AtoZ Environmental Consulting

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Wildlife Surveys — NEPA Management

Mexican Spotted Owl – Mogollon, NM

2024 Roost Summary

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Definitions

Action Area – area of mineral exploration and reclamation

AtoZec – AtoZ Environmental Consulting

MSO – Mexican spotted owl

MMD – New Mexico Mining and Minerals Division

NMDGF – New Mexico Department of Game and Fish

PAC – Protected Activity Center

PCE – Primary Constituent Element

Permit – Minimal Impact Exploration Operation Permit No.CA027EM

Summa – Summa Silver Corporation

Survey Area – 0.5-mile buffer around the Action Area

Survey Protocol – *Mexican Spotted Owl Survey Protocol, 2012 (Updated 3/15/2022)*

USFS – United States Forest Service

USFWS – U.S. Fish and Wildlife Service

1. Project Overview

1.1 Introduction

Summa Silver Corp (Summa) received Minimal Impact Exploration Operation Permit No.CA027EM (Permit) from the New Mexico Mining and Minerals Division (MMD) on September 8, 2021 (MMD 2021). Section 10, Part E, Mexican Spotted Owl Mitigations to be Performed, of the Permit states:

"To minimize potential impacts to Mexican Spotted Owl, all drilling and disturbance activities should be performed outside of the breeding and fledgling-dependency period of March 1 through August 31 when possible. If drilling activities cannot be avoided during the breeding and fledgling-dependency period, spotted owl surveying shall be conducted within a 0.5-mile buffer zone prior to any road work, drill pad construction, and drilling. Surveys shall be conducted by qualified biologists using the U.S. Fish and Wildlife Service (USFWS) *Mexican Spotted Owl Survey Protocol, 2012 (Updated 3/15/2022)* (hereafter Survey Protocol) and in accordance with New Mexico Department of Game and Fish (NMDGF) recommendations. If an occupied breeding territory is located within the 0.5-mile buffer zone, drilling activities shall not occur until the young have fully fledged and dispersed from the area (MMD 2021)."

Summa contracted with AtoZ Environmental Consulting (AtoZec) to perform Mexican spotted owl (*Strix occidentalis lucida*; MSO) surveys in compliance with their Permit. Experienced AtoZec biologist Eric Herman performed the surveys under a USFWS Section 10(a)(1)(a) research and recovery permit and NMDGF Authorization For Taking Protected Wildlife for Scientific Purposes.

This Survey Report summarizes the 2024 MSO roost inspections and provides recommendations; a continuation of the 2-year protocol MSO surveys performed in 2022 and 2023.

1.2 Project Area

The area of mineral exploration and reclamation (Action Area) is located within in the historic Mogollon Mining District in the vicinity of Mogollon, NM (Figure 1) within the Gila National Forest; approximately 75 miles north of Silver City. The Action Area includes the drill pads, work areas, current roads, 10 feet to either side of roads requiring modification, and 10 feet to either side of new roads. This area of disturbance totals 1.35 acres (MMD 2021). The Survey Area includes a 0.5-mile buffer around the Action Area. Within this Survey Area 5 MSO roosts were inspected; 4 previously identified in 2022 and 2023, and 1 new roost discovered in 2024.

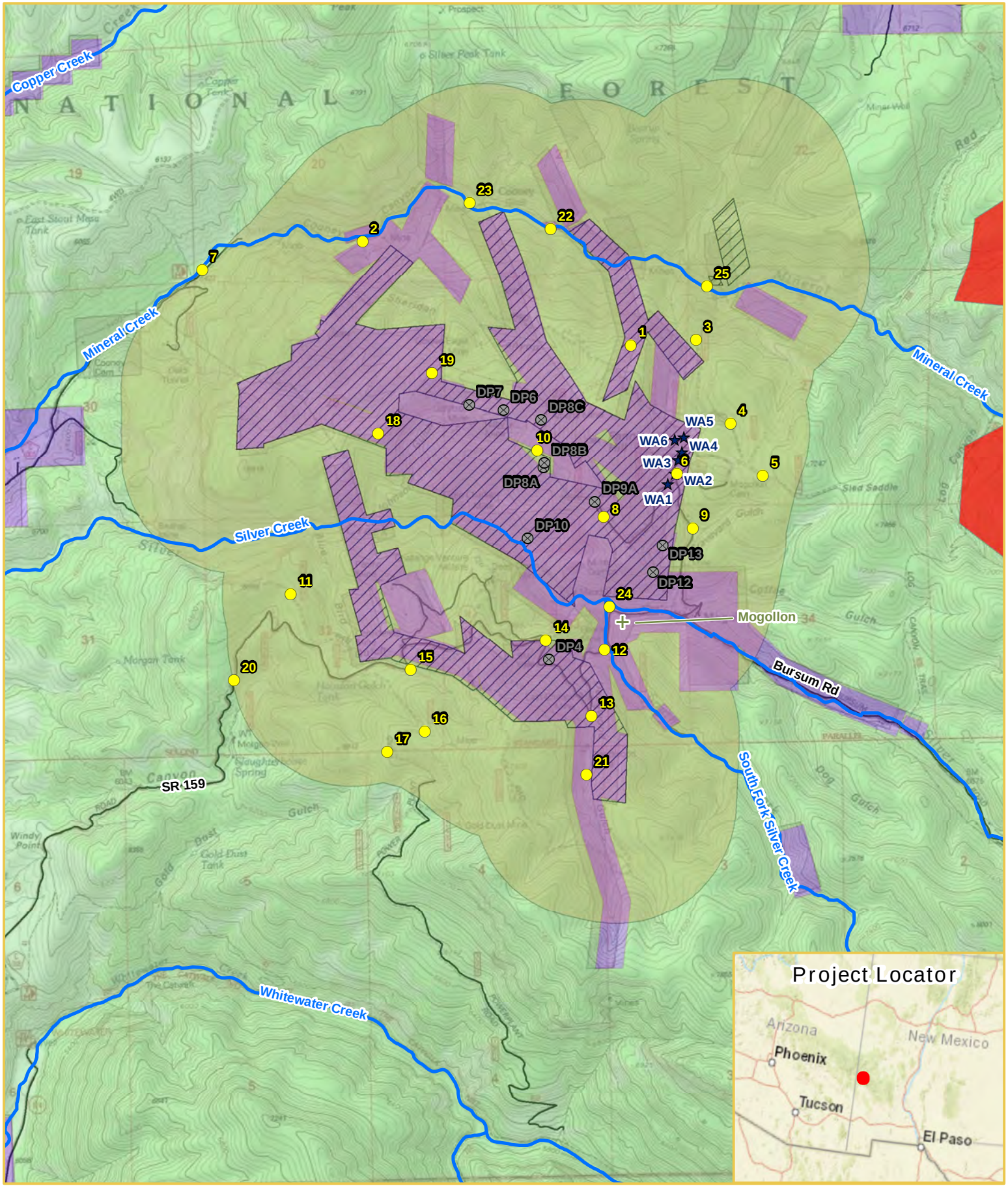
Over several decades, numerous underground mining activities have extracted high-grade gold and silver veins from three primary mines: Fanney, Last Chance, and Consolidated (Cision PR Newswire 2020; The Assay 2022). Mining activities ceased in 1942, and the district has since been largely inactive, except for a few exploratory drilling projects conducted in the 1980s and 2010 (Cision PR Newswire 2020). The property hosts approximately 21 miles of near-continuous epithermal-associated veins and faults (Cision PR Newswire 2020; Summa Silver 2022a, b). Approximately 1 mile of veins and faults in the Action Area have been drill tested.

2. Mexican Spotted Owl

2.1 Life History

The MSO is a medium sized owl without ear tufts, an average length of 16.1-18.9 inches long, and a wingspan of 39.8 - 44.9 inches. They are brown colored with large, irregular and numerous white spots on the head, neck, back, and underparts. The tail has about ten light bands. The large, round, brownish facial disks are concentrically barred with dark brown, with a dark brown border. Their eyes appear almost

Figure 1. Mexican Spotted Owl Survey Area



Coordinate System: NAD 1983 UTM Zone 12N

Date: 9/9/2024

black. The sexes are nearly identical, but females are slightly larger, have darker head and face color, and breeding females have brood patches. Juvenile spotted owls (hatchling to approximately 5 months) have a white downy appearance. Subadults (5 to 26 months) possess adult plumage but have pointed rectrices with white tips. The rectrices of adults (>27 months) have rounded and mottled tips. Adults are generally long-lived; however, there is a low survival of young to breeding age. Based on banding studies, the species often live for 16-17 years (AGFD 2023).

MSOs do not build their nests; they use cavity or abandoned platform nests, ledges on cliffs, and mistletoe clusters. They are monogamous, breeding sporadically, and generally not nesting every year (USFWS 2012). In good years most of the population will nest, whereas in other years only a small proportion of pairs will nest (USFWS 2012). They have one brood, with egg laying peaking as early as early March. They lay 1-3 (usually 2) faintly buff, unmarked. Incubation by female lasts 28-32 days with hatching in late April to early May. Females leave nest only to regurgitate pellets, defecate, and receive prey from male during the incubation period and first half of the brooding period. Male feeds the female and young until young are two weeks old, when both parents begin prey delivery. Young leave the nest at about 5 weeks (June), and fly at about 6-7 weeks of age. They stay near the nest for several weeks, and are fed by the adults until late summer, typically staying with adults through August (AGFD 2023). Adults breed at 2-3 years of age, but may not breed every year. Reproductive success is generally low with the average number of young fledged per pair at about 1.0 (USFWS 2012).

MSOs are mostly solitary outside the breeding season. Seasonal migration of some individuals occurs in many or most MSO populations, and in both sexes, but not always year to year. When migration occurs to wintering areas, it is generally from higher to lower elevations, and to more open habitats (AGFD 2023). Territory fidelity is high with MSO and they return to their territories year to year after migration.

Prey is snatched from the ground in talons after a gliding descent from a perch. Their common prey includes woodrats, deer mice, lagomorphs, voles, and invertebrates, but also may prey upon various birds, bats, lizards, and snakes. MSOs will regularly cache excess food on tree branches (AGFD 2023).

The MSO is Listed Threatened by the USFWS.

2.2 Habitat

General

MSO are found amongst forested mountains and steep canyons extending from the southern Rocky Mountains in Colorado and the Colorado Plateau in southern Utah, southward through Arizona, New Mexico, and far western Texas, through the Sierra Madre Occidental and Oriental, to the mountains at the southern end of the Mexican Plateau (AGFD 2023).

They primarily roost and breed in dense old-growth mixed-conifer forests with complex structure. Forests are typically uneven-aged and multistoried (USFWS 2012). These sites have high canopy closure, high basal area, many snags, and many downed logs. For foraging, multistoried forest with many potential patches is desirable, but MSO forage in a variety of habitats: managed and unmanaged forests, pinyon-juniper woodlands, mixed-conifer and ponderosa pine forests, cliff faces and terraces between cliffs, and riparian zones (Ganey et al. 2003).

The 1995 Recovery Plan, updated in 2012 (USFWS 2012), includes the following Primary Constituent Elements (PCE) for MSO critical habitat. Critical habitat is an area occupied by the species at the time of federal listing that contains physical or biological features essential to conservation of the species and

may require special management considerations or protection. Critical habitat is not present in the Survey Area, but exists 0.5 mile to the east. While the Survey Area is not within critical habitat, these attributes are used to assess suitable MSO habitat (USFWS 2012).

PCEs Related to Forest Structure:

- A range of tree species, including mixed-conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30-45% of which are large trees with a trunk diameter of ≥0.3 m (12 in) when measured at 1.4 m (4.5 ft) from the ground.
- A shaded canopy created by the tree branches and foliage covering ≥40% of the ground.
- Large, dead trees (i.e., snags) with a trunk diameter of at least 0.3 m (12 in) when measured at 1.4 m (4.5 ft) from the ground.

PCEs Related to Maintenance of Adequate Prey Species:

- High volumes of fallen trees and other woody debris.
- A wide range of tree and plant species, including hardwoods.
- Adequate levels of residual plant cover to maintain fruits, seeds, and allow plant regeneration.

PCEs Related to Canyon Habitat (one or more of the following):

- Presence of water (often providing cooler air temperature and often higher humidity than the surrounding areas).
- Clumps or stringers of mixed-conifer, pine-oak, pinyon-juniper, and/or riparian vegetation.
- Canyon walls containing crevices, ledges, or caves
- High percentage of ground litter and woody debris.

Project Area

Suitable habitat for the MSO is present in several canyons of the Survey Area demonstrating the PCEs above. Large, mature coniferous species of Douglas fir, ponderosa pine, and juniper grow from canyon slopes into the uplands. The canyon bottoms contain a diverse mix of oak, sycamore, box elder, locust, and other deciduous species. These create upper, mid, and lower story canopies creating a multilayered vertical structure with ample shade. Woody debris and old tree snags are abundant throughout the canyon habitat. Ample rocky cliffs with numerous ledges and grottos extend along the length of the canyons. Water was present throughout the survey season in Mineral Creek, but not in all canyon drainages where MSO were located.

Rising up the mountainsides from the canyon tops habitat suitability degrades. Mixed tree species ranging in different sizes are not common at the higher elevations of the Survey Area, above the canyons. Cliffs, shade, and water are all lacking.

A Protected Activity Center (PAC) is an “area of at least 243 ha (600 acres) surrounding the “core area,” which is the nest site, a roost grove commonly used during the breeding season in absence of a verified nest site, or the best roosting/nesting habitat if both nesting and roosting information are lacking (USFWS 2022).” Based on information from the Unites States Forest Service (USFS) Glenwood Ranger District, two MSO PACs were previously documented approximately 2 miles northeast of the Survey Area in 2002 and east of the Survey Area in 2004. In 2009, two PACs were recorded within 2 miles southeast of the Survey Area (USFS 2022).

3. Survey Methods

A complete 2-year inventory for MSO was completed from 2022 to 2023 for the Survey Area following the methods found in the Survey Protocol. The results of those surveys yielded 4 MSO roosts for future monitoring. The 2024 roost monitoring did not resurvey the Survey Area but focused only on conducting visits to the identified roost sites to confirm MSO presence. The roost visit dates can be found in Table 1 below. These roost inspections followed the "Conducting Daytime Follow-up Surveys" section from the Survey Protocol as a guideline.

In brief, a roost visit searches all habitats within at least a 0.5 mile radius of the known roost area, centering on locations of previous MSO sightings. This involves walking throughout the area, calling, listening, and watching for owl sign. A minimum of one hour was typically spent searching for owls during each visit, unless owls were observed sooner. Inspections were centered around early morning or late afternoon, when possible, to overlap with periods of higher MSO activity. In some cases where owls were not observed during a daytime visit, nighttime calling was conducted. As these visits were not part of the initial 2-year inventory, this was not done in all cases if substantial owl sign was observed to confirm presence.

During roost inspections an incidental MSO was heard; therefore, the location was surveyed following the Survey Protocol. In brief, the survey consists of broadcasting MSO calls from a call point for at least 15 minutes or continuously calling while hiking a route. If no response, the surveyor moves to the next call point. Depending on habitat structure, call points may be spaced between .25 and .5 mile. If an MSO response is recorded, the surveyor records pertinent data. The surveyor then moves at least .5 to .75 mile to the next call point. For MSO responses, the surveyor makes a daytime visit to the area an MSO called from through triangulated data. The surveyor searches the area for an MSO and follows the Survey Protocol to determine roosting status. This visit must be conducted within 2 days from the night the MSO was detected from the call point. Once an owl location was known, nighttime calling was not conducted from within 0.5 mile of the roost and a daytime visit was made.

A survey is complete once all call points have been surveyed from and day-time follow-up visits made to roosts. A specific number of surveys can be completed each month with 5 days elapsing between calling from a single call point, between March 1 to August 31. More details on timing, daytime surveys, follow-up visits, and alternative call methods can be found in the Survey Protocol (USFWS 2022).

Table 1. MSO Roost Visits/Surveys, 2024

Date	Daytime, Nighttime
Silver Creek 1	
03/14	Daytime
04/06	Daytime
04/22	Daytime
05/12	Daytime
07/29	Daytime
Silver Creek 2	
03/14	Daytime
04/04	Daytime
04/05	Daytime
04/21	Nighttime
04/22	Daytime
04/25	Daytime, Nighttime

05/12	Nighttime
07/29	Daytime
Mineral Creek	
04/05	Daytime
04/21	Daytime
04/25	Daytime, Nighttime
05/09	Daytime
07/28	Daytime
FR 716B	
03/14	Daytime
04/06	Daytime
04/21	Nighttime
04/22	Daytime
04/25	Nighttime
04/26	Daytime
05/09	Daytime
07/28	Daytime
Sheridan Canyon	
04/25	Nighttime
04/26	Daytime
05/09	Nighttime
05/10	Daytime
07/29	Nighttime
07/30	Daytime

4. Survey Results and Analysis

All owls detected during daytime and nighttime surveys were part of a roost in the Survey Area. Survey results are discussed by each established roost below. Photos of each roost are located in Appendix A. Datasheets with roost details are provided only to the USFWS.

4.1 Silver Creek Roost 1

Table 2. Silver Creek Roost 1, 2024

MSO	Date				
	03/16	04/06	04/22	05/12	07/29
# of MSO	2	1	0	0	1
Sex	M, F	M	-	-	F
Stage	A, A	A	-	-	A

Notes: M=male, F=female, A=adult, J=juvenile, ?=unknown

In 2022 a breeding pair of MSO with 2 juveniles was confirmed in Silver Creek Roost 1. In 2023 the pair of MSO were confirmed, but breeding was not.

The pair was again observed together in the roost in 2024; however, breeding was not confirmed. The absence of the female MSO from April until July could indicate she was on nest and not visible. Fresh owl sign was present throughout the season, including on visits when no owls were observed, confirming use of the roost. It is possible the MSO bred, and juveniles had dispersed out of the central roost area by the 07/29 visit. This cannot be concluded and is only a possibility. Reproductive success is generally low in MSO (USFWS 2012). Young MSO observed prior to August are usually within 0.2 mile of the nest (Ward and Salas 2000).

While breeding cannot be confirmed, it is confirmed by the extensive owl sign and the owl pair present that Silver Creek 1 is an active roost.

4.2 Silver Creek Roost 2

Table 3. Silver Creek Roost 2, 2024

MSO	Date							
	03/14	04/04	04/05	04/21	04/22	04/25	05/12	07/29
# of MSO	0	1	0	0	1	0	0	1
Sex	-	F	-	-	?	-	-	M
Stage	-	A	-	-	A	-	-	A

Notes: M=male, F=female, A=adult, J=juvenile, ?=unknown

In 2022 a breeding pair of MSO with 2 juveniles was confirmed in Silver Creek Roost 2, while in 2023 breeding was again confirmed with 1 juvenile.

Early in the 2024 season single adults were heard or seen sporadically while fresh owl sign was minimal. MSO do not always respond and difficulty accessing areas of the roost due to treacherous conditions left some areas unexplored. On the final visit the adult male and roost center were located in a previously unexplored area, shifting the roost center. Multiple ledges, a mine adit, and multilayered trees exhibited extensive MSO use. Juvenile observations from the past 2 years were in what is now likely the edge of the roost. As the early surveys focused on the edges of the roost, it is possible the adults bred, and juveniles dispersed elsewhere in the roost. Future inspections of this roost will focus on the newly mapped roost center.

While breeding was not observed and cannot be confirmed, extensive owl sign and both a male and female observation confirm Silver Creek 2 is an active roost.

4.3 Mineral Creek Roost

Table 4. Mineral Creek Roost , 2024

MSO	Date				
	04/05	04/21	04/25	05/09	07/28
# of MSO	0	0	2	1	0
Sex	-	-	M, F	M	-
Stage	-	-	A, A	A	-

Notes: M=male, F=female, A=adult, J=juvenile, ?=unknown

Detections in 2022 and 2023 surveys confirmed the location of an active roost.

Roost inspections in 2024 again confirmed the owl pair in the roost. Juveniles were not observed and observing both adults on 4/25 could indicate successful breeding did not take place. The nest ledge used in 2023 showed no owl sign or owls throughout the 2024 season. The area of main activity and fresh owl sign was approximately 100 meters from the nest ledge and offered numerous ledges and grottos for roosting. Whitewash and pellets observed in this area did not increase from the 5/9 to 7/28 visit but remained the same. The Mineral Creek roost contains a large area full of high cliffs and crevices and swift water flow which could have made early season detection difficult. While there is potential of the owls using additional areas, a high-use area of the roost has been identified.

Breeding may not have occurred, but observations of the MSO pair and owl sign confirms Mineral Creek is an active roost.

4.4 FR716B Roost

Table 5. FR716B Roost, 2024

MSO	Date							
	03/14	04/06	04/21	04/22	04/25	04/26	05/09	07/28
# of MSO	0	0	1	0	1	0	2	1
Sex	-	-	M	-	M	-	M, F	M
Stage	-	-	A	-	A	-	A, A	A

Notes: M=male, F=female, A=adult, J=juvenile, ?=unknown

The 2022 surveys did not locate owls in this area; however, the 2023 surveys confirmed a pair of MSO in this active roost.

Early in the 2024 season locating the owls visually or aurally proved difficult; however, fresh owl sign was observed beneath the small grotto that was used in 2023. This included feathers, whitewash, and pellets. The male was detected during 2 separate night surveys without locating owls during the daytime follow-ups. A confirmed nesting location has not been identified and it is possible the female was on a nest and during the day visits the male was nearby the nest. The night responses could have drawn the male towards the surveyor. Both owls were observed on 5/9; they called aggressively and followed the surveyor out of the roost once located. This behavior could indicate breeding, but no there is no

confirmation. If breeding occurred, it could be expected the female would leave the nest roughly around mid-May. The final visit did not confirm juveniles. If there was successful breeding it is possible juveniles dispersed further away, though young MSO observed prior to August are usually within 0.2 mile of the nest (Ward and Salas 2000).

While breeding was not confirmed, it is confirmed by the extensive owl sign and the presence of the MSO pair that FR716B is an active roost.

4.5 Sheridan Canyon Roost

Table 6. Sheridan Canyon Roost, 2024

MSO	Date					
	04/25	04/26	05/09	05/10	07/29	07/30
# of MSO	1	0	1	0	1	2
Sex	M	-	M	-	?	?,?
Stage	A	-	A	-	A	A, J

Notes: M=male, F=female, A=adult, J=juvenile, ?=unknown

No observations were made in this area in previous years.

An incidental detection while in the Survey Area led to surveys at this roost. Consistent early season night detections failed to produce daytime detections. When the daytime search area was expanded towards the end of the season, MSO were identified in a narrow portion of the canyon with multilayered canopy structure. A single adult and single juvenile were identified. This area will be searched in detail in the future for a possible nesting location.

Successful breeding was confirmed qualifying Sheridan Canyon as an active roost.

5. Recommendations

Based on the evidence through 2 years of surveys and 1 year of roost inspections, there are 5 active roosts in the Survey Area. At least three of these roosts had breeding success in 1 or 2 of the survey/inspection years. Based on these observations, MSOs not breeding every year, and MSO low reproductive success, the following recommendations are made:

- The 5 known roost sites are surveyed by an MSO qualified biologist using the USFWS *Mexican Spotted Owl Survey Protocol, 2012 (Updated 3/15/2022)* as a guideline through project duration.
- If an occupied breeding territory is located within the 0.5-mile buffer zone, drilling activities shall not occur until the young have fully fledged and dispersed from the area.
- Continued absence of drilling activities during the MSO breeding season.
- Continued coordination with Summa, USFWS, USFS, NMDGF, and MMD to develop additional actions, PAC delineations, or to determine if any additional information is needed.

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Appendix A – Roost Photos

Silver Creek 1

Photo 1. Whitewash, pellets, and blood beneath ledge.

Photo 2. Adult MSO perched in grotto.

Photo 3. Adult MSO perched in grotto.

Photo 4. Multi-layered tree structure early in season.

Silver Creek 2


Photo 5. Adult MSO.


Photo 6. Adult MSO.

Photo 7. Pellets and whitewash in mine adit.

Photo 8. Roost habitat.

Mineral Creek

Photo 9. Adult MSO on ledge.

Photo 10. Adult MSO in fir tree.

Photo 11. Nest ledge from 2023 empty.

Photo 12. Canyon ledges where adult MSO, whitewash, and pellets observed.

FR716B Roost

Photo 13. Adult MSO.


Photo 14. Adult MSO at night.

Photo 15. Area below grotto where pellets, whitewash, and feathers observed.

Photo 16. MSO pellet within roost.

Sheridan Canyon Roost

Photo 17. Adult MSO.

Photo 18. Juvenile MSO.

Photo 19. Roost habitat where MSO was located.

Photo 20. MSO whitewash within roost.