**Thomas D. Gatlin**
*Vice-President Nuclear Operations*
(803) 345-4342

SCE&G®
A SCANA COMPANY

March 12, 2013
RC-13-0044

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Dear Sir/Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
SOUTH CAROLINA ELECTRIC & GAS COMPANY (SCE&G) FLOODING HAZARD REEVALUATION RESPONSE TO NRC REQUEST FOR INFORMATION PURSUANT TO 10 CFR 50.54(f) REGARDING THE FLOODING ASPECTS OF RECOMMENDATION 2.1 OF THE NEAR-TERM TASK FORCE REVIEW OF INSIGHTS FROM THE FUKUSHIMA DAI-ICHI ACCIDENT

References:

1. NRC Letter, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," March 12, 2012 [ML12053A340]

2. NRC Japan Lessons-Learned Project Directorate, JLD-ISG-2012-05, "Guidance for Performing the Integrated Assessment for External Flooding," Revision 0, November 30, 2012 [ML12311A214]

3. NRC Letter, D.L. Skeen (NRC) to J.E. Pollock (NEI), "Trigger Conditions for Performing an Integrated Assessment and Due Date for Response," December 3, 2012 [ML12326A912]

On March 12, 2012, the NRC issued Reference 1 to all power reactor licensees and holders of construction permits which are either active or deferred status. Enclosure 2 of Reference 1 contains specific Requested Actions, Requested Information, and Required Responses associated with Recommendation 2.1: Flooding Reevaluation. South Carolina Electric & Gas, acting for itself and as an agent for South Carolina Public Service Authority, provides the following Flood Hazard Analysis Reevaluation Report.

VCSNS performed the flood hazard reevaluations to determine if plant flood protection features, credited in the current licensing basis (CLB) for protection and mitigation from external flood events, are available, functional and properly maintained to ensure the operation of safety systems in the event of a credible flood event. SCE&G used Reference 2 to perform the integrated assessment for external flooding. The flooding reevaluations were performed in compliance with the 10 CFR 50 Appendix B program.



A001
NRR

A not for public disclosure version of this letter, RC-13-0038, was signed and submitted to the NRC on March 12, 2013.

This letter contains one new regulatory commitment. As a supplement to the attached Flood Hazard Analysis Reevaluation Report, VCSNS will submit an integrated assessment report as defined in Reference 3 scenario 2 by March 12, 2015.

Should you have any questions concerning the content of this letter, please contact Bruce L. Thompson at (803) 931-5042.

I declare under penalty of perjury that the foregoing is true and correct.

3/12/13
Executed on

for T.D. GATLIN
Thomas D. Gatlin

BQ/TDG/ts
Attachments: I. SCE&G's Flood Hazard Analysis Reevaluation Report (Redacted Version)
II. List of Regulatory Commitments

c: (without attachment unless noted)
K. B. Marsh
S. A. Byrne
J. B. Archie
N. S. Carns
J. H. Hamilton
J. W. Williams
W. M. Cherry
E. J. Leeds
V. M. McCree (with attachment)
E. A. Brown (with attachment)
NRC Resident Inspector
K. M. Sutton
NSRC
RTS (CR-12-01098)
File (815.07)
PRSF (RC-13-0044)

**VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1**

**ATTACHMENT I**

**SCE&G'S FLOOD HAZARD ANALYSIS REEVALUATION REPORT (Redacted Version)**

SOUTH CAROLINA ELECTRIC & GAS
VIRGIL C. SUMMER NUCLEAR STATION
NUCLEAR OPERATIONS

ENGINEERING SERVICES TECHNICAL REPORT

TR02060-003

# Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding the Flooding Aspects of Recommendation 2.1 of the Near-Term Task Force Review of Insights From the Fukushima Accident

## Flood Hazard Reevaluation Report for VCSNS

REVISION 0

Jon A. Winterhalter /x Lawrence G. Grybosky — 03-07-2013
ORIGINATOR – Jon A. Winterhalter/Lawrence Grybosky — DATE

Michael B. Marcellus — 3/7/2013
REVIEWER – Michael Marcellus — DATE

Gary J. Taylor — 03/11/2013
APPROVAL AUTHORITY (VCSNS) – — DATE

RECORD OF CHANGES

| CHANGE LETTER | TYPE CHANGE | APPROVAL DATE | CANCELLATION DATE | CHANGE LETTER | TYPE CHANGE | APPROVAL DATE | CANCELLATION DATE |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

# Table of Contents

## 1. Purpose

The purpose of this Technical Report is to provide a written response to the U. S. Nuclear Regulatory Commission (NRC) pursuant to the requirements in Title 10 of the Code of Federal Regulations (10 CFR), Section 50.54(f) letter (Reference 3.1), dated March 12, 2012 (NRC 50.54(f) Letter), as applicable to the Virgil C. Summer Nuclear Station, Unit 1 (VCSNS). As part of this request, licensees are required to perform flood hazard reevaluations to determine if plant flood protection features, credited in the current licensing basis (CLB) for protection and mitigation from external flood events, are available, functional and properly maintained to ensure the operation of safety systems in the event of a credible flood event.

The flood protection and mitigation features will be evaluated against revised flood levels which may result from use of current methodologies and regulatory guidance. This report documents the results of the flood hazard reevaluations that were performed to meet the requirements of NTTF 2.1: Flooding - Hazard Reevaluation.

The work for the flooding reevaluations was performed in compliance with the 10 CFR 50 Appendix B program. Several related calculations were originated to support the conclusions in this report. They are referenced where applicable.

For purposes of this report, flooding refers to the external ingress of water resulting from local intense precipitation and severe weather conditions or other occurrences, which could adversely affect systems, structures, and components (SSCs) important to safety and includes Probable Maximum Precipitation (PMP) and Probable Maximum Flood (PMF).

## 2. Scope

This report is prepared by WorleyParsons under SCE&G Purchase Order NU-02SR747671, "Fukushima Flooding Walkdowns and Reevaluation."

The scope of this report is to respond to specific information requests from the NRC 50.54(f) Letter (Reference 3.1), Enclosure 2, Recommendation 2.1: Flooding, and Attachment 1 to Recommendation 2.1: Flooding Enclosure 2, which includes the following items:

2.1 Site information related to the flood hazard:

- 2.1.1 Detailed site information (layout, topography, elevation of SSCs)
- 2.1.2 Current design basis flood hazard levels for all flood-causing mechanisms including groundwater ingress
- 2.1.3 Flood related changes to licensing basis since license issue
- 2.1.4 Changes to the watershed and local area
- 2.1.5 Current licensing basis flood protection and mitigation features that are considered in the licensing basis to protect against external ingress of water into SSCs important to safety
- 2.1.6 Additional site details necessary to assess flooding

2.2 Evaluation of the flood hazard for each flood-causing mechanism, based on present-day methodologies and regulatory guidance.

2.3 Comparison of current and reevaluated flood-causing mechanisms at the site.

2.4 Interim evaluation and actions taken or planned to address any higher flooding hazards relative to the design basis, prior to completion of the integrated assessment report, if necessary.

2.5 Additional actions beyond Requested Information item 2.4 (above) taken or planned to address flooding hazards, if any.

2.6 While performing these reevaluations, should it be found that only local intense precipitation is not bounded by the current design basis, then the evaluation of such flooding (and recommended remedial measures) should be submitted with this hazard report.

## 3. References

3.1 U. S. Nuclear Regulatory Commission (NRC), "Request for Information Pursuant to Title 10 of the Code of Federal Regulations (10 CFR), Section 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," March 12, 2012

3.2 NRC letter, "Trigger Conditions for Performing an Integrated Assessment and Due Date for Response, December 3, 2012

3.3 NTTF 2.3 Flooding Walkdown Credited Features Checklist, Revision 4, 11/02/2012, prepared for NTTF 2.3 Flooding Walkdowns

3.4 FSAR, "Updated Final Safety Analysis Report," November 28, 2011

3.5 Report TR02060-002, "10 CFR 50.54(f) Regarding the Flooding Aspects of Recommendation 2.3 of the Near-Term Task Force Review of Insights From the Fukushima Accident, Verification Walkdown Report for VCSNS Plant Flood Protection Features - Walkdown Record Forms and Supplementary Data"

3.6 Photogrammetric Survey, "SUMMER_2012_TOPO_10-29-12.dwg," by Glenn Associates Surveying, Inc., October 29, 2012

3.7 Calculation DC02060-001, "Storm Drainage Calculation," Revision 0, dated December 9, 1982

3.8 Calculation DC02060-005, "Stormwater Runoff from Fukushima NTTF Recommendation 2.1 PMP Event on Plant Site and Service Water Pond for Unit 1," February 15, 2013

3.9 Calculation DC02060-006, "Estimation of Fukushima NTTF Recommendation 2.1 Local Probable Maximum Precipitation (PMP) for Unit 1, February 15, 2013

3.10 Calculation DC02060-007, "Estimation of Fukushima NTTF Recommendation 2.1 Probable Maximum Precipitation (PMP) for Monticello Reservoir for Unit 1," February 15, 2013

3.11 Calculation DC02060-008, "Est of Fukushima NTTF Recommendation 2.1 Probable Max Flood (PMF) Elev for Monticello Reservoir & the SWP for Unit 1," February 15, 2013

3.12 U.S. NRC NUREG/CR-7046, "Design-Basis Flood Estimation for Site Characterization at Nuclear Power Plants in the United States of America," November 2011

3.13 U.S. NRC NUREG/CR-6966, "Tsunami Hazard Assessment at Nuclear Power Plant Sites in the United States of America, March 2009

3.14 U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), "Hydrometeorological Report No. 52, Application of Probable Maximum Precipitation Estimates – United States East of the 105th Meridian," August 1982

3.15 JLD-ISG-2012-05, "Guidance for Performing the Integrated Assessment for External Flooding," Revision 0, November 30, 2012, (ML12311A214)

3.16 NUREG-0800, Section 2.4.2, "Floods," Revision 4, March 2007

3.17 OAP-109.1, Revision 3 (F), Operations Administrative Procedure, "Guidelines for Severe Weather"

3.18 SOP-207, Revision 22, System Operating Procedure, "Circulating Water"

# 4. Hazard Reevaluation

## 4.1 Site Information Related to the Flood Hazards

The current licensing basis (CLB) documents were reviewed to compile the flood elevations and credited flood protection features. The documents that were reviewed include:

- FSAR (Reference 3.4)
- Procedures
- Technical Specifications
- Maintenance Rule Procedures
- LRA (License Renewal Application)
- LRA SER
- LRA and SER Commitments
- PLEX/LRA Technical Reports including: TR00170-001, -002, and -003
- Fukushima Response letter to INPO IER 11-1 dated 4/15/11
- Design Calculations
- Construction Drawings
- NSR Structures DBD
- Topical Seismic DBD
- SW DBD
- IPEEE conclusions TR00310-001
- NRC TI 2515-183 inspection results
- ES-0400 SW Pond Structure & Dam Inspections Guidelines
- CR-11-01207 (Lessons Learned from the IER 1-11 walkdowns)

The credited plant flood protection features are summarized in the spreadsheet, Flooding Walkdown Credited Features Checklist, Revision 4 (Reference 3.3). This spreadsheet is included as Attachment A. This checklist was also used during the 2.3 Flood Walkdown. The walkdown report is cited as Reference 3.5.

Relevant SSCs important to safety and the Ultimate Heat Sink (UHS) are included in the scope of this reevaluation, and pertinent data concerning these SSCs are included. Other relevant site data include the following:

### 4.1.1 Detailed Site Information

Detailed site information (both designed and as-built), includes present-day layout, elevation of pertinent SSCs important to safety, site topography, and pertinent spatial and temporal data sets.

4.1.1.1 Original Design Grading and Drainage Configuration

The original site layout is shown on drawing E-744-052, Site Improvements – Plot Plan.

The original design of site grading is shown on drawings E-744-053, Revision 0, and E-744-054, Revision 0, (Attachment B).

Note: All elevations on the existing plant drawings, the new survey, and otherwise mentioned in this report refer to National Geodetic Vertical Datum of 1929 (NGVD29) since they predate the current North American Vertical Datum of 1988 (NAVD88).

4.1.1.2 As-Built Grading and Drainage Configuration

As-built plant grade is partially shown on the current revisions of drawings E-744-053-R37 and E-744-054-R14. To provide complete and detailed as-built information to support the reanalysis work, a new topographical survey was performed during the summer of 2012. The finished map "Summer Power Plant – 2012" (Reference 3.6) is dated October 29, 2012 (Attachment C). The survey was performed by photogrammetric methods and is accurate to within 0.1 foot (x, y, and z). The new survey was used to develop the digital terrain model for use in the FLO-2D analyses.

Significant development has occurred along the western side of the plant since original licensing. Development includes new structures, roads, parking lots, gravel laydown yards, storm drainage systems, and site grading. In most cases the grading work raised the original contours.

4.1.2 Current Design Basis Flood Elevations

4.1.2.1 Local Intense Precipitation

4.1.2.1.1 General

FSAR - Sections 2.4.3.1.2 and 2.4.3.1.3, state that Local Intense Precipitation is defined as the greatest hourly depth of rainfall during the 6-hour probable maximum precipitation (PMP). The PMP has been determined to build up to at most elevation 436.15 feet (weir flow over the plant roads with centerline elevations of 436.0 feet) on the site assuming no flow in the storm inlets and storm sewer pipe system (completely blocked) before overland flow allows surface runoff to flow off the plant site perimeter away from the main plant buildings.

According to Table 2.4-5 (FSAR): Distribution Sequence for 6 Hour Point Probable Maximum Precipitation

| Hour | Rainfall Amount (inches) |
|---|---|
| 1 | 2.98 |
| 2 | 3.58 |
| 3 | 4.47 |
| 4 | 11.34 |
| 5 | 4.18 |
| 6 | 3.28 |
| Total | 29.83 |

The maximum one hour rainfall of the PMP is 11.34 inches. The plant drainage system consisting of inlets and buried stormwater was originally designed for less than the final license basis FSAR PMP rainfall event. To further evaluate the capacity of the installed storm drainage system, surface storage was calculated for each drainage subbasin and it was concluded that the 11.34-inch 4$^{th}$ hour rainfall would be stored at or below elevation 436.0 feet. The analysis assumed a normally-functioning, below-grade stormwater drainage system. Refer to Calculation DC02060-001 (Reference 3.7).

The centerline elevation of the roads surrounding the perimeter of the plant area was originally set at 436.0 feet nominal elevation. The overflow capacities of the surrounding roads act as weirs up to elevation 436.0 feet, resulting in a maximum ponding elevation of 436.15 feet during the 6-hour PMP (FSAR - Section 2.4.3.1.3). This statement assumes that the site grades allow drainage away from power block with roads acting as weirs.

FSAR - Section 2.4.10 states: "The roofs of safety-related buildings are designed to safely dispose of or store up to a maximum of 4 inches of local intense precipitation."

4.1.2.1.2 Local Intense Precipitation Original Calculation

Calculation DC02060-001, Revision 0, dated December 9, 1982, performed the subbasin storage analysis that was described in the FSAR. That calculation was based on conditions shown on the grading drawing E-743-001, Revision 20 and drainage drawing E-744-053, Revision 9. Drawing E-744-053 shows that the original grading design outside (west) of the western plant fence was comprised of drainage subbasins with ridge elevations of 435.5 feet and inlet grates at elevations 432.0 ft, 432.5 ft, or 433.5 ft.

4.1.2.2 Flooding in Streams and Rivers

4.1.2.2.1 Flooding from Frees Creek - Monticello Reservoir PMF

The Monticello Reservoir is the nearest body of water to the site, and serves as the source of cooling and makeup water for the VCSNS. Monticello Reservoir is the upper pool of the Fairfield Pumped Storage Facility and has a surface area of about 6,800 acres and a storage volume of about 400,000 acre-feet at the normal maximum water surface elevation of 425.0 feet. The water elevation of the reservoir is controlled by the Fairfield Hydro station which is a pumped storage generating station and varies between 420.5 and 425.0 feet, NGVD 29. The Frees Creek Dams serve to impound Monticello Reservoir on the west side. The Frees Creek Dams, main dam and three saddle dams, have crest elevations of 434.0 feet.

Monticello Reservoir normal maximum still water level is 425.0 feet, NGVD 29 (FSAR - Section 2.4.10). Maximum water level during Probable Maximum Flood (PMF), with wind storm surge and wave setup, is defined in FSAR Section 2.4.3.6.2 as 436.6 feet, NGVD 29 (maximum water level of 425.0 ft plus 48-hour PMP of 4.1 ft plus wave runup of 7.5 ft). The North Berm top is at design elevation 438.0 feet providing an available physical margin of 1.4 feet.

A conservative design basis assumption is that no water is released from the Fairfield Hydro station during the event. The controlled normal maximum reservoir still water level is assumed to be at elevation 425.0 feet. If water were released by Fairfield Hydro station, the maximum design water level would be less than 425.0 feet.

4.1.2.2.2 Flooding from the Service Water Pond (SWP) PMF

The Service Water Pond (SWP) is a Seismic Category 1 impoundment constructed adjacent to Monticello Reservoir that is physically separated by Seismic Category 1 dams and natural land masses. The SWP supplies water for the Service Water System under normal and emergency operations and serves as the plant's Ultimate Heat Sink (UHS). The interconnecting pipe, through the operation of a butterfly isolation valve, permits the SWP to be supplied from Monticello Reservoir. For normal operating conditions, the Monticello Reservoir and SWP levels can fluctuate between elevations 420.5 feet and 425.0 feet.

Service Water Pond (SWP) "normal operation (mean level)" still water elevation is 422.0 feet, NGVD 29 (FSAR, Section 9.2.5.3.2.3.a). Maximum water level during Probable Maximum Flood (PMF), with wind storm surge and wave setup, is calculated at 433.6 feet, NGVD 29. The West Embankment top design elevation is 435.0 feet. The other three dams forming the SWP have top design elevations of 438.0 feet.

The SWP is designed to preclude being flooded, or drained, by Monticello Reservoir. An interconnecting pipe is the only hydraulic connection between the SWP and Monticello Reservoir. This pipe is fitted with a butterfly isolation valve that is locked closed during normal operation (FSAR Sections 2.4.8 and 9.2.5).

4.1.2.2.3 Flooding from Broad River PMF

The PMF on the Broad River was determined to be elevation 290.5 feet at Parr Reservoir. Nominal site grade of 435 feet is about 145 feet above the Broad River flood. Flooding from Broad River will not affect the site.

4.1.2.3 Dam Breaches and Failures

Dam breaches and failures were considered during the Broad River Flooding evaluation. There are no dams upstream of the Monticello Reservoir on Frees Creek. Failure of the Frees Creek Dams (loss of Monticello Reservoir) will not affect the self-contained Service Water Pond which is the UHS for the plant.

4.1.2.4 Storm Surge

Water level increases due to storm surge were included in the PMF determinations in the Monticello Reservoir and the Service Water Pond.

4.1.2.5 Seiche

FSAR 2.4.5.5 states, for Monticello Reservoir, the longitudinal wave period is 21 minutes and the transverse period is approximately 10 minutes. Since these periods are much greater than wave periods associated with this type of system, wind generated wave amplification is not possible.

4.1.2.6 Tsunami

FSAR 2.4.6 states that tsunami effects are not a safety-related consideration since the plant is located 150 miles inland from the Atlantic Ocean.

FSAR 2.4.4.2 states that "because of the low topographic relief of the region surrounding Monticello Reservoir, the possibility of a slope failure and a resulting landslide which could produce a local slide induced flood wave is extremely remote." (This is actually a type of tsunamigenic flooding.)

4.1.2.7 Ice Induced Flooding

FSAR 2.4.7 states that due to a combination of the temperate local climate and the fact that plant cooling increases the surface temperature of the Monticello Reservoir and the Service Water Pond, an analysis of ice effects was not considered.

4.1.2.8 Channel Migration or Diversion

Monticello Reservoir water elevations are controlled by the Fairfield Pumped Storage Facility. The SWP water level is controlled by the VCS plant and will fluctuate with the Monticello Reservoir levels unless the valve in the 36-inch diameter connecting pipeline is closed. The valve is usually closed to isolate the SWP water from the reservoir because chemical additives are added to the service water. The valve is opened to transfer water from the Monticello reservoir into the SWP. There is also a low level alarm on the pond that will alert the operator to take this action (Reference ARP-001-XCP-604). There is no procedure to release water from the SWP if the water level increases due to stormwater runoff inflow.

Since the Monticello Reservoir and SWP water elevations are controlled, channel diversion effects at the VCSNS are not a design basis (FSAR 2.4.9).

4.1.2.9 Combined Effect Flood

Potential dam failures on the Broad River were considered. Assuming failure of the Clinchfield Dam and the subsequent cascading failures of five downstream dams (all upstream of Parr Dam) the discharge was estimated to be 5,131,000 cubic feet per second (cfs). This flow is less than the Broad River PMF of 5,351,000 cfs (FSAR 2.4.4.3)with an elevation of 290.5 feet at Parr Reservoir (FSAR 2.4.4.4).

## 4.2 Evaluation of the Flood Hazard for Each Flood Causing Mechanism

The section reports on the reevaluation of the flood hazard for each flood-causing mechanism, based on present-day methodologies and regulatory guidance.

4.2.1 Local Intense Precipitation

4.2.1.1 PMP Comparison

Calculation DC02060-006(Reference 3.9) was prepared to determine the present-day Probable Maximum Precipitation (PMP) for use in the determination of Local Intense Precipitation (LIP) on the plant site. The PMP for this purpose is currently defined as the 1 hour, 1 square mile PMP as defined in Section 3.2 of NUREG/CR-7046, (Reference 3.12). The PMP rainfall for the site is 19.0 inches.

4.2.1.2 PMP Runoff Calculation Comparison

Once the PMP was determined, that rainfall event was applied to the site and the maximum water level elevations and flows were calculated by using the FLO-2D Pro software application. Refer to Calculation DC02060-005 (Reference 3.8).

The new maximum water surface during the PMP event at the main plant buildings and doors varies from 437.5 feet to 436.6 feet.

As a result of the extensive nature of development of the western side of the plant site, substantial surface water runoff flows north and south of the power block in an easterly direction and discharges into the Service Water Pond.

### 4.2.2 Flooding in Streams and Rivers

#### 4.2.2.1 PMF Flooding from Frees Creek Watershed into Monticello Reservoir

Calculations DC02060-007 and DC02060-008 (References 3.10 and 3.11, respectively), determine the present-day Probable Maximum Flood (PMF) elevation exterior to the main plant site (not including the Local Intense Precipitation). The PMP was also determined for the watershed of the reservoir to support the PMF determination. Other additive factors are storm surge and waves set up by winds.

The new calculation used the current digital elevation model (DEM) information to determine the latest Monticello reservoir surface area, upstream watershed area, and wind fetch calculation. The DEM was downloaded from the South Carolina Department of Natural Resources (SCDNR) Geodatabase using the terrain surface data for Fairfield County.

The calculation concluded that the maximum PMF elevation for Monticello Reservoir at the North Berm of the plant is 437.00 feet. Because of the difference in dam face slopes, the PMF elevation for Monticello Reservoir at the North Dam of the SWP was determined to be 434.77 feet.

The PMF elevation at the North Berm is above the CLB PMF elevation of 436.6 feet, but still below the berm top elevation which is 438.0 feet. The PMF elevation for Monticello Reservoir at the North Dam of the SWP was not stated separately in the FSAR but was determined to be below 436.6 feet (CLB).

#### 4.2.2.2 Flooding from the Service Water Pond (SWP) PMF

Calculations were prepared to determine the present-day Probable Maximum Flood (PMF) exterior to the main plant site relative to flooding from the SWP. The same PMP as used in the Local Intense Precipitation (LIP) calculation was used to support the PMF effect from the SWP on the plant site since the combined plant site and SWP area fall within the 1 square mile area definition of the LIP. Other additive factors are storm surge and waves set up by winds. The PMF elevation for the Service Water Pond at the West Embankment was determined to be 428.30 feet.

#### 4.2.2.3 Flooding from Broad River PMF

Recent hydrologic and hydraulic data resources for the Broad River were investigated. The calculations performed for Unit 2 and 3 licensing were also reviewed. No significant changes were found in the Broad River basin that would change the conclusion that PMF flooding would only generate flood elevations of 145 feet below the VCSNS plant site.

4.2.2.4 Dam Breaches and Failures

Dam breaches and failures were considered during the original Broad River Flooding evaluation. No significant changes were found in the Broad River basin dams that would change the conclusion that any possible combination of dam failures would only generate flood elevations of greater than 145 feet below the VCSNS plant site. (The dam failure flooding case was determined to be less than the PMF on the river system.)

There are no dams upstream of the Monticello Reservoir on Frees Creek. Failure of the Frees Creek Dams (loss of Monticello Reservoir) will not flood the plant site and will not affect the Service Water Pond which is the UHS for the plant.

4.2.2.5 Storm Surge

Water level increases due to storm surge were included in the PMF determinations in the Monticello Reservoir and the Service Water Pond.

4.2.2.6 Seiche

FSAR 2.4.5.5 states, for Monticello Reservoir, the longitudinal wave period is 21 minutes and the transverse period is approximately 10 minutes. Since these periods are much greater than wave periods associated with this type of system, wind generated wave amplification is not possible. No further analysis was performed.

4.2.2.7 Tsunami

FSAR 2.4.6 states that tsunami effects are not a safety-related consideration since the plant is located 150 miles inland from the Atlantic Ocean. This statement should state that "coastal" tsunami effects are not a concern to VCSNS. According to the NUREG/CR-6966 (Reference 3.13) definition "A tsunami is a series of water waves generated by a rapid, large-scale disturbance of a water body due to seismic, landslide, or volcanic tsunamigenic sources," and, "Note that this definition is not limited to oceanic tsunamis."

FSAR 2.4.3 states "seismically induced floods due to landslides in the site area pose no threat due to the site elevation and the generally flat to rolling terrain."

FSAR 2.4.4.2 states "because of the low topographic relief of the region surrounding Monticello Reservoir, the possibility of a slope failure and a resulting landslide which could produce a local slide induced flood wave is extremely remote."

Additional investigation into the potential for landslide generated waves was undertaken for the Monticello Reservoir. Landslides can be submarine or subaerial (starting above water and extending below water). The plant site is just inside the southeast limit of "Moderate susceptibility/low incidence" on the Landslide Overview Map of the Conterminous United States, 1982 presented on the USGS web site. Susceptibility to landsliding was defined as the probable degree of response of [the areal] rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. High, moderate, and low susceptibility are delimited by the same percentages used in classifying the incidence of landsliding. Geographic areas southeast of the boundary are rated low landslide incidence (less than 1.5% of the area involved in landslides).

The watershed was reviewed for ground elevation and surface slope. Of the entire watershed area, approximately 40% of it is the reservoir water surface. From maximum operating water surface of elevation 425 feet, the upland areas extend as high as elevation 515 feet but predominantly range between 440 feet and 480 feet. The upland area slopes vary from a high of 10% on the western side to less than 10%, averaging closer to 5%, on the eastern side of the reservoir. This review supports the FSAR statement that a landslide which could produce a local slide induced flood wave is remote.

4.2.2.8 Ice Induced Flooding

Due to a combination of the temperate local climate and the fact that plant cooling increases the surface temperature of the Monticello Reservoir and the Service Water Pond, additional analysis of ice effects was not performed.

4.2.2.9 Channel Migration or Diversion

Monticello Reservoir water elevations are controlled by the Fairfield Pumped Storage Facility. The SWP water level is controlled by the VCS plant by a valve in the 36-inch diameter connecting pipeline. The valve is usually closed to isolate the SWP water from the reservoir because chemical additives are added to the service water. The SWP water level will fluctuate with the Monticello Reservoir levels unless this valve is closed. The valve is opened to transfer water from the Monticello reservoir into the SWP. There is also a low level alarm on the pond that will alert the operator to take this action (Reference ARP-001-XCP-604). There is no procedure to release water from the SWP if the water level increases due to stormwater runoff inflow.

Since the Monticello Reservoir and SWP water elevations are controlled, channel diversion effects at the VCSNS are not a design basis (FSAR 2.4.9).

4.2.2.10 Combined Effect Flood

Potential dam failures on the Broad River were considered. Assuming failure of the Clinchfield Dam and the subsequent cascading failures of five downstream dams (all upstream of Parr Dam) the discharge was estimated to be 5,131,000 cubic feet per second (cfs). This flow is less than the Broad River PMF of 5,351,000 cfs (FSAR 2.4.4.4). No further analysis was performed.

## 4.3 Comparison of Current and Reevaluated Flood Causing Mechanism

The section compares the reevaluation flood hazard basis for each flood causing mechanism to the original flood hazards of the CLB.

4.3.1 Local Intense Precipitation

The CLB considered the 6-hour PMP and the hour with the highest rainfall depth ($4^{th}$ hour with 11.34 inches) was used to analyze the storm drainage systems. The storm drainage system was originally designed for less than 11.34 inches in 1 hour. Surface storage was used to store runoff that ponded due to insufficient pipe system capacity. In response to an NRC question, it was stated in the FSAR that even if the pipe system was completely blocked, runoff would flow overland away from the power block buildings with a maximum water elevation of 436.15 feet.

New Calculation DC02060-005 (Reference 3.8) determined that the maximum water levels resulting from the new PMP event on the current as-built site will vary from 437.5 feet to 436.6 feet around the main plant exterior walls and doors. These elevations are greater than the 436.15 feet maximum ponding elevation stated in the FSAR. Existing door threshold elevations vary from 435.97 feet (finished floor elevation) to 436.36 at personnel doors due to floor elevation and height of threshold frames variations. The existing doors are not designed to be water-tight. The conclusion is that the reevaluated ponding elevations from the PMP event are not bounded by the CLB.

There are two primary reasons for this increase. The first reason is the continuing, extensive site development, especially on the western side of the main plant site that has caused the grade in that area to be raised as new buildings were constructed with their associated roads and parking facilities. Surface storage has been reduced and, in some cases, storm drainage system inlets have been raised in elevation. The second reason is the addition of the Owner Controlled Area (OCA) fencing and security features have caused grade to be raised and large rocks (Vehicle Barrier) surrounding the site that impede surface runoff from draining away from the main plant buildings area. These impacts have been shown by current analyses to have cumulatively resulted in the increase of water ponding in the vicinity of the main plant during the PMP rainfall event. Currently, instead of surface runoff flowing westerly away from the west side of the power block as originally designed, runoff actually flows from the west side eastward toward the power block.

### 4.3.2 Flooding from Monticello Reservoir PMF

Calculation DC02060-008 was prepared to determine the present-day Probable Maximum Flood (PMF) elevation exterior to the main plant site in accordance with current plant licensing criteria. The PMP was also determined for the watershed of the reservoir in Calculation DC02060-007 to support the PMF determination. The other additive factors are the storm surge and waves set up by winds.

The maximum elevation is calculated to be 437.00 feet providing an Available Physical Margin (APM) of 1.00 foot. This calculation includes several conservatisms: the assumption that Monticello Reservoir is at maximum operating level at the start of the storm event; no releases of water from Monticello Reservoir occur during the event; and the combined effects of the coincident PMP, design wind storm, and worst case wind direction.

### 4.3.3 Flooding from the Service Water Pond (SWP) PMF

Calculation DC02060-008 was prepared to determine the present-day Probable Maximum Flood (PMF) elevation exterior to the main plant site. The PMP was also determined for the watershed of the reservoir in Calculation DC02060-007 to support the PMF determination. Other additive factors are storm surge and waves set up by winds.

The calculation concluded that the maximum water elevation at the West Embankment would be 428.30 feet. This is less than the CLB of 433.6 feet (FSAR 2.4.10).

### 4.3.4 Broad River Flooding

The CLB and reevaluated flood hazard from Broad River flooding are consistent.

4.3.5 Dam Breaches and Failures

The CLB and reevaluated flood hazard from dam failures and breaches are consistent.

4.3.6 Storm Surge

The CLB and reevaluated flood hazard from storm surge are consistent.

4.3.7 Seiche

The CLB and reevaluated flood hazard from seiches are consistent.

4.3.8 Tsunami

The CLB and reevaluated flood hazard from tsunamigenic waves are consistent.

4.3.9 Ice Induced Flooding

The CLB and reevaluated flood hazard from ice induced flooding are consistent.

4.3.10 Channel Migration or Diversion

The CLB and reevaluated flood hazard from channel migration or diversion are consistent.

4.3.11 Combined Effect Flood

The CLB and reevaluated flood hazard from combined effect flooding are consistent.

## 4.4 Interim Evaluation and Actions Taken or Planned to Address Higher Flooding Hazards

The following Condition Reports (CRs) were prepared in response to the findings of the Recommendation 2.3 Walkdowns.

4.4.1 CR-12-04133

Brief Description: During review of site flood protection design in accordance with NEI 12-07 [Rev. 0-A], in response to Fukushima NTTF Recommendation 2.3-Flooding, the Flooding Walkdown Team identified deficiencies related to site dams and embankments. The following deficiencies were identified during study of site topographical surveys performed as part of Fukushima Recommendation 2.1/2.3 response (Performed per PO# NU-02NN747697). The surveys were submitted with accuracy of 0.1 feet at the dam/berm profiles.

- The North Berm (DE-1) was identified as having local low points in crest at elevation 437.7 feet.
- The SWP North Dam (DE-2) was identified as having low points in crest elevation of 437.1 feet.

- The SWP East Dam (DE-3) was identified as having low points in crest elevation of 437.5 feet.

The North Berm, SWP North Dam and SWP East Dam have a design elevation of 438.0 feet (FSAR, Section 2.10).

Conclusion (Excerpt): "Although the Dam/Berm crest elevations are below 438.0 feet there is still available physical margin between the current Dam/Berm crest elevation and the maximum wave run-up elevation. It is also noted that the SW Pond North and East dam require protection against wind-wave activity generated in the SW Pond. The maximum elevation of wind-wave run-up generated in the SW Pond is 433.6', which is bounded for the SW Pond North and East dam by the wind-wave activity from Monticello Reservoir."

Operability Recommendation: "OPERABLE"

4.4.2 CR-12-03267

Brief Description: During review of site flood protection design in accordance with NEI 12-07a, in support of Fukushima NTTF Recommendation 2.3 – Flooding, a discrepancy was noted between the FSAR stated site maximum ponding level and the Nuclear Safety Related building flood protection features.

Conclusion (Excerpt): Design Engineering to resolve discrepancies noted within FSAR Section 2.4.3.1.3 regarding site protection against the local intense precipitation flood event. ES-120 Operability Recommendation has been completed. Interim actions include a general visual inspection to be performed on each catch basin shown on drawing 743-001 for catch basin manhole inlet blockage as well as for potentially transportable materials in the immediate vicinity that could result in manhole blockage. Sandbags will be procured, staged, and used as determined by the Shift Supervisor in the best interests of plant safety. The direction for staging of the sandbags, as well as locations of where the sandbags are needed, will be included in EPP-015 or other applicable operating guidance.

Operability Recommendation: OPERABLE but DEGRADED, see CR for Corrective Action(s).

"Guidelines for Sandbagging Ground Level Plant Doors" have been incorporated into Operations Administrative Procedure, OAP-109.1, Revision 3(F), "Guidelines for Severe Weather."

4.4.3 CR-12-04135

Brief Description: During review of site flood protection design in accordance with NEI 12-07 [Rev. 0-A], in response to Fukushima NTTF Recommendation 2.3-Flooding, the Flooding Walkdown Team identified the following deficiencies in the Reactor Building Tendon Gallery:

- Active Groundwater in-leakage/seepage was noted above the 408 feet elevation of the Tendon Access Gallery.
- There are 8 small conduit penetrations ((6) - 1.5" and (2) - 1") located on the removable slab sections of the Tendon Gallery on the East side of the Reactor Building. Slab sections are shown on drawing E-411-060. The low point of the top of conduits is at elevation 436.19 feet, which is above the maximum site ponding elevation of 436.15 feet.

Conclusion (Excerpt): "The groundwater in-leakage is considered to be very minimal and to have no impact on plant equipment. The Tendon Gallery Sump pumps located below elevation 388 feet provide sufficient capability to pump down the minor groundwater ingress.

WO# 1210857 has been written for maintenance to rework the seal per the standard details of drawing E-400-250 "Overall Plant – Joint Sealer Study", Section 4-4.

It is desired to provide a removable cap over the 8 small conduit penetrations. The purpose of the cap will be to preclude the very small amount of rain water which falls directly into the conduits from entering into the tendon gallery. The current amount of water that enters the conduits during rainstorms will not result in any flooding concerns; however as a good practice it is desired to provide the removable cap.

WO#1210858 has been written for electrical maintenance to install removable conduit cap on the 8 small conduits located on removable slab sections of the Tendon Gallery on the East Side of the Reactor Building (75 degrees Azimuth).

Operability Recommendation: "OPERABLE"

4.4.4 CR-12-04137

Brief Description: During review of site flood protection design in accordance with NEI 12-07 [Rev. 0-A], in response to Fukushima NTTF Recommendation 2.3-Flooding, the Flooding Walkdown Team identified the following deficiencies in the Diesel Generator Building basement (400 feet elevation):

- On both the West and North wall of the Diesel Generator Building minor in-leakage was noted. The in-leakage was noted leaking around the SW Piping Penetrations (DG Room 00-01) on East Wall at approximate elevation 415 feet as well as in-leakage at the seismic rattle space between the DGB north wall and the IB East Wall above elevation 400 feet (DG Room 00-02).

Conclusion (Excerpt): Due to the low leakage rate and sump pump capability; there is no adverse consequence to essential equipment due to the maintenance type groundwater in-leakage.

WO# 1210860 has been written for Civil Maintenance to seal the rattle space with Colma Joint Sealer or equal as shown on drawing E-400-250.

WO# 1210861 has been written for Civil Maintenance to investigate the cause of and repair leakage thru the Link Seals for the 24" Service Water Piping at the 400 feet elevation of the Diesel Generator Building (CMP-550.001 "Diesel Building Link Seal Installation and Removal").

Operability Recommendation: "OPERABLE"

4.4.5 CR-11-00563

*This item had been previously identified by plant personnel prior to the flooding walkdowns and was entered into the CAP at that time as CR 11-00563.*

Brief Description: During field walkdown of Service Water Pumphouse to support CDBI inspection, ground water infiltration was noted through penetrations P-SW-1-002 in Room 25-01 and P-SW-01-001 in Room 25-03. The leak is occurring due to a degraded seal in annulus between the piping penetration and the 30" SW Pump discharge piping on the SE wall of the SWPH.

Conclusion (Excerpt): The amount of water infiltration is minimal and will have no adverse effect on design flood levels in Rooms 25-01, 25-02 and 25-03. The seal is not a fire rated seal and is not listed in STP-728-031.

Operability Recommendation: "OPERABLE"

4.4.6 CR-12-03527

Brief Description: Water was observed dripping in room 25-08 of the SWPH (Room adjacent to sump pumps and 'C' switchgear). The water appeared to be coming from the packing material around the duct bank (not the conduit) and falling into the sump pump trench. The sumps were not running.

Conclusion (Excerpt): The amount of water infiltration is minimal. WO#1209247 was written to inspect and repair gasket/filler material.

Operability Recommendation: "OPERABLE"

4.4.7 CR-12-04504

Brief Description: During review of site flood protection design, the Flooding Walkdown Team identified the following deficiency related to RWST pit and associated penetrations (AB 412' elevation):

- The potential deficiency is rainwater which would accumulate in the pit during the local intense precipitation event (PMP), which totals 29.83" over a 6-hour period. The RWST has no passive drainage provisions in place to remove/drain local intense precipitation falling into the RWST pit area. During the 6-hour PMP, the water depth in the pit would be approximately 4.68 feet. This correlates to a hydrostatic pressure loading of approximately 2.02 psi. The seals in the 12 penetrations are not listed in the PenSeal Database as having any specific design requirements for sealing against rainwater. The penetrations are, in general, sealed between electrical conduits or piping/insulation with a silicone sealant, similar to 732 RTV.

Conclusions: The pressure over the small effective areas of the penetration annulus is minimal and not expected to lead to failure of seals during the PMP. The seals are often subjected to submersion during heavy rain storms and no significant leakage has occurred, only small maintenance type leakage. The distributed concrete floor loading due to rainwater is approximately 0.294 ksf. Per DC03230-013, the design Live Load under the RWST, which is at the maximum slab span of 19 feet, is 3.18 ksf. The slab was designed to accommodate the 51 feet of water head from the RWST, and due to the fact that the RWST is at the critical span, and the entire slab is similarly reinforced, it is concluded that the 4.68 feet of water is insignificant.

Recommendations: Recommend further evaluation of the as-built configuration of the penetration seals and incorporation of the descriptions of the 12 penetrations which are located in the RWST pit Floor Slab into the PenSeal database to reflect the as-built condition and the sealant detail.

Operability Recommendation: "OPERABLE"

## 4.5 Evaluation to Address Unbounded Flooding Hazard from Local Intense Precipitation – Proposed Plant Modifications

4.5.1 General

In accordance with the direction contained in the December 3, 2012 "trigger" letter from the NRC to NEI (Reference 3.2), the unbounded Local Intense Precipitation (LIP) was evaluated. Scenario 2 of this letter states that if during these reevaluations, it is found that only local intense precipitation is not bounded by the current design basis, then the evaluation of such flooding should be submitted with this hazard report. Addressing the evaluation in this report precludes the need for a separate integrated assessment report for VCSNS.

Based upon the results of the flooding walkdowns and evaluations made to date, it is concluded that VCSNS does correspond to the case where the local intense precipitation is the only condition not bounded by the current design basis. As such, Scenario 2 of the "trigger" letter is met.

Since the integrated assessment requires a peer review as determined by the resolution of NEI FAQ 009 dated 2/13/2013, the summary information and proposed plant modifications (simple Integrated Assessment) will be provided as a supplement to this report at a later date.

## 5. Attachments

A. NTTF 2.3 Flooding Walkdown Credited Features Checklist, Revision 4, 11/02/2012

B. Drawing Number E-744-053 "Plant Site, North Plot Plan – Finished Grade," Revision 0, 6/21/1972, and
Drawing Number E-744-054 "Plant Site, South Plot Plan – Finished Grade," Revision 0, 6/21/1972.

C. "Summer Power Plant – 2012," by Glenn Associates Surveying, Inc., October 29, 2012

## 6. Revision Summary

Revision 0 is the original report issue.

# Attachment A

NTTF 2.3 Flooding Walkdown Credited Features Checklist, Revision 4, 11/02/2012

(14 Pages)

**Project:** SCE&G - V.C. Summer Nuclear Station, Unit 1
**Subject:** NTTF Recommendation 2.3 - Flooding Walkdowns

Flooding Walkdown **Credited** Features Checklist
Rev 4, 11/02/2012

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| DE-1 | North Berm | N/A | 2.4.3.6.2 | A.1.1.1 | E-726-403 | 2H:1V Slopes; **EL 438.0**;<br>2, 9-inch filter zones beneath 36 inches riprap<br>Max Flood Elev. = 436.6' | minimum Elev 438.0', riprap condition, confirm elev by topo survey.<br>Degradation and leakage (if applicable)<br>**Follow ES-400 Guidelines, which is based in part on RG 1.127** |
| | *(Monticello Reservoir)* | | 2.4.10 | | E-743-001 | | |
| | | | 2.5.6 | | E-744-053 | | |
| DE-2 | North Dam | N/A | 2.4.10 | A.1.1.1 | E-726-403 | 3.5H:1V Slopes (outside), 3H:1V Slopes (inside); **EL 438.0**; 2 - 9" filters; 3' riprap; Total berm top width = 40'; Exterior slope is flood protection for SW Pond; Max Flood Elev. = 433.6' | top width 30 feet, minimum Elev 438.0', riprap condition, confirm elev by topo survey.<br>Degradation and leakage (if applicable)<br>**Follow ES-400 Guidelines, which is based in part on RG 1.127** |
| | *(Service Water Pond)* | | 2.5.6 | | E-726-406 | | |
| | | | | | E-726-421 to 425 | | |
| DE-3 | East Dam | N/A | 2.4.10 | A.1.1.1 | E-726-413 | 3.5:1 Slopes (outside), 3:1 Slopes (inside); **EL 438.0**; Zone 1 filter = 6", Zone 2 filter = 1'; 3' riprap; Total berm top width = 40'; Exterior slope is flood protection for SW Pond; Max Flood Elev. = 433.6' | top width 40 feet, minimum Elev 438.0', riprap condition, confirm elev by topo survey.<br>Degradation and leakage (if applicable)<br>**Follow ES-400 Guidelines, which is based in part on RG 1.127** |
| | *(Service Water Pond)* | | 2.5.6 | | E-726-407 | | |
| | | | | | E-726-437 | | |
| DE-4 | South Dam | N/A | 2.4.10 | A.1.1.1 | E-726-412 | 3.5:1 Slopes (outside), 3:1 Slopes (inside); **EL 438.0**; Zone 1 filter = 6", Zone 2 filter = 1'; 3' riprap; Total berm top width = 40'; Exterior slope is flood protection for SW Pond; Max Flood Elev. = 433.6' | top width 30 feet, minimum Elev 438.0', riprap condition, confirm elev by topo survey.<br>Degradation and leakage (if applicable)<br>**Follow ES-400 Guidelines, which is based in part on RG 1.127** |
| | *(Service Water Pond)* | | 2.5.6 | | E-726-406 | | |
| | | | | | E-726-431 | | |
| | | | | | E-726- 432 | | |
| DE-5 | West Embankment | N/A | 2.4.10 | A.1.1.1 | E-726-416 | 3:1 Slope; **EL 435.0**;<br>2 - 9" filters; 2' riprap; berm top width = 50' (minimum);<br>Max Flood Elev. = 433.6' | top width 50 feet, minimum Elev 435.0', riprap condition, confirm elev by topo survey.<br>Degradation and leakage (if applicable)<br>**Follow ES-400 Guidelines, which is based in part on RG 1.127** |
| | *(Service Water Pond)* | | 2.5.6 | | E-726-407 | | |
| GR-1 | Grading | N/A | 2.4.3.1.3 | A.1.1 | E-743-001 | CL of roads around the site area in the immediate vicinity of the plant buildings @ **EL 436.0**; overland drainage flow will commence once ponding has reached 436.0. Water surface elevation will not be higher than **436.15**.<br><br>Plant site is graded to permit overland drainage flow away from the buildings toward the south and west. Water surface elevation will not be higher than **436.15**. Site will drain adequately to protect safety class equipment even with the underground storm drainage system completely blocked. | High elevations that will restrict flow of surface water away from safety structures.<br><br>Confirm maximum elev by topo survey.<br><br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey. |
| | | | 3.4.1.1 | A.1.7 | E-743-002 | | |
| | | | | | E-744-053 | | |
| | | | | | E-744-054 | | |
| | | | | | E-744-058 | | |
| | | | | | E-744-059 | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| YD-1 | Grading | XTK00025-MB | 2.4.3.1.3 | A.1.1 | D-302-651; E-304-653 | **Mechanical Component**<br><br>Exposed below grade, Aux. Building | Confirm no potential for flooding of vents or other tank connections nor damage to tank from external flow resulting from local intense precipitation overtopping the wall from overland flow (does NOT include local intense precipitation falling directly into the RWST pit).<br><br>Determine impact of water overtopping wall at 436.0' and pooling within RWST Pit |
| | *Vents and Connections Refueling Water Storage Tank* | | 3.4.1.2 | | E-811-008; E-412-303 | | |
| | | | | | C-818-651 (Sheets 1-4) | | |
| | | | | | 1MS-11-016 and 020(E6) | | |
| | | | | | E3, E4, E5, E7 | | |
| | | | | | (1MS-11-017,018,019,021) | | |
| | | | | | | | |
| YD-2 | Grading | XTK00008-CST | 2.4.3.1.3 | A.1.1 | D-302-101, E-811-042, | **Mechanical Component**<br><br>Above ground, East of plant | Confirm no potential for flooding of vents or other tank connections nor damage to tank from external flow resulting from local intense precipitation.<br><br>Vertical pipe enters ground.<br>Vents and overflow pipes are above elevation 436.15' |
| | *Vents and Connections Condensate Storage Tank* | | 3.4.1.2 | | B-814-304 | | |
| | | | | | 1MS-17-095(E4) | | |
| | | | | | 1MS-17-100(E9) | | |
| | | | | | D-302-085 | | |
| | | | | | E-303-012, E-303-004 | | |
| YD-3 | Grading | XVB01010 | 2.4.3.1.3 | A.1.1 | D-302-101, E-811-042, | **Electrical component**<br>Emergency Feedwater Valve - Manual | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Condensate Storage Tank Outlet* | | 3.4.1.2 | | B-814-304 | | |
| | | | 6.3.2.2.7 | | 1MS-17-095(E4) | | |
| | | | | | 1MS-17-100(E9) | | |
| | | | | | D-302-085 | | |
| | | | | | E-303-012, E-303-004 | | |
| YD-4 | Grading | XVG01007 | 2.4.3.1.3 | A.1.1 | D-302-101, E-811-042, | **Electrical component**<br>Emergency Feedwater Valve - Manual | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Condensate Storage Tank Outlet* | | 3.4.1.2 | | B-814-304 | | |
| | | | 6.3.2.2.7 | | 1MS-17-095(E4) | | |
| | | | | | 1MS-17-100(E9) | | |
| | | | | | D-302-085 | | |
| | | | | | E-303-012, E-303-004 | | |
| YD-5 | Grading | ILT03621 | 2.4.3.1.3 | A.1.1 | D-302-101, E-811-042, | **Electrical component**<br>Emergency Feedwater Instrument | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Condensate Tank* | | 3.4.1.2 | | B-814-304 | | |
| | | | 6.3.2.2.7 | | 1MS-17-095(E4) | | |
| | | | | | 1MS-17-100(E9) | | |
| | | | | | D-302-085 | | |
| | | | | | E-303-012, E-303-004 | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| YD-6 | Grading | ILT03631 | 2.4.3.1.3 | A.1.1 | D-302-101, E-811-042, | **Electrical component** Emergency Feedwater Instrument | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Condensate Tank* | | 3.4.1.2 | | B-814-304 | | |
| | | | 6.3.2.2.7 | | 1MS-17-095(E4) | | |
| | | | | | 1MS-17-100(E9) | | |
| | | | | | D-302-085 | | |
| | | | | | E-303-012, E-303-004 | | |
| YD-7 | Grading | ILT03631A | 2.4.3.1.3 | A.1.1 | D-302-101, E-811-042, | **Electrical component** Emergency Feedwater Instrument | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Condensate Tank* | | 3.4.1.2 | | B-814-304 | | |
| | | | 6.3.2.2.7 | | 1MS-17-095(E4) | | |
| | | | | | 1MS-17-100(E9) | | |
| | | | | | D-302-085 | | |
| | | | | | E-303-012, E-303-004 | | |
| YD-8 | Grading | XTK00053A/B-DG | 2.4.3.1.3 | A.1.1 | 1MS-20-490-0002 | **Mechanical Component** Buried, East of plant | Confirm no potential for flooding of vents or other tank connections nor damage to tank from external flow resulting from local intense precipitation. |
| | *Vents and Connections Emergency Diesel Fuel Oil Storage Tank* | | 3.4.1.2 | | D-302-351 | | |
| | | | | | E-303-027, E-434-011 | | |
| | | | | | B-814-317, E-001-061 | | |
| | | | | | 1MS-20-490-0001 | | |
| | | | | | E-744-104 | | |
| YD-9 | Grading | XTK00053A | 2.4.3.1.3 | A.1.1 | 1MS-20-490-0002 | **Electrical component** Diesel Generator Services Tank | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *A DG Fuel Oil Storage Tank* | | 3.4.1.2 | | D-302-351 | | |
| | | | 6.3.2.2.7 | | E-303-027, E-434-011 | | |
| | | | | | B-814-317, E-001-061 | | |
| | | | | | 1MS-20-490-0001 | | |
| | | | | | E-744-104 | | |
| YD-10 | Grading | XTK00053B | 2.4.3.1.3 | A.1.1 | 1MS-20-490-0002 | **Electrical component** Diesel Generator Services Tank | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *B DG Fuel Oil Storage Tank* | | 3.4.1.2 | | D-302-351 | | |
| | | | 6.3.2.2.7 | | E-303-027, E-434-011 | | |
| | | | | | B-814-317, E-001-061 | | |
| | | | | | 1MS-20-490-0001 | | |
| | | | | | E-744-104 | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| YD-11 | Grading | XAC0014 | 2.4.3.1.3 | A.1.1 | N/A | Mechanical Component<br>Electrical component<br>Instrument Air Supply<br>Air Compressor | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Diesel Driven Air Compressor* | | 3.4.1.2 | | | | |
| | | | | | | | |
| YD-12 | Grading | XEG00101-CVCS | 2.4.3.1.3 | A.1.1 | N/A | Mechanical Component<br>Being added by ECR-50780C and may not yet be installed<br><br>Electrical component<br>Chemical and Volume Control, EDG | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *CVCS Alternate Seal Injection Diesel* | | 3.4.1.2 | | | | |
| | | | | | | | |
| | | | | | | | |
| EBW-1 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Auxiliary Building West Wall Interior Surfaces* | *Basement Flr-El 374* | 3.4.1.2 | | E-412-061 | | |
| | | *Basement Flr-El 374* | 3.8.4.1.2 | | E-023-053 | | |
| | | *Basement Flr-El 374 Under RWST Pit* | 2.4.3.1.3 | | E-412-062 | | |
| | | *Basement Flr-El 388* | 3.4.1.1 | | E-412-101 | | |
| | | *Basement Flr-El 388 Under RWST Pit* | | | E-412-102 | | |
| | | *Basement Flr-El 388* | | | E-023-054 | | |
| | | *Basement Flr-El 397* | | | - - - | | |
| | | *Basement Flr-El 412* | | | E-412-303 | | |
| | | *West Wall* | | | E-412-125 | | |
| | | *El 388* | | | E-412-129 | | |
| | | *B/T RWST Pit-El 374* | | | E-412-133 | | |
| | | *El 412* | | | E-023-056 | | |
| | | *El 436* | | | E-023-059 | | |
| | | *South Wall* | | | E-412-147 | | |
| EBW-1A | Exterior Bldg Wall | *Basement Flr-El 374* | 3.4 | A.1.2 | E-023-053 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Auxiliary Building East Wall Interior Surfaces* | *Basement Flr-El 388* | 3.4.1.2 | | E-023-054 | | |
| | | *Basement Flr-El 397* | 3.8.4.1.2 | | - - - | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |
| | | | | | | | |
| | | | | | | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-2 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**.<br><br>Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Door threshold is above 436.15'<br><br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Auxiliary Building North Wall Interior/Exterior Surfaces* | *Basement Flr-El 374* | 3.4.1.2 | | E-023-053 | | |
| | | *Basement Flr-El 374 Under RWST Pit* | 3.8.4.1.2 | | E-412-062 | | |
| | | *Basement Flr-El 388* | 2.4.3.1.3 | | E-412-101 | | |
| | | *Basement Flr-El 388 Under RWST Pit* | 3.4.1.1 | | E-412-102 | | |
| | | *Basement Flr-El 388* | | | E-023-054 | | |
| | | *Basement Flr-El 397* | | | E-412-301 | | |
| | | *Basement Flr-El 412* | | | E-023-056 | | |
| | | *El 412* | | | E-023-059 | | |
| | | *El 436* | | | E-412-123 | | |
| | | | | | E-412-135 | | |
| | | Door AB-407 | | | D-101-014 | | |
| | | Door AB-406 | | | | | |
| | | Door AB-419 | | | | | |
| | | Door AB-418 | | | | | |
| | | Door AB-417A | | | | | |
| EBW-2A | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Auxiliary Building South Wall Interior Surfaces* | *Basement Flr-El 374* | 3.4.1.2 | | E-023-053 | | |
| | | *Basement Flr-El 374 Under RWST Pit* | 3.8.4.1.2 | | E-412-062 | | |
| | | *Basement Flr-El 388* | 2.4.3.1.3 | | E-412-101 | | |
| | | *Basement Flr-El 388 Under RWST Pit* | 3.4.1.1 | | E-412-102 | | |
| | | *Basement Flr-El 388* | | | E-023-054 | | |
| | | *Basement Flr-El 397* | | | E-412-301 | | |
| | | *Basement Flr-El 412* | | | E-412-123 | | |
| | | | | | E-412-135 | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-3 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Fuel Handling Building West Wall Interior/Exterior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-415-072 | | |
| | | | 3.8.4.1.6 | | E-415-081 | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |
| EBW-4 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Fuel Handling Building North Wall Interior/Exterior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-415-061 | | |
| | | | 3.8.4.1.6 | | E-415-092 | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |
| EBW-5 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>Door threshold is above 436.15'<br>**Follow ES-0437 Guidelines** |
| | *Fuel Handling Building East Wall Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-415-061 | | |
| | | | 3.8.4.1.6 | | E-415-093 | | |
| | | Door FH-301 | 2.4.3.1.3 | | D-101-027 | | |
| | | Door FH-302 | 3.4.1.1 | | | | |
| | | Door FH-303 | | | | | |
| | | Door FH-304 | | | | | |
| EBW-6 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>Door threshold is above 436.15'<br>**Follow ES-0437 Guidelines** |
| | *Fuel Handling Building South Wall 1 Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-415-061 | | |
| | | | 3.8.4.1.6 | | E-415-091 | | |
| | | *Door FH-305* | 2.4.3.1.3 | | D-101-027 | | |
| | | | 3.4.1.1 | | | | |
| EBW-7 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Fuel Handling Building South Wall 2 Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-415-061 | | |
| | | | 3.8.4.1.6 | | E-415-093 | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-8 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>Top of curb is above 436.15'<br><br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Reactor Building/ Tendon Gallery Northeast Wall Interior Surfaces* | *Elev. 388* | 3.4.1.2 | | E-411-031 | | |
| | | *Elev. 396* | 2.4.3.1.3 | | E-411-033 | | |
| | | | 3.4.1.1 | | E-411-035 | | |
| | | | | | E-411-666-1 | | |
| | | | | | E-921-101 | | |
| | | | | | E-921-103 | | |
| | *Reactor Building Curb* | TG-101-Curb | | | D-101-020 | | |
| EBW-8A | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Reactor Building/ Tendon Gallery Northwest Wall Interior Surfaces* | *Elev. 388* | 3.4.1.2 | | E-411-031 | | |
| | | *Elev. 396* | 3.4.1.1 | | E-411-033 | | |
| | | | | | E-411-035 | | |
| | | | | | E-411-666-1 | | |
| | | | | | E-921-101 | | |
| | | | | | E-921-103 | | |
| EBW-8B | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Reactor Building/ Tendon Gallery Southwest Wall Interior Surfaces* | *Elev. 388* | 3.4.1.2 | | E-411-032 | | |
| | | *Elev. 396* | 3.4.1.1 | | E-411-034 | | |
| | | | | | E-411-035 | | |
| | | | | | E-411-666-2 | | |
| | | | | | E-921-102 | | |
| EBW-8C | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Top of curb is above 436.15'<br><br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Reactor Building/ Tendon Gallery Southeast Wall Interior Surfaces* | *Elev. 388* | 3.4.1.2 | | E-411-032 | | |
| | | *Elev. 396* | 2.4.3.1.3 | | E-411-034 | | |
| | | | 3.4.1.1 | | E-411-035 | | |
| | | | | | E-411-666-2 | | |
| | | | | | E-921-102 | | |
| | | | | | | | |
| | | | | | | | |
| | *Reactor Building Curb* | PA-RB-Curb | | | D-101-022 | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-9 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Top of curb is above 436.15'<br><br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Diesel Generator Building North Wall Interior Surfaces* | | 3.4.1.2 | | E-417-060 | | |
| | | El 427, 436 | 3.8.4.1.4 | | E-417-081 | | |
| | | El 400, 427, 436 | 2.4.3.1.3 | | E-023-069 | | |
| | | El 400 | 3.4.1.1 | | E-023-007 | | |
| | | El 436, Embed Conduit | | | E-201-231 | | |
| | | Door DB-301 | | | D-101-028 | | |
| | | Door DB-302 | | | | | |
| EBW-10 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Diesel Generator Building East Wall Interior Surfaces* | | 3.4.1.2 | | E-417-060 | | |
| | | El 427, 436 | 3.8.4.1.4 | | E-417-083 | | |
| | | El 412, 436 | 2.4.3.1.3 | | E-023-069 | | |
| | | El 400, 412 | 3.4.1.1 | | E-023-007 | | |
| EBW-11 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Top of curb is above 436.15'<br><br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Diesel Generator Building South Wall Interior Surfaces* | | 3.4.1.2 | | E-417-060 | | |
| | | El 427, 436 | 3.8.4.1.4 | | E-417-081 | | |
| | | El 400, 412 | 2.4.3.1.3 | | E-023-007 | | |
| | | El 436, Conduit | 3.4.1.1 | | E-201-231 | | |
| | | Door DB-305 | | | D-101-028 | | |
| | | | | | | | |
| | | | | | | | |
| EBW-11A | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Diesel Generator Building West Wall Interior Surfaces* | El 400 | 3.4.1.2 | | E-417-031 | | |
| | | El 400 | 3.8.4.1.4 | | E-417-032 | | |
| | | El 388, 400 | 2.4.3.1.3 | | E-023-069 | | |
| | | El 400 | 3.4.1.1 | | E-023-007 | | |
| EBW-12 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Intermediate Building East Wall 1 Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-413-061 | | |
| | | | 3.8.4.1.3 | | | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-13 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>Top of curb is above 436.15'<br><br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Intermediate Building South Wall 1 Interior Surfaces* | | 3.4.1.2 | | E-413-081 | | |
| | | | 3.8.4.1.3 | | | | |
| | | Door IB-302 | 2.4.3.1.3 | | D-101-025 | | |
| | | Door IB-304 | 3.4.1.1 | | | | |
| | | | | | | | |
| | | | | | | | |
| EBW-14 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Intermediate Building East Wall 2 Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-413-061 | | |
| | | | 3.8.4.1.3 | | | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |
| EBW-15 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Door threshold is above 436.15'<br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Intermediate Building South Wall 2 Interior Surfaces* | | 3.4.1.2 | | E-413-083 | | |
| | | | 3.8.4.1.3 | | | | |
| | | Door IB-313 | 2.4.3.1.3 | | D-101-025 | | |
| | | Door IB-314 | 3.4.1.1 | | | | |
| | | Door IB-314 | | | | | |
| | | Door IB-315 | | | | | |
| | | | | | | | |
| EBW-16 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Door threshold is above 436.15'<br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Intermediate Building West Wall Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-413-062 | | |
| | | | 3.8.4.1.3 | | | | |
| | | Door IB-305 | 2.4.3.1.3 | | D-101-025 | | |
| | | | 3.4.1.1 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-17 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-413-063 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Door threshold is above 436.15'<br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Penetration Access Area - Intermediate Building Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-413-087 | | |
| | | | 3.8.4.1.3 | | E-413-089 | | |
| | | | 2.4.3.1.3 | | E-304-252 | | |
| | | Door PA-205 | 3.4.1.1 | | D-101-022 | | |
| | | Door PA-204 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| EBW-18 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces<br><br>Plant site is graded to permit overland drainage flow away from the buildings. Water surface elevation will not be higher than **436.15**. | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>Door threshold is above 436.15'<br>Topography for plant site provides overland drainage flow away from buildings. Confirm by topo survey.<br><br>**Follow ES-0437 Guidelines** |
| | *Control Building South Wall Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-414-061 | | |
| | | | 3.8.4.1.5 | | E-414-081 | | |
| | | Door CB-301 | 2.4.3.1.3 | | D-101-025 | | |
| | | Door CB-302 | 3.4.1.1 | | D-105-011 | | |
| | | Door CB-326 | | | | | |
| | | Door CB-303 | | | | | |
| | | | | | | | |
| EBW-19 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Control Building West Wall Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-414-061 | | |
| | | | 3.8.4.1.5 | | E-414-087 | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |
| EBW-20 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-001-061 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br><br>Verify visible penetrations are sealed<br><br>**Follow ES-0437 Guidelines** |
| | *Control Building North Wall Interior Surfaces* | *Basement Flr-El 412* | 3.4.1.2 | | E-414-061 | | |
| | | | 3.8.4.1.5 | | E-414-085 | | |
| | | | 2.4.3.1.3 | | | | |
| | | | 3.4.1.1 | | | | |
| | | | | | | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-21 | Exterior Bldg Wall | EMH0001 | 3.4 | A.1.2 | E-414-041 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Control Building, Elect MH 1* | | 3.4.1.2 | | | | |
| | | | 3.8.4.1.5 | | | | |
| | | | | | | | |
| EBW-22 | Exterior Bldg Wall | EMH0004 | 3.4 | A.1.2 | E-414-041 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Control Building, Elect MH 4* | | 3.4.1.2 | | | | |
| | | | 3.8.4.1.5 | | | | |
| | | | | | | | |
| EBW-25 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-426-713 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Service Water Pumphouse East Wall Interior Surfaces* | Architectural | 3.4.1.2 | | D-126-002 | | |
| | | Penetrations | 3.8.4.1.7 | | E-303-010 | | |
| | | Floor - El 425 | 2.4.3.1.3 | | E-426-702 | | |
| | | Floor - El 436 and 441 | 3.4.1.1 | | E-426-703 | | |
| | | Plans and Sections | | | E-023-080 | | |
| | | Syst Flow Diagram | | | D-302-221 | | |
| EBW-26 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-426-711 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Service Water Pumphouse North Wall Interior Surfaces* | Architectural | 3.4.1.2 | | D-126-002 | | |
| | | Penetrations | 3.8.4.1.7 | | E-303-010 | | |
| | | Floor - El 425 | 2.4.3.1.3 | | E-426-702 | | |
| | | Floor - El 436 and 441 | 3.4.1.1 | | E-426-703 | | |
| | | Plans and Sections | | | E-023-080 | | |
| | | Syst Flow Diagram | | | D-302-221 | | |
| | | Roof Drains | | | E-926-102 | | |
| EBW-27 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-426-714 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Service Water Pumphouse West Wall Interior Surfaces* | Architectural | 3.4.1.2 | | D-126-002 | | |
| | | Penetrations | 3.8.4.1.7 | | E-303-010 | | |
| | | Floor - El 425 | 2.4.3.1.3 | | E-426-702 | | |
| | | Floor - El 436 and 441 | 3.4.1.1 | | E-426-703 | | |
| | | Plans and Sections | | | E-023-080 | | |
| | | Syst Flow Diagram | | | D-302-221 | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| EBW-28 | Exterior Bldg Wall | | 3.4 | A.1.2 | E-426-713 | Structures (housing safety-related equipment) located below finished grade are provided with a continuous waterproofing membrane on their outside surfaces | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Service Water Pumphouse South Wall Interior Surfaces* | Architectural | 3.4.1.2 | | D-126-002 | | |
| | | Penetrations | 3.8.4.1.7 | | E-303-010 | | |
| | | Floor - El 425 | 2.4.3.1.3 | | E-426-702 | | |
| | | Floor - El 436 and 441 | 3.4.1.1 | | E-426-703 | | |
| | | Plans and Sections | | | E-023-080 | | |
| | | Syst Flow Diagram | | | D-302-221 | | |
| FLR-1 | Building Mat | | 3.4.1.2 | A.1.3 | E-023-054 | The Auxiliary Building mat is provided with a waterproof membrane on the bottom surface. | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Auxiliary Building Elev. 388* | | | | | | |
| FLR-2 | Building Mat | | 3.4.1.2 | A.1.3 | E-023-054 | The Auxiliary Building mat is provided with a waterproof membrane on the bottom surface. | Evidence of flood infiltration, leakage, and cracks<br>Verify visible penetrations are sealed<br>**Follow ES-0437 Guidelines** |
| | *Auxiliary Building Elev. 397* | | | | | | |
| RF-1 | Roof | | 2.4.10 | A.1.3 | E-001-062 | The roofs of safety-related buildings are designed to safely dispose of or store to a maximum of 4 inches of local intense precipitation. | The roof will drain rain water and not store more than 4 inches of precipitation (rain).<br>**Follow ES-0437 and CMP-700.005 Guidelines** |
| | *Fuel Handling Building* | | | | | | |
| RF-2 | Roof | | 2.4.10 | A.1.3 | E-001-062 | The roofs of safety-related buildings are designed to safely dispose of or store to a maximum of 4 inches of local intense precipitation. | The roof will drain rain water and not store more than 4 inches of precipitation (rain).<br>**Follow ES-0437 and CMP-700.005 Guidelines** |
| | *Auxiliary Building* | | | | | | |
| RF-3 | Roof | | 2.4.10 | A.1.3 | E-001-062 | The roofs of safety-related buildings are designed to safely dispose of or store to a maximum of 4 inches of local intense precipitation. | The roof will drain rain water and not store more than 4 inches of precipitation (rain).<br>**Follow ES-0437 and CMP-700.005 Guidelines** |
| | *Control Building* | | | | | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

| ID | Credited Feature | Tag or Location | FSAR Reference | NEI 12-07 Reference | Drawing Reference | *Reference Information | Inspect For |
|---|---|---|---|---|---|---|---|
| RF-4 | Roof | | 2.4.10 | A.1.3 | E-001-062 | The roofs of safety-related buildings are designed to safely dispose of or store to a maximum of 4 inches of local intense precipitation. | The roof will drain rain water and not store more than 4 inches of precipitation (rain).<br><br>**Follow ES-0437 and CMP-700.005 Guidelines** |
| | *Intermediate Building* | | | | | | |
| RF-5 | Roof | | 2.4.10 | A.1.3 | E-001-062 | The roofs of safety-related buildings are designed to safely dispose of or store to a maximum of 4 inches of local intense precipitation. | The roof will drain rain water and not store more than 4 inches of precipitation (rain).<br><br>**Follow ES-0437 and CMP-700.005 Guidelines** |
| | *Diesel Generator Building* | | | | | | |
| RF-6 | Roof | | 2.4.10 | A.1.3 | E-001-062 | The roofs of safety-related buildings are designed to safely dispose of or store to a maximum of 4 inches of local intense precipitation. | The roof will drain rain water and not store more than 4 inches of precipitation (rain).<br><br>**Follow ES-0437 and CMP-700.005 Guidelines** |
| | *Reactor Building* | | | | | | |
| MH-1 | Grading | EMH0002 | 2.4.3.1.3 | A.1.1 | E-434-007 | Conduit seals may have been removed as part of an NRC requirement.<br><br>Top elevations may have been altered | Verify lid extension, top elev. 437.3'<br><br>Verify paper joint is not misaligned such as to allow water intrusion. |
| | *Elect MH 2* | | 3.4.1.1 | A.1.6 | E-434-014 | | |
| | | | 3.4.1.2 | A.1.8 | E-216-001 | | |
| COMM-1 | Grading | | N/A | A.1.1 | 1MS-68-002 | Flood Protection is needed to support the NTTF 9.3 Communications needs identified in NEI 12-01 Section 2.4 (assumption # 3) | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Communications -* | | | | | | |
| | *Installed Inverters* | XIT5936 | | | | | |
| | *Installed Battery Chargers* | XIT5937 | | | | | |
| COMM-2 | Grading | XDS 95 ED-360 V.D.C. | N/A | A.1.1 | 1MS-68-002 | Flood Protection is needed to support the NTTF 9.3 Communications needs identified in NEI 12-01 Section 2.4 (assumption # 3) | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Communications -* | XDS 96 ED-360 V.D.C. | | | | | |
| | *Battery Disconnect* | | | | | | |
| COMM-3 | Grading | | N/A | A.1.1 | 1MS-68-002 | Flood Protection is needed to support the NTTF 9.3 Communications needs identified in NEI 12-01 Section 2.4 (assumption # 6) | Components protected from external flooding resulting from local intense precipitation up to elevation 436.15' by feature or elevation. |
| | *Communications -* | | | | | | |
| | *Infrastructure* | | | | | | |

*Reference WorleyParsons "VCSNS NTTF 2.3 FLOODING WALKDOWNS REVIEW OF CURRENT LICENSING BASIS REFERENCES" for the basis reference list used to generate this checklist.

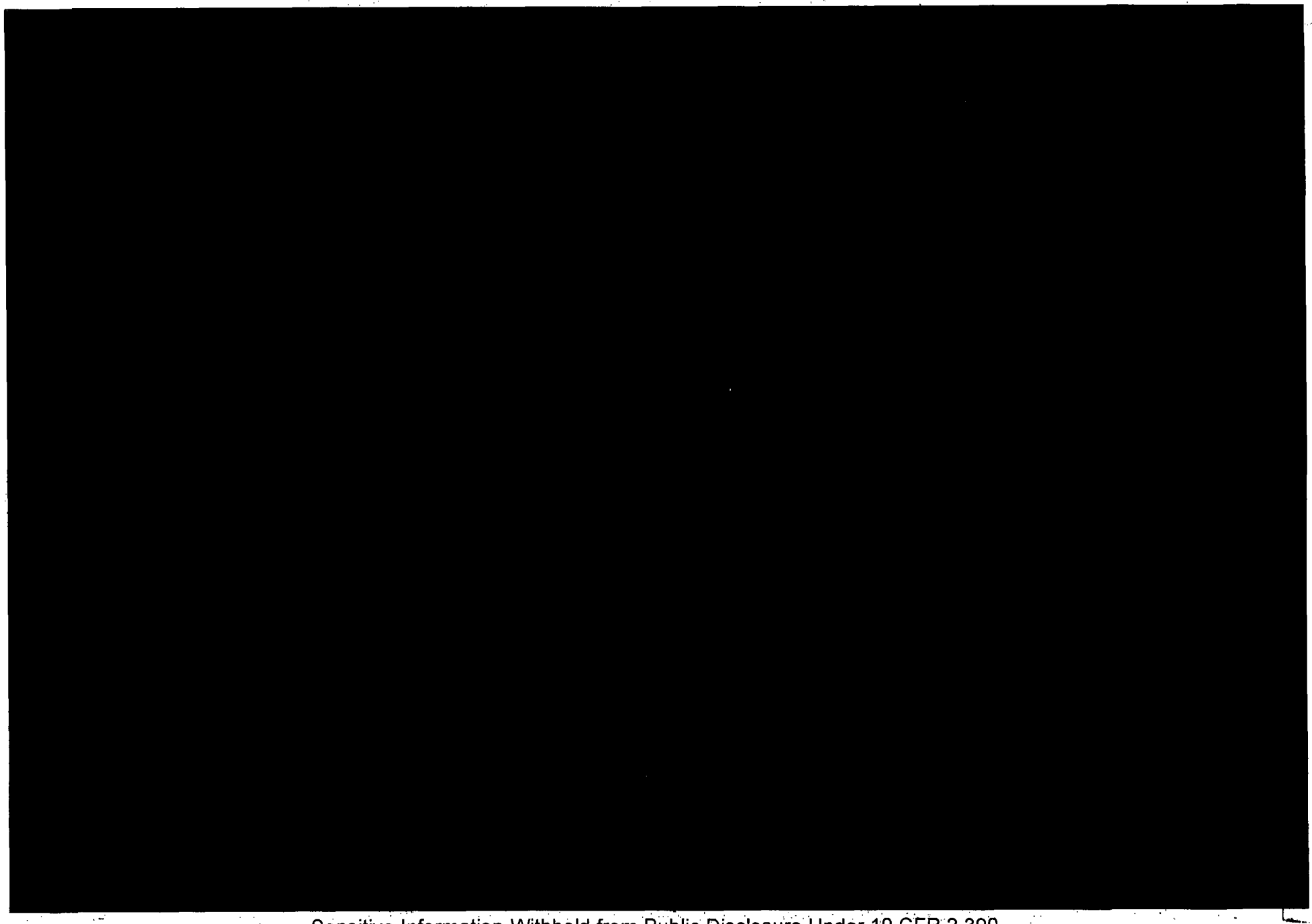
# Attachment B

Drawing Number E-744-053
"Plant Site, North Plot Plan – Finished Grading," Revision 0, 6/21/1972,
and

Drawing Number E-744-054
"Plant Site, South Plot Plan – Finished Grading," Revision 0, 6/21/1972

(3 Pages)

Drawing No. E-744-053

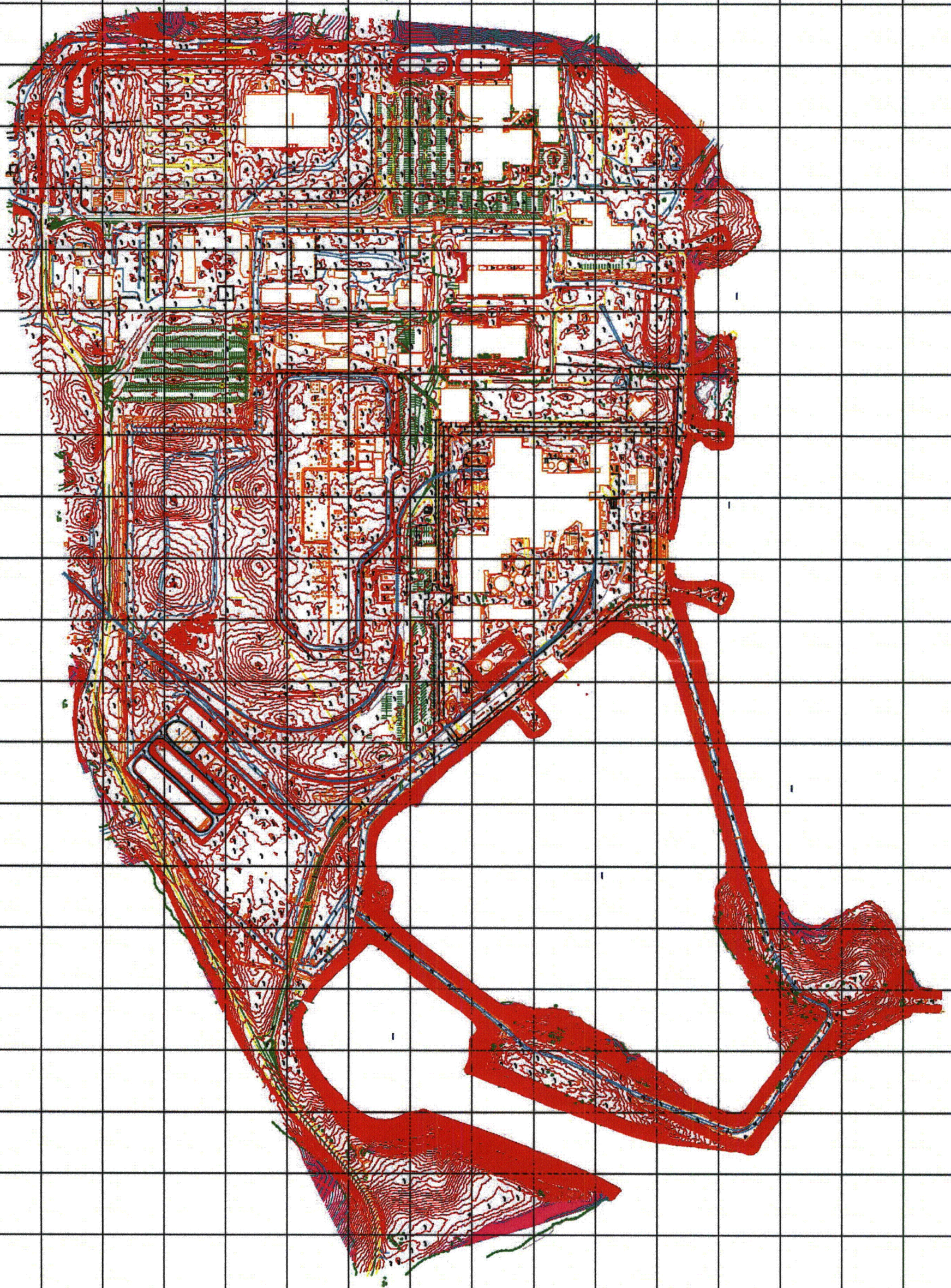


# Attachment C

"Summer Power Plant – 2012," Glenn Associates Surveying, Inc., October 29, 2012

(3 Pages)

"Summer Power Plant - 2012," Glenn Associates Surveying, Inc., October 29, 2012



1" = 50' MAP SCALE
0.5' CONTOUR INTERVAL

100 50 0 100 200

## CONTROL POINTS

| | | | |
|---|---|---|---|
| 601 | 1906790.1295 | 473999.5153 | 433.90 |
| 602 | 1907145.9766 | 473489.1296 | 438.15 |
| 603 | 1907587.1390 | 472542.5302 | 456.48 |
| 604 | 1907924.1287 | 471897.4126 | 457.55 |
| 605 | 1903342.7943 | 470157.2924 | 430.19 |
| 606 | 1902948.0927 | 470906.4127 | 432.46 |
| 607 | 1902699.4295 | 471910.5346 | 433.58 |
| 608 | 1902431.0844 | 472789.6037 | 338.05 |
| 609 | 1906455.7060 | 473246.8697 | 425.11 |
| 610 | 1905206.6775 | 472802.6690 | 435.06 |
| 611 | 1904500.1732 | 473271.6561 | 438.21 |
| 612 | 1903347.4535 | 473187.3050 | 434.56 |
| 613 | 1907006.7973 | 472340.6882 | 439.83 |
| 614 | 1906981.9225 | 471440.9376 | 436.74 |
| 615 | 1906012.8174 | 470837.9813 | 436.24 |
| 616 | 1905911.9023 | 471964.8826 | 436.80 |
| 617 | 1903619.2418 | 472270.6676 | 437.25 |
| 618 | 1904817.3205 | 470572.5134 | 435.61 |
| 619 | 1904191.7549 | 471375.9184 | 435.99 |
| 620 | 1905422.7487 | 471796.6279 | 435.13 |
| 621 | 1905185.8632 | 472298.7732 | 435.28 |
| 622 | 1904888.2845 | 472186.2543 | 435.45 |
| 623 | 1905578.0708 | 470597.9126 | 432.44 |
| 624 | 1904359.2422 | 470771.6980 | 436.50 |

**GROUND CONTROL PROVIDED BY:**
GLENN ASSOCIATES
11547 STATE HWY 215
JENKINSVILLE, SC 29065
803.345.5297

## MAP LEGEND

- **CURBS**
- PAVED ROADS
- UNPAVED ROADS
- BRIDGES
- BRIDGE WING, HEAD, END WALLS
- PAVED DRIVEWAYS & PARKING
- UNPAVED DRIVEWAYS & PARKING
- **CHANGE IN ROAD SURFACE**
- RAILROADS
- BUILDINGS
- FOUNDATION
- AREA OUTLINE
- CULVERT
- FENCE
- **PAVED DITCH**
- CONTROL POINT
- CATCH BASIN
- **LOCATED OBJECT**
- GUARD RAIL
- TREE LINES / WOODS
- HEDGE / SCRUB LINE
- **SINGLE TREE**
- **SHRUB**
- SWIMMING POOLS
- WALLS
- DAMS
- HYDRO
- **FOOTBRIDGE**
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- SPOT ELEVATION
- OBSCURE INDEX CONTOUR
- OBSCURE INTERMEDIATE CONTOUR
- OBSCURED AREA OUTLINE
- BREAKLINE
- DTM POINT
- GUY WIRE ANCHOR
- LOCATED POLE
- POLE WITH CONCRETE BASE
- TOWER
- LOCATED MISC OBJECT
- MANHOLE

# SUMMER POWER PLANT 2012
## JENKINSVILLE, SC
MAPPING & DTM
GLENN ASSOCIATES

THIS MAP WAS PREPARED IN ACCORDANCE WITH THE ACCEPTED NATIONAL MAP ACCURACY STANDARDS FOR THE INDICATED SCALE AND CONTOUR INTERVAL. ALL WORK PERFORMED BY OR UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL PHOTOGRAMMETRIST. DASHED CONTOURS MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS.

I, JAMES M SALMONS, P.L.S. #22965, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL PHOTOGRAMMETRIC SURVEY MADE UNDER MY SUPERVISION; THAT THIS PHOTOGRAMMETRIC SURVEY WAS PERFORMED TO MEET FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS AS APPLICABLE; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED ON JULY 19, 2012; THAT THE PHOTOGRAMMETRIC SURVEY WAS COMPLETED ON AUGUST 28, 2012; THAT CONTOURS SHOWN AS [BROKEN LINES] MAY NOT MEET THE STATED STANDARD; AND ALL COORDINATES ARE BASED ON SC STATE PLANE COORDINATES 1983.

THAT THE COLOR AERIAL PHOTOGRAPHY WAS TAKEN AT A NOMINAL SCALE OF 1" = 166' USING A WILD RC-30 AERIAL CAMERA. THAT THE DATA WAS COMPLIED BY STANDARD PHOTOGRAMMETRIC MEANS USING A BC2 ANALYTICAL STEREO PLOTTER AND/OR DATEM EVOLUTION SOFTCOPY SYSTEM. THAT THIS DATA WAS COMPILED TO MEET NATIONAL MAP ACCURACY STANDARDS. THAT THE DATA WAS COMPILED AT 1" = 50' WITH A 0.5' CONTOUR INTERVAL. THAT THE DASHED CONTOURS MAY NOT MEET THE STATED ACCURACIES.

THAT ALL GROUND CONTROL AND FIELD DATA SURVEY WAS OBTAINED BY GLENN ASSOCIATES SURVEYING, JENSKINSVILLE, SOUTH CAROLINA. ALL COORDINATES PROVIDED ARE GROUND COORDINATES DERIVED FROM THE ABOVE INFORMATION BASED ON THE NAD 83 COORDINATE SYSTEM AND NGVD 29.

*THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY JAMES M SALMONS, L-4041, ON AUGUST 28, 2012. THIS ELECTRONIC MEDIA SHALL NOT BE CONSIDERED A CERTIFIED DOCUMENT. SEE THE PROJECT REPORT FOR CERTIFICATE AND SEAL.*

PHOTOGRAPHY SCALE
1" = 166'

DATE OF PHOTOGRAPHY
JULY 19, 2012

**MAP COMPILED BY PHOTOGRAMMETRIC METHODS.**

**GEODATA CORP JOB # 12024**

GeoData Corp
DIGITAL MAPPING SERVICES
104 EAST HORTON STREET ZEBULON NC 27597
PHONE (919) 269-6744 FAX (919) 269-0413
WWW.GEODATACORPORATION.COM

DATE: AUGUST 28, 2012

THIS DIGITAL FILE SHOULD NOT BE CONSIDERED A CERTIFIED COPY.

**VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1**

**ATTACHMENT II**

**LIST OF REGULATORY COMMITMENTS**

The following table identifies those actions committed to by SCE&G, Virgil C. Summer Nuclear Station in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Bruce L. Thompson, Manager, Nuclear Licensing, (803) 931-5042.

| COMMITMENT | Due Date/Event |
|---|---|
| Submit the V.C. Summer Nuclear Station Unit 1 Integrated Assessment Report | March 12, 2015 |