

Dr. Aaron Steinwand  
Inyo County Water Department  
135 South Jackson Street  
Independence, CA 93526

March 25, 2019

**RE: Summary of Hydrologic Monitoring Activities, March 2019**  
Rose Valley, Inyo County, California  
Hay Ranch Project Conditional Use Permit #2007-03

Dear Dr. Steinwand:

This letter summarizes hydrologic monitoring activities conducted in March 2019 by TEAM Engineering & Management, Inc. (TEAM), related to the Hay Ranch Water Extraction Project and CUP #2007-03.

### **Background**

As outlined in the Hay Ranch Water Extraction Final EIR's Hydrologic Monitoring and Mitigation Plan (HMMP), *Phase 1: Monitoring System Setup and Supplemental Data Collection* occurred prior to December 25, 2009 at monitoring points throughout Rose Valley. With the initiation of pumping by Coso Operating Company, LLC (COC) on December 25, 2009, the Hay Ranch Water Extraction Project entered into the *Phase 2: Startup Monitoring and Reporting* period. *Phase 3: Model Recalibration and Redefinition of Pumping Rates and Durations* occurred from September 2010 to April 2011, with recalibration of the groundwater model by Daniel B. Stephens & Associates (DBS&A) and with redefinition of pumping rates and durations by Inyo County Water Department (ICWD). With the April 1, 2011 issuance of the ICWD's "Addendum to the HMMP for CUP#2007-003/Coso Operating Company, LLC" (2011 ICWD Addendum) the project entered *Phase 4: Ongoing Monitoring, Mitigation and Reporting*. In 2013 further model revision occurred with results and new trigger levels detailed in ICWD's August 30, 2013 letter to COC regarding Conditional Use Permit #2007-003/Coso. In June 2014 further model revision was conducted by DBS&A with results and new trigger levels detailed in ICWD's June 27, 2014 letter to COC regarding Conditional Use Permit #2007-003/Coso. On June 20, 2016 the ICWD extended the June 30, 2016 cessation of pumping date to September 30, 2016 which allowed COC to pump up to the remaining volume from the 1,614 AF allowed for the previous year.

Re-evaluation of pumping rates and duration based on recalibration of the model was conducted by DBS&A in 2017. Continuation of pumping, at a rate not to exceed 1,611 acre-feet annually beginning on June 1, 2017, was approved in ICWD's June 27, 2017 letter to COC regarding Conditional Use Permit #2007-003/Coso. Revised Maximum Acceptable Drawdown and Drawdown at Cessation of Pumping values were provided to TEAM in the DBS&A report titled "Third Updated Groundwater Flow Model and Predictive Simulation Results, Coso Operating Company, Hay Ranch Water Extraction and Delivery System" dated August 24, 2017. On November 2, 2018 COC requested an evaluation be performed to determine if pumping could be extended past May 31, 2019. In a letter dated November 27, 2018, ICWD agreed to allow COC to pump the remaining volume from the amount permitted to be extracted from June 1, 2017 through May 31, 2019. This will allow COC to pump up to the remaining 1,936 AF from November 14, 2018 through May 31, 2021 as long as all other agreed upon conditions are followed.

## **Monitoring and Reporting**

During the March 2019 monthly hydrologic data collection event at the monitoring locations in the Rose Valley area, static depth-to-water (DTW) measurements, one visual observation of the Little Lake Ranch (LLR) Siphon Well Outflow and three sets of flow rates were collected by TEAM, as summarized in the attached table (Table 1). Data for this monthly field event was collected on March 13 and 14, 2019. Pressure transducer data was downloaded from monitoring units including one “BaroTroll” which records barometric pressure. In March, previous months measurement data for LADWP 816 Well were provided and current data were requested from LADWP personnel.

Figure 1 presents the combined amount of groundwater pumped from the Hay Ranch North and South wells, in acre-feet, from December 25, 2009 through January 16, 2019 compared to the maximum allowable pumping amounts. The total amount of groundwater extracted from the Hay Ranch property from December 25, 2009 to January 16, 2019 (Hay Ranch CUP project total) is approximately 17,796 AF. The totalizers for the Hay Ranch North and South wells were observed to be non-functional during the February and March 2019 field visits and measurements were unable to be collected. Coso personnel have indicated that the totalizers were fixed on March 21, 2019. The maximum allowable pumping rate was 3,000 acre-feet per year (AFY) for December 25, 2009 through December 31, 2010; was 4,839 AFY from January 2011 through August 2013; was 3,040 AFY from September 2013 through June 2014; was 1,614 AFY from July 2014 through June 2016, extended by ICWD through September 2016; and is 1,611 AFY from June 2017 through May 2019, extended by ICWD through May 31, 2021.

For the current pumping rate period (June 1, 2018 to May 31, 2019) an estimated 309 AF of groundwater, of the 1,611 AF allowable, have been extracted from the Hay Ranch property as of January 16, 2019.

For the extended pumping period (November 14, 2018 to May 31, 2021) totalizers have indicated an estimated 0.2 AF (65,000 Gallons) of groundwater, of the 1,936 AF allowable, have been extracted from the Hay Ranch Property through January 16, 2019.

## **Trigger Levels and Maximum Acceptable Drawdowns**

In the August 2017 DBS&A report, Trigger Levels and Maximum Acceptable Drawdowns were recommended for specific monitoring wells, based on a maximum allowable pumping rate of 1,611 AFY starting on June 1, 2017. These levels were incorporated into the updated Table 2 provided herein.

Based on the manual depth to water (DTW) data collected by TEAM on March 13, 2019, the Water Level at the Lego Well (RV-140) was measured in exceedance of its Trigger Level, by 0.18 feet. No action is required other than notification, until two triggers are exceeded by 0.25 feet or more.

Based on data collected by TEAM during the February to March 2019 monitoring period, none of the other Trigger Levels were exceeded at Hay Ranch Project monitoring wells which have baselines and trigger levels established (see Table 2). No Maximum Acceptable Drawdown levels have been reached during COC pumping under CUP #2007-03.

## **Operational Notes**

The totalizers for the Hay Ranch North and South wells were observed to be inoperable during the March 2019 field visit and measurements were unable to be collected. According to COC personnel the totalizers were repaired on March 21, 2019; measurements are anticipated to be collected in April 2019. COC has confirmed that it has not pumped groundwater from the Hay Ranch wells while the totalizer is inoperable. Hourly transducer depth-to-water measurements from the nearby cluster wells (RV-60, RV-61, RV-80 and RV-81) continue to provide monitoring oversight. There were no other significant operational issues observed during the reporting period.

## Data Transmittal

TEAM posted updates to the “Coso” database on the ICWD web server. Current Hay Ranch Project hydrographs in PDF form were uploaded to the ICWD website ([www.inyowater.org](http://www.inyowater.org)).

If you have any questions or require additional information, please contact TEAM at your convenience.

Sincerely,

TEAM Engineering & Management, Inc.



Greg M. Foote  
Senior Environmental Scientist

**TABLE 1**  
**Field Observations of Rose Valley Hydrologic Monitoring Points**  
**March 2019**

Project Name:	Hay Ranch Project HMMP	Date: March 13-14, 2019
Location:	Rose Valley, Inyo County	
Observer(s):	G. Foote	Page: 1 of 1

Well ID	Monitoring Point	Date	Time	DTW (ft)	Flow (cfs)	GWE (ft amsl)	Method	Transducer Log Interval	Notes
RV-10	Dews	NM	NM	NM	NA	NM	TEAM manual read	NA	
RV-20	LADWP 816	NM	NM	NM	NA	NM	LADWP manual read	NA	Data requested LADWP
RV-30	Cal Pumice	03/13/19	9:54	NA	NA	NA	TEAM manual read	Hourly	Measured to be dry to 238' below TOC in March 2019
RV-40	Dunmovin	NM	NM	NM	NA	NM	TEAM manual read	NA	Discontinued due to new in-well infrastructure
RV-50	Hay Ranch North	1/16/19 (1)	12:22	NM	No	NM	TEAM manual read	NA	3,760,812,576 gallons (11,542 AF) pumped since 12/25/09
RV-60	Hay Ranch 1A	03/13/19	13:24	193.93	NA	3238.25	TEAM manual read	Hourly	
RV-61	Hay Ranch 1B	03/13/19	13:19	199.81	NA	3232.04	TEAM manual read	Hourly	
RV-62	Hay Ranch 1C	03/13/19	13:13	196.43	NA	3235.07	TEAM manual read	NA	
RV-70	Hay Ranch South	1/16/19 (1)	0:00	NM	No	NM	TEAM manual read	NA	2,037,917,657 gallons (6,254 AF) pumped since 12/25/09
RV-80	Hay Ranch 2A	03/13/19	13:43	198.23	NA	3234.77	TEAM manual read	Hourly	
RV-81	Hay Ranch 2B	03/13/19	13:39	205.48	NA	3227.15	TEAM manual read	Hourly	
RV-82	Hay Ranch 2C	03/13/19	13:35	199.03	NA	3233.07	TEAM manual read	NA	
RV-90	Coso Jct Ranch	03/13/19	10:19	175.17	NA	3227.96	TEAM manual read	NA	
RV-100	Coso Jct Store #1	03/13/19	10:05	146.22	NA	3225.90	TEAM manual read	Hourly	
RV-110	Davis Ranch North Well	03/13/19	10:29	6.57	NA	3886.49	TEAM manual read	Hourly	
RV-111	Davis Ranch South Well	03/13/19	10:35	12.15	NA	3885.91	TEAM manual read	Hourly	Pump installed in DR South well in Aug 2015
RV-112	Davis Ranch South Flow	NM	NM	NM	NM	NM	TEAM manual read	NA	Discontinued: Flow actively managed
RV-120	Red Hill Well (BLM)	03/13/19	11:32	141.23	NA	3199.60	TEAM manual read	Hourly	
RV-130	G-36	03/13/19	12:49	183.08	NA	3196.94	TEAM manual read	NA	
RV-140	Lego	03/13/19	12:41	225.12	NA	3197.73	TEAM manual read	Hourly	
RV-150	Cinder Road	03/13/19	11:07	192.16	NA	3185.70	TEAM manual read	Hourly	Surveyed measuring point removed, DTW measured to TOC
RV-160	18-28 GTH	03/13/19	12:20	175.22	NA	3187.36	TEAM manual read	NA	
RV-170	Fossil Falls Campground	03/13/19	11:18	142.05	NA	3174.72	TEAM manual read	NA	
RV-180	LLR North Well	03/14/19	10:20	40.62	NA	3158.48	TEAM manual read	Hourly	
RV-210	LLR Dock Well	03/14/19	11:22	6.03	NA	3148.11	TEAM manual read	NA	Surveyed measuring point removed, DTW measured to TOC
RV-220	LLR Stilling Well (lake surface)	03/14/19	11:16	3.55	NA	3147.49	TEAM manual read	Hourly	
RV-230	LLR Little Lake Outflow	03/14/19	11:37	NA	1.57	NA	TEAM manual read	Hourly	
RV-240	LLR Coso Springs Flow	03/14/19	11:58	NA	0.47	NA	TEAM manual read	Hourly	
RV-245	LLR North Culvert Flow	03/14/19	12:17	NA	1.75	NA	TEAM manual read	Hourly	
RV-250	LLR Siphon Discharge	03/14/19	12:13	NA	Yes	NA	TEAM visual read	NA	Siphon Well flowing into Pond 2
RV-260	LLR Hotel Well	03/14/19	10:00	0.44	NA	3139.22	TEAM manual read	NA	Artesian

NM - not measured; NA - not applicable; IO - Inoperative; UA - Data currently unavailable

DTW - Depth to water in feet (ft) below top of casing or other reference point; a negative DTW indicates that the groundwater elevation is above the surveyed reference point

Flow - In cubic feet per second (cfs)

GWE- Groundwater elevation in feet above mean sea level (ft amsl)

1) Totalizers non-functional on February 20 and March 13, 2019.

**TABLE 2**  
**Hay Ranch Project Groundwater Baselines and Trigger Levels**  
**March 2019**

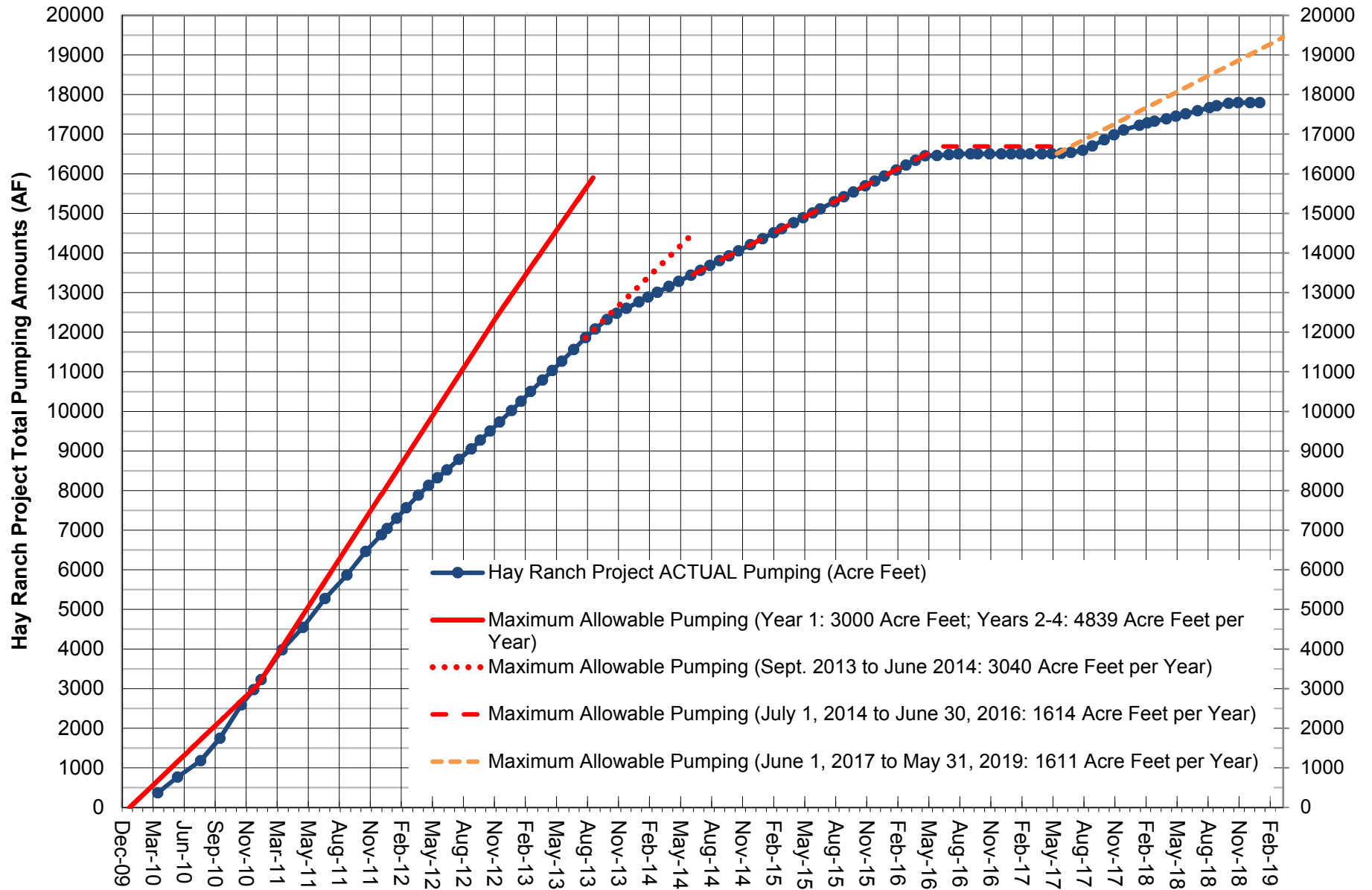
Well ID	Monitoring Point	Baseline GWE <sup>1</sup> (feet amsl)	Recent Date of Measurement	Recent GWE (feet amsl)	Recent GWE Compared to Baseline (feet)	Drawdown Trigger Level <sup>2</sup> (feet)	Recent GWE Compared to Trigger Level (feet)	Recent GWE Above Max Drawdown <sup>2</sup> (feet)
RV-80	HR 2A	3240.92	03/13/19	3234.77	-6.15	16.9	10.75	11.45
RV-90	Coso Jct Ranch	3230.65	03/13/19	3227.96	-2.69	9.60	6.91	7.01
RV-100	Coso Jct Store #1	3227.59	03/13/19	3225.90	-1.69	8.60	6.91	7.01
RV-120	Red Hill Well	3200.66	03/13/19	3199.60	-1.06	3.40	2.34	2.94
RV-130	G-36	3198.35	03/13/19	3196.94	-1.41	2.70	1.29	2.19
RV-140	Lego	3199.21	03/13/19	3197.73	-1.48	1.30	-0.18	1.22
RV-150	Cinder Road	3186.92	3/13/19 (3)	3185.70	-1.22	1.50	0.28	1.18
RV-160	18-28 GTH	3187.67	03/13/19	3187.36	-0.31	1.20	0.89	1.99
RV-180	LLR North Well	3158.88	03/14/19	3158.48	-0.40	0.70	0.30	1.00

1) GWE: Groundwater elevation measured in feet above mean sea level. Baseline GWEs set January 2010 and March 2011 and approved by Inyo County Water Department (ICWD).

2) Max DD and Trigger Level: Maximum Acceptable Drawdown and Drawdown Trigger Level from Table 4 of the "Third Updated Groundwater Flow Model and Predictive Simulation Results, Coso Operating Company Hay Ranch Water Extraction and Delivery System, Conditional Use Permit (CUP) 2007-003" Dated August 24, 2017.

3) Cinder Road well damaged in October 2017, surveyed measuring point removed. Accuracy of GWE calculation may be reduced.

**FIGURE 1**  
ACTUAL AND MAXIMUM ALLOWABLE PUMPING AMOUNTS (TOTALS) FOR HAY RANCH PROJECT



Note: The "maximum allowable pumping" is based on a pumping rate of 3000 AF/yr for 12/09 to 12/10, 4839 AF/yr for 1/11 to 8/13, 3040 AF/yr from 9/13 to 6/14, 1,614 AF/yr from 7/14 to 6/16 and 1611 AFY for 6/17 to 5/19.