APD Package Report

Date Printed:

APD ID:	Well Status:
APD Received Date:	Well Name:
Operator:	Well Number:

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 1 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 1 file(s)
  -- Casing Design Assumptions and Worksheet(s): 6 file(s)
  -- Diagram of the equipment for the circulating system in accordance with Onshore Order #2: 1 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 6 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 1 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Well Site Layout Diagram: 1 file(s)
  -- Seed reclamation attachment: 1 file(s)
  -- Other SUPO Attachment: 7 file(s)

- PWD Report
- PWD Attachments
  -- Water quality analysis: 1 file(s)
  -- PWD Map: 1 file(s)

- Bond Report
- Bond Attachments

-- None

Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☐ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.

2. Name of Operator

9. API Well No.

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory

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

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

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 requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date

Title

Approved by *(Signature)*	Name *(Printed/Typed)*	Date

Title	Office

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.

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.

APPROVED WITH CONDITIONS

Approval Date: 03/21/2022

(Continued on page 2)

*(Instructions on page 2)

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Approval Date: 03/21/2022

Additional Operator Remarks

Location of Well

0. SHL: SWSW / 254 FSL / 326 FWL / TWSP: 32N / RANGE: 4W / SECTION: 7 / LAT: 37.0259378 / LONG: -107.3335125 (TVD: 0 feet, MD: 0 feet)
PPP: SWSW / 236 FSL / 1119 FWL / TWSP: 32N / RANGE: 4W / SECTION: 7 / LAT: 37.0258238 / LONG: -107.3307994 (TVD: 2725 feet, MD: 3047 feet)
BHL: SESW / 216 FSL / 1944 FWL / TWSP: 32N / RANGE: 4W / SECTION: 7 / LAT: 37.025705 / LONG: -107.3279752 (TVD: 3110 feet, MD: 3958 feet)
PPP: SESW / 213 FSL / 1330 FWL / TWSP: 32N / RANGE: 4W / SECTION: 7 / LAT: 37.0257934 / LONG: -107.330077 (TVD: 2823 feet, MD: 3280 feet)
BHL: NESE / 1521 FSL / 200 FEL / TWSP: 32N / RANGE: 4W / SECTION: 8 / LAT: 37.0290858 / LONG: -107.2989071 (TVD: 2863 feet, MD: 12511 feet)
PPP: SWSW / 232 FSL / 1289 FWL / TWSP: 32N / RANGE: 4W / SECTION: 7 / LAT: 37.0257993 / LONG: -107.3302165 (TVD: 2804 feet, MD: 3235 feet)
BHL: NENE / 305 FNL / 200 FEL / TWSP: 32N / RANGE: 4W / SECTION: 17 / LAT: 37.0240714 / LONG: -107.2988472 (TVD: 2880 feet, MD: 12434 feet)
PPP: SWSW / 233 FSL / 1248 FWL / TWSP: 32N / RANGE: 4W / SECTION: 7 / LAT: 37.0258052 / LONG: -107.330356 (TVD: 2785 feet, MD: 3190 feet)
BHL: SWNE / 2181 FNL / 200 FEL / TWSP: 32N / RANGE: 4W / SECTION: 17 / LAT: 37.0189184 / LONG: -107.2989005 (TVD: 2900 feet, MD: 12725 feet)
PPP: SWSW / 234 FSL / 1207 FWL / TWSP: 32N / RANGE: 4W / SECTION: 7 / LAT: 37.025811 / LONG: -107.3304956 (TVD: 2766 feet, MD: 3145 feet)
BHL: SESE / 1042 FSL / 200 FEL / TWSP: 32N / RANGE: 4W / SECTION: 17 / LAT: 37.0135026 / LONG: -107.2989475 (TVD: 2920 feet, MD: 13486 feet)

BLM Point of Contact

Name: ASHLEY C HITCHELL
Title: LIE
Phone: (970) 385-1304
Email: ahitchell@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

United States Department of the Interior
Bureau of Land Management

Decision Record
DOI-BLM-CO-S010-2018-0030-EA

September 2018

North Carracas 32-4 and 32-5
Natural Gas Wells, Well Pads, and Pipelines

Location: ***North Carracas 32-5 (Middle Pad 1E)***
NWNE/4, Section 14, Township 32 North, Range 5 West, N.M.P.M.
North Carracas 32-4 (Middle Pad 2F)
NWNW/4, Section 18, Township 32 North, Range 4 West, N.M.P.M.
SWSW/4, Section 7, Township 32 North, Range 4 West, N.M.P.M.
Archuleta County, Colorado

Applicant/Address: *Red Willow Production Company*
P.O. Box 369
Ignacio, Colorado 81137

U.S. Department of the Interior
Bureau of Land Management
Tres Rios Field Office
161 Burnett Drive, Unit 4
Durango, CO 81301
Phone: 970-247-4874

DECISION RECORD

DOI-BLM-CO-S010-2018-0030-EA

North Carracas 32-4 and 32-5 Natural Gas Wells, Well Pads, and Pipelines

I have reviewed the Environmental Assessment (EA), DOI-BLM-CO-SO10-2018-0030, and the Finding of No Significant Impact (FONSI) that was prepared based upon that EA. Following a review of those documents, it is my decision to implement the Proposed Action as described in the EA. My decision applies only to Southern Ute Indian Tribal mineral estate oil and gas development under BLM's fiduciary responsibility to the Tribe and its individual members.

Authorities

Delegated by Congress to the Secretary of the Interior, the trust responsibility for Indian mineral management and development requires the federal government to take such action as serves the best interests of the Indian people. The Southern Ute Indian Tribe (SUIT) mineral estate is very important to the Southern Ute Indian people. Historically, mineral development has been and still is a major source of income for the SUIT. Through the provisions of the Indian Self Determination Act of 1968 and the Indian Mineral Development Act (IMDA) of 1982, the SUIT has taken an active role in the management and development of their mineral resources.

Tribes are viewed under federal law as sovereign nations, and federal agencies coordinate with the Tribes on a "government to government" basis. Given the SUIT's sovereign status, state and local jurisdiction over the SUIT and its lands is limited. However, federal agencies have a trust responsibility to Tribes, which must be considered when federal actions potentially affect Tribal resources. As a result of the trust responsibility, the BLM's decision-making process is significantly different on Indian land from its process on public land. On Indian land, the BLM has the added responsibility of assigning considerable weight to Indian goals and interests, whereas on public land, the BLM's actions are guided by the Federal Land Policy and Management Act (FLPMA) and the public's best interest. Additionally, with regard to Indian lands, land use conflicts and ambiguities in federal regulations and policies are generally resolved in favor of the Indian Tribe's best interests. This is consistent with the federal government's responsibility to protect Indian land and take such action as best serves the interests of Indian Tribes and Tribal members.

My decision is consistent with all federal, state, Tribal and local authorizing actions required to implement the Proposed Action. All pertinent statutory requirements applicable to this Proposed Action were considered. These include BLM oil and gas regulations under the Mineral Leasing Act of 1920, the Federal Oil and Gas Royalty Management Act (FOGRMA) of 1982, and the IMDA of 1982. Encompassing BIA regulations are the Indian Minerals Leasing Act of 1920 and the IMDA of 1982. In applying the National Environmental Policy Act (NEPA) to Indian issues, federal agencies must conduct thorough analyses of the proposed action and alternatives. The decisions made based on the analyses must also take into consideration that federal agencies are required to reasonably and prudently further the best interests of tribes and to consult with tribes in ascertaining tribal interests.

Regulations applicable to SUIT oil and gas activities and enforced by other federal agencies, either directly or through delegation to the states, include: consultation with US Fish and Wildlife Service under the Endangered Species Act regarding threatened, endangered and

candidate species; coordination with the US Environmental Protection Agency regarding air and water quality under the Clean Air Act, the Clean Water Act, and the Safe Drinking Water Act; consultation with the Army Corps of Engineers regarding waters of the U.S.; and consultation with the State of Colorado Historic Preservation Office regarding cultural resources.

Exploration, development and operation of the Tribal oil and gas mineral estate are an integral part of the BLM and BIA trust responsibility. Four principal pieces of legislation give primary direction to the agencies for Indian mineral operations: the Allotted Lands Leasing Act of 1909, the Indian Minerals Leasing Act of 1938, the Mineral Leasing Act of 1920, and the IMDA of 1982.

Compliance and Monitoring

BLM will follow guidance provided in BLM's Permanent Instruction Memorandum 2018-014, which generally states that inspections will be limited to the federal action, which includes drilling and producing the federal well or lateral well bore. Surface environmental inspections would not be the responsibility of the BLM during production or final reclamation on the private surface.

The BLM will routinely inspect operations during all phases of the Proposed Action to verify compliance with applicable laws, regulations, lease terms, the Applications for Permit to Drill and its conditions of approval, Onshore Oil and Gas Orders, Notice to Lessees, and other written orders of the authorized officer.

During drilling, operations will be checked by the BLM to ensure that environmental protective measures conform to what was approved. During the lifetime of the well, production compliance inspections will be conducted by BLM periodically to ensure continued production accountability.

Terms / Conditions / Stipulations

Potential resource impacts from the Proposed Action are mitigated through environmental commitments incorporated into the Proposed Action and the mitigation measures in the EA. The applicable mitigation measures in the EA are included as conditions of approval (COAs) to this decision and are provided in Attachment A.

Plan Conformance and Consistency

The Proposed Action has been reviewed by BLM, BIA, and the SUIT, and it is found to be in conformance with the following land use plan (43 CFR 1610.5):

Plan: SUIT Natural Resource Management Plan (NRMP), Planning Period 2012 to 2032 (SUIT 2012)

Date Approved: August, 2012

The Proposed Action would fulfill the objective and intent of the SUIT NRMP, Planning Period 2012 to 2032, that mineral resources on the Southern Ute Indian Reservation (SUIR) be developed in an environmentally responsible manner. With design features incorporated into the Proposed Action and mitigation measures derived from the EA to reduce environmental impacts, the Proposed Action is in conformance with the NRMP.

Alternatives Considered

The EA considered two alternatives: the Proposed Action and the No Action Alternative.

The Proposed Action included drilling 14 natural gas wells, building two well pads and access roads, and constructing gas and water pipelines. The Proposed Action would result in approximately 11.18 acres of surface disturbance (10.83 acres on private land and 0.35 acres on tribal trust land).

The No Action Alternative was considered in the EA, which consisted of denying the APDs for the natural gas wells. Under the No Action Alternative, the proposed wells that would penetrate Indian minerals would not be drilled. The No Action Alternative would result in the continuation of the current land and resource uses in the Proposed Action area.

Rationale for Decision

The Proposed Action, with the COAs in Attachment A, has been selected because it meets the underlying purpose and need for the applicant to exercise their oil and gas lease rights, which allows for the exploration and development of the oil and gas resources. The BLM is approving private exploration and production from Tribal oil and gas leases, because the activity is an integral part of the SUIR oil and gas leasing and development program under authority of the Indian Mineral Leasing Act of 1938 (25 USC § 396; 25 CFR Parts 211 and 212), and the Indian Mineral Development Act of 1982.

The Proposed Action follows the guiding goal of the *Southern Ute Indian Tribe Natural Resource Management Plan, Planning Period 2012 to 2023* (NRMP 2012-2023) to identify and implement processes and procedures to provide integrated management of renewable and non-renewable resources in an environmentally, culturally, and socially responsible manner to benefit current and future generations of the Southern Ute Tribal Membership and support the Permanent Fund Mission statement and guiding principles. In addition, the Proposed Action helps meet the SUIT Department of Energy's mission of ensuring that the members of the SUIT receive maximum benefit from the energy and mineral resources located on their reservation while at the same time minimizing the impact of extraction of the resources on the natural and cultural environment.

The No Action Alternative would not fulfill the purpose and need of allowing for the responsible development of leased fluid minerals on the Southern Ute Indian Reservation. No other alternatives were brought forward for analysis.

Protest/Appeal Language

This decision is subject to State Director review pursuant to 43 CFR 3165.3 (b). Any party who is adversely affected by the decision of the State Director after a State Director review pursuant to 43 CFR 3165.3(b) may appeal that decision to the Interior Board of Land Appeals pursuant to the regulations set out in 43 CFR Part 4.

9-5-18

Connie Clementson
Field Office Manager
Tres Rios Field Office

Date

Approval Date: 03/21/2022

The following mitigation measures were derived from the EA and will be attached to the Applications for Permit to Drill as Conditions of Approval and only apply to the Federal action.

Air Quality

1. An Oil and Gas Facility Air Quality Monitoring Annual Report must be submitted to the SUIT Air Quality Program by April 1st of each year. The reporting form can be found on the SUIT DOE's website at the following link: http://www.suitdoe.com/Documents/Appendix_D_Air%20Quality%20Report%20Format.pdf

Water Resources – Ground Water

2. All non-freshwater fluid storage containers/tanks (i.e., produced water storage tanks, chemical tanks, fuel tanks, etc.) must be located within an impermeable, lined (or equivalent) secondary containment structure capable of containing at least 110% of the storage capacity of the largest tank/container during all drilling, completion, and testing operations. If a liner is used, it can be no less than 24-mil thick so the integrity of the liner will be maintained while using heavy equipment.

Cultural Resources

In order for the proposed action to be in compliance with the provisions in Section 106 of the National Historic Preservation Act, the operator must adhere to the following conditions where were derived from the BIA's cultural clearance letters to the operator:

3. Site 5AA1809 must be avoided and protected by placing a temporary fence between the site and the construction area for the Middle Pad 2F as detailed in the cultural survey report's Table 6.2 and illustrated in the cultural report's Figure 5.1 (see cultural survey report SEAS Report 17-098b). Also, a qualified archeologist must monitor all earth-disturbing activities within 50 feet of site boundaries.
4. All land-altering activities shall be confined to the area surveyed for cultural resources, and the project sponsor shall control the action of its agents at the job site to ensure that no archaeological sites are disturbed or damaged. Disturbance or damage to sites on tribal land is a violation of the Archaeological Resources Protection Act (16 U.S.C. § 470ee) which prohibits the excavation, removal, damage, alteration, or defacement, or attempt to excavate, remove, damage, alter, or deface any archaeological resources [cultural resources] located on Indian lands. Both criminal and civil penalties may be assessed (16 U.S.C. §§ 470ee and 470ff) for violations.
5. If subterranean cultural resources or human remains are encountered, all land-altering activities shall cease within 50 feet of the discovery and the Southern Ute Tribe and the BIA Regional Archeologist shall be notified immediately for consultation on the treatment of the discovery.

United States Department of the Interior
Bureau of Land Management

Finding of No Significant Impact
DOI-BLM-CO-S010-2018-0030-EA

September 2018

North Carracas 32-4 and 32-5
Natural Gas Wells, Well Pads, and Pipelines

Location: ***North Carracas 32-5 (Middle Pad 1E)***
NWNE/4, Section 14, Township 32 North, Range 5 West, N.M.P.M.
North Carracas 32-4 (Middle Pad 2F)
NWNW/4, Section 18, Township 32 North, Range 4 West, N.M.P.M.
SWSW/4, Section 7, Township 32 North, Range 4 West, N.M.P.M.
Archuleta County, Colorado

Applicant/Address: *Red Willow Production Company*
P.O. Box 369
Ignacio, Colorado 81137

U.S. Department of the Interior
Bureau of Land Management
Tres Rios Field Office
161 Burnett Drive, Unit 4
Durango, CO 81301
Phone: 970-247-4874

North Carracas 32-4 and 32-5 Natural Gas Wells, Well Pads, and Pipelines

INTRODUCTION:

The Bureau of Land Management (BLM) has conducted an environmental assessment (EA), DOI-BLM-CO-SO10-2018-0030, to address the Applications for Permit to Drill (APD) from Red Willow Production Company (operator) for two natural gas wells as well as 12 future natural gas wells. The proposed 14 wells would produce Southern Ute Indian Tribal Trust minerals associated with a Bureau of Indian Affairs (BIA) issued oil and gas lease identified as BIA Lease No. 750-08-2008. The anticipated lifespan for each natural gas well is estimated to be 25 to 30 years. The underlying need for the proposal would be met while accomplishing the following objective:

- To respond to the applicant's proposal to exercise valid existing rights pursuant to Southern Ute Indian Tribe (SUIT) oil and gas lease number 750-08-2008 issued by the BIA, consistent with the lease's terms and conditions, through drilling gas wells, and if successful, producing commercial quantities of oil and/or gas from the leased acreage.

The operator is planning to drill up to 14 natural gas wells on two separate well pads known as the North Carracas Middle 1E and 2F well pads. The operator plans to drill up to eight natural gas wells on the Middle 1E well pad: North Carracas 32-5 14E-1, 14E-2, 14E-3, 14E-4, 14E-5, 14E-6, 14E-7, and 14E-8. Up to six natural gas wells are planned on the Middle 2F well pad: North Carracas 32-4 7F-1, 7F-2, 7F-3, 7F-4, 7F-5, and 7F-6. The operator has submitted one APD for the North Carracas 32-5 14E-1, located on Middle Pad 1E, and one APD for the North Carracas 32-4 7F-1, located on Middle Pad 2F, to the BLM Tres Rios Field Office. The locations of the two proposed well pads were included in the Southern Ute Indian Tribe's (Tribe's) North Carracas Natural Gas Plan of Development and were analyzed at a broad, programmatic level in the BLM's 2013 Final Environmental Assessment for the North Carracas Natural Gas Plan of Development.

The proposed Middle 1E well pad is located in the northeast quarter of Section 14, Township 32 North, Range 5 West, New Mexico Principle Meridian (NMPM), and the proposed Middle 2F well pad is located in the southwest quarter of Section 7 and the northwest quarter of Section 18, Township 32 North, Range 4 West, NMPM. Both well sites are located on private surface/non-Federal minerals approximately between 3.5 and 5 miles east of Arboles, Colorado in Archuleta County. The well sites would be located within the Southern Ute Indian Reservation (SUIR).

To access the well sites, the operator would cross tribal trust surface with the access road originating from County Road 500. Gas pipelines would also be constructed along the access road by a pipeline company, Red Cedar Gathering Company. The operator proposes to install a freshwater pull and storage station at the operator's East Pilot well pad, which would store water pulled from the nearby San Juan River. The East Pilot well pad is located in Section 21, Township 32 North, Range 4 West, NMPM. The East Pilot well pad is located on private surface/non-Federal minerals, but the pipeline crosses tribal trust surface.

FINDING OF NO SIGNIFICANT IMPACT:

Based upon a review of the EA and its supporting documents, I have determined that the Proposed Action is not a major federal action, and it will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. None of the environmental effects from the Proposed Action meet the definition of significance in context or intensity as defined in 40 CFR 1508.27, nor do any of the effects exceed those described in the 2013 Final Environmental Assessment for the North Carracas Natural Gas Plan of Development (2013 FEA). Therefore, an environmental impact statement is not needed.

This finding is based on the context and intensity of the Proposed Action as described in the EA:

Context: The project is a site-specific action directly involving approximately 11.18 acres of land (10.83 acres of private land and 0.35 acres of tribal trust land) that by itself does not have international, national, regional, or state-wide importance. The project is located within an area where gas extraction operations have occurred in the past.

Intensity: The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27 and incorporated into the resources and issues considered (includes supplemental authorities, Appendix 1, H-1790-1) and supplemental Instruction Memorandum, Acts, regulations, and Executive Orders.

The following have been considered in evaluating the intensity for this proposal:

1. **Impacts may be both beneficial and adverse.**

   The environmental impacts of the Proposed Action are fully disclosed in the EA. The proposed project would result in short and long term impacts to air quality, culturally important plants, endangered fish species, migratory birds, ambient noise levels, soils, vegetation, visual resources, surface water resources, and groundwater resources. However, design features built into the Proposed Action and mitigation measures considered in Chapter 3 of the EA would help minimize these impacts. None of the environmental effects discussed in detail in the EA and associated appendices are considered significant, nor do the effects exceed those described in the 2013 FEA.

2. **The degree to which the selected alternative will affect public health or safety.**

   The Proposed Action is not expected to significantly affect public health and safety. As described in the EA, the Proposed Action could impact groundwater resources and air quality. However, design features built into the Proposed Action and mitigation measures considered in Chapter 3 of the EA would help minimize these impacts.

3. **Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wilderness, wild and scenic rivers, or ecologically critical areas.**

   There are no park lands, prime farmlands, wetlands, wilderness, wild and scenic rivers, or ecologically critical areas within the project area for the Proposed Action.

   The areas that could be affected by the Proposed Action were inventoried by permitted archaeologists, and two historical sites were discovered within the vicinity of the Middle 2F well pad. One site was determined as not eligible for the National Register of Historic

Places, because the site lacked integrity and potential for subsurface cultural deposits. The second site was determined eligible for the National Register of Historic Places under register criteria "d." This eligible site must be avoided, fenced off, and monitored during construction. Pursuant to 36 CFR 800.4(d)(1), the BIA determined that the Proposed Action would have no effect on any historic properties listed or eligible to the National Register of Historic Places provided that avoidance, fencing, and monitoring mitigation measures are followed. The SUIT concurred with the archaeological report recommendations and mitigation measures for the eligible site, and it presented no comments regarding Southern Ute traditional religious or cultural sites that might be impacted by the Proposed Action. The Colorado State Historic Preservation Officer concurred with BIA's determination. The Proposed Action is in compliance with the provisions of Section 106 of the National Historic Preservation Act subject to mitigation measures.

4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.**

   The effects on the quality of the human environment are not likely to be highly controversial. Oil and natural gas well drilling have been occurring historically in the general area, and the effects are generally well understood. In addition, design features built into the Proposed Action and mitigation measures considered in Chapter 3 of the EA would help minimize these impacts.

5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.**

   The Proposed Action is not unique or unusual. There is a long history of oil and gas development in the San Juan Basin. Effects associated with drilling are well known and documented. There are no predicted effects on the human environment that are considered to be highly uncertain or involve unique or unknown risks.

6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.**

   The Proposed Action neither establishes a precedent for future BLM actions with significant effects, nor represents a decision in principle about future consideration. The Proposed Action is within the scope of the 2013 FEA.

7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts – which include connected actions regardless of land ownership.**

   No individually or cumulatively significant impacts were identified for the Proposed Action. A complete disclosure of the effects of the project is contained in Chapter 3 of the EA. The adverse and beneficial impacts identified for the Proposed Action, in conjunction with any impacts of other past, present, or reasonably foreseeable future actions will have negligible cumulative impacts on the human environment.

8. **The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of**

Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The areas that could be affected by the Proposed Action were inventoried by permitted archaeologists, and two historical sites were discovered within the vicinity of the Middle 2F well pad. One site was determined as not eligible for the National Register of Historic Places, because the site lacked integrity and potential for subsurface cultural deposits. The second site was determined eligible for the National Register of Historic Places under register criteria "d." This eligible site must be avoided, fenced off, and monitored during construction. Pursuant to 36 CFR 800.4(d)(1), the BIA determined that the Proposed Action would have no effect on any historic properties listed or eligible to the National Register of Historic Places provided that avoidance, fencing, and monitoring mitigation measures are followed. The SUIT concurred with the archaeological report recommendations and mitigation measures for the eligible site, and it presented no comments regarding Southern Ute traditional religious or cultural sites that might be impacted by the Proposed Action. The Colorado State Historic Preservation Officer concurred with BIA's determination. The Proposed Action is in compliance with the provisions of Section 106 of the National Historic Preservation Act subject to mitigation measures.

After considering environmental factors and other information, the project is not expected to adversely affect districts, sites, highways, structures, or other objects listed on or eligible for listing on the National Register of Historic Places, nor will it cause loss or destruction of significant scientific, cultural, or historical resources.

9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973, or the degree to which the action may adversely affect: 1) a proposed to be listed endangered or threatened species or its habitat, or 2) a species on BLM's sensitive species list.**

Of the nine federally listed species with potential to be impacted from actions on the SUIR, the endangered Colorado pikeminnow (*Ptychocheilus lucius*) and endangered razorback (*Xyrauchen texanus*) sucker have the potential to be impacted by the Proposed Action. Given that the Proposed Action would result in the depletion of 31.5 acre-feet of water over a 5 to 10 year period from within the San Juan River basin, this project falls under BLM Colorado's Programmatic Biological Assessment (PBA) for water depleting activities associated with BLM's fluid minerals program in the San Juan River basin in Colorado. In the PBA, the BLM estimated that the average annual depletion associated with fluid mineral development would be approximately 40 acre-feet.

In response to BLM's PBA, the U. S. Fish and Wildlife Service (FWS) issued a Programmatic Biological Opinion (PBO; ES/GJ-6-CO-08-F-02) on November 21, 2008, which concurred with BLM's determination that water depletions are "Likely to Adversely Affect" the Colorado pikeminnow, and the razorback sucker. Likewise, the project is also likely to adversely affect designated critical habitats for these endangered fish along San Juan river. However, the FWS also determined that BLM water depletions from the San Juan River Basin are not likely to jeopardize the continued existence of the Colorado pikeminnow or razorback sucker, and that BLM water depletions are not likely

to destroy or adversely modify designated critical habitat. As required in the PBO, the amount of depletions from this project as well as all other depletions in the San Juan River Basin will be recorded by BLM and reported to USFWS at the end of the fiscal year.

10. **Whether the action threatens a violation of a federal, state, local, or tribal law, regulation or policy imposed for the protection of the environment, where non-federal requirements are consistent with federal requirements.**

    The Proposed Action does not violate any known federal, state, local or tribal law or requirement imposed for the protection of the environment. Federal and tribal interests were given the opportunity to participate in the process for preparing the environmental analysis. In addition, the project is consistent with applicable land management plans, policies, and programs.

Connie Clementson
Field Office Manager
Tres Rios Field Office

9-5-18
Date

Approval Date: 03/21/2022

EA PROJECT CHECKLIST

Tres Rios Field Office
Canyons of the Ancients National Monument

The following checklist was created to guide the project lead through the NEPA process for an Environmental Assessment (EA) and aid the project lead in presenting the completion of appropriate NEPA tasks for efficient decision-making. For further details regarding the NEPA process and individual tasks, please refer to the TRFO-CANM document, SUMMARY of NEPA PROCESS. The "Completed" column of this checklist must be completely filled out and presented to the Authorized Officer on top of the NEPA project for the decision-making process.

Project Title: North Carracas 32-4 and 32-5 Natural Gas Wells, Well Pads, and Pipelines

NEPA Number: DOI-BLM-CO-SO10-2018 - 0030 -EA

File/Serial Number: 750-08-2008

Project: Leader: Tanner Nygren

CHECKLIST

EA Project Task			Completed (Date, "X", or NA)
Project eFolder (Creation) Create project efolder in appropriate fiscal year efolder in S:\nepa			NA
Specialist Request Form Proposed Action; Purpose and Need; Map; and Create accessible GIS shapefiles			NA
NEPA Meeting Presentation Present project to Interdisciplinary Team; Provide Specialist Request Forms and ID Team Checklist			Date: NA
ID Team Checklist Form Specialists assigned to ID team during NEPA meeting; Fill out rationale			Date AO Signed: NA
ePlanning (Initial) Create project in ePlanning (D2 and BackOffice); Acquire NEPA number			7/12/18
NEPA Log (Entry) Enter project into the NEPA Log; Keep NEPA Log up-to-date			X
ID Team Meeting(s) Were internal scoping meetings held?			Date: NA
Cooperating Agencies Notification Were there any cooperating agencies involved in NEPA project?			Date: SUIT/BIA
Public Scoping	Published on ePlanning?	☒	
	Interested Party Mailing List Notified?	☐	
	Press Release?	☐	
	Public Meeting?	☐	
	Scoping Period: None		
Tribal Consultation	Letter(s) Mailed?	☐	BIA completed on 8/7/18
	Phone Call(s) or Meeting(s) Held?	☐	
	Response(s) Received?	☐	

Approval Date: 03/21/2022

EA PROJECT CHECKLIST

Tres Rios Field Office
Canyons of the Ancients National Monument

SHPO Consultation Informational Concurrence	Date Initiated: Date Concluded:		BIA completed on 8/7/18
USFWS Consultation Formal ☐ Informal ☐	Date Initiated: Date of Concurrence:		NA
Resource Issues for EA Must be signed by Authorized Officer (AO)	____ / _____NA_____ Initials / Printed Name of AO		
NEPA Document Document has been reviewed by AFM	BLM Drafted 3rd Party Consultant Drafted	☐ ☒	
Public Comment on EA	Published on ePlanning? Interested Party Mailing List notified? Press Release? Public Meeting?	☐ ☐ ☐ ☐	NA
	Public Comment Period: None		
FONSI & DR Both documents have been prepared and reviewed by AFM			

Authorized Officer Decision

Decision:	CX	**Decision Date:**	9-5-18

Post-Decision

ePlanning (Update)	Upload final documents to Back Office?	☐
	Public notification of Appeal Period? Change Status?	☐
	Update Status to "Completed" after Appeal Period?	☐
NEPA Log & Project eFolder Update NEPA Log to reflect milestones and status of project; Ensure all documents are in efolder in S:\nepa		
NEPA Notebook Provide the Administrative Assistant with decision documents		

Approval Date: 03/21/2022

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Tres Rios Field Office
161 Burnett Drive - Unit 4
Durango, CO 81301-3647

In Reply Refer To:
COA APD ID: 10400082523

RED WILLOW PRODUCTION COMPANY

NORTH CARRACAS 32-4 7F-5

GENERAL REQUIREMENTS FOR OIL AND GAS OPERATIONS ON FEDERAL AND INDIAN LEASES

I. GENERAL

A. Prior approval by the BLM-Authorized Office (Drilling and Production Section) is required for variance from the approved drilling program and before commencing plugging operations, plug back work casing repair work, corrective cementing operations, or suspending drilling operations indefinitely. Emergency approval may be obtained orally, but such approval is contingent upon filing of a notice of intent (on a Sundry Notice, Form 3160-5) within three business days (original and three copies of Federal leases and an original and four copies on Indian leases). **Any changes to the approved plan or any questions regarding drilling operations should be directed to BLM during regular business hours via Sundry Notice. Emergency program changes after hours should be directed to Joe Killins at (970) 759-8988.**

B. Notify this office at least 24 hours in advance prior to the following:

a. Well Spud
b. Running and cementing casing
    i. Submit a cement evaluation log if cement is not circulated to surface.
c. BOP test
    i. In the event a BLM inspector is not present during the initial BOP test, please provide chart record.

C. Each well shall have a well sign in legible condition from spud date to final abandonment. The sign should show the operator's name, lease serial number, or unit name, well number, location of the well, and whether lease is Tribal or Allotted, (See 43 CFR 3162.6(b)).

D. A complete copy of the approved Application for Permit to Drill, along with any conditions of approval, shall be available to authorized personnel at the drill site whenever active drilling operations are under way. All operations will be governed by Onshore Order #2 unless specifically modified prior to operations.

E. From the time drilling operations are initiated and until drilling operations are completed, a member of the drilling crew or the tool pusher shall maintain rig surveillance at all time, unless the well is secured with blowout preventers or cement plugs.

F. On directional/horizontal wells submit as drilled directional survey from surface to total depth.

II. Site Specific

III. PHONE NUMBERS

Rodney Brasher	**Lead Technician**	**work: 970-385-1347**	**cell: 970-799-1244**
Alan White	**Technician**	**work: 970-385-1201**	**cell: 970-317-0329**
Nathan Willis	**Technician**	**work: 970-385-1349**	**cell: 970-749-1734**
Bryan Clappe	**Technician**	**work: 970-385-1364**	**cell: 970-903-9077**
Joe Killins	**Engineer**	**work: 970-385-1363**	**cell: 970-759-8988**

Approval Date: 03/21/2022

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

03/25/2022

Operator Certification

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.

NAME: Shelly Cowden **Signed on:** 01/03/2022

Title: Surface Specialist

Street Address: 14933 Hwy 172

City: Ignacio **State:** CO **Zip:** 81137

Phone: (970)563-5194

Email address: scowden@rwpc.us

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5

SURFACE LOCATION: 254' FSL & 326' FWL
SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO. GROUND LEVEL ELEVATION: 6160'

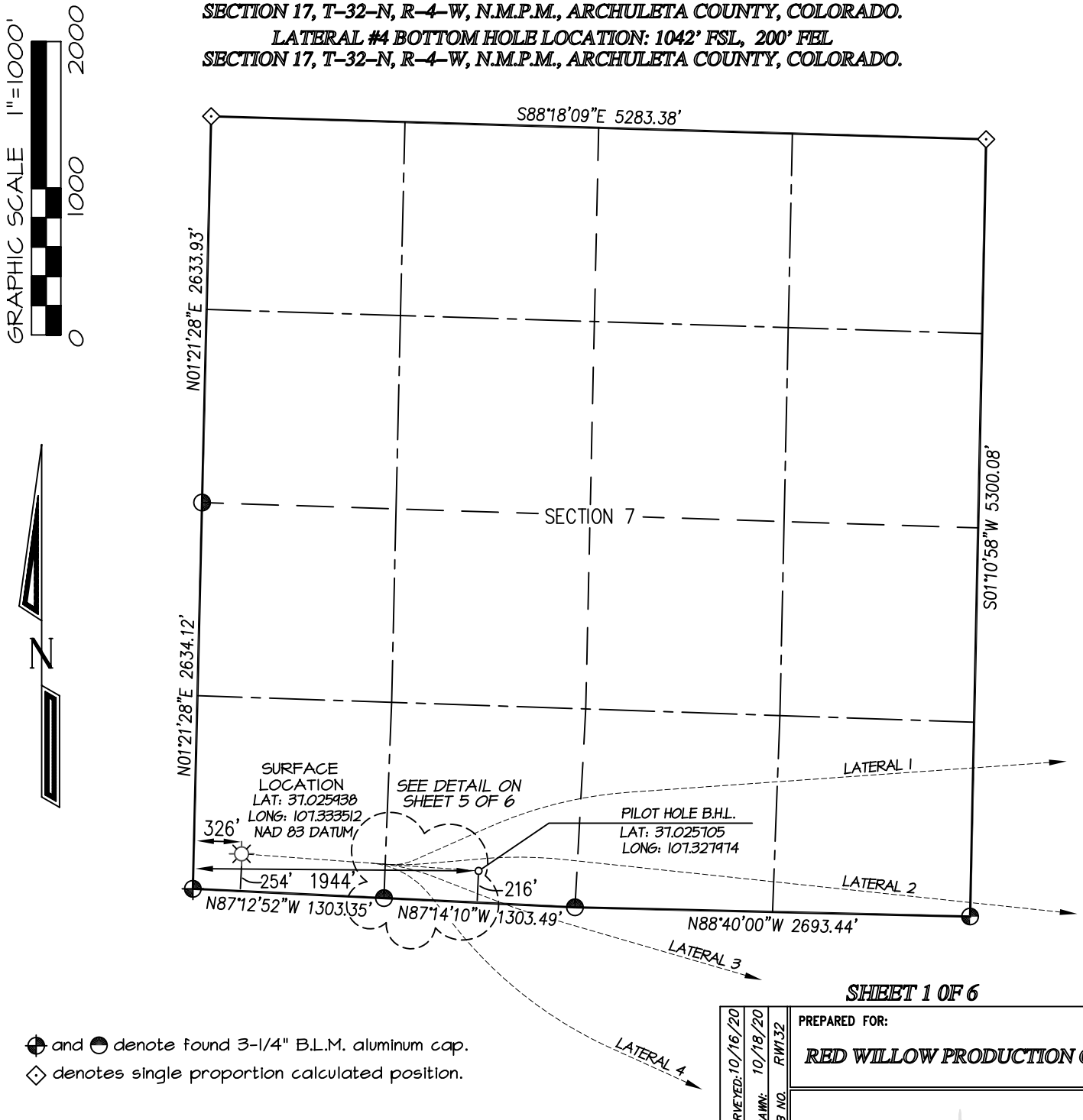
PILOT HOLE BOTTOM HOLE LOCATION: 216' FSL, 1944' FWL
SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #1 BOTTOM HOLE LOCATION: 1521' FSL, 200' FEL
SECTION 8, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #2 BOTTOM HOLE LOCATION: 305' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #3 BOTTOM HOLE LOCATION: 2181' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #4 BOTTOM HOLE LOCATION: 1042' FSL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.



SHEET 1 OF 6

⊕ and ◓ denote found 3-1/4" B.L.M. aluminum cap.
◇ denotes single proportion calculated position.

NOTE:
SEE SHEET 6 OF 6 FOR COORDINATE TABLE, SURVEY NOTES, AND SURVEYOR'S CERTIFICATE.

SURVEYED:	10/16/20
DRAWN:	10/18/20
JOB NO.	RW132
DRAWN BY:	K.R.
CHECKED BY:	K.R.
FILE NO.	RW132WP4

PREPARED FOR:
RED WILLOW PRODUCTION CO.

NORTHSTAR
SURVEYING & MAPPING, INC.
768 County Rd. 308
DURANGO, CO. 81303
(970) 385-0851

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5

SURFACE LOCATION: 254' FSL & 326' FWL
SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO. GROUND LEVEL ELEVATION: 6160'

PILOT HOLE BOTTOM HOLE LOCATION: 216' FSL, 1944' FWL
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LATERAL #1 BOTTOM HOLE LOCATION: 1521' FSL, 200' FEL
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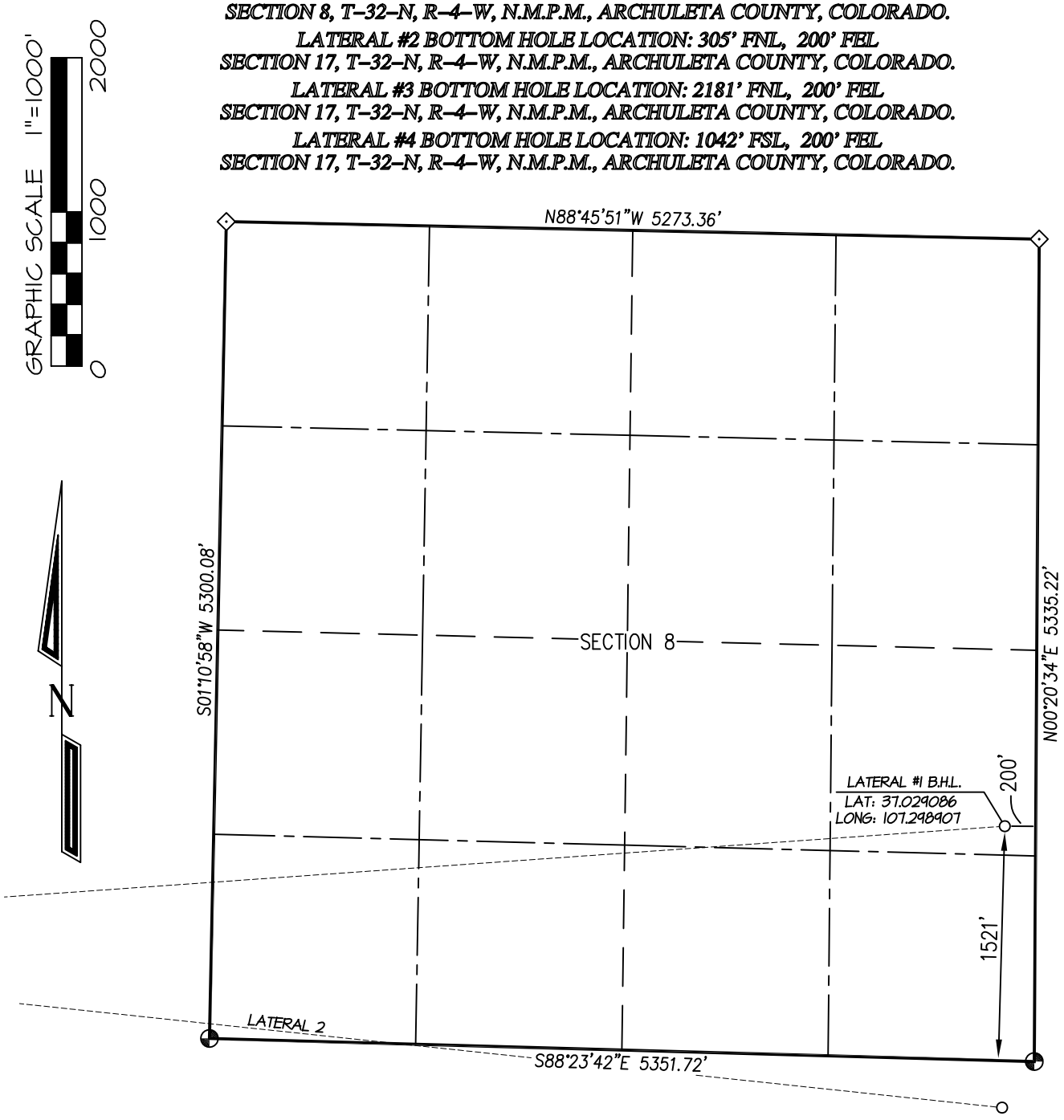
LATERAL #2 BOTTOM HOLE LOCATION: 305' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #3 BOTTOM HOLE LOCATION: 2181' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #4 BOTTOM HOLE LOCATION: 1042' FSL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.



SHEET 2 OF 6

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◇ denotes single proportion calculated position.

NOTE:
SEE SHEET 6 OF 6 FOR COORDINATE TABLE, SURVEY NOTES, AND SURVEYOR'S CERTIFICATE.

DRAWN BY: K.R.	SURVEYED: 10/16/20
CHECKED BY: K.R.	DRAWN: 10/18/20
FILE NO: RW1.32WP4	JOB NO. RW1.32

PREPARED FOR:
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768 County Rd. 308
DURANGO, CO. 81303
(970) 385-0851

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5

SURFACE LOCATION: 254' FSL & 326' FWL
SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO. GROUND LEVEL ELEVATION: 6160'

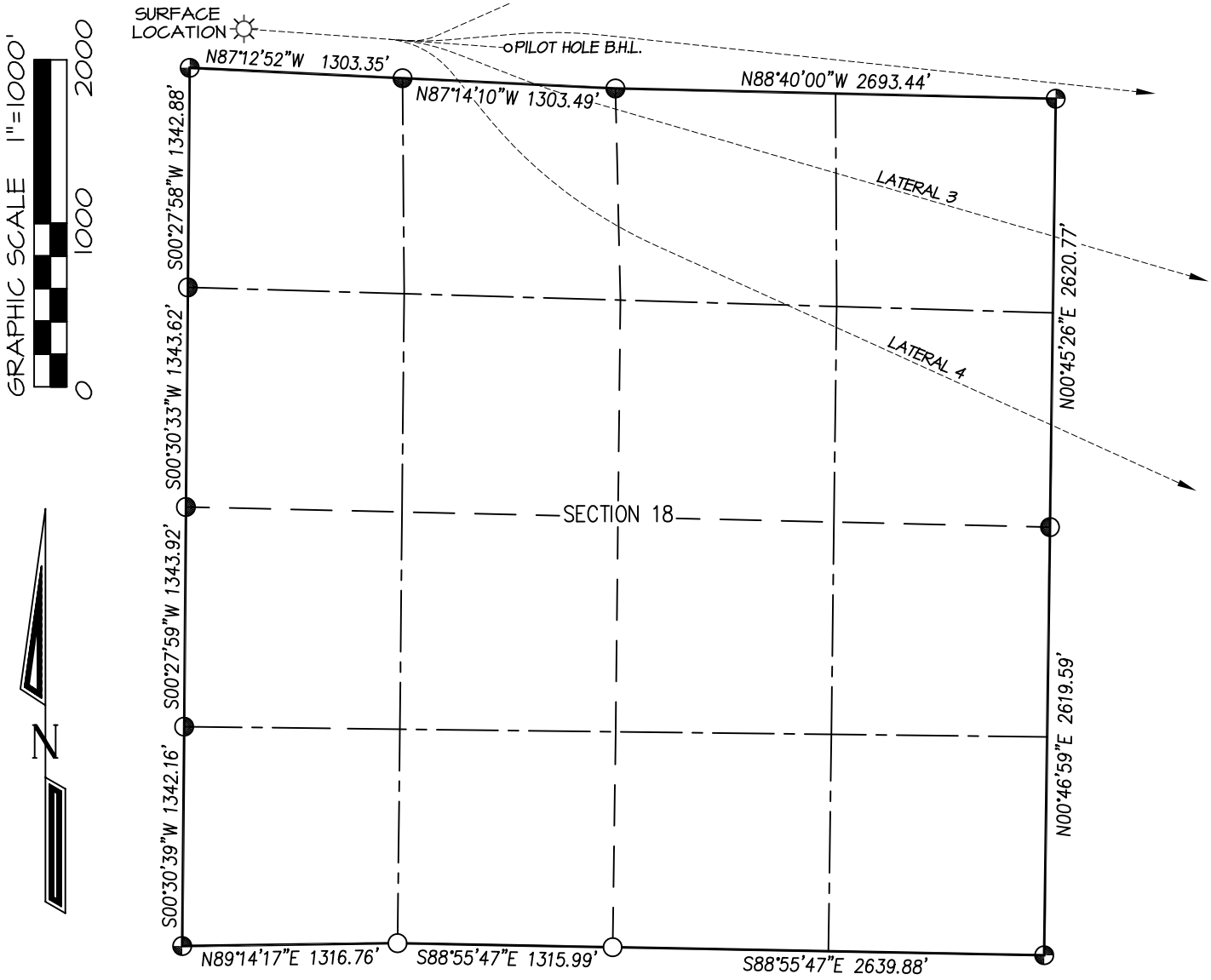
PILOT HOLE BOTTOM HOLE LOCATION: 216' FSL, 1944' FWL
SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #1 BOTTOM HOLE LOCATION: 1521' FSL, 200' FEL
SECTION 8, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #2 BOTTOM HOLE LOCATION: 305' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #3 BOTTOM HOLE LOCATION: 2181' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #4 BOTTOM HOLE LOCATION: 1042' FSL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.



SHEET 3 OF 6

⊕ and ◓ denote found 3-1/4" B.L.M. aluminum cap.
◇ denotes single proportion calculated position.

NOTE:
SEE SHEET 6 OF 6 FOR COORDINATE TABLE, SURVEY NOTES, AND SURVEYOR'S CERTIFICATE.

SURVEYED:	10/16/20
DRAWN:	10/18/20
JOB NO.	RW132
DRAWN BY:	K.R.
CHECKED BY:	K.R.
FILE NO.	RW132WP4

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768 County Rd. 308
DURANGO, CO. 81303
(970) 385-0851

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5

SURFACE LOCATION: 254' FSL & 326' FWL
SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO. GROUND LEVEL ELEVATION: 6160'

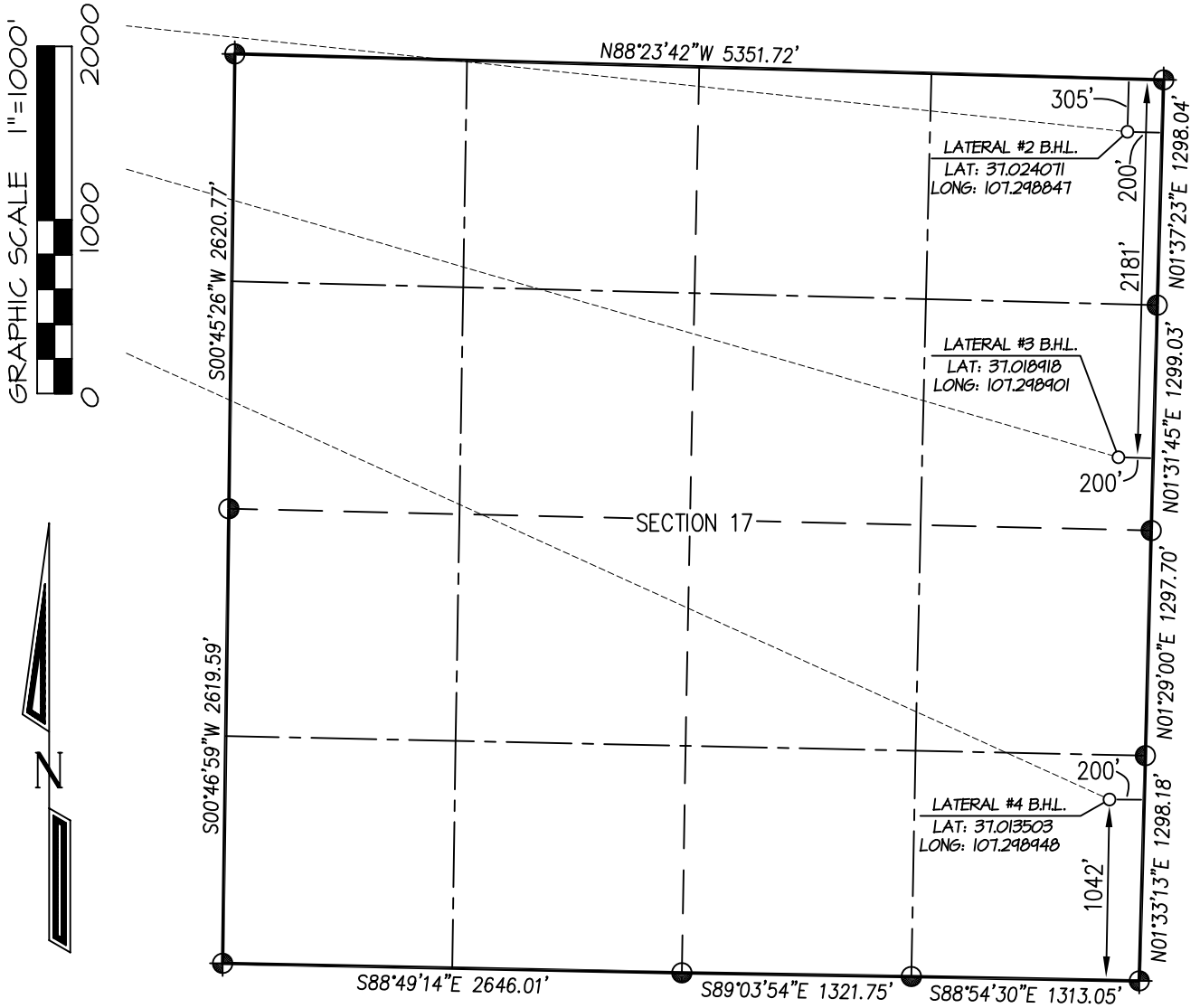
PILOT HOLE BOTTOM HOLE LOCATION: 216' FSL, 1944' FWL
SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #1 BOTTOM HOLE LOCATION: 1521' FSL, 200' FEL
SECTION 8, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #2 BOTTOM HOLE LOCATION: 305' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #3 BOTTOM HOLE LOCATION: 2181' FNL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.

LATERAL #4 BOTTOM HOLE LOCATION: 1042' FSL, 200' FEL
SECTION 17, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO.



SHEET 4 OF 6

⊕ and ◓ denote found 3-1/4" B.L.M. aluminum cap.
◇ denotes single proportion calculated position.

NOTE:
SEE SHEET 6 OF 6 FOR COORDINATE TABLE, SURVEY NOTES, AND SURVEYOR'S CERTIFICATE.

SURVEYED:	10/16/20
DRAWN:	10/18/20
JOB NO.	RW132
DRAWN BY:	K.R.
CHECKED BY:	K.R.
FILE NO.	RW132WP4

PREPARED FOR:
RED WILLOW PRODUCTION CO.

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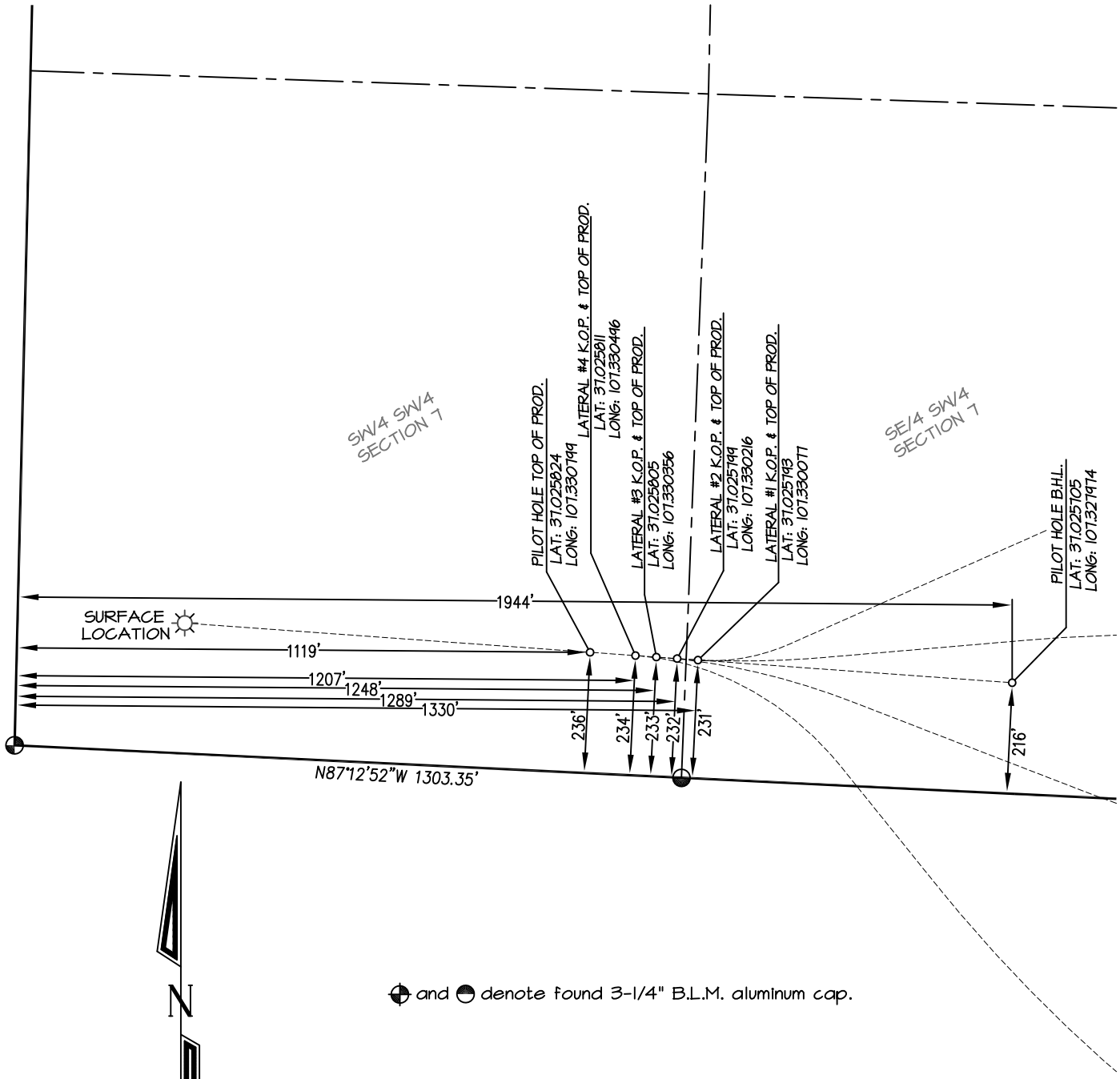
768 County Rd. 308
DURANGO, CO. 81303
(970) 385-0851

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5

SURFACE LOCATION: 254' FSL & 326' FWL

SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO. GROUND LEVEL ELEVATION: 6160'

PILOT & LATERAL KICKOFF/TOP OF PRODUCTION DETAIL



⊕ and ◓ denote found 3-1/4" B.L.M. aluminum cap.

GRAPHIC SCALE 1"=300'

0 300 600

NOTE:

SEE SHEET 7 OF 7 FOR COORDINATE TABLE, SURVEY NOTES, AND SURVEYOR'S CERTIFICATE.

SHEET 5 OF 6

REVISED: 10/21/20

SURVEYED:	10/16/20
DRAWN:	10/18/20
JOB NO.	RW132
DRAWN BY:	K.R.
CHECKED BY:	K.R.
FILE NO.	RW132WP4

PREPARED FOR:

RED WILLOW PRODUCTION CO.

NORTHSTAR
SURVEYING & MAPPING, INC.
768 County Rd. 308
DURANGO, CO. 81303
(970) 385-0851

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5

SURFACE LOCATION: 254' FSL & 326' FWL

SECTION 7, T-32-N, R-4-W, N.M.P.M., ARCHULETA COUNTY, COLORADO. GROUND LEVEL ELEVATION: 6160'

NORTH CARRACAS 32-4 7F-5	CSZ NAD '83	NAD '83	TIES	SEC/TWP/RNG
SURFACE HOLE LOCATION	N (Y) = 1,136,072.61' E (X) = 2,464,747.54'	LAT: 37.025938°N LONG: 107.333512°W	FSL = 254' FWL = 326'	SECTION 7, T-32-N, R-4-W
PILOT HOLE - TOP OF PRODUCTION	N (Y) = 1,136,015.53' E (X) = 2,465,538.64'	LAT: 37.025824°N LONG: 107.330799°W	FSL = 236' FWL = 1119'	SECTION 7, T-32-N, R-4-W
PILOT HOLE - BOTTOM HOLE LOCATION	N (Y) = 1,135,956.12' E (X) = 2,466,362.56'	LAT: 37.025705°N LONG: 107.327974°W	FSL = 216' FWL = 1944'	SECTION 7, T-32-N, R-4-W
PROPOSED TOP OF PRODUCTION & KOP LATERAL #1	N (Y) = 1,136,000.33' E (X) = 2,465,749.29'	LAT: 37.025793°N LONG: 107.330077°W	FSL = 231' FWL = 1330'	SECTION 7, T-32-N, R-4-W
PROPOSED BOTTOM HOLE LOCATION LATERAL #1	N (Y) = 1,137,022.19' E (X) = 2,474,870.62'	LAT: 37.029086°N LONG: 107.298907°W	FSL = 1521' FEL = 200'	SECTION 8, T-32-N, R-4-W
PROPOSED TOP OF PRODUCTION & KOP LATERAL #2	N (Y) = 1,136,003.27' E (X) = 2,465,708.61'	LAT: 37.025799°N LONG: 107.330216°W	FSL = 232' FWL = 1289'	SECTION 7, T-32-N, R-4-W
PROPOSED BOTTOM HOLE LOCATION LATERAL #2	N (Y) = 1,135,196.33' E (X) = 2,474,852.94'	LAT: 37.024071°N LONG: 107.298847°W	FNL = 305' FEL = 200'	SECTION 17, T-32-N, R-4-W
PROPOSED TOP OF PRODUCTION & KOP LATERAL #3	N (Y) = 1,136,006.22' E (X) = 2,465,667.93'	LAT: 37.025805°N LONG: 107.330356°W	FSL = 233' FWL = 1248'	SECTION 7, T-32-N, R-4-W
PROPOSED BOTTOM HOLE LOCATION LATERAL #3	N (Y) = 1,133,320.71' E (X) = 2,474,801.24'	LAT: 37.018918°N LONG: 107.298901°W	FNL = 2181' FEL = 200'	SECTION 17, T-32-N, R-4-W
PROPOSED TOP OF PRODUCTION & KOP LATERAL #4	N (Y) = 1,136,009.13' E (X) = 2,465,627.23'	LAT: 37.025811°N LONG: 107.330496°W	FSL = 234' FWL = 1207'	SECTION 7, T-32-N, R-4-W
PROPOSED BOTTOM HOLE LOCATION LATERAL #4	N (Y) = 1,131,349.34' E (X) = 2,474,749.54'	LAT: 37.013503°N LONG: 107.298948°W	FSL = 1042' FEL = 200'	SECTION 17, T-32-N, R-4-W

NOTES:

1. WELL LOCATION FOOTAGE CALLS MEASURED PERPENDICULAR TO SECTION LINES.
2. WELL GPS OBSERVATION PERFORMED BY KENNY REA ON 12/12/2021 - PDOP VALUE = 1.9
3. BEARINGS & DISTANCE SHOWN ARE FIELD MEASURED UNLESS OTHERWISE NOTED.
4. ALL MEASURED DISTANCES SHOWN ARE GRID DISTANCE WITH NO SCALE FACTOR APPLIED.
5. BEARINGS ARE BASED ON THE NORTH AMERICAN DATUM OF 1983, COLORADO SOUTH STATE PLANE COORDINATE SYSTEM, ZONE 0503.
6. ELEVATION IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (GEOID18).

COLORADO REGISTERED
KENNETH E. REA
31941
12-21-21
PROFESSIONAL LAND SURVEYOR

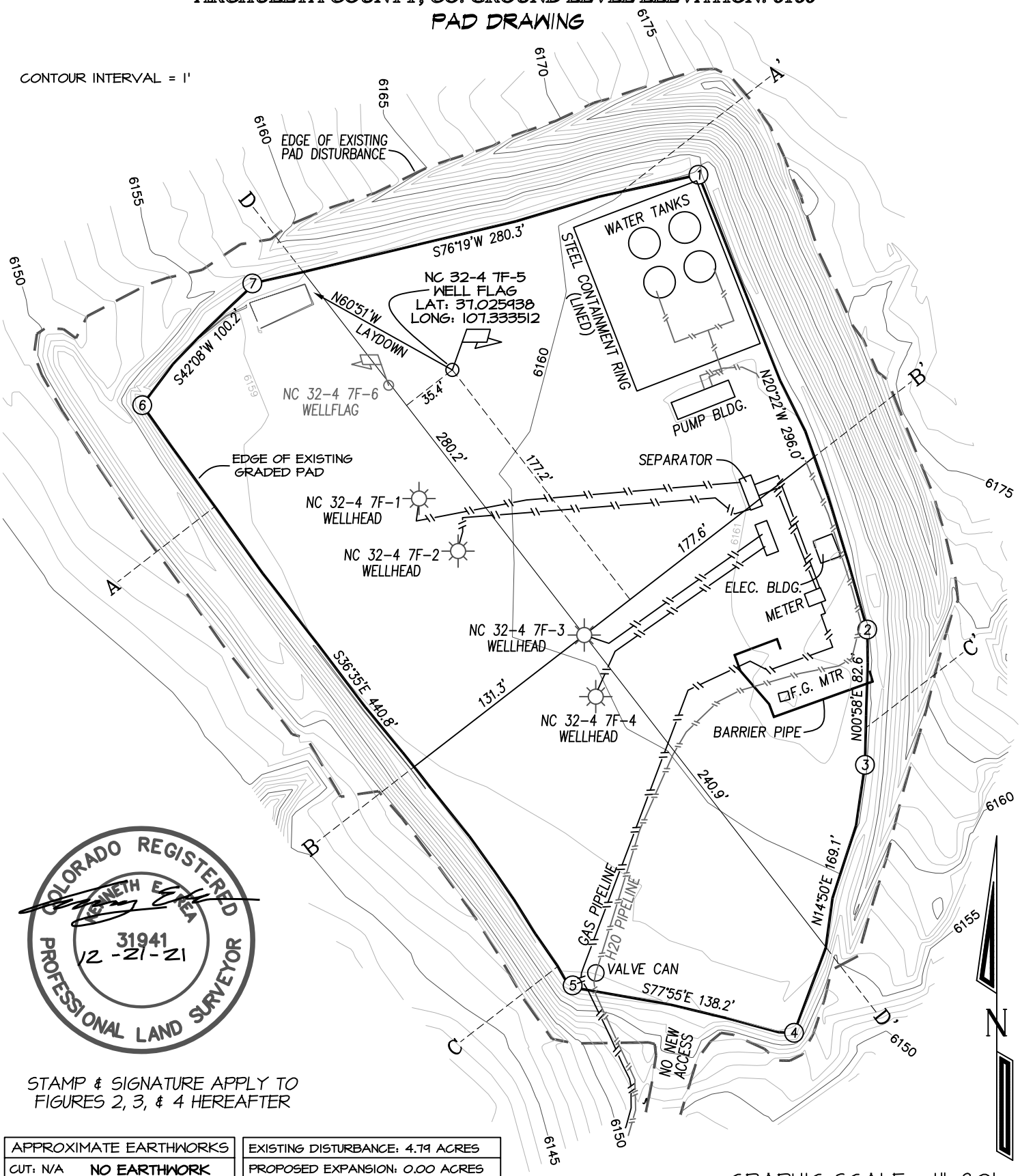
I, KENNETH E. REA, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE WELL LOCATION SHOWN ON THIS PLAT IS ACCURATELY PLOTTED FROM FIELD NOTES OF ACTUAL SURVEYS MADE UNDER MY DIRECT SUPERVISION, AND THAT THIS PLAT IS NOT A LAND SURVEY PLAT OR IMPROVEMENT SURVEY PLAT, AND THAT IT IS NOT TO BE RELIED UPON FOR THE ESTABLISHMENT OF FENCE, BUILDING, OR OTHER FUTURE IMPROVEMENT LINES.

SURVEYED: 12/12/21
DRAWN: 12/13/21
JOB NO. RW132
DRAWN BY: K.R.
CHECKED BY: K.R.
FILE NO. RW132WP5

PREPARED FOR:
RED WILLOW PRODUCTION CO.

NORTHSTAR
SURVEYING & MAPPING, INC.
768 County Rd. 308
DURANGO, CO. 81303
(970) 385-0851

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5
254' FSL, 326' FWL, SECTION 7, T-32-N, R-4-W, N.M.P.M.,
ARCHULETA COUNTY, CO. GROUND LEVEL ELEVATION: 6160'
PAD DRAWING



COLORADO REGISTERED
KENNETH E. TREA
31941
12-21-21
PROFESSIONAL LAND SURVEYOR

STAMP & SIGNATURE APPLY TO FIGURES 2, 3, & 4 HEREAFTER

APPROXIMATE EARTHWORKS
CUT: N/A
FILL: N/A — NO EARTHWORK OR NEW DISTURBANCE REQUIRED
TOPSOIL: N/A
NET EXPORT: 0 CUBIC YARDS

EXISTING DISTURBANCE: 4.79 ACRES
PROPOSED EXPANSION: 0.00 ACRES
LEVEL PAD SIZE: 3.28 ACRES
TOTAL DISTURBED AREA: N/A
PERMITTED AREA: N/A

GRAPHIC SCALE 1"=80'

0 80 160

FIGURE 1

DRAWING SCALE: 1" = 80'	DATE DRAWN: 12/14/20	NORTHSTAR SURVEYING & MAPPING, INC.	FILE NO.RW132CFA	DRAWN BY: K.R.	CHECKED BY: K.R.

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5
254' FSL, 326' FWL, SECTION 7, T-32-N, R-4-W, N.M.P.M.,
ARCHULETA COUNTY, CO. GROUND LEVEL ELEVATION: 6160'
TYPICAL RIG LAYOUT

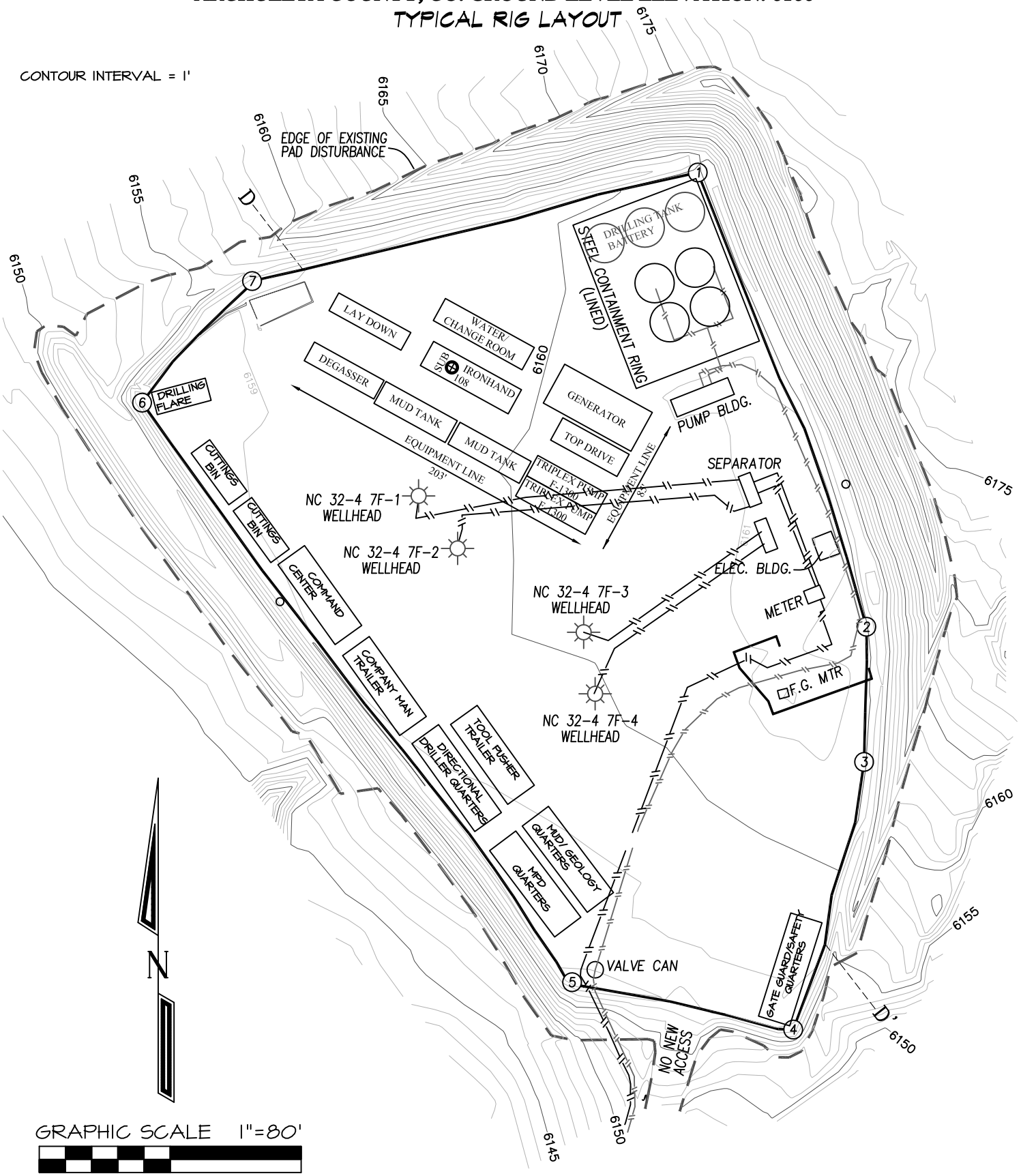


FIGURE 2

DRAWING SCALE: 1" = 80'	DATE DRAWN: 12/14/20	NORTHSTAR SURVEYING & MAPPING, INC.	FILE NO.RW132CFA	DRAWN BY: K.R.	CHECKED BY: K.R.

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32–4 7F–5
254' FSL, 326' FWL, SECTION 7, T–32–N, R–4–W, N.M.P.M.,
ARCHULETA COUNTY, CO. GROUND LEVEL ELEVATION: 6160'
FACILITY LAYOUT & RECLAMATION

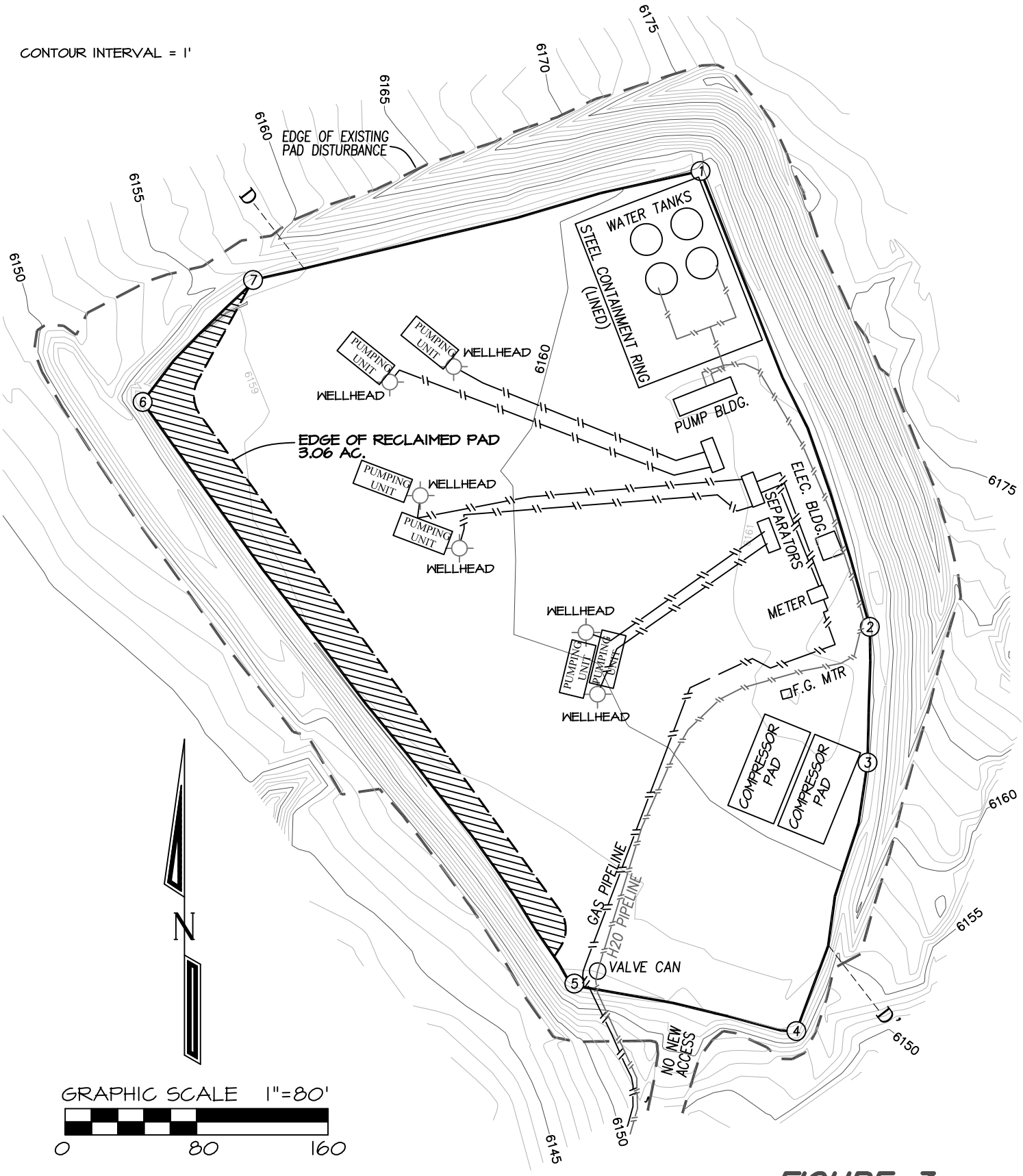
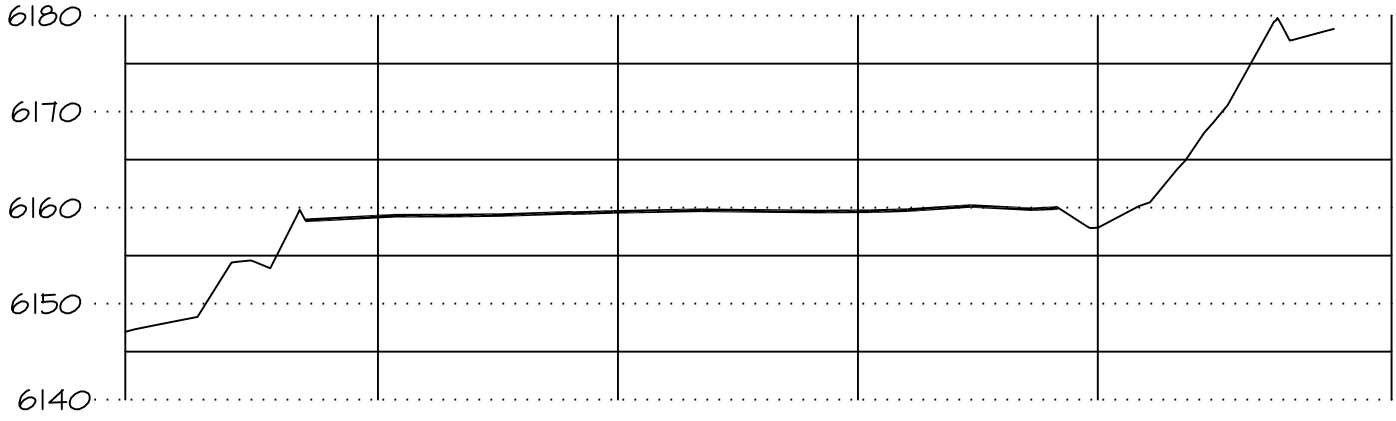


FIGURE 3

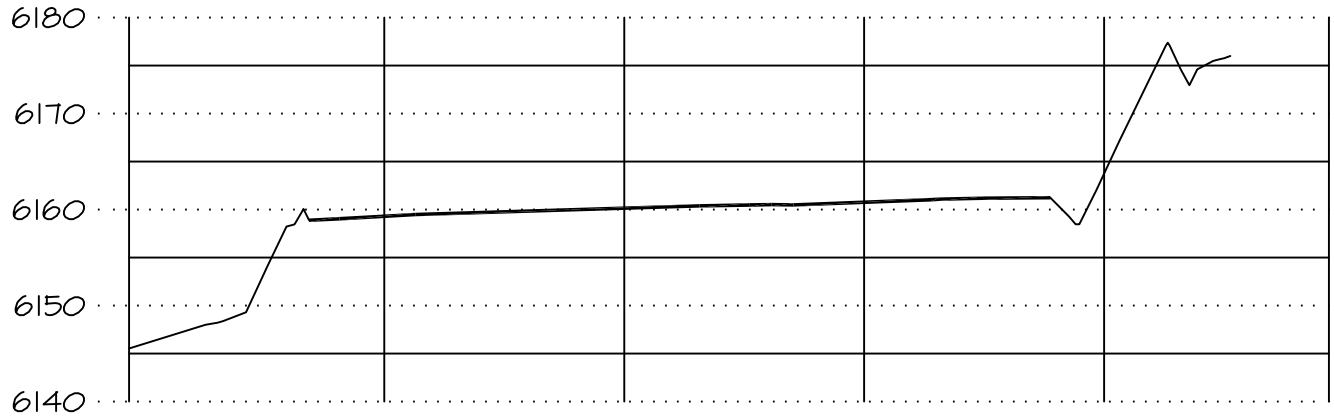
DRAWING SCALE: 1" = 80'	DATE DRAWN: 12/14/20	NORTHSTAR SURVEYING & MAPPING, INC.	FILE NO.RW132CFA	DRAWN BY: K.R.	CHECKED BY: K.R.

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32-4 7F-5
254' FSL, 326' FWL, SECTION 7, T-32-N, R-4-W, N.M.P.M.,
ARCHULETA COUNTY, CO. GROUND LEVEL ELEVATION: 6160'
PAD CROSS SECTION DETAIL

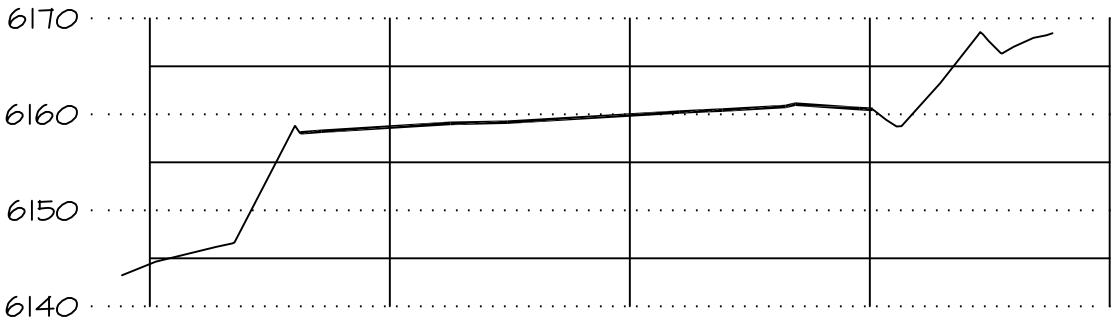
ELEV. A-A'



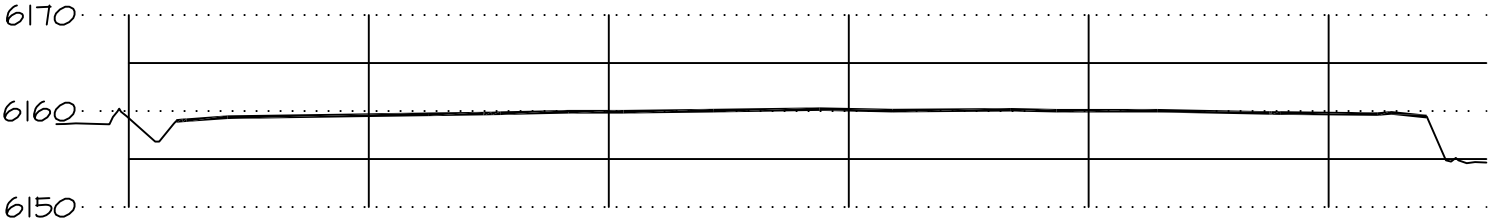
ELEV. B-B'



ELEV. C-C'



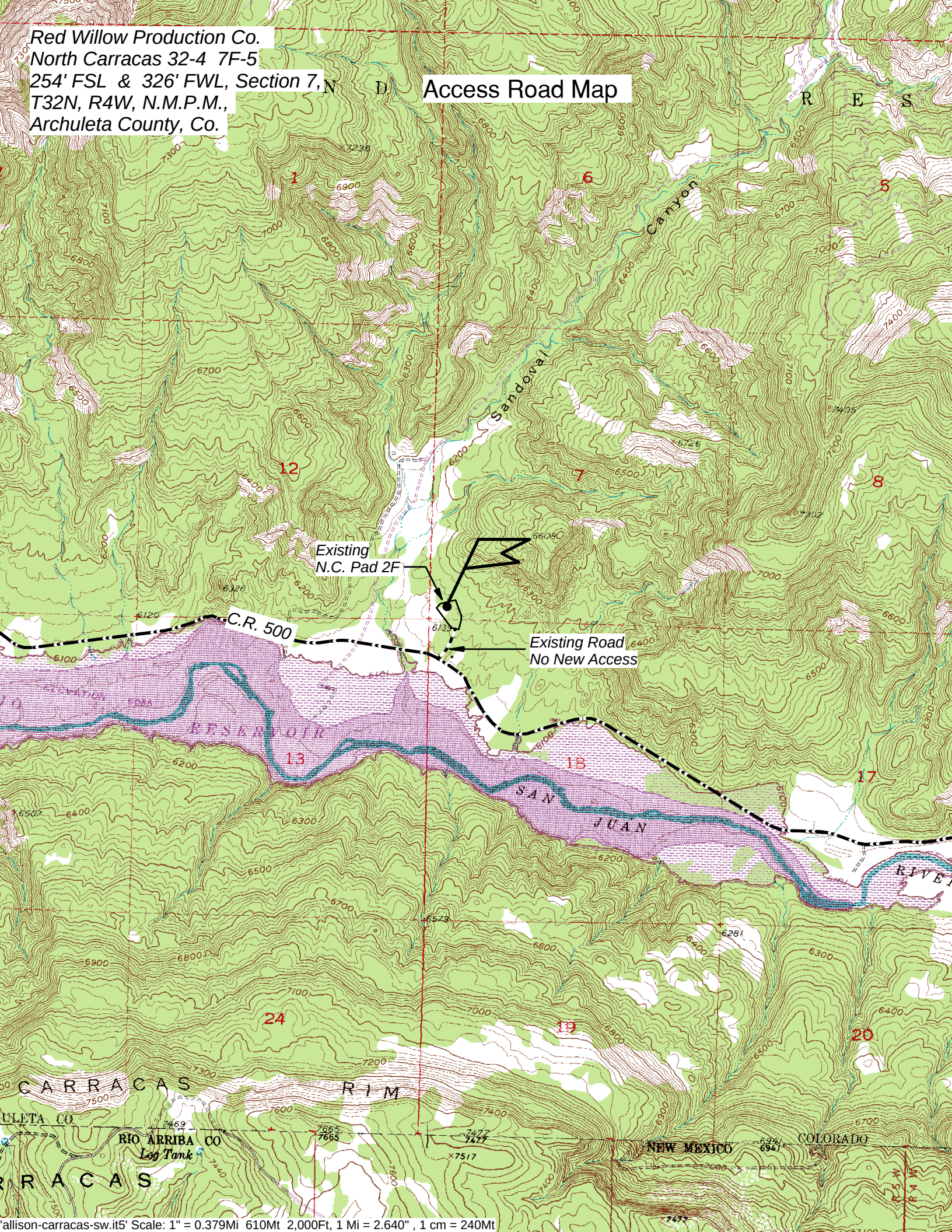
ELEV. D-D'



VERTICAL SCALE: 1' = 20' / HORIZONTAL SCALE: 1' = 60'

FIGURE 4

	DATE DRAWN: 12/14/20	NORTHSTAR SURVEYING & MAPPING, INC.	FILE NO.RW132CFB	DRAWN BY: K.R.	CHECKED BY: K.R.



'allison-carracas-sw.it5' Scale: 1" = 0.379Mi 610Mt 2,000Ft, 1 Mi = 2.640" , 1 cm = 240Mt

Red Willow Production Company

North Carracas 32-4 7F-5

254’ FSL, 326’ FWL, Section 7, T32N, R4W, Archuleta County, Co.

Looking North

Looking East

Looking South

Looking West

Access at Well Location

Access at Road

All photos taken on 12/12/2020

Directions from the Intersection of State Highway 172 & State Highway 151 in Ignacio, CO

to Red Willow Production Company: North Carracas 32-4 7F-5

254' FSL & 326' FWL, Section 7, T32N, R4W, N.M.P.M., Archuleta County, CO.

From the Intersection of State Highway 172 & State Highway 151 in Ignacio, CO. travel East on State Hwy 151 for 19.7 miles;

Go right (East) for on Archuleta County Road #500 for 6.7 miles;

Go left (North) following existing road for 0.1 miles to existing North Carracas Pad 2F well location.

APD ID: 10400082523 **Submission Date:** 01/13/2022

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Well Type: COALBED NATURAL GAS WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
7968074	SAN JOSE	6175	0	0	CONGLOMERATE, SANDSTONE	USEABLE WATER	N
7968075	NACIMIENTO	5265	910	910	CONGLOMERATE, SANDSTONE, SHALE, SILTSTONE	NONE	Y
7968077	OJO ALAMO	4083	2092	2107	SANDSTONE, SHALE, SILTSTONE	USEABLE WATER	N
7968078	KIRTLAND	3973	2202	2226	SHALE, SILTSTONE	NATURAL GAS	N
7968079	FRUITLAND COAL	3450	2725	3047	COAL, SANDSTONE, SHALE, SILTSTONE	CO2, COAL, NATURAL GAS	Y
7968076	PICTURED CLIFFS	3285	2890	3438	SANDSTONE, SILTSTONE	NATURAL GAS	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 5000

Equipment: -Annular preventer -Pipe Ram and blind ram -Drilling spool, or blowout preventer with 2 side outlets (choke side shall be a 3 inch minimum diameter, kill side shall be at least 2-inch diameter) -3 inch diameter choke line -2choke line valves (3 inch minimum) -Kill line (2 inch minimum) -2 chokes with 1 remotely controlled from rig floor -2kill line valves and a check valve (2 inch minimum) -Upper Kelly cock valve with handle available -Safety valve(s) and subs to fit all drill string connections in use -Inside BOP or float sub available -Pressure gauge on choke manifold -Fill-up line above the uppermost preventer.

Requesting Variance? NO

Variance request:

Testing Procedure: Bureau of Land Management's minimum specification for pressure control equipment will be utilized. The drilling rig has not been selected for this well. Selection will take place after approval of this application is granted. Manual and/or hydraulic controls will be in compliance with OSO #2 for 3,000 psi system. A remote accumulator will be used. Pressures, capacities, location of remote hydraulic and manual controls will be identified at the time of the BLM supervised BOP test. During drilling operations, Red Willow Production Company will follow the API Diller's Method for kick control in the event of a gas kick. See attachment for details - Guidelines - BOP - Control Driller's Method.

Choke Diagram Attachment:

NC_32_4_7F_5_Choke_Manifold_20220104091925.pdf

BOP Diagram Attachment:

NC_32_4_7F_5_BOP_20220104091933.pdf

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

NC_32_4_7F_5_Choke_Manifold_20220104091925.pdf

NC_32_4_7F_5_BOP_20220104091933.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	CONDUCTOR	17.5	13.375	NEW	API	N	0	140	0	140	6175	6035	140	J-55	54.5	ST&C						
2	SURFACE	12.25	9.625	NEW	API	N	0	860	0	858	6175	5317	860	J-55	36	ST&C	4.817	2.538	DRY	3.116	DRY	3.116
3	INTERMEDIATE	8.75	7.0	NEW	API	N	0	3958	0	3110	6174	3065	3958	J-55	23	LT&C	1.926	3.143	DRY	1.955	DRY	1.955
4	LINER	6.125	4.5	NEW	API	N	3235	12435	2804	2880	3371	3295	9200	J-55	11.6	LT&C	3.855	5.6	DRY	1.659	DRY	1.659
5	LINER	6.125	4.5	NEW	API	N	3280	12512	2823	2863	3352	3312	9232	J-55	11.6	LT&C	3.878	5.633	DRY	1.661	DRY	1.661
6	LINER	6.125	4.5	NEW	API	N	3190	12726	2785	2900	3390	3275	9536	J-55	11.6	LT&C	3.828	5.561	DRY	1.656	DRY	1.656
7	LINER	6.12	4.5	NEW	API	N	3145	13487	2766	2920	3409	3255	10342	J-55	11.6	LT&C	3.082	5.523	DRY	1.654	DRY	1.654

Casing Attachments

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Casing Attachments

Casing ID: 1 **String Type:** CONDUCTOR

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing ID: 2 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

NC_32_4_7F_5_Casing_Design_Surface_20220104105145.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

NC_32_4_7F_5_Casing_Design_Intermediate_20220104105626.pdf

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Casing Attachments

Casing ID: 4 **String Type:** LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

NC_32_4_7F_5_Casing_Design_Production_Lat2_20220104110150.pdf

Casing ID: 5 **String Type:** LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

NC_32_4_7F_5_Casing_Design_Production_Lat1_20220104105815.pdf

Casing ID: 6 **String Type:** LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

NC_32_4_7F_5_Casing_Design_Production_Lat3_20220104110235.pdf

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Casing Attachments

Casing ID: 7 **String Type:** LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

NC_32_4_7F_5_Casing_Design_Production_Lat4_20220104110319.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
CONDUCTOR	Lead		0	140	200	1.17	15.8	234.69	100	Class G	2% Calcium Chloride Poly-E-Flake
SURFACE	Lead		0	860	430	1.17	15.8	501.77	100	CEM, Class G	Calcium Chloride Poly-E-Flake
INTERMEDIATE	Lead		0	2000	170	2.4	12.3	400.53	50	Calcium Chloride Poly- E-Flake	FE-2 Super CBL Kol-Seal Poly-E-Flake
INTERMEDIATE	Tail		2000	3958	195	1.85	13.5	341.93	50	VariCem	Super CBL, FE-2, Kol-Seal, Poly-E-Flake
LINER	Lead		3235	12435	0	0	0	0	0	None. Open hole	None. Open hole
LINER	Lead		3380	12512	0	0	0	0	0	None. Open hole	None. Open hole
LINER	Lead		3190	12726	0	0	0	0	0	None. Open hole	None. Open hole

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
LINER	Lead		3145	13487	0	0	0	0	0	None. Open hole	None. Open hole

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? YES

Description of the equipment for the circulating system in accordance with Onshore Order #2: Red Willow plans to utilize Managed Pressure Drilling (MPD) as a drilling technique for the North Carracas 32-4 7F-5. The new MPD system will reduce the use of high weight fluids during the drilling phase by holding back pressure on the annulus and therefore increasing bottom hole pressure without the need of hydrostatic head from the higher weight fluids. Attached is a diagram with further information.

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

MPD_20220104091703.pdf

Describe what will be on location to control well or mitigate other conditions: Sufficient weighting material will be on hand to weight mud up 1 PPG, if required. The formula for weight up with barite is: Sacks of Barite per 100 bbl of mud = 1470 x (W2 - W1)/(35 - W2) Where; W1 = current mud weight, W2 = new mud weight.

Describe the mud monitoring system utilized: Pit Volume Totalizer (PVT) equipment (or equivalent) will be on each pit to monitor pit levels. A trip tank equipped with a PVT sensor will be used to monitor trip volumes. Possible lost circulation in the Fruitland Coal and Pictured Cliffs Sand. Lost circulation has been successfully mitigated with lost circulation materials. there will not be a reserve pit for this well. A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	860	WATER-BASED MUD	8.4	8.9	66.6		8	20	150		
860	3958	LOW SOLIDS NON-DISPERSED (LSND)	9	10.5	66.6		8	15	5000	8	
3145	13487	OTHER : Calcium Choride	10	11.6	71.8		8	6	170000	15	
3145	13487	OTHER : Produced Water	8.4	8.9	66.6		8	2	5000	0	

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Safety measures, standard for oil and gas drilling operations, will be used during logging operations. The well will be circulated with proper weight mud to control any flows and the well will be checked prior to pulling out of the hole for logs and will be checked for flow during logging operations. A pre-job safety meeting will be held prior to logging operations. No production tests are anticipated at this time. Mudlogging operations: Pilot hole: 1,500ft - 2,958ft MD. 30ft samples except in target zones of Fruitland (2,843ft - 2,883ft TVD) where 10ft or 20ft samples will be retrieved if possible. Fruitland Laterals: Mudlogging and GeoSteering total length of all laterals: 3,145ft - 13,487ft MD.Logging While Drilling Gamma Ray: Fruitland Laterals: Continuous LWD and GeoSteering in all laterals to maintain drilling within the coal. CBL: The CBL will be ran during the sequence of setting the various pipe strings after pumping cement. This cased hole log will be ran as deemed necessary after cement pumping operations.

List of open and cased hole logs run in the well:

CEMENT BOND LOG,DIRECTIONAL SURVEY,GAMMA RAY LOG,MEASUREMENT WHILE DRILLING,MUD LOG/GEOLOGICAL LITHOLOGY LOG,

Coring operation description for the well:

No coring operations are planned for this well.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1500 **Anticipated Surface Pressure:** 815

Anticipated Bottom Hole Temperature(F): 125

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

NC_32_4_7F_5_Pilot_Plan_3_20220104090253.pdf
NC_32_4_7F_5_Lateral_1_Plan_3_20220104090302.pdf
NC_32_4_7F_5_Lateral_2_Plan_3_20220104090309.pdf
NC_32_4_7F_5_Lateral_3_Plan_3_20220104090316.pdf
NC_32_4_7F_5_Lateral_4_Plan_3_20220104090324.pdf
NC_32_4_7F_5___Wellbore_Schematic_20220104110518.pdf

Other proposed operations facets description:

On March 1, 2018, Red Willow Production Company, as applicant, submitted an application to the Colorado Oil and Gas Conservation Commission (the Commission) requesting issuance of an order (Order) establishing a North Carracas Middle Pilot Unit (the Unit). Such Order will require the concurrence of the BLM and the approval of Bureau of Indian Affairs. The purpose of the Unit is to drill and produce wells from the Fruitland formation coal seams covering certain lands, including the property subject to this Application, located in Archuleta County, Colorado and situated within the exterior boundaries of the Southern Ute Indian Reservation. Applicants management expects no material impediment to the issuance of the Order and anticipates that if the proceedings with respect to the proposed Unit go forward according to plan, an Order was issued on November 1, 2018.

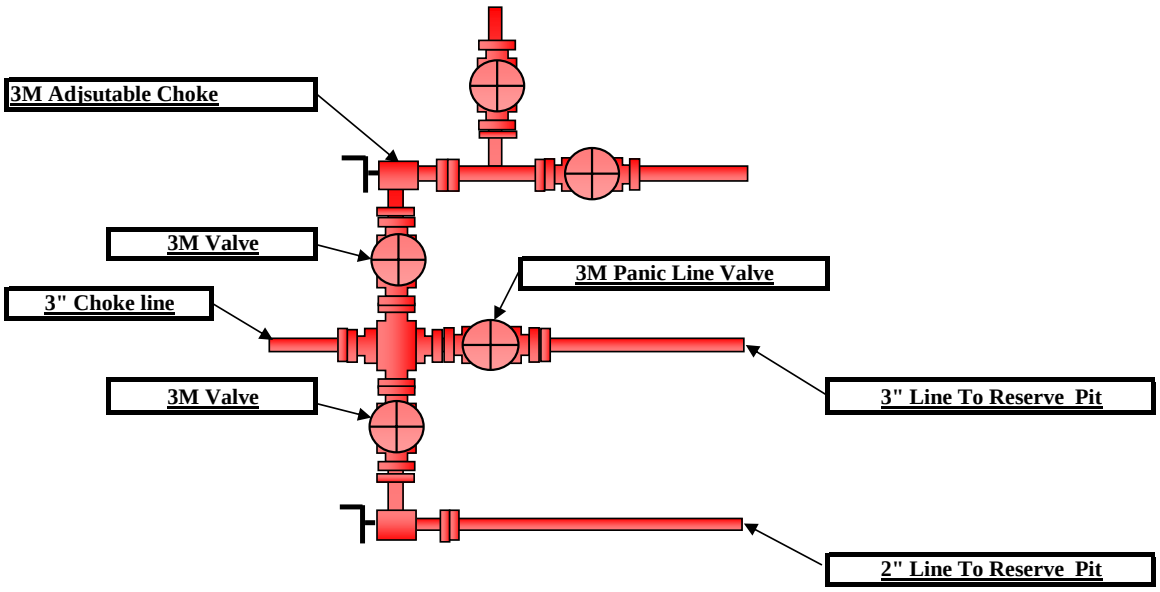
The Intermediate section of the well will not be perforated or completed.

Other proposed operations facets attachment:

Other Variance attachment:

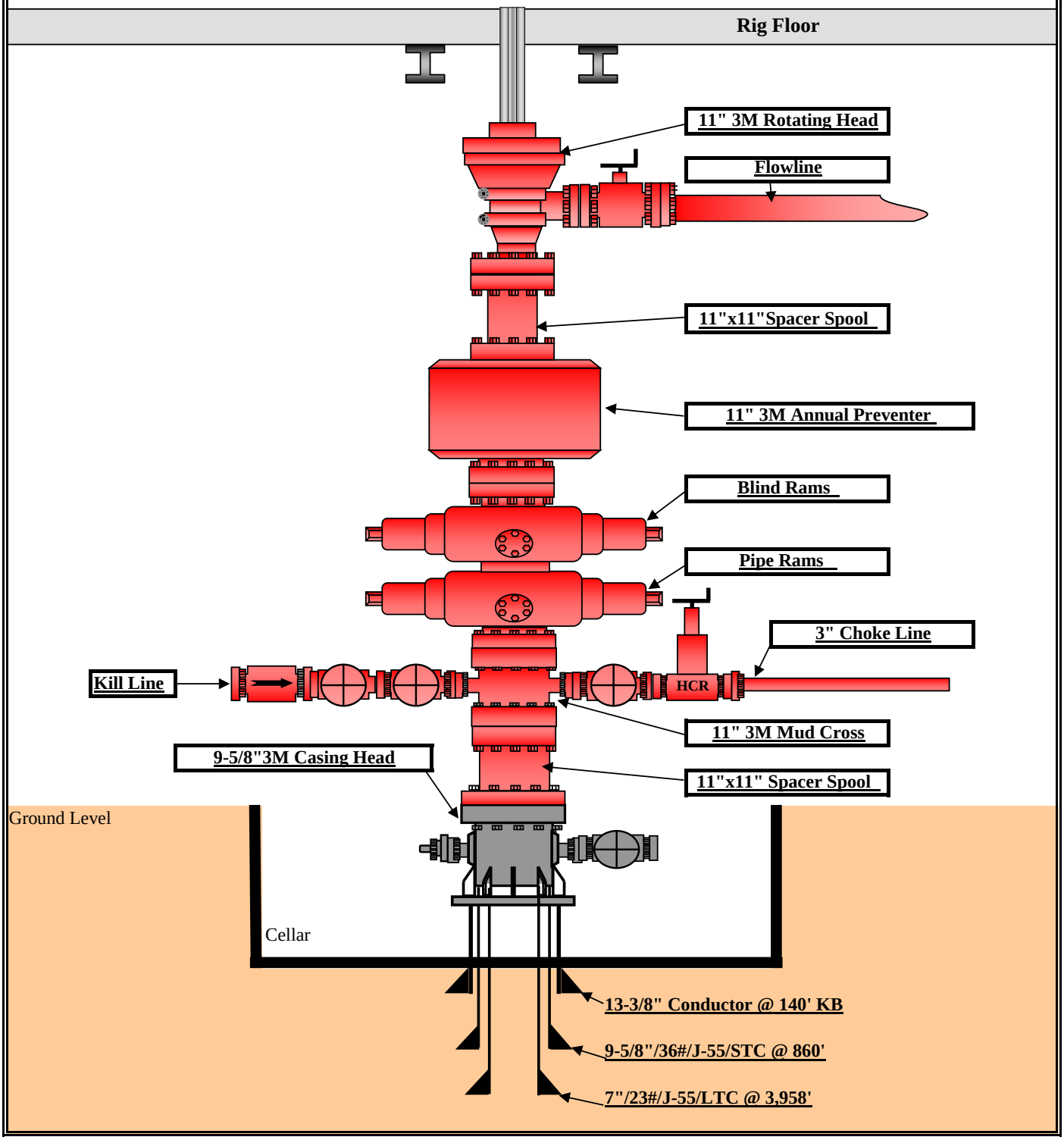
North Carracas 32-4 7F-5

CHOKE MANIFOLD



North Carracas 32-4 7F-5

BOP CONFIGURATION



Red Willow Production Company

NC 32-4 7F-5

SURFACE CASING

SIZE	WEIGHT	GRADE	CONNECTION
9.625"	36#	J-55	STC

CASING SIZE FOR NEXT BIT:		
Drift	8.765"	
Next Bit Size	8.75"	

DESIGN IS ADEQUATE

COLLAPSE CALCULATION:		
Mud Weight Outside of Casing	9.4	ppg
Mud Column Outside of Casing (0' - TD)	858	ft
Hydrostatic Pressure Outside of Casing	419	psi
Collapse Resistance	2,020	psi
Design Collapse Safety Factor	1.125	
Calculated Safety Factor = Resistance / Hydrostatic Pressure	4.817	

COLLAPSE SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Total Evacuation Inside of Casing (0' - TD)
- Full Mud Column In The Annulus Outside of The Casing (0' - TD)

BURST CALCULATION:		
Hydrostatic Head Outside of Casing	0	psi
TD of Next Hole Section	3,110	ft
Gas Gradient Inside of Casing (0' - TD)	0.1	psi/ft
MW At TD of Next Hole Section	10.5	ppg
Hydrostatic Pressure Inside of Casing	311	psi
Formation Pressure At TD	1,698	psi
Burst Pressure Imposed At Surface (Well Shut In)	1,387	psi
Burst Resistance	3,520	psi
Design Burst Safety Factor	1.10	
Calculated Safety Factor = Resistance / Imposed	2.538	

BURST SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- No Hydrostatic Head from Mud Outside of Casing (0' - TD)
- 100% Mud Evacuation Inside of the Casing w/ Full Gas Column of 0.10 psi/ft, From Next Section
- No Additional Pressure Imposed At Surface (Surface Pressure = 0 psi)

TENSION CALCULATION:		
Casing Set	858	ft TVD(KB)
Casing Weight	36	plf
Buoyancy Factor = 1- (MW)/65.5	0.856	
Casing String Weight	30,888	lbs
Buoyed Casing String Weight	26,455	lbs
Tensional Strength	394,000	lbs
Design Tension Safety Factor	1.20	
Calculated Safety Factor = Tension Strength /String Weight	3.116	

TENSION SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Assumes 100K Overpull on String Weight

Red Willow Production Company

NC 32-4 7F-5

PRODUCTION CASING

SIZE	WEIGHT	GRADE	CONNECTION
4.5"	11.6#	L-80	LTC

COLLAPSE CALCULATION:

Mud Weight Outside of Casing	11	ppg
Mud Column Outside of Casing (0' - TD)	2,920	ft
Hydrostatic Pressure Outside of Casing	1,670	psi
Collapse Resistance	6,350	psi
Design Collapse Safety Factor	1.125	
Calculated Safety Factor = Resistance / Hydrostatic Pressure	3.802	

COLLAPSE SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Total Evacuation Inside of Casing (0' - TD)
- Full Mud Column In The Annulus Outside of The Casing (0' - TD)

BURST CALCULATION:

Hydrostatic Head Outside of Casing	0	psi
TD of Next Hole Section	2,920	ft
Gas Gradient Inside of Casing (0' - TD)	0.1	psi/ft
MW At TD of Next Hole Section	11.2	ppg
Hydrostatic Pressure Inside of Casing	292	psi
Formation Pressure At TD	1,701	psi
Burst Pressure Imposed At Surface (Well Shut In)	1,409	psi
Burst Resistance	7,780	psi
Design Burst Safety Factor	1.10	
Calculated Safety Factor = Resistance / Imposed	5.523	

BURST SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- No Hydrostatic Head from Mud Outside of Casing (0' - TD)
- 100% Mud Evacuation Inside of the Casing w/ Full Gas Column of 0.10 psi/ft, From Next Section
- No Additional Pressure Imposed At Surface (Surface Pressure = 0 psi)

TENSION CALCULATION:

Casing Set	2,920	ft TVD(KB)
Casing Weight	11.6	plf
Buoyancy Factor = 1- (MW)/65.5	0.832	
Casing String Weight	33,872	lbs
Buoyed Casing String Weight	28,184	lbs
Tensional Strength	212,000	lbs
Design Tension Safety Factor	1.20	
Calculated Safety Factor = Tension Strength /String Weight	1.654	

TENSION SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Assumes 100K Overpull on String Weight

Red Willow Production Company

NC 32-4 7F-5

PRODUCTION CASING

SIZE	WEIGHT	GRADE	CONNECTION
4.5"	11.6#	L-80	LTC

COLLAPSE CALCULATION:

Mud Weight Outside of Casing	11	ppg
Mud Column Outside of Casing (0' - TD)	2,900	ft
Hydrostatic Pressure Outside of Casing	1,659	psi
Collapse Resistance	6,350	psi
Design Collapse Safety Factor	1.125	
Calculated Safety Factor = Resistance / Hydrostatic Pressure	3.828	

COLLAPSE SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Total Evacuation Inside of Casing (0' - TD)
- Full Mud Column In The Annulus Outside of The Casing (0' - TD)

BURST CALCULATION:

Hydrostatic Head Outside of Casing	0	psi
TD of Next Hole Section	2,900	ft
Gas Gradient Inside of Casing (0' - TD)	0.1	psi/ft
MW At TD of Next Hole Section	11.2	ppg
Hydrostatic Pressure Inside of Casing	290	psi
Formation Pressure At TD	1,689	psi
Burst Pressure Imposed At Surface (Well Shut In)	1,399	psi
Burst Resistance	7,780	psi
Design Burst Safety Factor	1.10	
Calculated Safety Factor = Resistance / Imposed	5.561	

BURST SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- No Hydrostatic Head from Mud Outside of Casing (0' - TD)
- 100% Mud Evacuation Inside of the Casing w/ Full Gas Column of 0.10 psi/ft, From Next Section
- No Additional Pressure Imposed At Surface (Surface Pressure = 0 psi)

TENSION CALCULATION:

Casing Set	2,900	ft TVD(KB)
Casing Weight	11.6	plf
Buoyancy Factor = 1- (MW)/65.5	0.832	
Casing String Weight	33,640	lbs
Buoyed Casing String Weight	27,991	lbs
Tensional Strength	212,000	lbs
Design Tension Safety Factor	1.20	
Calculated Safety Factor = Tension Strength /String Weight	1.656	

TENSION SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Assumes 100K Overpull on String Weight

Red Willow Production Company

NC 32-4 7F-5

PRODUCTION CASING

SIZE	WEIGHT	GRADE	CONNECTION
4.5"	11.6#	L-80	LTC

COLLAPSE CALCULATION:

Mud Weight Outside of Casing	11	ppg
Mud Column Outside of Casing (0' - TD)	2,880	ft
Hydrostatic Pressure Outside of Casing	1,647	psi
Collapse Resistance	6,350	psi
Design Collapse Safety Factor	1.125	
Calculated Safety Factor = Resistance / Hydrostatic Pressure	3.855	

COLLAPSE SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Total Evacuation Inside of Casing (0' - TD)
- Full Mud Column In The Annulus Outside of The Casing (0' - TD)

BURST CALCULATION:

Hydrostatic Head Outside of Casing	0	psi
TD of Next Hole Section	2,880	ft
Gas Gradient Inside of Casing (0' - TD)	0.1	psi/ft
MW At TD of Next Hole Section	11.2	ppg
Hydrostatic Pressure Inside of Casing	288	psi
Formation Pressure At TD	1,677	psi
Burst Pressure Imposed At Surface (Well Shut In)	1,389	psi
Burst Resistance	7,780	psi
Design Burst Safety Factor	1.10	
Calculated Safety Factor = Resistance / Imposed	5.600	

BURST SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- No Hydrostatic Head from Mud Outside of Casing (0' - TD)
- 100% Mud Evacuation Inside of the Casing w/ Full Gas Column of 0.10 psi/ft, From Next Section
- No Additional Pressure Imposed At Surface (Surface Pressure = 0 psi)

TENSION CALCULATION:

Casing Set	2,880	ft TVD(KB)
Casing Weight	11.6	plf
Buoyancy Factor = 1- (MW)/65.5	0.832	
Casing String Weight	33,408	lbs
Buoyed Casing String Weight	27,797	lbs
Tensional Strength	212,000	lbs
Design Tension Safety Factor	1.20	
Calculated Safety Factor = Tension Strength /String Weight	1.659	

TENSION SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Assumes 100K Overpull on String Weight

Red Willow Production Company

NC 32-4 7F-5

PRODUCTION CASING

SIZE	WEIGHT	GRADE	CONNECTION
4.5"	11.6#	L-80	LTC

COLLAPSE CALCULATION:

Mud Weight Outside of Casing	11	ppg
Mud Column Outside of Casing (0' - TD)	2,863	ft
Hydrostatic Pressure Outside of Casing	1,638	psi
Collapse Resistance	6,350	psi
Design Collapse Safety Factor	1.125	
Calculated Safety Factor = Resistance / Hydrostatic Pressure	3.878	

COLLAPSE SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Total Evacuation Inside of Casing (0' - TD)
- Full Mud Column In The Annulus Outside of The Casing (0' - TD)

BURST CALCULATION:

Hydrostatic Head Outside of Casing	0	psi
TD of Next Hole Section	2,863	ft
Gas Gradient Inside of Casing (0' - TD)	0.1	psi/ft
MW At TD of Next Hole Section	11.2	ppg
Hydrostatic Pressure Inside of Casing	286	psi
Formation Pressure At TD	1,667	psi
Burst Pressure Imposed At Surface (Well Shut In)	1,381	psi
Burst Resistance	7,780	psi
Design Burst Safety Factor	1.10	
Calculated Safety Factor = Resistance / Imposed	5.633	

BURST SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- No Hydrostatic Head from Mud Outside of Casing (0' - TD)
- 100% Mud Evacuation Inside of the Casing w/ Full Gas Column of 0.10 psi/ft, From Next Section
- No Additional Pressure Imposed At Surface (Surface Pressure = 0 psi)

TENSION CALCULATION:

Casing Set	2,863	ft TVD(KB)
Casing Weight	11.6	plf
Buoyancy Factor = 1- (MW)/65.5	0.832	
Casing String Weight	33,211	lbs
Buoyed Casing String Weight	27,633	lbs
Tensional Strength	212,000	lbs
Design Tension Safety Factor	1.20	
Calculated Safety Factor = Tension Strength /String Weight	1.661	

TENSION SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Assumes 100K Overpull on String Weight

Red Willow Production Company

NC 32-4 7F-5

1ST INTERMEDIATE CASING

SIZE	WEIGHT	GRADE	CONNECTION
7"	23#	J-55	LTC

CASING SIZE FOR NEXT BIT:

Drift	6.241"
Next Bit Size	0"

DESIGN IS ADEQUATE

COLLAPSE CALCULATION:

Mud Weight Outside of Casing	10.5	ppg
Mud Column Outside of Casing (0' - TD)	3,110	ft
Hydrostatic Pressure Outside of Casing	1,698	psi
Collapse Resistance	3,270	psi
Design Collapse Safety Factor	1.125	
Calculated Safety Factor = Resistance / Hydrostatic Pressure	1.926	

COLLAPSE SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Total Evacuation Inside of Casing (0' - TD)
- Full Mud Column In The Annulus Outside of The Casing (0' - TD)

BURST CALCULATION:

Hydrostatic Head Outside of Casing	0	psi
TD of Next Hole Section	3,110	ft
Gas Gradient Inside of Casing (0' - TD)	0.1	psi/ft
MW At TD of Next Hole Section	10.5	ppg
Hydrostatic Pressure Inside of Casing	311	psi
Formation Pressure At TD	1,698	psi
Burst Pressure Imposed At Surface (Well Shut In)	1,387	psi
Burst Resistance	4,360	psi
Design Burst Safety Factor	1.10	
Calculated Safety Factor = Resistance / Imposed	3.143	

BURST SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- No Hydrostatic Head from Mud Outside Of Casing (0' - TD)
- 100% Mud Evacuation Inside of the Casing w/ Full Gas Column Of 0.10 psi/ft, From Next Section
- No Additional Pressure Imposed At Surface (Surface Pressure = 0 psi)

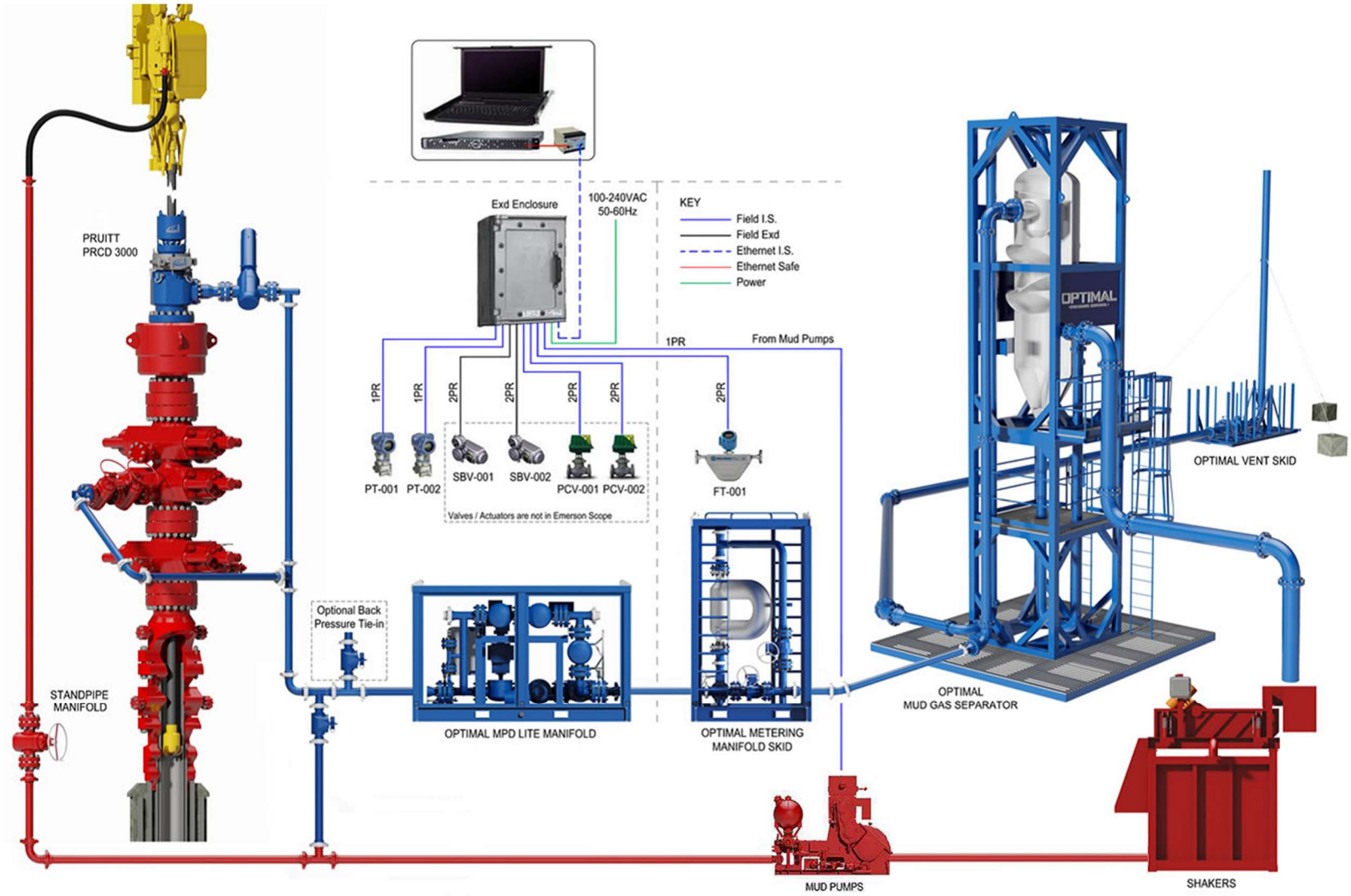
TENSION CALCULATION:

Casing Set	3,110	ft TVD(KB)
Casing Weight	23	plf
Buoyancy Factor = 1- (MW)/65.5	0.840	
Casing String Weight	71,530	lbs
Buoyed Casing String Weight	60,063	lbs
Tensional Strength	313,000	lbs
Design Tension Safety Factor	1.20	
Calculated Safety Factor = Tension Strength /String Weight	1.955	

TENSION SF IS GREATER THAN DESIGN SF. DESIGN IS ADEQUATE

ASSUMPTIONS:
- Casing Consists of A Single Size, Weight, and Grade. No Mixed Casing Strings.
- Assumes 100K Overpull on String Weight

MANAGED PRESSURE DRILLING (MPD) PROCESS FLOW DIAGRAM



RED WILLOW PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Company: Red Willow Production Co.
Project: Archuleta County, CO NAD83
Site: North Carracas 7F Pad
Well: NC 32-4 7F-5
Wellbore: Pilot
Design: Plan #3

LONESTAR CONSULTING

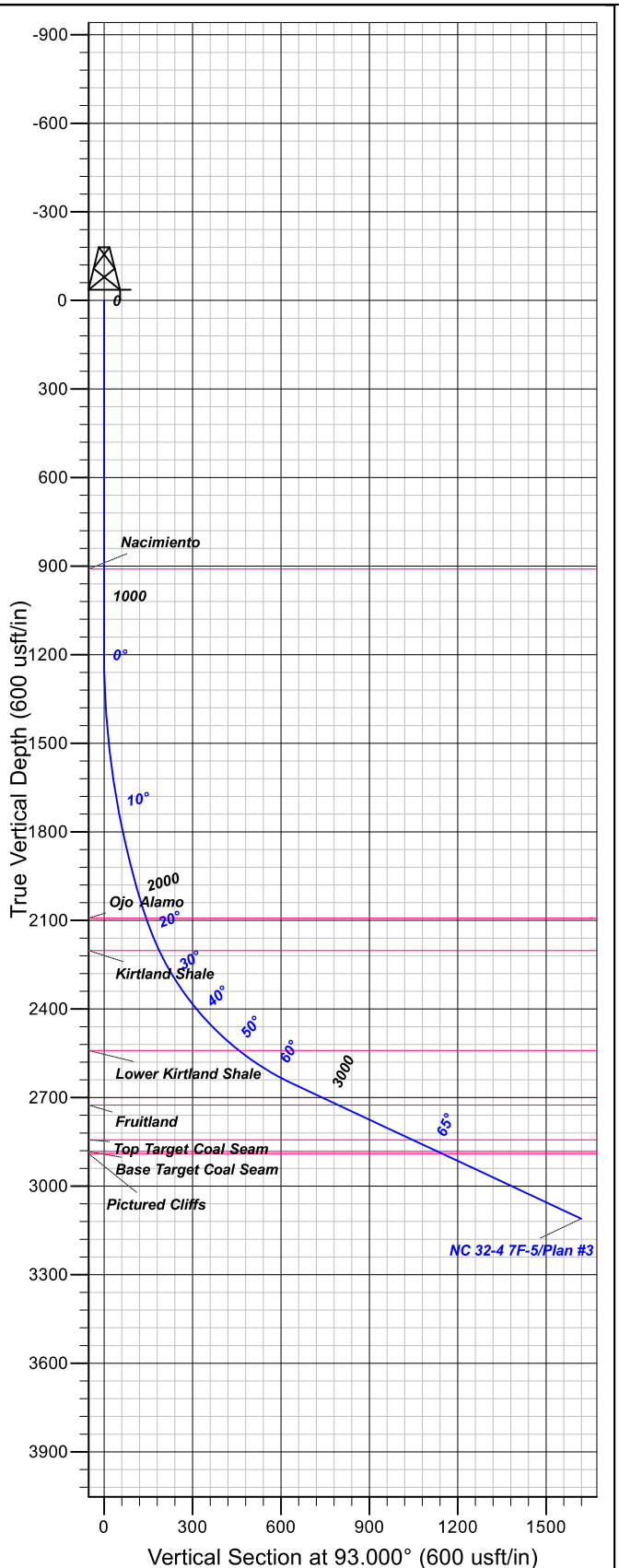
Well Details: NC 32-4 7F-5

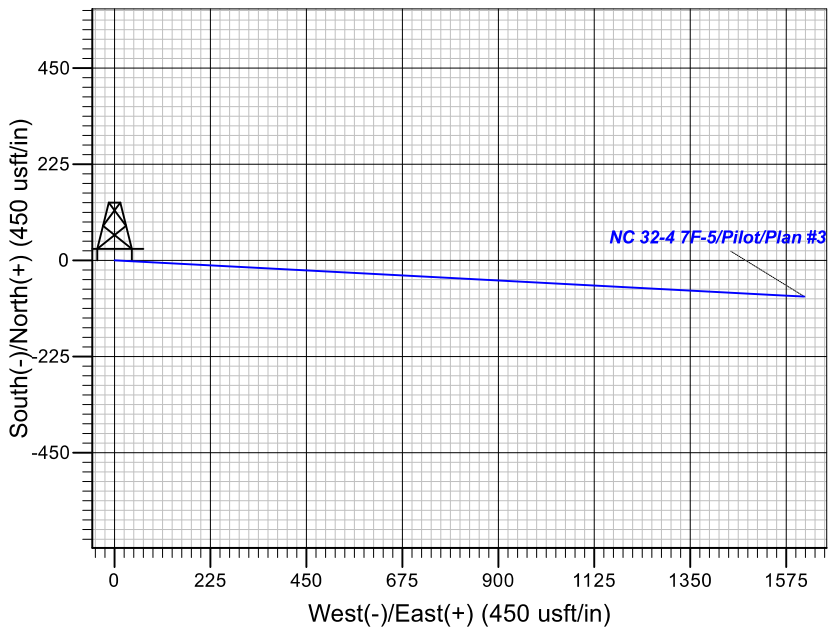
GL 6160' & RKB 15' @ 6175.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1136072.58	2464747.54	37.0259378	-107.3335125	

Azimuths to True North
Magnetic North: 8.65°

Magnetic Field
Strength: 49712.3nT
Dip Angle: 63.47°
Date: 11/18/2021
Model: HDGM2021_FILE





FORMATION TOP DETAILS

TVDPath	MDPath	Formation
910.00	910.00	Nacimiento
2092.00	2107.09	Ojo Alamo
2202.00	2225.79	Kirtland Shale
2540.00	2662.34	Lower Kirtland Shale
2725.00	3047.46	Fruitland
2843.00	3326.67	Top Target Coal Seam
2883.00	3421.31	Base Target Coal Seam
2890.00	3437.88	Pictured Cliffs

CASING DETAILS

No casing data is available

Plan: Plan #3

12:39, December 21 2021
Created By: Janie Collins

PROJECT DETAILS: Archuleta County, CO NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Southern Zone

System Datum: Mean Sea Level

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
1200.00	0.00	0.000	1200.00	0.00	0.00	0.00	0.00	0.00	
2100.00	18.00	93.000	2085.27	-7.34	140.02	2.00	93.00	140.21	
2883.33	65.00	93.000	2655.64	-33.75	643.95	6.00	0.00	644.83	
3958.44	65.00	93.000	3110.00	-84.74	1616.99	0.00	0.00	1619.21	

DESIGN TARGET DETAILS

No target data is available.

Red Willow Production Co.

Archuleta County, CO NAD83
North Carracas 7F Pad
NC 32-4 7F-5

Pilot

Plan: Plan #3

Standard Planning Report

21 December, 2021

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #3		

Project Archuleta County, CO NAD83

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site North Carracas 7F Pad

Site Position:		**Northing:**	1,135,994.45 usft	**Latitude:**	37.0257222
From:	Map	**Easting:**	2,464,727.53 usft	**Longitude:**	-107.3335758
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	-1.12 °

Well NC 32-4 7F-5

Well Position	**+N/-S**	78.51 usft	**Northing:**	1,136,072.58 usft	**Latitude:**	37.0259378
	+E/-W	18.47 usft	**Easting:**	2,464,747.54 usft	**Longitude:**	-107.3335125
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	6,160.00 usft

Wellbore Pilot

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	11/18/2021	8.65	63.47	49,712.30000000

Design Plan #3

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	93.000

Plan Survey Tool Program **Date** 12/21/2021

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	3,958.23	Plan #3 (Pilot)	MWD+HDGM	
				OWSG MWD + HDGM	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,100.00	18.00	93.000	2,085.27	-7.34	140.02	2.00	2.00	0.00	93.00	
2,883.33	65.00	93.000	2,655.64	-33.75	643.95	6.00	6.00	0.00	0.00	
3,958.44	65.00	93.000	3,110.00	-84.74	1,616.99	0.00	0.00	0.00	0.00	

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	2.00	93.000	1,299.98	-0.09	1.74	1.75	2.00	2.00	0.00
1,400.00	4.00	93.000	1,399.84	-0.37	6.97	6.98	2.00	2.00	0.00
1,500.00	6.00	93.000	1,499.45	-0.82	15.67	15.69	2.00	2.00	0.00
1,600.00	8.00	93.000	1,598.70	-1.46	27.84	27.88	2.00	2.00	0.00
1,700.00	10.00	93.000	1,697.47	-2.28	43.46	43.52	2.00	2.00	0.00
1,800.00	12.00	93.000	1,795.62	-3.28	62.52	62.60	2.00	2.00	0.00
1,900.00	14.00	93.000	1,893.06	-4.45	84.98	85.10	2.00	2.00	0.00
2,000.00	16.00	93.000	1,989.64	-5.81	110.82	110.98	2.00	2.00	0.00
2,100.00	18.00	93.000	2,085.27	-7.34	140.02	140.21	2.00	2.00	0.00
2,200.00	24.00	93.000	2,178.58	-9.21	175.79	176.03	6.00	6.00	0.00
2,300.00	30.00	93.000	2,267.64	-11.59	221.11	221.41	6.00	6.00	0.00
2,400.00	36.00	93.000	2,351.47	-14.44	275.47	275.85	6.00	6.00	0.00
2,500.00	42.00	93.000	2,429.15	-17.73	338.29	338.75	6.00	6.00	0.00
2,600.00	48.00	93.000	2,499.83	-21.43	408.87	409.43	6.00	6.00	0.00
2,700.00	54.00	93.000	2,562.73	-25.49	486.44	487.11	6.00	6.00	0.00
2,800.00	60.00	93.000	2,617.17	-29.88	570.16	570.94	6.00	6.00	0.00
2,883.33	65.00	93.000	2,655.64	-33.75	643.95	644.83	6.00	6.00	0.00
2,900.00	65.00	93.000	2,662.68	-34.54	659.03	659.94	0.00	0.00	0.00
3,000.00	65.00	93.000	2,704.94	-39.28	749.54	750.57	0.00	0.00	0.00
3,100.00	65.00	93.000	2,747.21	-44.03	840.05	841.20	0.00	0.00	0.00
3,200.00	65.00	93.000	2,789.47	-48.77	930.55	931.83	0.00	0.00	0.00
3,300.00	65.00	93.000	2,831.73	-53.51	1,021.06	1,022.46	0.00	0.00	0.00
3,400.00	65.00	93.000	2,873.99	-58.25	1,111.57	1,113.09	0.00	0.00	0.00
3,500.00	65.00	93.000	2,916.25	-63.00	1,202.07	1,203.72	0.00	0.00	0.00
3,600.00	65.00	93.000	2,958.52	-67.74	1,292.58	1,294.35	0.00	0.00	0.00
3,700.00	65.00	93.000	3,000.78	-72.48	1,383.09	1,384.99	0.00	0.00	0.00
3,800.00	65.00	93.000	3,043.04	-77.23	1,473.59	1,475.62	0.00	0.00	0.00
3,900.00	65.00	93.000	3,085.30	-81.97	1,564.10	1,566.25	0.00	0.00	0.00
3,958.44	65.00	93.000	3,110.00	-84.74	1,616.99	1,619.21	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #3		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
910.00	910.00	Nacimiento		0.00	0.000
2,107.09	2,092.00	Ojo Alamo		0.00	0.000
2,225.79	2,202.00	Kirtland Shale		0.00	0.000
2,662.34	2,540.00	Lower Kirtland Shale		0.00	0.000
3,047.46	2,725.00	Fruitland		0.00	0.000
3,326.67	2,843.00	Top Target Coal Seam		0.00	0.000
3,421.31	2,883.00	Base Target Coal Seam		0.00	0.000
3,437.88	2,890.00	Pictured Cliffs		0.00	0.000

RED WILLOW PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Company: Red Willow Production Co.
Project: Archuleta County, CO NAD83
Site: North Carracas 7F Pad
Well: NC 32-4 7F-5
Wellbore: Lateral 1
Design: Plan #3

PROJECT DETAILS: Archuleta County, CO NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Southern Zone
System Datum: Mean Sea Level
Local North: True

LONESTAR CONSULTING

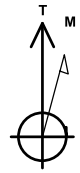
WELL DETAILS: NC 32-4 7F-5

GL 6160' & RKB 15' @ 6175.00usft

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	1136072.58	2464747.54	37.0259378	-107.3335125

Plan: Plan #3 (NC 32-4 7F-5/Lateral 1)

Created By: Janie Collins Date: 12:50, December 21 2021



Azimuths to True North
Magnetic North: 8.65°

Magnetic Field
Strength: 49712.3nT
Dip Angle: 63.47°
Date: 11/18/2021
Model: HDGM2021_FILE

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
7F-5 Lat 1 BHL	2863.00	1148.11	10102.49	1137022.19	2474870.62	37.0290858	-107.2989070

SECTION DETAILS

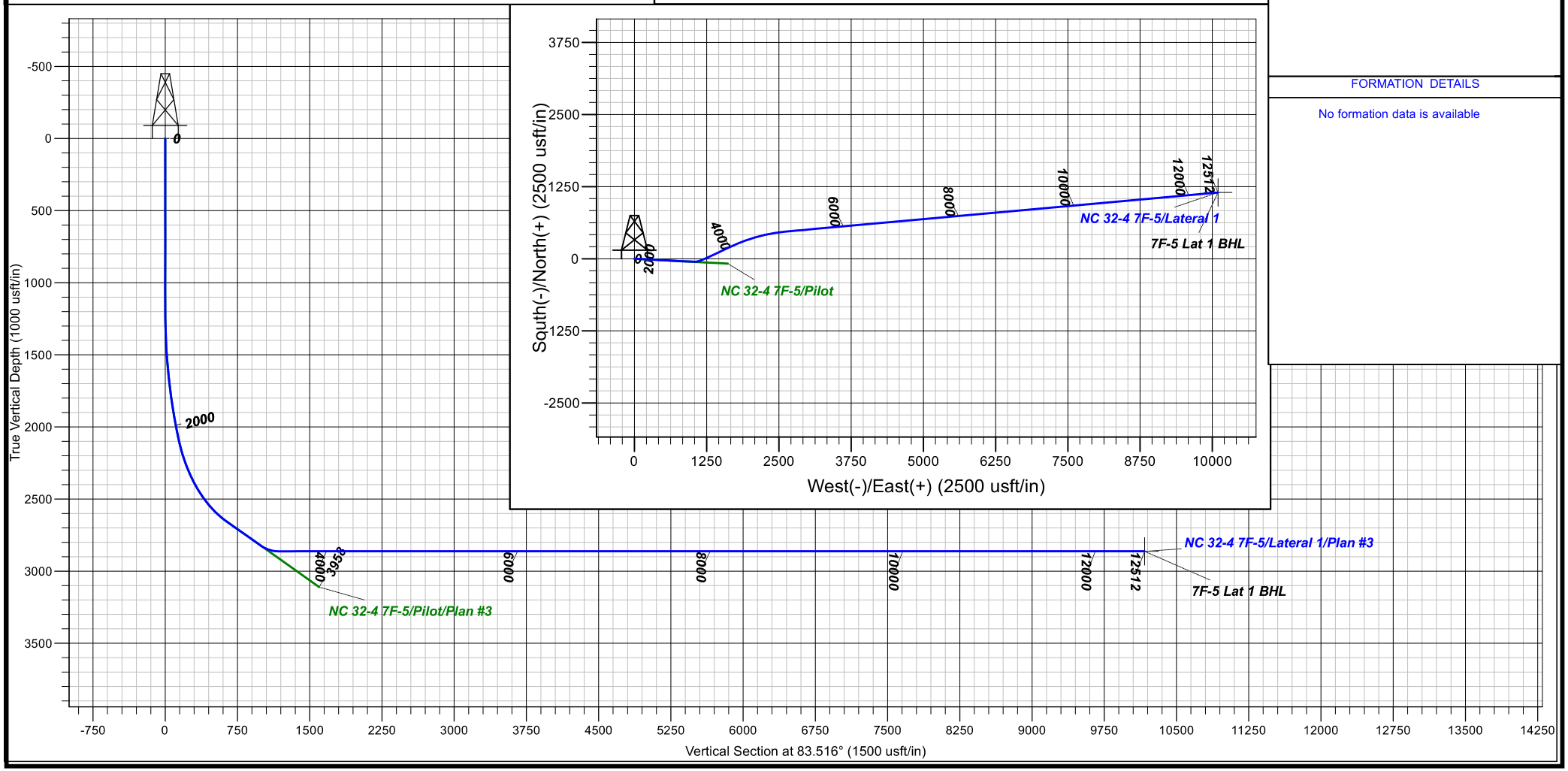
MD	Inc	Azi	TVD	+N/-S	+E/-W	DIeg	TFace	VSect
3280.00	65.00	93.000	2823.28	-52.56	1002.96	0.00	0.00	990.61
3287.00	67.00	93.000	2826.12	-52.90	1009.35	28.57	0.00	996.92
3469.63	90.00	65.000	2863.00	-17.56	1181.63	19.51	-53.69	1172.09
4019.63	90.00	65.000	2863.00	214.88	1680.10	0.00	0.00	1693.62
5010.89	90.00	84.825	2863.00	471.61	2632.43	2.00	90.00	2668.85
12511.52	90.00	84.825	2863.00	1148.11	10102.49	0.00	0.00	10167.52

CASING DETAILS

No casing data is available

FORMATION DETAILS

No formation data is available



RED
WILLOW
PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Red Willow Production Co.

Archuleta County, CO NAD83
North Carracas 7F Pad
NC 32-4 7F-5

Lateral 1

Plan: Plan #3

Standard Planning Report

21 December, 2021

LONESTAR CONSULTING

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

Project Archuleta County, CO NAD83

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site North Carracas 7F Pad

Site Position:		**Northing:**	1,135,994.45 usft	**Latitude:**	37.0257222
From:	Map	**Easting:**	2,464,727.53 usft	**Longitude:**	-107.3335758
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	-1.12 °

Well NC 32-4 7F-5

Well Position	**+N/-S**	78.51 usft	**Northing:**	1,136,072.58 usft	**Latitude:**	37.0259378
	+E/-W	18.47 usft	**Easting:**	2,464,747.54 usft	**Longitude:**	-107.3335125
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	6,160.00 usft

Wellbore Lateral 1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	11/18/2021	8.65	63.47	49,712.30000000

Design Plan #3

Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	3,280.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	83.516

Plan Survey Tool Program **Date** 12/21/2021

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	3,280.00	12,510.75	Plan #3 (Lateral 1)	MWD+HDGM	
				OWSG MWD + HDGM	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
3,280.00	65.00	93.000	2,823.28	-52.56	1,002.96	0.00	0.00	0.00	0.00	
3,287.00	67.00	93.000	2,826.12	-52.90	1,009.35	28.57	28.57	0.00	0.00	
3,469.63	90.00	65.000	2,863.00	-17.56	1,181.63	19.51	12.59	-15.33	-53.69	
4,019.63	90.00	65.000	2,863.00	214.88	1,680.10	0.00	0.00	0.00	0.00	
5,010.89	90.00	84.825	2,863.00	471.61	2,632.43	2.00	0.00	2.00	90.00	
12,511.52	90.00	84.825	2,863.00	1,148.11	10,102.49	0.00	0.00	0.00	0.00	7F-5 Lat 1 BHL

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,280.00	65.00	93.000	2,823.28	-52.56	1,002.96	990.61	0.00	0.00	0.00
3,287.00	67.00	93.000	2,826.12	-52.90	1,009.35	996.92	28.57	28.57	0.00
3,300.00	68.52	90.804	2,831.05	-53.30	1,021.37	1,008.82	19.51	11.67	-16.90
3,400.00	80.94	75.162	2,857.49	-41.19	1,116.54	1,104.75	19.51	12.42	-15.64
3,469.63	90.00	65.000	2,863.00	-17.56	1,181.63	1,172.09	19.51	13.02	-14.60
3,500.00	90.00	65.000	2,863.00	-4.72	1,209.16	1,200.89	0.00	0.00	0.00
3,600.00	90.00	65.000	2,863.00	37.54	1,299.79	1,295.72	0.00	0.00	0.00
3,700.00	90.00	65.000	2,863.00	79.80	1,390.42	1,390.54	0.00	0.00	0.00
3,800.00	90.00	65.000	2,863.00	122.06	1,481.05	1,485.36	0.00	0.00	0.00
3,900.00	90.00	65.000	2,863.00	164.32	1,571.68	1,580.19	0.00	0.00	0.00
4,000.00	90.00	65.000	2,863.00	206.59	1,662.31	1,675.01	0.00	0.00	0.00
4,019.63	90.00	65.000	2,863.00	214.88	1,680.10	1,693.62	0.00	0.00	0.00
4,100.00	90.00	66.607	2,863.00	247.82	1,753.41	1,770.18	2.00	0.00	2.00
4,200.00	90.00	68.607	2,863.00	285.91	1,845.87	1,866.35	2.00	0.00	2.00
4,300.00	90.00	70.607	2,863.00	320.76	1,939.59	1,963.41	2.00	0.00	2.00
4,400.00	90.00	72.607	2,863.00	352.31	2,034.48	2,061.25	2.00	0.00	2.00
4,500.00	90.00	74.607	2,863.00	380.53	2,130.41	2,159.75	2.00	0.00	2.00
4,600.00	90.00	76.607	2,863.00	405.38	2,227.27	2,258.80	2.00	0.00	2.00
4,700.00	90.00	78.607	2,863.00	426.84	2,324.93	2,358.26	2.00	0.00	2.00
4,800.00	90.00	80.607	2,863.00	444.88	2,423.29	2,458.02	2.00	0.00	2.00
4,900.00	90.00	82.607	2,863.00	459.48	2,522.21	2,557.96	2.00	0.00	2.00
5,000.00	90.00	84.607	2,863.00	470.61	2,621.58	2,657.96	2.00	0.00	2.00
5,010.89	90.00	84.825	2,863.00	471.61	2,632.43	2,668.85	2.00	0.00	2.00
5,100.00	90.00	84.825	2,863.00	479.65	2,721.18	2,757.93	0.00	0.00	0.00
5,200.00	90.00	84.825	2,863.00	488.67	2,820.77	2,857.91	0.00	0.00	0.00
5,300.00	90.00	84.825	2,863.00	497.69	2,920.36	2,957.88	0.00	0.00	0.00
5,400.00	90.00	84.825	2,863.00	506.71	3,019.95	3,057.85	0.00	0.00	0.00
5,500.00	90.00	84.825	2,863.00	515.73	3,119.55	3,157.83	0.00	0.00	0.00
5,600.00	90.00	84.825	2,863.00	524.75	3,219.14	3,257.80	0.00	0.00	0.00
5,700.00	90.00	84.825	2,863.00	533.77	3,318.73	3,357.78	0.00	0.00	0.00
5,800.00	90.00	84.825	2,863.00	542.78	3,418.32	3,457.75	0.00	0.00	0.00
5,900.00	90.00	84.825	2,863.00	551.80	3,517.91	3,557.72	0.00	0.00	0.00
6,000.00	90.00	84.825	2,863.00	560.82	3,617.51	3,657.70	0.00	0.00	0.00
6,100.00	90.00	84.825	2,863.00	569.84	3,717.10	3,757.67	0.00	0.00	0.00
6,200.00	90.00	84.825	2,863.00	578.86	3,816.69	3,857.65	0.00	0.00	0.00
6,300.00	90.00	84.825	2,863.00	587.88	3,916.28	3,957.62	0.00	0.00	0.00
6,400.00	90.00	84.825	2,863.00	596.90	4,015.88	4,057.59	0.00	0.00	0.00
6,500.00	90.00	84.825	2,863.00	605.92	4,115.47	4,157.57	0.00	0.00	0.00
6,600.00	90.00	84.825	2,863.00	614.94	4,215.06	4,257.54	0.00	0.00	0.00
6,700.00	90.00	84.825	2,863.00	623.96	4,314.65	4,357.52	0.00	0.00	0.00
6,800.00	90.00	84.825	2,863.00	632.98	4,414.25	4,457.49	0.00	0.00	0.00
6,900.00	90.00	84.825	2,863.00	642.00	4,513.84	4,557.46	0.00	0.00	0.00
7,000.00	90.00	84.825	2,863.00	651.02	4,613.43	4,657.44	0.00	0.00	0.00
7,100.00	90.00	84.825	2,863.00	660.03	4,713.02	4,757.41	0.00	0.00	0.00
7,200.00	90.00	84.825	2,863.00	669.05	4,812.62	4,857.38	0.00	0.00	0.00
7,300.00	90.00	84.825	2,863.00	678.07	4,912.21	4,957.36	0.00	0.00	0.00
7,400.00	90.00	84.825	2,863.00	687.09	5,011.80	5,057.33	0.00	0.00	0.00
7,500.00	90.00	84.825	2,863.00	696.11	5,111.39	5,157.31	0.00	0.00	0.00
7,600.00	90.00	84.825	2,863.00	705.13	5,210.99	5,257.28	0.00	0.00	0.00
7,700.00	90.00	84.825	2,863.00	714.15	5,310.58	5,357.25	0.00	0.00	0.00
7,800.00	90.00	84.825	2,863.00	723.17	5,410.17	5,457.23	0.00	0.00	0.00
7,900.00	90.00	84.825	2,863.00	732.19	5,509.76	5,557.20	0.00	0.00	0.00
8,000.00	90.00	84.825	2,863.00	741.21	5,609.36	5,657.18	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,100.00	90.00	84.825	2,863.00	750.23	5,708.95	5,757.15	0.00	0.00	0.00
8,200.00	90.00	84.825	2,863.00	759.25	5,808.54	5,857.12	0.00	0.00	0.00
8,300.00	90.00	84.825	2,863.00	768.27	5,908.13	5,957.10	0.00	0.00	0.00
8,400.00	90.00	84.825	2,863.00	777.28	6,007.73	6,057.07	0.00	0.00	0.00
8,500.00	90.00	84.825	2,863.00	786.30	6,107.32	6,157.05	0.00	0.00	0.00
8,600.00	90.00	84.825	2,863.00	795.32	6,206.91	6,257.02	0.00	0.00	0.00
8,700.00	90.00	84.825	2,863.00	804.34	6,306.50	6,356.99	0.00	0.00	0.00
8,800.00	90.00	84.825	2,863.00	813.36	6,406.10	6,456.97	0.00	0.00	0.00
8,900.00	90.00	84.825	2,863.00	822.38	6,505.69	6,556.94	0.00	0.00	0.00
9,000.00	90.00	84.825	2,863.00	831.40	6,605.28	6,656.92	0.00	0.00	0.00
9,100.00	90.00	84.825	2,863.00	840.42	6,704.87	6,756.89	0.00	0.00	0.00
9,200.00	90.00	84.825	2,863.00	849.44	6,804.47	6,856.86	0.00	0.00	0.00
9,300.00	90.00	84.825	2,863.00	858.46	6,904.06	6,956.84	0.00	0.00	0.00
9,400.00	90.00	84.825	2,863.00	867.48	7,003.65	7,056.81	0.00	0.00	0.00
9,500.00	90.00	84.825	2,863.00	876.50	7,103.24	7,156.78	0.00	0.00	0.00
9,600.00	90.00	84.825	2,863.00	885.51	7,202.84	7,256.76	0.00	0.00	0.00
9,700.00	90.00	84.825	2,863.00	894.53	7,302.43	7,356.73	0.00	0.00	0.00
9,800.00	90.00	84.825	2,863.00	903.55	7,402.02	7,456.71	0.00	0.00	0.00
9,900.00	90.00	84.825	2,863.00	912.57	7,501.61	7,556.68	0.00	0.00	0.00
10,000.00	90.00	84.825	2,863.00	921.59	7,601.20	7,656.65	0.00	0.00	0.00
10,100.00	90.00	84.825	2,863.00	930.61	7,700.80	7,756.63	0.00	0.00	0.00
10,200.00	90.00	84.825	2,863.00	939.63	7,800.39	7,856.60	0.00	0.00	0.00
10,300.00	90.00	84.825	2,863.00	948.65	7,899.98	7,956.58	0.00	0.00	0.00
10,400.00	90.00	84.825	2,863.00	957.67	7,999.57	8,056.55	0.00	0.00	0.00
10,500.00	90.00	84.825	2,863.00	966.69	8,099.17	8,156.52	0.00	0.00	0.00
10,600.00	90.00	84.825	2,863.00	975.71	8,198.76	8,256.50	0.00	0.00	0.00
10,700.00	90.00	84.825	2,863.00	984.73	8,298.35	8,356.47	0.00	0.00	0.00
10,800.00	90.00	84.825	2,863.00	993.75	8,397.94	8,456.45	0.00	0.00	0.00
10,900.00	90.00	84.825	2,863.00	1,002.76	8,497.54	8,556.42	0.00	0.00	0.00
11,000.00	90.00	84.825	2,863.00	1,011.78	8,597.13	8,656.39	0.00	0.00	0.00
11,100.00	90.00	84.825	2,863.00	1,020.80	8,696.72	8,756.37	0.00	0.00	0.00
11,200.00	90.00	84.825	2,863.00	1,029.82	8,796.31	8,856.34	0.00	0.00	0.00
11,300.00	90.00	84.825	2,863.00	1,038.84	8,895.91	8,956.32	0.00	0.00	0.00
11,400.00	90.00	84.825	2,863.00	1,047.86	8,995.50	9,056.29	0.00	0.00	0.00
11,500.00	90.00	84.825	2,863.00	1,056.88	9,095.09	9,156.26	0.00	0.00	0.00
11,600.00	90.00	84.825	2,863.00	1,065.90	9,194.68	9,256.24	0.00	0.00	0.00
11,700.00	90.00	84.825	2,863.00	1,074.92	9,294.28	9,356.21	0.00	0.00	0.00
11,800.00	90.00	84.825	2,863.00	1,083.94	9,393.87	9,456.18	0.00	0.00	0.00
11,900.00	90.00	84.825	2,863.00	1,092.96	9,493.46	9,556.16	0.00	0.00	0.00
12,000.00	90.00	84.825	2,863.00	1,101.98	9,593.05	9,656.13	0.00	0.00	0.00
12,100.00	90.00	84.825	2,863.00	1,111.00	9,692.65	9,756.11	0.00	0.00	0.00
12,200.00	90.00	84.825	2,863.00	1,120.01	9,792.24	9,856.08	0.00	0.00	0.00
12,300.00	90.00	84.825	2,863.00	1,129.03	9,891.83	9,956.05	0.00	0.00	0.00
12,400.00	90.00	84.825	2,863.00	1,138.05	9,991.42	10,056.03	0.00	0.00	0.00
12,500.00	90.00	84.825	2,863.00	1,147.07	10,091.02	10,156.00	0.00	0.00	0.00
12,511.52	90.00	84.825	2,863.00	1,148.11	10,102.49	10,167.52	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
7F-5 Lat 1 BHL - plan hits target center - Point	0.00	0.000	2,863.00	1,148.11	10,102.49	1,137,022.18	2,474,870.62	37.0290858	-107.2989071

RED WILLOW PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Company: Red Willow Production Co.
Project: Archuleta County, CO NAD83
Site: North Carracas 7F Pad
Well: NC 32-4 7F-5
Wellbore: Lateral 2
Design: Plan #3

PROJECT DETAILS: Archuleta County, CO NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Southern Zone
System Datum: Mean Sea Level
Local North: True

LONESTAR CONSULTING

WELL DETAILS: NC 32-4 7F-5

GL 6160' & RKB 15' @ 6175.00usft

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	1136072.58	2464747.54	37.0259378	-107.3335125

Plan: Plan #3 (NC 32-4 7F-5/Lateral 2)

Created By: Janie Collins Date: 12:58, December 21 2021

Azimuths to True North
Magnetic North: 8.65°

Magnetic Field
Strength: 49712.3nT
Dip Angle: 63.47°
Date: 11/18/2021
Model: HDGM2021_FILE

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
7F-5 Lat 2 BHL	2880.00	-677.74	10120.65	1135196.33	2474852.94	37.0240714	-107.2988472

SECTION DETAILS

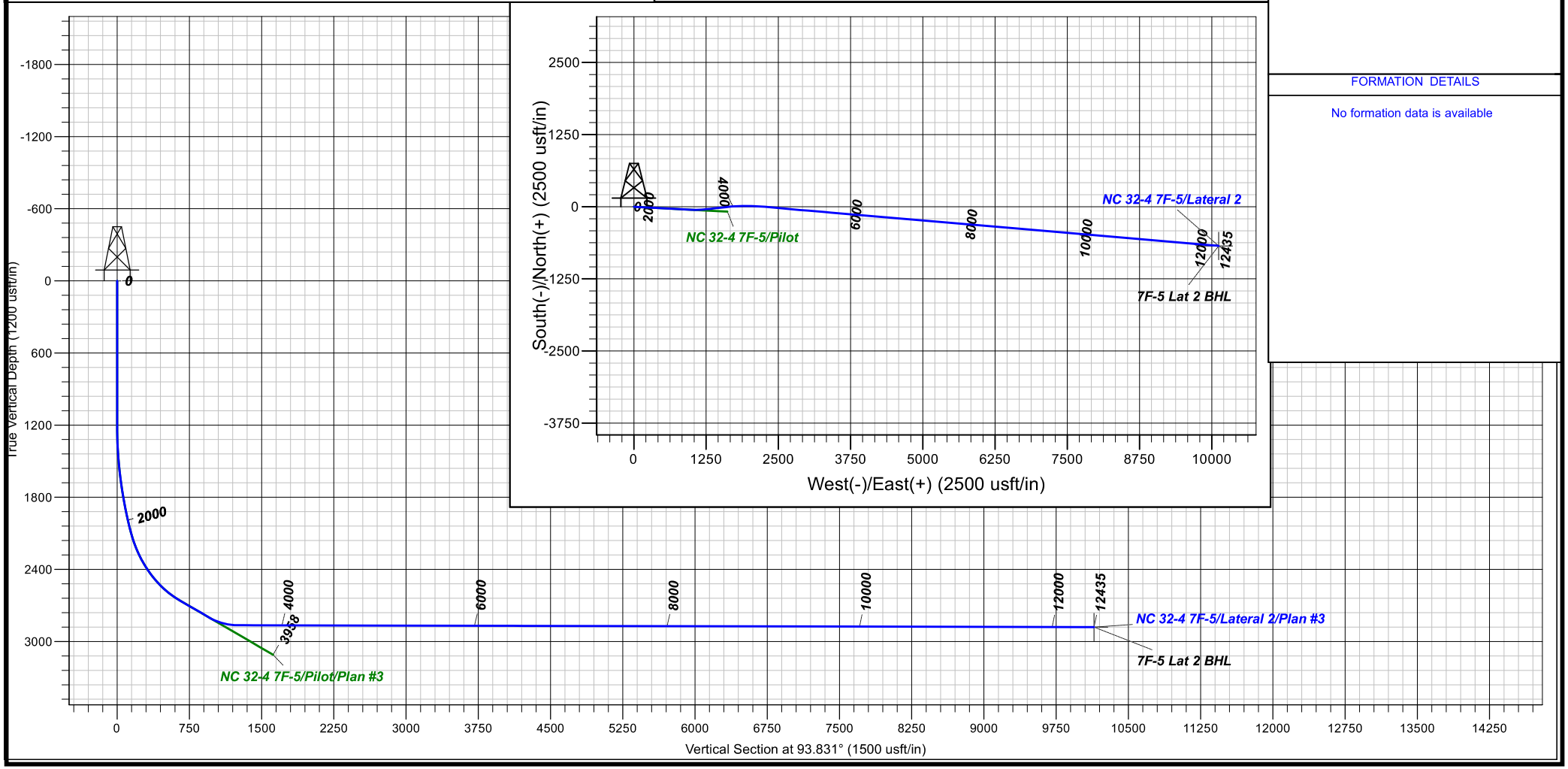
MD	Inc	Azi	TVD	+N/-S	+E/-W	DIeg	TFace	VSect
3235.00	65.00	93.000	2804.26	-50.43	962.23	0.00	0.00	963.45
3242.00	67.00	93.000	2807.11	-50.76	968.62	28.57	0.00	969.84
3532.50	89.90	84.000	2865.00	-42.45	1250.91	8.44	-22.15	1250.95
3932.50	89.90	84.000	2865.70	-0.64	1648.72	0.00	0.00	1645.08
4478.46	89.90	94.919	2866.64	4.50	2193.83	2.00	89.99	2188.62
12434.60	89.90	94.919	2880.00	-677.74	10120.65	0.00	0.00	10143.32

CASING DETAILS

No casing data is available

FORMATION DETAILS

No formation data is available



Red Willow Production Co.

Archuleta County, CO NAD83
North Carracas 7F Pad
NC 32-4 7F-5

Lateral 2

Plan: Plan #3

Standard Planning Report

21 December, 2021

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 2		
Design:	Plan #3		

Project Archuleta County, CO NAD83

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site North Carracas 7F Pad

Site Position:		**Northing:**	1,135,994.45 usft	**Latitude:**	37.0257222
From:	Map	**Easting:**	2,464,727.53 usft	**Longitude:**	-107.3335758
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	-1.12 °

Well NC 32-4 7F-5

Well Position	**+N/-S**	78.51 usft	**Northing:**	1,136,072.58 usft	**Latitude:**	37.0259378
	+E/-W	18.47 usft	**Easting:**	2,464,747.54 usft	**Longitude:**	-107.3335125
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	6,160.00 usft

Wellbore Lateral 2

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	11/18/2021	8.65	63.47	49,712.30000000

Design Plan #3

Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	3,235.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	93.831

Plan Survey Tool Program **Date** 12/21/2021

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	3,235.00	12,433.79	Plan #3 (Lateral 2)	MWD+HDGM	
				OWSG MWD + HDGM	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
3,235.00	65.00	93.000	2,804.26	-50.43	962.23	0.00	0.00	0.00	0.00	
3,242.00	67.00	93.000	2,807.11	-50.76	968.62	28.57	28.57	0.00	0.00	
3,532.50	89.90	84.000	2,865.00	-42.45	1,250.91	8.44	7.88	-3.10	-22.15	
3,932.50	89.90	84.000	2,865.70	-0.64	1,648.72	0.00	0.00	0.00	0.00	
4,478.46	89.90	94.919	2,866.64	4.50	2,193.83	2.00	0.00	2.00	89.99	
12,434.60	89.90	94.919	2,880.00	-677.74	10,120.65	0.00	0.00	0.00	0.00	7F-5 Lat 2 BHL

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 2		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,235.00	65.00	93.000	2,804.26	-50.43	962.23	963.45	0.00	0.00	0.00
3,242.00	67.00	93.000	2,807.11	-50.76	968.62	969.84	28.57	28.57	0.00
3,300.00	71.54	91.057	2,827.63	-52.67	1,022.81	1,024.05	8.44	7.84	-3.35
3,400.00	79.42	87.926	2,852.68	-51.76	1,119.53	1,120.48	8.44	7.88	-3.13
3,500.00	87.33	84.953	2,864.21	-45.58	1,218.58	1,218.90	8.44	7.91	-2.97
3,532.50	89.90	84.000	2,865.00	-42.45	1,250.91	1,250.95	8.44	7.91	-2.93
3,600.00	89.90	84.000	2,865.12	-35.39	1,318.04	1,317.46	0.00	0.00	0.00
3,700.00	89.90	84.000	2,865.29	-24.94	1,417.49	1,415.99	0.00	0.00	0.00
3,800.00	89.90	84.000	2,865.47	-14.49	1,516.95	1,514.52	0.00	0.00	0.00
3,900.00	89.90	84.000	2,865.64	-4.04	1,616.40	1,613.06	0.00	0.00	0.00
3,932.50	89.90	84.000	2,865.70	-0.64	1,648.72	1,645.08	0.00	0.00	0.00
4,000.00	89.90	85.350	2,865.82	5.62	1,715.93	1,711.72	2.00	0.00	2.00
4,100.00	89.90	87.350	2,865.99	11.99	1,815.72	1,810.86	2.00	0.00	2.00
4,200.00	89.90	89.350	2,866.16	14.87	1,915.67	1,910.40	2.00	0.00	2.00
4,300.00	89.90	91.350	2,866.33	14.26	2,015.66	2,010.21	2.00	0.00	2.00
4,400.00	89.90	93.350	2,866.50	10.16	2,115.58	2,110.17	2.00	0.00	2.00
4,478.46	89.90	94.919	2,866.64	4.50	2,193.83	2,188.62	2.00	0.00	2.00
4,500.00	89.90	94.919	2,866.67	2.65	2,215.29	2,210.16	0.00	0.00	0.00
4,600.00	89.90	94.919	2,866.84	-5.92	2,314.92	2,310.14	0.00	0.00	0.00
4,700.00	89.90	94.919	2,867.01	-14.50	2,414.55	2,410.13	0.00	0.00	0.00
4,800.00	89.90	94.919	2,867.18	-23.07	2,514.18	2,510.11	0.00	0.00	0.00
4,900.00	89.90	94.919	2,867.34	-31.65	2,613.82	2,610.09	0.00	0.00	0.00
5,000.00	89.90	94.919	2,867.51	-40.22	2,713.45	2,710.07	0.00	0.00	0.00
5,100.00	89.90	94.919	2,867.68	-48.80	2,813.08	2,810.05	0.00	0.00	0.00
5,200.00	89.90	94.919	2,867.85	-57.37	2,912.71	2,910.03	0.00	0.00	0.00
5,300.00	89.90	94.919	2,868.02	-65.95	3,012.34	3,010.02	0.00	0.00	0.00
5,400.00	89.90	94.919	2,868.18	-74.52	3,111.97	3,110.00	0.00	0.00	0.00
5,500.00	89.90	94.919	2,868.35	-83.10	3,211.60	3,209.98	0.00	0.00	0.00
5,600.00	89.90	94.919	2,868.52	-91.67	3,311.24	3,309.96	0.00	0.00	0.00
5,700.00	89.90	94.919	2,868.69	-100.25	3,410.87	3,409.94	0.00	0.00	0.00
5,800.00	89.90	94.919	2,868.86	-108.82	3,510.50	3,509.93	0.00	0.00	0.00
5,900.00	89.90	94.919	2,869.02	-117.40	3,610.13	3,609.91	0.00	0.00	0.00
6,000.00	89.90	94.919	2,869.19	-125.97	3,709.76	3,709.89	0.00	0.00	0.00
6,100.00	89.90	94.919	2,869.36	-134.55	3,809.39	3,809.87	0.00	0.00	0.00
6,200.00	89.90	94.919	2,869.53	-143.12	3,909.03	3,909.85	0.00	0.00	0.00
6,300.00	89.90	94.919	2,869.70	-151.70	4,008.66	4,009.83	0.00	0.00	0.00
6,400.00	89.90	94.919	2,869.86	-160.27	4,108.29	4,109.82	0.00	0.00	0.00
6,500.00	89.90	94.919	2,870.03	-168.85	4,207.92	4,209.80	0.00	0.00	0.00
6,600.00	89.90	94.919	2,870.20	-177.42	4,307.55	4,309.78	0.00	0.00	0.00
6,700.00	89.90	94.919	2,870.37	-186.00	4,407.18	4,409.76	0.00	0.00	0.00
6,800.00	89.90	94.919	2,870.54	-194.57	4,506.81	4,509.74	0.00	0.00	0.00
6,900.00	89.90	94.919	2,870.70	-203.15	4,606.45	4,609.73	0.00	0.00	0.00
7,000.00	89.90	94.919	2,870.87	-211.72	4,706.08	4,709.71	0.00	0.00	0.00
7,100.00	89.90	94.919	2,871.04	-220.30	4,805.71	4,809.69	0.00	0.00	0.00
7,200.00	89.90	94.919	2,871.21	-228.87	4,905.34	4,909.67	0.00	0.00	0.00
7,300.00	89.90	94.919	2,871.38	-237.45	5,004.97	5,009.65	0.00	0.00	0.00
7,400.00	89.90	94.919	2,871.54	-246.02	5,104.60	5,109.63	0.00	0.00	0.00
7,500.00	89.90	94.919	2,871.71	-254.60	5,204.24	5,209.62	0.00	0.00	0.00
7,600.00	89.90	94.919	2,871.88	-263.17	5,303.87	5,309.60	0.00	0.00	0.00
7,700.00	89.90	94.919	2,872.05	-271.75	5,403.50	5,409.58	0.00	0.00	0.00
7,800.00	89.90	94.919	2,872.22	-280.32	5,503.13	5,509.56	0.00	0.00	0.00
7,900.00	89.90	94.919	2,872.38	-288.90	5,602.76	5,609.54	0.00	0.00	0.00
8,000.00	89.90	94.919	2,872.55	-297.47	5,702.39	5,709.53	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 2		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,100.00	89.90	94.919	2,872.72	-306.05	5,802.02	5,809.51	0.00	0.00	0.00
8,200.00	89.90	94.919	2,872.89	-314.62	5,901.66	5,909.49	0.00	0.00	0.00
8,300.00	89.90	94.919	2,873.06	-323.20	6,001.29	6,009.47	0.00	0.00	0.00
8,400.00	89.90	94.919	2,873.22	-331.77	6,100.92	6,109.45	0.00	0.00	0.00
8,500.00	89.90	94.919	2,873.39	-340.35	6,200.55	6,209.43	0.00	0.00	0.00
8,600.00	89.90	94.919	2,873.56	-348.92	6,300.18	6,309.42	0.00	0.00	0.00
8,700.00	89.90	94.919	2,873.73	-357.50	6,399.81	6,409.40	0.00	0.00	0.00
8,800.00	89.90	94.919	2,873.89	-366.07	6,499.45	6,509.38	0.00	0.00	0.00
8,900.00	89.90	94.919	2,874.06	-374.65	6,599.08	6,609.36	0.00	0.00	0.00
9,000.00	89.90	94.919	2,874.23	-383.22	6,698.71	6,709.34	0.00	0.00	0.00
9,100.00	89.90	94.919	2,874.40	-391.80	6,798.34	6,809.33	0.00	0.00	0.00
9,200.00	89.90	94.919	2,874.57	-400.37	6,897.97	6,909.31	0.00	0.00	0.00
9,300.00	89.90	94.919	2,874.73	-408.95	6,997.60	7,009.29	0.00	0.00	0.00
9,400.00	89.90	94.919	2,874.90	-417.52	7,097.23	7,109.27	0.00	0.00	0.00
9,500.00	89.90	94.919	2,875.07	-426.10	7,196.87	7,209.25	0.00	0.00	0.00
9,600.00	89.90	94.919	2,875.24	-434.67	7,296.50	7,309.24	0.00	0.00	0.00
9,700.00	89.90	94.919	2,875.41	-443.25	7,396.13	7,409.22	0.00	0.00	0.00
9,800.00	89.90	94.919	2,875.57	-451.82	7,495.76	7,509.20	0.00	0.00	0.00
9,900.00	89.90	94.919	2,875.74	-460.40	7,595.39	7,609.18	0.00	0.00	0.00
10,000.00	89.90	94.919	2,875.91	-468.97	7,695.02	7,709.16	0.00	0.00	0.00
10,100.00	89.90	94.919	2,876.08	-477.55	7,794.66	7,809.14	0.00	0.00	0.00
10,200.00	89.90	94.919	2,876.25	-486.12	7,894.29	7,909.13	0.00	0.00	0.00
10,300.00	89.90	94.919	2,876.41	-494.70	7,993.92	8,009.11	0.00	0.00	0.00
10,400.00	89.90	94.919	2,876.58	-503.27	8,093.55	8,109.09	0.00	0.00	0.00
10,500.00	89.90	94.919	2,876.75	-511.85	8,193.18	8,209.07	0.00	0.00	0.00
10,600.00	89.90	94.919	2,876.92	-520.42	8,292.81	8,309.05	0.00	0.00	0.00
10,700.00	89.90	94.919	2,877.09	-529.00	8,392.44	8,409.04	0.00	0.00	0.00
10,800.00	89.90	94.919	2,877.25	-537.57	8,492.08	8,509.02	0.00	0.00	0.00
10,900.00	89.90	94.919	2,877.42	-546.15	8,591.71	8,609.00	0.00	0.00	0.00
11,000.00	89.90	94.919	2,877.59	-554.72	8,691.34	8,708.98	0.00	0.00	0.00
11,100.00	89.90	94.919	2,877.76	-563.30	8,790.97	8,808.96	0.00	0.00	0.00
11,200.00	89.90	94.919	2,877.93	-571.87	8,890.60	8,908.94	0.00	0.00	0.00
11,300.00	89.90	94.919	2,878.09	-580.45	8,990.23	9,008.93	0.00	0.00	0.00
11,400.00	89.90	94.919	2,878.26	-589.02	9,089.86	9,108.91	0.00	0.00	0.00
11,500.00	89.90	94.919	2,878.43	-597.60	9,189.50	9,208.89	0.00	0.00	0.00
11,600.00	89.90	94.919	2,878.60	-606.17	9,289.13	9,308.87	0.00	0.00	0.00
11,700.00	89.90	94.919	2,878.77	-614.75	9,388.76	9,408.85	0.00	0.00	0.00
11,800.00	89.90	94.919	2,878.93	-623.32	9,488.39	9,508.84	0.00	0.00	0.00
11,900.00	89.90	94.919	2,879.10	-631.90	9,588.02	9,608.82	0.00	0.00	0.00
12,000.00	89.90	94.919	2,879.27	-640.47	9,687.65	9,708.80	0.00	0.00	0.00
12,100.00	89.90	94.919	2,879.44	-649.05	9,787.29	9,808.78	0.00	0.00	0.00
12,200.00	89.90	94.919	2,879.61	-657.62	9,886.92	9,908.76	0.00	0.00	0.00
12,300.00	89.90	94.919	2,879.77	-666.20	9,986.55	10,008.74	0.00	0.00	0.00
12,400.00	89.90	94.919	2,879.94	-674.77	10,086.18	10,108.73	0.00	0.00	0.00
12,434.60	89.90	94.919	2,880.00	-677.74	10,120.65	10,143.32	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 2		
Design:	Plan #3		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
7F-5 Lat 2 BHL - plan hits target center - Point	0.00	0.000	2,880.00	-677.74	10,120.65	1,135,196.33	2,474,852.93	37.0240713	-107.2988472

RED WILLOW PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Company: Red Willow Production Co.
Project: Archuleta County, CO NAD83
Site: North Carracas 7F Pad
Well: NC 32-4 7F-5
Wellbore: Lateral 3
Design: Plan #3

PROJECT DETAILS: Archuleta County, CO NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Southern Zone
System Datum: Mean Sea Level
Local North: True

LONESTAR CONSULTING

WELL DETAILS: NC 32-4 7F-5

GL 6160' & RKB 15' @ 6175.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1136072.58	2464747.54	37.0259378	-107.3335125

Plan: Plan #3 (NC 32-4 7F-5/Lateral 3)

Created By: Janie Collins Date: 14:28, December 21 2021

Azimuths to True North
Magnetic North: 8.65°

Magnetic Field
Strength: 49712.3nT
Dip Angle: 63.47°
Date: 11/18/2021
Model: HDGM2021_FILE

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
7F-5 Lat 3 BHL	2900.00	-2554.01	10105.77	1133320.71	2474801.24	37.0189184	-107.2989005

SECTION DETAILS

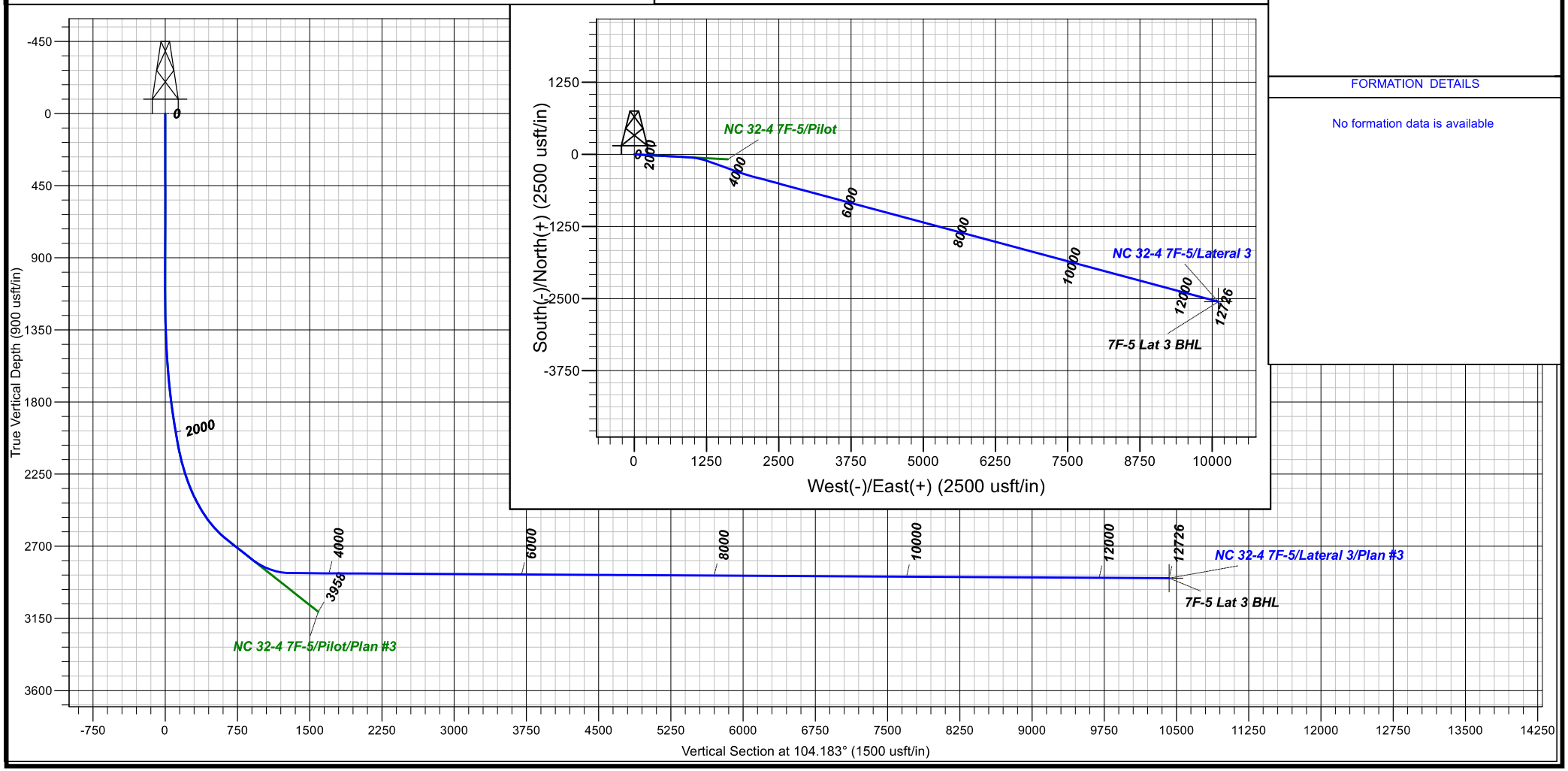
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect
3190.00	65.00	93.000	2785.24	-48.29	921.50	0.00	0.00	905.25
3197.00	67.00	93.000	2788.09	-48.63	927.89	28.57	0.00	911.52
3594.05	89.79	110.000	2868.00	-127.69	1304.54	7.09	38.29	1296.06
4094.05	89.79	110.000	2869.83	-298.70	1774.38	0.00	0.00	1793.48
4340.20	89.80	105.077	2870.71	-372.85	2009.02	2.00	-89.89	2039.14
12725.65	89.80	105.077	2900.00	-2554.01	10105.77	0.00	0.00	10423.51

CASING DETAILS

No casing data is available

FORMATION DETAILS

No formation data is available



RED
WILLOW
PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Red Willow Production Co.

Archuleta County, CO NAD83
North Carracas 7F Pad
NC 32-4 7F-5

Lateral 3

Plan: Plan #3

Standard Planning Report

21 December, 2021

LONESTAR
CONSULTING

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 3		
Design:	Plan #3		

Project Archuleta County, CO NAD83

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site North Carracas 7F Pad

Site Position:		**Northing:**	1,135,994.45 usft	**Latitude:**	37.0257222
From:	Map	**Easting:**	2,464,727.53 usft	**Longitude:**	-107.3335758
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	-1.12 °

Well NC 32-4 7F-5

Well Position	**+N/-S**	78.51 usft	**Northing:**	1,136,072.58 usft	**Latitude:**	37.0259378
	+E/-W	18.47 usft	**Easting:**	2,464,747.54 usft	**Longitude:**	-107.3335125
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	6,160.00 usft

Wellbore Lateral 3

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	11/18/2021	8.65	63.47	49,712.30000000

Design Plan #3

Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	3,190.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	104.183

Plan Survey Tool Program **Date** 12/21/2021

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	3,190.00	12,724.85	Plan #3 (Lateral 3)	MWD+HDGM	
				OWSG MWD + HDGM	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
3,190.00	65.00	93.000	2,785.24	-48.29	921.50	0.00	0.00	0.00	0.00	
3,197.00	67.00	93.000	2,788.09	-48.63	927.89	28.57	28.57	0.00	0.00	
3,594.05	89.79	110.000	2,868.00	-127.69	1,304.54	7.09	5.74	4.28	38.29	
4,094.05	89.79	110.000	2,869.83	-298.70	1,774.38	0.00	0.00	0.00	0.00	
4,340.20	89.80	105.077	2,870.71	-372.85	2,009.02	2.00	0.00	-2.00	-89.89	
12,725.65	89.80	105.077	2,900.00	-2,554.01	10,105.77	0.00	0.00	0.00	0.00	7F-5 Lat 3 BHL

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 3		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,190.00	65.00	93.000	2,785.24	-48.29	921.50	905.25	0.00	0.00	0.00
3,197.00	67.00	93.000	2,788.09	-48.63	927.89	911.52	28.57	28.57	0.00
3,200.00	67.17	93.143	2,789.26	-48.78	930.65	914.23	7.09	5.57	4.77
3,300.00	72.80	97.730	2,823.49	-57.74	1,024.11	1,007.04	7.09	5.63	4.59
3,400.00	78.53	102.043	2,848.25	-74.41	1,119.48	1,103.59	7.09	5.73	4.31
3,500.00	84.32	106.183	2,863.17	-98.53	1,215.31	1,202.41	7.09	5.79	4.14
3,594.05	89.79	110.000	2,868.00	-127.69	1,304.54	1,296.06	7.09	5.82	4.06
3,600.00	89.79	110.000	2,868.02	-129.72	1,310.13	1,301.98	0.00	0.00	0.00
3,700.00	89.79	110.000	2,868.39	-163.93	1,404.10	1,401.47	0.00	0.00	0.00
3,800.00	89.79	110.000	2,868.75	-198.13	1,498.07	1,500.95	0.00	0.00	0.00
3,900.00	89.79	110.000	2,869.12	-232.33	1,592.04	1,600.43	0.00	0.00	0.00
4,000.00	89.79	110.000	2,869.49	-266.53	1,686.01	1,699.92	0.00	0.00	0.00
4,094.05	89.79	110.000	2,869.83	-298.70	1,774.38	1,793.48	0.00	0.00	0.00
4,100.00	89.79	109.881	2,869.85	-300.73	1,779.98	1,799.40	2.00	0.00	-2.00
4,200.00	89.79	107.881	2,870.22	-333.09	1,874.59	1,899.06	2.00	0.00	-2.00
4,300.00	89.80	105.881	2,870.57	-362.12	1,970.28	1,998.95	2.00	0.00	-2.00
4,340.20	89.80	105.077	2,870.71	-372.85	2,009.02	2,039.14	2.00	0.00	-2.00
4,400.00	89.80	105.077	2,870.92	-388.41	2,066.76	2,098.93	0.00	0.00	0.00
4,500.00	89.80	105.077	2,871.27	-414.42	2,163.32	2,198.91	0.00	0.00	0.00
4,600.00	89.80	105.077	2,871.62	-440.43	2,259.87	2,298.90	0.00	0.00	0.00
4,700.00	89.80	105.077	2,871.97	-466.44	2,356.43	2,398.89	0.00	0.00	0.00
4,800.00	89.80	105.077	2,872.32	-492.45	2,452.99	2,498.88	0.00	0.00	0.00
4,900.00	89.80	105.077	2,872.67	-518.46	2,549.55	2,598.86	0.00	0.00	0.00
5,000.00	89.80	105.077	2,873.02	-544.47	2,646.10	2,698.85	0.00	0.00	0.00
5,100.00	89.80	105.077	2,873.37	-570.48	2,742.66	2,798.84	0.00	0.00	0.00
5,200.00	89.80	105.077	2,873.72	-596.50	2,839.22	2,898.83	0.00	0.00	0.00
5,300.00	89.80	105.077	2,874.07	-622.51	2,935.77	2,998.81	0.00	0.00	0.00
5,400.00	89.80	105.077	2,874.42	-648.52	3,032.33	3,098.80	0.00	0.00	0.00
5,500.00	89.80	105.077	2,874.76	-674.53	3,128.89	3,198.79	0.00	0.00	0.00
5,600.00	89.80	105.077	2,875.11	-700.54	3,225.45	3,298.77	0.00	0.00	0.00
5,700.00	89.80	105.077	2,875.46	-726.55	3,322.00	3,398.76	0.00	0.00	0.00
5,800.00	89.80	105.077	2,875.81	-752.56	3,418.56	3,498.75	0.00	0.00	0.00
5,900.00	89.80	105.077	2,876.16	-778.57	3,515.12	3,598.74	0.00	0.00	0.00
6,000.00	89.80	105.077	2,876.51	-804.59	3,611.67	3,698.72	0.00	0.00	0.00
6,100.00	89.80	105.077	2,876.86	-830.60	3,708.23	3,798.71	0.00	0.00	0.00
6,200.00	89.80	105.077	2,877.21	-856.61	3,804.79	3,898.70	0.00	0.00	0.00
6,300.00	89.80	105.077	2,877.56	-882.62	3,901.35	3,998.68	0.00	0.00	0.00
6,400.00	89.80	105.077	2,877.91	-908.63	3,997.90	4,098.67	0.00	0.00	0.00
6,500.00	89.80	105.077	2,878.26	-934.64	4,094.46	4,198.66	0.00	0.00	0.00
6,600.00	89.80	105.077	2,878.61	-960.65	4,191.02	4,298.65	0.00	0.00	0.00
6,700.00	89.80	105.077	2,878.96	-986.66	4,287.58	4,398.63	0.00	0.00	0.00
6,800.00	89.80	105.077	2,879.30	-1,012.68	4,384.13	4,498.62	0.00	0.00	0.00
6,900.00	89.80	105.077	2,879.65	-1,038.69	4,480.69	4,598.61	0.00	0.00	0.00
7,000.00	89.80	105.077	2,880.00	-1,064.70	4,577.25	4,698.60	0.00	0.00	0.00
7,100.00	89.80	105.077	2,880.35	-1,090.71	4,673.80	4,798.58	0.00	0.00	0.00
7,200.00	89.80	105.077	2,880.70	-1,116.72	4,770.36	4,898.57	0.00	0.00	0.00
7,300.00	89.80	105.077	2,881.05	-1,142.73	4,866.92	4,998.56	0.00	0.00	0.00
7,400.00	89.80	105.077	2,881.40	-1,168.74	4,963.48	5,098.54	0.00	0.00	0.00
7,500.00	89.80	105.077	2,881.75	-1,194.76	5,060.03	5,198.53	0.00	0.00	0.00
7,600.00	89.80	105.077	2,882.10	-1,220.77	5,156.59	5,298.52	0.00	0.00	0.00
7,700.00	89.80	105.077	2,882.45	-1,246.78	5,253.15	5,398.51	0.00	0.00	0.00
7,800.00	89.80	105.077	2,882.80	-1,272.79	5,349.70	5,498.49	0.00	0.00	0.00
7,900.00	89.80	105.077	2,883.15	-1,298.80	5,446.26	5,598.48	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 3		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,000.00	89.80	105.077	2,883.50	-1,324.81	5,542.82	5,698.47	0.00	0.00	0.00
8,100.00	89.80	105.077	2,883.85	-1,350.82	5,639.38	5,798.45	0.00	0.00	0.00
8,200.00	89.80	105.077	2,884.19	-1,376.83	5,735.93	5,898.44	0.00	0.00	0.00
8,300.00	89.80	105.077	2,884.54	-1,402.85	5,832.49	5,998.43	0.00	0.00	0.00
8,400.00	89.80	105.077	2,884.89	-1,428.86	5,929.05	6,098.42	0.00	0.00	0.00
8,500.00	89.80	105.077	2,885.24	-1,454.87	6,025.60	6,198.40	0.00	0.00	0.00
8,600.00	89.80	105.077	2,885.59	-1,480.88	6,122.16	6,298.39	0.00	0.00	0.00
8,700.00	89.80	105.077	2,885.94	-1,506.89	6,218.72	6,398.38	0.00	0.00	0.00
8,800.00	89.80	105.077	2,886.29	-1,532.90	6,315.28	6,498.37	0.00	0.00	0.00
8,900.00	89.80	105.077	2,886.64	-1,558.91	6,411.83	6,598.35	0.00	0.00	0.00
9,000.00	89.80	105.077	2,886.99	-1,584.92	6,508.39	6,698.34	0.00	0.00	0.00
9,100.00	89.80	105.077	2,887.34	-1,610.94	6,604.95	6,798.33	0.00	0.00	0.00
9,200.00	89.80	105.077	2,887.69	-1,636.95	6,701.50	6,898.31	0.00	0.00	0.00
9,300.00	89.80	105.077	2,888.04	-1,662.96	6,798.06	6,998.30	0.00	0.00	0.00
9,400.00	89.80	105.077	2,888.39	-1,688.97	6,894.62	7,098.29	0.00	0.00	0.00
9,500.00	89.80	105.077	2,888.73	-1,714.98	6,991.18	7,198.28	0.00	0.00	0.00
9,600.00	89.80	105.077	2,889.08	-1,740.99	7,087.73	7,298.26	0.00	0.00	0.00
9,700.00	89.80	105.077	2,889.43	-1,767.00	7,184.29	7,398.25	0.00	0.00	0.00
9,800.00	89.80	105.077	2,889.78	-1,793.01	7,280.85	7,498.24	0.00	0.00	0.00
9,900.00	89.80	105.077	2,890.13	-1,819.03	7,377.41	7,598.22	0.00	0.00	0.00
10,000.00	89.80	105.077	2,890.48	-1,845.04	7,473.96	7,698.21	0.00	0.00	0.00
10,100.00	89.80	105.077	2,890.83	-1,871.05	7,570.52	7,798.20	0.00	0.00	0.00
10,200.00	89.80	105.077	2,891.18	-1,897.06	7,667.08	7,898.19	0.00	0.00	0.00
10,300.00	89.80	105.077	2,891.53	-1,923.07	7,763.63	7,998.17	0.00	0.00	0.00
10,400.00	89.80	105.077	2,891.88	-1,949.08	7,860.19	8,098.16	0.00	0.00	0.00
10,500.00	89.80	105.077	2,892.23	-1,975.09	7,956.75	8,198.15	0.00	0.00	0.00
10,600.00	89.80	105.077	2,892.58	-2,001.10	8,053.31	8,298.14	0.00	0.00	0.00
10,700.00	89.80	105.077	2,892.93	-2,027.12	8,149.86	8,398.12	0.00	0.00	0.00
10,800.00	89.80	105.077	2,893.27	-2,053.13	8,246.42	8,498.11	0.00	0.00	0.00
10,900.00	89.80	105.077	2,893.62	-2,079.14	8,342.98	8,598.10	0.00	0.00	0.00
11,000.00	89.80	105.077	2,893.97	-2,105.15	8,439.53	8,698.08	0.00	0.00	0.00
11,100.00	89.80	105.077	2,894.32	-2,131.16	8,536.09	8,798.07	0.00	0.00	0.00
11,200.00	89.80	105.077	2,894.67	-2,157.17	8,632.65	8,898.06	0.00	0.00	0.00
11,300.00	89.80	105.077	2,895.02	-2,183.18	8,729.21	8,998.05	0.00	0.00	0.00
11,400.00	89.80	105.077	2,895.37	-2,209.19	8,825.76	9,098.03	0.00	0.00	0.00
11,500.00	89.80	105.077	2,895.72	-2,235.21	8,922.32	9,198.02	0.00	0.00	0.00
11,600.00	89.80	105.077	2,896.07	-2,261.22	9,018.88	9,298.01	0.00	0.00	0.00
11,700.00	89.80	105.077	2,896.42	-2,287.23	9,115.43	9,398.00	0.00	0.00	0.00
11,800.00	89.80	105.077	2,896.77	-2,313.24	9,211.99	9,497.98	0.00	0.00	0.00
11,900.00	89.80	105.077	2,897.12	-2,339.25	9,308.55	9,597.97	0.00	0.00	0.00
12,000.00	89.80	105.077	2,897.47	-2,365.26	9,405.11	9,697.96	0.00	0.00	0.00
12,100.00	89.80	105.077	2,897.82	-2,391.27	9,501.66	9,797.94	0.00	0.00	0.00
12,200.00	89.80	105.077	2,898.16	-2,417.29	9,598.22	9,897.93	0.00	0.00	0.00
12,300.00	89.80	105.077	2,898.51	-2,443.30	9,694.78	9,997.92	0.00	0.00	0.00
12,400.00	89.80	105.077	2,898.86	-2,469.31	9,791.34	10,097.91	0.00	0.00	0.00
12,500.00	89.80	105.077	2,899.21	-2,495.32	9,887.89	10,197.89	0.00	0.00	0.00
12,600.00	89.80	105.077	2,899.56	-2,521.33	9,984.45	10,297.88	0.00	0.00	0.00
12,700.00	89.80	105.077	2,899.91	-2,547.34	10,081.01	10,397.87	0.00	0.00	0.00
12,725.65	89.80	105.077	2,900.00	-2,554.01	10,105.77	10,423.51	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 3		
Design:	Plan #3		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
7F-5 Lat 3 BHL - plan hits target center - Point	0.00	0.000	2,900.00	-2,554.01	10,105.77	1,133,320.71	2,474,801.23	37.0189184	-107.2989006

RED WILLOW PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Company: Red Willow Production Co.
Project: Archuleta County, CO NAD83
Site: North Carracas 7F Pad
Well: NC 32-4 7F-5
Wellbore: Lateral 4
Design: Plan #3

PROJECT DETAILS: Archuleta County, CO NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Southern Zone
System Datum: Mean Sea Level
Local North: True

LONESTAR CONSULTING

WELL DETAILS: NC 32-4 7F-5

GL 6160' & RKB 15' @ 6175.00usft

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	1136072.58	2464747.54	37.0259378	-107.3335125

Plan: Plan #3 (NC 32-4 7F-5/Lateral 4)

Created By: Janie Collins Date: 14:39, December 21 2021

Azimuths to True North
Magnetic North: 8.65°

Magnetic Field
Strength: 49712.3nT
Dip Angle: 63.47°
Date: 11/18/2021
Model: HDGM2021_FILE

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
7F-5 Lat 4 BHL	2920.00	-4526.02	10092.78	1131349.34	2474749.54	37.0135026	-107.2989475

SECTION DETAILS

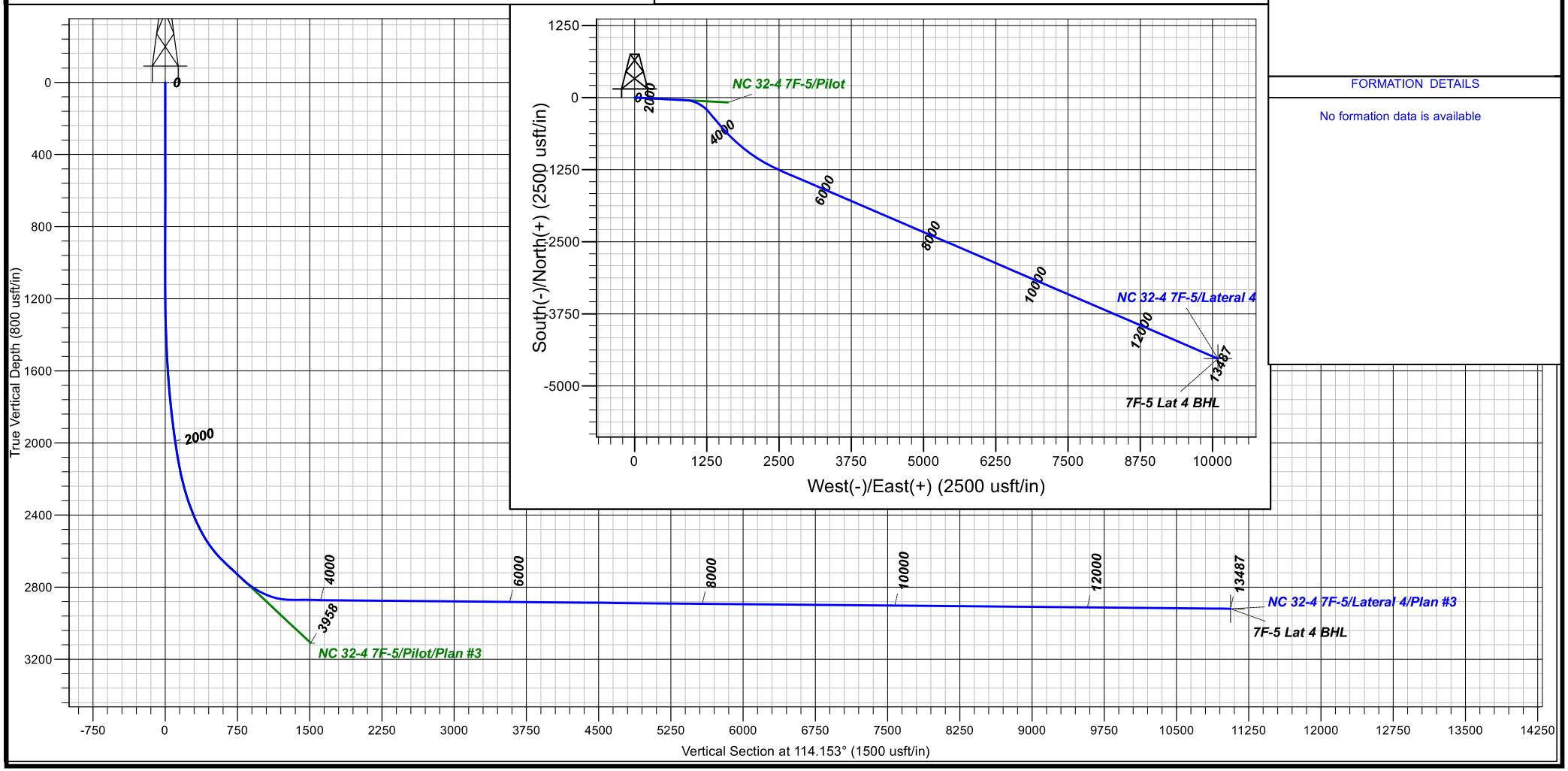
MD	Inc	Azi	TVD	+N/-S	+E/-W	DIeg	TFace	VSect
3145.00	65.00	93.000	2766.22	-46.16	880.78	0.00	0.00	822.55
3152.00	67.00	93.000	2769.07	-46.49	887.16	28.57	0.00	828.52
3627.72	89.70	140.000	2870.00	-254.03	1285.31	10.71	70.31	1276.73
3927.72	89.70	140.000	2871.57	-483.84	1478.14	0.00	0.00	1546.71
5262.85	89.71	113.297	2878.56	-1273.58	2539.65	2.00	-90.05	2838.43
13486.58	89.71	113.297	2920.00	-4526.02	10092.78	0.00	0.00	11061.15

CASING DETAILS

No casing data is available

FORMATION DETAILS

No formation data is available



Red Willow Production Co.

Archuleta County, CO NAD83
North Carracas 7F Pad
NC 32-4 7F-5

Lateral 4

Plan: Plan #3

Standard Planning Report

21 December, 2021

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 4		
Design:	Plan #3		

Project Archuleta County, CO NAD83

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site North Carracas 7F Pad

Site Position:		**Northing:**	1,135,994.45 usft	**Latitude:**	37.0257222
From:	Map	**Easting:**	2,464,727.53 usft	**Longitude:**	-107.3335758
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	-1.12 °

Well NC 32-4 7F-5

Well Position	**+N/-S**	78.51 usft	**Northing:**	1,136,072.58 usft	**Latitude:**	37.0259378
	+E/-W	18.47 usft	**Easting:**	2,464,747.54 usft	**Longitude:**	-107.3335125
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	6,160.00 usft

Wellbore Lateral 4

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	11/18/2021	8.65	63.47	49,712.30000000

Design Plan #3

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	3,145.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	114.153

Plan Survey Tool Program **Date** 12/21/2021

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	3,145.00	13,485.89	Plan #3 (Lateral 4)	MWD+HDGM	
				OWSG MWD + HDGM	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
3,145.00	65.00	93.000	2,766.22	-46.16	880.78	0.00	0.00	0.00	0.00	
3,152.00	67.00	93.000	2,769.07	-46.49	887.16	28.57	28.57	0.00	0.00	
3,627.72	89.70	140.000	2,870.00	-254.03	1,285.31	10.71	4.77	9.88	70.31	
3,927.72	89.70	140.000	2,871.57	-483.84	1,478.14	0.00	0.00	0.00	0.00	
5,262.85	89.71	113.297	2,878.56	-1,273.58	2,539.65	2.00	0.00	-2.00	-90.05	
13,486.58	89.71	113.297	2,920.00	-4,526.02	10,092.78	0.00	0.00	0.00	0.00	7F-5 Lat 4 BHL

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 4		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,145.00	65.00	93.000	2,766.22	-46.16	880.78	822.55	0.00	0.00	0.00
3,152.00	67.00	93.000	2,769.07	-46.49	887.16	828.52	28.57	28.57	0.00
3,200.00	68.82	98.193	2,787.13	-50.84	931.40	870.67	10.71	3.78	10.82
3,300.00	73.07	108.598	2,819.86	-72.81	1,023.15	963.37	10.71	4.26	10.41
3,400.00	77.83	118.518	2,845.03	-111.51	1,111.69	1,059.99	10.71	4.76	9.92
3,500.00	82.93	128.078	2,861.77	-165.60	1,193.94	1,157.17	10.71	5.10	9.56
3,600.00	88.22	137.425	2,869.50	-233.20	1,267.02	1,251.52	10.71	5.29	9.35
3,627.72	89.70	140.000	2,870.00	-254.03	1,285.31	1,276.73	10.71	5.34	9.29
3,700.00	89.70	140.000	2,870.38	-309.40	1,331.77	1,341.77	0.00	0.00	0.00
3,800.00	89.70	140.000	2,870.90	-386.00	1,396.05	1,431.77	0.00	0.00	0.00
3,900.00	89.70	140.000	2,871.43	-462.60	1,460.32	1,521.77	0.00	0.00	0.00
3,927.72	89.70	140.000	2,871.57	-483.84	1,478.14	1,546.71	0.00	0.00	0.00
4,000.00	89.70	138.554	2,871.95	-538.62	1,525.29	1,612.15	2.00	0.00	-2.00
4,100.00	89.70	136.554	2,872.48	-612.40	1,592.78	1,703.92	2.00	0.00	-2.00
4,200.00	89.70	134.554	2,873.00	-683.79	1,662.80	1,797.02	2.00	0.00	-2.00
4,300.00	89.70	132.554	2,873.53	-752.69	1,735.27	1,891.33	2.00	0.00	-2.00
4,400.00	89.70	130.554	2,874.06	-819.02	1,810.09	1,986.75	2.00	0.00	-2.00
4,500.00	89.70	128.554	2,874.59	-882.69	1,887.19	2,083.15	2.00	0.00	-2.00
4,600.00	89.70	126.554	2,875.12	-943.64	1,966.46	2,180.43	2.00	0.00	-2.00
4,700.00	89.70	124.554	2,875.65	-1,001.79	2,047.81	2,278.45	2.00	0.00	-2.00
4,800.00	89.70	122.554	2,876.17	-1,057.05	2,131.14	2,377.10	2.00	0.00	-2.00
4,900.00	89.70	120.554	2,876.70	-1,109.38	2,216.35	2,476.26	2.00	0.00	-2.00
5,000.00	89.70	118.554	2,877.21	-1,158.70	2,303.34	2,575.81	2.00	0.00	-2.00
5,100.00	89.71	116.554	2,877.73	-1,204.96	2,391.99	2,675.62	2.00	0.00	-2.00
5,200.00	89.71	114.554	2,878.24	-1,248.09	2,482.20	2,775.59	2.00	0.00	-2.00
5,262.85	89.71	113.297	2,878.56	-1,273.58	2,539.65	2,838.43	2.00	0.00	-2.00
5,300.00	89.71	113.297	2,878.74	-1,288.27	2,573.77	2,875.58	0.00	0.00	0.00
5,400.00	89.71	113.297	2,879.25	-1,327.82	2,665.61	2,975.57	0.00	0.00	0.00
5,500.00	89.71	113.297	2,879.75	-1,367.37	2,757.46	3,075.56	0.00	0.00	0.00
5,600.00	89.71	113.297	2,880.26	-1,406.92	2,849.31	3,175.54	0.00	0.00	0.00
5,700.00	89.71	113.297	2,880.76	-1,446.47	2,941.15	3,275.53	0.00	0.00	0.00
5,800.00	89.71	113.297	2,881.26	-1,486.02	3,033.00	3,375.52	0.00	0.00	0.00
5,900.00	89.71	113.297	2,881.77	-1,525.57	3,124.84	3,475.51	0.00	0.00	0.00
6,000.00	89.71	113.297	2,882.27	-1,565.12	3,216.69	3,575.49	0.00	0.00	0.00
6,100.00	89.71	113.297	2,882.78	-1,604.67	3,308.53	3,675.48	0.00	0.00	0.00
6,200.00	89.71	113.297	2,883.28	-1,644.22	3,400.38	3,775.47	0.00	0.00	0.00
6,300.00	89.71	113.297	2,883.78	-1,683.77	3,492.22	3,875.46	0.00	0.00	0.00
6,400.00	89.71	113.297	2,884.29	-1,723.32	3,584.07	3,975.44	0.00	0.00	0.00
6,500.00	89.71	113.297	2,884.79	-1,762.87	3,675.92	4,075.43	0.00	0.00	0.00
6,600.00	89.71	113.297	2,885.30	-1,802.42	3,767.76	4,175.42	0.00	0.00	0.00
6,700.00	89.71	113.297	2,885.80	-1,841.96	3,859.61	4,275.41	0.00	0.00	0.00
6,800.00	89.71	113.297	2,886.30	-1,881.51	3,951.45	4,375.39	0.00	0.00	0.00
6,900.00	89.71	113.297	2,886.81	-1,921.06	4,043.30	4,475.38	0.00	0.00	0.00
7,000.00	89.71	113.297	2,887.31	-1,960.61	4,135.14	4,575.37	0.00	0.00	0.00
7,100.00	89.71	113.297	2,887.82	-2,000.16	4,226.99	4,675.36	0.00	0.00	0.00
7,200.00	89.71	113.297	2,888.32	-2,039.71	4,318.83	4,775.34	0.00	0.00	0.00
7,300.00	89.71	113.297	2,888.82	-2,079.26	4,410.68	4,875.33	0.00	0.00	0.00
7,400.00	89.71	113.297	2,889.33	-2,118.81	4,502.52	4,975.32	0.00	0.00	0.00
7,500.00	89.71	113.297	2,889.83	-2,158.36	4,594.37	5,075.31	0.00	0.00	0.00
7,600.00	89.71	113.297	2,890.34	-2,197.91	4,686.22	5,175.30	0.00	0.00	0.00
7,700.00	89.71	113.297	2,890.84	-2,237.46	4,778.06	5,275.28	0.00	0.00	0.00
7,800.00	89.71	113.297	2,891.34	-2,277.01	4,869.91	5,375.27	0.00	0.00	0.00
7,900.00	89.71	113.297	2,891.85	-2,316.56	4,961.75	5,475.26	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 4		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,000.00	89.71	113.297	2,892.35	-2,356.11	5,053.60	5,575.25	0.00	0.00	0.00
8,100.00	89.71	113.297	2,892.85	-2,395.66	5,145.44	5,675.23	0.00	0.00	0.00
8,200.00	89.71	113.297	2,893.36	-2,435.21	5,237.29	5,775.22	0.00	0.00	0.00
8,300.00	89.71	113.297	2,893.86	-2,474.75	5,329.13	5,875.21	0.00	0.00	0.00
8,400.00	89.71	113.297	2,894.37	-2,514.30	5,420.98	5,975.20	0.00	0.00	0.00
8,500.00	89.71	113.297	2,894.87	-2,553.85	5,512.82	6,075.18	0.00	0.00	0.00
8,600.00	89.71	113.297	2,895.37	-2,593.40	5,604.67	6,175.17	0.00	0.00	0.00
8,700.00	89.71	113.297	2,895.88	-2,632.95	5,696.52	6,275.16	0.00	0.00	0.00
8,800.00	89.71	113.297	2,896.38	-2,672.50	5,788.36	6,375.15	0.00	0.00	0.00
8,900.00	89.71	113.297	2,896.89	-2,712.05	5,880.21	6,475.13	0.00	0.00	0.00
9,000.00	89.71	113.297	2,897.39	-2,751.60	5,972.05	6,575.12	0.00	0.00	0.00
9,100.00	89.71	113.297	2,897.89	-2,791.15	6,063.90	6,675.11	0.00	0.00	0.00
9,200.00	89.71	113.297	2,898.40	-2,830.70	6,155.74	6,775.10	0.00	0.00	0.00
9,300.00	89.71	113.297	2,898.90	-2,870.25	6,247.59	6,875.08	0.00	0.00	0.00
9,400.00	89.71	113.297	2,899.41	-2,909.80	6,339.43	6,975.07	0.00	0.00	0.00
9,500.00	89.71	113.297	2,899.91	-2,949.35	6,431.28	7,075.06	0.00	0.00	0.00
9,600.00	89.71	113.297	2,900.41	-2,988.90	6,523.12	7,175.05	0.00	0.00	0.00
9,700.00	89.71	113.297	2,900.92	-3,028.45	6,614.97	7,275.03	0.00	0.00	0.00
9,800.00	89.71	113.297	2,901.42	-3,068.00	6,706.82	7,375.02	0.00	0.00	0.00
9,900.00	89.71	113.297	2,901.93	-3,107.55	6,798.66	7,475.01	0.00	0.00	0.00
10,000.00	89.71	113.297	2,902.43	-3,147.09	6,890.51	7,575.00	0.00	0.00	0.00
10,100.00	89.71	113.297	2,902.93	-3,186.64	6,982.35	7,674.98	0.00	0.00	0.00
10,200.00	89.71	113.297	2,903.44	-3,226.19	7,074.20	7,774.97	0.00	0.00	0.00
10,300.00	89.71	113.297	2,903.94	-3,265.74	7,166.04	7,874.96	0.00	0.00	0.00
10,400.00	89.71	113.297	2,904.45	-3,305.29	7,257.89	7,974.95	0.00	0.00	0.00
10,500.00	89.71	113.297	2,904.95	-3,344.84	7,349.73	8,074.93	0.00	0.00	0.00
10,600.00	89.71	113.297	2,905.45	-3,384.39	7,441.58	8,174.92	0.00	0.00	0.00
10,700.00	89.71	113.297	2,905.96	-3,423.94	7,533.43	8,274.91	0.00	0.00	0.00
10,800.00	89.71	113.297	2,906.46	-3,463.49	7,625.27	8,374.90	0.00	0.00	0.00
10,900.00	89.71	113.297	2,906.97	-3,503.04	7,717.12	8,474.88	0.00	0.00	0.00
11,000.00	89.71	113.297	2,907.47	-3,542.59	7,808.96	8,574.87	0.00	0.00	0.00
11,100.00	89.71	113.297	2,907.97	-3,582.14	7,900.81	8,674.86	0.00	0.00	0.00
11,200.00	89.71	113.297	2,908.48	-3,621.69	7,992.65	8,774.85	0.00	0.00	0.00
11,300.00	89.71	113.297	2,908.98	-3,661.24	8,084.50	8,874.84	0.00	0.00	0.00
11,400.00	89.71	113.297	2,909.48	-3,700.79	8,176.34	8,974.82	0.00	0.00	0.00
11,500.00	89.71	113.297	2,909.99	-3,740.34	8,268.19	9,074.81	0.00	0.00	0.00
11,600.00	89.71	113.297	2,910.49	-3,779.89	8,360.03	9,174.80	0.00	0.00	0.00
11,700.00	89.71	113.297	2,911.00	-3,819.43	8,451.88	9,274.79	0.00	0.00	0.00
11,800.00	89.71	113.297	2,911.50	-3,858.98	8,543.73	9,374.77	0.00	0.00	0.00
11,900.00	89.71	113.297	2,912.00	-3,898.53	8,635.57	9,474.76	0.00	0.00	0.00
12,000.00	89.71	113.297	2,912.51	-3,938.08	8,727.42	9,574.75	0.00	0.00	0.00
12,100.00	89.71	113.297	2,913.01	-3,977.63	8,819.26	9,674.74	0.00	0.00	0.00
12,200.00	89.71	113.297	2,913.52	-4,017.18	8,911.11	9,774.72	0.00	0.00	0.00
12,300.00	89.71	113.297	2,914.02	-4,056.73	9,002.95	9,874.71	0.00	0.00	0.00
12,400.00	89.71	113.297	2,914.52	-4,096.28	9,094.80	9,974.70	0.00	0.00	0.00
12,500.00	89.71	113.297	2,915.03	-4,135.83	9,186.64	10,074.69	0.00	0.00	0.00
12,600.00	89.71	113.297	2,915.53	-4,175.38	9,278.49	10,174.67	0.00	0.00	0.00
12,700.00	89.71	113.297	2,916.04	-4,214.93	9,370.33	10,274.66	0.00	0.00	0.00
12,800.00	89.71	113.297	2,916.54	-4,254.48	9,462.18	10,374.65	0.00	0.00	0.00
12,900.00	89.71	113.297	2,917.04	-4,294.03	9,554.03	10,474.64	0.00	0.00	0.00
13,000.00	89.71	113.297	2,917.55	-4,333.58	9,645.87	10,574.62	0.00	0.00	0.00
13,100.00	89.71	113.297	2,918.05	-4,373.13	9,737.72	10,674.61	0.00	0.00	0.00
13,200.00	89.71	113.297	2,918.56	-4,412.68	9,829.56	10,774.60	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference**	Well NC 32-4 7F-5
Company:	Red Willow Production Co.	**TVD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Project:	Archuleta County, CO NAD83	**MD Reference:**	GL 6160' & RKB 15' @ 6175.00usft
Site:	North Carracas 7F Pad	**North Reference:**	True
Well:	NC 32-4 7F-5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral 4		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,300.00	89.71	113.297	2,919.06	-4,452.23	9,921.41	10,874.59	0.00	0.00	0.00
13,400.00	89.71	113.297	2,919.56	-4,491.77	10,013.25	10,974.57	0.00	0.00	0.00
13,486.58	89.71	113.297	2,920.00	-4,526.02	10,092.78	11,061.15	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
7F-5 Lat 4 BHL - plan hits target center - Point	0.00	0.000	2,920.00	-4,526.02	10,092.78	1,131,349.34	2,474,749.53	37.0135026	-107.2989476

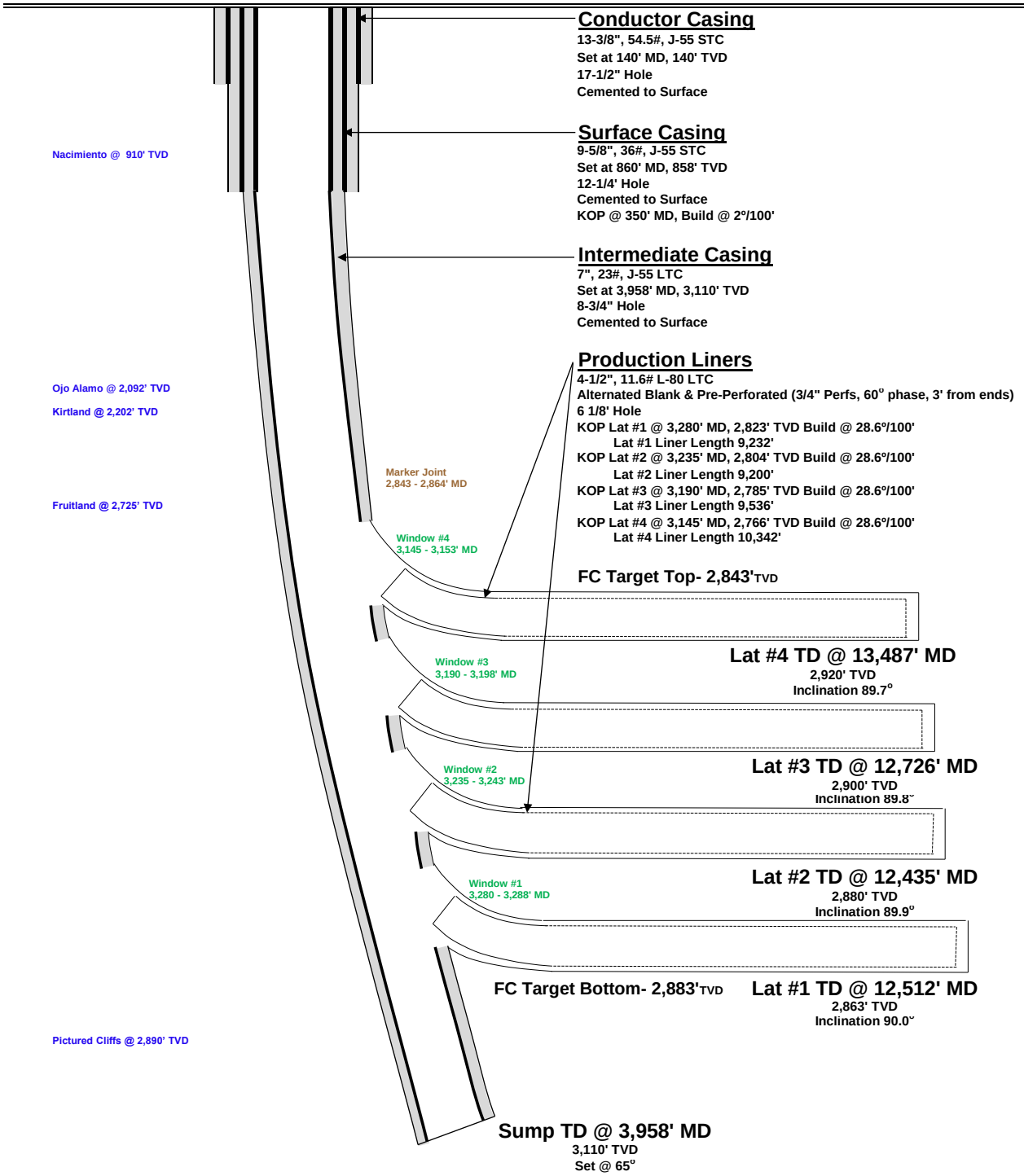
Red Willow Production Company
North Carracas 32-4 7F-5
SHL: 254' FSL, 326' FWL Section 7, T32N, R4W
Intermediate BHL: 216' FSL, 1,944' FWL Section 7, T32N, R4W
Lateral #1 BHL: 1,521' FSL, 200' FEL Section 8, T32N, R4W
Lateral #2 BHL: 305' FNL, 200' FEL Section 17, T32N, R4W
Lateral #3 BHL: 2,181' FNL, 200' FEL Section 17, T32N, R4W
Lateral #4 BHL: 1,042' FSL, 200' FEL Section 17, T32N, R4W
Archuleta County, Colorado
API:
AFE#:
Target: Fruitland Coal
G.L. = 6,160'
RKB = 15'

Proposed

RED WILLOW PRODUCTION CO.
SOUTHERN UTE INDIAN TRIBE

Spud Date
9/15/2022

WELLBORE SCHEMATIC



APD ID: 10400082523 **Submission Date:** 01/13/2022

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Well Type: COALBED NATURAL GAS WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

NC_32_4_7F_5_Directions_20220104100121.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** YES

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

NC_32_4_7F_5_1_Mile_Buffer_20220104100050.pdf

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Surface facilities will be set in preparation of drilling the well. The produced water and gas will be combined at the surface and travel through pipeline to equipment. Once separated, the water will be placed in water tanks prior to being pumped through a pipeline to an SWD well offsite. The gas will be sent through a meter and into a Red Cedar gathering line.

Production Facilities map:

NC_32_4_7F_5_SURVEY_DOCS_12_21_21_Well_Site_Layout_20220104100030.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: MUNICIPAL

Water source use type: SURFACE CASING
DUST CONTROL
CAMP USE

Source latitude:

Source longitude:

Source datum:

Water source permit type: WATER RIGHT

Permit Number:

Water source transport method: TRUCKING

Source land ownership: INDIAN (TRIBAL/ALLOTTED)

Source transportation land ownership: INDIAN (TRIBAL/ALLOTTED)

Water source volume (barrels): 500

Source volume (acre-feet): 0.06444655

Source volume (gal): 21000

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Water source type: PERENNIAL SURFACE

Water source use type: SURFACE CASING

DUST CONTROL

Source latitude: 37.01 **Source longitude:** -107.28

Source datum: NAD83

Water source permit type: TEMPORARY WATER USE PERMIT

Water source transport method: TRUCKING

Source land ownership: INDIAN (TRIBAL/ALLOTTED)

Source transportation land ownership: INDIAN (TRIBAL/ALLOTTED)

Water source volume (barrels): 13965.061367 **Source volume (acre-feet):** 1.8

Source volume (gal): 586531.8

Water source type: RECYCLED

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude: 37.035 **Source longitude:** -107.392

Source datum: NAD83

Water source permit type: OTHER

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 13965.061367 **Source volume (acre-feet):** 1.8

Source volume (gal): 586531.8

Water source type: MUNICIPAL

Water source use type: SURFACE CASING

OTHER **Describe use type:** Surface Casing and other

Source latitude: **Source longitude:**

Source datum:

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

SURFACE CASING

OTHER **Describe use type:** Surface Casing and other

Water source permit type: WATER RIGHT

Permit Number:

Water source transport method: TRUCKING

Source land ownership: INDIAN (TRIBAL/ALLOTTED)

Source transportation land ownership: INDIAN (TRIBAL/ALLOTTED)
Water source volume (barrels): 2500 **Source volume (acre-feet):** 0.32223274

Source volume (gal): 105000

Water source and transportation map:

NC_32_4_7F_5_Water_Sources_20220104095826.pdf

Water source comments: Produced Water will be gathered from existing wells in the area and used during the drilling of the well. Fresh water will be used while drilling the surface casing portion of the well in addition to cementing operations of the surface and intermediate casing strings. Municipal fresh water will be trucked from the town of Ignacio to be used during these operations. Additional fresh water will be acquired through a water pull station. The water pull station at the East Pilot Pad will be located at the southeastern corner and will run a waterline south from the pad to the San Juan River, a distance of approximately 475 feet. The station will consist of a three above ground water storage tanks, contained within a bermed area and will have a transfer pump to pull from the river. The waterline will consist of a 4 poly-line laid by hand on the ground that will be submerged in the San Juan River and house with a filtration device to prevent solids and fish from being pulled into the waterline. The entire waterline will be staked to prevent movement and potential waterline damage. A check valve will be placed within the line to prevent the pumped water from flowing back into the river and will also keep the line primed for pulling water. See section 12 attachment for additional information. The Calcium Chloride that will be used for well control will be supplied by a private vendor. The primary source of the Calcium Chloride will vary depending on availability, but will be collected at Basin Disposal in Bloomfield, NM and trucked to the drilling location. Additional calcium chloride will be built on location as well as trucked from the collection point Basin Disposal.
New water well? N

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: NO

Construction Materials description:

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: SEWAGE

Waste content description: Residential waste will be collected in a sewer vault on location.

Amount of waste: 750 gallons

Waste disposal frequency : Daily

Safe containment description: A sewer vault with a high level limit alarm will be used for containment.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: The vendor will dispose transfer sewage waste to the water treatment plant for the City of Durango.

Waste type: PRODUCED WATER

Waste content description: The well will not produce fluids until the well is tied into production facilities. All produced water will be sent to the separator and water tanks. There are no plans for production tests in any penetrated oil formations, therefore no oil is expected to be brought to surface.

Amount of waste: 150 barrels

Waste disposal frequency : Daily

Safe containment description: The well will be tied into a produced water pipeline and transferred underground through pipe to a separator and tank system.

Safe containmant attachment:

Waste disposal type: OFF-LEASE INJECTION **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Water produced from the well will be sent to the Tiffany SWD #1 for deep injection. The location of the SWD is shown on the attached produced water disposal route attached in Section 12 and Section1.

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Waste type: DRILLING

Waste content description: A closed loop drilling system will be used and no pits will be built for liquids or drill cuttings. Drill cuttings will be washed, vacuumed, and dried using drying shakers and collected in 2-3 three sided steel bins. Dried cuttings will be loaded and trucked daily and as needed to Industrial Ecosystems Inc. (IEI), located at JGJG land farm, #49 CR 3150, Aztec, NM 87410 where it will be land farmed, Bondad Landfill, Located at 1500 CR 318, Durango, CO 81301 and Archuleta County Landfill, Located at 9171 CR 500, Pagosa Springs CO 81147. Cuttings will not be stored on location. Any additional water reclaimed during drilling operations will be stored in steel tanks and trucked to Basin Disposal, 200 Montana, Bloomfield, NM for deep injection.
Amount of waste: 100 barrels

Waste disposal frequency : Daily

Safe containment description: A closed loop drilling system will be used and no pits will be built for liquids or drill cuttings. Drill cuttings will be washed, vacuumed, and dried using drying shakers and collected in 2-3 three sided steel bins. Dried cuttings will be loaded and trucked daily and as needed.
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Solids - Industrial Ecosystems Inc. (IEI), located at JFJ Land Farm, #49 CR 3150, Aztec, NM 87410 Water - Basin Disposal, 200 Montana, Bloomfield, NM.

Waste type: GARBAGE

Waste content description: All garbage and trash will be collected in a trash container and hauled to a commercial landfill.

Amount of waste: pounds

Waste disposal frequency : Weekly

Safe containment description: All garbage and trash will be collected in a trash container and hauled to a commercial landfill
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE
Disposal type description:

Disposal location description: Bondad Landfill

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit? NO

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? N

Description of cuttings location

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

NC_32_4_7F_5_SURVEY_DOCS_12_21_21_Well_Site_Layout_20220104095608.pdf

Comments: See attached survey plat (North Carracas 32-4 7F-5 Survey Plat), for information regarding the well site layout during drilling, completion and production phase of the well. The proposed survey plat shows the proposed location and orientation of the drilling rig and existing production equipment layout along with the use of 24ml thick liner under rig. The liner will be installed below all equipment associated with handling, processing, or storage of highly saline muds (i.e., >25,000 ppm TDS) including, but not limited to, the closed loop system, mud pumps and processing system, drill cuttings collection and handling areas, storage equipment containing spent mud and flow-back fluids, etc. All soil contaminated from saline mud, saline drill cuttings, etc. on or off the pad will be tested and/or remediated/removed appropriately. Red Willow will develop and implement a spill prevention, control, and countermeasure plan, and have the plan available upon request on site during drilling, completing, and testing. Red Cedar Gathering Company is aware of the gas pipeline route and is comfortable with layout. The gas line will be laid from the separator to the wellhead and will be tied in after drilling and completions operations are finalized. The pad will not be bermed during drilling and completion operations. A liner will be utilized for surface protection. Interim Reclamation is planned to be postponed until all 6 wells on the well pad are drilled and completed. The estimated time frame for pad drilling and completions is 5 to 10 years.

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** Middle Pad

Multiple Well Pad Number: 2F

Recontouring attachment:

Drainage/Erosion control construction: Storm-water management will be in place on well pad and will be maintained.

Drainage/Erosion control reclamation: Storm-water management will be in place on well pad and will be maintained.

Well pad proposed disturbance (acres): 0
Road proposed disturbance (acres):
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 0
Other proposed disturbance (acres): 0
Total proposed disturbance: 0

Well pad interim reclamation (acres): 0
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0
Total interim reclamation: 0

Well pad long term disturbance (acres): 0
Road long term disturbance (acres): 0
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres): 0
Other long term disturbance (acres): 0
Total long term disturbance: 0

Disturbance Comments: After drilling and completion operations of all 6 wells, and once the well pad cut and fill slopes have achieved final grade, the operator will initiate interim reclamation. The unused portions of the well pads and the entire pipeline right-of-ways will be re-contoured, seeded and mulched. Slopes greater than 3:1 will be hand broadcast or hydro-seeded at double the prescribed rate, and hydro-mulched at 2 tons/acre to provide temporary stabilization. Rock armor may be placed within the inlet and outlet of the culverts along the access road. Earthwork for interim reclamation will be completed within 5 to 10 years to allow for the entire pad development and completion of all wells. Final reclamation of the entire project area will be completed within 6 months of well abandonment.

Reconstruction method: Interim Reclamation as Identified during onsite

Topsoil redistribution: Topsoil will be stock piled onsite with waddles and seeded. During interim reclamation a small portion will be utilized in those areas. During final reclamation the remaining topsoil will be equally distributed across the re-contoured location

Soil treatment: Interim Reclamation as Identified during onsite

Existing Vegetation at the well pad: None, bare ground

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: none, bare ground

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: none, bare ground

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: none, bare ground

Existing Vegetation Community at other disturbances attachment:

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

EAST_AREA_SEED_MIX_20220104095142.pdf

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method: East area Tribal approved seed mix will be used. See attached seeding document.

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: The well pad will be placed on a weed maintenance schedule

Weed treatment plan attachment:

Monitoring plan description: Monitored in early spring and late fall

Monitoring plan attachment:

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Success standards: The pad will not have interim reclamation completed. Red Willow Production Company will assess need and size for any additional equipment needed in the future.
Pit closure description: Closed Loop System

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: MorningStar Operating **Fee Owner Address:** 400 W 7th St.

Phone: (817)334-8318 **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: AGREEMENT

Surface Access Agreement Need description: Surface agreement under negotiation

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF INDIAN AFFAIRS

Other surface owner description:

BIA Local Office: IGNACIO, CO.

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Fee Owner: Fee Owner Depercated **Fee Owner Address:**

Phone: (999)999-9999 **Email:** none@aol.com

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: AGREEMENT

Surface Access Agreement Need description: Surface agreement in negotiation

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Section 12 - Other Information

Right of Way needed? N **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information: Water Well Samples from the area of the proposed well will be collected. Red Willow plans to implement design features from section 2.2.9 of the 2013 FEA POD attached except for bullet point 3 under Air Quality that speaks to a very specific engine. If an engine is utilized for compression it will be housed in a four-walled building. The building will be tested to ensure the structure can maintain the 50dbA or less that the State of Colorado requirements for noise (as courtesy). If the building cannot achieve the 50dbA or fewer requirement, Red Willow will take additional measure to comply. The four-walled building will be painted juniper green as well as all other equipment on location to match surrounding background colors. The compressor chosen will be 2,000HP and not emit more than 2 grams of nitrogen oxides per horsepower hour. Red Willow will mitigate dust with water as needed and during heavy traffic activity. Red Willow will also follow Section 2.2 Additional Design Features to include the 3 bullet points of the BA NC Middle 1E & 2F Natural Gas Development Project (see attached section 2.2). All speed limits on CR 500 will be observed and on pad speed limits will be based on road and pad conditions, but limited to 25mph.

Use a previously conducted onsite? Y

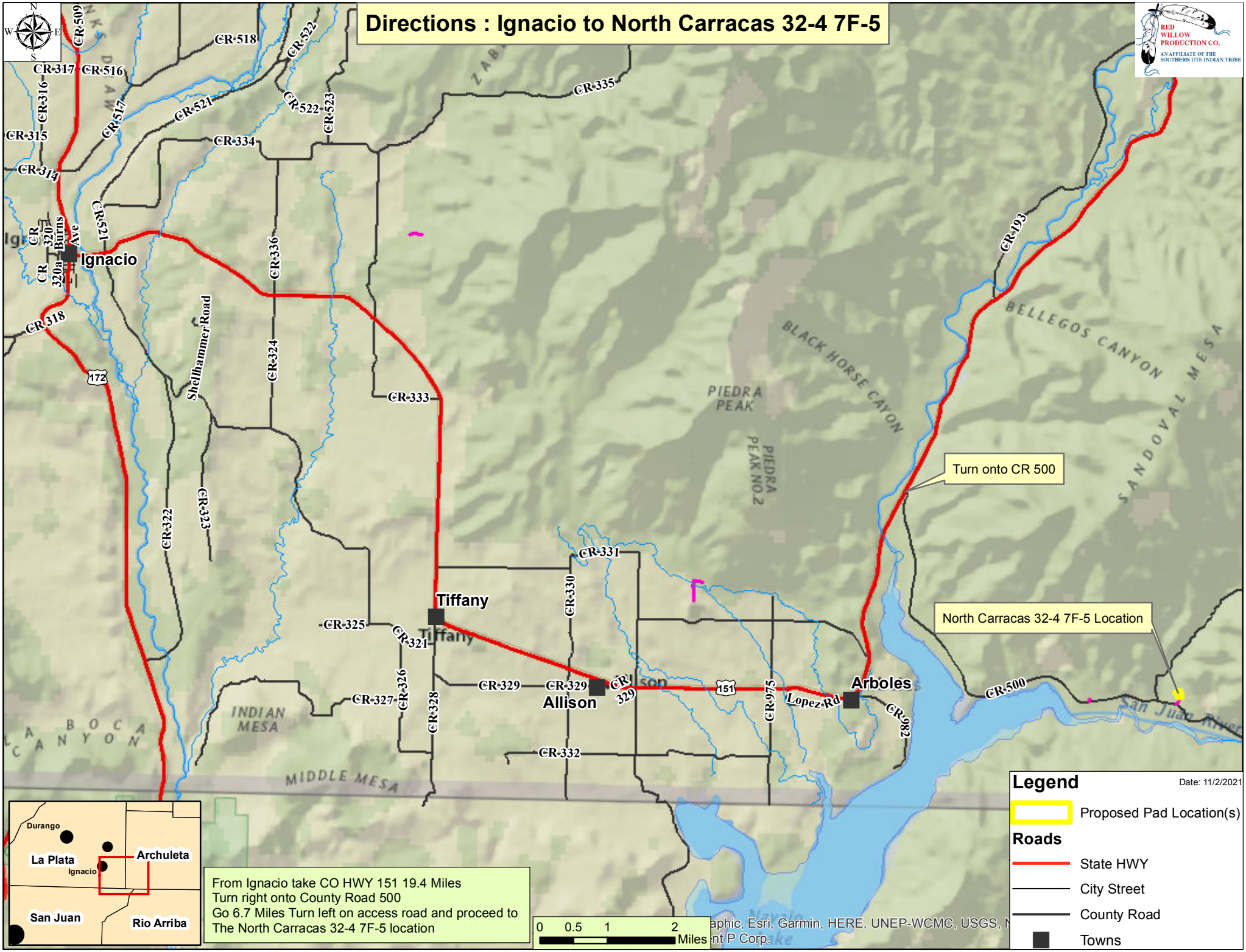
Previous Onsite information: Conducted November 2017

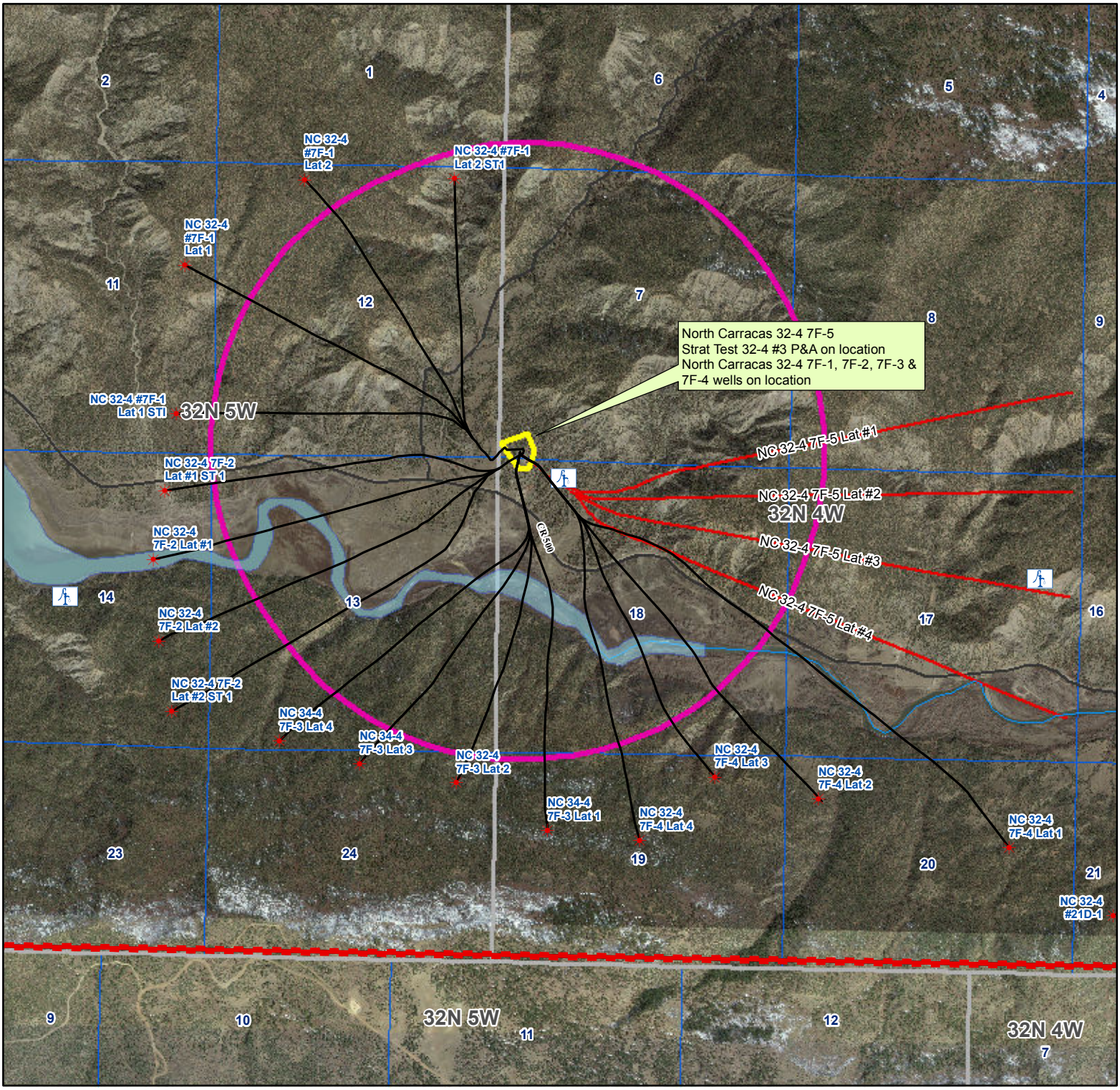
Other SUPO Attachment

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

NC_32_4_7F_5_Produced_Water_20220104094427.pdf
NC_32_4_7F_5_Gravel_Pits_20220104094435.pdf
NC_32_5_7F_5_Self_Cert._Statement_20220104094446.pdf
NC_POD_Design_Features_20220104094517.pdf
2017.11.07_Onsite_Notes_Middle_Pad_2F__Middle_Pad__20220104094536.pdf
BA_NC_Middle_Well_Pads_1E_and_2F_Final_20180110.pdf_Design_Features_2.2_20220104094544.pdf
SanJuanRiverIntake_20220104094614.pdf


Directions : Ignacio to North Carracas 32-4 7F-5
RED WILLOW PRODUCTION CO.
AN AFFILIATE OF THE SOUTHERN UTE INDIAN TRIBE
CR-509
CR-518
CR-522
CR-317
CR-516
CR-316
CR-517
CR-521
CR-522
CR-523
CR-335
CR-315
CR-334
CR-314
CR-521
CR 320
CR 320a
Burns Ave
Ignacio
CR-336
CR-318
Shellhammer Road
CR-324
172
CR-333
CR-322
CR-323
CR-331
CR-330
Tiffany
CR-325
CR-321
CR-326
CR-329
CR-329
Allison
CR-327
CR-328
INDIAN MESA
CR-332
MIDDLE MESA
BOCA CANYON
PIEDRA PEAK
PIEDRA PEAK NO.2
BLACK HORSE CANYON
BELLEGOS CANYON
SANDOVAL MESA
CR-193
Turn onto CR 500
North Carracas 32-4 7F-5 Location
151
CR-975
Lopez Rd
Arboles
CR-982
CR-500
San Juan River
Durango
La Plata
Archuleta
Ignacio
San Juan
Rio Arriba
From Ignacio take CO HWY 151 19.4 Miles
Turn right onto County Road 500
Go 6.7 Miles Turn left on access road and proceed to
The North Carracas 32-4 7F-5 location
0 0.5 1 2
Miles
Legend
Date: 11/2/2021
Proposed Pad Location(s)
Roads
State HWY
City Street
County Road
Towns



Legend

- Gas Well
- Existing Well Bore
- Domestic Water Well
- Reservation Boundary
- Producing Interval
- Build
- Proposed Pad Location(s)
- 1 Mile Buffer

Roads

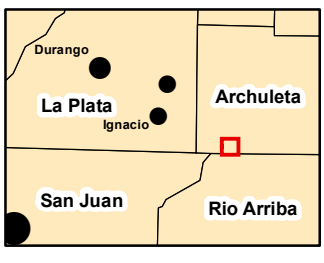
- County Road
- Township
- Section

Red Willow Production Co.
North Carracas 32-4 7F-5
Domestic Water Wells and Oil and Gas Wells Within 1 Mile of Pad Location

1 P&A, 1 domestic water well and 16 gas wells within buffer

Date: 11/2/2021

0 0.125 0.25 0.5 Miles



RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32–4 7F–5
254' FSL, 326' FWL, SECTION 7, T–32–N, R–4–W, N.M.P.M.,
ARCHULETA COUNTY, CO. GROUND LEVEL ELEVATION: 6160'
FACILITY LAYOUT & RECLAMATION

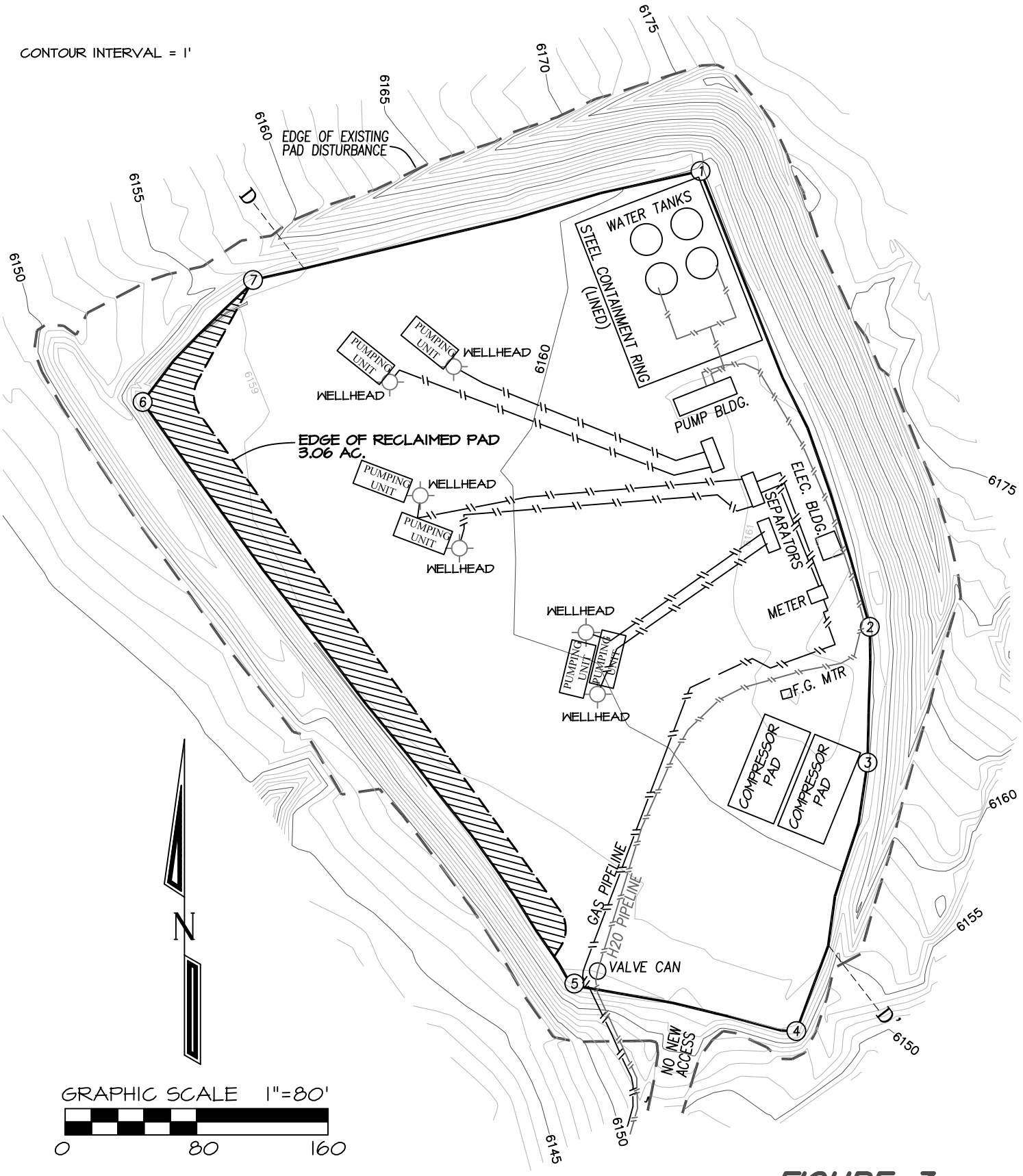
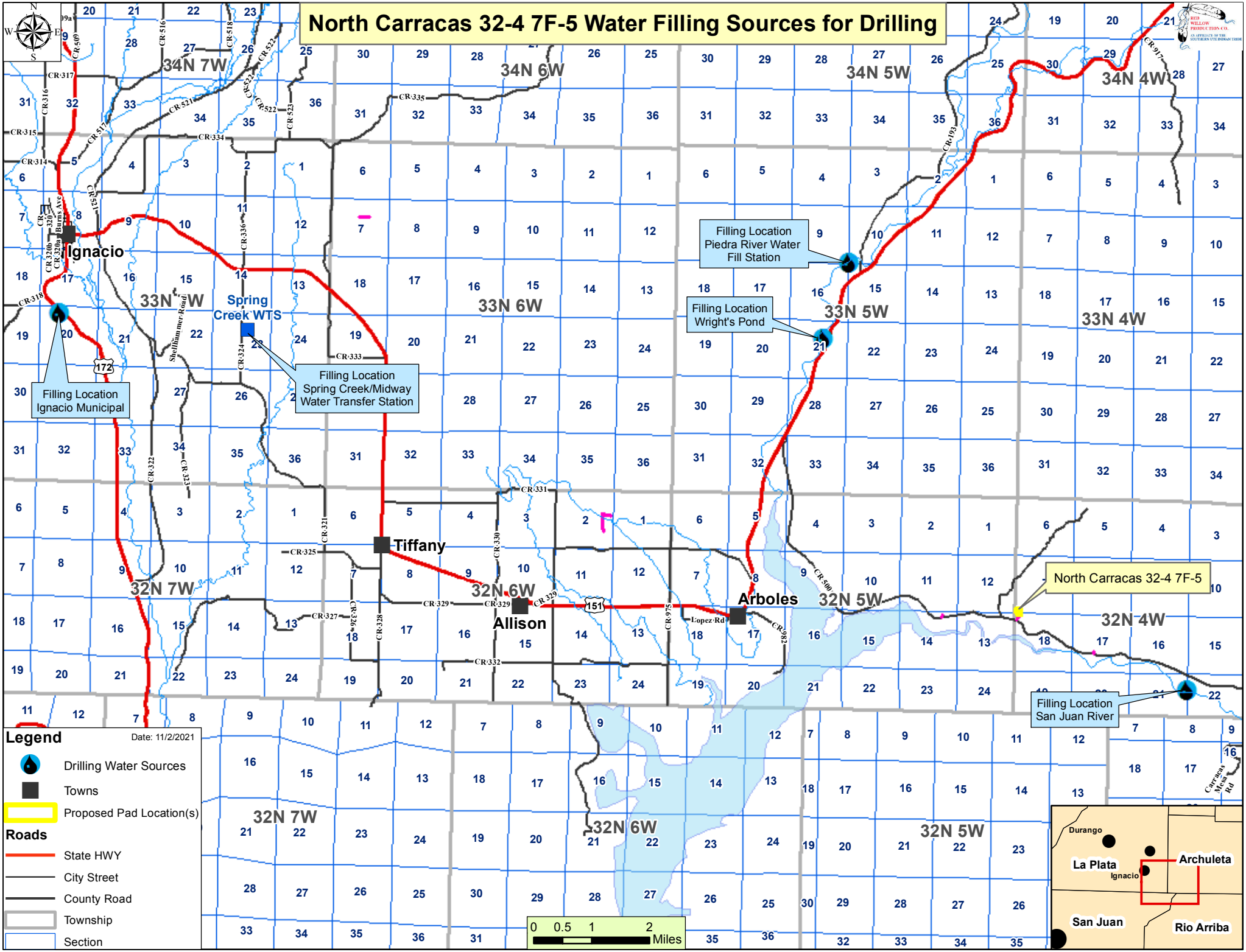


FIGURE 3

DRAWING SCALE: 1" = 80'	DATE DRAWN: 12/14/20	NORTHSTAR SURVEYING & MAPPING, INC.	FILE NO.RW132CFA	DRAWN BY: K.R.	CHECKED BY: K.R.


North Carracas 32-4 7F-5 Water Filling Sources for Drilling
Filling Location Piedra River Water Fill Station
Filling Location Wright's Pond
Filling Location Spring Creek/Midway Water Transfer Station
Filling Location Ignacio Municipal
Filling Location San Juan River
North Carracas 32-4 7F-5
Ignacio
Spring Creek WTS
Tiffany
Allison
Arboles
34N 7W
34N 6W
34N 5W
34N 4W
33N 7W
33N 6W
33N 5W
33N 4W
32N 7W
32N 6W
32N 5W
32N 4W
Legend
Date: 11/2/2021
Drilling Water Sources
Towns
Proposed Pad Location(s)
Roads
State HWY
City Street
County Road
Township
Section
0 0.5 1 2 Miles
Durango
La Plata
Archuleta
Ignacio
San Juan
Rio Arriba

RED WILLOW PRODUCTION COMPANY: NORTH CARRACAS 32–4 7F–5
254' FSL, 326' FWL, SECTION 7, T–32–N, R–4–W, N.M.P.M.,
ARCHULETA COUNTY, CO. GROUND LEVEL ELEVATION: 6160'
FACILITY LAYOUT & RECLAMATION

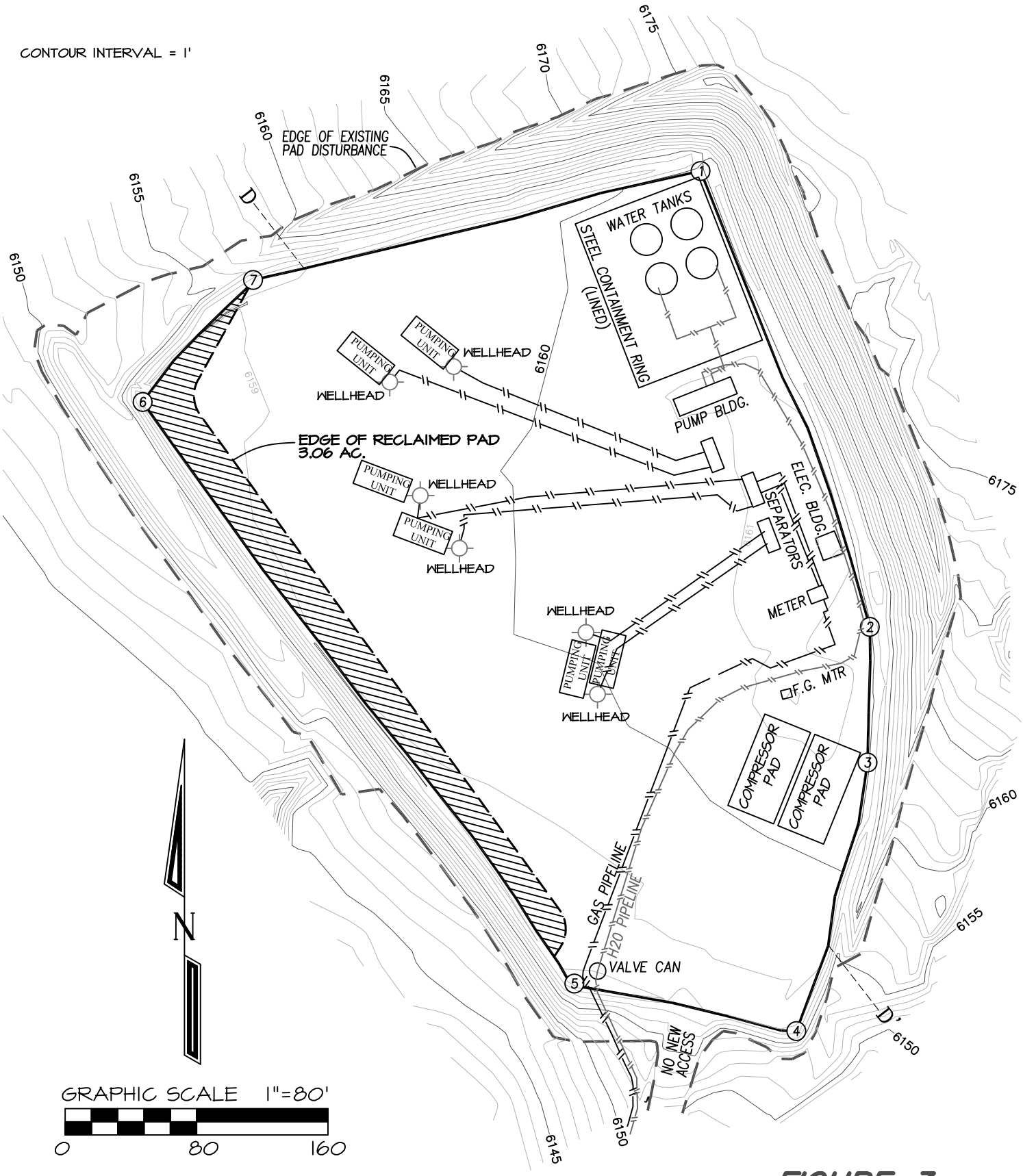


FIGURE 3

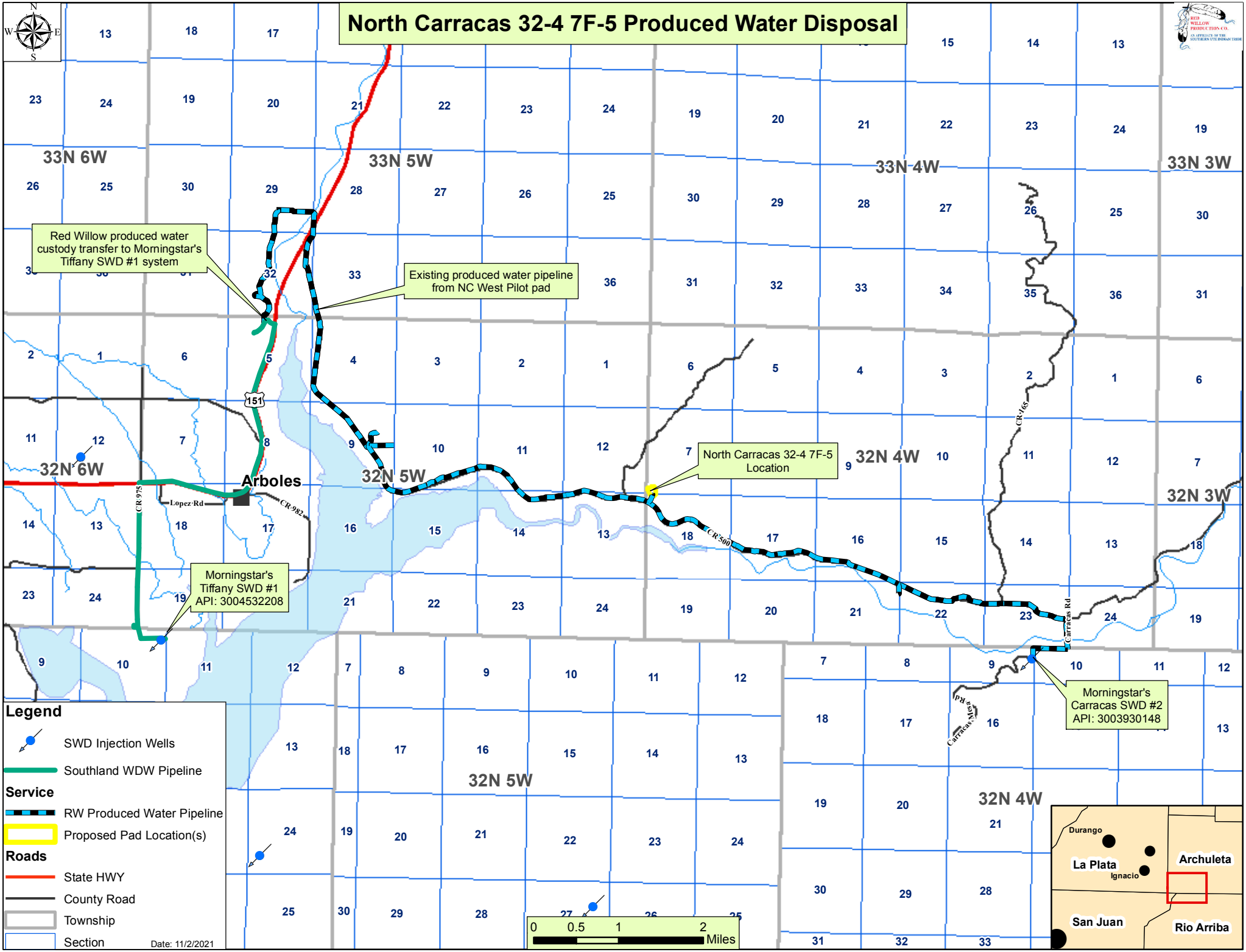
DRAWING SCALE: 1" = 80'	DATE DRAWN: 12/14/20	NORTHSTAR SURVEYING & MAPPING, INC.	FILE NO.RW132CFA	DRAWN BY: K.R.	CHECKED BY: K.R.

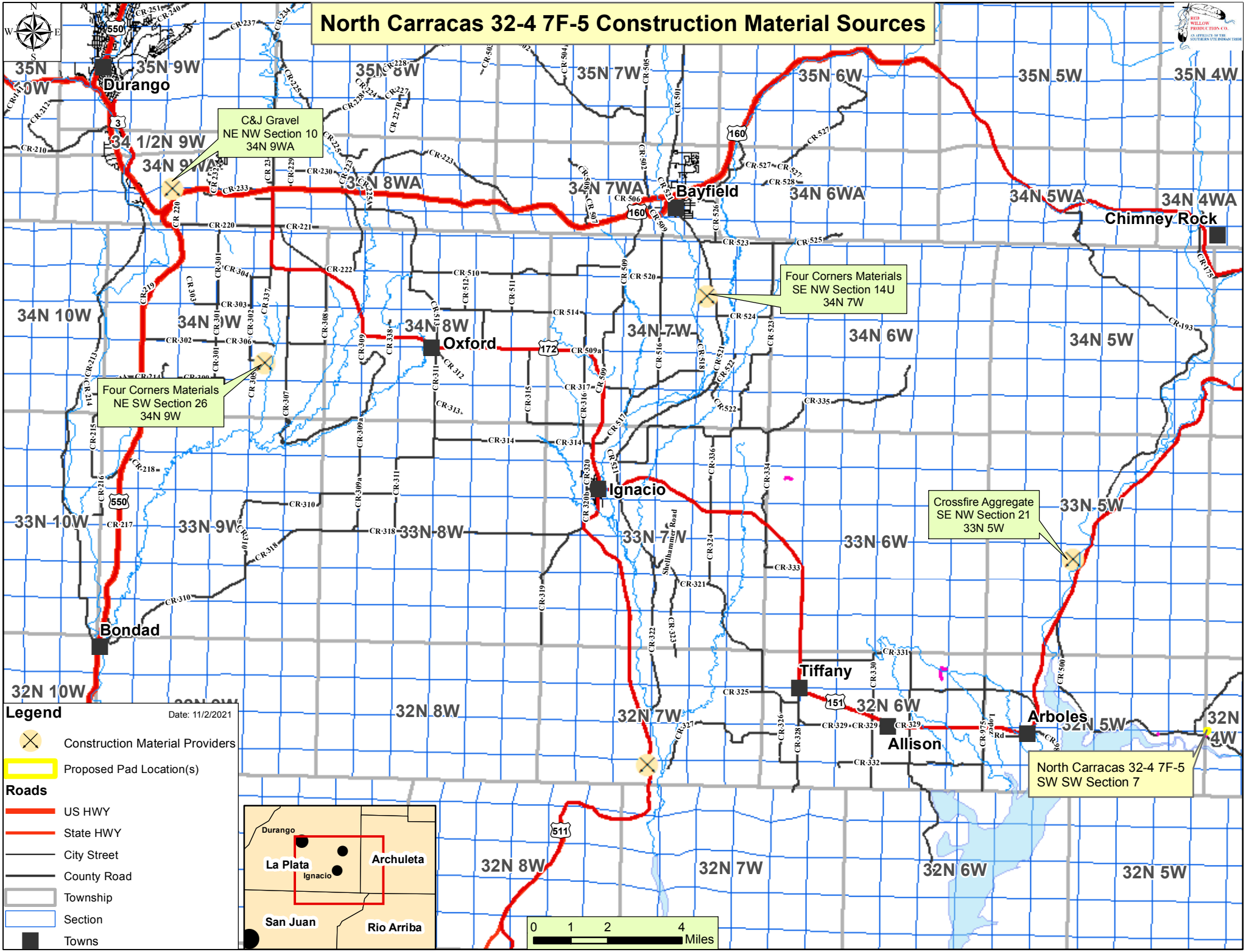
EAST AREA SEED MIX

MIX # 2, West of Hwy 550 to Hwy 140;

Crested Wheatgrass	2 LBS/PLS per acre
Indian Rice Grass	2 LBS/PLS per acre
Blue Grama Grass	2 LBS/PLS per acre
Galleta Grass	2 LBS/PLS per acre
Sand Drop Seed	1 LBS/PLS per acre
Fourwing Saltbush	1 LBS/PLS per acre
Western Wheatgrass	4 LBS/PLS per acre
Pubescent Wheatgrass	2 LBS/PLS per acre
Annual Sterile Ryegrass or Sterile Triticale	12 LBS/PLS per acre

These are drilled rates. These rates shall be doubled for broadcast seeding.


North Carracas 32-4 7F-5 Produced Water Disposal
Red Willow produced water custody transfer to Morningstar's Tiffany SWD #1 system
Existing produced water pipeline from NC West Pilot pad
North Carracas 32-4 7F-5 Location
Morningstar's Tiffany SWD #1 API: 3004532208
Morningstar's Carracas SWD #2 API: 3003930148
Arboles
Lopez Rd
CR 975
CR 982
CR 500
CR 165
Carracas Rd
Carracas Mesa Rd
151
33N 6W
33N 5W
33N 4W
33N 3W
32N 6W
32N 5W
32N 4W
32N 3W
Legend
SWD Injection Wells
Southland WDW Pipeline
Service
RW Produced Water Pipeline
Proposed Pad Location(s)
Roads
State HWY
County Road
Township
Section
Date: 11/2/2021
0 0.5 1 2 Miles
Durango
La Plata
Ignacio
Archuleta
San Juan
Rio Arriba


North Carracas 32-4 7F-5 Construction Material Sources
C&J Gravel
NE NW Section 10
34N 9WA
Four Corners Materials
SE NW Section 14U
34N 7W
Four Corners Materials
NE SW Section 26
34N 9W
Crossfire Aggregate
SE NW Section 21
33N 5W
North Carracas 32-4 7F-5
SW SW Section 7
Durango
Bayfield
Chimney Rock
Oxford
Ignacio
Bondad
Tiffany
Allison
Arboles
35N 10W
35N 9W
35N 8W
35N 7W
35N 6W
35N 5W
35N 4W
34 1/2N 9W
34N 9WA
34N 8WA
34N 7WA
34N 6WA
34N 5WA
34N 4WA
34N 10W
34N 9W
34N 8W
34N 7W
34N 6W
34N 5W
33N 10W
33N 9W
33N 8W
33N 7W
33N 6W
33N 5W
32N 10W
32N 8W
32N 7W
32N 6W
32N 5W
32N 4W
Legend
Date: 11/2/2021
Construction Material Providers
Proposed Pad Location(s)
Roads
US HWY
State HWY
City Street
County Road
Township
Section
Towns
Durango
La Plata
Archuleta
Ignacio
San Juan
Rio Arriba
0 1 2 4
Miles

SELF-CERTIFICATION STATEMENT
FROM LESSEE/OPERATOR
AND SURFACE OWNER

Federal or Indian Lease No.: 750-08-2008

Well Name(s): North Carracas 32-4 7F-5

I hereby certify to the Authorized Officer of the Bureau of Land Management (BLM) that the owner of the surface or that owner's representative authorizes Red Willow Production Co. (operator) to drill a Federal well from the non-Federal lands, and in which the surface owner or representative guarantees the Department of the Interior (Department), including the BLM, access to the non-Federal lands to perform all necessary surveys and inspections related to the Federal wells.

I understand that if access for any bureau of the Department to the operations and surrounding area for official business related to the approved operations is denied or impeded in any way, the BLM may order the federally approved operations halted and the Federal well or wells shut in.

Surface Owner Information:

Surface Owner Name:	Southland Royalty Company LLC
Surface Owner Address:	400 W. 7th St., Fort Worth, TX 76102
Surface Owner Phone Number:	817-334-7717

Signed this 28 day of February 2018.

Michelle Faris, Director of Land
Signature of lessee/operator representative *Print name of lessee/operator representative*

I (Surface Owner) have read and accept the above lessee/operator's certification.

Signed this 12TH day of MARCH, 2018.

JONATHAN A. HOLMES - LAND MANAGER
Signature of Surface Owner if accepts *Print Name of Surface Owner if accepts*

The majority of proposed pipelines would parallel and overlap existing roads. Approximately 4.5 miles of pipeline ROW would parallel proposed new roads; therefore, approximately half of the proposed pipeline ROWs would be reclaimed following construction, with the other half remaining for access. On Tribal Trust lands, access roads would be reclaimed at final abandonment per BLM COAs and BIA/Tribal stipulations.

At final abandonment, the well locations, production facilities, and access roads would undergo final reclamation to restore the character and productivity of the land. During final reclamation, surface equipment would be removed from the well locations and compressor station. Disturbed areas would be re-contoured as close to the original landform as possible. Salvaged topsoil would be respread and the area reseeded. Appropriate erosion controls would be implemented. A reclamation plan would be included in the Surface Use Plan of Operations developed for each gas well. Roads and pipelines would be reclaimed as outlined in the project-specific stipulations. Additional reclamation measures may be required based on the conditions existing at the time of abandonment.

2.2.9 Design Features

Design features, also known as best management practices (BMP), are an integral part of the proposed action. The environmental effects are analyzed assuming that design features are in place and successful. For the proposed actions, standard and project-specific design features have been derived from the Programmatic Environmental Assessment for 80-Acre Infill Oil and Gas Development on the Southern Ute Indian Reservation (USDI 2009) and the Southern Ute North Carracas Energy Development: Guidance and Protocol to Reduce Wildlife Impacts (SUIT 2010b).

The SUIT DNR, SUIT DOE, BLM, USEPA, and BIA may perform inspections of facilities within the exterior SUIT boundary to assess compliance with mitigation and may take additional, legally authorized enforcement actions to assure compliance. For any federal actions, all applicable (as designated by a BLM representative) Gold Book BMPs and site-specific mitigations will be utilized throughout the entire life of the proposed project wherever practically possible.

Design features for the proposed action include but are not limited to:

Air Quality

- Roads would be surfaced or dust inhibitors would be used (e.g., surfacing materials, non-saline dust suppressants, water, etc.), as appropriate, on roads and well locations constructed on soils susceptible to wind erosion, to reduce the amount of fugitive dust generated by traffic, or other activities.
- Speed limits would be enforced to the extent practicable on roads in and adjacent to the project area, to further reduce fugitive dust.
- All new and replacement internal combustion gas field engines must meet, at minimum, recently promulgated (January 18, 2008, 73 Federal Register 3568) New Source Performance Standards (NSPS) (40 CFR 60, Subpart JJJJ). Additionally, all new and replacement internal combustion gas field engines greater than or equal to 500 design-rate hp (or site de-rated hp values, as long as manufacturer de-ration values and emission factors are supplied and current demonstration compliant with appropriate emission rate requirement) must not emit more than 1 gram of

nitrogen oxides (NOx) per horsepower hour upon issuance of the Decision document, as opposed to being delayed under the NSPS.

- All prime mover diesel drilling rig engines (not work overs or recompletion rigs) will meet Tier 2 (or better) emission standards.
- Compressors would be ultra-lean-burn engines, each fitted with two oxidation catalysts to meet NSPS.
- Green completion technology will be used for all natural gas well completions.

Water Quality

- Protect water quality within, and downstream of, the study area from soil erosion and sedimentation by BMPs that include erosion control devices and management procedures, retention of a vegetation buffer strip (minimum of 100 feet) between water bodies and disturbed areas, and spill prevention procedures.
- Whenever reasonably possible, bore under jurisdictional waters of the U.S., including drainages and wetlands to avoid and/or minimize surface impacts. Pipe would be installed a minimum of 4 feet below stream bottoms. Pipelines installed under streams will utilize a pipe-in-pipe design to minimize the potential for leaks.
- The operator will develop, implement, and strictly adhere to project-specific and comprehensive Spill Prevention, Control, and Countermeasure (SPCC) Plans, if required as a result of petroleum hydrocarbons in sufficient quantities (i.e., 1,320 gallons or more) being utilized and/or stored on a particular well or facility location.
- All spills shall be promptly reported to the SUIT DOE and BIA, in accordance to the SUIT Spill/Release Reporting Policy and reported to the BLM in accordance with BLM-Notice to Lessees NTL-3A.
- Containment structures sufficiently impervious to prevent a discharge to waters of the U.S., such as containment dikes, containment walls, drip pans, or equivalent protection actions will be constructed and maintained around qualifying fluid/chemical facilities or storage tanks.
- Monitor bradenhead pressures to identify wells that may have wellbore integrity problems and may be acting as vertical conduits for fluid migration, including but not limited to completion fluid, methane, or Fruitland Coal water.
- Monitor water quality, conduct bradenhead testing, and evaluate data accordingly.
- Cement all surface and production casing strings to the surface by circulation methods.
- If cement in the surface and/or production string is not circulated to the surface and a cement bond log or temperature log shows sufficient coverage and cement bond to isolate the appropriate zones, including the Fruitland Coal gas-bearing zone, and casing shoe tests positive, drilling will proceed. Otherwise, remediation will be performed.
- Within any areas of concern, the SUIT DOE and BLM may require water well monitoring as part of APD approval.
- In the event that any surface water body or usable groundwater aquifer is degraded by any of the proposed project activities, the problem shall be immediately reported and remediated or other corrective action taken as determined by the appropriate agency.

- The USEPA would perform mechanical integrity tests on the saltwater disposal well per the underground injection permit.
- Injection well operations will be monitored monthly for cumulative injection volumes and pressures in tubing and tubing/casing annulus.
- Self-contained, closed-loop systems will be utilized to drill the natural gas wells in this proposed POD.
- For the CBM wells, the operator will follow procedures in a manner consistent with COGCC Rule 608 for sampling water wells in the vicinity of the proposed natural gas wells.
- For the salt-water disposal well, the operator shall collect samples and conduct complete water analyses in a manner consistent with COGCC Rule 609.e(1) and (2) on all newly developed water wells less than 300 feet in depth within the project area if the landowner consents to sampling.
- Meet all applicable USEPA federal water quality standards.
- Avoid construction activities near or through streams (whether ephemeral or perennial) and implement USACE permit requirements.
- Require operators to map and delineate waters of the U.S., as defined at 33 CFR § 328.3, prior to the planning of any activity at or near such waters.
- Require operators to avoid impacting waters of the U.S. whenever practicable.
- Require operators to obtain 404 permits from the USACE, including the 401 certification from the USEPA for land within the boundary of the Reservation.
- Require operators to minimize unavoidable discharges of fill material to waters of the U.S.
- Require operators to mitigate waters of the U.S. that are adversely impacted by their activities.
- Require operators to obtain appropriate permits, including those associated with Section 404 of the Clean Water Act, when crossing surface waters or waters of the U.S., as defined at 33 CFR § 328.3.
- The Stormwater Recommendations for Oil and Gas Operations on Tribal Lands within the Southern Ute Indian Reservation will be implemented. The stormwater recommendations are provided in Appendix F.
- There will be no permanent structure constructed within the 100-year floodplain boundaries of streams unless it can be demonstrated on a case-by-case basis that there is no physically practical alternative. In cases where floodplain construction is approved, additional constraints and BMPs such as flood protection measures or construction timing restrictions may be applied
- Operators will implement the USEPA Reasonable and Prudent Practices for Stabilization BMPs to eliminate or minimize adverse impacts to the environmental health of the SUIT natural resources (USEPA 2004b).
- Implement BMPs to slow or reduce the flow of surface-water runoff across disturbed areas, including diversion of surface runoff around facilities.
- Appropriately sized culverts will be installed to convey surface flow under constructed access roads. Reduce erosion impacts from roads through measures described in the standard environmental protection criteria.

- Implement and maintain structural erosion and sediment controls such as interim or permanent water bars, detention ponds, straw bales, silt fences, earth dikes, and inlet and outlet protection.
- Implement non-structural control practices such as interim and permanent stabilization, permanent and temporary seeding and re-vegetation, geotextiles, mulch, tackifiers, and hydromulching (using approved weed free seed mix).
- Install culverts as erosion prevention measures in areas of high runoff.
- Protect water bodies and drainage pathways near drill sites or roads, which are the most susceptible to erosion by developing buffers or adding erosion control measures.
- Minimize erosion at sites located in steep terrain during the construction phase by utilizing stormwater BMP measures such as contouring, water bars, temporary ditches, and detention basins, along with minimizing the period of disturbance.
- Timely plug and abandon non-productive wells and associated flow lines and equipment.

Vegetation

- Avoid areas containing sensitive vegetation types, such as wooded riparian vegetation or known sites with culturally important plants, to the fullest extent possible.
- All oil and gas operators will obtain a permit from the SUIT Forestry Division prior to the removal of wood materials greater than 4 inches in diameter from well pads or pipelines.
- Separate topsoil and set aside for reclamation purposes.
- Limit construction activities to dry conditions to reduce soil compaction and rutting, as appropriate.
- Reclaim and re-vegetate all disturbed areas of soil with approved, certified weed-free seed mixes, fertilizer, and/or mulch.
- Use spark arresters on chainsaws and mufflers on vehicles to prevent wildland fires.
- Burning brush, trash, or scrap materials, etc. is restricted by Reservation rules.
- Monitor invasive species populations.
- Use BMPs to minimize the introduction of invasive species.
- Require operators to control noxious weeds in disturbed areas.
- Apply herbicide only under the supervision of a licensed pesticide applicator, and ensure that application, storage, and disposal procedures meet federal and Tribal requirements.
- Avoid construction in wetlands to the fullest extent possible.
- Identify unavoidable direct and indirect impacts on wetland areas during individual project planning. Develop a wetland mitigation/monitoring plan and obtain necessary permits, prior to initiation of construction activities.
- When it is necessary to cross streams and riparian areas, design facilities to cross at right angles, rather than parallel, in order to minimize the area of impact on these resources. Use BMPs at any temporary stream crossings and rehabilitate wetlands as soon as possible.
- Minimize surface disturbance by accessing new wells via spur roads off existing roadways rather than through construction of new primary roads.
- Corridors for pipeline ROWs should be shared or consolidated to the extent practicable.

- Final reclamation must occur in a timely manner upon decommissioning and abandonment of facilities and in accordance with SUIT and/or BLM stipulations and COAs associated with APDs and ROW grants.

Wildlife and Fisheries

- Minimize or avoid development in areas of critically important wildlife habitat, such as elk or deer winter concentration areas and wooded riparian vegetation.
- Where development in unique habitats cannot be avoided, mitigation (such as habitat enhancement and restoration) shall be considered. SUIT DNR or Division of Wildlife Resource Management (DWRM) will coordinate with the operator in the development of appropriate wildlife habitat mitigations and enhancements, and the operator will be responsible for construction of these improvements as a COA to proceed with the development activity.
- Conduct on-site inspections of potential development locations to ensure avoidance of wooded riparian areas to the greatest extent possible.
- Site major developments (e.g., well pads, heavily used roads, and processing facilities) away from migration corridors. Lightly used roads and pipelines may be placed in such areas. Tribal wildlife biologists shall be consulted directly on all major developments to develop specific mitigation to protect migration corridors.
- Locate facilities at the base of slopes where feasible to provide a background of topography and/or natural cover.
- Minimize the number of well monitoring trips by coordinating well visits to limit traffic or by installing automated monitoring systems.
- Re-vegetate disturbed areas as soon as possible. Monitor the success of re-vegetation efforts and reseed as needed to develop established stands of vegetation. As per requirements under the design features for vegetation resources, this re-vegetation shall be noted in the annual report.
- Maintain appropriate speed limits on access roads to minimize wildlife injuries or mortalities due to vehicle-wildlife collisions.
- Heater-treaters (separators) will be screened to prevent bird mortalities.
- All fences and cattle guards will be removed from well pads once vegetation has been established following completion of reclamation activities unless requested by landowners. Oil and gas operators will install pipe barriers or panels around wellheads, meters, valves, and other equipment to minimize impacts to wildlife and livestock.
- Bird netting will be suspended and maintained over all reserve pits, open tanks, and catchments if hydrocarbons or toxic chemicals are present in the fluids until reclamation is complete.
- Restrict new well locations and ROWs to at least ¼ mile from a raptor nest or winter roost.
- A migratory bird survey prior to construction during the migratory bird breeding season (March through August) will be conducted.
- SUIT DWRM biologists shall conduct yearly nesting surveys to document known nest sites and monitor nesting success. Annual winter roost surveys would also be conducted to identify and record additional winter roost sites. These data would be used to evaluate the effectiveness of mitigation measures for wooded riparian habitat and develop additional mitigation criteria as necessary.

- *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors* (CDOW 2008) will be implemented, with the exception of bald eagle.
- To the extent practicable restrict timing of drilling activities in undisturbed areas to reduce disturbance impacts on deer and elk. Unless otherwise agreed by SUIT DNR/DWRM, no drilling activities will be allowed from December 1st through April 30th ("Closure Period") for any projects more than a 1/3-mile distance from Archuleta County Road 500 ("Buffer Area"). Routine maintenance, construction, and/or completion activities being conducted outside of the Buffer Area, during the Closure Period, may only occur between 8:30 am and 3:30 pm. Prior approval of SUIT DNR/DWRM is required for drilling activities outside of the Buffer Area prior to April 30th. The April 30th start date may be altered at the discretion of SUIT DNR/DWRM based on severity of snowpack conditions.
- Regardless of distance from Archuleta CR 500, construction, drilling, and completion activities should be scheduled to avoid particularly sensitive seasonal wildlife sites, specifically bald eagle winter roost sites, southwestern willow flycatcher nest sites, and raptor nest sites. SUIT DNR/DWRM should be consulted on sensitive sites, timing considerations, and buffer distances.
- As much as possible, drilling activities outside of the Buffer Area should be scheduled to avoid annual big game hunting seasons, when Tribal use of land is at its highest (i.e., generally from September through December). If the operator believes that drilling activities outside of the Buffer Area are necessary between September and December, consultation with SUIT DNR/DWRM should occur to address the issue on a site-specific basis.
- Avoid new surface disturbance and placement of new facilities in key wildlife habitats, especially within and adjacent to wetland-riparian zones. SUIT DNR/DWRM should be consulted in the planning stages in order to identify specific sensitive habitats that should be avoided.
- Locate roads as far from streams and bottoms of drainages as possible and outside of riparian habitat unless after consultation with SUIT DNR/DWRM it is determined that alternative alignments would be more environmentally disruptive. Consult with SUIT DNR/DWRM when stream/drainage crossings cannot be avoided.
- Establish company policies to protect wildlife and other natural resources while employees are on SUIT or SUIT partner lands (e.g., no poaching, no firearms, no dogs on location, no feeding of wildlife, no littering, bear proof trash containment, use restrooms or portable toilets only).
- Reduce noise by using current and effective sound dampening devices or techniques such as hospital grade mufflers, equipment housing, insulation, installation of sound barriers, earthen berms, and vegetative buffers. Specific sound dampening mitigation can be determined for new facilities at a site-specific level in consultation with SUIT DNR/DWRM.
- Install signage notifying the public that unauthorized vehicular travel on roads and facility ROWs is not permitted. If future activities indicate that signage is not sufficient to prevent unauthorized traffic, consider the use of locked gates.
- Any fencing required around facilities or along roads should use wildlife friendly designs to readily allow wildlife passage.
- Design and maintain access roads in light of the anticipated volume of traffic and the weight and speed of vehicles using these roads to minimize environmental damage, including the generation of fugitive dust and contribution of sediment to downstream areas.

- Avoid locating staging, refueling, and storage areas within 300 feet of any reservoir, lake, wetland, or natural perennial or seasonally flowing stream of river to the extent reasonable. If this cannot be avoided in a reasonable manner, consultation with SUIT DNR/DWRM should occur to address the issue on a site-specific basis.
- Promptly report all spills to the appropriate Federal/Tribal authorities.
- Close and immediately reclaim all roads that are redundant, or have been abandoned to the maximum extent possible to minimize disturbance and habitat fragmentation.
- The operator will notify the BLM authorized officer, nearest USFWS law enforcement office, and the SUIT DNR/DWRM within 24 hours, if the operator discovers a dead or injured federally protected species (i.e., migratory bird species, bald or golden eagle, or federally listed species) in or adjacent to a pit, trench, tank, exhaust stack or fence.
- The operator will construct and maintain pits, cellars, open-top tanks, and trenches that are not otherwise fenced, screened, or netted to exclude livestock, wildlife, and humans. At a minimum, the operator will construct and maintain escape ramps, ladders or other methods of wildlife escape in pits, cellars, open-top tanks, or at frequent intervals along trenches where entrapment hazards may exist.
- The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances.

Threatened and Endangered Species

- No disturbance will be allowed within 20 meters (65 feet) of federally listed plant occupied habitat, and any disturbance proposed within 200 meters (656 feet) of listed plants occupied habitat would be analyzed in a separate site-specific consultation.
- Conduct southwestern willow flycatcher (*Empidonax traillii extimus*) surveys within suitable habitat prior to any construction activities to determine presence or absence.
- If southwestern willow flycatchers are located during survey efforts, no surface-disturbing activities will be conducted from May 1 through August 15.
- Minimize construction activities in wooded riparian habitat, or any other potential southwestern willow flycatcher nesting habitat.
- No disturbance will be allowed within 200 meters (656 feet) of known or discovered occupied southwestern willow flycatcher breeding habitat.
- Pre-construction surveys for Gunnison (*Cynomys gunnisoni*) prairie dogs will be conducted on proposed locations. Direct impacts to prairie dog colonies will be avoided where possible, and in the light of other resource tradeoffs resulting from access road and or pad relocation.

Bald Eagle Winter Roosting (November 15 to March 15)

- For a construction project planned during the bald eagle winter roosting period and within ¼ mile of a riparian zone with a mature cottonwood component, a pre-construction survey shall be initiated within 10 days prior to the start of construction to verify the presence or absence of bald eagle roosting activity. The surveys must be conducted by qualified biologist(s) according to protocol as set forth by the USFWS. Generally, the survey should be performed during dawn and dusk periods on 2 or more days immediately prior to the construction start date. The survey should be documented and results sent to the Division Head of the SUIT DWRM.

- If one or no bald eagles are found to be roosting within ¼ mile of the study area during the pre-construction survey, work may proceed with no time of day restrictions.
- If two or more bald eagles are found to be roosting within ¼ mile of the proposed construction site study area during the pre-construction survey, the operator will be restricted to working between 10:00 a.m. and 2:00 p.m. on a daily basis.
- If bald eagles continue to occupy or enter the area within ¼ mile of the construction site between the 10:00 a.m. and 2:00 p.m. time window, work will stop until the bald eagles leave the area. Under no circumstances shall bald eagles be harassed in order to disperse them from the area.

Bald Eagle Spring/Summer Nesting (March 16 to July 1)

- For a construction project planned during the bald eagle nesting period and within ½ mile of suitable bald eagle nesting habitat (e.g., a riparian area with a mature cottonwood component), a pre-construction survey will be initiated within 10 days prior to the start of construction to verify the presence or absence of bald eagle nesting activity. The survey will be conducted by qualified biologist(s) according to protocol as set forth by the USFWS. Generally, the surveys should be performed during dawn and dusk periods on 2 or more days immediately prior to the construction start date. The survey will be documented and results sent to the Division Head of the SUIT DWRM.
- If no bald eagles are found to be nesting within ½ mile of the proposed construction site during the pre-construction survey, work may proceed with no restriction. If bald eagles are found to be nesting within ½ mile of the construction area, the construction must stop until all signs of nest use have stopped for the year.
- If an active bald eagle nest is known to exist within ½ mile of a proposed construction project, the construction project may not proceed until all signs of nest use have stopped for the year.

Cultural Resources

- All oil and gas developments with a federal nexus must be implemented in compliance with Section 106 of the National Historic Preservation Act. Regulations implementing this Act require that: (1) cultural resources be thoroughly inventoried within areas that would be potentially affected by these projects; (2) the significance of any identified resources be evaluated; and (3) measures be taken to avoid or mitigate any identified adverse effects on significant resources. This requirement must be done in consultation with the State Historic Preservation Office, Federal Advisory Council on Historic Preservation, BIA, and other interested parties.
- Standard Tribal and BIA procedures require project developers to retain archaeological consultants to intensively survey project areas (accompanied by Tribal representatives), and prepare reports that document the survey results, assess projected impacts, and formulate recommendations about resource significance and measures to avoid or mitigate any identified adverse effects. These procedures must be completed in accordance with all applicable regulations. Standard procedures stipulate that all well site, access road, and pipeline development activities be confined within areas that have been inventoried for cultural resources.
- All work crews would be routinely informed of cultural resource protection laws and that they are subject to prosecution if they collect artifacts or disturb archaeological sites.
- It is anticipated that most projects probably can be modified to avoid direct impacts on archaeological and historical sites. If avoidance is impossible, the potential is high for

satisfactorily mitigating impacts through professional study to recover important data from archaeological and historical sites before they are affected by a proposed project.

- Environmental assessments of any subsequent authorized individual projects would consider impacts on archaeological sites and provide additional opportunities for the Tribe to assess and address protection of traditionally used native species and preservation of SUIT heritage.
- If COAs or other stipulations state that a cultural resources monitor must be present during construction activities and the operator does not comply with that stipulation, the project will be shut down until such monitoring is present. Additionally, lawfully authorized penalties may be imposed for non-compliance.

Land Use and Ownership

- Situate project facilities, including roads, away from or at the edges of irrigated and non-irrigated agricultural land to the maximum extent practical to reduce direct and indirect effects on agricultural resources and operations.
- Minimize crossings or other direct effects on watershed restoration facilities; agricultural irrigation facilities including water canals, ditches, and pipelines; and other water conveyance systems to the maximum extent practical or provide for their protection to allow them to operate as designed.
- If facilities (e.g., fences, gates, cattle guards) are damaged or displaced by oil and gas activities, they would be repaired or replaced by the operator, to a condition as good as or better than original.
- Restrict project-related construction equipment and vehicle movement to specific, designated access roads to minimize disturbance to potentially sensitive areas.
- Continue to require responsibility for fence, gate, and cattle guard maintenance and for noxious weed control as COAs and stipulations for APDs and ROW grants.
- Develop reclamation plans for all areas that have been disturbed during production, and specify techniques for reclamation of well pads, pipeline ROW, and roads.
- Site facilities to avoid or minimize impacts on livestock or wildlife water. If such water is impacted, measures should be taken to replace the water source in respect to both quantity and quality.
- Site roads, pipelines, and well pads away from residences and out of view from residences as much as possible.
- Work with surface owner, when possible, to pick sites for roads, pipelines, and well pads.
- Choose sites that would provide topographic and vegetative screening for the location of well facilities.
- Use low-profile tanks and other production facilities to minimize visibility.
- Locate facilities away from prominent topographic features.
- If possible, avoid locations near populated areas, parks, scenic areas, hilltops, and natural or man-made structures. For linear facilities such as access roads, avoid crossing hillcrests.
- Where placement of a facility is necessary in a hilltop area, consider locations on the slopes or brow of a hill to minimize the silhouette.

- Paint facilities to match the surrounding vegetation/landscape.
- Design cut-and-fill slopes to achieve maximum compatibility with the surrounding natural topography.
- Align access roads to follow existing grades to minimize cuts and fills.
- Limit the clearing of trees and vegetation for the project facilities to the minimum area required. Clearing edges should be feathered and thinned, as appropriate.

Public Health and Safety

Additional design features related to public health and safety are listed above under Air Quality and Water Quality.

- Motors or compressors will be located and/or oriented to reduce noise transmission.
- Unless otherwise authorized, the Tribe will require operators to meet noise standards no less stringent than those imposed by the COGCC on lands within its jurisdiction.
- Companies with oil and gas facilities on the Reservation will provide sanitary facilities at locations such that a person would not have to travel by vehicle any longer than 10 minutes from a given location to reach a sanitary facility.
- In the event that personnel are not able to reach a sanitary facility and must relieve themselves on-site, they are expected to have access to a shovel and bury any toilet paper and human waste sufficiently beneath the surface of the ground.
- Panel barriers will be erected around meter houses, pump heads or other surface facilities unless an allottee or private landowner requests fencing of the location. The type and location of barriers would be determined on a case-by-case basis during a site visit.
- Design exterior lighting of project facilities to minimize visual impacts while meeting applicable safety and security objectives.
- The operator will disclose the hydraulic fracturing fluid chemical components to the Tribe, the BLM, and the BIA, and may authorize further public disclosure in a manner consistent with COGCC Order 1R-114, even though that COGCC order is not directly applicable on a jurisdictional basis.

2.3 Alternatives Considered but Eliminated from Further Analysis

An alternative responding to an issue, but not substantially accomplishing the purpose and need, is not considered a reasonable alternative to the proposed action. Two alternatives were identified and subsequently eliminated from further analysis during the development of the North Carracas POD. These alternatives are discussed below and will not be evaluated further in this assessment. No other alternatives were identified for the proposed North Carracas POD that would result in fewer environmental impacts and still meet the purpose and need of the proposed action.

2.3.1 80-Acre Development Alternative

The North Carracas AMI is comprised of spacing units varying in size and number of wells authorized within each unit. Horizontal drilling and completion are contemplated within these units to minimize surface impacts and the number of wells required to effectively drain the reservoir. If the AMI were

ONSITE INSPECTION

Well Name(s): Middle Pad 2F (Center Middle Pad)
Location: Sec. 7 and 18, T. 32 N., R. 4 W.
Operator: Red Willow Prod. Co.
Surface Owner: Southland Royalty Co.
Onsite Date: 11/07/2017

Onsite Notes:

Access Road

- Access road construction width and driving surface width need to be in the SUPO.
- A diagram needs to depict the culverts along the road. What depth of cover will be placed over the culverts.

Pipelines

- Two pipelines are proposed 15' feet away from the centerline of the access road.
- Both pipelines are tying into an approved pipeline ROW.

Well Site

- Survey plat needs revised to shift the topsoil stockpile against the PA line along the bottom of the fill slope.
- 2-3 foot tall berm of topsoil would be stockpiled along the north edge to help divert water east around the well site.
- The SUPO needs to have plans addressing the existing capped well (gas well?) near road entrance.
- If the pad is planned to be bermed for containment during drilling, this BMP should be stated in the SUPO.
- In the reclamation section of the SUPO, Red Willow needs to state whether or not the drainage channel crossing the well site visible on the survey plats will be restored for final reclamation. Also state if the entire well site will be recontoured to match surrounding landscape at final reclamation.
- The reclamation plan needs to include how Red Willow plans to reduce the slope grade along the south edge of the well site.

Other Notes

- The 6 wells are planned to be drilled consecutively.

- Red Willow needs to consider requesting a waiver for interim reclamation 6-month deadline in SUPO. A target deadline must be provided in the SUPO in relation to the completion date of each well.
- SUPO needs to have a self certification letter similar to the North Carracas 32-5 recent APDs.
- SUPO needs plans that address how the trees will be handled during construction.
- Does Red Willow plan to avoid certain wildlife seasons? BA may have some recommendations. What noise level will Red Willow hold their noise sources to? Which zone standard will be followed – Rural/Residential/Agricultural zone? What color will Red Willow paint their facilities – the typical Juniper Green?
- Provide plans for mitigating dust and traffic speed on the access road and well pad, since an occupied residence is close to the access road.

2.2 Design Features

All design features developed for the approved North Carracas POD and included in the conditions of approval (COAs) will apply to the proposed project, including those for air quality, water quality, vegetation, and wildlife/fisheries. In addition, project specific design features include:

- Erosion and sediment control best management practices (BMPs) will be implemented through a site-specific Stormwater Pollution Prevention Plan (SWPPP) to minimize erosion and sedimentation during construction
- Interim reclamation and Juniper Green equipment paint color to mitigate impacts to visual resources
- Standard design features will be implemented to mitigate impacts to the environment from increased noise as a result of the proposed project

Project specific design features that have been developed by the Tribe's DNR are included in the Onsite Report in Appendix B.

3 Summary of the Analysis

Prior to conducting the field surveys, a qualified biologist with SECMG (Matthew Zabka) acquired the current list of USFWS threatened, endangered, proposed, and candidate species (federally listed species) with the potential to occur within the Reservation (SUIT 2017). A review of these species and their habitat requirements was performed before conducting the field surveys.

On-site, pedestrian surveys of the proposed project area were conducted on October 5 and November 7, 2017. All plants and animals observed in the project area were recorded in Appendix C, and a survey was conducted for federally listed species and their potential habitats. Digital photos of the project area were taken. Binoculars and a spotting scope were used to survey for potential raptor nesting habitat, and to scan the surrounding area.

For this proposed project, the project area was defined as the area of surface disturbance. The action area was defined as the project area plus a 1/4-mile radial scan of the surrounding area. The action area was delineated to analyze the potential for direct, indirect, and cumulative impacts to biological resources from the proposed project. The action area was determined by a combination of the following factors: line of site from the project area, the distance that light and noise from construction, drilling and completion activities could be seen or heard over ambient conditions in the area, and how far fugitive dust could reasonably travel.

4 Existing Habitat Conditions

The proposed well pads are located in piñon-juniper woodland habitat to the north of County Road 500, which travels along the north side of the San Juan River as it enters Navajo Reservoir. The Middle 1E well pad is situated in relatively undisturbed woodland. Existing disturbances within the Middle 1E project


Legend
Date: 4/4/2018
Type
Water Pump
Water Tank
Red Willow Operated Wells
Gas
Temp Water Pipeline
Township
Section
North Carracas 32-4 22D-2 Fc
North Carracas 32-4 21D-1 Fc ST
North Carracas 32-4 21D-1 Fc
North Carracas 32-4 22D-1 Fc ST
North Carracas 32-4 22D-1 Fc
North Carracas 32-4 15D-2 Fc
North Carracas 32-4 15D-2 Fc ST
Suction Pump
500 bbl Water Storage Tanks
Steel Post Anchoring System
NENE
NWNW
Temporary Water Line
21
32N 4W
22
SENE
SWNW
Steel Post Anchoring System
Intake Location w/ Filtration Device
Durango
La Plata
Ignacio
Archuleta
San Juan
Rio Arriba
San Juan River Water Intake
0 25 50 100 Feet
1:1,000

APD ID: 10400082523 **Submission Date:** 01/13/2022

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Well Type: COALBED NATURAL GAS WELL **Well Work Type:** Drill

Section 1 - General

Would you like to address long-term produced water disposal? YES

Water quality analysis:

NC_32_4_7F_5_Produced_Water_20220104094341.pdf

PWD Map:

NC_32_4_7F_5_Produced_Water_20220104094343.pdf

Average monthly evaporation (in.): **Average monthly precipitation (in.):**

Do you have a Produced Water Management Plan? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? Y

Produced Water Disposal (PWD) Location: OFFLEASE

PWD surface owner: FEE **PWD disturbance (acres):** 0

Injection PWD discharge volume (bbl/day): 150

Injection well mineral owner: FEE

Injection well type: EXISTING

Injection well number: #1 **Injection well name:** Tiffany SWD

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit? N

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? N

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4 **Well Number:** 7F-5

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

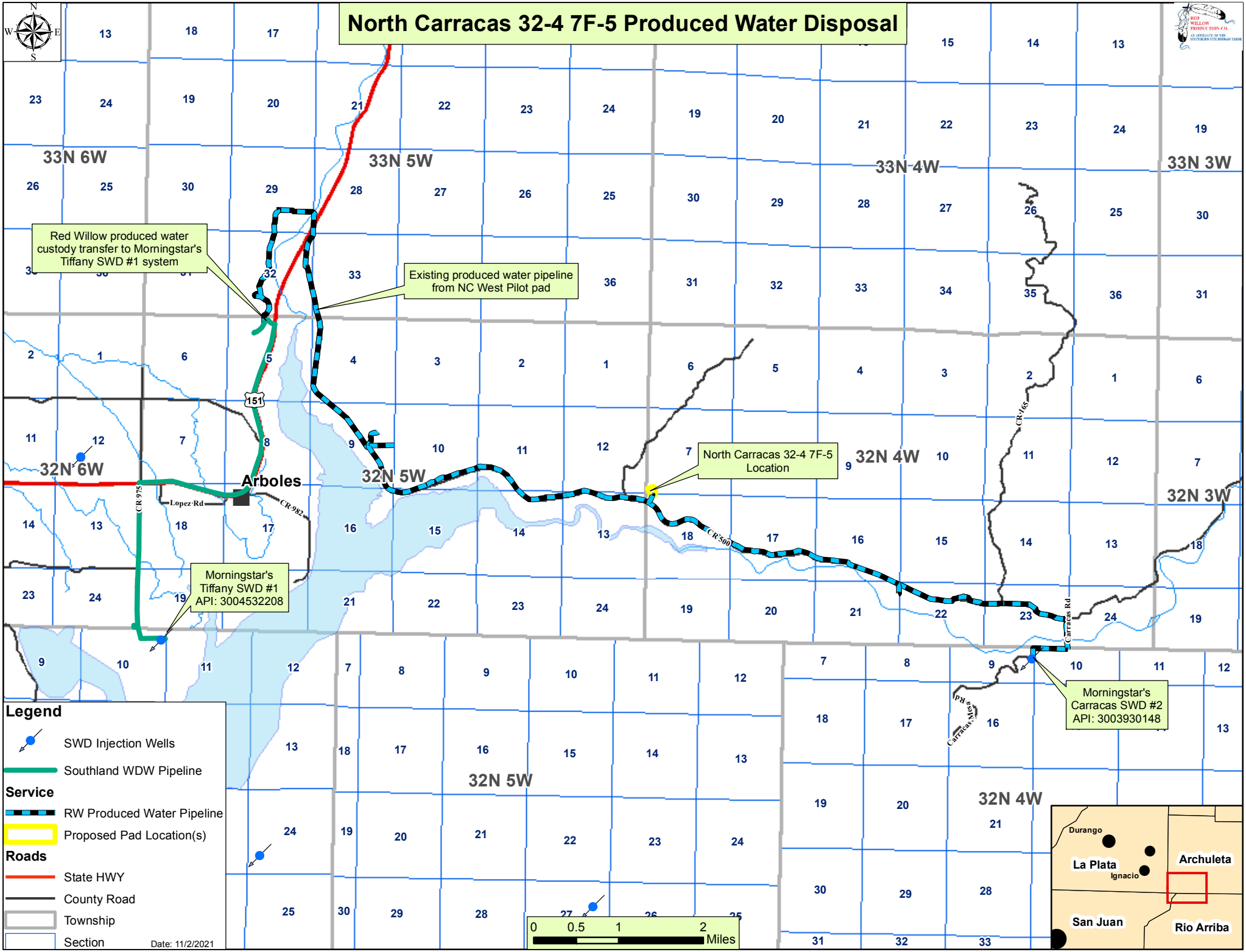
Other PWD discharge volume (bbl/day):

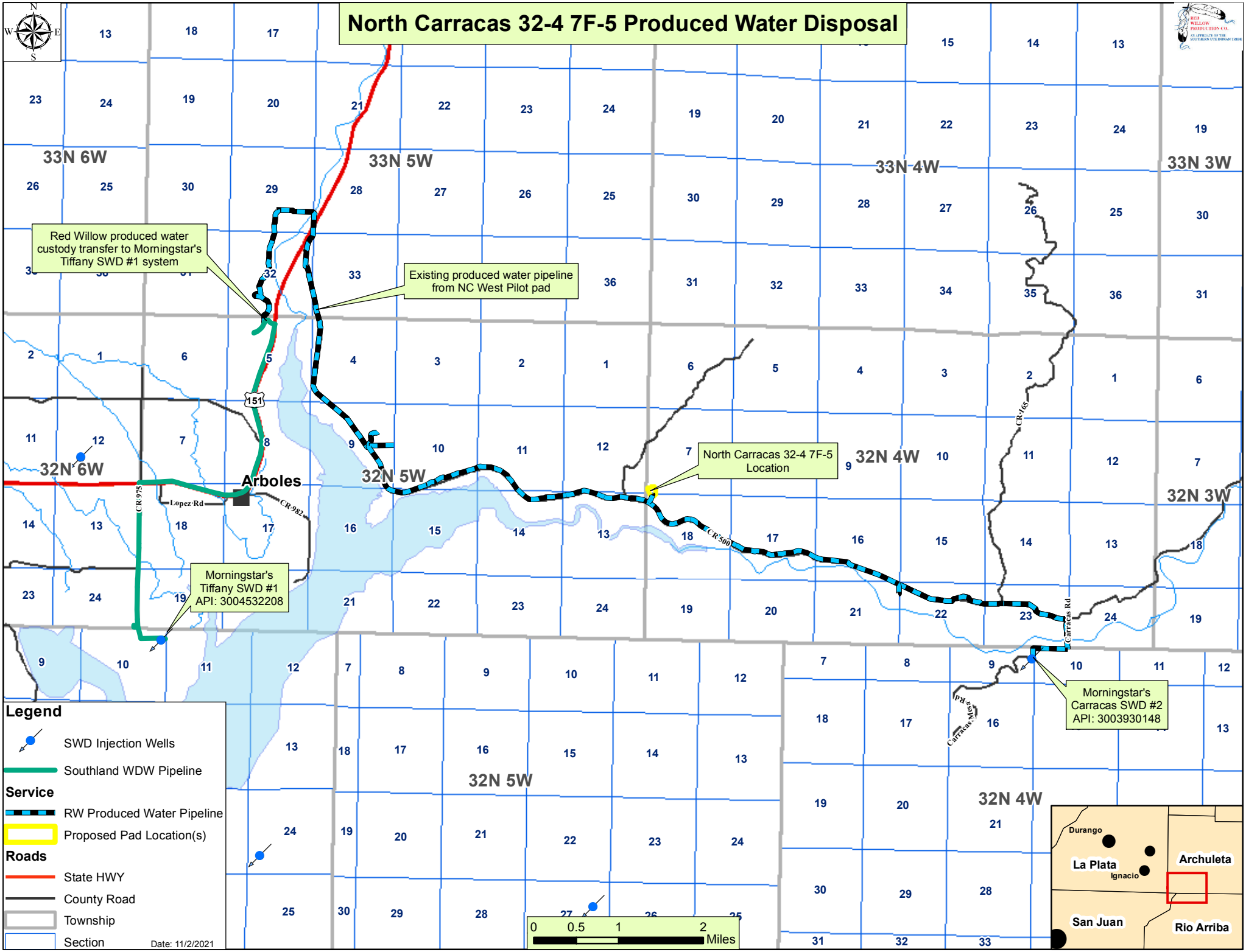
Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:


North Carracas 32-4 7F-5 Produced Water Disposal
Red Willow produced water custody transfer to Morningstar's Tiffany SWD #1 system
Existing produced water pipeline from NC West Pilot pad
North Carracas 32-4 7F-5 Location
Morningstar's Tiffany SWD #1 API: 3004532208
Morningstar's Carracas SWD #2 API: 3003930148
Arboles
Lopez Rd
CR 975
CR 982
CR 500
CR 165
Carracas Rd
Carracas Mesa Rd
151
33N 6W
33N 5W
33N 4W
33N 3W
32N 6W
32N 5W
32N 4W
32N 3W
Legend
SWD Injection Wells
Southland WDW Pipeline
Service
RW Produced Water Pipeline
Proposed Pad Location(s)
Roads
State HWY
County Road
Township
Section
Date: 11/2/2021
0 0.5 1 2 Miles
Durango
La Plata
Ignacio
Archuleta
San Juan
Rio Arriba


North Carracas 32-4 7F-5 Produced Water Disposal
Red Willow produced water custody transfer to Morningstar's Tiffany SWD #1 system
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Morningstar's Tiffany SWD #1 API: 3004532208
Morningstar's Carracas SWD #2 API: 3003930148
Arboles
Lopez Rd
CR 975
CR 982
CR 500
CR 165
Carracas Rd
Carracas Mesa Rd
151
33N 6W
33N 5W
33N 4W
33N 3W
32N 6W
32N 5W
32N 4W
32N 3W
Legend
SWD Injection Wells
Southland WDW Pipeline
Service
RW Produced Water Pipeline
Proposed Pad Location(s)
Roads
State HWY
County Road
Township
Section
Date: 11/2/2021
0 0.5 1 2 Miles
Durango
La Plata
Ignacio
Archuleta
San Juan
Rio Arriba

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

03/25/2022

APD ID: 10400082523

Submission Date: 01/13/2022

Operator Name: RED WILLOW PRODUCTION COMPANY

Well Name: NORTH CARRACAS 32-4

Well Number: 7F-5

Well Type: COALBED NATURAL GAS WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: IND

BLM Bond number:

BIA Bond number: RLB0012965

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: