FALLBROOK PUBLIC UTILITY DISTRICT
WATER RIGHT PERMIT 11356 (APPLICATION 12178)
ATTACHMENT TO ALTERNATIVE COMPLIANCE PLAN

Section A(9) – Installation Deadline

Per the regulations the original installation deadline for Permit 11356 was January 1, 2017. The State Water Board subsequently extended the deadline to March 31, 2017. Fallbrook Public Utility District filed a Request for Additional Time (24 months) with the State Water Board on March 22, 2017. By letter dated August 25, 2017, the State Water Board granted an extension until January 1, 2018.

Section F(1) - For each Point of Diversion listed in the Alternative Compliance Plan, describe how the water is measured.

The sole point of diversion for Permit 11356 is the Robert A. Skinner Dam. The dam is situated on Tucalota Creek in Riverside County and impounds a 44,000-acre-foot reservoir (Lake Skinner); see **Attachment 1**. The dam and lake are owned and operated by Metropolitan Water District of Southern California (MWD). The primary purpose of Lake Skinner is to provide regulatory and emergency storage capacity for water imported to southern California by MWD. MWD does not have a water right to store or divert natural inflow in Lake Skinner. Lake Skinner is within the Santa Margarita River watershed and is thus within the scope of the Modified Final Judgment and Decree dated April 6, 1966, in matter of Complaint No. 1247 filed by the United States of America in the United States District Court for the Southern District of California on January 25, 1952, to seek an adjudication of all respective water rights within the Santa Margarita River watershed.

In March 1989, the Court issued an Order appointing a Watermaster to administer and enforce the provisions of the Modified Final Judgment and Decree and subsequent orders of the Court. The appointing Order described the Watermaster's powers and duties as well as procedures for funding and operating the Watermaster's office. Also in 1989, the Court appointed a Steering Committee, which presently is comprised of representatives from the United States, Eastern Municipal Water District, Fallbrook Public Utility District, Metropolitan Water District of Southern California, Pechanga Band of Luiseño Mission Indians, Western Municipal Water District, and Rancho California Water District. The purposes of the Steering Committee are to assist the Court, to facilitate litigation, and to assist the Watermaster. A Memorandum of Understanding and Agreement on Operation of Lake Skinner (MOU), dated November 12, 1974, was approved by the Court on January 16, 1975. The MOU contains provisions to protect Santa Margarita River Watershed water users from potential effects of Lake Skinner on either subsurface or surface flows.

FPUD's Permit 11356, issued in 1958. originally allowed for the construction of a new dam and reservoir on the Santa Margarita River. The State Water Board later modified the Permit to move

the point of diversion to the then-existing Lake Skinner, allowing for the collection of up to 10,000 acre-feet of water to storage from Tucalota Creek. In effect, Permit 11356 allows for the comingling natural inflow into Lake Skinner from Tucalota Creek with MWD's imported supply. On February 16, 2005, the Court approved an Order Amending the MOU (2005 MOU). The 2005 MOU references other agreements by which MWD will wheel to FPUD its water under Permit 11356 through the San Diego Water Authority, and provides for specified releases to be made from Lake Skinner to avoid downstream impacts (see **Attachment 2**). Among other provisions, the 2005 MOU sets forth a protocol by which MWD will daily quantify natural inflow to Lake Skinner and disaggregate the inflow from MWD's import/export water for the purposes of determining FPUD's entitlement under Permit 11356 and other requirements for avoiding impacts to diverters downstream of Lake Skinner. The MWD protocol involves the measurement and/or computation of inflow and outflow elements to Lake Skinner, including imported and exported supplies, natural inflow, required releases, and precipitation to and evaporation loss from the reservoir. An example of the data inputs and calculations are shown on the attached MWD spreadsheet calculation for December 2010 (**Attachment 3**).

Section F(2) - Identify the measurement accuracy associated with the measurement devices.

Response: For preparing this Alternative Compliance Plan, FPUD contacted MWD for information on devices used to measuring the various Lake Skinner inflow and outflow components. Information for the devices, to the extent provided by MWD, is summarized below:

1. MWD import to Lake Skinner – Acoustic flow meter SDC-0 with SCADA; see **Attachment 4** for device information and 2017 calibration. Maximum error was found to be 0.48 percent.

2. MWD export from Lake Skinner - Acoustic flow meter LSOC-0 with SCADA; see **Attachment 4** for device information and 2017 calibration. Maximum error was found to be 0.21 percent.

3. Releases from Lake Skinner – MWD makes releases from Lake Skinner from the dam outlet and from the Auld Valley Pipeline. Recent laboratory calibration reports and photographs of the meters are provided in **Attachment 5**. The meters were found to be within 2 percent accuracy.

4. Emergency release – Venturi flow meters LSBO-100 and LSBO-350; see **Attachment 6** for device information and 2017 calibration tests. The maximum error of LSBO-100 was found to be 0.37 percent. The maximum error of LSBO-350 was found to be 0.28 percent.

5. Evaporation pan – This is a manually read device with a hook gauge (see photographs in **Attachment 7**). The hook gauge is read every 24 hours at midnight by the Skinner Treatment plant operators.

6. Precipitation gage - This is a manually read device (see photograph in **Attachment 7**). This gauge is read every 24 hours at midnight by the Skinner Treatment Plant operators. A measuring ruler is used to record the rainfall trapped in the cylinder each day.

In addition, MWD visually monitors the flow in Tucalota Creek, Rawson Creek, and Middle Creek during storms and uses those observations to supplement the Lake Skinner operations analysis.

Data from the aforementioned devices and observations is used in conjunction with bathymetric data for Lake Skinner to populate MWD's spreadsheet and conduct the daily analysis. See **Attachment 8** for a recent topographic map and area-capacity curves for Lake Skinner.

Section F(3) - Describe how the accuracy of the Alternative Compliance Plan was calculated.

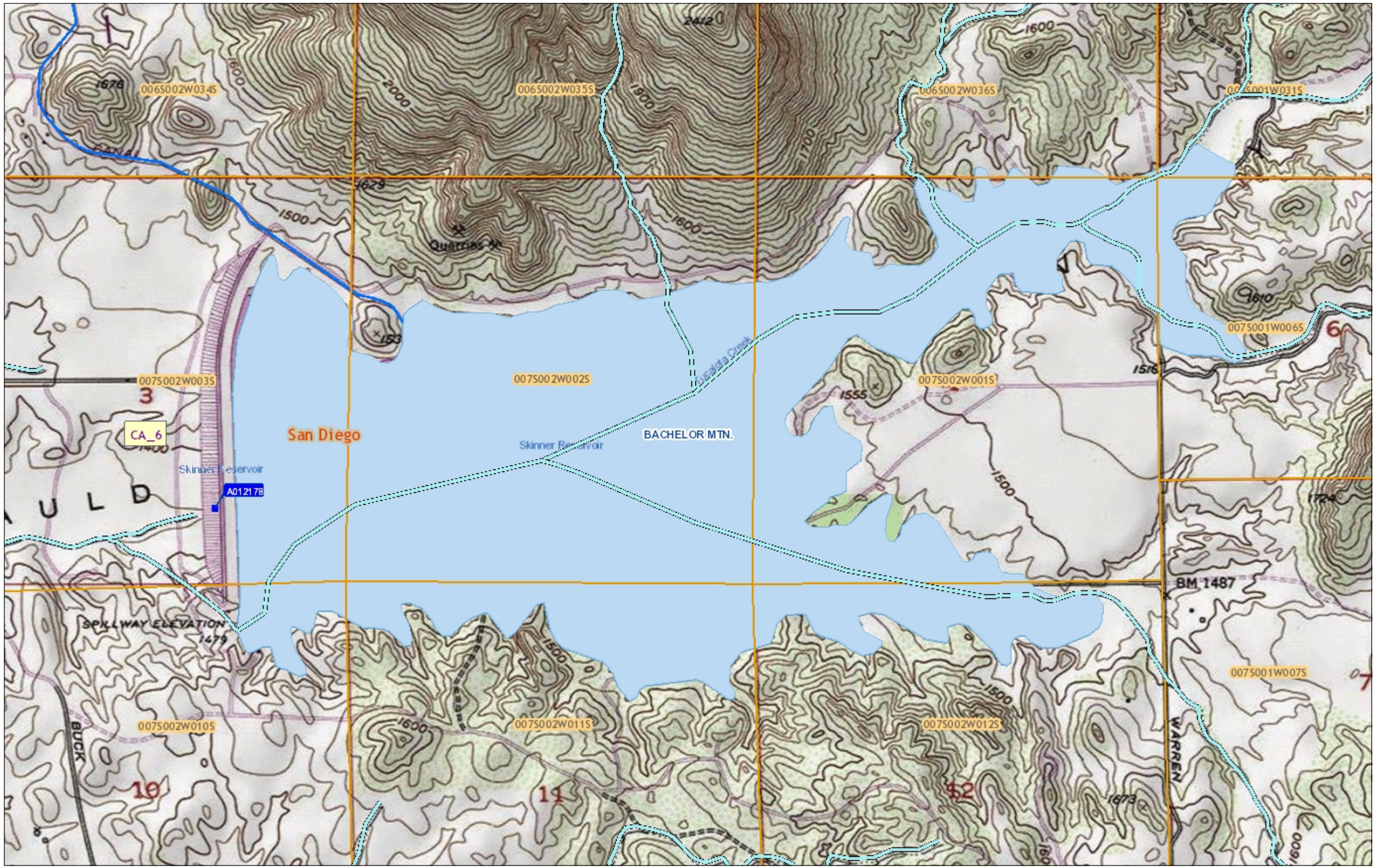
Per Section D(1) this Alternative Compliance Plan generally seeks relief from the required accuracy and certification-of-accuracy provisions of the regulations. The accuracies of certain measuring devices used by MWD to quantify water diversion and use under Permit 11356 are discussed in the response to Item F(2) herein. The results of MWD's determination of natural inflow to Lake Skinner and the extent of that inflow attributed to FPUD's Permit 11356 are reported to the Santa Margarita River Watermaster by MWD. The Watermaster apparently considers MWD's results to be sufficiently accurate so include the information in its Annual Watermaster Reports.

ATTACHMENT 1 –

Location map for Lake Skinner (excerpt from SWRCB GIS)

eWRIMS GIS

California State Water Resources Control Board



Legend

Points of Diversion

- Active
- Adjudicated
- Cancelled
- Certified
- Claimed
- Claimed - Local Oversight
- Inactive
- Licensed
- Pending
- Permitted
- Registered
- Revoked
- State Filing
- Temporary

- Fully Appropriated Streams
- PLSS
- Quad Map Outlines (1:24k)
- Regional Board Boundaries
- State Plane Zones
- Counties
- Rivers (1:24K)

1: 18,056

0.6 0 0.28 0.6 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes

This map was automatically generated using Geocortex Essentials.

ATTACHMENT 2 –

2005 FPUD-MWD Amended MOU

Robert H. James, General Counsel
SACHSE, JAMES & LOPARDO
205 W. Alvarado St.
Fallbrook, CA 92028-2002
760-728-1154

Attorneys for FALLBROOK PUBLIC UTILITY DISTRICT

UNITED STATES DISTRICT COURT

FOR THE

SOUTHERN DISTRICT OF CALIFORNIA

UNITED STATES OF AMERICA, Plaintiff, FALLBROOK PUBLIC UTILITY DISTRICT, et al., Defendants.	Civil Action No. 51-1247-SD-GT AMENDED MEMORANDUM OF UNDERSTANDING AND AGREEMENT ON OPERATION OF LAKE SKINNER

AMENDED MEMORANDUM OF
UNDERSTANDING AND AGREEMENT

This Memorandum of Understanding and Agreement dated this twelfth day of November, 1974, and amended this 18th day of Jan., 2004, among THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA (herein referred to as "Metropolitan", a public corporation of the State of California; FALLBROOK PUBLIC UTILITY DISTRICT (herein referred to as "Fallbrook"), a public corporation of the State of California; and RANCHO CALIFORNIA WATER DISTRICT, a California Water District, successor in interest to Rancho California and The Vail Company.

Whereas, the United States District Court for the Southern District of California, in the case entitled, United States v. Fallbrook Public Utility District, et al., No. 1247 – SD-C (herein referred to as "The Action"), has adjudicated water rights to the Santa Margarita River stream system (herein referred to as "System") by the Modified Final Judgments and Decrees entered on April 6, 1966 and June 27, 1968 (herein referred to as the "judgment");

Whereas, Fallbrook, and Rancho California Water District are the substantial water users in the System; have been involved for the past two decades in litigation to determine, the respective rights and duties of the users of the waters of the System; and are parties of record in the Action;

Whereas, Article V of the 1966 Order in the Judgment retains continuing jurisdiction as to the use of all surface waters within the watershed of the System, and Article II thereof adopts Interlocutory Judgment 28 by reference, which in

turn retains continuing jurisdiction over the impoundment of the surface waters of the System;

Whereas, Metropolitan has completed construction of a dam and reservoir with a capacity of some 44,000 acre feet in Auld Valley, Riverside County, on Tucalota Creek which is a tributary of the Santa Margarita River by way of Santa Gertrudis Creek and Murrieta Creek, being known as Auld Valley Dam and Lake Skinner (herein referred to as the "Project");

Whereas, the Project's purpose is to provide regulatory storage capacity for the San Diego pipelines, rather than to impound surface water of the System as set forth more fully in Attachment A hereto;

Whereas, the Project will nonetheless unavoidably impound small amounts of surface waters of the system for short periods of time;

Whereas, the Project lies within the Tucalota Creek sub-watershed which is a part of the Santa Gertrudis Creek sub-watershed as described in Interlocutory Judgments 31 and 31A, both of which have been incorporated by reference into the Judgment;

Whereas, Metropolitan has acquired a portion of the lands riparian to Tucalota Creek, along with the respective appurtenant water rights set forth in Interlocutory Judgment 31 listed in Attachment B hereto;

Whereas, the defendants in the Action, that are listed in Attachment C hereto, have assigned all or part of their water rights in Tucalota Creek to Metropolitan;

Whereas, on November 20, 2001, the State Water Resources Control Board amended Permit 11356 allowing Fallbrook to divert up to 10,000 acre feet into Lake Skinner between November 1 and June 1 of the succeeding year and deliver said water thirty (30) days after diversion;

Whereas, Condition No. 13 of Permit 11356 requires Fallbrook to release water into the Santa Margarita River downstream from the Point of Diversion in such amounts and at such rates as will be sufficient, together with inflow from downstream tributary sources, to supply downstream diversions of the surface flow under prior rights to the extent water would have been available for such diversions from flow unregulated by Fallbrook's works, and sufficient to maintain percolation of water from the stream channel as such percolation would occur from flow unregulated by Fallbrook's works, in order that operation of the Project shall not reduce natural recharge of groundwaters from the Santa Margarita River; and

Whereas, by separate agreements (herein referred to as "Delivery Agreements") between Fallbrook, Metropolitan and the San Diego County Water Authority (herein referred to as the "Authority"), Metropolitan has agreed to wheel up to 10,000 acre feet of the water subject to Permit 11356 in and through Lake Skinner to Fallbrook through the Authority, and the Authority has agreed to deliver the water to Fallbrook, all subject to the terms of the Delivery Agreements;

NOW, THEREFORE, in evidence of the understandings and agreements which have been reached, the undersigned parties to this memorandum do hereby declare such understandings and agreements to be as follows:

I. Metropolitan will operate the Project in accordance with the following principles:

A. The basic function of Lake Skinner is to provide regulatory Storage Capacity for the San Diego Pipelines. Consistent with the Delivery Agreements, Metropolitan also will wheel to Fallbrook its water under Permit 11356 through the Authority, which will subsequently deliver the water to Fallbrook. Only water that would have been available in the Drainage Basin in the absence of the Reservoir is to be wheeled. The permit also would allow Fallbrook to divert water into Lake Skinner and deliver that water to Fallbrook thirty (30) days after diversion.

B. Lake Skinner will be operated so that subsurface water Outflow will approximate the flow that would have occurred in the absence of the Reservoir.

C. The quantity of all Local Runoff will be determined, then the Required Releases will be made to Tucalota Creek with the remainder, "Fallbrook Diversion" defined by Table 1 as the difference between Column 1 and Column 2 or Column 3, whichever is applicable, diverted and wheeled to Fallbrook through the Authority thirty (30) days after diversion.

D. Rainfall on the Reservoir will be retained in Lake Skinner.

E. Water conservation and flood control are not explicit functions of Lake Skinner.

F. The Groundwater immediately downstream from the Dam will be maintained at the approximate level that would have existed in the absence of the Project.

G. The Outflow from Lake Skinner will have no significant effect on the quality of the water downstream of the Dam.

II. Metropolitan will implement those principles set forth in Article I, above, by operating the Project under the following criteria:

A. Local Runoff shall be determined as follows with more specific descriptions set forth in Attachment D hereto:

1. Local Runoff into the Reservoir from the Drainage Basin above the Dam will be computed daily.

2. Local Runoff into the Reservoir will be computed as a residual quantity in a water balance of all other measured Imports, Inflows, Exports, Outflows, and changes in Storage Content of the Reservoir.

3. In the determination of Local Runoff, no distinction will be made between runoff from lands belonging to Metropolitan and runoff from land owned by others.

4. Rainfall on the Reservoir surface will not be included as a component of Local Runoff into the Reservoir but will be considered as if it were a Metropolitan Import.

5. Evaporation from the Reservoir surface will be included in the water balance as if it were a Metropolitan Export.

6. Miscellaneous consumptive uses of water for the Skinner Filtration Plant, for recreational developments and other local uses, will be included in the water balance as if the water were a Metropolitan Export.

7. Metropolitan Water District shall maintain a record of the above-referenced computations and data in a "Lake Skinner – Tucalota Creek Water Rights Monthly Record Sheet." (hereinafter "Record Sheet")

B. Reservoir Releases shall be determined as follows, with more specific description set forth in Attachment E hereto:

1. Releases from the Reservoir into Tucalota Creek will begin shortly after the daily quantity of Local Runoff is computed and will be adjusted daily as required by subsequent determinations of Local Runoff.

2. The Release from the Reservoir into Tucalota Creek will be limited to the computed mean daily Local Runoff into the Reservoir, or the Required Release determined as set forth in Attachment E hereto, whichever is lesser, except as noted in paragraph 3, below.

3. Releases into Tucalota Creek may be made as requested by the Watermaster, within reasonable and safe limits that would

neither impair Metropolitan's use of the Project nor expose it to public liability.

4. The start of any Release from the Reservoir into Tucalota Creek will be made at a low rate, and any increases in the rate of Release will be made gradually to alert downstream parties.

5. Within the constraints imposed by physical limitations and other operating limits as mentioned in Paragraphs 2, 3 and 4, above, Releases to Tucalota Creek will be made at rates similar to those which would have occurred in the absence of the Reservoir.

6. Releases from the Reservoir into Tucalota Creek will be continued during and following each flood event until the total computed quantity of Required Release has been released.

7. As a general operating procedure, freeboard will be maintained between the elevation of the water surface and the spillway crest elevation.

C. No Storage Space is specifically reserved in the Reservoir for flood control or conservation use; and Releases from the Reservoir into Tucalota Creek will normally be made through the Dam outlets, as described more fully in Attachment F hereto.

D. The water level of the Groundwater immediately below the Dam will be monitored by means of a representative well, and will be maintained at levels that would have existed in the absence of the Project by means of Releases from the Reservoir, if seepage through the Dam and Subsurface

Flows are inadequate for this purpose, as more fully described in Attachment G hereto.

E. The quality of the imported water which is stored in the Reservoir will be adequate for all intended uses; and Releases from the Reservoir will have little if any, effect on the general water quality as compared to the quality that would have existed in the absence of the Reservoir, as more fully described in Attachment H hereto.

F. Metropolitan will file a copy of the monthly Record Sheet described in Attachment E hereto, with the Watermaster prior to the end of each respective following month. The Watermaster will in turn deliver copies of each month's sheet to each party to the Judgment.

III. The following terms used in this Memorandum of Understanding and Agreement, shall have the respective meaning given below unless otherwise indicated:

A. Dam—The Auld Valley Dam constructed by Metropolitan on Tucalota Creek.

B. Discharge Capacity—The maximum capability of the Dam outlets or spillway with the Dam valves or gates in a full-open position.

C. Drainage Basin—The area tributary to Tucalota Creek upstream from the Auld Valley Dam.

D. Export—Water which is released from the Reservoir through the San Diego pipelines evaporation from the Reservoir surface and local consumptive use by Metropolitan.

E. Groundwater—The general subsurface water body in the zone of saturation in the basin downstream of the Dam.

F. Import—Water which flows into the Reservoir through the San Diego Canal and pipelines and rainfall on the Reservoir surface.

G. Inflow—Local Runoff and subsurface Flow into the Reservoir from the Drainage Basin above the Dam.

H. Local Runoff—Surface water runoff from the Drainage Basin into the Reservoir.

I. Outflow—Releases made through the Dam outlets and over the Dam spillway into Tucalota Creek and seepage through the Dam and other Subsurface Flow.

J. Release—Water which flows through the Dam outlets or over the Dam spillway into Tucalota Creek.

K. Required Release—The release rate determined using the procedures set forth in Attachment E hereto.

L. Reservoir—Lake Skinner created by Auld Valley Dam.

M. Storage Capacity—The maximum volume of water which may be stored in the Reservoir.

N. Storage Content—The volume of water actually stored in the Reservoir at a given time.

O. Storage Space—The Storage Capacity of the Reservoir which is not filled with water at a given time.

P. Subsurface Flow—All water flowing below the land surface.

Q. Watermaster—The individual appointed pursuant to Interlocutory Judgment 45 as incorporated in the Judgment.

IV. Metropolitan's operation of the Project in the manner described in Articles I and II will not impair the downstream rights of any of the parties to the Action.

V. Notwithstanding any other provision of this Agreement or anything which might reasonably be implied or inferred therefrom, nothing herein shall be construed to affect in any manner any rights to the use of water from the Santa Margarita River or its tributaries which the Parties to this Agreement hold. Nothing in this Agreement shall be construed as a transfer of or an attempt to transfer such rights or any part thereof between the parties.

VI. Upon execution of this Memorandum and Agreement by the respective undersigned representatives on behalf of Fallbrook, Rancho California Water District and Metropolitan, Fallbrook shall present this instrument to the United States District Court for the Southern District of California for approval and incorporation into the Judgment as the Court may determine appropriate in the circumstances. Upon approval by the Court this Agreement shall become fully effective and will remain in effect so long as the Delivery Agreements remain in effect.

VII. No assignment or transfer of the rights defined in this Agreement or any part or interest therein shall be valid unless approved all the parties hereto.

VIII. The criteria and reservoir release data referred to in Article II hereof, the terms used in Article III hereof, and the formulae included in the Attachments

hereto shall be periodically reviewed and, based on operating experience, will be modified if deemed necessary or appropriate by the parties hereto.

IX. No member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this Agreement or to any benefit that may arise herefrom; but this restriction shall not be construed to extend to this Agreement if made within a corporation or company for its general benefit.

IN WITNESS WHEREOF the undersigned have executed this Memorandum of Understanding and Agreement on behalf of their respective principals.

APPROVED AS TO FORM:
Jeffrey Kightlinger

By: JAMES F. ROBERTS
Deputy General Counsel

ATTEST:

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____
Ron Gastelum, CEO

FALLBROOK PUBLIC UTILITY DISTRICT

By: _____
Keith Lewinger, General Manager

ATTEST:

RANCHO CALIFORNIA WATER DISTRICT

By: _____
Brian Brady, General Manager

ATTEST:

By: _____
James Jenks, Watermaster
Santa Margarita Watershed

Attachment E

RESERVOIR RELEASES

1. Required Releases from Lake Skinner will be made at the following rates for the periods indicated.

A. During the months of June, July, August, September, and October the Required Release will be limited to the computed mean daily rate of Local Runoff into the Reservoir except as noted in Article II, Paragraph B (3), as described in Procedure 2.

B. During the months of November, December, January, February, March, April and May, after annual diversions for Fallbrook total 10,000 acre feet, the Required Release will be limited to the computed mean daily rate of Local Runoff into the Reservoir except as noted in Article II, Paragraph B (3), as described in Procedure 2.

C. During the months of November, December, January, February, March, April and May, when annual diversions for Fallbrook total less than 10,000 acre feet, the Required Release for a given Local Runoff will be as shown on Table 1 for days when Local Runoff is greater than the previous day and for all other days, except as noted in Article II, Paragraph B (3) and except as modified by paragraph D below.

D. The Required Release described in Paragraph C, above, for days when the Local Runoff exceeds that of the previous day, may be reduced proportionately to reflect development along Tucalota Creek, when the development of riparian land along Tucalota Creek begins to rely exclusively on

imported water supply; however, in no event can the Required Release be reduced to a level below that used on all other days. The proportionate reduction factor may be developed by dividing the length of the watercourse crossing the developed parcel as listed in Table 2 by the total length of watercourse from Lake Skinner downstream to the existing channelized portion of Tucalota Creek (23,683 feet). The Required Release may then be reduced by a rate developed by multiplying the factor times the appropriate release rate shown in Table 1. A parcel shall be deemed to be relying on an imported water supply upon issuance of a building permit by Riverside County.

Each year during October, the Watermaster will advise Metropolitan of the appropriate factor to use for the ensuing year.

E. Procedure 2 of Attachment E and the attached Record Sheet of Attachment E provides details regarding Required Releases. Such Required Releases will begin approximately four hours after the preceding 24-hour accumulation period.

Note: The Record Sheet is to be amended by adding a column for "Required Release", a column for "Fallbrook Diversion", a column for "Cumulative Fallbrook Diversions", and a column for Delivery Date. Cumulative Fallbrook Diversions will be reset at zero on October 30 of each year.

2. It should be noted that if the Required Release as determined in Procedure 2 rate exceeds Discharge Capacity, Metropolitan will continue to make Releases at the maximum Discharge Capacity and increase the duration of

the Release until volume equivalence is reached. It should also be noted that the spillway at the Dam is ungated. Any Reservoir elevation above the Dam's spillway crest elevation will automatically result in water being spilled until the Reservoir level returns to the spillway crest elevation. Metropolitan will not use elevations in excess of the spillway crest at any time in its calculations. Therefore, any temporary surcharge storage above the spillway crest will not be included in the computation of Reservoir Releases.

3. Metropolitan will observe a maximum Reservoir elevation during the rainy season which will keep 1,000 acre-feet of Storage Space below the Dam's spillway crest evacuated at all times except during flood events. The purpose of this is to preclude any spillway overflow in excess of that which would have naturally passed downstream.

4. It is impossible to identify precisely that portion of the Local Runoff which will enter Reservoir bank storage during the short period of time that Local Runoff is held in Lake Skinner. However, this quantity will be small and will be more than offset by the increase in Local Runoff due to the saturated lands adjacent to the Reservoir.

5. Fallbrook Diversion in Procedure 2 is defined as the flow to be delivered to Fallbrook thirty (30) days after runoff enters Lake Skinner (Runoff as calculated on Monthly Record Sheet minus Required Releases as shown on Table 1, calculated daily).

Procedure 2

Procedure for determining quantity and rate of Required Releases from Lake Skinner into Tucalota Creek.

A. Definitions:

Q = External accumulation in acre-feet

P = Precipitation on the lake surface in acre-feet

A = Actual Local runoff into Lake Skinner in acre-feet

Calculation: $A = Q - P$

B. Calculation of Required Releases during the months of November, December, January, February, March, April and May prior to annual diversions for FPUD reaching 10,000 acre-feet.

After calculating "A" above, determine

Required Releases from Table 1.

C. Calculation of Required Releases during the months of November, December, January, February, March, April and May after diversions for FPUD exceed 10,000 acre-feet and during the months of June, July, August, September and October.

Required Releases = "A" as calculated above.

D. Rate of Required Releases:

(1) Release of runoff will begin at 1100 hours after readings and calculations are made relative to the period ending at 0700 hours.

(2) The rate of release will begin at 5 cfs or less and be incremented in 5 cfs or less steps until the rate (from Procedure 1) is attained and then will be continued constant until the volume A has been released.

(3) The rate of Release possible is shown on Graph 1. Metropolitan will release incidentally stored water at rates greater than rate R upon request from responsible authorities, within reasonable limits that will neither impair Metropolitan's use of the Project nor expose it to public liability.

TABLE 1

REQUIRED RELEASES FROM LAKE SKINNER

During months of November, December, January,
February, March, April and May
Prior to Annual Diversions for FPUD Reaching 10,000 Acre-Feet

	REQUIRED RELEASE **TO TUCALOTA CREEK**	
Local Runoff Acre Feet/Day	Days When Local Runoff is Greater than the Previous Day Acre Feet/Day	All Other Days Acre Feet/Day
(1)	(2)	(3)
5	5	5
10	10	7
15	14	9
20	17	10
25	19	10.5
30	21	11
35	22.5	11.5
40	24	12
45	25.5	12.25
50	27	12.5
55	28	12.75
60	29	13
65	30	13.12
70	31	13.25
75	31.5	13.37
80	32	13.5
85	32.25	13.62
90	32.5	13.75
95	32.75	13.87
100	33	14
> 100	33	14

TABLE 2

RIPARIAN OWNERS ALONG TUCALOTA CREEK

DOWNSTREAM FROM LAKE SKINNER

Parcel No.	Owner	Feet Below Lake Skinner		Length of Watercourse Feet	Area of Parcel Acres	Comments
958 04 024	MWD	0	3,500	3500	591.26	Parcel owned by MWD to Washington Street
958 09 022	MWD	3,500	4,914	1414	45.04	
958 09 021	Carvi Auto Body & Paint Inc.	4,914	5,267	353	4.99	
958 09 020	Mazoe Smith 2003 Trust	5,267	5,653	386	4.86	
958 09 019	Avila, Jessie/Leticia	5,653	5,910	257	4.73	
958 09 029	Cuevas, Roger/Cecilia	5,910	6,360	450	6.88	
958 09 030	Samuel Desantiago	6,360	6,746	386	6.89	
958 09 036	Larry A. Urban	6,746	6,971	225	20.4	Borders Buena Ventura Road
958 09 035	Larry A. Urban	6,971	8,064	1093	19.54	
958 17 006	Tessier, Anthony J.	8,064	8,385	321	4.68	
958 17 003	Hopkins, David Ray/Cherlyn Ann	8,385	8,835	450	4.43	
958 17 002	Carter, Robert B & Jane L.	8,835	9,221	386	4.79	
958 17 024	Munoz, Alfonso/Manuela	9,221	9,671	450	4.63	
958 17 023	Cornejo, Francisco; Wenzel, Hans F.	9,671	10,121	450	4.64	Borders Pourroy Road
958 14 009	Rancho Bella Vista LLC	10,121	11,792	1671	22.72	TR 23418, Approved February 1989
958 14 010	Rancho Bella Vista LLC	11,792	13,013	1221	36.82	Expired February 1992
958 14 003	Borel, Alexander Ray, et al and Borel, Leonard Roy	13,013	14,427	1414	109.3	
958 14 002	Borel, Alexander A.	14,427	15,841	1414	40	Borders Leon Road - PP 17631 - In Dept. Review
958 27 012	Borel, Alex A	15,841	17,705	1864	40	
957 32 006	French Valley Commercial Partners	17,705	19,955	2250	150.29	Reservoir - In Department Review
957 32 005	French Valley Commercial Partners	19,955	20,919	964	11.04	
957 35 002	Pulte Home Corp - May have been subdivided	20,919	23,683	2764	241.04	Approved April 2001, Expires March 2004

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
LAKE SKINNER -- TUCALOTA CREEK WATER RIGHTS
MONTHLY RECORD SHEET

(month)		I Inflow (af)	O Outflow (af)	D Release (af)	E Evaporation (af)	S Storage Change (af)	Q External Water (af)	R Rate of Accumulation (cfs)	P Precipitation (af)	A Runoff (af)	LMIN Well Depth AV-28 (ft)	Lake Storage (af)	Required Release[1], (af)	Fallbrook Diversion[2], (af)	Cumulative Fallbrook Diversions[3], (af)	Delivery Date[4]	
Day of Month	1																
	2																
	3																
	4																
	5																
	6																
	7																
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	30																
	31																
TOTAL																	

Notes

Q=S+O+D+E-I

R=0.504Q

A=Q-P

[1] "Required releases" are either Column 2 or 3 from Table 1, whichever is applicable based on whether or not runoff is increasing.

[2] "Fallbrook Diversion" is defined as (from the Monthly Record Sheet), the Column labeled "A Runoff" minus the Column labeled "Required Release" from Table 1, either Column 2 or 3, whichever is applicable.

[3] Cumulation of daily Fallbrook Diversion

[4] Calculation Date Plus 30 Days

ATTACHMENT 3 –

MWD Lake Tucalota Monthly Record Sheet, December 2010

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

EASTERN REGION, LAKE SKINNER BRANCH

TUCALOTA CREEK MONTHLY RECORD SHEET

For the Month of: December, 2010

	LAKE	S	*S		P		E			I		O	B	<G>	A	R			F	CF	DD
DATE	ELEV (FT)	STORAGE (AF)	DIFF (AF)	SURFACE ACRES	PRECIP (IN)	PRECIP (AF)	EVAP (IN)	EVAP (AF)	INLET avg. flow (CFS)	INFLOW (AF)	OUTLET avg. flow (CFS)	OUTFLOW (AF)	BY-PASS (AF)	UNKNOWN STORAGE (AF)	RUNOFF (AF)	REQUIRED MOU RELEASE DAILY (AF)	ACTUAL RELEASE (AF)	RUNOFF SCENARIO	FALLBROOK DIVERSION (AF)	CUMULATIVE FALLBROOK (AF)	DELIVERY DATE
	1,476.60	39,077.96																			
1	1,476.84	39,333.95	255.99	1,076.45	0.00	0.00	0.10	6.28	622	1,233.74	484	960.01	0	-11.46	0.00	0.00	0.00	NG	0.00	0.00	12/31/10
2	1,476.94	39,440.85	106.90	1,078.09	0.00	0.00	0.10	6.29	588	1,166.30	529	1,049.27	0	-3.84	0.00	0.00	0.00	NG	0.00	0.00	1/1/11
3	1,476.83	39,323.27	-117.59	1,076.29	0.00	0.00	0.09	5.65	570	1,130.60	628	1,245.64	0	3.10	0.00	0.00	0.00	NG	0.00	0.00	1/2/11
4	1,476.63	39,109.92	-213.35	1,073.01	0.00	0.00	0.10	6.26	572	1,134.56	682	1,352.75	0	11.09	0.00	0.00	0.00	NG	0.00	0.00	1/3/11
5	1,476.41	38,875.89	-234.03	1,069.41	0.00	0.00	0.09	5.61	570	1,130.60	682	1,352.75	0	-6.26	0.00	0.00	0.00	NG	0.00	0.00	1/4/11
6	1,476.33	38,790.96	-84.93	1,068.10	0.03	1.87	0.05	3.11	572	1,134.56	616	1,221.84	0	3.59	0.00	0.00	0.00	NG	0.00	0.00	1/5/11
7	1,476.11	38,557.88	-233.08	1,064.49	0.00	0.00	0.09	5.59	571	1,132.58	680	1,348.78	0	-11.29	0.00	0.00	0.00	NG	0.00	0.00	1/6/11
8	1,475.92	38,357.14	-200.74	1,061.38	0.00	0.00	0.10	6.19	604	1,198.03	699	1,386.47	0	-6.12	0.00	0.00	0.00	NG	0.00	0.00	1/7/11
9	1,475.73	38,156.91	-200.22	1,058.27	0.00	0.00	0.14	8.64	597	1,184.15	694	1,376.55	0	0.81	0.00	0.00	0.00	NG	0.00	0.00	1/8/11
10	1,475.52	37,936.21	-220.70	1,054.83	0.00	0.00	0.07	4.31	564	1,118.69	668	1,324.98	0	-10.11	0.00	0.00	0.00	NG	0.00	0.00	1/9/11
11	1,475.30	37,705.68	-230.53	1,051.23	0.00	0.00	0.19	11.65	564	1,118.69	676	1,340.85	0	3.27	0.00	0.00	0.00	NG	0.00	0.00	1/10/11
12	1,475.11	37,507.14	-198.54	1,048.11	0.00	0.00	0.00	0.00	562	1,114.73	655	1,299.19	0	-14.07	0.00	0.00	0.00	NG	0.00	0.00	1/11/11
13	1,474.96	37,350.76	-156.38	1,045.66	0.00	0.00	0.16	9.76	585	1,160.35	652	1,293.24	0	-13.73	0.00	0.00	0.00	NG	0.00	0.00	1/12/11
14	1,474.83	37,215.50	-135.27	1,043.53	0.00	0.00	0.14	8.52	590	1,170.27	652	1,293.24	0	-3.77	0.00	0.00	0.00	NG	0.00	0.00	1/13/11
15	1,474.74	37,121.99	-93.50	1,042.05	0.02	1.22	0.03	1.82	571	1,132.58	612	1,213.90	0	-11.57	0.00	0.00	0.00	NG	0.00	0.00	1/14/11
16	1,474.90	37,288.30	166.31	1,044.67	0.18	10.96	0.07	4.26	675	1,338.86	583	1,156.38	0	-22.87	0.00	0.00	0.00	NG	0.00	0.00	1/15/11
17	1,475.17	37,569.78	281.48	1,049.10	0.16	9.79	0.01	0.61	697	1,382.50	551	1,092.91	0	-17.29	0.00	0.00	0.00	NG	0.00	0.00	1/16/11
18	1,475.47	37,883.76	313.98	1,054.01	0.42	25.81	0.00	0.00	651	1,291.26	489	969.93	0	-33.16	0.00	0.00	0.00	NG	0.00	0.00	1/17/11
19	1,475.73	38,156.91	273.15	1,058.27	0.73	45.05	0.00	0.00	575	1,140.51	447	886.62	0	-25.78	0.00	0.00	0.00	NG	0.00	0.00	1/18/11
20	1,476.10	38,547.30	390.39	1,064.33	3.06	189.91	0.00	0.00	513	1,017.54	434	860.84	0	43.78	0.00	0.00	0.00	NG	0.00	0.00	1/19/11
21	1,476.55	39,024.73	477.43	1,071.70	2.57	160.60	0.00	0.00	515	1,021.50	373	739.85	0	35.18	0.00	0.00	0.00	NG	0.00	0.00	1/20/11
22	1,477.15	39,665.82	641.08	1,081.53	3.40	214.42	0.00	0.00	378	749.76	309	612.90	0	0.78	289.02	22.88	0.00	UR	266.14	266.14	1/21/11
23	1,477.16	39,676.55	10.73	1,081.69	0.00	0.00	0.03	1.89	305	604.97	321	636.70	0	0.78	43.57	12.45	0.00	UR	31.12	297.26	1/22/11
24	1,477.09	39,601.48	-75.07	1,080.55	0.00	0.00	0.02	1.45	295	585.13	332	658.52	0	-4.23	4.00	4.00	0.00	NG	0.00	297.26	1/23/11
25	1,477.02	39,526.48	-75.00	1,079.40	0.00	0.00	0.09	5.66	291	577.20	329	652.57	0	3.04	3.00	3.00	0.00	NG	0.00	297.26	1/24/11
26	1,477.01	39,515.77	-10.71	1,079.24	0.30	18.88	0.07	4.41	291	577.20	301	597.03	0	-8.35	3.00	3.00	0.00	NG	0.00	297.26	1/25/11
27	1,476.95	39,451.55	-64.22	1,078.25	0.00	0.00	0.08	5.03	285	565.30	310	614.89	0	-11.60	2.00	2.00	0.00	NG	0.00	297.26	1/26/11
28	1,477.05	39,558.61	107.06	1,079.89	0.00	0.00	0.09	5.67	299	593.07	240	476.04	0	-6.30	2.00	2.00	0.00	NG	0.00	297.26	1/27/11
29	1,477.29	39,816.15	257.53	1,083.82	0.75	47.40	0.00	0.00	297	589.10	199	394.72	0	0.78	14.97	9.71	0.00	UR	5.26	302.52	1/28/11
30	1,477.39	39,923.70	107.55	1,085.46	0.05	3.16	0.16	10.13	293	581.17	232	460.17	0	-10.48	4.00	4.00	0.00	NG	0.00	302.52	1/29/11
31	1,477.44	39,977.52	53.83	1,086.28	0.00	0.00	0.12	7.60	296	587.12	257	509.76	0	-18.93	3.00	3.00	0.00	NG	0.00	302.52	1/30/11
Total/Avg			899.56		11.67	729.06	2.19	136.37	495.42	30,462.59	494.06	30,379.29	0	-4.68	368.56	66.04	0.00			197.12	

171.44 per MND Requirement

MND Required Release Check:

If the total Monthly Runoff, Column A, is greater than 40 AF, then the MND Required Release = (Q*109.3*e(-0.002318*Q))/100, where Q is the Monthly Runoff.
The total required release for the month must be the greater of the monthly MND Required Release, or Column R, daily MOU Required Release.

When Column A > 40 AF
MND Required Release = 171.4355938

TOTAL LAKE STORAGE CHANGE = 899.56 **AF** **SPW AVERAGE =** 35.00 % **<G> DAILY AVERAGE =** -4.68

Formulas for Different Runofff Scenarios

NG = Normal, **A** = visual estimate
NG = Normal, **<G>** = *S + O + E + B - I - P - A
UR = Ungauged Runoff, **A** = *S + O + E + B - I - P - *G (When Runoff is significant/peaking, use *G)
UB = Ungauged Runoff, **B** = *S + O + E - I - P - A - *G (When on Bypass, use *G and appropriate A)
UI = Unkown Inflow, **I** = *S + O + E + B - P - A - *G (When Runoff is visually estimated, use *G)

Formulas for Fallbrook/Metropolitan Agreement, effective 2/16/05

R = Required Releases, from Table 1, either Column 1 or Column 2, whichever is appropriate.
F = A - R
CF = Daily cumulation of F
DD = 30 days from runoff event

Definition of Unknown Storage (or External Water)

***G** is the average of <G> for the preceding 12 month period.

Release Summary		
Balance owed from Nov, 2010		0.00
Dec Required Release (>MND or MOU)	+	171.44
Total release owed	=	171.44
Amount released in Dec 2010	-	0.00
Balance	=	171.44

*MND Required Release for Dec = 0 AF
Amount released = MND Method

Certification for Wheeling Rate

Member Agency: SDCWA Sub-Agency: Fallbrook PUD

Service Connection: SD-07 Volume, AF _____

Month: _____

Date: _____

Approval: _____
Unit Manager,

ATTACHMENT 4 –

MWD Lake Skinner import and export flow meters information

SDC-0

1. Acoustic Flow Meter
    a. Make: Accusonic
    b. Model: 7500
    c. Serial Number 511

2. Electronic Recording Device
    a. Schneider Electric
    b. SCADApack ES
    c. S/N EN070LC012092
    d. **Flow rate**: Cubic Feet per Second (CFS). **Flow Totalizer**: Cubic Feet (CF)
    e. Continuous reading device, 15 minute interval reporting time to ClearSCADA to WINS system updating.

3. Calibration information (See attached calibration sheet)

4. Dan Starkey
    a. 951-926-5891
    b. Dstarkey@mwdh2o.com
    c. Licenses
        i. International Society of Automation, Certified Control System Technician II (ISA CCST II # 100282)
        ii. T2 operator
        iii. D2 operator

5. 6 month calibration and maintenance schedule.

LSOC-0

1. Acoustic Flow Meter
    a. Make: Accusonic
    b. Model: 7500
    c. Serial Number: 155

2. Electronic Recording Device
    a. Schneider Electric
    b. SCADApack ES
    c. S/N EN070LC012025
    d. **Flow rate**: Cubic Feet per Second (CFS). **Flow Totalizer**: Cubic Feet (CF)
    e. Continuous reading device, 15 minute interval reporting time to ClearSCADA to WINS system updating.

3. Calibration information (See attached calibration sheet)

4. Dan Starkey
    a. 951-926-5891
    b. Dstarkey@mwdh2o.com
    c. Licenses
        i. ISA CCST # 100282
        ii. T2 operator
        iii. D2 operator

5. 6 month calibration and maintenance schedule.

CALIBRATION CERTIFICATE

Printed: 07.12.2017 16:19:06
Printed by: Daniel Starkey

Certificate Number: MWD/16294/CAL

POSITION ID: SDC-0

POSITION

Position Name:
Work Order Number:
Location: n/o Auld rd. w/o Leon rd
Plant Structure: Skinner/Skinner in service billing meters/Skinner Plant meters/

DEVICE

Device ID: SDC-0
Serial Number:
Manufacturer Model:
Operating Range:
Operating Temp.: Humidity:

FUNCTION

Function: Flow Transmitter (ft)
Transfer Function: Linear
Range (I/O): 4.00 to 20.00 mA (G) 4.00 to 20.00 mA

CALIBRATION EVENT

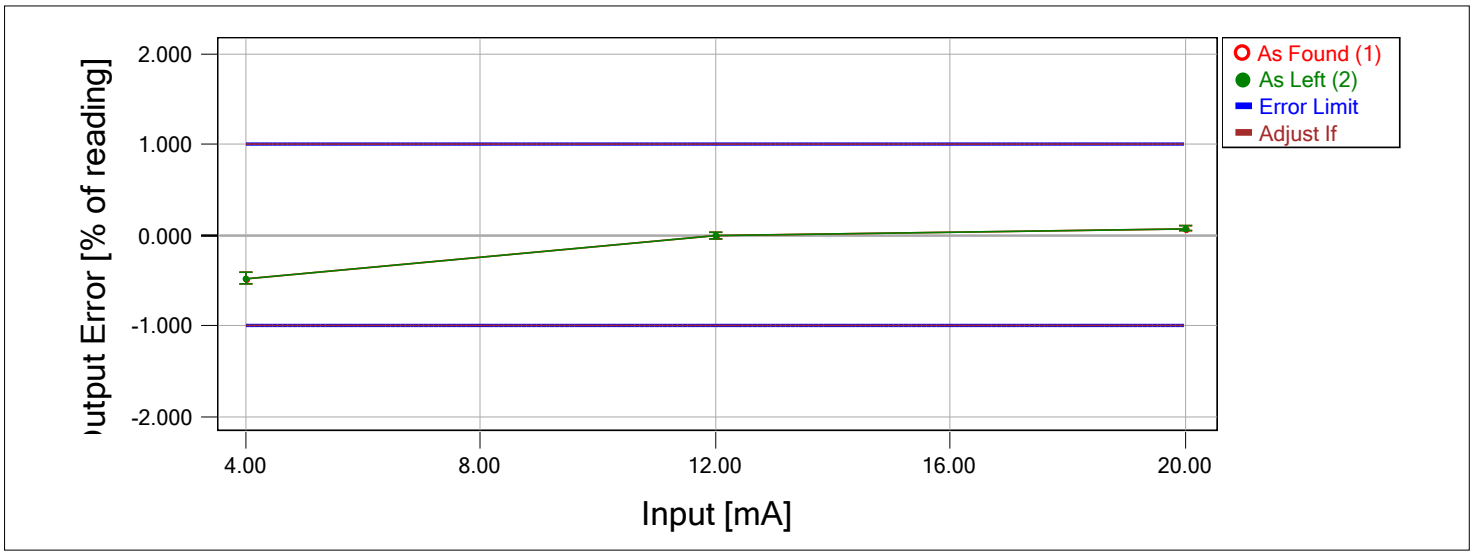
Calibration Date: 7/26/2017 12:17:00 PM
Next Cal. Date: 1/22/2018
Environment Temp.: 0.00 °F Humidity: 0.00 %

PROCEDURE

Due Date: 8/13/2017 Interval: 180 days
Reject if Error >: 1.00 % of reading Adjust To <: 0.00 % of reading
Classification:
Calibration Strategy:

CALIBRATORS

Input Calibrator: Due Date:
Input Module: Due Date:
Output Calibrator: MC5 s/n: 25519345 Due Date: 7/10/2018
Output Module: E s/n: 40150 Due Date: 7/10/2018



1. As Found — PASSED

Max Error: -0.48 % of reading

Nominal Input [mA]	Actual Input [mA]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
4.0	4.000	4.0	3.9808	-0.48
12.00	12.000	12.00	11.9990	-0.01
20.000	20.000	20.000	20.0132	0.07

2. As Left — PASSED

Max Error: -0.48 % of reading

Nominal Input [mA]	Actual Input [mA]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
4.0	4.000	4.0	3.9808	-0.48
12.00	12.000	12.00	11.9990	-0.01
20.000	20.000	20.000	20.0132	0.07

Calibration Note:

Calibrated by: Daniel Starkey
7/26/2017 12:17:00 PM

Approved: Scott McMullen,
11/7/2017 7:39:09 AM

CALIBRATION CERTIFICATE

Certificate Number: MWD/16293/CAL

Printed: 07.12.2017 16:20:30
Printed by: Daniel Starkey

POSITION ID: LSOC-0

POSITION

Position Name:
Work Order Number:
Location: n/o Auld rd. w/o Leon rd
Plant Structure: Skinner/Skinner in service billing meters/Skinner Plant meters/

DEVICE

Device ID: lsoc-0
Serial Number:
Manufacturer Model: Accusonic 7500
Operating Range:
Operating Temp.: Humidity:

FUNCTION

Function: Flow Transmitter (ft)
Transfer Function: Linear
Range (I/O): 4.00 to 20.00 mA (G) 4.00 to 20.00 mA

CALIBRATION EVENT

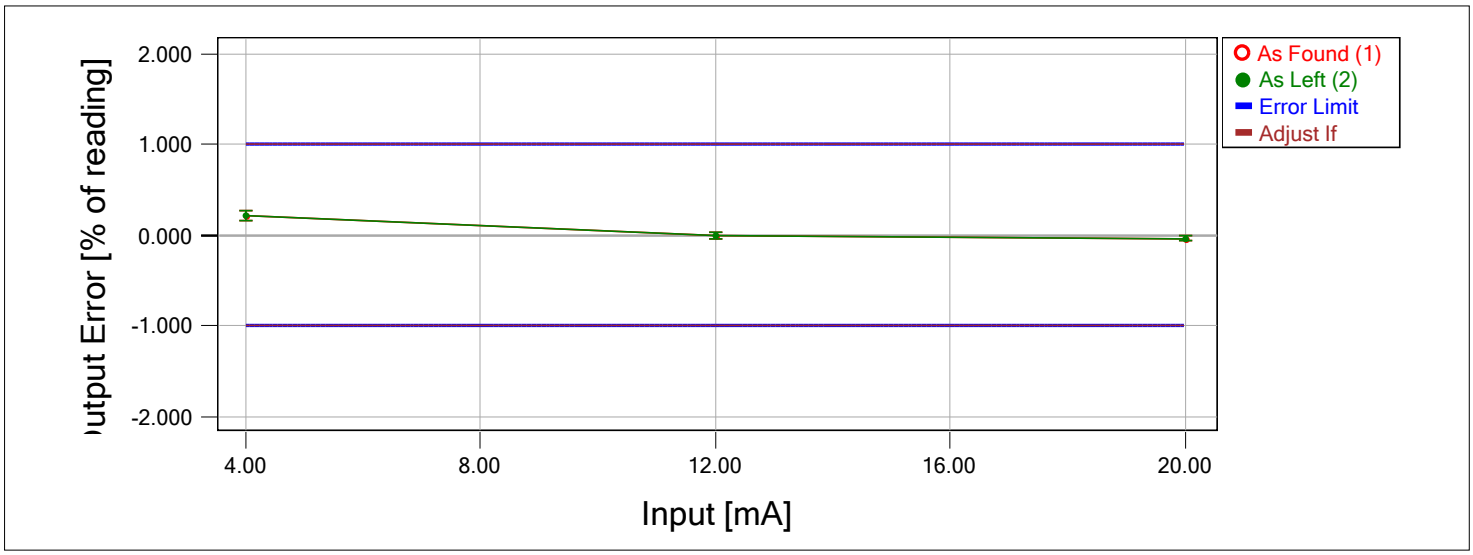
Calibration Date: 7/26/2017 12:07:00 PM
Next Cal. Date: 1/22/2018
Environment Temp.: 0.00 °F Humidity: 0.00 %

PROCEDURE

Due Date: 8/13/2017 Interval: 180 days
Reject if Error >: 1.00 % of reading Adjust To <: 0.00 % of reading
Classification:
Calibration Strategy:

CALIBRATORS

Input Calibrator: Due Date:
Input Module: Due Date:
Output Calibrator: MC5 s/n: 25519345 Due Date: 7/10/2018
Output Module: E s/n: 40150 Due Date: 7/10/2018



1. As Found — PASSED

Max Error: 0.21 % of reading

Nominal Input [mA]	Actual Input [mA]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
4.0	4.000	4.0	4.0084	0.21
12.00	12.000	12.00	11.9991	-0.01
20.000	20.000	20.000	19.9922	-0.04

2. As Left — PASSED

Max Error: 0.21 % of reading

Nominal Input [mA]	Actual Input [mA]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
4.0	4.000	4.0	4.0084	0.21
12.00	12.000	12.00	11.9991	-0.01
20.000	20.000	20.000	19.9922	-0.04

Calibration Note:

Calibrated by: Daniel Starkey
7/26/2017 12:07:00 PM

Approved:

ATTACHMENT 5 –

MWD Lake Skinner release flow meter information and photos

CERTIFIED TEST REPORT

CUSTOMER: MCCALLS METER SALES & SERVICE

MODEL NO: MW508

METER SERIAL NO: 13-10857

CONFIGURATION

METER INSIDE DIAMETER: 8.071

METER OUTSIDE DIAMETER:

TEST DATE: 10/17/2013

TEST FACILITY: Volumetric

IDEAL TEST CONSTANT: 3963

CALIBRATION DATA

	Tested TC	GPM	Accuracy
1	3964	1547	100.0

CERTIFIED BY: **Robert Galusha** **ID#:** **176785** **PRINT DATE:** 2/16/2018

This calibration was performed on a gravimetric or volumetric test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Gravimetric +/- 0.15% Volumetric +/- 0.5%

3255 WEST STETSON AVENUE
HEMET, CA 92545 USA
PHONE (951) 652-6811 / FAX (951) 652-3078
WEB SITE: http://www.mccrometer.com E-MAIL: customerservice@mccrometer.com

13-10857
13-10857

Printed by Cherish Stack
2/16/2018 11:33:26 AM
Version 1.2 (4/18/2007)

Lake Skinner Bubbler 0-500 gpm Station 18+59

CERTIFIED TEST REPORT

CUSTOMER: MCCALLS METER SALES-MUNICIPAL

MODEL NO: ML04-12

METER SERIAL NO: 20161314

CONFIGURATION

METER INSIDE DIAMETER: 12.2

DIAL: AFT X 0.01 15 CFS

GEARS: 13 / 43

TOTALIZER GEARS: 24L- / 35LL

ACTUAL METER INDEX: 0.9029

TEST FACILITY: Volumetric

As Calibrated

CALIBRATION DATA

	FLOW RATE GPM	% ACCURACY
1	2571.69	101.63
2	1348.20	100.35
3	199.68	99.71

TEST DATE: 7/20/2016

CERTIFIED BY: Robert Galusha **ID#:** 176785 **PRINT DATE:** 2/16/2018

This calibration was performed on a gravimetric or volumetric test facility, traceable to the National Institute of Standards and Technology, USA. The estimated flow measurement uncertainty of the calibration facilities are:
Gravimetric +/- 0.15% Volumetric +/- 0.5%

McCROMETER
3255 WEST STETSON AVENUE
HEMET, CA 92545 USA
PHONE (951) 652-6811 / FAX (951) 652-3078
WEB SITE: http://www.mccrometer.com E-MAIL: customerservice@mccrometer.com

20161314
20161314

Printed by Cherish Stack
2/16/2018 11:33:57 AM
Version 1.0 (3/9/2007)

Treated Water Release Station 19+50

ATTACHMENT 6 –

MWD emergency release flow meter information

CALIBRATION CERTIFICATE

Certificate Number: MWD/16784/CAL

Printed: 06.02.2018 15:58:43
Printed by: Daniel Starkey

POSITION ID: LSBO-100

POSITION

Position Name:
Work Order Number:
Location:
Plant Structure: Skinner/Skinner in service billing meters/Skinner Plant meters/

DEVICE

Device ID: LSBO-100
Serial Number:
Manufacturer Model:
Operating Range:
Operating Temp.: Humidity:

FUNCTION

Function: Pressure Transmitter (pt)
Transfer Function: Square Root (vx)
Range (I/O): 0.00 to 275.68 4.00 to 20.00 mA

CALIBRATION EVENT

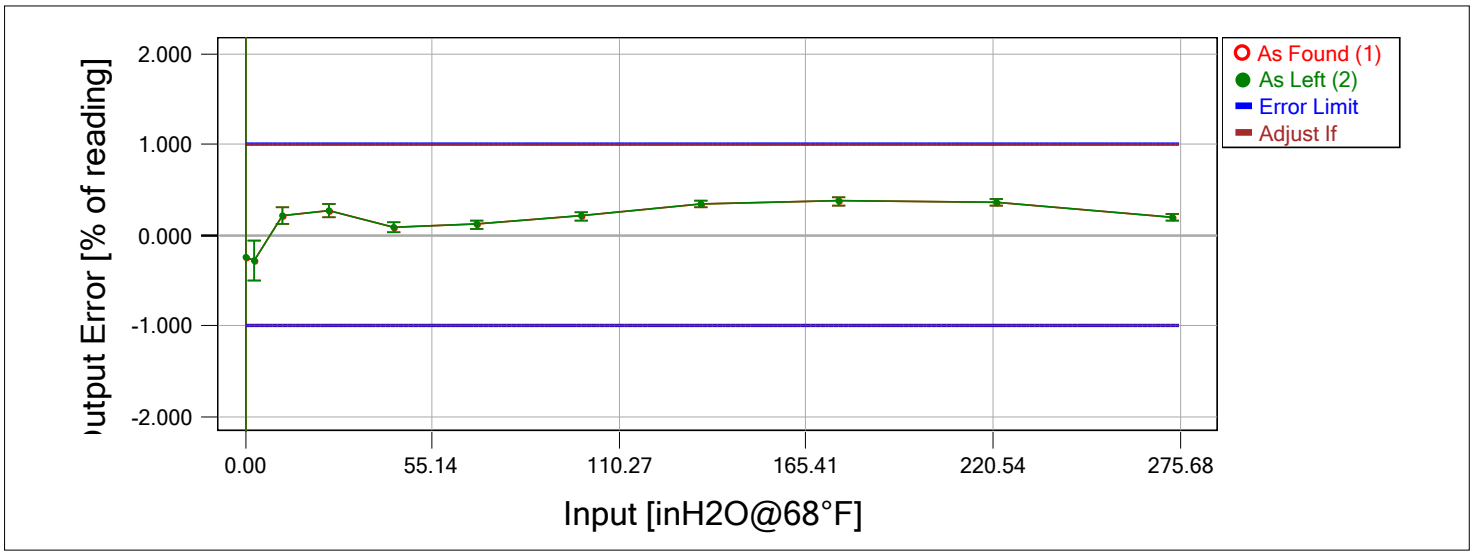
Calibration Date: 12/19/2017 12:29:00 PM
Next Cal. Date: 6/17/2018
Environment Temp.: 0.00 °F Humidity: 0.00 %

PROCEDURE

Due Date: 1/22/2018 Interval: 180 days
Reject if Error >: 1.00 % of reading Adjust To <: 0.00 % of reading
Classification: A
Calibration Strategy: Quality system calibrations

CALIBRATORS

Input Calibrator: MC5 s/n: 25518989 Due Date: 8/25/2018
Input Module: INT1C s/n: 44347 Due Date: 8/25/2018
Output Calibrator: MC5 s/n: 25518989 Due Date: 8/25/2018
Output Module: E s/n: 38805 Due Date: 8/25/2018



1. As Found — PASSED

Max Error: 0.37 % of reading

Nominal Input [inH2O@68°F]	Actual Input [inH2O@68°F]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
0.00	0.00	4.0	3.9898	-0.2550
2.7568	2.76	5.6000	5.5853	-0.2790
11.0272	11.00	7.20000	7.2112	0.2105
24.8112	24.68	8.80000	8.8106	0.2652
44.1088	43.89	10.4000	10.3921	0.0770
68.92	68.49	12.00	11.9889	0.1160
99.2448	98.96	13.6000	13.6139	0.2038
135.0832	134.49	15.20000	15.2275	0.3434
176.4352	174.98	16.80000	16.8086	0.3672
223.3008	221.49	18.40000	18.4066	0.3550
275.68	273.62	20.000	19.9798	0.1991

2. As Left — PASSED

Max Error: 0.37 % of reading

Nominal Input [inH2O@68°F]	Actual Input [inH2O@68°F]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
0.00	0.00	4.0	3.9898	-0.2550
2.7568	2.76	5.6000	5.5853	-0.2790
11.0272	11.00	7.20000	7.2112	0.2105
24.8112	24.68	8.80000	8.8106	0.2652
44.1088	43.89	10.4000	10.3921	0.0770
68.92	68.49	12.00	11.9889	0.1160
99.2448	98.96	13.6000	13.6139	0.2038
135.0832	134.49	15.20000	15.2275	0.3434
176.4352	174.98	16.80000	16.8086	0.3672
223.3008	221.49	18.40000	18.4066	0.3550
275.68	273.62	20.000	19.9798	0.1991

Calibration Note:

Calibrated by: Robert Armstrong
12/19/2017 12:29:00 PM

Approved: Daniel Starkey,
1/3/2018 7:01:16 AM

CALIBRATION CERTIFICATE

Certificate Number: MWD/16785/CAL

Printed: 06.02.2018 15:58:00
Printed by: Daniel Starkey

POSITION ID: LSBO-350

POSITION

Position Name:
Work Order Number:
Location:
Plant Structure: Skinner/Skinner in service billing meters/Skinner Plant meters/

DEVICE

Device ID: LSBO-350
Serial Number:
Manufacturer Model:
Operating Range:
Operating Temp.: Humidity:

FUNCTION

Function: Pressure Transmitter (pt)
Transfer Function: Square Root (vx)
Range (I/O): 0.00 to 275.68 4.00 to 20.00 mA

CALIBRATION EVENT

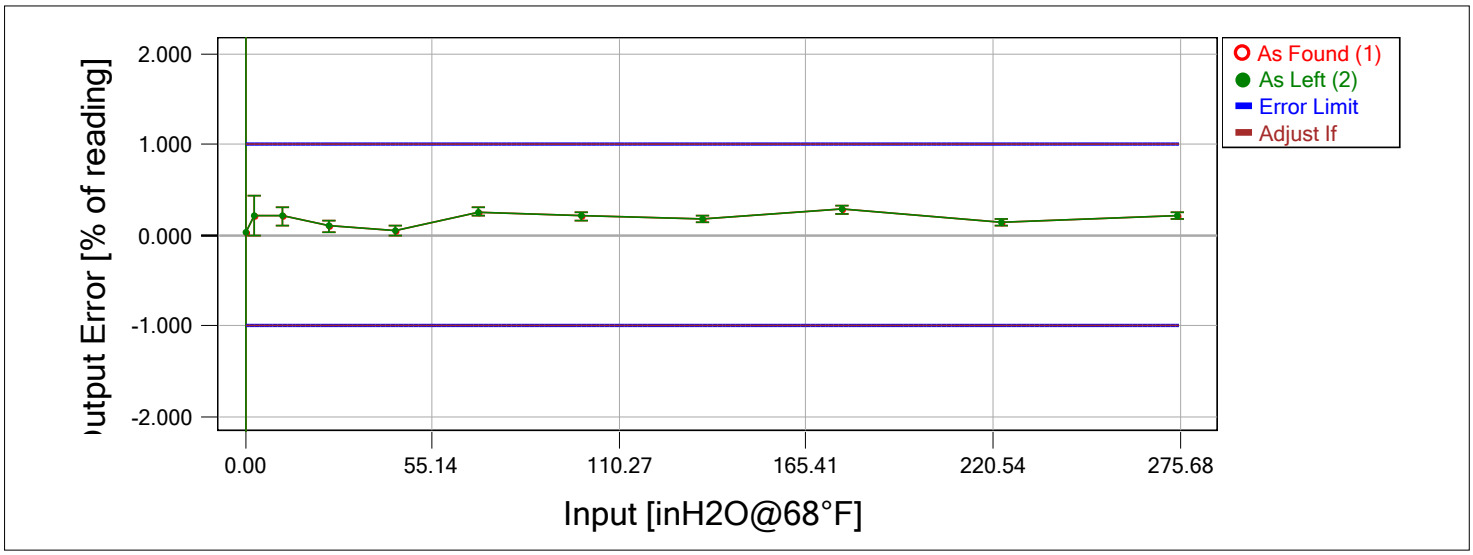
Calibration Date: 12/19/2017 12:11:00 PM
Next Cal. Date: 6/17/2018
Environment Temp.: 0.00 °F Humidity: 0.00 %

PROCEDURE

Due Date: 1/22/2018 Interval: 180 days
Reject if Error >: 1.00 % of reading Adjust To <: 0.00 % of reading
Classification: A
Calibration Strategy: Quality system calibrations

CALIBRATORS

Input Calibrator: MC5 s/n: 25518989 Due Date: 8/25/2018
Input Module: INT1C s/n: 44347 Due Date: 8/25/2018
Output Calibrator: MC5 s/n: 25518989 Due Date: 8/25/2018
Output Module: E s/n: 38805 Due Date: 8/25/2018



1. As Found — PASSED

Max Error: 0.28 % of reading

Nominal Input [inH2O@68°F]	Actual Input [inH2O@68°F]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
0.00	0.01	4.0	4.0973	0.0228
2.7568	2.77	5.6000	5.6157	0.2119
11.0272	11.02	7.20000	7.2138	0.2062
24.8112	24.78	8.80000	8.8056	0.0980
44.1088	44.07	10.4000	10.4013	0.0396
68.92	68.77	12.00	12.0218	0.2544
99.2448	98.99	13.6000	13.6152	0.2026
135.0832	134.93	15.20000	15.2205	0.1767
176.4352	175.97	16.80000	16.8294	0.2758
223.3008	223.23	18.40000	18.4229	0.1369
275.68	274.95	20.000	20.0198	0.2052

2. As Left — PASSED

Max Error: 0.28 % of reading

Nominal Input [inH2O@68°F]	Actual Input [inH2O@68°F]	Nominal Output [mA]	Actual Output [mA]	Found Error [% of reading]
0.00	0.01	4.0	4.0973	0.0228
2.7568	2.77	5.6000	5.6157	0.2119
11.0272	11.02	7.20000	7.2138	0.2062
24.8112	24.78	8.80000	8.8056	0.0980
44.1088	44.07	10.4000	10.4013	0.0396
68.92	68.77	12.00	12.0218	0.2544
99.2448	98.99	13.6000	13.6152	0.2026
135.0832	134.93	15.20000	15.2205	0.1767
176.4352	175.97	16.80000	16.8294	0.2758
223.3008	223.23	18.40000	18.4229	0.1369
275.68	274.95	20.000	20.0198	0.2052

Calibration Note:

Calibrated by: Robert Armstrong
12/19/2017 12:11:00 PM

Approved: Daniel Starkey,
1/3/2018 7:01:35 AM

LSBO-100

1. Venturi Flow Meter
    a. Make: Rosemount DP cells
    b. Model: 3051
    c. S/N Low DP 114860
    d. S/N High DP 115709
2. Electronic Recording Device
    a. Schneider Electric
    b. SCADApack ES
    c. S/N EN070KC011948
    d. Flow rate: Cubic Feet per Second (CFS). Flow Totalizer: Cubic Feet (CF)
    e. Continuous reading device, 15 minute interval reporting time to ClearSCADA to WINS system updating
3. Calibration information (SEE Attached calibration sheet)
4. Robert Armstrong
    a. 1951-926-5858
    b. Rarmstrong@mwdh2o.com
    c. Licenses
        i. International Society of Automation, Certified Control System Technician I (ISA CCST I #100400)
5. 6 month calibration and maintenance schedule

LSBO-350

1. Venturi Flow Meter
    a. Make: Rosemount DP cells
    b. Model:
    c. S/N Low DP 132958
    d. S/N High DP 115714
2. Electronic Recording Device
    a. Schneider Electric
    b. SCADApack ES
    c. S/N EN070KC011860
    d. Flow rate: Cubic Feet per Second (CFS). Flow Totalizer: Cubic Feet (CF)
    e. Continuous reading device, 15 minute interval reporting time to ClearSCADA to WINS system updating
3. Calibration information (SEE Attached calibration sheet)
4. Robert Armstrong
    a. 1951-926-5858
    b. Rarmstrong@mwdh2o.com
    c. Licenses
        i. International Society of Automation, Certified Control System Technician II (ISA CCST I #100400)
5. 6 month calibration and maintenance schedule

ATTACHMENT 7 –

MWD Photographs of Lake Skinner evaporation pan, hook gage, and precipitation gage

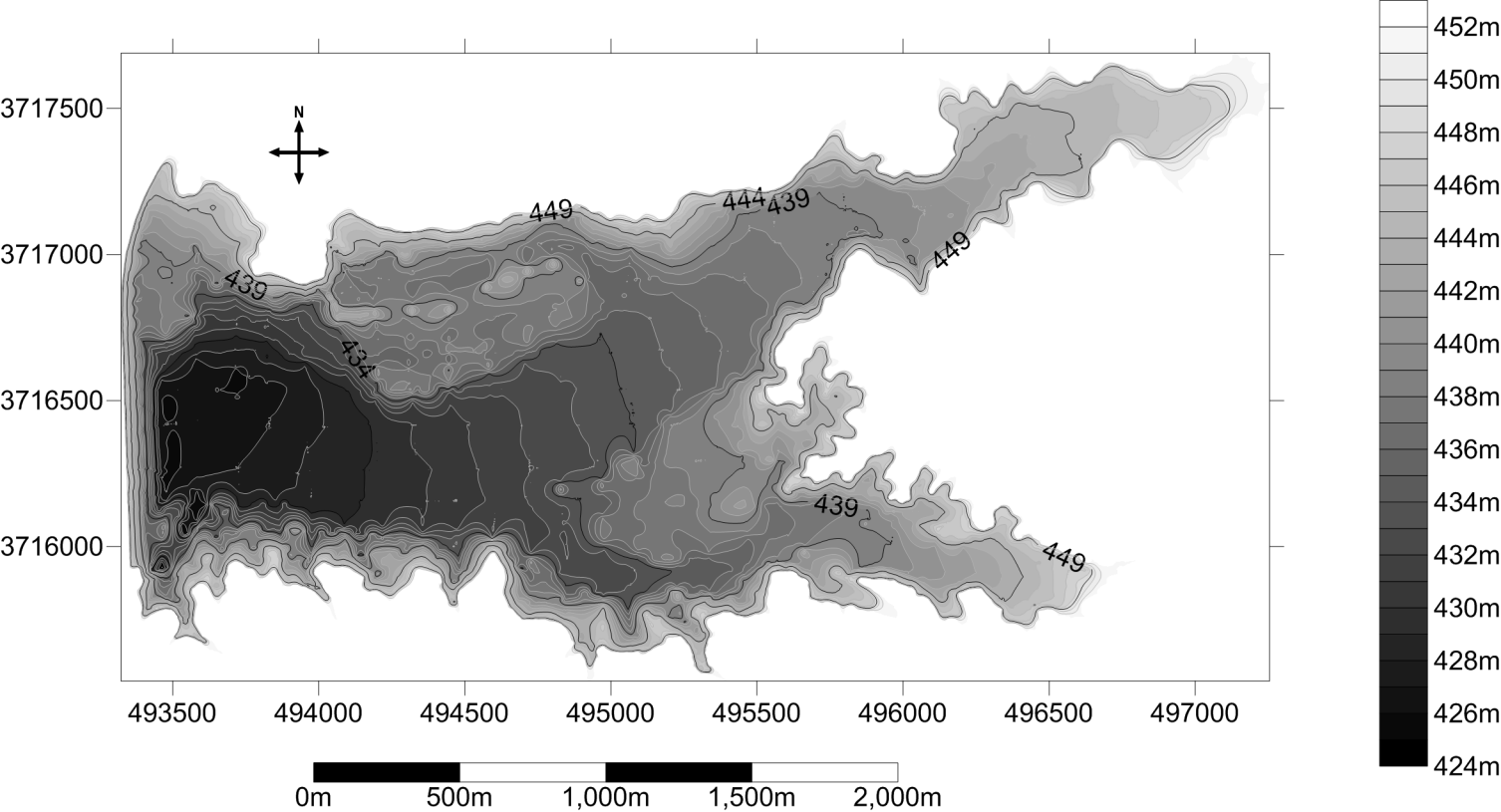
Lake Skinner Evaporation Pan

Lake Skinner Evaporation Pan Hook Gage

Lake Skinner Precipitation Gage

ATTACHMENT 8 –

MWD Lake Skinner bathymetric contours and A-C curves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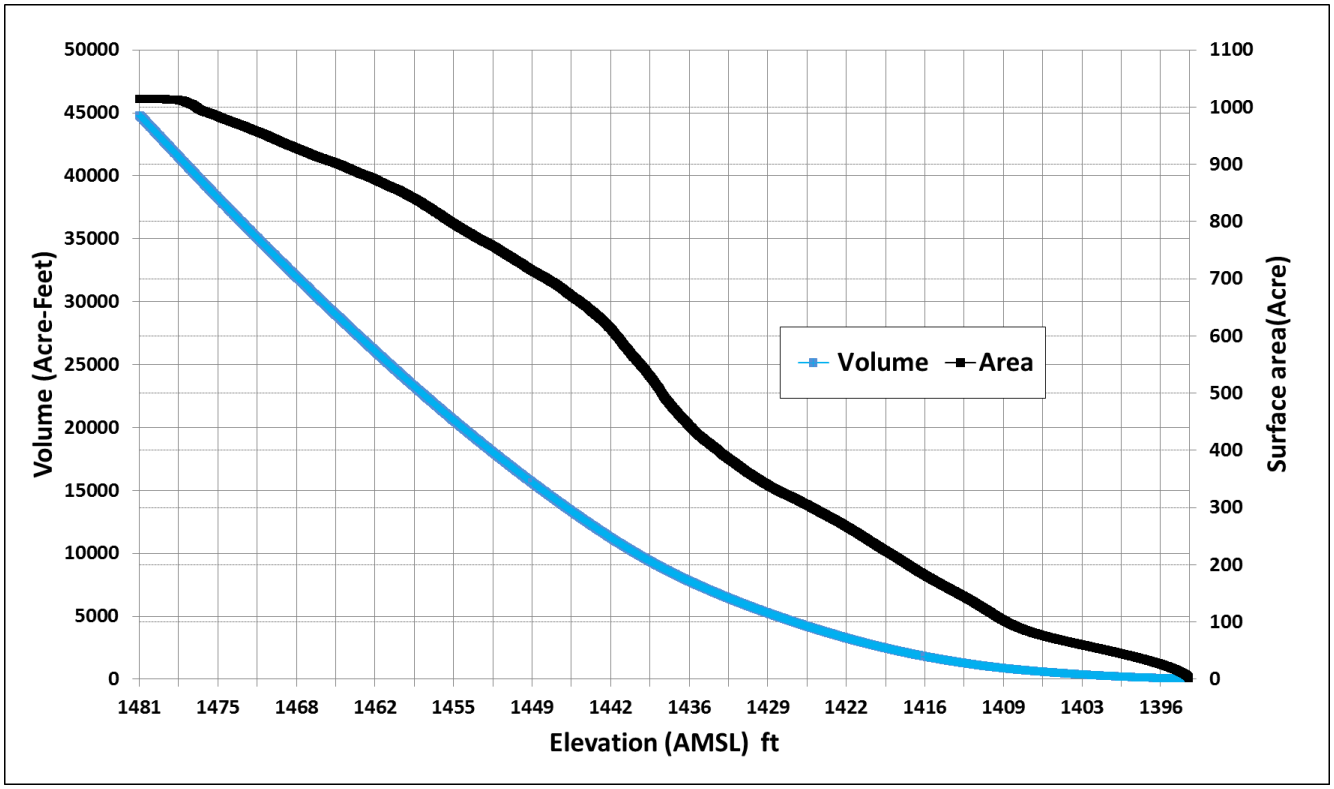
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30000
25000
20000
15000
10000
5000
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1000
900
800
700
600
500
400
300
200
100
0
Surface area(Acre)
Volume
Area
1481
1475
1468
1462
1455
1449
1442
1436
1429
1422
1416
1409
1403
1396
Elevation (AMSL) ft