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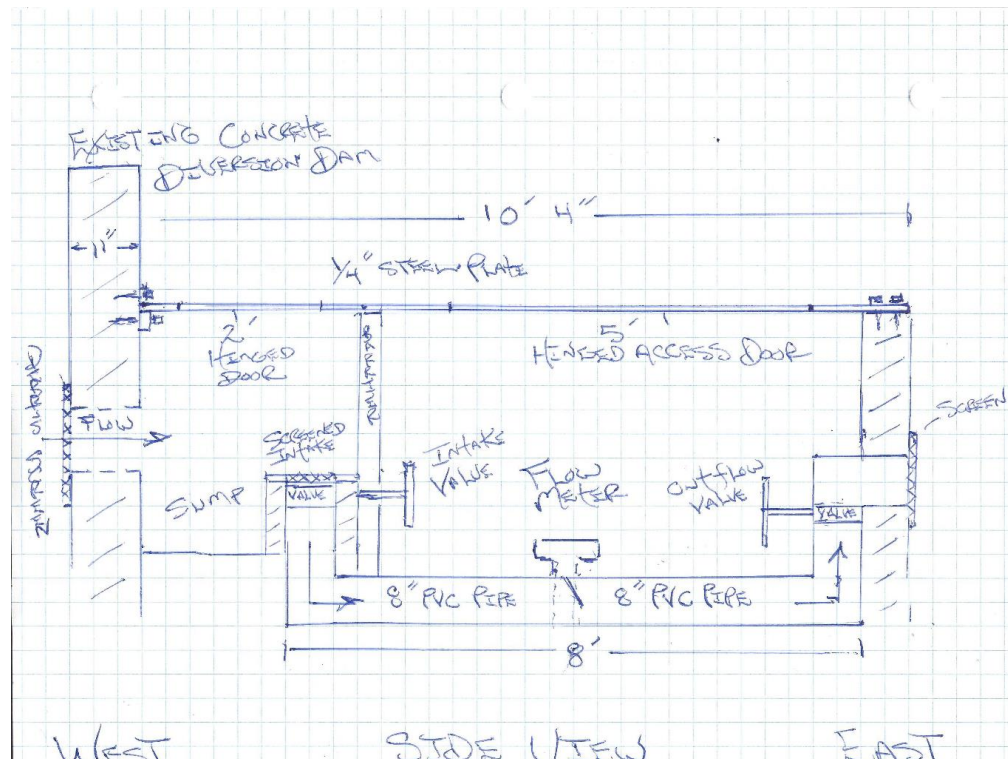
July 12, 2017

Subject: Preliminary Proposal, Cost Estimate, Olney Creek Diversion Measurement Device and Screen Vault

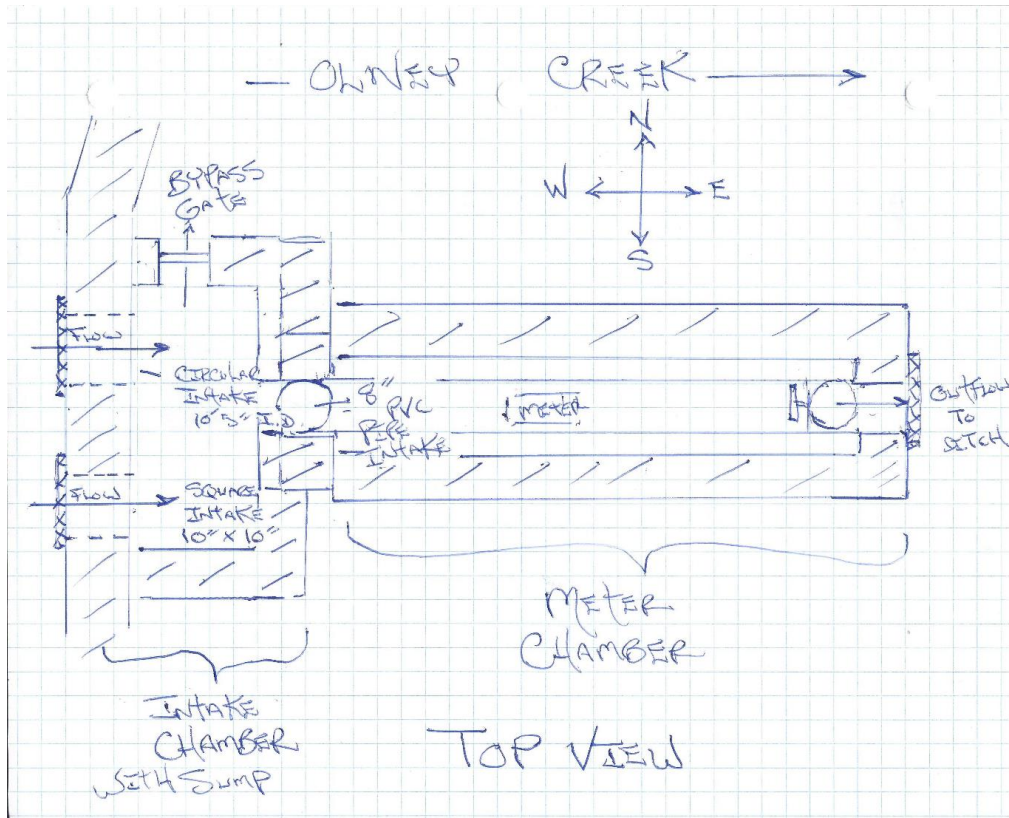
Dear Mr. Sargent,

Thank you for considering me for your SB 88 compliance needs at your Olney Creek Diversion. You explained that this diversion needs a vault with a meter for security, and the incoming and outgoing flow must be screened to protect against sediment filling during moderate to high creek flows.

I based my design and cost estimate on our discussions and your preliminary sketches.



Sargent Preliminary Sketch of Olney Creek Meas. Device, Side View



Sargent Preliminary Sketch of Olney Creek Meas. Device, Top View

The measurement device will need 10 pipe diameters upstream and downstream of the meter to ensure accurate flow measurement. That requires 80" for an 8" pipe, or 6'-8" on each side of the meter. Add 2' for the meter, and the inside length of the vault will need to be increased to 16'.

The location of this diversion makes it inaccessible by equipment. Not only is the topography difficult, but obtaining entry permits from landowners will be difficult, if it is possible at all. That means all equipment, tools, and materials will have to be carried in by hand.

Use of a backhoe would speed the installation. Using hand labor avoids the backhoe cost, but costs more for the foreman and laborer. Overall, this increases the cost of the project.

The California Department of Fish and Wildlife will require a 1602 Lake or Streambed Alteration agreement (1602). The 1602 cost varies, and hopefully will be on the low end of the scale. CDFW is likely to require a fish screen here given the presence of salmonids in Olney Creek. My cost estimate assumes low-end costs, but you will not know these costs for sure until you start working with CDFW.

Stability of the installation is a concern because it has to withstand medium to high flood flows. Since a foundation cannot be dug or blasted in the rock bed, rebar will have to be driven to secure the vault. This adds significant time and cost for labor and materials.

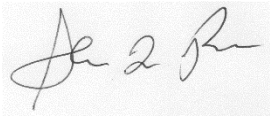
Here is my cost estimate based on what we know so far. Once I visit the site and evaluate the stream and potential high water elevations, this cost may go up.

### **Preliminary Cost Estimate**

<b>Description</b>	<b>Price</b>	<b>Quantity</b>	<b>Units</b>	<b>Subtotal</b>
McCrometer McMag3000 8" Meter	\$ 2,700	1	ea.	\$ 2,700
8" Schedule 40 PVC Pipe	\$ 17	20	ft.	\$ 340
8" Schedule 40 PVC Pipe Elbows	\$ 55	3	ea.	\$ 165
8" Schedule 40 PVC Pipe Couplings	\$ 23	3	ea.	\$ 69
PVC Glue, Primer	\$ 25	2	cans	\$ 50
8" Gate Valves	\$ 550	2	ea.	\$ 1,100
Steel bolts, nuts, etc.	\$ 30	10	lb.	\$ 300
Concrete / mortar	\$ 5	80	60-lb. bags	\$ 400
Steel Vault Cover, 4' x 4' x 1/4"	\$ 300	4	ea.	\$ 1,200
Steel Vault Cover, 4' x 2' x 1/4"	\$ 120	2	ea.	\$ 240
Hinges, Hasps, and Locks	\$ 40	2	ea.	\$ 80
Expanded Metal Screens, 2' x 2'	\$ 20	2	ea.	\$ 40
# 5 Rebar (ties to ground, brick reinforcement)	\$ 1	800	ft.	\$ 600
CDFW Permits	\$ 3,500	1	ea.	\$ 3,500
Owner's Share of Fish Screen	\$ 4,000	1	ea.	\$ 4,000
FEMA Review and Exemption	\$ 6,000	1	ea.	\$ 6,000
Engineer	\$ 225	12	hr.	\$ 2,700
Foreman (includes small, gas-powered equipment)	\$ 75	32	hr.	\$ 2,400
Laborer (includes small, gas-powered equipment)	\$ 25	32	hr.	\$ 800
<b>TOTAL:</b>				<b>\$ 26,684</b>

Thanks very much for consulting me on your diversion project. Please let me know how you would like to proceed.

Yours Truly,

A handwritten signature in cursive script, appearing to read "J. 2 R.", enclosed within a rectangular border.