NUCLEAR ENVIRONMENTAL ENGINEERING SECTION
2008-2009 FACT SHEET
INVESTIGATION OF TRITIUM LEAK AT OYSTER CREEK

During a planned cable replacement within an onsite cable vault, plant workers at the Oyster Creek Nuclear Generating Station (Oyster Creek) discovered water within the vault. Plant policy is to sample any water collecting onsite in vaults, excavation trenches, and buildings for radioactivity. As a result, sampling of the water that had collected within the vault indicated 102,000 picoCuries per Liter (pCi/L) tritium. Subsequent to this discovery, 4.5 million pCi/L tritium was detected in an existing, onsite groundwater monitoring well (Well MW-15K-1A). Five additional new groundwater wells (Wells W-50, W-51, W-52, W-53, and W-54) were installed in the vicinity of the underground cable vault.

As part of Exelon's investigation, they discovered two active pipe leaks. The underground portions of these pipes were replaced during April and May 2009. Other nearby pipes were pressure tested or excavated and visually inspected and no leakage was found. One pipe, one-inch in diameter will be excavated and inspected in June 2009. This is the only remaining component to be inspected. In May 2009, divers completed underwater inspection of the inside of a large tank containing water with tritium. This inspection concluded that this tank was not leaking.

Exelon continues to sample the onsite groundwater monitoring wells in the vicinity of the underground cable vault to determine whether the tritium is migrating towards the property boundary and to ensure that the tritium levels decrease as would be anticipated if the leaks were terminated. The BNE has been receiving split samples from these wells (raw well water) for independent analysis of tritium and gamma emitting radionuclides by our radiological contract laboratory. No gamma emitting radionuclides have been found. DEP's split sample results for tritium indicated maximum values of:

- 2.47 million pCi/L in Well MW-15K-1A
- 2.82 million pCi/L in Well W-50
- 1.82 million pCi/L in Well W-51
- 1,256 pCi/L in Well W-53
- 3,565 pCi/L in Well W-54
- All other onsite well readings were below detection limits.

Daily surface water samples also are being taken from the plant's intake canal and the discharge canal, including the Route 9 Bridge which represents the nearest public access point. No tritium or gamma emitting radionuclides have been found in any surface water samples, therefore posing no threat to public health and safety.

An additional well has been installed in the vicinity of existing well, W-50. This new well, W-55 is a pumping test well designed to assist in the determination of the local groundwater flow in the area and can be utilized in the event of potential remediation of groundwater by Exelon. Due to its close proximity to Well W-50 this new well is not routinely sampled.

The DEP also received split samples of core borings from Wells W-50, W-51, W-52, W-53, W-54 and W-55. Results indicated no gamma emitting radionuclides.

The analysis results of the BNE's split samples and a map showing sample locations/well depths can be found at the DEP website address at: http://www.state.nj.us/dep/rpp/bne/index.htm. The data tables shown only include the laboratory results for the BNE split samples and do not include data for any samples analyzed by Exelon's laboratory.

BNE staff continues to be onsite participating in ongoing inspections with Exelon and the Nuclear Regulatory Commission (NRC). Additional information on tritium in groundwater at nuclear power plants can be found at the NRC website address at: http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.html.