

Appendix B

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To: Mark Adelson, RWQCB Grant Manager

From: Pat Boldt, WRCAC, project director

RE: Technical memo-Agricultural survey data summary Task 3.4

Date: December 14, 2011

Background

Agriculture has been a significant industry of the San Jacinto watershed, a sub-watershed of the Santa Ana watershed, for more than 100 years. In the early 1800's, before Statehood, cattle were running and by the 1880's artesian wells allowed irrigation for crops. The Lake Hemet dam, built in 1895, provided water for irrigated orchards in the San Jacinto valley.

Dairy and agricultural operators comprise agricultural activity in the watershed today and are stakeholders in the Lake Elsinore/Canyon Lake Total Maximum Daily Load (TMDL) for nutrients. Currently agricultural operator activities in the watershed are not permitted, although the dairy operators are permitted under the Confined Animal Feeding operations permit (CAFO). A current trend in the State of California is to permit agricultural operations. The Santa Ana Regional Water Quality Control Board (SARWQCB), Region 8, is one of the last to implement an agricultural permit or irrigated land regulation. The Conditional Waiver for Agricultural Discharges (CWAD) is being developed to address water quality agricultural issues and concerns in the San Jacinto watershed. The Western Riverside County Agricultural Coalition (WRCAC) is a non-profit agricultural coalition that currently serves in a lead entity for the TMDL for both dairy and agricultural operators. It will also serve as the lead entity for CWAD membership of agricultural operators program.

WRCAC received a 319 grant for "Implementation of Nutrient Total Maximum Daily Loads (TMDL) in the San Jacinto Watershed through a Feasibility Assessment for Pollutant Trading for Agricultural Operators and the Development of a Best Management Practices(BMPs) Database Tool "-Agreement 10-446-558. Significant progress has been made in identifying agricultural operators and aerial mapping for land use had been completed using 2007 data. Baseline TMDL data was then collected for 2005; 2010 data is currently underway. However, specific BMPs, crops and land use practices remain unidentified. Task 3.0 is the first step in addressing this deficiency and important to the future CWAD program and the TMDL implementation process for agricultural operators as well as NPS to NPS pollutant trading feasibility.

Agricultural Operator Survey

Task 3.0 of this grant is the development of an agricultural operator survey form to identify current land use practices and BMPs being implemented. This is a baseline survey and was

conducted on a 100% voluntary basis. The survey was developed with simplicity in mind. The two page survey addressed the most common questions for agricultural land use practices. A copy of the survey is attached.

The foundation for the mailing lists for the survey were the compliant (those stakeholders with more than 20 acres and actively farmed within the past 5 years) and the exempt (those stakeholders excluded based on no agricultural activity within the past 5 years) as observed through the 2007 aerial mapping data. These lists were updated based upon August 2011 available existing information. On the initial lists for 2007, Federal, State and tribal lands were included. Recently, it was determined that WRCAC would not likely collect on these agencies and they were returned to the RWQCBs responsibility and were subsequently removed from the grant mailing list. It should also be noted that there were considerable returned envelopes having never reached their destination address. With the survey being done in August of 2011 and the mailing agricultural operator identification process utilizing 2007 data, it is understandable in the current economic climate that considerable change in ownership has occurred over a 4 year time period and undeliverable surveys were relatively high and expected.

It should also be noted that the data was entered into the spreadsheets as the owners reported it. APNs were not verified-as they will be verified against new 2010 aerial mapping data which is being analyzed in 2011 and should be available in December of 2011 or January of 2012. The field verification process for the 2010 mapping data is currently underway.

Results*

	<u>Mailed</u>	<u>Returned/Undeliverable</u>		<u>Completed</u>	
Compliant	181	14	7.7%	51	28.2%
Exempt	135	11	10.4%	26	19.3%
TOTAL	316	25	7.9%	77	24.4%

**Late surveys continue to come in. The additional survey data will be copied for the 2010 aerial mapping verification process. An updated summary will also be provided with final survey response percentages.*

Exempt parcels are those that have not been farmed in the past 5 years. We mailed surveys out to these parcels as they could have been converted to agriculture in recent years. Although we are aware of a few that became active, it appears that the exempt properties remained essentially non-active. In a difficult economic climate, land that was destined for development may temporarily be farmed.

Do You Lease Land?

Do you Lease	#	%
Yes	26	51%
No	13	25.5%
No response	12	23.5%

Of 26 leases

Irrigated	5	19.23%
Non-irrigated	16	61.54%
Irrigated and non-irrigated	4	15.38%
Other(poultry)	1	3.85%

More than half of the land is leased from the respondents. It was also clear that many landowners did not know what agricultural activity was occurring on their property. The leasing of land appears to be controlled by a few farmers throughout the watershed. There were 5-6 names that were repeatedly named as the leasing party. Developers made up a large portion of stakeholders leasing land. As the economic climate improves, we expect many of the leased lands to become developed and switch to urban land use.

Land Use Type

Land Use Type	#	%	# of APNs listed
Irrigated	17	33.3%	75
Non-Irrigated	18	35.3%	59
Irrigated & Non-Irrigated	3	5.9%	17
Citrus	3	5.9%	8
Poultry	5	9.8%	12
Horses & Cattle	2	4.0%	4
Irrigated Citrus and Horses	1	2.0%	2
Xmas Trees	1	2.0%	1
Other/Goats	1	2.0%	1

**Three (3) agricultural operators did not report in their survey the break down between irrigated and non-irrigated agriculture. Based on past aerial mapping and the increase of developers farming we would expect the non-irrigated % to be higher than irrigated.*

Crop type/group	Acreage (rounded)	Acreage by group
Animal operations		
Poultry	44.5	
Goats	27	
Horses	60	
Total AFO's		131.5**
Citrus		
Citrus unspecified	207	
Grapefruit	1700	
Oranges	295	
Oranges and Grapefruit	91	
Lemons	5	
Total citrus		2298
Grains		
Barley	580	
Safflower	308	
Wheat	2643	
Oats & Wheat	153	
Legumes & grains	257	
Dairy crops	1898	
Sorghum	30	
Sorghum, alfalfa, rye, sudan & winter grains	494	
Total grains		6,363
Other crops		
Garlic	4	
Potatoes	5663	
Chinese vegetables	207	
Row crop vegetables	20	
Xmas trees	7	
Total Other crops		5,901
TOTAL FARMED ACREAGE		14,693.5
TOTAL ACREAGE REPORTED*		15,198

**There are an additional 504.5 acres that are in the TMDL 5 year window period but are no longer farmed. They were last farmed in 2009-2010 year. It is the owners' intent to leave the property vacant and gain exemption in 2014-2015.*

***Acreage not significant on Animal operations/Numbers of horses/goats and poultry significant.*

Do you use manure? Is it imported?

Do you use manure?	#	%	# that import manure	%
yes	6	11.76%	2	3.92%
no	45	88.24%	49	96.08%

Six of the 51 current active survey ag respondents use manure, with only 2 importing manure. However two of the larger agricultural land owners in the watershed are in this number. Imported manure from the two (2) reported stakeholders in the survey is applied on an estimated 2,300 acres.

Two of the stakeholders (3.92%) that use manure are dairies using what they produce. Both, as required under their CAFO permit, have approved Comprehensive Nutrient Management Plans (CNMPs) in place. The estimated acreage is 830 acres. One stakeholder only uses manure that is produced on his property by three horses.

Do you use chemical fertilizer?

Do you use chemical fertilizer?	# using chemical fertilizer	%
Yes	24	47.06%
No	27	52.94%
No response	0	

Types of chemical fertilizer used?

(Listed as they reported)		
Anhydrous Ammonia	2	3.92%
14-5-5	2	3.92%
UN32	6	11.76%
Unspecified	6	11.76%
ENC 11-8-5 only on wheat and oats	1	1.96%
Aqua ammonia	1	1.96%
Urea or urea/coron	3	5.88%
NH3	1	1.96%
0-52-0 and 15-5-5	1	1.96%
Ca nitrate	1	1.96%

Frequency of application varied with chemical fertilizer used and crops being grown but 11 respondents said they fertilized once per year (21.57%), while 6 stakeholders fertilized 2 times per year (11.76%). Only one stakeholder fertilized three times per year and one stakeholder only fertilized once every two years. The balance of respondents did not indicate frequency of applications.

Do you use recycled water?

Do you use recycled water?	# of respondents	%
Yes	8	15.69%
No	42	82.35%
No response	1	1.96%

Of the 8 survey respondents using recycled water, the acreage is estimated at 8,648 acres.

Do you rotate crops? How frequently do you rotate?

Do you rotate crops?	# of respondents	%	Frequency crop is rotated
Yes	15	29.41%	
No	34	66.66%	
No response*	2	3.92%	

Crops rotated:

Potatoes	3	5.88%	Every 3 years, 2 times per year(2)
Safflower & wheat	1	1.96%	Every 3-4 years
Citrus	1	1.96%	2-3 times
Corn & Alfalfa	1	1.96%	Every 3 years
Oats & wheat	1	1.96%	Once per year
Small grains	1	1.96%	Every 3 years
Sorghum, Alfalfa, Sudan Rye, and winter grains	1	1.96%	Unspecified-as recommended by crop advisor
Upland game forage	1	1.96%	Unspecified
Wheat	2	3.92%	Once every 4 years
Unspecified	1	1.96%	
Chinese vegetables	1	1.96%	Every three months
Row crop vegetables	1	1.96%	Twice per year

*No response is likely due to landowner not knowing what practices the lease is doing.

Do you use pesticides/herbicides? What brands do you use and frequency of application?

Do you use pesticides or herbicides?	# of respondents	%	Frequency of use?
Yes	31	60.78%	
No	19	37.25%	
No Response	1	1.96%	
Brands used:			
Glean alone	5	9.8%	1 X per yr.; as needed
Roundup alone	5	9.8%	Varied-used monthly;1 X per year;2 X per year
Glean & Clarity	2	3.92%	1 X per yr.
Unspecified	6	11.76%	varied
Spot treat for Salt Cedar	1	1.96%	As needed
Pyranha	1	1.96%	
LV4	1	1.96%	
Tricor, Matrix, Avaunt	2	3.92%	
Rodent bait, Lorsban, Roundup	1	1.96%	
Lorsban, Roundup, Somizine, Indion 70	1	1.96%	
Kupran & Karamz	1	1.96%	1-2 times per year
Glyfos	1	1.96%	As needed
LU-6, Clarity, Glean	2	3.92%	1 X per year
Roundup, Lorsban, Simazine	1	1.96%	2-4 times per year
Honcho Herbicide	1	1.96%	2-3 times per year

*No response is likely due to the landowner unaware of leasee practices.

Do you file a Notice of Intent (NOI)?

Do you have an NOI?	# of respondents	%
Yes	11	21.57%
No	36	70.59%
Don't know or no response	4	7.84%

Several responded “yes” or “depends if restricted materials are used.” For the sake of this table- these were counted as yes numbers as they understand when they need an NOI.

Are you receptive to new Best Management Practices (BMPs) on your land?

Are you receptive to

NEW BMPs?	# of respondents	%
Yes	24	47.06%
No	7	13.73%
Don't know	3	5.88%
No response	17	33.33%

Do you have Best Management Practices (BMPs) currently on your land?

Do you have BMPs currently in place?	#	%
Yes	35	68.62%
No	8	15.69%
No response	8	15.69%

Note: Several that responded they do not have BMPs in place –do have BMPs in place. They do not understand the terminology of BMP.

Of the 35 that responded that they have BMPs in place:

10 said the BMPs increased their costs

12 said the BMPs decreased their costs

1 said it neither increased nor decreased costs

3 said they didn't know?

Please list BMPs that you use on your land?

Types of BMPs listed	#	%
Installed flood levee	1	1.96%
Weed abatement and /or trash removal	2	3.92%
Sprinklers/micro-emitters	17	33.3%
Conservation enhancement	1	1.96%
Leveled land	2	3.92%
Wheel lines and hand pipes	3	5.88%
Berms	3	5.88%
Manure hauled off site	1	1.96%
Deep till	1	1.96%
Soil retention	1	1.96%
Tail water retention	1	1.96%
No fertilizers/limited herbicides	1	1.96%

Disc	2	3.92%
Minimum till	3	5.88%
Media filters	1	1.96%
Culverts, drainage ditches, dirt roads	1	1.96%
Slow moving water in washes absorbed in sandy soil	2	3.92%
Buffer zones	5	9.8%
Mulch	4	7.84%
No runoff	1	1.96%
Erosion Control	4	7.84%
Sub-surface irrigation	1	1.96%
Poultry manure placed on concrete pad until removed	2	3.92%
Catch basin(poultry)	2	3.92%
Daily Manure cleanup(poultry)	2	3.92%

*More than one BMP was frequently listed. Total percent exceeds 100%.

How much money has been invested in BMPs on your property?

Low amount	2
\$6,500 per year to haul manure	1
\$30/acre	1
\$500/acre	1
\$20,000	3
\$42,000	1
Over \$50,000	1
Thousands	1
\$100,000	1
None	3
Unknown	10
No response	26

How much would you invest in new BMPs on your property?

	#	%
None	6	11.76%
Don't know	14	27.45%
Case by Case	1	1.96%
Yes-amount not specified	1	1.96%
Low-not much	1	1.96%
No response	28	54.9%

Comparison of land use mapping 2007 & survey acreage responses

<u>Land Use Type</u>	<u>Active Agriculture/Compliant 2007 Acres*</u>	<u>Ag Survey acres</u>	<u>%</u>
Irrigated agriculture	12,138.5	3,331.27	27.4%
Non-irrigated agriculture	5,358.2	3,355.38	62.6%
Non & Irrigated agriculture* *		5,544.58	
Citrus	2,314.0	2,298	99.3%
Nurseries, undifferentiated	171.8	0	0%
Turf farms	646.7	0	0%
Christmas Tree farm	11.2	7.0	62.5%
Poultry	224.4	45.0	20.05%
Horses and other livestock	459.4	87.2	19.0%
Other	230.1	25.07	10.9%
Total	21,554.3	14,693.5	68.2%

*Active agricultural acreage from the 2007 mapping data includes only the compliant, known acreage. Non-compliant, exempt and undeliverable was not included.

**504.5 acres were reported but no longer farmed since 2009-2010. These are not included in the table.

With 24.4% of the active complaint ag operators responding to the survey, 68.2% of the compliant acres were reported as compared to the 2007 mapping data. We anticipate that there is a reduction in overall agricultural acreage in the San Jacinto watershed between 2007 and 2011. Current mapping studies will verify what this reduction is in January of 2012. With that in mind, this is a remarkably high response for identifying individual parcel acreage land use practices.

Many of the survey respondents did not list individual parcels and they combined irrigated and non-irrigated land uses together. The table above lists these combined parcels ** which account for 5,544.58 acres. The majority of these crops are likely irrigated however, since they were not differentiated by the respondents, they are listed in a new category and will be verified in the new mapping data for the correct land use type. Comparing all irrigated and non-irrigated acreage in comparison to the 2007 mapping data, 69.9% or 12,231.23 acres of the 17,496.7 acres are identified in the agricultural survey.

Summary:

Identification of BMPs and land use practices in the San Jacinto watershed for agricultural operators is an important component for the future CWAD program and the implementation process for the TMDL. An agricultural operator BMP/ land use survey was distributed to 316 stakeholders. The response rate was 24.4% on a 100% voluntary survey. More significantly of the 181 compliant stakeholders, those stakeholders actively farming, there was a 28.2% return or 51 completed surveys.

Significant results were obtained in this survey. Perhaps one of the more important results was the percentage of leased land. Fifty-one (51%) of the agricultural surveys with active farm land indicated that the land being farmed was leased. Twenty-three and a half (23.5%) did not respond to this question. We expect that leased land in the watershed is realistically between the 60-75% range. This is significant for several reasons:

- Land owners are typically not as aware of the land practices on their land. Several land owners had to discuss the survey with the leases and in a high percentage documented that they were unaware of BMPs or land use practices on their property.
- Developers are a significant portion of the leased land owners and many indicated that the land would be developed as the economic climate improves.
- Education and responsibility of land use practices should be addressed in upcoming seminars and outreach venues.

Land use type was generally distributed as expected. One-Third (36%) irrigated, 38% non-irrigated, 6% citrus, 10% poultry, 6% horses/cattle/goats, and 4% other. Please note that 6% of the land use was characterized as irrigated and non-irrigated and the parcel acreage was not broken down in the survey. The 6% was divided equally for the summary calculation.

A total acreage of 15,198 acres was accounted for in the survey and although only 28%, the largest agricultural operators all participated in the survey and the remaining acreage we believe to be smaller parcels. We are currently completing the 2010 aerial mapping and overlaying this land use information into the database. We will have a better understanding of the remaining acreage in January of 2012.

Of the 15,198 acres, grain crops accounted for 6,363 acres, citrus was 2,298 acres, potatoes 5,663 acres and the balance in other crops.

Only 6 of 51 respondents used manure. Two of these users are large agricultural operators that accounted for an estimated 2,300 acres. One of these parcels is associated with a dairy and they use what they produce. There was one smaller dairy operator that also uses what they produce. Both have approved NMPs in place.

Only 3.92% or two operators import manure. We have seen a constant reduction of imported manure into the San Jacinto Watershed over the past 8 years.

The use of chemical fertilizer was 47%. One would expect the use of fertilizer with irrigated crops and citrus. The type of fertilizer used was dependent upon crop type.

Those agricultural operators utilizing recycled water made up 15.69% of the survey sample or 8 respondents out of the 51 actively farming. The recycled water source is Eastern Municipal Water District (EMWD).

Just under 30% of the active farming survey respondents rotate crops or 15 of the 51. Crop rotation was dependent upon the type of crop.

Pesticides/Herbicide use was 31 of the 51 respondents or 60.78%. Brands and frequency varied.

The majority of respondents did not file NOI's or 71%. Eleven or 21.6% either had filed NOI's or knew when to file an NOI. Again these were the larger irrigated crop users. Several indicated that they didn't know what an NOI was?

Of particular interest for our project, 68.62% said that they currently use BMPs. Thirty-two (32%) either did not know if they used BMPs or didn't respond to the question. This was a much higher percentage than we anticipated. We also noted that several people who said they did not use BMPs currently actually do. The understanding of what a BMP is should be addressed in future education and stakeholder outreach seminars. Landowners who leased had less knowledge of BMP practices than those who owned the land. BMPs implemented both increased and decreased costs almost equally.

When asked if they would be receptive to new BMPs, 47% said yes while 14% said no. An additional 39% either had no response or didn't know.

BMPs listed as most frequently used in the San Jacinto watershed were: sprinklers/micro-emitters, berms, wheel lines buffer zones, mulch and erosion control.

The amount of money invested in BMPs varied from 0 to \$100,000. The majority did not know costs or there was no response.

When asked how much money they would invest in new BMPs 12% said none, 55% did not respond, 27% didn't know and only one respondent said yes.

The information collected from this survey will provide the baseline land use agricultural parcel data that will be used to assist in the determination of pollutant trading BMPs from non-point sources to non-point sources in the watershed. The web-based BMP tool which is being developed in 2012 will use this data to populate the database along with the new 2010 aerial mapping GIS which will verify to the current 2011 level land use practices.

Conclusions:

The agricultural survey provided good land use data for the San Jacinto Watershed with a 24.4% rate of return in a 100% voluntary survey. The agricultural survey data accounted for 68.2% of the compliant acreage as compared to the 2007 compliant agricultural land use data. Additional surveys have been received since evaluating the data and WRCAC expects the final participation percentage to be around 35% or an estimated one-third of the agricultural operators polled. The additional data will be incorporated with the 2010 aerial mapping data and used to verify parcel land use. The mapping and land use data will be an important component for the Agricultural Nutrient Management Plan (AgNMP) and CWAD program as they are developed.

Educational and stakeholder outreach will be important areas of emphasis for the AgNMP and CWAD as well. With a large percentage of leased land and owners not understanding what is occurring on their property, developing BMPs and striving for load reductions may be more challenging than expected. The owners will need to take a more active role on their property's land use.

There is also a need to educate agricultural operators on what BMPs are and how they benefit agricultural operators in load reductions. It appears that a large number of BMPs are implemented but not accounted for by the agricultural operators.

Agricultural operators are not likely to spend any significant amount of money on new BMPs on their property in the current economic climate. Agricultural land use will likely diminish as the economy improves and urban development regains its momentum.



Western Riverside County Agriculture Coalition

Due August 22nd, 2011

Western Riverside County Agriculture Coalition Agricultural Operator Land Use and Best Management Practices (BMP) Survey

Western Riverside County Agriculture Coalition (WRCAC) received grant funding through the State Water Resources Control Board to develop a BMP tracking tool. To better understand and quantify nutrient load reductions from agricultural operations, as required in the TMDL implementation process and the Conditional Waiver for Agricultural Discharges (CWAD), we need your help. Please take the time to complete and return the attached survey.

You have received this survey because you are on our current list of agricultural operators in the watershed. If you prefer to receive this survey via email, send your request to Pat Boldt at mpboldt@aol.com.

We understand that many owners lease their property for agricultural purposes. However, the property owner, not the lessee, is responsible for TMDL compliance. We ask that the property OWNER complete the attached survey and return it to WRCAC. Some property owners may need assistance from their lessees to accurately complete this form.

The Canyon Lake and Lake Elsinore TMDL requires nutrient load reductions from agricultural operations. It is important that agricultural operators are credited for BMPs that they already have in place; *these practices may count toward TMDL compliance*. At this time, we are unaware of individual efforts and the BMPs being implemented that may currently be reducing loads. This survey requests data that is essential to developing the BMP tracking database that will be used to track agricultural BMPs and quantify nutrient load reductions for agricultural practices. Identification of these BMPs may reduce future TMDL costs for individual agricultural operators.

We will develop a web-based tool to assist us in tracking BMPs and load reductions in the watershed. This information can only be effective if we receive this survey information as a starting point. WRCAC is working with agricultural operators to meet regulations, coordinate efforts, recognize existing BMPs, and offer new BMPs to meet TMDL load reduction requirements.

Thank you for your assistance.

Pat Boldt
WRCAC, Executive Director
mpboldt@aol.com
951-808-8531

Name: _____
 Business name: _____
 Address: _____
 City/State/Zip: _____

Phone: _____ E-mail address: _____

If we have questions, do you prefer to be reached by: Phone or E-mail?

Has your property been vacant of any agricultural activity over the past 5 years? Yes No

Please list parcels: _____

Do you lease this land for agricultural purposes? Yes No

If yes, Name of lessee: _____
 Lessee contact info: _____

Land Use Type: (Please check all appropriate boxes)

- Irrigated Agriculture Please list crops: _____
- Non-Irrigated Agriculture Please list crops: _____
- Turf
- Citrus Please list type grown: _____
- Nurseries Please list: _____
- Poultry/ Horses Please list #'s: _____
- Other Please identify: _____

Agriculture Acreage:

Please list total acreage for each parcel used. If you have some irrigated and some non-irrigated please state by % how much of each. Use a separate sheet if necessary for multiple parcels.

*Do not include dairy cows or any land associated with dairy operations.

APN/Parcel #	Acres	Crops

Farming Practices:

Do you apply manure? Yes No – list parcels: _____

Do you import manure? Yes No – list parcels: _____

Do you apply a chemical fertilizer? Yes No

If yes, list parcels and type of fertilizer: _____

If yes, how often do you apply fertilizer? _____

Do you use recycled water? Yes No

Do you rotate crops? Yes No

If yes, how often do you rotate crops? _____

Do you apply pesticides/herbicides? Yes No

If yes, list parcels and brands and frequency: _____

Do you file a Notice of Intent (NOI)? Yes No

If yes, please list parcels: _____

Do you currently use Best Management Practices (BMPs) on your land? Yes No

If yes, please answer the following questions. Examples include drip irrigation, mulching, buffer zones, etc. There are hundreds of possible BMPs. There is no incorrect answer. Any practice you use that reduces nutrient runoff from your land is an acceptable BMP. Please list them for each parcel where BMPs are used.(Use a separate sheet if necessary)

Parcel #	BMPs used

Have these BMPs increased or reduced your costs? Please explain:

If new BMPs were suggested that would reduce nutrient loss and save you money, would you be likely to implement new BMPs? Yes No

How much have you invested on existing BMPs on your property? _____

How much would you be willing to pay for new BMPs on your property? _____

Do you have any other comments? _____

Please return completed survey form by August 22nd to:
Western Riverside County Agriculture Coalition
Attention: Pat Boldt, Executive Director
2160 Santa Anita Rd.
Norco, CA 92860

If you have any questions, please contact me at (951) 808-8531 or at email address mpboldt@aol.com. You may also contact Bruce Scott (bruce@sbd farms.com) with questions. Late receipt of this form is not encouraged but we will accept forms after 8/22/11.

Thank you for completing this information.

Water Quality Trading Feasibility Assessment for San Jacinto Basin Agricultural Operators

Task 4.4 Ongoing Outreach for Long Term Use of WeBMP and Protocols for Verification of Data
Obtained Through WeBMP
Technical Memo #1

WRCAC/Pat Boldt Consulting

October 24, 2013

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1.0 Overview

The agricultural and dairy operators will achieve compliance with the agricultural Waste Load Allocations (WLAs) or Load Allocations (LAs) or lake water quality response targets applicable to Lake Elsinore and Canyon Lake through a combination of watershed-based BMPs and in-lake remediation projects. While some watershed-based BMP implementation activities are expected to be generally uniform across the area, others may vary by individual owner/operator with implementation dependent on each operator's available resources and opportunities and local sub-watershed needs.

The agricultural operators have participated voluntarily in the TMDL process to-date as there is no permit currently in place. BMPs that agricultural operators have individually implemented for more than a decade have not been measured, credited, or acknowledged in any way. Therefore, the current load reduction required should be attainable through changes in land use, the documentation of BMPs currently employed, and those that will be implemented in the future. Individual agricultural operators cannot be held accountable for implementing the same types of BMPs with varying types of crops and loads. Identification of nutrient loading will be addressed by WRCAC on a watershed scale. The implementation of BMPs will be proposed and implemented on an individualized, per-operator basis. WRCAC will assist in the process and develop tools such as the weBMP, an agricultural nutrient management watershed program, and updated aerial mapping.

1.1 Task 4.4 Description: WeBMP Tool

The development of the weBMP data base tool is the first step in data collection used to capture BMPs on an individual basis. An Agricultural Operator Survey was developed and implemented. The resulting data was summarized as a foundation for identifying BMPs currently employed in the watershed. None of the individual BMPs have been previously documented by ag operators for assessing load reductions since the adoption of the TMDL. Data from the Agricultural Operator survey was field verified and 2010 aerial mapping confirmed each land use type. Although the Agricultural Operator Survey gave great insight into the BMPs being implemented, manure and fertilizer use and actual BMP load reductions were not calculated. WRCAC has made significant progress towards addressing agricultural nutrient load and potential reductions. The next step is to specifically quantify these BMPs and load reductions on an owner/per-parcel basis.

The weBMP was developed to provide an easy to use on-line tool for voluntary use by agricultural operators to input data into an active database. The weBMP is an INPUT TOOL to capture data. The original intention was to create the weBMP tool in conjunction with and coordinated with the Conditional Waiver for Agricultural Discharge (CWAD) permit requirements. At this time, a CWAD permit is not available and a draft of the CWAD NOI has been recently released but has not been finalized. The weBMP will be finalized once the various forms required are coordinated and WRCAC and the Santa Ana RWQCB agree upon the best approach for moving forward without redundancy.

Additionally, WRCAC and various stakeholders have determined that the weBMP form will have to be coordinated with an Agricultural Nutrient Management software program and its limitations. Additional software programs are currently being researched for potential use. (See section 2.1 for additional information.) Initially, WRCAC believed that the weBMP alone might provide the information needed,

however, many new software programs have emerged and continue to improve, making TMDL load reductions and agricultural BMPs easier to analyze. WRCAC is considering these options.

1.2 Overview of Interface and Link on Website

The weBMP is located on the Western Riverside County Agriculture Coalition (WRCAC) website at www.sjwrcac.org.

By clicking on weBMP program tab across the top the user is taken to a log in screen. Once logged in, the user can identify the subject property, the BMPs implemented, and the number of acres associated with each practice. Figure 1 shows examples of the weBMP data pages currently available. The data entered by agricultural operators is tabulated in a program called Starfield. At this time we do not know how we can interface a new nutrient agriculture software program with the weBMP. One Media Solutions has been WRCAC's consultant on developing the WRCAC website and implementing this weBMP interactive link. They will also provide interface and linkage assistance to whatever advanced BMP/loading reduction software program we select.





Figure 1. Data Pages Currently Available in WeBMP

2.0 Implementation of the WeBMP

This section provides an introduction to how the weBMP will be implemented. At this time, the weBMP has been developed and the interactive link has been activated in a beta test mode. When this grant began, it was assumed that the CWAD permit would be in place by the time this project was completed. Many of the tasks were based upon actual permit requirements, not assumptions. Updates to the weBMP form and requirements will be dependent upon the final permit requirements. The weBMP tool with few modifications is ready for use.

In the interim, the software program for calculating BMP load reductions and interface with update parcel and owner information will be explored. Upon selection of the software, implementing the software and doing an extensive outreach and education work effort will be critical.

2.1 Development of Process for Implementation

The weBMP is ready for use pending final language in the CWAD permit. It is dependent upon how data will be collected and what data will be collected in the RWQCBs Notice of Intent (NOI). There are also unresolved questions because of redundancy in the Ag Commissioner's NOI forms as well. Adding a third or 4th WRCAC layer of the same data is unnecessary. One of the challenges at this point is to streamline data from as few sources as possible. This also will limit erroneous data as the agricultural operators may not consistently fill out the forms in the same manner.

For the balance of the current year (2013) and next year, WRCAC will work with the RWQCB in the development of the CWAD and WRCAC's role in the ongoing process. WRCAC will move forward in evaluating, selecting and buying the appropriate agricultural software system for BMP and load

reductions. Since no one system appears to do what we need, WRCAC is hopeful that a blending of the software tool and the weBMP tool will provide a package that will work for our watershed.

Upon integration of the two tools, a beta test will be completed on the new system and development of educational and training materials will commence. WRCAC will attempt to coordinate this work with new aerial mapping data as it becomes available. The next mapping update is expected in 2015 or 2016 to reflect the flyover data update scheduled for 2015.

Table 1. Proposed timeline for WeBMP and software program implementation

Action Item	Responsible Party	Date
1. Research BMP/load reduction programs	WRCAC	September 2013-November 2013
2. Select software program	WRCAC	4/1/14
3. Upon adoption of CWAD, review weBMP and update accordingly	WRCAC	3 months after adoption of CWAD
4. Follow closely CWAD development status.	WRCAC with RWQCB	Ongoing
5. Interface weBMP with BMP load software and beta test	WRCAC	12/31/14
6. Education and outreach to stakeholders	WRCAC	Begin development late 2014, implement 2015
7. Implement program with ag operators	WRCAC	Late summer 2015
8. Compile and analyze data	WRCAC	12/31/15

2.2 Verification of Data Obtained

Data is verified with updated aerial mapping which WRCAC completes every 3-4 years. Field verification is also done at various levels in the WRCAC TMDL process for allocations and all exemptions.

Additional verifications are frequently conducted using additional aerial mapping programs such as NAIP or the County of Riverside to view the parcels in alternative years. Aerial Information Systems (AIS) develops the aerial mapping data. They also field verify all active ag parcels. Ms. Pat Boldt, Executive Director of WRCAC, or a field technician photograph all parcels applying for exemptions. Copies are kept by WRCAC and a copy provided to the RWQCB.

As the process develops and additional verification is required, WRCAC will reassess practices to assure that data is verified whenever necessary.

2.2.1 Coordination with the Agricultural Nutrient Management System

An Agricultural Nutrient Management System software program is needed that is capable of handling the individual operator data, inventory BMPs and quantify nutrient load reductions. The Agricultural Nutrient Management System will be an ANALYSIS TOOL. It is our goal to show ongoing nutrient reduction data by year between the 2015 interim target TMDL date and the 2020 final compliance date.

WRCAC is in the preliminary phase of researching the various programs available and determining a best fit for WRCAC agricultural operator stakeholder needs. Some of the programs currently being evaluated are:

----SST Nutrient Management Planning

www.sstsoftware.com

----ChesapeakeStat (with the TMDL Tracking feature Bay TAS)

http://stat.chesapeakebay.net/sites/all/cstat/tmdl/BayTAS_factsheet.pdf

----USDA Nutrient Tracking Tool

<http://nn.tarleton.edu/NTTwebARS/>

----University of Maryland Phosphorous Management tool

<http://extension.umd.edu/sections/agricultural-nutrient-management-program>

----State of Ohio Resource Management Program for Load Reduction

www.dnr.state.oh.us/tabid/24157/default.aspx

The general consensus is that a lot of people are working on this issue. There is no one comprehensive tool that addresses WRCAC's needs and there has been a lot of money spent on some very mediocre software program products. None of the software programs are easy.

Selecting the best fit for the San Jacinto River watershed and implementing the software will be a major step in meeting the TMDL Ag compliance and CWAD implementation requirements. WRCAC is just beginning to undertake this task.

3.0 Outreach and Education of the WebNMP Tool

3.1 Developing Training Materials & Outreach

Upon implementation of a nutrient software program and completion of interface linkage between the weBMP and the BMP/load reduction program, training materials will be developed. The success of meeting load reductions and the successful implementation of these programs rests on stakeholder outreach and education.

A multi-faceted approach will be required. At this time, the following methods of outreach are being considered:

1. WRCAC Workshops – several in various locations
2. Agrarian Newsletter articles
3. WRCAC Website information
4. Mailings of print material
5. Email or phone hotline
6. Additional workshops as part of CWAD continuing education requirements
7. Teaming with the Ag Commissioner’s office and having printed material available
8. Articles in other newsletters such as Riverside County Farm Bureau

Additionally, outreach to other entities such as the TMDL Task Force will be necessary.

3.2 Coordination of Data with Various Programs

The weBMP data and any future WRCAC data relevant to the TMDL will be coordinated through WRCAC. Agricultural and dairy operators in the San Jacinto River watershed participate in the TMDL through their membership in WRCAC. This is a proven process which has been in place for seven years. WRCAC is also the representative for agriculture and dairy for the Lake Elsinore/Canyon Lake TMDL Task Force and actively participates in the CWAD permit development process.

WRCAC strives to synchronize and coordinate data to achieve maximum benefits at minimum costs to stakeholders while maintaining its focus on successfully meeting compliance deadline dates.

4.0 Conclusions and Next Steps

WRCAC will continue to coordinate with the RWQCB on the CWAD permit and its adoption. The weBMP tool will be updated to reflect needs determined in the final permit and implementation of the best agricultural nutrient loading system that will coordinate with the weBMP input tool. The success of the weBMP tool and the agricultural loading software system will be dependent upon stakeholder involvement and outreach. Both tools are part of the critical path for WRCAC stakeholders to achieve TMDL compliance in 2020.

Resources

Western Riverside County Agriculture Coalition. “Agricultural Nutrient Management Plan for the San Jacinto Watershed.” April 2013.

Western Riverside County Agriculture Coalition website www.sjwrcac.org.

Analysis of Compliance with EPA's Nine Key Elements of a Watershed Plan

10/24/13

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For nonpoint source pollution control projects to receive Clean Water Act Section 319 funding, the Environmental Protection Agency (EPA) requires that the watershed plan and supporting planning documents applicable to the project area include nine key elements as described in *Applying for and Administering CWA Section 319 Grants: A Guide for State Nonpoint Source Agencies* (EPA, 2003). The following is a list of the nine key elements and a summary of references to existing planning documents that contribute to meeting these requirements.

Element A

An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed-based plan.

See San Jacinto River Watershed IRWMP Section 2.1.4.2 (pp. 33–46) for a discussion of pollutant sources and source categories.

Additional updated information is available through the LESJWA TMDL Task Force Administrator or Tim Moore, TMDL Task Force consultant.

Elements B and C

An estimate of the load reductions expected for the management measures described under paragraph (c) below.

A description of the nonpoint source (NPS) management measures that will need to be implemented to achieve the load reductions estimated under paragraph (b) above and an identification (using a map or a description) of the critical areas in which those measures will be needed to implement this plan.

See San Jacinto River Watershed IRWMP Section 2.1.4.2 (pp. 33–46) for estimated pollutant loads from identified sources. The TMDL provides the nutrient load reductions needed to restore water quality in the SJ watershed. However, a revised TMDL will be needed prior to the 2020 compliance date because new information is showing the original WLA's were not accurately listed when the TMDL was established in 2004.

Since the San Jacinto River Watershed IRWMP, projects have been implemented in Lake Elsinore and studies have been completed evaluating the various Canyon Lake projects developed and to be implemented. The TMDL Task Force assesses a 35% reduction in phosphorous in Lake Elsinore based upon the active operation of the aeration system developed in 2007. Fishery management via stocking of the lake has also been used on several occasions since the beginning of the TMDL. We anticipate that fishery management will continue to play a significant role in the future. An alum project is scheduled to begin in September of 2013 for Canyon Lake to reduce nutrient loads. This project is funded through a grant and stakeholder funding. As of October 2013 the alum project is underway and preliminary results are encouraging.

The San Jacinto River Watershed Council (SJRWC) initially completed a nutrient reduction plan for Canyon Lake under a watershed plan grant. The findings of the study recommended that oxygenation was the preferred choice to reduce nutrients in the lake. Subsequent studies were warranted to determine if oxygenation alone would meet the TMDL load reduction targets. Dr. Michael Anderson completed additional studies for the TMDL Task Force and determined that watershed BMPs would also be needed to reduce nutrients in the lake. The TMDL Task Force has developed design and costs for an oxygenation project. Alum was also considered for in lake nutrient reduction. Alum has been the most viable alternative determined to reduce nutrients in the lake. Tim

Moore, Risk Science consultant to the TMDL Task Force, evaluates load reduction potential on various projects and develops the strategy for implementing these projects.

Agricultural stakeholders are moving out of the watershed at a significant pace. Nutrients from agricultural activity will be significantly reduced while urban sources increase in the future. We believe that current economic considerations have significantly changed from the boom development years of 2007, where agricultural land was being converted to urban development. Developers are in a holding pattern. Many have returned to leasing land for agricultural activity until development is back on track. Recent 2010 mapping activity in the region suggests that there was a slight increase in irrigated land use, however, not as much as had been projected. Overall, the total farmable acreage in the watershed remained relatively constant. As the economy improves in 2014-2020, it is expected that urban development will increase and agricultural land uses will diminish.

A new dairy permit was adopted by the RWQCB in June of 2013. This is a 5 year permit. There are short, medium and long term strategies being developed to address the permit requirements, but we believe that removing solid manure out of the watershed and eliminating the import of manure into the watershed may reduce manure up to 140,000-150,000 tons per year. This will be a significant reduction for agriculture on TMDL nutrient loads. Additionally, a new composting facility was opened in 2012 that will compost a large quantity of solid manure in the watershed into a bagging operation.

A California Energy Grant (CEG) pilot project of over \$1.7 million is also nearing completion. This project will convert manure to bio-diesel fuel. This is a new and very innovative technology that has gained much interest at the State level. We believe that a regional facility in the San Jacinto Valley is possible in the future. This operation would greatly reduce manure solids, reducing nutrients for the TMDL and salts for groundwater. The impact of this project will be significant on a local, State, and at a nationwide level.

Dairy operations and cows in the watershed were already at 28% reduction since the implementation of the TMDL in 2004. Although the dairy headcount fluctuates based upon the economy, additional decreases have occurred. There are currently less than 50,000 cows in the San Jacinto Watershed.

Agricultural operators have completed a 2010 land use data update via aerial mapping and are looking into Blue water satellite imaging for identification of load “hot spots “as a monitoring tool. As part of the Conditional Waiver for Agricultural Dischargers (CWAD) permit, an agricultural monitoring program will be developed and implemented. Currently, the 319-grant is nearing completion to determine the feasibility of nonpoint source to non-point source trading with agricultural entities. BMPs currently practiced are being identified and a web-based tool for updating BMPs is being developed.

The Agricultural Nutrient Management Plan (AgNMP) and the urban counterpart, the Comprehensive Nutrient Reduction Plan (CNRP) were recently submitted to the RWQCB. The CNRP was approved in August of 2013. The AgNMP is currently being reviewed by RWQCB staff. Load reductions and plans for compliance by urban and agriculture are identified in these plans.

Data sources:

- Table 14 on page 37 of the Ag BMPs document provides some general pollutant reduction effectiveness data for specific management measures identified in that document.
- Table 5-10 in the IRDMP provides qualitative information on pollutant reduction effects for various manure/wastewater treatment technologies.
- Qualitative and quantitative data are also scattered throughout the discussions of candidate practices in section 5.4.2 of the IRDMP

- The data on crop nutrient uptake in Table 5-18 of the IRDMP.
- TMDL Task Force-Dr. Michael Anderson Oxygenation Analysis for Canyon Lake
- TMDL Task Force-Preliminary Design information on Oxygenation for Canyon Lake
- Tim Moore, Risk Science consultant, various load reduction opportunities and analysis

Element D

An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement this plan.

See San Jacinto River Watershed IRWMP Section 4.1 (p. 103) for total financial assistance needed, with details on funding requirements for 110 individual projects presented in Appendix F. Additional summary data by management category are presented in Table G-1.

Table G-1. Anticipated Funding for Each Resource Management Strategy

Resource Management Strategy	Anticipated Funding
1. Improve surface and ground water quality	\$512,450,457
2. Ensure the long-term viability of water supplies	\$149,255,982
3. Provide adequate stormwater and flood control	\$211,490,000
4. Protect, enhance, and create habitat for wildlife	\$1,015,116,457
5. Manage land use to protect natural resources and watershed character	\$275,599,982
6. Promote water recycling	\$275,599,982
7. Expand water conservation programs	\$19,830,000
8. Enhance opportunities for parks, recreation, and open space	\$190,590,000
9. Weigh environmental justice concerns in watershed decision-making	\$1,303,750,457
10. Explore opportunities to address climate change issues with watershed projects	\$1,300,000

Note: because individual projects meet multiple resource management strategies, these amounts total more than the total funding anticipated for all proposed projects.

See San Jacinto River Watershed IRWMP Section 5.2 (p. 129) for a discussion of the funding sources and authorities that will be relied upon to implement the plan, as well as San Jacinto River Watershed IRDMP Sections 6.2 and 6.3 for information on dairy-specific implementation details and coordination with other agencies.

Since the San Jacinto River Watershed IRWMP, additional costs have been summarized for TMDL implementation for Lake Elsinore and Canyon Lake. (LESJWA Summit, October 2011)

- Development of oxygenation system for Canyon Lake \$2-4 Million
- Aeration system O & M \$500,000 per year
- Development and implementation of agricultural NPS to NPS Pollutant Trading plan
- And ongoing watershed monitoring (LESJWA) as well as new monitoring requirements (ag only for the CWAD) in the future.
- Reduced monitoring costs until 2015, then additional watershed monitoring will be required from 2015-2020

Element E

A component that will be used to enhance public understanding and education of the project and to encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.

There is considerable public outreach occurring in the SJ watershed particularly from the agricultural standpoint. In order to understand the information component it is important to understand the integration strategy for agricultural stakeholders and how it ties together.

The dairy and agricultural community is a challenging stakeholder group to address as there are hundreds of individual owners/operators to include into the TMDL implementation process. In January of 2006, WRCAC agreed to be the lead agency for the TMDL implementation process, on behalf of private property owners that own designated agriculture land, at the request of the Santa Ana Regional Water Quality Control Board (SARWQCB). WRCAC is the single voice in the TMDL implementation process representing the agricultural community.

There are several deliverables associated with the TMDL process that are met by the stakeholder Task Force group. Additionally, some deliverables are stakeholder specific such as the Agricultural Nutrient Management Plan (AgNMP) which was submitted to the RWQCB in 2013 in coordination with the urban stakeholder deliverable the Comprehensive Nutrient Reduction Plan (CNRP).

The Santa Ana RWQCB is in the process of developing a Conditional Waiver for Agricultural Discharges (CWAD) for the San Jacinto Watershed. Eventually the CWAD program will be developed to include the entire Santa Ana Watershed. The purpose of this program is to control pollutants in irrigation tail waters that empty into surface waters. Ag waivers are an efficient way to regulate a large number of dischargers with similar wastes and who use similar practices to manage their discharges, without issuing a permit to each discharger.

The goals of the CWAD program for the San Jacinto River watershed are to reduce the amount of nutrient pollutants discharged from agricultural operations to surface waters, to support the ongoing work implementing the TMDL, and to develop more information about the quality of runoff from agricultural operations that can be used to improve watershed management.

It is WRCAC's intention to coordinate and integrate all the programs developed and maximize the benefits to the stakeholders. The programs that are being integrated are:

- The Lake Elsinore/Canyon Lake Nutrient TMDL
- Salt Offset Program/groundwater monitoring wells for dairies
- Pollutant trading programs:319 grant for non-point to non-point sources and the LE/CL point source/non-point source program
- Conditional Waiver for Agricultural Discharges (CWAD)

Specifically, the AgNMP (a TMDL deliverable) will tie in closely with the CWAD requirements. The AgNMP in its entirety may be downloaded from the Western Riverside County Agriculture Coalition website (WRCAC) at www.sjwrcac.org The AgNMP provides timelines for ag deliverables for the agricultural monitoring plan and QAPP that will also meet CWAD requirements. Pollutant trading options are being addressed for the TMDL but are also tied in with the CWAD and the 319 grant deliverables by identification of BMPs in the watershed and a process for encouraging and implementing BMPs in the watershed by agricultural operators.

The coordination and integration of the TMDL, CWAD, salt offset program and the pollutant trading feasibility grant provide a cohesive strategy for agricultural operators to meet regulatory requirements. WRCAC continues to pursue opportunities and assist agricultural and dairy operators in the San Jacinto watershed in meeting environmental issues.

The ultimate integrated strategy includes: understanding agricultural land use from 2005 to 2020, encouraging agricultural stakeholders to utilize BMPs in the watershed, implementing projects to reduce loads (such as exporting manure out of the watershed), participating in pollutant trading programs (such as in-lake projects) and monitoring progress through an efficient agricultural monitoring program.

WRCAC is very active in the SJ watershed. The SJRWC has been dormant for the past year. This is due primarily to the fact that the DWR grant funding regional process approach has wiped out most small non-profits in favor of large water agencies that devote most of their resources to water agency projects. The days of directly applying for a small grant are essentially gone. Small non -profits don't have \$25,000 to write a grant proposal and aren't looking for sizeable grant funding. SJRWC completed the San Jacinto IRWMP and was told during the process that the quality of the finished product far exceeded many larger entities. Yet funding to update a SJ IRWMP is unlikely under the current process methodology. The future of the SJRWC is uncertain. Other agencies have taken on some of the roles of what the SJRWC has done in the past and we expect this to continue. However, until a decision is made regarding the SJRWC and its future watershed plan updates are only being done by SAWPA for the Santa Ana Watershed and with an urban/water agency focus.

WRCAC developed an Integrated Regional Dairy Management Program (IRDMP) and it is likely that any future updates to the IRDMP will include some updates relevant to the SJ IRWMP. The existing 110 projects in the SJRWC IRWMP were compiled in 2006 and 2007. An updated version of watershed projects is necessary for strategic implementation and continued effective watershed planning. With some grant funding this is achievable through the IRDMP. Financial assistance to update the IRWMP would also help the SJRWC to remain viable over the next few years. The LE/CL TMDL Task Force addresses in-lake remediation projects for the watershed and many of the needed BMPs for urban and ag are cited in the CNRP and the AgNMP. Funding has been limited over the past few years, and being a small non-profit makes it even more challenging. However, we are hopeful that State funded projects such as dairy water quality grants, and agricultural funding will gain some momentum in the next 5 years.

WRCAC has always taken a holistic approach to addressing ag and dairy watershed issues. WRCAC goals will include:

1. Continue to identify key dairy and agricultural projects in the watershed.
2. Implement projects that provide value to the watershed
3. Evaluate the performance and success of the IRDMP and update where possible applicable IRWMP projects

Element F

A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.

See San Jacinto River Watershed IRWMP Section 5.1 (pp. 126–129) for a discussion of project implementation priorities in the San Jacinto River Watershed. See also the San Jacinto River Watershed IRDMP Sections 6.1.2 and 7 for a discussion of priority practices for implementation and the next steps specific to dairy processes. A schedule has been developed for offsetting the impacts

of dairy wastewater discharges and manure application to land as detailed in the “Final Work Plan to Offset the Impacts of Dairy Process Wastewater Discharge and Manure Land Application within the San Jacinto River Basin” (see Figure 1). Additional discussion of priorities for agricultural management practice selection can be found in *Management Practices to Reduce Nutrient Loads from Agricultural Operations in the San Jacinto Watershed* (p. 40) , including a discussion of how to evaluate projects for implementation at farm and watershed scale.

A number of projects proposed in the San Jacinto River Watershed IRWMP have already been completed, see Table G-2.

Table G-2. Progress Report for Projects Proposed in the San Jacinto River Watershed IRWMP

Project ID	Project Name	Status
34	San Jacinto Agricultural In-Lieu Project	Underway/EMWD
46	Alum Treatment for Canyon Lake	Alum grant and stakeholder funding. Project to begin September 2013
47	Canyon Lake Dredging Enhancements	Cancelled midway through implementation/TMDL Task Force
48	Lake Elsinore & Canyon Lake Nutrient TMDL Monitoring	Ongoing/underway/TMDL Task Force
51	Fishery Management Project	Done as needed on LE; likely to be included in stakeholder options moving forward
54	Lake Elsinore Water Quality Modeling Study	Underway/TMDL Task Force
85	Invasive Removal in San Jacinto	Ongoing/SAWA
87	Irrigation Management BMPs for agricultural, residential and commercial use in the San Jacinto Basin	In planning/design phase/AgNMP
91	San Jacinto Gap Plans, Specifications, and Estimates	In planning/design phase/SJRWC(on hold water rights dispute)
93	Fire Risk Analysis & Management	Some work being completed following recent fires in both LE area and around Hemet lake in SJ mountain area.
97	Watershed-wide monitoring for the San Jacinto nutrient TMDL	Undertaken by the LESJWA TMDL Task Force; underway with revisions for 2014
98	Assessing Pathogen Fate & Transport on a farm: Implementation of Manure Management on Watershed WQ	Completed as part of IRDMP
99	Sustainability of a Comprehensive Nutrient Management Plan for Field-scale Dairy Lagoon Water Application	Completed as part of the Integrated, Regional Dairy Management Plan/SJBRCD & WRCAC
103	Agricultural/CAFO Pollutant Trading Analysis and Feasibility for Pathogen and Nutrient TMDL reductions in the SJ Watershed	Grant awarded/WRCAC 319 grant/Grant to be completed fall of 2013
104	CAFO General Waste Discharge Permit 5 year Management plan	Permit adopted June 7, 2013. WRCAC addressing new requirements and ongoing issues
105	Development of Comprehensive Nutrient Management Plan (CNMP) for San Jacinto Watershed Agricultural Community	Completed/UCR 319 grant
106	Implementation of IRDMP Recommendations	Ongoing by WRCAC/Scott Brothers dairy pilot scale project gasification with synfuel component and biochar. Project addresses nutrients and salts.
107	Implementation of the Salt Offset Implementation Strategy for Agriculture	Ongoing/WRCAC/IRDMP implementation/new permit monitoring well requirements
108	Updating Agricultural database information and parcels and GIS/Aerial Mapping in the SJ Watershed	WRCAC recently completed 2010 mapping. New TO underway with AIS on Baseline GIS data and new TO for definition of sub watershed boundaries regarding Mystic lake issues.

109	San Jacinto Watershed for Acquisition of Open Space for Habitat Conservation	Underway as part of Project 91; in discussion for 186-acre open space acquisition /SJRWC
105	Development of AgNMP	Submitted to RWQCB 2013

Note: projects not listed have not yet begun or status update was not available.

Though funding availability will in part dictate the actual scheduling of future projects, in general, projects of a planning nature and those that involve research and assessment to characterize watershed conditions should occur prior to individual improvement and regulatory compliance projects. This will ensure that such implementation projects are developed in a holistic manner with the greatest benefit to the watershed in terms of addressing program goals and pollutant load reductions. Education programs are expected to have long-term benefits by changing human behavior and therefore will be implemented continually as funding becomes available.

The AgNMP contains a “roadmap” for agricultural compliance that will be integrated into the TMDL, CWAD, and salt offset requirements to meet essential target dates. The plan contains defined agricultural monitoring, load reduction goals and projects to meet those goals.

Element G

A description of interim, measurable milestones to determine whether NPS management measures or other control actions are or will be implemented.

The key measures expected to result in greatest load reductions include:

- In-lake treatment options for Lake Elsinore and Canyon Lake
Including, but not limited to, the Aeration system in Lake Elsinore (35% nutrient load reduction) and the alum treatment project supported by grant funding in Canyon Lake estimated to reduce phosphorous load by 9,337 kilograms.
Identification and Implementation of Agricultural BMPs by individual operators
Including but not limited to implementation of Agricultural Nutrient Management Plan (an estimated 20-25%+ load reduction from 2010 loading rates). Agricultural BMPs will be implemented to reduce load as well as the attrition rate due to reduced ag and reduced manure loads.
- Implementation of a Pollutant Trading model between point sources and non-point sources as well as nonpoint sources to non-point source trading.
- Implementation of a dairy manure manifest system
- Researching backhauling opportunities to eliminate 50% or more of solid manure in the watershed
- New technologies to address salt and nutrient reduction such as the CEG grant pilot study in 2012 at Scott Brothers Dairy Farm. We believe that the short term solution for reducing manure in the watershed is the backhaul system, a medium term solution is the pilot grant study and the long term solution is a regional thermal system. Backhauling may also play a significant role in the economy of the Backhauling program.
- A new composting facility with a bagging operation is also scheduled to open in San Jacinto in February of 2012. This may also have a significant impact on load reduction
- The TMDL Task Force Implementation sheet lists a detailed schedule including projects planned and completed as required through the TMDL Implementation process.

Additional data sources:

- IRDMP section 6.4 - Mechanisms for Evaluating Implementation Plan Performance and Updating the IRDMP

Element H

A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised or, if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.

The TMDL adopted by the Santa Ana RWQCB and ongoing work of the Lake Elsinore and Canyon Lake TMDL Task Force addresses this element. The Task Force has produced many reports with information contributing to meeting this requirement.

Additionally, WRCAC maintains updated land use mapping information for the watershed for agricultural activities and is working on its “integration strategy.” WRCAC aggressively pursues grants and new technology that will assist in meeting water quality standards. A regional agricultural approach with an integrated, multi-beneficial outcome is in everyone’s best interest for agricultural stakeholders and all stakeholders in the San Jacinto Watershed.

Element I

A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (h) immediately above.

The TMDL adopted by the Santa Ana RWQCB and ongoing work of the Lake Elsinore and Canyon Lake TMDL Task Force addresses this element. The Task Force has produced many reports with information that meets this requirement.

WRCAC will be developing an additional agricultural monitoring plan for agricultural monitoring sites that will specifically address agricultural concerns for the CWAD and AgNMP. Blue Water imaging satellite is also being reviewed for future use along the Salt Creek area and for additional date specific information such as satellite imaging of phosphorous after a large storm event.

The aerial mapping component has already been developed for 2005, 2007 and 2010 for agricultural land uses. This mapping effort is a key component to understanding load reductions from current land uses in the region. WRCAC expects the next mapping update in 2015 or 2016 to reflect the flyover data update scheduled for 2015. WRCAC anticipates a later update again in 2018 or 2019. WRCAC is monitoring this activity; however, we are dependent upon the availability of the fly over mapping photography.

In summary, the monitoring component consists of:

1. LESJWA Task Force Monitoring - 4 stations
2. WRCAC Ag specific monitoring stations which are currently under review.
3. WRCAC AIS aerial mapping updates
4. Future use of Blue Water Satellite imaging technology in select situations
5. Development of an agricultural monitoring plan and QAPP with multiple agricultural monitoring locations.

References

EPA. 2003. Applying for and Administering CWA Section 319 Grants: A Guide for State Nonpoint Source Agencies. <http://www.epa.gov/owow/nps/319/319Guide.htm>, Last updated January 21, 2010. Accessed August 12, 2010.

Reference Document Links or Locations

Agricultural Nutrient Management Plan (AgNMP)	www.sjwrcac.org
Comprehensive Nutrient Management Plan (CNRP)	RWQCB website Or contact Jason Uhley,RCFCD
Conditional Waiver for Agricultural Discharges (CWAD)	RWQCB website in future Contact:Mark Adelson
Dairy Permit/	RWQCB website Contact:Ed Kashak
Integrated Regional Dairy Management Plan (IRDMP)	www.sjwrcac.org
Integrated Regional Watershed Management Plan	www.sjrwc.org
LE/CL TMDL Task Force information	www.SAWPA.org Contact:Rick Whetsel
WQT Feasibility Assessment Report	www.sjwrcac.org As of November 1, 2013