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OPPD
Omaha Public Power District
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Omaha, NE 68102-2247

August 10, 2011
LIC-11-0090

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

References: 1. Docket No. 50-285
2. Nuclear Regulatory Commission Public Meeting, July 27, 2011

SUBJECT: Fort Calhoun Station Post-Flooding Recovery Action Plan

Due to Missouri river flooding, Fort Calhoun Station (FCS) entered a Notice of Unusual Event (NOUE) on June 6, 2011, as required by station procedures. Since April 9, 2011, FCS has been shutdown for a refueling outage and will remain shutdown until the Missouri river recedes to a safe level and site conditions allow for restart.

In the Reference 2 public meeting, OPPD provided information concerning current FCS site conditions, flooding action levels, on-going flood response, post-flooding recovery actions, and the OPPD commitment to safety. Additionally, in the Reference 2 meeting, OPPD committed to submit a detailed FCS flooding recovery action plan. The attached FCS post-flooding recovery action plan provides for extensive reviews of plant systems, structures, and components (SSCs) to assess the impact of the flood waters.

OPPD understands that selected actions in the attached plan will be included in a Confirmatory Action Letter (CAL) that must be satisfactorily completed prior to FCS plant restart. Therefore, this letter contains no commitments; the commitments will be described in the CAL.

OPPD is committed to the safe operation of FCS and will not ascend in mode without concurrence from the NRC that applicable commitments have been satisfied.

The attached FCS flooding recovery action plan is intended to be a living document and will be updated and re-submitted periodically as necessary. The Security recovery action plan will be submitted under separate cover.

Sincerely,

Jeffrey A. Reinhart
Site Vice President

JAR/rmc

Enclosure

FLOODING RECOVERY ACTION PLAN
REVISION 0

OMAHA PUBLIC POWER DISTRICT
FORT CALHOUN STATION

FLOODING RECOVERY ACTION PLAN
REVISION 0

AUGUST 10, 2011

Revision Log		
Revision	**Date**	**Description**
0	8/10/11	Initial issuance

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1. RECOVERY PLAN OVERVIEW

INTRODUCTION

The Missouri River flooding experienced at Fort Calhoun Station during the summer of 2011 has significantly challenged plant operation and has resulted in the station remaining shutdown since April 9, 2011, when the unit was removed from service for the start of the 2011 refueling outage. Throughout the flooding, OPPD has ensured that Fort Calhoun Station (FCS) continues to be operated in a manner that protects the public health and safety. OPPD is fully committed to ensuring that public health and safety is assured when FCS is returned to power operations.

In response to this unprecedented flooding event, OPPD is undertaking comprehensive, aggressive actions to fully scope, and then correct, the extent of flooding impact at FCS, beginning with comprehensive assessments of systems, structures and components (SSC) and continuing with detailed plans for repair and restoration. This document, the *FCS Flooding Recovery Plan*, provides detailed plans and actions regarding the structure, content and methods for these restart actions.

The FCS Flooding Recovery Plan is organized as follows:

Section 1 – Recovery Plan Overview

Section 2 – Assessment and Restoration Focus Areas

Section 3 – Action Plan Summary

Section 4 – Internal and External Oversight

Appendix A – Flooding Recovery Action Plans

PURPOSE

The purpose of the Flooding Recovery Plan (FRP) is to provide a roadmap for successful restart of Fort Calhoun Station. The FRP aligns OPPD, the FCS organization, and key oversight organizations toward the common goal of returning FCS to safe, event-free nuclear generation of electricity for OPPD. The FRP identifies specific focus areas that shall be addressed now and in the future. The FRP provides action plans, and the associated action steps, required to achieve plant restart and support continued safe operation following return to power operations.

ASSESSMENT AND RESTORATION FOCUS AREAS

As explained above, the FRP sets forth the actions that must be completed to allow plant restart and support continued safe operation. The objectives for the focus areas are characterized by the following statements:

- Assessment of SSCs impacted or potentially impacted by flooding to verify operability or functionality;

- Assessment of emergency preparedness to verify that the on-site and off-site emergency response infrastructure has been restored;
- Assessment of the current configuration of the physical protection system;
- Restoration of facilities and equipment to pre-flooding conditions;
- Identification of SSCs that must be monitored long-term for degradation;
- Evaluation of the effects of the flooding event on the station design and licensing basis;
- Incorporation of lessons learned into station procedures.

These objectives are broad in scope and form the foundation for comprehensive evaluation of the impact of this flooding event. The focus area objectives have been translated into six focus areas for development of action plans:

- Site Restoration
- Plant Systems and Equipment
- Equipment Reliability
- Design and Licensing Basis
- Emergency Planning
- Security

The focus areas are discussed and defined in more detail in Section 2.

EMERGENCY PREPAREDNESS

The FCS Emergency Preparedness program and emergency response capability has been maintained throughout the flooding event to assure protection of the health and safety of the public. Recognizing that the emergency response infrastructure may have been damaged by the flooding, OPPD will assess the capabilities of both the on-site and off-site emergency response facilities and organizations in the site's 10-mile emergency planning zone (EPZ) to respond to site emergencies. OPPD will also assist the state emergency management organizations in Iowa and Nebraska with preparation of their required assessments of the infrastructure associated with the radiological emergency preparedness program. OPPD will assist the states in drafting a letter of certification that is submitted to FEMA stating that the offsite emergency response organizations are capable of responding to a radiological emergency.

PHYSICAL SECURITY

Throughout the flooding event, OPPD has maintained physical security measures in accordance with the Security Plan. However, because of the flooding, some security systems and equipment have been removed from service. A security system damage

assessment and restoration plan has been included in the FRP and OPPD fully intends to restore the out-of-service equipment prior to plant restart. If circumstances prevent full restoration of the physical security protection, OPPD will use compensatory measures as allowed by the Security Plan. Prior to plant restart, OPPD will conduct an assessment of the current configuration of the physical protection system to verify the security protective strategy meets the objective of providing high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. This assessment will include local law enforcement and emergency response organizations to verify that their response capability for a security event has not been adversely impacted.

2011 REFUELING OUTAGE COMPLETION

Restart of FCS requires completion of the 2011 refueling outage. The detailed scope and schedule for outage completion are not included in the FRP. However, several major milestones are included in the associated action plan. Outage activities were suspended immediately after reactor core reload and upper guide structure installation, prior to the next major activity, which is Engineered Safety Features testing. The schedule has been developed for restarting outage activities based on river level projections from the US Army Corps of Engineers. However, that schedule will remain flexible due to the uncertainty of site conditions as the flood waters recede.

RESTART ISSUES IDENTIFICATION AND TRACKING

The FCS Corrective Action Program (CAP) is a comprehensive process for identifying, evaluating and correcting problems. While the FRP will be used to track the focus area action plans and action steps, the CAP will be used to track and resolve non-conforming and degraded conditions identified during plant assessments and inspections. Station personnel recognize the importance of identifying, reporting, and correcting problems via the CAP on a continuing basis. The CAP will be used as directed by applicable station procedures and issues will be classified regarding significance and priority in accordance with those procedures.

A separate Flooding Recovery Issues List be developed and maintained to track the status of flooding-related issues that must be resolved prior to plant restart. Issues will be identified through routine review of Condition Reports generated since the onset of flooding. Where appropriate, those issues will be added to the Plant Review Committee (PRC) Startup List, included in the FRP and/or added to the 2011 RFO scope.

DOCUMENTATION REQUIREMENTS

Flooding Recovery Action Plans

For each action on the Flooding Recovery Action Plans, closure packages will be developed to summarize the actions taken to address the issue and complete the deliverable identified in the action plan. The result will be an easy-to-review document summarizing the actions taken and describing the results achieved by implementation of the action plan.

Flooding Recovery Issues List

Closure of items on the Flooding Recovery Issues List will be documented using existing permanent plant processes. Those will primarily include the CAP, the Maintenance Work Control Process and the Surveillance Testing Process. The Flooding Recovery Issues List will be maintained as a current and convenient reference for verification by the Plant Review Committee that all issues have been addressed prior to plant restart.

Plant Restart Readiness Verification

Verification of readiness for plant restart will occur in accordance with Operating Procedure OP-1 "Master Checklist for Plant Startup." That procedure includes:

- System Alignment Verification
- Open Degraded and Non-conforming Item Review
- Off-Site Emergency Preparedness Verification
- Startup Surveillance Testing Verification
- Temporary Modification Review
- Safety Analysis For Operability Review
- Annunciator Status Verification
- Clearance Status Review
- Post Maintenance Testing Verification
- Locked Component Verification
- Containment Integrity Verification

2. ASSESSMENT AND RESTORATION FOCUS AREAS

SUMMARY OF FOCUS AREAS

An important step in developing the FRP was to identify and understand the scope of the assessment and restoration activities that will be required. Most of the site is still covered by flood waters and evaluation of the flooding impact on the plant has, in general, not yet been possible. Development of the FRP emphasized a broad and comprehensive approach to short term and long term assessment of flooding impact on plant systems, structures and components. As a result, FCS has identified six focus areas. Each focus area has been assigned to a station manager as the Focus Area Owner and each focus area has one or more associated action plans with Action Plan Owners.

The process requires that each action plan includes an Issue Definition and Objective to clearly define the scope and expected results for each action plan. Action steps, due dates and deliverables are included each action in the action plans. As a summary overview, the following paragraphs identify the six focus areas and provide a brief characterization of scope of each focus area. Details regarding specific objectives and actions are contained in the FCS Flooding Recovery Action Plans in Appendix A.

FOCUS AREAS & OWNERS

Site Restoration – Greg Roets, Manager – Major Projects

Includes all activities to remove flooding protection and equipment from the site, restore facilities and equipment with known damage and restore equipment that was moved off-site for protection from flooding. Although not directly related to flooding, repairs to 480VAC bus 1B4A are also included in this focus area.

Plant Systems and Equipment – Kevin Naser, Manager – System Engineering

Includes assessment of the condition of plant systems and equipment to determine what, if any, damage has occurred and identify actions necessary to restore the equipment to operable or functional status.

Long Term Equipment Reliability – Mark Frans, Manager – Engineering Programs

Includes assessing the condition and reliability of station equipment that may have been impacted by flooding conditions but has not failed. This will include both short term and long term assessment and monitoring.

Design and Licensing Basis – Steve Miller, Manager – Design Engineering

Includes all activities to verify that Fort Calhoun Station is in compliance with the NRC-approved design and licensing basis and determine if changes to the licensing basis are required due to changes in the frequency or magnitude of an external flooding event.

Emergency Planning – Steve Gebers, Manager – Emergency Planning, Health Physics and Administrative Services

Includes assessing the capabilities of both the on-site and off-site emergency response facilities and organizations in the site's 10-mile emergency planning zone (EPZ) to respond to site emergencies and restoration of those facilities where required. Also includes identifying lessons learned from the external flooding event and incorporating those lessons into station procedures.

Security – Al Clark, Manager - Security

Includes assessment of security system damage and restoration of damaged equipment. Also includes verifying the response capability of local law enforcement and emergency response organizations for a security event has not been adversely impacted.

3. ACTION PLAN SUMMARY

ACTION PLAN FORMAT AND CONTENT

The FRP action plans are the primary tool for documenting and tracking flooding recovery progress and issue closure. The action plans have defined owners with clear and concise issue definitions and objectives. The actions are assigned to individuals and have start and end dates and expected deliverables.

Oversight processes and practices will be used to oversee and monitor implementation and closure of each action plan to ensure readiness for plant restart. Section 4.0 provides additional details on the management oversight and monitoring practices that will be used to monitor execution of the FRP.

LIST OF ACTION PLANS

The twenty FRP action plans are grouped by focus area as shown below. This is the current list of action plans. During assessment activities, it is possible that additional action plans will be identified for development.

1. **Site Restoration – Greg Roets, Manager – Major Projects**
   - 1.1. Flooding Protection and Equipment Demobilization
   - 1.2. Plant and Facility Restoration

1.3. Bus 1B4A Restoration and Extent of Condition Actions

1.4. 13.8 kV Underground Distribution Damage Assessment and Restoration

2. **Plant Systems and Equipment – Kevin Naser, Manager – System Engineering**

2.1. Station Fire Protection System Damage Assessment and Restoration

2.2. System Health Assessments

2.3. Wetted Motor Damage Assessment and Restoration

3. **Long Term Equipment Reliability – Mark Frans, Manager – Engineering Programs**

3.1. Engineering Program Reviews

3.2. Underground Cable Assessment

3.3. Underground Piping and Tanks Assessment

3.4. I&C Power Supply Service Life Assessment

4. **Design and Licensing Basis – Steve Miller, Manager – Design Engineering**

4.1. Plant and Facility Geotechnical and Structural Assessment

4.2. External Flooding Barrier Configuration

4.3. Plant Design Configuration Control

4.4. External Flooding Design Basis Review

5. **Emergency Planning – Steve Gebers, Manager – Emergency Planning, Health Physics and Administrative Services**

5.1. Return Alert Notification Sirens To Functional Status

5.2. Field Monitoring and Post Accident Environmental Monitoring

5.3. Assessment of Offsite Emergency Response Following a Natural Disaster

5.4. Onsite Facility and Equipment Restoration

6. **Security – Al Clark, Manager - Security**

6.1. Security System Damage Assessment and Restoration

ACTION PLAN IMPLEMENTATION

RESPONSIBILITIES

The focus area owner is responsible for the overall implementation of their action plans and will review all completed action plans for closure following completion. Each action plan step has a specific individual who has been assigned responsibility for its implementation. Responsibilities of these individuals are summarized below:

- The Action Step Owner is responsible for completing the assigned action step by the specified completion date;

- The Action Plan Owner is responsible for ensuring the on-time completion of all action steps, as approved;
- The Focus Area Owner is responsible for ensuring on-time and effective implementation and completion of all action plans in the assigned focus area.

ACTION PLAN SCHEDULING AND TRACKING

The actions outlined in the FRP will be included in an integrated project schedule. The action plan owners are responsible for updating the project schedule on a weekly basis.

ACTION PLAN CLOSURE PROCESS

The closure process for the action steps and action plans are summarized in the following paragraphs.

ACTION STEP CLOSURE

The closure of each action step in an action plan will require a closure report using a standard closure format. The action plan owner and the focus area owner will be responsible for ensuring that the completion of an action step is documented and preparing the closure report package. An independent review of the action steps closure documentation will also performed.

ACTION PLAN CLOSURE

Following completion of the action steps in an action plan, the Action Plan Owner and the Focus Area Owner will review the action plan for closure. A final closure report will be prepared which documents justification for closure of the action plan. The package will then be reviewed and signed by the Action Plan Owner and Focus Area Owner.

ACTION PLAN REVISIONS

Revisions to due dates on an action plan will be managed by the Action Plan Owner. Revisions that affect the scope, intent, or basis for previously approved revisions (e.g., deletion of actions or addition of actions) require review and approval by the Action Plan Owner and the Focus Area Owner. Changes other than dates will require a change to the revision number and date of the action plan. Revisions that may impact NRC commitments will be reviewed by Licensing to evaluate the potential commitment impact and any changes to commitments will be approved by the Site Vice President.

4. INTERNAL AND EXTERNAL OVERSIGHT

FCS management is responsible for monitoring progress in accomplishing the FRP and is accountable for the overall implementation of the FRP. Management oversight will be accomplished through review meetings and oversight activities as described in the following paragraphs:

FRP PROGRESS REVIEW MEETINGS

Overall progress toward completing FRP action plans will be reviewed every two weeks in a regularly scheduled FRP Progress Review Meeting. This meeting will be chaired by the Site Vice President and will be attended the Division Managers and the Focus Area Owners. The purpose of the meeting will be to review the completion progress of the FRP action plans and to hold the Focus Area Owners accountable for their progress in completing the FRP.

OPPD SENIOR MANAGEMENT OVERSIGHT

The Vice President-Nuclear and Chief Nuclear Officer will report FRP progress to the OPPD President and CEO and the OPPD Board Nuclear Oversight Subcommittee on a monthly basis.

INDUSTRY OVERSIGHT

The Institute of Nuclear Power Operations will conduct a review visit at Fort Calhoun Station in September 2011 to provide an industry perspective on the station's readiness for power operations. INPO conducts review visits in selected areas to supplement the evaluation, accreditation, and events analysis programs. Review visits are separate and distinct from assistance visits in that they are initiated by INPO and are evaluative in nature. Any INPO recommendations that identify conditions adverse to quality will be documented in the CAP as required by Standing Order R-2, "Condition Reporting and Corrective Action," and will be tracked on the Flooding Recovery Issues List.

INDEPENDENT OVERSIGHT - QUALITY ASSURANCE ASSESSMENTS

Quality Assurance (QA) has developed a plan for oversight of activities associated with the FRP. This plan contains guidance for performing QA evaluations of FRP activities and action plans. Specifically, the plan ensures that QA activities are documented and performed in accordance with written procedures or checklists to verify, by examination and evaluation of evidence, that applicable elements of the FRP have been developed, planned, effectively implemented and appropriately documented. During these evaluations, QA will use existing processes for oversight of and for response to emergent issues. QA will provide periodic reports to the Chief Nuclear Officer (CNO) and FCS management regarding progress and quality of FRP activities. Any QA findings that identify conditions adverse to quality will be documented in the CAP as required by

Standing Order R-2, "Condition Reporting and Corrective Action," and will be tracked on the Flooding Recovery Issues List.

INDEPENDENT OVERSIGHT – SAFETY AUDIT AND REVIEW COMMITTTEE

The Safety Audit and Review Committee (SARC) reports to and advises the Vice President and Chief Nuclear Officer on matters affecting nuclear safety. During the flooding event, the SARC has provided ongoing oversight of activities associated with station operation and provided periodic reports to the CNO. During the next regularly scheduled meeting of the SARC in September 2011, the SARC will conduct a review of the FRP and the associated action plan closure packages and provide recommendations regarding readiness for power operations to the CNO. Any SARC recommendations that identify conditions adverse to quality will be documented in the CAP as required by Standing Order R-2, "Condition Reporting and Corrective Action," and will be tracked on the Flooding Recovery Issues List.

APPENDIX A – FLOODING RECOVERY ACTION PLANS

FCS Flooding Recovery Action Plan 1.1
Flooding Protection and Equipment Demobilization

FOCUS AREA:	Site Restoration
ACTION PLAN:	Flooding Protection and Equipment Demobilization
ACTION PLAN NUMBER:	1.1
COMPLETION DATE:	12/31/2011
FOCUS AREA OWNER:	Greg Roets
ACTION PLAN OWNER:	John Brandeau

ISSUE DEFINITION:
Temporary flood protection barriers and equipment were installed prior to the flooding event

OBJECTIVE:
Remove temporary flood protection barriers and equipment

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Remove AOP-1 floodgates and store	Maintenance	Uehling	8/22/2011	AOP-1 floodgates removed and stored
2.	Remove temporary diesel, fuel tankers/tanks and transformer from Protected Area	Construction	Brandeau	8/26/2011	Temporary diesel, fuel tankers/tanks and transformers removed
3.	Remove the Aqua Dams from the Protected Area	Construction	Brandeau	8/26/2011	Aqua dam removed
4.	Remove flood protection around Security Building	Construction	Brandeau	9/6/2011	Flood protection removed
5.	Remove pumps and hoses from Security building	Construction	Brandeau	9/6/2011	Pumps and hoses removed

FCS Flooding Recovery Action Plan 1.1
Flooding Protection and Equipment Demobilization

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
6.	Remove sandbags from turbine building	Construction	Brandeau	9/6/2011	Sandbags removed

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Determine where OPPD will store purchased flood protection equipment	Construction	Brandeau	8/1/2011	8/5/2011 (complete)	Storage location determined
2.	Return all flood protection rental equipment to vendors	Construction	Brandeau	8/5/2011	11/30/2011	Flood protection rental equipment returned
3.	Remove Aqua Dam around training center	Construction	Brandeau	8/10/2011	8/25/2011	Aqua dam removed
4.	Remove fuel cans, empty and store as company assets	Construction	Brandeau	8/15/2011	10/30/2011	Fuel cans removed, emptied and stored
5.	Remove pumps and FME around training center	Construction	Brandeau	8/15/2011	8/26/2011	Pumps and FME removed
6.	Remove scaffold bridges around training center	Construction	Brandeau	8/18/2011	9/1/2011	Scaffold bridges removed

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
7.	Dewater and remove all Aqua Berms around the Admin Building	Construction	Brandeau	8/22/2011	8/26/2011	Aqua dam removed
8.	Remove all pumps and hoses from around Admin Building	Construction	Brandeau	8/22/2011	8/26/2011	Pumps and hoses removed
9.	Remove iron bridge to the front entrance of Admin Building	Construction	Brandeau	8/22/2011	8/26/2011	Bridge removed
10.	Remove sandbags and Hesco barriers around Admin Building	Construction	Brandeau	8/22/2011	9/2/2011	Sandbags and Hesco barriers removed
11.	Remove flood materials and debris on the grounds of the training center	Construction	Brandeau	8/22/2011	9/23/2011	Training Center grounds cleaned
12.	Gather, clean and store purchased flood control equipment (waders, life jackets, boots, rain gear, etc.)	Construction	Brandeau	9/1/2011	12/31/2011	Equipment gathered, cleaned and stored
13.	Remove the aqua dam from the old warehouse	Construction	Brandeau	9/15/2011	9/23/2011	Aqua dam removed
14.	Remove Hesco Barriers and pumps from the Training Center chiller	Construction	Brandeau	9/15/2011	9/23/2011	Hesco barriers and pumps removed
15.	Remove elevated walkways and store scaffold material	Construction	Brandeau	8/5/2011	9/26/2011	Walkways removed and scaffold stored
16.	Remove sandbags from intake structure	Construction	Brandeau	9/15/2011	9/30/2011	Sandbags removed

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
17.	Remove sandbags and Hesco barriers at south transformer of new warehouse	Construction	Brandeau	9/15/2011	10/5/2011	Sandbags and Hesco barriers removed
18.	Remove sandbags in new warehouse	Construction	Brandeau	9/15/2011	10/5/2011	Sandbags removed

FCS Flooding Recovery Action Plan 1.2
Plant and Facility Restoration

FOCUS AREA:	Site Restoration
ACTION PLAN:	Plant and Facility Restoration
ACTION PLAN NUMBER:	1.2
COMPLETION DATE:	10/30/2012
FOCUS AREA OWNER:	Greg Roets
ACTION PLAN OWNER:	John Brandeau

ISSUE DEFINITION:

Site structures and facilities may have been damaged by flooding

OBJECTIVE:

Repair flood-related damage to site facilities and structures

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Determine if equipment in the intake structure and cells has been damaged	System Engineering	Naser	8/26/2011	Evaluation report
2.	Determine if intake cell cleaning is required	System Engineering	Naser	8/22/2011	Evaluation report
3.	Repair any structural damage identified in the intake structure	Construction	Brandeau	9/6/2011	Repairs completed
4.	Return B.5.b materials to proper location	Construction	Brandeau	9/6/2011	Equipment returned to proper location
5.	Correct any structural damage that is identified in Turbine Building	Construction	Brandeau	9/6/2011	Repairs completed

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Repair damage to the ISFSI Mux building	Construction	Brandeau	9/6/2011	Repairs completed
2.	Inspect and replace caulking between the concrete barriers as necessary	Construction	Brandeau	9/6/2011	Repairs completed

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Clean intake structure building as needed	Construction	Brandeau	8/15/2011	10/15/2011	Clean up complete
2.	Determine if any biohazards exist in CARP Bldg; mitigate as required	Chemistry	Kingston	8/15/2011	10/15/2011	Mitigation complete
3.	Determine if any biohazards exist in intake structure and resolve	Chemistry	Kingston	8/15/2011	9/30/2011	Biohazards identified and resolved
4.	Determine if any biohazards exist in Protected Area fab shop and resolve	Chemistry	Kingston	8/15/2011	10/1/2011	Biohazards identified and resolved
5.	Determine if any Biohazards exist in Radioactive Waste building and take corrective actions	Chemistry	Kingston	8/15/2011	9/30/2011	Biohazards identified and resolved
6.	Determine if there are any environmental issues in common areas and resolve	Chemistry	Kingston	8/15/2011	11/30/2011	Environmental issues resolved

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
7.	Dismantle all scaffold walkways in Protected Area and store as required	Construction	Brandeau	9/15/2011	9/30/2011	Scaffold removed
8.	Inspect for biohazards in the Security Building, remediate as necessary	Chemistry	Kingston	8/15/2011	9/22/2011	Biohazards identified and corrected
9.	Recover stored equipment from Blair substation to FCS site	Construction	Brandeau	9/15/2011	9/30/2011	Equipment returned to site
10.	Remove any flood protection materials from storm drains	Construction	Brandeau	9/15/2011	9/30/2011	Materials removed
11.	Remove debris around DW-68 storage tank and utility building	Construction	Brandeau	9/15/2011	9/23/2011	Debris removed
12.	Remove temporary berms around A/C units and transformers in Protected Area	Construction	Brandeau	9/15/2011	9/30/2011	Temporary berms removed
13.	Restore configuration of Protected Area - HazStor building, insulator shed	Construction	Brandeau	9/15/2011	9/30/2011	Configuration restored
14.	Check for biohazards in Chem Storage building and initiate clean up if necessary	Chemistry	Kingston	9/22/2011	10/22/2011	Clean up complete
15.	Clean Protected Area fab shop as required	Construction	Brandeau	9/22/2011	10/1/2011	Clean up complete
16.	Restore equipment to Security Building that was removed during flooding	Construction	Brandeau	9/22/2011	9/30/2011	Equipment restored

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
17.	Restore concrete barriers inside the Protected Area to the previous locations	Construction	Brandeau	9/22/2011	9/30/2011	Repairs completed
18.	Return security and RP equipment to the security building	Construction	Brandeau	9/22/2011	10/30/2011	Equipment restored
19.	Inspect tank and equipment on DI tank for damage	System Engineering	Naser	9/15/2011	9/22/2011	Inspection report
20.	Replace carpet tiles in Training Center auditorium	Facilities	Borcyk	8/5/2011	9/15/2011	Carpet replaced
21.	Replace carpeting in the OPS NRC Exam room, check for mold and remediate mold	Facilities	Borcyk	8/5/2011	9/15/2011	Carpet replaced, remediation complete
22.	Replace desks and tables in the NRC Exam Room/Storage Area	Facilities	Ferguson	8/5/2011	9/15/2011	Desks and tables replaced
23.	Evaluate material stored in the warehouse for shelf-life	Material Management	Nicholas	8/15/2011	10/15/2011	Material evaluated
24.	Clean and inspect Admin building interior for mold and insects	Facilities	Borcyk	8/18/2011	8/31/2011	Inspection and cleaning complete
25.	Clean and inspect Training Center interior for mold and insects	Facilities	Borcyk	8/18/2011	8/31/2011	Inspection and cleaning complete
26.	Unplug drains in the Training Center atrium and simulator	Facilities	Koziel	8/18/2011	8/30/2011	Drains restored

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
27.	As water recedes determine the extent of damage to each trailer	Construction	Brandeau	8/22/2011	9/9/2011	Evaluation report
28.	Pump out pockets of water that are pooled on grounds	Construction	Brandeau	8/22/2011	10/30/2011	Water pumped out
29.	Remove items stored along the access road	Construction	Brandeau	8/22/2011	11/30/2011	Items removed
30.	Resolve environmental issues in Training Center	Facilities	Borcyk	8/22/2011	9/15/2011	Environmental issues resolved
31.	Determine the need for replacement of trailers on a case-by-case basis	Construction	Brandeau	8/26/2011	9/16/2011	Assessment completed
32.	Discuss with trailer rental vendor the purchase of temporary trailers	Construction	Brandeau	8/26/2011	9/16/2011	Decision whether to purchase temporary trailers
33.	Establish rental contracts for needed trailers	Construction	Brandeau	8/26/2011	9/30/2011	Contracts in place
34.	Evaluate if each trailer is worth salvaging or needs to be scrapped	Construction	Brandeau	8/26/2011	9/15/2011	Assessment completed
35.	Evaluate, repair and clean RP training trailer	Construction	Brandeau	8/26/2011	9/15/2011	Clean up complete
36.	If temporary trailers are salvageable, complete required repairs	Construction	Brandeau	8/26/2011	9/30/2011	Repairs completed
37.	Inspect RP training trailer interior for mold and insects	Facilities	Borcyk	8/26/2011	9/15/2011	Inspection completed

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
38.	Remove temporary pump and restore south lift station to normal configuration	Facilities	Koziel	8/26/2011	9/2/2011	Restored to normal configuration
39.	Repair damaged sidewalks and gratings	Construction	Brandeau	8/30/2011	4/30/2012	Repairs completed
40.	Tritium groundwater sampling	Chemistry	Kingston	9/1/2011	10/30/11	Flood-related sampling complete
41.	Determine the amount of damage to trees, grass, and other landscaping	Construction	Brandeau	9/1/2011	10/30/2011	Assessment completed
42.	Repaint surfaces and structures exposed to flood waters as necessary	Construction	Brandeau	9/3/2011	4/30/2012	Painting complete
43.	Clean maintenance storage building as required	Construction	Brandeau	9/15/2011	10/15/2011	Clean up complete
44.	Clean removed flood access scaffold; oil hinges and knuckles	Construction	Maurer	9/15/2011	9/30/2011	Scaffold cleaned, oiled and stored
45.	Determine if any biohazards exist in maintenance storage building and resolve	Chemistry	Kingston	9/15/2011	9/22/2011	Hazards identified and resolved
46.	Determine if any regulatory requirements need to be addressed for sewage discharge	Chemistry	Kingston	9/15/2011	10/1/2011	Evaluation report
47.	Ensure any biohazards have been addressed for sewage discharge system	Chemistry	Kingston	9/15/2011	10/15/2011	Biohazards identified and corrected

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
48.	Inspect all equipment in the DW-68 tank utility building	System Engineering	Naser	9/15/2011	9/22/2011	Inspection report
49.	Inspect materials in Maintenance Storage building for flood damage and discard appropriately	Maintenance	Uehling	9/15/2011	12/30/2011	Materials inspected and dispositioned
50.	Inspect materials in Protected Area fab shop for flood damage and discard appropriately	Maintenance	Uehling	9/15/2011	10/30/2011	Materials inspected and dispositioned
51.	Inspect warehouse laydown for damaged material, identify material for disposal	Material Management	Nicholas	9/15/2011	12/30/2011	Inspection complete
52.	Remove equipment from turbine deck and restore to original location	Maintenance	Uehling	9/15/2011	12/30/2011	Items restored to normal location
53.	Remove trailers from Protected Area and other areas and move to upper parking lot once lower lots can be opened.	Construction	Brandeau	9/15/2011	9/30/2011	Trailers removed
54.	Repair damage to 6 bay garage	Construction	Brandeau	9/15/2011	9/30/2011	Repairs completed
55.	Repair ISFSI as necessary	Construction	Brandeau	9/15/2011	11/30/2011	Repairs completed
56.	Repair or replace B.5.b equipment as necessary	Training	Anielak	9/15/2011	11/1/2011	Repairs or replacement completed
57.	Repair sewage lagoons and lift stations as required	Construction	Brandeau	9/15/2011	11/15/2011	Repairs completed

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
58.	Restore trash compactors	Facilities	Ferguson	9/15/2011	9/30/2011	Trash compactors restored
59.	Clean and inspect the Training Center cooling tower	Facilities	Koziel	9/22/2011	10/15/2011	Inspection and cleaning complete
60.	Clean Protected area yard - remove water stains from buildings, algae, sludge, grade/level the grounds	Construction	Brandeau	9/22/2011	10/15/2011	Clean up complete
61.	Evaluate condition of fuel tank at sally port inside Protected Area and repair, replace or remove as required	System Engineering	Naser	9/22/2011	10/15/2011	Repair, replacement or removal complete
62.	Evaluate whether the old warehouse should be torn down and replace or restored.	Construction	Roets	9/22/2011	9/30/2011	Evaluation report
63.	Put recovered equipment from Blair substation back in place	Maintenance	Uehling	9/22/2011	12/31/2011	Equipment back in place
64.	Remove dead trees and bushes as necessary	Construction	Brandeau	9/22/2011	4/30/2012	Trees and bushes removed
65.	Repair damage to DW-68 tank and utility building	Construction	Brandeau	9/22/2011	11/15/2011	Repairs completed
66.	Repair Security building as required	Construction	Brandeau	9/22/2011	12/30/2011	Repairs completed
67.	Restore fences in switchyard	T&D	Lester	9/22/2011	12/30/2011	Fences restored
68.	Assess and repair damage to the boat house	Construction	Brandeau	9/30/2011	6/30/2012	Boat house repaired

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
69.	Clean up and restore old warehouse if it will be kept	Construction	Brandeau	9/30/2011	4/15/2012	Clean up complete
70.	Mow grounds and spray weeds prior to winter	Facilities	Koziel	9/30/2011	10/30/2011	Yard maintenance completed
71.	Remove debris at burn pad and restore area	Construction	Brandeau	9/30/2011	11/30/2011	Area restored
72.	Remove equipment and material from ACP area, restore area	Construction	Brandeau	9/30/2011	12/30/2011	Equipment removed, area restored
73.	Remove sea vans from inside the switchyard berm	Construction	Brandeau	9/30/2011	12/30/2011	Seavans removed
74.	Repair discovered geotechnical problems in common areas outside the Protected Area	Construction	Brandeau	9/30/2011	11/30/2011	Repairs completed
75.	Repair structural or geotechnical deficiencies in CARP building	Construction	Brandeau	9/30/2011	10/30/2011	Repairs completed
76.	Repair structural or geotechnical deficiencies in Chemistry Storage building	Construction	Brandeau	9/30/2011	11/15/2011	Repairs completed
77.	Repair the ISFSI haul route as necessary	Construction	Brandeau	9/30/2011	5/1/2012	Repairs completed
78.	Determine required landscaping replacement	Facilities	Koziel	10/1/2011	5/1/2012	Assessment completed
79.	Excavate and repair drainage ditches as necessary	Construction	Brandeau	10/30/2011	11/30/2011	Ditches excavated and repaired
80.	ISFSI haul route load test	Engineering Programs	Hutchinson	3/15/2012	10/1/2012	Load test complete

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
81.	Replant landscaping in OCA	Facilities	Koziel	3/15/2012	10/30/2012	Landscaping replaced
82.	Repave the DeSoto marker turnout at top of hill	Construction	Brandeau	4/1/2012	6/30/2012	Area repaved

FCS Flooding Recovery Action Plan 1.3
Bus 1B4A Restoration and Extent of Condition Actions

FOCUS AREA:	Site Restoration
ACTION PLAN:	Bus 1B4A Restoration and Extent of Condition Actions
ACTION PLAN NUMBER:	1.3
COMPLETION DATE:	8/30/2011
FOCUS AREA OWNER:	Greg Roets
ACTION PLAN OWNER:	Merl Core

ISSUE DEFINITION:

A fire that occurred on June 7, 2011, rendered bus 1B4A inoperable. In addition, cables in the cable tray immediately above 1B4A were damaged by heat. Fire by-products and Halon discharge into the switchgear room has left many pieces of equipment coated with debris and they must be properly cleaned or otherwise dispositioned.

OBJECTIVE:

Restore bus 1B4A to an operable status within design basis. Correct any identified extent of condition associated with the fire Root Cause Analysis. Restore all affected cables to operable condition within design basis. Assure the equipment and the switchgear room, itself, is returned to an acceptably clean condition.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Rebuild the 1B4A load center	NLI	Core	7/20/2011	Completely refurbished load center that has been modified to accept Square D circuit breakers (replace the aluminum bus with a copper, bolted bus)
2.	Provide documentation for the dedication of the rebuilt load center in accordance with Contract 163495	NLI	Core	7/20/2011	The vendor, NLI, is rebuilding the load center under their QA program. Before the plant accepts the load center from NLI, appropriate dedication documentation must be provided

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
3.	Complete EC 53257 and obtain PRC approval to authorize the use of the rebuild load center, 1B4A	DEN	Sterba	6/9/2011	A completed and PRC approved Engineering Change must be issued before the 1B4A bus may be declared operable
4.	Test all cables that terminate in 1B4A load center	Construction	Woockman	7/20/2011	A listing of cables that must be repaired or replaced for load center 1B4A - Completed
5.	Repair or replace defective cables terminating in 1B4A load center	Construction	Woockman	8/5/2011	All cables that service the 1B4A load center are capable of meeting their operational and design basis requirements
6.	Perform testing on the insulation of the cables that were potentially impacted by the fire located in the cable tray above 1B4A load center using EPRI technology.	Construction	Findlay	7/25/2011	Report from EPRI that provides conclusions to the health of the insulation of the subject cables - Completed
7.	Complete Engineering Change (53517) that details the repair to the cable jackets for cables located in the cable tray above the 1B4A load center.	DEN	Sterba	7/25/2011	An Engineering Change that directs actions required to repair cable jackets and cable tray sections to assure the cables meet design requirements
8.	Repair or replace the cables located in the cable tray above load center 1B4A that have had jacket damage	Construction	Findlay	7/25/2011	Return damaged cables to meet Fort Calhoun design basis criteria. Additionally, return the cable tray to a condition that meets the FCS design basis

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
9.	Witness Factory Acceptance Testing (FAT) of the new Square D circuit breakers that will be used in the 1B4A load center to replace the existing AK-25 breakers and the two Square D input and bus tie breakers	Construction	Rosloniec	8/8/2011	Verification that the Square D replacement breakers will meet the requirements for the rebuilt load center
10.	Calibration of the internal relays and protection equipment for bus 1B4A	Metering	Core	8/23/2011	Calibrated equipment internal to the 1B4A bus will be calibrated to the requirements of the individual calibration procedures and ready to provide required protection and control of plant equipment
11.	Install new 4160 to 480 volt transformer T1B4A	Maintenance	Woockman	8/16/2011	A new transformer will be installed that will be available to power the 1B4A bus when required
12.	Calibrate new Square D circuit breakers	Maintenance	Barna	8/10/2011	New breakers will be calibrated to Fort Calhoun calibration procedures and available to install in the load center
13.	Determine the method and extent of cleaning required in the switchgear room to return the equipment to pre-fire conditions and acceptable for power operation.	System Engineering	Kalra	6/24/2011	Technical requirements for cleaning equipment located in the switchgear room as well as writing maintenance work requests to accomplish the work

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
14.	Clean equipment in the switchgear room that has been coated with by-products from the fire	Maintenance	Barna	8/8/2011	Return of the equipment located in the switchgear room to pre-fire conditions as required by the technical requirements supplied by System Engineering
15.	Provide any required Engineering Change for the non-segregated bus between 1B4A and 1B3A-4A	DEN	Sterba	8/10/2011	If required, due to necessary repairs to the non-segregated bus, appropriate engineering paperwork that authorizes the new or refurbished bus installation. Note: at this time, it is not yet known if there will be any engineering change required
16.	Repair 1B4A to 1B3A-4A non-segregated bus section	NLI	Woockman	8/15/2011	The bus between 1B4A and 1B3A-4A is replaced either with new bus or repaired bus that was removed
17.	Perform testing of all circuits associated with 1B4A load center	Construction	Ellis	8/19/2011	Completed testing that demonstrates the external cables and internal wiring of the 1B4A load center have been properly re-terminated
18.	Perform testing of all circuits associated with cabling not associated with the 1B4A load center (i.e. cables located in the cable tray above the load center)	Construction	Findlay	8/12/2011	Completed testing that demonstrates that all cables located in the tray above the 1B4A load center have been properly re-terminated
19.	Submit, track, and seek approval of procedures that are changed as the result of EC 53257 and are required to be issued before the System Acceptance Process.	System Engineering	Kalra	8/25/2011	Approved procedures that are required for System Acceptance of Engineering Change 53257 are complete

Short-Term Actions (Prior To Leaving Cold Shutdown)						
#	Action	Lead Group	Owner	Start Date		Deliverable
20.	Prepare Acceptance forms	Construction	Woockman	8/26/2011		System Acceptance for Operability forms are completed and ready for Operations, Engineering, and Maintenance to accept the work that was performed on 1B4A load center
21.	Declare bus 1B4A Operable	Operations	Smith	8/30/2011		Operations Department has declared the bus operable and it has been placed in service. No outstanding holds for operation exist
22.	Temporary Modification restoration	Maintenance	Barna	8/25/2011		All temporary modifications that have been installed after the fire event have been restored to normal conditions and the operational requirements and design basis are met with normal equipment control and power feeds
23.	Extent of Condition repair requirements. At this time, the extent of condition is not fully known. Provide repair requirements for extent of condition.	System Engineering	Clayton	8/10/2011		The requirements for any repairs/refurbishments/ adjustments that dictated by the Root Cause Analysis extent of condition.

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
24.	Implement the requirements supplied by System Engineering regarding the extent of condition. At this time it is known that the minimum required for the extent of condition will be to clean the bus stabs for the main and bus tie breakers for five load centers (1B4A not required due to new bus) Additional actions may be required.	Maintenance	Barna	8/15/2011	Repair or adjustment of items required by the extent of condition. As a minimum, the bus stabs will be cleaned to remove built up lubricant. Additional items may be specified by System Engineering.

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	N/A					

FCS Flooding Recovery Action Plan 1.4
13.8 kV Underground Distribution Damage Assessment and Restoration

FOCUS AREA:	Site Restoration
ACTION PLAN:	13.8 kV Underground Distribution Damage Assessment and Restoration
ACTION PLAN NUMBER:	1.4
COMPLETION DATE:	12/31/2011
FOCUS AREA OWNER:	Greg Roets
ACTION PLAN OWNER:	Robert Hopkins

ISSUE DEFINITION:

Flooding conditions and temporary mitigation measures have degraded station 13.8kV System

OBJECTIVE:

Restore Station 13.8kV System to functional status

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Remove sandbags for access to padmount T&D switch SW1062	Construction	Hopkins	8/27/2011	Completed CWO task or inspection
2.	Inspect 13.8kV underground padmount T&D switch SW1062	T&D	Hopkins	8/27/2011	Inspection punchlist
3.	Inspect and/or test T&D 13.8kV transformer 13TN43G	T&D	Hopkins	8/27/2011	Inspection punchlist and/or test report
4.	Inspect manholes MH1 through MH5 associated with circuit 231 between T&D switch SW1062 to T&D transformer 13TN43G	T&D	Hopkins	8/27/2011	Inspection punchlist

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
5.	Inspect ducts associated with manholes MH1 through MH5 between T&D switch SW1062 to T&D transformer 13TN43G and repair as necessary	T&D	Hopkins	8/27/2011	Inspection punchlist
6.	Inspect and/or test Circuit 231 from T&D switch SW1062 to T&D transformer 13TN43G and repair as necessary	T&D	Hopkins	8/27/2011	Inspection punchlist and/or test report

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Develop design changes based on walk down and lesson learned to allow circuit 231 from T&D switch SW1062 to transformer 13TN43G to function during applicable design basis flooding	DEN & T&D	Sterba	9/5/2011	10/28/2011	Design change package
2.	Verify inventory and/or develop material requisitions.	T&D	Hopkins	9/5/2011	10/28/2011	Completed Material Requisitions or inventory list

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
3.	Develop required Work Orders	T&D	Hopkins	9/5/2011	10/28/2011	Approved Work Orders
4.	Implement Work Orders	T&D	Hopkins	9/30/2011	10/28/2011	Completed Work Orders
5.	T&D test new installation as required	T&D	Hopkins	10/14/2011	10/28/2011	Completed test procedures and verifying that system is functional
6.	Remove sandbags for access to 13.8kV T&D transformers, switchgear and switches.	Construction	Hopkins	8/27/2011	12/31/2011	Completed CWO task or inspection
7.	Inspect T&D 13.8kV underground padmount switches	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist
8.	Inspect T&D switchgear SW1067 and recommend replacement and/or relocation to preclude loss during design basis flooding	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist
9.	Inspect and/or test T&D 13.8kV transformers located in the OCA	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist and/or test report
10.	Inspect and/or test T&D 13.8kV transformers located in the PA	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist and/or test report
11.	Inspect associated T&D 13.8kV distribution manholes for possible waterproofing	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
12.	Inspect any pole mounted drops for necessary extensions and waterproofing	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist
13.	Test T&D 13.8kv cables and recommend replacement.	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist and/or test report
14.	Test 13.8kV load cables associated with switchgear SW1067 and recommend replacement	T&D	Hopkins	8/27/2011	12/31/2011	Inspection punchlist and/or test report
15.	Recommend and develop design changes to preclude loss during design basis flooding as determined by analysis	DEN & T&D	Hopkins	8/27/2011	12/31/2011	Design Change Package
16.	Verify inventory and/or develop material requisitions with lead times.	T&D	Hopkins	8/27/2011	12/31/2011	Completed material requisitions or inventory lists
17.	Develop required T&D Work Orders	T&D	Hopkins	9/5/2011	12/31/2011	Approved Work Orders
18.	Implement Work Orders	T&D	Hopkins	9/30/2011	12/31/2011	Completed Work Orders
19.	Replace 13.8kv cables as recommended by T&D	T&D	Hopkins	9/30/2011	12/31/2011	Complete Work Orders
20.	Replace/repair pad mounted switches as recommended by T&D	T&D	Hopkins	9/30/2011	12/31/2011	Complete Work Orders
21.	T&D test new installation as required	T&D	Hopkins	12/16/2011	12/31/2011	Completed Test Procedures and verify that system is functional

FCS Flooding Recovery Action Plan 2.1
Station Fire Protection Damage Assessment and Restoration

FOCUS AREA:	Plant Systems and Equipment
ACTION PLAN:	Station Fire Protection Damage Assessment and Restoration
ACTION PLAN NUMBER:	2.1
COMPLETION DATE:	12/31/2011
FOCUS AREA OWNER:	Kevin Naser
ACTION PLAN OWNER:	Gaston Riva

ISSUE DEFINITION:

Flooding conditions and temporary mitigation measures may have degraded station fire protection and fire detection systems and components.

OBJECTIVE:

Restore all flood affected fire protection systems and equipment to functional and operable status. Ensure all areas of the plant are in compliance with applicable fire protection standing orders and program requirements.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Ensure all underground piping is intact and no voids are present near FP piping	Engineering Programs	Frans	8/8/2011	System health assessment report and geotechnical assessment report
2.	Repair any damaged or non functional fire hydrants located inside the protected area or connected to the main fire protection header ring	Maintenance	Uehling	8/15/2011	Completed maintenance work documents

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
3.	Flush fire protection system piping connected to the fire protection header ring which flowed river water during flood mitigation actions	Operations / Chemistry	Kingston	8/15/2011	Completed system flushing plan
4.	Inspect all SO-G-103 fire barriers in plant buildings affected by flood waters. Include Pyrocrete barriers in Intake Structure	Quality Control	Beasley	8/1/2011	Completed maintenance/inspection work documents
5.	Verify soil compaction and moisture content in areas of underground fire protection main header ring and attached piping is per NFPA requirements	Engineering Programs	Erdman	9/12/2011	System health assessment report and geotechnical assessment report
6.	Restore the exterior fire hose houses impacted by flooding to functional condition	Operations	Pallas	9/5/2011	Completed PM and ST procedures for hose house inspections and testing
7.	Verify proper functioning of flood affected fire hose houses	Operations	Pallas	9/5/2011	Completed PM and ST procedures for hose house testing. Closed fire impairment permits
8.	Complete FP System PMs and STs on flood impacted equipment which was not accessible for inspection and testing	Operations	Pallas	8/15/2011	Completed PMs and STs and associated work order documents

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
9.	Complete full flow testing of fire pumps prior to drop date of 9/14/2011	System Engineering / Operations	Riva	8/31/2011	Completed STs
10.	Remove the plugs that were installed in the transformer pits for drainage from the rocks	Maintenance	Uehling	8/15/2011	Completed work maintenance documents

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Restore transformers T1A3 and T1A1 deluge valves to service	Operations	Pallas	8/31/2011	9/30/2011	Completed operating instructions and closed fire impairment permits
2.	Repair any damaged or non functional fire hydrants not connected to the fire protection header ring	Maintenance	Uehling	9/12/2011	11/15/2011	Completed work maintenance documents
3.	Flush fire protection system piping not connected to the fire protection header ring which flowed river water during flood mitigation actions	Operations / Chemistry	Kingston	9/12/2011	10/14/2011	Completed system flushing plan

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
4.	Clean and repair coating of all flood affected FP piping and equipment exposed to flood waters	Maintenance	Uehling	9/19/2011	11/15/2011	Completed work maintenance documents
5.	Restore Maintenance fabrication shop deluge valve	Operations	Pallas	9/26/2011	11/15/2011	Completed operating instructions and closed fire impairment permits

FCS Flooding Recovery Action Plan 2.2
System Health Assessments

FOCUS AREA:	Plant Systems and Equipment
ACTION PLAN:	System Health Assessments
ACTION PLAN NUMBER:	2.2
COMPLETION DATE:	9/30/2011
FOCUS AREA OWNER:	Kevin Naser
ACTION PLAN OWNER:	Kevin Naser

ISSUE DEFINITION:

Flooding conditions and temporary mitigation measures may have degraded station structures, systems, and components.

OBJECTIVE:

Identify actions required to restore system health.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Complete the Auxiliary Cooling System (ACS) Flooding Recovery System Health Assessment report	System Engineering	Dolton	8/1/2011	Auxiliary Cooling System (ACS) Flooding Recovery System Health Assessment report
2.	Complete the Auxiliary Feedwater System (AFW) Flooding Recovery System Health Assessment report	System Engineering	Jun	8/1/2011	Auxiliary Feedwater System (AFW) Flooding Recovery System Health Assessment report
3.	Complete the Auxiliary Instrumentation System (AIS) Flooding Recovery System Health Assessment report	System Engineering	Bozarth	8/1/2011	Auxiliary Instrumentation System (AIS) Flooding Recovery System Health Assessment report

FCS Flooding Recovery Action Plan 2.2
System Health Assessments

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
4.	Complete the Control Rod Drive System (CRD) Flooding Recovery System Health Assessment report	System Engineering	Jun	8/1/2011	Control Rod Drive System (CRD) Flooding Recovery System Health Assessment report
5.	Complete the Chemical and Volume Control System (CVC) Flooding Recovery System Health Assessment report	System Engineering	Ruhsam	8/1/2011	Chemical and Volume Control System (CVC) Flooding Recovery System Health Assessment report
6.	Complete the Circulating Water System (CWS) Flooding Recovery System Health Assessment report	System Engineering	Koenig	8/1/2011	Circulating Water System (CWS) Flooding Recovery System Health Assessment report
7.	Complete the Emergency Core Cooling System (ECC) Flooding Recovery System Health Assessment report	System Engineering	Dean	8/1/2011	Emergency Core Cooling System (ECC) Flooding Recovery System Health Assessment report
8.	Complete the Emergency Diesel Generator System (EDG) Flooding Recovery System Health Assessment report	System Engineering	Beck	8/1/2011	Emergency Diesel Generator System (EDG) Flooding Recovery System Health Assessment report
9.	Complete the Electrical Distribution System (EDS) Flooding Recovery System Health Assessment report	System Engineering	Bottum	8/1/2011	Electrical Distribution System (EDS) Flooding Recovery System Health Assessment report

FCS Flooding Recovery Action Plan 2.2
System Health Assessments

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
10.	Complete the Engineered Safety Features System (ESF) Flooding Recovery System Health Assessment report	System Engineering	Bozarth	8/1/2011	Engineered Safety Features System (ESF) Flooding Recovery System Health Assessment report
11.	Complete the Fuel Handling System (FHS) Flooding Recovery System Health Assessment report	System Engineering	Bare	8/1/2011	Fuel Handling System (FHS) Flooding Recovery System Health Assessment report
12.	Complete the Fire Protection System (FPS) Flooding Recovery System Health Assessment report	System Engineering	Riva	8/1/2011	Fire Protection System (FPS) Flooding Recovery System Health Assessment report
13.	Complete the Hoisting Equipment System (HES) Flooding Recovery System Health Assessment report	System Engineering	Winterboer	8/1/2011	Hoisting Equipment System (HES) Flooding Recovery System Health Assessment report
14.	Complete the Instrument Air System (IAS) Flooding Recovery System Health Assessment report	System Engineering	Koenig	8/1/2011	Instrument Air System (IAS) Flooding Recovery System Health Assessment report
15.	Complete the Main Feedwater System (FWS) Flooding Recovery System Health Assessment report	System Engineering	Phillips	8/1/2011	Main Feedwater System (FWS) Flooding Recovery System Health Assessment report
16.	Complete the Reactor Coolant System (RCS) Flooding Recovery System Health Assessment report	System Engineering	Jun	8/1/2011	Reactor Coolant System (RCS) Flooding Recovery System Health Assessment report

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
17.	Complete the Radiation Monitoring System (RMS) Flooding Recovery System Health Assessment report	System Engineering	Bozarth	8/1/2011	Radiation Monitoring System (RMS) Flooding Recovery System Health Assessment report
18.	Complete the Reactor Protection System (RPS) Flooding Recovery System Health Assessment report	System Engineering	Bare	8/1/2011	Reactor Protection System (RPS) Flooding Recovery System Health Assessment report
19.	Complete the Spent Fuel Pool System (SFP) Flooding Recovery System Health Assessment report	System Engineering	Ruhsam	8/1/2011	Spent Fuel Pool System (SFP) Flooding Recovery System Health Assessment report
20.	Complete the Steam Generator System (SGS) Flooding Recovery System Health Assessment report	System Engineering	Phillips	8/1/2011	Steam Generator System (SGS) Flooding Recovery System Health Assessment report
21.	Complete the Sampling System (SLS) Flooding Recovery System Health Assessment report	System Engineering	Ruhsam	8/1/2011	Sampling System (SLS) Flooding Recovery System Health Assessment report
22.	Complete the Structures System (STR) Flooding Recovery System Health Assessment report	System Engineering	Beck	8/1/2011	Structures System (STR) Flooding Recovery System Health Assessment report
23.	Complete the Turbine Generator System (TGS) Flooding Recovery System Health Assessment report	System Engineering	Mierzejewski	8/1/2011	Turbine Generator System (TGS) Flooding Recovery System Health Assessment report

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
24.	Complete the Turbine Plant Cooling System (TPC) Flooding Recovery System Health Assessment report	System Engineering	Koenig	8/1/2011	Turbine Plant Cooling System (TPC) Flooding Recovery System Health Assessment report
25.	Complete the Ventilating Air Conditioning System (VAC) Flooding Recovery System Health Assessment report	System Engineering	Mierzejewski	8/1/2011	Ventilating Air Conditioning System (VAC) Flooding Recovery System Health Assessment report
26.	Complete the Waste Disposal System (WDS) Flooding Recovery System Health Assessment report	System Engineering	Ruhsam	8/1/2011	Waste Disposal System (WDS) Flooding Recovery System Health Assessment report
27.	Complete the Demineralized Water / Potable Water (DW/PW) Flooding Recovery System Health Assessment report	System Engineering	Koenig	8/1/2011	Demineralized Water / Potable Water (DW/PW) Flooding Recovery System Health Assessment report
28.	Complete the Vents and Drains (VD) Flooding Recovery System Health Assessment report. This will include Sanitary and Storm Drains	System Engineering	Koenig	8/1/2011	Vents and Drains (VD) Flooding Recovery System Health Assessment report
29.	Complete the Auxiliary Steam Flooding Recovery System Health Assessment report. This will include the Auxiliary Boiler	System Engineering	Phillips	8/1/2011	Auxiliary Steam Flooding Recovery System Health Assessment report

FCS Flooding Recovery Action Plan 2.2
System Health Assessments

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
30.	Complete the Meteorological Monitoring Flooding Recovery System Health Assessment report	System Engineering	Bozarth	8/1/2011	Meteorological Monitoring Flooding Recovery System Health Assessment report
31.	Complete the Plant Security Systems Flooding Recovery System Health Assessment report	System Engineering	Bunting	8/1/2011	Plant Security Systems Flooding Recovery System Health Assessment report
32.	Complete the Plant Security Systems Flooding Recovery System Health Assessment report	System Engineering	Bozarth	8/1/2011	Plant Security Systems Flooding Recovery System Health Assessment report

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	N/A					

Flooding Recovery System Health Assessment

System:		Group:	
System Engineer:		Backup System Engineer:	
Reporting Period:		Date:	

Executive Summary

Prepared by:	Date:	Approved by:	Date:

Contents

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Status of Temporary Modifications

List any open temporary modifications (TM) to the system. If the system has no open temporary modifications, mark the first "TM EC" line as "N/A".

TM EC Number	Description	CR No(s)	Work Order(s)	Criteria for Restoration	Flood Event Related? (Yes/No)	Restoration required prior to startup? (Yes/No)	If restoration is not required prior to startup, provide justification.

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Status of PM Task Deferrals

List any PM tasks that have been deferred as a result of flooding. If no PMs have been deferred due to flooding, mark the first line "PMID" as "N/A" and state that no deferrals have occurred under the "justification" column.

PMID	Description	Due Date	Required Prior to Startup? (Yes/No)	If not required prior to startup, please provide justification

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Flooding Effects on Operating Conditions of Systems, Structures, and Components (SSCs)

List any SSCs in the system that have experienced unusual operating conditions due to the flooding incident (e.g. out-of-service for longer than usual, in service for longer than usual, functioning at a different capacity or operating point from usual, etc.). If flooding has not resulted in any unusual system operating conditions, mark the first "SSC (tag)" line as "N/A" and describe why system operation is unaffected under the "justification" column.

SSC (tag)	Description/Function	Operation (hrs, design point, etc.)		Further Evaluation Required? (Yes/No)	If yes, provide CR Number	If no, provide justification.
		Normal	During Flooding			

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Flooding-Related Condition Reports

List all CRs written on system operation or system SSCs due to the flooding event and provide the status and disposition of corrective actions for each. If no flooding-related CRs have been written on system SSCs, mark the first "CR Number" line "N/A".

CR Number	Level	Description of Condition	Status (Open/ Closed)	Status and Disposition of Corrective Actions	If Actions are Not Required to be Completed Prior to Startup, Provide Justification.

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

System Engineering Walkdown – SSC Condition Assessment (Adapted from PED-SEI-20, Attachment 3)

Area /Room (attach additional forms for each area/room inspected):

SSC (tag)	Affected by Flooding? (Yes/No)	Observations/Comments	Recommended Action (Repair, further evaluation, none)	CR Number	WR Number	If no further action is recommended, provide justification.

Note: PED-SEI-20 requirements have been enhanced to highlight and address flood-specific issues. However, this is intended to be a full system walkdown and not limited to flood-affected SSCs.

Work Completed by: Date: Reviewed by:

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

System Engineering Walkdown – Trendable Gauge/Process Readings (Adapted from PED-SEI-20, Attachment 3)							
Area /Room (attach additional forms for each area/room inspected) :							
Tag/Identifier	Value	Units	Comments	Tag/Identifier	Value	Units	Comments

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Active System Leaks				Handheld Temperature/Vibration Probe Readings			
Tag/Identifier	Fluid Type	Leak Rate	Comments	Tag/Identifier	Value	Units	Comments
Note: PED-SEI-20 requirements have been enhanced to highlight and address flood-specific issues. However, this is intended to be a full system walkdown and not limited to flood-affected SSCs.							
Walkdown Completed by:			Date:		Reviewed by:		

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Mechanical Walkdown Attention-to-Detail Reminders (Adapted from PED-SEI-20, Attachment 2)

Pumps

[ ] Are the foundation bolts installed correctly?
[ ] Is the oiler full?
[ ] Does the pump/motor sound right?
[ ] Are operating parameters (suction / discharge pressures / amps) normal?
[ ] Is it clean?
[ ] Is there evidence of new or even old leaks?
[ ] Is the foundation drain plugged or clear?
[ ] Is the machine labeled correctly and completely?
[ ] Are there missing fasteners, handwheels or parts?
[ ] Is the instrumentation tubing crimped?
[ ] Is there evidence of unusual vibration?
[ ] Are there any signs of corrosion?
[ ] What is the condition of paint/coatings?
[ ] Are all safety devices properly installed?

Piping

[ ] Any evidence of leakage?
[ ] Are flow rates normal?
[ ] Are flanges properly bolted?
[ ] Are pipe supports properly installed?
[ ] Is protective coating in good condition?
[ ] Is insulation installed?

Filters/Strainers

[ ] Any evidence of leakage?
[ ] Is ΔP normal?
[ ] Are flanges properly bolted?
[ ] Is protective coating in good condition?
[ ] Is flush line valve in proper position?
[ ] Any evidence of packing leakage?

Storage Tanks

[ ] Any evidence of leakage?
[ ] Is vent clear?
[ ] Is protective coating in good condition?

Valves

[ ] Are there any visible packing leaks?
[ ] Instrument Air leaks?
[ ] Bent tubing?
[ ] Instrument Air regulator normal range?
[ ] Is stem adequately lubricated?
[ ] Is valve labeled correctly?
[ ] Are there body-to-bonnet leaks?
[ ] Missing fasteners or handwheels?
[ ] What is the condition of the paint?
[ ] Are there any signs of corrosion?
[ ] Flexible conduits attached correctly?
[ ] Is motor kept dry?
[ ] Are compartment drains open?

Heat Exchangers

[ ] Are flow rates normal?
[ ] Are temperatures normal?
[ ] Any evidence of leakage at flanges?
[ ] Is protective coating in good condition?
[ ] Is insulation installed?

Boric Acid

[ ] Is there an active leak?
[ ] Is there any dried boric acid on the equipment?

Pipe Supports

[ ] Loose or missing nuts?
[ ] Correct alignment?
[ ] Is the fluid level sufficient for snubbers?
[ ] Is there evidence of bolt torque relaxation?
[ ] Is the surface condition of structural welds satisfactory?
[ ] Is protective coating in good condition?
[ ] Is there any corrosion or deposits visible under support/clamps?

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Special Considerations for Evaluating Mechanical SSCs Impacted by Flooding	
Water Intrusion into Mechanical Equipment	**Water Affect on Mechanical Equipment Exterior**
[ ] Evidence of flood-induced component corrosion? [ ] Is there any flood water in equipment oil reservoirs? [ ] Any foreign material introduced by flood waters? [ ] Evidence of degraded bearing lubrication? [ ] Any bio-deposits or fouling?	[ ] Evidence of flood-induced erosion of housings, base plates, or other components? [ ] Any damage to coatings? [ ] Any damage to components from impact of flood debris? [ ] Loosening of fasteners that secure equipment?

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Structural Walkdown Attention-to-Detail Reminders (Adapted from PED-SEI-20, Attachment 2)

Concrete Structures and Supports	Steel Structures
[ ] Are there abnormal wear patterns on the surface (areas of missing protective coating exhibiting feathered edges of the sound coating)?	[ ] Is there any bending or deformation?
[ ] Is there evidence of blisters and scaling (irregular raising of a thin layer) of the concrete surface; pitting; spalling and pop-out (small up to 10 mm, medium 10-50 mm, large > 50mm)?	[ ] Are there any cracked welds?
[ ] Are there bug holes (cavities usually not exceeding 25 mm resulting from entrapment of air bubbles in the surface)?	[ ] Is there a white crystalline deposit on the surface?
[ ] Is there evidence of cracking or fracture?	[ ] Is there evidence of corrosion attack and accumulation of corrosion products on the surface?
[ ] Is there exposed aggregate?	[ ] Is there discoloration of the protective coating?
[ ] Has there been a deflection/deformation/distortion (a change in dimensional shape) over time?	[ ] Are there bird nests or droppings on the surface?
[ ] Is there discoloration?	[ ] Are there loose anchor bolts?
[ ] Is there any evidence of exudation (a liquid or viscous gel-like material discharged through a crack, pore, or opening in the surface)?	[ ] Are there cracks in the protective coating?
[ ] Is there any efflouresence (a deposit of salt formed on the surface)?	[ ] Are there blisters in the protective coating?
[ ] Is there exposed reinforcement?	[ ] Are corrosion products delaminating or scaling from the surface in layers?
[ ] Is there misalignment at construction joints or pipe joint or misaligned doors?	[ ] Is the bolting corroded?
[ ] Are there loose or damaged elastomeric waterproofing membranes (e.g., tank wall membrane)?	[ ] Are there cracked, damaged or missing grout pads under baseplates?
[ ] Has there been growth of an existing crack?	
[ ] Is there blistering of protective coatings?	
[ ] Is there cracking in the protective coatings?	
[ ] Is there cracking or distortion of elastomeric sealants, caulking or gaskets?	

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Special Considerations for Evaluating Structural SSCs Impacted by Flooding	
Exposure of Structures to Flood Waters [ ] Evidence of any extraordinary stresses on structures induced by flood current or abnormal static water pressure? (e.g. cracks, leaks, etc.) [ ] Evidence of soil erosion around structure foundations due to flood water exposure? [ ] Evidence of settling or other foundation degradation due to flood water exposure? [ ] Do any structural support/reinforcement members indicate degradation from exposure to flood waters (e.g. loosening of fasteners, damage due to flood debris impact, material erosion, etc.)?	

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Electrical Walkdown Attention-to-Detail Reminders (Adapted from PED-SEI-20, Attachment 2)

Batteries	Transformers
[ ] Are terminal posts free of corrosion? [ ] Is electrolyte above low level mark in each cell? [ ] Are there any defects in the cell cases? [ ] Is the room temperature satisfactory? [ ] Is there excessive sedimentation of cells? [ ] Are plates normal color? [ ] Is battery charger supplying excessive current? [ ] Is there acid buildup on battery rack? [ ] Is ground strap connected to battery rack?	[ ] Are filters/radiators clear of debris? [ ] Does the transformer sound normal? [ ] Does the transformer feel warmer than usual? [ ] Are the forced cooling fans in service? [ ] Are there any cracked ceramic insulator fins? [ ] Are temperature gauges reading normal values? [ ] Are there any missing fasteners on covers? [ ] Is ground strap connected to transformer? [ ] Check bushing oil levels.
Motors	**Distribution Panels**
[ ] Does the motor sound normal? [ ] Is there excessive motor vibration? [ ] Is the motor warmer than usual? [ ] Is the ground strap connected? [ ] Are the air vents clear of debris? [ ] Are oil levels normal? [ ] Are the amps in the normal range? [ ] Is the space heater on (idle motor)? [ ] Is the motor dry? [ ] Is the flexible conduit properly attached?	[ ] Is the flash cover installed? [ ] Are there any tripped breakers? [ ] Are any of the breakers hot-to-the-touch? [ ] Are covers installed on any open knockouts? [ ] Is there any debris between panel and wall? [ ] Is ground strap connected? [ ] Are all conduit hubs/rings tight? [ ] Is there water dripping on the panel?
Electrical Cabinets	**Wiring and Connectors**
[ ] Is the interior clean? [ ] Are louvers and air filters clean? [ ] Are door gaskets intact? [ ] Do door handles work? [ ] Is there excessive dust build-up on internal devices? [ ] Is ground strap connected? [ ] Is there any sign of moisture intrusion? [ ] Are foam fire barriers intact? [ ] Are there any blown fuses (indicator popped out)? [ ] Do any relays appear overheated?	[ ] Are terminations limited to 2 conductors? [ ] Is there excessive exposed conductor at lug? [ ] Is insulation intact over length of wire? [ ] Are there improperly trained wires?

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Electrical Walkdown Attention-to-Detail Reminders (Adapted from PED-SEI-20, Attachment 2)

Cable Trays [ ] Are fire stops installed on vertical runs of tray? [ ] Is station ground cable firmly attached? [ ] Are there any bowed sections of tray? [ ] Are tray supports attached at both ends? [ ] Are there any cables outside the tray? [ ] Are cables properly separated?	**Switches** [ ] Is handle attached? [ ] Is dust cover installed? [ ] Are wires trained away from moving contacts? [ ] Is there excessive dust build-up at contacts?
Conduits [ ] Are covers installed? [ ] Is seal-tight properly connected at end fittings?	**Security Equipment** [ ] Does security door latch properly after passing through? [ ] Is card reader properly attached to faceplate? [ ] Are magnetic switches properly aligned? [ ] Are there any holes in fence fabric? [ ] Do cameras have any obstructions?
Special Considerations for Evaluating Electrical SSCs Impacted by Flooding	
Water Intrusion into Electrical Equipment [ ] Evidence water in motor windings? [ ] Deposits/fouling inside motors, breakers, junction boxes, transformers, conduit, etc.? [ ] Any flood-induced corrosion of contacts? [ ] Evidence of condensation?	**Water Affect on Electrical Equipment Exterior** [ ] Erosion of cable insulation? [ ] Cable Insulation degraded due to chemical attack? [ ] Damage to cables, cable supports, conduit, etc. from impact of flood debris? [ ] Damage to transformers or switchgears due to flood water?

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Computer Systems Walkdown Attention-to-Detail Reminders (Adapted from PED-SEI-20, Attachment 2)

ERF	**Distributed Control System (DCS)**
On ERF Page SCH: Review the list of scheduled ERF tasks (processes) [ ] Are all processes current and updating per set frequency: On ERF Page ALM: Inspect several pages of alarm history. [ ] Are there any alarms indicating loss of communication with QSPDS or gateways? [ ] Are there any alarms indicating loss of communication with ERDS or MET Tower? On ERF Page SYS: Review contents of page [ ] Are the historians and gateways connected normally? [ ] Does the display indicate a current and backup ERF node? [ ] Is the BACKUP INSYNC status **YES?** [ ] Does QSPDS A and QSPDS B status indicate **UP?** [ ] Do the Weather Tower Statuses for LOSS OF PWR, LOSS OF LIGHTS and LOSS OF DL LINK all indicate **NO?**	Check System Alarm Messages using Baretail, AIM Inform or Foxray on PC-DCS-01: [ ] Are there any unexplained equipment failures? [ ] Are there any unusual GPS Time Synch Messages? Check Process Alarm history using the CAD alarm history or Foxray Alarm Statistics [ ] Are there any other unusual or unexplained alarms? [ ] Are there any indication of chattering alarms that could or should be addressed? [ ] Are there any indication or operator nuisance alarms that should be addressed? [ ] Are there any indications of mis-configured alarms? Check Printer Status [ ] On PC-DCS-01 (EWCU01) Ensure both printers have a status of Ready (Start/Settings/Printers and Faxes) Check Graphics: [ ] View some random DCS pages and verify there are no obvious display issues.
Plant Data Network (PDN) Check Network Status: On workstation QC-PDN-01 assess the network displays [ ] Do all the network switch link statuses appear good with no more than a momentary degraded indication? [ ] Is any switch or station degraded or failed?	

Flooding Recovery System Health Assessment

System: _____ Group: _____
System Engineer: _____ Backup System Engineer: _____
Reporting Period: _____ Date: _____

Generic Plant Walkdown Attention-to-Detail Reminders (Adapted from PED-SEI-20, Attachment 2)

Housekeeping	Configuration Control
[ ] Verify combustibles (e.g.: rags, absorbent cloths) are not in proximity of rotating or hot surfaces. [ ] Verify station cleanliness standards are being maintained. [ ] Verify coating meet station standards.	[ ] Verify P&ID's reflect actual system configuration. [ ] Verify WO tag deficiencies being tracked. [ ] Verify condition does not affect system operability.
Unauthorized Temporary Modifications	**Modification and Maintenance Work in Progress**
[ ] Inspect for electrical jumpers, piping, or ducts that are not part of the system design. [ ] Inspect for temporary equipment connected to a system. [ ] Inspect for permanent equipment electrically or mechanical disconnected. [ ] Inspect for temporary hoses connecting 2 fluid systems. [ ] Inspect for electrical cable, including extension cords that violate separation criteria. [ ] Inspect for taped or plugged floor drains. [ ] Inspect for temporary cooling fans or space heaters being used to maintain equipment in operation.	[ ] Verify interim configuration does not have negative impact on system performance. [ ] Verify scaffolding and ladders are not erected too close to critical equipment and that they are properly secured. [ ] Verify testing of other equipment does not have negative influence on system performance. [ ] Verify welding and grinding does not negatively impact nearby equipment. [ ] Verify that spare electrical wires are isolated and taped.
Special Considerations for General Evaluation of SSCs Impacted by Flooding	
Exposure of SSCs to Flood Waters [ ] Evidence that a SSC has been wetted by river water (Ref also CR record). [ ] SSC has been directly impacted by river water (Ref also CR record). [ ] Evidence of system chemistry degradation as a result of exposure to flood waters? [ ] Evidence of component damage or degradation resulting from flood mitigation efforts (e.g. impact by flood barriers, heavy equipment traffic, sandbagging, operation of pumping stations, etc.)?	

FCS Flooding Recovery Action Plan 2.3
Wetted Motor Damage Assessment and Restoration

FOCUS AREA:	Plant Systems and Equipment
ACTION PLAN:	Wetted Motor Damage Assessment and Restoration
ACTION PLAN NUMBER:	2.3
COMPLETION DATE:	06/30/2012
FOCUS AREA OWNER:	Kevin Naser
ACTION PLAN OWNER:	Glen Seier

ISSUE DEFINITION:

Flooding conditions may have wetted and degraded plant electric motors.

OBJECTIVE:

Restore all wetted electric motors to a functional status.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Assess whether motor is to be tested for possible use, refurbished or replaced (if motor was exposed to water for an extended period of time refurbishment and/or replacement is warranted).	System Engineering	SE/Motor Engineer	8/15/2011	System health assessment report
	For motors to be tested for possible use:				
2.	Take oil sample from bearing housings.	Maintenance	Uehling	8/15/2011	Complete maintenance work documents
3.	Evaluate if water has gotten in contact with bearings.	Engineering Programs	Reimers	8/15/2011	Predictive Maintenance Group to evaluate sampled oil test results for water contamination

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
4.	Refurbish motor if water contamination is present in oil. Replace motor in whole is an additional option.	Engineering Programs, Vendor	Seier	8/15/2011	Completed maintenance work documents. Purchase order will be needed for Vendor support. Vendor to provide motor refurbishment report. A new motor can be used if available
5.	Perform visual and boroscope inspection of motor internals (to included termination box) looking for slit, pools of water, corrosion, etc.	QC/Motor Engineer	Seier	8/15/2011	Completed maintenance work documents. Visual inspection looking for internal contamination and degradation
6.	Evaluate visual inspection results for possible actions (removal of moisture, cleaning, refurbishment of motor)	Motor Engineer	Seier	8/15/2011	Condition reports and/or Work Request will be generated for actions needed based on visual inspection results
7.	If bearings are in good condition and motor is visibly in good condition, Static Test Motor (resistive balance, megger, PI).	Electrical Maintenance	EM/Motor Engineer	8/15/2011	Completed maintenance work documents. The testing can be done from the termination box at the motor or from the MCC if the feeder cables to the motor have been found acceptable (Reference Underground Cable Assessment Plan)
8.	If Static Test results are SAT, motor can be started. Maintenance oversight of initial run. Vibration data to be taken during initial run	Ops/Mnt/QC	Maintenance	8/15/2011	Completed maintenance work documents
	For motors to be refurbished:				

FCS Flooding Recovery Action Plan 2.3
Wetted Motor Damage Assessment and Restoration

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
9.	Remove motor and prepare for shipment to vendor.	Maintenance	Uehling	8/15/2011	Completed maintenance work documents
10.	Refurbish motor	Motor Engineer, Vendor	Seier	8/15/2011	Completed maintenance work documents. Purchase order will be needed for Vendor support. Vendor to provide motor refurbishment report. A new motor can be used if available
11.	Install refurbished motor	Maintenance	Uehling	8/15/2011	Completed maintenance work documents
12.	Post Maintenance Testing of motor	Mnt/Ops	Maintenance	8/15/2011	Completed maintenance work documents
	For motors to be replaced:				
13.	Ensure spare motor is available or order new motor	Maintenance Planning	Hodgson	8/15/2011	Complete maintenance work documents
14.	Remove degraded motor	Maintenance	Uehling	8/15/2011	Completed maintenance work documents
15.	Install new motor	Maintenance	Uehling	8/15/2011	Completed maintenance work documents
16.	Post Maintenance Testing of motor	Mnt/Ops	Maintenance	8/15/2011	Completed maintenance work documents

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	If system design allows, the degraded motor can be refurbished or replaced as a Long-Term action (i.e. one of three circulating water motors was found degraded)	Maintenance	Uehling	11/15/2011	06/30/2012	Completed maintenance work documents

FCS Flooding Recovery Action Plan 3.1
Engineering Program Reviews

FOCUS AREA:	Long Term Equipment Reliability
ACTION PLAN:	Engineering Program Reviews
ACTION PLAN NUMBER:	3.1
COMPLETION DATE:	9/30/2011
FOCUS AREA OWNER:	Mark Frans
ACTION PLAN OWNER:	Mark Frans

ISSUE DEFINITION:

Review all Engineering Programs and determine if flood recovery plans are needed for each program.

OBJECTIVE:

Ensure all site restoration issues associated with Engineering Programs are included in Site Restoration Plan.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Document review of all Engineering Programs	Engineering Programs	Frans	8/1/2011	Spreadsheet documenting program reviews (attached)

Short-Term Actions (Prior To Reactor Critical)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions

#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	N/A					

Program	Owner	Question #1: Have any of the program components come in contact with flood water? IF answered no, questions 2 through 6 will be N/A'd.	Question #2: Does river water normally come in contact with the components during normal operation?	Question #3: Could flood water that came in contact with the program component have any additional negative effect other than normal operation?	Question #4: Did the condition of the river water flooding change river water properties to a point that is different than expected and could result in a negative effect on a program component?	Question #5: Could the extended period of time of river flooding conditions result in an accumulative negative effect on the component?	Question #6: Could the added elevation of the river have a negative effect on the program components?	Question #7: Are there any flooding CRs that would not be covered by the system review?	Question #8: Are there any flooding temporary modifications that would not be covered by the system review?	Comments	Conclusion (flood recovery needed - Yes or No) - IF no explain why.
Steam Generators	Hutchinson, Teddy	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Steam generators were not affected by flood waters and will be walked down by system engineer.
In-service Inspection	Downey, Patrick	Yes	Yes	No	N/A	N/A	N/A	No	No	N/A	No - Flooding conditions would not affect code requirements, system engineer walkdowns will find any issues that may need further screening.
Flow Accelera	Bretey, Nicole	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Flooding conditions would not affect any FAC susceptible piping
Check Valves	Taylor, Dave	Yes	Yes	No	No	No	No	No	No	No check valves are known to have been submerged or externally exposed to flood water	No - System interaction review would address effects on check valves.

Containment & LLRT)	Miller, Glenn	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Containment leak rate will not be affected by flood waters.
Snubbers	Grewe, Jim	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Snubbers are located inside buildings and would be seen on the system walkdowns.
Containment Tendon Testing	Miller, Glenn	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Containment tendon testing will not be affected by flood waters.
Motor Operated Valves	Swerczek, Jim	No	N/A	N/A	N/A	N/A	N/A	No	No	MOV Program Valves did not come into contact with floodwater; therefore, no flood recovery actions are required.	No - System interaction review would address effects on MOV Program Valves.
Relief Valves	Taylor, Dave	Yes	Yes	No	No	No	No	No	No	No relief valves are known to have been submerged or externally exposed to flood water	No - System interaction review would address effects on relief valves.
Boric Acid Corrosion Control	Steffen, Dave	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Boric acid corrosion is inside buildings that were not affected by flood waters and will be seen by system engineers on their walkdowns.

Cobalt Reduct	Lisowyj, Bob	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Cobalt Reduction is only for components inside containment, so not effect from flooding.
Preventive Mai	Huang, Claudio	Yes	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Current PM procedures are unchanged. Changes in frequency will be covered by the PM process.
Predictive Ma	Reimers, Josh	Yes	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Current PdM Technologies are unchanged. Changes in frequency will be covered by PM change process.
Thermal Performanc e	Bretey, Nicole	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - The plant is not operating
Maintenance	Zagata, Joe	Yes	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Equipment under water, possibly degrading but will be covered by system reviews
Service Water	Maassen, Kristen	Yes	Yes	Yes	Yes	Yes	No	No	No	N/A	Yes - underground piping will need to be evaluated to ensure there are no voids

Alloy 600	Lisowyj, Bob	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Alloy 600 is only in containment and flooding did not affect containment.
Electrical Equi Qualification	Smidt, Jeff	No	No	Yes	No	No	No	No	No	N/A	No - Other than possibility of water intrusion in conduit systems in designated areas and this will be covered by the system walkdowns.
Life Cycle Mar	Maassen, Kristen	N/A	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - the life cycle management program is a program that encompasses all the other programs.
Air Operated V	Molzer, Doug	Yes	No	No	No	No	No	No	No	N/A	No - No submergence of any AOV is known to have occurred. FCV-1904A/B/C may have had some residual spray on the valves. This did not result in any component degradation.
Large Motors	Seier,Glen	Yes	No	Yes	N/A	Yes	No	No	No	The CW motors have gotten wet. Wetted motors outside of the Large Motor Program will be addressed by System Walkdowns.	Yes - A Wetted Motor Recovery Plan has been developed.

Welding	Grewe, Jim	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Welding program is a process that is not affected by flooding.
Dry Fuel Stora	Hutchinson, Teddy	Yes	No	Yes	N/A	Yes	Yes	No	No	The utility building was surrounded by water. The haul route and ISFSI pad will have to be inspected due to high groundwater and flooding.	Yes - ISFSI recovery plan will cover all needed inspections.
Buried Piping & Components	Maassen, Kristen	Yes	Yes	Yes	Yes	Yes	No	No	No	N/A	Yes - underground piping will need to be evaluated to ensure there are no voids
One-Time Inspections	Maassen, Kristen	No	N/A	N/A	N/A	N/A	N/A	No	No	None with current commitments, if a new aging effect is found then will re-evaluate	No - inspections are already planned and are commitments from the NRC
Cables & Connections	Smidt, Jeff	Yes	No	Yes	N/A	Yes	Yes	No	No	N/A	Yes - Testing of impacted cables and connections will be necessary.
Fatigue Monit	Lisowyj, Bob	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Fatigue Monitoring deals with equipment inside containment and was not affected by flooding.
Managing Gas Accumulation in Safety Systems	Bretey, Nicole	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Flooding conditions did not affect the ECCS piping

License Renev	Maassen, Kristen	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - License Renewal is a group of commitments made to the NRC in the past, flooding will not affect the commitments.
RCS Leak Rate	Hutchinson, Teddy	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - All components in the RCS leak rate monitoring program are inside buildings and were not affected by flood water and will be covered by system walkdowns
Control Room Habitability	Turner, Phil	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Program components did not come in contact with flood water.
Groundwater Protection	Maassen, Kristen	Yes	No	Yes	N/A	N/A	No	No	No	N/A	Yes - The storm sewers onsite need to be inspected, need to ensure they are not leaking.
Containment Insulations	Turner, Phil	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Program components did not come in contact with flood water.
Thermal Aging Embrittlement	Maassen, Kristen	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - all components in this program are located in Containment and flood waters did not affect these components

Overhead Load Handling Systems Inspection	Turner, Phil	No	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - Program components did not come in contact with flood water.
Selective Leaching	Maassen, Kristen	No	N/A	N/A	N/A	N/A	N/A	No	No	None of the Selective Leaching components are in contact with river water	No - all components in this program are in the CCW system and flood waters did not affect these components
Structures Monitoring	Turner, Phil	Yes	Yes	Yes	No	Yes	Yes	No	No	N/A	Yes - Flood recovery is being driven by the Turbine Bldg., Auxiliary Bldg. and Intake Structure Flood Recovery Plans
Valve Packing	Steffen, Dave	Yes	Yes	Yes	Yes	Yes	No	No	No	N/A	No - valve packing issues would be noticed by the system engineering walkdowns
Surveillance Tests / In-service Testing	Boston, Kevin	Yes	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No - surveillance tests / in-service testing requirements would not be affected by flooding conditions, they are set frequencies. System reviews would document any STs that still need to be performed.

Fire Protection	Shudak, Tom	Yes	Yes	Yes	Yes	Yes	No	No	No	The FP water suppression system is designed to pump river water. The exterior of the system does not normally come in contact with flood water.	Yes - Being tracked by the Fire Protection Recovery System Plan
	Assumptions:										
	• Flooding resulting in extending the outage is no different than any other condition that may extend an outage. Programs have processes in place to address outage extensions.										
	• Having river water come in contact with program components does not automatically make it a candidate for negative effects on the component when the components are subjected to the river water in normal conditions.										

FCS Flooding Recovery Action Plan 3.2
Underground Cable Assessment

FOCUS AREA:	Long Term Equipment Reliability
ACTION PLAN:	Underground Cable Assessment
ACTION PLAN NUMBER:	3.2
COMPLETION DATE:	12/31/2011
FOCUS AREA OWNER:	Mark Frans
ACTION PLAN OWNER:	Teddy Hutchinson

ISSUE DEFINITION:

Flooded cable manholes and vaults have subjected cables to conditions which may have impacted cable function and/or reliability.

OBJECTIVE:

Assess impact of submergence on Safety Related and Important to Safety/Production Cables within the Maintenance Rule Scope to assure a reasonable expectation of continued operability/functionality.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Test Maintenance Rule Medium Voltage Power Cables subjected to wetting/submergence	Program Engineering	Hutchinson / Smidt	8/26/2011	Test 4 Raw Water Pump Motor Cables (AC-10A-D), 3 Circ Water Pump Motor Cables (CW-1A-C) and the Electric Fire Pump Motor Cable (FP-1A) by Tan Delta and Partial Discharge testing
2.	Test Maintenance Rule Low Voltage Power Cables subjected to wetting/submergence	Program Engineering	Hutchinson / Smidt	8/26/2011	Test Shielded Low Voltage cables by Tan Delta & Partial Discharge; Test Unshielded Low Voltage by Indenter or AC Megger
3.	Test Maintenance Rule Low Voltage Control and Instrumentation Cables subjected to wetting/submergence	Program Engineering	Hutchinson / Smidt	8/26/2011	Test by Indenter or AC Megger. CHAR testing may also be useful; due to lesser observed impact of water treeing in control and instrument cables, sampling is recommended

FCS Flooding Recovery Action Plan 3.2
Underground Cable Assessment

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Test or Replace 13.8KV Medium Voltage Cable for Emergency Power Feed and Met Tower Feed	Transmission & Distribution / Program Engineering	Hopkins & Hutchinson / Smidt	8/30/2011	13.8 KV cables are scheduled to be replaced as part of the 13.8KV Underground Distribution Recovery Plan from T&D. This will need to be coordinated with Start up
2.	Inspect Manholes and Vaults for damage and integrity of water seals at penetrations	DEN	Hyde	8/30/2011	
3.	Contingency Cable Replacement (If identified defective cable during testing)	EM	Hutchinson / Smidt	based on cable testing	

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	N/A					

FCS Flooding Recovery Action Plan 3.3
Underground Piping and Tanks Assessment

FOCUS AREA:	Long Term Equipment Reliability	
ACTION PLAN:	Underground Piping and Tanks Assessment	
ACTION PLAN NUMBER:	3.3	
COMPLETION DATE:	10/31/2011	
FOCUS AREA OWNER:	Mark Frans	
ACTION PLAN OWNER:	Ken Erdman	

ISSUE DEFINITION:
Flooding conditions and temporary mitigation measures may have degraded underground piping and tanks.

OBJECTIVE:
Restore all station underground piping and tanks to functional status.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Inspect underground piping and tanks using GPR (Ground Penetrating Radar)	Program Engineering	Erdman	9/6/2011	Ensure all underground piping and tanks are intact and no structurally significant voids are present near piping

Short-Term Actions (Prior To Reactor Critical)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	GPR (Ground Penetrating Radar) report finalized for documentation	Program Engineering	Erdman	9/15/2011	10/31/2011	Final report

FCS Flooding Recovery Action Plan – 3.4
I&C Power Supply Service Life Assessment

FOCUS AREA:	Long Term Equipment Reliability
ACTION PLAN:	I&C Power Supply Service Life Assessment
ACTION PLAN NUMBER:	3.4
COMPLETION DATE:	6/30/2012
FOCUS AREA OWNER:	Mark Frans
ACTION PLAN OWNER:	Ravi Tella

ISSUE DEFINITION:

A few power supplies in the FCS Reactor Protection System (RPS) have failed. Some failures are due to age related failure mechanisms, including some equipment that was installed beyond the vendor or other established recommended service life. This same issue applies to Safety Related (CQE) - includes FID 1 & 2-power supplies in other systems.

OBJECTIVE:

Ensure safety-related (CQE) power supplies do not fail while in service by implementation of an effective equipment reliability strategy. Replace CQE power supplies that are beyond their established service life. Develop a strong technical basis for all CQE power supplies that support the equipment reliability strategies for these power supplies.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Replace Non-RPS CQE power supplies that will be beyond their recommended service life	Engineering Programs	Tella	6/15/2011	Non-RPS CQE power supplies replaced that will beyond their recommended service life. Work Order report – showing the applicable WO in finished or complete status

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Establish High Impact Team with a Charter	Engineering Programs	Tella	5/28/2011	Team established and briefed on the task, objectives and Charter - Completed
2.	Identify all CQE power supplies; priority will be on RPS CQE power supplies and then non-RPS CQE power supplies	Engineering Programs	Tella	5/28/2011	Excel list of all power supplies, including identification of those power supplies that do not have a unique component identification number in Asset Suite - Completed
3.	Determine the installation date for FCS CQE power supplies; these dates will be used to define those CQE power supplies that are beyond their service life	Engineering Programs	Tella	6/15/2011	Excel list with CQE power supplies and their installation dates
4.	Conduct an industry and FCS specific analysis of historical performance for CQE power supplies; determine the effectiveness of the current ER Strategies at the FCS component level	Engineering Programs	Tella	6/15/2011	Word or Excel document with a summary of historical performance by manufacturer and model and FCS component identification number for CQE power supplies
5.	Conduct an analysis of the current FCS ER Strategy for power supplies; contact vendors, review industry documentation, benchmark other plants	Engineering Programs	Tella	6/15/2011	Revised ER Strategy document for CQE power supplies

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
6.	Determine the recommended service life for CQE power supplies based on analyses performed earlier in this action plan These service lives will be based on: (1) manufacturer and model, (2) qualified life testing, (3) vendor recommendations and communication with vendors, (4) remnant life based on stress testing of removed power supplies, (5) industry and FCS specific historical performance and (6) actual duty cycle and service condition where these power supplies are installed	Engineering Programs	Tella	6/15/2011	Excel list with manufacturer and model number and recommended service lives for each CQE power supply
7.	Conduct a failure modes and effects analysis on each power supply to ensure the impact of failures is understood	Engineering Programs	Tella	6/15/2011	Excel or Word document with Failure modes and effects analysis of each power supply defining the system and plant impact of a failure of that power supply

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
8.	Document the time based replacement strategy and basis for CQE and RPS power supplies This strategy and basis will provide the tasks to be performed and the basis for the scope and frequency of those tasks. This action is being completed before start up to ensure each power supply has been analyzed and a recommended service life defined	Engineering Programs	Tella	6/15/2011	Word and Excel documents defining the time based replacement strategy and basis
9.	Define those power supplies that are beyond their service life. This will include power supplies that will be beyond their service life before the next planned refueling outage	Engineering Programs	Tella	6/15/2011	Excel list of power supplies beyond their service life, including those that will be beyond their service life before the next refueling outage; Operability Determination (NOD-QP-31) documenting the basis for power supplies that will not be replaced
10.	Replace RPS CQE power supplies beyond their service life	Engineering Programs	Tella	6/15/2011	Work Order report – showing the applicable WO in finished or complete status

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Complete the development of the ER Strategy for CQE power supplies This action will include all tasks to be performed and basis for those tasks and PM Change Requests for any PM changes	Engineering Programs	Tella	10/2/2011	2/3/2012	Fully developed ER Strategy loaded into IQReview (software) PM Change Requests (FC-1065) for PM Changes
2.	Implement PM Change Requests by changing PMs in Asset Suite Validate PM Changes in Asset Suite to be correct	Engineering Programs	Tella	10/2/2011	3/15/2012	PMs changed. PM Change Requests (FC-1065) verified to be closed accurately
3.	Schedule new and revised PMs	Engineering Programs	Tella	10/2/2011	4/15/2012	PMs scheduled in Asset Suite

FCS Flooding Recovery Action Plan 4.1
Plant and Facility Geotechnical and Structural Assessment

FOCUS AREA:	Design and Licensing Basis
ACTION PLAN:	Plant and Facility Geotechnical and Structural Assessment
ACTION PLAN NUMBER:	4.1
COMPLETION DATE:	12/31/2011
FOCUS AREA OWNER:	Steve Miller
ACTION PLAN OWNER:	Ken Erdman

ISSUE DEFINITION:

Flooding may have negatively affected the functionality of existing structures.

OBJECTIVE:

Engineer's geotechnical and structural assessment of the post-flood condition and functionality of buildings at FCS.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
	Planning and Logistics Activities				
1.	Establish assessment requirements	Engineering Programs	Erdman	8/01/2011	Assessment requirements defined
2.	Assemble OPPD & HDR program management team	Engineering Programs	Erdman	8/01/2011	HDR project guide
3.	Select and assemble analysis teams	Engineering Programs	Erdman	8/01/2011	HDR project guide
4.	Badging staff for plant access	Engineering Programs	Erdman	8/01/2011	Appropriate staff badged
5.	Develop draft level 2 schedule	Engineering Programs	Erdman	8/01/2011	Draft Level 2 schedule.

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
6.	Develop final level 2 schedule	Engineering Programs	Erdman	8/03/2011	Final level 2 schedule.
7.	Priority 1 proposal	HDR	Erdman	07/06/2011	Detailed scope and fee proposal for priority 1 structures.
8.	Prepare draft report document plan and outline	Engineering Programs	Erdman	8/8/2011	Draft report document plan and outline.
	Data Acquisition				
9.	Acquire existing geotechnical and structural data	Engineering Programs	Erdman	8/03/2011	Data acquired.
10.	Create shareable database	Engineering Programs	Erdman	8/15/2011	Database shareable by OPPD and HDR staff.
	Class 1 Priority 1 Structures Evaluation and Analysis	See Below			
11.	Review data for each structure and identify data gaps	Engineering Programs	Erdman	8/8/2011	List of data gaps.
12.	Review structure design features to assess potential for damage due to flooding	Engineering Programs	Erdman	8/8/2011	Specific methods, procedures and schedules for each structure.
13.	Inspect structures	Engineering Programs	Erdman	8/8/2011	Field reports.
14.	Assess post-inundation condition of structures	Engineering Programs	Erdman	8/8/2011	Post inundation condition report.
15.	Prepare remediation alternatives (if appropriate)	Engineering Programs	Erdman	8/8/2011	Remediation alternatives report.

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
16.	Create report of findings	Engineering Programs	Erdman	8/8/2011	Summary report
17.	Review findings and recommendations with OPPD and document results	Engineering Programs	Erdman	9/6/2011	Meetings and documentation
	Non-Class 1 Priority 1 Structures Evaluation and Analysis	See Below			
18.	Review data for each structure and identify data gaps	Engineering Programs	Erdman	8/8/2011	List of data gaps
19.	Review structure design features to assess potential for damage due to flooding	Engineering Programs	Erdman	8/8/2011	Specific methods, procedures and schedules for each structure
20.	Inspect structures	Engineering Programs	Erdman	8/8/2011	Field reports
21.	Assess post-inundation condition of structures	Engineering Programs	Erdman	8/8/2011	Post inundation condition report
22.	Prepare remediation alternatives (if appropriate)	Engineering Programs	Erdman	8/8/2011	Remediation alternatives report
23.	Create report of findings	Engineering Programs	Erdman	8/8/2011	Summary report
24.	Review findings and recommendations with OPPD and document results	Engineering Programs	Erdman	9/6/2011	Meetings and documentation

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
	Non-Class 1 Priority 2 Structures Evaluation and Analysis	See below				
1.	Review data for each structure and identify data gaps	Engineering Programs	Erdman	8/8/2011	10/14/2011	List of data gaps
2.	Review structure design features to assess potential for damage due to flooding	Engineering Programs	Erdman	8/8/2011	10/21/2011	Specific methods, procedures and schedules for each structure
3.	Inspect structures	Engineering Programs	Erdman	8/8/2011	10/28/2011	Field reports
4.	Assess post-inundation condition of structures	Engineering Programs	Erdman	8/8/2011	11/04/2011	Post inundation condition report
5.	Prepare remediation alternatives (if appropriate)	Engineering Programs	Erdman	8/8/2011	11/20/2011	Remediation alternatives report
6.	Create report of findings	Engineering Programs	Erdman	8/8/2011	11/23/2011	Summary report
7.	Review findings and recommendations with OPPD and document results	Engineering Programs	Erdman	11/28/2011	12/02/2011	Meetings and documentation

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
	Reports and Submittals					
8.	Assemble final summary report	Engineering Programs	Erdman	12/05/2011	12/30/2011	Final summary report reflecting OPPD owner review comments
9.	Establish long-term monitoring activities	Engineering Programs	Erdman	10/15/2011	12/15/2011	Long-term monitoring plan

Plant & Facility Geotechnical and Structural Assessment

Priority 1 – Structures That Must Be Assessed Prior to Plant Restart

Class 1 (Seismic) Structures

- Intake Structure
- Auxiliary Building
- Containment
- Rad Waste Building
- Technical Support Center – may not be Class 1 but was seismically designed

Non-Class 1 Structures Inside PA

- Security Building
- Turbine Building
- Security BBREs
- South Switchyard
  - Transformers (T1, T1A1, T1A2, T1A3, and T1A4)
  - 161 kV Structures
  - 345 kV Structures
- Condensate Storage Tank
- Underground Utilities
  - Raw Water Piping
  - Fire Protection System Piping
  - Underground cable bank to Intake Structure

Non-Class 1 Structures Outside PA

- ISFSI (Dry Fuel Strorage)
- OSGS (Old Steam Generator Storage Building) – might be seismically designed
- Switchyard
  - 161 kV Building
  - 345 kV Building (west)
  - 345 kV Building (east)
  - Transformers
  - 161kV Structures
  - 345 kV Structures
- Met Tower
- Condensate Storage Tank
- Demin Water Storage Tank and Pump House
- Underground Utilities
  - Underground cable bank from the Switchyard to Plant

- Underground cable bank from the Switchyard to Plant

Priority 2 – Structures That Do Not Directly Support Plant Operation

Non-Class 1 Structures Inside PA

- New Warehouse
- Chemistry/Radiation Protection Building (CARP)
- Maintenance Shop
- Maintenance Fabrication Shop

Non-Class 1 Structures Outside PA

- Maintenance Storage Building
- Old Warehouse
- Training Center
- Administrative Building
- Hazardous Material Storage Building
- Maintenance Garage
- Tertiary Building (Boat Storage)
- Spare Transformer Pads
- Shooting Range
- Parking Lots
- Outdoor Concrete Slabs and Driveways
- Sewage Lagoons

FCS Flooding Recovery Action Plan 4.2
External Flooding Barrier Configuration

FOCUS AREA:	Design and Licensing Basis
ACTION PLAN:	External Flooding Barrier Configuration
ACTION PLAN NUMBER:	4.2
COMPLETION DATE:	12/16/2011
FOCUS AREA OWNER:	Steve Miller
ACTION PLAN OWNER:	Kevin Hyde

ISSUE DEFINITION:

Flood barriers may have been affected during the 2011 flooding event or outage activities that would prevent the barriers from performing their intended function. This issue will also address the final configuration of any flood mitigation devices installed to address the 2011 flooding event.

OBJECTIVE:

Verify that the current configuration of external flood barriers is adequate to protect critical assets required to implement protective actions as described in AOP-1, Acts of Nature.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Review / observe all external flood barrier configurations and verify that they have not been altered during flood response or outage activities	DEN	Hyde	9/1/2011	Report documenting the results of the review
2.	Issue SO-G-124, Flood Barrier Impairment program	PMG	Bontrager	8/15/2011	EC number tracking issuance of SO-G-124; training required prior to issue of this procedure

FCS Flooding Recovery Action Plan 4.2
External Flooding Barrier Configuration

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
3.	Document external flood barrier impairments as applicable in accordance with SO-G-124	DEN	Hyde	9/5/2011	Complete impairment forms in the control room
4.	Establish Program Owner for Flood Barrier impairment process	Engineering Programs	Erdman	8/22/2011	Process owner
5.	Perform walkdown of all flood mitigation devices (i.e., berms, sandbags, HESCO barriers) to determine if each device is to be removed or is to remain	DEN	Hyde	8/29/2011	List of flood mitigation devices and configuration disposition; Engineering Changes to be initiated as necessary to address final desired configuration
6.	Initiate actions to remove flood mitigation devices which have been determined to not be permanent fixtures.	DEN	Hyde	9/6/2011	Work Requests or Work orders to drive removal of temporary equipment and fixtures.

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Identify degraded flood barriers	DEN	Hyde	8/15/2011	Condition Reports and work requests for each degraded flood barrier
2.	Repair flood barriers as required	Maintenance	Uehling	8/15/2011	All flood barriers restored as required

FCS Flooding Recovery Action Plan 4.2
External Flooding Barrier Configuration

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
3.	Review restoration plans for each impaired flood barrier per SO-G-124 form FC-1411	Engineering Programs	Erdman	9/5/2011	FC-1411 forms reviewed and restoration plans confirmed
4.	Review impaired flood barriers as identified in accordance with SO-G-124 form FC-1411	OPS	Pallas	9/12/2011	FC-1411 forms reviewed and barrier conditions verified
5.	Removal of all flood mitigation devices which have been determined to not be permanent fixtures	Maintenance	Uehling	9/12/2011	Temporary flood control fixtures have been removed

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Provide technical justification for qualification of all external flood barriers	DEN	Hyde	8/8/2011	12/16/2011	Completion of CR 2010-2387 action items
2.	Develop Engineering Change paperwork to support final configuration of flood mitigation barriers	DEN	Hyde	8/29/2011	12/16/2011	EC issued for flood control measures that have been determined to be permanent

FCS Flooding Recovery Action Plan 4.3
Station Design Configuration Control

FOCUS AREA:	Design and Licensing Basis
ACTION PLAN:	Station Design Configuration Control
ACTION PLAN NUMBER:	4.3
COMPLETION DATE:	4/15/2012
FOCUS AREA OWNER:	Steve Miller
ACTION PLAN OWNER:	Steve Swearngin

ISSUE DEFINITION:

Various configuration changes have occurred as part of flood mitigation. Tracking of configuration changes will continue throughout the flooding event to ensure that configuration control is maintained. Decisions will need to be made following the flooding regarding the final configuration required. In some instances, (e.g. earthen berm in the switchyard), it may be beneficial to leave the flood mitigation devices in place as permanent fixtures.

OBJECTIVE:

Establish final plant configuration following the 2011 Flooding event.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Finalize identification of all configuration changes for restoration	DEN	Swearngin	6/9/2011	Listing of Configuration Changes that were made during flooding event
2.	Finalize identification of configuration changes to be made permanent	DEN	Swearngin	8/31/2011	Engineering changes initiated for permanent changes
3.	Establish Priority/Schedule for restoration	DEN	Swearngin	9/2/2011	All configuration changes identified in schedule, required plant conditions for restoration identified
4.	Initiate actions to remove non-permanent configuration changes	DEN	Swearngin	9/2/2011	Work documents have been initiated for removal of non-permanent changes

FCS Flooding Recovery Action Plan 4.3
Station Design Configuration Control

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Completion of all ECs/restoration required for plant start-up	Construction	Roets	9/7/2011	Restoration of identified configuration changes for start-up is complete

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Complete remaining ECs/restoration for station configuration control (not required for start-up)	DEN	Swearngin	8/31/2011	4/15/2012	Remaining configuration changes for restoration complete

FCS Flooding Recovery Action Plan 4.4
External Flood Design Basis Review

FOCUS AREA:	Design and Licensing Basis	
ACTION PLAN:	External Flood Design Basis Review	
ACTION PLAN NUMBER:	4.4	
COMPLETION DATE:	12/9/2011	
FOCUS AREA OWNER:	Steve Miller	
ACTION PLAN OWNER:	Kevin Hyde	

ISSUE DEFINITION:

The station design basis needs to be reviewed with respect to the 2011 flood event to determine if changes to the design basis are appropriate based on lessons learned regarding flood character.

OBJECTIVE:

Determine if the station flood design basis is adequate to maintain nuclear safety and protect the health and safety of the public. Based on the conclusion of the assessment revise design basis, processes and procedures as appropriate.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Short-Term Actions (Prior To Reactor Critical)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

FCS Flooding Recovery Action Plan 4.4
External Flood Design Basis Review

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1	Gather flood response lessons learned through CR reviews to determine if procedure or strategy changes should be implemented.	DEN	Miller	9/29/2011	11/18/2011	Recommended process and strategy changes
2	Review Flood Design Basis and determine if the 2011 flood event provides additional information that should drive design basis changes	DEN	Miller	6/9/2011	10/07/2011	The external flooding design basis document was prepared as a result of action assignments in CR 2010-2387. This DBD has been under examination throughout the 2011 flood event. Further review will be conducted to determine if design basis changes are warranted
3	Implement procedure and strategy changes as indicated by the lessons learned review conducted above.	DEN	Miller	6/9/2011	12/09/2011	This is similar to action item 39 of level A CR 2010-2387 which requires implementation of enhanced external flooding procedures. This action item is due 12/09/2011

FCS Flooding Recovery Action Plan 5.1
Return Alert Notification Sirens To Functional Status

FOCUS AREA:	Emergency Planning
ACTION PLAN:	Return Alert Notification Sirens To Functional Status
ACTION PLAN NUMBER:	5.1
COMPLETION DATE:	12/30/2011
FOCUS AREA OWNER:	Steve Gebers
ACTION PLAN OWNER:	Rhonda Hankins

ISSUE DEFINITION:

Flooding conditions and power cut offs have made sirens 1, 69, 75, 76, 135, 143, 257, 259, and 260 non-functional.

OBJECTIVE:

Restore flood affected sirens to functional status.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Short-Term Actions (Prior To Reactor Critical)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Procure 10 Solar charging kits of the nine affected sirens	Emergency Planning	Hankins	7/14/2011	Ten solar charging kits have been ordered and are expected to be delivered the first week of September 2011
2.	Perform fly over of flood affected siren to determine status and potential condition of the equipment	Emergency Planning	Hankins	8/9/2011	Determine if sirens are still erect, if power cables are down, and general condition of the affected sirens

FCS Flooding Recovery Action Plan 5.1
Return Alert Notification Sirens To Functional Status

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
3.	Based on siren inspection procure replacement siren heads, poles, electronic, and power supplies	Communication	Hankins	8/26/2011	Replacement equipment is available when water recedes and counties allow reentry into flood affected areas
4.	If siren damage and or infrastructure is such that timely repair of sirens is not possible, work with FEMA, state and local governments for potential exemptions or long term plan	Emergency Planning	Berck	8/26/2011	Written approval by FEMA or a FEMA approved plan for restoration based on infrastructure or resident restoration
5.	Replace batteries in the affected sirens	Communication	Hankins	9/6/2011	Replace batteries when roads to sirens are passable, allowed by county governments, and safe for the technicians
6.	Install solar charging kits on the affected sirens	Communication and Blue Valley	Hankins	9/6/2011	Install chargers when roads to sirens are passable, allowed by county governments, and safe for the technicians
7.	Conduct Siren Inspections using the Communications developed check list.	Communication	Hankins	9/6/2011	Inspect sirens per check list and restore a power supply in preparation for testing
8.	Conduct a full siren test after sirens have been restore to functional status	Emergency Planning	Hankins	9/15/2011	Perform Emergency Planning Test (EPT-3), Alert Notification Complete Cycle Test

FCS Flooding Recovery Action Plan 5.1
Return Alert Notification Sirens To Functional Status

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Conduct Emergency Planning Test (EPT-37), Emergency Sign Verification	Emergency Planning	Hankins	9/6/2011	12/30/2011	Replace the signs when roads to signs are passable, allowed by county governments and safe for the planners and maintenance
2.	Establish priorities with Communications, T&D, Mid-American Power, and counties for restoring AC power to the sirens	Emergency Planning	Hankins	9/9/2011	12/30/2011	Restore AC power when roads to sirens are passable, allowed by county governments and safe for the lineman and technicians

FCS Flooding Recovery Action Plan 5.2
Field Monitoring and Post Accident Environmental Monitoring

FOCUS AREA:	Emergency Planning
ACTION PLAN:	Field Monitoring and Post Accident Environmental Monitoring
ACTION PLAN NUMBER:	5.2
COMPLETION DATE:	8/19/2011
FOCUS AREA OWNER:	Steve Gebers
ACTION PLAN OWNER:	Pete DeAngelis

ISSUE DEFINITION:

Performing fielding monitoring and environmental sampling in flood affected sectors or through roads closed by flooding.

OBJECTIVE:

Be able to assess and determine if Protective Action Recommendations are adequate for affected sectors.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Develop a field monitoring and environmental sampling plan	Emergency Planning	DeAngelis	6/26/2011	Completed: Develop a sampling plan and have it peer reviewed by ERO protective measure personnel
2.	Distribute Plan	Emergency Planning	DeAngelis	6/26/2011	Completed: Plan was reviewed by peers and is stationed at Protective Measure Emergency Response stations
3.	Conduct a Protective Measure table top with the states of Nebraska and Iowa	Emergency Planning	DeAngelis	6/26/2011	During the drill, the field team monitoring plan will be used to walk through and sample in flood affected areas; based on critiques, the plan will be revised as appropriate

FCS Flooding Recovery Action Plan 5.2
Field Monitoring and Post Accident Environmental Monitoring

Short-Term Actions (Prior To Leaving Cold Shutdown)					
#	Action	Lead Group	Owner	Start Date	Deliverable
4.	Discuss the use of fly-over sampling of flood affects area of the EPZ with the Directors of Radiological Health at the State of Nebraska and Iowa	Emergency Planning	Gebers	5/26/2011	Completed: Discussed the potential need to have DOE fly-over support in flood affected areas if a large radiological release where to occur

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	N/A					

FCS Flooding Recovery Action Plan 5.3
Assessment of Offsite Emergency Response Following a Natural Disaster

FOCUS AREA:	Emergency Planning	
ACTION PLAN:	Assessment of Offsite Emergency Response Following a Natural Disaster	
ACTION PLAN NUMBER:	5.3	
COMPLETION DATE:	12/31/2011	
FOCUS AREA OWNER:	Steve Gebers	
ACTION PLAN OWNER:	Allen Berck	

ISSUE DEFINITION:
Assess the capabilities of the offsite emergency response to respond to a radiological emergency.

OBJECTIVE:
FEMA to issue a letter of Reasonable Assurance to the NRC to allow Fort Calhoun to go critical.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Short-Term Actions (Prior To Reactor Critical)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	Perform ERDS testing	Emergency Planning	Moeller	7/26/2011	Perform normal testing per EPT-21. Last test was completed 7/29/2011 satisfactory. Test results will support EPDM-20, Assessment of Offsite Emergency Response Following a Natural Disaster, documentation

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
2.	Perform normal communications testing	Emergency Planning	Berck	7/26/2011	Perform normal testing per EPT-5 and EPT-6. Last was completed 7/28/2011 (EPT-5 & EPT-6) satisfactory. Test results will support EPDM-20 documentation
3.	Restore area radiation monitors	Emergency Planning	DeAngelis	7/26/2011	Verify that the area radiation monitors have been repaired, calibrated, and are functional. Results will support EPDM-20 documentation. Write work orders and contingencies if not functional
4.	Ensure effluent radiation monitors are functional	Emergency Planning	DeAngelis	7/26/2011	Verify that the effluent radiation monitors have been repaired, calibrated, and are functional. Results will support EPDM-20 documentation. Write work orders and contingencies if not functional
5.	Restore equipment used for emergency classification	Emergency Planning	DeAngelis	7/26/2011	Verify that equipment used for classification is repaired, calibrated, and are functional. Results will support EPDM-20 documentation. Write work orders and contingencies if not functional
6.	Perform normal facility inventories and assessments	Emergency Planning	Berck	7/26/2011	Perform normal testing per EPT-24, EPT-25, EPT-26, EPT-30, EPT-54, and EPT-55. Test results will support EPDM-20 documentation
7.	Conduct Meeting with FEMA, NRC, local Emergency Manager, and State Emergency Managers	Emergency Planning	Gebers	7/13/2011	Completed 7/26/2011; initial review of EPDM-20 check list with the organizations

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
8.	Submit exemption to postpone 2011 annual exercise	Emergency Planning	Gebers	6/13/2011	Complete; letter has been sent to NRC. Obtained concurrent with state and local representative at the 7/26/2011 meeting. Letters wishing to postpone were sent from the state of Iowa and Nebraska to FEMA Region IV on 7/29/2011
9.	Conduct pager test per EPT-34, Perform Augmentation or Notification Drills	Emergency Planning	Hankins	7/26/2011	Verify that the organization is capable of staffing the ERO
10.	Emergency Response Facilities	Emergency Planning	DeAngelis	7/26/2011	Summarize findings for off-site and on-site facilities using EPDM-20 as a guide
11.	Communications	Emergency Planning	Reller	7/26/2011	Summarize findings for off-site and on-site communications using EPDM-20 as a guide
12.	Emergency Response Organizations	Emergency Planning	Reller	7/26/2011	Summarize findings for off-site and on-site emergency response organizations using EPDM-20 as a guide
13.	Public Alert and Notification	Emergency Planning	Reller	7/26/2011	Summarize findings for the public alerting systems using EPDM-20 as a guide
14.	Special Needs and Transportation	Emergency Planning	Reller	7/26/2011	Summarize findings for special needs transportation using EPDM-20 as a guide
15.	Evacuation Routes	Emergency Planning	Reller	7/26/2011	Summarize findings for evacuation routes using EPDM-20 as a guide
16.	Accident Assessment	Emergency Planning	DeAngelis	7/26/2011	Summarize findings for off-site and on-site accident assessment capabilities using EPDM-20 as a guide
17.	Support Services	Emergency Planning	Reller	7/26/2011	Summarize findings for off-site support services including fire, rescue and B.5.b. response using EPDM-20 as a guide

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
18.	Develop a report with the supporting documentation that can be used to assist the states in writing a letter of certification to FEMA Region IV	Emergency Planning	Berck	7/26/2011	Gather supporting documentation from each area assessed and maintain a restart file. Assist the state and local organizations with resolving identified weaknesses. Each state to issue a letter of certification that the off-site organization is capable of responding to a radiological emergency

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Offsite Monitoring Locations	Emergency Planning	DeAngelis	7/26/2011	6/15/12	Evaluate the condition of the field team sample locations to determine if the topography has changed and these locations are still viable sample points. Initiate procedure and EAGLE software changes as needed

FCS Flooding Recovery Action Plan 5.4
Onsite Facility and Equipment Restoration

MAJOR ACTIVITY:	Emergency Planning	
ACTION PLAN:	Onsite Facility and Equipment Restoration	
ACTION PLAN NUMBER:	5.4	
COMPLETION DATE:	12/31/2011	
ISSUE OWNER:	Steve Gebers	
ACTION PLAN OWNER:	Allen Berck	

ISSUE DEFINITION:
Assess the capabilities of the onsite emergency response facilities and equipment for a radiological emergency.

OBJECTIVE:
Restore onsite facilities and equipment. Dates are based on expected river elevations when water is no longer on-site.

Short-Term Actions (Prior To Leaving Cold Shutdown)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	N/A				

Short-Term Actions (Prior To Reactor Critical)

#	Action	Lead Group	Owner	Start Date	Deliverable
1.	MET tower restoration	System Engineering	Bozarth	9/1/2011	Repair and/or replace Meteorological instrumentation
2.	MET tower building restoration	Construction	Brandeau	9/1/2011	Repair and/or replace the meteorological tower building and air conditioning system
3.	Secondary Evacuation Route restoration	Construction	Brandeau	9/6/2011	Repair the site secondary evacuation route

FCS Flooding Recovery Action Plan 5.4
Onsite Facility and Equipment Restoration

Short-Term Actions (Prior To Reactor Critical)					
#	Action	Lead Group	Owner	Start Date	Deliverable
4.	Critique Flooding event	Emergency Planning	Berck	8/15/2011	Conduct and document flooding event critique, including major procedures used to address and mitigate flooding

Long-Term Actions						
#	Action	Lead Group	Owner	Start Date	Finish Date	Deliverable
1.	Clean the TSC (including areas under the false floor, and toilets)	Construction	Brandeau	9/15/2011	10/7/2011	Cleaning completed
2.	Evaluate the wiring and components under the TSC false floor	System Engineering	Naser	9/22/2011	10/7/2011	A schedule to replace and or repair as needed
3.	Repair cracks between floors and walls of the TSC and Auxiliary Building as necessary	Construction	Brandeau	9/22/2011	10/7/2011	Repairs complete
4.	Return TSC toilets and potable water to service	Maintenance	Uehling	9/15/2011	10/7/2011	Services restored