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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Tuesday, October 21, 2025  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for Murray Unit 1H  
47-033-06121-00-00

Extended lateral

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

A handwritten signature in black ink, reading "Jason Harmon".

H. Jason Harmon  
Acting Chief

Operator's Well Number: Murray Unit 1H  
Farm Name: Robert G & Christine E Flanigan etal  
U.S. WELL NUMBER: 47-033-06121-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 10/21/2025

Promoting a healthy environment.

10/24/2025

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

- 1) Well Operator: Antero Resources Corporation 494507062 033 - Harris Eagle Wolf Summit 7.5'  
Operator ID County District Quadrangle
- 2) Operator's Well Number: Murray Unit 1H MOD Well Pad Name: Flanigan Pad
- 3) Farm Name/Surface Owner: Robert G. & Christine Flanigan, et al Public Road Access: Gregorys Run Road
- 4) Elevation, current ground: 1,161' Elevation, proposed post-construction: 1,154'
- 5) Well Type (a) Gas X Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_  
Other \_\_\_\_\_  
(b) If Gas Shallow X Deep \_\_\_\_\_  
Horizontal X
- 6) Existing Pad: Yes or No Yes
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 7700' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#
- 8) Proposed Total Vertical Depth: 7700' TVD
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: 17000' MD
- 11) Proposed Horizontal Leg Length: 6898' \*Open to modification at a later date
- 12) Approximate Fresh Water Strata Depths: 424'
- 13) Method to Determine Fresh Water Depths: From 47033009510000
- 14) Approximate Saltwater Depths: 1176'
- 15) Approximate Coal Seam Depths: N/A
- 16) Approximate Depth to Possible Void (coal mine, karst, other): Yes
- 17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes \_\_\_\_\_ No X
- (a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

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*Jeff A Propat*

9-30-2025

18)

**CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	J-55	94#	100'	100'	CTS, 96 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	474'	474'	CTS, 494 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	3100'	3100'	CTS, 1262 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P110-ICV	23#	17000'	17000'	CTS, 3356 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

*Jeff A Propat*

9-30-2025

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.375"	2250	50	Class A/L	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A/L	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A/L	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	14,360	2500	Class G/H	~1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

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Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill a new horizontal shallow well into the Marcellus Shale.

\*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs

Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 12.63 acres

22) Area to be disturbed for well pad only, less access road (acres): 7.64 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers

Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.

Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.

Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

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24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A/L cement.

Surface: Class A/L cement with 2-3% calcium chloride and 1/4 lb of flake

Intermediate: Class A/L cement with 1/4 lb of flake, 5 gallons of clay treat

Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51

Production: Tail cement- Class G/H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

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25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.

Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.

Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

\*Note: Attach additional sheets as needed.

Jeff A Propat

9-30-2025

Page 3 of 3  
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UWI (APINum)	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf'd
47033038330000	COFFMAN A W	COFFMANK-7	DEVONIAN GAS PRODUCTION INC	KRISCOTT INC	4,660	3010 - 4587	Speechley, Balltown, Benson	Weir, Alexander
47033051800000	ROBERT A FLANIGAN	32315	DIVERSIFIED PRODUCTION LLC	DOMINION EXPL&PROD	3,498	1524 - 3337	Big Injun, Thirty-Foot, Gordon, Fifth, Speechley, Balltown	Weir, Alexander
47033011160000	DENNIS C BATES	12397	DIVERSIFIED PRODUCTION LLC	CONSOL GAS SUPPLY CRP	3,440	2962 - 3306	Big Injun, Thirty-Foot, Gordon, Fifth, Speechley, Balltown	Weir, Alexander

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# LEGEND

- Proposed gas well
- ⊙ Existing Well, as noted
- ⊙ Digitized Well, as noted

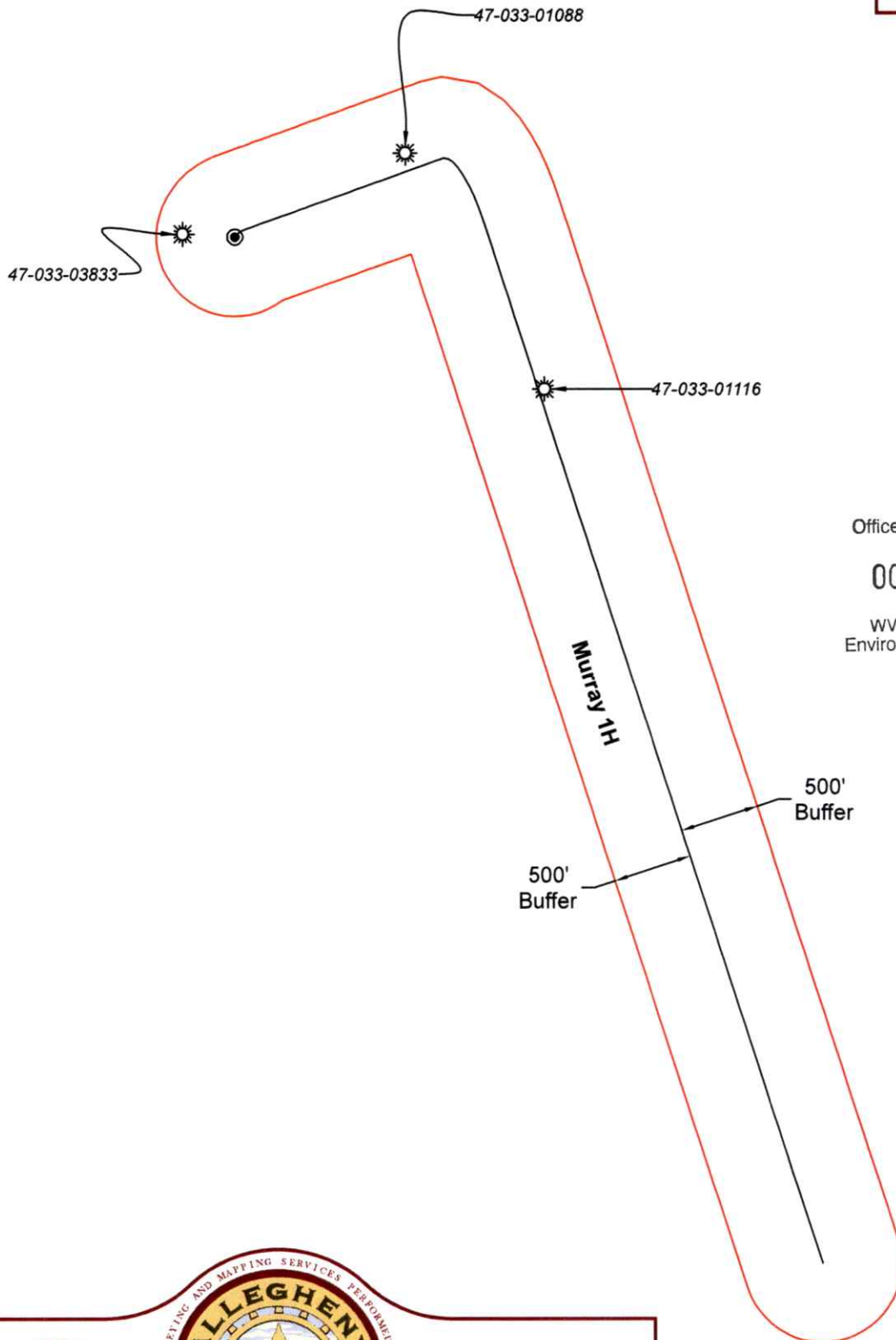


The orientation of this survey is Grid North, and its coordinate base is the West Virginia Coordinate System of 1927, North Zone

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Bridgeport Office  
Phone: (304) 848-5035  
Fax: (304) 848-5037

172 Thompson Drive  
Bridgeport, WV 26330

PARTY CHIEF: C. Lynch	DRAWN BY: C. Robinson
RESEARCH: J. Miller	PREPARED: September 25, 2025
SURVEYED: Dec. 2016	PROJECT NO: 212-36-EO-25
FIELD CREW: C.L., K.M.	DRAWING NO: Murray 1H AOR

Sheet 1 of 1



Scale: 1 inch = 1000 feet

10/24/2025







INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

WV Department of  
Environmental Protection

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
<b><u>A: A.W. Coffman &amp; Susan Coffman Lease</u></b>			
A.W. Coffman & Susan Coffman	Hope Natural Gas	1/8	0143/0420
Hope Natural Gas	Consolidated Gas Supply Corporation	Conveyed	0903/0179
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Conveyed	1136/0250
Consolidated Gas Transmission Corporation	CNG Development Company	Conveyed	1143/0921
CNG Development Company	CNG Producing Company	Name Change	WVSOS
CNG Producing Company	Dominion Exploration & Production, Inc.	Name Change	0058/0366
Dominion Exploration & Production, Inc.	Antero Resources Appalachian Corporation	Assignment	1423/1068
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0002/0914
<b><u>B: Dennis C. Bates, et al Lease</u></b>			
Dennis C. Bates, et al	Consolidated Gas Supply Corporation	1/8	1018/0344
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Conveyed	1136/0250
Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	0051/0795
CNG Transmission Corporation	UMC Petroleum Corporation	Assignment	1230/1194
UMC Petroleum Corporation	Ashland Exploration, Inc.	Assignment	1263/0494
Ashland Exploration, Inc.	Blazer Energy Corporation	Assignment	1294/0299
Blazer Energy Corporation	Eastern State Oil & Gas, Inc.	Name Change	0058/0093
Eastern State Oil & Gas, Inc.	Equitable Production - Eastern States Oil & Gas, Inc.	Name Change	0059/0854
Equitable Production - Eastern States Oil & Gas, Inc.	Appalachian Natural Gas Trust	Assignment	1326/0527
Appalachian Natural Gas Trust	EQT Production Company	Merger	0036/1328
EQT Production Company	Antero Resources Appalachian Corporation	Assignment	1482/0857
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0002/0914
<b><u>C: Gore Corporation Lease</u></b>			
Gore Corporation	Consolidated Gas Supply Corporation	1/8	1017/0392
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Conveyed	1136/0250
Consolidated Gas Transmission Corporation	CNG Development Company	Assignment	1143/0921
CNG Development Company	CNG Producing Company	Merger	WVSOS
CNG Producing Company	Dominion Exploration & Production, Inc.	Name Change	0058/0366
Dominion Exploration & Production, Inc.	Consol Gas Company	Name Change	0059/0972
Consol Gas Company	CNX Gas Company, LLC	Merger	0036/0913
CNX Gas Company, LLC	Antero Resources Appalachian Corporation	Assignment	1479/0628
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0002/0914
<b><u>F: Walter R. Lawman, et al Lease</u></b>			
Walter R. Lawman, et al	Consolidated Gas Supply Corporation	1/8	1018/0352
Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Conveyed	1136/0250
Consolidated Gas Transmission Corporation	CNG Development Company	Assignment	1143/0921
CNG Development Company	CNG Producing Company	Merger	WVSOS
CNG Producing Company	Dominion Exploration & Production, Inc.	Name Change	0058/0366
Dominion Exploration & Production, Inc.	Consol Gas Company	Name Change	0059/0972
Consol Gas Company	CNX Gas Company, LLC	Merger	0036/0913
CNX Gas Company, LLC	Antero Resources Appalachian Corporation	Assignment	1479/0628
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0002/0914

10/24/2025



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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<b>H: Sarah J. Morrison &amp; Ashton H. Morrison, w/h Lease</b>				
	Sarah J. Morrison & Ashton H. Morrison, w/h	Hope Natural Gas Company	1/8	0183/0056
	Hope Natural Gas Company	Consolidated Gas Supply Corporation	Conveyed	0903/0179
	Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	Conveyed	1136/0250
	Consolidated Gas Transmission Corporation	CNG Transmission Corporation	Name Change	0051/0795
	CNG Transmission Corporation	Dominion Transmission, Inc.	Name Change	0058/0362
	Dominion Transmission, Inc.	CONSOL Energy Holdings LLC XVI	Merger	1458/0299
	CONSOL Energy Holdings LLC XVI	Consol Gas Company	Merger	0059/1019
	Consol Gas Company	CNX Gas Company LLC	Merger	1472/0294
	CNX Gas Company LLC	Antero Resources Appalachian Corporation	Assignment	1479/0628
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0002/0914

\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

\*Co-tenancy utilization – Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with the development of certain royalty owners' interests in this tract.

\*\*Pooling/Unitization – Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract.

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**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Corporation

By: Tim Rady

Its: Senior Vice President of Land

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

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Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
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October 1, 2025

West Virginia Department of Environmental Protection  
Office of Oil and Gas  
Attn: Mr. Taylor Brewer  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
Fax 303.357.7315

Mr. Brewer:

Antero Resources Corporation (Antero) would like to submit the following permit modifications for approved well on the existing Flanigan Pad: Murray Unit 1H (47-033-06121), and Snook Unit 1H (47-033-06122), and on the existing Delta Pad: Sapinero Unit 4H (47-095-02945) Expedited.

Attached you will find the following:

- AOR
- Revised Form WW-6B
- Revised Form WW-6A1
- Revised Mylar Plat

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If you have any questions please feel free to contact me at (303) 357-6959.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "S Gaspar".

Stefan Gaspar  
Permitting Agent  
Antero Resources Corporation

Enclosures

Murray 1H MOD CK# 4045704  
AMT \$7,500.00

Snook 1H MOD CK# 4045706  
AMT \$7,500.00

Sapinero 4H MOD CK# 4045705  
AMT \$7,500.00

10/24/2025