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NUCLEAR ENERGY INSTITUTE
GROUNDWATER PROTECTION INITIATIVE
SELF ASSESSMENT CHECKLIST

Plant or Utility Being Reviewed: Indian Point Energy Center (IPEC) **Date of Review:** July 2008

Reviewers: P. Hollenbeck

Guideline Section	Objective/Acceptance Criteria	Section Met Yes-No	Comments As Required
1.1 Ensure that the site characterization of geology and hydrology provides an understanding of predominant ground water gradients based upon current site conditions.			
1.1.a	Perform hydrogeologic and geologic studies to determine predominant ground water flow characteristics and gradients.	Yes	An extensive site groundwater investigation was performed from September 2005 through September 2007 and documented in Reference 1. Comprehensive geophysical testing of the site has determined the predominant groundwater characteristics such as water table elevations, gradients, flow rates and flow direction.
1.1.b	As appropriate, review existing hydrogeologic and geologic studies, historical environmental studies, and permit or license related reports.	Yes	As documented in Reference 1, GZA identified, retrieved and evaluated historic geological, hydrogeological and geotechnical reports, as well as site construction plans and drawings and performed interviews with key site personnel to assist in studying the site.
1.1.c	Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water.	Yes	As documented in Reference 1, groundwater flows from the north, east and south towards the plant and then ultimately discharges to the Hudson River.
1.1.d	Establish the frequency for periodic reviews of site hydrogeologic studies.	Yes	Reference 2 requires a review of the site hydrology every 5 years. This may be achievable at IPEC via the quarterly report process presently in place and review by a hydrologist.
1.1.e	As appropriate, update the Final Safety Analysis Report with changes to the hydrology and/or geology.	Yes	Based on Reference 1, minor changes to applicable sections of the Unit 2 UFSAR have been submitted to Licensing for approval. These changes are expected to be approved by September 2008. No updates to the Unit 3 UFSAR are currently underway.

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1.2 Identify site risk based on plant design and work practices			
1.2.a	Identify each SSC and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.	Yes	As part of the extensive groundwater site characterization activities and documented in Reference 1, all SSCs were reviewed to identify SSCs that contain significant levels of radioactivity. Wells were installed downstream of these SSCs to assist in identifying leaks that could reach groundwater. Work practices that involve or could involve mechanisms that could result in licensed material reaching groundwater are identified in job specific procedures, the ALARA and/or RWP programs before work can begin. Controls are established in job specific procedures and both the ALARA and RWP programs to help mitigate or eliminate spills and leaks.
1.2.b	Identify existing leak detection methods for each SSC and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.	Yes	Unit 3 SFP has a tell-tale system to assist in the identification of leaks. As documented in Reference 1, although Unit 3 currently has no leaks, sentinel wells have been placed in strategic locations to identify any new leaks that may occur from Unit 3. The Unit 1 and Unit 2 SFPs do not have the tell-tale system; therefore, as part of the groundwater investigation, sentinel wells have been installed to provide leak detection capability. Additional programs such as the long term groundwater program, Reference 2, the Aging Management Program as defined in Reference 7, the NRC 80-10 program as implemented through Reference 8, sampling of the Storm Drain System and visual observations will be used to identify any new leaks in all three units.

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1.2.c	Identify potential enhancements to leak detection systems or programs.	Yes	The Groundwater Monitoring Program, Reference 2, calls for an annual review. This review will evaluate the trends in the sample results and determine if enhancements to the program should be made. The NRC 80-10 and the Storm Drain Sampling programs are currently being reviewed to determine if enhancements can be made for the purpose of leak detection.
1.2.d	Identify potential enhancements to prevent spills or leaks from reaching ground water.	Yes	The Unit 1 SFP is currently flooded to transfer all the fuel to dry cask storage. Upon completion of the fuel transfer, the pool will be drained in preparation for cleaning. These activities will terminate the leak from the Unit 1 SFP. These activities are expected to be completed by the end of 2008 or early in 2009. All known leaks from the Unit 2 SFP have been terminated.
1.2.e	Identify the mechanism or site process for tracking corrective actions.	Yes	Entergy procedure, EN-LI-102, "Corrective Action Process" is used to track corrective actions.
1.2.f	Establish long term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.	Yes	As part of the license renewal application, commitments have been made to perform preventative measures and surveillance activities for many SSCs. See Appendix B of Reference 7 for details of the Aging Management Program. In addition, the Radiological Ground Water Monitoring Program, Reference 2, will be used to assist in detecting inadvertent releases of licensed material.
1.2.g	Establish the frequency for periodic reviews of SSCs and work practices.	Yes	As part of the license renewal application, commitments have been made to perform periodic reviews for many SSCs. See Appendix B of Reference 7 for details of the Aging Management Program.

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Guideline Section	Objective/Acceptance Criteria	Section Met Yes-No	Comments As Required
1.3 Establish an on-site ground water monitoring program to ensure timely detection of inadvertent radiological releases to ground water.			
1.3.a	Using the hydrology and geology studies developed under Objective 1.1, consider placement of ground water monitoring wells down-gradient from the plant but within the boundary defined by the site license.	Yes	As documented in Reference 1, over forty wells have been installed on site, primarily in the Industrial and Radiologically Controlled Areas.
1.3.b	Consider, as appropriate, placing sentinel wells closer to SSCs that have the highest potential for inadvertent releases that could reach ground water or SSCs where leak detection capability is limited.	Yes	As documented in Reference 1, sentinel wells have been placed near high radioactivity SSCs such as the U2 SFP and the U1 SFP. Although the U3 SFP currently has no leaks, sentinel wells have been strategically placed for additional leak detection capability.
1.3.c	Establish sampling and analysis protocols, including analytical sensitivity requirements, for ground water and soil.	Yes	Sampling frequencies, analyte suites and analysis sensitivities for groundwater are established in Reference 2. Reference 3 provides the sample size and analysis sensitivities for gamma emitters in soil.
1.3.d	Establish a formal, written program for long term ground water monitoring.	Yes	Reference 2 is the formal, written program for long term groundwater monitoring. It has been in effect since January 2008.
1.3.e	Periodically review existing station or contract lab(s) analytical capabilities.	Yes	Entergy procedure EN-QV-121, "Supplier Qualification / Maintenance of Qualifications" requires contract laboratories to be evaluated every 3 years. This evaluation can be accomplished by a company sponsored audit or by reviewing the data available from the Nuclear Procurement Issues Committee (NUPIC).
1.3.f	Establish a long term program for preventative maintenance of ground water wells.	Yes	Reference 2 requires the periodic inspection of wells to determine that the wells are suitable for sampling and analysis. The status of degraded wells will be changed from "Active" to "Inactive".

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1.3.g	Establish the frequency for periodic review of the ground water monitoring program.	Yes	Reference 2 requires periodic self assessments of the groundwater monitoring program at frequencies consistent with NEI-07-07 (Final).
1.4 Establish a remediation protocol to prevent migration of licensed material off-site and to minimize decommissioning impacts			
1.4.a	Establish written procedures outlining the decision making process for remediation of leaks and spills or other instances of inadvertent releases. This process is site specific and shall consider migration pathways	Yes	For leaks determined through the groundwater monitoring program, Reference 2, provides guidance on the decision making process if Investigation Levels are reached. For leaks and spills that occur as a result of plant activities, Reference 9 provides guidance on actions and communications. IPEC management will determine whether additional actions such as remediation will be taken.
1.4.b	Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.	Yes	The Radiological Environmental Monitoring Program (REMP) is used to evaluate the impact of IPEC operations on the surrounding environment. Results to date show that IPEC has had no adverse radiological impact. If an environmental sample result has unusual or unexpected levels of radioactivity, Reference 6 will be used to provide guidance on evaluating, notifying and reporting.
1.4.c	Evaluate and document, as appropriate, decommissioning impacts resulting from remediation activities or the absence thereof.	Yes	As documented in Reference 1, after removing the fuel and water from the Unit 1 SFP, no additional actions will be taken. All known leaks from Unit 2 SFP have been stopped. Monitored natural attenuation will be used to observe the predicted downward trends in groundwater concentrations. The latest decommissioning cost estimate has included the additional work scope caused by the pool leaks.

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2.1.c	For licensees that are in States where multiple nuclear power plants are located and multiple owner companies, it is highly recommended that the licensees coordinate their efforts and communicate with each other. The initial briefing for the State/local officials and the contents of a voluntary communication should be consistent.	Yes	Entergy procedure EN-RP-113, "Response to Contaminated Spills/Leaks", Reference 4, contains guidance on communication with State/Local officials. Another procedure IP-SMM-LI-108, "Event Notification and Reporting", Reference 5; will also be implemented should notifications be required by EN-RP-113. These procedures will be used by all Entergy plants in New York. Due to the unique nature of the IPEC groundwater situation and the high level of interest in IPEC, it is difficult to reach agreement between different companies on when to communicate with State and Local officials.
2.2 Make informal communication as soon as practicable to appropriate State/Local officials, with follow-up notifications to the NRC, as appropriate, regarding significant "on-site leaks/spills into ground water and on-site or off-site water sample results exceeding the criteria in the REMP as described in the OCDM/ODAM.			
2.2.a	Communication with the designated State/Local officials shall be made before the end of the next business day if an inadvertent leak or spill to the environment has or can potentially get into groundwater and exceeds any of the following criteria: i) If a spill or leak exceeding 100 gallons from a source containing licensed material; ii) If the volume of a spill or leak can not be quantified, but is likely to exceed 100 gallons, from a source containing licensed material, or iii) Any leak of spill, regardless of volume or activity, deemed by the licensee to warrant voluntary communication.	Yes	Reference 4 contains guidance on communication with State/Local officials if the conditions specified in (i), (ii) or (iii) have been met. Another procedure, Reference 5, will also be implemented should notifications be required by EN-RP-113.

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Guideline Section	Objective/Acceptance Criteria	Section Met Yes-No	Comments As Required
2.2.b	Communication with the designated State/Local officials shall be made before the end of the next business day for a water sample result (i) of off-site ground water or surface water that exceeds any of the REMP reporting criteria for water as described in the ODCM/ODAM, or (ii) of on-site surface water, that is hydrologically connected to ground water, or ground water that is or could be used as a source of drinking water, exceed any of the REMP reporting criteria for water as described in the ODCM/ODAM.	Yes	Reference 6 contains guidance on communication with State/Local officials if the condition specified in (i) has been met. Based upon the groundwater investigation, Reference 1, no on-site surface water is hydrologically connected to groundwater and no groundwater is or could be used as a source of drinking water. Therefore, no communication will be made under condition (ii).
2.2.c	When communicating to the State/Local officials, be clear and precise in quantifying the actual release information as it applies to the appropriate regulatory criteria.	Yes	Reference 4 has an attachment (9.1) which will be completed prior to communicating information. The attachment documents information about the source, location, actions taken, etc. When communication is made, space is available for recording agencies, names, dates and times. Attachment 9.1 will become part of the 10CFR50.75(g) file.
2.2.d	Voluntary communication to State and/or Local officials may also require NRC notification under 10 CFR 50.72(b)(2)(xi). Licensees should perform these notifications consistent with their existing program.	Yes	Entergy procedure, Reference 4, contains guidance on communication with the NRC under 10CFR50.72 should voluntary communication be made to State and/or Local officials. This notification would be made under Reference 5, IP-SMM-LI-108, "Event Notification and Reporting".
2.2.e	Contact NEI by email to GW_Notice@nei.org as part of a voluntary communication event.	No	Reference 4 contains no guidance on communication with NEI as part of a voluntary communication event.

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3.1 Perform a self-assessment of the GPI program (references this check sheet)			
3.1.a	An independent, knowledgeable individual(s) shall perform the initial self assessment within one year of implementation.	Yes	The initial self assessment was completed in August 2008. The program was initiated in January 2008.
3.1.b	Perform periodic self-assessments of the GPI program at least once every five years after initial self-assessment.	No	The first periodic self-assessment is not due until 2013.
3.1.c	The self-assessment, at a minimum, shall evaluate implementation of all objectives identified in this document.	Yes	All objectives in the Check List have been evaluated and documented.
3.1.d	The self-assessment shall be documented consistent with applicable procedures.	Yes	The self assessment will be documented consistent with EN-LI-102, "Self Assessment and Benchmark Process"
3.2 Conduct a review of the GPI program, including at a minimum the licensee's self assessments, under the auspices of NEI.			
3.2.a	An independent, knowledgeable individual(s) shall perform the initial review within one year of the initial self-assessment performed per objective 3.1.a above	No	The first independent review of the initial self-assessment is due before August 2009.
3.2.b	Periodic review of the GPI program should be performed every five years, subsequent to the license's periodic self-assessment performed per Objective 3.1.b above.	No	The first independent periodic review is not due until completion of 3.1.b above.

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References:	
1.0	GZA Final Ground Water Report to IPEC, "Hydrogeologic Site Investigation Report", dated January 7, 2008.
2.0	IP-SMM-CY-110, "Radiological Ground Water Monitoring Program"
3.0	IP-SMM-RP-801, "Radiological Control of Volumetric Materials"
4.0	EN-RP-113, "Response to Contaminated Spills/Leaks"
5.0	IP-SMM-LI-108, "Event Notification and Reporting"
6.0	0-CY-1905, "Notification, Investigation & Reporting of Abnormal Activity in Environmental Samples"
7.0	Indian Point Energy Center License Renewal Application
8.0	EN-CY-108, "Monitoring of Non-Radioactive Systems"
9.0	IP-SMM-EV-101, "IPEC Spill / Release Response Plan"
10.0	EN-LI-102, "Corrective Action Process"
11.0	EN-LI-104, "Self Assessment and Benchmark Process"
12.0	EN-QV-121, "Supplier Qualification / Maintenance of Qualifications"
13.0	RE-ADM-1-22, "Site Soil Characterization"