**Issue/Title:** Pilgrim Nuclear Power Station (PNPS): Tritium in Groundwater Monitoring Wells

**Topic:** PNPS Updates as of April 8, 2011

**Previous Plans:** Results from groundwater monitoring well samples during the weeks of March 15th and March 22nd, 2011 were reported by Entergy (see tables below). Split samples for the weeks of March 15th and March 22nd, 2011 have also been reported by MERL.

**Current Status:**

Table 1[1]: March 15th

| Location | Date | MERL[2] pCi/L | GEL[3] pCi/L |
|---|---|---|---|
| MW 201 | 3/15/2011 | NDA<300 | 477 |
| MW 202 | 3/15/2011 | - | - |
| MW 202 I | 3/15/2011 | - | - |
| MW 203 | 3/15/2011 | - | - |
| MW 204 | 3/15/2011 | - | - |
| **MW 205** | **3/15/2011** | **5852** | **5470** |
| **MW 206** | **3/15/2011** | **2518** | **2320** |
| MW 207 | 3/15/2011 | - | - |
| MW 208-S | 3/15/2011 | - | - |
| MW 208-I | 3/15/2011 | - | - |
| MW 209 **new** | 3/15/2011 | 1105 | 1320 |
| MW 210 **new** | 3/15/2011 | - | - |
| MW 211 **new** | 3/15/2011 | 1101 | 940 |
| MW 212 **new** | 3/15/2011 | - | - |
| MW 213 **new** | 3/15/2011 | - | - |
| MW 214 **new** | 3/15/2011 | - | - |
| MW 3 | 3/15/2011 | - | - |
| MW 4 | 3/15/2011 | - | - |
| SW-boat ramp | 3/15/2011 | - | - |
| SW-intake | 3/15/2011 | - | - |

Table 2: March 22nd

| Location | Date | MERL pCi/L | GEL pCi/L |
|---|---|---|---|
| MW 201 | 3/22/2011 | 547 | 712 |
| MW 202 | 3/22/2011 | - | - |
| MW 202 I | 3/22/2011 | - | - |
| MW 203 | 3/22/2011 | - | - |
| MW 204 | 3/22/2011 | - | - |
| **MW 205** | **3/22/2011** | **1774** | **1460** |
| **MW 206** | **3/22/2011** | **3865** | **3600** |
| MW 207 | 3/22/2011 | - | - |
| MW 208-S | 3/22/2011 | - | - |
| MW 208-I | 3/22/2011 | - | - |
| MW 209 **new** | 3/22/2011 | 1076 | 1030 |
| MW 210 **new** | 3/22/2011 | - | - |
| MW 211 **new** | 3/22/2011 | 1213 | 1020 |
| MW 212 **new** | 3/22/2011 | - | - |
| MW 213 **new** | 3/22/2011 | - | - |
| MW 214 **new** | 3/22/2011 | - | - |
| MW 3 | 3/22/2011 | - | - |
| MW 4 | 3/22/2011 | - | - |
| SW-boat ramp | 3/22/2011 | - | - |
| SW-intake | 3/22/2011 | - | - |

*** NDA = not detected at less than activity value listed**
**** results pending**
**- not analyzed this week**

[1] PNPS screening level for tritium in groundwater monitoring wells is 3,000 pCi/L, which is 1/10th of the NRC-approved Pilgrim Offsite Dose Calculation Manual standard for tritium in non-drinking water sources. The EPA drinking water standard is 20,000 pCi/L. The nearest drinking water wells are approximately 2.5 miles from the plant.
[2] Results from the Massachusetts Environmental Radiation Laboratory (MERL)
[3] GEL Laboratories are a radioanalytical laboratory contracted by PNPS

The latest groundwater monitoring results reported by Entergy show that MW205 increased from 1,080 pCi/L of tritium detected on March 8th to 5,470 pCi/L of tritium detected on March 15th and decreased to 1,460 pCi/L of tritium detected on March 22nd. Results for MW206 have fluctuated slightly with 2,700 pCi/L of tritium detected on March 8th, 2,320 pCi/L detected on March 15th, and 3,600 pCi/L of tritium detected on March 22nd. Results for MW201 have continued to be steadily lower than previous results near 1,000 pCi/L of tritium detected, with 592 pCi/L of tritium detected on March 8th, 477 pCi/L of tritium detected on March 15th, and 712 pCi/L of tritium detected on March 22nd. Results for MW209 and MW211 continue to remain near 1,000 pCi/L of tritium detected. For March 8th, results for MW209 indicated 1,240 pCi/L of tritium detected, for March 15th, results indicated 758 pCi/L of tritium detected, and for March 22nd, 1,030 pCi/L of tritium was detected. For March 8th, results for MW211 indicated 1,170 pCi/L of tritium detected, for March 15th, results indicated 940 pCi/L of tritium detected, and for March 22nd, 1,020 pCi/L of tritium was detected. For the weeks of March 15th and March 22nd split sample results from MERL, listed in the table above, were once again fairly consistent with Entergy results.

As previously reported, the dye testing is proceeding as planned at PNPS. Dyes were introduced in three possible source locations in mid-January and a fourth dye was introduced into the French drain system near the condensate storage tanks (CST) in mid-February. Entergy has reported that no dyes have been detected in the first 10 weeks of results they have received from the dye testing company. The charcoal samplers continue to be collected weekly to determine whether the dyes are present in the groundwater, although this is not expected to occur in most wells for several months or more due to the slow rate of groundwater flow.

Entergy reported that no tritium was detected in a grab sample of rain water collected from the Reactor Building roof top in March. Entergy plans to collect future rainwater samples from this rooftop location later this spring when the weather conditions (e.g. sufficient rainfall, wind direction) are right.

**Looking Forward:**

Entergy and their consultants plan to develop additional soil sampling plans in light of the March soil sampling results showing no detectable tritium in soils in the vicinity of MW205 and MW206. The second phase of soil sampling will likely focus on areas located further up-gradient of MW205 and MW206. At MDPH's request, Entergy is also evaluating the impacts of ambient temperature on tritium levels in groundwater monitoring wells.