FACT SHEET

<u>Applicant:</u>	ExxonMobil Low Carbon Solutions Onshore 22777 Springwoods Village Parkway Spring, TX 77389 281-939-3899
Project Proposal:	Permit to drill one Class V Stratigraphic Test Well
Type of Facility:	N/A
Well Names:	Hummingbird IZM No. 001
Project Location:	Section 29, Township 5 South, Range 3 West, of Allen Parish
Facility Local Address:	N/A
Application No.:	45462
Docket No.:	IMD 2025-03

<u>Project Summary</u>: The following information is prepared according to the requirements of Statewide Order No. 29-N-1, (LAC 43:XVII, Subpart 1) to briefly set forth the principal facts and significant policy questions considered in preparing a draft permit concerning an application by ExxonMobil Low Carbon Solutions Onshore to drill one Class V stratigraphic test well in Allen Parish, Louisiana.

The application is for the drilling of one proposed Class V stratigraphic test well. The total depth of the well is at a depth of approximately 7,660 feet below ground level.

The acquisition of geotechnical data is proposed to occur in the drilling of this well. No disposal of waste via injection will occur.

<u>General Information</u>: ExxonMobil Low Carbon Solutions Onshore proposes to collect geotechnical cores, fluid samples, static pressure measurements, and other applicable information.

The base of the lowermost underground source of drinking water (USDW) is approximately 2,430 feet below ground level. There are five registered water wells located within a one mile radius of the proposed well location. The principal regional aquifers in the area comprise of the Chicot, Evangeline, and Jasper Aquifers below.

The complete application consists of the application form (Form UIC-25 Stratigraphic Test); technical attachments describing the geology, hydrology, construction, completion, and financial responsibility estimate.

The draft permit conditions were based on applicable rules and regulations as set forth in Statewide Order No. 29-N-1 (LAC: 43:XVII, Subpart 1) as amended. Such rules provide for the protection and non-endangerment of USDW regarding the permitting, drilling, completing, operating and maintaining of Classes I (nonhazardous waste), III, IV, and V injection well operations in the State of Louisiana.

<u>Application Locations</u>: An application package is available for inspection at the Louisiana Office of Conservation, Injection and Mining Division, LaSalle Building, 617 North Third Street, Room 817, Baton Rouge, LA 70802 from 8:00 am until 4:30 pm, Monday through Friday. To view, please ask for the ExxonMobil Low Carbon Solutions Onshore Class V Permit Application identified at the beginning of this document. The application package is also available at the Louisiana Department of Energy and Natural Resources, Class VI Carbon Sequestration website.

For information regarding the public hearing or any information concerning the application, refer to the Public Notice for Docket No. IMD 2025-03 or call Scott St. Romain at (225) 342-5517, Monday through Friday, between the hours of 7:00 a.m. to 3:30 p.m.

<u>Comment Period</u>: The public comment period officially commences March 13, 2025 at 8:00 a.m. and concludes, May 1, 2025 at 4:30 p.m. Submit all comments in writing to Scott St. Romain, Louisiana Office of Conservation, Injection and Mining Division, 617 N. 3rd St, Baton Rouge, LA 70802. Comments may also be e-mailed to info@la.gov. Please reference ExxonMobil Low Carbon Solutions Onshore Class V Permit, Application Number 45462, Docket No. IMD 2025-03.

<u>Public Hearing</u>: The public hearing will be held on April 30, 2025 at 6:00 p.m. at the Allen Parish Civic Center at 609 Tiger Lane in Oberlin, Louisiana.

Tyler Patrick Gray SECRETARY

KEITH O. LOVELL ASSISTANT SECRETARY COASTAL MANAGEMENT DUSTIN H. DAVIDSON DEPUTY SECRETARY

Amanda McClinton Assistant secretary Energy



Mark Normand, Jr. UNDERSECRETARY

ANDREW B. YOUNG ASSISTANT SECRETARY MINERAL RESOURCES Manny Acosta OIL SPILL COORDINATOR

STEVEN M. GIAMBRONE INTERIM DIRECTOR CONSERVATION

DEPARTMENT OF ENERGY AND NATURAL RESOURCES

March 5, 2025

Cody Todd, P.E. ExxonMobil Low Carbon Solutions Onshore (E1041) 22777 Springwoods Village Parkway Spring, TX 77389

* * * APPROVAL TO CONSTRUCT * * *

RE: Stratigraphic Test Well – New Drill Hummingbird IZM No. 001 Wildcat-SO LA Lafayette Dist. Field Allen Parish Application No.45462 Serial No. _____ API No. _____

Dear Mr. Todd:

The application by ExxonMobil Low Carbon Solutions Onshore (ExxonMobil) to drill a Class V stratigraphic test well has met the interim requirements for permitting such a well. The issuance of this Permit to Construct constitutes a final permit decision regarding the construction of this well. You are hereby granted approval to perform the work as described in the application. The approved work must be completed by ______, 2026.

ExxonMobil is to notify the Conservation Enforcement Specialist (CES) for Allen Parish, Sarah Hitchcock at (337) 298-8726, Monday through Friday, or by calling the Injection and Mining Division at (225) 342-5515 at least 72 hours prior to commencement of work. At least 48 hours before the casing test of the long string, contact the CES to schedule a witnessed casing test.

Within twenty (20) days after completion of the work, submit the documentation requested in the enclosed Reporting Requirements to the Injection and Mining Division. PLEASE READ THE ENCLOSURES CAREFULLY.

Please be reminded that for future work on the well, a work permit approval must be obtained from this office before repairing, stimulating, plugging, or otherwise working on this well.

Yours very truly,

Steven M. Giambrone Office of Conservation

Gavin D. Broussard, Interim Director Injection and Mining Division



OFFICE OF CONSERVATION

IMD REPORTING REQUIREMENTS >> Class V Stratigraphic Test

Drilling and construction of the well must be completed within one (1) year from the date of the permit approval letter, otherwise, the permit will expire. Before the expiration of the permit, the operator must notify the Injection and Mining Division (IMD) if a time extension will be requested or if well will not be drilled.

The approved application describes how the well is to be constructed. Changes in the approved construction, such as well surface location, well depth, or casing setting depths, will require <u>prior written approval</u> from IMD. Failure to obtain <u>prior</u> <u>written approval</u> will be cause for revoking the permit.

At least forty-eight (48) hours prior to commencement of work, the appropriate Conservation Enforcement Specialist (CES) identified below must be contacted. If you are unable to reach the CES, please call the Injection and Mining Division at (225) 342-5515 between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday.

Application No.	45462	Serial No.	
CES Name	Sarah Hitchcock	CES Phone No.	337-298-8726

Within twenty (20) days after completion of the well, the completion documents listed below must be filed with IMD for review and approval in compliance with the regulations. Please place the well's Serial Number on the log headings.

- A Class V Well History and Work Résumé Report (Form UIC-42 STRAT TEST) with an original signature from an authorized representative of the operating company and two photocopies of the form (front and back). The Form UIC-42 can be saved, filled-out, and printed by going to <u>www.dnr.louisiana.gov/consforms</u> >> Injection & Mining Division >> Form UIC-42.
- Two (2) copies of the wellbore schematic depicting the completed well.
- Two (2) copies of the electric log used to identify the USDW.
- Two (2) copies of the cement bond log for each respective casing string.
- An original AFFIDAVIT OF TEST OF CASING IN WELL (Form CSG-T) signed by a company representative and witnessed by a third party for each casing. Provide a copy of the properly labeled pressure chart if the Form CSG-T does not have a witnessed signature. Include the well name, well serial number, casing size, test start time and stop time, date of test, and signature of company representative. The Form CSG-T can be downloaded from www.dnr.louisiana.gov/consforms >> Injection & Mining Division >> Form CSG-T.

Send the above required documentation together in **<u>ONE PACKAGE</u>** to:

Office of Conservation- 9th Floor Injection & Mining Division 617 North 3rd Street Baton Rouge, LA 70802

045462



CLASS V STRAT TEST WELL PERMIT APPLICATION

OFFICE OF CONSERVATION INJECTION & MINING DIVISION 617 N. Third St., 9th FLOOR BATON ROUGE, LA 70802

> Injection-Mining@la.gov (225) 342-5515

UIC-25 STRAT	rest		PLEASE READ	APPLIC	ATION INS	TRUCTIONS			TYPE ONLY
1. APPLICATION 1	YPE: (Cheo	:k One)							
🗹 DRILL AND C	OMPLETE N	EW CLASS V W	ELL			NVERT AN EXIST	NG WEL	L TO CLASS V	
OTHER (SPEC	IFY):								
2. IDENTIFY WEL	L USE								
Drill a stratigrap	hic test we	II to evaluate t	he feasibility of a	a potent	ial carbon	storage projec	t		
3. IDENTIFY FUTU		SE (i.e. Convers	ion to Class VI, m	onitor w	vell, P&A, e	etc.)			
Monitor Well									
4. OWNER/OPER	ATOR NAM	E						5.00	OPERATOR CODE
ExxonMobil Lov	v Carbon S	olutions Onsh	ore	7	/				E1041
6. OWNER/OPER	ATOR MAIL	ING ADDRESS		196		7. CITY, STATE,	ZIP COD	E	
22777 Springwo	oods Villag	e Parkway				Spring, TX 77	389		
8. TELEPHONE NO)			9. E-M		SS			
346-220-7391				cody.t	odd@exx	onmobil.com			
10. WELL NAME				11. WE	LLNO	12. WELL SERIA	L NO (W	ell Conversio	ns Only)
Hummingbird IZ	M				1				
13. FIELD NAME								14. FIELD CO	DE
Wildcat - So LA	Lafayette	District							9727
15. PARISH NAM	E					16. SECTION	17.	TOWNSHIP	18. RANGE
Allen Parish (02	2)					29		5S	ЗW
19. LOCATION CO	ORDINATE	S (GCS, NAD 27)		20. STATE	PLANE COORDI	NATES (I	AMBERT, NA	D 27)
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21. LEGAL LOCAT	ION DESCR	IPTION (FROM	LOCATION PLAT):		•				
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Allon Fanon, Ed	alsiana						OFFICE	E OF CONSI	ERVATION
									2.4
L								NUV 25-20	<u>_</u> 4

22. LIST PERMITS, LICENSES, OR APPROVALS THE APPLICANT HAS RECEIVED OR APPLIED FOR WHICH SPECIFICALLY AFFECT THE APPLICANT'S LEGAL OR TECHNICAL ABILITY TO CARRY OUT THE PROPOSED ACTIVITY. INCLUDE IDENTIFICATION NUMBER OF APPLICATIONS OR, IF ISSUED, THE IDENTIFICATION NUMBER OF THE PERMIT, LICENSE, OR OTHER APPROVALS.

	Rogu	latory Progr	am or Agence	4	,	Permits, Licenses, Construction, Project Approval Identification							
Louisiana	Department	of Environr	nental Qual	ity		LPDES Stormw	ater Permit		. ppioraile				
23. WELL C	ASING / CEM	ENT DATA						_					
CASING	HOLE DIAMETER	CASING WEIGHT	-	CASING SET	TING DEPTH	TOTAL SACKS TYPE			YIELD				
(OD- INCHES)	(INCHES)	(LB/FT)	CASING GRADE	CASING GRADE TOP BOTTOM		M SACKS	(Lead/Tail)	(Lead/Tail)	(Lead/Tail)				
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9 5/8	12 1/4	47	L-80	0	2,600) 1,075	875/200	A/A	1.92/1.17	' Surface			
5 1/2	8 1/2	17	L-80	0	3,220) See last line	See last line	See last line	See last lii	ne See last line			
5 1/2	8 1/2	23	22Cr125	3,220	7,460) See last line	See last line	See last line	See last lin	ne See last line			
5 1/2 8 1/2 17 L-80 7,460 7,66						1,588 975/613 A/CO2 COMP. 1.58/1.49 Surface							
24 8465 6		0.400		***ALL WELL	DEPTHS SI	HOULD BE GIVEN IN N	1D***						
Z4. BASE C		2,430				25. HEIGHT OF	KB FOR PROP	OSED WELL (FT): 32				
REFER	ENCE E-LOG (S	SERIAL NUM	BER): 10428	4		26. ELEVATION	OF GL FOR P	ROPOSED WEI	L (FT): 62				
27. WELL T	OTAL DEPTH	(FT):	28. PLUGBAC	K DEPTH (FT):	29. TUBING SIZI	CKER SIZE 8	DEPTH:					
	7,660			5,000			NA	NA					
			IN.		ST INFO	RMATION (IF APP							
31. INJECT	ION ZONE DE	РТНЅ				32. COMPLETIC	N/PERFORAT	ION DEPTHS					
4,80	0	Bo	7,460)		5,030 7,020 Top: Bottom:							
33. WELL	COMPLETION			HOLE	🖸 PE	RFORATIONS		REEN					
34. TEST N	/IATERIAL (e.ရ	g. nitrogen, l	orine, etc):	35. MAXIM		PRESSURE (psi):	36. 1	OTAL INJECT		1E (bbls):			
	Br	ine			4	.500			15,000				
CO ₂ is prohibited as a Class V test material													
37. Is the	Well Located or	n Indian Lands	or Other Land	ds Owned by	or under t	he Jurisdiction or P	rotection of the	e Federal Gover	mment?	□YES ☑NO			
38. Is the V	Well Located on	State Water B	Bottoms or Oth	er Lands Own	ied by or u	nder the Jurisdictio	n or Protection	of the State of L	ouisiana?				
39. If the pat the prop	oroposed well is osed well locati	s associated w ion?	ith a potential	Class VI geolo	ogic seque	stration project, do	es the applican	t own the mine	ral rights				
40. If no, h	as written notifi	cation been pr	ovided to the n	nineral owner(s)?					YES NO			

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COMPANY: ExxonMobil Low Carbon Solutions Onshore Storage LLC

MAILING ADDRESS: 22777 Springwoods Village Parkway, Spring, TX 77389

TELEPHONE NUMBER: 346-220-7391

NAME: Cody Todd, P.E.

E-MAIL ADDRESS: cody.todd@exxonmobil.com

42. CERTIFICATION BY WELL OWNER/OPERATOR

I certify that as the owner/operator of the injection well, the person identified in Item No. 37 above is authorized to act on my behalf during the processing of this application, to submit additional information as requested, and to give oral statements in support of this application. I will grant an authorized agent of the Office of Conservation entry onto the property to inspect the injection well and related appurtenances as per LSA-R.S. 30:4. I agree to operate the well in accordance with Office of Conservation guidelines. I further certify under penalty of law that I have 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 or imprisonment or both (LSA-R.S. 30:17).

41. AGENT OR CONTACT AUTHORIZED TO ACT ON BEHALF OF THE APPLICANT DURING THE PROCESSING OF THIS APPLICATION

Print Name of Well Owner/Operator	Print Title of Company	Print Title of Company Official (as applicable)						
ExxonMobil Low Carbon Solutions Onshore	Bruce Chalton - Vice	President						
Signature of Well Owner/Operator		Date $(1/2)$						
BCC.		11/21) 24.						

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TWO ORIGINAL FORM MD-10-R-A FOR EACH EXISTING WELL TO BE CONVERTED (IF CONVERSION IS PROPOSED)

• Not applicable – New Drill

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ExxonMobil Low Carbon Solutions Onshore Storage LLC Class V Stratigraphic Test Well Application Hummingbird IZM No. 1 Allen Parish, LA

Attachment 1

ONE ORIGINAL CERTIFIED LOCATION PLAT SHOWING THE LOCATION OF THE CLASS V WELL LOCATION

(OFFICE OF CONSERVE

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No. MZ N2024/2247919/DWG/Hummingbird 1



Attachment 2

AN ANNOTATED COPY OF AN ELECTRIC WELL LOG OF THE NEAREST OFFSET WELL THAT SHOWS THE UNDERGROUND SOURCE OF DRINKING WATER (USDW)

o See attached marked well log of the HDE No. 1 - SN 104284

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		DE	TAIL LOG 5 "=100'		
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_ 30 +		0 0	A-16"-M SHORT NORMAL	2 10	6 FF40 4000 INDUCTION 0
				100	4000

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Attachment 3

AN ANNOTATED COPY OF AN ELECTRIC WELL LOG OF THE NEAREST OFFSET WELL THAT SHOWS THE INJECTION ZONE

o See attached marked well log of the Martin B No. 1 - SN 231312

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Witnessed By	Recorded By	Equip. Location	Max Rec. Temp	Time on Boltom	Time Since Circ.	Pin @ BHT	Source Rinf Rinc	Forne @ Lines. Temp	Firmf @ Minas. Temp.	Parn @ Misas Temp.	Source of Sample	Ph Fluid Lots	Dans. Visc.	Type Fluid in Hole	Brt Size	Casing - Logger	Cassing - Driller	Top - Logget Interval	Bottom - Logged Interva	Depth - Logger	Depth - Driller	Run No.	Date	Deriburgi massaland imm	Log measured ham	Permanent Datur	COMPANY WELL	UNIT MARTI	PETROL N B 1 N CREE	FUM					
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Source of Sample			•			-	RESIS	TIVITY EC	UIPMENT D	ATA		
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Diameter	3.625"	No. of Cent	T		Diame	er	4	5"	Diarr	veler	3.(26"
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INJECTION & MINING DIVISION



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Attachment 4

SCHEMATIC OF THE CLASS V-WELL SHOWING:

- 1. Casing diameter, specifications, material (PVC, steel, etc.) and depth,
- 2 Screen type, length, material, slot or opening size,
- 3. Injection tubing size inside casing (if any)'
- 4. Hole diameter (bit size),
- 5. Amount and type of cement used and depths to top and bottom of cement,
- 6. Wellhead showing all fittings,
- 7. Discharge line diameter and connection to wellhead,
- 8. Well house (if any).

The schematic is stamped and signed by a Louisiana-registered Professional Engineer (PE)

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Attachment 5

WORK PROGNOSIS FOR DRILLING, COMPLETING, AND TESTING THE WELL

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DRILLING, COMPLETION, & TESTING PLAN

Hummingbird IZM #1

ExxonMobil Low Carbon Solutions Onshore Storage LLC

WELL INFORMATION

Location:	Lat: 30° 35' 04.63" N (NAD 27)	Long: 92° 41' 54.26" W (NAD 27)
	(Section - 29; Township – 5S; Range – 3	3W; Allen Parish; Louisiana)
Objective:	The primary objective is a stratigraphic ExxonMobil's Carbon Sequestration pro	test of various formations as part of oject.
Operator:	ExxonMobil Low Carbon Solut 22777 Springwoods Village Par	ions Onshore kway
	Spring, Texas 77389	

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ExonMobil

045462

GEOLOGICAL PROGNOSIS

Formation	Estimated Depth, (KB), feet
Base of Underground Source of Drinking Water	Approx. 2,430
Fleming Seal	3,220
Top Miocene Composite Confining Seal	4,180'
Upper Catahoula	4,800'
Top Anahuac	5,340'
Base Anahuac/Top Lower Catahoula	5,600'
Top Frio	6,270'
Base Middle Frio	7,460'

Coring Program

Sidewall cores are proposed to be collected from selected formations as desired. Additional whole cores may be collected in select formations.

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Logging and Testing Program

Cased Hole / Open Hole	Hole Size (inch)	Interval Depth (feet)	Individual Logging Tools	Interval
Open Hole	12-1/4	0-2,600'	Gamma Ray, Resistivity, Spontaneous Potential Logs.	Surface (Open Hole).
Open Hole	8-1/2	2,600' – 7,660'	Gamma Ray, Resistivity, Density Porosity, Dipole Sonic, Spectroscopy, Image Log, Fluid and pressure samples	Production (Open Hole)
Cased Hole	12-1/4	0-2,600'	Cement Bond Log, CCL, Gamma Ray	Surface (Cased Hole)
Case Holed	8-1/2	0 – 7,660'	Cement Bond Log, CCL, Gamma Ray	Production (Cased Hole)

Note: SP Log will be run in open hole surface section but not in remainder of hole due to Oil Based Mud Note: Additional logs may be run for data acquisition purposes

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Drilling Procedure

- 1. Pre-install 20" conductor at approximately ~100ft below ground level, cementing to surface with 225 sx of Class A, 1.55 ft³/sack. Cut casing as necessary.
- 2. Notify LDENR upon intent to spud the well a minimum of 48 hours before the planned spud time.
- 3. Mobilize and rig up drilling rig and equipment.
- 4. Install load ring on conductor and nipple up flowline.
- 5. Spud and drill hole to $\sim 2,600'$.
- 6. Circulate the hole clean. Pull out of hole with BHA.
- 7. Run open hole wireline logs per the Logging and Testing Program
 - Note: The Open-hole logs will be submitted to LDENR for USDW determination and minimum surface casing depth requirement prior to setting the surface casing to ensure adequate isolation and protection of the USDW.
- 8. Run 9-5/8 in. surface casing with centralizers to $\pm 2,600$ ft.
- 9. Cement 9-5/8 in. casing to surface. The proposed cement slurries are presented below, but the final slurries and volumes will be based on wellbore conditions:

Slurry Specifications:

Lead: Class A cement with additives

Sacks: 875 sacks

Yield: 1.92 ft³/sack

Density: 12.7 ppg

Tail: Class A cement with additives

Sacks: 200 sacks

Yield: 1.17 ft³/sack

Density: 15.6 ppg

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- Note: If the cement is not circulated to surface, cement top off job may be performed. Notify LDENR if cement is not circulated to the surface, prior to conducting cement top up.
- 10. Install wellhead and BOPs. Test BOPs.
- 11. Wait on cement 12 hours prior to testing casing.
- 12. Pressure test the casing to a minimum of 600 psi for 30 minutes per LDENR regulations.
 - A maximum of 5% pressure loss is allowed over the 30 minutes test period.
 - The pressure test will be charted and recorded on form CSG-T (Casing Test affidavit) and submitted to LDENR.
 - Notify LDENR-IMD at least 48 hours prior to conducting the pressure test in the event staff wishes to witness the test.

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- 13. Pick up 8-1/2 in. BHA and drill out shoe track, and 10ft of new formation.
- 14. Perform Formation Integrity Test.
- 15. Drill 8-1/2 in. hole to TD, taking cores in select formations as desired.
- 16. Run open hole wireline logs per the Logging and Testing Program
- 17. Run 9-5/8 in. cased hole wireline logs per the Logging and Testing Program
- 18. Run 5-1/2 in. production casing with centralizers to TD (\pm 7,660) and with the following equipment installed:
 - Casing mounted perforating guns, U-tube system for fluid sampling, and pressure array installed to \sim 3,100 ft.
- 19. Cement 5-1/2 in. production casing to surface. The proposed cement slurries are presented below, but the final slurries and volumes will be based on wellbore conditions:

Slurry Specifications:

Lead: Class A cement with additives

Sacks: 975 sacks

Yield: 1.49 ft³/sack

Density: 12.5 ppg

Tail: CO2 Compatible Cement

Sacks: 613 sacks

Yield: 1.58 ft³/sack

Density: 13.5 ppg

- Note: If the cement is not circulated to surface, cement top off job may be performed. Notify LDENR if cement is not circulated to the surface, prior to conducting cement top up.
- Note: If casing packer and stage tool are required, the cement program will be modified to add the equipment.
- Note: The final cement slurry designs and volumes will be based on as-drilled hole conditions.

20. Wait on cement 12 hours prior to testing casing.

21. Pressure test the casing to a minimum of 1,000 psi for 30 minutes per LDENR regulations.

- A maximum of 5% pressure loss is allowed over the 30 minutes test period.
- The pressure test will be charted and recorded on form CSG-T (Casing Test affidavit) and submitted to LDENR.
- Notify LDENR-IMD, at least 48 hours prior to conducting the pressure test in the event staff wishes to witness the test. OFFICE OF CONSERVATION

22. Nipple down BOP and install dry hole tree.

23. Rig down and move out drilling rig.

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Completion Procedure (Rigless Ops)

- 24. Rig up surface pressure equipment.
- 25. Rig up wireline unit and PCE.
- 26. Run cased hole wireline logs per the Logging and Testing program
 - The CBL will be submitted to LDENR-IMD for confirmation of good cement prior to injection into the well. The CBL must show evidence of the minimum required interval of 60% bonded cement in the isolating shale immediately above the top of zone. If CBL does not show good bond, perform squeeze and re-run CBL.
- 27. Pick up guns and RIH.
- 28. Perforate ~ 6,693' 7,020' and POOH

Note: Actual perforation depths are subject to change based on the open hole logs of the well itself

- 29. RIH with P/T gauge on wireline to perforation interval to take bottomhole P/T reading.
- 30. Rig up surface iron and pumping equipment.
- 31. Perform step rate fall off test
 - The ISRT will consist of 5 to 10 minutes steps with each step holding a constant injection rate. The actual injection rates and step duration will be determined based on the downhole pressure response recorded real time, and the max rate is currently assumed to be below 25 bpm.
 - The IFT will consist of a dual ramp-up followed by hard shut-ins with the second shut-in duration extending to 24 hours. The rates will be increased in 15 min increments until the max designed rate in the schedule is reached (assumed to be below 25 bpm).

Note: The fluid source for the injectivity test(s) will be a water source well drilled on location treated as needed with KCl, NaCl, and/or other additives to ensure adequate density and formation compatibility. A fluid source analysis from a LELAP accredited laboratory will be provided to the Injection & Mining Division (IMD) prior to any injection.

Note: A detailed step rate fall off test procedure for all tests will be provided to IMD along with the Fluid Source Analysis prior to injection

- 32. POOH with P/T gauge.
- 33. Pick up 5-1/2" cast iron bridge plug and set at ~6,673' (~20' above perf interval). Pressure Test plug to minimum of 300 psi for 30 minutes without losing more than 5% pressure.
- 34. RIH wireline cement bailer and spot 10' of cement on top of CIBP
- 35. Pick up guns and RIH
- 36. Perforate 6,320' 6,430' and POOH

Note: Actual perforation depths are subject to change based on the open hole logs of the well itself OFFICE OF CONSERVATION

- 37. RIH with P/T gauge on wireline to perforation interval.
- 38. Perform step rate fall off test



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- The ISRT will consist of 5 to 10 minutes steps with each step holding a constant injection rate. The actual injection rates and step duration will be determined based on the downhole pressure response recorded real time, and the max rate is currently assumed to be below 25 bpm.
- The IFT will consist of a dual ramp-up followed by hard shut-ins with the second shut-in duration extending to 24 hours. The rates will be increased in 15 min increments until the max designed rate in the schedule is reached (assumed to be below 25 bpm).
- 39. POOH with P/T gauge.
- 40. Pick up 5-1/2" cast iron bridge plug and set at ~6,300' (~20' above perf interval). Pressure Test plug to minimum of 300 psi for 30 minutes without losing more than 5% pressure.
- 41. RIH wireline cement bailer and spot 10' of cement on top of CIBP
- 42. Pick up guns and RIH
- 43. Perforate 5,655' 5,858' and POOH

Note: Actual perforation depths are subject to change based on the open hole logs of the well itself

- 44. RIH with P/T gauge on wireline to perforation interval.
- 45. Perform step rate fall off test
 - The ISRT will consist of 5 to 10 minutes steps with each step holding a constant injection rate. The actual injection rates and step duration will be determined based on the downhole pressure response recorded real time, and the max rate is currently assumed to be below 25 bpm.
 - The IFT will consist of a dual ramp-up followed by hard shut-ins with the second shut-in duration extending to 24 hours. The rates will be increased in 15 min increments until the max designed rate in the schedule is reached (assumed to be below 25 bpm).
- 46. POOH with P/T gauge.
- 47. Pick up 5-1/2" cast iron bridge plug and set at ~5,635' (~20' above perf interval). Pressure Test plug to minimum of 300 psi for 30 minutes without losing more than 5% pressure.
- 48. RIH wireline cement bailer and spot 10' of cement on top of CIBP.
- 49. Pick up guns and RIH
- 50. Perforate 5,030' 5,230' and POOH

Note: Actual perforation depths are subject to change based on the open hole logs of the well itself

- 51. RIH with P/T gauge on wireline to perforation interval.
- 52. Perform step rate fall off test
 - The ISRT will consist of 5 to 10 minutes steps with each step holding a constant injection rate. The actual injection rates and step duration will be determined based on the downhole pressure response recorded real time, and the max rate is currently assumed to be below 25 bpm.



- The IFT will consist of a dual ramp-up followed by hard shut-ins with the second shut-in duration extending to 24 hours. The rates will be increased in 15 min increments until the max designed rate in the schedule is reached (assumed to be below 25 bpm).
- 53. POOH with P/T gauge.
- 54. Pick up 5-1/2" cast iron bridge plug and set at ~5,010' (~20' above perf interval). Pressure Test plug to minimum of 300 psi for 30 minutes without losing more than 5% pressure.
 - Notify LDENR-IMD CES at least 48 hours prior to conducting the final pressure test which will serve as the well's MIT
- 55. RIH wireline cement bailer and spot 10' of cement on top of CIBP for a final PBTD of 5,000'
- 56. Rig down wireline unit.
- 57. Install the TA plug in the wellhead.
- 58. Demob equipment from location.

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Attachment 6

FINANCIAL SURETY

• Financial Surety in the form of a performance bond covering the third party estimated P&A cost, once approved, will be submitted to LDENR prior to a permit to construct being issued.

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Attachment 7

IT QUESTIONS DOCUMENTATION

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1. Have the potential and real adverse environmental effects of the proposed project been avoided to the maximum extent possible?

The potential and real adverse environmental effects of the proposed Class V Stratigraphic Test Well (Well) have been minimized or avoided to the maximum extent practicable. The potential and real adverse environmental impacts that may occur are in relation to underground sources of drinking water (USDW) and to the surface environment. Preservation, avoidance, and minimization of the potential effects caused by the proposed activity is described below.

Standard USDW Protections

- a) Well design, drilling, installation, and testing will conform with all applicable standards.
- b) Ensure the USDW is protected by setting surface casing below the lowermost USDW formation and cementing the casing to surface in accordance with applicable standards.
- c) The surface cased section will be drilled vertically which minimizes the length of casing passing through any USDW at the site and minimizes complications of cementing.
- d) Pressure testing of the surface casing will be conducted to ensure no leaks or potential for migration of fluids to the USDW.
- e) Production casing will be cemented from the surface to the total depth of the well to seal off the formations and prevent migration of fluids outside of the injection zone.
- f) A cement bond log (CBL) will be run to confirm the integrity of the cement (i.e., assurance that there are no channels adjacent to the casing which would permit migration of fluids up the wellbore from the injection zone).
- g) Permanent monitors may be installed in the well and surrounding locations for both seismic and USDW monitoring.
- h) Should it be required, the well will be plugged and abandoned in accordance with all applicable regulations.

Standard Environmental Protections

The construction of the proposed Well will incorporate best management practices (BMPs), engineering practices, and regulatory requirements to help ensure that any potential and real adverse environmental effects occurring as the result of proposed Well are avoided to the maximum extent possible. The following BMPs, engineering practices, and regulatory requirements will be utilized as applicable for the proposed Well: **OFFICE** OF CONSERVATION

- a) Ensure all work sites and equipment access routes return to a clean and safe condition when the work is completed.
- b) Contractors will be required to develop and implement a Stormwater Prevention Pollution Plan (SWPPP) to minimize runoff of stormwater and runoff of any fill materials into adjacent waterways during construction.
- c) Solid and/or hazardous waste generated during construction shall be temporarily stored on-site in accordance with applicable local, state, and federal regulations prior to off-site transport and shall be disposed of at an authorized state/federally approved treatment, storage, or disposal facility.
- d) Air emissions generated from the proposed facilities are expected to be minor and only last during construction activities.
- e) Any temporary noise impacts from the project are expected to be minor, and no noise mitigation is expected to be necessary.
- There are no anticipated wetland impacts associated with this Well.
- NJECTION & MINING DIVISION (c) (J) (a) (p) There are no anticipated impacts to threatened and endangered species or critical habitats associated with this Well. The U.S. Fish and Wildlife Information for Planning and Consultation (IPaC) Tool was used, and the species identified as endangered or threatened were the red-cockaded woodpecker, whooping crane and the American Chaffseed. Other species were identified as proposed or candidate species and were considered. However, this Well is located in a timber stand that undergoes regular maintenance using industry standard practices and was not identified to contain the aforementioned species.
 - h) The Louisiana Office of Cultural Development's Louisiana cultural resources mapper tool did not identify any cultural resources for this well location as of July 25, 2024.

2. Does a cost benefit analyses of the environmental impact costs versus the social and economic benefits of the proposed project demonstrate that the latter outweighs the former?

Yes, the potential social and economic benefits of the proposed project outweigh the potential environmental impact costs. The data gathered from the proposed Well may be used in support of developing a site for the geological sequestration of carbon dioxide (CO₂), if the subsurface data gathered from the Well is favorable. If the subsurface is favorable and a geological CO₂ sequestration site were to be developed it would provide significant economic and social benefits to the region.

Further, CO₂ sequestration is a type of project that the Louisiana Legislature has determined to be favored as a matter of Louisiana public policy. Specifically, the Louisiana Legislature has recognized the many benefits offered by carbon capture and sequestration (CCS) projects, stating that "[i]t is declared to be in the public interest for a public purpose and the policy of Louisiana that . . . [t]he geologic storage of carbon dioxide will benefit the citizens of

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the state and the state's environment by reducing greenhouse gas emissions." See La. R.S. 30:1 102(A). The Center for Climate and Energy Solution states that in 2022, the United States (U.S.) emitted nearly 6 billion metric tons of greenhouse gases and CO_2 accounted for 79% of all the greenhouse gases released. Per Louisiana's 2021 Greenhouse Gas Inventory, over 92% of all Louisiana greenhouse gas emissions (as of 2018) were CO_2 . Per Louisiana's Climate Action Plan, Louisiana has an objective of net zero CO_2 emissions by 2050. A CCS Project specifically aids Louisiana in achieving the net zero CO_2 emission goal set forth in Louisiana's Climate Action Plan and can address the primary sector (industry) cited as the dominant source of CO_2 emissions per Louisiana's 2021 Greenhouse Gas Inventory Report.

3. Are there alternative projects which would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits?

There are no alternative projects that would offer more protection to the environmental than the proposed project without unduly curtailing non-environmental benefits and meet the objectives of the Project. Site-specific information and data concerning the suitability of this Area of Interest (AOI) for the possible future sequestration and storage of CO_2 is not currently available. Such information, including core samples, fluid samples, and static pressure measurements, is required to support any future application to construct and operate a Class VI well. *E.g.*, LAC 43:XVII.3607.C.2; 40 C.F.R. 146.82. The necessary site-specific subsurface data cannot be obtained through means other than drilling a test well to collect the data within the AOI. Accordingly, there is no alternative project that would provide greater environmental protection without unduly curtailing the non-environmental benefits and objectives of the proposed project.

4. Are there alternative sites which would offer more protection to the environment than the proposed site without unduly curtailing non-environmental benefits?

There are no alternative sites which would offer more protection to the environment than the proposed site without unduly curtailing non-environmental benefits and meet the objectives of the Project. This Well is uniquely positioned in the AOI to evaluate the feasibility of developing a geological CO₂ sequestration project within a particular subsurface geology. As outlined in the application, this Well is to serve as a future monitoring well and is therefore also uniquely positioned at a suitable monitoring location. Since the Well is needed to collect data concerning the feasibility of the AOI for potential future geological CO₂ sequestration, the Project only considered alternative sites within the AOI. Sites outside the AOI would frustrate the purpose of the Project because data collected from outside the AOI could not be used to evaluate the AOI for potential geological CO₂ sequestration. Nor would data collected from outside the AOI be responsive to the regulatory requirements associated with an application to construct and operate a Class VI well. In addition, as discussed above, the AOI was screened for environmental and cultural sensitivities, which were to be avoided to the maximum extent practical. The construction of the Well along with all access roads has been designed to the minimal practical footprint to safely construct, operate, maintain, and close the Well.

Within the AOI, the proposed Well site was selected due to the following metrics: proximity to existing timber harvest roads, proximity to the Greenline, suitable monitoring location, and OFFICE OF CONSERVATION

to maximize data collection. Wetlands were avoided as the Well was positioned within a silvicultural field.

5. Are there mitigating measures which would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits?

No, there are currently no other mitigating measures which would offer more protection to the environment without unduly curtailing non-environmental benefits. Not drilling an appraisal well will limit the ability to evaluate the AOI for potential for CO_2 sequestration, which assists in meeting the state and national objectives of reducing greenhouse gases in the atmosphere. As discussed in the response to Question 1, the proposed Well will be designed and constructed as per applicable regulations and guidance from the Louisiana Office of Conservation (Injection & Mining Division). Surface activities shall comply with Louisiana Department of Energy & Natural Resources (LDENR), Louisiana Department of Environmental Quality, and all other applicable agency regulations.

All efforts will be made to avoid and/or mitigate any impacts to the USDW and any surface impacts associated with the Well. To the extent necessary, the Project will prepare a SWPPP and apply for coverage under the appropriate Storm Water General Permit for the construction activities associated with the Well. Moreover, the Project will mitigate any unavoidable impacts to wetlands by purchasing the appropriate wetland mitigation credits from an authorized Mitigation Bank in accordance with the US Army Corps of Engineers, the Office of Coastal Management, and/or LDENR.

Air and noise emissions associated with construction of the Well will be temporary, and they are not expected to exceed regulatory thresholds or impact local communities. The Project will use BMPs to mitigate any air or noise impacts associated with such construction.

The Project will comply with all applicable regulations and standards and implement any additional measures necessary to ensure compliance while ensuring safe and protective operation during the life of the Well.

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Attachment 8

LABAROTY ANALYSIS OF INJECTION TEST FLUID

• The fluid source for the injectivity test(s) will be a water source well drilled on location treated as needed with KCl, NaCl, and/or other additives to ensure adequate density and formation compatibility. A fluid source analysis from a LELAP accredited laboratory will be provided to the Injection & Mining Division (IMD) prior to any injection.

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P&A PROCEDURE, SCHEMATIC, AND THIRD PARTY COST ESTIMATE

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Plugging Procedure, Schematic, & Cost Estimate

Hummingbird IZM #1

ExxonMobil Low Carbon Solutions Onshore Storage LLC

WELL INFORMATION

Location:	Lat: 30° 35' 04.63" N (NAD 27)	Long: 92° 41' 54.26" W (NAD 27)			
	(Section - 29; Township - 5S; Range - 3W; Allen Parish; Louisiana)				

Operator: ExxonMobil Low Carbon Solutions Onshore 22777 Springwoods Village Parkway Spring, Texas 77389

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Plugging and Abandonment Work Prognosis:

- 1. Submit a UIC-17 to P&A the well and await work permit number.
- 2. Provide Office of Conservation a minimum of 60 day notice of intent to plug the well with the final plugging plan sealed with a P.E. certification.
- 3. Provide 48 hour notice prior to initiating any site activity or beginning P&A procedure.
- 4. Move in and rig up workover rig.
- 5. Nipple down tree.
- 6. Rig up BOP and pressure test.
- 7. Run in hole with workstring to 2,680 (~200ft below base of USDW plug).
- 8. Circulate with 9ppg WBM or inhibited brine.
- 9. Pump viscous pill as a base for balanced cement plug.
- 10. Pull out of hole to top of viscous pill.
- 11. Pump balanced cement plug from 2,380 ft to 2,480 ft.
 - a. The proposed cement slurries are presented below, but the slurries, depths, and volumes will be based on as drilled logs for bottom of the plug starting in a confining shale formation below the USDW extending to a minimum of 50 ft above the base of the USDW. Plug will be a minimum of 100' extending at least 50' below the base of the USDW and 50' above.
 - Slurry Specifications:
 - Class H with additives
 - Sacks: 15 sacks
 - Yield: 1.06 ft3/sack
 - Density: 16.4 ppg
- 12. Wait on cement.
- 13. Tag cement for top of plug verification and pressure test to minimum of 300 psi for 30 minutes without losing more than 5%.
- 14. Pull out of hole to base of surface cement plug.
- 15. Pump balanced cement plug from 6ft to 36ft BGL.

The proposed cement slurries are presented below but the slurries, depths, and volumes will ensure that the surface plug is 30ft or greater and allows for the casing to be cut at least 5ft below ground level.

Slurry Specifications:

Class H with additives

- Sacks: 5 sacks
- Yield: 1.06 ft3/sack

Density: 16.4 ppg

- 16. Rig down BOP.
- 17. Cut wellhead at least 5 ft below ground level.
- 18. Weld 1/2in steel plate across all annuli and include well serial number and P&A date.
- 19. Within 30 days after plugging, a plugging report (Form UIC-P&A) shall be submitted to LDENR OFFICE OF CONSERVATION

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P&A Cost Estimate

Item	Days/# of Jobs	Rate		Cost Estimate	
Rig Mob/Demob	2	\$	6,500	\$	13,000
Rig	3	\$	6,500	\$	19,500
Workstring Cost	3	\$	4,200	\$	12,600
Equipment Rentals	3	\$	1,000	\$	3,000
Trucking Loads	2	\$	1,500	\$	3,000
P&A Disposal	1	\$	14,000	\$	14,000
Cement	1	\$	1,750	\$	1,750
Cement Pumping Services	2	\$	5,000	\$	10,000
Forklift Rental Costs	1	\$	3,250	\$	3,250
Pipe Rack Costs	1	\$	2,500	\$	2,500
Welding and Casing Cutting	1	\$	5,000	\$	5,000
Waste Management/Disposal/Vacuum Trucks	1	\$	4,500	\$	4,500
Surface Restoration & Remediation	1	\$	4,605	\$	4,605
Supervision Expenses	3	\$	1,500	\$	4,500
PM Costs and Reports	4,000	\$	4,000		
Subtotal	\$	105,205			
10% Project Conti	\$	10,521			
Project Total					115,726

Professional Engineering Certification

Lonquist Sequestration, LLC is submitting this Plug and Abandonment Cost Estimate in support of the Hummingbird IZM No. 1 Class V permit application. I, William H. George, P.E., hereby certify that I have reviewed and prepared the cost estimate provided above for plug and abandonment of the Hummingbird IZM No. 1 stratigraphic test well.

Certified By: Lonquist Sequestration, LLC Louisiana Firm License EF-7423

William H. George, P.E. - Vice President / Principal Engineer Louisiana License PE-45286 (512) 787-7478 will@longuist.com



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Date Signed: July 30, 2024 Austin, Texas

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1/4 MILE AOR DETAIL WELL REPORT

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ExxonMobil Low Carbon Solutions Onshore Storage LLC Class V Stratigraphic Test Well Application Hummingbird IZM No. 1 Allen Parish, LA



Louisiana Department of Energy and Natural Resources (DENR)

SONRIS/2000

SRCN4188_WELLS -- WELLS IN AREA OF REVIEW (AOR)

Report run on: Nov 18, 2024 2:23 PM



Note: Wellbore sizes with an asterisk symbol (*) next to it are assumed values based on the casing size and these assumed values have been substituted in place of a null (or zero) value everywhere a null (or zero) value previously existed as the wellbore size.