

# STORMWATER MANAGEMENT PLAN

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Twin Bridges Resources LLC (Twin Bridges) has prepared this Stormwater Management Plan for the Red Rocks 1-13 exploratory helium gas well in Las Animas County, Colorado. The sections below correspond to Colorado Oil & Gas Conservation Commission guidance and to requirements in Rule 304.c.(15) to prepare a Stormwater Management Plan consistent with Rule 1002.f.

## 1. OIL AND GAS LOCATION AND CONSTRUCTION SITE DETAILS

### Proposed Oil and Gas Operations

Twin Bridges proposes wildcat exploratory helium gas well development on private ranchland in rural Las Animas County. An individual Oil and Gas Location will support a single conventional vertical well, approximately 1,200 feet deep. Shallow well drilling requires a drill rig approximately equivalent to a rig used to drill a water well.

### Site Description

The Oil and Gas Location is located in a remote area of Las Animas County on previously disturbed private ranchland. Previous disturbances include historical ranching operations and two-track dirt roads. There is no nearby surface water.

### Nature of Construction Activities

The helium gas well will be drilled as a conventional vertical well. It does not require drilling mud or chemical storage. The well is not anticipated to produce hydrocarbons or produced water. As a result, there will be no hydrocarbon or produced water storage on the location. A temporary freshwater tank may be used during well drilling. A temporary fuel storage tank for drilling equipment will be located inside of integrated secondary containment.

### Sequence of Construction Activities

Approximately 1 day will be needed to prepare the location for well drilling. Approximately 7 to 10 days will be needed for well drilling and completion. Up to approximately 3 days will be needed for well productivity testing. Approximately 1 day will be needed for interim reclamation and revegetation.

### Access Road and Flowline Corridor Construction

Existing two-track dirt access will be used to access the location. There will be no access road construction. If the well supports production, a 6-inch diameter polyethylene helium gas flowline will be buried underground from the location to an off-location helium purification unit. The flowline corridor is estimated to be approximately 6 feet wide and approximately 24 inches deep. Flowline corridor construction will require minimal trenching equipment to support the small diameter polyethylene material.

### Location Construction

The Oil and Gas Location area is predominantly flat. Minimal site clearing and grading is needed to prepare the location for well drilling. Site preparation will consist of the limited vegetation removal and cut and fill sufficient to support a water well-sized drill rig, pipe rack, and ancillary equipment.

## 2. SUPPLEMENTAL SITE INFORMATION

### Site Area and Disturbance Area

The working pad surface will be an estimated 1 acre. The grade does not vary significantly across the oil and gas location. The area is predominantly flat. Cut and fill to support the location is estimated to be limited to areas

around the working pad surface of 5 feet, or less. There will be no disturbance for access roads; site access will use an existing two-track dirt road. If the exploratory well supports production, the helium gas flowline corridor will be approximately 3 miles long.

### **Soil Description, Data, and Erosion Potential**

The Natural Resources Conservation Service Map Units indicate that the dominant soil type in the Oil and Gas Location area is WC – Plughat-Villegreen Complex, 1 to 4 percent slopes. The typical profile for this soil type is well-drained with an A-horizon of 0 to 3 inches of silt loam overlaying 3 to 6 inches of silty clay loam. The combined arid location, minimal approximately 8-foot elevation change across the 1-acre working pad surface, and minimal site preparation minimizes erosion potential.

### **Vegetation Description**

The area surrounding the oil and gas location is arid previously disturbed rangeland from historical ranching operations, two-track dirt roads, and other disturbances. Vegetation in this area is predominantly blue grama, western wheatgrass, and snakeweed.

### **Pre-disturbance Coverage Estimate**

The estimated pre-disturbance coverage is approximately 75 percent.

### **Known Weed Infestations**

There are no observed weed infestations or noxious weeds associated with the location.

### **Non-stormwater discharges**

The location will have no non-stormwater discharges.

### **Receiving Waters**

There is no receiving water near the location. The nearest water feature is a remnant of a former man-made stock pond.

## **3. STORMWATER MANAGEMENT CONTROL MEASURES**

### **Potential Pollution Sources**

Potential pollution sources during construction are soils and sediment from disturbed areas and potential fluid leaks from well drilling equipment.

### **Locations Listed in Rule 1002.f.(3).A**

Locations on the Working Pad Surface and areas of cut and fill are shown on Twin Bridge's Construction Layout Drawing. The drawing supports the following locations and discussion:

Transport of chemicals and materials – The shallow conventional vertical well will be drilled without mud or chemicals. There will be no chemical storage on site. There is a low potential, therefore, for loading and unloading operations to contribute to stormwater discharges.

Fueling – A temporary fuel tank for equipment will have integrated secondary containment. Vehicles will not be fueled on site.

Storage - Materials will consist predominantly of piping offloaded at a centralized drill rack and pipe area.

Produced Water and Drilling Fluids – Produced water is not anticipated during well drilling based on historical well log information in this area. The well will be drilled without mud.

Outdoor Processing Activities – No processing will occur at the location.

Significant Dust or Particulate Generating Processes – Exposed soils and drilling have potential to generate dust.

Erosion and Vehicle Tracking – There is no elevation change to result in erosion between the Working Pad Surface and interface with the existing two-track dirt road. There is no tie-in to paved surfaces to result in vehicle tracking. The nearby road is an unpaved county road.

Waste Disposal Practices – Waste is limited to drill cuttings temporarily stored on the working pad surface before beneficial reuse, and trash removed from the location daily.

Leaks and Spills – The location for the drill rig, with its integrated motors, is shown on the Form 2A, Preliminary Drill Rig Layout.

Ground Disturbing Maintenance Activities – After construction and interim reclamation, there are no anticipated ground disturbing maintenance activities.

## **Pollution Prevention**

Erosion Control – There will be an approximately 8-foot elevation change across the 1-acre Working Pad Surface. This limits areas of cut and fill to 5 feet, or less. Only portions of the Working Pad Surface that require vegetation removal, minor grading to level portions of work area, and parking and laydown will be disturbed. The minimal topsoil removal anticipated will be mounded to avoid loose soils and will be reused after the 7 to 10-day well development is complete.

Secondary Containment – The temporary fuel tank used during well drilling will have integrated secondary containment and will be on location for approximately 7 to 10 days. The fuel tank will be removed after well development is complete.

Reclamation – The 1-acre Working Pad Surface will be reduced to approximately 0.2 acre after the 7 to 10-day well development is complete. The remaining area will be revegetated and stabilized during interim reclamation.

## **Structural and Non-structural Practices**

Structural Practices – Structural practices are listed in Section 6. The downgradient side of the Oil and Gas Location will have straw wattles, as needed, to prevent soils and sediment from leaving the location in the event of a significant storm event and before interim reclamation is complete. After interim reclamation, if vegetation does not provide sufficient armoring, straw wattles will be maintained and inspected to prevent soils and sediment from leaving the location. If there is evidence of ponding or erosion from the location, stormwater diversions will be created to avoid stormwater channelization. The temporary fuel storage tank for drilling equipment will be located inside of integrated secondary containment during well drilling to prevent impacts from leaks or spills.

Non-structural Practices – Non-structural practices are listed in Section 6. Disturbances will be limited to the portions of the Oil and Gas Location needed to support well development and production so that vegetation remains to stabilize the area. Disturbed portions of the Working Pad Surface not needed for production will be stabilized and revegetated as part of interim reclamation. Loose material and debris used during well development will be containerized. There will be no liquids storage on the Working Pad Surface during production. Vehicles and equipment will be monitored for leaks during well development. Absorbents

will be made available to address inadvertent spills. Ingress, egress, and parking will occur in designated areas. Inspections will be performed daily during well drilling. Inspections will be performed approximately 2 to 3 times weekly during any well production. The location and stormwater controls will be maintained to prevent deterioration resulting in erosion or transport of soils and sediments off site.

## **Erosion Controls**

Downgradient straw wattles will be used as needed to prevent erosion from stormwater runoff. Designated vehicle ingress and egress will help to avoid vegetation and soil disturbance resulting in erosion. Interim reclamation and revegetation will occur when well drilling is complete. Seeding will occur during the next favorable growing season. Revegetation will be monitored for growth and a vegetative cover that reflects 80 percent of the reference area condition.

## **Vehicle Tracking Control**

There is no tie-in to paved surfaces that would result in vehicle tracking. The nearby road is an unpaved county road.

## **Materials Handling and Spill Prevention**

There will be no drilling mud or chemical use for well drilling. Trash and debris will be containerized and transported off site after well development. Vehicles and equipment used on site will be properly maintained to prevent leaks and will be monitored for leakage.

## **Management of Waste Material**

Drill cuttings will be tested and analyzed for constituents in Table 915-1. Drill cuttings are forecasted to be land applied on location as a beneficial soil amendment, subject to surface owner approval and in compliance with COGCC 900 Series Rules. Trash will consist of incidental domestic waste (e.g., food wrappers). It will be secured in a pickup and removed from the location daily. Cement is not anticipated to generate waste because it will be provided by bulk truck.

## **4. SITE-SPECIFIC CONSTRUCTION AND STORMWATER/EROSION CONTROL MEASURE DRAWINGS**

In accordance with COGCC guidance, this section refers to the Construction Layout Drawing and Oil and Gas Facilities Layout Drawing attached to this plan.

## **5. INSPECTION AND MAINTENANCE PROCEDURES**

### **Trained and Qualified Site Inspections**

Stormwater inspection will be conducted by personnel trained and qualified on the content of this Stormwater Management Plan and preventative measures, practices, controls, and maintenance in the field. The drilling supervisor and site operator are experienced with stormwater management and maintenance.

### **Scope of the Inspection**

Stormwater inspections will review the Oil and Gas Location perimeter; disturbed areas and reclaimed areas; equipment, material, and storage areas; and vehicle access. Inspections will look for evidence of soils or sediment leaving the location. Inspections will review the location for signs of erosion. Stormwater maintenance needs will be identified and addressed with appropriate follow up.

## State and Local Inspection Requirements

The operator will comply with construction stormwater management requirements administered by the Colorado Department of Public Health and Environment (CDPHE) and any requirements imposed as a condition of the land use approval issued by the Las Animas County Land Use Department.

## Inspection Procedures and Frequency

The Oil and Gas Location will be monitored daily during the approximately 1 day for site preparation and 7 to 10 days for well development. Evidence of soil or sediment runoff, maintenance needs, and any spills or leaks will be addressed. Following well development, stormwater inspection will occur at a minimum of once every 7 days, consistent with stormwater requirements administered by CDPHE. Inspection frequency may be reduced to once every 30 days after ground disturbance is complete and the site is stabilized with interim reclamation. During inspection, the site operator will look for evidence of erosion, runoff, and stabilization and vegetative success from interim reclamation. Inspections will ensure that erosion and sediment controls identified in this plan are maintained and functioning properly and that there is no evidence of movement of soils, ponding, runnels, and erosion.

## Reporting and Recordkeeping Requirements

Recordkeeping will include conformance with recordkeeping requirements administered by CDPHE. During well drilling, stormwater records will be included with the drill operations records. During production, the site operator will record stormwater inspections and maintenance needs as part of the maintenance records for the location.

## 6. SITE-SPECIFIC CONSTRUCTION AND STORMWATER/EROSION CONTROL BMPS

This section is a list of site-specific BMPs to control and minimize stormwater and sediment run-on and run-off.

### Structural

- Silt fence and wattles will be placed as needed on the downgradient side of the Oil and Gas Location.
- Stormwater diversions will be developed as needed to avoid channelization, ponding, or erosion.
- The temporary fuel tank used for well drilling will have integrated secondary containment.

### Non-structural

- Stabilization and revegetation will be performed as part of interim reclamation.
- Loose materials and debris will be containerized during well development.
- Vehicles and equipment will be monitored for leaks during well development.
- Absorbents will be made available to address inadvertent spills.
- Ingress, egress, and parking will occur in designated areas.
- Monitoring will be performed daily during well drilling.
- Stormwater inspection will be performed at least every 7 days during well production and every 30 days after interim reclamation.

LAS ANIMAS COUNTY  
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T30S R55W 6<sup>TH</sup> P.M.



SCALE: 1" = 30'  
0' 15' 30'

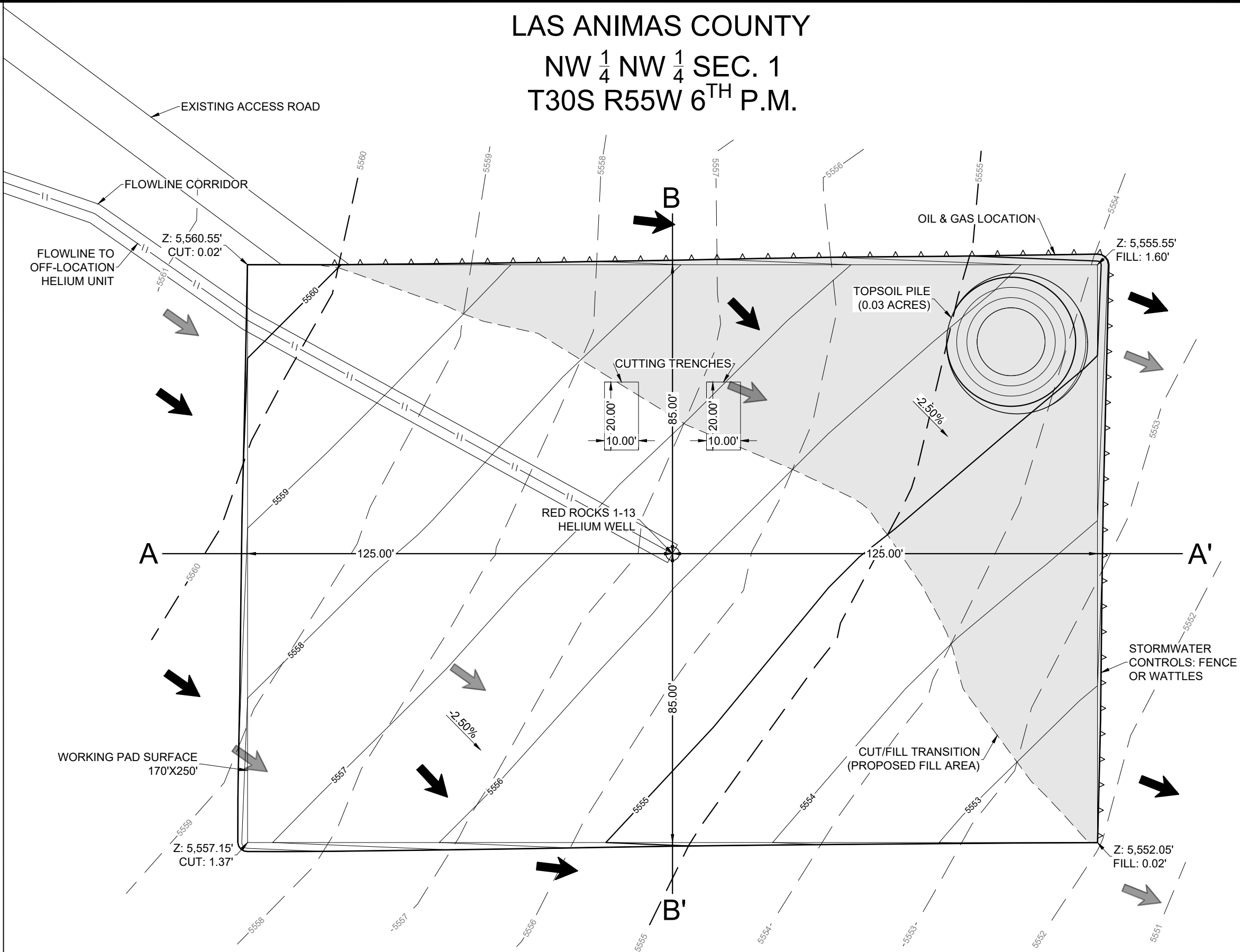
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- STORMWATER CONTROLS: FENCE OR WATTLES
- FILL AREA
- WELLHEAD
- PROPOSED DRAINAGE
- EXISTING DRAINAGE

WELLHEAD ELEVATIONS

GRADED ELEVATION: 5,556.70'  
UNGRADED ELEVATION: 5,556.70'

EARTHWORK QUANTITIES:

CUT: 470 CY  
FILL: 372 CY  
TOPSOIL (3"): 98 CY  
EXPORT: 0 CY  
FILL FACTOR: 1.15  
WORKING PAD SURFACE: 1.00 ACRES  
OIL & GAS LOCATION: 1.10 ACRES  
FLOWLINE DISTURBANCE: 2.30 ACRES



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CONSTRUCTION LAYOUT - PLAN VIEW

RED ROCKS 1-13

**Twin Bridges LLC**

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DATE: 08/10/21

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REVIEWED BY: CCC

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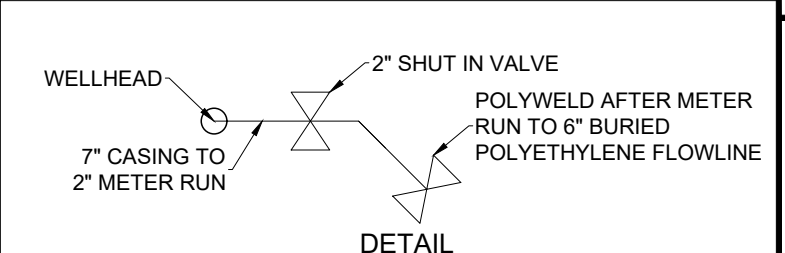
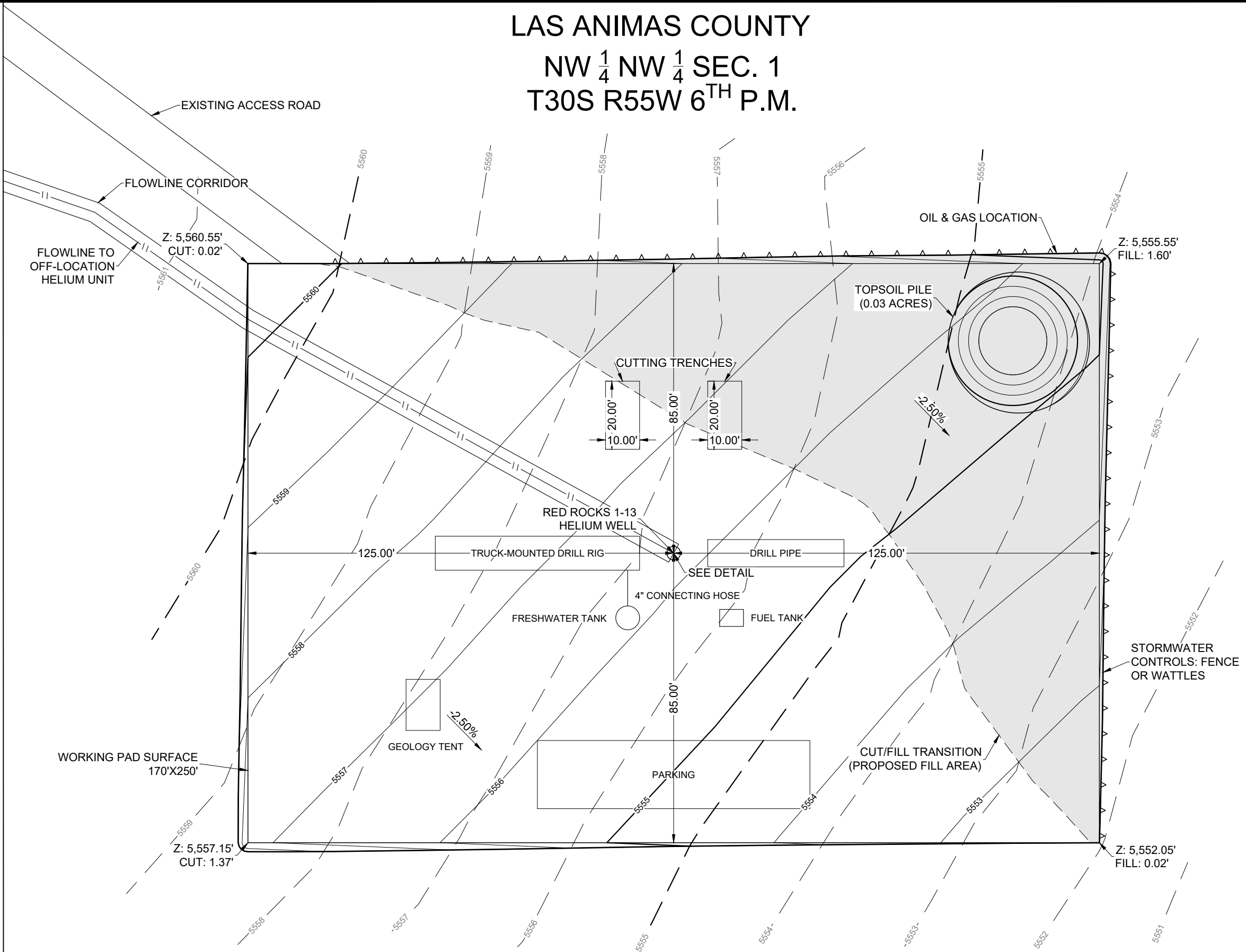


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- STORMWATER CONTROLS: FENCE OR WATTLES
- FILL AREA
- WELLHEAD

WELLHEAD ELEVATIONS  
GRADED ELEVATION: 5,556.70'  
UNGRADED ELEVATION: 5,556.70'

THERE IS NO DISTINCTION BETWEEN RIG LAYOUT AND WELL COMPLETION LAYOUT FOR THIS DEVELOPMENT.



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RIG LAYOUT

RED ROCKS 1-13

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SCALE: 1" = 30'  
0' 15' 30'

EXISTING 1' CONTOUR

EXISTING 5' CONTOUR

PROPOSED 1' CONTOUR

PROPOSED 5' CONTOUR

STORMWATER  
CONTROLS: FENCE  
OR WATTLES

RECLAMATION AREA

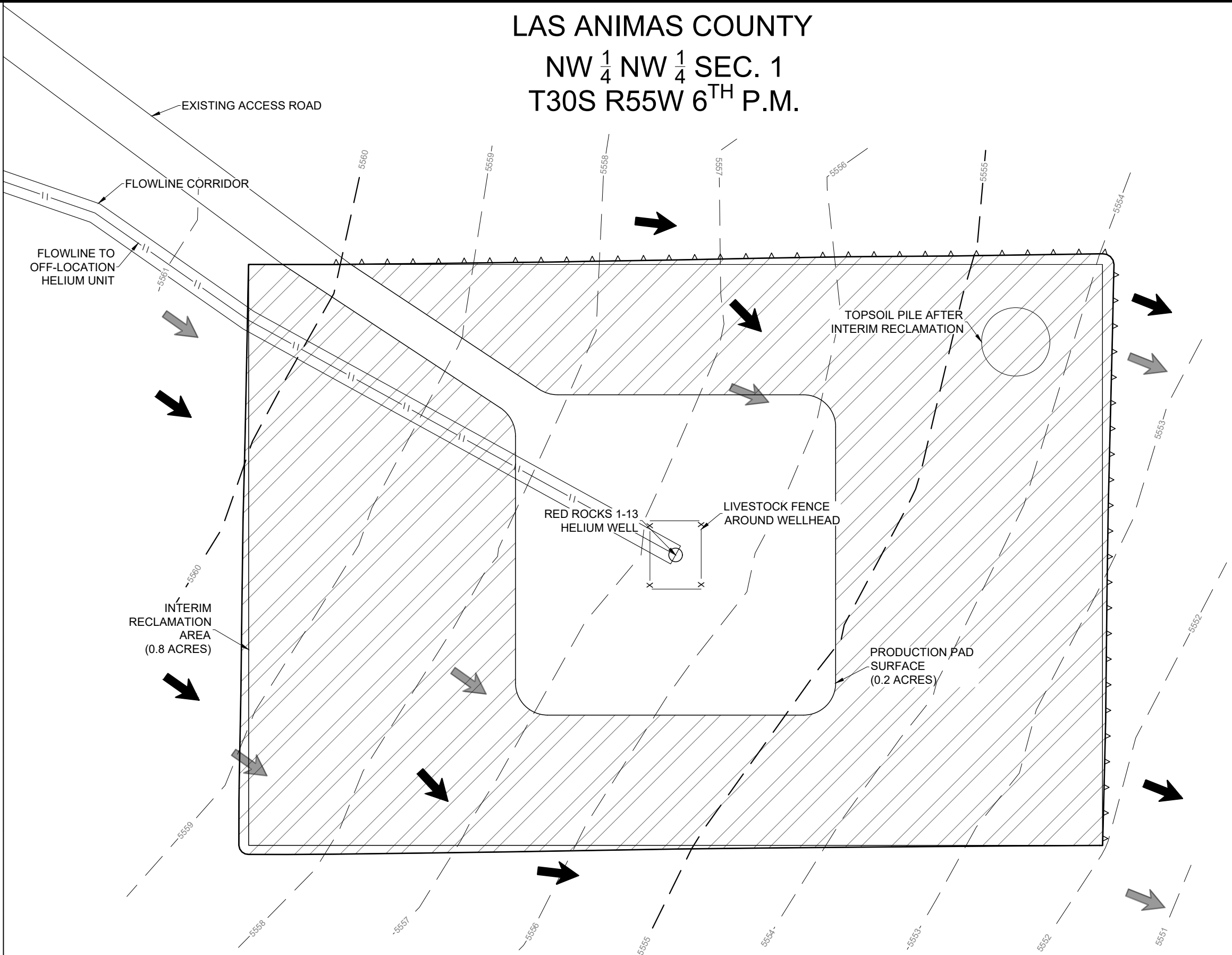
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OIL AND GAS FACILITIES LAYOUT

RED ROCKS 1-13

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