

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED  
OMB No. 1004-0137  
Expires July 31, 2010

5. Lease Serial No.  
COC069715

6. If Indian, Allottee or Tribe Name

1a. Type of work: ☒ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.  
Castor Gulch Unit #1

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.

2. Name of Operator East Resources, Inc.

9. API Well No.

3a. Address 370 Interlocken Blvd., Suite 550  
Broomfield, Colorado 80021

3b. Phone No. (include area code)  
303-865-5957

10. Field and Pool, or Exploratory

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*

At surface T5N, R91W, Sec. 21, 6th P.M., NWNE, 559' FNL, 1321' FEL

At proposed prod. zone T5N, R91W, Sec. 21, 6th P.M., SENW, 1739' FNL, 1569' FWL

11. Sec., T. R. M. or Blk. and Survey or Area  
Sec. 21, T5N, R91W, 6th P.M.

14. Distance in miles and direction from nearest town or post office\*

12. County or Parish  
Moffat

13. State  
CO

15. Distance from proposed\* location to nearest property or lease line, ft.  
(Also to nearest drig. unit line, if any) 718'

16. No. of acres in lease  
1995.130

17. Spacing Unit dedicated to this well  
N/A

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft. N/A

19. Proposed Depth  
3907' TVD, 6271' MD

20. BLM/BIA Bond No. on file  
Pending

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
6428' GL, 6433' KB

22. Approximate date work will start\*  
08/30/2009

23. Estimated duration  
14 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature *Brian Dolan*

Name (Printed/Typed)  
Brian Dolan

Date  
05/28/2009

Title  
Operations Manager

Approved by (Signature) *Jerome D. Strahan*  
Title ASSISTANT FIELD MANAGER

Name (Printed/Typed) /S/ JEROME D. STRAHAN P.E.  
BUREAU OF LAND MANAGEMENT  
Office LITTLE SNAKE FIELD OFFICE

Date AUG 05 2009

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

CONDITIONS OF APPROVAL  
ATTACHED

APPROVAL WILL EXPIRE  
IN TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

\*(Instructions on page 2)

65:6 WH 11 MAR 2009

BLM LITTLE SNAKE FIELD OFFICE  
RECEIVED

RECEIVED



**ADVISORY NARRATIVES AND CONDITIONS OF APPROVAL  
APPLICATION FOR PERMIT TO DRILL**

Operator: **East Resources, Inc.**

Well No.: **Castor Gulch Unit #1**    Lease No.: **COC69715**    Legal Description: **NWNE section 21 T5N R91W**

**GOVERNMENT ADDRESS**

<b>UNITED STATES DEPARTMENT OF INTERIOR</b>	<b>FIELD OFFICE</b>	Little Snake Field Office
<b>BUREAU OF LAND MANAGEMENT</b>	<b>ADDRESS</b>	455 Emerson Street Craig, Colorado 81625
	<b>OFFICE PHONE</b>	(970) 826-5000    FAX: (970) 826-5002
	<b>OFFICE HOURS</b>	7:45 a.m. to 4:30 p.m. (Monday - Friday)

All lease and/or unit operations are to be conducted in such a manner to ensure full compliance with the applicable laws, regulations (43 CFR Part 3160), Onshore Oil and Gas Orders No. 1, 2, 3, 4, 5, 6 and 7, Notice to Lessees, and the approved plan of operations. Approval of this application does not relieve you of your responsibility to obtain other required federal, state, or local permits. A copy of the approved Form 3160-3 and the pertinent drilling plan, along with any advisory narratives and conditions of approval, shall be available at the drillsite to authorized representatives at all times. The operator is considered fully responsible for the actions of his subcontractors.

Your review and appeal rights are contained in 43 CFR 3165.3 and 3165.4.

**ACTIONS REQUIRING BLM NOTIFICATION**

**48-Hours notification prior to Construction and/or Reclamation.**

**Oral Spud notices at least 24-hours after spudding, followed with a Sundry Notice within 5 working days.**

**For WILDCAT wells, a daily log of drilling activities shall be submitted to the BLM on a daily basis.**

**For other wells, this report shall be submitted at the request of the Authorizing Officer.**

**Well Completion Reports must be submitted within 30-days of completion of the well  
or after completion of operations being performed.**

For running casing, cementing, BOPE tests, drill stem tests or other notices, submit  
24-hours in advance of commencing operations AND call the following number and leave  
voice message with call back number.

**(970) 826-5093  
(voice mail)**

**AUTHORIZED OFFICER REPRESENTATIVE CONTACTS**

If you seek immediate approval or emergency assistance on any action that is related to the APD Surface Use Plan, contact the Natural Resource Specialist listed below.

If you seek immediate approval or emergency assistance on any action that is related to the APD Drilling Plan or other down hole issues, you should contact the Petroleum Engineer listed below.

<b>Natural Resource Specialist</b>	<b>ROY MCKINSTRY:</b> howard_mckinstry@blm.gov	<b>Work Phone</b> (970) 826-5104 <b>Cell Phone</b> (970) 326-8408
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<b>Natural Resource Specialist</b>	<b>SHAWNA WISER:</b> shawna_wiser@blm.gov	<b>Work Phone</b> (970) 826-5086 <b>Cell Phone</b> (970) 326-8524
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<b>Petroleum Engineering</b>	<b>STANLEY ENG:</b> stanley_eng@blm.gov	<b>Work Phone</b> (970) 826-5075 <b>Cell Phone</b> (970) 326-8388
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In the event the Petroleum Engineer named above is unavailable, please contact one of the following:

<b>Petroleum Engineering Technician (Second Contact)</b>	<b>ROY WALLIS:</b> roy_wallis@blm.gov	<b>Work Phone</b> (970) 826-5093 <b>Cell Phone</b> (970) 326-8331
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<b>ENERGY, LANDS, &amp; MINERALS ASSISTANT FIELD MANAGER</b>	<b>JERRY STRAHAN, P.E.</b> jerry_strahan@blm.gov	<b>Work Phone</b> (970) 826-5099
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**A COMPLETE COPY OF THE APPLICATION FOR PERMIT TO DRILL, THE CONDITIONS OF APPROVAL, and  
APPLICABLE MAPS MUST BE FURNISHED TO YOUR FIELD REPRESENTATIVE AND BE AVAILABLE ON SITE  
DURING CONSTRUCTION AND DRILLING ACTIVITIES.**



## SITE SPECIFIC CONDITIONS

1. CO-30 No surface disturbing activities between March 1 and June 30 in order to protect nesting Columbian sharp – tailed grouse.
2. A Pesticide Use Proposal (PUP) will be approved prior to application of herbicides and/or other pesticides on Federal surface; contact the Little Snake Field Office to obtain a PUP form to request this authorization. Submit the PUP two (2) months in advance of planned application. In the event you elect to apply herbicide or other pesticide as described and authorized on the approved PUP, you must report this use within 24 hours on Bureau of Land Management form titled Pesticide Application Record.
3. The well pad location will be brush beat prior to stripping of topsoil.
4. Construction or other surface-disturbing activities will not be allowed when the soils are saturated to a depth of more than 3 inches.
5. The access road constructed will be crowned, ditched, and maintained to provide a 14 to 16 foot travel way. Total width of authorized disturbance is 30 feet. Water turnouts needed to provide additional drainage from the road ditch will be constructed not to exceed 2 percent slope to minimize soil erosion.
6. Vehicular travel is limited to the approved location and approved access route. The water haul route will coincide with the proposed access road. Any changes in the water source or haul route must have written approval before the changes take place.
7. Culverts will be installed keeping the inlet and the outlet on original grade and sized to adequately drain the surface runoff (18" minimum).
8. In the event that topsoil cannot be properly distributed during reclamation, additional precautions will be taken to minimize erosion of subsoil. Periodic monitoring to assess site specific environmental conditions, timing of operations, and use of mulches and/or barriers may be required to ensure that erosion is not significant within the entire well pad location disturbance and access road easement.
9. Well pad will be reclaimed as closely as possible to pre disturbance conditions to re-establish pre-existing drainage.
10. Additional mitigative measures will be employed to prevent or reduce accelerated erosion if it begins to occur within or on constructed drainage and diversion ditches or surface drainages affected by the road, well pad, well pad embankments, or pipeline corridor.
11. Utilize the "One Call" system to locate and stake the centerline and limits of all underground facilities in the area of proposed excavations.
12. Provide 48-hour notification to the owner/operator of facilities prior to performing any work within 10 feet of buried or aboveground pipelines.
13. The mud used for drilling the well will utilize *fresh water* as defined in 43 CFR 3160.0

## STANDARD CONDITIONS

14. The Little Snake Field Office will be given 48-hour notification prior to commencing construction and/or reclamation work. Contact the Little Snake Field Office (970) 826-5000 to report work, which will commence.
15. Notify Little Snake Field Office at (970) 826-5000 12 to 24-hours in advance to witness running and cementing of surface casing and testing of the BOPE. Also notify the Little Snake Field Office 24-hours in advance of beginning well completion operations.
16. The notice of spud will be reported orally to the Little Snake Field Office (970) 826-5000 at least 24 hours after spudding. This notice shall include spud date, time, details of spud (hole, casing, cement, etc.), API well number, and date the rotary rig was moved on location. If the spudding occurs on a weekend or holiday, wait until the following regular workday to make this report. The oral notice shall be followed by written notification within 5 working days.
17. Two copies of all electric and other logs for the well as per 43 CFR 3162.4-1(b) shall be submitted on DVD/CD rather than hard copy, *except* for the Cement Bond Log which shall be provided *both* electronically and a hard copy.
18. No hazardous materials, hazardous wastes, or trash will be disposed of on public lands or on private surface overlying the oil and gas lease. If a release does occur, it will be reported to the Little Snake Field Office immediately at (970) 826-5000.



19. The area to be utilized for storage of the reserve pit overburden will have the brush cleared and the topsoil salvaged before excavation of the reserve pit commences.
20. All survey stakes representing the leveled drill pad, the crest of excavations, the toe of embankments, the reserve pit, and the access road will be in place prior to construction. Staking shall include the well location, two 200-foot directional reference stakes, the exterior dimensions of the drill pad, reserve pit and other areas of surface disturbance, cuts and fills, and centerline flagging of new roads with road flagging being visible from one to the next.
21. Construction activities will not be allowed to commence if the topsoil cannot be separated from the subsoil during adverse environmental conditions (i.e. when soils are frozen or muddy). During periods of adverse conditions such as thawing, heavy rains, snow, or flooding, all construction activities off existing maintained roads that create excessive surface rutting will be suspended.
22. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.
23. Drainage for runoff water will be provided to divert runoff water away from the reserve pit, cut portions of the well location and the topsoil stockpile. Runoff water that concentrates and forms channels on the well location will be diverted and/or dispersed to prevent erosion of the fill slopes. Any ditches designed to provide runoff drainage will be constructed on a minimal grade and will release water onto undisturbed ground without causing accelerated erosion. The operator will take additional measures if erosion is occurring within the runoff water drainage system.
24. If fossils are discovered during construction or other operations, all activity in the area will cease and the Field Office Manager will be notified immediately. An assessment of significance will be made within an agreed timeframe. Operations will resume only upon written notification by the Authorized Officer.
25. STANDARD STIPULATION: If cultural or paleontological resources are discovered during exploration operations under this license, the licensee shall immediately notify the Field Officer Manager and shall not disturb such discovered resources until the Field Officer Manager issues specific instructions.
  - a. Within 5 working days after notification, the Field Office Manager shall evaluate any cultural resources discovered and shall determine whether any action may be required to protect or to preserve such discoveries.
  - b. The cost of data recovery for cultural resources discovered during exploration operations shall be borne by the licensee, if the licensee is ordered to take any protective measures. Ownership of cultural resources discovered shall be determined in accordance with applicable law.
  - c. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the Authorized Officer (970) 826-5087. Within five working days the Authorized Officer will inform the operator as to:
    1. Whether the materials appear eligible for the National Register of Historic Places;
    2. The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again and,
  - d. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the Authorized Officer will assume responsibility for whatever recordation, and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator will then be allowed to resume construction.
  - e. Pursuant to 43 CFR 10.4(g) (Federal Register Notice: Monday December 4, 1995, Vol 60, No. 232) the holder of this authorization must notify the Authorized Officer, by telephone (970) 826- 5087, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the Authorized Officer.
26. The reserve pit will be designed to exclude runoff water and maintain a 2-foot freeboard between the maximum fluid level and the lowest point of containment. The reserve pit will not be used for disposal of any materials or fluids, except for materials or fluids specifically addressed in the drilling program or having a subsurface origin. If oil or oily substance is in the reserve pit, it must be removed within 30 days after the drilling rig is removed. Netting will be installed if oily substance is present in the reserve pit.
27. The perimeter of the reserve pit and production pits, if any, will be fenced with woven wire with 2 strands of barbed wire, properly spaced, on the top and all held in place by side posts and corner H-braces to inhibit entry by livestock and wildlife. The fence will be maintained until backfilling or removal of facilities occurs.



29. In the event downhole operations threaten to exceed the required 2-foot freeboard, requiring reserve pit fluids, immediate notification will be provided to the Authorized Officer with concurrent steps taken to minimize the introduction of additional fluids, until alternative containment methods can be approved.
30. Reserve pits must be free of fluids and backfilled within 6 months of well completion. On multi well pads reserve pits must be free of fluids and backfilled within 6 months of the last well completed on the pad. The method of disposal for reserve pit fluids must be approved by the BLM AO. After the fluids disappear, the reserve pit mud will be allowed to dry sufficiently to allow backfilling. The backfilling of the reserve pit will be completed within 30 days after dry conditions exist and will meet the following minimum requirements:
- a. Backfilling will be done in such a manner that the mud and associated solids will be confined to the pit and not squeezed out and incorporated in the surface materials.
  - b. There will be a minimum of 5 feet of cover (overburden) on the pit.
  - c. When the work is completed, the pit areas will support the weight of heavy equipment without sinking and over time shall not subside over 6-inch depth.
31. If installed, production facilities will be located on cut portions of the existing drill pad.
32. In the event production is established, all land surfaces that are to remain free of vegetation (roads and well location) will be monitored for and protected from wind erosion; dry powdery soil will be treated to minimize wind erosion. The unused disturbed areas surrounding the well location will be re-contoured to appropriate confirmation as soon as possible. Some or all of the stockpiled topsoil will be evenly distributed over these re-contoured areas. Brush cleared prior to construction of the well site shall be scattered back over the re-contoured area.
33. Prior approval is required to remove reserve pit fluids from the reserve pit; a request of this type will need to include the destination of the fluids and if the destination is not a State approved facility, the request will include State approval of the destination.
34. All pits, cellars, rat holes and other bore holes unnecessary for further lease operations, excluding the reserve pit, will be backfilled immediately after the drilling rig is released. Pits, cellars and/or bore holes that remain on location must be fenced as specified for the reserve pit in the applicant's Surface Use Plan.
35. In the event a producing well is established, all new production equipment which has open-vent exhaust systems, such as heater treaters, separators, dehydration units, and flare stacks, shall be designed and constructed to prevent birds and bats from entering or nesting in or on such units, and to the extent practical, to discourage birds from perching on the exhaust stacks.
36. All permanent structures (on-site for six months or longer) constructed or installed (including oil well pumpjacks) will be shale green. All facilities will be painted within six months of installation. Facilities required to comply with OSHA (Occupational Safety and Health Act) will be excluded.
37. Surface facilities should appear to blend in to the existing landscape to the greatest possible extent. Facilities should not be located on ridgelines or extend above them. Facilities should be minimal in size (or located underground) and colored and texture to blend in with the surroundings.
38. A containment berm must be installed around all storage tanks, including temporary tanks. Compaction and construction of the berm surrounding the tank or tank battery will be designed to prevent lateral movement of fluids through the utilized materials, prior to storage of fluids. The berm must be constructed to contain at minimum 110 percent of the storage capacity of the largest tank within the berm. All loading lines will be placed inside the berm.
39. Control of noxious weeds will be required through successful vegetation establishment and/or herbicide application. It is the responsibility of the lease operator to insure compliance with all local, state, and federal laws and regulations, as well as labeling directions specific to the use of any given herbicide.
40. All production facilities installed on location that have the potential to leak or spill oil, glycol, produced water, or other fluid, which may constitute a hazard to public health or safety, shall be placed within an appropriate secondary containment or diversionary structure. The structure shall hold 110% of the capacity the largest single tank in use and be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours. It shall be installed so that any spill or leakage would not drain, infiltrate, or otherwise escape to ground water, surface water, or navigable waters before cleanup is completed.
41. Reclamation Performance Standard

The lessee is required to use the reclamation practices necessary to reclaim all disturbed areas. Reclamation will ensure surface and subsurface stability, growth of a self-regenerating permanent vegetative cover and compatibility with post land use. The vegetation will be diverse and of the same seasonal growth as adjoining vegetation. Post land use will be determined by the Authorized Officer but normally will be the same as adjoining uses.



Reclamation practices which must be applied or accomplished are: re-grading to the approximate original contour, effectively controlling noxious weeds, separating, storing and protecting topsoil for redistribution during final abandonment, seeding and controlling erosion. If topsoil is not present, or quantities are insufficient to achieve reclamation goals, a suitable plant growth media will be separated, stored and protected for later use. Reclamation will begin with the salvaging of topsoil and continue until the required standards are met. If use of the disturbed area is for a short time (less than one year), practices, which ensure stability, will be used as necessary during the project, and practices needed to achieve final abandonment will commence immediately upon completion of the approved activity use and be completed, with the exception of vegetative establishment, within one year.

If use of the area is for longer periods of time (greater than one year), interim reclamation is required on the unused areas. Interim reclamation of the unused areas will begin immediately upon completion of the permanent facility(s) and be completed, with exception of vegetative establishment, within one year. For both short and long term projects vegetative establishment will be monitored annually. If the desired vegetation is not established by the end of the second growing season, cultural practices necessary for establishment will be implemented prior to the beginning of the next growing season. Interim reclamation, unless otherwise approved, will require meeting the same standards as final abandonment with the exception of original contour, which may be only partially achievable.

Annual reports consisting of reclamation practices completed and the effectiveness of the reclamation will be provided to the Little Snake Field Office. The first report will be due in January following initiation of reclamation practices and annually thereafter until final abandonment is approved.

There are numerous reclamation practices and techniques that increase the success rate of reclamation and stabilization. With the exception of those stated above, it is the lessee's prerogative to use those (s)he chooses to accomplish the objective. However, it is recommended that state-of-the-art reclamation, stabilization, and management practices be used to achieve the desired objective in a timely and cost-effective manner.

The following definitions and measurements will be used to accomplish and determine if reclamation has been achieved:

Permanent vegetative cover will be accomplished if the basal cover of perennial species, adapted to the area, is at least ninety (90) percent of the basal cover of the undisturbed vegetation of adjoining land or the potential basal cover as defined in the Soil Conservation Service Range Site(s) for the area.

Diverse will be accomplished if at least two (2) perennial genera and three (3) perennial species, adapted to the area, make up the basal cover of the reclaimed area in precipitation zones thirteen (13) inches or less and three (3) perennial genera and four (4) perennial species in precipitation zones greater than thirteen (13) inches. One species will not make up more than fifty (50) percent of the perennial vegetation by basal cover.

Self-regenerating and adapted to the area will be evident if the plant community is in good vigor, there is evidence of successful reproduction, and the species are those commonly used and accepted in the area.

Surface stability will be accomplished if soil movement, as measured by deposits around obstacles, depths of truncated areas, and height of pedestalling, is not greater than three tenths (0.3) of an inch and if erosion channels (rills, gullies, etc.) are less than one (1) inch in depth and at intervals greater than ten (10) feet.

If this standard is not met by the end of the second growing season, two alternatives exist depending on the severity of the erosion:

If erosion were greater than two (2) times the allowable amount, corrective action would have to be taken by the responsible company at that time.

If erosion is less than or equal to two (2) times the allowable amount, and it is determined the erosion occurred during vegetative establishment and the site may become stable, no corrective action would be required at that time. Another check (and measurement) would be performed a year later to determine if stability standards had been met. If the original measurements have not increased by more than the allowed standard, the standard would be considered met. However, if the increase were greater than the allowed standard, corrective action would be required.

Subsurface stability (mass wasting event) is of concern if disturbance has included excavation over four (4) feet in depth and greater than 10,000 square feet in area on slopes thirty five (35) percent and greater, or on any erosion-prone slope (Danforth Hills, Vermillion Bluffs, and badland areas). When these conditions occur, length of liability for reclamation and final abandonment will continue for ten (10) years following re-contouring to original contour or for such time that climatic patterns provide two (2) consecutive years in which measurable precipitation totals at least 120 percent of average from October 1 through September 30, as measured by data averaged from nearby regional weather stations.



The Authorized Officer may waive stipulation, or portions of it. Such waiver will be documented and justified when not applicable, or when objectives are accomplished through another method.

## REGULATORY REMINDERS

- A. This permit is valid for a period of two years from the date of approval. Any requests for extensions must be submitted prior to the end of the two-year period. If the permit terminates, any surface disturbance created under the permit must be rehabilitated in accordance with the approved plan within 90 days of termination, unless otherwise approved by the Authorized Officer. An expired permit may be reinstated at the Authorized Officer's discretion; however, future operations may require a new application be filed for approval.
- B. All drilling operations, unless otherwise specifically approved in the APD, must be conducted in accordance with Onshore Oil and Gas Order No. 2; Drilling Operations.
- C. All 10-Day Requirement responses are made part of this APD.
- D. There shall be no deviation from the proposed drilling and/or workover program as approved, without prior approval from the Little Snake Field Office. Safe drilling and operating practices must be observed.
- E. Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.
- F. No location will be constructed or moved, no well will be plugged, and no drilling or workover equipment will be removed from a well to be placed in a suspended status without prior approval of the Little Snake Field Office. If operations are to be suspended for more than 30 days, prior approval for certain well operations must be obtained and notification given before resumption of operations in accordance with 43 CFR 3162.3-2 and 3162.3-4.
- G. In the case of newly drilled dry holes or failures, and in emergency situations, oral approval for subsurface abandonment operations may be granted by the Little Snake Field Office. Oral approvals must be confirmed in writing (Notice of Intention to Abandon (Form 3160-5)) within 15 days. Unless the plugging is to take place immediately upon receipt of oral approval, the appropriate resource area must be notified at least 48 hours in advance of the plugging of the well, in order to provide a representative the opportunity to witness plugging operations.
- H. Whether the well is completed as a dry hole or as a producer, "Well Completion and Recompletion Report and Log" (Form 3160-4) must be submitted not later than 30 days after completion of the well or after completion of operations being performed, in accordance with Onshore Oil and Gas Order No. 1. Daily drilling reports, a copy of all logs, core descriptions, core analyses, well-test data, geologic summaries, sample descriptions, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations (with Form 3160-4) will be filed and sent to the Little Snake Field Office, 455 Emerson Street, Craig, Colorado 81625. Samples (cuttings, fluid, and/or gas) will be submitted only when requested by the Authorized Officer.
- I. Section 102 (b) (3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1 (c), requires that "not later than the fifth business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, or the date on which such production has begun or resumed."

The date on which a well commences production, or resumes production after having been off production for more than 90 days is to be construed as follows:

1. For an oil well, the date on which liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank or the date on which liquid hydrocarbons are first produced into a permanent storage facility, whichever occurs first;
2. For a gas well, that date on which gas is first measured through sales metering facilities or the date on which associated liquid hydrocarbons are first sold or shipped from a temporary storage facility, whichever occurs first. For purposes of this provision, a gas well shall not be considered to have been off production unless it is incapable of production.

If you fail to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c) (3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3163.2(e) (2).

- J. This APD is approved subject to the requirement that, should the well be successful (completed for production or recompleted for production in a new interval), the Little Snake Field Office must be notified when it is placed in a producing status. Such notification may be provided orally if confirmed in writing, and must be received in the Little Snake Field Office by not later than the 5<sup>th</sup> business day following the date on which the well is placed on production. The notification shall provide, as a minimum, the following information items:
  - 1. Operator name
  - 2. Well name, number, and location



3. Date well was placed on product.
  4. The lease, or communitized tract, or unit participating area to which the well's production is attributable.
- K. A separate Monthly Report of Operations, Form 3160-6, shall be submitted for each lease, unit participating area, or communitization agreement, beginning with the month in which drilling operation commence, in accordance with 43 CFR 3162.4-3. This report shall be sent to Minerals Management Service, Production Accounting Division, P.O. Box 17110, Denver, Colorado 80217.
- L. If at any time the facilities located on public lands authorized by the terms of the lease are no longer included in the lease (due to contraction in the unit or other lease or unit boundary change) the BLM will process a change in authorization to the appropriate statute. The authorization will be subject to appropriate rental, or other financial obligation determined by the Authorized Officer.
- M. All produced liquids must be contained, including the dehydrator vent/condensate line effluent. All production pits must be bermed and fenced.
- N. Gas produced from this well may not be vented or flared beyond an initial, authorized test period of 30 days or 50 MMCF following completion, whichever comes first, without the prior written approval of the authorized officer. Should gas be vented or flared without approval beyond the authorized test period, you may be directed to shut the well in until the gas can be captured or approval to continue venting or flaring is granted and you may be required to compensated the lessor for that portion of the gas that was vented or flared without approval which is determined to have been avoidably lost.
- O. Produced water from newly completed wells may be temporarily disposed of into the reserve pit for a period of up to 90 days. During the 90-day periods, an application for approval of a permanent disposal method and location will be submitted according to Onshore Order No. 7 for approval.
- P. If an Electronic Flow Computer (EFC) on a differential-type flow meter for gas measurement is used, the operator will follow the standards and requirements of Notice to Lessees (LTL-2007-1). This NTL does not alter the standards and requirements of Onshore Order No. 5, applicable variances, or NTLs which address the primary device.
- Q. All occurrences of useable water at depths encountered, shall be reported to the Little Snake Field Office with the Well Completion Report.
- R. A schematic facilities diagram as required by CFR 43, Part 3162.7-5, shall be submitted to the Little Snake Field Office within 60 days of installation or first production, whichever occurs first. All site security regulations as specified in Onshore Order No. 3 shall be adhered to. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed in accordance with 3162.7-5(b).
- S. The permit holder is required to use certified weed free hay, straw and mulch on BLM lands in Colorado should the use or storage of hay, straw or mulch be necessary. Any person who knowingly and willfully violates this regulation may be subject to a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both as defined in 43 USC 1733 (a).



**BAKER & ASSOCIATES**

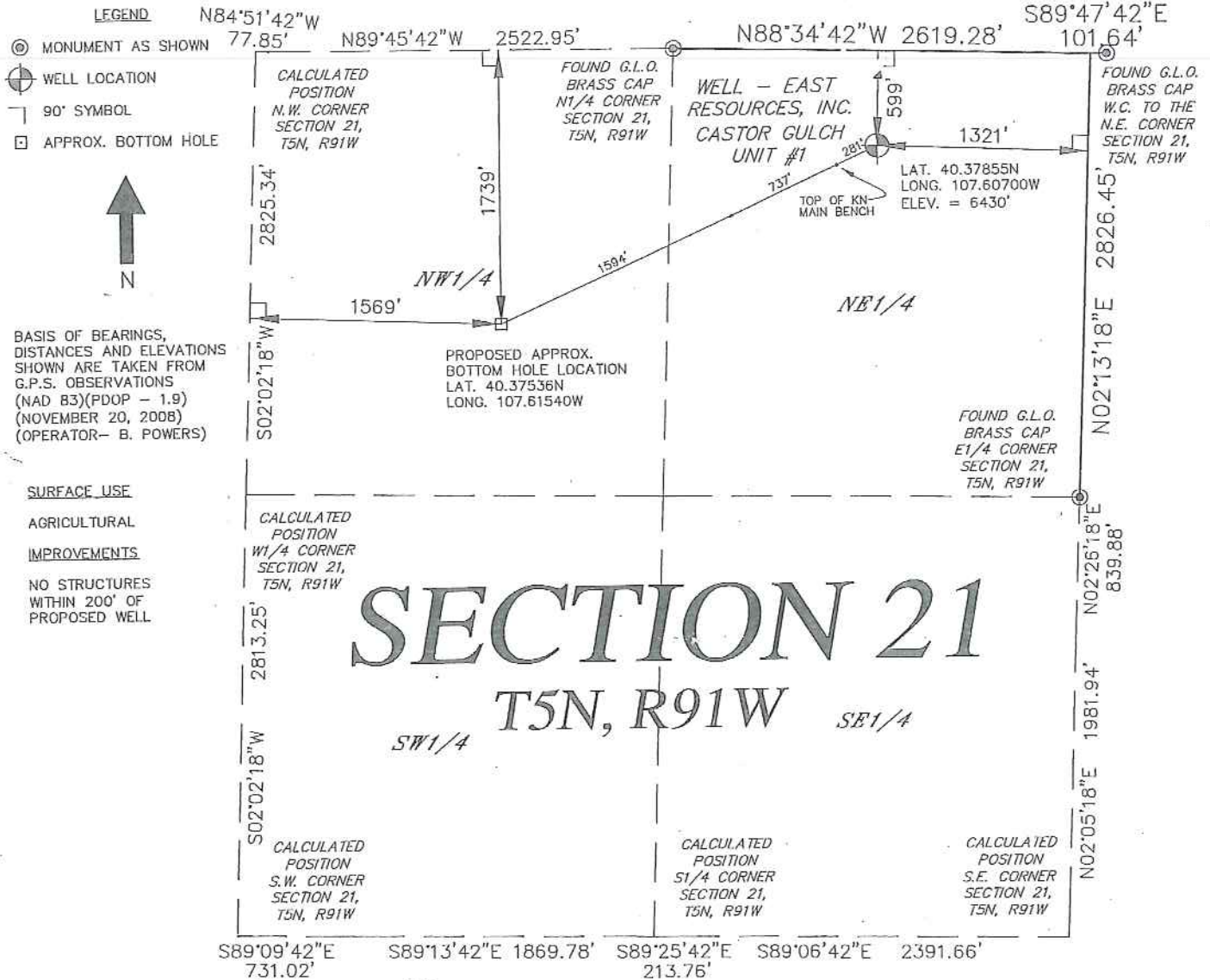
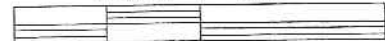
Engineers \* Surveyors

LOCATED IN THE NW1/4NE1/4 OF  
SECTION 21, T5N, R91W OF THE  
6TH P.M., MOFFAT COUNTY, COLORADO

WELL -  
EAST RESOURCES, INC.  
CASTOR GULCH UNIT #1

1790 W. Victory Way - Craig, Colorado 81625  
Telephone (970) 824-3435  
FAX (970) 824-3102

SCALE: 1"=1000'



LAND SURVEYOR'S CERTIFICATE

I, Lloyd W. Powers being a duly registered Professional Land Surveyor do hereby certify that this survey was made by me or under my direct supervision and is based upon my professional knowledge, information and belief and conforms with the applicable standards of practice in the State of Colorado. This certificate does not constitute a guaranty or warranty, either expressed or implied.

Lloyd W. Powers, PLS  
Colorado Reg. No. 13901



0B162-ER-HF1-21



# Castor Gulch Unit #1

## 9 Point Drilling Plan

### East Resources Inc.

Surface location: NE ¼ of Section 21, T5N, R91W

Bottom Hole: NW ¼ of Section 21, T5N, R91W

#### 1. Estimated Formation Tops:

The estimated depths of important geological markers are as follows:

Surface Elevation: 6,428' GL and 6,433' KB

Formation	Vertical Depth (ft)	Measured Depth (ft)	Subsea Depth (ft)
Mancos	0	0	6,433
Morapos	945	945	5,488
X Bentonite	3,145	3,145	3,288
Buck Peak	3,415	3,419	3,018
Niobrara Main Bench	3,774	3,871	2,659
Horizontal Landing	4,042	4,671	2,391
Niobrara Base @ Landing	4,205	N/A	2,228
Horizontal Toe	3,907	6,271	2,526
Niobrara Base @ Toe	4,149	N/A	2,284

#### 2. Depth of Intervals potentially containing Oil, Gas, Water, or other Minerals

The estimated depths of zones containing oil, gas, water, or other minerals are as follows:

Substance	Formation	Vertical Depth (ft)	Measured Depth (ft)
Water	Morapos	945	945
Oil/Gas	Buck Peak	3,415	3,419
Oil	Niobrara	3,774	3,871

All shows of fresh water and raw minerals will be reported and protected.



### 3. Blow Out Prevention Equipment:

The maximum anticipated bottom hole pressure is less than 2000 psi. A 0.27 psi/ft pressure gradient as determined from offset wells indicates a maximum of  $0.27 * 4042' = 1091$  psig BHP

A 2000 psi, or greater, working pressure BOP system will be installed and maintained after the 9-5/8" surface casing is set and cemented.

The well control equipment above the 2000 psig minimum rated drilling flange is as follows:

- a. An 11" 2000 psi or greater drilling spool with (2) side outlets (Choke side 3" & Kill side 2").
- b. An 11" 2000 psi or greater double preventer with blind and pipe rams.
- c. An 11" 750 psi Static Rated rotating drilling head.

The choke and kill systems coming off the drilling spool are as follows:

- a. A 3" choke line with (1) valve connected to a manifold with (2) adjustable chokes and pressure gauge.
- b. A 2" kill line with one manual valve and one check valve.

Auxiliary Equipment:

- a. A hydraulically actuated upper Kelly valve.
- b. A float valve will be used in the drill string above the bit
- c. A stabbing valve will be on the floor at all times.

The BOP assembly and casing will be pressure tested to minimum standards set forth in "On Shore Order #2". The BOP will be mechanically checked daily during the drilling operation.

BOP tests with 200 psi minimum and 1500 psi maximum, except the rotating head (750 psi), will be conducted on the following occasions:

- a. After initial installation
- b. After any component change
- c. Twenty one days after previous test if applicable
- d. As required by well conditions



#### 4. Casing Program:

Hole Section	Hole Size	Depth TVD	Depth MD	Pipe Size	Pipe Weight	Pipe Grade	Pipe Condition	Range
Surface	12-1/4"	530	530	9-5/8"	36	J-55, ST&C	New/Used	3.0
Intermediate	8-3/4"	3,781	3,881	7"	23	J-55, ST&C	New/Used	3.0
Production	6-1/4"	3,907	6,271	Open Hole	N/A	N/A	N/A	N/A

Note: If used pipe is to be run it will be inspected and tested to new pipe specifications and have a minimum wall thickness of 87.5 % of new pipe specifications. Surface and intermediate casing will be pressure tested to 1500 psi prior to drilling out the shoe.

#### Surface Casing: 9-5/8", 36 ppf, J-55, ST&C Mechanical Integrity Ratings.

Collapse	Internal Yield	Joint Strength
2020 psi	3520 psi	394,000 lbs

The maximum anticipated pore pressure and drilling fluid gradients are 0.44 psi/ft (Water) and 0.468 psi/ft (9.0 ppg mud) respectively. The resulting design factors for the casing are:

**Collapse Pressure** = 530 ft \* 0.44 psi/ft = 233 psig. **Design Factor** = 2020/233 = 8.6

**Internal Yield Pressure** = 530 ft \* 0.468 psi/ft = 248 psig. **Design Factor** = 3520/248 = 14.2

**Joint Strength (In Air)** = 530 ft \* 36 lb/ft = 19,080 lbs. **Design Factor** = 394,000/19,080 = 20.6

The surface casing will have 8 centralizers; one 10 feet above the shoe, one just above the latch down collar, one around the next two connections, and then one every three joints around the connection.



**Intermediate Casing: 7", 23 ppf, J-55, ST&C Mechanical Integrity Ratings.**

Collapse	Internal Yield	Joint Strength
3270 psi	4360 psi	284,000 lbs

The maximum anticipated hydrostatic pressure gradient and fracture pressure gradients are 0.44 psi/ft (Water) and 0.85 psi/ft (Limestone fracture gradient) respectively. The resulting design factors for the casing are as follows:

**Collapse Pressure:** (with the casing evacuated for air drilling and a column of water in the annulus) =  $3,781 \text{ ft} \times 0.44 \text{ psi/ft} = 1663 \text{ psig}$ , **Design Factor** =  $3270/1663 = 1.96$

**Internal Yield Pressure:** If fracture stimulation is required the greatest differential pressure will be at the surface. The resulting surface pressure while pumping at 50 BPM will be: Bottom hole treating pressure – hydrostatic head + friction pressure =  $(3,781 \text{ ft} \times 0.85 \text{ psi/ft}) - (3,781 \text{ ft} \times 0.44 \text{ psi/ft}) + 500 \text{ psig} = 2050 \text{ psig}$ . **Design Factor** =  $4360/2050 = 2.12$

If a screen-out during stimulation were to occur, the maximum differential pressure would be at the top of the cement. The most restrictive conditions would be at maximum proppant concentration and maximum surface treating pressure with minimum annulus pore pressure. **(0.54 psi/ft (4.0 ppa slurry) – 0.27 psi/ft (under pressured reservoir gradient)) x 3100' (Top of Cement) + 3000 psi (Max surface pressure) = 3837 psig, Design Factor =  $4360/3837 = 1.14$**

**Joint Strength** : (In Air) =  $3,881 \text{ ft} \times 23 \text{ lb/ft} = 89,263 \text{ lbs}$ . **Design Factor** =  $284,000/89,263 = 3.18$

The intermediate casing will have 12 centralizers; one 10 feet above the float shoe, one just above the latch collar, one around the next three connections, and then one every third joint placed around the connection.



### Optional Hole & Casing Program:

Hole Section	Hole Size	Depth TVD	Depth MD	Pipe Size	Pipe Weight	Pipe Grade	Pipe Condition	Range
Surface	13-1/2"	530	<b>530</b>	10-3/4"	40.5	J-55, ST&C	New/Used	3.0
Intermediate	9-7/8"	3,781	<b>3,881</b>	7-5/8"	26.4	J-55, ST&C	New/Used	3.0
Production	6-3/4"	3,907	<b>6,271</b>	Open Hole	N/A	N/A	N/A	N/A

#### Surface Casing: 10-3/4", 40.6 ppf, J-55, ST&C Mechanical Integrity Ratings.

	<u>Collapse</u>	<u>Internal Yield</u>	<u>Joint Strength</u>
	1580 psi	3130 psi	420,000 lbs
<i>Design Factors:</i>	6.77	12.6	19.5

#### Intermediate Casing: 7-5/8", 26.4 ppf, J-55, ST&C Mechanical Integrity Ratings.

	<u>Collapse</u>	<u>Internal Yield</u>	<u>Joint Strength</u>
	2890 psi	4140 psi	315,000 lbs
<i>Design Factors:</i>	1.73	2.02 Pumping	3.07
(Same Calculations)		1.08 Screen-out	

### **5. Cement Program:**

The following is the proposed cementing program for the 9-5/8" surface casing and 7" intermediate casing strings.

#### Surface Casing:

Top of cement – Surface.

Volume – Calculated annular volume plus 50% excess equals 250 cubic feet of class G with a density of 14.10 lb/gal and yield 1.64 ft<sup>3</sup>/sk with 1.0% CaCl<sub>2</sub> and 10% gypsum & polyester flake.  
Sacks of cement = 152.44

#### Intermediate Casing:

Top of cement – 3100', approximately 300' above Buck Peak.

Volume – Calculated annular volume plus 25% excess equals 150 cubic feet of class G with a density of 14.10 lb/gal and yield 1.63 ft<sup>3</sup>/sk with 10% gypsum & polyester flake expanding agent.  
Sacks of cement = 92.02

The cement will be allowed to cure up the point where the compressive strength is 500 psi or greater before drilling out the shoe. Wait on cement time will be recorded on the daily report.



## 6. Drilling Fluids Program:

Interval	Mud Type	Density (ppg)	Viscosity (cp)	Fluid Loss (cc)	Remarks
Surface	Spud	8.4 -9.0	40-60	NC	Fresh water with gel & lime
Intermediate	Air/Mist	3.0 - 5.7	5-15	NC	Dusting or Mist Drilling
Production	Air/Mist	5.7	10-20	NC	Mist & Stiff Foam

Sufficient quantities of mud and materials will be on location in the event a well control situation should arise while air drilling. The spud mud, used to drill the surface casing, will be left in the 250 barrel capacity steel mud pit. A 500 bbl water tank and raw mud materials will also be available on site. An 800 hp mud pump capable of pumping 12.4 BPM against 1700 psi discharge pressure will be on site and used to kill the well if required.

### Surface 0 – 530':

A simple spud mud consisting of fresh water, gel, and lime will be utilized to drill this section. The cuttings will be caught in a catch tank located next to the steel mud pit and moved to the blooie pit for stabilization and burial or hauled off site.

### Intermediate 530' –3881':

Air-mist drilling will be utilized for this section. The returns will be carried through a 6" blooie line that discharges into the blooie pit located 100' from the well. Dust suppression will be controlled with a water mist system located at the end of the blooie line. In the event natural gas is encountered the ignition, at the end of the blooie line, will be accomplished by an electric lance with continuous spark or alternative safe automatic ignition system. The available 2500 SCFM air will be provided by two primary (1256 CFM @ 365 psi discharge) and one booster (2500 CFM @ 2500 psi discharge) compressors. The compressors and liquid injection pump will be located 100' from the well in the opposite direction of the blooie pit. The three compressors and liquid injection pump are equipped with spark arrestors. If liquid hydrocarbons are encountered while drilling the Buck Peak interval the returns will be directed through the choke manifold into the gas buster tank.

### Production 3881' – 6271':

Air mist and stiff foam will be utilized to drill this section. The returns will be circulated through the choke manifold and into the gas buster tank in order to capture any liquid hydrocarbons. In the event significant oil returns are encountered, the choke manifold will be utilized to hold between 100 to 200 psi back pressure and drilling will continue with a balanced to slightly under-balanced system.



## **7. Formation Evaluation Program:**

Mud logging will be performed from the base of surface casing to the well total depth.

### **Open Hole Logging:**

Run 1: AIT & GR from 3881' to 530'

Run 2: AIT, GR, ECS, and FMI from 3881' to 6271'

No coring or DST's are planned

## **8. Abnormal Conditions:**

- a. The expected bottom hole pressure is 1091 psi. ( 0.27 psi/ft x 4042' TVD)
- b. The maximum bottom hole temperature is 138 degrees F.
- c. No hydrogen sulfide gas is expected.
- d. When drilling under-pressured naturally fractured reservoirs the potential for lost circulation is present providing that the effective circulating density is greater than the pore pressure. However, this potential has been eliminated by the utilization of an air/ mist drilling fluid system.

## **9. Other Facets regarding the Drilling Plan:**

The well geometry consists of penetrating the Niobrara at a 50 degree inclination and continuing to build to 95 degrees and drilling a 1600' horizontal lateral. This will be accomplished by starting the build (KOP) at 3271' TVD and building at 10 degrees/ 100' up to a 50 degree inclination and drilling into the Niobrara main bench. Then continue to build at 5 degrees/100' up to a 95 degree inclination while drilling in the pay interval and drill a 1600' horizontal lateral. (See attached directional plan)





Well: Castor Gulch Unit #1  
Location: Sec. 21 - 5N - 91W  
Rig:

Declination Corr.:  
Grid Corr.:  
Total Corr.:

-10.33

Calculation Method Minimum Curvature  
Proposed Azimuth 245 From True North  
Depth Reference KB  
Tie Into: 6435

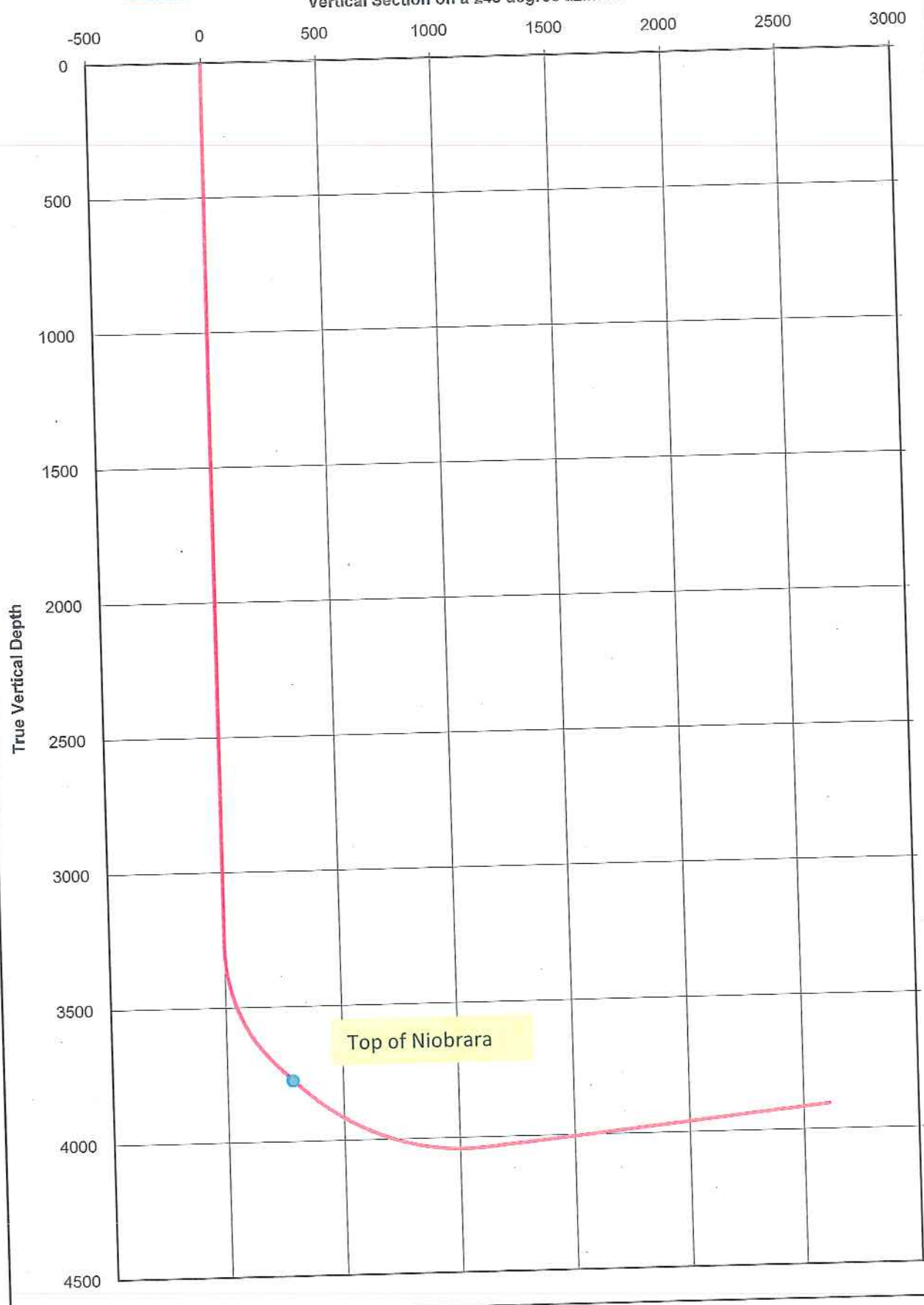
Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
Tie In Coordinates													
Surface						0							
Kick off Point	3271	0	245		3271	0							
MWD	3371	10	245	100	3370	8.70	3.68 S	7.89 W	8.70	245.00	10.00	10.00	0.00
MWD	3471	20	245	100	3467	34.55	14.60 S	31.32 W	34.55	245.00	10.00	10.00	0.00
MWD	3571	30	245	100	3557	76.76	32.44 S	69.57 W	76.76	245.00	10.00	10.00	0.00
MWD	3671	40	245	100	3639	134.05	56.65 S	121.49 W	134.05	245.00	10.00	10.00	0.00
MWD	3771	50	245	100	3710	204.67	86.50 S	185.49 W	204.67	245.00	10.00	10.00	0.00
MWD	3871	50	245	100	3774	281.27	118.87 S	254.92 W	281.27	245.00	0.00	0.00	0.00
Top of Niobrara	3881	51	245	10	3781	288.96	122.12 S	261.89 W	288.96	245.00	5.00	5.00	0.00
Casing Point	3891	55	245	90	3835	360.58	152.39 S	326.80 W	360.58	245.00	5.00	5.00	0.00
MWD	4071	60	245	100	3889	444.89	188.02 S	403.21 W	444.89	245.00	5.00	5.00	0.00
MWD	4171	65	245	100	3935	533.57	225.50 S	483.58 W	533.57	245.00	5.00	5.00	0.00
MWD	4271	70	245	100	3973	625.93	264.53 S	567.28 W	625.93	245.00	5.00	5.00	0.00
MWD	4371	75	245	100	4003	721.27	304.82 S	653.69 W	721.27	245.00	5.00	5.00	0.00
MWD	4471	80	245	100	4025	818.87	346.07 S	742.14 W	818.87	245.00	5.00	5.00	0.00
MWD	4571	85	245	100	4038	917.98	387.95 S	831.97 W	917.98	245.00	5.00	5.00	0.00
MWD	4671	90	245	100	4042	1,017.85	430.16 S	922.49 W	1,017.85	245.00	5.00	5.00	0.00
Horizontal Niobrara	4771	95	245	100	4038	1,117.73	472.37 S	1,013.00 W	1,117.73	245.00	5.00	5.00	0.00
MWD	4871	95	245	100	4029	1,217.35	514.47 S	1,103.29 W	1,217.35	245.00	0.00	0.00	0.00
MWD	4971	95	245	100	4020	1,316.96	556.57 S	1,193.58 W	1,316.96	245.00	0.00	0.00	0.00
MWD	5071	95	245	100	4012	1,416.58	598.67 S	1,283.86 W	1,416.58	245.00	0.00	0.00	0.00
MWD	5171	95	245	100	4003	1,516.20	640.78 S	1,374.15 W	1,516.20	245.00	0.00	0.00	0.00
MWD	5271	95	245	100	3994	1,615.82	682.88 S	1,464.43 W	1,615.82	245.00	0.00	0.00	0.00
MWD	5371	95	245	100	3986	1,715.44	724.98 S	1,554.72 W	1,715.44	245.00	0.00	0.00	0.00
MWD	5471	95	245	100	3977	1,815.06	767.08 S	1,645.00 W	1,815.06	245.00	0.00	0.00	0.00
MWD	5571	95	245	100	3968	1,914.68	809.18 S	1,735.29 W	1,914.68	245.00	0.00	0.00	0.00
MWD	5671	95	245	100	3959	2,014.30	851.28 S	1,825.58 W	2,014.30	245.00	0.00	0.00	0.00
MWD	5771	95	245	100	3951	2,113.92	893.38 S	1,915.86 W	2,113.92	245.00	0.00	0.00	0.00
MWD	5871	95	245	100	3942	2,213.54	935.48 S	2,006.15 W	2,213.54	245.00	0.00	0.00	0.00
MWD	5971	95	245	100	3933	2,313.16	977.58 S	2,096.43 W	2,313.16	245.00	0.00	0.00	0.00
MWD	6071	95	245	100	3925	2,412.78	1,019.68 S	2,186.72 W	2,412.78	245.00	0.00	0.00	0.00
MWD	6171	95	245	100	3916	2,512.40	1,061.79 S	2,277.01 W	2,512.40	245.00	0.00	0.00	0.00
Horizontal TD	6271	95	245	100	3907	2,612.02	1,103.89 S	2,367.29 W	2,612.02	245.00	0.00	0.00	0.00





# Castor Gulch Unit #1

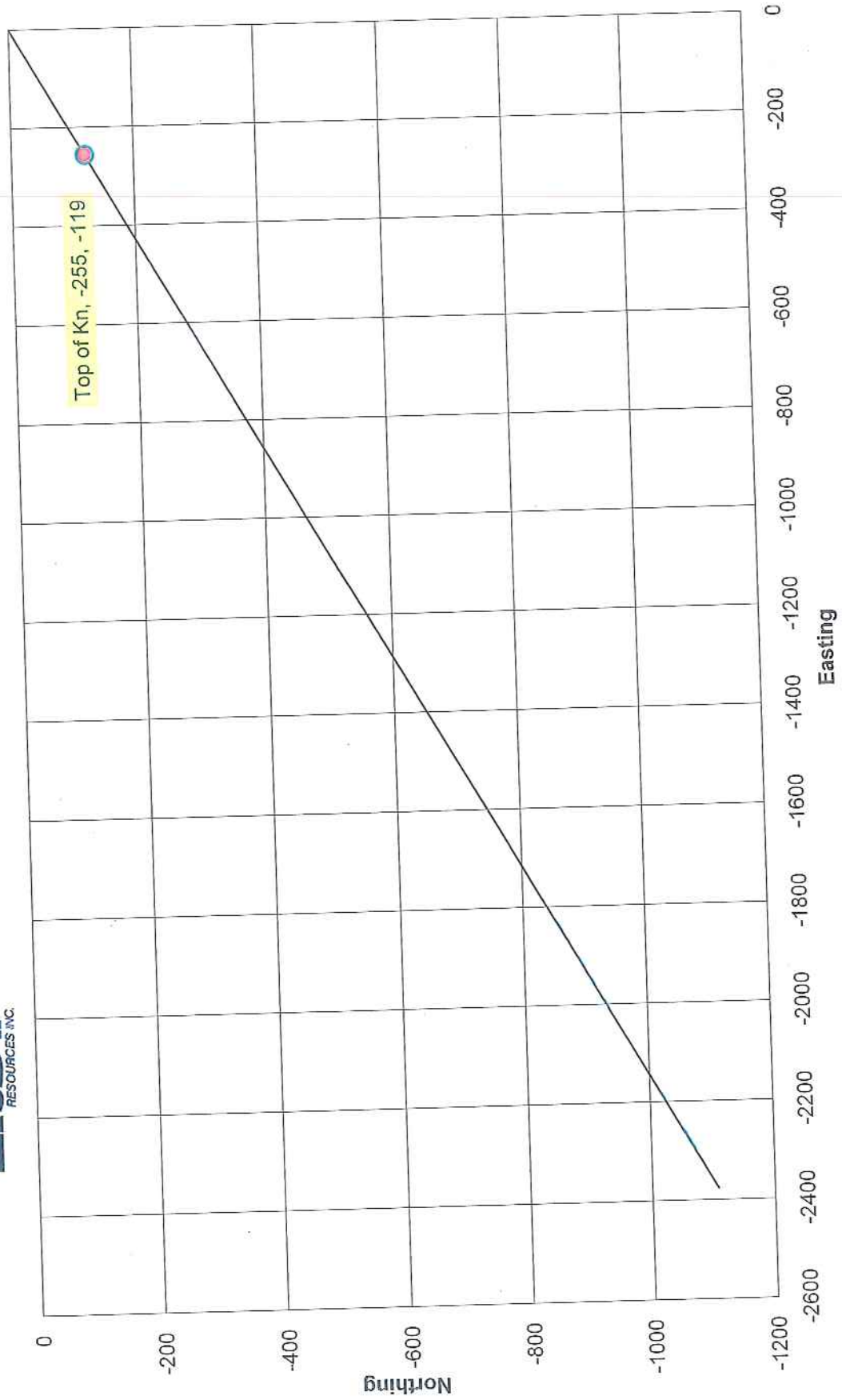
Vertical Section on a 245 degree azimuth







# Castor Gulch Unit #1 Plan View





**TWELVE POINT SURFACE USE PLAN OF OPERATIONS**  
**Attachment to Application for Permit to Drill**

**Operator:** East Resources, Inc.  
370 Interlocken Blvd., Suite 550  
Broomfield, Colorado 80021

**Well Name:** Castor Gulch Unit #1

**Staked Well Location:** 599' FNL, 1321' FEL of Section 21,  
T5N, R91W, 6<sup>th</sup> P.M., Moffat County, Colorado

**1. Existing Roads**

- a. Refer to attached **Access Road Map – A** and **Access Road Map – B**.
- b. The well site is located SSW of the town of Craig, Colorado. Access will be via State Highway 13 and Moffat County Road 93.
- c. Driving directions: Starting at the intersection of U.S. Highway 40 and State Highway 13 in Craig, proceed south on State Highway 13 for 12.5 miles to Moffat County Road 93. Turn left (ENE) on County Road 93, proceed 0.7 miles. The well site is located immediately adjacent to the north side of County Road 93.
- d. In accordance with a request by the Moffat County Road and Bridge Department, County Road 93 will be improved by applying gravel to the surface along the first 200 feet of the road extending northeast from State Highway 13 in order to prevent mud from being brought from the road onto the highway by trucks accessing the drill site.
- e. The existing roads are maintained by the State of Colorado and Moffat County.

**2. New or Reconstructed Access Roads**

- a. Refer to attached **Location Layout**.
- b. The well site is immediately adjacent to County Road 93. No new or reconstructed access roads will be required.
- c. Driveway access from County Road 93 will be required. A single driveway will be used for well site construction and drilling. If commercial production is established, a second driveway will be constructed after the removal of drilling equipment to allow oil tankers to turn around using a one-way drive-through



configuration. Permits for driveway access to County Road 93 will be obtained from Moffat County, and the driveways will be constructed in accordance with Moffat County standards.

- d. The driveways and well pad drive-through will be constructed and maintained as necessary to prevent soil erosion and accommodate all-weather traffic
- e. In the event that commercial production is established from the proposed well, the second driveway will be constructed, and the driveways and well pad drive-through will be surfaced to an average minimum depth (after compaction) of four inches with three inch minus pit run gravel or crushed rock, if and/or as required by the Authorized Officer. The surfacing materials will be obtained from a contractor having a permitted source of materials within the general area. Eighteen-inch CMP culvert and ditching will be used to prevent washout of the driveways, drive-through, and the adjacent portion of County Road 93.
- f. During the drilling and production phases of operations, the driveways and well pad drive-through will be kept in a safe and useable condition and drainage ditches and culverts will be kept clear and free flowing.

3. **Location of Existing Wells**

- a. Refer to attached map **1-Mile Radius**.
- b. Water Wells - 10  
Injection Wells - 0  
Disposal Wells - 0  
Producing Wells - 0  
Drilling Wells - 0  
Abandoned Wells - 0  
Shut-in Wells - 0

4. **Location of Existing and/or Proposed Production Facilities**

- a. Refer to attached **Production Layout**.
- b. All production facilities will be placed on the disturbed portion of the well pad and at a minimum of 25 feet from the toe of the back slope.
- c. Containment berms will be constructed around those production facilities designed to hold fluids. The berms will be constructed of compacted subsoil, be sufficiently large and impervious as to hold 110 percent of the capacity of the largest tank located within the berm, and be independent of the back cut.



- d. All permanent above-ground structures constructed or installed on location and not subject to safety requirements that dictate otherwise will be painted Shale Green.

5. **Location and Type of Water Supply**

Water will be hauled by tank trucks from the Williams Fork, with the point of diversion located on the south side of State Highway 317 immediately east of its junction with State Highway 13 in Section 21, T5N, R91W at latitude 40° 22' 22" N, longitude 107° 36' 53" W. Water usage will be approximately 5,000 bbls for construction, drilling and completion of the well.

6. **Source of Construction Materials**

Fill material for construction of the well pad and driveways will be taken from the cuts at the well site. Any material that may be required for surfacing of the well pad and driveways will be obtained from a contractor having a permitted source of material within the general area. No construction materials will be removed from Federal or Indian lands without prior approval from the appropriate surface management agency.

7. **Methods for Handling Waste**

- a. Drill cuttings and drilling fluids will be contained in steel mud pits and the blooie pit during drilling operations. At completion of drilling operations all cuttings and drilling mud will be contained in the blooie pit for drying and burial. If fracture stimulation is necessary the fluids used therein will be sent to the blooie pit for evaporation. Produced water will be hauled by truck to Elk Springs Recycling & Recovery, a commercial disposal facility in Moffat County.
- b. All garbage and non-flammable solid waste materials will be placed in a portable dumpster or trash cage. No trash will be placed in the blooie pit. Accumulated trash will be transported to a state-approved waste disposal site as needed and upon completion of operations. Upon removal of the drilling rig all debris and other waste materials not contained in the trash cage will be collected and removed from the well site. No potentially adverse materials will be left at the well site.
- c. Portable, self-contained chemical toilets will be provided for human waste disposal. Upon completion of operations, or as required, the toilet holding tanks will be pumped and the contents disposed of in an approved sewage disposal facility in compliance with all state and local laws and regulations pertaining to disposal of human wastes.



- d. The blooie pit will be backfilled when dry after drilling and completion operations are finished. If natural evaporation of the contents is not feasible, alternative methods of drying, fluids removal or other treatment will be used. If fluids will be disposed of by any method other than evaporation or hauling to an approved disposal site, prior approval will be obtained from the Authorized Officer.
- e. The blooie pit will be fenced on three sides during drilling operations, and the open side will be closed when drilling operations are completed. The fencing will be maintained until the pit is backfilled.

8. **Ancillary Facilities**

No ancillary facilities are anticipated in conjunction with this well.

9. **Well Site Layout**

- a. Refer to attached **Location Layout, Rig Layout, and Cross Sections**.
- b. All equipment and vehicles will be confined to the approved disturbed areas of this APD, i.e. driveways, well pad, and spoil and topsoil storage areas.
- c. In order to divert surface runoff, a drainage ditch will be constructed around the upslope side of the well pad.
- d. The fill section of the well pad will be compacted.
- e. The blooie pit will be constructed in a way that minimizes the accumulation of surface precipitation runoff into the pit. This will be accomplished by construction of berms and ditches. The pit will be fenced on three sides during drilling operations and the fourth side will be fenced when the drilling rig moves off the location. The fence will be either (1) woven wire at least 28 inches high and within 4 inches of ground surface with 2 strands of barbed wire above the woven wire with 10-inch spacing, or (2) at least 4 strands of barbed wire spaced, starting from the ground, at approximately 6-, 8-, 10-, and 12-inch intervals.
- f. The blooie pit will be backfilled when dry after drilling and completion operations are finished. If natural evaporation of the contents is not feasible, alternative methods of drying, fluids removal or other treatment will be used. If fluids will be disposed of by any method other than evaporation or hauling to an approved disposal site, prior approval will be obtained from the Authorized Officer.



**10. Plans for Surface Reclamation**

- a. A top-drive drilling rig will be used, so no rat hole or mouse hole will be required or excavated.
- b. Stockpiled topsoil will be spread on all cut and fill slopes to facilitate reseeding. Drainage ditches and culverts will not be blocked with topsoil.
- c. The cut and fill slopes will be broadcast reseeded using a mixture of certified or registered pure live seed with species, proportions, and application rate per BLM recommendations. The slopes will be raked or chained after broadcast reseeding in order to cover the seed.
- d. Seeding will be done after completion operations either between September 15 and November 15 (before ground freeze) or as early as possible in the spring to take advantage of available ground moisture. Seeding will be repeated as necessary to obtain a stand that is satisfactory to the Authorized Officer. Seeding success will be evaluated following completion of the first growing season after planting.

**11. Surface Ownership**

Surface ownership of approximately one-half of the well site is Federal, with the other one-half owned by John Raftopoulos, of 2991 Pine Ridge Drive, Craig, Colorado 81625, and Steve Raftopoulos, of 2915 Pinon Circle, Craig, Colorado 81625, as tenants in common. A copy of this Surface Use Plan of Operations has been sent to both private surface owners.

**12. Other Information**

- a. All lease and/or unit operations will be conducted in compliance with applicable laws, regulations, Onshore Oil and Gas Orders, the approved Plan of Development and any applicable Notices to Lessees. The operator is fully responsible for the actions of its subcontractors. Approved copies of the "Application for Permit to Drill" will be furnished to the field representatives, and an approved copy will be on location during all construction and drilling operations to ensure compliance with the permit.
- b. Weeds will be controlled on disturbed surface areas within the limits of the driveways and well pad. Weed control methods will be in accordance with guidelines established by the EPA, BLM, and state and local authorities. Approval will be obtained from the Authorized Officer prior to use of pesticides.



- c. Construction activity will not be conducted using frozen or saturated soils materials or during periods when watershed damage is likely to occur.
- d. A Class III Cultural Resource Inventory has been completed and the report submitted to the BLM. If any cultural resources are found during construction, all work will stop, and the Authorized Officer will be notified.

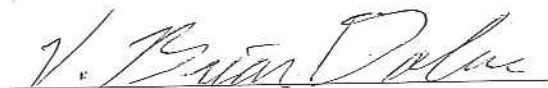


LESSEE OR OPERATOR REPRESENTATIVE AND CERTIFICATION

Brian Dolan  
Operations Manager  
East Resources, Inc.  
370 Interlocken Blvd., Suite 550  
Broomfield, CO 80021  
Office: 303-865-5957  
FAX: 303-865-5961  
Cell: 303-915-8811  
E-mail: bdolan@eastresourcesinc.com

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 28 day of May, 2009.



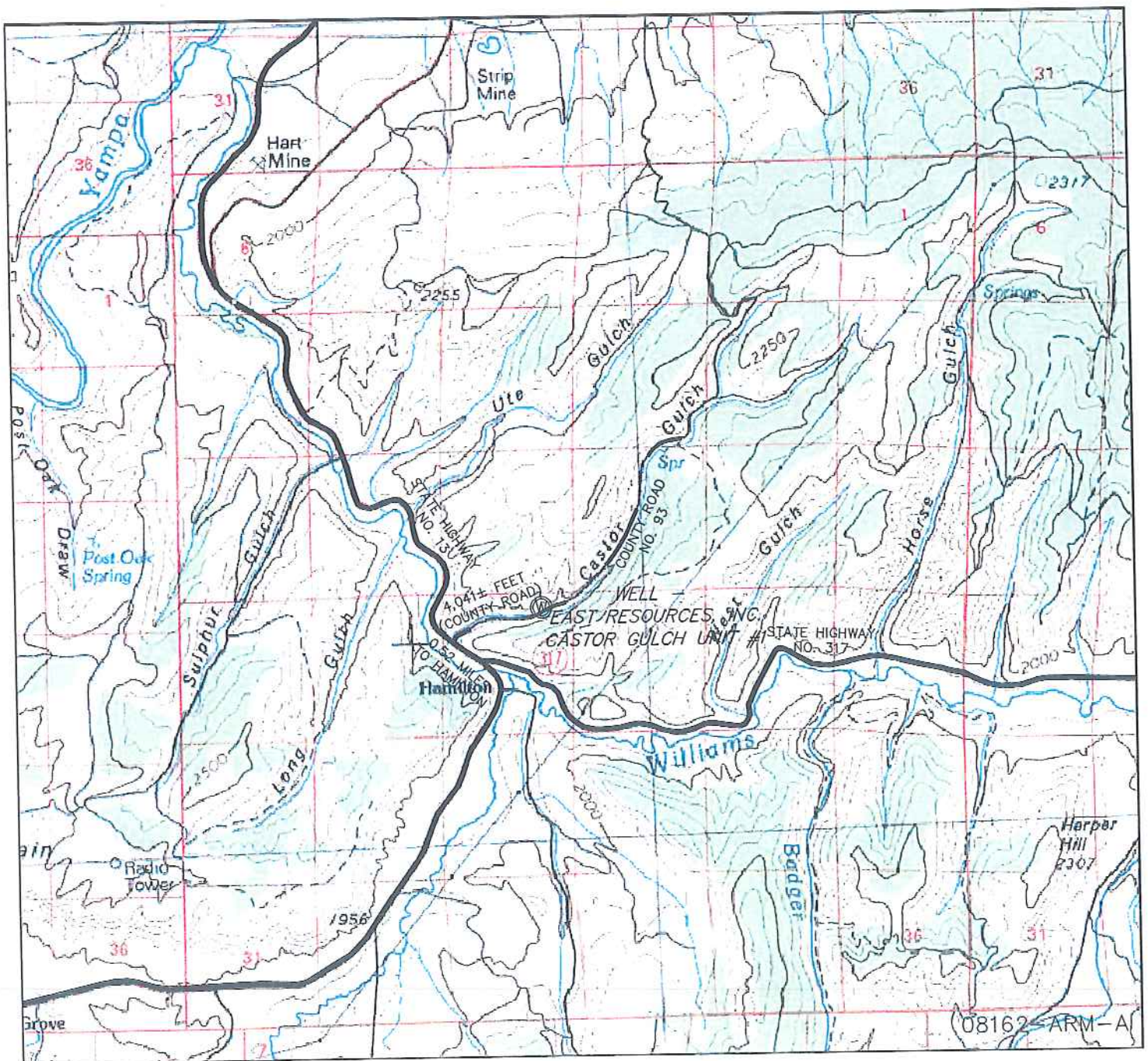
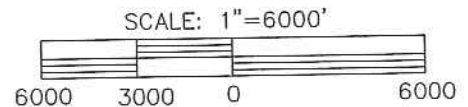
Brian Dolan  
Operations Manager  
East Resources, Inc.



**ACCESS ROAD MAP - A**  
**WELL - EAST RESOURCES, INC.**  
**CASTOR GULCH UNIT #1**  
**LOCATED IN THE NW1/4NE1/4 OF**  
**SECTION 21, T5N, R91W OF THE**  
**6TH P.M., MOFFAT COUNTY, COLORADO**

**LEGEND**

- DENOTES U.S. OR STATE HIGHWAY
- - - DENOTES COUNTY ROAD
- DENOTES EXISTING GRAVEL ROAD
- - - DENOTES EXISTING TWO TRACK ROAD
- - - DENOTES PROPOSED ACCESS ROAD
- Ⓢ DENOTES PROPOSED WELL SITE









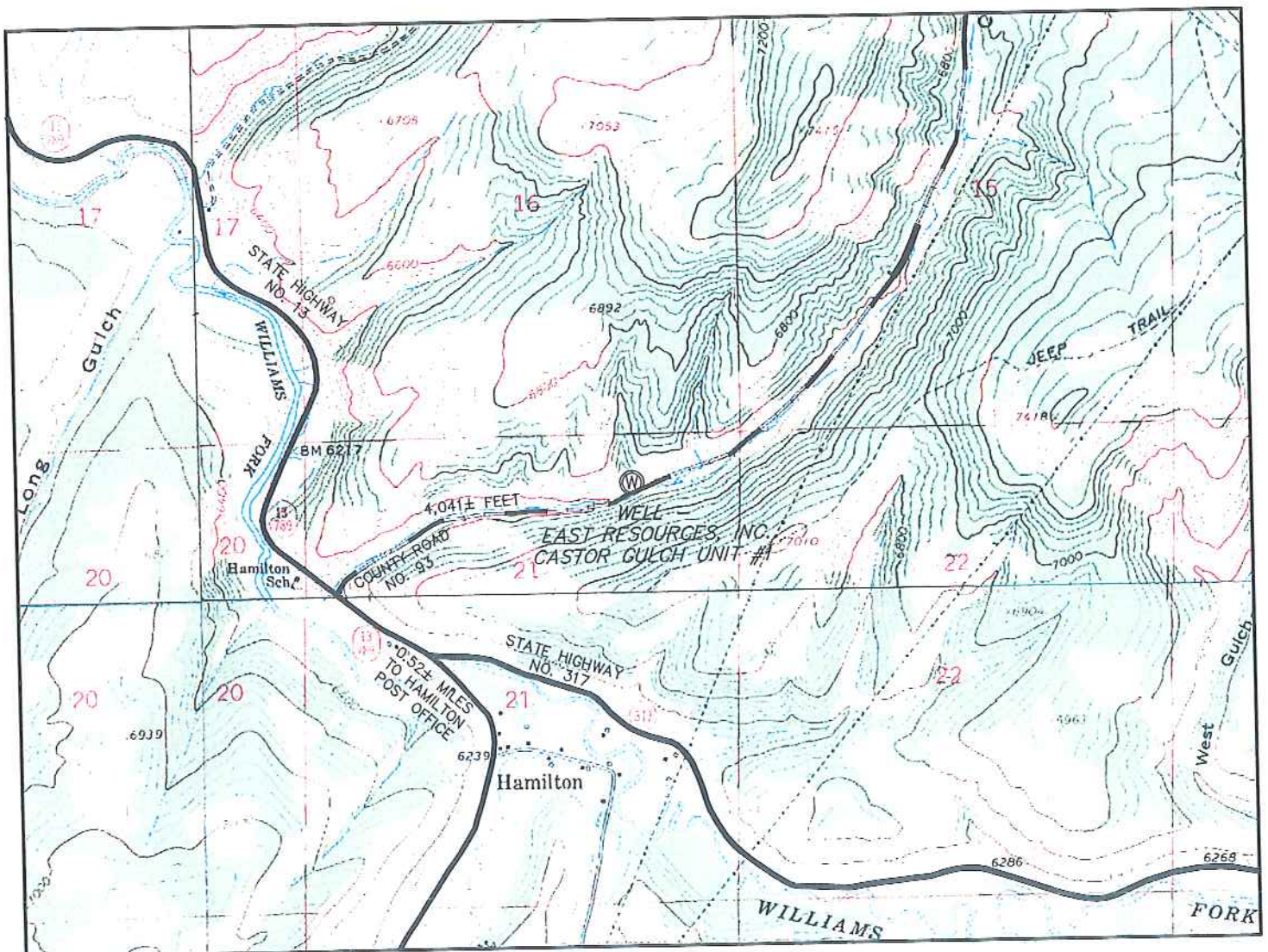
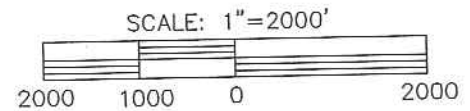
(08162-ARM-A)



*ACCESS ROAD MAP - B  
WELL - EAST RESOURCES, INC.  
CASTOR GULCH UNIT #1  
LOCATED IN THE NW1/4NE1/4 OF  
SECTION 21, T5N, R91W OF THE  
6TH P.M., MOFFAT COUNTY, COLORADO*

**LEGEND**

-  DENOTES U.S. OR STATE HIGHWAY
-  DENOTES COUNTY ROAD
-  DENOTES EXISTING GRAVEL ROAD
-  DENOTES EXISTING TWO TRACK ROAD
-  DENOTES PROPOSED ACCESS ROAD
-  PROPOSED WELL SITE










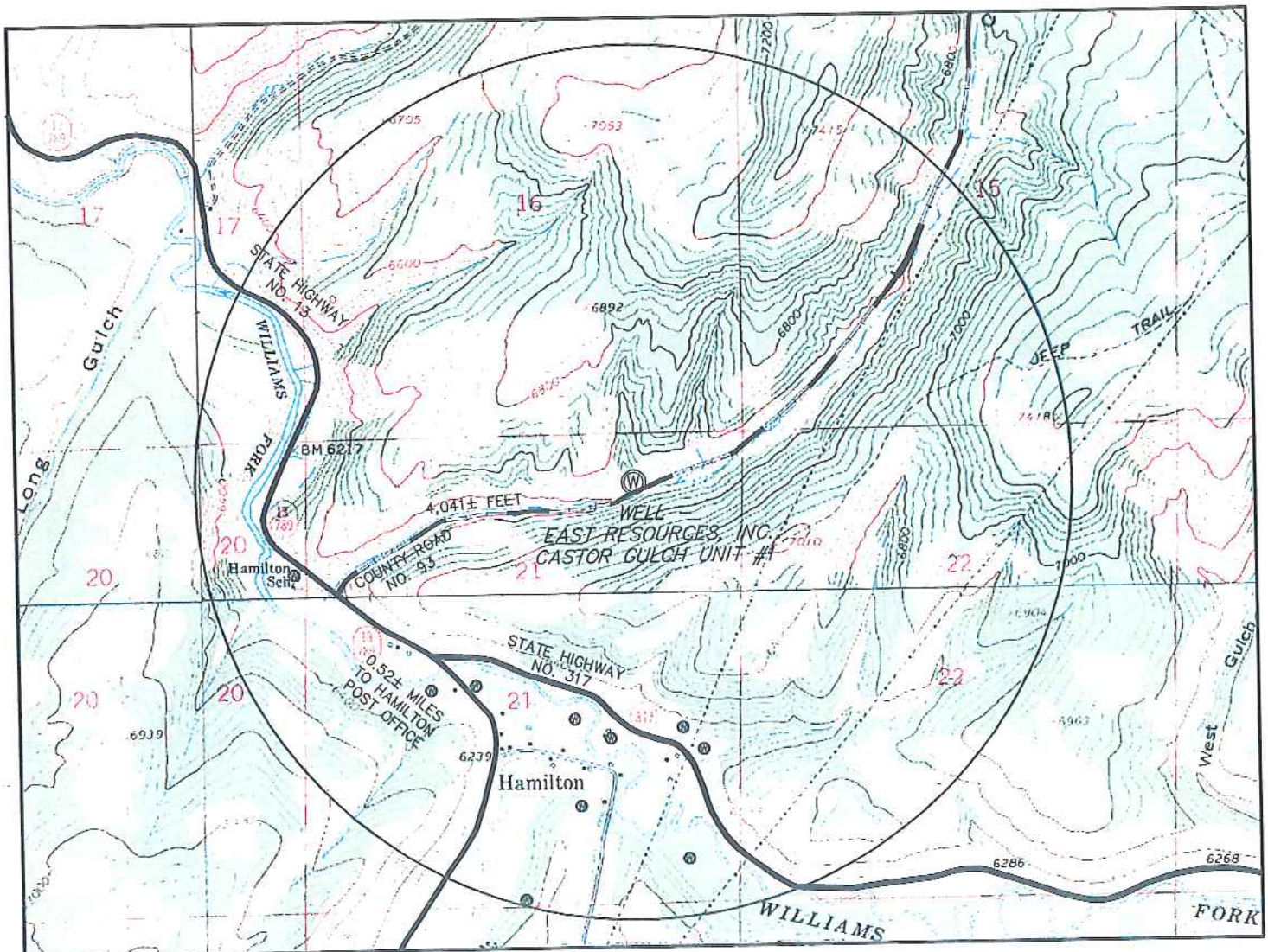
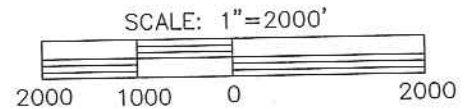


# 1-MILE RADIUS

WELL - EAST RESOURCES, INC.  
CASTOR GULCH UNIT #1  
LOCATED IN THE NW1/4NE1/4 OF  
SECTION 21, T5N, R91W OF THE  
6TH P.M., MOFFAT COUNTY, COLORADO

## LEGEND

-  DENOTES U.S. OR STATE HIGHWAY
-  DENOTES COUNTY ROAD
-  DENOTES EXISTING GRAVEL ROAD
-  DENOTES EXISTING TWO TRACK ROAD
-  DENOTES PROPOSED ACCESS ROAD
-  PROPOSED WELL SITE
-  EXISTING WELL





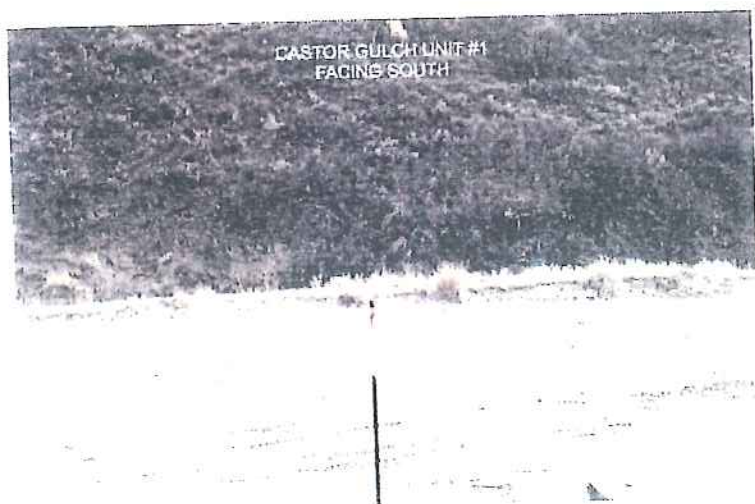
LOCATION PHOTOS  
WELL — EAST RESOURCES, INC.  
CASTOR GULCH UNIT #1



CASTOR GULCH UNIT #1  
FACING NORTH



CASTOR GULCH UNIT #1  
FACING EAST



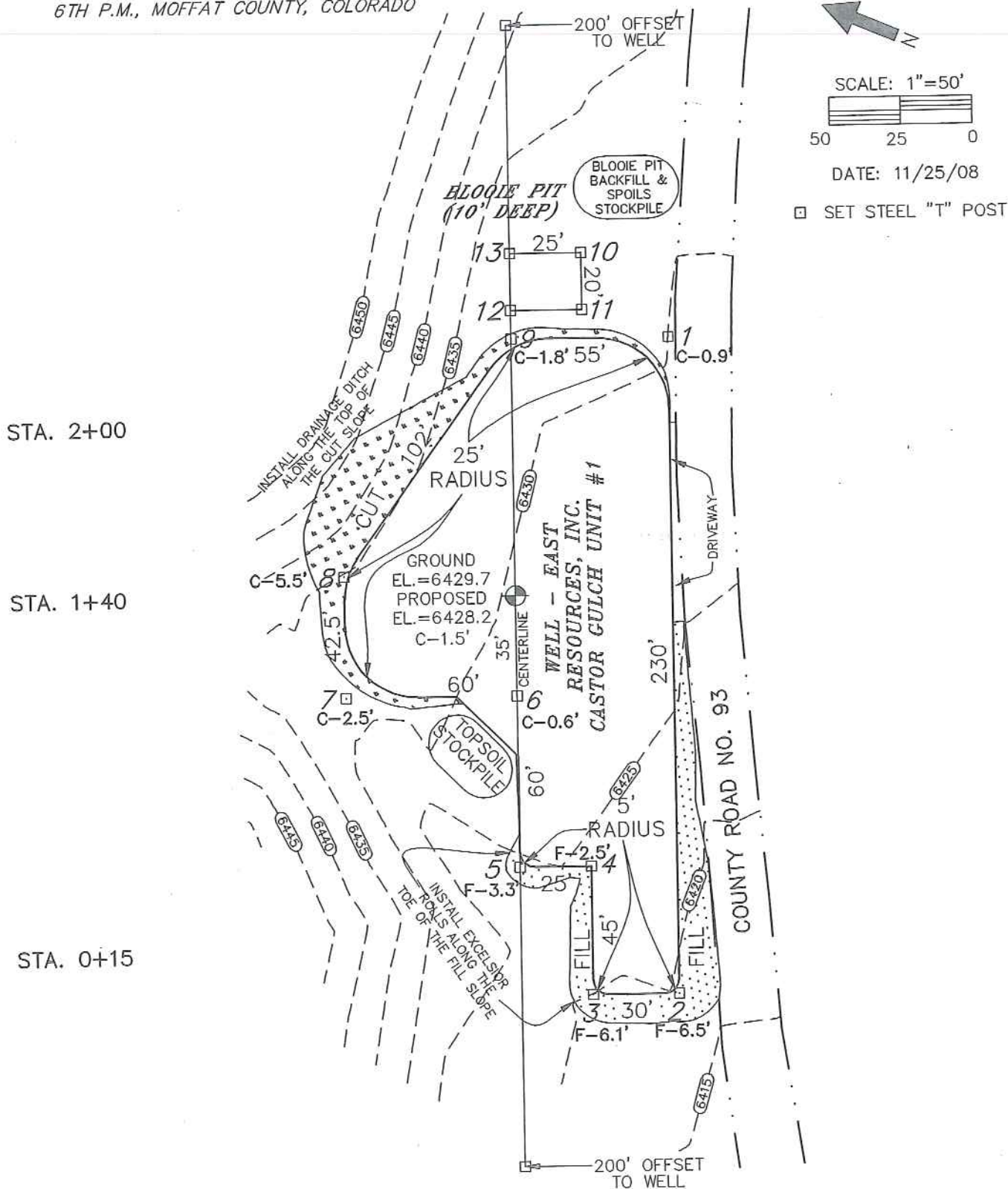
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FACING SOUTH



CASTOR GULCH UNIT #1  
FACING WEST

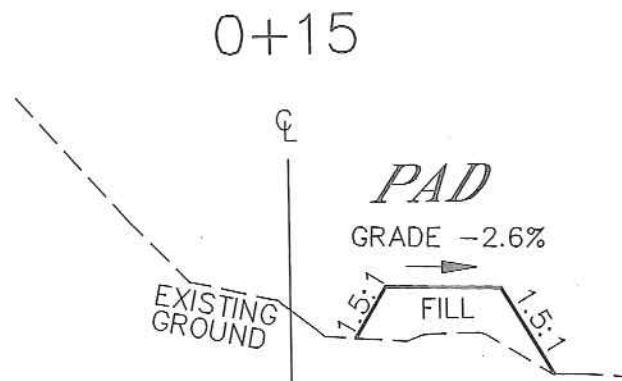
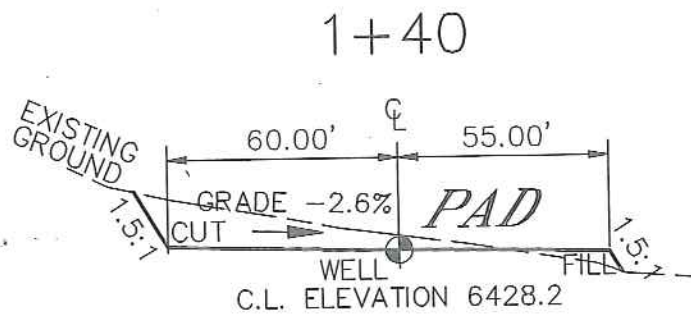
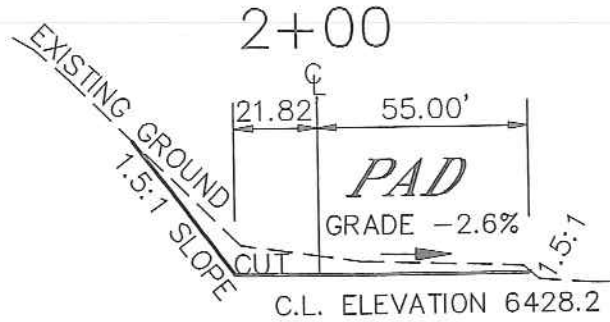


LOCATED IN THE NW1/4NE1/4  
SECTION 21, T5N, R91W OF THE  
6TH P.M., MOFFAT COUNTY, COLORADO





**CROSS SECTIONS**  
WELL - EAST RESOURCES, INC.  
CASTOR GULCH UNIT #1



APPROXIMATE YARDAGE'S  
CUT=939 C.Y.  
FILL=655 C.Y.  
TOP SOIL=388 C.Y.

NOTE:  
HORIZONTAL SCALE 1" = 50'  
VERTICAL SCALE 1" = 20'



**BAKER &  
ASSOCIATES**

Engineers \* Surveyors

1790 W. Victory Way - Craig, Colorado 81625  
Telephone (970) 824-3435  
FAX (970) 824-3102

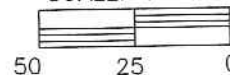
## RIG LAYOUT

WELL - EAST RESOURCES, INC.  
CASTOR GULCH UNIT #1

LOCATED IN THE NW1/4NE1/4  
SECTION 21, T5N, R91W OF THE  
6TH P.M., MOFFAT COUNTY, COLORADO



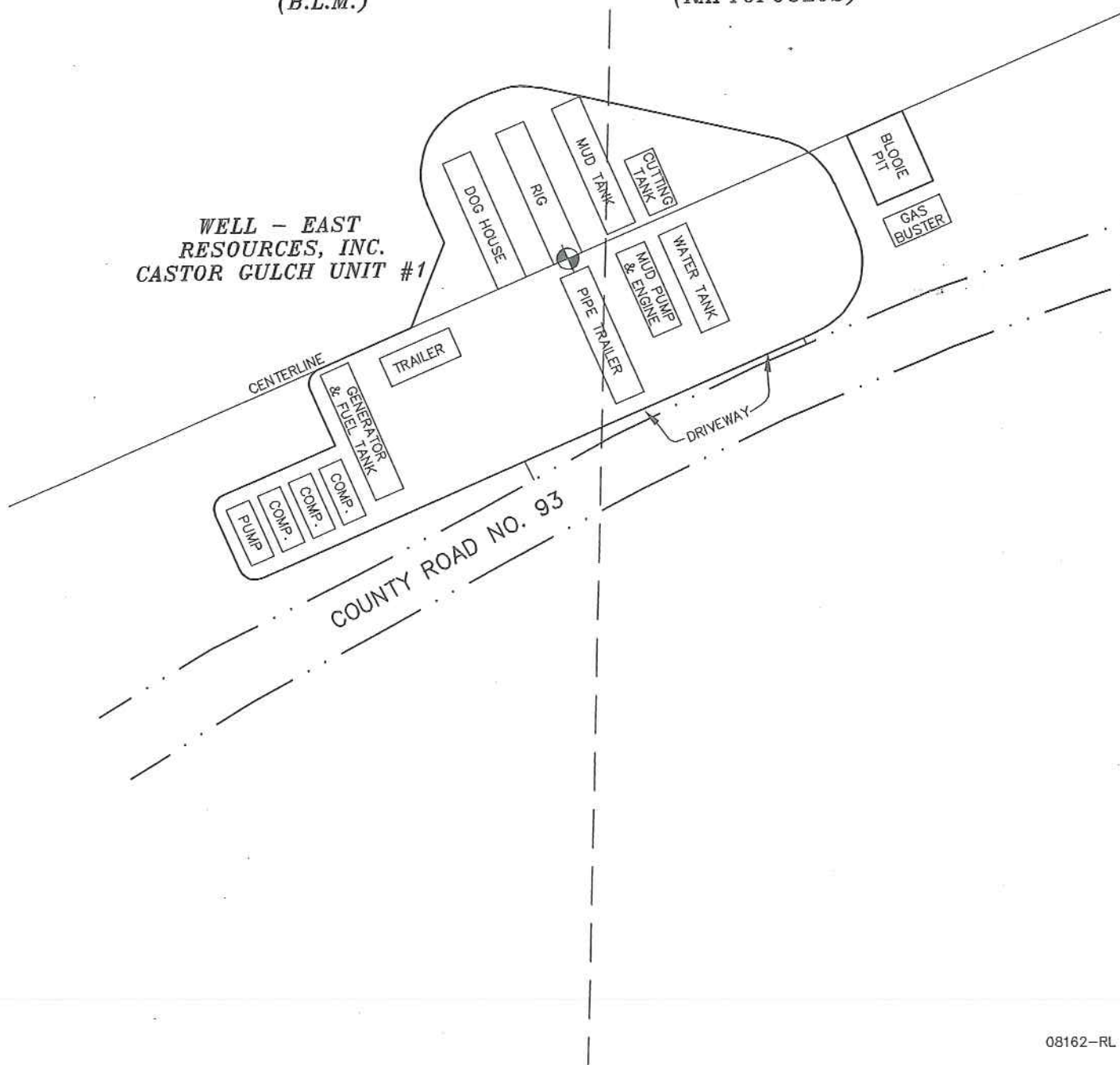
SCALE: 1"=50'



NW1/4NE1/4  
SECTION 21  
(B.L.M.)

NE1/4NE1/4  
SECTION 21  
(RAFTOPOULOS)

WELL - EAST  
RESOURCES, INC.  
CASTOR GULCH UNIT #1





**BAKER &  
ASSOCIATES**

Engineers \* Surveyors

1790 W. Victory Way - Craig, Colorado 81625  
Telephone (970) 824-3435  
FAX (970) 824-3102

## PRODUCTION LAYOUT

WELL - EAST RESOURCES, INC.  
CASTOR GULCH UNIT #1

LOCATED IN THE NW1/4NE1/4  
SECTION 21, T5N, R91W OF THE  
6TH P.M., MOFFAT COUNTY, COLORADO

NW1/4NE1/4  
SECTION 21  
(B.L.M.)

NE1/4NE1/4  
SECTION 21  
(RAFTOPOULOS)

