1-2-2019

2016 - Salinas Valley Hydrologic Subareas, 4th Quarter Water Conditions

Monterey County

168 West Alisal Street,
1st Floor
Salinas, CA 93901
831.755.5066

Board Report

Legistar File Number: WRAG 16-085

October 17, 2016

Introduced: 10/9/2016 **Current Status:** Agenda Ready

Version: 1 **Matter Type:** WR General Agenda

Receive Report on Salinas Valley Water Conditions for the Fourth Quarter of Water Year 2015-2016

RECOMMENDATION:
It is recommended that the Monterey County Water Resources Agency Board of Directors:

Receive report on Salinas Valley water conditions for the fourth quarter of Water Year 2015-2016.

SUMMARY/DISCUSSION:
This report covers the fourth quarter of Water Year 2015-2016 (WY16), July through September, 2016. It provides a brief overview of water conditions in the Salinas Valley with discussion of precipitation, reservoir storage, and ground water level trends. Data for each of these components are included as graphs and tables in Attachments B through J.

Precipitation - Normally a time of minimal precipitation, the fourth quarter of WY16 brought lower than normal rainfall to Salinas and King City. Cumulative totals for the quarter were 0.00 inches (0% of normal rainfall of 0.20 inches for the quarter) at the Salinas Airport, and 0.00 inches (0% of normal rainfall of 0.17 inches for the quarter) in King City.

Attachment B contains graphs for both stations showing monthly and cumulative precipitation data for the current and a normal water year. Attachment B also includes tables showing values for precipitation totals as well as percent of normal precipitation.

Rainfall data for Salinas and King City should be considered preliminary until verified by National Weather Service data at a later date.

Reservoirs - The following table compares fourth quarter storage at Nacimiento and San Antonio reservoirs for the past two years. Storage in Nacimiento Reservoir is 20,930 acre-feet higher than in September 2015, and storage in San Antonio Reservoir is 11,334 acre-feet higher.

Reservoir	September 30, 2016 (WY16) Storage in acre-feet	September 30, 2015 (WY15) Storage in acre-feet	Difference in acre-feet
Nacimiento	97,780	76,850	20,930
San Antonio	21,863	10,529	11,334

Graphs for both reservoirs showing daily storage for the last five water years along with average daily storage for comparison are included as Attachments C and D.

Groundwater Levels - More than 80 wells are measured monthly throughout the Salinas Valley to monitor seasonal groundwater level fluctuations. Data from approximately 50 of these wells is used in the preparation of this report. The measurements are categorized by hydrologic subarea, averaged, and graphed to compare current water levels with selected past conditions. Graphs for individual subareas, showing the current year's water level conditions, last year's conditions (WY15), dry conditions (WY91), and near-normal conditions (WY85), are found in Attachments E through I. Attachment J is a summary of water level changes for all subareas.

Groundwater level measurements indicate that, by the end of the fourth quarter of WY16, water levels were recovering in the Pressure and East Side Subareas, though not in the Forebay or Upper Valley Subareas. Over the past month, average groundwater levels rose by two feet in the Pressure 400-Foot Aquifer, five feet in the East Side Subarea and less than a half foot in the Pressure 180-Foot Aquifer. Groundwater levels declined in the Forebay and Upper Valley Subareas, by one foot and two feet, respectively, over the past month.

Compared to September 2015, average groundwater levels in September 2016 were down by six feet and five feet in the Upper Valley and Forebay Subareas, respectively, while rising by six feet in the East Side Subarea, and by one foot in the Pressure 400-Foot Aquifer. September 2016 groundwater levels in the Pressure 180-Foot Aquifer were virtually unchanged from September 2015 levels.

When compared to WY85, which is considered to be a year of near normal groundwater conditions, current water levels are 22 feet lower in the East Side Subarea, 20 feet lower in the Forebay Subarea, 19 feet lower in the Upper Valley Subarea, 17 feet lower in the Pressure 180-Foot Aquifer and one foot lower in the Pressure 400-Foot Aquifer.

Average groundwater levels for the fourth quarter of WY16 remained below WY91 (dry condition) levels in the Pressure 180-Foot Aquifer as well as the Forebay and Upper Valley Subareas. By contrast, throughout the fourth quarter, water levels in the Pressure 400-Foot Aquifer remained five to seven feet higher than in WY91, while groundwater levels in the East Side Subarea rebounded to WY91 levels by the end of the fourth quarter of WY16.

OTHER AGENCY INVOLVEMENT:

None.

FINANCING:

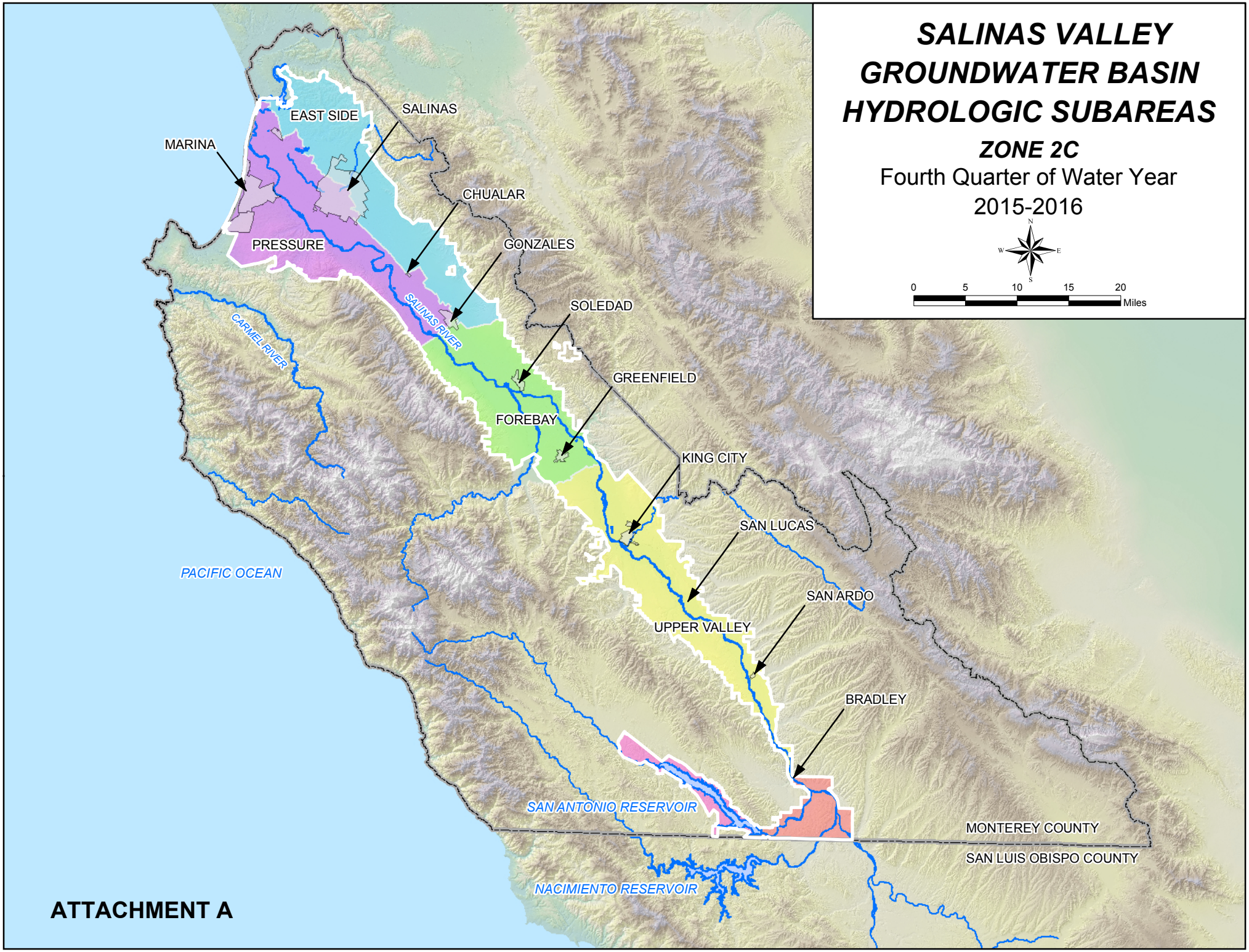
Funds 113, 114, 115, 116.

Prepared by: Howard Franklin, Senior Hydrologist, (831) 755-4860
Peter Kwiek, Hydrologist, (831)755-4860

Approved by: _____
David E. Chardavoyne, General Manager, (831) 755-4860

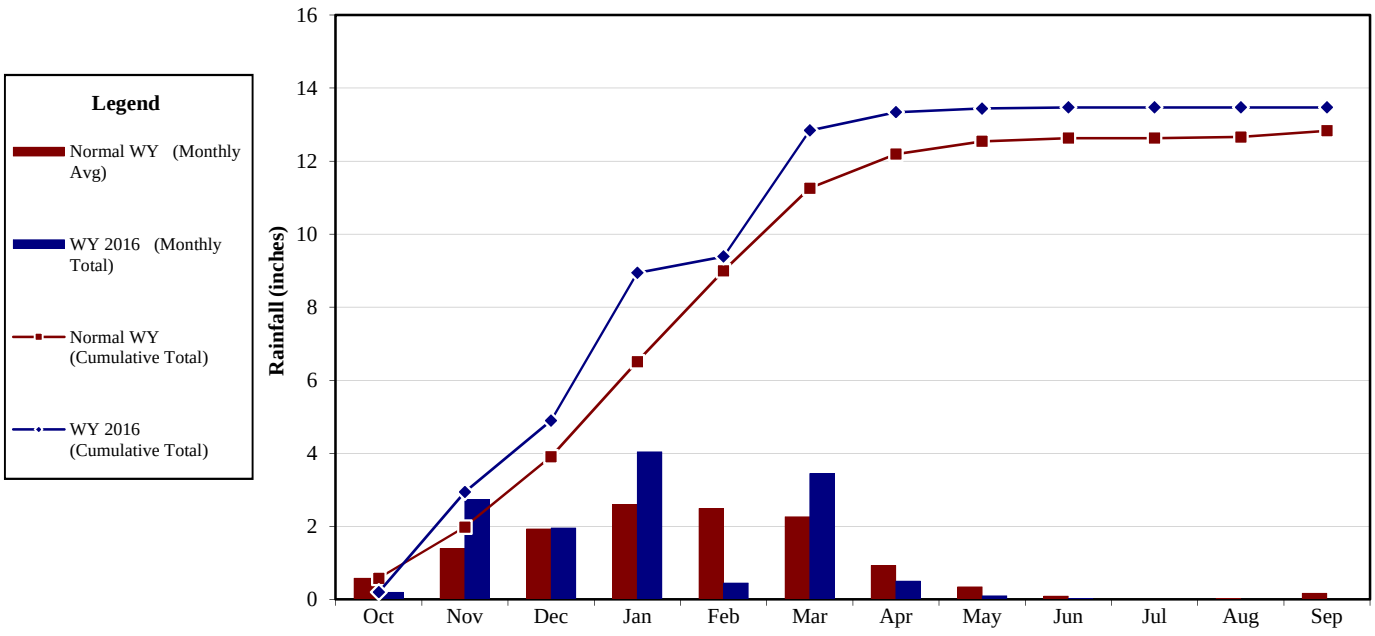
Attachments:

1. Attachment A: Salinas Valley Hydrologic Subareas Map
2. Attachment B: Salinas and King City Precipitation Graphs
3. Attachment C: Nacimiento Reservoir Graph
4. Attachment D: San Antonio Graph
5. Attachment E: Groundwater Trends Pressure 180-Foot Aquifer
6. Attachment F: Groundwater Trends Pressure 400-Foot Aquifer
7. Attachment G: Groundwater Trends East Side Subarea
8. Attachment H: Groundwater Trends Forebay Subarea
9. Attachment I: Groundwater Trends Upper Valley Subarea
10. Attachment J: Groundwater Trends Summary



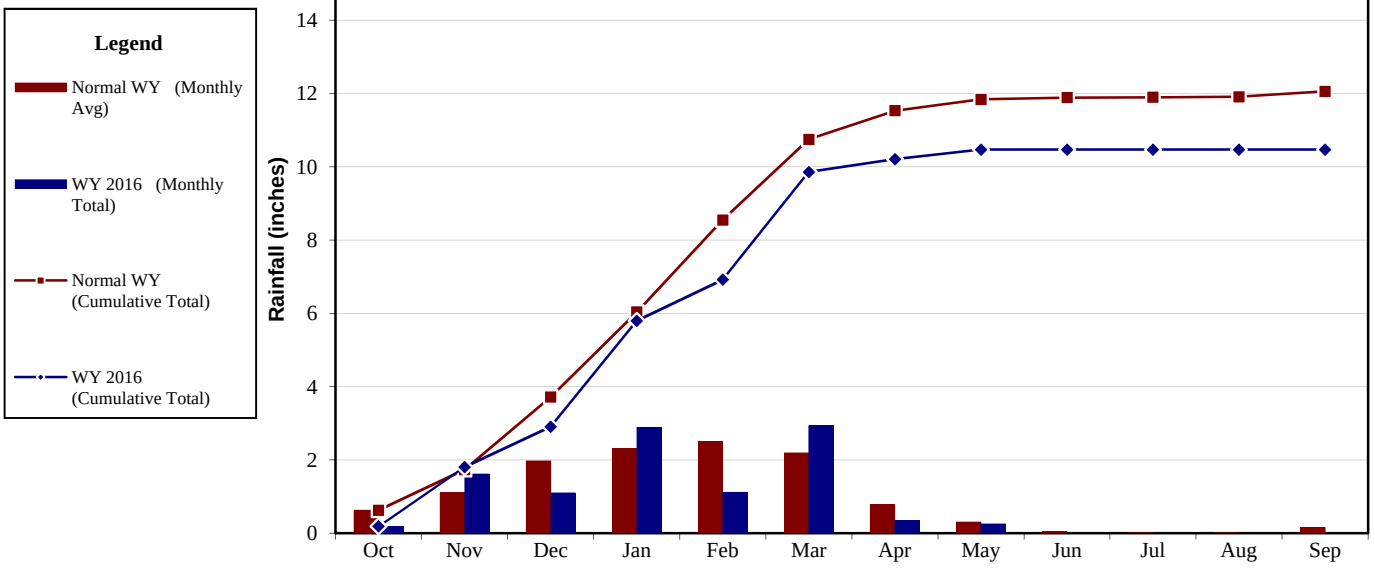
ATTACHMENT A

SALINAS AIRPORT RAINFALL
WATER YEAR 2016



Monthly Rainfall (WY 2016)	0.20	2.74	1.96	4.04	0.45	3.45	0.50	0.10	0.03	0.00	0.00	0.00
Monthly Rainfall (Normal WY*)	0.58	1.40	1.93	2.60	2.49	2.26	0.93	0.35	0.09	0.00	0.03	0.17
Percent of Normal for Month	34%	196%	102%	155%	18%	153%	54%	29%	33%	0%	0%	0%
Cumulative Rainfall (WY 2016)	0.20	2.94	4.90	8.94	9.39	12.84	13.34	13.44	13.47	13.47	13.47	13.47
Cumulative Rainfall (Normal WY*)	0.58	1.98	3.91	6.51	9.00	11.26	12.19	12.54	12.63	12.63	12.66	12.83
Percent of Cumulative Normal	34%	148%	125%	137%	104%	114%	109%	107%	107%	107%	106%	105%

KING CITY RAINFALL
WATER YEAR 2016

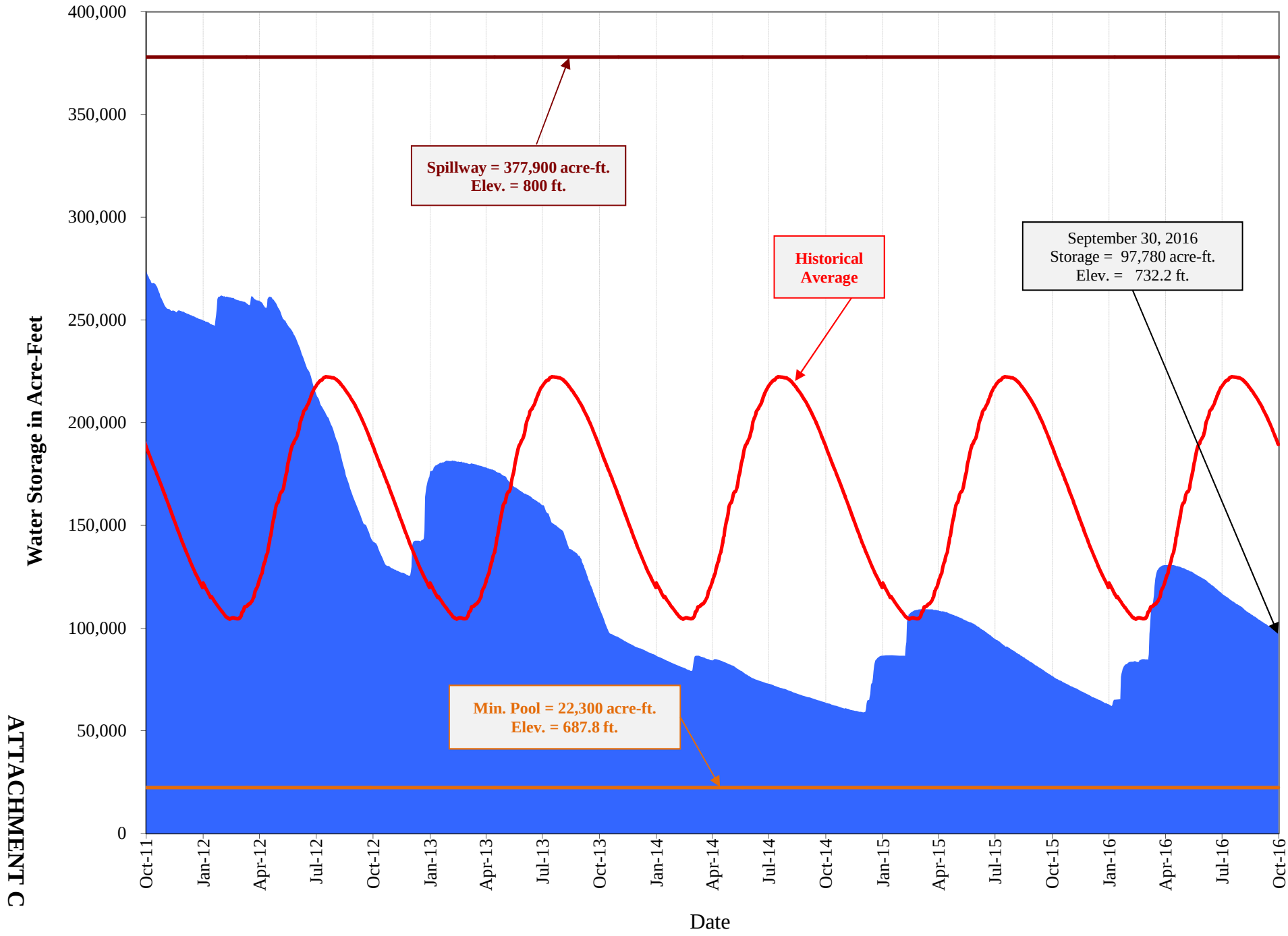


Monthly Rainfall (WY 2016)	0.19	1.62	1.10	2.89	1.12	2.94	0.35	0.26	0.00	0.00	0.00	0.00
Monthly Rainfall (Normal WY*)	0.63	1.11	1.98	2.32	2.51	2.20	0.78	0.31	0.05	0.01	0.01	0.15
Percent of Normal for Month	30%	146%	56%	125%	45%	134%	45%	84%	0%	0%	0%	0%
Cumulative Rainfall (WY 2016)	0.19	1.81	2.91	5.80	6.92	9.86	10.21	10.47	10.47	10.47	10.47	10.47
Cumulative Rainfall (Normal WY*)	0.63	1.74	3.72	6.04	8.55	10.75	11.53	11.84	11.89	11.90	11.91	12.06
Percent of Cumulative Normal	30%	104%	78%	96%	81%	92%	89%	88%	88%	88%	88%	87%

*Average precipitation over the most recent 30-year period ending in a decade (1981-2010)

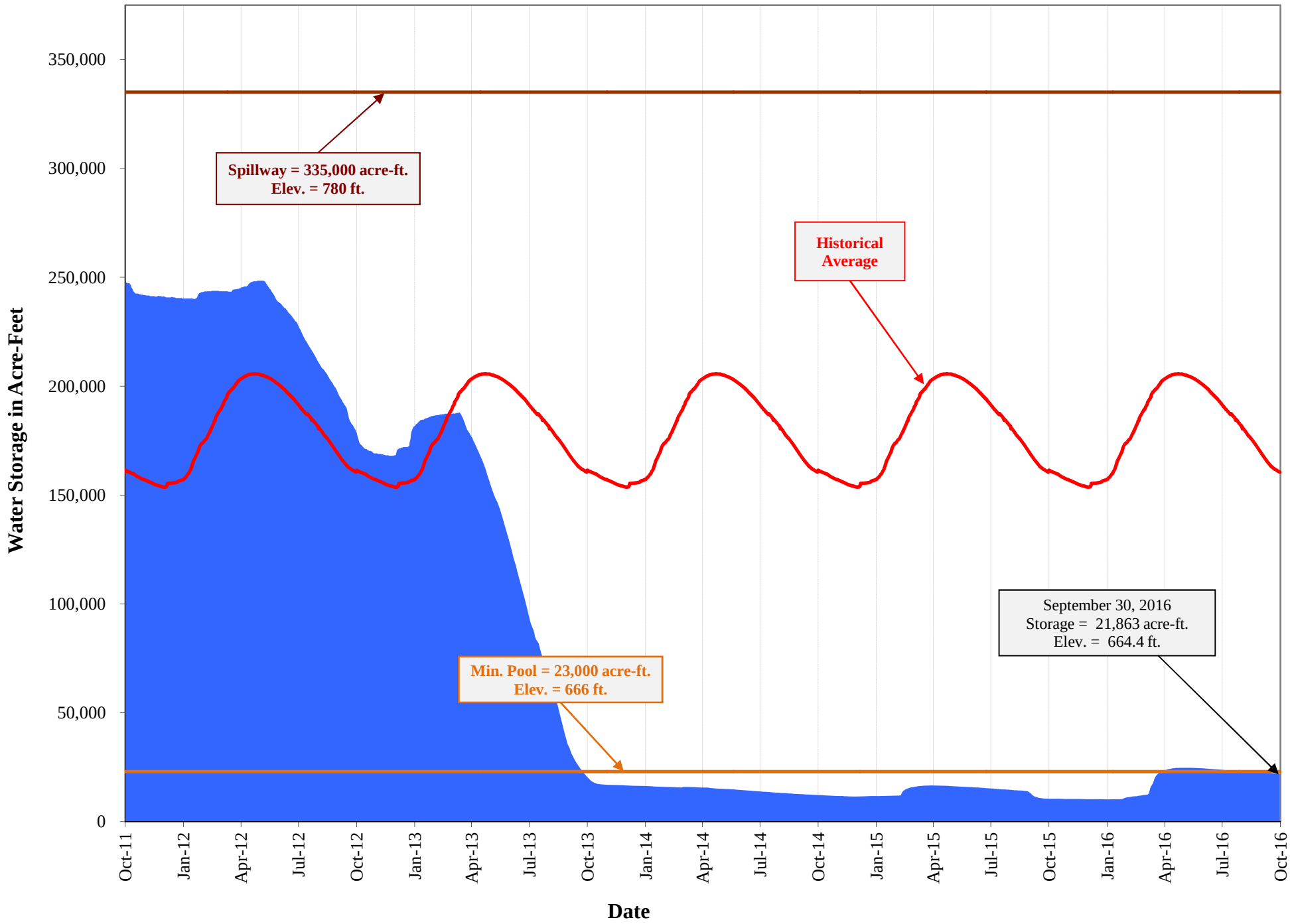
ATTACHMENT B

NACIMIENTO RESERVOIR
DAILY STORAGE



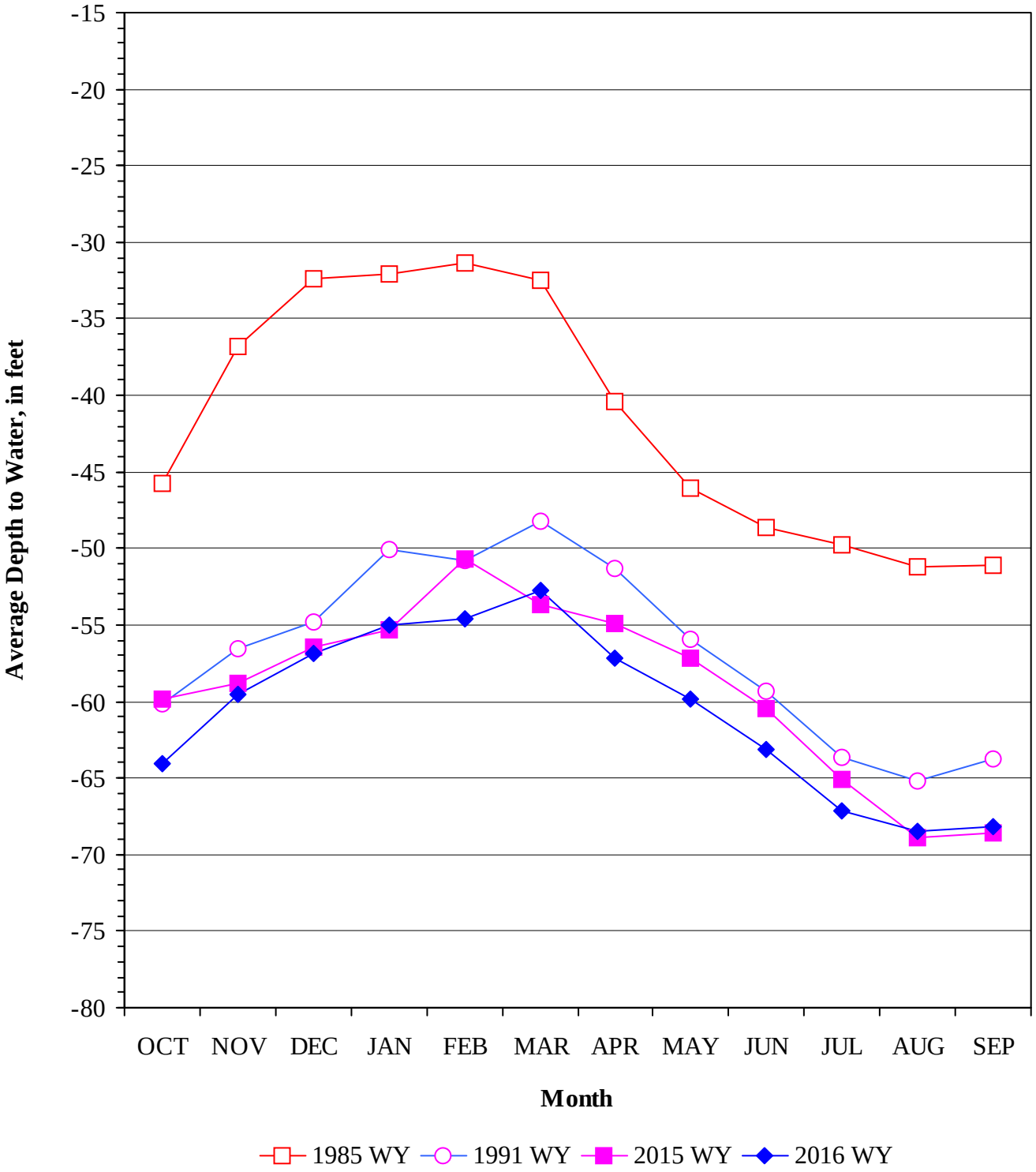
ATTACHMENT C

SAN ANTONIO RESERVOIR
DAILY STORAGE



ATTACHMENT D

GROUNDWATER TRENDS
PRESSURE 180-FOOT AQUIFER
5 Wells

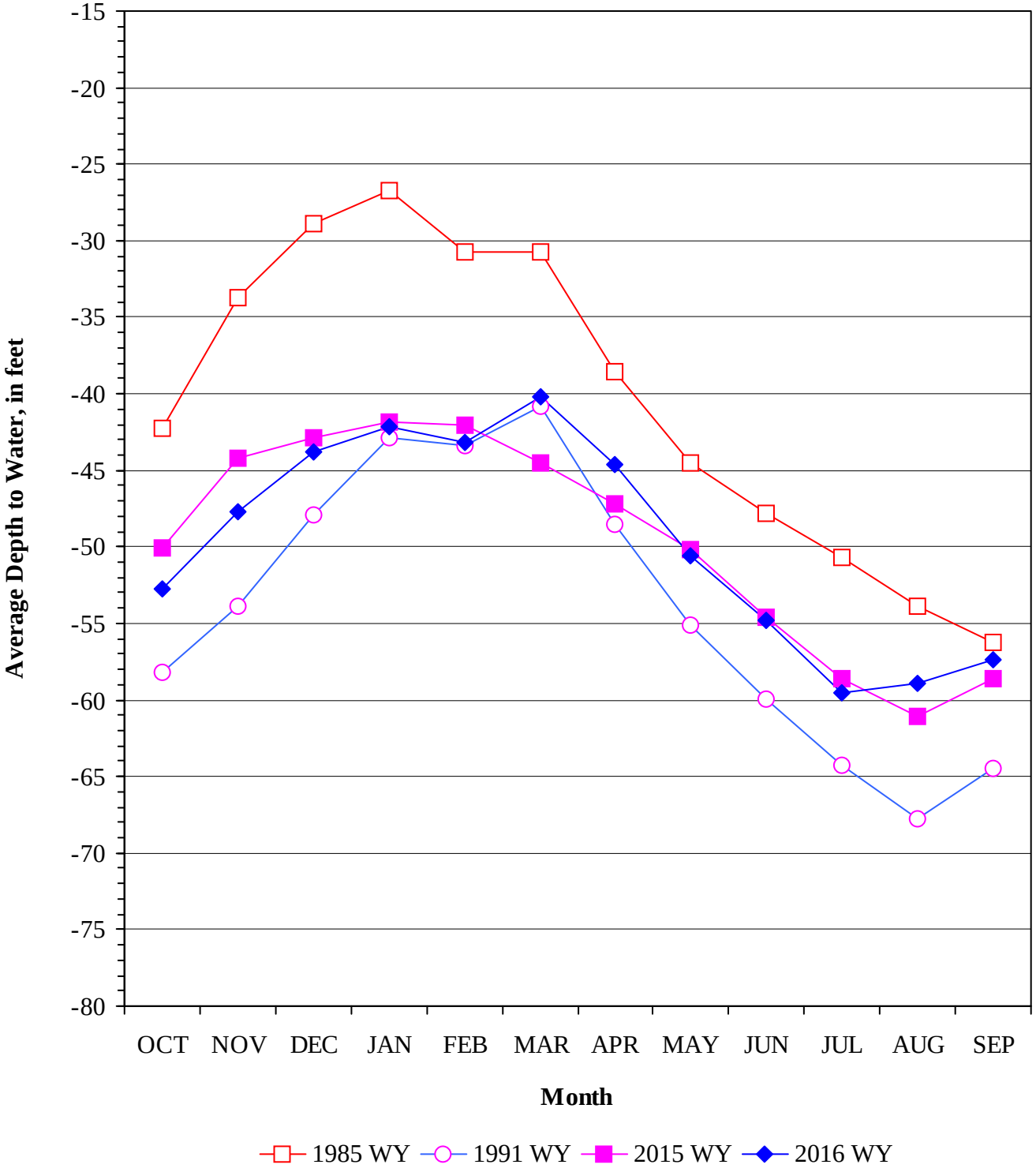


ATTACHMENT E

GROUNDWATER TRENDS

PRESSURE 400-FOOT AQUIFER

11 Wells

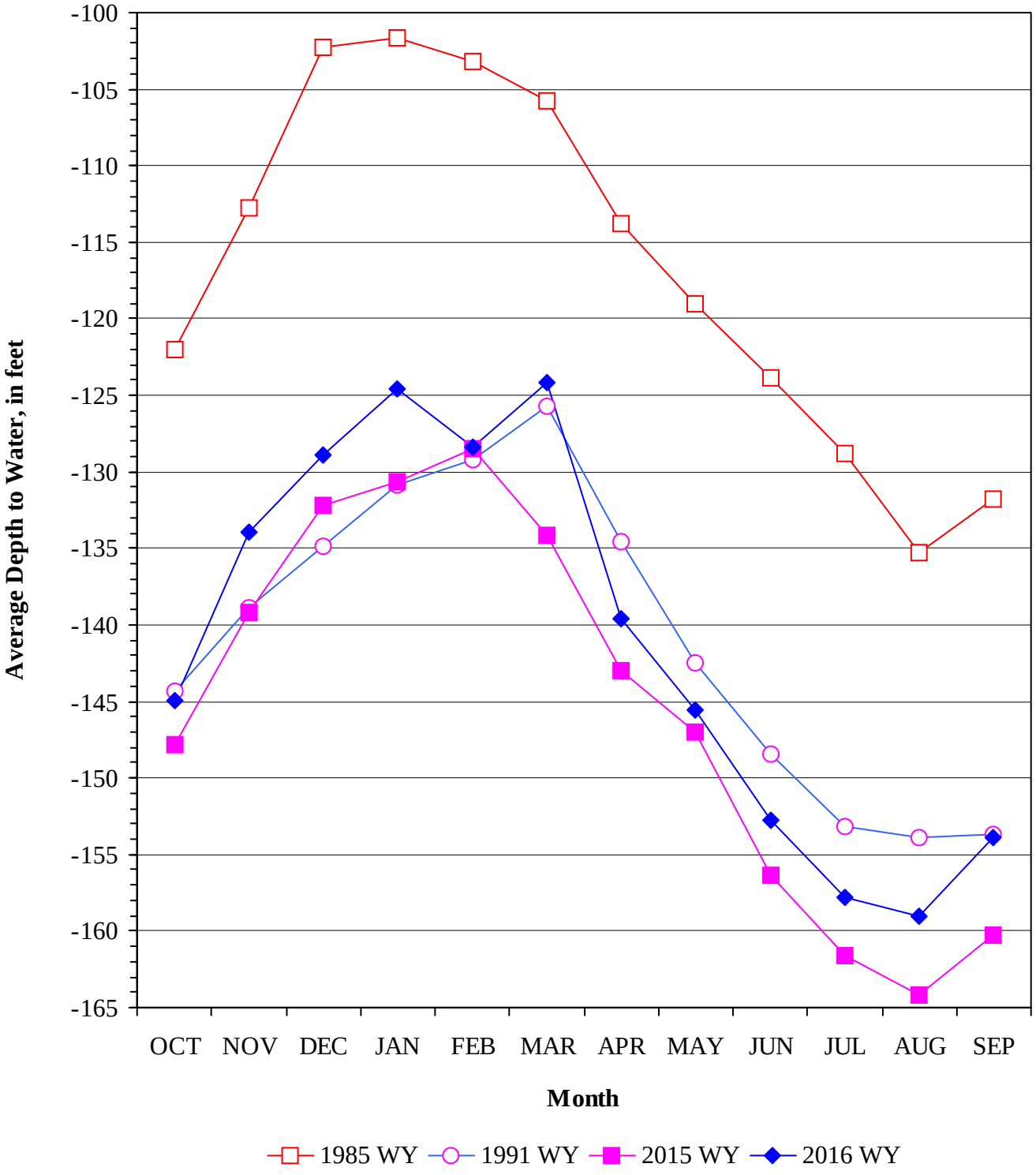


ATTACHMENT F

GROUNDWATER TRENDS

EAST SIDE SUBAREA

11 Wells

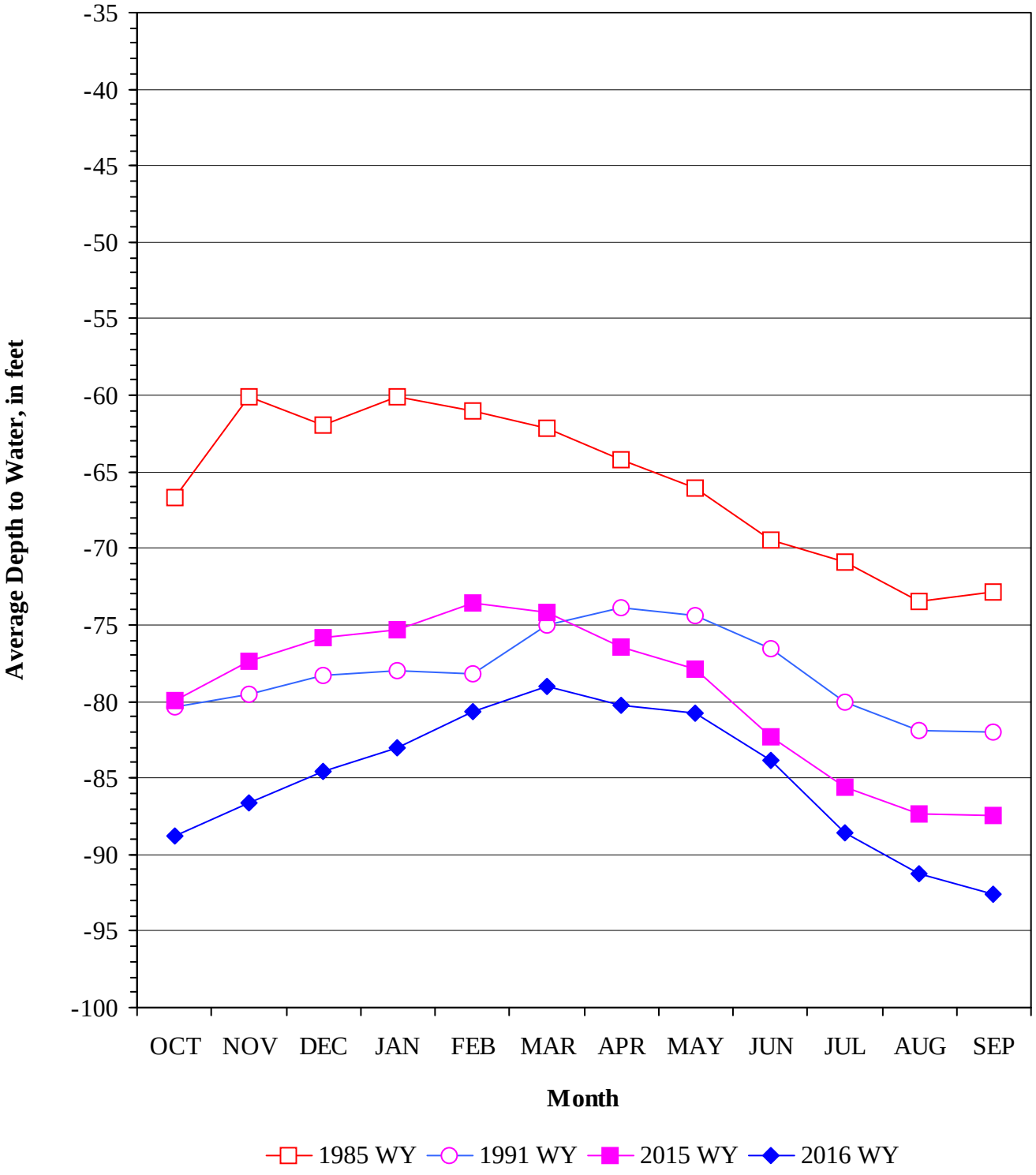


ATTACHMENT G

GROUNDWATER TRENDS

FOREBAY SUBAREA

10 Wells

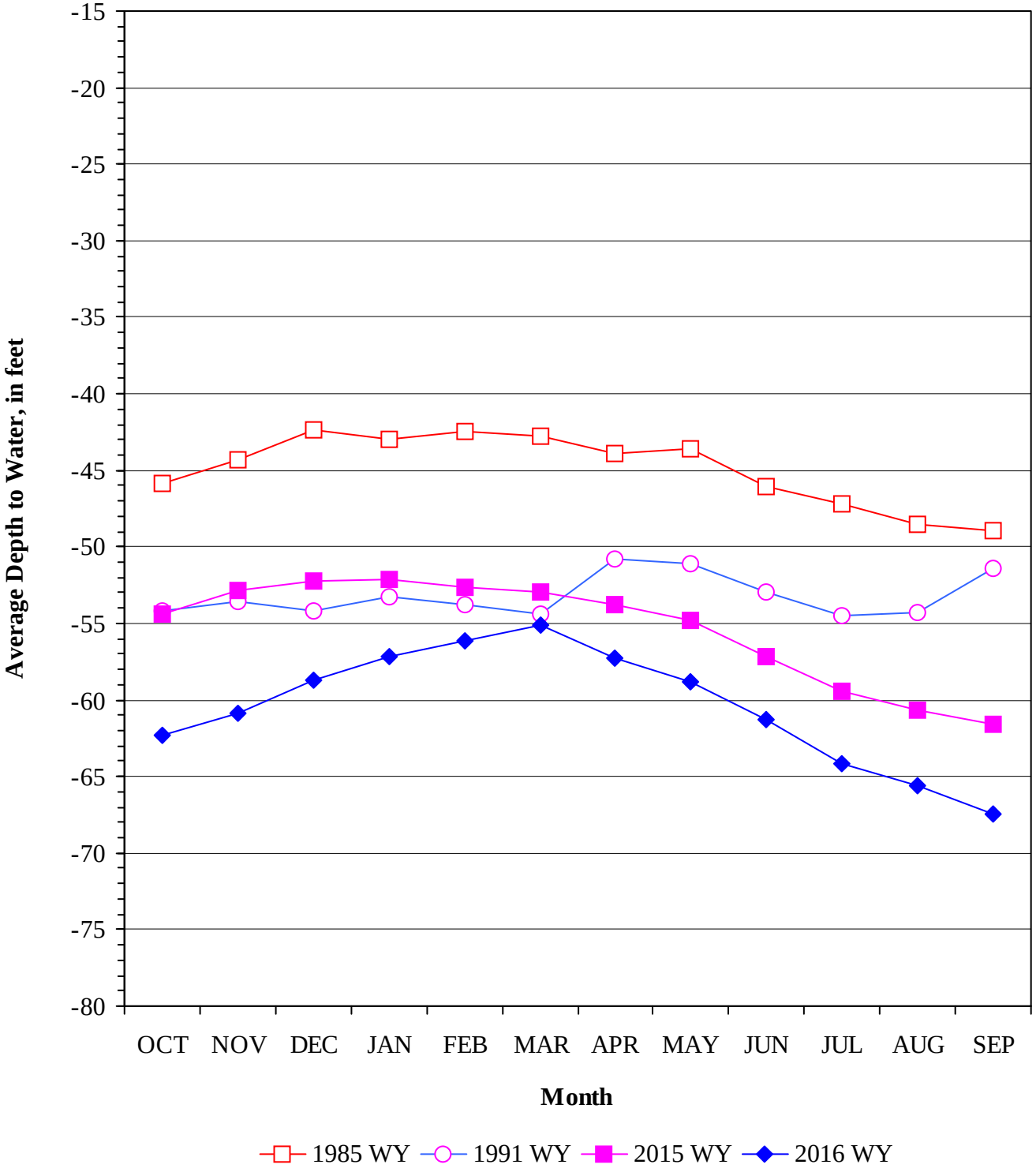


ATTACHMENT H

GROUNDWATER TRENDS

UPPER VALLEY SUBAREA

9 Wells



ATTACHMENT I

Groundwater Trends Summary
September 2016

Area	September 2016 Depth to Water	1 Year Change	Change From WY 1985	1 Month Change
Pressure 180-Foot Aquifer	68'	no change	down 17'	up <1'
Pressure 400-Foot Aquifer	57'	up 1'	down 1'	up 2'
East Side Subarea	154'	up 6'	down 22'	up 5'
Forebay Subarea	93'	down 5'	down 20'	down 1'
Upper Valley Subarea	68'	down 6'	down 19'	down 2'

September water levels, compared to last year, range from 6' lower to 6' higher.

September water levels, compared to WY 1985, range from 22' lower to 1' lower.

September changes in water levels over the last month range from 2' lower to 5' higher.

ATTACHMENT J