

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

September 7, 2016

**RE: Summary of Hydrologic Monitoring Activities, August 2016**  
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 2016 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 allows COC to pump the remaining volume from the 1,614 AF allowed for the previous year, as long as all other conditions of the CUP #2007-03 are adhered to.

## **Monitoring and Reporting**

During the August 2016 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 17 and 18, 2016. Pressure transducer data was downloaded from monitoring

units, including one “BaroTroll” measuring barometric pressure. Also in August, a DTW measurement from LADWP 816 Well was 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 August 17, 2016 compared to the maximum allowable pumping amounts. The total amount of groundwater extracted from the Hay Ranch property from December 25, 2009 to August 17, 2016 (Hay Ranch CUP project total) is approximately 16,502 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 1, 2011 through August 30, 2013; was 3,040 AFY from September 2013 through June 2014; is 1,614 AFY from July 1, 2014 to June 30, 2016; extended by ICWD to September 30, 2016. As indicated on Figure 1, Coso Operating Company has pumped less than the maximum allowable amount of groundwater from the Hay Ranch Wells, for each respective period.

For the current pumping rate period (July 1, 2015 to September 30, 2016) an estimated 1,425 AF of groundwater, of the 1,614 AF allowable, have been extracted from the Hay Ranch Property as of August 17, 2016. Based on the June 20 ICWD letter, the remaining amount for the pumping year (approximately 189 AF) can be pumped through September 30, 2016.

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

In Table 1 of the June 27, 2014 ICWD Letter to Coso Operating Company, Drawdown at Cessation of Pumping Trigger Levels (Trigger Levels) and Maximum Acceptable Drawdowns have been set for specific monitoring wells, based on a pumping rate of 1,614 AFY starting on July 1, 2014.

Based on the manual depth to water (DTW) data collected by TEAM on August 17 and 18, 2016, the Water Levels at the Lego Well and Little Lake Ranch North Well (LLR North) were measured in exceedance of their Trigger Levels by 0.19 feet and 0.28 feet, respectively.

The GWE at Lego was measured at 09:28 on August 17, 2016 was 3198.32 feet. The Trigger Level for Lego well is 0.70 feet. The Lego GWE has decreased by 0.89 feet compared to its 2010 baseline (3199.21), exceeding its Trigger Level. On August 17, 2016, Lego GWE was 1.51 feet above its Maximum Acceptable Drawdown level.

The GWE at LLR North as measured at 10:10 on August 18, 2016, was 3158.20 feet. The Trigger Level for LLR North is 0.40 feet. The LLR North GWE has decreased by 0.68 feet compared to its 2010 baseline (3158.88), exceeding its Trigger Level. On August 18, 2016, the LLR North GWE was 0.62 feet above its Maximum Acceptable Drawdown level.

Based on data collected by TEAM during the July to August 2016 monitoring period, none of the other Trigger Levels were exceeded at Hay Ranch Project monitoring wells which have baselines and trigger levels established (Table 2). No Maximum Acceptable Drawdown levels have been reached during COC pumping under CUP #2007-03.

## Operational Notes

During the August 2016 monitoring event, the pressure transducer in HR-1B (RV-61) was replaced. Used transducers were placed in Coso Junction Ranch well (RV-90) and the Hay Ranch 1C well (RV-62) in order to collect additional data for the upcoming pump test on the new deep well on the Hay Ranch property.

## 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  
Project Scientist

**TABLE 1**  
**Field Observations of Rose Valley Hydrologic Monitoring Points**  
**August 2016**

|               |                          |                          |
|---------------|--------------------------|--------------------------|
| Project Name: | Hay Ranch Project HMMP   | Date: August 17-18, 2016 |
| 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 provided by LADWP                                  |
| RV-30   | Cal Pumice                       | 08/17/16 | 10:36 | 255.12   | NA         | 3250.77       | TEAM manual read  | Hourly                  |   |
| RV-40   | Dunmovin                         | NM       | NM    | NM       | NA         | NM            | TEAM manual read  | NA                      | Discontinued due to new in-well infrastructure          |
| RV-50   | Hay Ranch North                  | 08/17/16 | 12:56 | NM       | No         | NM            | TEAM manual read  | NA                      | 3,340,256,947 gallons (10,251 AF) pumped since 12/25/09 |
| RV-60   | Hay Ranch 1A                     | 08/17/16 | 14:08 | 201.12   | NA         | 3231.05       | TEAM manual read  | Hourly                  |   |
| RV-61   | Hay Ranch 1B                     | 08/17/16 | 13:58 | 214.50   | NA         | 3217.35       | TEAM manual read  | Hourly                  |   |
| RV-62   | Hay Ranch 1C                     | 08/17/16 | 13:36 | 210.44   | NA         | 3221.06       | TEAM manual read  | NA                      |   |
| RV-70   | Hay Ranch South                  | 08/17/16 | 12:57 | NM       | No         | NM            | TEAM manual read  | NA                      | 2,036,924,603 gallons (6,251 AF) pumped since 12/25/09  |
| RV-80   | Hay Ranch 2A                     | 08/17/16 | 14:40 | 202.32   | NA         | 3230.68       | TEAM manual read  | Hourly                  |   |
| RV-81   | Hay Ranch 2B                     | 08/17/16 | 14:33 | 216.12   | NA         | 3216.51       | TEAM manual read  | Hourly                  |   |
| RV-82   | Hay Ranch 2C                     | 08/17/16 | 14:26 | 207.66   | NA         | 3224.44       | TEAM manual read  | NA                      |   |
| RV-90   | Coso Jct Ranch                   | 08/17/16 | 12:27 | 175.35   | NA         | 3227.78       | TEAM manual read  | NA                      |   |
| RV-100  | Coso Jct Store #1                | 08/17/16 | 11:06 | 147.59   | NA         | 3224.53       | TEAM manual read  | Hourly                  |   |
| RV-110  | Davis Ranch North Well           | 08/17/16 | 11:46 | 6.58     | NA         | 3886.48       | TEAM manual read  | Hourly                  |   |
| RV-111  | Davis Ranch South Well           | 08/17/16 | 11:56 | 13.59    | NA         | 3884.47       | TEAM manual read  | Hourly                  | Pump installed in DR South well                         |
| RV-112  | Davis Ranch South Flow           | NM       | NM    | NM       | NM         | NM            | NM                | NA                      | Discontinued: Flow actively managed                     |
| RV-120  | Red Hill Well (BLM)              | 08/17/16 | 11:21 | 140.84   | NA         | 3199.99       | TEAM manual read  | Hourly                  |   |
| RV-130  | G-36                             | 08/17/16 | 9:36  | 182.52   | NA         | 3197.50       | TEAM manual read  | NA                      |   |
| RV-140  | Lego                             | 08/17/16 | 9:28  | 224.53   | NA         | 3198.32       | TEAM manual read  | Hourly                  |   |
| RV-150  | Cinder Road                      | 08/17/16 | 10:16 | 191.94   | NA         | 3186.02       | TEAM manual read  | Hourly                  |   |
| RV-160  | 18-28 GTH                        | 08/17/16 | 9:09  | 174.83   | NA         | 3187.75       | TEAM manual read  | NA                      |   |
| RV-170  | Fossil Falls Campground          | 08/17/16 | 10:01 | 141.87   | NA         | 3174.90       | TEAM manual read  | NA                      |   |
| RV-180  | LLR North Well                   | 08/18/16 | 10:10 | 40.90    | NA         | 3158.20       | TEAM manual read  | Hourly                  |   |
| RV-210  | LLR Dock Well                    | 08/18/16 | 10:30 | 7.15     | NA         | 3146.99       | TEAM manual read  | NA                      |   |
| RV-220  | LLR Stilling Well (lake surface) | 08/18/16 | 10:35 | 4.91     | NA         | 3146.13       | TEAM manual read  | Hourly                  | Inside of well casing filled with silt                  |
| RV-230  | LLR Little Lake Outflow          | 08/18/16 | 11:07 | NA       | 0.00       | NA            | TEAM manual read  | Hourly                  |   |
| RV-240  | LLR Coso Springs Flow            | 08/18/16 | 11:20 | NA       | 0.34       | NA            | TEAM manual read  | Hourly                  |   |
| RV-245  | LLR North Culvert Flow           | 08/18/16 | 11:44 | NA       | 0.55       | NA            | TEAM manual read  | Hourly                  |   |
| RV-250  | LLR Siphon Discharge             | 08/18/16 | 11:37 | NA       | Yes        | NA            | TEAM visual read  | NA                      | Siphon Well flowing into Pond 2                         |
| RV-260  | LLR Hotel Well                   | 08/18/16 | 9:55  | 1.00     | NA         | 3137.78       | 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 2016**

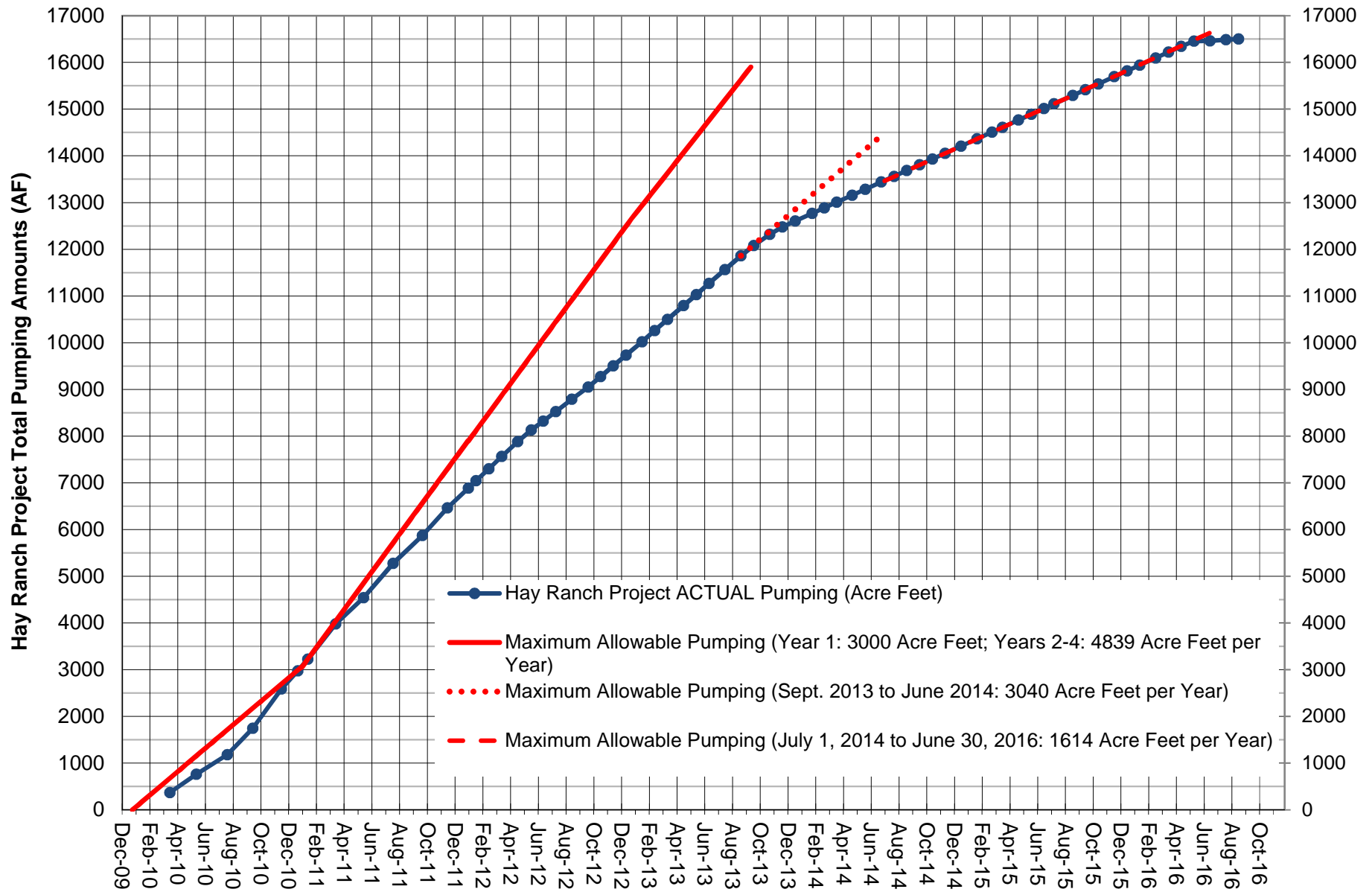
| Well ID | Monitoring Point  | Baseline GWE <sup>1</sup><br>(feet amsl) | Recent Date<br>of Measurement | Recent GWE<br>(feet amsl) | Recent GWE<br>Compared to Baseline<br>(feet) | Drawdown<br>Trigger Level <sup>3</sup><br>(feet) | Recent GWE<br>Compared to Trigger Level<br>(feet) | Recent GWE<br>Above Max DD <sup>2</sup><br>(feet) |
|---------|-------------------|--|-------------------------------|---------------------------|--|--|---|---|
| RV-80   | HR 2A             | 3240.92                                  | 08/17/16                      | 3230.68                   | -10.24                                       | 15.3   | 5.06  | 6.26  |
| RV-90   | Coso Jct Ranch    | 3230.65                                  | 08/17/16                      | 3227.78                   | -2.87  | 9.30   | 6.43  | 6.43  |
| RV-100  | Coso Jct Store #1 | 3227.59                                  | 08/17/16                      | 3224.53                   | -3.06  | 8.30   | 5.24  | 5.34  |
| RV-120  | Red Hill Well     | 3200.66                                  | 08/17/16                      | 3199.99                   | -0.67  | 3.00   | 2.33  | 3.13  |
| RV-130  | G-36              | 3198.35                                  | 08/17/16                      | 3197.50                   | -0.85  | 2.20   | 1.35  | 2.45  |
| RV-140  | Lego              | 3199.21                                  | 08/17/16                      | 3198.32                   | -0.89  | 0.70   | -0.19   | 1.51  |
| RV-150  | Cinder Road       | 3186.92                                  | 08/17/16                      | 3186.02                   | -0.90  | 1.00   | 0.10  | 1.40  |
| RV-160  | 18-28 GTH         | 3187.67                                  | 08/17/16                      | 3187.75                   | 0.08   | 0.70   | 0.78  | 2.18  |
| RV-180  | LLR North Well    | 3158.88                                  | 08/18/16                      | 3158.20                   | -0.68  | 0.40   | -0.28   | 0.62  |

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 "June 27, 2014 Conditional Use Permit#2007-003/Coso "

3) "Trigger Level at Cessation of Pumping" from Table 1 of ICWD's "June 27, 2014 Conditional Use Permit#2007-003/Coso ".

**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, and 1,614 AF/yr from 7/14 to 6/16.