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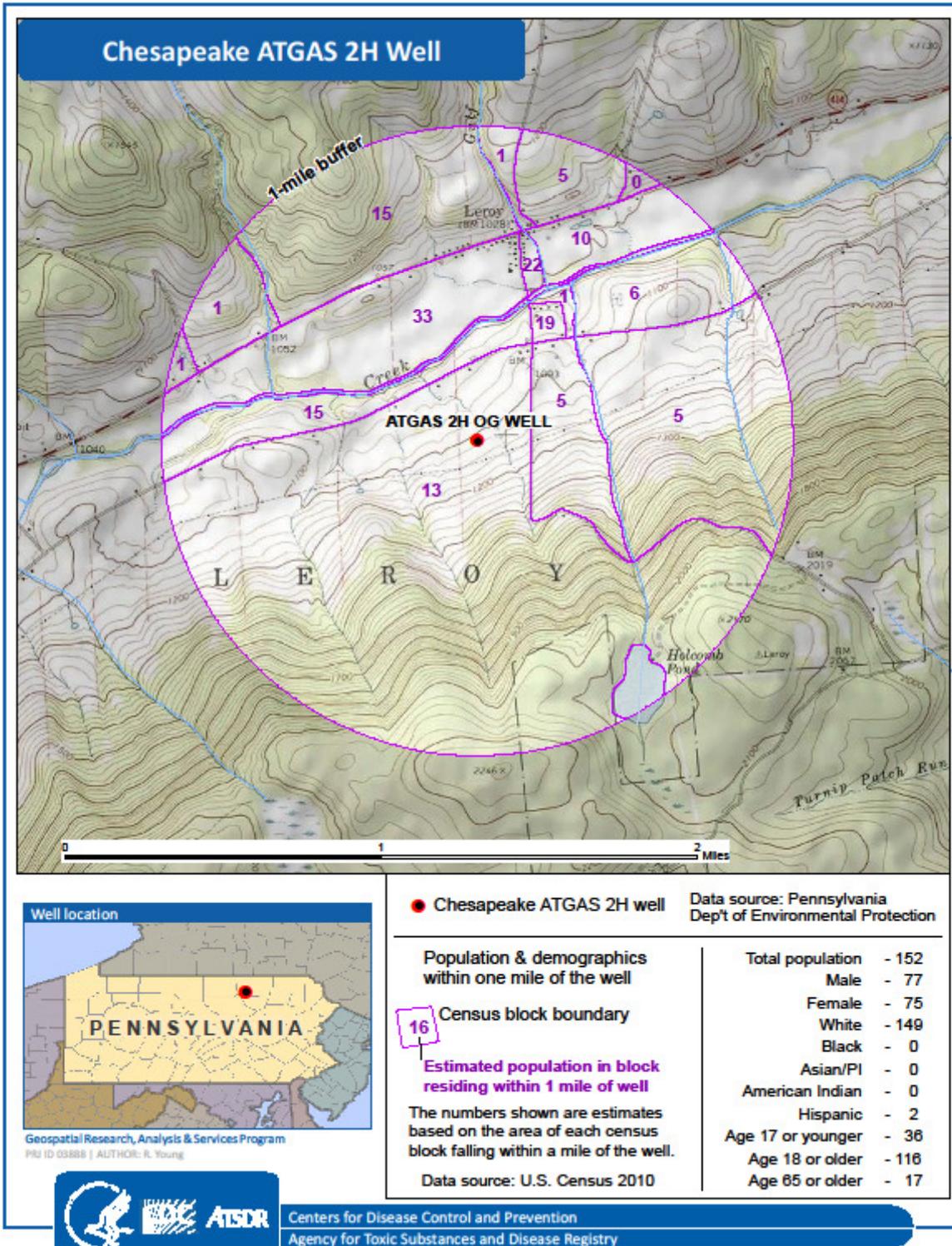
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Appendix A. Chesapeake ATGAS 2H Well Site Location and Demographics Information



Geospatial Research, Analysis & Services Program
PRJ ID 03888 | AUTHOR: R. Young

● Chesapeake ATGAS 2H well

Data source: Pennsylvania
Dep't of Environmental Protection

Population & demographics
within one mile of the well

Total population	- 152
Male	- 77
Female	- 75
White	- 149
Black	- 0
Asian/PI	- 0
American Indian	- 0
Hispanic	- 2
Age 17 or younger	- 36
Age 18 or older	- 116
Age 65 or older	- 17

16 Census block boundary

Estimated population in block
residing within 1 mile of well

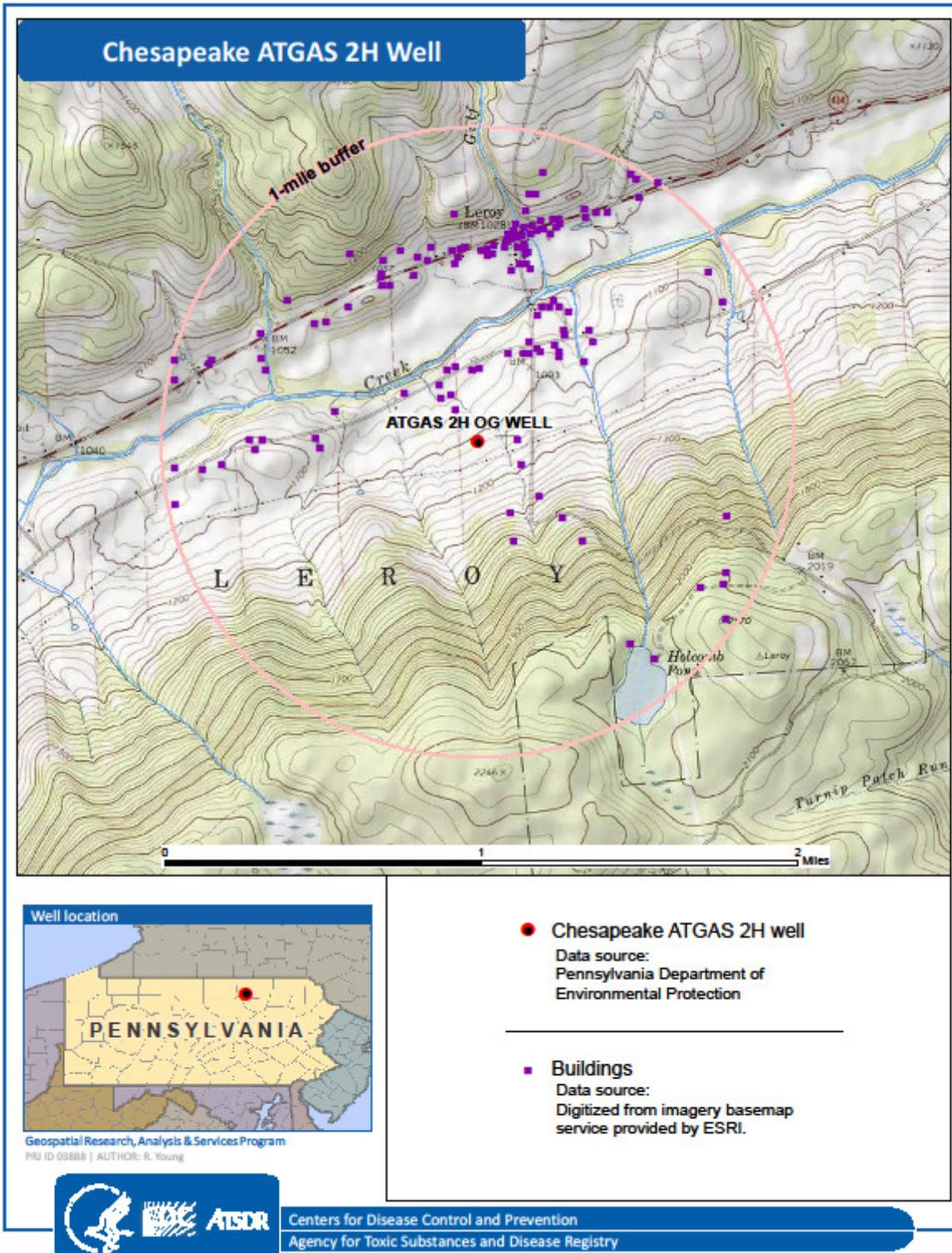
The numbers shown are estimates
based on the area of each census
block falling within a mile of the well.

Data source: U.S. Census 2010



Centers for Disease Control and Prevention
Agency for Toxic Substances and Disease Registry

Appendix B. Buildings Near the Chesapeake ATGAS 2H Well Site



Appendix C. Summary of All Non-Radiological Chemical Detections in EPA April 2011 Sampling of Residential Private Wells Post-Chesapeake AT&T 2H Well Site Blowout

	Blank	RW01	RW02	RW03	RW04	RW05	RW06	RW07	
Analyte									
Methane		ND	120	ND	6,200	7.4	240	17	Organics
Ethane		ND	ND	ND	2.6	ND	ND	ND	
HEM	2,900 b	1,700 B	2,200 B	1,700 B	3,200 B	1,300 B	2,800 B	2,100 B	
Tetrachloroethene		ND	ND	ND	ND	ND	ND	0.36 J	
Aluminum	ND	ND	ND	2,400	ND	ND	ND	ND	Inorganics
Antimony	ND	ND	ND	0.11 J	0.085 J	ND	ND	ND	
Arsenic	ND	0.73 J	30	9.4	1.8 J	2.1 J	4.2 J	2.1 J	
Barium	ND	180	370	220	2,600	200	660	250	
Beryllium	ND	ND	ND	0.14 J	ND	ND	ND	ND	
Cadmium	ND	ND	ND	0.043 J	0.090 J	ND	ND	ND	
Calcium	ND	76,000	43,000	40,000	170,000	29,000	26,000	24,000	
Chromium	ND	ND	ND	2.4	ND	ND	ND	ND	
Cobalt	ND	0.062 J	0.030 B	1.1	0.10 J	0.019 J	0.039 B	0.026 J	
Copper	ND	20	ND	12	2.9 J	ND	8	ND	
Iron	ND	ND	550	3,100	600	170	80 J	190	
Lead	ND	0.48 J	0.20 J	1.7	ND	ND	0.60 J	0.66	
Lithium	ND	13	11 L	17	1,900	38	87	60	
Magnesium	ND	12,000	6,000	4,200	21,000	5,400	3,600	3,900	
Manganese	ND	200	400	130	260	130	95	110	
Nickel	ND	0.70 J	0.35 J	3.5	1.1 J	ND	1 J	ND	
Potassium	240 B	1,500 J	1,700 B	1,700 J	13,000	1,200 J	1,900 B	1,200 J	
Silver	ND	ND	0.026 B	ND	0.038 B	ND	ND	ND	
Sodium	320 B	8,600	46,000 K	22,000	2,100,000 K	56,000	120,000 K	74,000	
Strontium	ND	220	610	380	15,000	1,100	1,100	1,000	
Thallium	0.020 B	0.032 B	ND	0.047 B	0.030 B	ND	0.020 B	ND	

	Blank	RW01	RW02	RW03	RW04	RW05	RW06	RW07	
Analyte									
Uranium	ND	5.1	2.9	9.3	0.023 B	0.049 J	0.14 J	0.16 J	Water Quality
Vanadium	ND	ND	ND	5.4	0.17 J	ND	ND	3.9 J	
Zinc	ND	5.4 J	ND	15	2.7 J	ND	5.8 J	ND	
Total Phosphate	ND	ND	27 J	120 J	ND	ND	ND	16 J	
Bromide	ND	ND	120 J	ND	15,000+	110 J	1,700	340	
Chloride	ND	8,600	15,000	10,000	1,900,000+	12,000	220,000+	45,000	
Sulfate	ND	32,000	6,900	12,000	1,200+	16,000	4,500 J	12,000	
Alkalinity	ND	220,000	210,000	130,000	110,000	180,000	140,000	170,000	
Bicarbonate alkalinity (as CaCO3)	ND	220,000	210,000	130,000	110,000	180,000	140,000	170,000	
Turbidity (in NTU)	ND	0.11	3.8	190+	0.71	0.65	0.52	0.54	
Specific conductance (in unhos/cm)	ND	480	660	330 L	5,900	410 L	1,000	470 L	
Hardness	ND	240,000	130,000	120,000	510,000	96,000	81,000	76,000	
Total Dissolved Solids	ND	270	230,000	210,000	4,700,000+	230,000	520,000	270,000	
Total Suspended Solids	ND	ND	2,000 J	80,000+	ND	ND	ND	ND	

Notes: Data are in µg/L

Most detection limits were higher for pre-drilling than post-drilling analyses

+ = result reported from diluted analysis

B = Compound found in the blank

J = Result is less than the reporting limit but equal or greater than the method detection limit; concentration reported is approximate

K = Analyte present, Reported value may be high. Actual value expected to be lower.

L = Analyte present. Sample value is biased low. Actual value is expected to be higher.

MBAS = Methylene blue active substance

NA = Data not available

ND = Not detected above method detection limit

NTU = Nephelometric turbidity units

RSL = Regional screening level

RW = Residential well

umhos/cm = micromhos per centimeter

Appendix D. Comparison of EPA April 2011 Private Well Sampling Results With Chesapeake July 2010 Private Well Sampling Results for RW02, RW03, RW04, and RW06, Before Drilling and After Chesapeake ATGAS 2H Well Site Blowout

Location	Analyte	Before Drilling	After Blowout
		Date Sampled: 7/14/2010	Date Sampled: 4/27/2011
RW02	Methane	349	120
RW02	Arsenic	29.3	30
RW02	Barium	365	370
RW02	Calcium	41000	43,000
RW02	Iron	521	550
RW02	Lithium	NA	11 L
RW02	Magnesium	6570	6,000
RW02	Manganese	366	400
RW02	Potassium	1,300	1,700 B
RW02	Sodium	45,800	46,000 K
RW02	Strontium	NA	610
RW02	Uranium	NA	2.9

Location	Analyte	Before Drilling	After Blowout
		Date Sampled: 7/13/2010†	Date Sampled: 4/28/2011
RW03	Methane	ND/ND	ND
RW03	Arsenic	ND/ND	9.4
RW03	Barium	41.5/157	220
RW03	Calcium	46,100/42,700	40,000
RW03	Iron	514/ND	3,100
RW03	Lithium	NA	17
RW03	Magnesium	8,240/4,090	4,200
RW03	Manganese	242/ND	130
RW03	Potassium	ND/ND	1,700 J
RW03	Sodium	27,100/17,000	22,000
RW03	Strontium	NA	380
RW03	Uranium	NA	9.3

		Before Drilling	After Blowout
Location	Analyte	Date Sampled: 7/15/2010	Date Sampled: 4/27/2011
RW04	Methane	763	6,200
RW04	Ethane	ND	2.6
RW04	Arsenic	ND	1.8 J
RW04	Barium	247	2,600
RW04	Calcium	15,400	170,000
RW04	Iron	87.7	600
RW04	Lithium	NA	1,900
RW04	Magnesium	2,430	21,000
RW04	Manganese	32.4	260
RW04	Potassium	1,780	13,000
RW04	Sodium	132,000	2,100,000 K
RW04	Strontium	NA	15,000
RW04	HEM (Oil and Grease)	ND	3.2 JB

		Before Drilling	After Blowout
Location	Analyte	Date sampled: 7/15/2010	Date sampled: 4/27/2011
RW06	Methane	440	240
RW06	Arsenic	ND	4.2 J
RW06	Barium	876	660
RW06	Calcium	29,100	26,000
RW06	Iron	77.2	80 J
RW06	Lithium	NA	87
RW06	Potassium	1,780	1,900 B
RW06	Magnesium	4,610	3,600
RW06	Manganese	106	95
RW06	Sodium	136,000	120,000 K
RW06	Strontium	NA	1,100
RW06	HEM (Oil and Grease)	ND	2.8 JB

Notes: Data are in µg/L

Most detection limits were higher for pre-drilling than post-drilling analyses

B = Compound found in the blank

J = Result is less than the reporting limit but equal or greater than the method detection limit; concentration reported is approximate

K = Analyte present, Reported value may be high. Actual value expected to be lower.

L = Analyte present. Sample value is biased low. Actual value is expected to be higher.

NA = Data not available

ND = Not detected above method detection limit

RW = Residential well