CLASS VI PERMIT INJECTION WELL PLUGGING PLAN

LAC 43:XVII §3631 & LCFS Protocol Subsection C.5.1(a)

STRATEGIC BIOFUELS
LOUISIANA GREEN FUELS PORT OF COLUMBIA FACILITY

Prepared By:
GEOSTOCK SANDIA, LLC

Revision No. 2
August 2024

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 FACILITY INFORMATION

Facility Name: Louisiana Green Fuels, Port of Columbia Facility
Three Class VI Injection Wells

Facility Contact: Bob Meredith, COO
303 Wall St, Columbia, LA 71418
225-278-0382
bobmeredith@strategicbiofuels.com

Well Locations: Port of Columbia,

Caldwell Parish, Louisiana

Name: Latitude / Longitude

Well 1 (W-N1): 32.18812141510 / -92.10986101060

Well 2 (W-N2): 32.18686691570 / -92.05915551900

Well 3 (W-S2): 32.16393759770 / -92.08754320370

Strategic Biofuels will conduct injection well and monitor well plugging and abandonment according to the procedures below for the Louisiana Green Fuels site per the requirements of Statewide Order No. 29-N-6 [LAC 43:XVII §3631]. It has been designed to prevent the movement of fluids into or between USDW's or out of the injection zones [§3631 (A)(3)].

Strategic Biofuels has provided the required financial assurance information for closure and post-closure care in "*Module C – Financial Responsibility Demonstration*". Estimated costs for well abandonment have been provided by an independent third-party (Geostock Sandia, LLC) per LAC 43:XVII §3609 (C)(4)(h)(i). Strategic Biofuels will submit a Form UIC-17, or successor form, to the commission for Notice of Intent to Plug prior to commencing plugging operations. The plugging operations will follow the procedures identified in this plan and will be contained within the Notice of Intent to plug to the commissioner [§3631 (A)(4)]. Adjustments to the work permit for the UIC-approved plugging plan will be updated based upon the final specifications of the completed injection wells as constructed. The plugging operations will not begin before obtaining approval from the Commissioner.

2.0 BOTTOMHOLE PRESSURE DETERMINATION

A final bottomhole reservoir pressure will be determined prior to commencing injection well plugging operations [§3631 (A)(2)].and LCFS Protocol Subsection C.5.1(d)(1)]. During the initial injection well operations, pressure gauges will be installed for downhole to continuously monitor the injection pressure. After cessation of injection operations, the downhole gauges will be used to obtain a final bottomhole pressure after a period of well stabilization within the injection zone prior to proceeding with the plugging operations.

If these gauges are damaged or malfunction, pressure and temperature gauges will be deployed via wireline, after the well has been flushed with a brine kill fluid so the well is at a static condition to record the final bottomhole pressure.

3.0 PLANNED MECHANICAL INTEGRITY TESTS

To verify well integrity, Strategic Biofuels will conduct at least one of the tests listed in Table 1 prior to plugging the injection wells as required by §3627 (A)(3) and LCFS Protocol Subsection C.5.1(d)(2). Tubing and packer will be retrieved at the end of injection operations as part of the plugging procedures. Casing will remain in the injection well and examined for integrity.

Table 1: Planned Mechanical Integrity Tests (MIT)

Test Description	Location
Cement Bond Log(s) (CBL) (External MIT)	Run CBL & Ultrasonic logs: Compare to initial run logs. Discrepancies, if any, can be noted between the logs as an indication of cement quality improvement (due to carbon hydroxide hardening of the cement) or degradation (due to casing movement or other cement sheath disturbance).
Radioactive Tracer Log-Alternate Log (External MIT)	Run radioactive tracer survey to register any fluid movement external to the long string casing;
Temperature Log (External MIT)	Run temperature log post-injection to register any fluid movements external to the long string casing;
Pressure Test (Internal MIT)	Perform a pressure test on the 9-5/8-inch casing from the upper packer to surface before removing the tubing and the packers. Test pressure to be greater than annulus pressure maintained during injection activities.
Casing Caliper Log (Internal MIT)	Casing caliper log (optional if long string casing successfully passes the pressure test (above). Caliper log will provide information about long string casing internal wall thickness loss due to corrosion or erosion, information useful for future projects.

Prior to testing, the wells will be flushed with brine to force the carbon dioxide away from the wellbore and out into the formation [per §3631 (A)(2) and LCFS Protocol Subsection C.5.1(f)]. Casing inspection tools will be run on wireline. Quality assurance for the logs has been detailed in "*Attachment 1 - Schlumberger Wireline Log Quality Control Reference Manual*" to the Quality Assurance Surveillance Plan (QASP) contained in the Testing and Monitoring Plan.

3.1 EQUIPMENT DETAILS

If wireline deployed pressure/temperature gauges are used to record bottomhole pressure, the wireline should be corrosion resistant (such as MP-35 line), and the deployed gauges should consist of a surface read-out gauge with a memory backup. Gauge specifications should be as follows or similar to those listed in Table 2:

Table 2: Injection/Falloff Pressure Gauge Information – Wireline Testing Operations

Pressure Gauge	Property	Value
Surface Readout Pressure Gauge	Range Resolution	0 – 10,000 psi/356 ºF +/-0.01 psi/0.01 ºF
	Accuracy	+/-0.03% of full scale (+/-3 psi/+/-0.1 ºF)
	Manufacturer's Recommended Calibration Frequency	Minimum Annual
Memory Pressure Gauge	Range Resolution	0 – 10,000 psi/356 ºF +/-0.01 psi/0.01 ºF
	Accuracy	+/-0.03% of full scale (+/-3 psi/+/-0.1 ºF)
	Manufacturer's Recommended Calibration Frequency	Minimum Annual

Prior to running an MIT or bottom hole pressure test, the wellbore may be displaced with water or brine, in either case, the well will be allowed to thermally stabilize prior to any and all testing operations. The wells will be shut-in for a minimum of 36 hours to allow for temperature effects from injection on the well above the Upper Tuscaloosa / Paluxy Primary Injection Zone to return near the normal gradient. from newly-placed fluids to dissipate. The external MIT logs will be run on all injection wells.

3.2 PASS/FAIL CRITERIA

Well Plugging is considered a "PASS" when it meets the objective of well plugging, which is minimizing the chance of leak to environment and reducing the possibility of unintended flow of fluid outside the confining unit to as low as reasonably practicable. Verification of meeting the objective will be conducted at the end of each plugging operation. The verification objective is to assess the sealing effectiveness and required position of a permanent isolation. Direct verification methods can be such as tagging, weight testing, dressing-off, inflow testing, pressure testing or indirect verifications such as volume/loss records, cementing pressure records, laboratory slurry testing (compressive strength development), surface cement sample setting, logging, and long-term monitoring (pressure and/or bubbles).

3.2.1 Temperature Survey

A baseline differential temperature survey will be run in well via wireline after allowing a period (minimum of 36 hours) to reach approximate static conditions. 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 log will include both an absolute temperature curve and a differential temperature curve. The well should be shut-in at least 36 hours to allow for temperature stabilization prior to running the temperature survey.

The temperature will be logged down from the surface to the deepest attainable depth (top of solids fill) in the wellbore. Recommended line speed for the logging operations is 30 to 60 feet per minute. A correlation log will be presented in track 1, and the two temperature curves will be presented in tracks 2 and 3. The temperature log will be scaled at or about 20° F (or 10° C degrees) per track. The differential curve will be scaled in a manner appropriate to the logging equipment design but will be sensitive enough to readily indicate anomalies. In general, the procedure for wireline operations for each well will be as follows:

1. Attach a temperature probe and casing collar locator (CCL) to the wireline.
2. After a minimum of 36 hours of well static conditions, begin the temperature survey. The tools will be lowered into well at 30 to 60 feet/minute, recording temperature in wellbore. The temperature survey will be run to the deepest attainable depth (top of solids fill) in the wellbore. The wireline may be flagged, if needed, to assist in depth correlation.

3. Following completion of the survey, the wireline tools will be retrieved from the wellbore.

A successful temperature log will "PASS" if there are no observed, unexplained anomalies outside of the permitted injection zone.

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 Commissioner may be required to further define the nature of the fluid movement or to diagnose a potential leak.

3.2.2 Radioactive Tracer Survey

A Radioactive Tracer Survey (RTS) may be run as an alternative to the temperature survey. The tool consists of a gamma detector above the ejector port and one or two detectors below the ejector port. In order to run the RTS, the well will need to be flushed with brine and the test will be conducted using brine or fresh water with clay stabilizer to convey the radioactive iodine tracer material. The tool should be able to continuously record during tracer fluid ejection. The upper detector will be recorded in track 1 at a scale of 0 to 100 or 150 API units, and the lower detector(s) will be recorded in tracks 2 and 3 at a higher (less sensitive) scale, typically 0 to 1,000 API units.

Prior to testing, an initial gamma ray base log, with a casing collar locator log, will be recorded from total depth of the well to at least 100 feet above the injection tubing packer, before it was removed. The initial gamma ray survey can be made under low flow conditions or with the well in static conditions.

A concurrent casing collar locator log for depth correlation will be run on the wireline tool string. Two five (5) minute time drive statistical checks will be run prior to the ejection of tracer fluid. One of the statistical checks will be run in a confining unit immediately above the uppermost perforation in the well. The second check should be run within the Primary Injection Zone. The baseline log and statistical checks will be run to determine background radiation prior to tracer fluid ejection.

Injection should be initiated or increased during testing operations. During the survey, injection flow rates will be set at the rate at which the fluid will be under laminar flow conditions, while remaining within the maximum permitted operating parameters anticipated for the well. The volume of the tracer fluid slug will be sufficient to cause a gamma curve deflection on the order of 25x background reading as the ejected slug passes the lower detector(s). This would typically be a full-scale deflection.

A constant injection (moving) survey will be run from above the setting depth of the top packer before it was removed to the perforations to confirm there are no leak paths between those two points. This survey will consist of ejecting a slug above the former top packer setting depth, verifying the ejection, dropping down through the slug, and then logging up through the slug to above where the slug was first ejected. The tool will be successively dropped down through the slug again, and logging will continue upward to above where the slug was encountered on the previous pass. This process will be repeated a minimum of two times, until the slug flows out into the formation. If necessary, the injection rate may be adjusted to accomplish this test.

A stationary survey will be run approximately 20 feet the top of the perforated interval to check for upward fluid migration outside the cemented casing. Flow during the stationary surveys will be at sufficient rates to approximate normal operating conditions for the well during its injection life. The procedure consists of setting the tool and logging on time drive, ejecting a slug, verifying the ejection, and waiting an appropriate amount of time that would allow the slug to exit the wellbore and return through channels outside pipe, if present. The time spent at the station will vary but should be at least twice the time estimated to detect the tracer fluid if channeling existed, or for 15 minutes, whichever is greater. If tracer fluid is detected channeling outside of the pipe at any time during the stationary survey, then the survey may be stopped, and the tracer fluid's movement will be documented by logging up on depth drive, until the tracer exits the channel. The stationary survey should be repeated at least one time.

Additional stationary or moving surveys may be required, depending upon well construction, test results, or to investigate known problem conditions. At least two repeatable logs of every tracer survey, moving and stationary, should be run. On completion of the tracer surveys, a final background gamma log will be run for comparison with the initial background log. In general, the test procedure will be as follows:

1. Attach radioactive tracer tools, including casing collar locator (CCL), gamma ray detectors and ejector modules to the wireline. Lower tools in wellbore to deepest attainable depth (top of solids fill). Record the depth of solids fill in the well, if any. Correlate tools on depth with the injection packer and any other cased-hole log(s) run in the well.

2. A baseline gamma log will be run from deepest attainable depth to approximately 4,800 feet (must be at least 100 feet above the setting depth of the top packer before it was removed). Statistical tool checks will be conducted 10 feet above the set depth of the top injection packer and approximately 15 feet above the top perforation. (*Specific depths will be identified and updated after each injection well completion*).

3. With the tool set a minimum of 100 feet above the packer, start injecting brine fluid at approximately 50 gpm (or defined acceptable rate). Eject a slug of tracer material and verify ejection.

4. Lower the tool through the slug and log up through the slug. Repeat slug-tracking sequence, following the slug down the tubing and into the injection zone until the slug is dissipated.

Note: It is desired to achieve a minimum of three or more passes below the injection packer before the radioactive slug exits the perforations. Adjust or reduce injection rate if needed to achieve this objective.

5. Repeat Steps 3 and 4.

6. Position lower detector of RTS tool at approximately 15 feet above the top perforation. Initiate and maintain injection at approximately 250 gpm (or defined acceptable rate).

7. Eject a slug of tracer material and record on time drive for a minimum of 15 minutes to determine if upward flow around the casing occurs.

8. Repeat Step 7.

9. Cease pumping, lower the tool to the deepest attainable depth, and run a repeat baseline gamma ray log to verify that the radiation level has returned to background.

10. Dump remaining tracer material from the tool and pump remaining test fluid to flush the tracer material from the wellbore.

11. Retrieve the wireline tools from the wellbore and rig down wireline unit.

A successful pressure test will "PASS" if the radioactive iodine material stays within the Primary Injection Zone and within the Sequestration Complex.

3.2.3 Cement Bond Log & Ultrasonic Log

Cement Bond and Ultrasonic logging will be run to verify the mechanical integrity of the near-well area behind the casing in the injection wells prior to plugging. The surveys will be compared to the original baseline survey run in the well during completion operations. Should downhole well completion change at any time, a new baseline log will be run. The Cement Bond and Ultrasonic logging surveys will be run from the top of the Tuscaloosa Formation up to the top of the Selma Chalk (just into the intermediate casing) in the injection wells. Note that the log will be run under no pressure but may be repeated while applying surface pressure in order to evaluate micro-annulus effects.

3.2.4 Casing Pressure Test

Before the removal of the tubing and packer system, a casing pressure test will be performed from the upper packer to surface. If the casing pressure test isn't performed with the tubing and packer, a casing pressure test will be performed Before setting the initial plug across the well completion interval. The casing pressures during the test will be recorded on a time-drive recorder for at least 60 minutes in duration and the chart or digital printout of times and pressures will be certified as true and accurate. The pressure scale on the chart will be low enough to readily show a 5 percent change from the starting pressure. In general, the test procedure will be as follows:

1. Connect a high-resolution pressure transducer to the well casing and increase wellbore pressure to at least 200 psig over the well's maximum permitted surface injection pressure and maintain for a minimum of 60 minutes.

2. At the conclusion of the test, surface casing pressure will be lowered to zero psi.

A successful pressure test will "PASS" if the pressure change is 5 percent or less of the initial test pressure at the conclusion of the 60-minute test period. IF the test pressure change is greater than 5% of the initial test pressure for the 60-minute time period, then the test will be considered a "FAIL". The test will be repeated and if the well continues to "FAIL", indicating that the construction of the well may have lost its integrity, plugging operations will be suspended pending consultation with the Commissioner to determine how to further assess the well and needed remediation. Additional tests at progressively lower pressures may be run to identify the pressure at which the casing can hold a differential. A review of the continuous monitoring of the annulus system will be performed to identify if there are any data that may lead to a potential leak and assist in diagnosing potential issues with the annulus.

4.0 DETAILS ON PLUGS

Strategic Biofuels will use the materials and methods noted in Table 3 to plug the injection wells [LAC 43:XVII §3631and LCFS Protocol Subsection C.5.1(d)(3) & (4) & (5) & (6)]. The Primary Injection Zone will be plugged in two stages, both through a cement retainer. The lower retainer shall be set at approximately 5,700 ft (between the Paluxy and Upper Tuscaloosa perforations) and the upper retainer at approximately 100 ft above the top of the perforated interval. Additional plugs in the protection casing will be placed across the bottom of the Austin Chalk / Eagleford Equivalent Primary Upper Confining Zone, the bottom of the Midway Shale Secondary Upper Confining Zone, across the surface casing shoe, and at the surface. Well-established industry practice has shown that a 100 ft to 200 ft length of good cement properly placed in the casing is an effective plug and fully sufficient for permanent isolation. Excess volume will be pumped to account for possible contamination and any uncertainty in placement.

The actual volume and depth placement of the plugs will depend on the geologic considerations as determined by the individual well logs, the downhole specifications of the well as constructed, and the mechanical conditions assessed by the post-injection evaluation procedures immediately preceding placement of the cement plugs and consultation with the Commissioner. The cement(s) formulated for plugging will be compatible with the carbon dioxide stream. The cement formulation and required certification documents will be submitted to authorized regulatory agency-with the final well plugging plan. Strategic Biofuels will report the wet density and will retain samples of the cement used for each plug. Volume calculations will be based upon the final dimensions of the protection casing. Plugs 1 and 2 will be placed by squeezing cement through a cement retainer and plugs 3, 4, and 5 will be spotted using the balanced method. The proposed plugging details are presented in Tables 3, 4, and 5 below.

Table 3: Plugging Details for the Injection Well No. 1 (W-N1)

Plug Information	Plug #1	Plug #2	Plug #3	Plug #4	Plug #5
Diameter of casing in which plug will be placed (in.)	8.921	8.921	8.921	8.921	8.921
Depth to bottom of tubing or drill pipe (ft)	5,700	4,800	4,000	1,300	100

Plug Information	Plug #1	Plug #2	Plug #3	Plug #4	Plug #5
Sacks of cement to be used (each plug)	475	350	80	73	37
Slurry volume to be pumped (bbls)	95	70	16	16	8
Slurry weight (lb./gal)	16.02	16.02	16.02	15.6	15.6
Calculated top of plug (ft)	5,700	4,800	3,800	1,100	0
Cement Yield (ft^3/sk)	1.11	1.11	1.11	1.19	1.19
Bottom of plug (ft)	6,920	5,695	4,000	1,300	100
Type of cement	EverCRETE™ or an approved CO_2 Resistant Cement	EverCRETE™ or an approved CO_2 Resistant Cement	EverCRETE™ or an approved CO_2 Resistant Cement	Premium	Premium
Method of emplacement	Retainer	Retainer	Balance	Balance	Balance

Table 4: Plugging Details for the Injection Well No. 2 (W-N2)

Plug Information	Plug #1	Plug #2	Plug #3	Plug #4	Plug #5
Diameter of casing in which plug will be placed (in.)	8.921	8.921	8.921	8.921	8.921
Depth to bottom of tubing or drill pipe (ft)	5,700	4,800	4,000	1,300	100
Sacks of cement to be used (each plug)	475	350	80	73	37
Slurry volume to be pumped (bbls)	95	70	16	16	8
Slurry weight (lb./gal)	16.02	16.02	16.02	15.6	15.6
Calculated top of plug (ft)	5,700	4,800	3,800	1,100	0
Cement Yield (ft^3/sk)	1.11	1.11	1.11	1.19	1.19
Bottom of plug (ft)	6,920	5,695	4,000	1,300	100
Type of cement	EverCRETE™ or an approved CO_2 Resistant Cement	EverCRETE™ or an approved CO_2 Resistant Cement	EverCRETE™ or an approved CO_2 Resistant Cement	Premium	Premium
Method of emplacement	Retainer	Retainer	Balance	Balance	Balance

Table 5: Plugging Details for the Injection Well No. 3 (W-S2)

Plug Information	Plug #1	Plug #2	Plug #3	Plug #4	Plug #5
Diameter of casing in which plug will be placed (in.)	8.921	8.921	8.921	8.921	8.921
Depth to bottom of tubing or drill pipe (ft)	5,700	4,800	4,000	1,300	100
Sacks of cement to be used (each plug)	475	350	80	73	37
Slurry volume to be pumped (bbls)	95	70	16	16	8
Slurry weight (lb./gal)	16.02	16.02	16.02	15.6	15.6
Calculated top of plug (ft)	5,700	4,800	3,800	1,100	0
Cement Yield (ft^3/sk)	1.11	1.11	1.11	1.19	1.19
Bottom of plug (ft)	6,920	5,695	4,000	1,300	100
Type of cement	EverCRETE™ or an approved CO_2 Resistant Cement	EverCRETE™ or an approved CO_2 Resistant Cement	EverCRETE™ or an approved CO_2 Resistant Cement	Premium	Premium
Method of emplacement	Retainer	Retainer	Balance	Balance	Balance

Prior to plugging each well, Strategic Biofuels will consider the operational and monitoring history of the sequestration project and identify whether any information or events warrant amendment of the original Well Plugging Plan. The volume and depth of the plug or plugs will depend on the final geology and "as built" well completion and conditions of the well as assessed during mechanical integrity testing prior to closure. The cement(s) formulated for plugging will be compatible (*i.e.*, carbon dioxide-resistant cement) with the stored carbon dioxide and water mixtures where exposure may occur. Because of its intrinsic low permeability, EverCRETE™ (a proprietary carbon dioxide resistant cement product from SLB) which resists cement matrix attack from wet supercritical carbon dioxide and water saturated with carbon dioxide. Accelerated reaction kinetics lead to a stabilized matrix within days of exposure to the carbon dioxide environment, leading to stabilized mechanical properties. These properties make it ideal for plugging the Primary Injection Zone and setting plugs at the top of the Sequestration Complex with a plug set across the Austin Chalk / Eagleford Equivalent / Top Upper Tuscaloosa interface and the Base Midway Shale / Top Selma Chalk interface.

Any final modifications to the cement formulation and required certification documents will be submitted to the agency with the proposed well plugging plan prior to field operations. Strategic Biofuels will include the wet density of the cement in the final "*Report of Plugging and Abandonment"* for each well and will retain duplicate samples of the cement used for each plug. Cement volumes will be calculated and verified using industry accepted equations for cement volumes, using casing size, annular areas, and total length of cement plugs. Top of each plug will be verified by load testing.

5.0 PLUGGING PLAN DETAILS

The following plugging and abandonment plans have been developed for the Strategic Biofuels – Louisiana Green Fuels site in accordance with LAC §3631.A.4 and LCFS Protocol Subsection C.5.1(d)(3) & (4) & (5) & (6). The proposed plugging and abandonment plan for the proposed injection wells is shown below, subject to modification by the Commissioner. The plugging procedure will be implemented if well operations are abandoned or if a well has reached the end of its useful life. NOTE: Plugging and Abandonment of the monitoring wells is contained within the Post-Injection Site Closure (PISC) & Site Care Plan of this application.

5.1 NOTIFICATIONS, PERMITS, AND INSPECTIONS

In compliance with LAC 43:XVII §3631 (A)(4) and LCFS Protocol Subsection C.5.1(h), Strategic Biofuels will notify the authorized regulatory agency with a Notice of Intent to plug by submitting a UIC-17, or successor form, to the commissioner. Strategic Biofuels will receive written approval from the commissioner before commencing plugging operations. Inspections and monitoring of the plugging operations will be made available to the regulatory authority at its request. A closure report certifying that the well or-wells were closed in accordance with applicable requirements will be submitted to the commissioner within 30 days of plugging each well [§3631 (A)(5)]. The report will include records for any unreported newly constructed or previously unidentified wells within the Area of Review that penetrate Midway Shale Secondary Upper Confining Zone.

When plugging and abandonment is complete, Strategic Biofuels will submit certification to the authorized regulatory body (by the plant and by a licensed, professional engineer with current registration, who is knowledgeable and experienced in practical drilling engineering and who is familiar with the special conditions and requirements of injection well construction) that the injection well(s) has been closed in accordance with the regulations. Plugging reports will be submitted within 30 days of well plugging and Strategic Biofuels will retain a copy of the plugging report for a minimum of 10 years following site closure [§3631 (A)(5)and LCFS Protocol Subsection C.5.1(k)].

5.2 PROPOSED PLUGGING PROCEDURES

The plugging and abandonment procedures and materials have been designed to permanently contain the sequestered carbon dioxide and prevent its movement out of the Sequestration Complex and into geologic intervals above the confining zones, the USDW and the atmosphere. The materials to be used will be resistive to the corrosive nature of carbon dioxide and water.

5.2.1 Injection Well No. 1 (W-N1)

A proposed well plugging schematic is contained in Figure 1 for Injection Well 1 (W-N1) and is based upon the proposed drilling and completion schematic. Final plan adjustment will be made for the "as built" well conditions and geological formation tops.

Prior to conducting the following plugging and abandonment procedure, Strategic Biofuels will inject a sufficient volume of brine buffer fluid to displace the carbon dioxide from the immediate wellbore area. Specific plugging plans will be updated for each well after the drilling and completion with "as built" well specifics and penetrated formation tops.

The outline of plugging procedures is as follows:

1. In compliance with LAC 43:XVII §3631 (A)(4), notify the EPA UIC Program Director at least 60 days before plugging the well and provide updated plugging plan.

2. Obtain bottomhole pressure per Section 2.0 of this plan. Compare test results to predicted values.

3. Move in and rig up a workover rig on well.

~~4.~~ Flush tubing with a -minimum of two multiple wellbore volumes of weighted brine (drilling mud if higher density required), sufficient to overbalance injection reservoir pressures and displace carbon dioxide from the immediate wellbore area.

5. Remove wellhead and rig up blowout preventer on well.

6. Unset upper retrievable packer and pull tubing seal assembly from lower permanent packer.

7. Circulate weighted brine into protection casing annulus sufficient to overbalance injection reservoir pressure.

8. Retrieve injection tubing, upper production packer and seal assembly from the well.

9. RIH with packer retrieving tool on workstring tubing and engage lower permanent injection packer. Release and retrieve packer from the well.

10. Run in hole with 2-7/8-inch workstring and bit to total depth. Circulate well clean. POOH.

11. Run temperature logs, radioactive tracer logs, casing inspection and cement bond logs to determine integrity of casing and cement bond. Note: If logs indicate potential for inter-formational fluid movement, modify closure plan to remediate and prevent it.

12. Pick up 9 5/8-inch cement retainer and run in well to 5,700 ft.

13. Run workstring in to well and latch into retainer. Rig up cementing equipment, and pump 20 barrels of spacer followed by 95 bbl (475 sx) of EverCRETE™ CO_2 Resistant cement. Displace the cement to near top of retainer. Pull workstring out of retainer and dump 1 bbls (5.1 sx) of cement on top of retainer. Pull the workstring up 500 ft and reverse circulate.

14. Shut well in and monitor pressure.

15. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load test the cement plug to ensure its competency (open perforations above).

16. Pick up 9 5/8-inch cement retainer and run in well to 4,800 ft.

17. Run workstring in to well and latch into retainer. Rig up cementing equipment, and pump 20 barrels of spacer followed by 70 bbl (350 sx) of EverCRETE™ CO_2 Resistant cement. Displace the cement to near top of retainer. Pull workstring out of retainer and dump 1 bbls (5.1 sx) of cement on top of retainer. Pull the workstring up 500 ft and reverse circulate.

18. Shut well in and monitor pressure.

19. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

20. Displace the brine in the wellbore with drilling mud or brine at a minimum of 9.5 lb/gal density and sufficient viscosity to support the plugging cement.

21. Pull up to 4,000 ft and rig up cementing equipment. Pump 20 barrels of spacer followed by 16 barrels (80 sx) of Evercrete cement across the Injection Zone / Primary Upper Confining Zone interface. Displace the cement to place a balanced 200 ft cement plug. Pull the workstring up 500 ft above the calculated top of cement slowly, so that a uniform cement column extends from +/- 4,000 ft to +/- 3,800 ft in the 9 5/8-inch casing. Reverse circulate the tubing clean.

22. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

23. Pull up to 1,300 ft and rig up cementing equipment. Pump 20 barrels of spacer followed by 16 barrels (73 sx) of Premium cement across the Surface Casing shoe. Displace the cement to place a balanced 200 ft cement plug. Pull the workstring up 500 ft above the calculated top of cement slowly, so that a uniform cement column extends from +/- 1,300 ft to +/- 1,100 ft in the 9 5/8-inch casing. Reverse circulate the tubing clean.

24. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

25. Pull up to 100 ft and rig up cementing equipment. Pump 10 barrels of spacer followed by 8 barrels (37 sx) of Premium cement. Displace the cement and pull the workstring up out of the well slowly so that a uniform cement column extends from +/- 100 ft to surface in the 9 5/8-inch casing.

26. Remove wellhead, cut off all casings five feet below ground surface, and weld a steel plate on top and inscribed with the well serial number and data of plug and abandonment.

27. Rig down workover rig and associated equipment and move out. Clean project site.

28. In accordance with the requirements of LAC 43:XVII §3631 (A)(5),within 30 days of plugging and closure, a plugging report will be submitted to the Commissioner. This report will be certified as accurate by Strategic Biofuels, and by the person who has performed the plugging operations. Strategic Biofuels will retain the well plugging report for 10 years following the site closure.

A proposed plugged schematic for the Injection Well No. 1 (W-N1) is presented in Figure 1.

5.2.2 Injection Well No. 2 (W-N2)

A proposed well plugging schematic is contained in Figure 2 for Injection Well 2 (W-N2) and is based upon the proposed drilling and completion schematic. Final plan adjustment will be made for the "as built" well conditions and geological formation tops.

Prior to conducting the following plugging and abandonment procedure, Strategic Biofuels will inject a sufficient volume of brine buffer fluid to displace the carbon dioxide from the immediate wellbore area per §3631 (A)(2). Specific plugging plans will be updated for each well after the drilling and completion with "as built" well specifics and penetrated formation tops.

The outline of plugging procedures is as follows:

1. In compliance with LAC 43:XVII §3631 (A)(4), notify the commissioner with a Notice of Intent form (UIC-17 or successor) containing a plugging plan with applicable details.

2. Receive written approval from commissioner to proceed with plugging operations.

3. Obtain bottomhole pressure per Section 2.0 of this plan. Compare test results to predicted values.

4. Move in and rig up a workover rig on well.

~~5.~~ Flush tubing with a -minimum of two multiple wellbore volumes of weighted brine (drilling mud if higher density required), sufficient to overbalance injection reservoir pressures and displace carbon dioxide from the immediate wellbore area.

6. Remove wellhead and rig up blowout preventer on well.

7. Unset upper retrievable packer and pull tubing seal assembly from lower permanent packer.

8. Circulate weighted brine into protection casing annulus sufficient to overbalance injection reservoir pressure.

9. Retrieve injection tubing, upper production packer and seal assembly from the well.

10. RIH with packer retrieving tool on workstring tubing and engage lower permanent injection packer. Release and retrieve packer from the well.

11. Run in hole with 2-7/8-inch workstring and bit to total depth. Circulate well clean. POOH.

12. Run temperature logs, radioactive tracer logs, casing inspection and cement bond logs to determine integrity of casing and cement bond. Note: If logs indicate potential for inter-formational fluid movement, modify closure plan to remediate and prevent it.

13. Pick up 9 5/8-inch cement retainer and run in well to 5,700 ft.

14. Run workstring in to well and latch into retainer. Rig up cementing equipment, and pump 20 barrels of spacer followed by 95 bbl (475 sx) of EverCRETE™ CO_2 Resistant cement. Displace the cement to near top of retainer. Pull workstring out of retainer and dump 1 bbls (5.1 sx) of cement on top of retainer. Pull the workstring up 500 ft and reverse circulate.

15. Shut well in and monitor pressure.

16. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load test the cement plug to ensure its competency (open perforations above).

17. Pick up 9 5/8-inch cement retainer and run in well to 4,800 ft.

18. Run workstring in to well and latch into retainer. Rig up cementing equipment, and pump 20 barrels of spacer followed by 70 bbl (350 sx) of EverCRETE™ CO_2 Resistant cement. Displace the cement to near top of retainer. Pull workstring out of retainer and dump 1 bbls (5.1 sx) of cement on top of retainer. Pull the workstring up 500 ft and reverse circulate.

19. Shut well in and monitor pressure.

20. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

21. Displace the brine in the wellbore with drilling mud or brine at a minimum of 9.5 lb/gal density and sufficient viscosity to support the plugging cement.

22. Pull up to 4,000 ft and rig up cementing equipment. Pump 20 barrels of spacer followed by 16 barrels (80 sx) of Evercrete cement across the Injection Zone / Primary Upper Confining Zone interface. Displace the cement to place a balanced 200 ft cement plug. Pull the workstring up 500 ft above the calculated top of cement slowly, so that a uniform cement column extends from +/- 4,000 ft to +/- 3,800 ft in the 9 5/8-inch casing. Reverse circulate the tubing clean.

23. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

24. Pull up to 1,300 ft and rig up cementing equipment. Pump 20 barrels of spacer followed by 16 barrels (73 sx) of Premium cement across the Surface Casing shoe. Displace the cement to place a balanced 200 ft cement plug. Pull the workstring up 500 ft above the calculated top of cement slowly, so that a uniform cement column

extends from +/- 1,300 ft to +/- 1,100 ft in the 9 5/8-inch casing. Reverse circulate the tubing clean.

25. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

26. Pull up to 100 ft and rig up cementing equipment. Pump 10 barrels of spacer followed by 8 barrels (37 sx) of Premium cement. Displace the cement and pull the workstring up out of the well slowly so that a uniform cement column extends from +/- 100 ft to surface in the 9 5/8-inch casing.

27. Remove wellhead, cut off all casings five feet below ground surface, and weld a steel plate on top and inscribed with the well serial number and data of plug and abandonment.

28. Rig down workover rig and associated equipment and move out. Clean project site.

29. In accordance with the requirements of LAC 43:XVII §3631 (A)(5),within 30 days of plugging and closure, a plugging report will be submitted to the Commissioner. This report will be certified as accurate by Strategic Biofuels, and by the person who has performed the plugging operations. Strategic Biofuels will retain the well plugging report for 10 years following the site closure.

A proposed plugged schematic for the Injection Well No. 2 (W-N2) is presented in Figure 2.

5.2.3 Injection Well No. 3 (W-S2)

A proposed well plugging schematic is contained in Figure 3 for Injection Well 3 (W-S2) and is based upon the proposed drilling and completion schematic. Final plan adjustment will be made for the "as built" well conditions and geological formation tops.

Prior to conducting the following plugging and abandonment procedure, Strategic Biofuels will inject a sufficient volume of brine buffer fluid to displace the carbon dioxide from the immediate wellbore area per §3631 (A)(2). Specific plugging plans will be updated for each well after the drilling and completion with "as built" well specifics and penetrated formation tops.

The outline of plugging procedures is as follows:

1. In compliance with LAC 43:XVII §3631 (A)(4), notify the commissioner with a Notice of Intent form (UIC-17 or successor) containing a plugging plan with applicable details.

2. Receive written approval from commissioner to proceed with plugging operations.

3. Obtain bottomhole pressure per Section 2.0 of this plan. Compare test results to predicted values.

4. Move in and rig up a workover rig on well.

~~5.~~ Flush tubing with a -minimum of two multiple wellbore volumes of weighted brine (drilling mud if higher density required), sufficient to overbalance injection reservoir pressures and displace carbon dioxide from the immediate wellbore area.

6. Remove wellhead and rig up blowout preventer on well.

7. Unset upper retrievable packer and pull tubing seal assembly from lower permanent packer.

8. Circulate weighted brine into protection casing annulus sufficient to overbalance injection reservoir pressure.

9. Retrieve injection tubing, upper production packer and seal assembly from the well.

10. RIH with packer retrieving tool on workstring tubing and engage lower permanent injection packer. Release and retrieve packer from the well.

11. Run in hole with 2-7/8-inch workstring and bit to total depth. Circulate well clean. POOH.

12. Run temperature logs, radioactive tracer logs, casing inspection and cement bond logs to determine integrity of casing and cement bond. Note: If logs indicate potential for inter-formational fluid movement, modify closure plan to remediate and prevent it.

13. Pick up 9 5/8-inch cement retainer and run in well to 5,700 ft.

14. Run workstring in to well and latch into retainer. Rig up cementing equipment, and pump 20 barrels of spacer followed by 95 bbl (475 sx) of EverCRETE™ CO_2 Resistant cement. Displace the cement to near top of retainer. Pull workstring out of retainer and dump 1 bbls (5.1 sx) of cement on top of retainer. Pull the workstring up 500 ft and reverse circulate.

15. Shut well in and monitor pressure.

16. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load test the cement plug to ensure its competency (open perforations above).

17. Pick up 9 5/8-inch cement retainer and run in well to 4,800 ft.

18. Run workstring in to well and latch into retainer. Rig up cementing equipment, and pump 20 barrels of spacer followed by 70 bbl (350 sx) of EverCRETE™ CO_2 Resistant cement. Displace the cement to near top of retainer. Pull workstring out of retainer and dump 1 bbls (5.1 sx) of cement on top of retainer. Pull the workstring up 500 ft and reverse circulate.

19. Shut well in and monitor pressure.

20. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

21. Displace the brine in the wellbore with drilling mud or brine at a minimum of 9.5 lb/gal density and sufficient viscosity to support the plugging cement.

22. Pull up to 4,000 ft and rig up cementing equipment. Pump 20 barrels of spacer followed by 16 barrels (80 sx) of Evercrete cement across the Injection Zone / Primary Upper Confining Zone interface. Displace the cement to place a balanced 200 ft cement plug. Pull the workstring up 500 ft above the calculated top of cement slowly, so that a uniform cement column extends from +/- 4,000 ft to +/- 3,800 ft in the 9 5/8-inch casing. Reverse circulate the tubing clean.

23. After waiting a sufficient amount of time for the cement to harden (minimum 8

hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

24. Pull up to 1,300 ft and rig up cementing equipment. Pump 20 barrels of spacer followed by 16 barrels (73 sx) of Premium cement across the Surface Casing shoe. Displace the cement to place a balanced 200 ft cement plug. Pull the workstring up 500 ft above the calculated top of cement slowly, so that a uniform cement column extends from +/- 1,300 ft to +/- 1,100 ft in the 9 5/8-inch casing. Reverse circulate the tubing clean.

25. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), locate the top of the cement plug, and load and/or pressure test the cement plug to ensure its competency.

26. Pull up to 100 ft and rig up cementing equipment. Pump 10 barrels of spacer followed by 8 barrels (37 sx) of Premium cement. Displace the cement and pull the workstring up out of the well slowly so that a uniform cement column extends from +/- 100 ft to surface in the 9 5/8-inch casing.

27. Remove wellhead, cut off all casings five feet below ground surface, and weld a steel plate on top and inscribed with the well serial number and data of plug and abandonment.

28. Rig down workover rig and associated equipment and move out. Clean project site.

29. In accordance with the requirements of LAC 43:XVII §3631 (A)(5),within 30 days of plugging and closure, a plugging report will be submitted to the Commissioner. This report will be certified as accurate by Strategic Biofuels, and by the person who has performed the plugging operations. Strategic Biofuels will retain the well plugging report for 10 years following the site closure.

A proposed plugged schematic for the Injection Well No. 3 (W-S2) is presented in Figure 3.

5.3 CONTINGENCY PLANS

Should any of the cement plugs not pass the load or pressure test, a sample of the retained slurry will be sent to the cementing company's laboratory for root-cause analysis to identify failure mechanism of the slurry. Cement pumping and mixing equipment will be inspected for equipment malfunction or cement contamination sources. Corrective actions will be applied prior to resetting the failed cement plug. The failed cement plug will be drilled out and the well will be recirculated down to the previous plug depth. The workstring will be placed accordingly, and a new plug will be pumped using the redesigned cement composition. Following cementing operations, the workstring will be pulled up 500 feet above the calculated top of cement. The workstring will be reverse circulated clean. After waiting a sufficient amount of time for the cement to harden (minimum 8 hours), the top of the cement plug will be located and load and/or pressure tested to ensure its competency.