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

Topic: PNPS Updates as of October 22, 2010

Previous Plans: Results from groundwater monitoring well samples and surface water samples taken during the weeks of October 4 and October 12, 2010, were reported by Entergy (see tables below). However, not all of the samples taken on October 12 have been analyzed yet. Splits of these two sampling dates are currently being analyzed by MERL.

Current Status:

Table 1[1]: October 4th

Location	Date	MERL[2] pCi/L	GEL[3] pCi/L
MW 201	10/4/2010	**	1140
MW 202	10/4/2010	-	-
MW 202 I	10/4/2010	-	-
MW 203	10/4/2010	-	-
MW 204	10/4/2010	-	-
MW 205	10/4/2010	****	**17300**
MW 206	10/4/2010	****	**8210**
MW 207	10/4/2010	-	-
MW 208-S	10/4/2010	-	-
MW 208-I	10/4/2010	-	-
MW 209 **new**	10/4/2010	-	-
MW 210 **new**	10/4/2010	-	-
MW 211 **new**	10/4/2010	-	-
MW 212 **new**	10/4/2010	-	-
MW 213 **new**	10/4/2010	-	-
MW 214 **new**	10/4/2010	-	-
MW 3	10/4/2010	-	-
MW 4	10/4/2010	-	-
SW-boat ramp	10/4/2010	**	NDA<305
SW-intake	10/4/2010	**	NDA<303

Table 2: October 12th

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	10/12/2010	**	1040
MW 202	10/12/2010	**	NDA<373
MW 202 I	10/12/2010	**	NDA<388
MW 203	10/12/2010	**	**
MW 204	10/12/2010	**	**
MW 205	10/12/2010	**	**1760**
MW 206	10/12/2010	**	**10100**
MW 207	10/12/2010	**	**
MW 208-S	10/12/2010	**	**
MW 208-I	10/12/2010	**	**
MW 209 **new**	10/12/2010	**	1440
MW 210 **new**	10/12/2010	**	610
MW 211 **new**	10/12/2010	**	1180
MW 212 **new**	10/12/2010	**	455
MW 213 **new**	10/12/2010	**	**
MW 214 **new**	10/12/2010	**	**
MW 3	10/12/2010	**	**
MW 4	10/12/2010	**	**
SW-boat ramp	10/12/2010	**	**
SW-intake	10/12/2010	**	**

*** 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

As previously reported, sample collections were modified to include weekly sampling of groundwater monitoring wells of most concern (MW-205, MW-206, and MW-201) and surface water samples. A complete round of sampling is now conducted bi-weekly. This revised sampling plan was implemented beginning the week of October 4. Perhaps of greatest interest are the results from MW-205. That well went from 17,300 pCi/L on October 4 to 1,760 on October 12. MW-206 rose slightly from 8,210 pCi/L on October 4 to 10,100 pCi/L on October 12. Thus, results from MW-205 and MW-206 continue to fluctuate.

On Friday, October 15, representatives from MDPH/BEH, MEMA, and MassDEP conducted a site visit and met with Entergy and NRC representatives at PNPS. The meeting included presentations by Entergy staff and their hydrogeology consultants, ERM, and concluded with a tour of the site.

Presentations at the meeting included but were not limited to descriptions of the rad waste drainage line and rainwater runoff. Entergy also described investigative steps already taken, such as pressure tests on the main stack drainage line. The hydrogeology presentation included discussion of the latest data collected by ERM of local groundwater flow rate and direction. As previously reported, groundwater flow rate is about 6 inches a day.

Entergy staff also described in some detail the dye testing that is planned to begin in November designed to evaluate several possible sources. These include roof runoff, the rad waste discharge line, and the area around the condensate storage tank. Entergy staff noted that, in part because of the relatively slow groundwater flow rate, it may be several months before results of the dye testing can be determined.

At this time, ERM reports that based on the hydrogeological data, they do not believe that MW-205 and MW-206 are hydraulically connected with each other, and hence, there may be two separate sources contributing to tritium detections in these wells. The dye testing may help evaluate whether such communication is occurring.

As previously reported, the possibility that old contamination located around MW 205 due to a previous excavation remains. Entergy is currently working with ERM on possible soil sampling in the area to further support or refute the likelihood that this may be a source of tritium for MW-205.

ERM, the hydrogeology consultants, have been taking weekly readings on the wells equipped with transducers. They concluded that except for those farthest from the shoreline, the wells show tidal influence in their water levels. However, the tidal-caused fluctuations in water levels in the wells do not correlate with tritium concentrations in the groundwater and hence do not explain the fluctuations in tritium concentrations in MW-205 and MW-206. Similarly, ERM has evaluated whether concentrations fluctuate with rainfall amounts. Again, there appears to be no correlation between rainfall and tritium concentrations in the wells based on analysis of sampling to date.

Looking Forward:

MDPH/BEH will coordinate a follow-up meeting with Entergy, MEMA, NRC, and MassDEP to discuss the information presented during the October 15, 2010 site visit.