

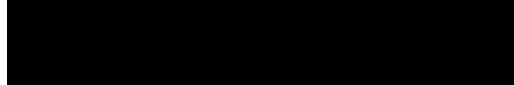
**INJECTION WELL PLUGGING PLAN
40 CFR §146.92(b)**

Brown Pelican CO₂ Sequestration Project

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1.0 Facility Information and Overview

Facility name: Brown Pelican CO₂ Sequestration Project
BRP CCS1, CCS2 and CCS3 Wells

Facility contact: Caroline Huet, Project Manager


Well location: Penwell, Texas


Oxy Low Carbon Ventures, LLC (OLCV) will conduct injection well plugging and abandonment (P&A) according to the procedures contained in this document.

The injection wells will be plugged and abandoned in accordance with the requirements of Environmental Protection Agency (EPA) document 40 CFR Subpart H – Criteria and Standards Applicable to Class VI Wells. The plugging procedure and materials will be designed to prevent

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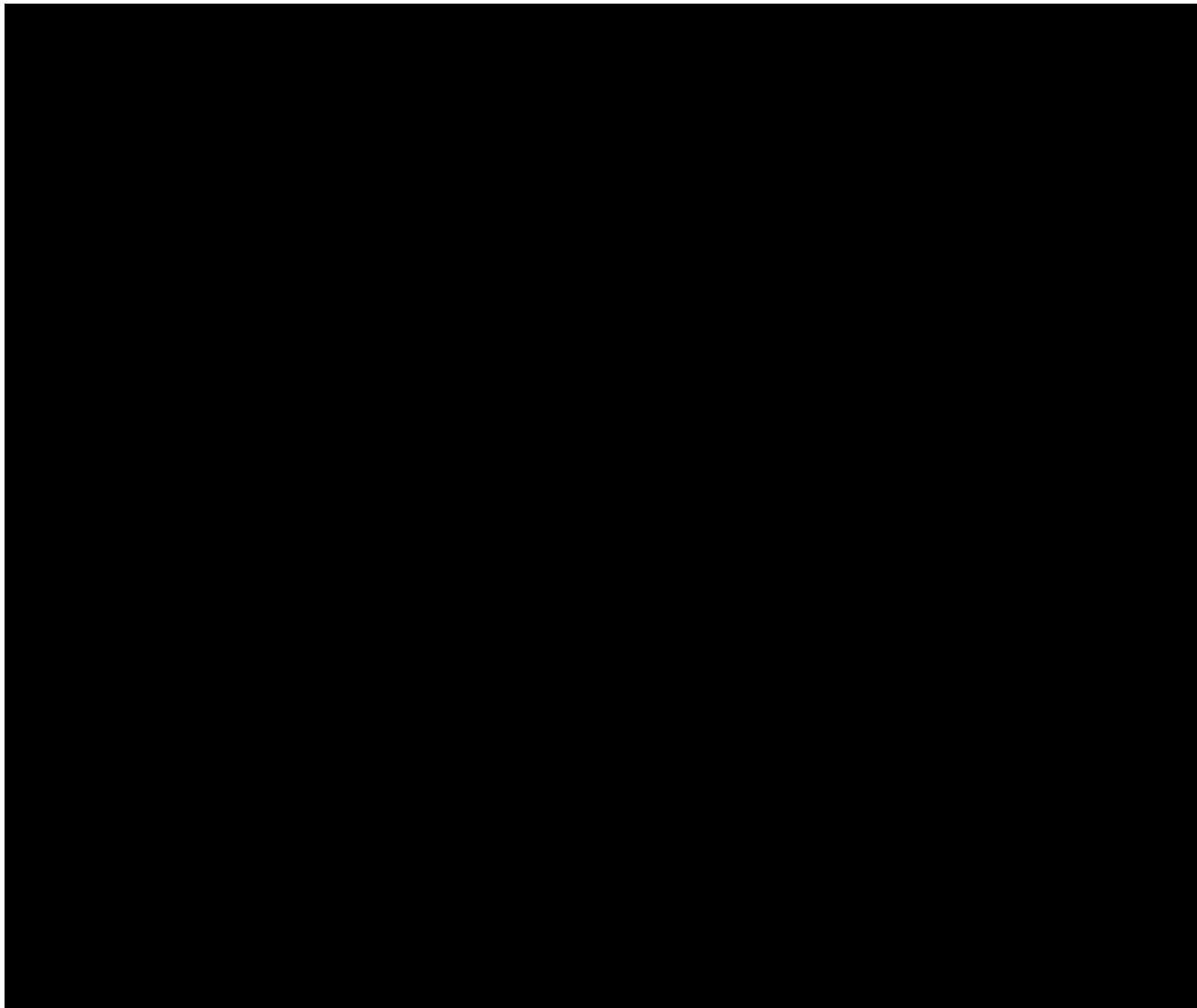
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any unwanted fluid movement, resist the corrosive aspects of carbon dioxide (CO₂) with water mixtures, and protect any underground sources of drinking water (USDWs).

Plugging procedures for CO₂ Injection wells are presented in this document. Plugging plans for monitoring and water withdrawal wells are presented in Appendix A of this document.

2.0 CO₂ Injection Wells

2.1 Planned Tests or Measures to Determine Bottomhole Reservoir Pressure



2.2 Planned Mechanical Integrity Test(s)

OLCV will conduct a temperature log and potentially additional logs listed in Table 1 and a pressure test to verify mechanical integrity before plugging the injection well, as required by 40 CFR §146.92(a).

Table 1—Planned and Possible Mechanical Integrity Tests

Test Description	Location
Temperature log (External MIT)	Injection wells and monitoring wells
Pulsed neutron log (External MIT)	Injection wells and monitoring wells
Noise log (External MIT)	Injection wells and monitoring wells
Annular Pressure Test (Internal)	Injection wells and monitoring wells

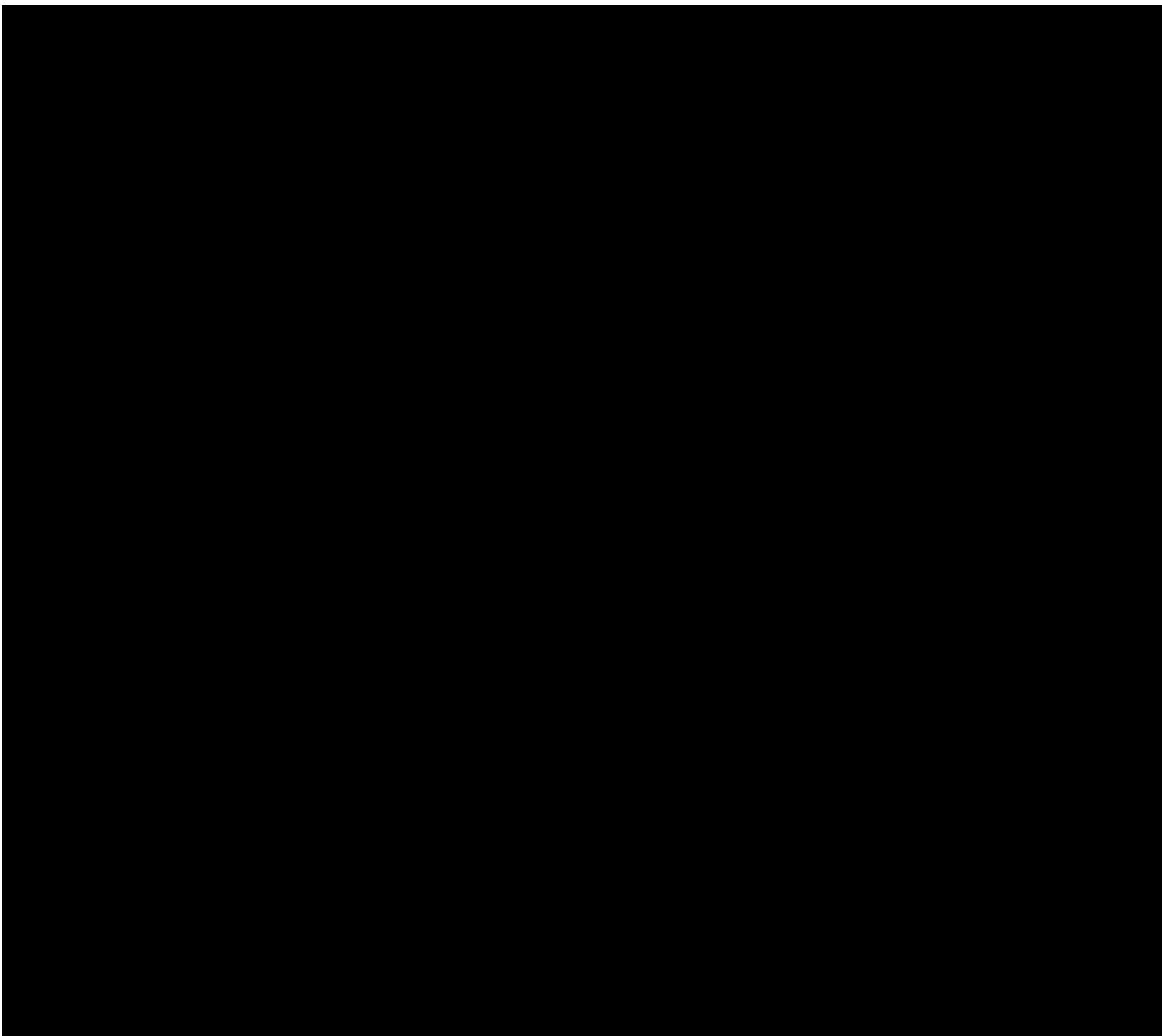
The following tools are able to detect fluid movements behind the long string casing. Tools will be run on wireline. Quality assurance for the logs will be provided by the vendor at time of selection.

Temperature logs are used to locate gas entries, detect casing leaks, and evaluate fluid movement behind casing. They are also used to detect lost-circulation zones and cement placement. Temperature logs are used as a basic diagnostic tool and are usually paired with other tools like acoustics or multi arms calipers if more in depth analysis is required.

Temperature instruments used today are based on elements with resistances that vary with temperature. The variable resistance element is connected with bridge circuitry or constant current circuit, so that a voltage response proportional to temperature is obtained. The voltage signal from temperature device is then usually converted to a frequency signal transmitted to the surface, where it is converted back to a voltage signal and recorded. The absolute accuracy of temperature logging instruments is not high (in the order of +/- 5°F), but the resolution is good (0.05°F) or better, although this accuracy can be compromised by present day digitalization of the signal on the surface. The temperature instrument usually can be included in the string with other tools, such as radioactive tracer tools or spinners flowmeters. Temperature logs are run continuously, typically at cable speeds of 20 to 30 ft/min.

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Pass/Fail Criteria

Well Plugging is considered pass when it meets the objective of minimizing the chance of leak of fluid to USDW.

Temperature Survey

The temperature log is one of the approved logs for detecting fluid movement outside pipe. A final differential temperature survey will be run during plugging operations and will provide a final temperature curve.

The temperature will be logged down from the surface to total depth in the well. Recommended line speed for the logging operations is [REDACTED]. In general, the procedure for wireline operations will be as follows:

1. Attach a temperature probe and casing collar locator (CCL) to the wireline.
2. Begin the temperature survey. The tools will be lowered into well at [REDACTED], recording temperature in wellbore. The temperature survey will be run to the deepest attainable depth in the wellbore.
3. Following completion of the survey, the wireline tools will be retrieved from the wellbore.
4. A successful temperature log will "PASS" if there are no observed, unexplained anomalies outside of the permitted injection zone.
5. If temperature anomalies are observed outside of the permitted zone, additional logging may be conducted to determine whether a loss of mechanical integrity or containment has occurred. Depending on the nature of the suspected movement, radioactive tracer, noise, oxygen activation, or other logs approved by the UIC Program Director may be required to further define the nature of the fluid movement or to diagnose a potential leak.

Pressure Test

After setting the initial plug across the well completion interval / perforation, an annular pressure test (APT) will be conducted to verify internal mechanical integrity. The APT is a short-term pressure test (30 minutes) where the well is shut in and the fluid in the annulus is pressurized to a predetermined pressure and is monitored for leak off. BRP will use a test pressure of 500 psi for the Mechanical Integrity Test. BRP will use a 5% decrease in pressure (test pressure x .05) from the stabilized test pressure during the duration of the test to determine if test is successful. If the annulus pressure decreases by $\geq 5\%$, the well will have failed the APT. If a well fails an APT, the test will be repeated. If the APT is again failed, the downhole equipment will be removed from the well and the source of the failure will be investigated. In general, the test procedure will be as follows:

1. Connect a high-resolution pressure transducer to the annulus casing valve and increase the annulus pressure to 500 psi and hold this pressure for 30 minutes.
2. At the conclusion of the 30-minute test the annulus pressure will be bled off to 0 psi and the pressure recording equipment will be removed from the casing valve.

Note: If a failure in the long string casing is identified, the operator will prepare a plan to repair the well before plugging and abandonment

2.3 Information on Plugs

OLCV will use the materials and methods noted in Table 2, Table 3 and Table 4 to plug the Injection wells. The volume and depth of the plug or plugs will depend on the final geology and downhole conditions of the well as assessed during construction.

The cement(s) formulated for plugging will be compatible with CO₂. Discussion about CO₂ resistant cement selection and additive is located in the Construction Plan – Appendix B. The

Table 2—Information on Cement Plugs for BRP CCS1

Well Number	Plugging Method	Plugging Depth (ft)	Plugging Volume (ft ³)	Plugging Material
WELL 1	Method A	1000	1000	Cement
WELL 2	Method B	1200	1200	Cement
WELL 3	Method C	1400	1400	Cement
WELL 4	Method D	1600	1600	Cement
WELL 5	Method E	1800	1800	Cement
WELL 6	Method F	2000	2000	Cement
WELL 7	Method G	2200	2200	Cement
WELL 8	Method H	2400	2400	Cement
WELL 9	Method I	2600	2600	Cement
WELL 10	Method J	2800	2800	Cement
WELL 11	Method K	3000	3000	Cement
WELL 12	Method L	3200	3200	Cement
WELL 13	Method M	3400	3400	Cement
WELL 14	Method N	3600	3600	Cement
WELL 15	Method O	3800	3800	Cement
WELL 16	Method P	4000	4000	Cement
WELL 17	Method Q	4200	4200	Cement
WELL 18	Method R	4400	4400	Cement
WELL 19	Method S	4600	4600	Cement
WELL 20	Method T	4800	4800	Cement
WELL 21	Method U	5000	5000	Cement
WELL 22	Method V	5200	5200	Cement
WELL 23	Method W	5400	5400	Cement
WELL 24	Method X	5600	5600	Cement
WELL 25	Method Y	5800	5800	Cement
WELL 26	Method Z	6000	6000	Cement
WELL 27	Method AA	6200	6200	Cement
WELL 28	Method BB	6400	6400	Cement
WELL 29	Method CC	6600	6600	Cement
WELL 30	Method DD	6800	6800	Cement
WELL 31	Method EE	7000	7000	Cement
WELL 32	Method FF	7200	7200	Cement
WELL 33	Method GG	7400	7400	Cement
WELL 34	Method HH	7600	7600	Cement
WELL 35	Method II	7800	7800	Cement
WELL 36	Method JJ	8000	8000	Cement
WELL 37	Method KK	8200	8200	Cement
WELL 38	Method LL	8400	8400	Cement
WELL 39	Method MM	8600	8600	Cement
WELL 40	Method NN	8800	8800	Cement
WELL 41	Method OO	9000	9000	Cement
WELL 42	Method PP	9200	9200	Cement
WELL 43	Method QQ	9400	9400	Cement
WELL 44	Method RR	9600	9600	Cement
WELL 45	Method SS	9800	9800	Cement
WELL 46	Method TT	10000	10000	Cement
WELL 47	Method UU	10200	10200	Cement
WELL 48	Method VV	10400	10400	Cement
WELL 49	Method WW	10600	10600	Cement
WELL 50	Method XX	10800	10800	Cement
WELL 51	Method YY	11000	11000	Cement
WELL 52	Method ZZ	11200	11200	Cement
WELL 53	Method AA	11400	11400	Cement
WELL 54	Method BB	11600	11600	Cement
WELL 55	Method CC	11800	11800	Cement
WELL 56	Method DD	12000	12000	Cement
WELL 57	Method EE	12200	12200	Cement
WELL 58	Method FF	12400	12400	Cement
WELL 59	Method GG	12600	12600	Cement
WELL 60	Method HH	12800	12800	Cement
WELL 61	Method II	13000	13000	Cement
WELL 62	Method JJ	13200	13200	Cement
WELL 63	Method KK	13400	13400	Cement
WELL 64	Method LL	13600	13600	Cement
WELL 65	Method MM	13800	13800	Cement
WELL 66	Method NN	14000	14000	Cement
WELL 67	Method OO	14200	14200	Cement
WELL 68	Method PP	14400	14400	Cement
WELL 69	Method QQ	14600	14600	Cement
WELL 70	Method RR	14800	14800	Cement
WELL 71	Method SS	15000	15000	Cement
WELL 72	Method TT	15200	15200	Cement
WELL 73	Method UU	15400	15400	Cement
WELL 74	Method VV	15600	15600	Cement
WELL 75	Method WW	15800	15800	Cement
WELL 76	Method XX	16000	16000	Cement
WELL 77	Method YY	16200	16200	Cement
WELL 78	Method ZZ	16400	16400	Cement
WELL 79	Method AA	16600	16600	Cement
WELL 80	Method BB	16800	16800	Cement
WELL 81	Method CC	17000	17000	Cement
WELL 82	Method DD	17200	17200	Cement
WELL 83	Method EE	17400	17400	Cement
WELL 84	Method FF	17600	17600	Cement
WELL 85	Method GG	17800	17800	Cement
WELL 86	Method HH	18000	18000	Cement
WELL 87	Method II	18200	18200	Cement
WELL 88	Method JJ	18400	18400	Cement
WELL 89	Method KK	18600	18600	Cement
WELL 90	Method LL	18800	18800	Cement
WELL 91	Method MM	19000	19000	Cement
WELL 92	Method NN	19200	19200	Cement
WELL 93	Method OO	19400	19400	Cement
WELL 94	Method PP	19600	19600	Cement
WELL 95	Method QQ	19800	19800	Cement
WELL 96	Method RR	20000	20000	Cement
WELL 97	Method SS	20200	20200	Cement
WELL 98	Method TT	20400	20400	Cement
WELL 99	Method UU	20600	20600	Cement
WELL 100	Method VV	20800	20800	Cement
WELL 101	Method WW	21000	21000	Cement
WELL 102	Method XX	21200	21200	Cement
WELL 103	Method YY	21400	21400	Cement
WELL 104	Method ZZ	21600	21600	Cement
WELL 105	Method AA	21800	21800	Cement
WELL 106	Method BB	22000	22000	Cement
WELL 107	Method CC	22200	22200	Cement
WELL 108	Method DD	22400	22400	Cement
WELL 109	Method EE	22600	22600	Cement
WELL 110	Method FF	22800	22800	Cement
WELL 111	Method GG	23000	23000	Cement
WELL 112	Method HH	23200	23200	Cement
WELL 113	Method II	23400	23400	Cement
WELL 114	Method JJ	23600	23600	Cement
WELL 115	Method KK	23800	23800	Cement
WELL 116	Method LL	24000	24000	Cement
WELL 117	Method MM	24200	24200	Cement
WELL 118	Method NN	24400	24400	Cement
WELL 119	Method OO	24600	24600	Cement
WELL 120	Method PP	24800	24800	Cement
WELL 121	Method QQ	25000	25000	Cement
WELL 122	Method RR	25200	25200	Cement
WELL 123	Method SS	25400	25400	Cement
WELL 124	Method TT	25600	25600	Cement
WELL 125	Method UU	25800	25800	Cement
WELL 126	Method VV	26000	26000	Cement
WELL 127	Method WW	26200	26200	Cement
WELL 128	Method XX	26400	26400	Cement
WELL 129	Method YY	26600	26600	Cement
WELL 130	Method ZZ	26800	26800	Cement
WELL 131	Method AA	27000	27000	Cement
WELL 132	Method BB	27200	27200	Cement
WELL 133	Method CC	27400	27400	Cement
WELL 134	Method DD	27600	27600	Cement
WELL 135	Method EE	27800	27800	Cement
WELL 136	Method FF	28000	28000	Cement
WELL 137	Method GG	28200	28200	Cement
WELL 138	Method HH	28400	28400	Cement
WELL 139	Method II	28600	28600	Cement
WELL 140	Method JJ	28800	28800	Cement
WELL 141	Method KK	29000	29000	Cement
WELL 142	Method LL	29200	29200	Cement
WELL 143	Method MM	29400	29400	Cement
WELL 144	Method NN	29600	29600	Cement
WELL 145	Method OO	29800	29800	Cement
WELL 146	Method PP	30000	30000	Cement
WELL 147	Method QQ	30200	30200	Cement
WELL 148	Method RR	30400	30400	Cement
WELL 149	Method SS	30600	30600	Cement
WELL 150	Method TT	30800	30800	Cement
WELL 151	Method UU	31000	31000	Cement
WELL 152	Method VV	31200	31200	Cement
WELL 153	Method WW	31400	31400	Cement
WELL 154	Method XX	31600	31600	Cement
WELL 155	Method YY	31800	31800	Cement
WELL 156	Method ZZ	32000	32000	Cement
WELL 157	Method AA	32200	32200	Cement
WELL 158	Method BB	32400	32400	Cement
WELL 159	Method CC	32600	32600	Cement
WELL 160	Method DD	32800	32800	Cement
WELL 161	Method EE	33000	33000	Cement
WELL 162	Method FF	33200	33200	Cement
WELL 163	Method GG	33400	33400	Cement
WELL 164	Method HH	33600	33600	Cement
WELL 165	Method II	33800	33800	Cement
WELL 166	Method JJ	34000	34000	Cement
WELL 167	Method KK	34200	34200	Cement
WELL 168	Method LL	34400	34400	Cement
WELL 169	Method MM	34600	34600	Cement
WELL 170	Method NN	34800	34800	Cement
WELL 171	Method OO	35000	35000	Cement
WELL 172	Method PP	35200	35200	Cement
WELL 173	Method QQ	35400	35400	Cement
WELL 174	Method RR	35600	35600	Cement
WELL 175	Method SS	35800	35800	Cement
WELL 176	Method TT	36000	36000	Cement
WELL 177	Method UU	36200	36200	Cement
WELL 178	Method VV	36400	36400	Cement
WELL 179	Method WW	36600	36600	Cement
WELL 180	Method XX	36800	36800	Cement
WELL 181	Method YY	37000	37000	Cement
WELL 182	Method ZZ	37200	37200	Cement
WELL 183	Method AA	37400	37400	Cement
WELL 184	Method BB	37600	37600	Cement
WELL 185	Method CC	37800	37800	Cement
WELL 186	Method DD	38000	38000	Cement
WELL 187	Method EE	38200	38200	Cement
WELL 188	Method FF	38400	38400	Cement
WELL 189	Method GG	38600	38600	Cement
WELL 190	Method HH	38800	38800	Cement
WELL 191	Method II	39000	39000	Cement
WELL 192	Method JJ	39200	39200	Cement
WELL 193	Method KK	39400	39400	Cement
WELL 194	Method LL	39600	39600	Cement
WELL 195	Method MM	39800	39800	Cement
WELL 196	Method NN	40000	40000	Cement
WELL 197	Method OO	40200	40200	Cement
WELL 198	Method PP	40400	40400	Cement
WELL 199	Method QQ	40600	40600	Cement
WELL 200	Method RR	40800	40800	Cement
WELL 201	Method SS	41000	41000	Cement
WELL 202	Method TT	41200	41200	Cement
WELL 203	Method UU	41400	41400	Cement
WELL 204	Method VV	41600	41600	Cement
WELL 205	Method WW	41800	41800	Cement
WELL 206	Method XX	42000	42000	Cement
WELL 207	Method YY	42200	42200	Cement
WELL 208	Method ZZ	42400	42400	Cement
WELL 209	Method AA	42600	42600	Cement
WELL 210	Method BB	42800	42800	Cement
WELL 211	Method CC	43000	43000	Cement
WELL 212	Method DD	43200	43200	Cement
WELL 213	Method EE	43400	43400	Cement
WELL 214	Method FF	43600	43600	Cement
WELL 215	Method GG	43800	43800	Cement
WELL 216	Method HH	44000	44000	Cement
WELL 217	Method II	44200	44200	Cement
WELL 218	Method JJ	44400	44400	Cement
WELL 219	Method KK	44600	44600	Cement
WELL 220	Method LL	44800	44800	Cement
WELL 221	Method MM	45000	45000	Cement
WELL 222	Method NN	45200	45200	Cement
WELL 223	Method OO	45400	45400	Cement
WELL 224	Method PP	45600	45600	Cement
WELL 225	Method QQ	45800	45800	Cement
WELL 226	Method RR	46000	46000	Cement
WELL 227	Method SS	46200	46200	Cement
WELL 228	Method TT	46400	4640	

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Table 3—Information on Cement Plugs for BRP CCS2

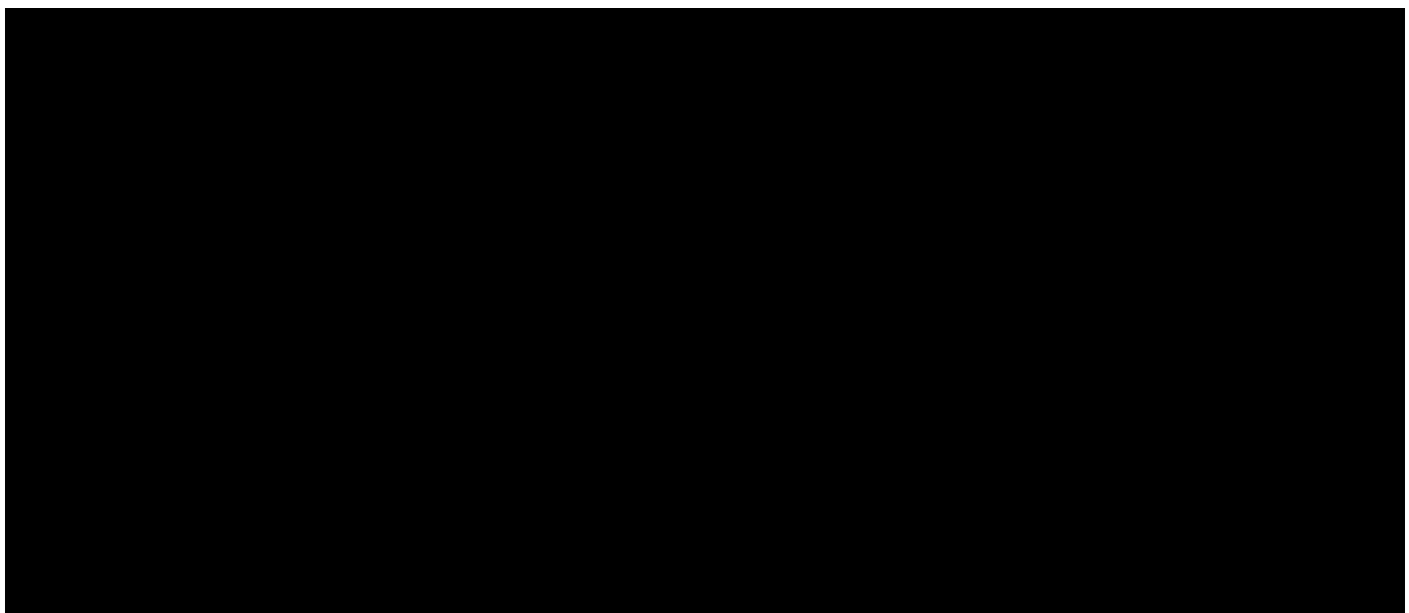
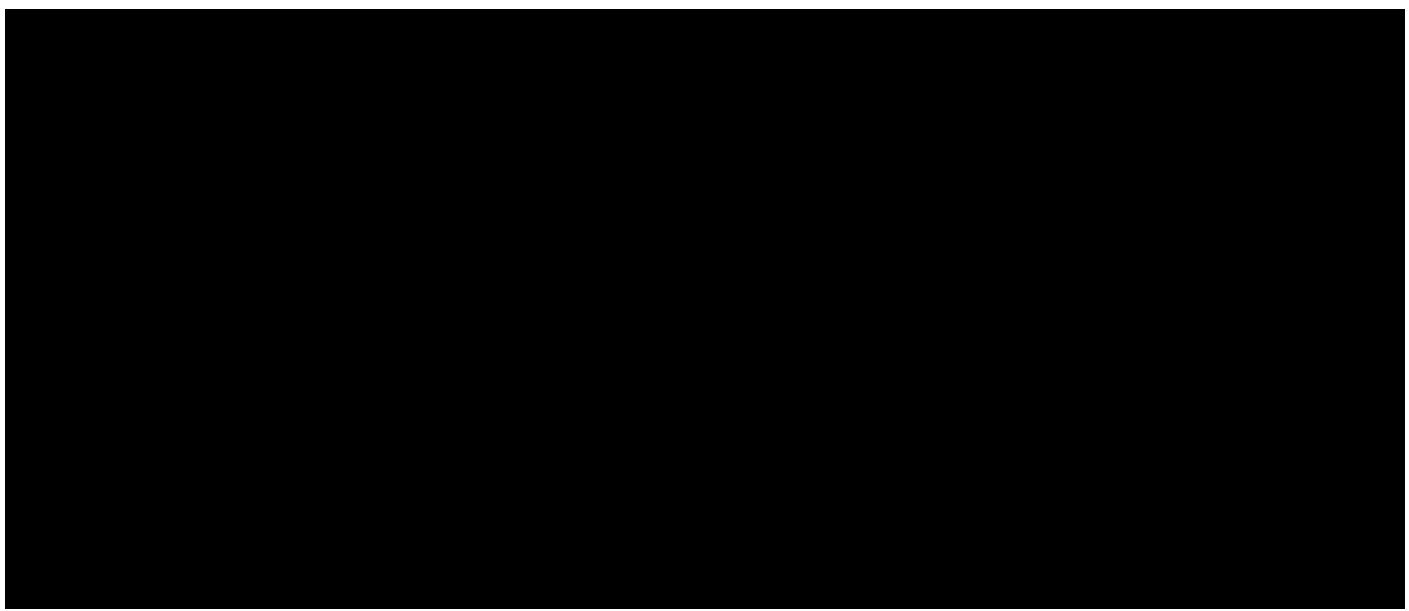
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Table 4—Information on Cement Plugs for BRP CCS3

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2.4 Plugging Schematics

The proposed plugging schematic for BRP CCS1 is shown in Figure 1, the proposed plugging schematic for BRP CCS2 is shown in Figure 2 and the plugging schematic for BRP CCS3 is shown in Figure 3. A sample EPA Plugging and Abandonment Plan form is found in Figure 4.

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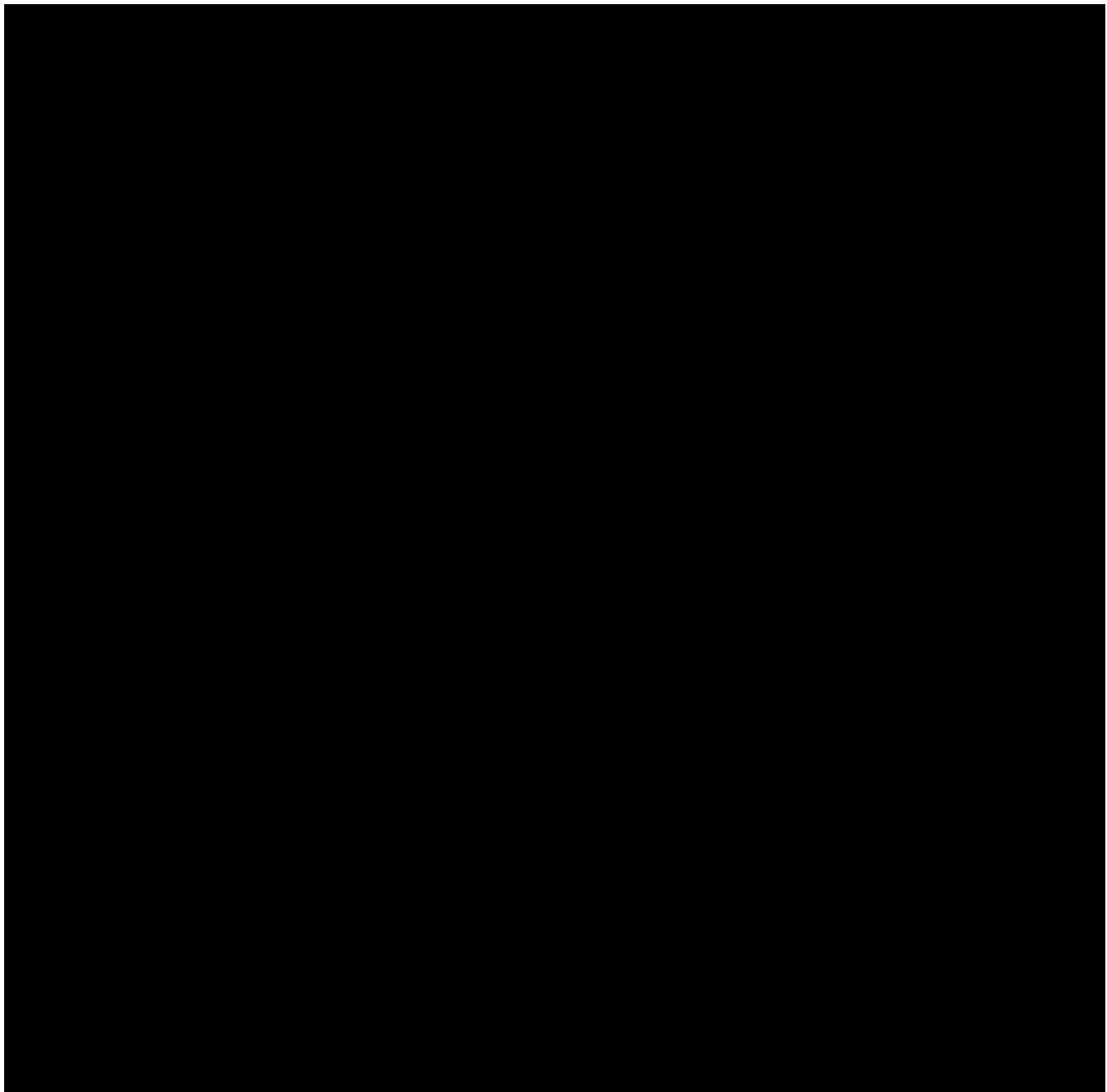


Figure 1—BRP CCS1 injection well plugging schematic

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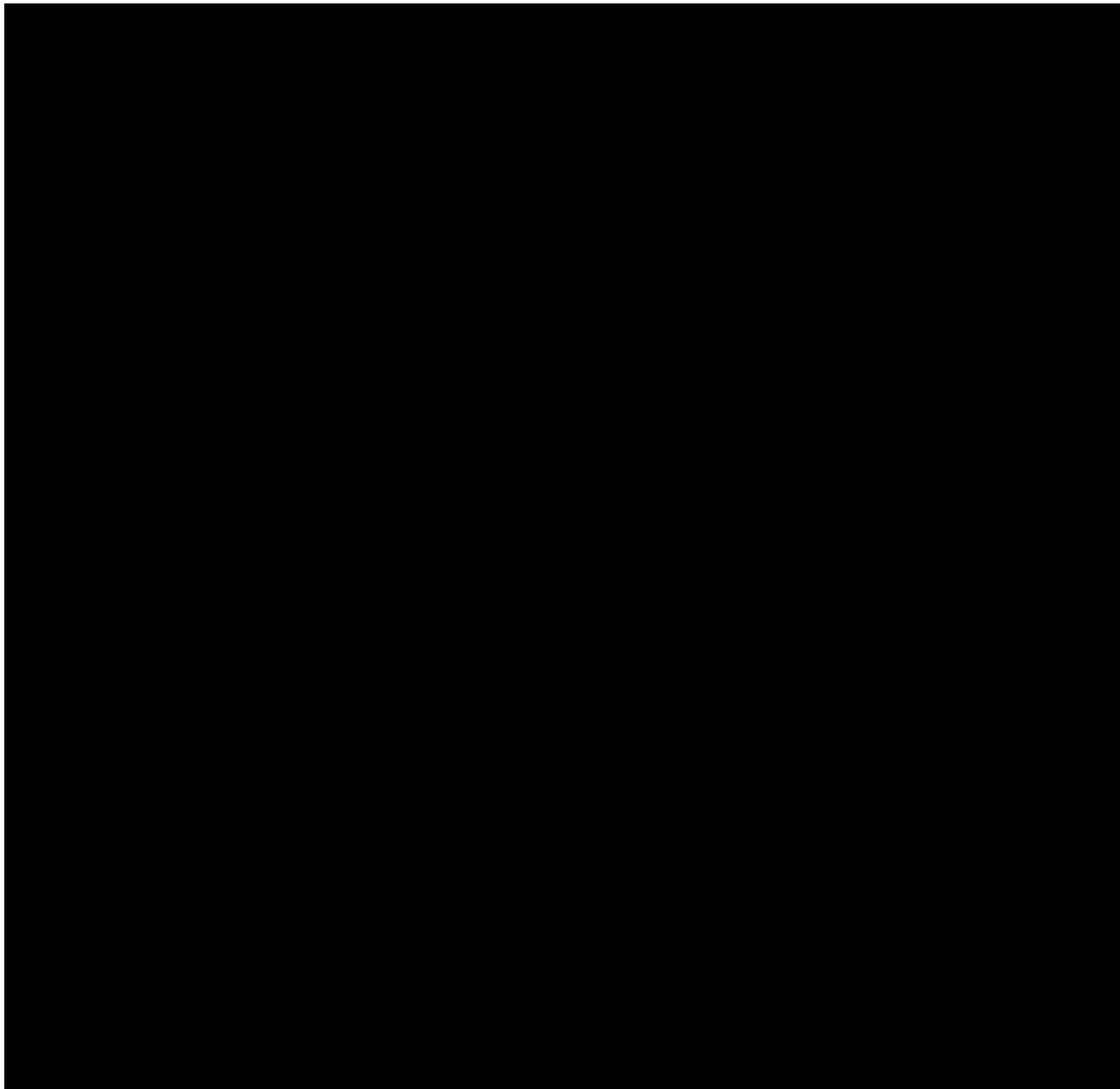


Figure 2—BRP CCS2 injection well plugging schematic

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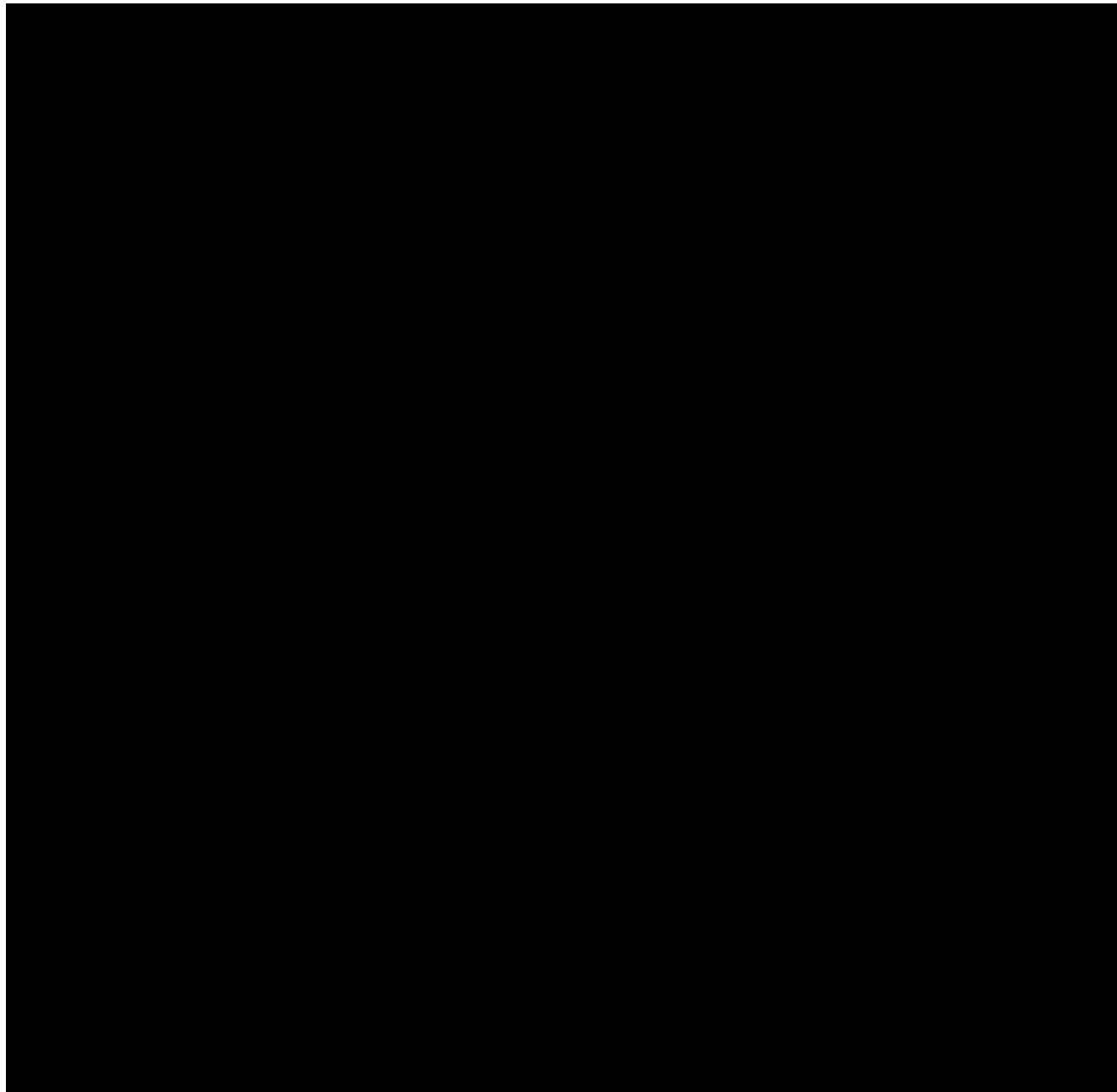


Figure 3—BRP CCS3 injection well plugging schematic

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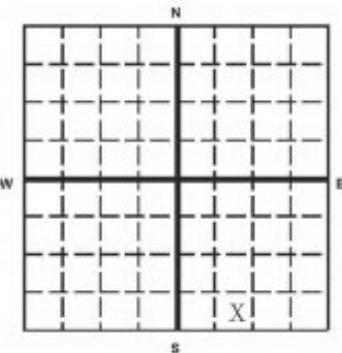
		OMB No. 2040-0042	Approval Expires 11/30/2014					
EPA		United States Environmental Protection Agency Washington, DC 20460						
PLUGGING AND ABANDONMENT PLAN								
Name and Address of Facility Morgan County Class VI UIC Well #1 (cased well completion, 1,500 ft lateral) [address not yet available]		Name and Address of Owner/Operator FutureGen Alliance, Inc. 73 Central Park Plaza East, Jacksonville, IL 62650						
Locate Well and Outline Unit on Section Plat - 640 Acres		State Illinois	County Morgan					
		Permit Number not yet issued						
Surface Location Description SE 1/4 of SE 1/4 of SW 1/4 of SE 1/4 of Section 26 Township 16N Range 9W		Locate well in two directions from nearest lines of quarter section and drilling unit						
Surface Location <input type="text"/> ft. from (N/S) <input type="text"/> Line of quarter section and <input type="text"/> ft. from (E/W) <input type="text"/> Line of quarter section.		WELL ACTIVITY						
<input checked="" type="checkbox"/> Individual Permit <input type="checkbox"/> Area Permit <input type="checkbox"/> Rule Number of Wells <input type="text" value="1"/>		<input type="checkbox"/> CLASS I <input type="checkbox"/> CLASS II <input type="checkbox"/> Brine Disposal <input type="checkbox"/> Enhanced Recovery <input type="checkbox"/> Hydrocarbon Storage <input type="checkbox"/> CLASS III						
Lease Name <input type="text"/>		Well Number <input type="text"/>						
CASING AND TUBING RECORD AFTER PLUGGING								
SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE				
24"	140.0	140	140	30"				
16"	84.0	570	570	20"				
10 3/4"	51.0	3,150 ¹	3,150 ¹	14 3/4"				
7"	29.0	6,004 ¹	6,004 ¹	9 1/2"				
CEMENTING TO PLUG AND ABANDON DATA:								
Size of Hole or Pipe in which Plug Will Be Placed (inche		PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
7"		7"	7"	7"	7"	7"	7"	7"
Depth to Bottom of Tubing or Drill Pipe (ft		6,004	3,900	3,100	1,800	1,500	700	
Sacks of Cement To Be Used (each plug)		451	149	0	53	0	124	
Slurry Volume To Be Pumped (cu. ft.)		505	167	271	63	167	146	
Calculated Top of Plug (ft.)		3,900	3,100	1,800	1,500	700	0 (0L)	
Measured Top of Plug (if tagged ft.)		3,900	3,100	1,800	1,500	700	0 (0L)	
Slurry Wt. (Lb./Gal.)		15.82	15.82	8.6	15.6	8.6	15.6	
Type Cement or Other Material (Class III)		EverCrete	EverCrete	8% Gel	Class A	8% Gel	Class A	
LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)								
From	To	From	To					
(7" perforated casing) 3,950 ft MD	6,004 ft MD							
Estimated Cost to Plug Wells								
Plug #1 Set through a cement retainer set at 3,900 ft MD \$600,000.00								
Certification								
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)								
Name and Official Title (Please type or print) Kenneth K. Humphreys, Chief Executive Officer		Signature 		Date Signed 03/03/2014				
EPA Form 7520-14 (Rev. 12-11)								

Figure 4—Sample EPA Plugging and Abandonment Plan form

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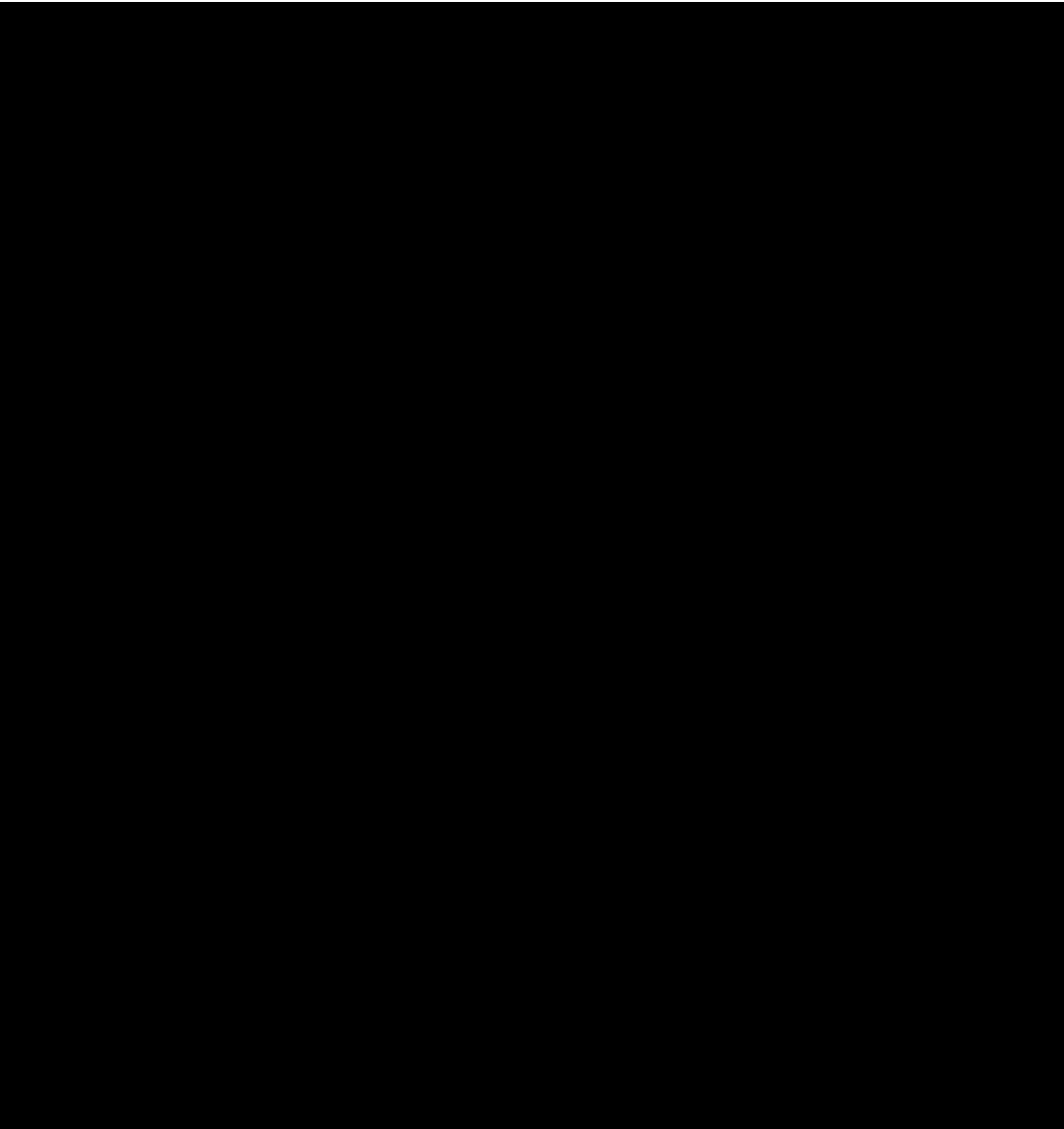
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3.0 Narrative Description of Plugging Procedures

3.1 Notifications, Permits, and Inspections

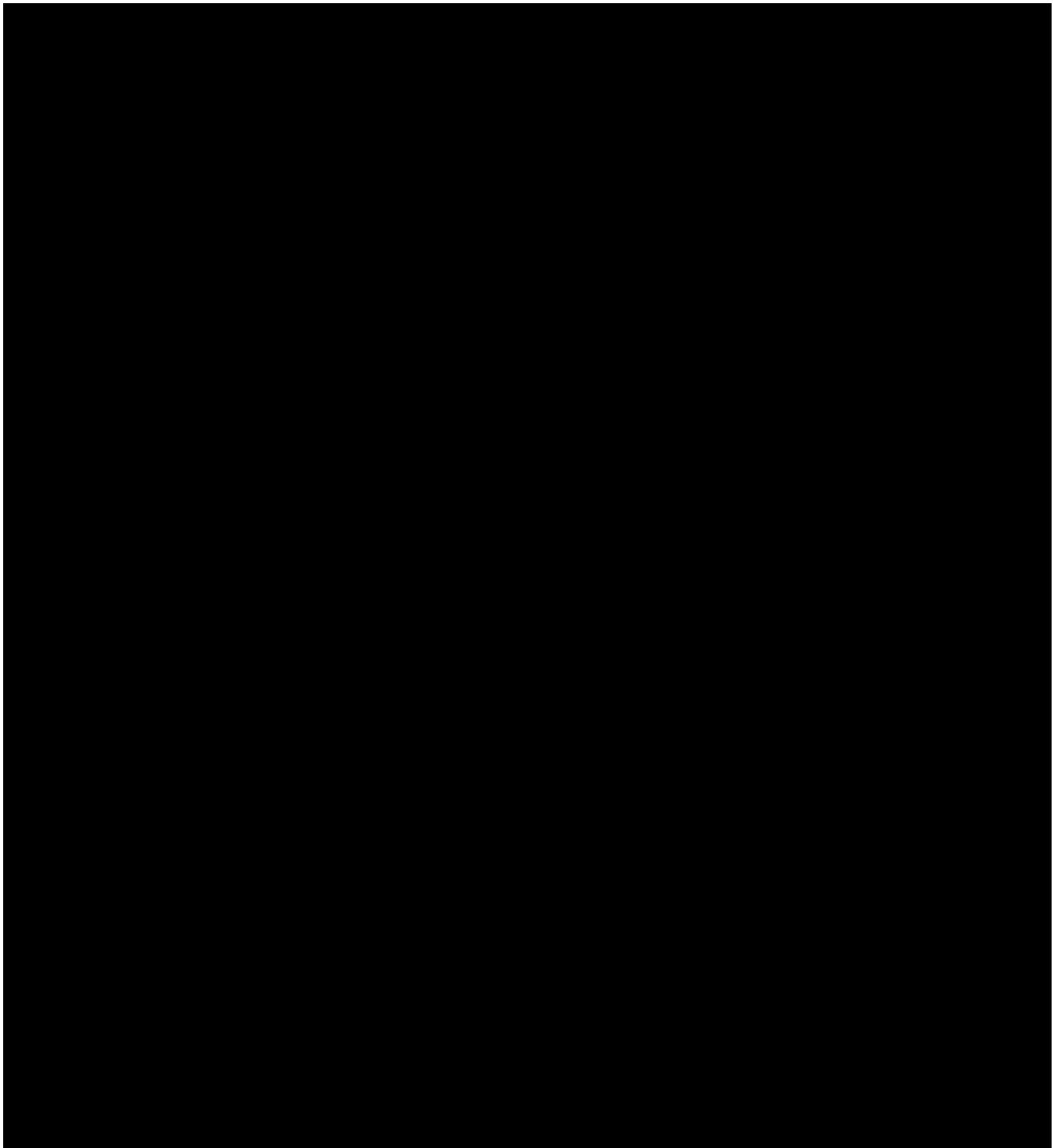
In compliance with 40 CFR §146.92(c), OLCV will notify the regulatory agency at least 60 days before plugging the well and provide an updated Injection Well Plugging Plan, if applicable.

3.2 Plugging Procedures for BRP CCS1



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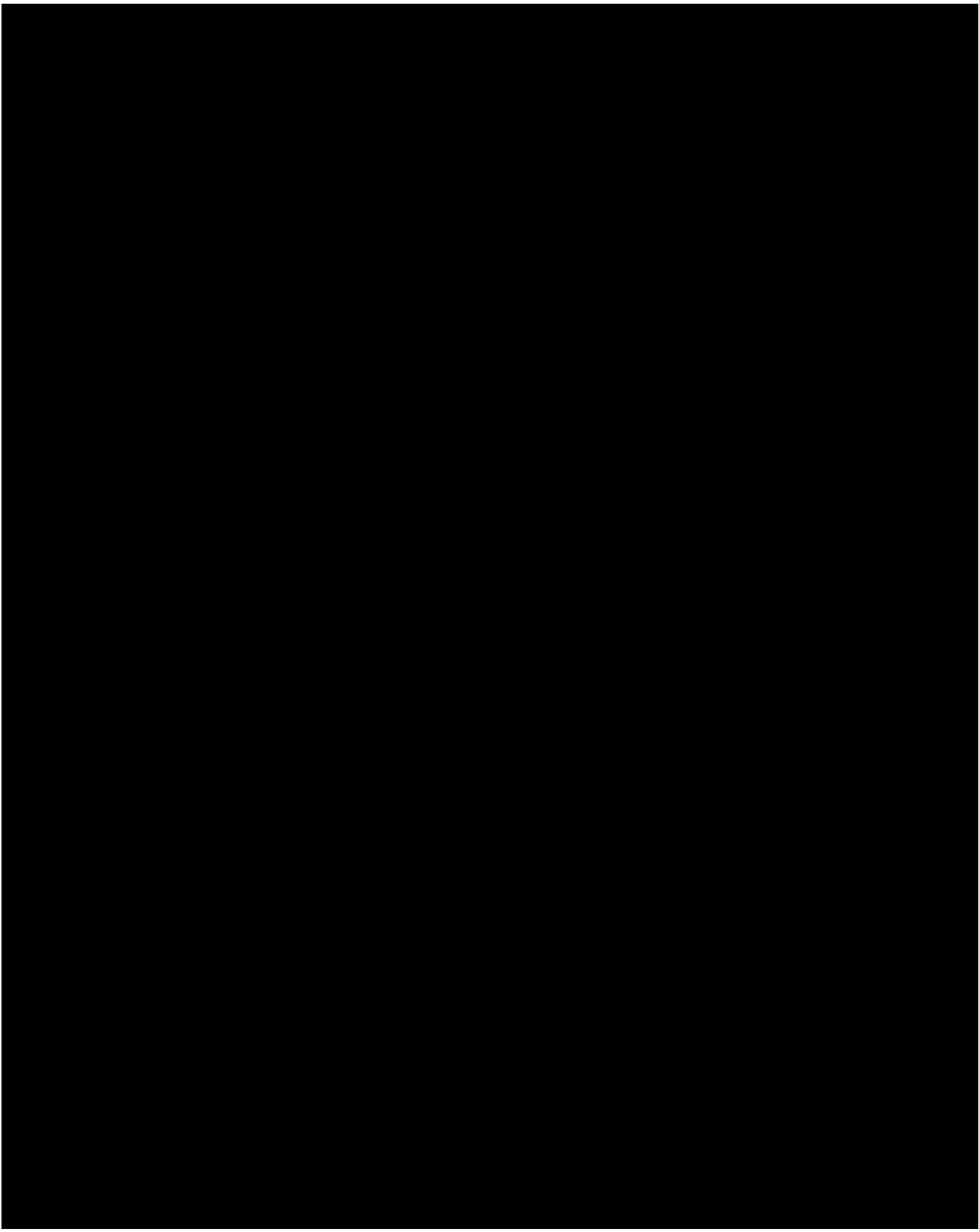


The procedures described above are subject to modification during execution as necessary to ensure a successful plugging operation. Any significant modifications due to unforeseen circumstances will be described in the plugging report.

Plan revision number: 1

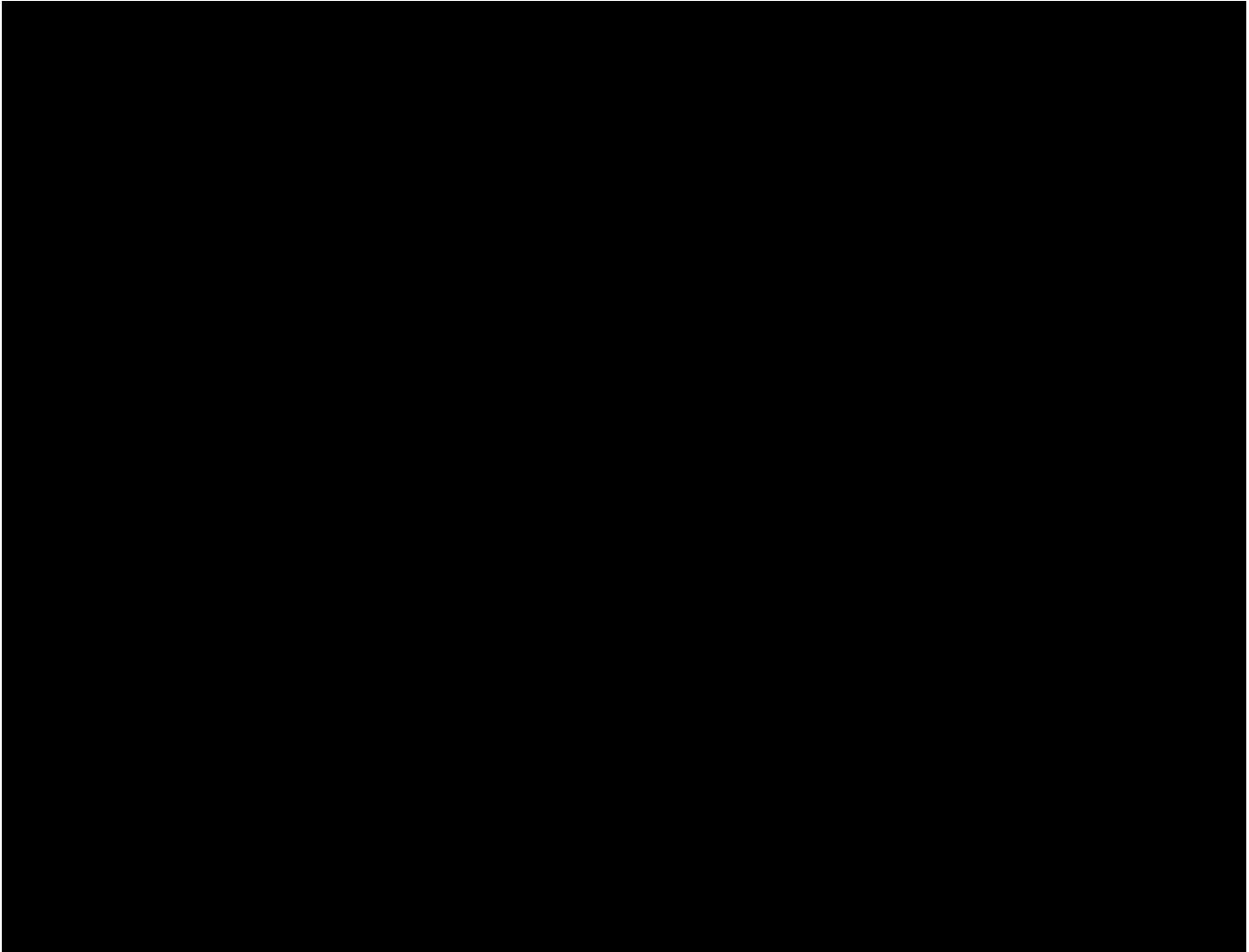
Plan revision date: 11/30/2023

3.3 Plugging Procedures for BRP CCS2



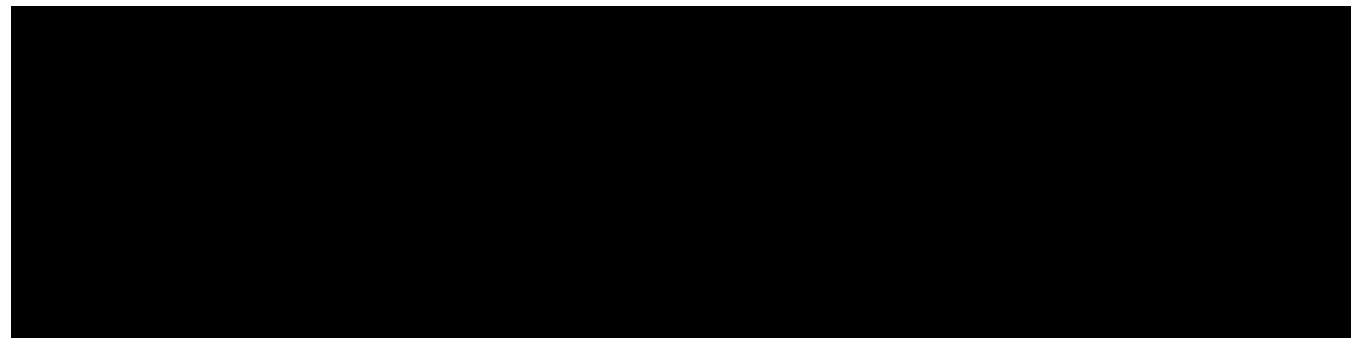
Plan revision number: 1

Plan revision date: 11/30/2023



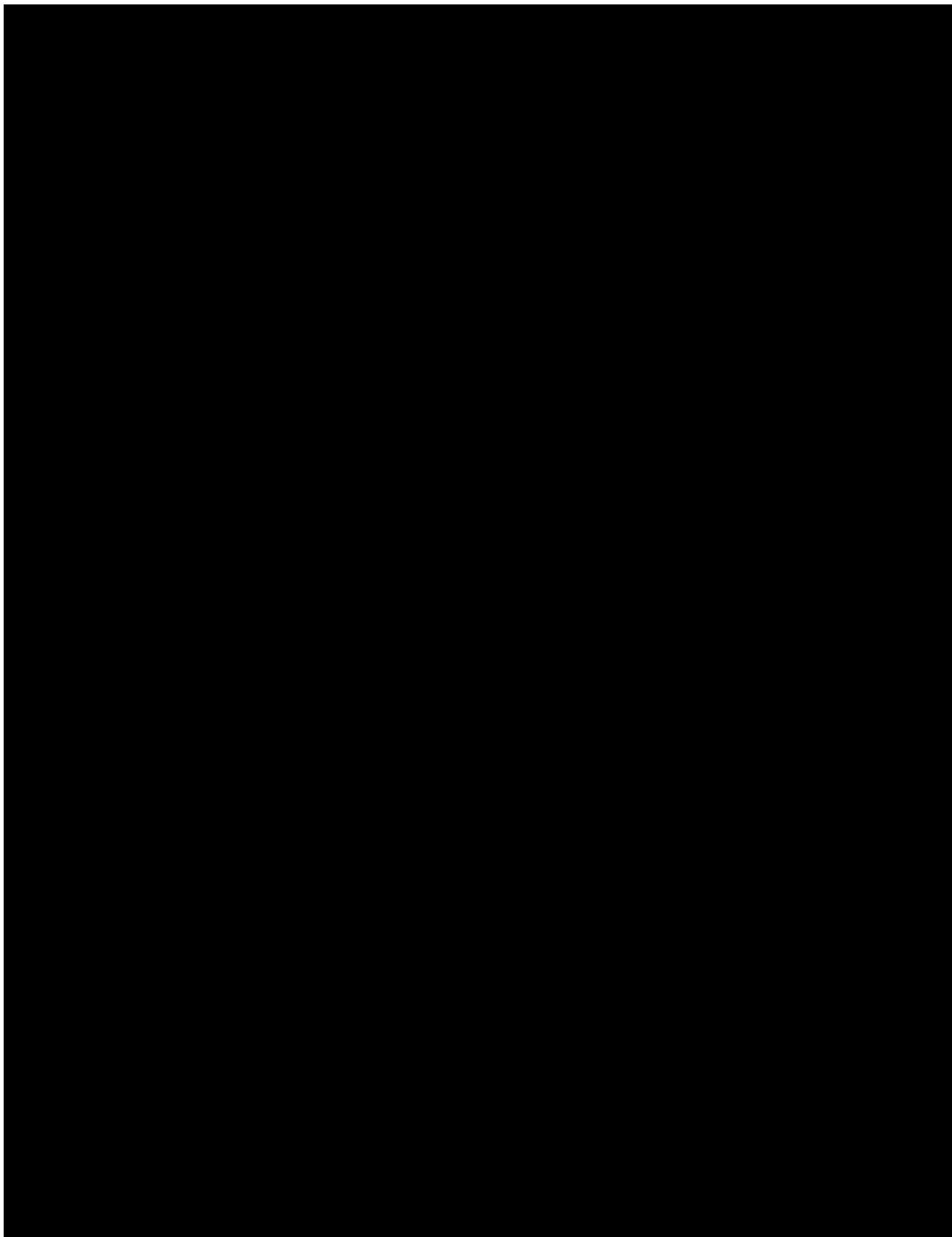
The procedures described above are subject to modification during execution as necessary to ensure a successful plugging operation. Any significant modifications due to unforeseen circumstances will be described in the plugging report.

3.4 Plugging Procedures for BRP CCS3



Plan revision number: 1

Plan revision date: 11/30/2023



Plan revision number: 1

Plan revision date: 11/30/2023



The procedures described above are subject to modification during execution as necessary to ensure a successful plugging operation. Any significant modifications due to unforeseen circumstances will be described in the plugging report.

