

STATE OF OHIO
DEPARTMENT OF NATURAL
RESOURCES

Division of Oil and Gas
Resources Management
WELL PERMIT

API WELL NUMBER
34-059-2-4370-00-00

OWNER NAME, ADDRESS
AMERICAN ENERGY UTICA LLC
P.O. BOX 18756
OKLAHOMA CITY

OK 73154

DATE ISSUED
5/7/2014

PERMIT EXPIRES
5/6/2016

TELEPHONE NUMBER (405) 418-8000

IS HEREBY GRANTED PERMISSION TO: Drill New Well, horizontally

AND ABANDON WELL IF UNPRODUCTIVE

PURPOSE OF WELL: Oil & Gas

COMPLETION DATE IF PERMIT TO PLUG:

DESIGNATION AND LOCATION:

LEASE NAME RED HILL FARM MDS GR
WELL NUMBER 3H
COUNTY GUERNSEY
CIVIL TOWNSHIP MADISON
TRACT OR ALLOTMENT
SURFACE FOOTAGE LOCATION 423'SL & 1245'EL OF SEC 1 (MADISON TWP)
TARGET FOOTAGE LOCATION 2491'SL & 677'EL OF SEC 22 (WASHINGTON TWP)

SURFACE NAD27

X: 2322731
Y: 776937
LAT: 40.1274710795786
LONG: -81.3459331269766

TARGET NAD27

2318081
784477
40.1483288144948
-81.3622197596545

TYPE OF TOOLS: Air Rotary/Fluid Rotary

PROPOSED TOTAL DEPTH 16000 FEET
GROUND LEVEL ELEVATION 1011 FEET

GEOLOGICAL FORMATION(S):

POINT PLEASANT

SPECIAL PERMIT CONDITIONS: Permit is subject to the attached terms and/or conditions
Horizontal Drilling Well Permit Conditions
Hydrogen Sulfide Conditions
Horizontal Well/Pre-Permitting Site Conditions

CASING PROGRAM (CASING MUST BE CENTRALIZED AND IS SUBJECT TO APPROVAL OF THE OIL AND GAS INSPECTOR):

26" CONDUCTOR APPROX. 100' CEMENTED TO SURFACE
13 3/8" SURFACE CASING MINIMUM OF 300' CEMENTED TO SURFACE
9 5/8 " INTERMEDIATE APPROX. 6050' AND CEMENTED
5 1/2" PRODUCTION CASING TO T.D. CEMENTED IF PRODUCTIVE
"BLOW OUT PREVENTOR REQUIRED" HAZARDOUS CONDITIONS MAY BE ENCOUNTERED

This permit is NOT TRANSFERABLE. This permit, or an exact copy thereof, must be displayed in a conspicuous and easily accessible place at the well site before permitted activity commences and remain until the well is completed. Ample notification to inspector is necessary.

OIL AND GAS WELL INSPECTOR:

MICHAEL HARTSHORN (740) 507-8000
ROCKY KING - Supervisor (614) 562-1854
DISTRICT #: (740) 588-0631

FIRE AND EMERGENCY NUMBERS

FIRE: (740) 489-5151
MEDICAL SERVICE (740) 439-8000

INSPECTOR NOTIFICATION

The oil and gas inspector must be notified at least 24 hours prior to:

1. Commencement of site construction
2. Pit excavation and closure
3. Commencement of drilling, reopening, converting or plugback operations
4. Installation and cementing of all casing strings
5. BOP testing
6. Well stimulation
7. Plugging operations
8. Well pad construction

The oil and gas inspector must be notified immediately upon:

1. Discovery of defective well construction
2. Detection of any natural gas or H2S gas during drilling in urban areas
3. Discovery of defective well construction during well stimulation
4. Determination that a well is a lost hole
5. Determination that a well is a dry hole

Richard J. Simmers

CHIEF, Division of Oil and Gas Resources
Management

STATE OF OHIO
DEPARTMENT OF NATURAL
RESOURCES

Division of Oil and Gas
Resources Management
WELL PERMIT

API WELL NUMBER
34-059-2-4370-00-00

ATTN AMBER KOLLOCK
AMERICAN ENERGY-UTICA LLC
P.O. BOX 18756
OKLAHOMA CITY, OK 73154

November 14, 1988
Revised: November 19, 2007
Revised: August 4, 2011

THESE STIPULATIONS MUST BE DISPLAYED WITH THE PERMIT IN A CONSPICUOUS PLACE AT THE WELL SITE IN ACCORDANCE WITH SECTION 1509.05 OF THE OHIO REVISED CODE.

HYDROGEN SULFIDE GAS PERMIT CONDITIONS

ALERT:

Hydrogen sulfide gas has been encountered in the "Big Lime" section in this township. Hydrogen sulfide can cause corrosion of the casing and tubing strings, deterioration of the surface equipment, contamination of fresh water resources and is a potential hazard to the health and safety of drilling crew workers, service company personnel, Division staff, and the local public. **Pursuant to 1509.17 of the Revised Code, the following permit conditions must be followed while drilling this well.**

1. If hydrogen sulfide gas is encountered in the "Big Lime" section and the well is being drilled on air, the rig shall convert to fluid drilling and shall remain on fluid until total depth or until the hydrogen sulfide zone is cemented.
2. Once set, the casing shall be cemented with a sufficient volume of SULFATE RESISTANT cement so as to provide a continuous sheath of cement to the top of the "Big Lime" section.
3. If the specific gas bearing zone can be identified it is only necessary to cement across the identified zone. A minimum of one hundred (100) feet of SULFATE RESISTANT cement shall be placed across the hydrogen sulfide bearing zone.
4. The Division's field inspector must be notified at least 12 hours prior to cementing this string of casing.

The Ohio Department of Natural Resources
The Division of Oil and Gas Resources Management
2045 Morse Road, Building F-2
Columbus, Ohio 43229-6693

HORIZONTAL DRILLING PERMIT CONDITIONS

Within sixty (60) days of completion of drilling operations, the following items **must** be submitted to the Division of Oil and Gas Resources Management:

- A copy of the bore hole deviation survey
- A revised surveyor's plat showing:
 1. Surface Location;
 2. Actual location of the first perforation;
 3. Actual location of the last perforation;
 4. Actual ending point of the bore hole in the target formation;
 5. X, Y coordinates of the above four points.
- A fifty-dollar (\$ 50.00) fee for the revised surveyor's plat.



Ohio Department of Natural Resources
 Division of Oil and Gas Resources Management
 2045 Morse Rd. Bldg. H-3 – Columbus OH 43229-6693



Pre-Construction Permit Conditions

Application Number	ODNR	Permit Number		Inspection Date	02/03/2014	Modification Date (if applicable)	
	Company	American Energy Partners		Lease Name/Well #		Red Hill Farm MDS GR	
	County	Guernsey		Township		Madison Township	
	Section/Lot	Sec 1/ Township 3/ Range 1		Urban Area (if applicable)		N/A	
	Inspected By	Mike Hartshorn					
	Accompanied By						

Directions to Location SR 22 East (East of intersection with McCoy Rd) Pad access on the right.

<u>ITEM</u>	<u>LEASE ROAD, WELL SITE CONSTRUCTION</u>	<u>Comments:</u>
1	Tree/Brush Removal/Disposition	Stock pile or remove from site
2	Topsoil Removal/Stockpiles/Placement	Proposed adjacent to and North of the well pad (Within LOD)
3	Erosion/Sediment Control (Silt Fence, Berms)	BMP's using compost filter sock, erosion control blanket and /or geotextile fabric and rock check dams.
4	Drainage Controls (Diversion Ditches, Culverts, Waterways, Crossings)	Sheet flow over the entire site using BMP's. Water bars and culverts to be installed on access road if necessary. Catch basins & underdrain around perimeter of well pad with shutoff valves in the event of a spill.
5	Signage	At entrance gate
6	Apron/Culverts/Road Materials	Limestone stablized entrance
7	Pull Off Area	Rock entrance or well pad. Parking within limit of disturbance
8	Parking	On site
9	GPS – Access Road	40.129243 / 081.347169
10	GPS – Well Stake	40.127472 / 081.345930
11	GPS – Tank Battery	SPCC plan to be provided at a later date
12	GPS – Pit Location	None Proposed
13	Site Construction Plan	Submitted with details

<u>ITEM</u>	<u>DRILLING CONSIDERATIONS</u>	<u>Comments:</u>
14	Location Dimensions (Length, Width, Approximate Acreage)	500' x 400' / Limit of disturbance approx.9.5 acres
15	Multiple Wells?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
16	Rig Type	Standard
17	Is a blow-out preventer required?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	If No, explain:	
18	Equipment Placement/	Rig located centrally on pad. Frac Tanks. Etc.are not shown but

Orientation (Rig/Frac Tanks/Etc.) assumed to be on the well pad.

19	Mine Voids?	?	Yes	<input checked="" type="checkbox"/>	No	
20	Verify Water Wells Within 300'	None				
21	Verify Structures Within 500'	Closet structure is approx. 850' northwest of well pad				
22	Verify Streams and Drainage	N/A				
23	Flood Plain?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	x
24	Stream Crossing?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	x
	Corps of Engineers Notified?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	x
25	Wetlands?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	x
	EPA Notified?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	x

<u>ITEM</u>	<u>PITS</u>	<u>Comments:</u>
26	Drilling Pits (Placement/Orientation)	None proposed
27	Pit Dimensions (Length, Width, Depth)	N/A
28	Estimated Volume/Capacity	N/A
29	Number & Type of Liners	N/A
30	Thickness of Liner	N/A
31	Type of Material Under Liner	N/A
32	Pit Construction Plan	N/A
33	Fencing (Pits/Entire Location)	Not shown

<u>ITEM</u>	<u>RESTORATION</u>	<u>Comments:</u>
34	Pit Closure – (Standard/Solidification/Off-Site Disposal – state time frame)	Closed system - offsite disposal
35	Site-Specific Time Frame for Restoration	Upon well completion and production or as specified by rule
36	Erosion/Sediment Control	BMP's
37	Drainage Control	BMP's

<u>ITEM</u>	<u>PRODUCTION</u>	<u>Comments:</u>
38	Is the Access Road Gate required? If No, explain:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>Gate and fence proposed</u>

<u>ITEM</u>	<u>WAIVERS</u>	<u>Comments:</u>
39	Is the Company required to submit a waiver? If yes, submit the following waiver requests:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Is the Company required to submit revised drawings? Yes No

THE FOLLOWING ITEMS HAVE BEEN CHANGED FROM THE ORIGINAL APPLICATION:

Memorandum

To: Permit Application File-API34059243410000
APATT024407
APATT024409


From: Richard J. Simmers, Chief

Date: May 6, 2014

Subject: Variance Request-American Energy Utica LLC
Red Hill Farm MDS GR Unit, 1H, 3H, 5H, wells, Guernsey County, Madison
and Washington Townships

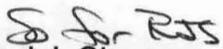
Pursuant to Section 1501:9-1-04 (E) (2) of the O.A.C., I hereby grant the variance request to the spacing requirements of Sections 1501:9-1-04 (C) (4) (b) of the O.A.C. to American Energy Utica LLC. The variance being requested reduces the spacing between wells to approximately 921 feet.

In the attached documents, the applicant has demonstrated that the approval of the variance will protect correlative rights and promote conservation by permitting oil and gas to be produced that could not otherwise be produced.

cc: Steve Opritza, Geologist

Memorandum

To: Permit File-API 34059243410000
APATT024407
APATT024409


From: Richard J. Simmers, Chief

Date: May 6, 2014

Subject: Variance Request-American Energy Utica LLC
Red Hill Farm MDS GR Unit, 1H, 3H, 5H, Guernsey County, Madison and
Washington Townships

Pursuant to Section 1501:9-1-04 (E)(2) of the OAC, I hereby grant the variance request to the spacing requirements of Sections 1501:9-1-04 (C)(4)(c) of the OAC to American Energy Utica LLC. Approval of this variance reduces the setback distances at the heel and toe portions of this horizontal shale well from 500 feet to no less than 150 feet to the unit boundary.

In the attached documents, the applicant has demonstrated that the approval of the variance will protect correlative rights and promote conservation by permitting oil and gas to be produced that could not otherwise be produced.

An "as drilled" survey plat showing the location of the perforations at the heel and toe sections of the well shall be submitted within 60 days of perforating the well.

c: Steve Opritza, Geologist

DAILY ROUTE SLIP Madison

APPLICATION NO. aPATT024409 TYPE: Drill New Well, horizontal

CONAME AMERICAN ENERGY UTICA L API

WELL NAME /NO. RED HILL FARM MDS GR 3H

COUNTY 59 GUERNSEY INITIALS DATE

DATE APPLICATION REC'D pn 4/17/2014

PERMIT FEE AND CHECK NO. \$500.00 1935

RUSH AMOUNT RUSH CHECK NO. \$0.00 0

APPLICATION ENTERED pn 4-17-14

APPLICATIONS AND PLATS SENT FOR MINE APPROVAL _____ _____

COAL APPROVAL RECEIVED _____ _____

OIL/GAS AFFIDAVIT REC'D _____ _____

URBANIZED AREA YES **NO** pn 4-17-14

URBANIZED AREA NOTIFICATION SENT pn 4-21-14

PRE-PERMIT REVIEW SENT TO INSPECTOR/REC'D BACK _____ _____

URBAN MAP REVIEW _____ _____

STATE LAND YES NO _____ _____

SAMPLES: YES _____ /SPECIAL AREAS _____ _____

GEOLOGIST APPROVAL MS⁵⁰ 5/6/14

DATA ENTRY /ISSUED pn 5/7/14

PERMIT: TAKEN _____ MAILED pn 5/13/14

FAX TO: _____

FINAL MAP CHECK RC 5-16-14

COMMENTS: mail HUSC, HO, HS

Proof Sheet

APPL NUMBER aPATT024409
OWNER NUMBER 9193
OWNER NAME AMERICAN ENERGY UTICA LLC
EXISTING WELL 0
API PERMIT NO
APPL TYPE HX
TYPE OF WELL OG
VARIANCE REQUEST
WELL NAME RED HILL FARM MDS GR
WELL NUMBER 3H
PREV/PROPOSED TD 16000
DRILL UNIT ACRES 639.87
TYPE OF TOOL RTAF
WELL CLASS EDPW
FIRE PHONE (740) 489-5151
MEDICAL PHONE (740) 439-8000
COUNTY CODE 59
COUNTY NAME GUERNSEY
COAL (Y=-1/N=0) -1
CIVIL TOWNSHIP MADISON
SURF QUAD FREEPORT
Nad 27 SURF ORIG X 2,322,731
Nad 27 SURF ORIG Y 776,937
GROUND ELEVATION 1011
SURF SEC 1
SURF LOT
SURF QTR TWP
SURF ALLOT
SURF TRACT
SURF FRACTION

URBANIZED AREA ?
NAME

STATE LAND ?
MP Check # 0

PROPOSED FORMATIONS

POINT PLEASANT

UTICA/PT PLEASANT
MARCELLUS

TAKE POINT ORIG X 2,322,346
TAKE POINT ORIG Y 776,736

TARG COUNTY CODE 59
TARG COUNTY NAME Guernsey

TARG CIVIL TWP MADISON *Washington*

TARG QUAD FREEPORT

Nad 27 TARG ORIG X 2,318,081

Nad 27 TARG ORIG Y 784,477

TARG ELEV 1080 -0

TARG SECTION 22

TARG LOT

TARG QTR TWP

TARG ALLOT

TARG TRACT

TARG FRACTION

Proof Sheet

SURFACE FOOTAGE

423' SL + 1245' EL of sec 1 (Madison sup)

TAKE POINT FOOTAGE

211' SL + 1626' EL of sec 1 (Madison sup)

TARGET FOOTAGE

2491' SL + 677' EL of sec 22 (Washington sup)

CASING PROGRAM

18	26	100
60	13 3/8	300
13	9 5/8	6050
21	5 1/2	
26		

SPECIAL CONDITIONS/COMMENTS

PER
 HWSC
 HD
 HS

PH# 23513
 BE = 1340

COMPLETION DT

MINES APPROVAL

AFFIDAVIT APPROV

G15: No mines No drift
 No water wells

SOURCES OF WATER

WATERSHED LAKE ERIE OHIO RIVER

RUMA ATTACHED

EST WITHDRAWAL RATE (GAL/DAY)

NON AGREEMENT AFFIDAVIT ATTACHED

EST TOTAL VOLUME (GALLONS)

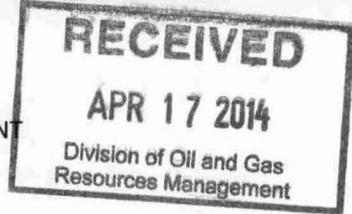
RECYCLED WATER EST TOTAL VOLUME (GALLONS)

WATER WELL SAMPLING RESULTS

DATE SUBMITTED

1935
8500⁰⁰

APPLICATION FOR A PERMIT (Form 1)
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL AND GAS RESOURCES MANAGEMENT
2045 MORSE ROAD, BUILDING F-2
COLUMBUS, OHIO 43229-6693
(614) 265-6922



APR 45 24409

SEE INSTRUCTIONS ON BACK

1. We (applicant) American Energy - Utica, LLC 2. Owner #: 9193
Address: P O Box 18756, Oklahoma City, OK 73154 Phone #: 405-418-8000
hereby apply this date April 11, 20 14 for a permit to:

Drill New Well Revised Location Convert
 Drill Horizontally Plug Back Deepen
 Drill Directionally Plug and Abandon Reopen
 Reissue Orphan Well Program Temporary Inactive

3. TYPE OF WELL: Oil & Gas Annular Disposal Saltwater Injection
 Stratigraphic Test Gas Storage Other (explain): _____
 Solution Mining* Enhanced Recovery* (*if checked, select appropriate box below)
 Input/Injection Water Supply Observation Production/Extraction

4. IS THE WELL LOCATION OR PRODUCTION FACILITY(S) WITHIN AN URBANIZED AREA AS DEFINED BY 1509.01 (Y)? Yes No

19. TYPE OF TOOLS: Cable Rotary (Air Fluid)
 Cable/Rotary Service Rig

5. MAIL PERMIT TO: American Energy - Utica, LLC
Attn: Amber Kollock
P O Box 18756
Oklahoma City, OK 73154

20. SOURCE(S) OF GROUND AND/OR SURFACE WATER USED IN PRODUCTION
OPERATION: Millers Fork
Watershed: Lake Erie Ohio River
Estimated Withdrawal Rate (gal/day): 60,000
Estimated Total Volume (gal): 900,000
If Recycled Water – Estimated Total Volume (gal): _____

6. COUNTY: Guernsey

7. CIVIL TOWNSHIP: Madison

8. SECTION: 1 9. LOT: _____

10. FRACTION: _____ 11. QTR TWP: _____

12. TRACT/ALLOT: _____

13. WELL #: 3

14. LEASE NAME: Red Hill Farm MDS GR

15. PROPOSED TOTAL DEPTH: 16000

16. PROPOSED GEOLOGICAL FORMATION(S):
Point Pleasant

17. DRILLING UNIT ACRES: 639.870

18. IF PERMITTED PREVIOUSLY:
API #: _____
OWNER: _____

21. EMERGENCY TELEPHONE NUMBERS: (closest to well site):
Fire: Antrim Fire 911, 740-489-5151
Medical: Southeastern Ohio Regional Medical, 911, 740-439-8000

22. MEANS OF INGRESS & EGRESS:
Road: State Hwy 22

23. ROAD USE FOR A HORIZONTAL WELL:
Maintenance Agreement Attached
Non-agreement Affidavit Attached

24. ARE THE SURFACE RIGHTS OWNED BY STATE OF OHIO?
Agency Name: _____

25. ATTACH LANDOWNER ROYALTY LISTING

26. PROPOSED CASING AND CEMENTING PROGRAM

Type Casing	Borehole Diameter (in)	Borehole Depth (ft)	Casing Diameter (in)	Casing Depth (ft)	Cement Volume (sacks)	Formation	Zone Tested or produced (✓ if Yes)	Hydraulic Fracturing (✓ if Yes)
Drive Pipe							<input type="checkbox"/>	<input type="checkbox"/>
Conductor	30	120	26	120	280		<input type="checkbox"/>	<input type="checkbox"/>
Mine String							<input type="checkbox"/>	<input type="checkbox"/>
Surface	17-1/2	980	13-3/8	980	1500		<input type="checkbox"/>	<input type="checkbox"/>
1 st Intermediate	12-1/4	6050	9-5/8	6050	3000		<input type="checkbox"/>	<input type="checkbox"/>
2 nd Intermediate							<input type="checkbox"/>	<input type="checkbox"/>
Production	8-1/2	16000	5-1/2	16000	3600	Point Pleasant	<input type="checkbox"/>	<input type="checkbox"/>
Liner							<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>
							<input type="checkbox"/>	<input type="checkbox"/>

I, the undersigned, being first duly sworn, depose and state under penalties of law, that I am authorized to make this application, that this application was prepared by me or under my supervision and direction, and that the facts stated herein are true, correct, and complete, to the best of my knowledge.

I, the undersigned, further depose and state that I am the person who has the right to drill on the tract or drilling unit and to drill into and produce from a pool and to appropriate the oil or gas that I produce therefrom either for myself or others as described in this application. And furthermore, I the undersigned, being duly sworn, depose and state at this time that I am not liable for any final nonappealable order of a court for damage to streets, roads, highways, bridges, culverts, or drainage ways pursuant to Section 5577.12 of the Ohio Revised Code (ORC). I, the undersigned, further depose and state that all notices required by 1509.06 (A) (9) ORC for this application have been duly provided by me. If applying for a permit to plug and abandon a well, I hereby certify that the written notices, as required in Section 1509.13, ORC, have been given.

That I hereby agree to conform with all provisions of Chapter 1509., ORC, and Chapter 1501., OAC, and all orders and conditions issued by the Chief, Division of Oil and Gas Resources Management.

Signature of Owner/Authorized Agent [Signature]
Name (Type or Print) ROBERT W. KEY II Title AUTHORIZED AGENT
If signed by Authorized Agent, a certificate of appointment of agent must be on file.

Sworn to and subscribed before me this the 15 day of April, 20 14.



[Signature] (Notary Public)
(Date Commission Expires)

OSV...
...
...





AMERICAN ENERGY
UTICA

April 11, 2014

VIA REGULAR MAIL

Ohio Department of Natural Resources
Division of Oil and Gas Resources Management
Attn: Ms. Mallory Stanton, Geologist
2045 Morse Road, F-2
Columbus, OH 43229-6693

Re: Red Hill Farm MDS GR 1H, 3H and 5H wellbores
Application for Permit (Drill New Well, Horizontally)
Request for Wellbore to Wellbore Spacing Distance Variance

Dear Ms. Stanton:

American Energy – Utica, LLC has simultaneously submitted the Applications for Permit to drill the Red Hill Farm MDS GR 1H, 3H and 5H wellbores in Harrison County, Ohio.

Pursuant to the Chief's authority granted in Ohio Administrative Code (OAC) § 1501:9- 1-04(E)(2), American Energy – Utica, LLC requests an exception from the requirement of OAC § 1501:9-1-04(C)(4)(b). For the proposed wells, the minimum distance from horizontal wellbore to horizontal wellbore will be as indicated below:

<u>Well Name</u>	<u>Proposed Distance Between Wellbores</u>
Red Hill Farm MDS GR 1H to 3H	921 feet
Red Hill Farm MDS GR 3H to 5H	921 feet

American Energy – Utica, LLC will be drilling these wells to be spaced as near as possible to 996' between well laterals, we are requesting the 921' variance to allow for deviation while drilling same.

The *above* proposed horizontal wells will meet the minimum setback distance as required by OAC § § 1501:9-1-04(C)(4)(c); and, thus, will be at least 500 feet from any drilling unit boundary.

The requested distance between horizontal wellbores will promote conservation and recovery of oil and natural gas within the permitted drilling unit and allow the recovery of reserves that might otherwise not be produced. Because this request will promote conservation and prevent waste, it is in the best interest of the public welfare of the State of Ohio.

AMERICAN ENERGY - UTICA, LLC

P.O. BOX 18756, OKLAHOMA CITY, OK 73154 • 301 N.W. 63RD, SUITE 600, OKLAHOMA CITY, OK 73116

Ohio Department of Natural Resources
Division of Oil and Gas Resources Management
Attn: Ms. Mallory Stanton, Geologist
January 22, 2014
Page 2

The locations of the proposed horizontal wellbores are presented on the attached well survey plats. If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

American Energy – Utica, LLC



Robert W. Kelly II
General Counsel
Direct Number: (405) 418-8030
E-Mail: bob.kelly@AEP-LP.com

Enclosure(s)



AMERICAN ENERGY
UTICA

April 11, 2014

ODNR Division of Oil and Gas Resource Management
Attn: Steve Opritza
2045 Morse Road, Building F-2
Columbus, Ohio 43229-6693

Re: Spacing Variance Request
Red Hill Farm MDS GR 1H, 3H, 5H

Dear Mr. Opritza:

Pursuant to 1501:9-1-04 (C)(4)(c) of the O.A.C., American Energy - Utica, LLC (AEU) respectfully requests a variance to the well spacing requirements of 1501:9-1-04 (2) of the O.A.C. for the **Red Hill Farm MDS GR 1H, 3H, 5H** located in Madison Township, Guernsey County. In the interest of protecting correlative rights while promoting the conservation of oil and gas, AEU requests reduced spacing of 150' between both the first and last take points of the well and the unit's boundaries. This reduced spacing, as demonstrated by the attached and previously submitted microseismic data to the Chief, encourages the most efficient recovery of Ohio's natural resources without impacting offset units. Without such reduced setbacks, AEU firmly believes that recoverable minerals will be effectively stranded.

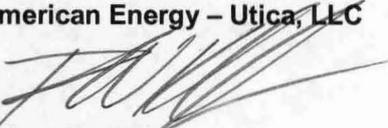
Enclosed you will find Hess's presentation to the ODNR's Technical Advisory Council on November 12, 2013 that discusses reduced well spacing. The presentation contains microseismic studies obtained in three Ohio counties which yielded fracture orientation and maximum event distance information. You will also find a map enclosed that depicts AEU's proposed Unit in proximity to Hess's submitted microseismic studies.

Based on the submitted information, AEU agrees with Hess on the following conclusions that support AEU's request of reduced spacing of 150' between both the first and last take points of the well and the unit's boundaries:

- The Maximum principle stress direction (SH_max) is similar in all 3 wells at N60°E.
- Given the uniformity for the regional stress field, induced fracture orientations seen from microseismic data are uniformly constrained in the direction the wells are drilled (N60°E).
- Hess has concluded that setback can be reduced to 150' at the toe and heel of laterals without impacting offset units. This reduction would enable longer laterals and up to 12% additional recovery across the play.

Sincerely,

American Energy – Utica, LLC


Robert W. Kelly II
General Counsel
Direct Number: (405) 418-8030
Email: bob.kelly@aep-lp.com

AMERICAN ENERGY - UTICA, LLC

P.O. BOX 18756, OKLAHOMA CITY, OK 73154 • 301 N.W. 63RD, SUITE 600, OKLAHOMA CITY, OK 73116



- ◆ AEU Red Hill Farm Pad
- ◆ Wells with MicroSeismic submitted to the ODNR



AMERICAN ENERGY
UTICA

AEU: RED HILL FARM PAD

TOE-HEEL VARIANCE REQUEST

Date: 5 March, 2014	Geo:
---------------------	------

Hess Proposal To Reduce Setback At Lateral's Heel and Toe to 150'

to be presented at

ODNR Technical Advisory Council November 12, 2013

Hess proposes to reduce the set back regulation at the toe and heel of laterals from the current 500' to 150' based on microseismic data. Hess does not, at this time, propose to reduce the setback on the unit 'long side'.

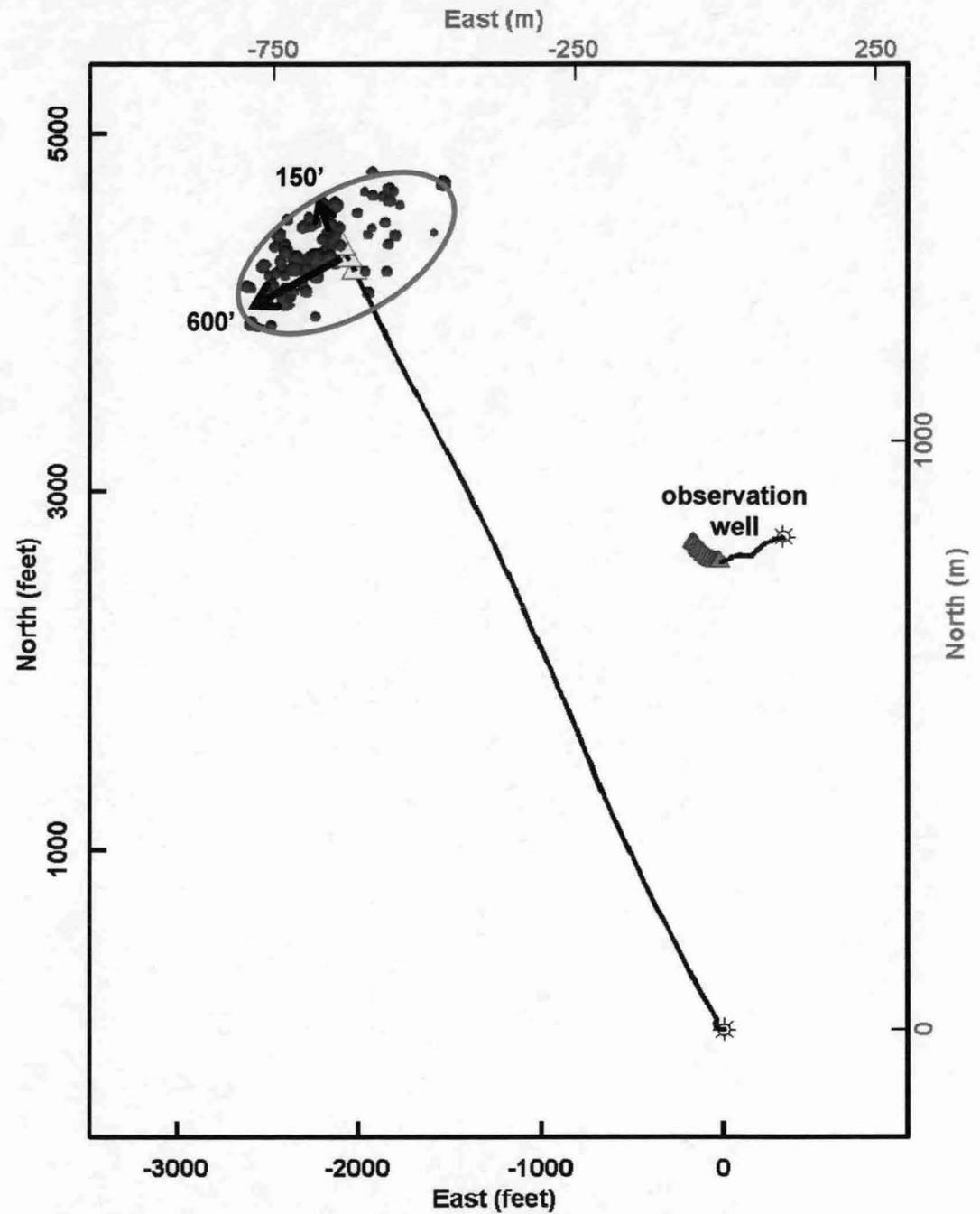
- Hess has acquired microseismic at 3 Utica well sites in Jefferson, Belmont & Guernsey counties. This data has yielded fracture orientation and maximum event distance information.
- The Maximum principle stress direction (SH-max) is similar in all 3 counties at N60°E.
- Given the uniformity of the regional stress field, induced fracture orientations seen from microseismic data are uniformly constrained in the direction the wells are drilled.
- Hess has concluded that setbacks can be reduced to 150' at the toe and heel of laterals without impacting offset units. This reduction would enable longer laterals and up to 12% additional recovery across the play.
- At this time Hess does not support reducing setbacks on the lateral 'long side'.
 - Microseismic event distance along SH-max (fracture half-length) is useful to constrain fracture modeling, which in turn can be used to determine 'effective' fracture half length and drainage areas. Hess is currently working to better understand this dimension through reservoir simulation which integrates production, tracer, and microseismic data.
- North Dakota's setback regulations in the Bakken Shale Play are currently 200 feet in the heel and toe direction and 500 feet in the long axis direction.

Location map of three Hess microseismic projects



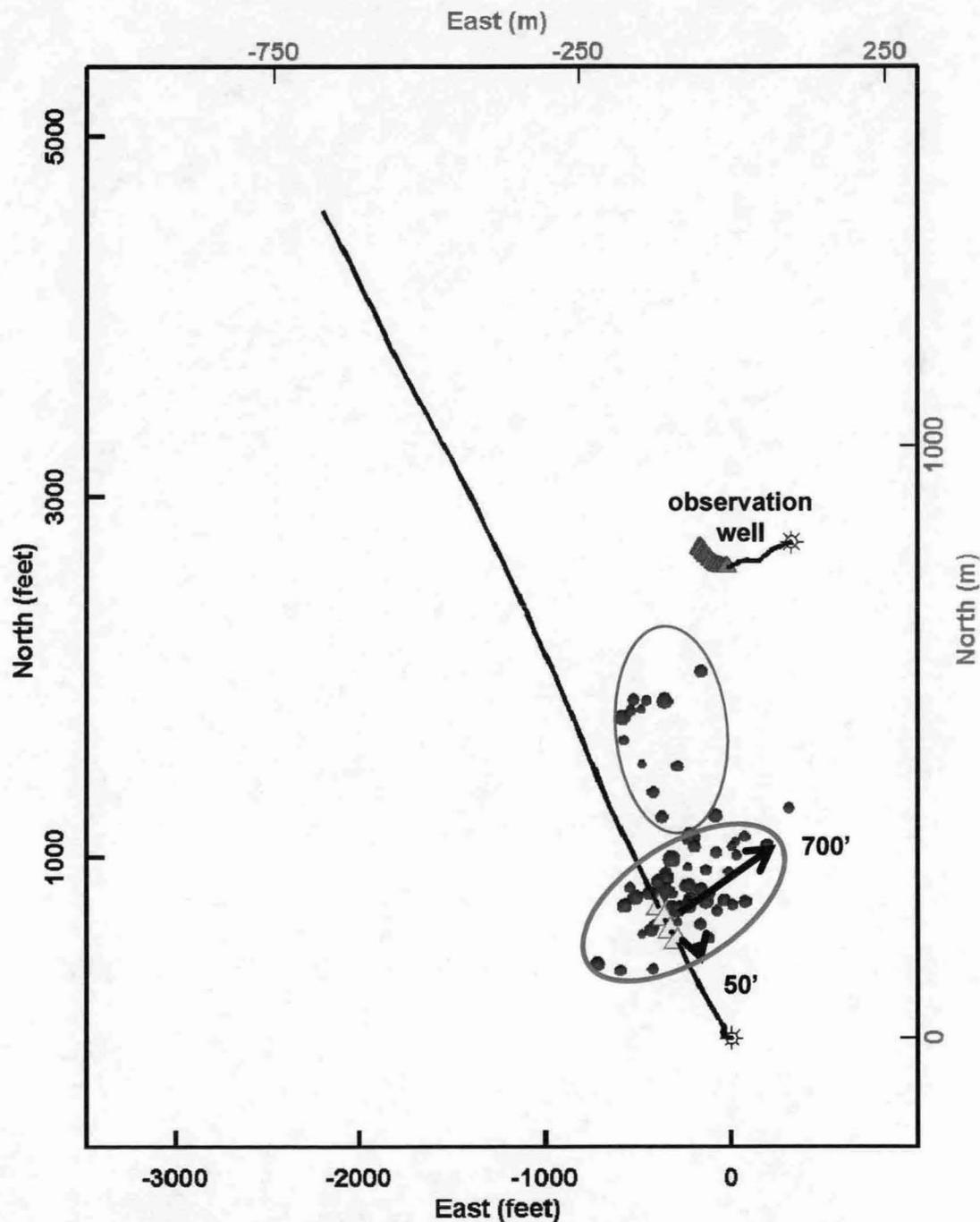
Jefferson County NAC 3-3H Toe Stage (stage #1) Microseismic: Map view

- Perforations: 4 yellow triangles
- Microseismic events: purple balls
- The events are less than 150' from the last perforation in the Sh-min direction.



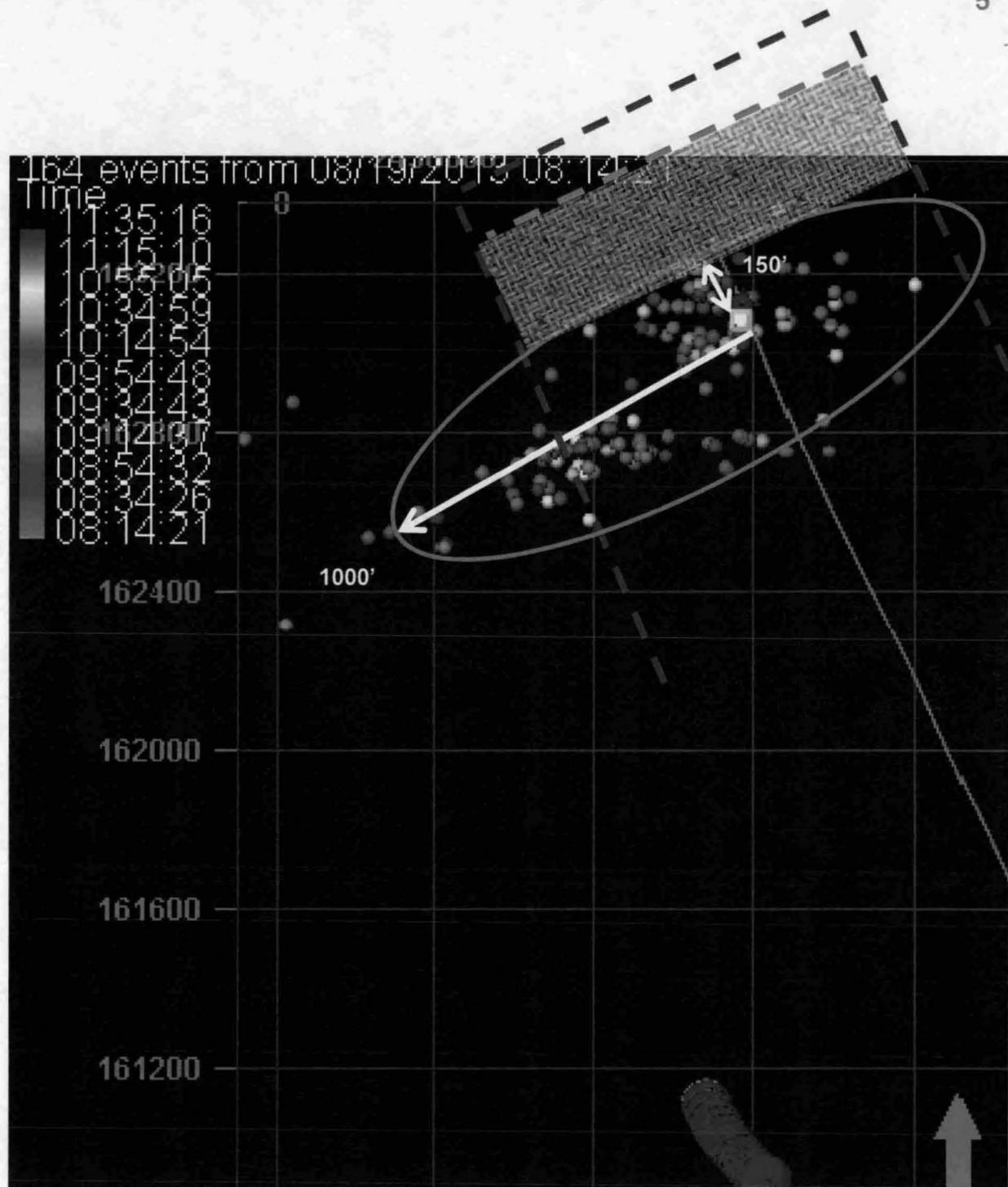
Jefferson County
NAC 3-3H
Heel Stage (stage #15)
Microseismic: Map view

- Perforations: 4 yellow triangles
- Microseismic events: purple balls
- The events are less than 50' from the last perforation in the Sh-min direction
- Inside green oval is growth along a previously stimulated area



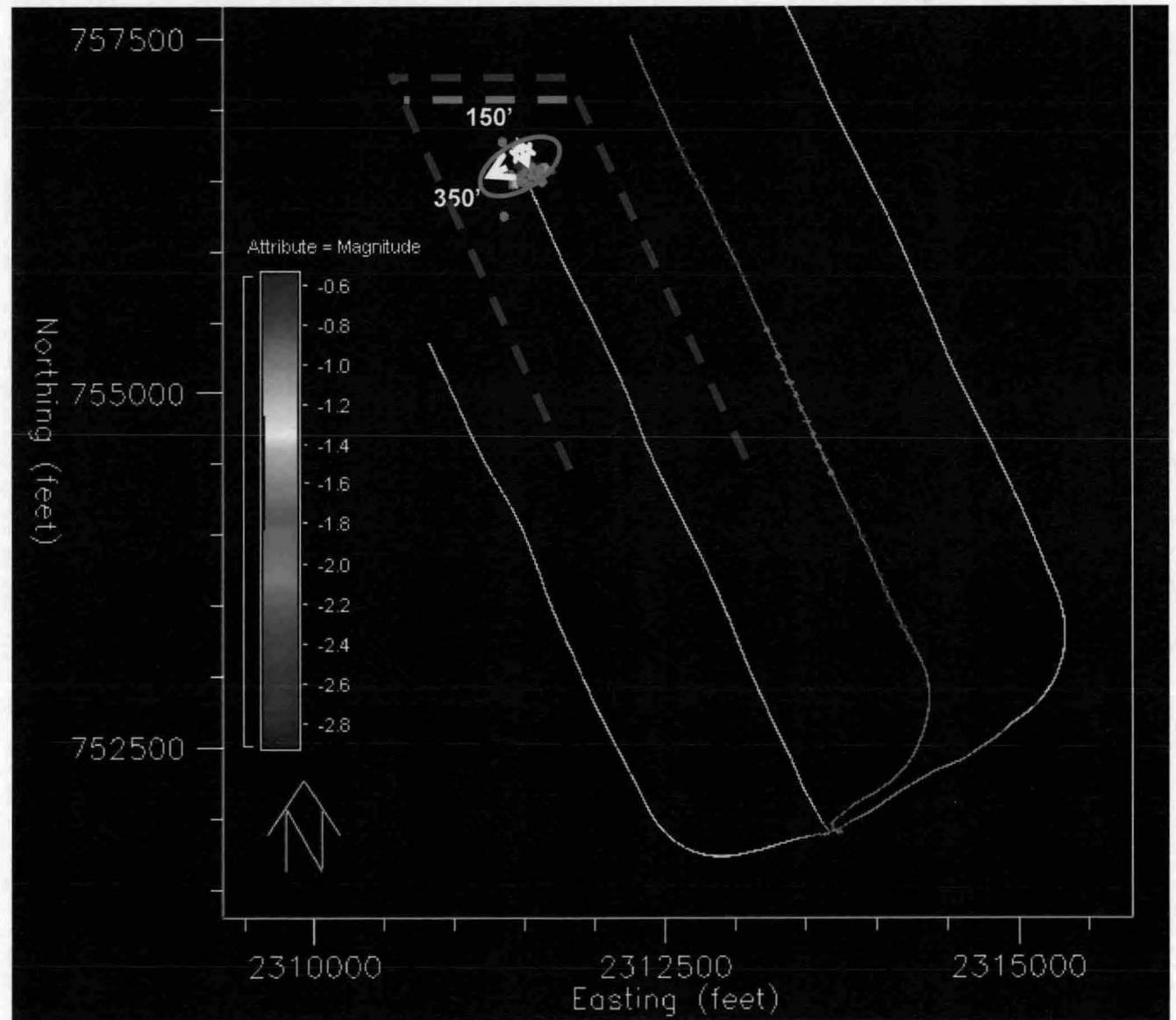
Belmont County Porterfield 1H-17 Toe Stage (stage #1) Microseismic Map view

- Sliding Sleeve port: red box
- Microseismic events: colored balls
- The events are less than 150' from the port in the toe stage of the well.
- Microseismic events do extend ~1000' from the wellbore in Sh-max direction.
- Red dashed line is the drilling unit outline.
- Green dashed line is the proposed setback.
- The proposal would allow the well to extend to within 150 ft of the red drilling unit.
- The additional area resulting from the reduced setback is shown in textured pattern.



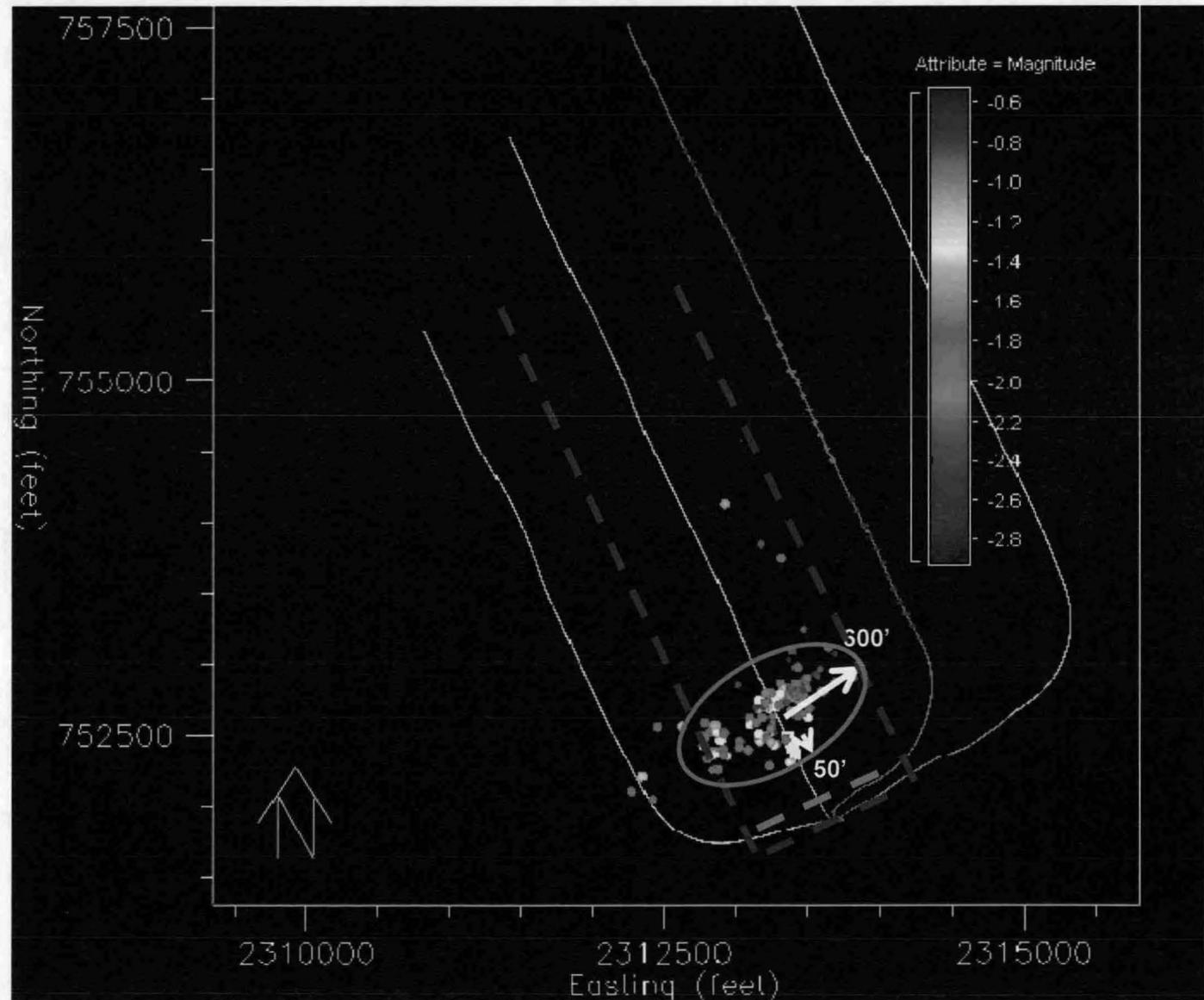
Guernsey County Oxford 1-H Toe Stage (stage #1) Microseismic Map view

- Perforations: red boxes
- Microseismic events: blue & green balls
- One event is as far as 150' beyond the last perf
- Red dashed line is drilling unit outline.
- Green dashed line is the proposed setback.



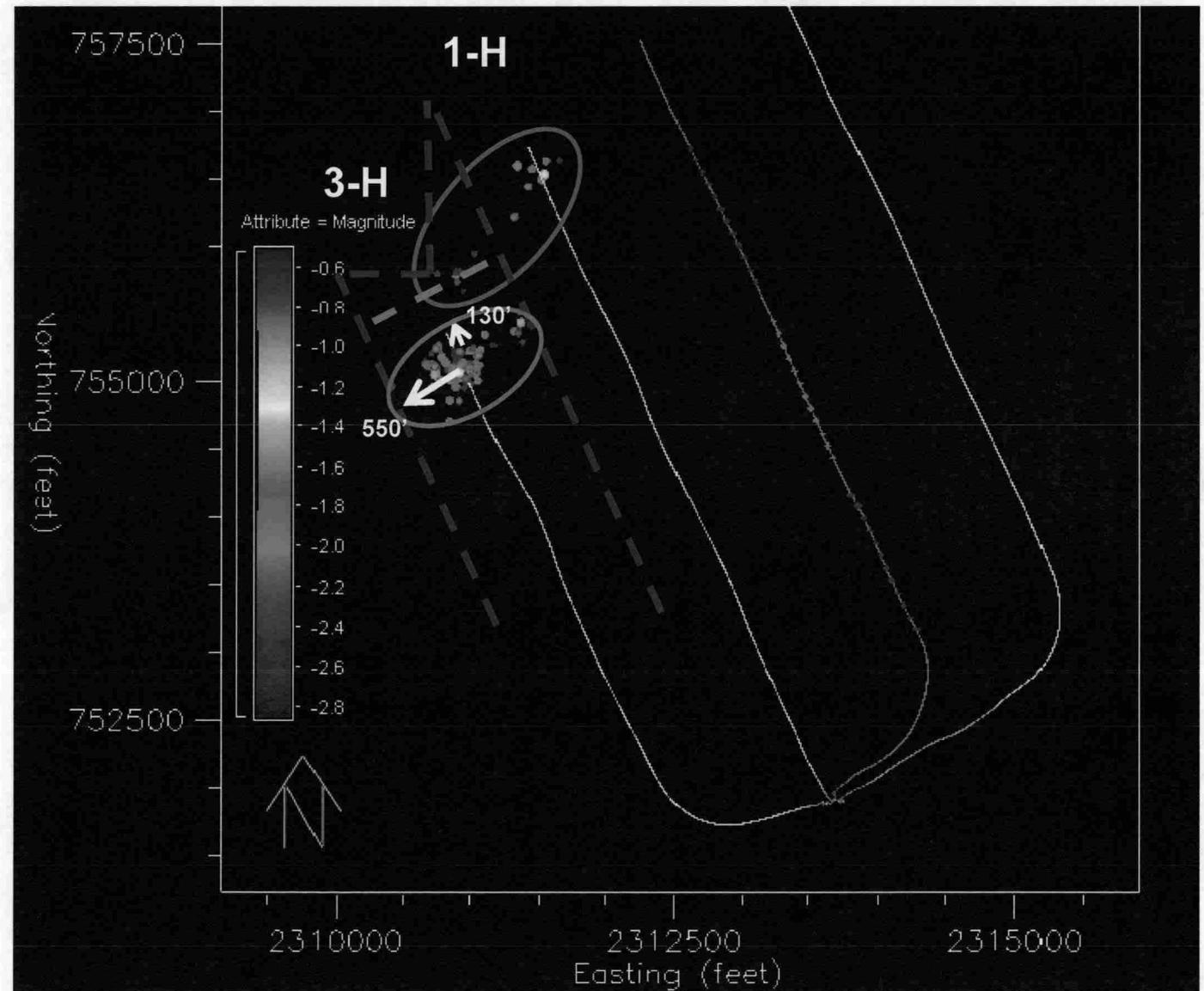
**Guernsey County
Oxford 1-H
Heel Stage (stage #21)
Microseismic Map view**

- Perforations: yellow boxes
- Microseismic events: colored balls
- No events are beyond 50 ft from the last perf.
- Red dashed line is the drilling unit outline.
- Green dashed line is proposed setback.



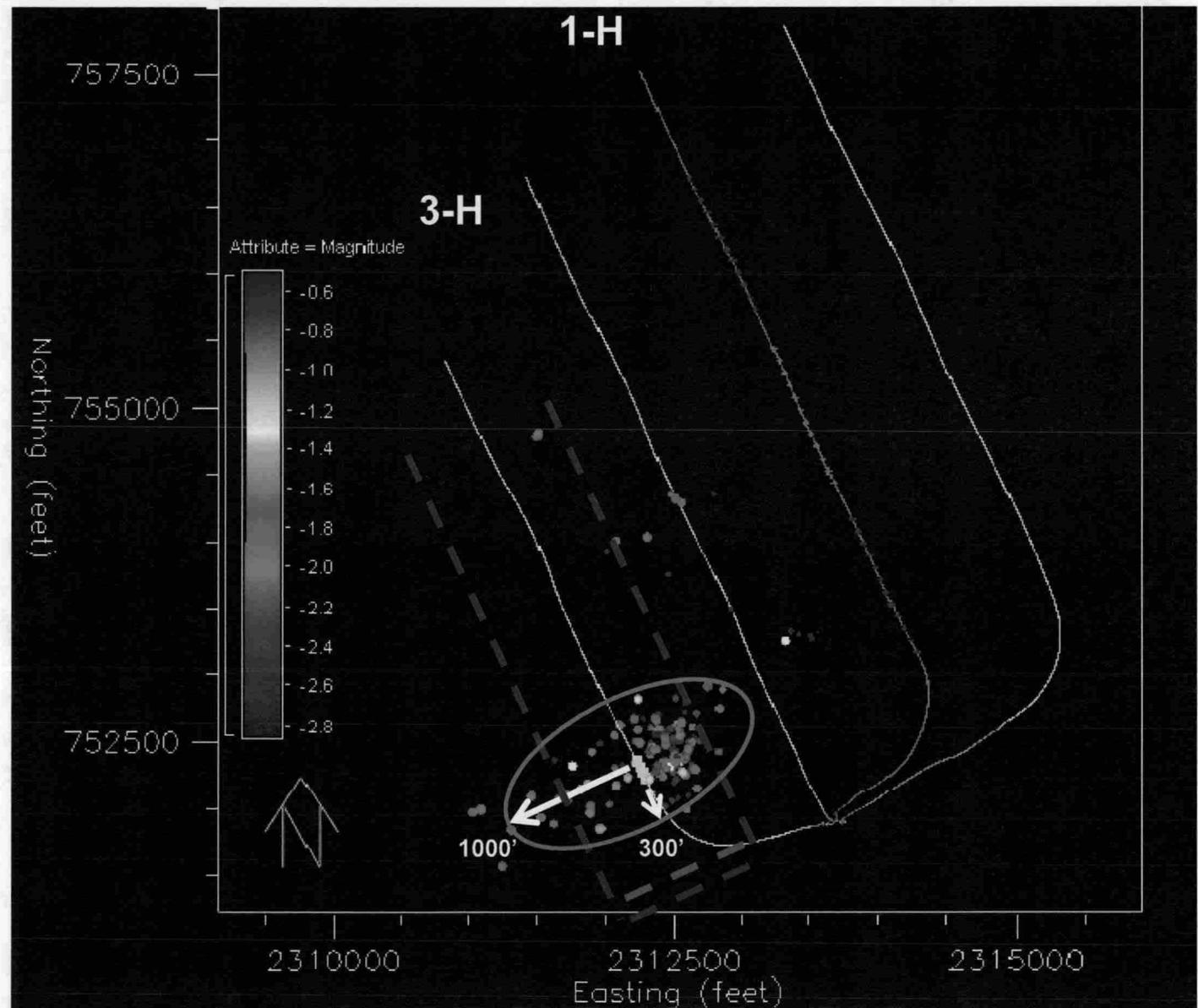
Guernsey County Oxford 3-H Toe Stage (stage #1) Microseismic Map view

- Perforations: red boxes
- Microseismic events: blue-green balls
- Events inside the green oval are from stage 1 in well 1-H and lie within the 1-H drilling unit (see slide 7).
- Microseismic events are less than 130' from last perf in the Sh-min direction.
- Red dashed line is the drilling unit outline.
- Green dashed line is the proposed setback.



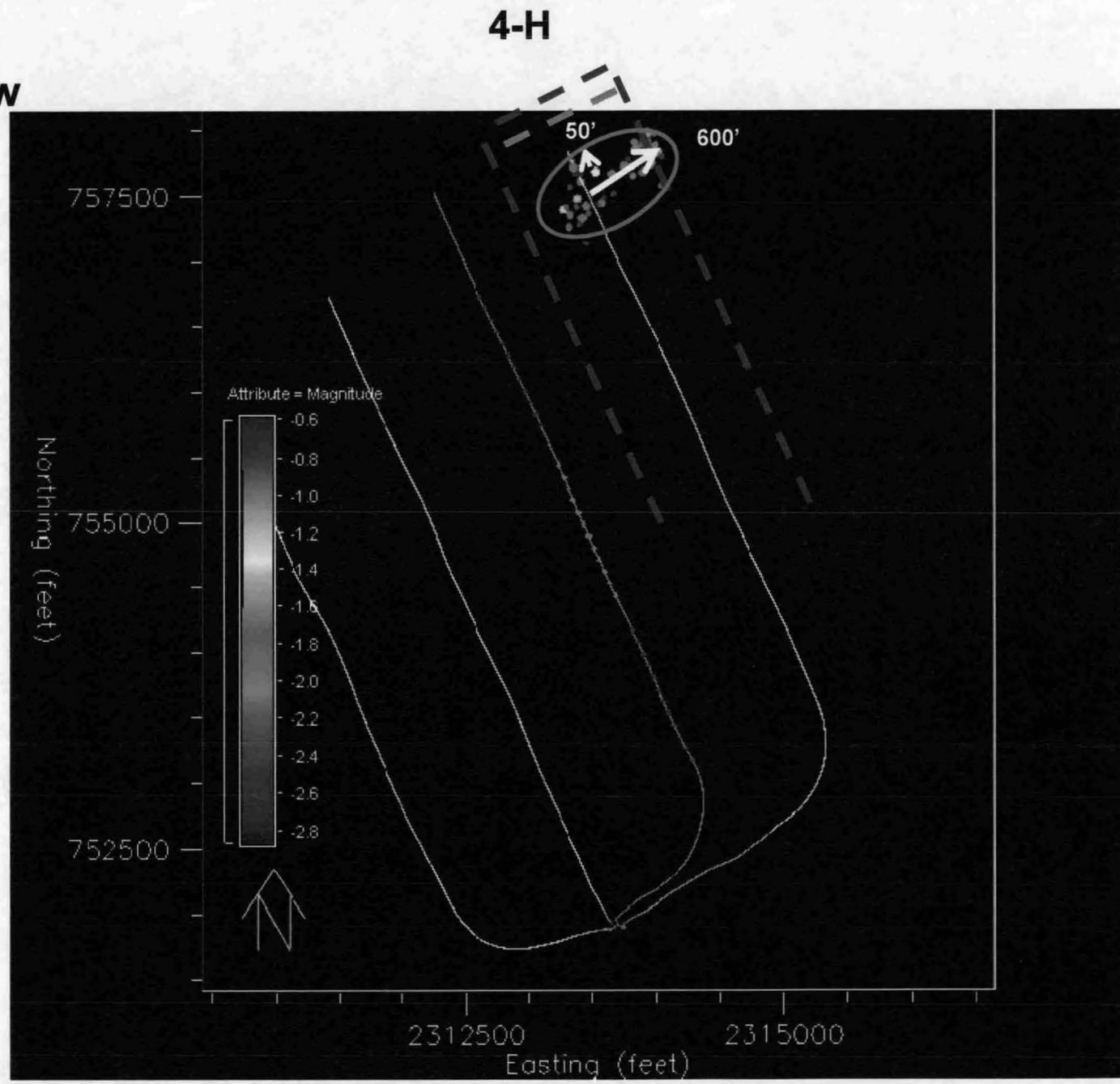
**Guernsey County
Oxford 3-H
Heel Stage (stage #15)
Map view Microseismic**

- Perforations: yellow boxes
- Microseismic events: blue-green balls
- The events are less than 300' from last perf in Sh-min direction.
- Red dashed line is the drilling unit outline.
- The green dashed line is the suggested setback.



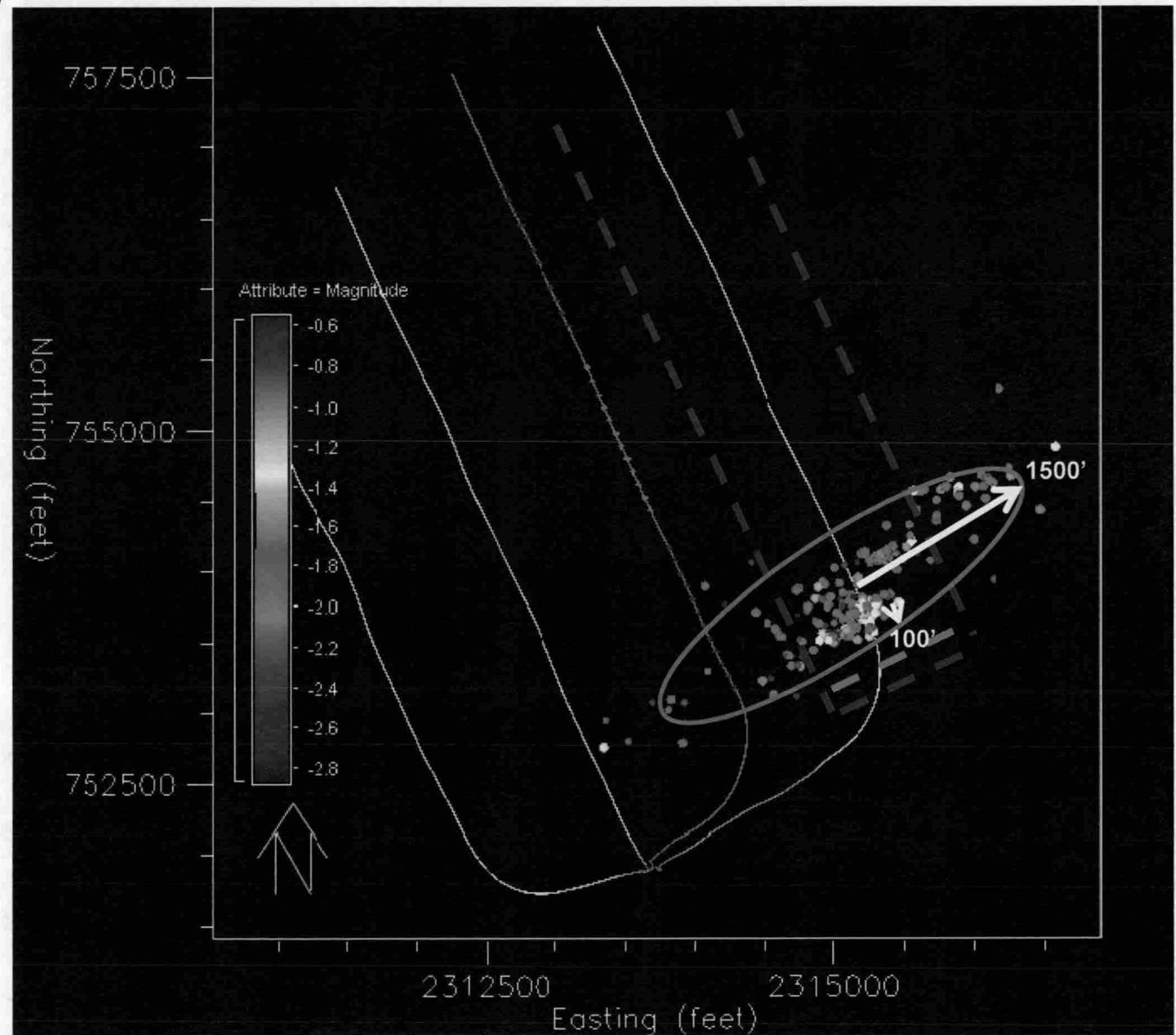
Guernsey County Oxford 4-H Toe Stage (stage #1) Microseismic Map view

- Sliding sleeve port: red box
- Microseismic events: blue-green balls
- The events are less than 50' from the port in Sh-min direction.
- Red dashed line is the drilling unit outline.
- Green dashed line is the proposed setback.



**Guernsey County
Oxford 4-H
Heel Stage (stage #1)
Microseismic Map view**

- Perforations: yellow boxes
- Microseismic events: blue-green balls
- The events are less than 100' from last perf in Sh-min direction.
- Red dashed line is the drilling unit outline.
- Green dashed line is the proposed setback.



Summary: Reduce Setback at Heel and Toe to 150'

- *Hess has collected microseismic data on Utica Shale wells in Jefferson, Belmont and Guernsey counties.*
- *In ten toe and heel stages, the average distance from take point to the farthest microseismic event is 118' in the direction the wells are drilled.*
- *Uniform orientation of principal stresses across the play ensures fractures are confined in the S_h -min direction.*
- *Reducing current setback at the toe and heel of laterals from 500' to 150' would result in adding as much as 12% additional recovery to the Utica Shale Play without impacting neighboring leases.*

Distance from take point to farthest microseismic event	
Porterfield 1H-17 Toe Stage	150'
Porterfield 1H-17 Heel Stage	50'
NAC 3-3H Toe Stage	150'
NAC 3-3H Heel Stage	50'
Oxford #1-H Toe Stage	150'
Oxford #1-H Heel Stage	50'
Oxford #3-H Toe Stage	130'
Oxford #3-H Heel Stage	300'
Oxford #4-H Toe Stage	50'
Oxford #4-H Heel Stage	100'
Average	118'

Summary:

Hess does not support changing setback rules in the Shmax or “long axis” direction

- *The actual stimulated portion of induced fractures is often less than half of the apparent frac length as marked by microseismicity.*
- *Production history matching and reservoir simulation suggest a range of fracture propped lengths less than or equal to the current 500 ft setback on the “long axis” side of drilling units.*
- *Hess is continuing to work to constrain SH-max fracture dimensions to determine ‘effective’ fracture half length and drainage areas, integrating production, tracer, and microseismic data.*
- *At this time Hess does not support reducing the 500’ setback on the lateral ‘long side’.*

**American Energy - Utica, LLC
Landowner Royalty Interest
Red Hill Farm MDS GR 1H, 3H, 5H**

Date: March 25, 2014

County: Guernsey

Township: Madison/Washington

Parcel ID:	Royalty Owner	Street	City, State, Zip
22000008000	RHDK Investments, LLC	3596 State Road 39	Dover, OHIO 44622
220000127000	Gary Allen Hayes	20480 Ranger Lane	Freeport, OHIO 43973
220000127001	Donald Joseph Beckett and Lucinda Roxanna Beckett, his wife	20420 Ranger Lane	Freeport, OHIO 43973
220000127002	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000225000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000225001	David and Mary Cooper	20411 Cadiz Rd.	Freeport, OHIO 43973
220000226000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000226001	David and Mary Cooper	20411 Cadiz Rd.	Freeport, OHIO 43973
220000227000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000228000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000762000	Keith A. Carpenter and Amy Carpenter, his wife	20483 Ranger Lane	Freeport, OHIO 43973
220001129000	Raymond R. Nichols and Ruth A. Nichols, his wife	20915 Nichols Lane	Freeport, OHIO 43973
220001129002	Thomas P. St. Clair	6420 Elmar Drive	North Canton, OHIO 44720
220000048000	David Cooper and Mary K. Cooper, husband and wife	20411 Cadiz Road	Freeport, OHIO 43973
220000048001	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000329000	Karen L. Taylor and Gary N. Taylor, Trustees of Karen L. and Gary N. Taylor Family Trust	PO Box 265	Howard, Ohio 43028
220000362000	Sally Jo Yarnell	3819 Holmes Rd.	Cambridge, OH 43725
400000465000	Audrey I. Rominger	20421 Ranger Lane	Freeport, OHIO 43973
220000047000	David Cooper and Mary K. Cooper, husband and wife	20411 Cadiz Road	Freeport, OHIO 43973
400000134000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
400000196000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000792000	Phillip E. and Ellen I. Nisley	20424 Cadiz Road	Freeport, OHIO 43973
400000123000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
400000126000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
400000124000	Dr. Thomas Perkowski Randy Raber Eric Kimble (Trustees of the Red Hill Farm Trust)	71963 Lodge Road	Freeport, OHIO 43973
220000333001	David Cooper and Mary K. Cooper, husband and wife	20411 Cadiz Road	Freeport, OHIO 43973
400000196001	Donald J. Beckett and Lucinda R. Beckett, his wife	20420 Ranger Road	Freeport, OHIO 43973
220000791001	Heritage Christian Fellowship	20360 Cadiz Road	Freeport, OHIO 43973
220000620000	Virgil Lynn Miller	260 S Vintage Rd	Paradise, PA 17562
400000639000	Laura J. Wayble	72654 Lodge Rd.	Freeport, OHIO 43973
400000639001	Mark Wayble and Kimberly Wayble	72347 Lodge Rd.	Freeport, OHIO 43973
400000466000	Kenneth L. Hayes	72310 Lodge Rd.	Freeport, OHIO 43973
220000037000	Doris J. Kimble (Mineral Owner) Red Hill Farm Trust (Surface Owner)	Route 1, Box 401	Dover, OHIO 44622
220000131000	Heritage Christian Fellowship	20360 Cadiz Road	Freeport, OHIO 43973

RECEIVED**APR 17 2014****RESTORATION PLAN (Form 4)**

Ohio Department of Natural Resources

Division of Oil and Gas Resources Management, 2045 Morse Road, Bldg. F-2, Columbus OH 43229-6693

Division of Oil and Gas
Resources Management

1. DATE OF APPLICATION: 10-Apr-14	3. API #:
2. OWNER NAME, ADDRESS, & TELEPHONE NO.: American Energy - Utica, LLC P.O Box 18756, Oklahoma City, OK 73154 405-418-8001	4. WELL #: 3
	5. LEASE NAME: Red Hill Farm MDS GR
	6. PROPERTY OWNER: RHDK
	7. COUNTY: Guernsey
	8. CIVIL TOWNSHIP: Madison
	9. SECTION: 1
	10. LOT:
11. CURRENT LAND USE: <input checked="" type="checkbox"/> Cropland <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Pasture <input type="checkbox"/> Idle Land <input type="checkbox"/> Wetlands <input type="checkbox"/> Recreational <input type="checkbox"/> Residential <input type="checkbox"/> Industrial <input type="checkbox"/> Unreclaimed strip mine <input type="checkbox"/> Woodland: <input type="checkbox"/> Broadleaf <input type="checkbox"/> Needlelike	17. TYPE OF WELL: <input checked="" type="checkbox"/> Oil <input checked="" type="checkbox"/> Gas <input type="checkbox"/> Other
	18. STEEPEST SLOPE GRADIENT CROSSING SITE: <input type="checkbox"/> 0 to 2% <input checked="" type="checkbox"/> 2.1 to 8% <input type="checkbox"/> 8.1 to 10% <input type="checkbox"/> 10.1 to 24% <input type="checkbox"/> greater than 24%
12. SLOPE GRADIENT & LENGTH DETERMINED FROM: <input checked="" type="checkbox"/> Ground Measurement <input type="checkbox"/> U.S. Geological Survey Topographical Maps <input type="checkbox"/> Other: (explain) _____	19. LENGTH OF STEEPEST SLOPE CROSSING SITE: <input type="checkbox"/> 1 to 100 ft. <input type="checkbox"/> 101 to 200 ft. <input type="checkbox"/> 201 to 400 ft. <input checked="" type="checkbox"/> greater than 400 ft.
13. TYPE OF FALL VEGETAL COVER: <input type="checkbox"/> Little or no vegetal cover <input checked="" type="checkbox"/> Short grasses <input type="checkbox"/> Tall weeds or short brush (1 to 2 ft.) <input type="checkbox"/> Brush or bushes (2 to 6 ft.) <input type="checkbox"/> Agricultural crops <input type="checkbox"/> Trees with sparse low brush <input type="checkbox"/> Trees with dense low brush	20. RESTORATION OF DRILLING PITS: ** <input type="checkbox"/> Haul drilling fluids and fill pits <input checked="" type="checkbox"/> Use steel circulating tanks <input checked="" type="checkbox"/> Proposed alternative _____ Closed loop
	21. BACKFILLING AND GRADING AT SITE: <input checked="" type="checkbox"/> Construct diversions channeled to naturally established drainage systems <input type="checkbox"/> Construct terraces across slopes <input type="checkbox"/> Grade to approximate original contour <input checked="" type="checkbox"/> Grade to minimize erosion & control offsite runoff <input type="checkbox"/> Proposed alternative _____
14. SOIL & RESOILING MATERIAL AT WELLSITE: <input checked="" type="checkbox"/> Stockpile and protect topsoil to be used when preparing seedbed <input type="checkbox"/> Use of soil additives (e.g., lime, fertilizer) <input type="checkbox"/> No resoiling planned <input type="checkbox"/> Proposed alternative _____	22. VEGETATIVE COVER TO BE ESTABLISHED AT SITE: <input checked="" type="checkbox"/> Seeding plan <input checked="" type="checkbox"/> Sod <input type="checkbox"/> Agricultural crops <input type="checkbox"/> Trees and/or Bushes <input type="checkbox"/> Proposed alternative _____
15. DISPOSAL PLAN FOR TREES AND TREE STUMPS: <input type="checkbox"/> No trees disturbed <input type="checkbox"/> Haul to landfill <input checked="" type="checkbox"/> Cut into firewood <input type="checkbox"/> Sell to lumber <input type="checkbox"/> Bury with landowner's approval company <input checked="" type="checkbox"/> Mulch small trees and branches, erosion control <input type="checkbox"/> Use for wildlife habitat with landowner approval <input type="checkbox"/> Proposed alternative _____	23. ADDITIONAL HOLES: <input checked="" type="checkbox"/> Rat/Mouse, if used, will be plugged
	24. PROPOSED OR CURRENT LENGTH OF ACCESS ROAD: <input type="checkbox"/> 100 ft. or less <input type="checkbox"/> 101 to 500 ft. <input checked="" type="checkbox"/> 501 to 1500 ft. <input type="checkbox"/> greater than 1500 ft.
16. SURFACE AND SUBSURFACE DRAINAGE FACILITIES: <input checked="" type="checkbox"/> No existing drainage facilities for removal of surface and/or subsurface water <input type="checkbox"/> Tile drainage system underlying land to be disturbed <input type="checkbox"/> Drain pipe(s) underlying land to be disturbed <input type="checkbox"/> Surface drainage facilities on land to be disturbed	25. CURRENT LAND USE OF PATH OF ACCESS ROAD: <input checked="" type="checkbox"/> Cropland <input checked="" type="checkbox"/> Pasture <input type="checkbox"/> Commercial <input type="checkbox"/> Idle land <input type="checkbox"/> Wetlands <input type="checkbox"/> Recreational <input type="checkbox"/> Industrial <input type="checkbox"/> Residential <input type="checkbox"/> Unreclaimed strip mine <input type="checkbox"/> Woodland: <input type="checkbox"/> Broadleaf <input type="checkbox"/> Needlelike

**PITS MUST BE FILLED WITHIN TWO MONTHS AFTER COMMENCEMENT OF THE WELL AND WITHIN FOURTEEN DAYS AFTER COMMENCEMENT OF THE WELL IN AN URBANIZED AREA.

REQUIRED BY SECTION 1509.06 (A)(10), OHIO REVISED CODE -- FAILED TO SUBMIT MAY RESULT IN AN ASSESSMENT OF CRIMINAL FINES NOT LESS THAN \$100.00 NOR MORE THAN \$2,000.00 OR CIVIL PENALTIES NOT LESS THAN \$4,000.00.

26. SURFACING MATERIAL FOR ACCESS ROAD: <input checked="" type="checkbox"/> Gravel <input type="checkbox"/> Brick and/or tile waste <input type="checkbox"/> Slag <input checked="" type="checkbox"/> Crushed stone <input type="checkbox"/> No surfacing material to be used <input type="checkbox"/> Proposed alternative _____	29. STEEPEST SLOPE GRADIENT ON ACCESS ROAD: <input type="checkbox"/> 0 to 5% <input checked="" type="checkbox"/> 6 to 10% <input type="checkbox"/> greater than 10%
27. PATH OF ACCESS ROAD TO BE DETERMINED BY: <input checked="" type="checkbox"/> Landowner <input type="checkbox"/> Contractor <input type="checkbox"/> Existing access road <input checked="" type="checkbox"/> Operator	30. APPROXIMATE LENGTH OF STEEPEST SLOPE ON ROAD: <input type="checkbox"/> 0 to 100 ft. <input type="checkbox"/> 101 to 200 ft. <input checked="" type="checkbox"/> 201 to 400 ft. <input type="checkbox"/> greater than 400 ft.
28. GRADING AND EROSION CONTROL PRACTICE ON ROAD: <input checked="" type="checkbox"/> Diversions <input type="checkbox"/> Filter strips <input type="checkbox"/> Drains <input type="checkbox"/> Riprap <input type="checkbox"/> Open top culverts <input type="checkbox"/> Water breaks <input checked="" type="checkbox"/> Outsloping of road <input type="checkbox"/> Pipe culverts <input type="checkbox"/> Proposed alternative _____	31. HAS LANDOWNER RECEIVED A COPY OF THIS RESTORATION PLAN? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

The undersigned hereby agrees to implement all restoration operations identified on this form, and conform to all provisions of Section 1509.072 of the Ohio Revised Code, and to all Orders and rules issued by the Chief, Division of Oil and Gas Resources Management.

Signature of Owner/Authorized Agent *Randall Rodrigue*

Name (Typed or Printed) Randall Rodrigue Date 4/10/2014

RESTORATION PLAN MUST BE SUBMITTED TO THE DIVISION IN DUPLICATE.



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Richard J. Simmers, Chief

The Ohio Department of Natural Resources
The Division of Oil and Gas Resources Management
2045 Morse Road, Building F-2
Columbus, Ohio 43229-6693
Phone: (614) 265-6922; Fax: (614) 265-6910

April 21, 2014

Attention: Mr. Daniel G. Padden, Prosecuting Attorney
Guernsey County
139 West Eighth Street
P.O. Box 640
Cambridge, Ohio 43725-0640

Re: Red Hill Farms MDS GR, well number 3H

Dear Mr. Padden:

Pursuant to your request, we are notifying you of an application that we have received from American Energy Utica LLC. They have applied for a permit to drill a new Horizontal well in Madison Township. Attached, please find a copy of the application and surveyor's plat for this proposed well.

Should you have any questions or concerns about this proposed well site, please feel free to contact your county Oil and Gas well inspector, Michael Hartshorn at (740) 507-8000 or you may contact our regional office in Zanesville at (740) 588-0631 if you need additional information regarding this potential oil and gas well.

Sincerely,

A handwritten signature in cursive script that reads "Patty Nicklaus".

Patty Nicklaus, Office Assistant 3
Oil and Gas Well Permitting Section
(614) 265-6939

Enclosures

CC: Permit file