

Dr. Bob Harrington
Inyo County Water Department
135 South Jackson Street
Independence, CA 93526

September 5, 2018

RE: Summary of Hydrologic Monitoring Activities, August 2018
Rose Valley, Inyo County, California
Hay Ranch Project Conditional Use Permit #2007-03

Dear Dr. Harrington:

This letter summarizes hydrologic monitoring activities conducted in August 2018 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, as long as all other conditions of the CUP #2007-03 were adhered to.

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 July 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.

Monitoring and Reporting

During the August 2018 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 August 22 and 23, 2018. Pressure transducer data was downloaded from monitoring units including one "BaroTroll" which records barometric pressure. Also in August, measurements from LADWP 816 Well were provided by 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 August 22, 2018 compared to the maximum allowable pumping amounts. The total amount of groundwater extracted from the Hay Ranch property from December 25, 2009 to August 22, 2018 (Hay Ranch CUP project total) is approximately 17,672 AF. 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.

For the current pumping rate period (June 1, 2018 to May 31, 2019) an estimated 185 AF of groundwater, of the 1,611 AF allowable, have been extracted from the Hay Ranch property as of July 18, 2018.

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 August 22-23, 2018, the Water Level at both the Lego Well (RV-140) and the Little Lake Ranch North Well (RV-180) were measured in exceedance of their Trigger Levels, by 0.06 and 0.07 feet respectively. As per the HMMP, no action is required until two or more triggers are exceeded by at least 0.25 feet or a maximum acceptable drawdown is reached.

Based on data collected by TEAM during the July to August 2018 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

A new transducer was installed in the North Culvert (RV-245) due to inaccurate measurement. Data for the previous four monthly monitoring periods for this location were adjusted under the direction of the ICWD. The transducer that was temporarily installed in the North Culvert was moved to the flume at Coso Springs (RV-240). The transducer installed in the LLR North Well (RV-180) experienced a battery failure and will be replaced in September 2018. 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).

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
August 2018

Project Name:	Hay Ranch Project HMMP	Date: August 22-23, 2018
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	08/08/18	13:35	77.01	NA	3438.05	LADWP manual read	NA	Data provided by LADWP
RV-30	Cal Pumice	NM	NM	NM	NA	UA	TEAM manual read	Hourly	Unable to measure DTW, sounder hit bottom around 250'
RV-40	Dunmovin	NM	NM	NM	NA	NM	TEAM manual read	NA	Discontinued due to new in-well infrastructure
RV-50	Hay Ranch North	08/22/18	12:48	NM	NA	NM	TEAM manual read	NA	3,720,586,057 gallons (11,418 AF) pumped since 12/25/09
RV-60	Hay Ranch 1A	08/22/18	13:15	194.62	NA	3237.55	TEAM manual read	Hourly	
RV-61	Hay Ranch 1B	08/22/18	12:56	206.64	NA	3225.21	TEAM manual read	Hourly	
RV-62	Hay Ranch 1C	08/22/18	12:53	200.30	NA	3231.20	TEAM manual read	NA	
RV-70	Hay Ranch South	08/22/18	12:49	NM	No	NM	TEAM manual read	NA	2,037,857,278 gallons (6,254 AF) pumped since 12/25/09
RV-80	Hay Ranch 2A	08/22/18	13:17	198.91	NA	3234.09	TEAM manual read	Hourly	
RV-81	Hay Ranch 2B	08/22/18	13:13	209.61	NA	3223.02	TEAM manual read	Hourly	
RV-82	Hay Ranch 2C	08/22/18	13:09	202.40	NA	3229.70	TEAM manual read	NA	
RV-90	Coso Jct Ranch	08/22/18	10:12	175.49	NA	3227.64	TEAM manual read	NA	
RV-100	Coso Jct Store #1	08/22/18	9:39	146.55	NA	3225.57	TEAM manual read	Hourly	
RV-110	Davis Ranch North Well	08/22/18	10:40	6.59	NA	3886.47	TEAM manual read	Hourly	
RV-111	Davis Ranch South Well	08/22/18	10:47	13.48	NA	3884.58	TEAM manual read	Hourly	Pump installed in DR South well
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)	08/22/18	9:52	141.20	NA	3199.63	TEAM manual read	Hourly	
RV-130	G-36	08/22/18	12:30	182.98	NA	3197.04	TEAM manual read	NA	
RV-140	Lego	08/22/18	12:20	225.00	NA	3197.85	TEAM manual read	Hourly	Well inaccessible in June 2018
RV-150	Cinder Road	08/22/18	11:22	192.21	NA	3185.75	TEAM manual read	Hourly	Surveyed measuring point removed, DTW measured to TOC
RV-160	18-28 GTH	08/22/18	12:01	175.12	NA	3187.46	TEAM manual read	NA	Well inaccessible in June 2018
RV-170	Fossil Falls Campground	08/22/18	11:35	142.06	NA	3174.71	TEAM manual read	NA	
RV-180	LLR North Well	08/23/18	9:58	40.99	NA	3158.11	TEAM manual read	Hourly	
RV-210	LLR Dock Well	08/23/18	10:36	6.92	NA	3147.22	TEAM manual read	NA	Surveyed measuring point removed, DTW measured to TOC
RV-220	LLR Stilling Well (lake surface)	08/23/18	10:41	4.50	NA	3146.54	TEAM manual read	Hourly	
RV-230	LLR Little Lake Outflow	08/23/18	11:32	NA	0.00	NA	TEAM manual read	Hourly	
RV-240	LLR Coso Springs Flow	08/23/18	11:43	NA	0.36	NA	TEAM manual read	Hourly	
RV-245	LLR North Culvert Flow	08/23/18	11:05	NA	0.40	NA	TEAM manual read	Hourly	
RV-250	LLR Siphon Discharge	08/23/18	11:32	NA	Yes	NA	TEAM visual read	NA	Siphon Well flowing into Pond 2
RV-260	LLR Hotel Well	08/23/18	9:45	0.74	NA	3138.04	TEAM manual read	NA	

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)

TABLE 2
Hay Ranch Project Groundwater Baselines and Trigger Levels
August 2018

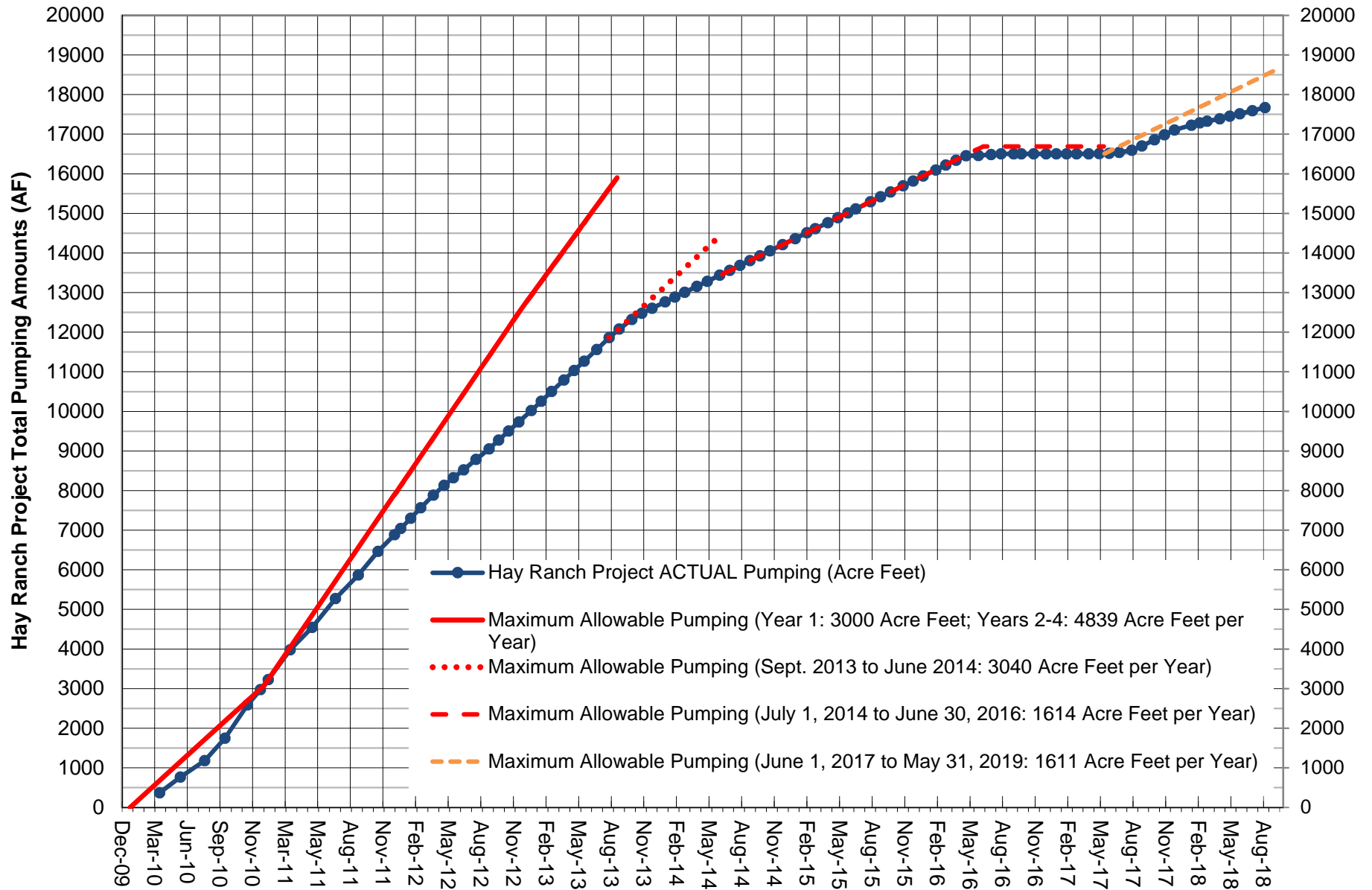
Well ID	Monitoring Point	Baseline GWE ¹ (feet amsl)	Recent Date of Measurement	Recent GWE (feet amsl)	Recent GWE Compared to Baseline (feet)	Drawdown Trigger Level ² (feet)	Recent GWE Compared to Trigger Level (feet)	Recent GWE Above Max Drawdown ² (feet)
RV-80	HR 2A	3240.92	08/22/18	3234.09	-6.83	16.9	10.07	10.77
RV-90	Coso Jct Ranch	3230.65	08/22/18	3227.64	-3.01	9.60	6.59	6.69
RV-100	Coso Jct Store #1	3227.59	08/22/18	3225.57	-2.02	8.60	6.58	6.68
RV-120	Red Hill Well	3200.66	08/22/18	3199.63	-1.03	3.40	2.37	2.97
RV-130	G-36	3198.35	08/22/18	3197.04	-1.31	2.70	1.39	2.29
RV-140	Lego	3199.21	08/22/18	3197.85	-1.36	1.30	-0.06	1.34
RV-150	Cinder Road	3186.92	8/22/18 (3)	3185.75	-1.17	1.50	0.33	1.23
RV-160	18-28 GTH	3187.67	08/22/18	3187.46	-0.21	1.20	0.99	2.09
RV-180	LLR North Well	3158.88	08/23/18	3158.11	-0.77	0.70	-0.07	0.63

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.