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

Topic: PNPS Updates as of January 27, 2012

Previous Plans: Results from groundwater monitoring well samples collected during the weeks of January 4th and January 10th, 2012 were reported by Entergy. Split sample results for the week of January 4th, 2012 have also been reported by MERL and split samples for the week of January 10th, 2012 are currently being analyzed by MERL.

Current Status:

Table 1[1]: January 4th

Location	Date	MERL[2] pCi/L	GEL[3] pCi/L
MW 201	01/04/2012	426	348
MW 202	01/04/2012	-	-
MW 202 I	01/04/2012	-	-
MW 203	01/04/2012	-	-
MW 204	01/04/2012	-	-
MW 205	**01/04/2012**	**8,604**	**7,570**
MW 206	**01/04/2012**	**2,827**	**2,420**
MW 207	01/04/2012	-	-
MW 208-S	01/04/2012	-	-
MW 208-I	01/04/2012	-	-
MW 209	01/04/2012	1,122	967
MW 210	01/04/2012	-	-
MW 211	01/04/2012	1,248	1,290
MW 212	01/04/2012	-	-
MW 213	01/04/2012	-	-
MW 214	01/04/2012	-	-
MW 215 **new**	01/04/2012	1,466	1,480
MW 217 **new**	01/04/2012	449	442
MW 3	01/04/2012	-	-
MW 4	01/04/2012	-	-
SW-boat ramp	01/04/2012	-	-
SW-intake	01/04/2012	-	-

Table 2: January 10th

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	01/10/2012	**	407
MW 202	01/10/2012	-	-
MW 202 I	01/10/2012	-	-
MW 203	01/10/2012	-	-
MW 204	01/10/2012	-	-
MW 205	01/10/2012	****	**4,990**
MW 206	01/10/2012	****	**2,890**
MW 207	01/10/2012	-	-
MW 208-S	01/10/2012	-	-
MW 208-I	01/10/2012	-	-
MW 209	01/10/2012	**	967
MW 210	01/10/2012	-	-
MW 211	01/10/2012	**	1,170
MW 212	01/10/2012	-	-
MW 213	01/10/2012	-	-
MW 214	01/10/2012	-	-
MW 215 **new**	01/10/2012	**	1,320
MW 217 **new**	01/10/2012	**	NDA*
MW 3	01/10/2012	-	-
MW 4	01/10/2012	-	-
SW-boat ramp	01/10/2012	-	-
SW-intake	01/10/2012	-	-

*** NDA = not detected at less than activity value listed**
**** results pending**
***** well inaccessible due to scheduled equipment use**
- 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 MW205 increased to a level of 7,570 pCi/L of tritium detected on January 4th and decreased to 4,990 pCi/L of tritium detected on January10th (the previous result on December 29th was 2,380 pCi/L). Results for MW206 decreased to 2,420 pCi/L of tritium detected on January 4th and increased to 2,890 pCi/L of tritium detected on January 10th (3,610 pCi/L of tritium was detected in the previous sample on December 29th). Results for MW201 indicated 348 pCi/L of tritium detected on January 4th, and 407 pCi/L of tritium detected on January 10th. Results for MW209 indicated 967 pCi/L of tritium detected on January 4th, and 967 pCi/L of tritium detected on January 10th. For MW211, 1,289 pCi/L of tritium was detected on January 4th, and 1,170 pCi/L of tritium was detected on January 10th. New wells MW215 and MW217 installed in mid-December 2011 have been sampled for four consecutive weeks starting December 22nd. MW215 indicated 1,280 pCi/L of tritium detected on December 22nd, 1,330 pCi/L of tritium detected on December 29th, 1,480 pCi/L of tritium detected on January 4th, and 1,320 pCi/L of tritium detected on January 10th. MW217 indicated 542 pCi/L of tritium detected on December 22nd, 530 pCi/L of tritium detected on December 29th, 442 pCi/L of tritium detected on January 4th, and no detectable tritium on January 10th. Split sample results from MERL for the week of January 4th were generally consistent with results reported by Entergy (see table above) and split sample results from MERL for the week of January 10th are currently being analyzed by MERL.

With the addition of the MW215 and MW217, it was agreed that the 5 priority wells and these two new wells could move to a bi-weekly sampling schedule after four consecutive weeks of sampling, provided there are no unusual patterns of tritium in groundwater detected in the new wells. The first 4 weeks of results for the 2 new wells do not appear to be unusual relative to other groundwater monitoring wells (e.g., the new wells are not showing highly elevated levels that might indicate an obvious source area). Thus, the bi-weekly sampling schedule will begin. It should be noted, that when the third new well, MW216, is able to be installed, it will also be sampled weekly for 4

consecutive weeks prior to moving to the bi-weekly priority well schedule, again, unless no unusual patterns emerge.

Entergy has provided a well installation report on MW215 and MW217 to MDPH and MEMA, which includes installation details and a map. MDPH is currently reviewing this document. An updated map showing the new well locations will be added to MDPH's tritium investigation website.

MDPH and MEMA have been receiving weekly updates on the progress of installing the third new well, MW216. Well installers encountered technical difficulties in digging this new well up gradient from MW206 (e.g., extensive underground concrete). ERM has proposed several new locations that may be feasible for placing this third new well up gradient of MW206 and close to the deep foundation of the reactor building. These locations were under storage containers that were relocated this week. During the week of January 30th Entergy will meet with ERM to move forward with ground penetrating radar. If the sub-surface is clear of interferences well installation efforts can proceed.

Soil samples were also collected at 5 foot intervals down to the water table at each of the new groundwater well locations. Soil samples have been analyzed by Entergy's contract laboratory and results indicated no detectable tritium. MERL will be analyzing split samples once they receive them from Entergy.

Entergy has provided a matrix summarizing specific dates the underground systems such as the radwaste discharge line and neutralization sump discharge have been used over the past few years. This information is being reviewed by MDPH and may be helpful in interpreting tritium results for the newly installed wells.

The charcoal samplers placed in monitoring wells for the dye testing effort continue to be collected. No dye has been detected in any sample since the dye testing began in January 2011. Dye test sampling will be done every two weeks until dye is detected in

any sample**.** As previously reported, once dye is detected, weekly sampling will resume.

A detailed document of next steps in the tritium investigation is being prepared by Entergy and should be available for MDPH and MEMA review sometime in February. This will include details about the above mentioned new well installations and soil samples, and other planned activities that may include exploratory soil sampling and even more additional wells.

Looking Forward:

MDPH will continue to closely follow any new investigation activities that are currently moving forward (i.e. well placement and soil sampling).

MDPH and MEMA plan to review Entergy's proposed next steps in the tritium investigation and will provide feedback once a more detailed summary document of the new investigation activities is provided by Entergy.