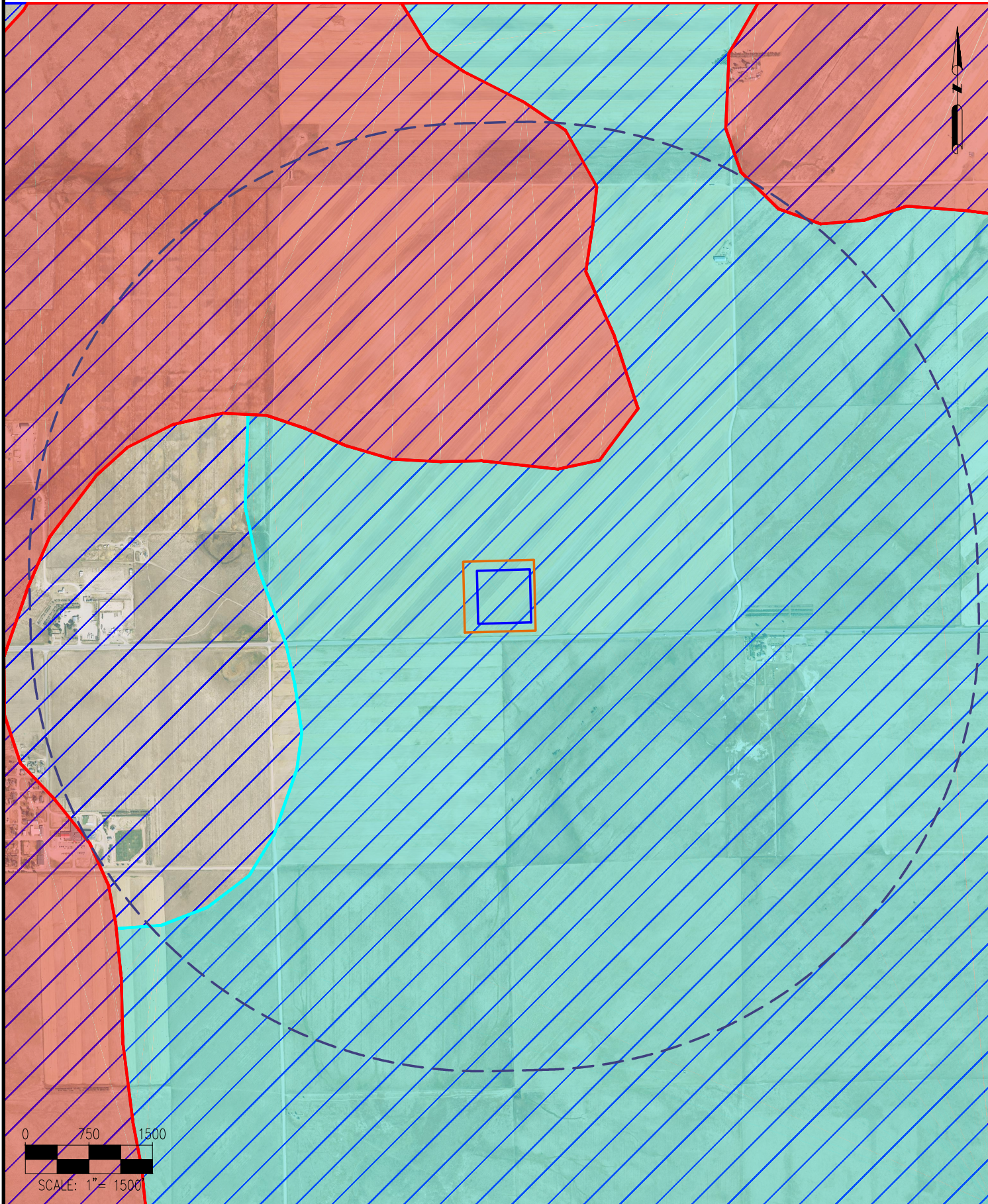


CLOUDBREAK PAD GEOLOGIC HAZARDS MAP



LEGEND:

- OIL AND GAS LOCATION
- WORKING PAD SURFACE
- 1-MILE WORKING PAD SURFACE BUFFER
- COLLAPSIBLE SOILS - CRETACEOUS AND TERTIARY FORMATIONS
- COLLAPSIBLE SOILS - DUNE AND SHEET SAND DEPOSITS
- COLLAPSIBLE SOILS - EOLIAN (WIND-BLOWN) DEPOSITS

GEOLOGIC HAZARDS:

- (AS MEASURED FROM THE WORKING PAD SURFACE)
- COLLAPSIBLE & EXPANDABLE SOILS - DUNE & SHEET SAND DEPOSITS AND EOLIAN (WIND-BLOWN) DEPOSITS ±1212' N
 - COLLAPSIBLE & EXPANDABLE SOILS - EOLIAN (WIND-BLOWN) DEPOSITS +0'
 - COLLAPSIBLE & EXPANDABLE SOILS - CRETACEOUS AND TERTIARY FORMATIONS +0'

HAZARD TYPE	DISTANCE (N/A IF >5280')	SOURCE, DESCRIPTION IF <5280'
AVALANCHES	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
LANDSLIDES	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
ROCK FALLS	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
MUD FLOWS	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
UNSTABLE OR POTENTIAL UNSTABLE SLOPES	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
SEISMIC EFFECTS	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
RADIOACTIVITY	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
GROUND SUBSIDENCE	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS
MINE EXTENT	N/A	ECMC GIS, WELD COUNTY PROPERTY PORTAL, CO GEOLOGIC SURVEY MAPS

I certify that I am a Professional Geologist, having met the educational requirements and professional work experience required by C.R.S. § 23-41-208(b). I have reviewed information pertaining to this Oil and Gas Location and the surrounding area, and have identified the following Geologic Hazards within a one mile radius: Collapsible soils. However these Geologic Hazards do not pose a risk to public health, safety, welfare, the environment and wildlife resources."

Kath Koh

SIGNATURE

Professional Geologist

10/21/2024

TITLE

DATE

The following sources have been consulted to determine if any hazards exist and to ascertain the boundaries of any identified hazards:

- ECMC GIS: https://cogccmap.state.co.us/cogcc_gis_online/
- Weld County Property Portal: <https://www.co.weld.co.us/maps/propertyportal/>
- Colorado Geological Survey:
 - ON-0001 -- Colorado Earthquake and Fault Map <https://cgsarcimage.mines.edu/on-001/>
 - ON-006-01 -- Statewide Landslide Inventory Map <https://cologeosurvey.maps.arcgis.com/apps/webappviewer/index.html?id=9dd73db7fbc34139abe51599396e2648>
 - ON-006-06 -- Colorado Historic Coal Mines <https://cologeosurvey.maps.arcgis.com/apps/webappviewer/index.html?id=1891e3149eda44af9dc8af81c4dc58a8>
 - ON-B-40M -- Radioactive Mineral Occurrences of Colorado and Bibliography <https://cologeosurvey.maps.arcgis.com/apps/webappviewer/index.html?id=c5381e1335284d63bfa5d4b018b3372f>
- FEMA: <https://www.fema.gov/flood-maps/national-flood-hazard-layer>

NOTES:

1. COLLAPSIBLE AND EXPANSIVE SOILS AS MAPPED DO NOT CONSTITUTE A GEOLOGIC HAZARD. ANY AREAS OF POTENTIAL OR PREVIOUS SUBSIDENCE DUE TO COLLAPSIBLE AND EXPANSIVE SOILS WILL BE IDENTIFIED AND MAPPED AS A SUBSIDENCE GEOLOGIC HAZARD AS PROVIDED BY GEOLOGIST. EXPANSIVE AND COLLAPSIBLE SOILS ARE EXTENSIVE BEYOND MAP LIMITS. (DATA SOURCE: CGS/CLIENT)
2. PER THE COLORADO GEOLOGIC SURVEY (CGS), EG-14 COLLAPSIBLE SOILS ARE PRESENT IN THE VICINITY OF THE LOCATION. THESE SOIL TYPES ARE PRONE TO BOTH WATER EROSION AND SOIL BLOWING. BISON IV OPERATING LLC WILL DEPLOY DUST MITIGATION MEASURES PROVIDED IN THE DUST MITIGATION PLAN THAT WILL MITIGATE AND MINIMIZE WIND EROSION. THE GRADING AND DRAINAGE DESIGN OF THE LOCATION, IN ADDITION TO IMPLEMENTATION OF STORMWATER CONTROLS PER BISON IV OPERATING LLC'S STORMWATER MANAGEMENT PLAN, WILL MITIGATE AND MINIMIZE WATER EROSION. IN ACCORDANCE WITH BISON IV OPERATING LLC'S STANDARD OPERATING PROCEDURE, AND AS OUTLINED IN THE TOPSOIL PROTECTION PLAN, A GEOTECHNICAL EXPLORATION WILL BE COMPLETED BY A GEOTECHNICAL ENGINEER PRIOR TO THE COMMENCEMENT OF PAD CONSTRUCTION CONSISTING OF MULTIPLE SOIL BORES ACROSS THE LOCATION. DURING PAD CONSTRUCTION, COLLAPSIBLE SOILS (IF PRESENT) WILL BE OVER EXCAVATED AND THROUGHOUT CONSTRUCTION ALL SOIL WILL BE MOISTURE CONDITIONED AND COMPACTED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. PROPER SLOPING AND BENCHING TECHNIQUES WILL BE ADHERED TO IN ACCORDANCE WITH OSHA REGULATIONS AND STEEP EMBANKMENTS WILL BE AVOIDED. PERMANENT FACILITY EQUIPMENT WILL BE INSTALLED ON DEEP-FOUNDATION ELEMENTS CONSISTING OF HELICAL PILES. NONE OF THE IDENTIFIED SOILS WITHIN THE AREA SURROUNDING THE CLOUDBREAK PAD ARE CONSIDERED A SIGNIFICANT HAZARD TO PUBLIC HEALTH, SAFETY, PROPERTY, OR THE ENVIRONMENT.

DATA SOURCE:
AERIAL IMAGERY: NAIP 2023
GEOLOGIC HAZARDS: COUNTY GIS, COGIS, USGS GIS

PUBLICLY AVAILABLE DATA SOURCES HAVE NOT BEEN INDEPENDENTLY VERIFIED BY ASCENT.

DISCLAIMER:
THIS PLOT DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND SHOULD NOT BE RELIED UPON TO DETERMINE BOUNDARY LINES, PROPERTY OWNERSHIP OR OTHER PROPERTY INTERESTS. PARCEL LINES, IF DEPICTED HAVE NOT BEEN FIELD VERIFIED AND MAY BE BASED UPON PUBLICLY AVAILABLE DATA THAT ALSO HAS NOT BEEN INDEPENDENTLY VERIFIED.



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PREPARED FOR:



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518 17TH STREET, SUITE 1800
DENVER, CO 80202
(720) 644-8997

SHEET NAME:
GEOLOGIC HAZARDS MAP
SURFACE LOCATION:
S 1/2 S 1/2 SECTION 22,
T8N, 62W, 6TH P.M.
WELD COUNTY, COLORADO

REV.	REVISION DESCRIPTION	DRFT	DATE	CHK	DATE
0	ISSUED FOR PERMIT	DM	10/21/24	CSG	10/21/24
1	ISSUED FOR PERMIT	DM	10/21/24	KH	10/21/24

DRAWING DATE:
10/21/24

DRAFTED BY:
DM

SHEET NO.
01 OF 01