RAI 14:
Description of Deficiency: The information provided in TR Section 2.9.3 does not meet the applicable requirements of 10 CFR Part 40, using the review procedures in Section 2.9.2 and acceptance criteria in Section 2.9.3 of NUREG 1569, and using Regulatory Guide 4.14. NRC 9-4-13 public meeting approved response."

Basis for Request: TR Section 2.9.3 (p. 2-394) states: "Water quality analyses for private water wells provided in this section is for March 25 to December 20, 2012. Groundwater samples for the CBR monitor wells were collected from March 4 to May 3, 2011 for the Brule monitor wells and March 12 to April 11, 2011 for CBR Chadron monitor wells. Quarterly groundwater sampling will continue until 1 year of data have been obtained and reported to the NRC."

Staff has not received the above-referenced quarterly groundwater sampling results for private wells consistent with RG 4.14.

Request for Additional Information Please provide one year of quarterly sampling results for private wells consistent with RG 4.14. For private wells located at or within 2 km of the MEA that have not been included in this sampling program, please sample these wells quarterly for one year or provide justification for not sampling these wells.

RAI 14 & Additional Notes Bullet #5 (NRC Status Table - 11/13/14) Response (03/12/15)

Quarterly radiological analyses for the private wells were submitted in Table 2.9-5 on 02/05/15 in response to RAI 12.H.

Quarterly non-radiological analyses are included in the revisions to Tables 2.2-11 and 2.9-6 and revisions to Figures 2.7-6 and 2.9-3.

Also included are revisions to the text in Sections 2.2-4 and 2.9-3.

Revisions to the Water User Survey are included under Appendix A.

The PPMP and operational monitoring plan are designed to meet the criteria outlined in RG 4.14 (NRC 1980). Radon-222 monitoring for sampling site MAR-1 through MAR-5 was conducted from the fourth quarter of 2011 through the fourth quarter of 2012 (**Table 2.9-3**). The gross count for the entire time period for all sampling points ranged from 43 to 362, with an average of 168. The gross count for sampling points MAR-1 through MAR-4 ranged from 43 to 362 (average of 163), compared to MAR-5 (background location) with a range of 70 to 255 (average of 191). The average radon concentration for the entire sampling period ranged from 0.07 to 1.6 uCi/ml (average of 0.5 uCi/ml). The average radon concentrations for sampling points MAR-1 through MAR-4 ranged from 0.07 to 1.6 uCi/ml (average of 0.5), compared to MAR-5 (background location) with a range of 0.1 to 1.0 uCi/ml (average of 0.6 uCi/ml).

The radon laboratory records are shown in **Appendix V-2**.

2.9.2.4 Quality of Air Measurements

The accuracy of monitoring data is critical to ensure that the PPMP air monitoring program precisely reflects air quality. RG 4.14 specifies the following LLDs for air measurements:

Radionuclide	Recommended LLD µCi/ml	Actual LLD µCi/ml
Natural Uranium	1×10^{-16}	1×10^{-16}
Thorium-230	1×10^{-16}	1×10^{-16}
Radium-226	1×10^{-16}	1×10^{-16}
Radon-222	2×10^{-10}	2×10^{-10}
Lead-210	2×10^{-15}	2×10^{-15}

Note: µCi/ml – microCurie per milliliter

2.9.3 Baseline Groundwater Monitoring

This section discusses the results of the radiological and non-radiological analyses for private water supply wells with the MEA and CBR monitor wells installed within the MEA for purposes of assessing the MEA site. In general, groundwater quality in the vicinity near the MEA is poor (Engberg and Spalding 1978). Groundwater obtained from the basal sandstone of the Chadron Formation has a strong sulfur odor as a result of localized reducing conditions associated with the ore body. Background and restoration values are discussed in Section 6.

Locations of all Arikaree, Brule, and basal sandstone of the Chadron Formation monitoring wells in the vicinity of the MEA are shown on **Figures 2.7-6** and **2.9-3**.

Radiological Water Quality Sampling

Radiological ~~W~~water quality analyses for private water wells in the area of review are provided in ~~this section are from~~**Table 2.9-5.** ~~March 24, 2011 to March 21, 2013.~~ Groundwater samples for the CBR monitor wells were collected from December 2013 to September 2014 ~~March 4 to May 3, 2011~~ for the Brule monitor wells, ~~and~~ November 2013 to September 2014 ~~March 12, 2011 to August 20, 2012~~ for the Arikaree monitor wells and November 2011 to August 2012 for the ~~CBR~~ basal sandstone of the Chadron Formation monitor wells.

During ~~In the March 2013~~ sampling ~~event~~ for the private water supply wells, there were a total of 4~~3~~5 ~~water supply~~ wells sampled for four quarters. Twelve wells were sampled less than four quarters, seven were seasonal wells and did not operate year-round and five became inoperable during the sampling event. An additional 17~~2~~4 water supply wells were not sampled due to inoperability; ~~could not be sampled for a variety of reasons,~~ including broken wells, ~~being inoperable,~~ powered off, ~~turned off for the season, windmill was~~ not working, and ~~well was~~ not in use. These wells are privately owned and in the control of the owners.

A summary of all groundwater quality data (radiological and non-radiological analytes) collected to date in the vicinity of the MEA, are presented in **Table~~s~~ 2.9-4.** The data are presented for the three water-bearing zones at the MEA: the Arikaree Group, Brule Formation, and basal sandstone of the Chadron Formation. ~~Based on sampling to date, water quality results for all private water supply wells completed in the Arikaree and Brule Formations and MEA monitoring wells for the Brule Formation indicate that TDS ranged from 200 to 537 milligrams per liter (mg/L), while TDS for the basal sandstone of the Chadron Formation is generally greater than 1,000 mg/L (**Table 2.9-4**). Similarly, conductivity for the private wells and the Brule Formation monitor wells ranged from 241 to 763 micromhos per centimeter (µmhos/cm), while conductivity for the basal sandstone of the Chadron Formation is generally greater than 1,000 µmhos/cm. Major cations and anions for the private wells and monitor wells in the Brule Formation ranged from 2.75 to 6.87 milliequivalents per liter (meq/L), whereas cations and anions ranged from 13.85 to 25 meq/L for monitor wells completed in the basal sandstone of the Chadron Formation. This would be expected when compared to the concentrations of TDS.~~

2.9.3.1 Private Water Supply Wells

~~Pre-operational baseline groundwater sampling and analyses of private wells are being carried out in two phases:~~

~~Phase 1~~

~~A select number of private water supply wells located within the MEA license boundary, and less than 0.5 miles (0.8 km) from the license boundary, were sampled in 2011 and analyzed for radiological and non-radiological parameters. The locations of these wells were based on placement around the license boundary and future MUs, with emphasis on downgradient locations. Within the license boundary, wells 705, 747 and 788 were monitored for three sampling events 2 weeks apart in 2011. Well 727 (within the license boundary) and wells 703, 723, 725, 741, 745, and 759 (less than 0.5 mile [0.8 km]) outside of the license boundary) were sampled and analyzed for four quarters in 2011. The locations of these wells are shown in **Figures 2.7-6** and **2.9-3**.~~

~~Phase 2~~

~~Phase 2~~

~~Consistent with requirements of RG 4.14, a more comprehensive monitoring program for additional private wells located within 1.24 miles (2 km) of the MEA license boundary was implemented in the second quarter 2012. An additional 47 private wells were added to the sampling program, resulting in a total of 57 wells being sampled:~~

~~Private Wells Sampled in 2011~~	~~Private Wells Sampled in 2012~~
~~703, 705, 723, 725, 727, 741, 745, 747, 759, 788,~~	~~700, 702, 703, 704, 705, 706, 707, 714, 715, 716, 719, 720, 721, 722, 723, 725, 727, 728, 730, 731, 732, 733, 734, 735, 736, 737, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 750, 752, 753, 754, 755, 759, 760, 777, 788, 794, 795, 799, 802, 809, 810, 811, 815, 821, 836, 841, 845~~
~~Private Wells Sampled in 2013~~	
~~700, 702, 703, 704, 705, 706, 707, 714, 719, 720, 721, 722, 725, 727, 728, 734, 737, 739, 742, 743, 744, 745, 746, 747, 748, 750, 752, 753, 754 755, 760, 777, 788, 794, 795, 799, 802, 809, 810, 811, 815, 821, 836, 841, 845~~	

~~Whenever operational, each of the active private wells located within 1.24 miles (2 km) of the license boundary, where landowner access could be obtained, will be monitored quarterly (**Figures 2.7-6 and 2.9-3**).~~

There were a total of 134 ~~active and inactive~~ private water supply wells within the license boundary and associated AOR identified during the water user survey. The number of wells and their general location within the MEA project AOR can be broken down as follows:

- Located within License Boundary: ~~13~~10 active and ~~two~~five inactive
- Located within 0.62 miles (1 km) radius of the License Boundary: ~~25~~12 active~~, and seven~~18 inactive, and three seasonal
- Located between 0.62 miles (1 km) and 1.24 miles (2 km) radius of the license boundary: ~~18~~15 active, ~~and six~~five inactive, and 4 seasonal
- Located between 1.24 miles (2 km) radius and to the 2.25-mile (3.62 km)AOR radius of the License Boundary: 54 active~~;~~ and eight inactive~~. and one unknown~~

The remainder of this section discusses the results of the radiological and non-radiological analyses for private water supply wells within the MEA. Other information on the selected wells, including formation, depth, and usage, is shown in **Appendix A**. Available well registration and well completion records are shown in **Appendix E**.

The radiological and non-radiological analytical results for the individual private wells are shown in **Tables 2.9-5** and **2.9-6,** respectively, and summarized in **Table 2.9-4**. Quarterly preoperational radiological and non-radiological water quality samples will be collected on all

active private wells within the permit area and 2 km license boundary. Sampling will begin in the 4th quarter of 2014 and will continue through the 3rd quarter of 2015.

The radiological analytical results for the Arikaree and Brule Formations were at levels that would be expected for background concentrations of the area (**Table 2.9-4 and 2.9-5**).

Suspended uranium concentrations for the private wells completed in the Arikaree and Brule Formations were at a range of <0.0003 mg/L to 0.001 mg/L (average of 0.00021 mg/L), and dissolved uranium levels were 0.0028 to 0.0373 mg/L (average of 0.00745 mg/L ~~picoCuries per liter [pCi/L~~]). Suspended uranium activity for the private wells ranged from <2.0E-10 to 0.4 µCi/mL (average of 0.000151 µCi/mL)~~.~~, and dissolved uranium ranged from 3.8E-10 to 18.1 µCi/mL (average of 1.33~~495~~ µCi/mL).

Suspended radium-226 values for the private wells ranged ~~from~~ from <6E-11 to 2E-10 µCi/mL ~~<0.06 U to 0.2 pCi/L~~ (average of 7E-11 µCi/mL~~0.07 pCi/L~~) and dissolved radium-226 ranged ~~from~~ from <1E-10 to 9.5E-9 µCi/mL (average of 2.5E-10 µCi/mL~~<0.1 U to 9.5 pCi/L (average of 0.21 pCi/L~~). The majority of the values for suspended and dissolved lead-210, polonium-210, and thorium-230 were below the reporting limit.

The concentrations of dissolved uranium in the private wells completed in the Arikaree and Brule Formations within the NTEA, TCEA, and MEA compared as follows based on available data:

NTEA	<0.0003 to 0.05 mg/L
TCEA	0.004 to 0.04 mg/L
MEA	0.0028 to 0.0373 mg/L

Dissolved uranium values for the TCEA tended to be somewhat higher than those for the NTEA and MEA.

Concentrations of dissolved radium-226 from private wells in the NTEA, TCEA, and MEA compared as follows:

NTEA	<0.2 to 1.3 x 10^{-9} µCi/mL ~~pCi/L~~
TCEA	1E-10 to 1.5E-9 µCi/mL ~~0.006 to 1.5 pCi/L~~
MEA	<1E-10 to 9.5E-9 µCi/mL ~~<0.1 to 9.5 pCi/L~~

The non-radiological analytical results were at levels consistent with what would be expected for background concentrations for the area (**Tables 2.9-4** and **2.9-6**). Concentrations of the parameters for the private wells versus CBR monitor wells completed in the Brule Formation are comparable, with some parameters for the private wells having somewhat lower average values than for the CBR monitor wells (e.g., dissolved sodium, sulfate, chloride, and conductivity; **Table 2.9-4**). The average values for sodium and sulfate for the private wells versus CBR Brule Formation monitor wells was 9.8 ~~20~~ versus ~~77~~104 mg/L and 10.2 versus ~~33~~ 26.2 mg/L, respectively. The average values for sodium and sulfate for the Brule Formation monitor wells versus the CBR basal sandstone of the Chadron Formation monitor wells was ~~77~~ 104 versus 408 mg/L and ~~33~~ 26.2 versus 173 mg/L, respectively.

Overall, similar trends in the NTEA and TCEA were seen for the same MEA water-bearing units.

2.2.3 Water Use Information

2.2.3.1 Dawes County Water Use

Every 5 years since 1950, the USGS assesses U.S. water use (USGS 2005) and includes water use estimates for the State of Nebraska. The latest study examined usage in 2005. The USGS works in cooperation with local, state, and federal environmental agencies to collect and distribute water-use information. For Nebraska water use data, the USGS works in cooperation with the NDNR. The USGS's National Water-Use Information Program is responsible for compiling and disseminating the nation's water-use data (USGS 2013). Every 5 years, the USGS compiles these data at the county level to produce water-use information aggregated at the county, state, and national levels. The next report was scheduled to be issued in 2010, but due to delays, the next report completion and data availability is not expected until 2014 (USGS 2013). The State of Nebraska does not update the data in the above referenced USGS reports, so any more recent data listed in **Table 2.2-9** will not be available until the USGS issues its water use report in 2014. **Table 2.2-10** was updated to reflected information on non-abandoned registered water wells for Dawes County as of April 8, 2013.

Estimated water use in 2005 for Dawes County, Nebraska is presented in **Table 2.2-9** (USGS 2005). The total 2005 population for Dawes County was 8,636 people, with public supply groundwater and surface water use totaling 2,590,000 gallons per day (gpd). Irrigation using groundwater and surface water accounted for a total of 24,550,000 gpd to irrigate an estimated 13,000 acres. Essentially all of the rural residents of Dawes County use groundwater for their domestic supply.

A summary of the number and types of registered non-abandoned water wells located in Dawes County as of April 8, 2013 is presented in **Table 2.2-10.** Note that this table refers to registered wells. Under current Nebraska law, water supply wells used solely for domestic purposes and completed prior to September 9, 1993, do not have to be registered (NRS 2008). Therefore, there are a number of domestic/agricultural and agricultural unregistered wells located in Dawes County. CBR identifies such wells through interviews with landowners and local drillers.

There are a total of 5,828 registered water wells in Dawes County used for a variety of purposes, as described in **Table 2.2-10**. According to the NDNR, there are a total of 251 domestic and 232 livestock wells located in Dawes County (NDNR 2013a). There are 36 public water supply wells located in Dawes County. Livestock water wells make up the majority of the wells identified in the MEA.

2.2.4 Marsland Expansion Area Project Area

The town nearest to the MEA project site is Marsland, NE, which is located approximately 4.6 miles (7.4 km) southwest of the nearest MEA site (centerpoint of Town of Marsland to centerpoint of MEA satellite building). There is no public water supply system for Marsland. The residential homes scattered throughout the MEA area are supplied with domestic water from private wells. Private well use is discussed in more detail below.

In general, groundwater supplies in the vicinity of the MEA are limited due to topography and shallow geology (University of Nebraska-Lincoln 1986). Groundwater quality in the vicinity near the MEA is generally poor (Engberg and Spalding 1978). Locally, groundwater is obtained from the Arikaree and Brule Formations. The primary groundwater supply is the Brule Formation, typically encountered at depths from approximately 50 to 350 feet bgs. In general, the static water level for Brule Formation wells in the MEA ranges from 50 to 150 feet bgs, depending on local topography (**Figures 2.6-3a** through **2.6-3n** and **1.4-1**).

Groundwater from the underlying basal sandstone of the Chadron Formation is not used as a domestic supply within the MEA because of the greater depth (850 to 1200 feet bgs) and inferior water quality. Gosselin et al. (1996) state that: (1) "*the sands near the bottom of the Chadron Formation yield sodium-sulphate water with high total dissolved solids*," and (2) in proximity to "*uranium deposits in the Crawford area, groundwater from the Chadron Formation is not suitable for domestic or livestock purposes because of high radium concentrations*." In addition, it is economically impractical to install water supply wells into the deeper basal sandstone of the Chadron Formation in the vicinity of the MEA, in contrast to the vicinity of the NTEA, where most basal sandstone of the Chadron Formation wells either flow at the surface or have water levels very close to surface elevation because of artesian pressure.

Based on a research study funded by the American Water Works Association Research Foundation (AWWARF), the average household water use annually (including outdoor) is approximately 409 gpd (Mayer et al. 1999). The results of the study suggested a daily indoor per capita water use of 69.3 gallons. According to the U.S. EPA, the average family of four can use 400 gallons of water every day; on average, approximately 70 percent of that water is used indoors (USEPA 2013). Because there is only one occupied residence located within the proposed MEA (NW¼ SW¼ section 7, T29N R50W), total water use would be expected at an average of approximately 400 gpd, using the U.S. EPA water use value. Eight occupied residences have been identified within the 2.25-mile (3.62-km) AOR. Therefore, water use would be expected to average at about 3,200 gpd for the entire area.

Another source of groundwater consumption in the AOR is private water well use for livestock watering. The Nebraska Resources Conservation Service (NRCS) located in Nebraska uses 0.45 animal units (AU) per acre and estimates the water consumption to be 15 to 20 gallons per day per animal (Teahon 2013a). An AU is defined as an animal equivalent of 1,000 pounds live weight, with or without an un-weaned calf. There is an estimated 27,572.4 acres of rangeland located with the MEA AOR. Based on the NRCS values for calculating livestock water consumption in Dawes County, livestock consumption within the MEA AOR (assuming full use), would be 186,114 to 248,152 gallons per day. There are approximately 3,694.6 acres located within the MEA license boundary, and based on the NRCS livestock consumption calculation values, livestock consumption (assuming full use of available rangeland acreage) would range from 24,938 to 33,251 gallons per day.

CBR conducted an updated water user survey in 2010 and 2011 to identify and locate all private water supply wells within the 2.25-mile (3.62-km) AOR of the proposed MEA. The water user survey targeted the location, depth, casing size, depth to water, and flow rate of all wells within the area that were (or potentially could be) used as domestic, agricultural, or livestock water supply. **Table 2.2-11** and **Appendix A** list the active, inactive, seasonal and abandoned water supply wells within the MEA and AOR. The locations of all active, inactive, seasonal and

abandoned water supply wells are depicted on **Figure 2.7-6** and **2.9-3.** Available NDNR water well registrations within the AOR are presented in **Appendix E-1** and available well abandonment records in the AOR are shown in **Appendix D-2**. The NDNR's water well retrieval database (NDNR 2013b) was reviewed on September 6, 2013, (Teahon 2013b) and no additional private water supply wells were identified to be installed or modified within the license boundary or AOR since the TR was submitted to the NRC by letter dated May 16, 2012.

There were a total of 134 ~~active and inactive/unknown~~ private water supply wells within the license boundary and associated AOR identified during the water user survey. There are a total of 11997 ~~active~~ private water supply wells within the AOR and outside of the license boundary (**Table 2.2-11**). Within this grouping 87 wells are active, 25 are inactive and seven are used seasonally. Of the 87 ~~of~~ active private wells, there are 61 livestock wells, 12 domestic/livestock, ~~six~~five ~~are classified solely as~~ agricultural, four domestic, two domestic/garden, one domestic/agricultural, one domestic/livestock/agricultural and one livestock/garden well. ~~use, four wells are classified as solely domestic use 13 wells domestic/livestock, two wells domestic/garden, one well domestic/agricultural, and one well domestic/livestock/agricultural, one livestock/garden, and 63 wells classified as solely livestock use. One additional well has an unknown well use and status.~~ It should be noted that 17~~18~~ of these wells have multiple or mixed well use classifications. In terms of aquifer assignments, three~~four~~ wells are assigned to the Arikaree Group, 35 wells are assigned to the Arikaree/Brule, 24 ~~30~~ wells are assigned to the Brule Formation, and 2~~58~~ wells are unassigned.

Within the MEA, there are a total of 1~~03~~ active private water supply wells (**Table 2.2-11**). Within this grouping of active private wells~~, one is classified as domestic use~~, eight ~~ten~~ are classified as livestock use, and two wells, installed and used by CBR as driller water supply wells, have an "other" well use classification. In terms of aquifer assignments, three wells are assigned to the Arikaree Group, four wells are assigned to the Arikaree/Brule, and three~~four~~ wells are assigned to the Brule Formation. ~~, and two wells are unassigned.~~ Five~~Two~~ wells within the license boundary ~~MEA~~ are designated as inactive. The NDNR water well retrieval database uses the code "other" for well uses defined as lake supply, fountain, geothermal, wildlife, wetlands, recreation, plant and lagoon, sprinkler, test, and other uses. (NDNR 2013b). For comparison, the following are water use designations used by the NDNR:

A Aquaculture
C Commercial/Industrial]
D Domestic
E Pit - Irrigation
G Ground Heat Exchanger Well - Closed Loop Heat Pump Well
H Heat Pump Well - Open Loop Heat Pump Well
I Irrigation
J Injection
L Observation (Groundwater Levels)

For well water uses that do not fall within these categories, the "other" well use code is used.

For all of the active private wells described above that remain unassigned to a formation, information provided by the well owner and from nearby wells was insufficient to accurately determine the well completion depth. However, based on discussions with land owners and

known completion depths of private water supply wells in the area, these wells have suggested well completions within the Arikaree Group or Brule Formation (**Table 2.2-11**). Well construction and water quality information for these wells are not available in the NDNR water well data retrieval database (NDNR 2011) or known by the well owner. Based on available information, all water supply wells within the MEA and AOR are completed in the relatively shallow Arikaree Group and Brule Formations, with no domestic or agricultural use of groundwater from the basal sandstone of the Chadron Formation (**Figure 2.7-6 and 2.9-3** and **Table 2.2-11**). Sampling results of these wells by CBR indicate water quality of Arikaree Group and/or Brule Formation aquifers. Based on water quality and the depth of the Arikaree Group and Brule Formation in the MEA Project area, it can be assumed that wells less than 285 feet in depth are located in the Arikaree Group and/or Brule Formation.

~~Two wells completed in the Brule Formation within the MEA are designated as inactive.~~ Active private wells within the license boundary and 1.2-miles (2-km) radius of the license boundary have been sampled quarterly as part of the preoperational/preconstruction monitoring program (PPMP). There are currently 10~~11~~ active private wells within the license boundary and an additional 33~~41~~ active private wells with the 1.2-mile (2-km) radius of the license boundary (**Figure 2.9-3** and **Table 2.2-11**). The PPMP baseline groundwater sampling and analysis program for the private wells is discussed in Section 2.9.3~~6.1.2.1~~. Wells were selected for sampling based on landowner approval for access to the wells and condition of the wells.

Based on population projections, future water use within the MEA and AOR will be a continuation of present use (see Section 2.3). There is one irrigation ~~crop circle~~ with a center pivot that extends into the license boundary (SE ¼ section of Section 18, T29N R50W; **Figure 7.3-2**). The nearest mine units to the ~~crop circle~~center pivot are MU-B and MU-C, which are located, at the nearest points, 0.37 and 0.28 mile (0.59 and 0.45 km, respectively from the ~~crop circle~~center pivot, respectively. This ~~crop circle~~center pivot located within the license boundary may continue to be operated by the land owner, but the pivot will not be operated inside any MEA monitor well ring. There are no other lands within the license boundary that are irrigated, and no additional irrigation within the license boundary will occur during MEA operations. Irrigation within the MEA AOR is anticipated to be consistent with the past. Any further development would be expected to be limited due to limited water supplies, topography and climate. It is anticipated that the residents of Marsland and the surrounding area will continue to use water supplied exclusively by private wells.

By operation of the leases, no new wells will be installed within the license area without CBR permission. The NDNR registered well database will be reviewed annually, and where appropriate, arrangements will be made to monitor any new wells.

In Nebraska, groundwater is subject to a combination of case law and statutory provisions administered by the Upper Niobrara White Natural Resource District and the courts when necessary (Kelly 2010). Case law has adopted the "rule of reasonable use" in combination with a correlative rights doctrine for allocation among groundwater users in times of shortage. In essence, the owner of land is entitled to groundwater under his land, but the owner may not extract groundwater in excess of reasonable and beneficial use upon the land, especially if such use impacts others who use the same groundwater. If the supply is insufficient for all owners, each is entitled to a reasonable proportion. Because there are no nearby users of basal sandstone of the Chadron Formation groundwater, conflict is unlikely.