

**E&P Waste Management Plan**  
**Land Application & Incorporation of Water-Based Bentonitic**  
**Drilling Fluids & Associated Drill Cuttings**  
**High Sierra Water Services, LLC.**

This E&P Waste Management Plan outlines the operational requirements for applying water-based bentonitic drilling fluids and associated drill cuttings to privately owned land to maintain compliance with COGCC Rule 907.d.(3). Only water-based bentonitic drilling fluids and associated drill cuttings generated by High Sierra Water Services, LLC. (High Sierra) will be applied at this site. The drilling fluids and drill cuttings will be applied as a beneficial soil amendment. The proposed land application site is located in Weld County, Colorado (SWSW Sec 33-T6N-R61W). A topographic map showing the site location is provided as Figure 1. An aerial photograph showing the location of the proposed land application site is provided as Figure 2. The E&P Waste Management Plan is detailed below.

1. High Sierra shall obtain written authorization from the surface owner prior to land application of the water-based bentonitic drilling fluids and associated drill cuttings.
2. The signed agreement shall state that only water-based bentonitic drilling fluids and associated drill cuttings generated by High Sierra will be applied at this site. No other E&P waste shall be deposited at this site.
3. A 3-inch maximum lift of water-based bentonitic drilling fluids and associated drill cuttings will be applied prior to incorporation.
4. High Sierra contractors will ensure that the material is incorporated into the soil within 10 days (site and weather conditions permitting).
5. High Sierra will maintain records of the following information:
  - name of well where material was generated
  - date the material was transferred from the well to the land application site
  - volume of material taken to the land application site
  - name of the transporter
6. Soil sampling:
  - Background samples have been collected and analyzed for electrical conductivity (EC), sodium adsorption ratio (SAR), pH, and total metals (excluding boron) in order to document background soil conditions (Figure 2).
  - Following incorporation of the drilling mud, one 4-point composite sample will be collected from an interval of 0-8 inches below ground surface (bgs) for every 20 acres where incorporation occurs in the land application area.
  - At a minimum, post incorporation soil samples will be analyzed for total petroleum hydrocarbons (TPH – C6-C36), benzene, toluene, ethylbenzene, xylenes (BTEX), EC, SAR, pH, and total metals (excluding boron) to ensure compliance with COGCC Table 910-1.



7. Water-based bentonitic drilling fluids and associated drill cuttings will be applied at this site for a maximum of three consecutive years.
8. Upon closure of the site, High Sierra will submit a Form 4 Sundry Notice providing the background and confirmation soil sample data and to request closure of this site.



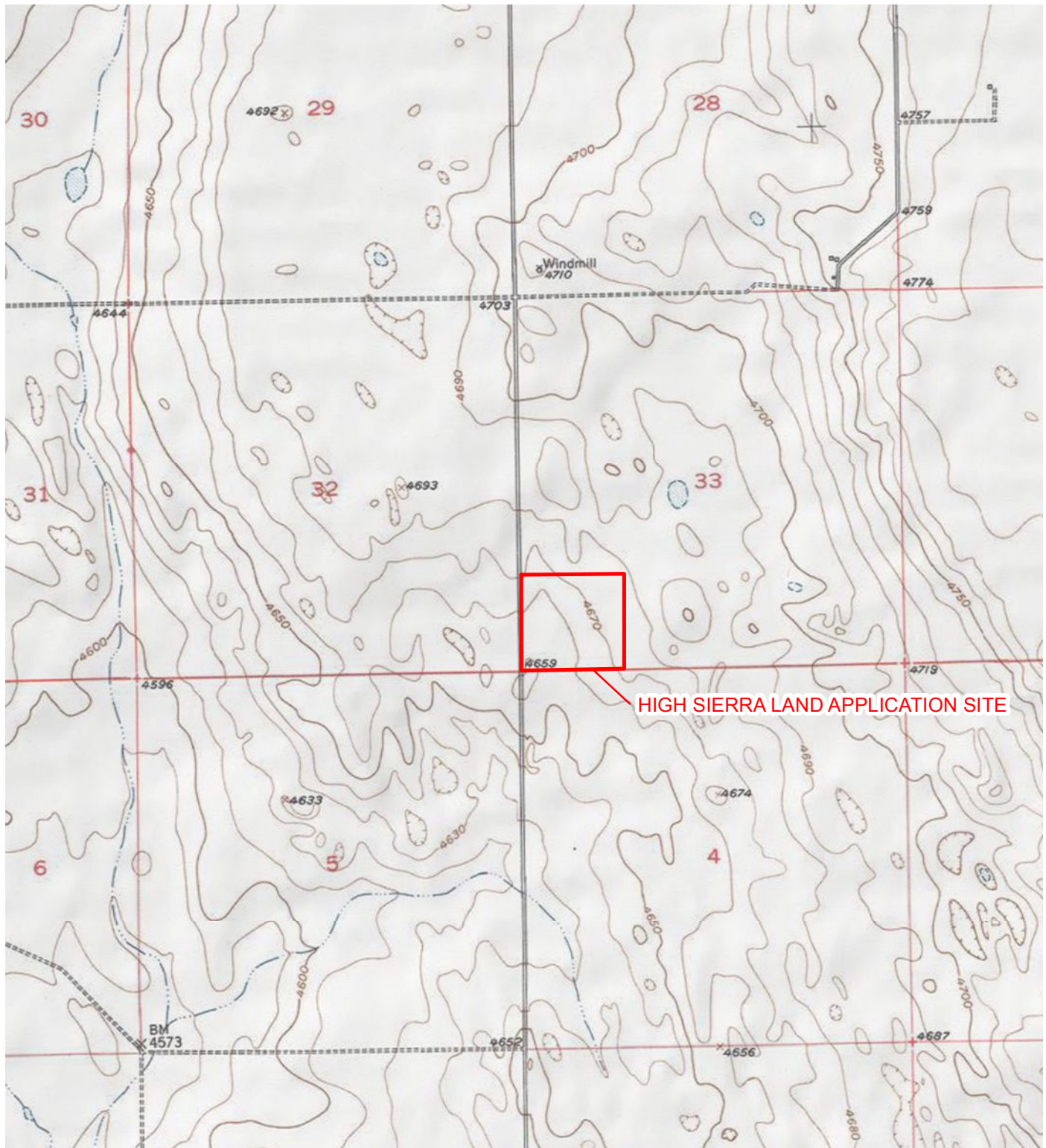
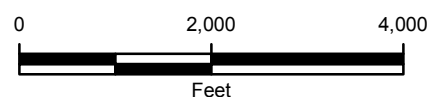


IMAGE COURTESY OF ESRI/USGS

# LEGEND

LAND APPLICATION SITE LOCATION



**FIGURE 1**  
**TOPOGRAPHIC SITE LOCATION MAP**  
**HIGH SIERRA LAND APPLICATION SITE**  
**SWSW SEC 33-T6N-R61W**  
**WELD COUNTY, COLORADO**  
**HIGH SIERRA WATER SERVICE LLC**





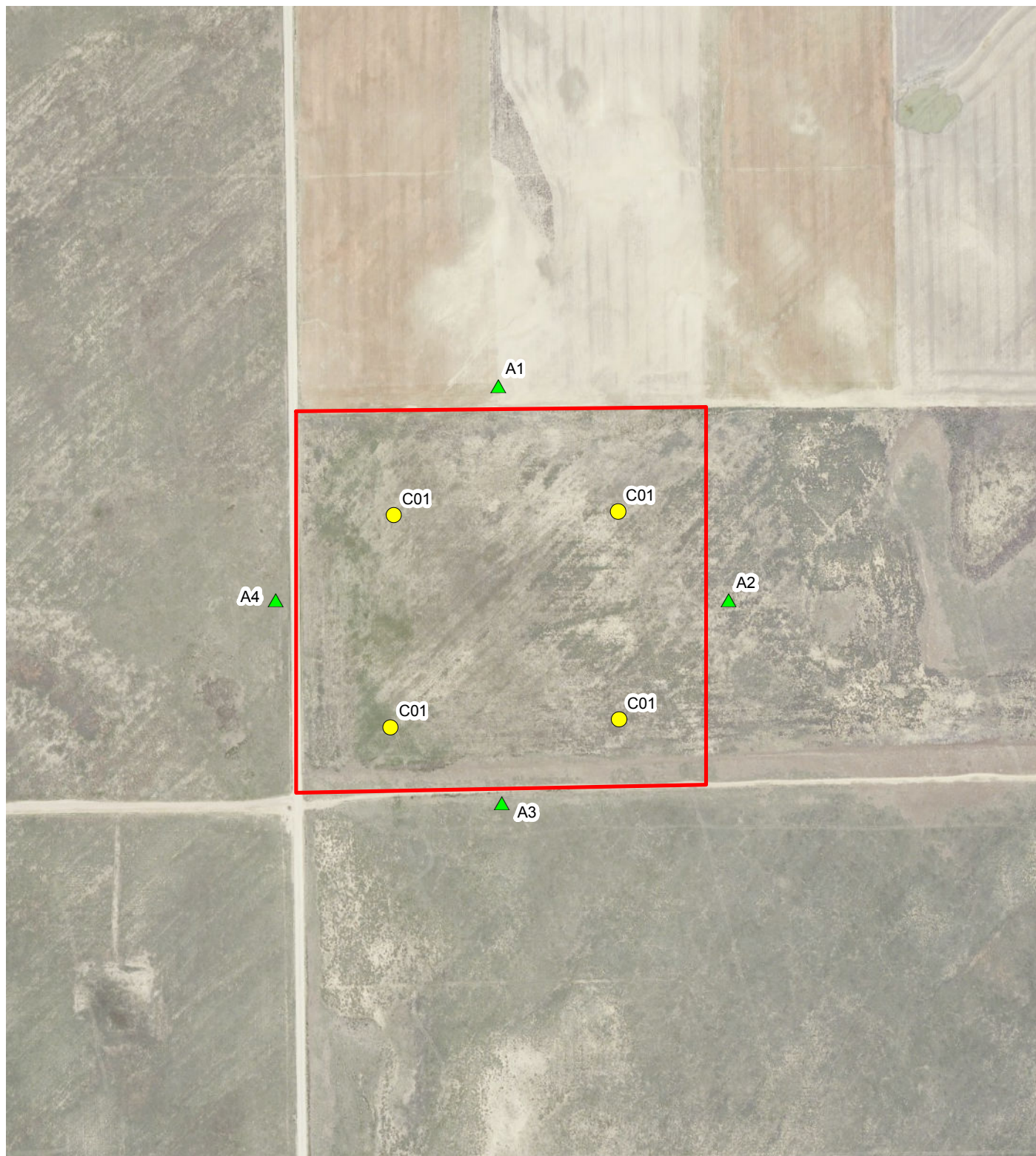


IMAGE COURTESY OF ESRI/BING MAPS

# LEGEND



COMPOSITE SOIL SAMPLE



DISCREET SOIL SAMPLE



LAND APPLICATION SITE LOCATION

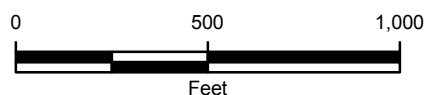


FIGURE 2  
AERIAL SITE LOCATION MAP  
HIGH SIERRA LAND APPLICATION SITE  
SWSW SEC 33-T6N-R61W  
WELD COUNTY, COLORADO  
HIGH SIERRA WATER SERVICE LLC

