

MEMORANDUM

To: David Cerasale, PhD
WestLand Resources, Inc.
4001 E Paradise Falls Drive
Tucson, Arizona 85712

From: Kari Dupler
WRA, Inc.

Date: July 18, 2019

Subject: Golden Queen Mine Drainages

The purpose of this memo is to describe drainage features that were encountered during the delineation conducted by WRA on May 30 and 31st, 2018 within the proposed expanded permit boundary (Study Area; Appendix A, Figures 1-5). The delineation identified approximately 7.05 acres (55,188 linear feet) of ephemeral and intermittent drainages within the Study Area, similar to features originally reviewed by the California Department of Fish and Wildlife (CDFW) in 1996 when CDFW determined that a Streambed Alteration Agreement was not necessary for the project. The Study Area is adjacent to the current permit boundary which was previously analyzed in the EIR prepared by Kern County in 1997 and in the Supplemental EIR in 2010. Appendix B includes photos of a subset of drainages that were mapped throughout the Study Area in 2018.

In the CDFW assessment of the project conducted as part of the review of the Notice of Preparation (CDFW 1996, signed by George Nokes), these drainages were described as having little or no channel definition and were not expected to support aquatic life. Site conditions have not changed since those described in the 1996 assessment, although the proposed permit boundary has been expanded.

The most frequent indicators used to determine the location of natural drainage areas included a break in the bank slope, change in particle size distribution, and shift in vegetation. Within the Study Area, natural drainage areas are generally small, single-channel watercourses, and all were dry during the 2018 delineation. These natural drainage areas do not sustain wetland vegetation are not expected to support aquatic life. The majority of ephemeral drainage areas demonstrated geomorphic indicators of episodic hydrologic activity, such as observable bed and banks, as well as scour. Several natural drainage areas were located at higher elevations, contributing to drainages further down slope.

Natural drainage areas delineated in 1996 within the current permit boundary exhibited the same characteristics as those delineated in 2018 within the Study Area, and WRA observed many features that were continuous between the Study Area and the current permit boundary. Feature S52 originates from within the current permit boundary and extends into the Study Area (Figure 2, Photographs 1-2). This feature was steep-sided, with poorly sorted bed material, and

vegetation growing within the drainage at higher elevations. Farther downstream, this drainage had a more well-developed bed and bank topography and well sorted bed material. Feature S75 originated from within the current permit boundary, and continued through the Study Area (Figure 4, Photographs 9-10). This feature exhibited similar characteristics along the length of the drainage and runs through both the current permit boundary and new study area. Similarly, feature S88 runs through both the current permit boundary and new Study Area and was the same along the length of the drainage (Figure 5, Photographs 7-8). Feature S85 is a steep, narrow, ephemeral drainage that extends through both the current permit boundary and Study Area (Figure 3, Photograph 18). The geomorphic characteristics of this channel are similar to those of other natural drainage areas that were mapped within the Study Area and were originally analyzed in the EIR for the current permit boundary.

Drainages that were mapped by WRA during the May 30-31, 2018 survey within the Study Area were consistent with features delineated in 1996 and determined by CDFW to not require a Stream Alteration Agreement within the current permit boundary.

Please contact me if you have any questions.

Kari Dupler
Senior Wetland Biologist

Appendices:
A. Figures 1-5 Mapped Features
B. Photo Appendix




Attachment A: Figures

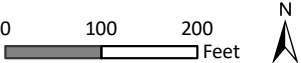
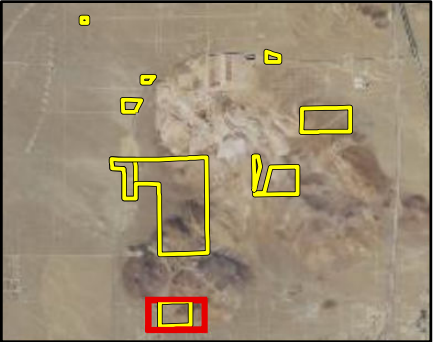
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Figure 1. Potential Jurisdictional Waters

Golden Queen Mine
Kern County, California

-  Study Area
-  Drainage Features Analyzed in 2018
-  Cross Section



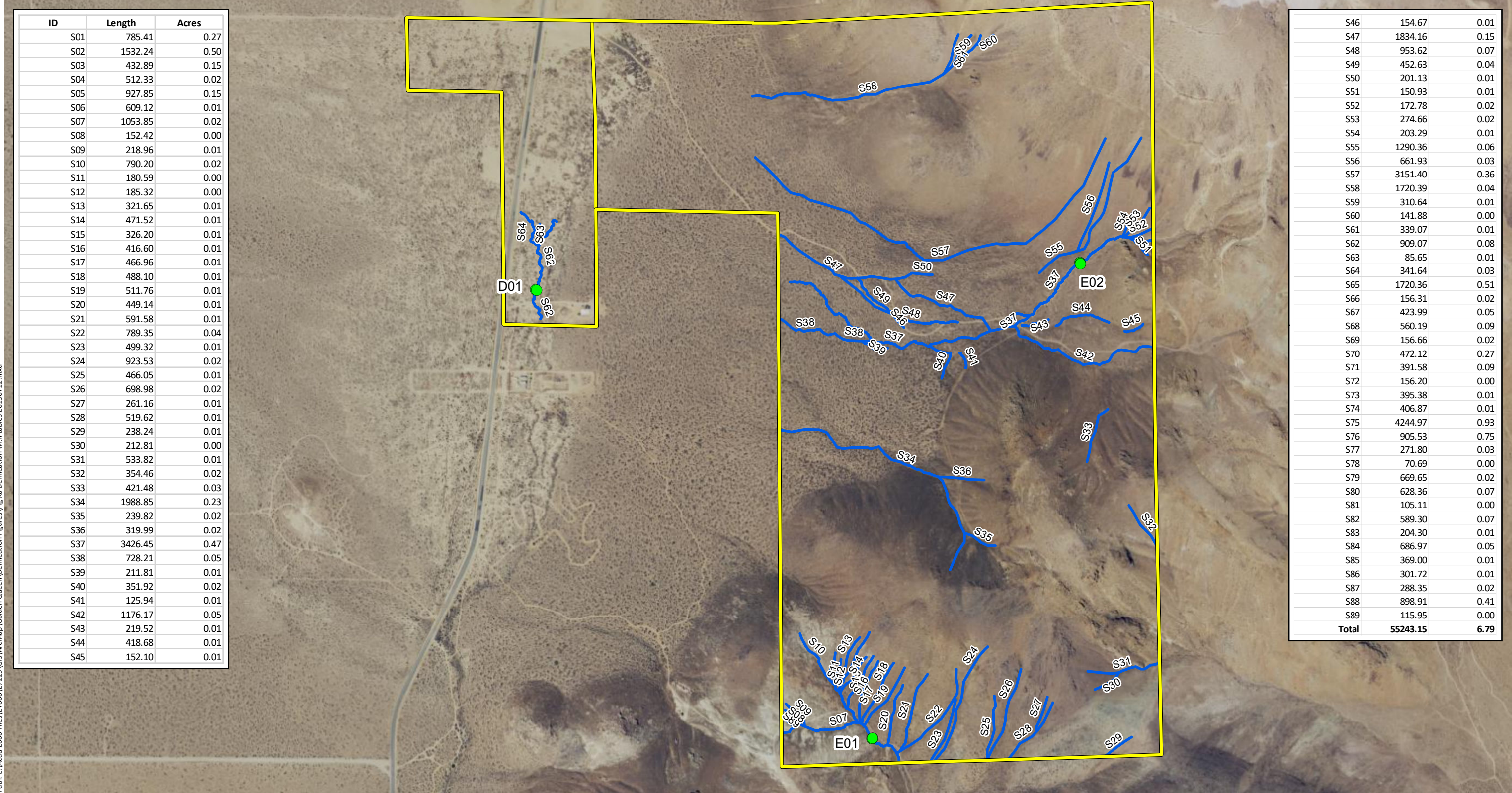
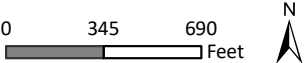
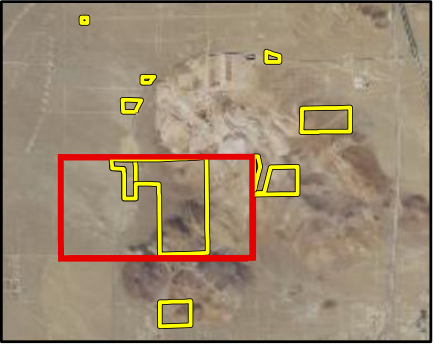


Figure 2. Potential Jurisdictional Waters

Golden Queen Mine
Kern County, California

- Study Area
- Drainage Features Analyzed in 2018
- Cross Section



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ID	Length	Acres
S01	785.41	0.27
S02	1532.24	0.50
S03	432.89	0.15
S04	512.33	0.02
S05	927.85	0.15
S06	609.12	0.01
S07	1053.85	0.02
S08	152.42	0.00
S09	218.96	0.01
S10	790.20	0.02
S11	180.59	0.00
S12	185.32	0.00
S13	321.65	0.01
S14	471.52	0.01
S15	326.20	0.01
S16	416.60	0.01
S17	466.96	0.01
S18	488.10	0.01
S19	511.76	0.01
S20	449.14	0.01
S21	591.58	0.01
S22	789.35	0.04
S23	499.32	0.01
S24	923.53	0.02
S25	466.05	0.01
S26	698.98	0.02
S27	261.16	0.01
S28	519.62	0.01
S29	238.24	0.01
S30	212.81	0.00
S31	533.82	0.01
S32	354.46	0.02
S33	421.48	0.03
S34	1988.85	0.23
S35	239.82	0.02
S36	319.99	0.02
S37	3426.45	0.47
S38	728.21	0.05
S39	211.81	0.01
S40	351.92	0.02
S41	125.94	0.01
S42	1176.17	0.05
S43	219.52	0.01
S44	418.68	0.01
S45	152.10	0.01

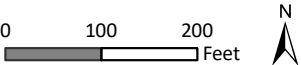
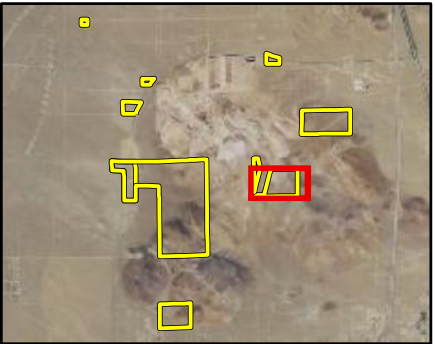
S46	154.67	0.01
S47	1834.16	0.15
S48	953.62	0.07
S49	452.63	0.04
S50	201.13	0.01
S51	150.93	0.01
S52	172.78	0.02
S53	274.66	0.02
S54	203.29	0.01
S55	1290.36	0.06
S56	661.93	0.03
S57	3151.40	0.36
S58	1720.39	0.04
S59	310.64	0.01
S60	141.88	0.00
S61	339.07	0.01
S62	909.07	0.08
S63	85.65	0.01
S64	341.64	0.03
S65	1720.36	0.51
S66	156.31	0.02
S67	423.99	0.05
S68	560.19	0.09
S69	156.66	0.02
S70	472.12	0.27
S71	391.58	0.09
S72	156.20	0.00
S73	395.38	0.01
S74	406.87	0.01
S75	4244.97	0.93
S76	905.53	0.75
S77	271.80	0.03
S78	70.69	0.00
S79	669.65	0.02
S80	628.36	0.07
S81	105.11	0.00
S82	589.30	0.07
S83	204.30	0.01
S84	686.97	0.05
S85	369.00	0.01
S86	301.72	0.01
S87	288.35	0.02
S88	898.91	0.41
S89	115.95	0.00
Total	55243.15	6.79

Sources: 2016 DigitalGlobe Aerial, WRA | Prepared By: czumwalt, 7/12/2019

Figure 3. Potential Jurisdictional Waters

Golden Queen Mine
Kern County, California

-  Study Area
-  Drainage Features Analyzed in 2018
-  Cross Section



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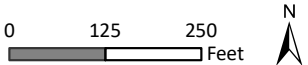
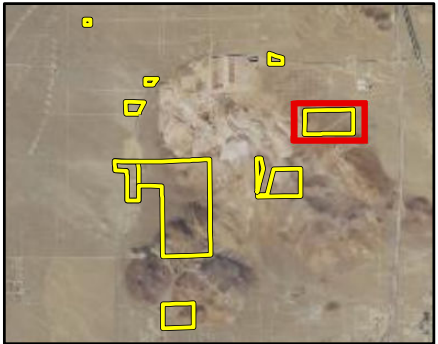


Sources: 2016 DigitalGlobe Aerial, WRA | Prepared By: czumwalt, 7/12/2019

Figure 4. Potential Jurisdictional Waters

Golden Queen Mine
Kern County, California

- Study Area
- Drainage Features Analyzed in 2018
- Drainage Features Analyzed in 2018
- Cross Section





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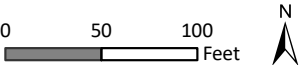
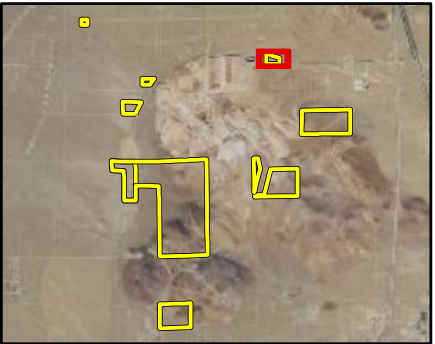


Sources: 2016 DigitalGlobe Aerial, WRA | Prepared By: czumwalt, 7/12/2019

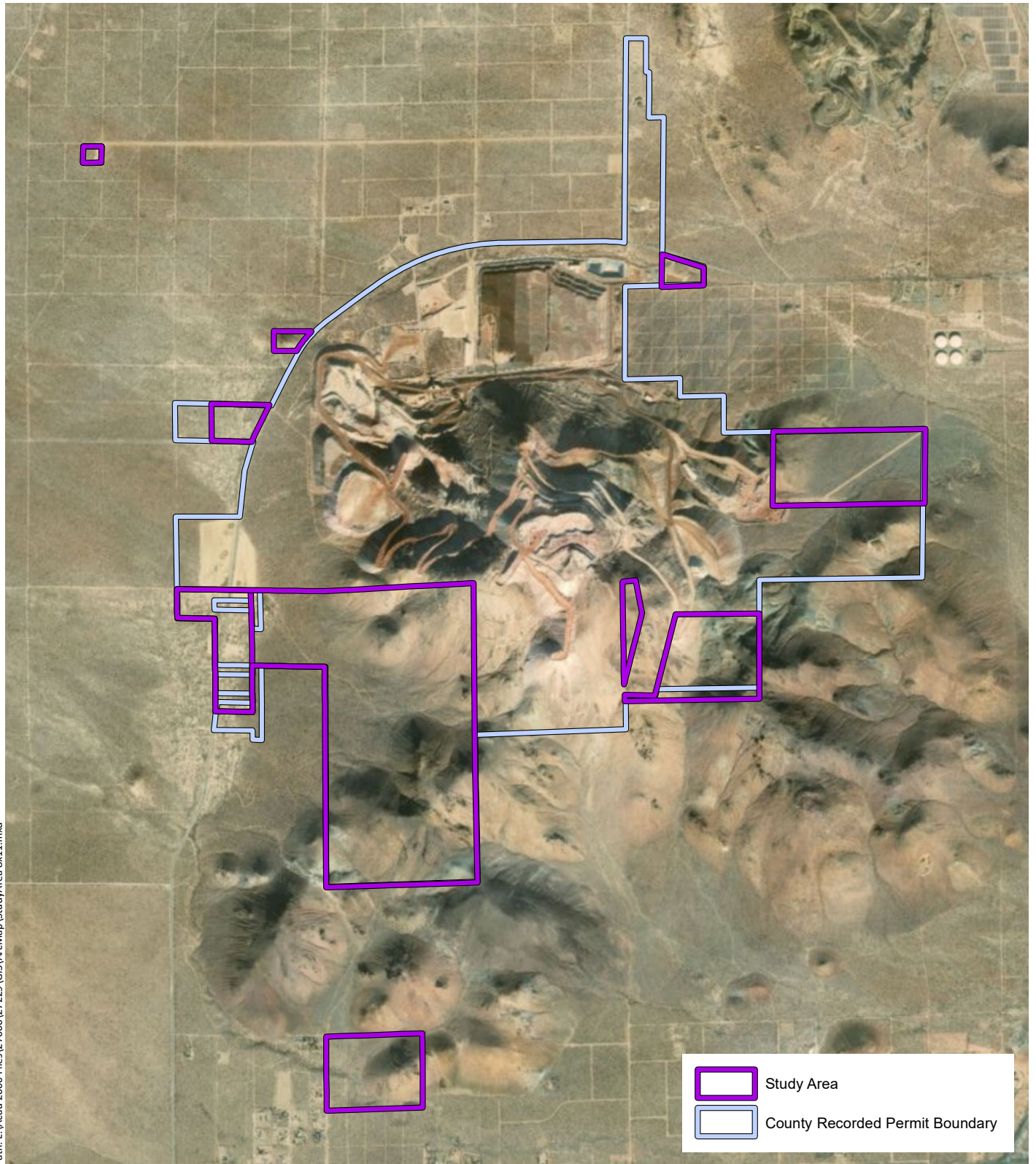
Figure 4. Potential Jurisdictional Waters

Golden Queen Mine
Kern County, California

-  Study Area
-  Drainage Features Analyzed in 2018



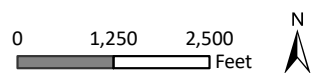
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Sources: 2016 DigitalGlobe Aerial, WRA | Prepared By: czumwalt, 7/12/2019

Figure 6. Study Area

Golden Queen Mine
Kern County, California



Attachment B: Photo Appendix



Photograph 1. Feature S52 along channel (northeast of Site E02) at the border of the new and current permit boundary, facing the current permit boundary Reference for Photograph 2 of the same channel in the Study Area. Photo taken May 31, 2018.



Photograph 2. Feature along channel (northeast of Site E02) in the Study Area, taken near Photograph 1. Photo taken May 31, 2018.



Photograph 3. Feature in current permit boundary (southeast of Site E02) at the border of the new and current permit boundary. Feature adjacent to Photograph 4 in the new project boundary. Photo taken May 31, 2018.



Photograph 4. Feature S44 in Study Area (southeast of Site E02) at the border of the new and current permit boundary. Photo taken May 31, 2008.



Photograph 5. Feature in current permit boundary at the border of the new and current permit boundary. Reference for Photograph 6, which was taken along the same channel northeast at Site H02. Photo taken May 30, 2018.



Photograph 6. Site H02 (upper fan of incised channel) in Study Area. Photo taken May 30, 2018.



Photograph 7. South of Silver Queen Road roughly 0.1 miles east of Holt Street, within the current permit boundary. Feature continues in Photograph 8, which is the new project boundary. Photo taken May 30, 2018.



Photograph 8. Feature S88 and creosote scrub in Study Area. Photo taken May 30, 2018.



Photograph 9. Feature S75 that originates from within the existing permit boundary and continues downstream (below) into the eastern portion of the Study Area.



Photograph 10. Feature S75 located in the eastern portion of the Study Area.



Photograph 11. Features S58 located on the southeastern edge of the Study Area. This feature originates from within the current permit boundary.



Photograph 12. Feature located in current permit boundary near 40th Street West and unnamed dirt road. Photo taken May 30, 2018.



Photograph 13. Site F01 (dry wash in creosote/Joshua tree woodland). Photograph taken May 30, 2018.



Photograph 14. Site F02 (creosote scrub with annuals, single thread runs parallel to base of hill), facing upstream. Photograph taken May 30, 2018.



Photograph 15. Features S62 north of Site D01 (loamy-sandy, flat plain west of alluvial fan on west side of Soledad Mountain). Photograph taken May 30, 2018.



Photograph 16. Site E01 (single thread in creosote scrub) facing upstream. Photograph taken May 30, 2018.



Photograph 17. Site E02 (dry wash in creosote scrubland). Photo taken May 30, 2018.



Photograph 18. Feature S85, steep, narrow, ephemeral channel described at cross-section J01, which is to the north. This feature extends through both the current permit boundary and Study Area. Photo taken May 31, 2018.



Photograph 19. Floodplain and secondary channel at Site J02, facing downstream. Photo taken May 31, 2018.



Photograph 20. Site H01 (gently sloping upper to mid alluvial fan creosote scrub), facing north. Photo taken May 30, 2018.

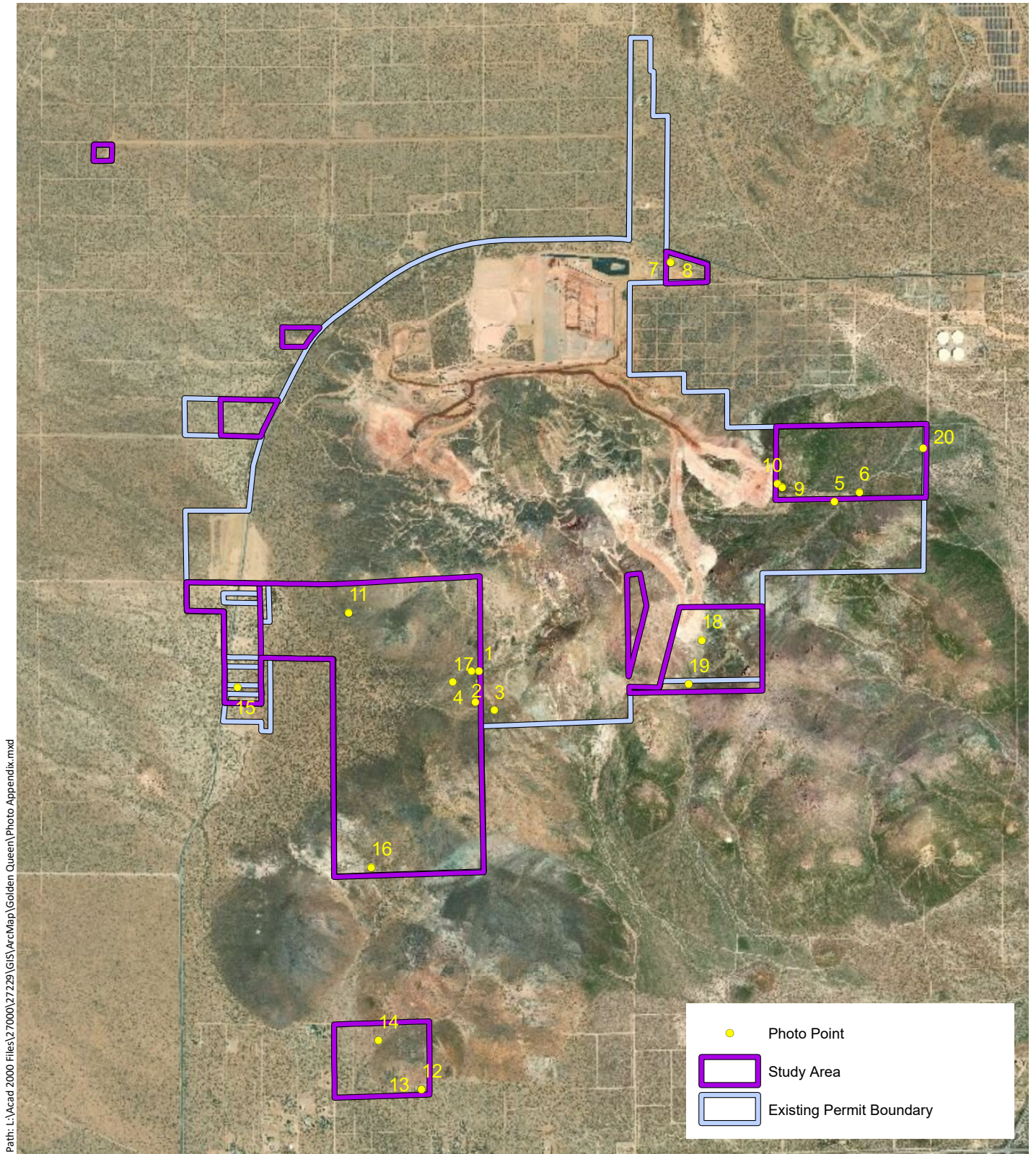


Figure 1. Photo Points

Golden Queen Mine
Kern County, California

