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8 BEFORE THE CALIFORNIA WATER QUALITY CONTROL BOARD  
9 CENTRAL VALLEY REGION

10 In the Matter of: ) DECLARATION OF HOWARD F.  
11 Donahue Schriber Asset Management ) WILKINS III IN SUPPORT OF DONAHUE  
12 Corporation; Rocklin Crossing, Placer County ) SCHRIBER ASSET MANAGEMENT  
13 Administrative Civil Liability Complaint ) CORPORATION'S SUBMISSION OF  
14 No. R5-2013-0519 ) EVIDENCE AND POLICY STATEMENTS  
AND DESIGNATION OF WITNESSES

1 I, Howard F. Wilkins III, hereby declare as follows:

2 1. I am a member in good standing of the State Bar of California. I am a partner in the  
3 Sacramento, California, law firm of Remy Moose Manley, LLP, counsel of record in this matter for  
4 Donahue Schriber Asset Management Corporation ("Donahue Schriber"). I make this declaration in  
5 support of Donahue Schriber's Submission of Evidence and Policy Statements and Designation of  
6 Witnesses, filed concurrently with this declaration.

7 2. The matters set forth in this declaration are within my person knowledge and, if called  
8 upon to testify to these matters, I could and would so testify.

9 3. Attached hereto as Exhibit "I" is a true and correct copy of a technical memorandum  
10 prepared by Michael Bryan, Ph.D.

11 4. Attached hereto as Exhibit "J" is a true and correct copy of a Curriculum Vitae for  
12 Michael Bryan, Ph.D. Dr. Bryant is an expert witness who can and will testify at the hearing for this  
13 matter and can authenticate the content of Exhibits "I" and "J" if further authentication is required.

14 5. Attached hereto as Exhibit "K" is a true and correct copy of a technical memorandum  
15 prepared by RSC Engineering, Inc.

16 6. Attached hereto as Exhibit "L" is a true and correct copy of Curriculum Vitae for  
17 Richard Chavez, P.E. Mr. Chavez is an expert witness who can and will testify at the hearing for this  
18 matter and can authenticate the content of Exhibits "K" and "L" if further authentication is required.

19 I declare under penalty of perjury under the laws of the State of California that the  
20 foregoing declaration is true and accurate.

21 Executed this 4th day of September, 2013, in Sacramento, California

22  
23  
24 By:   
25 Howard F. Wilkins III

# **EXHIBIT I**

**TECHNICAL MEMORANDUM FROM  
MICHAEL BRYAN, PH.D.,  
DONAHUE SCHRIBER ASSET  
MANAGEMENT CORPORATION, TO  
CENTRAL VALLEY REGIONAL WATER  
QUALITY CONTROL BOARD**

## TECHNICAL MEMORANDUM

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Date: September 4, 2013

Prepared for: Central Valley Regional Water Quality Control Board

On Behalf of: Donahue Schriber Asset Management Corporation

Prepared by: Michael Bryan, Ph.D.

Project: Rocklin Crossings Development Project

Subject: Written testimony regarding the potential effects of storm water discharges from the Rocklin Crossings Project on aquatic life beneficial uses of Secret Ravine

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### 1 Introduction

#### 1.1 Background

The Rocklin Crossings development project (Project) consists of a shopping center located on 59.4 acres southeast of the intersection of Interstate 80 and Sierra College Boulevard in Placer County. On September 2, 2009, the State Water Resources Control Board adopted the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ (NPDES No. CAS000002) (General Permit) for the Project, which became effective on July 1, 2010.

Construction at the Project site was initiated in 2012. In November and December 2012, Regional Water Board staff observed several violations of the General Permit during inspections of the construction site. On July 8, 2013, the Regional Water Board issued Administrative Civil Liability Complaint R5-2013-0519 (Complaint) to the Donahue Schriber Asset Management Corporation (Donahue Schriber), the property owner, based on allegations that Donahue Schriber had violated provisions of its General Permit. The Complaint alleges three separate violations; however, this testimony will only address "Violation 1," which is defined as two separate discharges of turbid water off the construction site into Secret Ravine on November 30, 2012.

#### 1.2 Purpose and Intended Use of this Document

The purpose and intended use of this document is to provide expert testimony regarding the potential for Violation 1 cited above to adversely affect the aquatic life beneficial uses in Secret Ravine. More specifically, the Complaint issued by the Regional Water Board, in accordance with the State Water Board's Water Quality Enforcement Policy (Effective May 20, 2010), considered the harm that may result to beneficial uses from exposure to pollutants or contaminants in an illegal discharge, in light of the statutory factors of the nature, circumstances,

extent and gravity of the violation or violations. The score evaluates direct or indirect harm or potential for harm from the violation. A score between 0 and 5 is assigned based on a determination of whether the harm or potential for harm to beneficial uses is negligible (0), minor (1), below moderate (2), moderate (3), above moderate (4), or major (5).<sup>1</sup>

The Complaint provides no direct observations or evidence of actual harm to aquatic life in Secret Ravine and, furthermore, provides no scientific assessment of the potential for harm to the aquatic life beneficial uses resulting from Violation 1. Rather, the Complaint simply proclaims that the Violation resulted in moderate (i.e., a score of 3) harm to beneficial uses.

To inform the Board, I provide herein a scientific assessment of the potential for harm associated with Violation 1, based on my expertise as a fisheries biologist and aquatic toxicologist. This written testimony concludes with my expert opinion, based on my scientific assessment, as to whether the potential harm to the aquatic life beneficial uses of Secret Ravine from Violation 1 was: negligible (0), minor (1), below moderate (2), moderate (3), above moderate (4), or major (5), according to the definitions of these terms in the State Water Board's Water Quality Enforcement Policy.

## **2 Characterization of the Violation 1 Discharge Event**

### **2.1 Background Information**

On November 30, 2012, Regional Water Board staff conducted a site inspection during a heavy rain event that produced 2.25 inches of rainfall within the first 11 hours of the day (Regional Water Board Inspection Report of November 30, 2012, dated December 20, 2012). This is considered a 1 in 25-year event, based on review of rainfall precipitation data for this area for the period 1922-2012 (see page 4 of the Complaint). In the Complaint, staff state that they observed "*...turbid storm water discharging from two locations...*" on the construction site.

At the downstream location (i.e., Dominguez Loop Road site), an earthen berm constructed next to a retaining wall, designed to contain stormwater within the construction site perimeter had breached, allowing storm water to flow from the southeast corner of the construction site, across approximately 175-200 ft of riparian habitat between the construction site boundary and Secret Ravine, which then flowed into Secret Ravine. Regional Water Board staff measured turbidity of "*greater than 1,000 NTU*" in the storm water using a handheld meter. Since turbidity was

<sup>1</sup> **0 = Negligible** - no actual or potential harm to beneficial uses.

**1 = Minor** - low threat to beneficial uses (i.e., no observed impacts but potential impacts to beneficial uses with no appreciable harm). **2 = Below moderate** - less than moderate threat to beneficial uses (i.e., impacts are observed or reasonably expected, harm to beneficial uses is minor). **3 = Moderate** - moderate threat to beneficial uses (i.e., impacts are observed or reasonably expected and impacts to beneficial uses are moderate and likely to attenuate without appreciable acute or chronic effects). **4 = Above moderate** - more than moderate threat to beneficial uses (i.e., impacts are observed or likely substantial, temporary restrictions on beneficial uses (e.g., less than 5 days), and human or ecological health concerns). **5 = Major** - high threat to beneficial uses (i.e., significant impacts to aquatic life or human health, long term restrictions on beneficial uses (e.g., more than five days), high potential for chronic effects to human or ecological health).

recorded as “>1,000 NTU, it is assumed that 1,000 NTU was the maximum reading capability of the meter used. This turbidity measurement was apparently taken near the construction site boundary at a linear distance of approximately 175-200 ft from Secret Ravine. Staff then recorded a turbidity measurement of 153 NTU in Secret Ravine a short distance upstream of the point at which the storm water from the Dominguez Loop Road location entered the creek.

Regional Water Board staff then inspected the Rocklin Crossings Detention Basin site (Detention Basin site), which is located upstream of the Dominguez Loop Road location, where they observed a second discharge of storm water from the construction site. Turbidity measured at the detention basin outlet was 2,425 NTU. It is my understanding that Dave Clayson of Total Site Maintenance (TSM) made this turbidity measurement, apparently using a turbidity meter with a measurement range above 1,000 NTU. It was later determined that a plug placed into this detention basin outlet had failed and the Complaint states that this plug failure allowed “...storm water to flow into Secret Ravine.” No turbidity measurement was recorded in Secret Ravine upstream of the discharge from the Detention Basin or downstream from the Dominguez Loop Road location.

Based on an assessment conducted by RSC Engineering (2013a and 2013b), the Complaint alleges that a total of 76,613 gallons of storm water from both areas of the construction site entered Secret Ravine between 8:00 am and 12:00 noon on November 30, 2012. A subsequent assessment examined the Secret Ravine hydrograph for this period at the flow gauge located approximately 1.2 miles downstream of the construction site and estimated that the total volume of flow discharged from the construction site from Violation 1 accounted for approximately 0.32% (i.e., one-third of one percent) of the total flow in the creek. Based on average discharge of 450 cfs measured at the Secret Ravine gauge, the contribution to total flow attributable to Violation 1 was approximately 1.44 cfs ( $450 \text{ cfs} * 0.0032$ ), on average.

## **2.2 Characterization of Turbidity and Sediment Entering Secret Ravine**

To inform this expert testimony, I conducted a site inspection on August 26, 2013. A number of key observations discussed below are based on this site inspection, along with information I reviewed from the record.

### **2.2.1 Detention Basin Site**

The 600-ft riparian habitat area between the Detention Basin outlet and the Secret Ravine at this upstream site consists of relatively dense upland and riparian vegetation (i.e., trees, shrubs, and grasses) over an undulating topography that would create hydraulic control points in which storm water would back up and pool before reaching the creek. This would cause much of the stormwater sediment load, particularly the sand-sized materials, to settle out onto the riparian landscape prior to reaching the creek channel.

Based on information in the record collected by Dave Clayson of TSM dated January 7, 2013, Secret Ravine apparently split into two channels under the November 30, 2012 high-flow event immediately downstream of the Croftwood Drive road bridge. The “secondary high-flow

channel” runs to the northwest of the main channel, and apparently may come within about 250 ft of the Detention Basin outlet. The Detention Basin discharge was observed entering this secondary high-flow channel by Dave Clayson and a Regional Water Board staff member on November 30, 2012, rather than the main channel of Secret Ravine. This secondary high-flow channel flowed downstream approximately 200-300 yards before re-connecting with the Secret Ravine’s main channel, well upstream of the Dominguez Loop Road discharge location.

Based on turbidity measurements taken by Dave Clayson on November 30, 2012, the turbidity of the stormwater exiting the Detention Basin outfall structure was 2,425 NTU. At this same time, the turbidity in the secondary high-flow channel of Secret Ravine, upstream of the Detention Basin’s discharge into this secondary high-flow channel, was 871 NTU. Also on the morning of November 30, 2012, downstream beyond where the secondary high-flow channel re-connected with the main channel but upstream of where the Dominguez Loop Road discharged stormwater entered Secret Ravine, the Regional Water Board staff member measured Secret Ravine turbidity at 153 NTU.

It is not surprising that the turbidity of the secondary high-flow channel (871 NTU) was markedly higher than that of Secret Ravine’s main channel (153 NTU) upstream of any discharge influences. This is because the secondary channel is dry most of the year and when high flows enter into dry channels, they churn up and re-suspend previously dry sands and silts that were deposited there by previous flood waters as they slowed and receded. The fact that the main channel of Secret Ravine had a turbidity as low as 153 NTU downstream of the Detention Basin discharge site indicates that much of the sediment load being carried by the Detention Basin discharge (measured at 2,425 NTU) settled-out in the riparian area and vegetation before reaching the secondary high-flow channel, settled within the secondary high-flow channel, and/or within initial reaches of the main channel. It further indicates that what turbid storm water did enter the creek’s channels at this site (later estimated to be 16,873 gallons) was diluted greatly, thereby resulting in the relatively low 153 NTU measured further downstream in Secret Ravine’s main channel.

## **2.2.2 Dominguez Loop Road Site**

An estimated 61,315 gallons of storm water left the Dominguez Loop Road location, of which 1,575 gallons was estimated to have been lost to infiltration prior to reaching Secret Ravine. The remaining 59,740 gallons of storm water from the Dominguez Loop Road location that entered the main channel of Secret Ravine accounted for most of the total estimated storm water that entered the creek as a result of Violation 1. However, the approximately 175-200 ft area of riparian habitat between the location at which turbidity was measured near the breached retaining wall and Secret Ravine contains grasses, bushes, blackberry, and trees. During my site visit of August 29, 2013, deposits of sand from the discharge event were observed in the grassy areas and along the blackberries throughout the riparian zone, indicating that much of the sand settled out of the storm water as it flowed over the land, and thus never entered Secret Ravine. The amount of sand and silt that entered Secret Ravine with this stormwater runoff cannot be accurately estimated. However, it should be noted that the substrate composition in this reach of Secret Ravine is dominated by fine (i.e., sand, silt) substrates. Consequently, the conveyance of

sand and silt into the water body at this site would simply be adding more of the already dominant substrate material. The >1,000 NTU turbidity measurement recorded at this site may well have been reduced by the overland flow and associated settling of sand within the riparian area, prior to it entering Secret Ravine. Nevertheless, for the purposes of this assessment, it is assumed that >1,000 NTU water entered Secret Ravine. It is clear that a substantial amount of sand did settle out within the riparian habitat area, never making it into the creek.

### **3 Characterization of Secret Ravine**

Secret Ravine is a perennially flowing tributary to Miner's Ravine, which is a tributary to Dry Creek, which is a tributary to the Sacramento River between Colusa Drain and the I Street Bridge. The designated aquatic life beneficial uses for Secret Ravine are warm and cold freshwater habitat, warm and cold fish migration, and warm and cold spawning habitat. The instream habitat, flows, and aquatic biological resources of the creek are described in the following subsections.

#### **3.1 Instream Habitat and Flows**

Secret Ravine drains a watershed of approximately 19.7 square miles, flowing approximately 10.5 miles from its headwaters at 1,285 feet to its confluence at Miners Ravine at an elevation of 165 feet (Dry Creek Conservancy 2001). Average rainfall in the watershed is approximately 25.0 inches per year, with most precipitation falling from December through February (Dry Creek Conservancy 2001). During the summer and early fall months, flow in Secret Ravine is relatively low and consistent, often ranging from 0.5 to 3 cfs (Dry Creek Conservancy 2001). During the winter and spring months, the creek is generally flashy with high-flow events during and immediately following storms (ECORP 2007).

In 2007, ECORP (2007) conducted an assessment of instream habitat for anadromous salmonids in two reaches: (1) a reach extending 2,903 ft upstream of the Detention Basin site (upstream reach), and (2) the 1,665-ft reach extending from the Detention Basin location to the Sierra College Boulevard Bridge (downstream reach). Overall, the two reaches were characterized as low gradient (<2% slope). Overall, a total of 14 short riffles (12 low-gradient and 2 high-gradient) were identified, comprising a combined total of less than 3% of the total available habitat in the two reaches. These researchers concluded that riffle habitat in the vicinity of Rocklin Crossings was "sparse" and limited by a lack of coarse substrates and a low gradient stream profile.

Substrate composition in the two reaches was characterized as consisting primarily of sand and fine sediments (ECORP 2007). A combined 68% of substrate in the upstream reach was characterized as sand (61%) and silt (7%). A combined 63% of substrate in the downstream reach was characterized as sand (57%) and silt (6%). Sand accounted for 60% of the substrate in the two reaches combined and accounted for 28% of the substrate composition in all riffles. Estimates of substrate embeddedness ranged from 25-50% on average, which the researchers attributed to the visible downstream movement of sands in both reaches, despite relatively low flows (ECORP 2007). Similarly, the Dry Creek Conservancy (2001) described sand as the

"...overwhelming dominant substrate element..." in Secret Ravine. The abundance of fine sediments in Secret Ravine has been identified by the California Department of Fish and Wildlife (CDFW), the Dry Creek Conservancy, and other researchers as one of the primary factors limiting production of fall-run Chinook salmon and steelhead in the creek (ECORP 2007; Dry Creek Conservancy 2001; Vanicek 1993; Ayres et al. 2003).

### 3.2 Aquatic Biological Resources

Secret Ravine's aquatic life beneficial uses (i.e., COLD, WARM, SPAWN, and MIGR) are represented by the fish and BMI communities that it supports. Based on fish community surveys conducted by the CDFW (Vanicek 1993), Garcia and Associates (2002), and observations made by ECORP (2007), Secret Ravine supports approximately 22 fish species, including eight native fishes. The resident fish assemblage is composed of 20 warmwater fishes, including species in the families Cyprinidae (minnows), Centrarchidae (basses and sunfishes), Catostomidae (suckers), Ictaluridae (bulhead catfishes), and Cottidae (sculpins). The spawning periods for fish species residing in Secret Ravine range from early spring to summer (Moyle 2002). Therefore, the life stages of resident fishes that occur in Secret Ravine in November include adults and juveniles. Based on these life histories, no eggs, alevins, or free-swimming larvae of the 20 resident fish species would have been present in Secret Ravine in late November.

Despite the poor habitat conditions for anadromous fish, Secret Ravine may support two anadromous fishes: (1) fall-run Chinook salmon and (2) steelhead (ECORP 2007). Fall-run Chinook salmon adults and redds have been observed upstream, downstream, and in the reach adjacent to the construction site in most years surveyed from 2003 to 2007; however, the total number of redds observed in Secret Ravine declined steadily from 68 redds observed in 2003 to 4 redds in 2007 (all 4 redds of 2007 were observed approximately 3-4 miles downstream of the project site) (ECORP 2007). Fall-run Chinook salmon typically spawn from late October through December shortly after arriving in their natal streams and, therefore, incubating eggs may potentially have been present in late November. However, there is no evidence in the Complaint to document the presence of Chinook salmon redds in the vicinity of the storm water discharges during November 2012.

Adult steelhead may be present in Secret Ravine during their seasonal spawning migrations. Both adult and juvenile steelhead have historically been observed in Secret Ravine in surveys conducted as recently as 2007 (ECORP 2007). However, because Central Valley steelhead spawn during the winter and spring months (typically January-April; McEwan and Jackson 1996; Moyle 2002), no steelhead eggs would be present in the gravels in late November. Juvenile steelhead rear in their natal streams for at least one year prior to emigrating and, therefore, may be present in Secret Ravine near the Rocklin Crossings location in late November. However, the majority of spawning and rearing by steelhead occurs upstream of the project site (Titus 2001).

Surveys of Secret Ravine's BMI community have been conducted in recent decades by Fields (1999), the Dry Creek Conservancy (Bailey Environmental 2003), and by the University of California, Berkeley (de Barruel and West 2003). These surveys all support the conclusion that Secret Ravine's BMI community is largely composed of organisms that are moderately to highly

tolerant to environmental degradation and have a relatively low degree of taxonomic diversity and abundance. Species in the family Chironomidae (midges), which are generally tolerant organisms that are widespread and common, comprised a large proportion of the BMI community (ECORP 2007). Based on their habitat assessment and review of available BMI surveys, ECORP (2007) concluded that the benthic habitats in Secret Ravine "*...do not appear to currently support a robust BMI community structure in the vicinity of or downstream of the Rocklin Crossings project area.*" The relatively low diversity and abundance of BMIs in Secret Ravine is likely due to the limited availability of high-quality habitats (e.g., riffles, coarse substrates with minimal embeddedness) (ECORP 2007) and represents a BMI community adapted to degraded conditions and unstable substrates dominated by fine sediments.

#### **4 Assessment of Potential Impacts**

##### **4.1 Key Considerations from Review of Scientific Literature**

There are several ways in which highly turbid water, carrying a sand and silt load, entering a water body could cause acute (short-term) and chronic (long-term) adverse impacts to resident aquatic life. The level of impact to a water body's aquatic life beneficial uses depends upon the relative frequency, magnitude, and geographic extent of such events. Because Violation 1 was a single 3-4 hour event during a precipitation-driven high-flow period, the manner in which adverse effects to Secret Ravine's aquatic life could potentially have occurred from Violation 1 is limited to the following.

- 1) Acute lethality of fish or BMIs due to water column turbidity levels.
- 2) Deposition of sand and silt on existing substrates, thereby burying incubating fish eggs and BMIs resulting in mortality of incubating eggs and BMIs present.
- 3) High turbidity and sand/silt settling cause fish and BMIs to move to other locations upstream (fish) or downstream (fish and BMIs) of the most affected area.

Because this was a single, short-duration event, no long-term adverse impacts to Secret Ravine's aquatic life would occur. Any local deposition of sand and silt within the channel from this single event would simply be redistributed to downstream reaches under this and subsequent precipitation-driven high flow periods. The substrate of the affected reach would rapidly return to an equilibrium state based on the creek's hydrology and geomorphology.

The majority of studies of potential effects of elevated turbidity in streams examine avoidance behavior or long-term spatial effects on fish or BMI abundance. Few studies examine the potential effects of short-term (i.e., one day or less) exposures of aquatic organisms to elevated turbidities, presumably because fish communities occurring in rivers and creeks are adapted to elevated turbidities and suspended sediment concentrations during and immediately after winter-spring storm events. Tolerance to elevated turbidities associated with winter freshets is essential to survival for aquatic organisms occurring in such systems (Gammon 1970). Naturally occurring turbidities rarely reach levels that are directly lethal to fish (Caux et al. 1997).

Newcombe and MacDonald (1991) concluded that turbidities exceeding 100,000 NTU are lethal to fish, but rarely occur in nature and typically are not of sufficient duration to pose a threat. In a study of fish and BMI species considered to be highly sensitive to increases in turbidity, Rowe et al. (2002) observed no mortality when repeatedly exposing the organisms to turbidities of 1,000 NTU every 2-3 days over a 22-day period. These researchers also reported that 24-hr exposure to turbidities of up to 20,000 NTU had no observable effect on the survival of the BMIs examined (i.e., caddisflies, damselflies, and mayflies) or most of the fish species examined.

Based on the scientific literature reported above, and aquatic organisms ability to withstand short-term exposure to high turbidity and sediments loads which they encounter annually during large storm events, it can be definitively concluded that no acute lethality to fish or BMIs would have occurred due to water column turbidity levels that occurred within Secret Ravine on November 30, 2012 for the 3-4 hours period that the stormwater discharge occurred. The remainder of this assessment will assess the potential for impacts associated with #2 and #3 listed above.

#### 4.2 Fish Eggs

The earliest life stages of fish (i.e., incubating eggs and alevins), which occur in the gravel and require interstitial flow for survival, are most susceptible to the adverse effects associated with increased sediment loads (Lloyd 1987). Based on the timing of fall-run Chinook salmon spawning and the incubation period required before alevins are hatched, the only early life stage potentially occurring in Secret Ravine in late November would be fall-run Chinook salmon eggs. However, as discussed above, the availability of spawning habitats in the reach adjacent to and downstream of the construction site is limited and quality of spawning habitat is considered poor to moderate due to a high proportion of fine sediments in the creek substrate (ECORP 2007; Dry Creek Conservancy 2001). The 25-50% embeddedness of riffles reported by ECORP (2007) for the reaches of Secret Ravine they evaluated immediately upstream and downstream of the construction site is marginal for spawning by anadromous salmonids. The California Department of Fish and Wildlife (CDFG 1998) considers 25% or less embeddedness of spawning substrates as suitable for Chinook salmon and steelhead. Consequently, based on historical Chinook salmon spawning data (ECORP 2007) and the dominant substrates in Secret Ravine adjacent to and immediately downstream of the Project site, it is unlikely that fall-run Chinook salmon redds with incubating eggs occurred in the creek adjacent to and immediately downstream of the construction site during the November 30, 2012 discharge event.

In the event that fall-run Chinook salmon did spawn in these reaches, the potential for adverse effects associated with the discharge events (i.e., burying of gravels containing incubating eggs) is low based on the following. First, I would not expect fall-run Chinook salmon to have had established redds in the secondary high-flow channel at the time of the discharge event because of unsuitable substrate (dominated by fine materials deposited by previous flood events) and because this channel would not have had flow in it for most, if not all, of the fall prior to November 30<sup>th</sup>. Second, within a couple hundred yards downstream of where the secondary high-flow channel rejoins the main channel, turbidity was measured at 153 NTU, which is well below any concern level for impacts to incubating salmon eggs or other aquatic life for short-

term storm period exposures. Third, the volume of water with elevated turbidity (and carrying a sand/silt load) that entered the creek comprised only 0.32% of the total flow in the creek and thus received on the order of 300:1 dilution. Fourth, the majority of sediments with the potential to embed gravels (i.e., sands) would have settled out of the storm water prior to reaching the creek due to the large areas of dense riparian vegetation present between the construction site boundary and Secret Ravine, which I observed on my site visit. Fifth, the contribution of sand and silt from the storm water discharge would represent a negligible load to the creek overall, relative to the sand/silt load that the watershed and creek itself mobilized during this storm event. Sixth, the discharge of turbid storm water carrying a sand/silt load entered a reach of Secret Ravine that is already dominated by sand substrates (see Section 3.1). The high precipitation-driven flow within the creek at the time of the discharge event, as well as subsequent precipitation-driven high-flow events would be expected to mobilize and redistribute discharged sands and silts along with the larger sand/silt load naturally mobilized from the watershed and channel by the high storm flows.

Based on these findings, it is my expert opinion that the sand and silt load that entered Secret Ravine associated with Violation 1 was not of sufficient volume and duration to cause notable harm to fish eggs that may have been incubating in the creek substrate. No impacts to fish eggs, including fall-run Chinook salmon eggs in redds, were observed or documented for this event. Although not observed, there existed a low potential for discharged sands and silts to have covered Chinook salmon eggs, and thus possibly adversely affected incubating eggs, should there have been one or more salmon redds immediately downstream of the Dominguez Loop Road discharge location, where the greatest settling of sands would have occurred. The majority of finer sands and silts would have been transported greater distances downstream and would have settled-out in the same manner that the creek's naturally recruited fine sand/silt load did. As such, the finer sands/silt would not have covered incubating Chinook salmon eggs near the discharge location or at downstream sites by magnitude that would have inhibited their incubation. Most of the larger sands discharged into the creek would have settled-out within a relatively short reach of the creek downstream of the Dominguez Loop Road discharge location. Thus, the larger, more rapidly settled sands would have affected only a very small portion of the Chinook salmon eggs incubating within Secret Ravine in the fall of 2012, if any at all, and thus would not result in any notable population-level effect to the species (i.e., would result in no appreciable harm to the species).

#### **4.3 Adult and Juvenile Fishes**

As discussed in Section 3.2, no free-swimming larvae of any fish species occur in Secret Ravine in November. However, adult life stages of all 22 resident and anadromous fish species occurring in Secret Ravine could be present near the Rocklin Crossings construction site in November, and juvenile life stages of all fish species except fall-run Chinook salmon could also be present. No impacts to adult or juvenile fishes were observed or documented for this event. Based on the results of published studies discussed above, the potential for adverse effects on adult and juvenile fish associated with the discharge event is very low for the following reasons. First, the volume of water with elevated turbidity (and carrying a sand/silt load) that entered the creek comprised only 0.32% of the total flow in the creek and, therefore, would not have caused

turbidity or suspended sediment loads in the creek to exceed published thresholds for acute or chronic effects on aquatic life. Second, the duration of the discharge event lasted less than 4 hours and, therefore, any incremental contribution of elevated sediment levels or turbidity was shorter than the durations cited in the scientific literature for causing acute or chronic effects on fish. Third, adult and juvenile fish are mobile and would be expected to avoid areas of elevated suspended sediments in the immediate vicinity of the storm water discharge and seek areas of lower turbidity and suspended sediment load, if desired.

Based on these findings, it is my expert opinion that the turbid water and associated sand and silt load that entered Secret Ravine due to Violation 1 was not of sufficient volume and duration to cause any notable population-level effects to adult or juvenile life stages of any fish species (i.e., would result in no appreciable harm to the species) occurring in Secret Ravine.

#### **4.4 Benthic Macroinvertebrates**

As discussed in Section 3.2, surveys of Secret Ravine's BMI community indicate that the community is dominated by organisms adapted to habitat conditions with unstable substrates dominated by fine sediments (i.e., sands and silts). Because much of the BMI community is found in the same riffle habitats that anadromous salmonids spawn in, the release of storm water with elevated turbidity levels (and carrying a sand/silt load) from the site during the November 2012 discharge event would not have adversely affected the BMI community of Secret Ravine for the same reasons discussed above for fish eggs. No impacts to BMIs were observed or documented for this event. Based on the results of published studies discussed above, the potential for adverse effects on BMIs associated with the discharge event is very low for the following reasons. First, the volume of water with elevated turbidity that entered the creek comprised a negligible proportion (i.e., 0.32%) of the total flow in the creek and thus received on the order of >300:1 dilution. Second, the majority of the sand in the storm water would have settled out of the storm water prior to reaching the creek. Third, the amount of sand/silt remaining in the storm water after passing through the riparian buffer zone would represent a negligible contribution of sand/silt load to the creek, relative to the creek's load that was mobilized from the watershed and channel during the storm event. The settling of the heavier sands that entered the creek would have occurred within a short distance downstream, with the finer materials distributed over greater distances downstream. Hence, any "burying" of BMIs would have occurred in a small geographic area. Finally, most BMI taxa have the ability to avoid unfavorable conditions by, for example, dislodging and drifting downstream, burrowing into the substrate, crawling to more favorable locations, or enclosing themselves.

Based on these findings, it is my expert opinion that the turbid water and associated sand and silt load that entered Secret Ravine due to Violation 1 was not of sufficient volume and duration to cause any notable population-level effects to BMIs (i.e., would result in no appreciable harm to the BMI community of the reach or the creek as a whole) occurring in Secret Ravine.

## **5 Conclusions**

Based on the scientific assessment presented above, it is my expert opinion that the harm or potential for harm to the aquatic life beneficial uses of Secret Ravine that may have resulted from

of Violation 1 was “minor,” as defined by the State Water Board’s Water Quality Enforcement Policy. No impacts to aquatic life were observed, but a low potential for short-term impacts to beneficial uses existed. The level of impact, should any impact to aquatic life have occurred, would have been sufficiently small in magnitude, duration, and geographic extent that no appreciable harm to any of the populations of aquatic organisms using Secret Ravine would have occurred.

## 6 References

- Ayres, E., Knapp, E., Lieberman, S., Love, J., and K. Vodopals. 2003. Assessment of stressors on fall-run Chinook salmon in Secret Ravine (Placer County, CA). Prepared by the Donald Bren School of Environmental Science and Management. Available at:  
<[http://www.bren.ucsb.edu/research/documents/fish\\_brief.pdf](http://www.bren.ucsb.edu/research/documents/fish_brief.pdf)>
- Bailey Environmental. 2003. Streams of western Placer County: aquatic habitat and biological resources literature review. Prepared for Sierra Business Council.
- Bolton, S., J. Bash, and C. Berman. 2001. Effects of turbidity and suspended solids on salmonids. Final Research Report. Prepared for the Washington State Transportation Commission. November.
- Caux, P.Y., D.R.J. Moore, and D. MacDonald. Ambient water quality guidelines (criteria) for turbidity, suspended and benthic sediments. Technical appendix. Prepared for BC Ministry of Environment, Lands and Park, Water Management Branch. April.
- CDFG (California Department of Fish and Game). 1998. California Salmonid Stream Habitat Restoration Manual. Third Edition. Inland Fisheries Division. California Department of Fish and Game. Sacramento, CA. 495 p.
- Dry Creek Conservancy. 2001. Secret Ravine adaptive management plan. Available at:  
<<http://www.drycreekconservancy.org/pdf/Secret%20Ravine%20Adaptive%20Management%20Plan.pdf>>
- de Barruel, M. and N. West. 2003. A benthic macroinvertebrate survey of Secret Ravine: the effects of urbanization on species diversity and abundance. Water Resources Center Archives. University of California, Davis.
- ECORP Consulting, Inc. 2007. Technical memorandum on Secret Ravine Creek and special-status fish. Public Draft Environmental Impact Report for the Rocklin Crossings Project. September 5. Available at: <<http://www.rocklin.ca.us/civica/filebank/blobdload.asp?BlobID=10011>>
- Fields, W. C. 1999. The benthic macroinvertebrate fauna of Secret Ravine Creek, Placer County, California.
- Gammon, J. R. 1970. The effect of inorganic sediment on stream biota. U. S. Environmental Protection Agency, Water Pollution Control Research Series 18050 DWC 12/70, Washington, D. C.

- Garcia and Associates. 2002. *2001-2002 Adult and Juvenile Salmonid Surveys, Water Temperature Monitoring, and Flow Measurements in Cirby and Linda Creeks, Placer County, California*. Prepared for the City of Roseville. December 2002.
- Lloyd, D.S. 1987. Turbidity as a water quality standard for salmonid habitats in Alaska. *North American Journal of Fisheries Management* 7: 34-45
- McEwan, D. & T. A. Jackson. 1996. Steelhead restoration and management plan for California. California Department of Fish and Game, Sacramento. 234 pp.
- Moyle, P.B. 2002. *Inland Fishes of California*. University of California Press, Berkeley, CA.
- Newcombe, C. P.; MacDonald, D. D. (1991). Effects of suspended sediments on aquatic ecosystems. *North American Journal of Fisheries Management* 11: 72-82.
- Rowe, D.K., et. al. (2002). Lethal turbidity levels for common freshwater fish and invertebrates in Auckland streams. Auckland Regional Council Technical Publication Number 337. 37 p.
- RSC Engineering. 2013a. Estimated volume of sediment laden water discharged from the site. Technical memorandum. January 25. Roseville, CA.
- RSC Engineering. 2013b. Follow up clarification to volume estimates of sediment laden discharge. Technical memorandum. February 14. Roseville, CA.
- RSC Engineering. 2013c. Rock Crossings, comparison of volume discharged from site with volume discharged in Secret Ravine. Technical memorandum. March 29. Roseville, CA.
- Titus, R.G. 2001. *Perennial Rearing Habitat for Juvenile Steelhead in the Dry Creek Drainage (Placer County)*. Memorandum to Ms. Kelly Finn, National Marine Fisheries Service. November 5. Available at: < <http://drycreekconservancy.org/SRAMP/appxd.htm>>
- Vanicek, C.D. 1993. Fisheries habitat evaluation Dry Creek, Antelope Creek, Secret Ravine, and Miners Ravine (Task 1). Prepared for EIP Associates by C. David Vanicek, CSUS.

# **EXHIBIT J**

**RESUME OF MICHAEL BRYAN**

Michael D. Bryan, Ph.D.  
Partner / Principal Scientist

Dr. Michael Bryan has over 26 years of combined consulting and research experience focused on fisheries biology, water quality, and aquatic toxicology. Dr. Bryan's fisheries and water quality experience extends to managing and serving as principal scientist for Endangered Species Act (ESA) Section 7 consultations with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), California Environmental Quality Act (CEQA) /National Environmental Policy Act (NEPA) documents, water quality and aquatic ecology studies, and regulatory permitting.

Dr. Bryan's research background provides a strong foundation for conducting specialized water quality and fisheries studies, including experimental design, study implementation, and project documentation. This work includes conducting biological assessments of fish and benthic macroinvertebrates to identify potential effects of new wastewater outfalls and Endangered Species Act compliance.

Dr. Bryan applies his extensive knowledge of fisheries and water quality in his management and technical oversight of CEQA/NEPA assessments for water supply and conveyance, flood control, and wastewater treatment and disposal projects. Dr. Bryan has developed a deep understanding of CVP/SWP operations, and the fish resources and water quality of the American River, Sacramento River, and Sacramento-San Joaquin Delta system. Dr. Bryan's expertise in preparing CEQA/NEPA assessments includes refinement of alternatives and development of defensible assessment thresholds.

Through his work on specialized fisheries and water quality studies and regulatory permitting and compliance, Dr. Bryan has established working relationships with federal and state resource agency representatives. Dr. Bryan applies his expertise to assist clients with strategic planning; compliance monitoring; technical evaluations; project refinement and implementation; and expert witness testimony.

**EDUCATION** Ph.D., Environmental Toxicology & Fisheries Biology, 1993, Iowa State University

M.S., Fisheries Biology, 1989, Iowa State University

B.S., Fisheries Biology & Biology, 1986, University of Wisconsin, Stevens Point

**REPRESENTATIVE  
PROJECT  
EXPERIENCE**

**FISHERIES BIOLOGY**

**BIOLOGICAL ASSESSMENT – NEW MOUNTAIN HOUSE WASTEWATER TREATMENT PLANT OUTFALL IN OLD RIVER**

Prepared a Biological Assessment addressing the potential effects on Endangered Species Act-listed anadromous fish species that could result from placing a new diffuser outfall into the Old River, and operating the outfall to discharge up to 5.4 mgd of treated municipal effluent at buildout. Developed conservation measures to be implemented as part of the project to avoid/minimize effects on listed fishes. Worked closely with National Marine Fisheries Service in

preparing the associated Biological Opinion.

**BIOLOGICAL ASSESSMENT – IRONHOUSE SANITARY DISTRICT WASTEWATER TREATMENT PLANT OUTFALL IN THE SACRAMENTO RIVER**

Prepared a Biological Assessment addressing the potential effects on Endangered Species Act-listed anadromous fish species that could result from placing a new diffuser outfall into the San Joaquin River, and operating the outfall to discharge up to 8.6 mgd of treated municipal effluent at buildout. Developed conservation measures to be implemented as part of the project to avoid/minimize effects on listed fishes. Worked closely with National Marine Fisheries Service in preparing the associated Biological Opinion.

**BIOLOGICAL ASSESSMENT – CITY OF CHICO WASTEWATER TREATMENT PLANT EXPANSION**

Prepared a Biological Assessment for project to address potential project construction and operational effects on ESA listed fish species and their habitats that could result from placing a new diffuser outfall in the Sacramento River and operating the outfall to discharge up to 12 mgd of treated municipal effluent. Developed conservation measures to be implemented as part of the project to avoid/minimize effects on listed fishes.

**COSUMNES RIVER FLOW AUGMENTATION PROJECT**

Lead fisheries consultant on project that provides up to 5,000 acre-foot of American River water annually routed through the Folsom South Canal to pre-wet the lower Cosumnes River channel to provide earlier and more prolonged hydraulic continuity throughout the lower river during the fall-run chinook salmon spawning season. Assessed potential fish resource impacts of implementing the project on the fish resources of the lower American River, Cosumnes River, and Mokelumne River.

**AQUATIC BIOLOGICAL RESOURCES ASSESSMENT OF HANGTOWN CREEK**

Principal-in-charge for study design and implementation of fish sampling (electrofishing), benthic macroinvertebrate sampling, habitat assessment, and temperature monitoring. Benthic macroinvertebrate sampling was conducted using the California Department of Fish and Game California Stream Bioassessment Procedure. Study focused on evaluating the thermal effects of the Hangtown Creek Wastewater Treatment Plant's discharge on the aquatic ecology of Hangtown Creek.

**PUTAH CREEK FLOW RESTORATION PROJECT**

Served as principal-in-charge of the Putah Creek fisheries assessment

to determine how the project, developed to address debris buildup below the Putah Creek Diversion Dam through dam and channel modifications, could incorporate elements to achieve a secondary objective of protecting, maintaining, and possibly enhancing Putah Creek's aquatic habitats and fish resources.

**LOWER YUBA RIVER CALFED PROJECT**

Co-Principal-in-charge and technical lead for developing a local-level Implementation Plan for Lower Yuba River anadromous fish habitat restoration. Project involved working with the Lower Yuba River Fisheries Technical Working Group, which has representatives from all state and federal fishery agencies, to perform a comprehensive review of available fishery, ecological, and hydrologic information and to develop a conceptual model for the Yuba River aquatic ecosystem. This model is a framework to guide the refinement, evaluation, and prioritization of restoration actions proposed by Calfed's Ecosystem Restoration Program Plan, U.S. Fish and Wildlife's Anadromous Fish Restoration Program, California Department of Fish and Game's 1991 Plan, and other fish management plans already developed for the river. The conceptual model identifies testable hypotheses related to key ecosystem processes, habitat conditions, stressors, and fish population trends and behavior, including habitat use. Based on this work, restoration actions, pilot projects, and studies are prioritized for near-term and long-term implementation in a manner consistent with long-term ecosystem and watershed management goals.

**LOWER AMERICAN RIVER OPERATIONS WORKING GROUP PARTICIPANT**

Provided technical assistance to staff from U.S. Bureau of Reclamation, California Department of Fish and Game, U.S. Fish and Wildlife Service, and National Marine Fisheries Services in evaluating alternative Folsom Dam shutter operational scenarios for the summer/fall period to maximize thermal benefits to Lower American River fall-run chinook salmon and steelhead, and to balance benefits to these two species.

**CDFG/YCWA INTERIM SETTLEMENT AGREEMENT**

Initiated and led the development of a California Department of Fish and Game-Yuba County Water Agency (YCWA) Interim Settlement Agreement and Interim Study Plan for the Lower Yuba River. Facilitated negotiations between CDFG and YCWA, which were conducted to reach agreement on several issues, including minimum instream flow, water temperature, and flow fluctuation requirements associated with operation of the Yuba River Development Project. This process ultimately culminated in the Lower Yuba River Accord. The Accord resolved a nearly 20-year legal and political fight over water rights and fisheries flows. The Accord received the State's

highest environmental award.

**LOWER AMERICAN RIVER SALMON MORTALITY MODEL DEVELOPMENT**

Project manager and technical lead for refinement of the U.S. Bureau of Reclamation's Lower American River early life stage fall-run chinook salmon mortality model. Compiled historic data defining temporal distributions of immigration and temporal and spatial distributions of spawning. Worked with Reclamation computer programmers to make code changes that resulted in an improved model that reflected the best available biological data for the river's fall-run chinook salmon population.

**LOWER SACRAMENTO RIVER AND DELTA TRIBUTARIES TECHNICAL TEAM APPOINTEE**

Appointed to the Lower Sacramento River and Delta Tributaries Technical Team, as part of the Anadromous Fish Restoration Program of the Central Valley Project Improvement Act. Developed technical reports outlining the key factors currently limiting chinook salmon and steelhead populations in the Lower American and Yuba rivers. Worked cooperatively with California Department of Fish and Game and U.S. Fish and Wildlife Service biologists on the project.

**CENTRAL VALLEY PROJECT RESTORATION TECHNICAL LIAISON**

Served as a technical liaison between the Northern California Power Agency, a contributor to the Central Valley Project (CVP) Restoration Fund, and the state and federal fish resource agencies charged with applying these funds to restore Central Valley anadromous fish populations. Developed a strategic process for establishing a shared understanding among these and other stakeholders regarding CVP restoration goals, objectives, and criteria for prioritizing expenditures from the CVP Restoration Fund to achieve basin-wide, fish population-restoration goals.

**BAY/DELTA FISHERIES REPORT**

Prepared a technical report for the Northern California Power Agency that identified the major factors that have contributed to recent declines in San Francisco Bay/Sacramento-San Joaquin Delta fishery resources. The factors contributing to recent declines of anadromous and resident fish populations were ranked according to their relative importance or contribution to observed population declines.

**SACRAMENTO SPLITTAIL DISTRIBUTION AND RELATIVE ABUNDANCE STUDY**

Project manager and technical lead for a large interagency (Department of Water Resources, California Department of Fish and Game, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.C. Davis, State Water Contractors, and Interagency Ecological Program) gill net survey that documented the distribution and relative abundance of Sacramento splittail in the Sacramento and San Joaquin rivers and Delta. Developed the experimental design and field operating procedures for the project, and supervised field personnel. Performed all statistical analyses of catch data, and prepared the project report.

**CEQA/NEPA**

**TERTIARY FILTRATION, ULTRAVIOLET DISINFECTION, AND BIOSOLIDS DEWATERING PROJECT CEQA INITIAL STUDY/MITIGATED NEGATIVE DECLARATION - CITY OF GALT**

As principal-in-charge, assisted the City of Galt (under contract to West Yost Associates) with environmental compliance documentation, NPDES permit acquisition, and environmental permitting for the proposed Phase 1 upgrade of selected unit processes at the wastewater treatment plant. Phase I of the project provides upgraded facilities (i.e., add tertiary treatment and ultraviolet disinfection) and will initiate a new discharge in the summer (previously permitted as a seasonal (winter) discharge). Phase II of the project involves further upgrades of the treatment facilities (improved nitrogen removal) and expansion in capacity from 3.0 million gallons per day (mgd) to 4.5 mgd. RBI prepared the CEQA Initial Study/Mitigated Negative Declaration (IS/MND) for the Phase 1 upgrades and necessary construction-related permits.

**IRONHOUSE SANITARY DISTRICT WASTEWATER TREATMENT PLANT EXPANSION AND UPGRADE – CEQA AND PERMITTING**

As principal-in-charge, assisted the Ironhouse Sanitary District (ISD) with environmental compliance, NPDES permit acquisition, and environmental permitting for the proposed expansion and upgrade of the ISD municipal wastewater treatment plant that serves the communities of Oakley, Bethel Island, and outlying communities. RBI prepared the water quality and the fishery and aquatic resources chapters of the environmental impact report, which was prepared by Jones & Stokes. RBI developed thresholds of significance for interpreting the effects of anticipated receiving water quality changes on aquatic resources. Addressed Endangered Species Act issues related to listed fish species.

RBI was instrumental in securing authorization of a new NPDES

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permit for ISD's proposed surface discharge outfall in the San Joaquin River at Jersey Island. RBI led the consulting team to negotiate and secure the NPDES permit through the Central Valley RWQCB and prepared the key elements of the Report of Waste Discharge. In addition, RBI assisted ISD in securing environmental permits to authorize the dredging and dredge-material disposal necessary to construct and install a new surface discharge outfall pipe and diffuser in the San Joaquin River. RBI prepared the sampling and analysis plan for sediment and dredge material characterization, and secured authorization under the Central Valley RWQCB's general waiver of waste discharge requirements for dredge material disposal to land. RBI provided monitoring and ongoing permit implementation services to ISD for the construction project.

#### **IRONHOUSE SANITARY DISTRICT HIGHWAY 4 PIPELINE PROJECT CEQA COMPLIANCE**

As principal-in-charge, worked with the ISD in implementing a strategic phased approach to CEQA compliance for ISD's proposed construction of a new sanitary sewer gravity trunk, and forcemain conveyance pipelines and recycled water pipeline within its service area. Phase 1 involved the upfront identification of potential project development constraints, regulatory requirements, and identification of the appropriate CEQA documentation and process. Phase 2 of the project involved preparation of an Initial Study/Mitigated Negative Declaration to meet CEQA requirements and support future regulatory permitting. Additionally, RBI managed technical subconsultants for the conduct of botanical rare plant surveys, and air quality, noise and cultural resource assessments.

#### **PLACER COUNTY SEWER MAINTENANCE DISTRICT 1 WASTEWATER TREATMENT PLANT UPGRADE AND EXPANSION – CEQA INITIAL STUDY/MITIGATED NEGATIVE DECLARATION**

Principal-in-charge of the hydrology and water quality section of the Initial Study/Mitigated Negative Declaration for the Sewer Maintenance District 1 Wastewater Treatment Plant Upgrade and Expansion project, and assisted with the biological resources section of the document by preparing the impact assessment for fisheries and aquatic resources. RBI assessed potential construction-related impacts and direct and cumulative long-term operations-related impacts of treatment plant upgrades and the increased effluent discharge rate to Rock Creek and Dry Creek, and water bodies further downstream. RBI assessed the potential water quality impacts on a constituent-by-constituent basis, incorporating key information from the antidegradation analysis and other technical reports that RBI had prepared for Placer County under separate contracts for work on the plant's NPDES permitting compliance.

**SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT 2020 MASTER PLAN EIR**

Lead consultant for preparing water quality and fishery and aquatic habitat chapters of the EIR. Responsible for coordinating all hydrologic and water quality modeling, and the use of modeled output for impact assessment purposes. Contributed to development of alternatives to be evaluated and thresholds of significance for the water quality and fisheries/aquatic habitat resources. Also assisted in conducting stakeholder and technical workshops associated with development of the 2020 Master Plan.

**LAKE OF THE PINES WASTEWATER TREATMENT PLANT UPGRADE EIR**

Lead consultant for preparing the water quality/hydrology and fishery and aquatic resources chapters of the EIR, which was prepared by EDAW for Nevada County. Contributed to development of alternatives to be evaluated and developed thresholds of significance for the water quality/hydrology and fisheries chapters. Also assisted in conducting stakeholder and technical workshops associated with development of the facilities Master Plan.

**CITY OF CHICO WASTEWATER TREATMENT PLANT EXPANSION EIR**

Lead consultant for preparing the fishery and aquatic resources chapter of the EIR, which was prepared by Jones & Stokes. Contributed to development of alternatives to be evaluated and developed thresholds of significance for the chapter. Also assisted in refinement of water quality assessments used to make determinations regarding potential impacts to aquatic resources in the Sacramento River.

**DEL WEBB TEHAMA PROJECT**

Lead consultant for preparing the fishery and aquatic resources chapter of the EIR, which was prepared by Impact Sciences. Conducted site surveys and habitat characterizations. Consulted with National Marine Fisheries Service to obtain a concurrence letter of not likely to adversely affect steelhead using adjacent water bodies.

**HANGTOWN CREEK WASTEWATER TREATMENT PLANT UPGRADES IS/MND**

Principal-in-charge for preparing an Initial Study/Mitigated Negative Declaration in support of planned upgrades to the Hangtown Creek Wastewater Treatment Plant. This environmental document was prepared to meet CEQA requirements and to support application for a State Revolving Fund loan to fund, in part, the planned improvements.

**LOWER CASCADE CANAL MODERNIZATION PROJECT EIR**

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Lead technical consultant for preparing the aquatic biological resources chapter of the EIR. Responsible for conducting detailed fisheries habitat and hydraulic assessments on the Lower Cascade Canal and presenting information to stakeholders. Contributed to the development of alternatives to be evaluated and thresholds of significance for determining impacts.

**CITY OF LINCOLN WASTEWATER TREATMENT AND RECLAMATION FACILITY EIR**

Provided technical review and oversight for the fisheries and aquatic biological resources chapter of EIR. Assisted project team with addressing potential impacts and preparing supplements and addendums to EIR. Consulted with National Marine Fisheries Service on anadromous fish issues, including Endangered Species Act issues, related to new wastewater discharges to Auburn Ravine.

**DEER CREEK WASTEWATER TREATMENT PLANT EXPANSION EIR**

Lead author for water quality and fisheries chapters of the EIR, prepared for the El Dorado Irrigation District, which involved compiling and assessing effluent and receiving water quality data and evaluating acute and chronic bioassay testing results.

**EASTERN SACRAMENTO COUNTY REPLACEMENT WATER SUPPLY PROJECT**

Lead consultant for preparing the water quality and fishery and aquatic resources chapters of the EIR, which was prepared by EDAW for Sacramento County. Contributed to development of alternatives to be evaluated and developed thresholds of significance for the water quality and fisheries chapters. Performed detailed analysis of effects on American River and tributary water quality and compliance with water quality standards that would result from inputting remediated groundwater into the system. Also assessed effects on fish resources in the American, Cosumnes, and Mokelumne rivers of using up to 5,000 acre-feet of remediated water, annually, to pre-wet the Cosumnes River channel to provide earlier and more prolonged hydraulic continuity throughout the lower river during the fall-run chinook salmon spawning season.

**BAY DELTA CONSERVATION PLAN EIR/EIS**

Provided strategic input to HDR, lead author of the EIR/EIS, regarding assessment of the plan's effects on water quality in the Sacramento-San Joaquin Delta and primary tributaries. Developed thresholds of significance for assessing water quality effects and participated in development of the water quality assessment framework, which required analysis of multiple alternatives and future time steps to address phased implementation of project elements. Directed assessments of multiple constituent-specific assessments, including

boron, pathogens, trace metals, nutrients, temperature, PCBs, pesticides, constituents of emerging concern, and DBP formation potential.

**SUCTION DREDGING PERMITTING PROGRAM SUPPLEMENTAL EIR, CALIFORNIA DEPARTMENT OF FISH AND GAME**

Principal-in-charge of water quality and toxicology impacts assessment for the Initial Study and supplemental EIR, which was prepared by Horizon Environmental. The EIR addresses the potential project-level environmental impacts of statewide suction dredging activity regulations. The focus of the analysis was on effects of dredging-related discharge of mercury in streams that have remnant contamination from historic gold mining activity.

**EL DORADO IRRIGATION DISTRICT WATER SUPPLY MASTER PLAN EIR**

Lead technical consultant for preparing the hydrology, water quality, and aquatic biological resources chapters of the programmatic EIR. Responsible for evaluating Master Plan demands and District operations to meet projected demands to determine how such operations could impact these resources. Provided strategic guidance for integrating other District facilities into the assessment to produce a more real-world assessment.

**EDWPA SUPPLEMENTAL WATER RIGHTS PROJECT EIR**

Directed the development of the water quality chapter for the El Dorado County Water and Power Authority (EDWPA) Supplemental Water Rights Project EIR. The proposed project is to establish permitted water rights allowing diversion of 40,000 AFA water from the American River basin to meet planned future water demands in the EID and GDPUD service areas and other areas located within El Dorado County that are outside of these service areas. The assessment addressed effects of the proposed project on American River watershed, Sacramento River, and Delta water quality.

**SACRAMENTO AREA WATER FORUM PROPOSAL EIR**

Prepared the fisheries and surface water quality chapters of the EIR and regularly presented technical information on effects of reservoir operations and water management on fish resources and water quality to the Water Forum, a coalition of 46 stakeholders representing agriculture, business, public agencies, and environmental groups collectively developing a strategic water-planning platform for the greater Sacramento area. Served as liaison between hydrologic/water temperature/salmon mortality modelers, Fischer-Delta (water quality) modelers, and other technical staff and CEQA consultants/City-County management staff responsible for

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preparing the EIR. Contributed to preparation of a Habitat Management Program (HMP) for the Lower American River, designed to preserve the wildlife, fisheries, recreational, and aesthetic values of the Lower American River, as well as mitigate for any potential impacts of the Water Forum Proposal.

**NATOMA PIPELINE REPLACEMENT AND FOLSOM WATER TREATMENT PLANT EXPANSION PROJECT EIR/EA**

Managed preparation of fisheries sections of the EIR/EA. The project involved analyzing the construction and operational impacts associated with pipeline replacement and water treatment plant expansion, as well as a 7,000 AFA increment of additional water planned to be diverted from Folsom Reservoir. Worked closely with modelers to develop hydrologic simulations to depict hydrologic effects of the project. Assessed output from the hydrologic, temperature, and salmon mortality models to identify project-specific and cumulative impacts to reservoir, river, and Delta fish resources. The project required compliance with federal and state regulations, including the Endangered Species Act and Clean Water Act.

**NARROWS II POWERHOUSE INTAKE EXTENSION MITIGATED NEGATIVE DECLARATION/INITIAL STUDY**

Technical lead for assessing the potential effects on the fish resources of Englebright Reservoir and the Lower Yuba River from drawing water into the Narrows II Powerhouse from a lower elevation within Englebright Reservoir as a result of extending the current intake structure. Prepared a technical report on findings, with an emphasis on temperature-related effects on Lower Yuba River anadromous fish resources.

**PLACER COUNTY WATER AGENCY AND NORTHRIDGE WATER DISTRICT GROUNDWATER STABILIZATION PROJECT EIR**

Managed preparation of fisheries chapter of the EIR. Analyzed the hydrologic effects of the project as they would affect Folsom Reservoir seasonal storage levels, lower American and Sacramento River flows, and Delta inflow/outflow, and water temperatures, and the potential for such changes to impact fish resources in these water bodies. Worked closely with modelers to develop hydrologic simulations to depict hydrologic effects of the project.

**LONG-TERM REOPERATION OF FOLSOM DAM AND RESERVOIR EIR**

Fisheries lead to determine the feasibility of indefinitely extending Sacramento Area Flood Control Agency's Folsom Dam and Reservoir Reoperation Agreement with the U.S. Bureau of Reclamation. Worked closely with modelers to develop hydrologic simulations to

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depict hydrologic effects of the project. Output from hydrologic, temperature, and salmon mortality models was assessed to identify project-specific and cumulative impacts to reservoir, river, and Delta fish resources. Additional activities included meeting with National Marine Fisheries Service, U.S. Fish and Wildlife Service, and California Department of Fish and Game to determine the need for consultation under the federal and state endangered species acts and determination of potential impacts to fishery resources throughout the Central Valley Project resulting from integrated reservoir operations.

**CVP WATER SUPPLY CONTRACTS EIS/EIR**

Lead author for the fisheries and water quality chapters of the joint programmatic EIS/EIR prepared for the Central Valley Project (CVP) Water Supply Contracts under Section 206 of Public Law 101-514. Evaluated hydrologic, river and reservoir water temperature, and salmon mortality model output to determine potential impacts to CVP reservoir, lower American and Sacramento rivers, and Delta fish resources that could result from diverting a portion of the water from Folsom Reservoir. Worked closely with project engineers to design the hydrologic modeling studies and determine output needed to conduct the necessary environmental assessments. Also participated in development and evaluation of project alternatives capable of fulfilling project purposes, with an emphasis on water supply, affected hydrology, and environmental constraints.

**HAMILTON CITY PUMPING PLANT FISH SCREEN IMPROVEMENT PROJECT EIR/EIS**

Developed technical approach to assessing the effects of the proposed project and its alternatives on fisheries and aquatic habitats. Lead author for all fisheries sections of the EIR/EIS. Fisheries and aquatic habitat chapter received U.S. EPA's highest review score. Key issues included analyses of alternative means of simultaneously protecting fish (including the endangered winter-run chinook salmon) while re-establishing reliability in Glenn-Colusa Irrigation District's diversions from the Sacramento River. This project involved many state and federal agencies, including California Department of Fish and Game, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Army Corps of Engineers, California Department of Water Resources, and the State Reclamation Board.

**NPDES PERMITTING / WASTEWATER DISCHARGER STUDIES**

**NPDES PERMIT RENEWAL**

Provides technical and strategic services to negotiate waste discharge requirements in NPDES permits for wastewater treatment plants

(WWTPs) issued by state regional water quality control boards (RWQCB). This includes conducting detailed reviews and preparing detailed comments on tentative NPDES permits to establish a record for administrative appeals, as well as face-to-face negotiations with RWQCB staff and other resources agencies, including California Department of Fish and Game, National Marine Fisheries Service, and Department of Public Services staff, over permit terms. Also prepares discharger presentations and provides public testimony at NPDES permit adoption hearings. These services have been provided for:

- El Dorado Irrigation District – Deer Creek and El Dorado Hills WWTPs (1996–present)
- Sacramento Regional County Sanitation District (1997–present)
- City of Roseville – Dry Creek and Pleasant Grove Creek WWTPs (1998–present)
- Placer County – Sewer Maintenance District 1, Sewer Maintenance District 3, Sheridan, and Applegate WWTPs (1998–present)
- City of Vacaville – Easterly WWTP (1999–present)
- City of Placerville – Hangtown Creek Water Reclamation Facility (1999–present)
- City of Brentwood WWTP (2003–present)
- Nevada County – Lake Wildwood, Lake of the Pines, and Cascade Shores WWTPs (2003–present)
- Mountain House Community Services District – Mountain House WWTP (2006–present)
- Ironhouse Sanitary District WWTP (2006–present)
- City of Stockton Regional Wastewater Control Facility (2008–present)
- Town of Windsor (2007–2010)
- National Park Service (2008–present)
- City of Ione (2010–present)
- Colusa Industrial Properties (2007–2008)
- City of Santa Rosa (2005–2007)
- Los Angeles County Sanitation Districts – Los Coyotes Water Reclamation Plant and Long Beach Water Reclamation Plant (2002–2005)
- City of Lincoln/Del Webb – Lincoln Wastewater Treatment and Reclamation Facility (2000–2005)

**PROFESSIONAL THERMAL PLAN EXCEPTIONS**  
**AFFILIATIONS /** Principal-in-charge and technical lead to conduct special studies in  
**CERTIFICATIONS** support of obtaining Clean Water Act section 316(a) exceptions to

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California Thermal Plan temperature objectives applied in NPDES permits and facilitate the exceptions' approval by the Central Valley Regional Water Quality Board (RWQCB) and fish resource agencies – California Department of Fish and Game, National Marine Fisheries Services, and U.S. Fish and Wildlife Service. Has developed or is currently developing exceptions as follows:

- *California Department of General Services (DGS)*. Completed study evaluating the temperature-related effects the Central Heating and Cooling Plant discharges to the Sacramento River on migrating fish. Based on this study, its findings, and concurrency on findings by the fish resource agencies, the RWQCB issued a Thermal Plan Exception to DGS, resulting in a cost-effective solution to DGS's temperature compliance issue.
- *Brentwood Wastewater Treatment Plant*. Completed study evaluating the temperature regime of Marsh Creek under the influence of the discharge and whether the regime could continue to support the indigenous aquatic life, as part of developing information to support a Thermal Plan exception. Developed alternative temperature limitations to protect the Marsh Creek aquatic life and also resolve the temperature compliance issue. Currently facilitating concurrence of alternative temperature limitations by the fish resource agencies.
- *Sacramento Regional County Sanitation District*. Completed study evaluating the effects of the Sacramento Regional Wastewater Treatment Plant discharge on the Sacramento River near-field and far-field temperature regime in support of renewing Thermal Plan exceptions for this discharge. Currently conducting a related temperature and fisheries study requested by the fish resource agencies to further examine the effects of the discharge on Sacramento River aquatic life.

#### **ANTIDegradation ANALYSES**

Principal-in-charge for conducting antidegradation analyses for municipal wastewater dischargers consistent with state and federal policies and guidance, in support of new or expanded discharge capacity. Antidegradation analyses completed include:

##### Surface Water

- Ironhouse Sanitary District Wastewater Treatment Plant - new discharge
- Sewer Maintenance District 1 Wastewater Treatment Plant --

upgrade and expansion

- City of Galt Wastewater Treatment Plant – new summer discharge and expansion
- El Dorado Hills Wastewater Treatment Plant – upgrade and expansion

Groundwater

- Ironhouse Sanitary District Master Reclamation Permit
- City of Roseville Aquifer Storage and Recovery

**TOXICITY REDUCTION EVALUATIONS(TREs)**

Principal-in-charge for TREs/TIEs performed for municipal wastewater dischargers, including the preparation of TRE work plans and action plans required by NPDES permits, interpretation of toxicity test results, and negotiations with regional water quality control board staffs to conclude the TRE. Dischargers for which TREs have been or are being performed include:

- City of Stockton Regional Wastewater Control Facility, *Selenastrum capricornutum* and *Ceriodaphnia dubia*
- Town of Windsor Wastewater Treatment, Reclamation and Disposal Facility, *Selenastrum capricornutum*
- City of Davis Water Pollution Control Plant, *Selenastrum capricornutum*
- City of Woodland Wastewater Treatment Plant, *Selenastrum capricornutum*
- City of Brentwood Wastewater Treatment Plant, *Ceriodaphnia dubia*

**WATER-EFFECT RATIO STUDIES**

Principal-in-charge for conducting water-effect ratio (WER) studies for municipal wastewater dischargers consistent with U.S. EPA and state guidance. Studies include:

- Deer Creek Wastewater Treatment Plant Copper WER
- Town of Windsor Wastewater Treatment, Reclamation, and Disposal Facility Copper WER
- Placer County Sewer Maintenance District 1 Aluminum WER
- City of Colfax Wastewater Treatment Plant Copper WER

**RECEIVING WATER TEMPERATURE STUDIES**

Principal-in-charge on studies conducted to evaluate seasonal

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temperature regimes and compliance with receiving water limitations stipulated in NPDES permits. Provided oversight in study plan development, managed field staff, and managed preparation of study reports for studies on the following receiving waters.

- Deer Creek – El Dorado County, CA for El Dorado Irrigation District
- Hangtown Creek – Placerville, CA for City of Placerville
- Old Alamo Creek, New Alamo Creek, and Ulatis Creek – Solano County, CA for City of Vacaville
- Marsh Creek – Contra Costa County, CA for City of Brentwood
- Sacramento River – for Sacramento Regional County Sanitation District and California Department of General Services
- Dry Creek and Pleasant Grove Creek – Placer County, CA for City of Roseville
- Atwater Drain – Atwater, CA for City of Atwater
- Dredger Cut, Highline Canal, and White Slough – San Joaquin County, CA for City of Lodi

#### **EFFLUENT AND RECEIVING WATER QUALITY ASSESSMENTS**

Principal-in-charge on effluent and receiving water quality assessments for the following dischargers:

- Hangtown Creek Water Reclamation Facility
- El Dorado Hills Wastewater Treatment Plant
- Deer Creek Wastewater Treatment Plant
- Sewer Maintenance District 1 Wastewater Treatment Plant – Placer County
- Sewer Maintenance District 3 Wastewater Treatment Plant – Placer County
- Sheridan Wastewater Treatment Plant – Placer County
- Stockton Regional Wastewater Control Facility (ongoing)
- Easterly Wastewater Treatment Plant – City of Vacaville (ongoing)

Assessments documented effluent and receiving water concentrations of over 180 constituents, including all California Toxics Rule/National Toxics Rule constituents, to determine whether contaminant-specific waste discharge requirements are warranted in the dischargers' NPDES permits.

#### **VINEYARD SURFACE WATER TREATMENT PLANT - SACRAMENTO COUNTY WATER AGENCY**

As principal-in-charge, assisted RMC Water and Environment for the permitting of a temporary surface water discharge of test water resulting from the startup of a large (80 mgd) water treatment plant

in southern Sacramento County. RBI prepared a technical report characterizing projected effluent quality of the testing and startup discharges, and assessment of potential effects to the small ephemeral stream channel (Gerber Creek) which will serve as the receiving water for temporary discharges lasting approximately 6 months with discharge rates varying up to 15 mgd. RBI assisted with preparation of permit application requirements for consistency with the Central Valley RWQCB's "limited threat general NPDES permit," which was an adopted streamlined permit procedure at the time of the project. The permit strategy involved development of a request, with supporting justification, of a temporary exception for the discharge to exceed applicable state water quality objectives for trihalomethane compounds. RBI also prepared the assessments of potential impacts to hydrology, water quality, and fisheries and aquatic resources for an amended CEQA Initial Study and Mitigated Negative Declaration that was prepared for the project.

**PORT OF STOCKTON STORMWATER ADMINISTRATIVE ORDER ON CONSENT  
NEGOTIATION AND TOXICITY MONITORING REVIEW**

Developed and negotiated stormwater toxicity monitoring requirements in the U.S. EPA's Administrative Order to achieve reasonable and scientifically defensible requirements. Technically reviewed and interpreted bioassay laboratory reports from stormwater monitoring events in support of maintaining compliance with the Order. Directed toxicity identification evaluations (TIEs), when needed.

**SEASONAL COLIFORM BACTERIA LIMITATIONS**

Negotiated alternative winter coliform bacteria limitations to be included in NPDES permits, which involved extensive technical analyses, technical report preparation, and negotiations with Central Valley Regional Water Quality Control Board policy and permitting staff and Department of Health Services (now Department of Public Health) technical staff. Dischargers assisted include: El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant and Placer County's Sewer Maintenance District 1 Wastewater Treatment Plant.

**ECOLOGICAL, WATER QUALITY, AND HYDROLOGIC EVALUATION OF DEER CREEK**

Project manager and technical lead on a study documenting the ecological, water quality, and hydrologic conditions of Deer Creek upstream and downstream of the Deer Creek Wastewater Treatment Plant discharge. Conducted reconnaissance survey, developed experimental approach, and supervised/participated in field data collection. Documented fish and benthic macroinvertebrate taxa. Prepared final project report, which served, in part, as the basis for

NPDES permit renewal.

**RECEIVING WATER DISSOLVED OXYGEN STUDIES**

As principal-in-charge and project manager, evaluated the effects of municipal wastewater treatment plant effluent discharges on downstream dissolved oxygen profiles using U.S. EPA's STREAMDO IV model. Studies conducted on Deer Creek for El Dorado Irrigation District, and Old Alamo, New Alamo, and Ulatis creeks for the City of Vacaville.

**BASIN PLAN AMENDMENTS / USE ATTAINABILITY ANALYSES**

**SITE-SPECIFIC OBJECTIVES – PH, TURBIDITY, AND TEMPERATURE**

Principal-in-charge and lead water quality/aquatic ecology specialist for development of site-specific amendments to the Central Valley Regional Water Quality Control Board (RWQCB) Water Quality Control Plan (Basin Plan) for Deer Creek pH, turbidity, and temperature. Developed supporting technical studies/information, drafted RWQCB Staff Report/Functional Equivalent Document, and prepared responses to peer review and public comments.

**REGION-WIDE BASIN PLAN OBJECTIVES – PH AND TURBIDITY**

Provided technical and strategic services to the Central Valley Regional Water Quality Control Board, on behalf of Central Valley dischargers, to develop and adopt region-wide amendments to the Central Valley Region Water Quality Control Plan (Basin Plan) for pH and turbidity. Work tiered from the development of site-specific objectives for pH and turbidity for Deer Creek.

**AQUATIC LIFE USE ATTAINABILITY ANALYSIS – OLD ALAMO CREEK**

Examined the suitability of Old Alamo Creek to support anadromous salmonids by examining the available instream and riparian habitat, flow regime, thermal regime, water quality, and existing fish and benthic macroinvertebrate communities and participated in preparation of the Use Attainability Analysis (UAA) report. The UAA supported de-designating the cold freshwater habitat and cold migration beneficial uses assigned to Old Alamo Creek.

**MUNICIPAL AND DOMESTIC SUPPLY (MUN) USE ATTAINABILITY ANALYSIS – NEW ALAMO CREEK AND ULATIS CREEK**

Principal-in-charge for the preparation of a Use Attainability Analysis (UAA) of the MUN use of New Alamo and Ulatis creeks, located in Solano County, consistent with U.S. EPA guidance. The project consisted of assembling hydrologic and water quality characteristics of the watersheds and documenting the extent of MUN use historically occurred or could be attained in the creeks. The UAA

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supported development of site-specific objectives for trihalomethane compounds for the protection of human health.

**SITE-SPECIFIC OBJECTIVES – CHLOROFORM, DIBROMOCHLOROMETHANE, AND DICHLOROBROMOMETHANE**

Principal-in-charge and co-author of technical report for the development of site-specific objectives (SSOs) for three trihalomethane (THM) compounds for New Alamo and Ulatis creeks, Solano County. SSOs were developed to be protective of human health-related uses and resolve the THM criteria compliance issues resulting from the City of Vacaville's Easterly Wastewater Treatment Plant discharge. Also participated in the review and drafting of key sections of the Regional Water Quality Control Board's (RWQCB) Staff Report supporting a Basin Plan amendment for the SSOs, and meetings with RWQCB and U.S. Environmental Protection Agency Region 9 staff overseeing the SSO development and approval.

**MUNICIPAL AND DOMESTIC SUPPLY (MUN) USE ATTAINABILITY ANALYSIS – ATWATER DRAIN**

Principal-in-charge for the preparation of a Use Attainability Analysis report for Atwater Drain, located in Merced County, to evaluate the suitability of its MUN designation. Required the evaluation of watershed land use, hydrology, and water quality information, as well as the documentation of past and current diversions from the drain.

**OTHER WATER QUALITY STUDIES**

**SOUTH FORK AMERICAN RIVER WATERSHED ASSESSMENT**

Principal-in-charge responsible for compilation and evaluation of available water quality data collected in the South Fork American River watershed. Project used a geographic information systems approach to prioritize sub-basins within the watershed for future water quality monitoring and restoration.

**SEDIMENT TOTAL MAXIMUM DAILY LOAD (TMDL)**

Project manager and technical lead for providing fisheries and water quality expertise to assist the Imperial Irrigation District with participating in the development of a silt TMDL for the Alamo River, the main tributary to the Salton Sea, Imperial Valley, CA. Using available scientific literature, characterized the effects of suspended sediments on freshwater aquatic life. Reviewed and provided comments on the Draft Problem Statement prepared by the Colorado River Basin Regional Water Quality Control Board.

**EFFLUENT DISCHARGE IMPACT ASSESSMENT**

Project manager and technical lead on evaluation of potential impacts to human health and aquatic life from discharging tertiary-treated municipal wastewater treatment plant effluent into Folsom Reservoir or Lake Natoma as part of dry year water conservation measures under the Sacramento Area Water Forum Proposal. Met with California Department of Health Services (now Department of Public Health) staff to discuss the proposed action and its potential effects on human health associated with downstream municipal purveyor diversions.

**FOLSOM DAM TEMPERATURE CONTROL DEVICE (TCD) ASSESSMENT**

Project manager and technical lead for assessing the potential impacts of operating a TCD at the urban water supply intakes at Folsom Dam. Identified seasonal impacts to Lower American River water temperatures and fish resources, and the quality of raw and finished urban water supplies diverted from Folsom Dam and the Lower American River.

**SEDIMENT CONTAMINANT MONITORING**

Project manager and technical lead for a North American-wide sediment contaminant monitoring survey designed to define the range of polydimethylsiloxanes in surface sediments of marine and freshwater systems receiving large municipal wastewater discharges. Supervised preparation of site-specific sampling plans, developed an experimental approach for the overall project, prepared a comprehensive quality assurance project plan, and contributed to preparation of project reports. Study served as the basis for subsequent bioassays and ecological risk assessments.

**ECOLOGICAL RISK ASSESSMENT**

Directed the aquatic assessment of component of a probabilistic ecological risk assessment that quantified the potential risk posed to wildlife and aquatic populations from opening and operating a gold mine in northern Washington.

**STORMWATER QUALITY MONITORING**

Project manager and technical lead for the Laguna West stormwater runoff water quality mitigation-monitoring project, Sacramento County. Developed the experimental design and field operating procedures, statistically analyzed laboratory bioassay and contaminant data, directed activities for field personnel, and wrote project progress and final reports.

# **EXHIBIT K**

## **CROSSINGS SUMMARY MEMO**



during the rain event, and recorded rainfall data from the City of Roseville. The calculations are not based on field measurements during the storm event. The volume estimates listed above should not be misconstrued as quantitative engineering results but rather as opinions based on engineering judgment.

- 2) The volumes summarized above are from two Technical Memoranda prepared by RSC Engineering attached hereto.

### • Estimated Dilution in Secret Ravine

Volume of water potentially discharged to Secret Ravine	76,613 gallons
Volume of water passing the site in Secret Ravine over the two hour time from 8:15 am to 10:15 am on November 30, 2012	24,235,200 gallons
Percentage of potential site discharge over flow volume in Secret Ravine	0.32%
Dilution ratio	316:1

#### NOTES:

The information summarized above is from the Technical Memo prepared by RSC Engineering attached hereto.

### • Rainfall Event Approximation

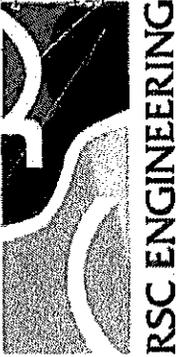
On November 30, the morning of the violation approximately 2.45 inches of rain fell between the hours of 10:00 PM the night before (November 29) and 1:30 PM the day of the violation. The average intensity of rainfall during this 15.5 hour period was 0.158 inches/hour. According to the Placer County Flood Control and Water Conservation District Storm Water Management Manual, the predicted rainfall amount for a 5 year-24 hour storm is 2.69 inches or an average intensity of 0.112 inches/hour. This data clearly indicates that the average rainfall intensity experienced the morning of November 30 significantly exceeded the average intensity of a 5 year-24 hour storm. Furthermore, as the table below illustrates, the documented storm intensity exceeds the average storm intensity of a 25 year 24 hour storm event.

Storm	Rainfall Amount	Average Intensity
5 year 24 hour	2.69 inches	0.112 in./hr.
10 year 24 hour	3.21 inches	0.133 in./hr.
25 year 24 hour	3.75 inches	0.156 in./hr.
50 year 24 hour	4.18 inches	0.174 in./hr.

# **ATTACHMENT A**

**ESTIMATED VOLUME OF SEDIMENT  
LADEN WATER DISCHARGED FROM  
THE SITE**

**RESPONSE TO NOTICE OF VIOLATION**



RSC ENGINEERING

# Estimated volume of sediment laden water discharged from the site Response to Notice of Violation

For:

Rocklin Crossings WDID# 5S31C364098  
Rocklin Crossings Detention Basin WDID# 5S31C364108  
Dominguez Loop Road WDID# 5S31C364102  
Center at Secret Ravine WDID# 5S31C364105

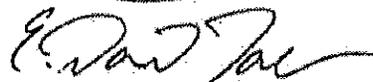
Prepared by:

**RSC Engineering**

January 25, 2013

RSC Engineering, Inc.  
Consulting Engineers



  
E. Daniel Taylor, P.E.



  
Richard S. Chavez, P.E.  
President

2250 Douglas Blvd.  
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Fax 916.788.4408  
rsc-engr.com

# Response to Notice of Violation

for

Rocklin Crossings WDID# 5S31C364098  
Rocklin Crossings Detention Basin WDID# 5S31C364108  
Dominguez Loop Road WDID# 5S31C364102  
Center at Secret Ravine WDID# 5S31C364105

## Estimated volume of sediment laden water discharged from the site

January, 25 2013

### 1. Introduction:

This calculation is in response to a request in the Notice of Violation (NOV) dated December 21, 2012 for the following projects:

Rocklin Crossings	WDID# 5S31C364098
Rocklin Crossings Detention Basin	WDID# 5S31C364108
Dominguez Loop Road	WDID# 5S31C364102
Center at Secret Ravine	WDID# 5S31C364105

The request is to provide "An estimate of the volume of sediment laden water discharged from the construction site" and "An estimate of sediment laden water discharged into Secret Ravine".

As stated in the NOV, the storm event started on November 28, 2012 and ended on December 5, 2012. The site discharged water at two locations: Discharge location #1 was at the inlet structure of the detention basin and discharge location #2 was at the south side of Dominguez Loop. Refer to Figure 1 for discharge locations.

This report presents the volume estimates of the water discharged from the site and into Secret Ravine based on available information including: the report prepared by Andy Van Veldhuizen with SD Deacon Dated December 18, 2012 describing the events surrounding the storm event in question (Appendix A), the NOV dated December 21, 2012 (Appendix B), and the stream gauge station data provided by the City of Roseville for the stream gauge located at Rocklin Road and Secret Ravine (Attached).

## **2. Assumptions:**

### ***Rain gauge***

Precipitation measurements used in these calculations are based upon the City of Roseville maintained rain gauge (rain gauge) on Secret Ravine where it crosses Rocklin road just east of Highway 80 and 1.2 miles south west of the project. The continuously recording rain gauge records were used since they provide the best available record of time versus rainfall depth.

### ***Location 1***

The volume of water discharged from location 1 is assumed to be the amount of precipitation that fell over Area 1 for the duration of the observed discharge event. Based on observations from onsite personnel, there was no stored water within Area 1 prior to the discharge.

### ***Location 2***

The volume of discharged water from location 2 is assumed to be the amount of precipitation over Area 2 for the duration of the observed discharge event and the volume of water in a temporary storage area that escaped when the berm along the south side of Dominguez Loop was breached. It is assumed, based on Photo #8 in the NOV, that the entire basin emptied during the discharge event.

### ***Discharge Into Secret Ravine.***

The volume of water discharged into Secret Ravine is assumed to be the volume discharged from the site minus the volume of water infiltrated between the site and Secret Ravine.

At location 1 the volume of water discharged into Secret Ravine is assumed to be equal to the volume discharged from the site. Location 1 is connected to Secret Ravine by an existing swale that was, prior to the discharge event, flowing with water; therefore the soil in the swale was saturated, negating infiltration.

The water from location 2 flowed overland through a heavily vegetated path, estimated to be 30' wide by 280' long, to reach Secret Ravine. It is assumed that the soil infiltration downstream of location 2 was 0.2 inches/hour (*Placer County Storm water Management Manual, Table 5-3*).

### 3. Methods:

Discharge volumes were determined by multiplying the contributing shed area, the depth of rainfall, and a land use coefficient (C).

Volume (cubic feet) = C \* Area (square feet) \* Rainfall (feet) + assumed storage volume

The land use coefficient adjusts the amount of runoff to account for cover material and infiltration. Based on the table below, a "C" of 0.30 was used for bare soil areas since the soil in both Areas 1 and 2 were reported to have been loosley compacted with rocky material. A "C" coefficient of 0.20 was used for the detention basin area since it was un-compacted and covered with vegetation:

Land Use	C	Land Use	C
<i>Business:</i> Downtown areas Neighborhood areas	0.70 - 0.95 0.50 - 0.70	<i>Lawns:</i>	
		Sandy soil, flat, 2%	0.05 - 0.10
		Sandy soil, avg., 2-7%	0.10 - 0.15
		Sandy soil, steep, 7%	0.15 - 0.20
		Heavy soil, flat, 2%	0.13 - 0.17
		Heavy soil, avg., 2-7%	0.18 - 0.22
		Heavy soil, steep, 7%	0.25 - 0.35
<i>Residential:</i> Single-family areas Multi units, detached Multi units, attached Suburban	0.30 - 0.50 0.40 - 0.60 0.60 - 0.75 0.25 - 0.40	<i>Agricultural land:</i>	
		<i>Bare packed soil</i>	
		*Smooth	0.30 - 0.60
		*Rough	0.20 - 0.50
		<i>Cultivated rows:</i>	
		*Heavy soil, no crop	0.30 - 0.60
		*Heavy soil, with crop	0.20 - 0.50
		*Sandy soil, no crop	0.20 - 0.40
		*Sandy soil, with crop	0.10 - 0.25
		<i>Pasture</i>	
*Heavy soil	0.15 - 0.45		
		*Sandy soil	0.05 - 0.25
		Woodlands	0.05 - 0.25
<i>Industrial:</i> Light areas Heavy areas	0.50 - 0.80 0.60 - 0.90	<i>Streets:</i>	
		Asphaltic	0.70 - 0.95
		Concrete	0.80 - 0.95
		Brick	0.70 - 0.85
Parks, cemeteries	0.10 - 0.25	Unimproved areas	0.10 - 0.30
Playgrounds	0.20 - 0.35	Drives and walks	0.75 - 0.85
Railroad yard areas	0.20 - 0.40	Roofs	0.75 - 0.95

Source: <http://water.me.vccs.edu/courses/CIV246/table2.htm>

Back check calculations were performed, when possible, to compare the estimated discharge volumes against the photos documenting the discharge event. Location 1 was back checked using the weir equation over the inlet drain structure at the downstream end of the detention basin and location 2 was back checked using the Manning's channel flow equation at the discharge adjacent to the end of the retaining wall at the south side of Dominguez Loop.

The volume of water discharged into Secret Ravine is calculated by subtracting the infiltrated water downstream of the site from the total volume of site discharge. Infiltration is calculated by multiplying the flow area by the infiltration rate by the duration of discharge.

Volume (infiltration) = Area of flow(sf.) \* Infiltration rate(ft./hr.) \* Duration of discharge(hr.)

#### 4. Discharge Location #1 (Detention Basin):

According to accounts given by S.D. Deacon the inlet drain structure in the detention basin was not discharging at 7:00 AM on November 30th. When S.D. Deacon returned to the detention basin at approximately 9:00 AM the inlet drain structure in the detention basin was discharging. For the purposes of this calculation it is assumed that the discharge began at 8:00 AM. The pipe down stream of the outlet structure was plugged by 12:00 PM on the same day and discharge was stopped for the duration of the storm.

The rain gauge recorded a rainfall depth of 0.87 inches during the time span of the location #1 discharge. (8:00 AM to 12:00 PM on November 30th).

#### Volume from Area 1 (refer to Figure 1):

Area<sub>1</sub>: 134,269 sf.  
Rainfall: 0.07 ft. (0.87")  
C: 0.24 (weighted average 58% vegetated, 42% bare soil)  
Volume: 2,256 cubic feet

Volume @ Discharge 1: 16,873 gallons

**Discharge Location #1 Backcheck:**

Photo # 15 in the NOV shows a discharge at the inlet structure in the detention basin. Given a total volume of 2,256 cubic feet over a 4 hour time span the average flow rate is 0.16 cfs. Based on the known weir parameters of the inlet structure the depth of flow over the weir can be calculated. The front side of the inlet structure is negated from the following calculations since a board was placed at the front of the inlet to stop the flow. The water built up and overtopped the 2 sides of the riser structure.

$$\text{Weir equation: } Q = \frac{2}{3} * C_d * A * \sqrt{2gh}$$

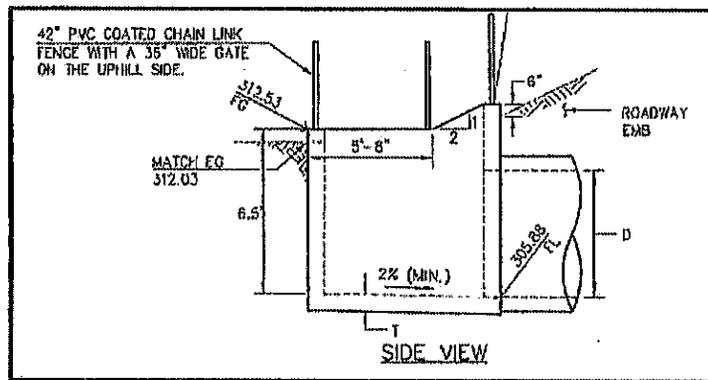
$$C_d = 0.6$$

$$A = h \times 5.67' \times 2 \text{ (two sides)}$$

$$Q = 0.16 \text{ cfs}$$

$$h = 0.03'$$

A flow depth of 0.03' seems reasonable with the water depth shown in Photo #15.



**Existing Riser Detail (Outlet structure at Detention Basin)**

Detail from Croftwood Access Road by TLA Engineering & Planning Dated 3/1/07

## 5. Discharge Location #2 (Dominguez Loop):

Per the daily superintendent report for November 30th (December 18 report, Appendix A, Tab F) the breach over the Dominguez loop berm began at 8:30 AM. Verbal testimony indicated that the breach was repaired within 1.5 hours. It is assumed that the discharge was stopped by 10:00 AM on the same day.

The rain gauge recorded a rainfall depth of 0.30 inches during the time span of the location #2 discharge.

Area <sub>2</sub> :	272,059 sf.
Rainfall:	0.025 ft. (0.30")
C:	0.30
<u>Volume (precip):</u>	<u>2,040 cubic feet</u>

The storage basin upstream of the Dominguez Loop berm is reported to have been 80' long by 30' wide by 2' deep making storage volume 4,800 cubic feet. Volume from Area 2 (refer to Figure 1). Area 2 is the area contributing to discharge location 2 comprising a small portion of the Rocklin Crossings site north of Schriber Way, the Center at Secret Ravine site, and the Dominguez Loop site.

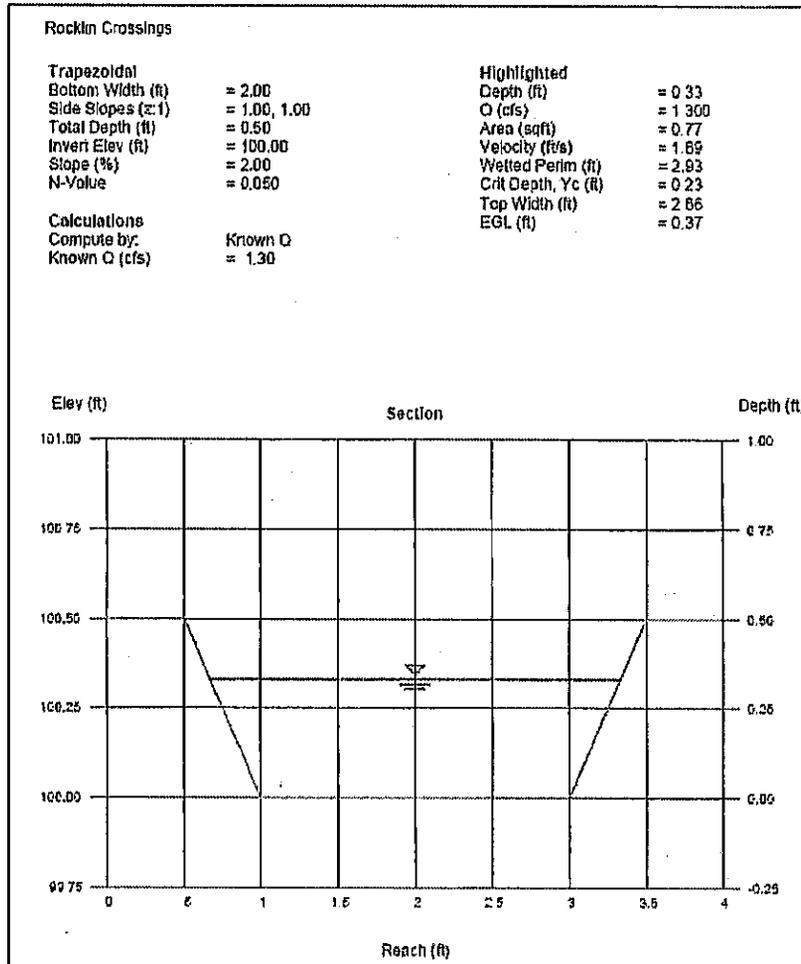
Volume (storage): 4,800 cubic feet

Total Volume: 6,840 cubic feet (precip.+storage)

Total Volume @ Discharge 2: 51,167 gallons

**Discharge Location #2 backcheck:**

Photo # 9 in the NOV shows the discharge at location #2 as defined channel flow at the end of the retaining wall on the south side of Dominguez Loop Road. Given a total volume of 6,840 cubic feet over a 1.5 hour time span the average flow rate is 1.3 cfs. Based on photo # 9 in the NOV it is assumed that the channel formed by the discharge at location #2 had an approximate 2' bottom with 1:1 side slopes and a 2% slope in the direction of flow. The depth of flow in the channel is calculated using the Manning's equation for open channel flow as follows:



**Manning's Equation Channel Flow Calculator**

Depth of flow= 0.33'

A flow depth of 0.33' seems reasonable compared to the water depth shown in Photo #9.

**6. Volume of water discharged into Secret Ravine:**

**Location 1:**

The volume of water discharged into Secret Ravine at location 1 is equal to the volume of water discharged from site at location 1.

Volume 1 discharged to Secret Ravine: 2,256 cubic feet

**Volume 1 Discharged to Secret Ravine: 16,873 gallons**

**Location 2:**

The Volume of water discharged into Secret Ravine from location 2 is the volume of water discharged from location 2 minus the volume of water infiltrated along the flow path:

Area of flow path: 8,400 s.f. (280'x30')  
Infiltration rate: 0.2 in/hr  
Time of infiltration: 1.5 hrs.  
Infiltration Volume: 210 cubic feet

Volume 2 discharged to Secret Ravine = Discharge 2 @ site (6,840 cf.)  
– Infiltration (210 cf.)  
= 6,630 cubic feet

**Volume 2 Discharged to Secret Ravine: 49,592 gallons**

## 7. Summary / Discussion:

The results from the calculations in the above report are summarized as follows:

### Volume discharged from site:

Discharge Location #1 (Detention Basin)

Area: 3.1 acres  
Rainfall: 0.87 inches  
Estimated volume: 16,873 gallons

Discharge Location #2 (Dominguez Loop)

Area: 6.2 acres  
Rainfall: 0.30 inches  
Storage released 4,800 cubic feet  
Estimated volume: 51,167 gallons

**Total Estimated volume discharged from Site: 68,039 gallons**

### Volume discharged Into Secret Ravine:

Estimated volume from location #1 (Detention Basin): 16,873 gallons  
Estimated volume from location #2 (Dominguez Loop): 49,592 gallons

**Total Estimated volume discharged into Secret Ravine: 66,465 gallons**

The results listed above are estimates based on available information including: photos, field reports by personnel (eye witnesses) at the site during the rain event, and recorded rainfall data from the City of Roseville. The calculations are not based on field measurements during the storm event. The volume estimates listed in this report should not be misconstrued as quantitative engineering results but rather as opinions based on engineering judgment.

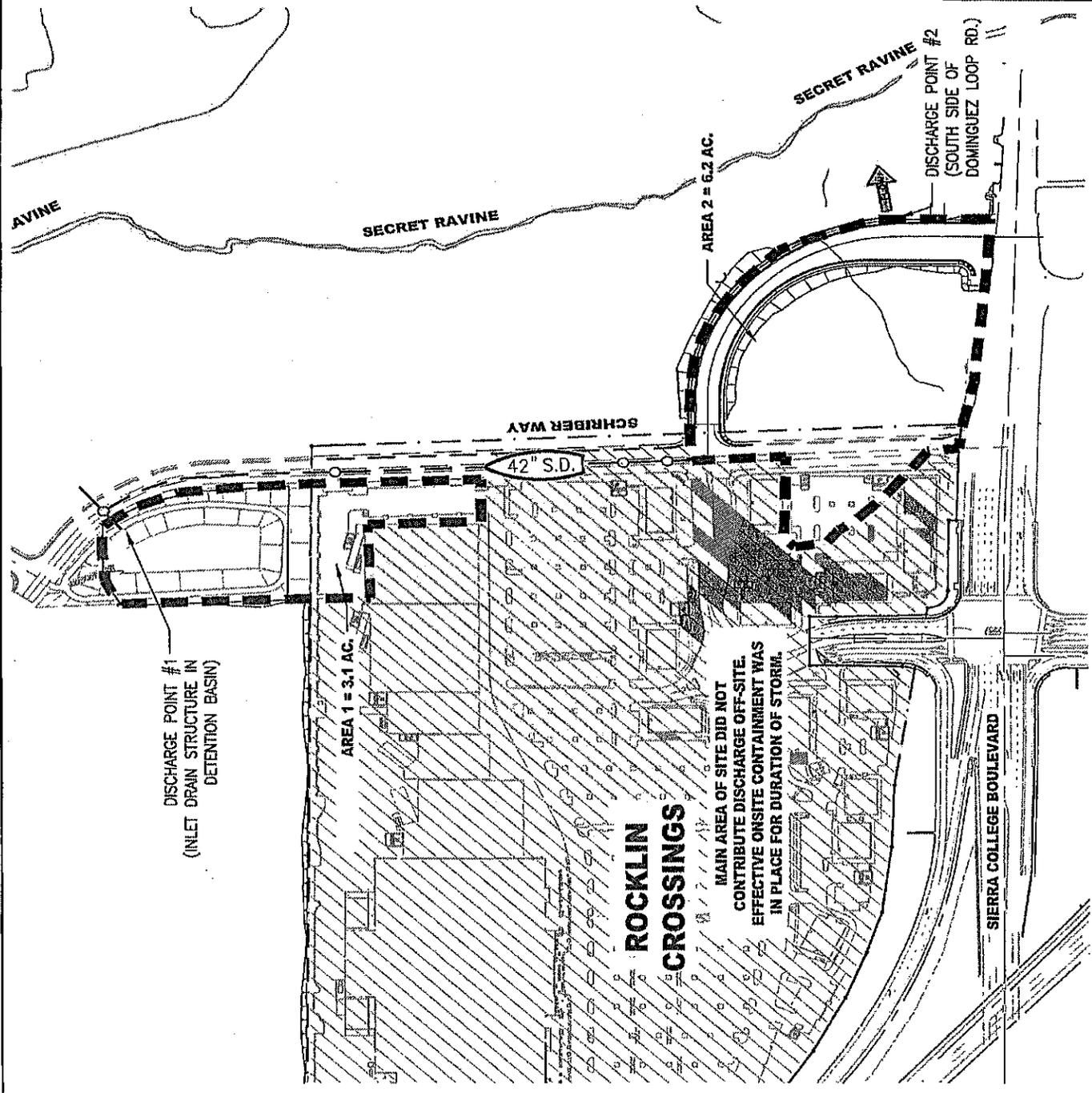
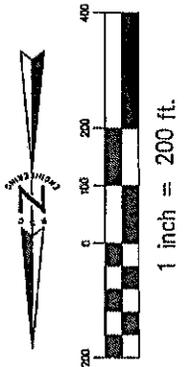
The back-checks of volumes for each discharge are provided as an independent check of the reasonableness of the assumptions used in the primary volume calculations. The back checks are not intended to provide confirmation of the primary calculations; they are intended to put the primary calculations into perspective and verify reasonableness.

# **ROCKLIN CROSSINGS**

## **City of Roseville Rain Gage Records Secret Ravine at Rocklin Road**

**November 28, 2012 – December 5, 2012**

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E.S.C. ENGINEERING  
 10000 DOWNEY AVENUE, SUITE 100  
 DOWNEY, CA 91704-4102  
 TEL: 714.225.8888 FAX: 714.225.4102

ROCKLIN CROSSINGS  
 ROCKLIN, CA

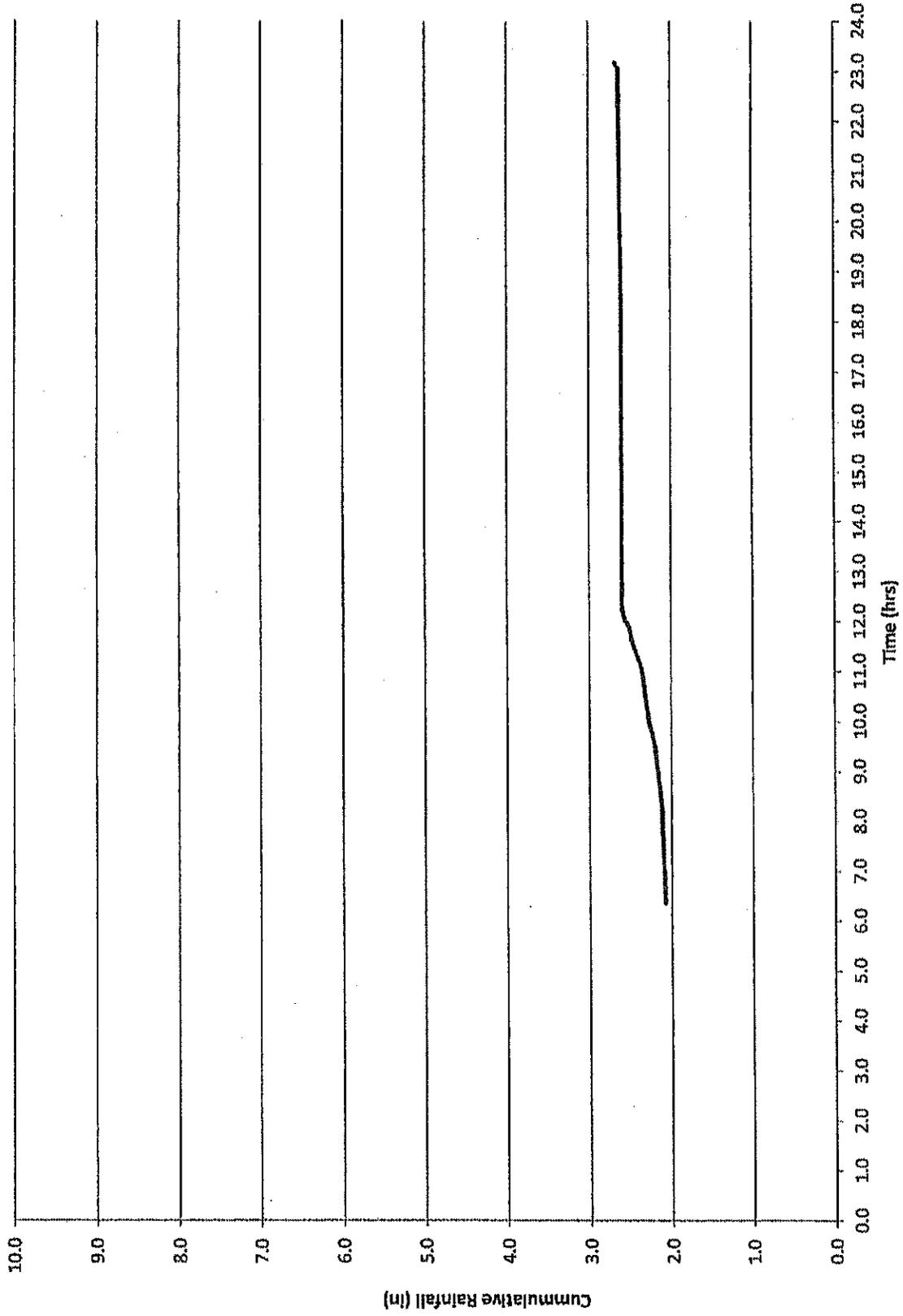
FIGURE - 1  
 DISCHARGE EXHIBIT

PROJECT NO: RCL-002 DATE: 1/25/2013 SHEET NO. 1 OF 1

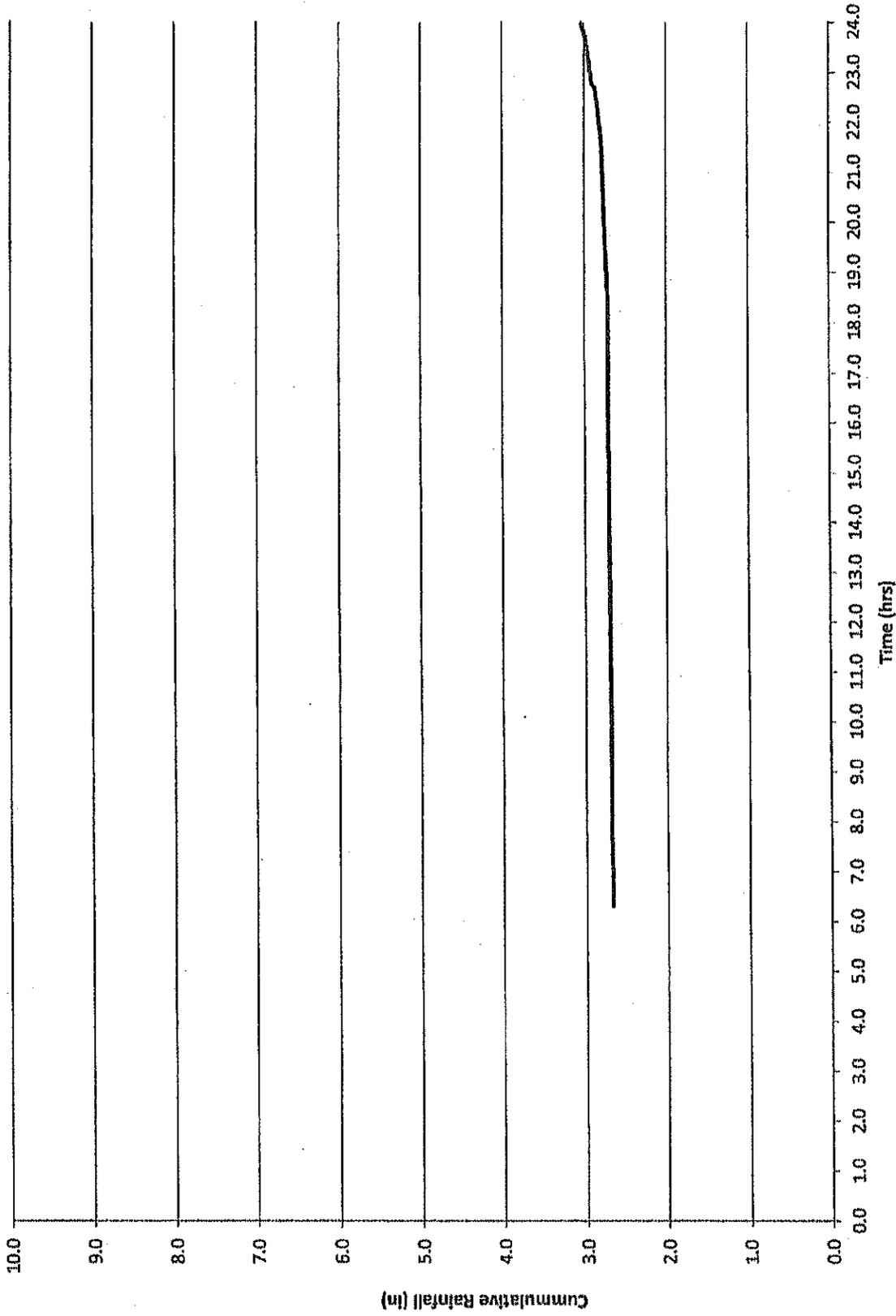
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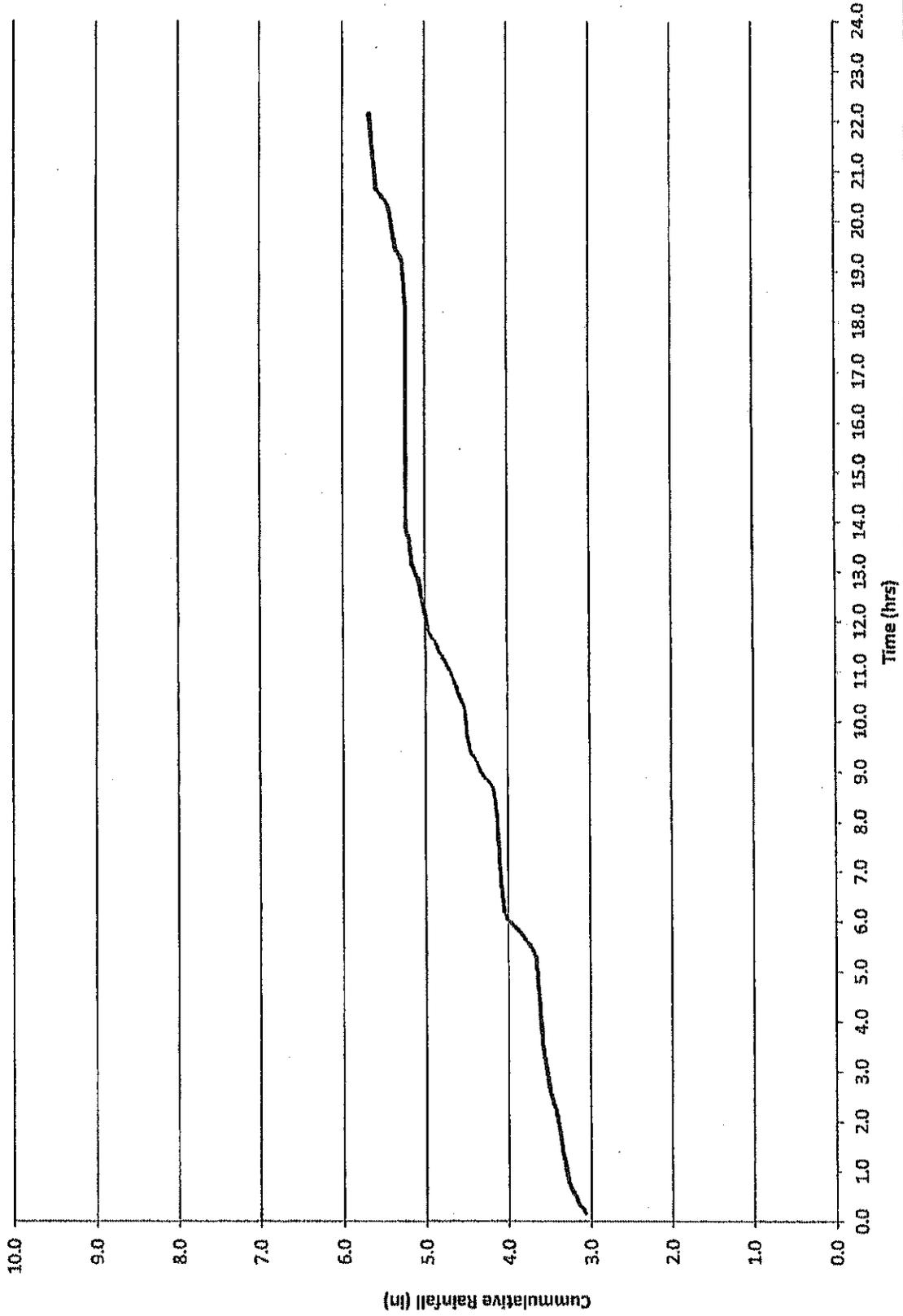
28-Nov-12



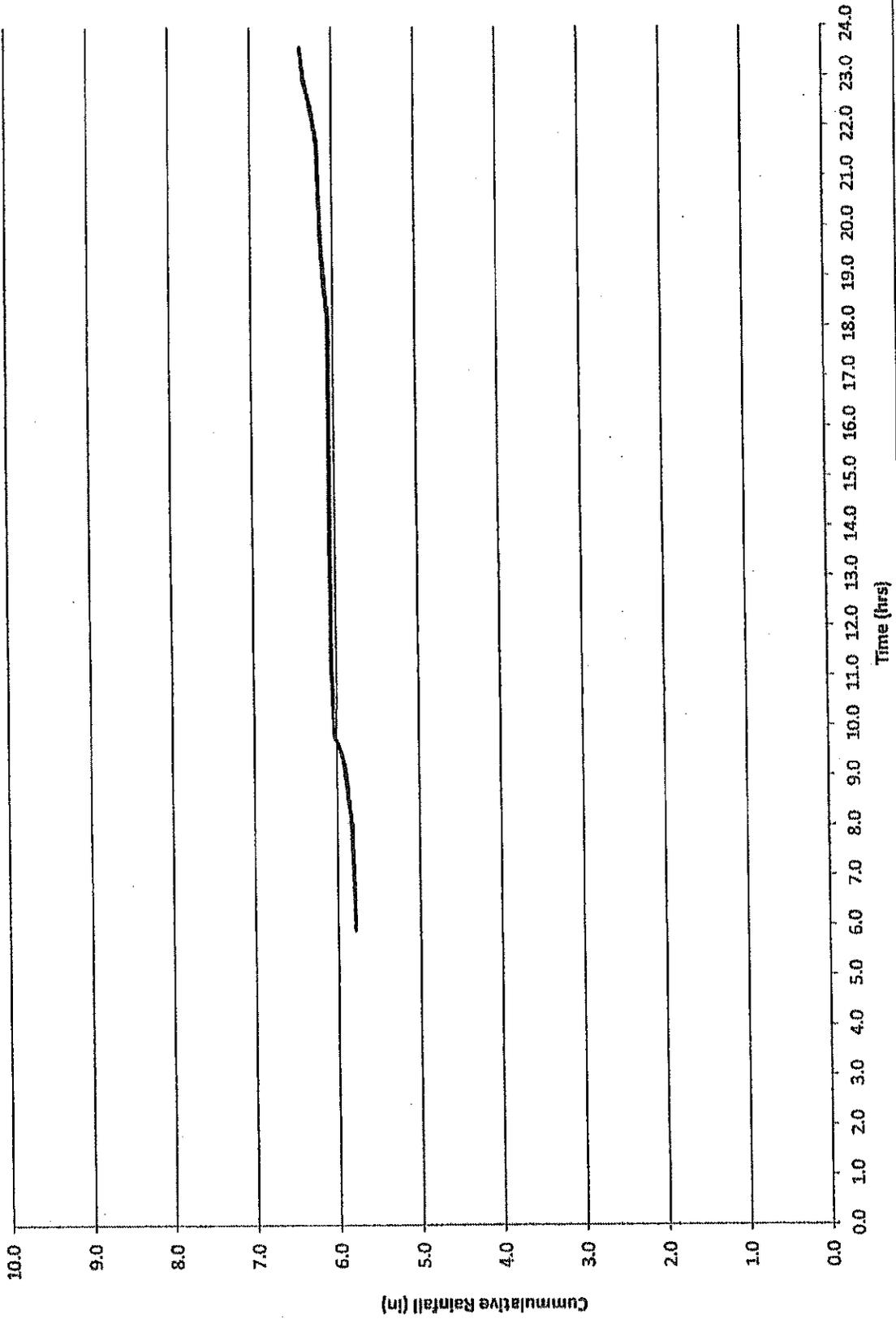
29-Nov-12



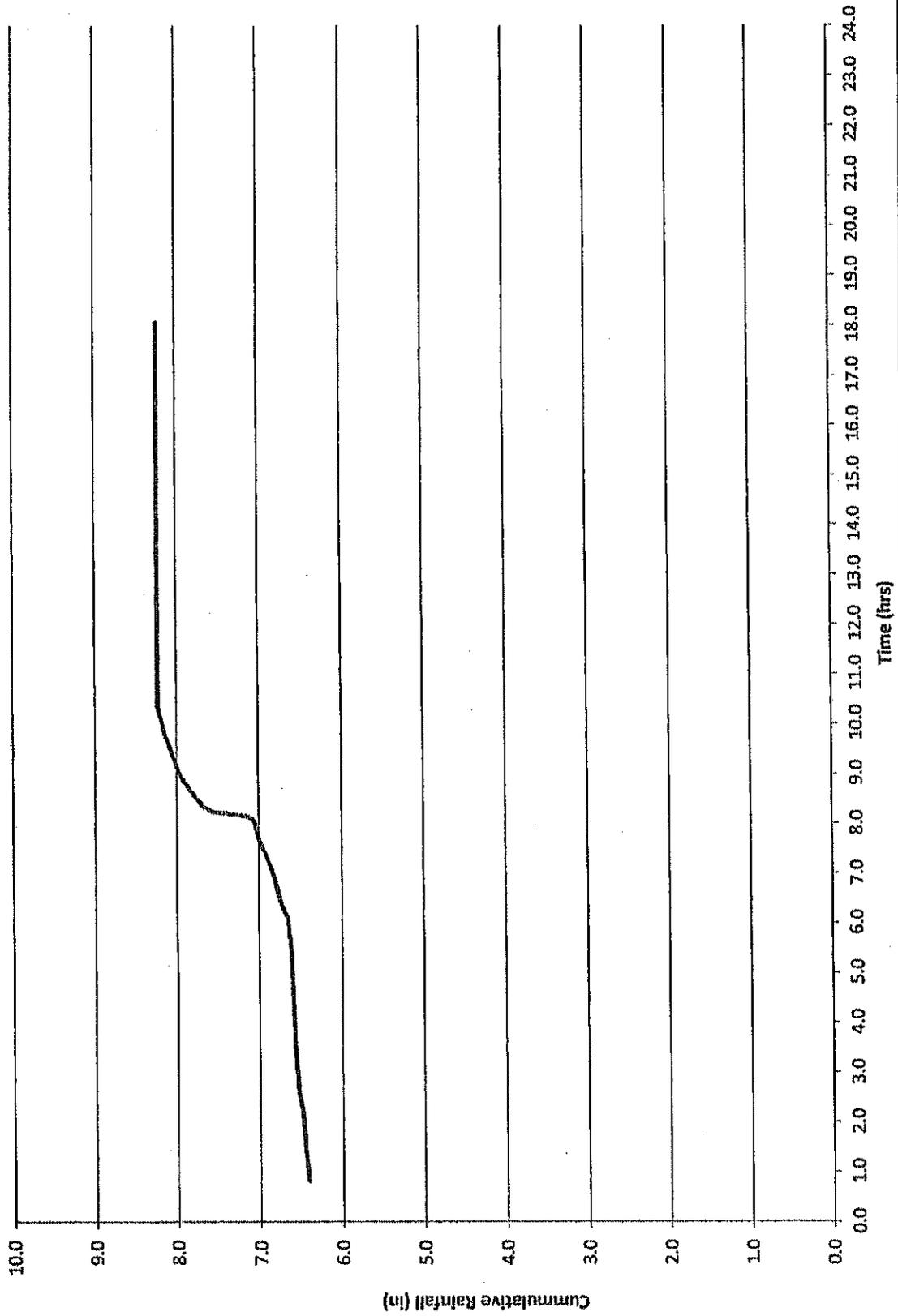
30-Nov-12



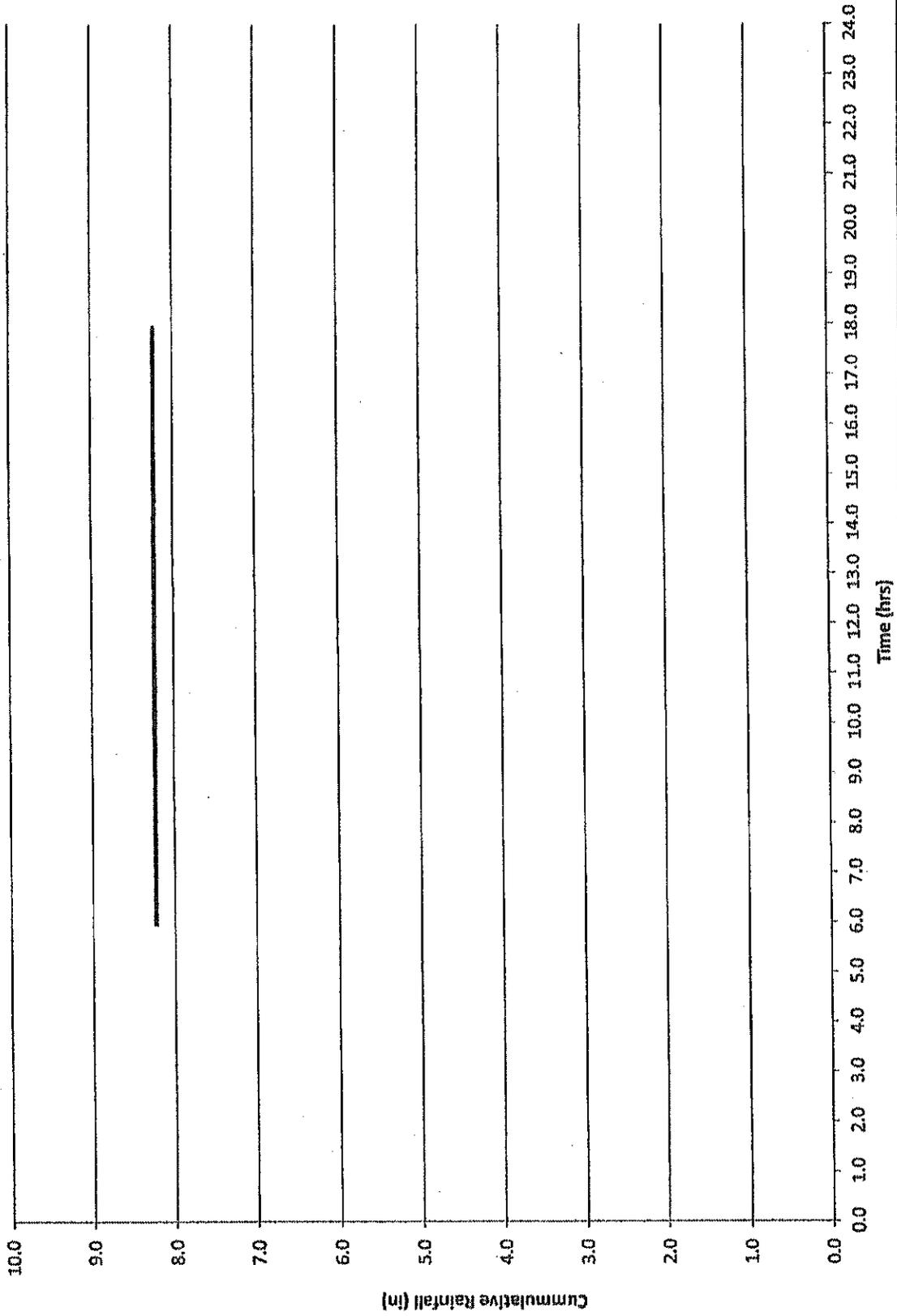
1-Dec-12



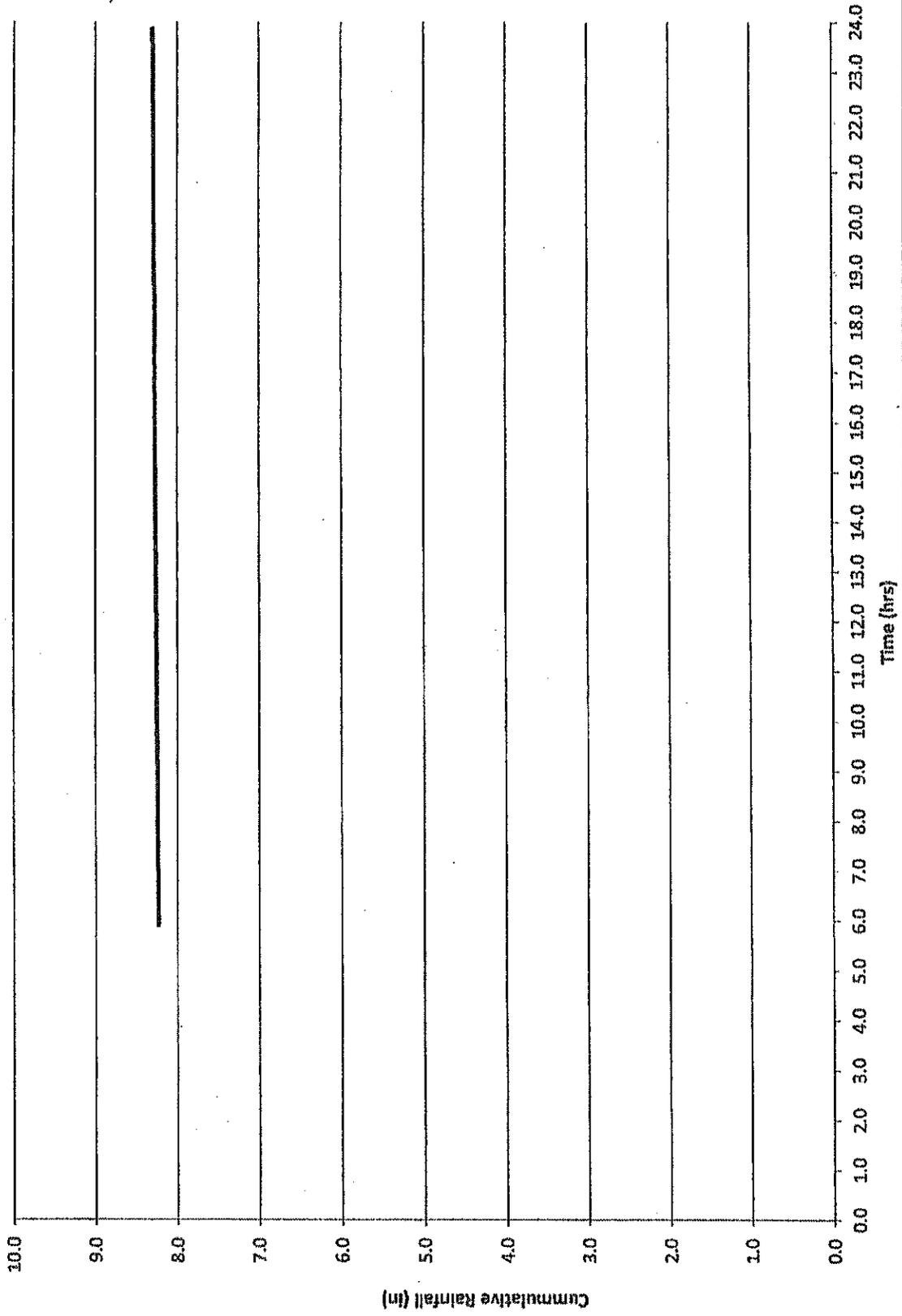
2-Dec-12



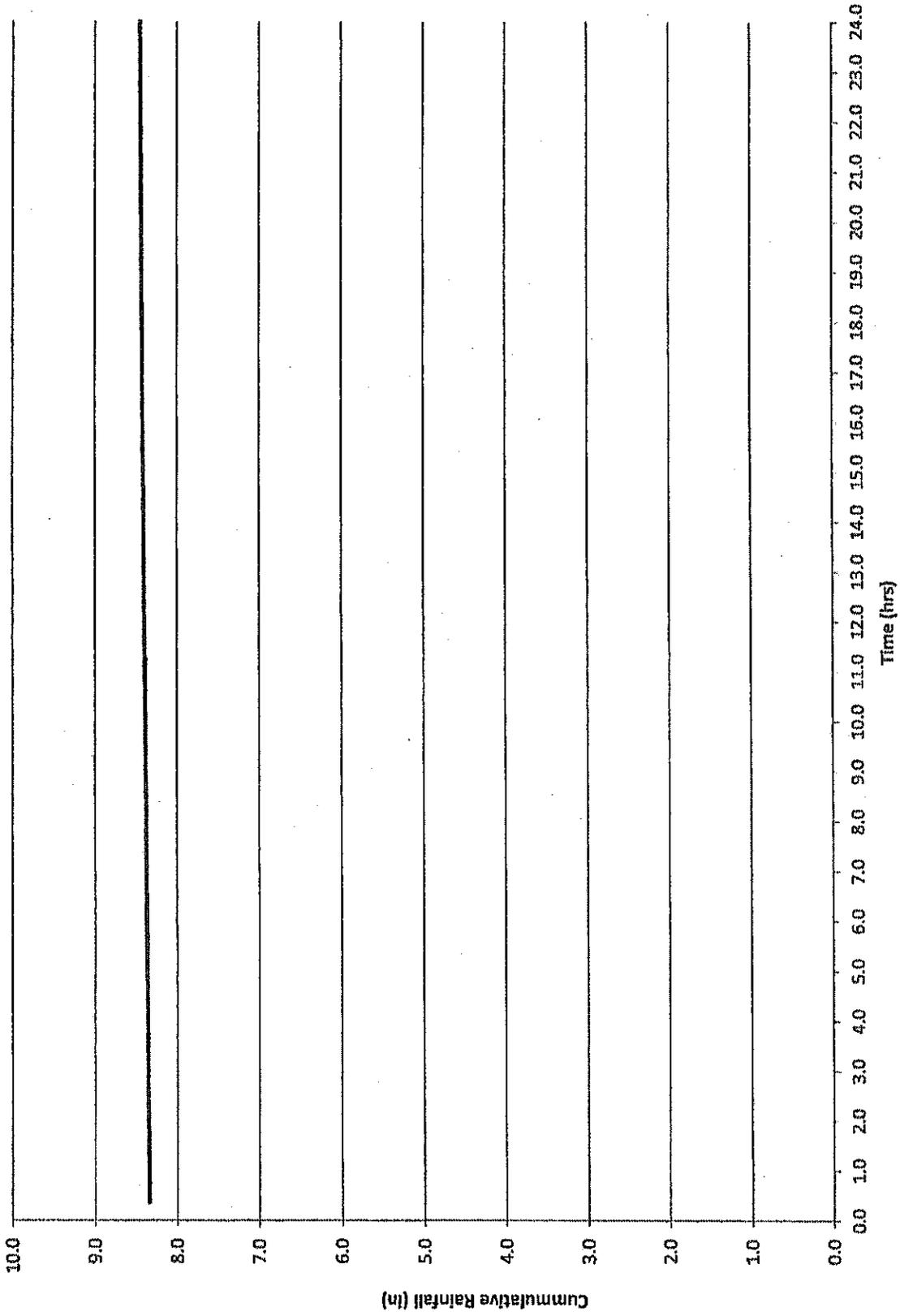
3-Dec-12



4-Dec-12



5-Dec-12

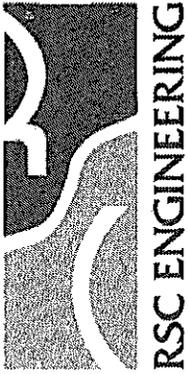


# **ATTACHMENT B**

**RESPONSE TO NOTICE OF VIOLATION**

**FOLLOW UP AND CLARIFIATION**

**RE: VOLUME ESTIMATES OF  
SEDIMENT LADEN DISCHARGE FROM  
SITE**



**Response to Notice of Violation  
Follow up and Clarification  
Re: Volume estimates of Sediment laden discharge from  
site**

For:

Rocklin Crossings WDIID# 5S31C364098  
Rocklin Crossings Detention Basin WDIID# 5S31C364108  
Dominguez Loop Road WDIID# 5S31C364102  
Center at Secret Ravine WDIID# 5S31C364105

**RSC Engineering**

February 14, 2013

RSC Engineering, Inc.  
Consulting Engineers

2250 Douglas Blvd.  
Suite 150  
Roseville, CA 95661  
916.788.2884  
Fax 916.788.4408  
rsc-engr.com

Please see the responses in bold to the questions below:

### Question #3:

Paragraph 3 on Page 9 states that the earthen dike at the west end of the Dominguez Loop failed and the runoff was stopped within 1.5 hours. The NOV Response does not specifically state when the breach failure occurred, but S.D. Deacon estimated the failure to occur at 0830 hours in their 12/18/12 Summary of BMPs and other storm water control efforts submittal. S.D. Deacon staff also verbally stated on 12/12/12 at the Water Board office meeting that the Dominguez Loop Road earth dam breached around 8AM on 11/30/12, the temp basin was enlarged, and discharges off the site were stopped by "Friday night".

Water Board staff believe that the discharge of turbid storm water at the Dominguez Loop Road earth dam (aka Discharge Point #2) may have been temporarily interrupted as repair efforts were initiated. Water Board staff was on site on 11/30 from 0940 to approximately 1110 hours and turbid storm water was still discharging from Discharge Point #2 at 1100 hours when QSP Dave Clayson and Water Board staff left the Discharge Point #2 site. Water Board Photograph No. 76, taken at 1055 hours at Discharge Point #2 is attached for your review.

Based on this information, please revise your estimate of when discharges off the construction site were stopped.

Per conversations with S.D. Deacon, the discharge was partially stopped at 10:00 a.m. when the rock berm was re-constructed as shown in the photo (1.5 hours after the berm failure); the discharge was completely stopped at 11:15 a.m. once the D-8 arrived at the discharge location.

The runoff at discharge location 2 during the time span from 10:00 a.m. to 11:15 a.m. cannot be calculated using the product of rainfall, area, and C factor as was done in the original calculations. During this time span the discharge was significantly reduced by the re-constructed crushed rock berm. A large percentage of the runoff from Area 2 was captured behind the re-constructed crushed rock berm while the remainder flowed through the re-constructed rock berm.

The volume of water discharged from 10:00 a.m. to 11:15 a.m. is calculated by estimating the flow in photo #76 taken by Marty Hartzell at 10:55 a.m. on 11/30/12 (shown below):



Using an assumed flow depth of 1 inch and an assumed flow width of 2 feet, the flow rate shown in this picture can be calculated using the sharp crested weir equation:

$$Q = \frac{2}{3} * C_d * A * \sqrt{2gh}$$

$C_d = 0.6$

$A = \text{flow depth} * \text{flow width} = 0.08' * 2'$

$Q = 0.15 \text{ cfs}$

Given the calculated flow rate and the time duration of flow the Volume of water discharged can be calculated as follows:

**Discharge Volume from Area2 from 10:00 a.m. to 11:15 a.m.**

<b>Flow rate:</b>	<b>0.15 cfs (from flow estimate above)</b>
<b>Flow time:</b>	<b>4,500 sec. (1.25 hrs. 10:00 to 11:15)</b>
<b>Volume:</b>	<b>675 cubic feet</b>
<b>Volume:</b>	<b><u>5,063 gallons</u></b>

**Question #4:**

*Appendix F provides the estimated volume of sediment laden storm water discharged from the site.*

*Figure 1 In Appendix F provides an estimate of the drainage area for Discharge Point #2 at 6.2 acres, but this area does not include storm water flowing from graded and compacted roads or areas north of the Dominguez Loop Road and Center at Secret Ravine properties. The drainage area for the Dominguez Loop Road and the Center at Secret Ravine sites is listed in SMARTS at 2.9 acres and 3.7 acres, respectively, which by itself is 6.6 acres.*

**Please see the attached exhibit which illustrates the discharge area for the 11-30-2012 storm event, the disturbed area from the Dominguez Loop SWPPP, and the disturbed area from the Center at secret Ravine SWPPP. The exhibit shows the disturbed areas from the two SWPPPs overlap. Removing the overlap area ( 1.18 ac) and the stabilized slope area that discharges directly offsite ( 0.60 ac) and comparing the sum of the two SWPPP plans ( 4.82 ac) vs the 11/30/12 discharge map ( 6.2 ac) shows that the discharge acreage is greater than the combined area of the two SWPPP documents.**

*Figure 1 includes a statement that the "Main area of site did not contribute discharge off-site", and "Effective onsite containment was in place for duration of storm." However, the 11/30/12 Daily Superintendent Report states that "Around 7:45am dike behind job trailer was overflowing causing dike to leak, water ran across Schriber way down to holding basin at Dominguez Loop." On 11/30, Water Board staff observed storm water ponding near the construction trailer and flowing south towards Schriber Way.*

*Based on this information, please reevaluate the Area 2 drainage area.*

**The revised exhibit includes the additional drainage area that contributed to the discharge point #2 after overtopping the berm on the north side of Schriber Way between pad 15 and pad 14 directly north of the intersection with Dominguez Loop Road. In addition to the area up-stream of that berm, the area north of Schriber way and east of Sierra College Boulevard was added to the total area contributing to the discharge at discharge location #2. This area (Area 2B in the attached revised Discharge Exhibit) was covered by existing vegetation and allowed ponding in two locations prior to releasing across Schriber Way to the south.**

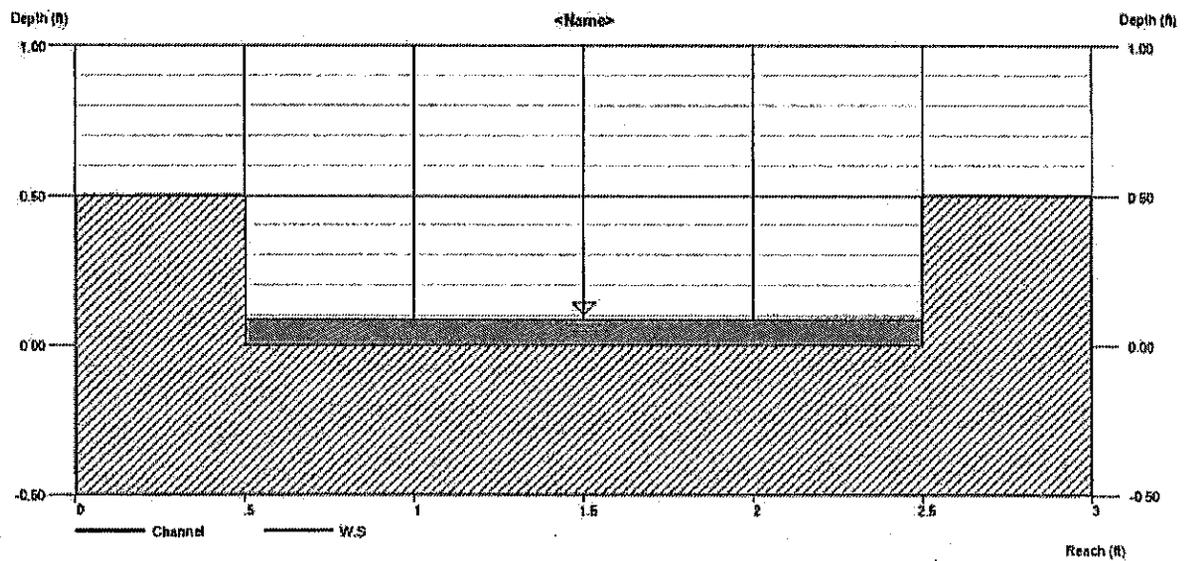
**The runoff from Area 2A was attenuated due to the ponding up-stream of the berm and the runoff from Area 2B was attenuated by the dense existing vegetative cover and the two ponding areas. The additional discharge from these areas is estimated to be the precipitation over the areas during the span of time from 8:30 a.m. to 10:00 a.m. (0.3 inches, Refer to the Appendix F from the Response to Notice of Violation dated 1-25-2013) multiplied by the area and the C coefficient of 0.2 (due to the vegetative cover and ponding).  
Volume 2A and 2B = Rainfall (ft.) \* Area (s.f.) \* C**

**Volume from Areas 2A and 2B**

Area 2A + Area 2B: 135,624 s.f. (1.1 ac. + 2.0 ac.)  
 Rainfall: 0.025 ft. (0.3 in.)  
 C: 0.2  
 Volume: 678 cubic feet  
 Volume: 5,085 gallons

**Backcheck of Volume from areas 2A and 2B**

Photo #4 from the NOV shows the discharge from areas 2A and 2B flowing across Schriber Way and into The Center at Secret Ravine. Given a total volume of 678 cf. over a 1.5 hour time span, the average flow rate is 0.13 cfs. Based on photo #4 from the NOV and given the average flow across Schriber Way the flow depth over Schriber Way is estimated using the broad crested weir equation with a bottom width of 2 feet. The Broad crested weir calculations are presented below:



Depth	Q	Area	Veloc	TopWidth	Energy
(ft)	(cfs)	(sqft)	(ft/s)	(ft)	(ft)
0.09	0.130	0.17	0.75	2.00	0.69

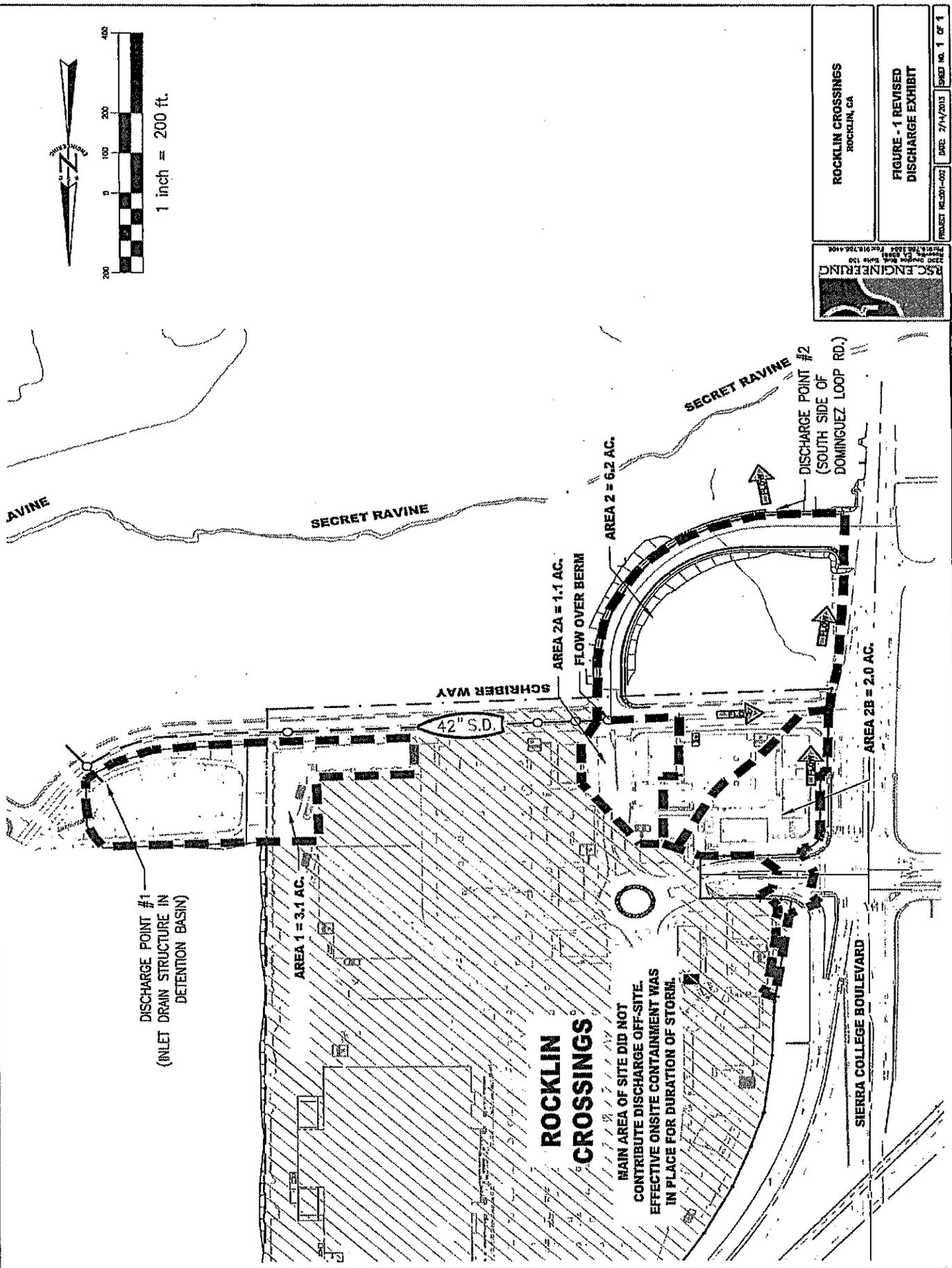
**Depth of Flow = 0.09'**

A flow depth of 0.09' above the roadway surface seems reasonable with what is shown in Photo# 4.

**Summary:**

Discharge Volume reported in 1/25/2013 Response to NOV:	51,167 gallons
Additional Volume discharged from Areas 2A and 2B north of Schriber Way:	5,085 gallons
Additional Volume discharged at discharge #2 from 10:00 a.m. to 11:15 a.m.:	5,063 gallons

**Revised Discharge Volume from Location #2: 61,315 gallons**

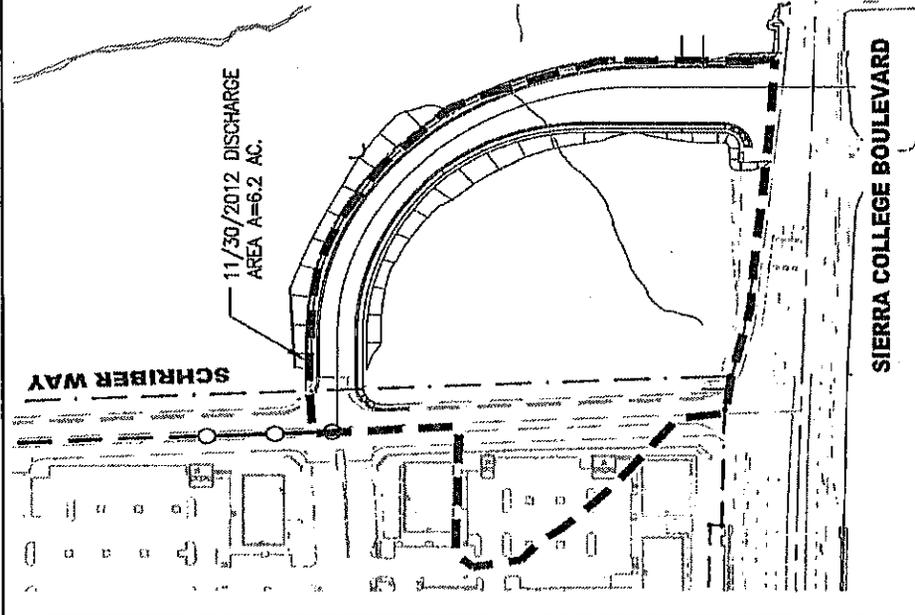


**BSC ENGINEERING**  
 2200  
 1200  
 100

**ROCKLIN CROSSINGS**  
 ROCKLIN, CA

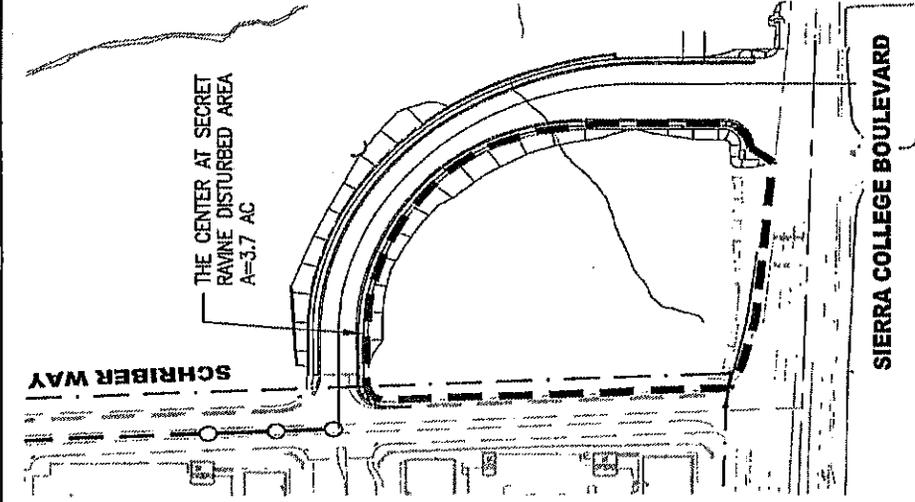
**FIGURE - 1 REVISED**  
 DISCHARGE EXHIBIT

PROJECT #12-01-002 | DATE: 2/14/2013 | SHEET NO. 1 OF 1



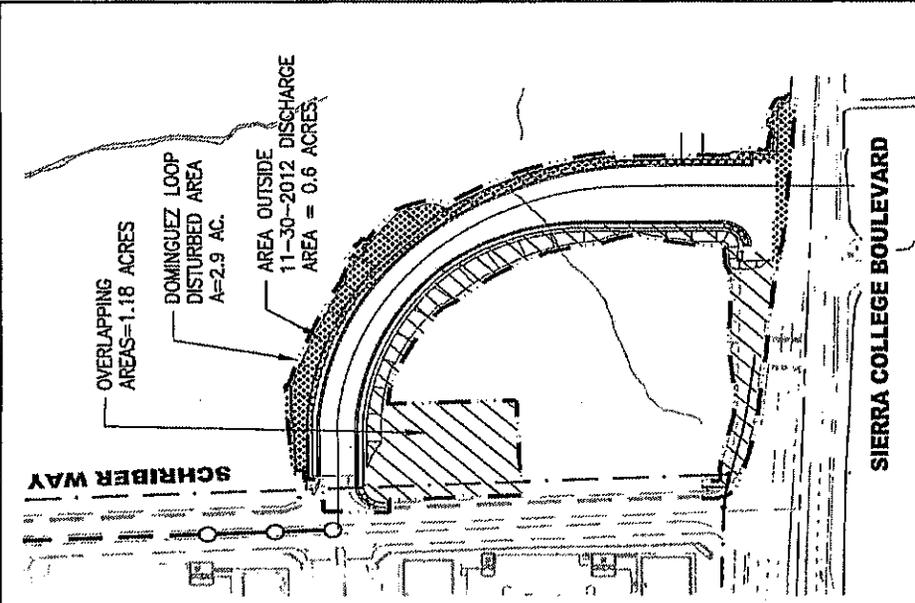
SIERRA COLLEGE BOULEVARD

**AREA-2 CONTRIBUTING TO 11-30-2012 DISCHARGE.**  
 AREA = 6.2AC



SIERRA COLLEGE BOULEVARD

**DISTURBED AREA FROM "THE CENTER AT SECRET RAVINE" SWPPP**  
 NET = 3.7AC



SIERRA COLLEGE BOULEVARD

**"DOMINGUEZ LOOP" SWPPP**  
 AREA = 2.9AC (SWPPP)  
 LESS: 0.6AC (AREA OUTSIDE DISCHARGE AREA)  
 LESS: 1.18AC (OVERLAP AREA)  
 NET = 1.12AC



ROCKLIN CROSSINGS  
 ROCKLIN, CA

FIGURE 1A  
 AREA EXHIBIT

PROJECT: RL-001-002 DATE: 2/14/2013 SHEET NO. 1 OF 1

RESULTANT DISTURBED AREA FROM DOMINGUEZ LOOP & SECRET RAVINE CONTRIBUTING TO THE DISCHARGE AREA FOR DISCHARGE POINT #2

3.7AC + 1.1AC = 4.8AC < 6.2AC



# **ATTACHMENT C**

**ROCKLIN CROSSINGS COMPARISON  
OF VOLUME DISCHARGED FROM SITE  
WITH VOLUME DISCHARGED IN  
SECRET RAVINE**



2250 Douglas Blvd.  
 Suite 150  
 Roseville, CA 95661  
 916.788.7884  
 916.788.4880 (fax)  
[info@rsc-engr.com](mailto:info@rsc-engr.com)

## Rocklin Crossings

Comparison of Volume discharged from site with volume discharged in Secret Ravine.

Date: 3/29/2013  
 RSC Proj. #: 001-002

**Objective:** Compare the volume of water discharged into Secret Ravine from the Rocklin Crossings Site during the November 30, 2013 storm event with the volume of water in Secret Ravine at the Rocklin Crossings site at during the discharge event.

### Volume of water discharged from the Rocklin Crossings site:

Volume of water discharged from the Rocklin Crossings Site: **76,613 Gallons**

Based on the "Estimated volume of sediment laden water discharged from the site" by RSC Engineering dated 1-25-2013 and the "Follow up Clarification to Volume estimates of sediment laden discharge" prepared by RSC Engineering dated 2-14-2013.

### Volume of water discharged by Secret Ravine during the discharge event:

The amount of water discharged by Secret Ravine during the November 30, 2012 discharge event is estimated using the flow hydrograph\* at the City of Roseville maintained gauge station on Secret Ravine where it crosses Rocklin Road just east of Highway 80 and 1.2 miles south west of the project (Refer to Figure 1 for Hydrograph).

The flow rate in Secret Ravine at the gauge station is reduced by a factor to represent the flow at the site discharge location. The reduction factor represents the shed area upstream of the gauge station and downstream of the site discharge location. The reduction factor is the shed area between the site and the gauge station divided by the total shed area up-stream of the gauge station.

The volume of water discharged from Secret Ravine that flowed past the Rocklin Crossings discharge location was calculated by determining an average flow rate for the time span from 0815 hrs to 1015 hrs on November 30, 2012 and multiplying the average flow rate (Q) by the 2 hours ( ie: 0815 hrs to 1015 hrs).

\* Flow Hydrograph provided by Civil Engineering Solutions, Inc. based on the measured stream depth data recorded at the gauge station by the City of Roseville.

Shed area between site and gauge station:	275	Acres
Total Shed area upstream of gauge station:	9,925	Acres
<b>Flow reduction Factor:</b>	<b>0.028</b>	
Q @ 0800 hrs:	369	
Q @ 1000 hrs:	530	
Time span:	2 hrs.	
Average Q:	450 cfs	
Volume = Avg Q (cfs) * Time (s):	3,240,000	Cubic Feet
<b>Volume discharged in Secret Ravine @ gauge station:</b>	<b>24,235,200</b>	<b>Gallons</b>
Volume of water discharged from the Rocklin Crossings Site:	76,613	Gallons
Volume Discharged in Secret Ravine @ site:	24,235,200	Gallons
<b>Site Discharge percentage of Secret Ravine Discharge:</b>	<b>0.32%</b>	

**Figure 1**  
Flow Hydrograph at Gauge Station

Date / Time	Depth	Est. Flow	Date / Time	Depth	Est. Flow
11/30/2012 00:03:01	250.49	ft 176.4636	11/30/2012 11:08:33	252.17	ft 543.5828
11/30/2012 00:18:07	250.47	ft 171.678	11/30/2012 11:23:36	252.24	ft 559.9288
11/30/2012 00:33:11	250.55	ft 186.0348	11/30/2012 11:38:38	252.3	ft 592.6208
11/30/2012 00:48:15	250.59	ft 187.63	11/30/2012 11:53:41	252.36	ft 608.1324
11/30/2012 00:48:15	250.59	ft 187.63	11/30/2012 12:08:43	252.48	ft 638.7384
11/30/2012 01:03:18	250.63	ft 195.606	11/30/2012 12:23:44	252.5	ft 654.0414
11/30/2012 01:18:21	250.66	ft 203.582	11/30/2012 12:38:46	252.54	ft 654.0414
11/30/2012 01:18:21	250.66	ft 203.582	11/30/2012 12:53:48	252.52	ft 654.0414
11/30/2012 01:33:24	250.64	ft 195.606	11/30/2012 13:08:50	252.55	ft 669.3444
11/30/2012 01:48:26	250.64	ft 195.606	11/30/2012 13:23:52	252.66	ft 699.9504
11/30/2012 02:03:28	250.65	ft 201.9868	11/30/2012 13:38:53	252.65	ft 699.9504
11/30/2012 02:18:30	250.67	ft 203.582	11/30/2012 13:53:55	252.71	ft 715.2534
11/30/2012 02:33:32	250.71	ft 211.558	11/30/2012 14:08:57	252.74	ft 727.4958
11/30/2012 02:48:34	250.76	ft 219.534	11/30/2012 14:23:59	252.77	ft 730.5564
11/30/2012 02:48:34	250.76	ft 219.534	11/30/2012 14:39:00	252.75	ft 730.5564
11/30/2012 03:03:36	250.8	ft 225.9148	11/30/2012 14:54:02	252.77	ft 730.5564
11/30/2012 03:18:38	250.82	ft 227.51	11/30/2012 15:09:04	252.81	ft 745.8594
11/30/2012 03:18:38	250.82	ft 227.51	11/30/2012 15:24:06	252.85	ft 764.7072
11/30/2012 03:33:40	250.86	ft 237.609	11/30/2012 15:39:07	252.82	ft 745.8594
11/30/2012 03:48:43	250.91	ft 247.708	11/30/2012 15:54:08	252.82	ft 745.8594
11/30/2012 04:03:44	250.97	ft 259.8268	11/30/2012 16:09:09	252.78	ft 730.5564
11/30/2012 04:18:45	251	ft 265.8862	11/30/2012 16:24:11	252.79	ft 730.5564
11/30/2012 04:33:47	251.03	ft 267.906	11/30/2012 16:39:12	252.73	ft 715.2534
11/30/2012 04:48:49	251.06	ft 278.005	11/30/2012 16:54:13	252.7	ft 715.2534
11/30/2012 04:53:49	251.06	ft 278.005	11/30/2012 17:09:14	252.64	ft 684.6474
11/30/2012 05:03:50	251.14	ft 288.104	11/30/2012 17:24:15	252.54	ft 654.0414
11/30/2012 05:18:55	251.14	ft 288.104	11/30/2012 17:39:16	252.5	ft 654.0414
11/30/2012 05:34:00	251.19	ft 304.2624	11/30/2012 17:54:17	252.4	ft 623.4354
11/30/2012 05:39:01	251.19	ft 304.2624	11/30/2012 18:09:18	252.29	ft 576.2748
11/30/2012 05:54:06	251.29	ft 324.4604	11/30/2012 18:24:19	252.26	ft 576.2748
11/30/2012 06:04:09	251.41	ft 347.2074	11/30/2012 18:39:21	252.16	ft 543.5828
11/30/2012 06:19:13	251.53	ft 367.9934	11/30/2012 19:09:24	252	ft 494.5448
11/30/2012 06:34:17	251.61	ft 388.7794	11/30/2012 19:09:24	252	ft 494.5448
11/30/2012 06:49:20	251.71	ft 409.5654	11/30/2012 19:24:28	251.92	ft 461.8528
11/30/2012 07:04:21	251.61	ft 388.7794	11/30/2012 19:39:30	251.86	ft 445.5068
11/30/2012 07:19:22	251.55	ft 378.3864	11/30/2012 19:54:32	251.79	ft 419.9584
11/30/2012 07:39:24	251.54	ft 367.9934	11/30/2012 20:09:34	251.69	ft 399.1724
11/30/2012 07:54:26	251.55	ft 378.3864	11/30/2012 20:24:36	251.65	ft 399.1724
11/30/2012 07:54:26	251.55	ft 378.3864	11/30/2012 20:39:38	251.61	ft 388.7794
11/30/2012 08:24:29	251.64	ft 388.7794	11/30/2012 20:54:40	251.65	ft 399.1724
11/30/2012 08:39:31	251.69	ft 399.1724	11/30/2012 21:09:41	251.68	ft 399.1724
11/30/2012 08:54:34	251.75	ft 419.9584	11/30/2012 21:24:42	251.58	ft 378.3864
11/30/2012 09:09:37	251.84	ft 430.3514	11/30/2012 21:39:44	251.58	ft 378.3864
11/30/2012 09:24:41	251.94	ft 461.8528	11/30/2012 21:54:45	251.55	ft 378.3864
11/30/2012 09:39:43	252.03	ft 494.5448	11/30/2012 22:24:48	251.61	ft 388.7794
11/30/2012 09:53:18	252.11	ft 527.2368	11/30/2012 22:39:50	251.66	ft 399.1724
11/30/2012 09:53:18	252.11	ft 527.2368	11/30/2012 22:54:51	251.7	ft 409.5654
11/30/2012 10:08:21	252.15	ft 543.5828	11/30/2012 23:09:52	251.7	ft 409.5654
11/30/2012 10:23:23	252.14	ft 527.2368	11/30/2012 23:24:53	251.74	ft 409.5654
11/30/2012 10:38:26	252.13	ft 527.2368	11/30/2012 23:39:54	251.77	ft 419.9584
11/30/2012 10:53:30	252.13	ft 527.2368	11/30/2012 23:54:57	251.76	ft 419.9584





# **EXHIBIT L**

**RESUME OF RICHARD S. CHAVEZ**



## **Richard S. Chavez, P. E.**

President, RSC Engineering, Inc.

- EDUCATION**      B.S. Civil Engineering with Honors  
University of California Berkley - 1975
- LICENSE**            Registered Professional Civil Engineer  
No. C29033, California 1978
- EMPLOYMENT** 2004 – Present RSC Engineering, Inc.  
Roseville, CA  
President
- 1999 – 2004 Doucet & Associates  
Roseville, CA  
Managing Engineer, Vice President
- 1981 – 1999 Morton & Pitalo, Inc.  
Sacramento, CA  
Project Manager, Vice President
- 1975 – 1981 Contra Costa County  
Public Works Flood Control, Construction  
Land Development  
Martinez, CA  
Assistant Engineer

### **QUALIFICATIONS:**

Rick has more than 38 years of experience in civil engineering, 32 years of which are in the Sacramento area. He has completed hundreds of projects for both the private and public sectors. His expertise includes planning and design of a broad range of projects, including: commercial shopping centers, office complexes, warehouses, schools and parks, fire station, Regional Transit facilities, and single- and multi-family residential developments. Mr. Chavez has also worked on projects for the Army Corps of Engineers, the US Department of the Navy, and the US Postal Service, as well as major infrastructure projects including roadways, widening projects for state routes, surface and underground drainage, sewer and water facilities, and relocation of underground dry utilities.

Mr. Chavez has also been responsible for due diligence research and evaluation of title reports, ALTA surveys, geotechnical reports, preliminary site assessments, permit and development fee research and developing feasibility reports discussing site constraints. His experience includes evaluation of raw land, infrastructure needs, preparing major backbone infrastructure layouts for sewer, water, storm drain and roadways as well as preparation of opinions of probable costs for infrastructure layouts.

Mr. Chavez has worked with consultant teams and economic consultants to establish financing plans that include bonding, permit fee structures, and upfront infrastructure costs. He has also provided support services in the preparation of Project EIRs.

## **Partial List of Projects**

### **Retail**

- Rocklin Crossings, Rocklin, CA
- Rocklin Commons, Roseville, CA
- Capital Village, Rancho Cordova, CA
- College Square, Sacramento, CA
- Creekside South Retail Center, Roseville, CA
- Crocker Ranch Village Center, Roseville, CA
- Fairway Creek Shopping Center, Roseville, CA
- Burlington Site ADA Upgrade, Citrus Heights, CA
- Folsom Gateway Shopping Center, Folsom, CA
- Green Valley Marketplace, El Dorado Hills, CA
- Highland Reserve Market Place, Roseville, CA
- Kohl's, Vacaville, CA
- Kohl's Takeover Remodel, Santa Clara and San Jose, CA
- Laguna Gateway, Elk Grove, CA
- Lowes Home Improvement Warehouse - Citrus Heights, Folsom, Lincoln, Martell, Modesto, Roseville & San Bruno, CA
- Missouri Flat Villages, El Dorado County, CA
- Morgan Hill Retail Center, Morgan Hill, CA
- Natomas Park Retail Center, Sacramento, CA
- Park Place Plaza Phases 1 & 2, Sacramento, CA
- Renaissance Creek, Roseville, CA
- Rocklin Commons, Rocklin, CA
- Rocklin Crossings, Rocklin, CA
- Safeway Building Expansion, Lakeport, CA
- Skywest Commons, Hayward, CA
- Sterling Point Retail Center, Lincoln, CA
- Sunridge Plaza, Rancho Cordova, CA
- Sunrise Mall Food Court Remodel, Citrus Heights, CA
- Sunset West Safeway Center, Rocklin, CA

### **Office**

- 2150 Douglas Blvd, Roseville, CA
- 3300 Douglas Blvd, Roseville, CA
- Creekside Ridge Office Park, Units 5 & 6, Roseville, CA
- Johnson Ranch Professional Center, Roseville, CA
- River View Business Park, Folsom, CA
- Serna Center – School District Admin. Office, Sacramento, CA
- Summit at Douglas Ridge, Roseville, CA
- William J. Carroll Government Center, Vacaville, CA

### **Medical**

- Florin Dialysis Parking Lot Rehabilitation, Sacramento, CA
- Kaiser Medical Office Building, ADA Site Upgrades, Sacramento, CA
- Kaiser Roseville Hospital, ADA Site Upgrades, Roseville, CA
- Kaiser South Medical Office Building II, ADA Upgrades, Sacramento, CA

- Kaiser South D.B. Moore Building, ADA Upgrades, Sacramento, CA

### **Schools**

- Allison School, North Highlands, CA
- Antelope Middle School, Antelope, CA
- Buljan Intermediate School, Roseville, CA
- Foresthill High School, Foresthill, CA
- Holmes Elementary School, North Highlands, CA
- Kemble Elementary School, Sacramento, CA
- Kimball High School, Tracy, CA
- Los Banos High School, Los Banos, CA
- Madison Elementary School, North Highlands, CA
- Oroville Middle School, Oroville, CA
- Regency Park Elementary School, Sacramento, CA
- Serna Center, Sacramento, CA
- Silverado Middle School, Roseville, CA
- Tracy Middle School, Tracy, CA
- Vencil Brown Elementary School, Roseville, CA
- West Side School, Rio Linda, CA

### **Apartments**

- Adagio Apartments, Sacramento, CA
- Autumn Oaks, Units 1 & 2, Roseville, CA
- Copperstone Village, Sacramento, CA
- Copperstone Village 2 & 3, Sacramento, CA
- Deer Valley Apartments, Roseville, CA
- Metro Center Condominiums, Sacramento, CA
- Sargeant Elementary School, Roseville, CA
- Sierra View Town Homes, Roseville, CA
- Tanglewood Apartments, Davis, CA
- Unaccompanied Enlisted Personnel Housing, Beale AFB, CA
- Verner Oaks Apartments, Sacramento County, CA
- Village Faire Apartments, Fair Oaks, CA
- Vineyard Park Apartments, Roseville, CA

### **Subdivisions**

- Alder Point, Roseville, CA
- Ashley Woods, Roseville, CA
- Broadstone, Roseville, CA
- Eastridge, Roseville, CA
- Emerson Place, Roseville, CA
- Eureka Village, Roseville, CA
- Hampton Village, Roseville, CA
- Hillsborough, Roseville, CA
- Hillsborough Park, Roseville, CA
- Kentfield, Roseville, CA
- Silverwood, Roseville, CA
- Wellington, Roseville, CA

## **Roadways**

- Cochran Road Widening, Morgan Hill, CA
- Douglas Boulevard, Roseville, CA
- East Roseville Parkway, Roseville, CA
- Eureka Road, Roseville, CA
- Highway 65 Frontage Improvements, Lincoln, CA
- Hillsborough Drive, Roseville, CA
- Ingram Slough NEV Crossing Study, Lincoln, CA
- Iron Point Road Widening, Folsom, CA
- Lammers Road Widening, Tracy, CA
- Missouri Flat Road Widening, El Dorado County, CA
- North Central Specific Plan, Roseville, CA
- Old Auburn Road Extension, Roseville, CA
- Professional Drive, Roseville, CA
- Sierra College Boulevard, Roseville, CA
- Southeast Specific Plan, Roseville, CA
- Stanford Ranch Road Widening and Median Improvements, Roseville, CA
- West Stockton Boulevard, Sacramento, CA

## **Industrial**

- SMUD East Campus - Operations Center, Sacramento, CA
- DBI Warehouse and Parking Lot Rehabilitation, West Sacramento, CA
- El Dorado Fire Station, El Dorado Hills, CA
- F Street Commerce Center, West Sacramento, CA
- Hanson pipe Products, Sacramento, CA
- Main Post Office Expansion, West Sacramento, CA
- Main Post Office, Stockton, CA
- Main Post Office, West Sacramento, CA
- Main Post Office Expansion, West Sacramento, CA
- R&L Carriers, West Sacramento, CA
- Roseville Technology Park, Roseville, CA
- Royal Oaks Main Post Office Expansion, Sacramento, CA

## **Light Rail**

- 39<sup>th</sup> and 48<sup>th</sup> Street Light Rail Train Stations, Sacramento, CA
- Regional Transit Mather Field Light Rail Extension, Phase 1 & 2, Sacramento, CA
- South Sacramento Light Rail Train Corridor Study, Sacramento, CA

## **AFFILIATIONS:**

American Society of Civil Engineers  
American Council of Engineering Companies

1 **CERTIFICATE OF SERVICE**

2 I, Rachel Jackson, declare that I am over 18 years of age. I am employed in Sacramento  
3 County at 455 Capitol Mall, Suite 210, Sacramento, California 95814. My mailing address is 455  
4 Capitol Mall, Suite 210, Sacramento, California 95814. My email address is  
rjackson@rmmenvirolaw.com.

5 On September 4, 2013, I sent the following documents:

6 **DECLARATION OF HOWARD F. WILKINS III IN SUPPORT OF DONAHUE SCHRIBER**  
7 **ASSET MANAGEMENT CORPORATION'S SUBMISSION OF EVIDENCE AND POLICY**  
8 **STATEMENTS AND DESIGNATION OF WITNESSES**

9 by electronic and regular mail to the following persons in the matter of Donahue Schriber Asset  
10 Management Corporation Administrative Civil Liability Complaint No. R5-2013-0519:

11 Patrick Pulupa  
12 Office of Chief Counsel  
13 State Water Resources Control Board  
1001 I Street, 22nd Floor  
Sacramento, CA 95814  
Patrick.Pulupa@waterboards.ca.gov

David Boyers  
State Water Resources Control Board  
1001 I Street, 16<sup>th</sup> Floor  
Sacramento, CA 95814  
David.Boyers@waterboards.ca.gov

14 Ken Landau  
15 Central Valley Regional Water Quality  
16 Control Board  
11020 Center Drive, Ste. 200  
17 Rancho Cordova, CA 95670  
Ken.Landau@waterboards.ca.gov

Mayumi Okamoto  
State Water Resources Control Board  
1001 I Street, 16<sup>th</sup> Floor  
Sacramento, CA 95814  
Mayumi.Okamoto@waterboards.ca.gov

18 Melissa Thorme  
19 Downey Brand  
20 621 Capitol Mall, 18th Floor  
Sacramento, CA 95814  
mthorme@downeybrand.com

21  
22 I certify and declare under penalty of perjury under the laws of the State of California that the  
23 foregoing is true and correct and that this document was executed on September 4, 2013 at  
24 Sacramento, California.

25 \_\_\_\_\_  
Rachel Jackson