Harold Snyder
P.O. Box 926
Nipomo, CA 93444

August 2, 2010

Don Spangnolo,
Nipomo Community Services District (NCSD)
148 Wilson Street, P.O. Box 326
Nipomo, CA 93444

(805) 929-1133 Phone
(805) 929-1932 Fax

Dear Don Spangnolo:

At the July 28th 2010 Board meeting, Agenda Item E-5 there was a report on the 2010 Spring Groundwater Index. The copy of the letter/Technical memo from SAIC was not completely readable in the board packet posted on the NCSD website.

First I am making a public records request for "good" color copy of the letter/Technical memo for spring 2010.

Second I am also making a public records request for "good" color copy of the letter/Technical memo for spring 2009 and the Fall of 2009.

Third I am also making a public records request for the data used in the Spring 2009, Fall of 2009 and Spring 2010 Technical memos. That includes the Well number, Well elevation, Well depth to water measurement and calculated Well water level above sea levels for each well used and a indication for the wells not used in the years Technical memo. For earlier years there has been a one or two page chart.

Thank You

Harold Snyder

August 13, 2010

Mr. Harold Snyder
P.O. Box
Nipomo, CA 93444

SUBJECT: PUBLIC DOCUMENT REQUEST

Dear Mr. Snyder,

Enclosed are the color copies of the letter/Technical memo for the spring 2010, spring 2009 and fall 2009 groundwater index prepared by SAIC. In regard to your third request for individual well data, we are looking to see if this is a record of the District. Any private well numbers or well locations however will not be disclosed.

Please remit $4.30 at your earliest convenience to cover our cost.

Very truly yours,

NIPOMO COMMUNITY SERVICES DISTRICT

Don Spagnolo, P.E.
General Manager

T:\ADMINISTRATIVE-OFFICE\PUBLIC DOCUMENT REQUESTS\SNYDER\100813 GROUNDWATER INDEX MEMO.DOCX

TO: Don Spagnolo, General Manager, Nipomo Community Services District

FROM: Joel Degner E.I.T., Brad Newton, Ph.D., P.G.

RE: Spring 2010 Groundwater Index

DATE: July 15, 2010

INTRODUCTION

Groundwater surface elevations (GSE) underlying the Nipomo Mesa are regularly measured at many places (wells) across the mesa. The Spring 2010 Groundwater Index (GWI) has been computed and presented herein along with historical GWI from 1975 to present based on these groundwater surface elevation measurements collected during spring and fall across the Nipomo Mesa. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, thus precluding a reliable calculation of GWI for those years.

Ground elevation surveys for the key wells were conducted in preparation of the 1st Annual Report - Calendar Year 2008 for the Nipomo Mesa Management Area (NMMA). These updated reference points were not incorporated into the GWI to preserve consistency in the historical calculations and presentations.

The NMMA Technical Group has not reviewed this technical memorandum, its findings, or any presentation of this evaluation.

RESULTS

Spring 2010 GWI is 80,000 acre-feet (AF), which is 4,000 AF greater than the Spring 2009 GWI (Table 1, Figure 1). The Key Well Index from NMMA 2nd Annual Report - Calendar Year 2009 generally follows the same historical trends as the GWI (Figure 1).

METHODOLOGY

The calculation of Spring and Fall GWI are based on GSE measurements regularly made by San Luis Obispo County Department of Public Works (SLO DPW), NCSD, USGS, and Woodlands. The integration of GSE data is accomplished by using computer software to interpolate between measurements and calculate GWI within the principal production aquifer assuming an unconfined aquifer and a specific yield of 11.7 percent. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, precluding a reliable calculation of GWI for those years.

Groundwater Surface Elevation Measurements

Groundwater surface elevation data were obtained from SLO DPW, NCSD, USGS, and Woodlands. SLO DPW measures GSE in monitoring wells during the spring (April) and the fall

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(October) of each year. Woodlands and NCSD measures GSE in their monitoring wells monthly. For the years 1975 to 1999, available representative GSE data were used to compute GWI. For the years 2000 to 2010, only GSE data from the same 45 wells were used to compute GWI.

The GSE data was reviewed in combination with well completion reports and historical hydrographic records in order to exclude measurements that do not accurately represent static water levels within the principal production aquifer. Wells that do not access the principal production aquifer or were otherwise determined to not accurately represent static water levels within the aquifer were not included in analysis.

Groundwater Surface Interpolation

The individual GSE measurements from each year were used to produce a GSE field by interpolation using the inverse distance weighting (IDW) method.

Groundwater Index

The value of the groundwater index was computed for the area defined in Phase III of the trial. The GWI was computed by subtracting both the mean sea level surface (elevation equals zero) and the volume of bedrock above sea level from the hypothetical saturated volume. The bedrock surface elevation is based on Figure 11: Base of Potential Water-Bearing Sediments, presented in the report, Water Resources of the Arroyo Grande - Nipomo Mesa Area (DWR 2002). The bedrock surface elevation was preliminarily verified by reviewing driller reports obtained from DWR. The saturated volume above sea level and bedrock was multiplied by a specific yield of 11.7% to compute the GWI. The specific yield is based on the average weighted specific yield measurement made at wells within the Nipomo Mesa Hydrologic Sub-Area (DWR 2002, pg. 86).

Key Well Index

The NMMA Technical Group selected the data from eight inland key wells to represent the whole of the NMMA. The Key Well Index was calculated annually using Spring GSE measurements from 1975 to 2008. The Key Wells were selected to represent various portions of the groundwater basin within the NMMA. In selecting the eight key wells, the following criteria were applied so that the wells generally represent the NMMA as a whole:

(1) The wells are geographically distributed,

(2) No single well overly influences the Key Well Index.

The first criterion was met in the selection of the wells, such that no well represented a disproportionate area. To meet the second criterion, groundwater elevations from each well were normalized so that any well where elevations were on the average higher or lower than the other wells did not overly influence the magnitude of the Key Well Index. This

normalization was accomplished by dividing each spring groundwater elevation measurement by the sum of all the Spring GSE data for that well.

The Key Well Index was defined for each year as the average of the normalized spring groundwater data from each well. The lowest value of the Key Well Index could be considered the "historical low" within the NMMA.

REFERENCES

Department of Water Resources (DWR). 2002. Water Resources of the Arroyo Grande – Nipomo Mesa Area, Southern District Report.

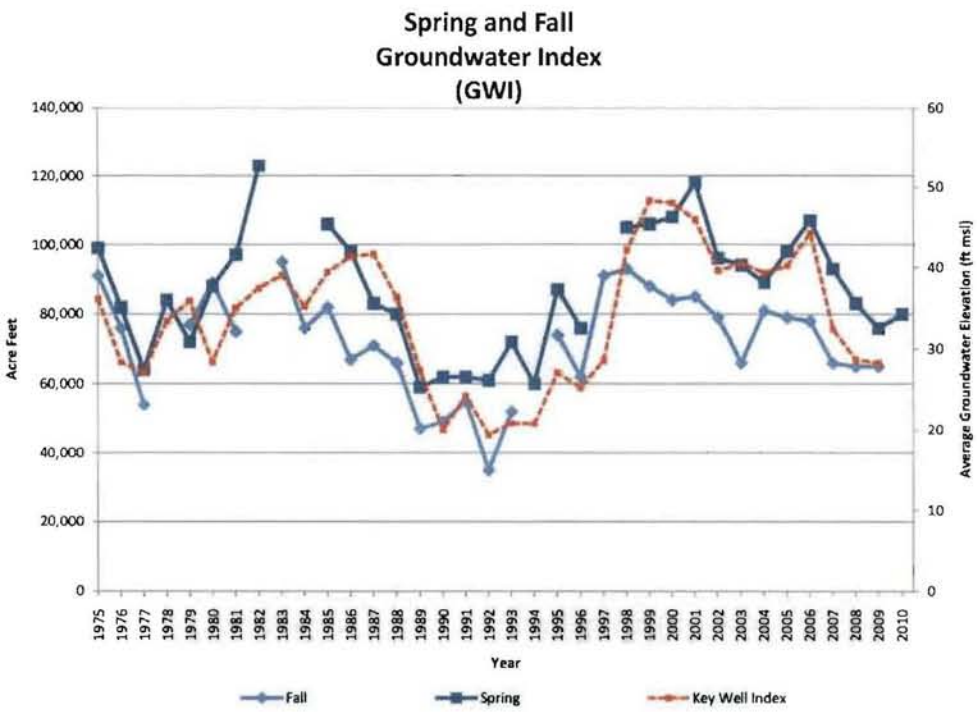
Table 1

Spring and Fall Groundwater Index (GWI)

Year	Rainfall (inches)	Spring GWI (Acre-Feet)	Number of Wells	Fall GWI (Acre-Feet)	Number of Wells	Spring to Fall Difference (Acre-Feet)
1975	17.29	99,000	54	91,000	54	8,000
1976	13.45	82,000	45	76,000	65	6,000
1977	10.23	64,000	59	54,000	63	10,000
1978	30.66	84,000	62	---	35	---
1979	15.80	72,000	57	77,000	63	(5,000)
1980	16.57	88,000	55	89,000	46	(1,000)
1981	13.39	97,000	46	75,000	47	22,000
1982	18.58	123,000	42	---	31	---
1983	33.21	---	35	95,000	42	---
1984	11.22	---	14	76,000	37	---
1985	12.20	106,000	37	82,000	41	24,000
1986	16.85	98,000	51	67,000	51	31,000
1987	11.29	83,000	48	71,000	52	12,000
1988	12.66	80,000	51	66,000	49	14,000
1989	12.22	59,000	47	47,000	57	12,000
1990	7.12	62,000	55	49,000	53	13,000
1991	13.06	62,000	52	55,000	54	7,000
1992	15.66	61,000	52	35,000	48	26,000
1993	20.17	72,000	54	52,000	61	20,000
1994	12.15	60,000	54	---	36	---
1995	25.47	87,000	35	74,000	52	25,000
1996	16.54	76,000	45	62,000	57	14,000
1997	20.50	---	20	91,000	48	---
1998	33.67	105,000	41	93,000	44	12,000
1999	12.98	106,000	56	88,000	49	18,000
2000	14.47	108,000	44	84,000	41	24,000
2001	18.78	118,000	43	85,000	35	33,000
2002	8.86	96,000	29	79,000	41	17,000
2003	11.39	94,000	37	66,000	42	28,000
2004	12.57	89,000	42	81,000	35	8,000
2005	22.23	98,000	38	79,000	39	19,000
2006	20.83	107,000	44	78,000	41	29,000
2007	6.96	93,000	44	66,000	42	27,000
2008	15.18	83,000	43	65,000	42	18,000
2009	10.31	76,000	44	65,000	43	11,000
2010	17.05	80,000	45			

---: insufficient for evaluation

Figure 1



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TO: Bruce Buel, General Manager Nipomo Community Services District

FROM: Joel Degner, Brad Newton, Ph.D., P.G., Bob Beeby, P.E.

RE: Spring 2009 Groundwater in Storage above Mean Sea Level

DATE: June 4, 2009

INTRODUCTION

Groundwater surface elevations (GSE) underlying the Nipomo Mesa are regularly measured at many places (wells) across the mesa. Presented herein is the Spring 2009 groundwater in storage above mean sea level (GWS) estimate along with estimates of historical GWS from 1975 to 2008 based on groundwater surface elevation measurements collected during Spring and Fall across the Nipomo Mesa. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, thus precluding a reliable estimate of GWS for those years.

During the process of preparing the NMMA 1st Annual Report Calendar Year 2008 the NMMA Technical Group (TG) collected and analyzed additional data for the NMMA, including a ground elevation survey for the key wells. These updated reference points were not incorporated into the GWS estimate to preserve consistency in the historical calculations and presentations.

The TG has not reviewed this technical memorandum, its findings, or any presentation of this evaluation.

RESULTS

Estimated Spring 2009 GWS is 76,000 acre-feet (AF), which is 7,000 AF less than Spring 2008 (Table 1, Figure 1). The key well index from NMMA 1st Annual Report Calendar Year 2008 generally follows the same historical trends as the GWS estimates (Figure 1).

METHODOLOGY

The annual estimates of Spring and Fall GWS are based on GSE measurements regularly made by San Luis Obispo County Department of Public Works (SLO DPW), NCSD, USGS, and Woodlands. The integration of GSE data is accomplished by using computer software to interpolate between measurements and calculate GWS within the principal production aquifer assuming an unconfined aquifer and a specific yield of 11.7 percent. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, precluding a reliable estimate of GWS for those years.

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The amount of GWS under the Nipomo Mesa Management Area (NMMA) was computed by multiplying the saturated volume above sea level with the aerially weighted specific yield (DWR, 2002), excluding bedrock (Figure 11: Base of Potential Water-Bearing Sediments, presented in the report, Water Resources of the Arroyo Grande - Nipomo Mesa Area [DWR 2002]). The amount of GWS under the NMMA was constrained to the boundary determined in Phase III of the trial.

Data provided by DWR, consisting of well completion reports, lithographic logs, electronic logs, and pump tests, were used to develop an understanding of the hydrogeologic conditions underlying the NMMA. A systematic review of these data pertaining to wells used for storage calculations was conducted in order to verify that each well's screened interval is within the principal production aquifer (Paso Robles Formation).

Groundwater Surface Elevation Measurements

Groundwater surface elevation data were obtained from SLO DPW, NCSD, USGS, and Woodlands. SLO DPW measures GSE in monitoring wells during the spring and the fall of each year. Woodlands and NCSD measures GSE in their monitoring wells monthly. For the years 1975 to 1999, available representative GSE data were used to estimate GWS. For the years 2000 to 2008, only GSE data from the same 45 wells were used to estimate GWS.

The GSE data was reviewed in combination with well completion reports and historical hydrographic records in order to exclude measurements that do not accurately represent static water levels within the principal production aquifer. Wells that do not access the principal production aquifer or were otherwise determined to not accurately represent static water levels within the aquifer were not included in analysis.

Groundwater Surface Interpolation

The individual GSE measurements from each year were used to produce a GSE field by interpolation using the inverse distance weighting (IDW) method.

Groundwater Volume Estimate

The amount of groundwater in storage under the Nipomo Mesa was estimated for the boundary determined in Phase III of the trial. The GWS was estimated by subtracting both the mean sea level surface (elevation equals zero) and the volume of bedrock above sea level from the saturated volume. The bedrock surface elevation is based on Figure 11: Base of Potential Water-Bearing Sediments, presented in the report, Water Resources of the Arroyo Grande - Nipomo Mesa Area (DWR 2002). The bedrock surface elevation was preliminarily verified by reviewing driller reports obtained from DWR. The saturated volume above sea level was multiplied by a specific yield of 11.7% to estimate the recoverable amount of GWS. The specific yield is based on the average weighted specific yield for the Nipomo Mesa Hydrologic Sub-Area (DWR 2002, pg. 86).

Key Well Index

The TG selected the data from eight inland key wells to represent the whole of the NMMA. The average Spring groundwater elevation of these key wells is used to calculate the Key Wells Index ("Index").

The Index was calculated annually using Spring groundwater elevation measurements from 1975 to 2008. The Key Wells were selected to represent various portions of the groundwater basin within the NMMA. In selecting the eight key wells, the following criteria were applied so that the wells generally represent the NMMA as a whole:

(1) The wells are geographically distributed,

(2) No single well overly influences the Index.

The first criterion was met in the selection of the wells, such that no well represented a disproportionate area. To meet the second criterion, groundwater elevations from each well were normalized so that any well where elevations were on the average higher or lower than the other wells did not overly influence the magnitude of the Index. This normalization was accomplished by dividing each Spring groundwater elevation measurement by the sum of all the Spring groundwater elevation data for that well.

The Index was defined for each year as the average of the normalized Spring groundwater data from each well. The lowest value of the Index could be considered the "historical low" within the NMMA.

REFERENCES

Department of Water Resources (DWR). 2002. Water Resources of the Arroyo Grande – Nipomo Mesa Area, Southern District Report.

Table 1

Spring and Fall
Groundwater in Storage above Mean Sea Level
for Phase III Boundary

Year	Rainfall (inches)	Spring GWS (Acre-Feet)	Number of Wells	Fall GWS (Acre-Feet)	Number of Wells	Spring to Fall Difference (Acre-Feet)
1975	17.29	99,000	54	91,000	54	8,000
1976	13.45	82,000	45	76,000	65	6,000
1977	10.23	64,000	59	54,000	63	10,000
1978	30.66	84,000	62	---	35	---
1979	15.80	72,000	57	77,000	63	(5,000)
1980	16.57	88,000	55	89,000	46	(1,000)
1981	13.39	97,000	46	75,000	47	22,000
1982	18.58	123,000	42	---	31	---
1983	33.21	---	35	95,000	42	---
1984	11.22	---	14	76,000	37	---
1985	12.20	106,000	37	82,000	41	24,000
1986	16.85	98,000	51	67,000	51	31,000
1987	11.29	83,000	48	71,000	52	12,000
1988	12.66	80,000	51	66,000	49	14,000
1989	12.22	59,000	47	47,000	57	12,000
1990	7.12	62,000	55	49,000	53	13,000
1991	13.06	62,000	52	55,000	54	7,000
1992	15.66	61,000	52	35,000	48	26,000
1993	20.17	72,000	54	52,000	61	20,000
1994	12.15	60,000	54	---	36	---
1995	25.47	87,000	35	74,000	52	25,000
1996	16.54	76,000	45	62,000	57	14,000
1997	20.50	---	20	91,000	48	---
1998	33.67	105,000	41	93,000	44	12,000
1999	12.98	106,000	56	88,000	49	18,000
2000	14.47	108,000	44	84,000	41	24,000
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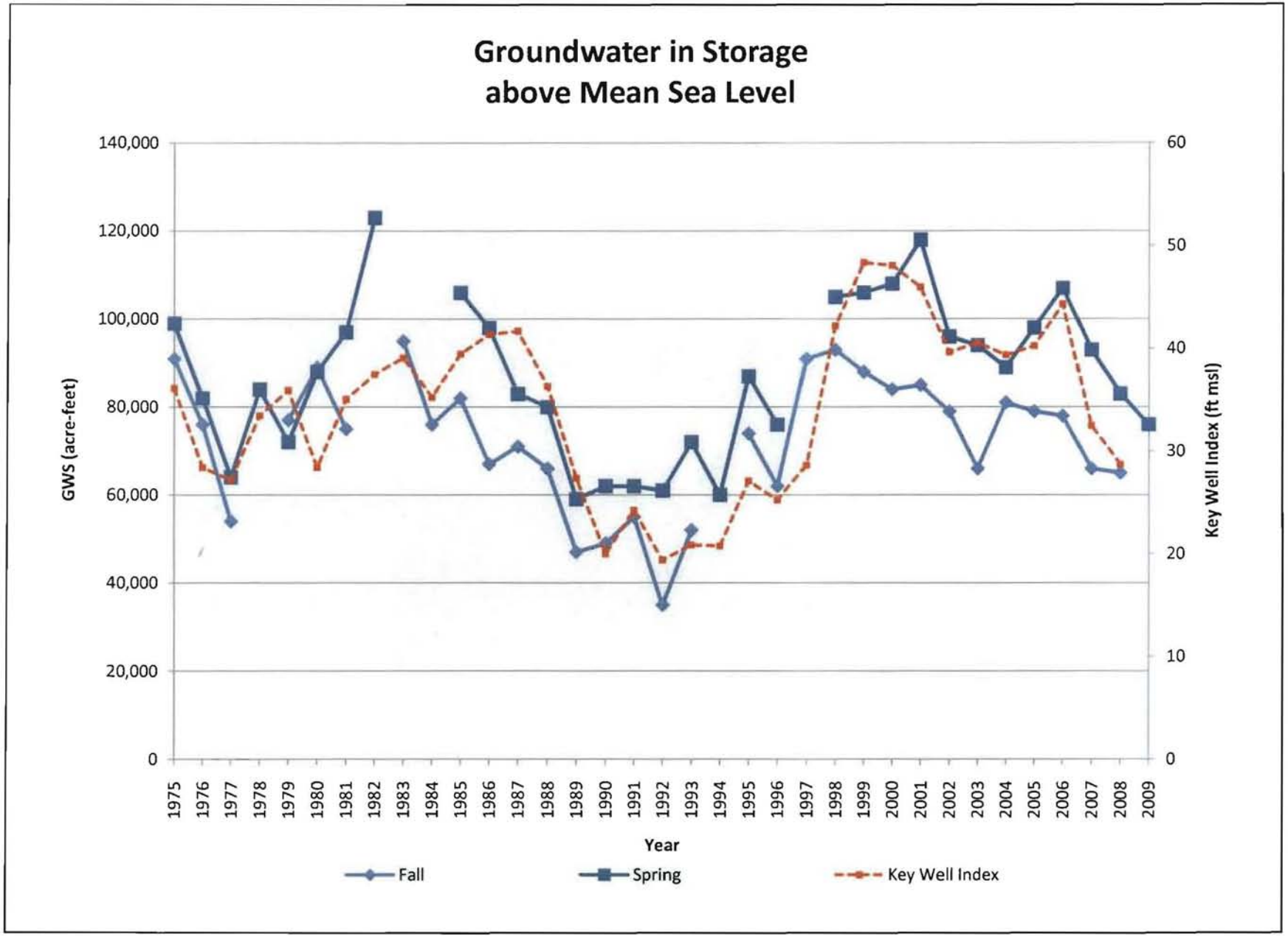
2005	22.23	98,000	38	79,000	39	19,000
2006	20.83	107,000	44	78,000	41	29,000
2007	6.96	93,000	44	66,000	42	27,000
2008	15.18	83,000	43	65,000	42	18,000
2009	7.91	76,000	44			

---: insufficient for evaluation

Figure 1



TO: Michael LeBrun, Interim General Manager, Nipomo Community Services District
FROM: Joel Degner E.I.T., Brad Newton, Ph.D., P.G.
RE: Fall 2009 Groundwater Index
DATE: December 08, 2009

INTRODUCTION

Groundwater surface elevations (GSE) underlying the Nipomo Mesa are regularly measured at many places (wells) across the mesa. The Fall 2009 Groundwater Index (GWI) has been estimated and presented herein along with historical GWI from 1975 to present based on these groundwater surface elevation measurements collected during spring and fall across the Nipomo Mesa. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, thus precluding a reliable estimate of GWI for those years.

Ground elevation surveys for the key wells were conducted in preparation of the 1st Annual Report - Calendar Year 2008 for the Nipomo Mesa Management Area (NMMA). These updated reference points were not incorporated into the GWI to preserve consistency in the historical calculations and presentations.

The NMMA Technical Group has not reviewed this technical memorandum, its findings, or any presentation of this evaluation.

RESULTS

Estimated Fall 2009 GWI is 65,000 acre-feet (AF), which is equal to the Fall 2008 GWI (Table 1, Figure 1). The Key Well Index from NMMA 1st Annual Report Calendar Year 2008 generally follows the same historical trends as the GWI estimates (Figure 1).

METHODOLOGY

The annual estimates of Spring and Fall GWI are based on GSE measurements regularly made by San Luis Obispo County Department of Public Works (SLO DPW), NCSD, USGS, and Woodlands. The integration of GSE data is accomplished by using computer software to interpolate between measurements and calculate GWI within the principal production aquifer assuming an unconfined aquifer and a specific yield of 11.7 percent. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, precluding a reliable estimate of GWI for those years.

Groundwater Surface Elevation Measurements

Groundwater surface elevation data were obtained from SLO DPW, NCSD, USGS, and Woodlands. SLO DPW measures GSE in monitoring wells during the spring and the fall of

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each year. Woodlands and NCSD measures GSE in their monitoring wells monthly. For the years 1975 to 1999, available representative GSE data were used to estimate GWI. For the years 2000 to 2009, only GSE data from the same 45 wells were used to estimate GWI.

The GSE data was reviewed in combination with well completion reports and historical hydrographic records in order to exclude measurements that do not accurately represent static water levels within the principal production aquifer. Wells that do not access the principal production aquifer or were otherwise determined to not accurately represent static water levels within the aquifer were not included in analysis.

Groundwater Surface Interpolation

The individual GSE measurements from each year were used to produce a GSE field by interpolation using the inverse distance weighting (IDW) method.

Groundwater Index

The value of the groundwater index was estimated for the boundary determined in Phase III of the trial. The GWI was estimated by subtracting both the mean sea level surface (elevation equals zero) and the volume of bedrock above sea level from the saturated volume. The bedrock surface elevation is based on Figure 11: Base of Potential Water-Bearing Sediments, presented in the report, Water Resources of the Arroyo Grande - Nipomo Mesa Area (DWR 2002). The bedrock surface elevation was preliminarily verified by reviewing driller reports obtained from DWR. The saturated volume above sea level was multiplied by a specific yield of 11.7% to estimate the recoverable amount of GWI. The specific yield is based on the average weighted specific yield for the Nipomo Mesa Hydrologic Sub-Area (DWR 2002, pg. 86).

Key Well Index

The NMMA Technical Group selected the data from eight inland key wells to represent the whole of the NMMA. The average spring groundwater elevation of these key wells is used to calculate the Key Wells Index.

The Key Well Index was calculated annually using Spring GSE measurements from 1975 to 2008. The Key Wells were selected to represent various portions of the groundwater basin within the NMMA. In selecting the eight key wells, the following criteria were applied so that the wells generally represent the NMMA as a whole:

(1) The wells are geographically distributed,

(2) No single well overly influences the Key Well Index.

The first criterion was met in the selection of the wells, such that no well represented a disproportionate area. To meet the second criterion, groundwater elevations from each well were normalized so that any well where elevations were on the average higher or lower than the other wells did not overly influence the magnitude of the Key Well Index. This

normalization was accomplished by dividing each spring groundwater elevation measurement by the sum of all the Spring GSE data for that well.

The Key Well Index was defined for each year as the average of the normalized spring groundwater data from each well. The lowest value of the Key Well Index could be considered the "historical low" within the NMMA.

REFERENCES

Department of Water Resources (DWR). 2002. Water Resources of the Arroyo Grande - Nipomo Mesa Area, Southern District Report.

Table 1

Spring and Fall Groundwater Index (GWI)

Year	Rainfall (inches)	Spring GWI (Acre-Feet)	Number of Wells	Fall GWI (Acre-Feet)	Number of Wells	Spring to Fall Difference (Acre-Feet)
1975	17.29	99,000	54	91,000	54	8,000
1976	13.45	82,000	45	76,000	65	6,000
1977	10.23	64,000	59	54,000	63	10,000
1978	30.66	84,000	62	---	35	---
1979	15.80	72,000	57	77,000	63	(5,000)
1980	16.57	88,000	55	89,000	46	(1,000)
1981	13.39	97,000	46	75,000	47	22,000
1982	18.58	123,000	42	---	31	---
1983	33.21	---	35	95,000	42	---
1984	11.22	---	14	76,000	37	---
1985	12.20	106,000	37	82,000	41	24,000
1986	16.85	98,000	51	67,000	51	31,000
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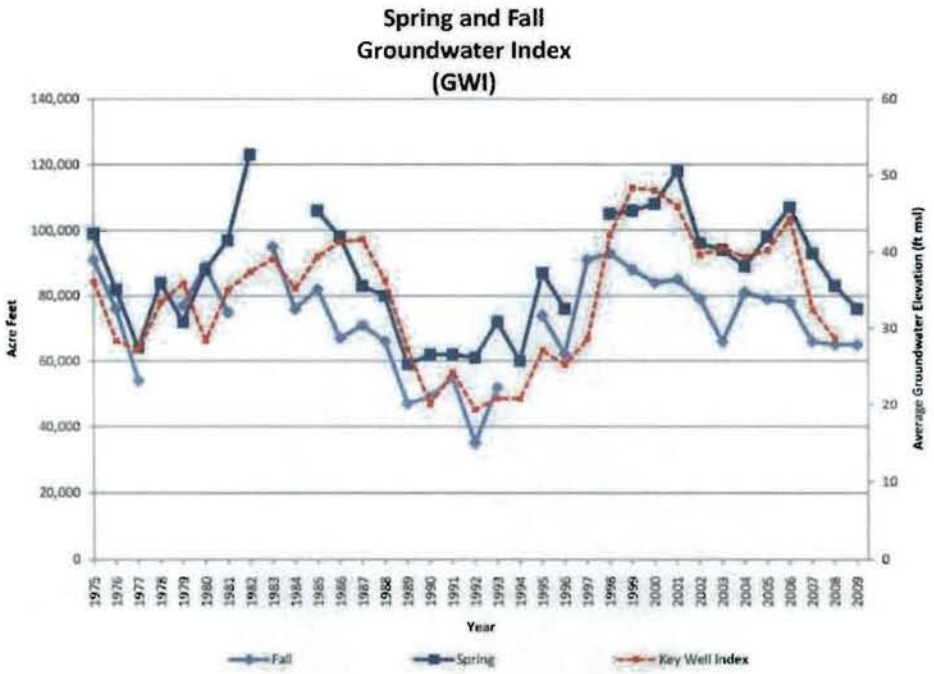
1991	13.06	62,000	52	55,000	54	7,000
1992	15.66	61,000	52	35,000	48	26,000
1993	20.17	72,000	54	52,000	61	20,000
1994	12.15	60,000	54	---	36	---
1995	25.47	87,000	35	74,000	52	25,000
1996	16.54	76,000	45	62,000	57	14,000
1997	20.50	---	20	91,000	48	---
1998	33.67	105,000	41	93,000	44	12,000
1999	12.98	106,000	56	88,000	49	18,000
2000	14.47	108,000	44	84,000	41	24,000
2001	18.78	118,000	43	85,000	35	33,000
2002	8.86	96,000	29	79,000	41	17,000
2003	11.39	94,000	37	66,000	42	28,000
2004	12.57	89,000	42	81,000	35	8,000
2005	22.23	98,000	38	79,000	39	19,000
2006	20.83	107,000	44	78,000	41	29,000
2007	6.96	93,000	44	66,000	42	27,000
2008	15.18	83,000	43	65,000	42	18,000
2009	10.31	76,000	44	65,000	43	11,000

--- Insufficient for evaluation

Figure 1



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