

**Buc-ee's Palmer Lake Site  
Proposed Commercial Travel Center  
Environmental Assessment  
El Paso County, Colorado  
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## 1. Executive Summary

Buc-ee's is proposing a commercial travel center in El Paso County, Colorado. The proposed 24.9-acre commercial travel center raises two primary environmental concerns: impacts to aquatic resources and adverse effects on big game populations. HWA Wildlife Consulting, LLC conducted an environmental assessment of the proposed travel center project site by assessing big game habitat and wetland and riparian habitat. The proposed project includes a 77,303 square foot facility, 120 fueling stations, 828 parking spaces, stormwater detention infrastructure, a retaining wall, and utility installations. The project will introduce substantial increases in water runoff, vehicle traffic (22,150 daily weekday trips), noise, and lighting. These factors present both direct and indirect risks to sensitive ecosystems and wildlife corridors in the region.

The site's topography and proximity to the Colorado Parks and Wildlife (CPW) designated aquatic High Priority Habitat (HPH), located 0.25 miles downslope, raise concerns about contamination from stormwater runoff and fuel-related pollutants. Fuel spills are inevitable at the proposed site, especially given the high number of planned fueling pumps. These spills can release toxic hydrocarbons, including benzene, toluene, and xylene, which are known to contaminate soil, surface water, and groundwater and pose serious ecological and human health risks. Spills at the site could have significant impacts to groundwater, nearby streams, and the CPW-designated aquatic HPH located approximately 0.25 miles downgradient of the project site.

Furthermore, the project site is located within habitat for elk and mule deer, including resident populations, summer ranges, concentration areas, and highway crossing habitats. It is located less than a mile from two major I-25 wildlife underpasses—Monument Hill and Dogleg—that provided over 4,000 mule deer crossing attempts during 2022–2023. The Greenland Wildlife Overpass is a new overpass designed to support long-term elk herd connectivity and is visible from the project site, which may impede big game movement along the overpass. Direct habitat loss (24.9 acres) combined with increased traffic, human presence, and visibility of the project site may cause avoidance of these wildlife crossings and the surrounding habitats. A GIS-based viewshed analysis shows much of the region's critical big game habitat, including the Greenland Overpass, big game HPHs, the approaches to the Dogleg Underpass, and the adjacent wildlife escape ramp, is within direct line-of-sight of the project. This visual and auditory exposure from the proposed project could lead to avoidance behaviors, habitat fragmentation, increased mortality from vehicle collisions, and reduced wildlife movements between seasonal ranges for big game species.

The proposed Buc-ee's travel center's scale, location, and associated vehicle traffic presents risks to both aquatic ecosystems and big game movement corridors. According to this assessment, the proposed project could negatively impact aquatic and big game habitat within the surrounding area.

## 2. Introduction

Buc-ee's has a proposed commercial travel center (project site) within El Paso County, Colorado. HWA Wildlife Consulting, LLC (HWA) completed an environmental assessment for the project site in 2025. This effort included a desktop analysis using online resources and field data collected



by HWA within and around the project site during a ground survey on May 15, 2025. The ground survey focused on:

- Assessing big game habitat within and around the project site
- Assessing the wetland and riparian habitat within and around the project site
- Photographing the project site and the surrounding habitat

The perimeter of the site was surveyed from the ground using adjacent roads (Palmer Drive Road and Beacon Lite Road) and a drone was used to survey the actual site and the surrounding habitat. This environmental assessment focused on potential impacts to aquatic habitats and big game species within and around the project site.

### 3. Project Site

The project site is located in the southwest corner of I-25 and Palmer Drive Road, approximately 2.5 miles east of Palmer Lake, Colorado, in Section 2 T11N:R67E (Figure 1). According to the development plan, the project site's boundary encompasses 24.9 acres to accommodate a 77,303 square foot travel center, 120 fueling stations, 828 parking spaces arranged along all four sides of the travel center, stormwater detention facilities, a retaining wall on the east side, and utilities. The site will be open twenty-four hours a day, seven days a week. The primary access points to the site are from Palmer Drive Road to the north and Beacon Lite Road to the west. The majority of the vehicles accessing the site will be exiting off of I-25, driving west along Palmer Drive Road, and then south into the site. Based on a traffic impact study, the project site will generate 22,150 daily weekday trips (Kimley-Horn 2024). Photos referenced in this report are included in Appendix A.

### 4. Vegetation

The vegetation cover within the project site primarily consists of undisturbed ponderosa pine (*Pinus ponderosa*) forested habitat and prairie grassland habitat (see photos in Appendix A). There is a small drainage that flows west to east through the site that could contain riparian associated plant species (Figure 2, Photo 4).

### 5. Wetland Habitat, Riparian Habitat, and Aquatic Species

Potential wetlands and riparian habitat within and around the project site were identified using U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), U.S. Geological Surveys (USGS) National Hydrography Dataset (NHD), Colorado Parks and Wildlife (CPW) High Priority Habitat (HPH) data, and drone imagery (Figure 2).

One NHD feature, classified as a stream/river, occurs within the project site (Figure 2). The NHD feature could not be surveyed from the ground due to land access restrictions. Drone imagery shows that there is a depression within this feature (Photo 4). This feature likely contains water during heavy rain events. The water flows west to east, crosses under I-25, and eventually heads northeast into CPW-designated aquatic native species conservation waters HPH. The aquatic HPH is located approximately 0.25 miles northeast of the project site (Figure 2, Photo 5). CPW



recommends that HPHs be avoided to minimize impacts to wildlife and sensitive habitats from land use developments in Colorado.

One of the primary aquatic concerns about the proposed development is potential spills impacting the important aquatic HPH and impacts to local groundwater. Based on the topography, spills within the project site will eventually flow east and northeast into the CPW designated aquatic HPH, located approximately 0.25 miles to the northeast (Figure 2). The newly developed Buc'-ees in Johnstown, Colorado, has already reported a diesel line spill that was reported on November 20, 2024 (Release #REL-016877; CDOPS, 2025). In addition to underground gas line and tank spills, there is a concern about gas spills at the 120 fueling pumps. Research from John Hopkins University indicates that a typical gas station may spill approximately 40 gallons of gasoline annually, with a substantial portion eventually seeping through the concrete and into the ground, potentially introducing hazardous substances like benzene into the environment (Hilpert and Breysse 2014). The estimated 40 gallons of gasoline spilled annually is referring to gasoline spilled at the pump and does not include spills from underground storage gas lines or tanks. This study focused on typical gas stations much smaller than the 120 fueling pump stations that the Buc'-ees site will have.

Gasoline spills can cause significant environmental impacts, contaminate soil, contaminate groundwater, and contaminate surface water due to the presence of toxic hydrocarbons such as benzene, toluene, and xylene (ATSDR 2015). These substances are not only harmful to aquatic life but also pose health risks to humans through contaminated drinking water and inhalation of volatile compounds (EPA 2020). In aquatic ecosystems, gasoline can reduce oxygen availability in water, leading to fish kills and disruption of aquatic habitats (NOAA 2021). Additionally, long-term exposure of these contaminants in the soil can hinder plant growth and degrade land quality, making remediation both complex and costly (EPA 2020). There is a concern that the gas spills at the project site will negatively impact ground water and the CPW-designated aquatic HPH that is located approximately 0.25 miles downslope of the project site.

## 6. Big Game

CPW has identified big game HPHs to protect species such as elk (*Cervus elaphus*) and mule deer (*Odocoileus hemionus*). CPW recommends that HPHs be avoided to minimize impacts to wildlife (including big game) from land use developments in Colorado. CPW has also identified habitat ranges where big game spend the majority of their time. Avoiding and minimizing impacts in HPHs and big game habitat ranges will help minimize any negative impacts to big game populations.

The location of big game HPHs and habitat ranges in the vicinity of the project site were obtained from the CPW – Geospatial Data website (CPW 2025, Figures 3-5). Big game HPHs do not occur within the project site. However, elk migration corridor HPH occurs approximately 0.14 miles to the north of the project site and mule deer severe winter range HPH and winter concentration area HPH occurs approximately 1.95 miles to the northwest of the project site (Photo 6). Additionally, the project site is located within elk resident population area habitat, elk highway crossings habitat, mule deer concentration area habitat, mule deer summer range habitat, mule deer resident population area habitat, and mule deer highway crossing habitat. And elk summer range habitat



is located approximately 0.39 miles to the west and mule deer winter range habitat is located approximately 0.01 miles to the north. The majority of the habitat within and around the project site is suitable for big game. Although some small-scale disturbances do occur in the area (e.g., roads and residential housing), the majority of the habitat is undisturbed and provides a mix of forage and cover habitat for big game (Figure 1 and photos in Appendix A).

Due to the elk and mule deer populations in the area and high fencing along I-25 that restricts big game movements, CPW and the Colorado Department of Transportation (CDOT) have strategically located underpasses, wildlife escape ramps, and overpasses, along I-25 to support big game movements (Figures 1-5 and photos in Appendix A).

Specifically, the Monument Hill Underpass is located approximately 0.63 miles south of the project site and the Dogleg Underpass is located approximately 0.67 miles north of the project site (Figures 1-5, Photos 6 and 7). These two underpasses were studied in 2022 and 2023 to determine wildlife activity and use with a focus on big game successfully crossing I-25 (Kintsch et al. 2025). The Monument Hill Underpass had 2,051 attempted mule deer crossings in 2022 and 2,444 in 2023 (Kintsch et al. 2025). The Dogleg Underpass had 378 attempted mule deer crossings in 2022 and 84 in 2023 (Kintsch et al. 2025). Successful mule deer crossings (number of mule deer that fully crossed the underpass) at the two underpasses ranged from 86% to 93% and wildlife-vehicle collisions decreased by 78% during the two-year study (Kintsch et al. 2025). Additional mammal species observed at the two underpasses include black bear (*Ursus americana*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), elk, fox (*Vulpes* sp.), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginianus*) (Kintsch et al. 2025). This data shows that deer, elk, and other wildlife species are in the area and move through the habitat during different times of the year. There is a concern that the increase in vehicle traffic associated with the project site will result in more noise, human activity, and vehicle lights at night, all of which could impact big game movement patterns within and between the two underpasses.

Wildlife high fencing is located along I-25 where big game species frequently attempt to cross the highway. Occasionally, big game species will pass through the high fencing (e.g., where the fencing is broken) and then they can become trapped within the I-25 corridor. Wildlife escape ramps are designed to allow big game species to safely escape from the high fenced areas. These wildlife escape ramps are strategically placed in areas where they are most likely to be utilized by big game species. A wildlife escape ramp, along the west side of I-25, is located adjacent to the project site (Figures 1-5, Photos 1 and 8). The wildlife escape ramp is located approximately 20 feet from the project site's boundary and approximately 100 feet from the project site's proposed retaining wall. Due to the project site's close proximity to the escape ramp, big game species might not feel comfortable using the escape ramp. As depicted in Photo 8, there will be limited space between the I-25 wildlife high fencing and the project site's retaining wall for big game to exit from the escape ramp. Human activity (vehicle and foot traffic), lights, and noise from the project site, which will be visible from the escape ramp, could prevent big game species from using the wildlife escape ramp and from traveling along the area between I-25 and the project site's retaining wall. Big game species trapped within the I-25 corridor present an increased risk for big game-vehicle collisions and could place more stress on the animals until they can escape from the corridor.





Further, the new I-25 Greenland Wildlife Overpass is located approximately 2.1 miles north of the project site (Figures 1-5, Photo 6). According to CDOT (2025), the overpass will provide a vital and safe connection for large game to cross I-25 in their natural habitat, addressing specific needs of elk and other large animals that need wide open areas to cross because they avoid tunnels, underpasses, and enclosed areas. This overpass will connect 39,000 acres of big game habitat (Douglas County Land Conservancy) to more than one million acres of the Pike National Forest (CDOT 2025). Due to this overpass being visible from the project site (see Viewshed Analysis in Figures 3-5) and the important habitat north of the project site that could be used for approaching and dispersing from the overpass, there is a concern that big game movements could be impacted by the project.

Finally, a viewshed analysis was conducted to determine the potential visual impacts from the project site. The viewshed analysis was ran using the Visibility (Spatial Analyst) tool in GIS ArcMap (v 10.8; ESRI Inc, Redlands, CA). Parameters for the viewshed included approximately 850-foot stretch of road along Palmer Drive Road (between I-25 and Beacon Lite Road), and the project site boundary, 1-meter resolution digital elevation model (DEM) obtained from The National Map (TNM) server (USGS 2025), and using a 6-foot height offset. The 6-foot height offset represents the taller vehicles entering and leaving the Buc-ee's site. The result of this analysis is included in Figures 3-5. The viewshed displays areas visible from the increased traffic associated with the project site. The viewshed analysis displays a significant amount of big game habitat, including elk HPH, that will be visible from the project site (Figures 3-5). According to a meta-analysis by Benitez-Lopez et al (2010), infrastructural developments resulted in mammal populations declining, with an increase in population declines (out to 5 km) in open areas compared to forested areas. The big game habitat to the north, northwest, and northeast is primarily open and visible from the project site (Figures 3 and 4). There is a concern that wildlife will avoid suitable big game habitat and travel corridors that are visible from the project site.

Due to the project site being located within big game habitat ranges, near big game HPHs, adjacent to a wildlife escape ramp, near two underpasses that are being used by elk, deer, and other wildlife species (Kintsch et al. 2025), and near the new I-25 Greenland Wildlife Overpass, there is a concern that the project site could negatively impact big game populations. As mentioned, the adjacent I-25 wildlife escape ramp, the new I-25 Greenland Wildlife Overpass, and the west and east approaches to the Dogleg Underpass, will all be visible from the project site based on the viewshed analysis (Figures 3-5). Big game could avoid portions of these visual (i.e., direct line-of-sight) areas due to the increase in vehicle traffic, lights, and noise that will not be blocked by the landscape. The increase in vehicle traffic at the project site (22,150 daily weekday trips [Kimley-Horn 2024]), not only disrupts the natural behavior of big game but also contributes to higher rates of mortality through vehicle collisions.

Large mammals (i.e., big game) avoid roads due to traffic-related disturbances (e.g. lights, noise, and chemical emissions), which can result in habitat fragmentation, loss, and degradation (Rytwinski and Fahrig 2015). Studies have shown that mammal population densities declined based on their close proximity to infrastructure (including busy roads) and minimizing infrastructure developments in relatively undisturbed areas is important for conserving wildlife populations (Benitez-Lopez et al 2010). There is a concern that the increase in vehicle traffic (22,150 daily weekday trips), resulting in more noise, human activity, and vehicle lights at night,



will result in big game avoiding portions of the habitat surrounding the project site. Many large mammals, such as elk and deer, tend to move more frequently at night. Studies have shown that large mammals such as elk or mule deer change their behaviors more during the day compared to night (Northrup et al. 2015, Dzialak et al. 2011, Sawyer et al. 2009). In both Colorado and Wyoming, elk have been shown to select areas associated with human development or roads during the night compared to daytime hours (Dzialak et al. 2011, Sawyer et al. 2009). However, if there is a significant increase in light from vehicles or project infrastructure, these areas might be avoided. With the amount of light, traffic, and noise expected from the project site, there is potential for the project to equate to hundreds of acres of suitable habitat being avoided by big game, including important wildlife migration corridors and HPH areas.

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< <https://www.usgs.gov/tools/national-map-viewer>>. Accessed 19 May 2025.



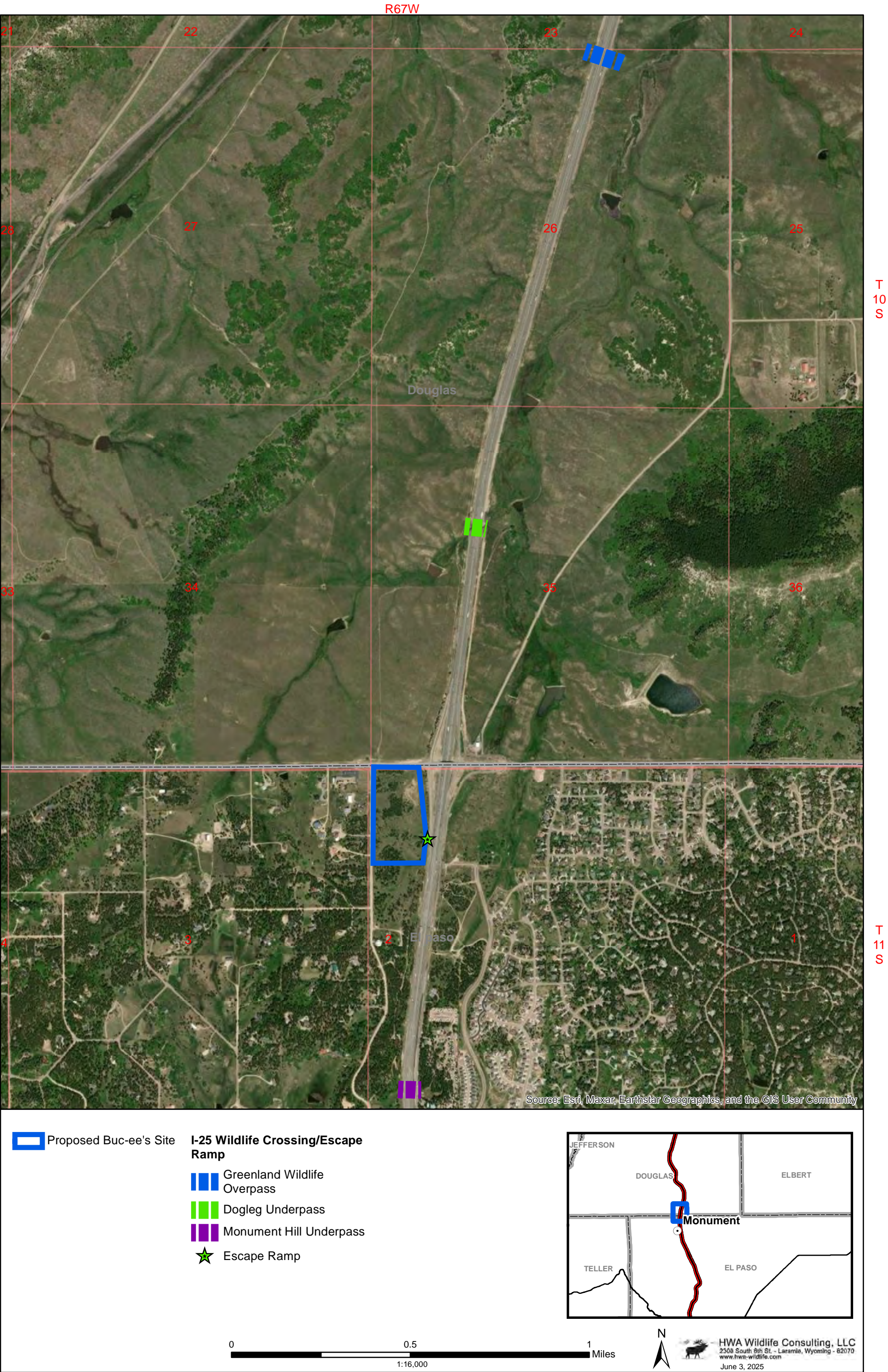


Figure 1. The proposed Buc-ee's Palmer Lake site.



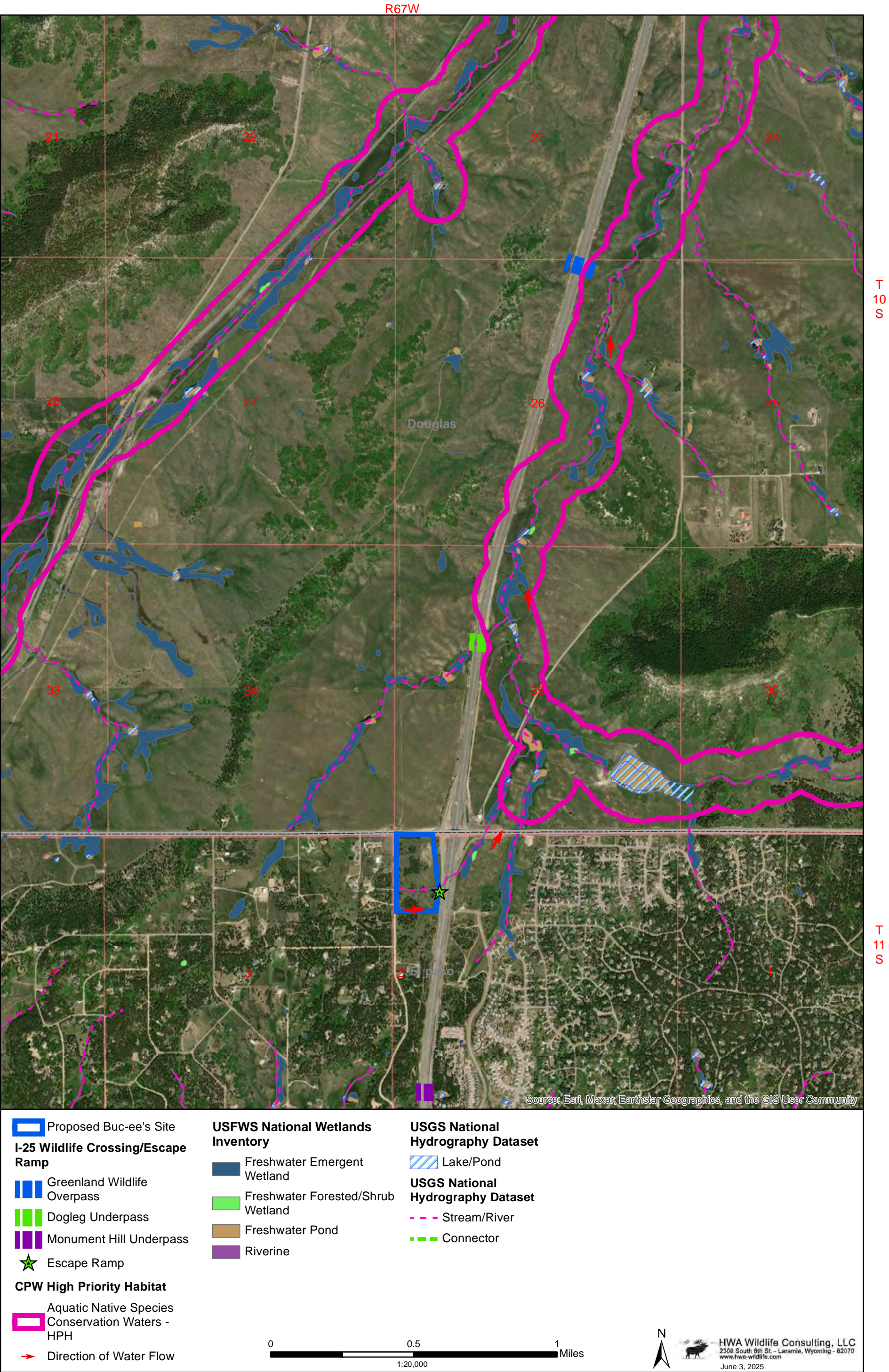


Figure 2. Wetland and riparian data (USFWS NWI, USGS NHD, and CPW HPH) around the proposed Buc-ee's site.



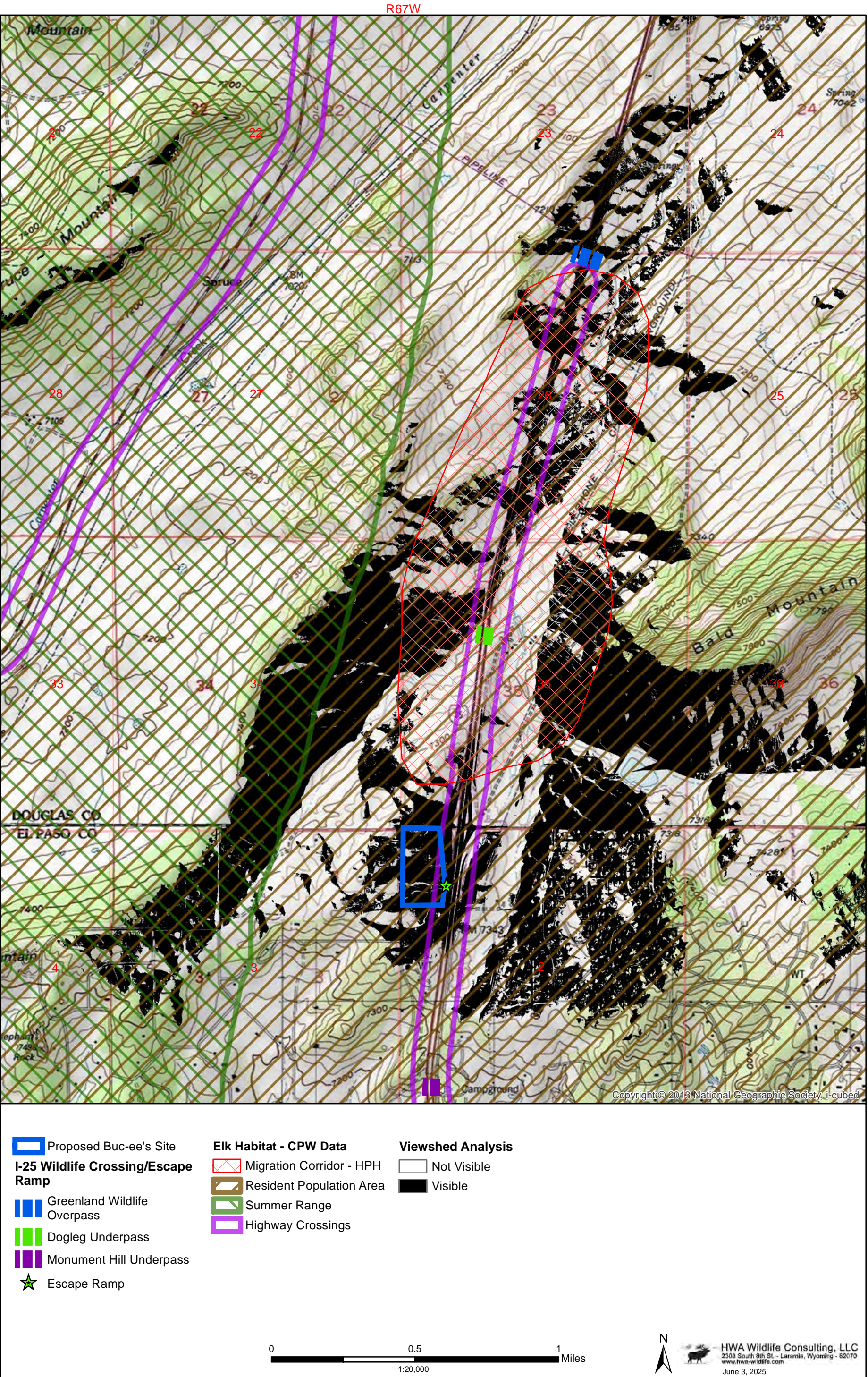


Figure 3. Elk habitat (CPW data) and viewshed analysis around the proposed Buc-ee's site.



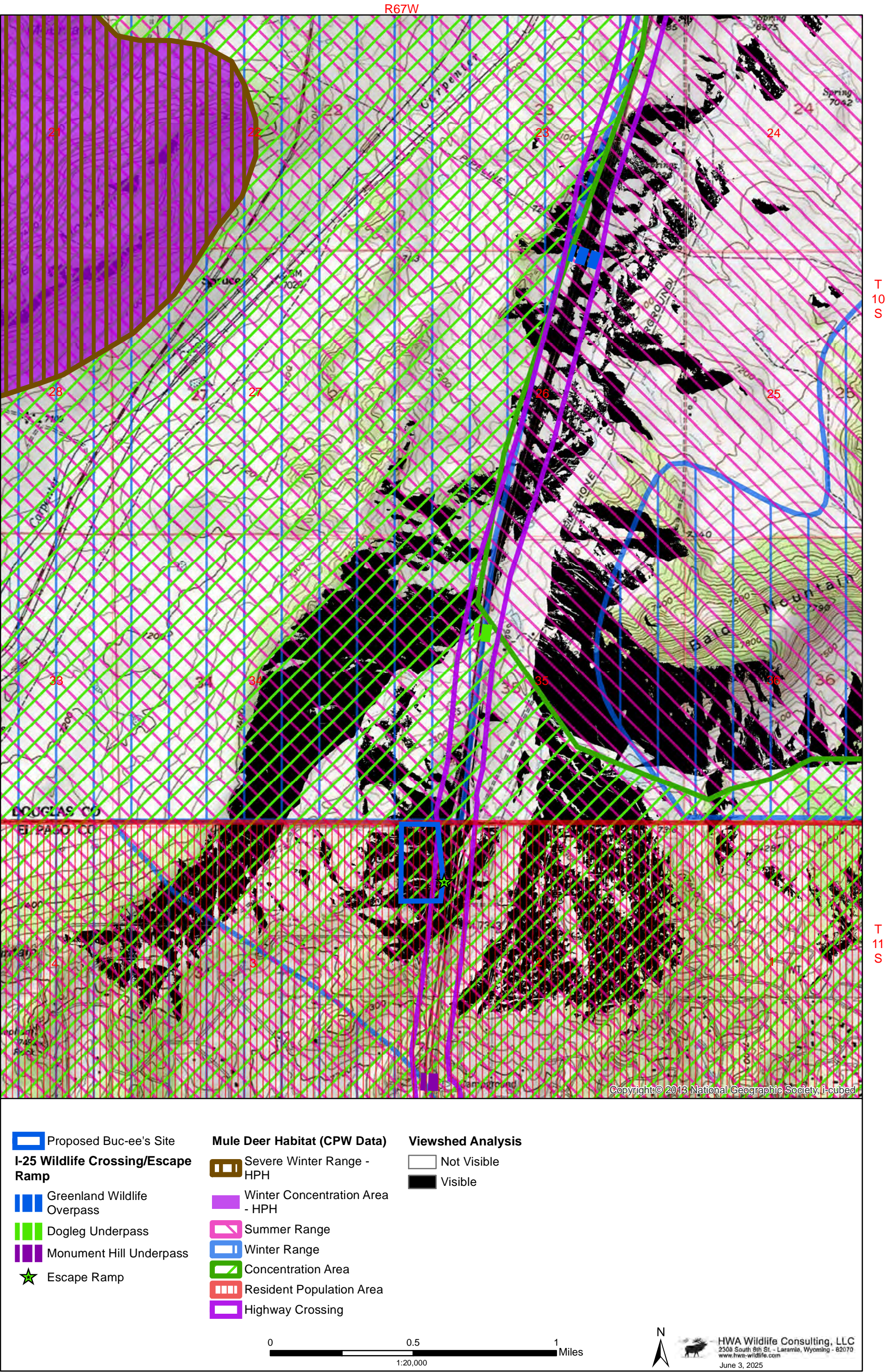


Figure 4. Mule deer habitat (CPW data) and viewshed analysis around the proposed Buc-ee's site.



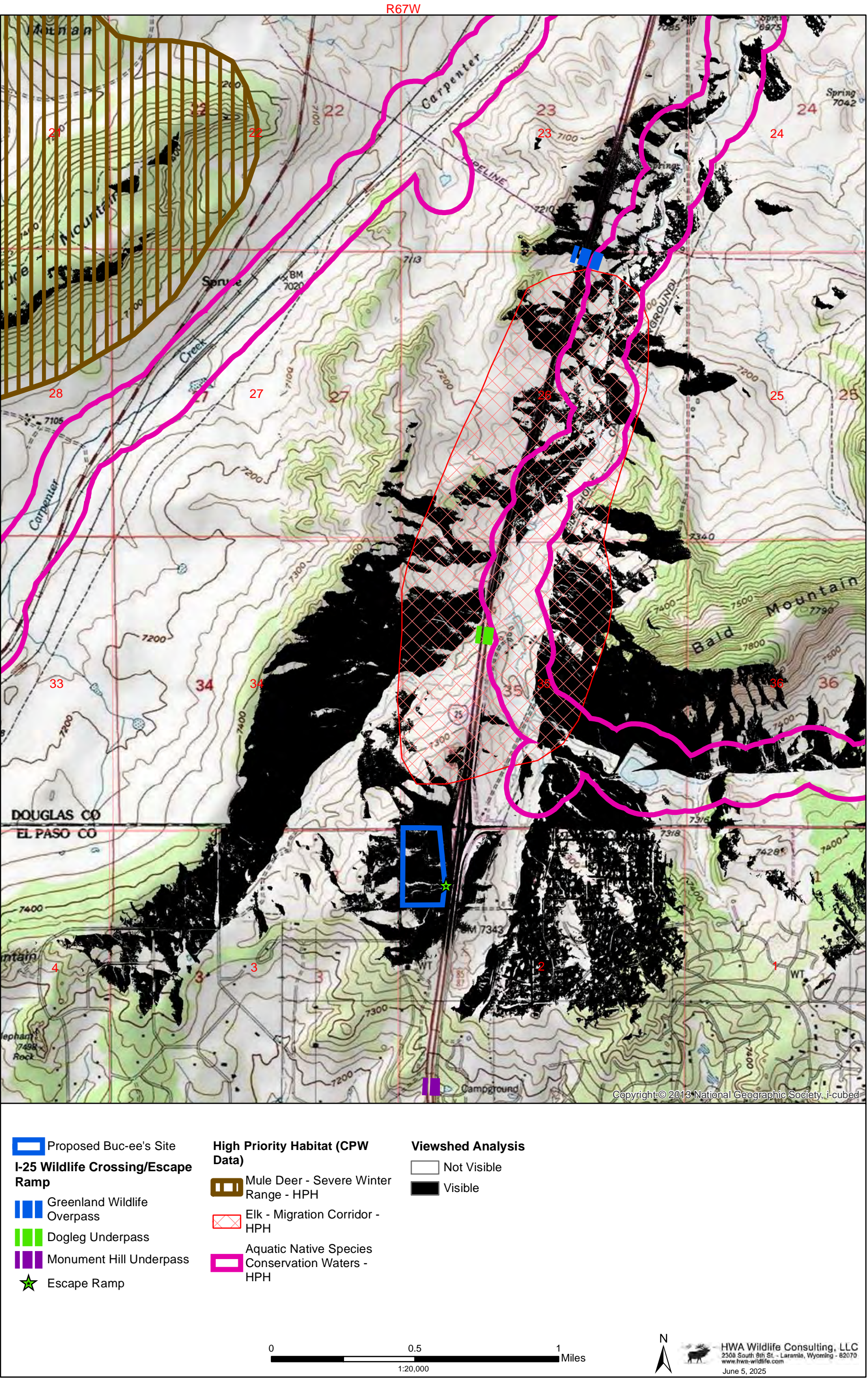


Figure 5. High priority habitat (CPW data) and viewshed analysis around the proposed Buc-ee's site.



## **Appendix A**

### **Photos of the project site and surrounding habitat**

(Survey Date: 5/15/2025)



**Photo 1. Looking SW at the project site.**



**Photo 2. Looking SE at the project site.**



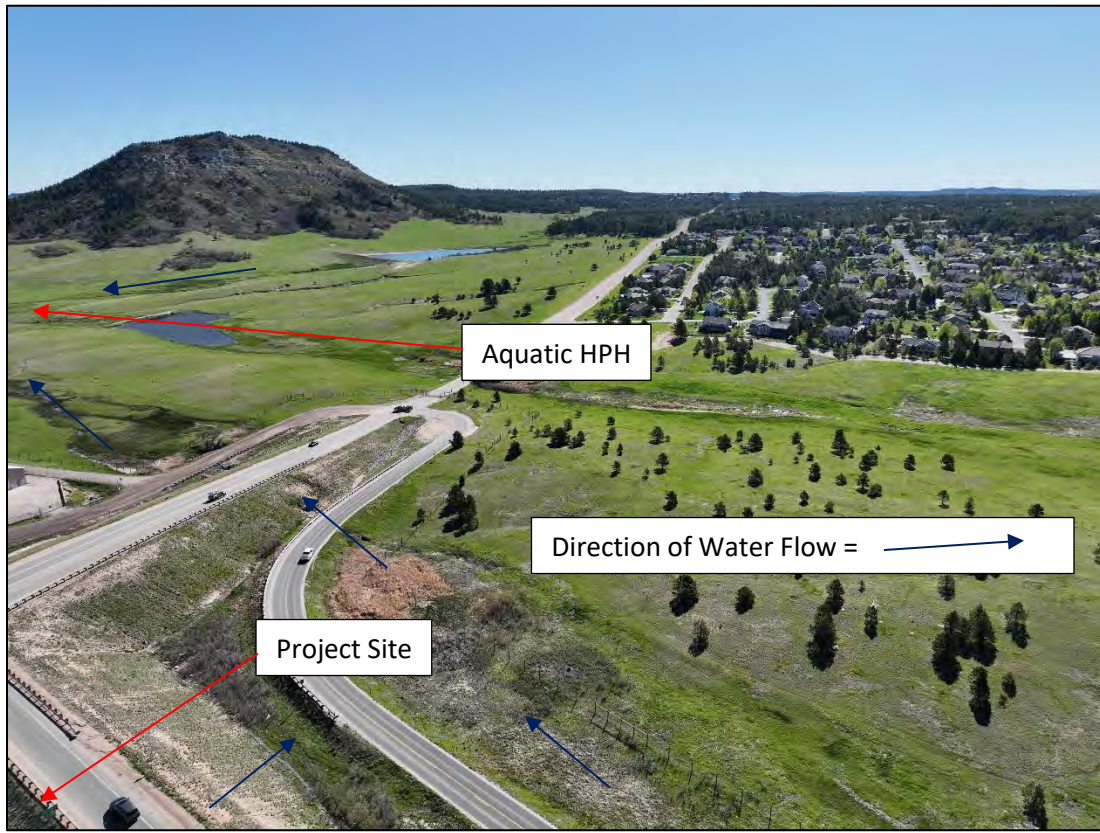


**Photo 3. Looking N at the northern half of the project site.**

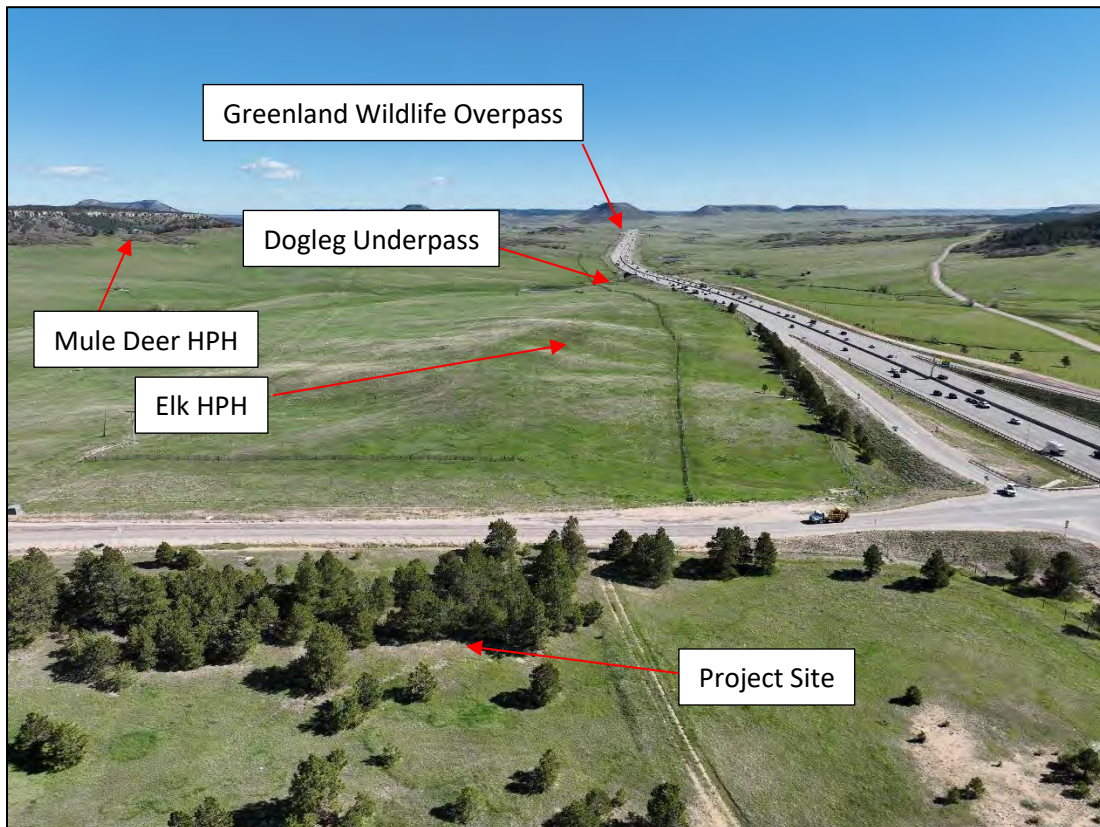


**Photo 4. Looking W at the drainage (NHD feature) within the project site.**





**Photo 5. Looking NE at aquatic HPH.**

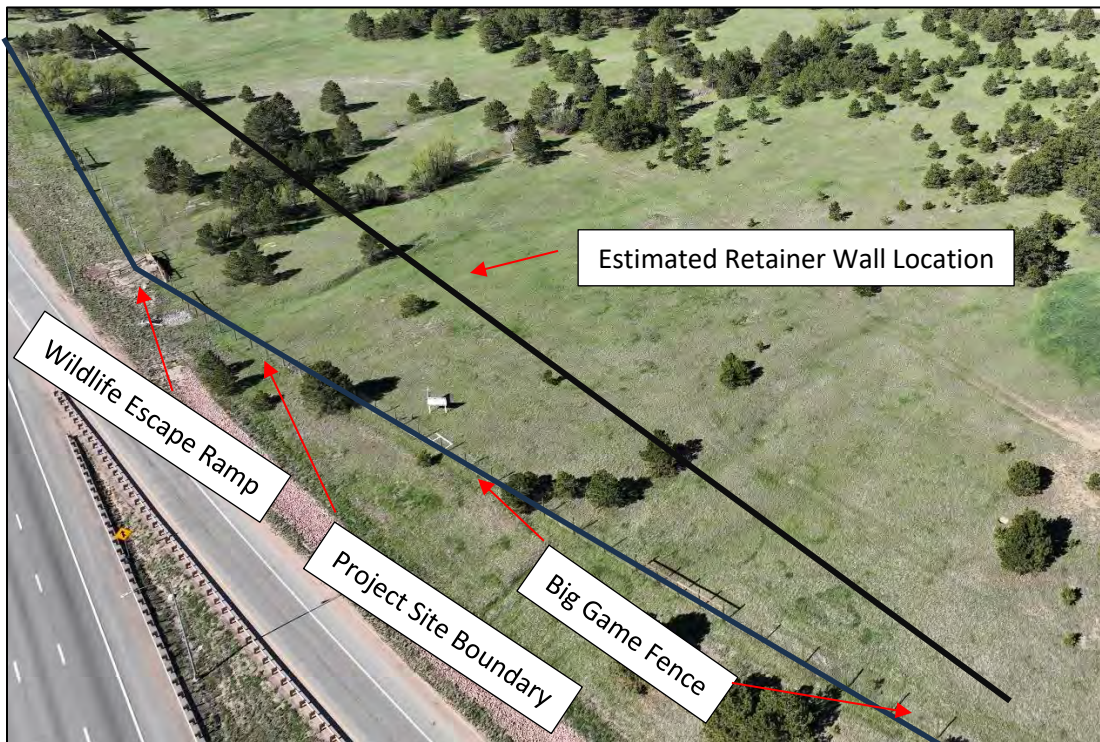


**Photo 6. Big game HPHs and I-25 wildlife crossings.**





**Photo 7. I-25 wildlife crossing.**



**Photo 8. I-25 wildlife escape ramp.**