From: McDonald, Jeffrey
To: "Gilmore, Tyler J"
Cc: Greenhagen, Andrew
Subject: RE: Informal Request (IR) # 3 (IR3-01-10-14)
Date: Friday, January 17, 2014 4:08:00 PM

Thanks, Tyler.

Jeffrey R. McDonald, Geologist
Underground Injection Control Branch
U.S. EPA - Region 5
(312) 353-6288 [office]
(312) 408-2240 [direct fax]
mcdonald.jeffrey@epa.gov

From: Gilmore, Tyler J [mailto:Tyler.Gilmore@pnnl.gov]
Sent: Friday, January 17, 2014 4:06 PM
To: McDonald, Jeffrey
Cc: Greenhagen, Andrew
Subject: Re: Informal Request (IR) # 3 (IR3-01-10-14)

Jeff,

Attached are our responses to the Informational request below, (IR) # 3 (IR3-01-10-14). Please call if you have any questions.

Thanks

Tyler

From: <McDonald>, Jeff McDonald <mcdonald.jeffrey@epa.gov>
Date: Friday, January 10, 2014 12:38 PM
To: Tyler Gilmore <tyler.gilmore@pnnl.gov>
Cc: "Greenhagen, Andrew" <Greenhagen.Andrew@epa.gov>
Subject: Informal Request (IR) # 3 (IR3-01-10-14)

Tyler,
Here are some comments/questions that we have for you and the applicant (FGA). I will gladly talk to you today, Monday, or whenever to clarify any questions you might have with these. As you can see, I copied this from our internal tracking. We will distinguish formal RAIs from informal requests (IRs), hence this being called IR #3. Do you think that a response to these could be sent back to us by the end of next week?
Thanks,
Jeff

RAI or item #	Subject	Appl. Page	Appl. Section.	EPA Comment / Question / Request	FutureGen Response
01-10-14_1	Alternative PISC timeframe	7.1	7.0	It appears that FutureGen will not be making a demonstration for an alternative PISC period (other than the 50 year default). We assume that if FutureGen makes a demonstration for a PISC other than the 5o year default, this will happen in the future. Is this correct?	
01-10-14_2	Testing and Monitoring	5.25	5.2.3.3	This bullet point states that pressure gauges will be pulled and recalibrated during a well workover, when the injection and monitoring well tubing is pulled. Question: Is this frequency of pressure monitor calibration adequate? How often does Future Gen anticipate it will pull the tubing of the well? We think that redundant gauges should be run to provide confirmation of downhole pressure and temperature. If you agree, what frequency and/or duration will you have both gauges in place to support this?	

01-10-14_3			Fig. 2.11	Figure 2.11 shows a fracture gradient of 0.647 psi/ft for the Elmhust formation. Therefore, the maximum injection pressure must be calculated using the lowest fracture gradient of the Elmhust formation of 647psi/ft x 0.9=.5823 P max at the wellhead=[{0.5823-(.433)(.8322)}3867.9]-14.7=844psig Where: From table 4.2, the density of the CO2 is 51.95 #/ft3, therefore, the specific gravity = 51.95/62.42= 0.8322 The maximum injection pressure in the injection zone = (0.433)(0.8322)(3867.9)+844=2238psig From Table 4.3, the maximum bottom-hole injection pressure is 2358psi Please provide details information about the equation and parameters used to come up with a maximum injection pressure of 1847 psi	
01-10-14_4	PISC	7.1	7.1	The FGA plans to calibrate the computational modeling used for the AoR and PISC with monitoring data once operational, however it is unclear if there is a schedule that the FGA plans to use for this purpose. The regulations require reevaluations every 5 years, but will the FGA conduct model calibration prior to that anniversary or more frequently, and if so, when or with what frequency?	
01-10-14_5	PISC	3.27 to 3.34	7.1.3 and 3.1.6	The computational model results indicate that a small fraction of the injected CO2 will enter the lower part of the Lombard formation. If authorized under any UIC permits, the injection zone will need to include that lower part of the Lombard. Please determine what members or submembers of the Lombard are expected to receive CO2 and will therefore be part of any permitted injection zone.	
01-10-14_6	PISC and T&M	7.5	7.2 and 5.2	Specific locations of monitoring wells need to be identified for any permit decision including what specific parameters will be monitored for.	
01-10-14_7	PISC and T&M	7.5	7.2.2	Please state whether FGA will use a "multi-level monitoring system within a single casing string with multiple sample intervals" **or** a "multi-level piezometer installation."	
01-10-14_8	PISC and T&M	7.6	7.2.3 and 5.2	Please indicate which method the FGA intends to use to compy with the requirements for indirect CO2 plume monitoring (40 CFR 146.90(g)). Please ensure that this covers both the injection and post injection phases of the project.	
01-10-14_9	PISC and T&M	7.9	7.3.4	The site closure plan should name the specific agencies who will be notified of site closure and **verify that no tribal authorities** must be included per 40 CFR 146.93(f)(2).	

Jeffrey R. McDonald, Geologist
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