Brunswick Questionaire

Progress Energy

JUL 28 2006

SERIAL: BSEP 06-0075

U. S. Nuclear Regulatory Commission
ATTN: Mr. Stuart A. Richards, Deputy Director
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation
Washington, DC 20555-0001

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Docket Nos. 50-325 and 50-324/License Nos. DPR-71 and DPR-62
Groundwater Protection - Data Collection Questionnaire

Ladies and Gentlemen:

The nuclear industry, in conjunction with the Nuclear Energy Institute, has developed a questionnaire to facilitate the collection of groundwater data at commercial nuclear reactor sites. The objective of the questionnaire is to compile baseline information about the current status of site programs for monitoring and protecting groundwater and to share that information with the NRC. The completed questionnaire for the Brunswick Steam Electric Plant, Unit Nos. 1 and 2 is enclosed.

No regulatory commitments are contained in this letter. Please refer any questions regarding this submittal to Mr. Randy C. Ivey, Manager - Support Services, at (910) 457-2447.

Sincerely,

BCW

B. C. Waldrep
Plant General Manager
Brunswick Steam Electric Plant

MAT/mat

Enclosure:
Groundwater Protection - Data Collection Questionnaire

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cc (with enclosure):

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Brunswick Steam Electric Plant, Unit Nos. 1 and 2

Groundwater Protection - Data Collection Questionnaire

1. **Briefly describe the program and/or methods used for detection of leakage or spills from plant systems, structures, and components that have a potential for an inadvertent release of radioactivity from plant operations into groundwater.**

   - Groundwater monitoring, as described in the response to Question 2, is contained in the Brunswick Steam Electric Plant (BSEP) Plant Operating Manual.
   - A Storm Drain Collector Basin collects storm water and water from the turbine building air-wash system. This water is then pumped to the onsite Stabilization Pond. The effluent of the pond is regularly sampled and analyzed for radionuclides. There are no interfaces with municipal storm water systems.
   - Operations personnel perform routine inspections of plant systems and structures during daily rounds. The rounds include identification of leaks and spills. Leaks and spills are identified in the work management system or the Corrective Action Program. Responses to leaks and spills include notification to the Control Room and Environmental and Radiation Control for assessment and cleanup, as needed.
   - Engineers perform periodic walkdowns of the systems for which they are responsible. The walkdowns include identification of leaks and spills. Leaks and spills are identified in the work management system or the Corrective Action Program. Responses to leaks and spills include notification of the Control Room and Environmental and Radiation Control, as needed.
   - A radiological monitoring program is in place which identifies any onsite spills or leaks that may enter the groundwater. The program monitors eight wells for radioactivity at varying sample frequencies during the calendar year.
   - Each unit's liquid radwaste effluent line is pressure tested during the unit's refueling outage and repaired as necessary.
   - Each unit's spent fuel storage pool is a poured reinforced concrete structure which has a stainless steel liner. They are located in the upper elevations of the units' reactor buildings; well above ground level. Anywhere there is a welded seam on the liner there are leak channels attached inside and outside the water volume to facilitate leak detection. The channels are routed to sight glasses, which are used to monitor for leakage through the channels, and then to radwaste. In the event a leak was to occur, sight glasses and manual valves will aid in determining the source of the leak. Operators check for fuel pool liner leakage each shift during routine rounds.

2. **Briefly describe the program and/or methods for monitoring onsite groundwater for the presence of radioactivity released from plant operations.**

   - BSEP has eight groundwater wells monitored for radioactivity. Seven are located inside the protected area, including some on the down-gradient groundwater flow side of the

plant. One is located down-gradient of the groundwater flow beneath the Stabilization Pond. The frequency of sample analysis varies from one to three times per year.

- BSEP does not have drinking water wells onsite. The perched groundwater at the site is not used for drinking water. BSEP utilizes county water for potable water which is provided from offsite.
- Samples from groundwater wells are analyzed for gamma emitters and tritium three times per year for those wells which contain tritium. Other wells with no known tritium are analyzed less frequently. For additional information, refer to the response to Question 4.
- The methodologies for determining the lower level of sensitivity for analysis instrumentation are described in the Offsite Dose Calculation Manual (ODCM). Typical sensitivities are provided in the following table.

Nuclide	Lower Level of Sensitivity, pCi/L
Tritium	2500
Mn-54	5
Fe-59	10
Co-58	5
Co-60	5
Zn-65	10
Zr-95	9
Nb-95	5
Cs-134	6
Cs-137	6
I-131	7
Ba-140	20
La-140	6

3. If applicable, briefly summarize any occurrences of inadvertent releases of radioactive liquids that had the potential to reach groundwater and have been documented in accordance with 10 CFR 50.75(g).

- Auxiliary Boiler release in February through March 1980. The maximum activity contained in the Auxiliary Boiler was 2.0E-02 µCi/ml. The releases were due to tube leaks in the Auxiliary Boilers which led to contamination of soils onsite and the Storm Drain System.
- Radwaste Discharge Line Leaks. A leak was repaired on the Unit 2 Radwaste Effluent Line in 1987. In May 1994, during a pressure test of the Unit 2 Radwaste Effluent Line,

a leak was discovered and repaired. As discussed in response to Question 4, there is no indication that any sources of drinking water were affected by these leaks.

- Storm Drain Stabilization Pond. The Storm Drain Stabilization Pond contains tritium from the Storm Drain Collector Basin which receives tritium from the overflow of the turbine building air-wash system. Well monitoring results confirm that there has been no leakage from the Storm Drain Stabilization Pond to groundwater.
- Low Level Warehouse Sump. In October 1996, water was drained from a storage container inside the Low Level Radwaste Processing Facility into a nearby floor drain sump. This resulted in an overflow of the drain sump onto the surrounding floor. A breach in the sump wall allowed approximately 100 gallons of slightly contaminated water (i.e., containing approximately 4.24E-07 μCi/ml of Co-60 and 7.97E-08 μCi/ml of Cs-137) to leak through a breach in the wall of the sump to the ground underneath the building.

4. **If applicable, briefly summarize the circumstances associated with any <u>onsite</u> or <u>offsite</u> groundwater monitoring result indicating a concentration in groundwater of radioactivity released from plant operations that exceeds the maximum contaminant level (MCL) established by the USEPA for drinking water.**

- Monitoring and analysis results indicate that one groundwater well, ESS-2C, located in the backfill of the protected area has a current concentration of 1.39E06 pCi/L of tritium. This was a result of the radwaste discharge line leak in May 1994. The current monitoring and trending of the radiological test wells indicates the tritium plume remains in the backfill area onsite and is expected to remain onsite. The site hydrology shows that movement of water in the area outside the plant backfill flows toward the backfill and from there to the intake canal. There is no indication that the plume can affect any sources of drinking water.

5. **Briefly describe any remediation efforts undertaken or planned to reduce or eliminate levels of radioactivity resulting from plant operations in soil or groundwater onsite or offsite.**

- The groundwater monitoring program is designed to confirm that the groundwater contamination identified due to the radwaste discharge line leak in May 1994, remains confined onsite.
- Plant procedures require sampling and analysis of excavation dirt and debris from inside the plant's protected area. Such materials are then evaluated for proper disposition or disposal.
- No remediation efforts for radiation in groundwater have been warranted to date.

WORKSHEET TO REVIEW SITE-SPECIFIC NEI GROUND WATER QUESTIONNAIRE RESPONSES

Operating Utility: Progress Energy
Nuclear Power Plant: Brunswick
Reviewer: J. Díaz-Vélez

		Circle One
1.	Is there any kind of onsite ground water monitoring being performed? If not, skip questions 2 and 5. 8 ground water wells.	**Yes** **No**
2.	Do the number of onsite ground water sampling locations reported in the questionnaire match the information you have collected previously and any corporate knowledge you are aware of? If not, briefly describe any differences:	**Yes** **No**
3.	Review whether onsite and/or offsite contamination was reported. Does this agree with your information? If not, briefly describe why:	**Yes** **No**
4.	Do the **number** and **sources** of leaks/spills reported in the questionnaire match your information? Yes, but I do not have an extensive corporate knowledge of Brunswick Operations If not, briefly describe any differences or reasons why not:	**Yes** **No**
5.	Were ground water activity levels greater than EPA limits reported? Does this agree with your information? If not, describe why: $H_3 \rightarrow 1.39E06$ pCi/L > 20,000 pCi/L, But is not in a drinking water aquifer.	**Yes** **No** (*)
6.	Does the site remediate spills or leaks?	**Yes** **No**

(*) Not reported as drinking water contamination.