



Technical Memorandum

Date: July 29, 2009
From: Spencer Harris
To: ISJ Group



SUBJECT: Water use estimates for Los Osos Creek Valley irrigation wells

This memorandum documents the agricultural irrigation well production estimates for the Los Osos Creek Valley. These production estimates are used in the groundwater basin model to represent current conditions. The scope of work was performed in accordance with sub-task 2 of the ISJ consulting agreement dated December 17, 2008.

Prior Estimate

Agricultural irrigation well production was estimated in the 2008 technical memorandum prepared for the Los Osos Wastewater Project (Cleath & Associates, *Basin hydrologic budget with simulated ground water elevation contour maps*, August 7, 2008). Under current conditions, basin well production included 800 acre-feet per year of agricultural irrigation in the Los Osos Creek Valley.

Irrigation Well Locations

Prior work identified sixteen primary irrigation wells in the Los Osos Creek Valley. These wells have been assigned to irrigate specific fields. Figure 1 and Figure 2 show the well and field locations. The assignments for the irrigation wells are as follows (all wells in Township 30 South, Range 11 East, Mount Diablo base and meridian):

Fields A, B:	17B01
	17H01
	17H03
Field C:	17J01
Fields D, E	17Ja
	16N02
	16N01
	17R02



Field F:	21Da
Field G:	17Ra
Field H:	20G02 20H02
Field I, K:	20J02 20J01
Field J:	21Ha 21Hb

The total combined area of the fields is approximately 400 acres (375 acres irrigated and 25 acres fallow).

Recent Crop data

Crop data are available from the San Luis Obispo County Department of Agricultural for fields with pesticide use, which includes all fields listed except portions of Field A and Field E (possibly used for organic farming) and Field G (not an agricultural parcel). Data from 2006 through 2008 were used for the current condition estimate.

The crop data were correlated with specific Los Osos Creek Valley fields using permit location codes. For each location code, pesticide use permittees file planned crop type(s), planted acreage, and pesticide use on an annual basis.

To determine the intensity of the cropping in each field, the proposed planted acreage for each crop was added together, and divided by the actual land area. The results show that 576 planted acres were proposed on 365 acres of land, for an average of 1.6 crops per field per year. Where the proposed planted acreage was significantly less than the land area (Field J), the unplanted acreage was assumed to be fallow.

Irrigation Water Use

The crop types were assigned nominal gross irrigation requirement factors. Turf was assigned a value of 2.7 feet per year, while truck crops were assigned a value of 1.3 feet per crop, which are the average values for Los Osos/Morro Bay listed in the 1998 San Luis Obispo County Master Water Plan Update. The resulting agricultural irrigation water demand for the creek valley for current conditions is estimated at 800 acre-feet per year (calculations attached). The wells serving each field were apportioned an equal share of their respective field production in the basin model.



ATTACHMENTS:

Figure 1
Figure 2
Cropping Data
Irrigation Water Demand



Figure 1
Fields A through F
Los Osos Creek Valley
Los Osos ISJ Group

Cleath-Harris Geologists, Inc.



Figure 2
Fields G through K
Los Osos Creek Valley
Los Osos ISJ Group

Cleath-Harris Geologists, Inc.

Cropping Data - Los Osos Creek Valley

Location	Irrigated Acres	Cropping Data (2006-2008)	Multiplier	Harvested Acres
	subtotals			subtotals
Field A				
140001		4 cabbage	1	4
140006		20 misc. truck	1	20
aerial*		30 misc. truck	1	30
	54			54
Field B				
140002		(fallow)		
140003		22.5 celery	1	22.5
140004		15 lettuce head	1	15
140005		16 cabbage	1	16
	53.5			53.5
Field C				
140008		12.5 broccoli, cilantro	2	25
140009		6 parsley	1	6
	18.5			31
Field D				
100002		6.5 broccoli, cabbage	2	13
100003		15.5 broccoli, cabbage	2	31
100004		8 broccoli, bok choy	2	16
100005		10 broccoli, cabbage	2	20
100006		6 broccoli	1	6
	46			86
Field E				
110001		55 broccoli, cabbage, napa cabbage, parsley, leaf lettuce, bok choy, celery	3	165
220002		5 cauliflower, cauliflower seed	2	10
220001		5 cauliflower, cauliflower seed	2	10
aerial*		10 misc. truck	1	10
	75			195

*NOTE: aerial photograph interpretation identifies additional crop area not listed in pesticide database (may be organic farming)

Cropping Data - Los Osos Creek Valley
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Location	Irrigated Acres	Cropping Data	Multiplier	Harvested Acres
	subtotals			subtotals
Field F	14	14 misc. truck	1	14
Field G	18	18 turf	1	18
Field H 20001	30	30 peas	1	30
Field I 60001 60002	28	28 squash, pepper, tomato (fallow)	2	56
Field J 10001 10002 10003 10004 10005	18.3	8.3 turf (fallow) (fallow) (fallow) 10 turf	1	18.3
Field K 60003 10003	20	20 peas	1	20
TTL	375.3		1.5	575.8

**2006-2008 Irrigation Water Demand
Los Osos Creek Valley**

Field	irrigated area (acres)	crop symbol	crop multiplier	harvested area (acres)	duty factor	applied water (afy)	Field groups	afy/group (afy)	wells	afy/well (afy)
A	54	T	1	54	1.3	70.2	A+B	139.75	3	46.6
B	53.5	T	1	53.5	1.3	69.55	B			
C	18.5	T	1.7	31	1.3	40.3	C	40.3	1	40.3
D	46	T	1.9	86	1.3	111.8	D+E	365.3	4	91.3
E	75	T	2.6	195	1.3	253.5	E			
F	14	T	1	14	1.3	18.2	F	18.2	1	18.2
G	18	UL1 (turf)	1	18	2.7	48.6	G	48.6	1	48.6
H	30	T	1	30	1.3	39	H	39	2	19.5
I	28	T	2	56	1.3	72.8	I+K	98.8	2	49.4
J	18.3	P7 (turf)	1	18.3	2.7	49.41	J	49.41	2	24.7
K	20	T	1	20	1.3	26	K			
TOTAL	375.3		1.5	575.8		799.36		799.36	16	