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BEFORE THE
STATE WATER RESOURCES CONTROL BOARD

In Re:
Emmerson Investment Inc.
Shasta River Tributary to Klamath River in
Siskiyou County
Proposed Revocation of Permits 19164 and
19165 (Applications 26306 and 26307)

**WRITTEN TESTIMONY OF JOE SCOTT,
DEPARTMENT OF WATER RESOURCES
WATERMASTER**

DATE: July 20, 2009
TIME: 9:00 a.m.

My name is Joe Scott, and I am employed by the California Department of Water Resources, Division of Planning and Local Assistance, Northern District Office as a Water Resources Tech II. Since 2001 to present, I have performed watermaster duties. Exhibit No. 50, attached hereto, describes the qualifications and duties of my position.

In 2001 and 2003, I spent a significant portion of my time assisting Keith Dick, the Watermaster for the Lower Shasta River (i.e., that portion of the river downstream of Lake Shastina/Dwinnell Reservoir) administer water diversions under the Shasta River Adjudication, Superior Court, Siskiyou County No. 7035 (“water rights decree” or “decree.”) Mr. Dick trained me on lower Shasta River watermaster duties; as far as I know, the tasks I performed and continue to perform on the lower Shasta are consistent with what Mr. Dick has done previously. Exhibit 47 is a map showing the portions of the Lower Shasta River subject to the Decree in the vicinity of the points of diversion for Permit Nos. 19164 and 19165.

In 2004, I was the Watermaster administering the adjudication for the Lower Shasta River. From 2005 to present, while my primary assignment has been as a Watermaster for the upper Shasta River and Scott River, I have continued to assist the Lower Shasta River Watermaster. As a long-time Watermaster, I am very familiar with the conditions on the lower Shasta River, the

1 diversions and the operation of the Shasta River.

2 As Watermaster my duties are to implement a water decree or order issued by a court or
3 by the State Water Resources Control Board. My principal duty, and that of the other
4 Watermasters on the Shasta River, is to ensure that each water user identified in the water rights
5 decree takes only what that user is entitled to divert. This is performed by setting the diversion
6 rates at the water diversion headgates. To be able to accurately set flows at diversion points, it is
7 a necessary part of my job to periodically measure water flow on various other waterways
8 covered by the decree. In addition, as watermaster, I regularly answer questions about the water
9 rights granted by the decree and I also regularly help informally resolve disputes between water
10 users.

11 Watermaster activities in the Scott-Shasta area generally begin April 1 and continue
12 through October 30, but may begin earlier if a diversion is requested by a water user on the river.

13 **OVERVIEW OF THE LOWER SHASTA RIVER**

14 Only appropriate rights to the water from the Shasta River have been adjudicated under
15 the water rights decree. The decree governs distribution of water stored in Dwinnell Reservoir.
16 Operation of the river is complicated in that riparian water rights were not adjudicated in the
17 Decree and therefore are not controlled by the Watermaster.

18 Water rights holders under the adjudication include those known as "prior rights holders."
19 Prior rights holders are water users holding rights whose diversion points were impacted by the
20 construction of Dwinnell Reservoir. The owners of Hole in the Ground Ranch (Ranch) are the
21 successors in interest to rights found in paragraphs 72, 355, 356, 382, and 383 of the decree. The
22 diversion points for the water rights defined in these paragraphs were impacted by Dwinnell
23 Reservoir as explained above. The Ranch's predecessors in interest agreed to acquiesce in the
24 construction of Dwinnell Dam upstream of their Ranch in exchange for the right to water stored
25 in the reservoir. The total of storage so substituted is 1,520 acre feet per year.

26 The Ranch holds permits issued by the State Water Resources Control Board, which in
27 total, grant the ability to divert 19 cfs. The Ranch may divert its permitted rights only when the
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1 Watermaster determines excess (or “surplus”) water exists in Shasta River. The Watermaster
2 must authorize the diversion before the Ranch takes the water.

3 When I acted as the lower Shasta River Watermaster, I determined surplus flows existed
4 on the lower Shasta River when flows at a particular measuring station reach 35 cfs. This gauge,
5 “Shasta River Near Montague,” maintained by the USGS, is located about a mile south of the
6 town of Montague. DWR has determined that when flows at the Montague gauge reach 20 cfs
7 enough water is available to meet the full rights of the decreed users downstream of the Montague
8 gauge. Over the years DWR has identified 15 cfs as an additional buffer or safety flow, that in
9 our experience provides the watermaster the flexibility to operate the system.

10 It is my opinion that the source of surplus water includes spring flows and water spilled
11 from Dwinnell Reservoir. The exception is that, beginning in May, when the flow at the
12 Montague Gauge is less than 35 cfs, the spring flows and spills from Lake Shastina may be
13 needed to meet adjudicated water rights of users located downstream of the Montague gauge, so
14 these contributions are not considered excess. Seepage from Lake Shastina appears to be a
15 significant contributor to springs located just below the dam, which are a source of surplus water
16 in the Shasta River. In particular, there appear to be substantial spring discharges when Lake
17 Shastina is at or above about 65 percent of its full capacity.

18 The Watermaster typically notifies water right holders early in the year of the probable
19 availability of water in the upcoming year, which assists the right holders in planning their
20 operations. Ranch operations along the lower Shasta River generally involve maximizing use of
21 surplus water which is usually available through about June 15. By maximizing this early use of
22 surplus water, the adjudicated water stored in Lake Shastina can be preserved for use later in the
23 year.

24 As a general rule, it is the Watermaster who operates the diversion works for those with
25 adjudicated water rights, while riparian right holders generally operate their own diversion works.
26 In some cases, a decreed right holder may operate his or her own gate with the consent of the
27 Watermaster, but for Hole-in-the-Ground Ranch, the Watermaster always opens the headgate to
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1 initiate diversions, regardless of whether the diversion is of stored Dwinnell Reservoir water or
2 surplus water.

3 The process of operating the Ranch's diversion is typically initiated by the Ranch's staff
4 contacting the Watermaster and requesting that water be diverted. The Watermaster then
5 evaluates the conditions on the Shasta River, and determines if the diversion can be made using
6 surplus water, or if the diversion will require the release of water from Dwinnell Reservoir. As
7 part of this process, the Watermaster lets the Ranch know whether the delivery will be made
8 using stored reservoir water, surplus water, or a mix. This means that the Ranch is responsible to
9 schedule its water stored in Dwinnell Reservoir to best meet its water requirements for the year.
10 If neither stored water nor surplus water is available, then the Watermaster will not divert water
11 for the user.

12 At the end of the time the Ranch desires water, either the Watermaster or the Ranch may
13 close the diversion gate. The Watermaster is typically notified at that time, particularly because
14 he is keeping records of the stored water released and remaining in each water right holder's
15 allocation.

16 **OPERATION OF DIVERSIONS FOR THE HOLE-IN-THE-GROUND RANCH**

17 The operation of the Ranch diversions is similar to the operation of other irrigation
18 diversions on the lower Shasta River. The one complicating factor for the Ranch's diversions is
19 that the same diversions facilities are used to divert both stored water rights and surplus water
20 diverted under the Ranch's State Water Resources Control Board Permits.

21 Near the beginning of the diversion season, the Watermaster typically informs the Ranch
22 manager of the expected availability of water, to allow the Ranch to plan its operations for the
23 year. The Ranch then contacts the Watermaster requesting that water be diverted, the
24 Watermaster determines if all or a portion of the diversion request can be met with surplus water,
25 and then informs the Ranch manager of that determination.

26 For the time I spent as Watermaster, I opened the gate to begin diversions at Hole in the
27 Ground Ranch at each of the diversion points. At the end of the diversion period, I closed the
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1 gate on the diversion facility. While diversions were taking place, I periodically visited the
2 diversion, and collected the flow records from the Stevens recorders installed at each of the
3 Ranch's diversion gates.

4 **FLOW MEASUREMENTS AND RECORD KEEPING**

5 Both of the diversions on the Ranch (identified as Diversion No. 165 and Diversion No.
6 166 in the Shasta River Adjudication) are equipped with Parshall flumes which are used to
7 measure the rate of diversion. The flow is measured in a throat of the Parshall flume with vertical
8 sides. The depth of water in the throat is measured, and the associated flow through that section
9 is determined using a "rating curve," which relates the depth of water to the flow rate. The
10 average gauge height for each day is used to determine the average flow in cubic feet per second
11 ("cfs") for that day. Exhibit 42 consists of photographs of one of the Parshall flumes for the
12 Ranch diversion.

13 Each of the flumes is also equipped with a Stevens f-type recorder. That recorder
14 provides a continuous record of the water depth at the flume over time. The paper record
15 produced is collected and analyzed once a month. This record provides the basis to document the
16 amounts of diversion. This record-keeping system has been in place as long as I have been
17 involved with the Watermaster service on the lower Shasta River. Exhibit 51 is an accurate copy
18 of the records that I kept for 2004 documenting the diversions at each of the diversions of the
19 Ranch.

20 I understand that the Watermaster flow records for 2002 and earlier years cannot now be
21 located. I do not know but have no reason to doubt that those lost records would have been
22 recorded and collected in the same manner as those that are currently kept.

23 While the Watermaster is not responsible to measure or record bypass flows, I am aware
24 of the 1 cfs bypass requirement at the two Ranch's diversion points. I have worked with the
25 Ranch to implement an orifice design, developed by the Water Board staff, to ensure that a
26 minimum 1 cfs always flows past each of the diversion points. In my experience, this is an
27 unusual permit requirement, because a device to ensure such a minimum flow will also often
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1 constitute a potential barrier to fish passage. While to my knowledge the DWR watermaster kept
2 no records of its operation, I took photographs of one of these devices in operation in about the
3 summer of 2004. I attach these photographs as Exhibit 43. I have typically made sure that the
4 orifice was not plugged by debris when I visited these diversion facilities.

5 I have also been involved in the recent installation of rock weirs at both of these
6 diversions to replace the previous diversion dam and orifice structure. Because water passes
7 through the rocks of the weir at multiple points, it is not possible to readily measure the bypass
8 flows. Based on my experience in judging flows visually, it appears that the flows are consistent
9 with the historic bypass amount, one cfs per diversion point.

10 I have not had direct contact with the Water Board staff, and have not forwarded diversion
11 or flow records to the Water Board staff. DWR watermaster records are kept in the Red Bluff
12 office of the Department of Water Resources. I have not been contacted by Water Board staff
13 with questions about those records.

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Emmerson Investment Inc.

Shasta River Tributary to Klamath River in
Siskiyou County

Proposed Revocation of Permits 19164 and
19165 (Applications 26306 and 26307)

**TESTIMONY OF IRA ALEXANDER,
DEPARTMENT OF WATER RESOURCES
WATERMASTER**

DATE: July 20, 2009

TIME: 9:00 a.m.

I am employed by the California Department of Water Resources, Division of Planning and Local Assistance, Northern District Office as a Water Resources Tech II.

Since 2007, I have been responsible for administering diversions of water from the Lower Shasta River (i.e., that portion of the river downstream of Lake Shastina/Dwinnell Reservoir) under the Shasta River Adjudication, Superior Court, Siskiyou County No. 7035 and under post-Decree water rights.

As Watermaster, I am familiar with the conditions on the lower Shasta River, the operation of the Dwinnell Reservoir, the criteria for determining when water in the lower Shasta River is "surplus" under the decree, and the diversion of water by Hole in the Ground Ranch ("Ranch"). I have read the testimony of Joe Scott and Keith Dick in these proceedings, which accurately describe the Ranch diversions and water measurement facilities. My administration of water rights on the Lower Shasta River is consistent with the process described in their testimony.

Since the irrigation season of 2007, I have personally opened and operated the Ranch's diversion facilities at Diversions Nos. 165 and 166, as identified in the Decree, which are also the points of diversion for water right Permits Nos. 19164 and 19165, respectively. I collected the measurements of water diverted by the Ranch at each of these diversion points.

Exhibit 52 is a true and accurate copy of the records that I kept of diversions from