

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

October 31, 2013

**RE: Summary of Hydrologic Monitoring Activities October 2013**  
Rose Valley, Inyo County, California  
Hay Ranch Project Conditional Use Permit #2007-03

Dear Dr. Harrington:

This letter summarizes hydrologic monitoring activities conducted in October 2013 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 (Coso) 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 August 2013 further model revision occurred with results and new trigger levels detailed in ICWD's August 30, 2013 Letter to Chris Ellis, Site Manager, Coso Operating Company, LLC regarding Conditional Use Permit #2007-003/Coso.

### **Monitoring and Reporting**

During the October 2013 monthly hydrologic data collection event at 30 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 four 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 October 23 and 24. Pressure transducer data was downloaded from 24 units, including one "BaroTroll" measuring barometric pressure. On October 8, a DTW measurement at LADWP 816 Well was taken by LADWP personnel.

At the Hay Ranch Property, Coso has pumped groundwater from two production wells: Hay Ranch North and Hay Ranch South. For the current year of project pumping, January 1, 2013 to October 23, 2013, a total of approximately 2,422 AF of groundwater have been extracted from the Hay Ranch property (2,367AF from the Hay Ranch North Well, and 55 AF from the Hay Ranch South Well).

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 October 23, 2013 compared to a hypothetical pumping amount. The total amount of groundwater extracted from the Hay Ranch property from December 25, 2009 to October 23, 2013 (Hay Ranch CUP project total) is approximately 12,320 AF. The hypothetical pumping amount assumes a pumping rate of approximately 3,000 acre-feet per year (AFY)

for December 25, 2009 through December 31, 2010; assumes a pumping rate of approximately 4,839 AFY from January 1, 2011 through August 30, 2013; and assumes a pumping rate of approximately 3,040 AFY from September 2013 to date. These hypothetical pumping rates represent the maximum allowable pumping amounts for the 2010-2013 periods.

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

In Table 1 of the August 30, 2013 ICWD Letter to Coso Operating Company, drawdown at cessation of pumping trigger levels (Trigger Levels) have been set for specific monitoring wells based on a pumping rate of 3,040 AFY.

Based on the manual DTW data collected by TEAM on October 23-24, 2013, the Trigger Level for the Little Lake Ranch (LLR) North (RV180) has been exceeded.

The baseline groundwater elevation (GWE) for LLR North, set by Inyo County Water Department in January 2010, is 3158.88 feet. The GWE at LLR North as measured at 10:05 on October 24 was 3158.62 feet. The Trigger Level for LLR North is 0.00 feet. The LLR North GWE has decreased by 0.26 feet compared to its baseline, exceeding its Trigger Level by 0.26 feet (Table 2). The October 24 LLR North GWE was 0.84 feet above its Maximum Acceptable Drawdown level.

Based on data collected by TEAM during the October 2013 monitoring event, no other Trigger Levels or Maximum Acceptable Drawdowns have been exceeded at Hay Ranch Project monitoring wells which have baselines and trigger levels established.

### **Operational Notes**

During the September to October 2013 period, the following operational issues were noted. Summer root growth occurred at the Davis Ranch Flume. The roots were removed during the October field event. The pressure transducer installed in HR 2A Well (RV80) had a power supply issue; a battery back-up will be installed during the November field event.

### **Data Transmittal**

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

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

Sincerely,

TEAM Engineering & Management, Inc.

Keith Rainville  
Staff Geologist

**TABLE 1**  
**Field Observations of Rose Valley Hydrologic Monitoring Points**  
**October 23-24, 2013**

Project Name:	Hay Ranch Project HMMP	Date: October 23-24, 2013
Location:	Rose Valley, Inyo County	
Observer(s):	K. Rainville	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	10/23/13	15:15	231.55		3755.37	TEAM manual read	NA	
RV-20	LADWP 816	10/08/13	13:57	77.72		3437.34	LADWP manual read	NA	Data provided by LADWP
RV-30	Cal Pumice	10/23/13	10:15	260.65		3245.24	TEAM manual read	Hourly	
RV-40	Dunmovin	10/24/13	9:00	306.65		3241.22	TEAM manual read	NA	
RV-50	Hay Ranch North	10/23/13	13:45	NM	Yes	NM	TEAM manual read	NA	2,079,014,059 gallons (6380 AF) pumped since 12/25/09
RV-60	Hay Ranch 1A	10/23/13	13:55	200.85		3231.32	TEAM manual read	Hourly	
RV-61	Hay Ranch 1B	10/23/13	14:05	299.95		3131.90	TEAM manual read	Hourly	
RV-62	Hay Ranch 1C	10/23/13	14:12	227.00		3204.50	TEAM manual read	Hourly	
RV-70	Hay Ranch South	10/23/13	13:46	NM	No	NM	TEAM manual read	NA	1,935,578674 gallons (5940 AF) pumped since 12/25/09
RV-80	Hay Ranch 2A	10/23/13	14:39	201.50		3231.50	TEAM manual read	Hourly	
RV-81	Hay Ranch 2B	10/23/13	14:33	224.03		3208.60	TEAM manual read	Hourly	
RV-82	Hay Ranch 2C	10/23/13	14:25	215.10		3217.00	TEAM manual read	Hourly	
RV-90	Coso Jct Ranch	10/23/13	10:40	174.25		3228.88	TEAM manual read	Hourly	
RV-100	Coso Jct Store #1	10/23/13	11:00	147.27		3224.85	TEAM manual read	Hourly	
RV-110	Davis Ranch North Well	10/24/13	12:25	6.55		3886.51	TEAM manual read	Hourly	
RV-111	Davis Ranch South Well	10/24/13	12:40	11.31		3886.75	TEAM manual read	Hourly	
RV-112	Davis Ranch South Flow	10/24/13	12:55	NA	0.01	NA	TEAM manual read	Hourly	
RV-120	Red Hill Well (BLM)	10/23/13	11:25	140.11		3200.72	TEAM manual read	Hourly	
RV-130	G-36	10/23/13	11:45	181.22		3198.80	TEAM manual read	NA	
RV-140	Lego	10/23/13	13:25	223.08		3199.77	TEAM manual read	Hourly	
RV-150	Cinder Road	10/23/13	12:15	191.29		3186.67	TEAM manual read	Hourly	
RV-160	18-28 GTH	10/23/13	13:00	174.12		3188.46	TEAM manual read	Hourly	
RV-170	Fossil Falls Campground	10/23/13	12:00	141.41		3175.36	TEAM manual read	NA	
RV-180	LLR North Well	10/24/13	10:05	40.48		3158.62	TEAM manual read	Hourly	
RV-210	LLR Dock Well	10/24/13	10:25	6.58		3147.56	TEAM manual read	Hourly	
RV-220	LLR Stilling Well (lake surface)	10/24/13	10:35	4.05		3146.99	TEAM manual read	Hourly	
RV-230	LLR Little Lake Outflow	10/24/13	11:15	NA	0.04	NA	TEAM manual read	Hourly	
RV-240	LLR Coso Springs Flow	10/24/13	10:55	NA	0.39	NA	TEAM manual read	Hourly	
RV-245	LLR North Culvert Flow	10/24/13	11:30	NA	0.74	NA	TEAM manual read	Hourly	
RV-250	LLR Siphon Discharge	10/24/13	11:25	NA	Yes	NA	TEAM visual read	NA	Siphon Well flowing into Pond 2
RV-260	LLR Hotel Well	10/24/13	12:01	0.70		3138.08	TEAM manual read	Hourly	

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**  
**October 2013**

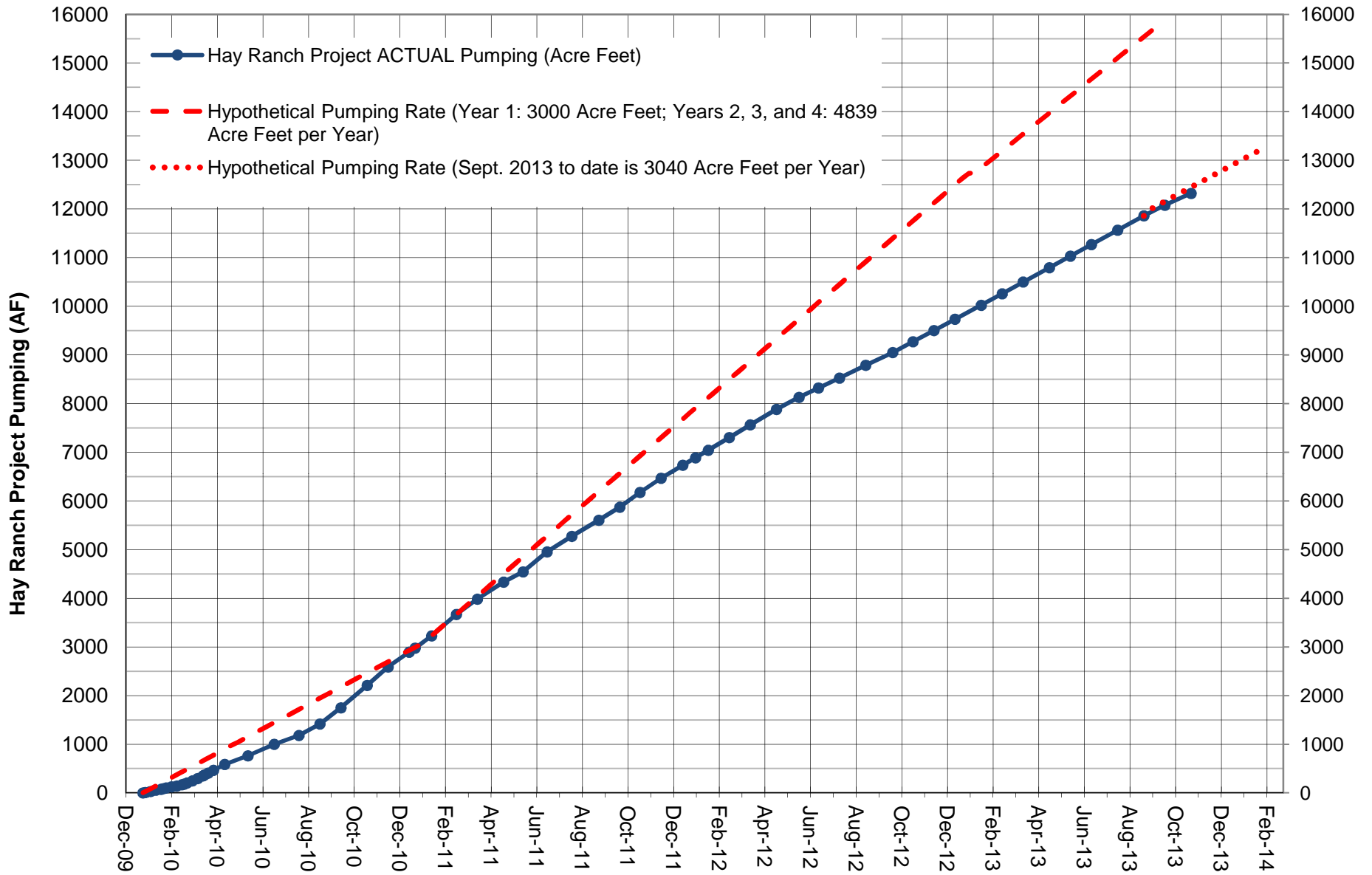
Well ID	Monitoring Point	Baseline GWE <sup>1</sup> (feet amsl)	Recent Date of Measurement	Recent GWE (feet amsl)	Recent GWE Compared to Baseline (feet)	Trigger Level At Cessation of Pumping <sup>3</sup> (feet)	Recent GWE Compared to Trigger Level (feet)	Recent GWE Above Max DD <sup>2</sup> (feet)
RV-40	Dunmovin	3252.73	10/24/13	3241.22	-11.51	21.4	9.89	9.89
RV-80	HR 2A	3240.92	10/23/13	3231.50	-9.42	19.0	9.58	9.58
RV-90	Coso Jct Ranch	3230.65	10/23/13	3228.88	-1.77	9.0	7.23	7.63
RV-100	Coso Jct Store #1	3227.59	10/23/13	3224.85	-2.74	7.7	4.96	5.46
RV-120	Red Hill Well	3200.66	10/23/13	3200.72	0.06	1.8	1.86	3.36
RV-130	G-36	3198.35	10/23/13	3198.80	0.45	1.1	1.55	3.35
RV-140	Lego	3199.21	10/23/13	3199.77	0.56	0.1	0.66	2.46
RV-150	Cinder Road	3186.92	10/23/13	3186.67	-0.25	0.3	0.05	1.65
RV-160	18-28 GTH	3187.67	10/23/13	3188.46	0.79	0.1	0.89	2.59
RV-180	LLR North Well	3158.88	10/24/13	3158.62	-0.26	0.0	-0.26	0.84

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: Maximum Acceptable Drawdown from Table 1 of ICWD's "August 30, 2013 Conditional Use Permit#2007-003/Coso "

3) Trigger Level at Cessation of Pumping from Table 1 of ICWD's "August 30, 2013 Conditional Use Permit#2007-003/Coso "

**FIGURE 1**  
**HYPOTHETICAL AND ACTUAL HAY RANCH PROJECT PUMPING**



Note: Coso Operating Co. initiated Hay Ranch Project pumping on 12/25/09.  
 The "hypothetical pumping rate" is based on a pumping rate of 3000 AF per year for 12/25/09 to 12/31/10, and 4839 AF per year for 2011 and 2012.