



MEMORANDUM

Date: August 6, 2021

To: Hans Schuster, GMT Exploration Company, LLC

From: Tim DeMasters, CORVUS Environmental Consulting, LLC

Re: OHWM Assessment of Cool Creek for the Irwin Taylor Well Pad and Access Road in Elbert County, Colorado

This memorandum has been prepared on behalf of GMT Exploration Company, LLC (GMT) and presents an updated subset of the results of a natural resources assessment (NRA) for the “Irwin Taylor” well pad and access road (Irwin Taylor project). The project is located in northwest Elbert County, Colorado (Figures 1 and 2). CORVUS Environmental Consulting, LLC (CORVUS) has been retained by GMT to assist with the NRA related to the project.

Supplementary information can be found in the accompanying materials, including:

- Attachment A – Figures
 - Figure 1 – Regional Map
 - Figure 2 – Aerial Overview
- Attachment B – Photographic Log

Regulatory Setting

Federal regulations define the ordinary high-water mark (OHWM) as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Under Section 404 of the Clean Water Act (CWA), the OHWM defines the lateral extent of federal jurisdiction in non-tidal waters of the United States (WOTUS) in the absence of adjacent wetlands” (Lichvar and Mersel 2014).

Regional OHWM guidance documents have been published by the US Army Corps of Engineers for both the Arid West Region and Coastal Mountains, Valleys and Coasts Region. This project is located within the Great Plains region (USACE 2010), which does not have a specific OHWM guidance document, so applicable portions of either of the two adjacent regions are often used.

The COGCC recently adopted updated wildlife rules (1200 Series) in support of the 2019 Colorado Senate Bill 19-181 law to “ensure that oil and gas development and operations in Colorado are regulated in a manner that protects public health, safety, welfare, the environment and wildlife resources” (effective January 15, 2021).

The COGCC 1200 Series Rules (Rules) provide the framework for planning oil and gas operations in a manner that minimizes impacts to sensitive wildlife species and habitat. In some instances, the Rules call for notice to and consultation with the Colorado Parks and Wildlife (CPW) during the permitting process to allow for identification of sensitive species and high priority habitats (HPHs) and to provide a framework for avoidance, minimization, and mitigation of impacts to wildlife. CPW has identified a list HPHs and provided recommendations to avoid and minimize impacts to wildlife from land use development.

Colorado Parks and Wildlife references the OHWM under the recently published “Colorado Parks and Wildlife’s (CPW) Recommendations to Avoid and Minimize Impacts to Wildlife from Land Use Development in Colorado”. Specifically,

“Aquatic Native Species Conservation Waters - Streams and lakes, managed by Colorado Parks and Wildlife for native fish species buffered to 500 ft. for use in SB181 oil and gas analyses. Most data pulled from National Hydrography Dataset (NHD) created and maintained by USGS” (CPW 2020).

Ordinary High Water Mark Assessment

Ordinary high water mark can be defined by the observation of a number of physical characteristics, commonly including (but not limited to) the following list (USACE 2005):

- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Generally, a combination of two or more of the above indicators are used to define the ordinary high water mark (OHWM), the most common of which are “bed and bank” and destruction of terrestrial vegetation (lack of upland plants in the channel). The term Bed and Bank is used to describe what is often referred to as a “stream bed”, or a consistent path where water flows, if/when it flows.

COGCC uses a slightly different name and definition than the US Army Corps; ORDINARY HIGH-WATER LINE (OWHL) shall mean the line that water impresses on the land by covering it for sufficient periods to cause physical characteristics that distinguish the area below the line from the area above it (Rules and Regulations 100 series). Characteristics of the area below the line include, when appropriate, but are not limited to, **deprivation of the soil of substantially all terrestrial vegetation and destruction of its agricultural vegetative value**. A flood plain adjacent to surface waters is not considered to lie within the surface waters' ordinary high-water line.

The Cool Creek drainageway (a tributary to Coal Creek), broadly labeled as an intermittent stream on the national hydrography dataset, is located approximately 520 feet to the west of the well pad site and approximately 80 feet to the east of the access road. **At the time of the field assessment there was no surface water, no defined bed and bank and therefore no OHWM nor OHWL associated with the drainage** (see Attachment B - Photolog). Furthermore, any groundwater or baseflow does not occur often enough to develop wetland habitat. Upland vegetation was observed to be present within, and throughout the historic drainageway. A common upland grass species, smooth brome (*Bromus inermis*), dominates the lowest areas in much of the drainageway, indicating that the soils are well drained and do not pool or flow water during most (including recent) normal years.

No hydrophytic vegetation indicators, hydric soil indicators, or hydrology (USACE 2010) were present.

Results

The portion of Cool Creek within the vicinity of the project area does not receive any normal (or ordinary) flows which would develop a mappable ordinary high-water line. There is **no evidence or examples of deprivation of the soil of substantially all terrestrial vegetation** and destruction of its agricultural vegetative value within the study area. This pad and road complies with the setbacks set under Native Fish and Other Native Aquatic Species Conservation Waters (100s, 200s series).

References

Lichvar, Robert W. and Mersel, Matthew K, 2014. A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States. August 2014. Accessed online <https://erdc-library.erdc.dren.mil/jspui/bitstream/11681/5501/1/ERDC-CRREL-TR-14-13.pdf>

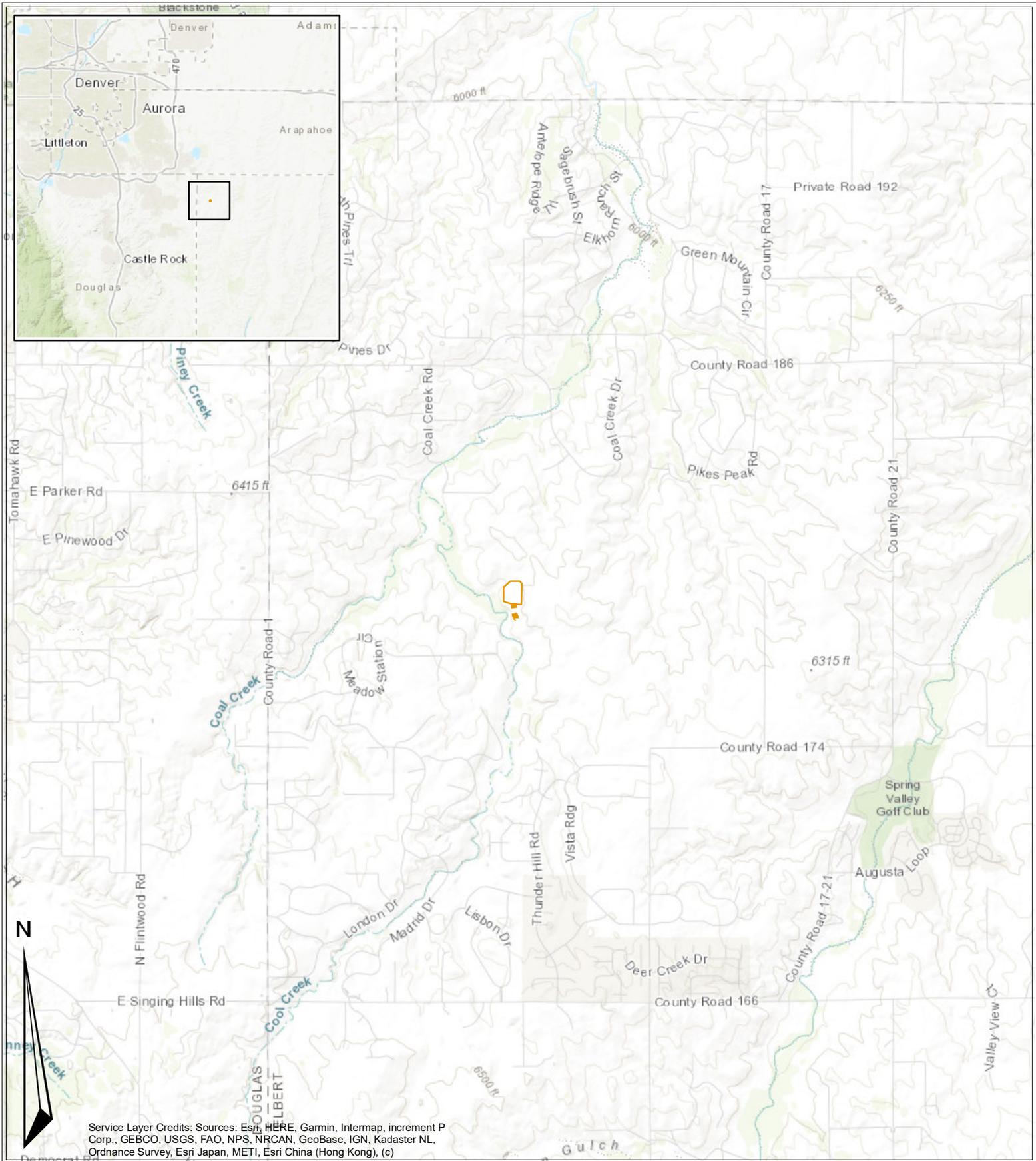
Tiglas, Darcy A. 2017. "Wetland Delineation at the proposed New County Road 178 and County Road 13 Extension Roadway Construction Project Site in Elbert County Near Parker, Colorado". November 2017.

U.S. Army Corps of Engineers (USACE), 2005. Regulatory Guidance Letter – Ordinary High Water Mark Identification. No 05-05, December 7, 2005. Accessed online

<https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll9/id/1253>.

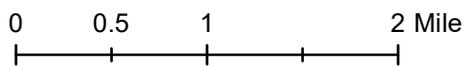
U.S. Army Corps of Engineers (USACE), 2010. Regional supplement to the Corps of Engineers wetland delineation manual: Great Plains Region (Version 2.0). Environmental Laboratory ERDC/EL TR-10-3. Vicksburg (MS): USACE Engineer Research and Development Center.

USGS, 2021. National Hydrography Dataset (NHD), <https://www.usgs.gov/core-science-systems/ngp/national-hydrography>. Website accessed March 10, 2021.



Irwin Taylor Well Pad Analysis

- Facility Pad
- Pad Access



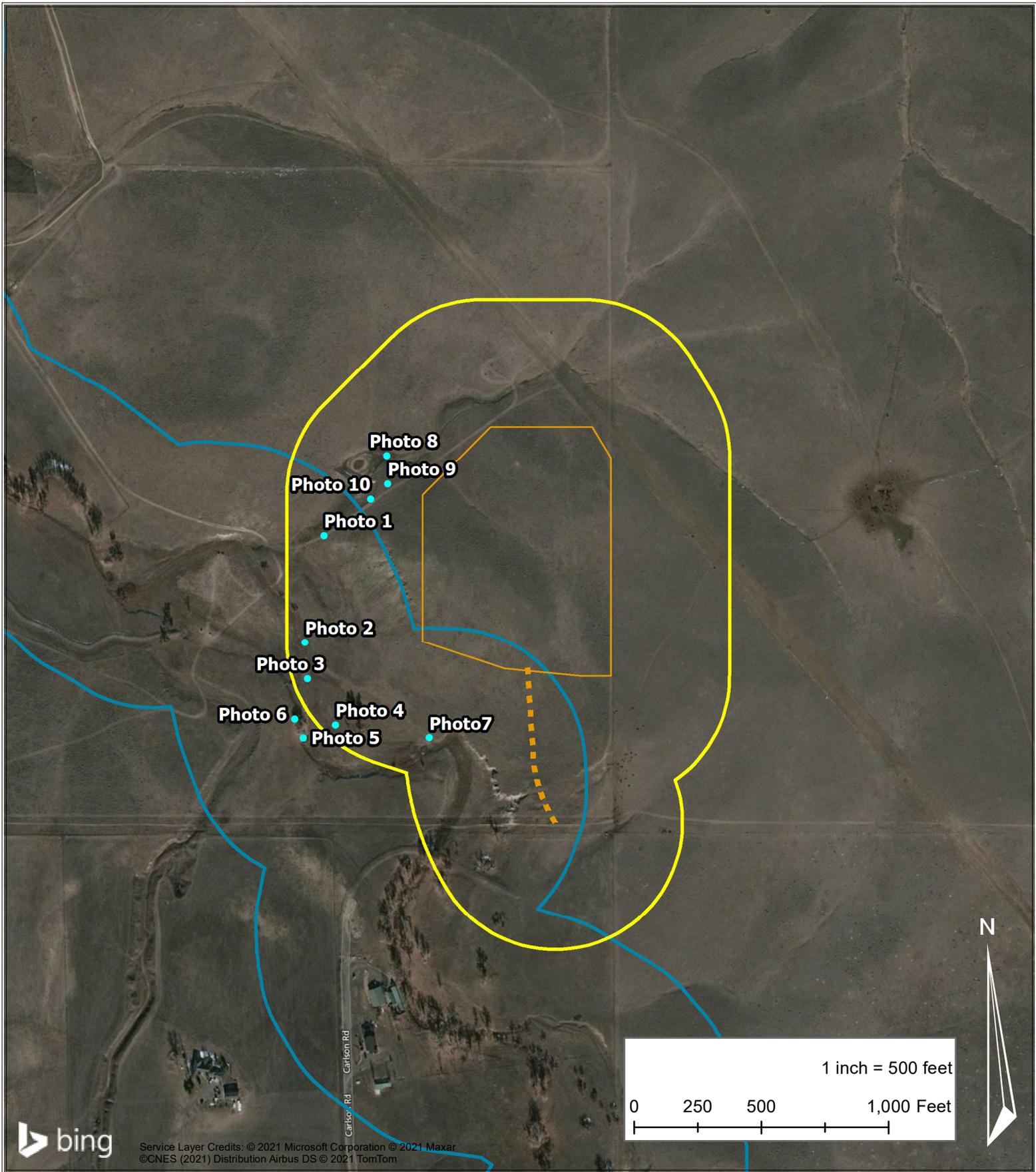
1 inch = 1 miles

FIGURE 1

REGIONAL MAP

Elbert County, Colorado
Map Date: 3/19/2021





Irwin Taylor Well Pad Analysis

- Photo Points
- 500-foot buffer
- Pad access
- Aquatic Native Species Conservation Waters
- Facility pad

FIGURE 2 AERIAL OVERVIEW WITH BUFFER



Elbert County, Colorado
Map Date: 8/6/2021

Photo Log for the Proposed Irwin Taylor Well Pad and Access Road in Elbert County, Colorado
OHWM Assessment

Photos Taken: July 30, 2021.



Photo 1. Overview of the riparian corridor from the well site facing west.



Photo 2. Overview of the riparian corridor from the site facing west showing sparse tree cover.

Photo Log for the Proposed Irwin Taylor Well Pad and Access Road in Elbert County, Colorado
OHWM Assessment

Photos Taken: July 30, 2021.



Photo 3. Overview of the riparian corridor from the site facing southwest towards the County Road construction.



Photo 4. View from within the riparian corridor showing an abundance of upland vegetation (smooth brome) and a lack of OHWM indicators.

Photo Log for the Proposed Irwin Taylor Well Pad and Access Road in Elbert County, Colorado
OHWM Assessment

Photos Taken: July 30, 2021.



Photo 5. View of the smooth brome community within the riparian corridor. This vegetation community is the same as that of the community outside the corridor.



Photo 6. View of riparian corridor showing no OHWM indicators. The area does not exhibit bed and bank characteristics, destruction of terrestrial vegetation, bent/matted vegetation, shelving, or wracking.

Photo Log for the Proposed Irwin Taylor Well Pad and Access Road in Elbert County, Colorado
OHWM Assessment

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Photo 7. View showing the continued dominance of the upland vegetation community within the riparian corridor and continued lack of OHWM indicators.



Photo 8. View of man-made cattle pond west of the site facing west.

Photo Log for the Proposed Irwin Taylor Well Pad and Access Road in Elbert County, Colorado
OHWM Assessment

Photos Taken: July 30, 2021.



Photo 9. Close up view of the southwest side of the cattle pond showing no connected bed and banks or loss of vegetation indicative of continued surficial flow.



Photo 10. View of upland vegetated swale lacking OHWM indicators. The area exhibits no change in vegetation community, destruction of terrestrial communities, debris, sedimentation, or bed and bank characteristics.