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Approved By: Original signed by Paul Harlos / 10/02/2008
(Peer Team Champion/Procedure Owner's Signature / Date)

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10/02/2008	10/02/2008	10/02/2008	10/02/2008
Corporate	FNP	HNP	VEGP

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PROCEDURE USAGE REQUIREMENTS		SECTIONS
Continuous Use:	Procedure must be open and readily available at the work location. Follow procedure step by step unless otherwise directed by the procedure.	
Reference Use:	Procedure or applicable section(s) available at the work location for ready reference by person performing steps.	
Information Use:	Available on site for reference as needed.	**ALL**

Procedure Version Description

Version Number	Version Description
1.0	Descriptive Information Initial procedure developed to address actions and reportability for potential radioactive groundwater contamination events.
2.0	Revision 1. Replaced Attachment 1, Industry Ground Water Protection Voluntary Communication Protocol Interim Guidance Document, June 2006, with NEI 07-07 Industry Ground Water Protection Initiative - Final Guidance Document, August 2007 2. Added section 6.6, Remediation Protocol, to provide general fleet guidance for groundwater remediation

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1.0 Purpose

The purpose of this procedure is to establish action levels and reporting criteria for communications with State/Local officials and for documentation in the sites' 10 CFR 50.75(g) files regarding accidental radioactive spills, leaks, or any other type of unplanned radioactivity releases to the environment which could affect groundwater both onsite and/or offsite.

The data sheet (Figure 1), in addition to recording pertinent unplanned radioactive releases, will be used to maintain each site's decommissioning file history of significant outside contamination events as well as providing a readily available document for regulatory review of such events.

2.0 Applicability

This is a fleet wide procedure applicable for all SNC sites.

3.0 References

3.1 10 CFR 50.75(g) – Reporting and recordkeeping for decommissioning planning

3.2 10 CFR 50.36a – Technical specifications on effluents from nuclear power reactors

3.3 10 CFR 50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents

3.4 40 CFR 141– National Primary Drinking Water Regulation

3.5 40CFR 190 – Environmental Radiation Protection Standards for Nuclear Power Operations

3.6 NRC IE Bulletin 80-10: Contamination of Nonradioactive Systems and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to Environment

3.7 NRC IN 2006-13 – Ground-water Contamination due to Undetected Leakage of Radioactive Water

3.8 NUREG -1301 – Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors

3.9 NUREG-1302 – Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Boiling Water Reactors

3.10 EPRI TR - 1011730 – Groundwater Monitoring Guidance for Nuclear Power Plants

3.11 Sites' Technical Specifications sections 5.5.4.b & 5.5.4.c

3.12 *Southern Nuclear Groundwater Protection Initiative Action Plan*

3.13 NEI 07-07 – Industry Ground Water Protection Initiative – Final Guidance Document – August 2007 (Attachment 1)

4.0 Definitions

4.1 ODCM – Offsite Dose Calculation Manual

4.2 Groundwater – any underground water in the earth, does not include surface water such as ponds, rivers, streams, lakes, puddles, etc.

4.3 Drinking water – per NEI guidelines, drinking water is defined as any potable groundwater source which is or may be used at some time in the future as a source of drinking water.

4.4 MDC – Minimum Detectable Concentration – for the purposes of this procedure is defined as the smallest concentration of radioactivity which is required to be able to be detected in an environmental sample as listed in the ODCM Table 4-3.

(Note: Groundwater tritium samples are routinely analyzed to be able to detect as low as background levels which may be much lower than the MDCs listed in the ODCM. Analyzing to these lower background levels enhances the ability to detect leaks into the groundwater.)

5.0 Responsibilities

5.1 Chemistry Manager

- Responsible for direction, control and overall coordination of this procedure.
- Manages the groundwater sampling program and reporting requirements of this procedure.

5.2 Health Physics Manager

- Responsible for notifying Chemistry Manager of any leaks, spills, or contamination to the ground in accordance with the criteria of this procedure.
- Responsible for ensuring appropriate entries are made to the 10 CFR 50.75(g) file regarding leaks, spills, or contamination to the ground (i.e. provide a completed Figure 1 data sheet to Corporate Nuclear Licensing for inclusion into the decommissioning file).

6.0 Procedure

6.1 Precautions and Limitations

6.1.1 EPA tritium drinking water reporting level: 20,000 pCi/L averaged over the calendar year (40 CFR 141.16).

6.1.2 NRC non-drinking surface water tritium reporting level: 30,000 pCi/L averaged over the calendar year (NUREG-1301 & 1302).

6.1.3 ODCM section 4.1.1.2.2 requires an NRC 30 day Special Report if environmental tritium samples, as a result of plant effluents (i.e. offsite), exceed 20,000 pCi/L averaged over a calendar quarter for drinking water or if they exceed 30,000 pCi/L averaged over a calendar quarter for non-drinking water.

6.1.4 10 CFR 20, Appendix B tritium effluent release concentration limit: 1E+06 pCi/L.

Note: Technical Specifications 5.5.4.b and ODCM Section 2.1.2 allow 10 times the 10 CFR 20 Appendix B Table 2 limits for most liquid effluent discharges thereby increasing the tritium effluent release concentration limit to 1E+07 pCi/L.

6.1.5 If the duration or total volume of a discovered contaminated leak to the environment can not be determined or reasonably estimated, the documentation and communication requirements of this procedure will apply.

6.1.6 "Informal" is intended to mean a communication between the station and the State/Local officials. It is not intended to mean a "notification" that would require a 4-hour 10 CFR 50.72 notification to the NRC.

6.1.6.1 If a licensee is notifying a local, state, or other federal agency in accordance with an existing law, regulation, or ordinance, then the licensee should make its notification to the NRC under the 10 CFR 50.72 notification requirement.

6.1.6.2 If a licensee is informally communicating with a local, state, or other federal agency (i.e., not under a specific law, regulation or ordinance), then the licensee has discretion as to whether to informally communicate with NRC (e.g., through the site resident inspector or regional NRC office) or formally through the 10 CFR 50.72 notification process. If due to the site-specific circumstances or heightened sensitivity to the issue at that site, the issue is likely to produce strong media interest, then the licensee should consider notifying NRC under the 10 CFR 50.72 requirement because this is actually the underlying intent of the regulation.

6.1.7 The communication between the site and the State/Local officials should be performed by the Chemistry Manager in accordance with plant procedures and this NMP or by Corporate Environmental Affairs personnel in accordance with this procedure.

6.1.8 This guidance does not take the place of any existing State requirements or regulations. If a site makes a "formal" communication to a State because of a regulatory requirement, then a 4-hour 10 CFR 50.72 NRC notification needs to be considered.

6.2 Ground Contamination Spill or Leak Documentation

6.2.1 Document all spills or leaks of contaminated liquids >100 gallons on Figure 1.

6.2.2 If a spill or leak of contaminated liquids <100 gallons occurs and cannot be completely captured and removed, document the spill or leak on Figure 1.

6.2.3 If no actions are taken or required for a ground spill or leak (e.g. no long term monitoring), a justification for that decision shall be documented on Figure 1.

6.2.4 Document all leaks, regardless of volume or activity, from a spent fuel pool to areas outside the buildings on Figure 1.

6.3 Document contamination of non-radioactive systems (NRC IE Bulletin 80-10: Contamination of Nonradioactive Systems and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to Environment) on Figure 1.

6.4 Figure 1 and associated documents are to be retained as QA records with American Nuclear Insurer's "Life of Policy" (SNC's "LP+99") designation and are available for inspection and audit.

6.5 A copy of all completed 10 CFR 50.75(g) Leak/Spill Decommissioning Records (Figure 1) shall be sent to each respective site's Document Control under R-type GG3.100.

6.6 Remediation Protocol

6.6.1 If radioactive spills or leaks occur to the environment, resources will be directed at quickly stopping the release.

6.6.2 The release will be evaluated for mitigation and/or clean-up using ALARA methodologies. Due to its extreme mobility and low radio-toxicity, tritium may be the one exception.

6.6.3 Tritium contamination in onsite groundwater will be allowed to decay and dissipate through natural processes if at all possible.

6.6.4 If tritium contaminated groundwater is expected to migrate offsite through the groundwater pathway, other means of remediation will be considered.

6.6.5 If other manmade radionuclides besides tritium are detected in groundwater, additional means of remediation will be evaluated (e.g. pumping out groundwater, soil excavation, grouting injection, etc.).

6.6.6 All events resulting in residual ground and groundwater manmade radioactivity remaining after clean-up shall be documented in accordance with steps 6.2 through 6.5 and steps 6.8 through 6.9 of this procedure, thereby ensuring the data will be captured for enclosure in the next decommissioning impact study.

6.7 State and Federal Agency Communication

6.7.1 Inform the plant's State Radiological Control or equivalent department(s) (and any local official if requested), in accordance with this procedure with as much information as known before the end of the next business day after discovery when:

6.7.1.1 An unmonitored and inadvertent contaminated leak or spill >100 gallons to the environment occurs OR

6.7.1.2 An unmonitored and inadvertent contaminated leak of unknown volume to the environment is found OR

6.7.1.3 All leaks, regardless of volume or activity from a spent fuel pool occurs to the ground outside the buildings OR

6.7.1.4 A confirmed water sample from an offsite or onsite ground water sample exceeds the reporting criteria for drinking water as listed in Table 4-2 of the ODCM (Note: This requirement is for newly identified leaks/spills or suspected new leaks/spills. It does not apply to already existing and reported groundwater conditions.) OR

6.7.1.5 A surface water sample exceeds the reporting criteria for water as listed in Table 4-2 of the ODCM.

6.7.2 Provide the following to the applicable state/local agency

Georgia Environmental Protection Division – Department of Natural Resources
24 hour emergency contact number – 1-800-241-4113

Alabama Department of Public Health – Radiation Control Division
24 hour emergency contact number – 1-800-843-0699 or 1-205-280-2310

6.7.2.1 Location and date of discovery/occurrence.

6.7.2.2 Volume (or best estimate) and leak rate if event is a leak.

6.7.2.3 Radioactivity levels.

6.7.2.4 Actions taken or being taken to remediate.

6.7.2.5 Impact to environment (e.g. groundwater, soil, etc).

6.7.2.6 Communication if leak or spill got outside the protected area or is expected to get out of the protected area.

6.7.3 When Step 6.6.2 above is applied, the NRC shall be notified in accordance with site or company applicable procedures using Figure 1 content as guidance.

6.8 Annual Radiological Effluent Release Report

6.8.1 Spills/leaks documented on Figure 1 that were released to the environment or outside the spent fuel pool enclosure, shall be documented in the next Annual Radioactive Effluent Release Report.

6.8.2 The documentation in the Annual Radioactive Effluent Release Report will contain:

6.8.2.1 Description of event

6.8.2.2 Radioactive contamination content and levels of event

6.8.2.3 Impact of event

6.8.2.4 Remediation of event

6.8.2.5 Discussion of impact on groundwater, if any

7.0 Records

This procedure, and any documents created using this procedure, will become QA Records when completed. The procedures and documents are considered complete when issued by Document Services via Documentum. QA Records are maintained by Corporate Document Services. Completed Data Packages or Forms that may be designated as QA Records in NMPs are maintained as QA Records by the site generating the QA Record.

QA record (X)	Non-QA record (X)	Record Generated	R-Type
X		Procedure NMP-EN-002 and associated documents created via this procedure are QA records with American Nuclear Insurer's "Life of Policy" record retention. This retention criteria is currently designated as "LP+99" for document services information.	NMP001
X		Figure 1, "10 CFR 50.75(g) Leak/Spill Decommissioning Record". The retention criteria for this record is "LP+99".	GG3.100

8.0 Commitments

The State and Local Communication requirements within this procedure do not imply any regulatory commitments. This procedure is a result of an NEI/Industry Groundwater Protection Initiative to communicate more effectively with outside agencies and public stakeholders in a more standardized industry methodology regarding accidental radioactive spills, leaks, or any other type of radioactivity releases to the environment which could affect groundwater both onsite and/or offsite. In addition, this procedure provides some industry guidance and standardization on maintaining data for sites' Decommissioning 10 CFR 50.75(g) files.

10 CFR 50.75(g) Leak/Spill Decommissioning Record (R-type GG3.100)

PART 1 – Location/Source				
Event Date	Plant Name:	Individual Contact Name:	Check one: Leak?	Spill?
____/____/____				
Volume (gallons):	Location of spill/leak		Source of spill/leak	
Duration of leak/spill:				
Gamma Activity (uCi/cc)	Tritium Activity (pCi/L)		Total Area Impacted (ft2)	

PART 2 – Event Description	
Outside of Protected Area? ☐ Yes ☐ No ☐ Unknown	
If unknown, what actions needed to determine?	
Description of event/issue	
Actions Taken to Stop Spill or Leak	
Actions Taken to Clean-up Spill or Leak and Long Term Monitoring	

PART 3 – Communications	
Condition Report Number:	
State Agency Notification: (Describe what agency, when and who)	
NRC Notification (when and who)	

Figure 1

NMP-EN-002
Actions for Potential Groundwater Contamination Events

Attachment 1

NEI 07-07 Industry Ground Water
Protection Initiative
Final Guidance Document – August 2007

NEI 07-07 [Final]

Nuclear Energy Institute

INDUSTRY GROUND WATER PROTECTION INITIATIVE - FINAL GUIDANCE DOCUMENT

August 2007

Nuclear Energy Institute, 1776 I Street N. W., Suite 400, Washington D.C. (202.739.8000)

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NOTICE

EXECUTIVE SUMMARY

NEI 07-07 was developed to describe the industry's Ground Water Protection Initiative. The Ground Water Protection Initiative identifies actions to improve utilities' management and response to instances where the inadvertent release of radioactive substances may result in low but detectible levels of plant-related materials in subsurface soils and water. The inadvertent releases addressed by this Initiative fall outside the current requirements of the Nuclear Regulatory Commission (NRC) and are well below the NRC's limits that ensure protection of public health and safety. Planned liquid and airborne releases performed in accordance with NRC's regulations are not included in the scope of the Initiative or this document. The Initiative also includes guidance on how the utilities should communicate with their stakeholders about those instances.

The Ground Water Protection Initiative identifies those actions necessary for implementation of a timely and effective ground water protection program. In addition, objectives are specified to accomplish each action and the acceptance criteria to demonstrate that the objectives have been met. If a licensee reaches an agreement on communication with their stakeholders that differs from the guidance in this document, that difference shall be documented and retained as part of plant records.

It is expected that this Initiative will be implemented by each member company currently operating or decommissioning a nuclear power plant and by each member company constructing a new plant after year 2006. In the event that new or amended NRC regulations are enacted that address ground water protection or inadvertent releases of radioactive liquids, this Initiative should be revisited by the Nuclear Strategic Issues Advisory Committee.

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INDUSTRY GROUND WATER PROTECTION INITIATIVE - FINAL GUIDANCE DOCUMENT

Introduction

Over the last ten years, there have been instances of nuclear power plants and materials licensees detecting contamination from inadvertent releases of licensed material to soil and/or groundwater. While none of the identified instances has threatened public health and safety or compromised environmental protection, local stakeholders have expressed concern.

Under the Industry Ground Water Protection Initiative (GPI), each member company operating or decommissioning a nuclear power plant was required to develop and implement a site-specific/company ground water protection program to assure timely and effective management of situations involving inadvertent releases of licensed material* to ground water* and to implement voluntary* communication programs by July 31, 2006. Each member company constructing a new plant after year 2006 shall develop the appropriate site procedures and/or programs to meet the GPI and implement them prior to initial receipt of nuclear fuel. An effective, technically sound ground water protection program may take at least a year to implement and requires on-going review and evaluation.

PURPOSE

The Industry Ground Water Protection Initiative will help licensees to:

1. Improve management of situations involving inadvertent radiological releases that get into ground water.

2. Improve communication with external stakeholders to enhance trust and confidence on the part of local communities, States, the NRC, and the public in the nuclear industry's commitment to a high standard of public radiation safety and protection of the environment.

This Industry Initiative only applies to licensed radioactive materials that are or were generated as a result of plant operations

BACKGROUND

Nuclear power plant licensees are required to control and monitor releases of radioactive liquids and airborne materials to ensure that they remain below regulatory limits and do not pose a threat to public health and safety. Over time, licensees have progressively reduced their releases to the environment such that individuals living near these facilities typically would not receive more than 1 millirem per year due to these controlled discharges. Licensees establish programs and procedures to carefully control radioactive material, however, leaks and spills occasionally occur and equipment can fail. As plants began to undergo decommissioning in the late 1990s to early 2000s, instances of subsurface and/or ground water contamination were identified. In addition, several operating facilities also identified ground water contamination resulting from spills and leaks or equipment failure. In one instance, low levels of licensed material were detected in a private well located on property adjacent to a nuclear power plant.

* wherever indicated, see glossary

The industry recognized that these instances of inadvertent contamination posed a public confidence challenge even though the releases themselves were not a significant public health issue. In May 2006, the U.S. commercial nuclear power plants adopted the Nuclear Energy Institute (NEI) Groundwater Protection Initiative (GPI) (Attachment 1). The Nuclear Strategic Issues Advisory Committee of NEI unanimously voted to implement these voluntary measures to minimize the potential for inadvertent releases of radioactive liquids to the environment and to enhance public trust and confidence in the industry.

Working in parallel, the NRC formed a Liquid Radioactive Release Lessons Learned Taskforce to assess the inadvertent release of radioactive liquid to the environment at power reactor sites. On July 10, 2006, the NRC issued Information Notice 2006-13 "Ground-water Contamination due to Undetected Leakage of Radioactive Water" that summarized its review of radioactive contamination of ground water at multiple facilities as a result of undetected leakage from facility structures, systems, or components that contain or transport radioactive fluids. Licensees were instructed to review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. The final report of the NRC's Taskforce was issued on September 1, 2006 and included twenty-six recommendations for additional consideration by the NRC. The report stated:

> "The most significant conclusion of the task force regarded public health impacts. Although there have been a number of industry events where radioactive liquid was released to the environment in an unplanned and unmonitored fashion, based on the data available, the task force did not identify any instances where the health of the public was impacted."

Nuclear power provides a significant portion of the electricity needed by society today and must be part of the future diversified generation mix, helping to reduce this nation's reliance on fossil fuels and to reduce the emission of greenhouse gases. Each licensee has voluntarily implemented the Groundwater Protection Initiative and will continue to do so in the future, recognizing that public confidence and trust are critical to the continued successful operation of their facilities.

1 GROUND WATER PROTECTION PROGRAM

ACTION 1 Improve management of situations involving inadvertent radiological releases that get into ground water

Each licensee shall develop a written Ground Water Protection Initiative (GPI) program that describes their approach to assure timely detection and effective response to situations involving inadvertent radiological releases to ground water to prevent migration of licensed radioactive material off-site and to quantify impacts on decommissioning. The GPI program shall specify the frequency at which and/or conditions under which each program element is performed to ensure that the licensee's understanding of the site, the potential for leaks or spills to occur, or for equipment to degrade over time accurately reflect actual conditions.

The Electric Power Research Institute (EPRI) is sponsoring development of a technical guideline for implementation of ground water protection programs at nuclear power plants to meet Action 1. The stated objectives of the EPRI "Guideline for Implementing a Groundwater Protection Program at Nuclear Power Plants" is to demonstrate a commitment to controlling licensed material, minimize potential unplanned, unmonitored releases to the environment from plant operations, and minimize long-term costs associated with potential ground water and subsurface contamination. Other technically sound, documented approaches that meet the baseline requirements and recommendations in the EPRI Guideline may also be used.

OBJECTIVE 1.1 SITE HYDROLOGY AND GEOLOGY

Ensure that the site characterization of geology and hydrology provides an understanding of predominant ground water gradients based upon current site conditions.

Acceptance Criteria:

a. Perform hydrogeologic and geologic studies to determine predominant ground water flow characteristics and gradients.

b. As appropriate, review existing hydrogeologic and geologic studies, historical environmental studies, and permit or license related reports.

c. Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water.

d. Establish the frequency for periodic reviews of site hydrogeologic studies. As a minimum, reviews should be performed whenever any of the following occurs:
   - Substantial on-site construction,
   - Substantial disturbance of site property,
   - Substantial changes in on-site or nearby off-site use of water, or
   - Substantial changes in on-site or nearby off-site pumping rates of ground water.

e. As appropriate, update the site's Final Safety Analysis Report with changes to the characterization of hydrology and/or geology.

OBJECTIVE 1.2 SITE RISK ASSESSMENT

Identify site risks based on plant design and work practices:

1.2.1 Evaluate all systems, structures, or components (SSCs) that contain or could contain licensed material and for which there is a credible mechanism for the licensed material to reach ground water.

1.2.2 Evaluate work practices that involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.

Acceptance Criteria:

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. Examples of SSCs of interest include: refueling water storage tanks, if outdoors; spent fuel pools; spent fuel pool leak detection systems; outdoor tanks; outdoor storage of contaminated equipment; buried piping; retention ponds or basins or reservoirs; lines carrying steam.

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. These may include ground water monitoring, operator rounds, engineering walkdowns or inspections, leak-detection systems, or periodic integrity testing.

c. Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walkdowns or inspections, or integrity testing.

d. Identify potential enhancements to prevent spills or leaks from reaching ground water. These may include resealing or paving surfaces or installing spill containment measures.

e. Identify the mechanism or site process for tracking corrective actions.

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.

g. Establish the frequency for periodic reviews of SSCs and work practices.

OBJECTIVE 1.3 ON-SITE GROUND WATER MONITORING

Establish an on-site ground water monitoring program to ensure timely detection of inadvertent radiological releases to ground water.

Acceptance Criteria

a. Using the hydrology and geology studies developed under Objective 1.1, consider placement of ground water monitoring wells downgradient from the plant but within the boundary defined by the site license.

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.

c. Establish sampling and analysis protocols, including analytical sensitivity requirements, for ground water and soil. Sampling for tritium in the vadose or unsaturated zone may not be practicable and may require additional evaluation. For split or duplicate samples, analytical sensitivity levels should be discussed with and agreed to by those external stakeholders responsible for the analyses to preclude future disputes.

d. Establish a formal, written program for longterm ground water monitoring. For those ground water monitoring locations that are included in the REMP*, revise the site's ODCM/ODAM*.

e. Periodically review existing station or contract lab(s) analytical capabilities. An important consideration is the time needed to obtain results.

f. Establish a long-term program for preventative maintenance of ground water wells.

g. Establish the frequency for periodic review of the ground water monitoring program.

OBJECTIVE 1.4 REMEDIATION PROCESS

Establish a remediation protocol to prevent migration of licensed material off-site and to minimize decommissioning impacts.

Acceptance Criteria

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.

b. Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.

c. Evaluate and document, as appropriate, decommissioning impacts resulting from remediation activities or the absence thereof.

* wherever indicated, see glossary

OBJECTIVE 1.5 RECORD KEEPING

Ensure that records of leaks, spills, remediation efforts are retained and retrievable to meet the requirements of 10 CFR 50.75(g).

Acceptance Criteria

a. Establish a record keeping program to meet the requirements of 10 CFR 50.75(g). Note that these records are used to determine an area's classification for purposes of performing surveys (see NRC Regulatory Issue Summary 2002-02 Lessons Learned Related to Recently Submitted Decommissioning Plans and License Termination Plans).

2 COMMUNICATION

ACTION 2 Improve communication with external stakeholders to enhance trust and confidence on the part of local communities, States, the NRC, and the public in the nuclear industry's commitment to a high standard of public radiation safety and protection of the environment.

OBJECTIVE 2.1 STAKEHOLDER BRIEFING

Each licensee should conduct initial and periodic briefings of their site specific GPI program with the designated State/Local officials.

Acceptance Criteria

a. The licensee should discuss:
   - The background or industry events that led to the GPI.
   - If there is additional information that the State/Local officials need to better understand the issue or place it in perspective for their constituents.
   - "How" the State/Local officials will use or distribute the information.

b. Licensees should consider including additional information or updates on ground water protection in periodic discussions with State/Local officials.

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.

OBJECTIVE 2.2 VOLUNTARY COMMUNICATION

Make informal* communication as soon as practicable to appropriate State/Local officials, with follow-up notification 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 ODCM/ODAM.

Acceptance Criteria:

This guidance provides a threshold for voluntary communication. Some States may require different communication thresholds; the licensee shall document any agreements with State/Local officials that differs from Industry guidance.

a. Communication to 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 the ground water **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 cannot be quantified but is likely to exceed 100 gallons from a source containing licensed material, or
   iii. Any leak or spill, regardless of volume or activity, deemed by the licensee to warrant voluntary communication.

To determine whether a leak or spill would trigger voluntary communication, consider the clarification in the following three text boxes in addition to 2.2.a i to iii above:

LEAK OR SPILL: The "leak or spill" represents an inadvertent event or perturbation in a system or component's performance. This event threshold is intended to ensure that State/Local officials are made aware that there has been an event of interest at the site and to keep them apprised of the licensee's action to contain and, as needed, remediate the event. "Leak or spill" events that meet the criteria shall be communicated regardless of whether or not the on-site ground water is, or could be used as, a source of drinking water.

The quantity of liquid resulting from leaks or spills of solid materials or waste or steam leaks should be evaluated with respect to 2.2.a. i to iii, inclusive.

* wherever indicated, see glossary

SOURCE CONTAINING LICENSED MATERIAL: A liquid, including steam, for which a statistically valid positive result is obtained when the sample is analyzed to the following a priori lower limits of detection (analytical sensitivity).

The analytical sensitivity for identifying a source containing licensed material is, at a minimum, the licensee's lower limits of detection that are required for radioactive liquid effluents for all isotopes.

POTENTIAL TO REACH GROUND WATER

Spills or leaks with the potential to reach ground water:

- Spill or leak directly onto native soil or fill,
- Spill or leak onto an artificial surface (i.e. concrete or asphalt) if the surface is cracked or the material is porous or unsealed,
- Spill or leak that is directed into unlined or non impervious ponds or retention basins (i.e. water hydrologically connected to ground water).

A spill or leak inside a building or containment unit is generally unlikely to reach ground water, particularly if the building or containment unit has a drain and sump system. However, the sump and drain system should be evaluated as part of the SSC risk assessment.

A spill or leak to a semi-impermeable or impermeable surface that is recaptured or remediated per Objective 1.4 before the close of the next business day does not trigger the voluntary communication protocol.

The licensee shall document any agreement with State/Local officials that differs from this Industry guidance as part of their record. For example, some states or local authorities have indicated that they do not wish leaks/spills to be included in the voluntary communication protocol or that the voluntary communication should be completed in a shorter timeframe.

Appendix A provides a flowchart for the communication protocol as it applies to leaks or spills or groundwater sample results.

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, that exceeds any of the REMP reporting criteria for water as described in the ODCM/ODAM

   The licensee shall document the basis for concluding that the on-site ground water is not or would not be considered a source of drinking water. Examples of a defensible basis are documents from the regulatory agency with jurisdiction over ground water use.

   Appendix A provides a flowchart for the communication protocol as it applies to groundwater sample results.

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 (i.e. put it in perspective). The following information should be provided as part of the informal communication:
   i. A statement that the communication is being made as part of the NEI Ground Water Protection Initiative,
   ii. The date and time of the spill, leak, or sample result(s),
   iii. Whether or not the spill has been contained or the leak has been stopped,
   iv. If known, the location of the leak or spill or water sample(s),
   v. The source of the leak or spill, if known,
   vi. A list of the contaminant(s) and the verified concentration(s),
   vii. Description of the action(s) already taken and a general description of future actions,
   viii. An estimate of the potential or bounding annual dose to a member of the public if available at this time, and
   ix. An estimated time/date to provide additional information or follow-up.

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.

e. Contact NEI by email to GW_Notice@nei.org as part of a voluntary communication event as described in Objective 2.2.

OBJECTIVE 2.3 THIRTY-DAY REPORTS

Submit a written 30-day report to the NRC for any water sample result for on-site ground water that is or may be used as a source of drinking water that exceeds any of the criteria in the licensee's existing REMP as described in the ODCM/ODAM for 30-day reporting of off-site water sample results. Copies of the written 30-day reports for both on-site and off-site water samples shall also be provided to the appropriate State/Local officials.

Acceptance Criteria:

a. All ground water samples taken for the Industry Initiative shall be analyzed and compared to the standards and limits contained in the station's REMP as described in the ODCM/ODAM. Pre-2006 ODCM/ODAM requirements specify a written 30-day report to the NRC for REMP sample results that exceed any of the REMP reporting criteria. Under the Initiative, a written 30-day NRC report is also required for all on-site sample results that exceed any of the REMP reporting criteria and could potentially reach the ground water that is or could be used in the future as a source of drinking water. If the ground water is not currently used for drinking water but is potable, each station should consider the ground water as a potential source of drinking water (see objective 2.2 acceptance criterion b for documentation needed to establish a defensible basis for determining the beneficial use(s) of ground water).

   The initial discovery of ground water contamination greater than the REMP reporting criterion is the event documented in a written 30-day report. It is not expected that a written 30-day report will be generated each time a subsequent sample(s) suspected to be from the same "plume" identifies concentrations greater than any of the REMP criteria as described in the ODCM/ODAM. The licensee should evaluate the need for additional reports or communications based on unexpected changes in conditions.

b. The 30-day special report should include:
   i. A statement that the report is being submitted in support of the GPI,
   ii. A list of the contaminant(s) and the verified concentration(s),
   iii. Description of the action(s) taken,
   iv. An estimate of the potential or bounding annual dose to a member of the public, and
   v. Corrective action(s), if necessary, that will be taken to reduce the projected annual dose to a member of the public to less than the limits in 10 CFR 50 Appendix I.

c. All written 30-day NRC reports generated under item 2.3.a are to be concurrently forwarded to the designated State/Local officials.

OBJECTIVE 2.4 ANNUAL REPORTING

Document all on-site ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year in the Annual Radiological Environmental Operating Report (AREOR) for REMP or the Annual Radioactive Effluent Release Report (ARERR) for the RETS as contained in the appropriate reporting procedure, beginning with the report for calendar year 2006.

Acceptance Criteria:

a. The appropriate changes to the ODCM/ODAM or to the appropriate procedures were expected to be completed in a timeframe to support the 2007 report of 2006 performance for plants that were operating or decommissioning when the GPI was adopted. For new plants, appropriate procedures that require inclusion of significant on-site leaks/spills into ground water and all on-site ground water results shall be developed and implemented prior to initial receipt of nuclear fuel.

b. Reporting of on-site ground water sample results shall be as follows:
   i. Ground water sample results that are taken in support of the GPI but are not part of the REMP program (e.g. samples obtained during the investigatory phase of the Action Plan circa year 2006) are reported in the ARERR required by 10 CFR 50.36a (a)(2).
   ii. Once the longterm monitoring sample points have been established per Objective 1.3, acceptance criterion d, the results are reported in the AREOR for those sample points that are included in the REMP as described in the ODCM/ODAM. The sample results for those longterm monitoring sample points that are not included in REMP are reported in the ARERR.

c. In addition to 2.4.b, voluntary communications shall be included in an annual report as follows:
   i. A description of all spills or leaks that were communicated per Objective 2.2 acceptance criterion a shall be included in the ARERR.
   ii. All on-site or off-site ground water sample results that exceeded the REMP reporting thresholds as described in the ODCM/ODAM that were communicated per Objective 2.2 acceptance criterion b shall be included in either the ARERR and/or in the AREOR.

3 PROGRAM OVERSIGHT

ACTION 3 Perform program oversight to ensure effective implementation of the GPI program

OBJECTIVE 3.1 PERFORM A SELF-ASSESSMENT

Perform a self-assessment of the GPI program (see Appendix B).

Acceptance Criteria:

a. An independent, knowledgeable individual(s) shall perform the initial self-assessment within one year of implementation. For existing plants, this means no later than December 31, 2008; for new plants this means within one year after initial criticality.

b. Perform periodic self-assessment of the GPI program at least once every 5 years after initial self-assessment.

c. The self-assessment, at a minimum, shall include evaluating implementation of all of the objectives identified in this document.

d. The self-assessment shall be documented consistent with applicable station procedures and programs.

OBJECTIVE 3.2 REVIEW THE PROGRAM UNDER THE AUSPICES OF NEI

Conduct a review of the GPI program, including at a minimum the licensee's self-assessments, under the auspices of NEI.

Acceptance Criteria:

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.

b. Periodic review of the GPI program should be performed every 5 years, subsequent to the license's periodic self-assessment performed per Objective 3.1.b. above.

GLOSSARY

AREOR means the Annual Radiological Environmental Operating Report – summarizes the results of the REMP to the NRC.

ARERR means the Annual Radioactive Effluent Release Report as required by 10 CFR 50.36a (a)(2) – summarizes the releases of liquid, airborne, and solid wastes from the facility and provides the calculated doses attributable to those releases.

Ground water as used in the GPI, means any subsurface water, whether in the unsaturated or vadose zone, or in the saturated zone of the earth.

Informal (communication) means a communication, typically by telephone, between licensee personnel and the State/Local officials. Subsequent notification of the NRC under 10 CFR 50.72 should be performed consistent with station policy.

Licensed material (from 10 CFR 20.1003) means source material, special nuclear material, or byproduct material received, possessed, used, transferred or disposed of under a general or specific license issued by the Commission.

ODCM/ODAM means the Offsite Dose Calculation Manual or Offsite Dose Assessment Manual or equivalent document. The licensee's manual required by Technical Specification that contains the dose assessment methodology and radiological effluent technical specifications.

REMP means the Radiological Environmental Monitoring Program specified by the ODCM/ODAM that provides measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides, which lead to the highest potential radiation exposures of individuals resulting from the station operation.

RETS means the Radiological Effluent Technical Specifications required to control the release of radioactive liquids and airborne materials from the site. Standard radiological effluent technical specifications are found in NUREG CR-1301.

Significant (leak or spill) means an item or incident that is of interest to the public or stakeholders. It does not imply or refer to regulatory terminology nor is it intended to indicate that the leak or spill has public health and safety or environmental protection consequences.

Voluntary as used in the GPI, means not required by statute or regulation.

Verbs "*may*", "*shall*", "*should*", "*will*", and "*would*" have the meanings commonly used in the nuclear power industry (see ANSI N42.14-1999). "Shall" denotes a requirement; "should" denotes a recommendation; "may" denotes permission.

ATTACHMENT 1

Nuclear Energy Institute Industry Initiative on Ground Water Protection
May 2006

Objectives:

1. Improve management of situations involving inadvertent radiological releases that get into ground water.

2. Enhance trust and confidence on the part of local communities, States, the NRC, and the public in the nuclear industry's commitment to a high standard of public radiation safety and protection of the environment.

Actions:

By July 31, 2006, each member company operating or decommissioning a nuclear power plant will:

1. Put in place a company/site-specific action plan(s) to help assure timely detection and effective response to situations involving inadvertent radiological releases in ground water to prevent migration of licensed radioactive material offsite and quantify impacts on decommissioning.

2. Expand the scope of the licensee's existing Radiological Environmental Monitoring Program (REMP) reporting requirements to include additional voluntary formal and informal reporting as follows:

   2.1 Document all onsite ground water sample results and a description of any significant onsite leaks/spills into ground water for each calendar year in the Annual REMP Report, beginning with the report covering the calendar year 2006;

   2.2 Submit a 30-day report to the NRC for any water sample result for onsite ground water that is or may be used as a source of drinking water that exceeds the criteria in the licensee's existing REMP for 30-day reporting of offsite water sample results. Copies of 30-day reports for both onsite and offsite water samples will also be provided to the appropriate State agency; and

   2.3 Make informal notification as soon as practicable to appropriate State/Local officials, with follow-up notification to the NRC, as appropriate, regarding significant onsite leaks/spills into ground water (see Item 2.1) and onsite or offsite water sample results exceeding the criteria in the REMP (see Item 2.2).

ATTACHMENT 2
FREQUENTLY ASKED QUESTIONS

1) Q: Does the commitment to "develop and implement a site-specific/company ground water protection program" specifically include a commitment to drill more monitoring wells, modify plant systems, structures, or components, etc?

   A: No. Companies are expected to complete an evaluation of the specific situation at each site and identify and schedule needed improvements to meet the objective of "help[ing] assure timely detection and effective response to situations involving inadvertent radiological releases to ground water to prevent migration of licensed radioactive material off-site and minimize the impacts on decommissioning." The scope of the needed improvements will largely depend on site-specific conditions, e.g., the history of leaks or spills and the extent and quality of current programs for detecting leaks and monitoring on-site ground water. The evaluation should be periodically reassessed.

2) Q: How does the voluntary communication protocol under Action 2 relate to reporting requirements in effect before 2006?

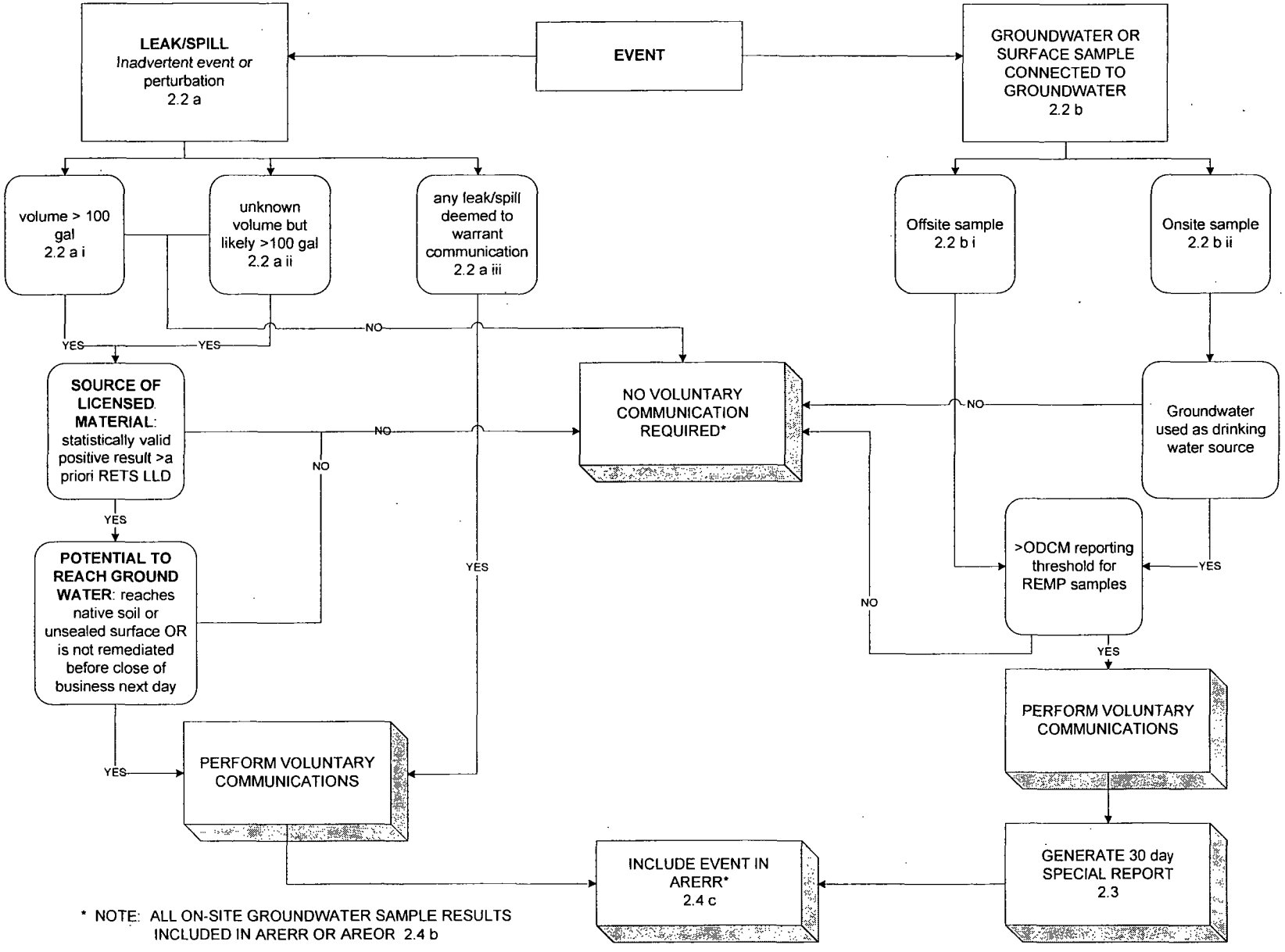
   A: Every licensee already has certain reporting requirements specified in their license, i.e., in the RETS, REMP, or ODCM/ODAM, although these criteria may vary somewhat from site to site. 10 CFR Parts 20 and 50 also contain relevant reporting requirements that apply to all licensees. In addition, some licensees may have reporting requirements or commitments that involve State or local agencies and officials. The voluntary communication protocol is intended to supplement the existing body of reporting requirements at each site in order to assure that all sites, at a minimum, consistently inform appropriate State and local officials, and the NRC as appropriate, regarding conditions and occurrences related to inadvertent radiological releases to the ground water at the site.

3) What is meant by "substantial on-site construction" or "substantial disturbance of site property" in acceptance criterion d to Objective 1.1?

   A: "Substantial" refers to the likelihood that the construction or disturbance has affected the subsurface flow of ground water. Licensees at new plants should, for example, review their pre-licensing characterization of hydrology and geology for changes that result from construction of buildings and structures or compaction of soil.

APPENDIX A

COMMUNICATION PROTOCOL FOR LEAK/SPILL AND GROUNDWATER SAMPLE RESULTS



* NOTE: ALL ON-SITE GROUNDWATER SAMPLE RESULTS INCLUDED IN ARERR OR AREOR 2.4 b

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APPENDIX B

SELF ASSESSMENT CHECKLIST
OBJECTIVE 3.1

Plant or Utility Being Reviewed: Date of Review

Reviewers:

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.		
1.1.b	As appropriate, review existing hydrogeologic and geologic studies, historical environmental studies, and permit or license related reports		
1.1.c	Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water.		
1.1.d	Establish the frequency for periodic reviews of site hydrogeologic studies.*		
1.1.e	As appropriate, update the Final Safety Analysis Report with changes to the hydrology and/or geology.		
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.*		
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.*		
1.2.c	Identify potential enhancements to leak detection systems or programs.*		
1.2.d	Identify potential enhancements to prevent spills or leaks from reaching ground water.*		
1.2.e	Identify the mechanism or site process for tracking 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.		
1.2.g	Establish the frequency for periodic reviews of SSCs and work practices.		
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 downgradient from the plant but within the boundary defined by the site license.		
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.		
1.3.c	Establish sampling and analysis protocols, including analytical sensitivity requirements, for ground water and soil.*		
1.3.d	Establish a formal, written program for longterm ground water monitoring.*		
1.3.e	Periodically review existing station or contract lab(s) analytical capabilities.*		
1.3.f	Establish a longterm program for preventative maintenance of ground water wells.		
1.3.g	Establish the frequency for periodic review of the ground water monitoring program.		

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Plant or Utility Being Reviewed: Date of Review

Reviewers:

Guideline Section	Objective/Acceptance Criteria	Section Met Yes-No	Comments As Required
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		
1.4.b	Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.		
1.4.c	Evaluate and document, as appropriate, decommissioning impacts resulting from remediation activities or the absence thereof.		
1.5 Ensure that records of leaks, spills, remediation efforts are retained and retrievable to meet the requirements of 10 CFR 50.75(g).			
1.5.a	Establish a record keeping program to meet the requirements of 10 CFR 50.75(g)		
2.1 Each licensee should conduct initial and periodic briefings of their site specific GPI program with the designated State/Local officials			
2.1.a	The licensee should discuss i) The background or industry events that led to the GPI ii) If there is additional information that the State/Local officials need to better understand the issue or place it in perspective for their constituents iii) "How" the State/Local officials will use or distribute the information		
2.1.b	Licensees should consider including additional information or updates on ground water protection in periodic discussions with State/Local officials		
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.		
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. *		
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		
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. *		
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		
2.2.e	Contact NEI by email to GW_Notice@nei.org as part of a voluntary communication event		
2.3 Submit a written 30-day report to the NRC for any water sample result for on-site ground water that is or may be used as a source of drinking water that exceeds any of the criteria in the licensee's existing REMP/ODCM for 30-day reporting of off-site water sample results. Copies of the written 30-day reports for both on-site and off-site water samples shall also be provided to the appropriate State/Local officials.			

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Plant or Utility Being Reviewed: Date of Review

Reviewers:

Guideline Section	Objective/Acceptance Criteria	Section Met Yes-No	Comments As Required
2.3.a	All ground water samples taken for the Industry Initiative shall be analyzed and compared to the standards and limits contained in the station's REMP as described in the ODCM/ODAM*		
2.3.b	The 30-day special report should include the items listed*		
2.3.c	All written 30-day NRC reports generated under item 2.3.a are to be concurrently forwarded to the designated State/Local officials		
2.4 Document all on-site ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year in the Annual Radiological Environmental Operating Report (AREOR) for REMP or the Annual Radioactive Effluent Release Report (ARERR) for the RETS as contained in the appropriate Site reporting procedure, beginning with the report for calendar year 2006.			
2.4.a	Complete appropriate changes to the ODCM/ODAM or to the appropriate procedures to support the 2007 report. For new plants, appropriate procedures that require inclusion of significant on-site leaks/spills into ground water and all on-site ground water results shall be developed and implemented prior to initial receipt of nuclear fuel*		
2.4.b	Report on-site ground water sample results as follows i) Ground water sample results that are taken in support of the GPI but not part of REMP in the ARERR ii) For longterm sample points that are included in the REMP as described in the ODCM/ODAM, the results are reported in the AREOR; those longterm sample points that are not included in REMP, the results are reported in the ARERR *		
2.4.c	In addition to 2.1.b, voluntary communications shall be included as follows: the following are to be included in either the ARERR and/or the AREOR i) A description of all spills or leaks that were communicated per Objective 2.2 acceptance criterion a shall be included in the ARERR ii) All on-site or off-site ground water sample results that exceeded the REMP reporting thresholds as described in the ODCM/ODAM that were communicated per Objective 2.2 acceptance criterion b shall be included in either the ARERR and/or the AREOR		
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.*		
3.1.b	Perform periodic self-assessments of the GPI program at least once every five years after initial self-assessment.		
3.1.c	The self-assessment, at a minimum, shall evaluate implementation of all objectives identified in this document.		
3.1.d	The self-assessment shall be documented consistent with applicable procedures.		
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		
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.		

Additional Comments As Required:

* Detailed requirements are in the Industry Ground Water Protection Initiative Final Guidance document - August 2007