

DRAFT
Natural Gas Source/Subsurface O&G Migration Pathway Investigation Suggested Action Plan
Smyrna, DeSoto Parish Louisiana
July 2, 2018

The attached spreadsheet represents a draft phased approach suggested for area operators to investigate all oil and gas wells for internal or external natural gas migration into the Wilcox aquifer in the Smyrna area, specifically Section 27 and portions of adjacent Sections 28, 22 and 26 in Township 13 North, Range 15 West in DeSoto Parish. The suggested well prioritization, phased approach is based on proximity to the ongoing aquifer vent relief locations and reported observations of aquifer gas, well and location accessibility, well status, well depth, and downhole conditions; starting with wells in Phase 1 best meeting the selection criteria progressing to Phase 2 then Phase 3 being the more challenging or least likely candidates. If it makes sense to operators, progression within and from phase to phase could be, but not absolutely necessary, in a sequential manner that builds upon the results, and corrective actions as needed, from well to well to a point where significant and sustained aquifer pressure decline is documented.

Each well investigation should include at a minimum: 1) casing pressure tests to determine surface and production casing integrity, 2) noise/temperature logs, perhaps cement bond logs (CBL), to determine whether or not there is any fluid/gas migration occurring outside of the casing, and 3) gamma logs to be run from the Midway shale to ground surface to determine location and thickness of the Wilcox aquifer.

All of the above and attached is based on what is known and available at this time without bias and prejudice with the objective being to find the source or sources of production formation natural gas in the area migrating to the shallow subsurface and charging the Wilcox aquifer.

Attachment: Excel Well List

DRAFT Natural Gas Source/Subsurface O&G Migration Pathway Investigation Rev1

Well Name	Well No.	Well SN	Status	Company	Section	Phase
J B Barr 28	1	228551	S	Indigo	28	1
Thomas 28	1	229067	S	Indigo	28	1
Robert Billingsley	1	171884	P	IMC	28	1
Mrs Bessie McMichael	1	109699	P	EP Energy*	27	1
Ardis Martin Thr Co	1	228277	A	Indigo	27	1
Ardis Martin Thr	2	229177	S	Indigo	27	1
David Mason 27	1	237166	A	Indigo	27	1
Mason	1	158546	P	Hallwood	27	1
Cowdin 27	1	229083	S	Indigo	27	1
Billingsley Est 28	1	229272	A	Indigo	28	2
Mary Bell Smith 28	2	239295	A	Indigo	28	2
J B Barr 28	2	229457	A	Indigo	28	2
Cleon Bryant 28	1	238902	A	Indigo	28	2
Mary Bell Smith 27	1	228386	A	Indigo	27	2
Cowdin 27	2	238922	A	Indigo	27	2
Jones	1,D	230945	A	XTO	26	2
Derbonne 27-34 HC	1	249856	D	Indigo	22	2
Derbonne 27-34 HC	2	249867	D	Indigo	22	2
Derbonne 22-15 HC	1	250446	D	Covey Park	22	2
Derbonne 22-15 HC	2	250447	D	Covey Park	22	2
Mary Bell Smith 28	1	238978	D	Indigo	28	3
Billingsley A	1	176281	P	Goldsberry	28	3
C H Hanson	1	169060	P	May	28	3
Ardis Martin Timber Co	1	152126	P	Monte Carlo	27	3
Mason A	1	223788	P	Nelson	27	3
Mason	1	215968	P	Nelson	27	3
Cowdin	1	209866	P	Rosbottom	27	3
Evans 26 H	1	239816	D	XTO	26	3
Joe Jones SWD	1	158247	P	Sonat	22	3

Legend
D = Directional
A = Active Producing Gas
P = Plugged
S = Shut-in
OSR
*P&A Operator Sonat Merger
**Includes Dual Completion SN230246