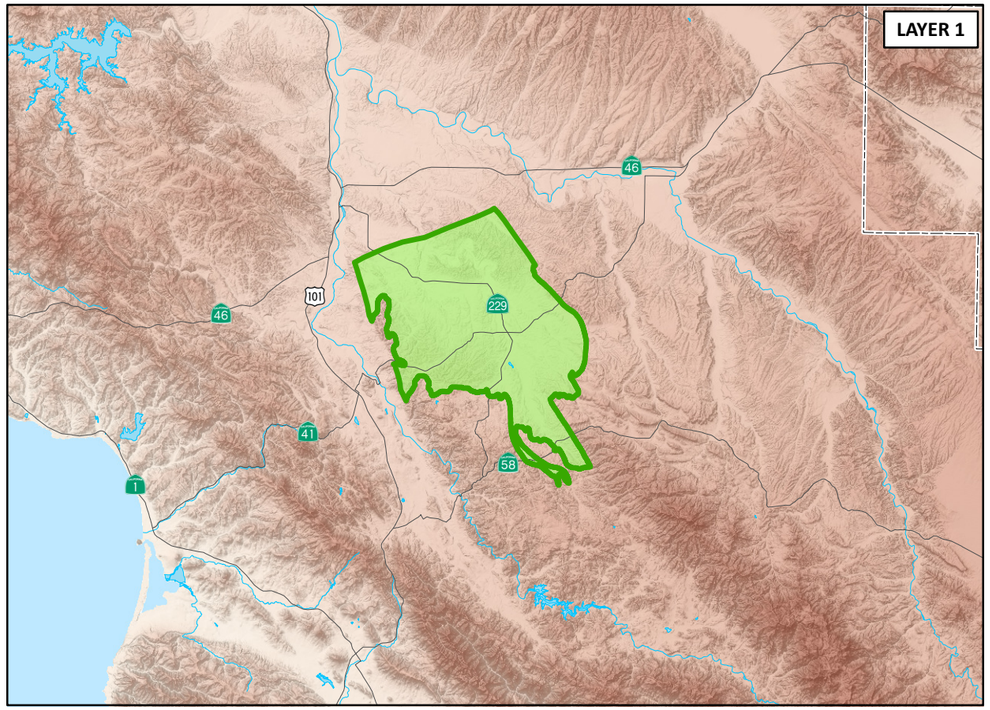
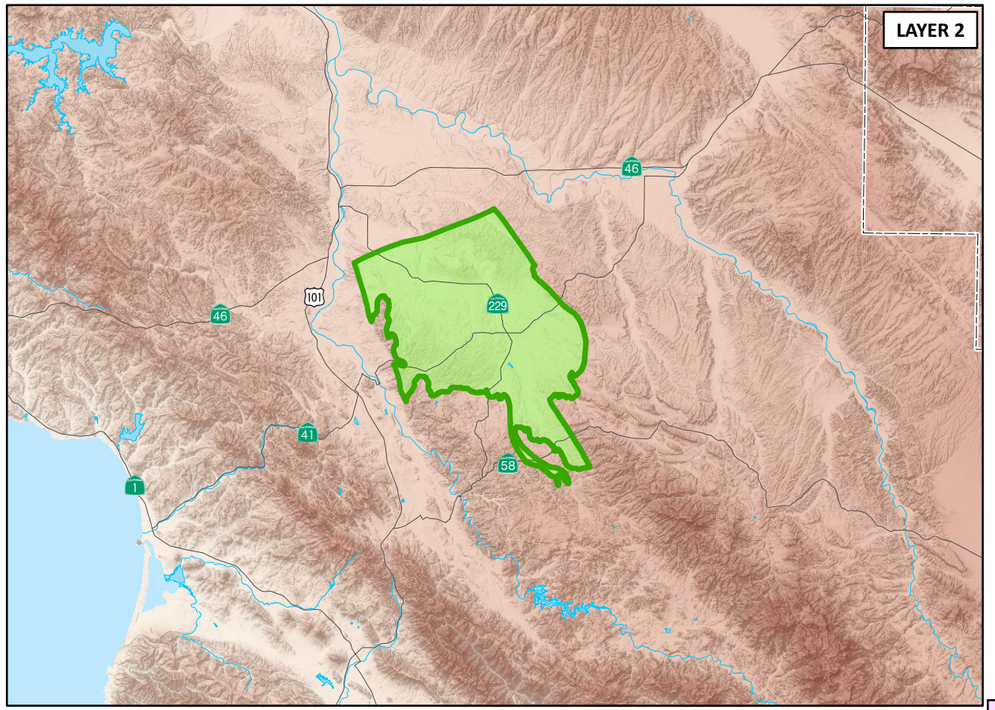
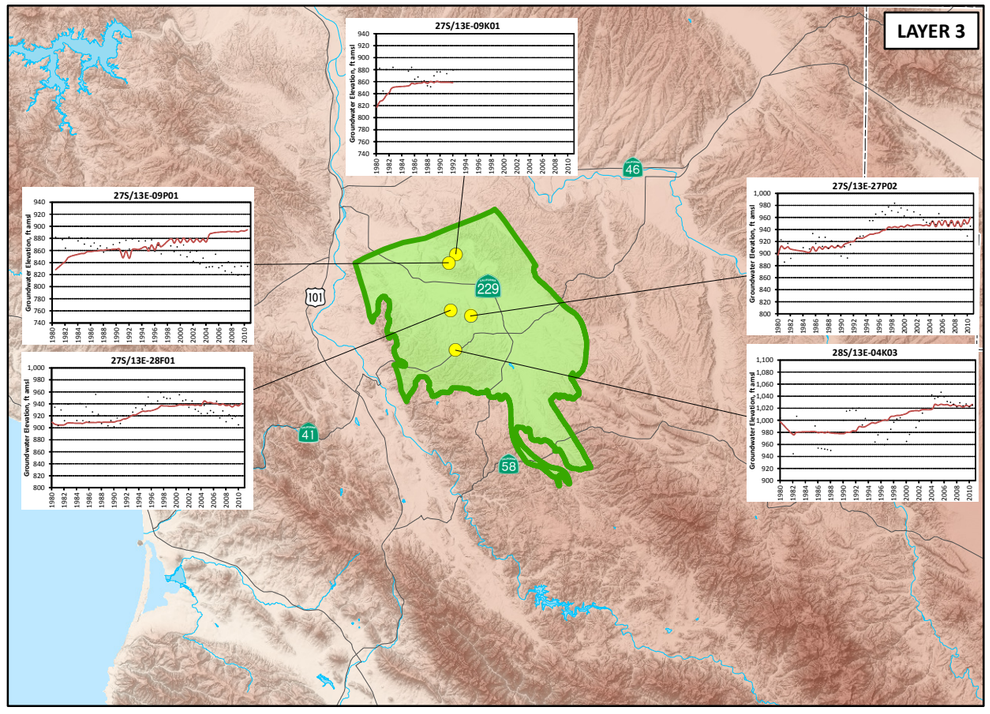
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

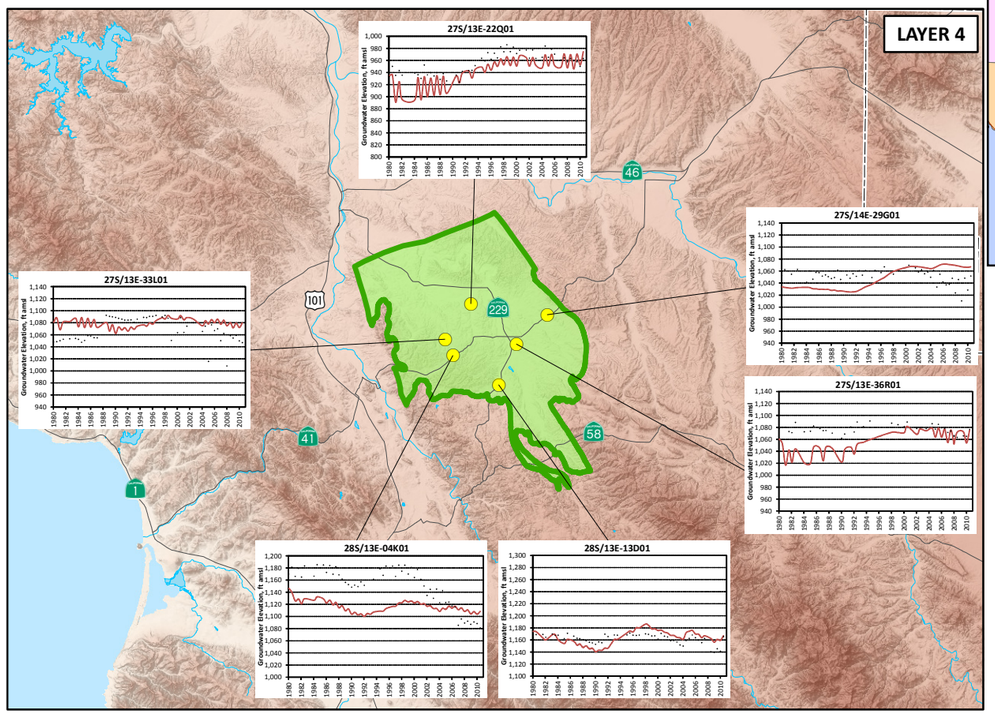
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

HYDROGRAPHS FOR RECALIBRATED BASIN MODEL CRESTON SUB-AREA





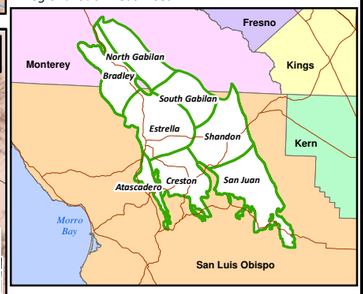




EXPLANATION

- Well Designation Within Sub-area
- Observed
- Model Generated
- Paso Robles Groundwater Basin with Sub-Area (Source: Fugro and Cleath, 2002)
- County Boundary

Regional Sub-Areas Inset



NORTH

0 4 8 Miles

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19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

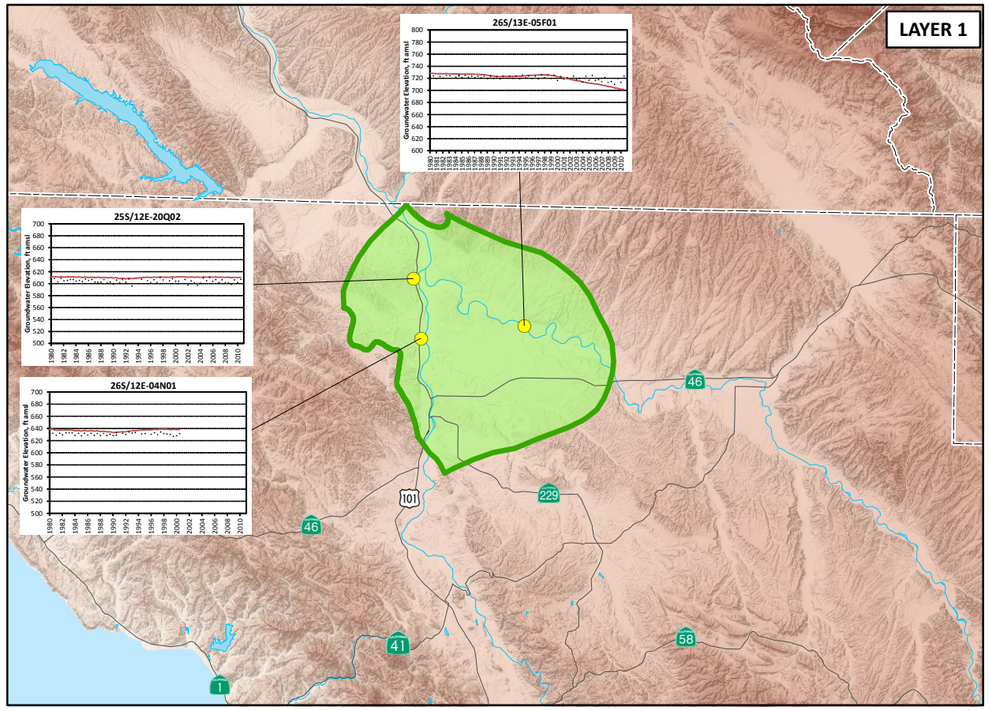
Figure 94

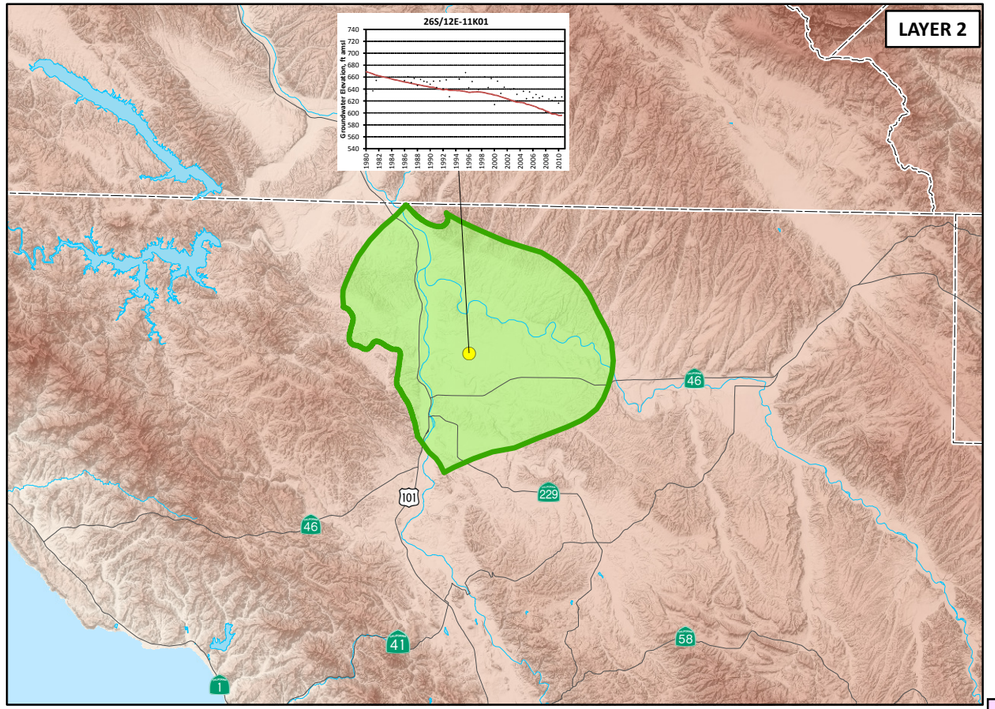
GIS_proj/co_slo_paso_robles_model/6_Fig_94_Hydrograph_CrestonSubarea_12-14.mxd

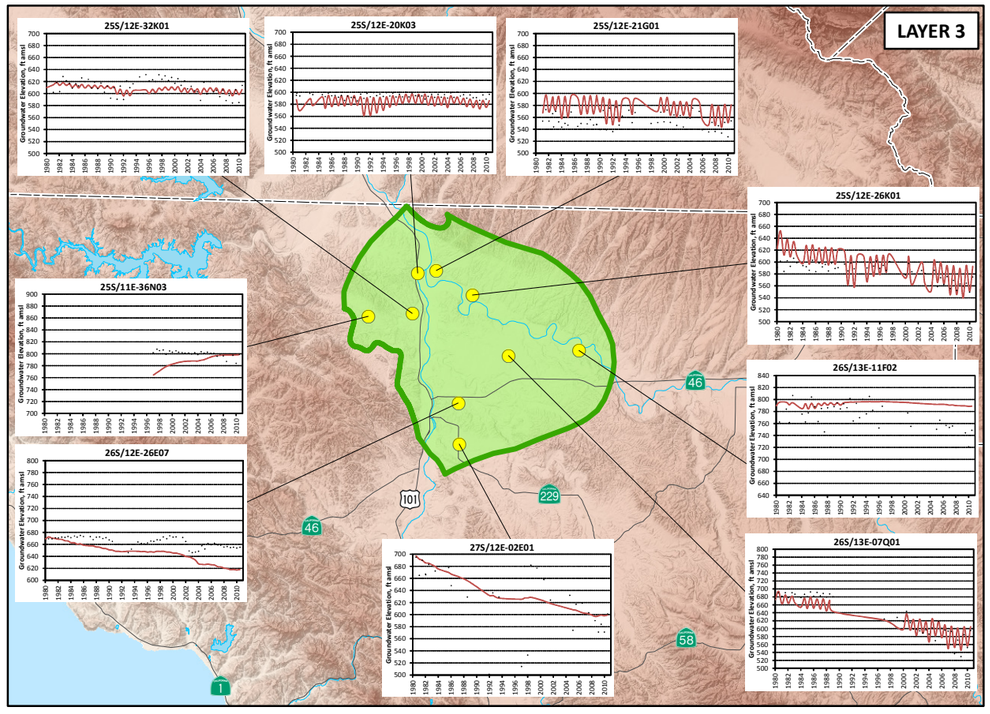
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

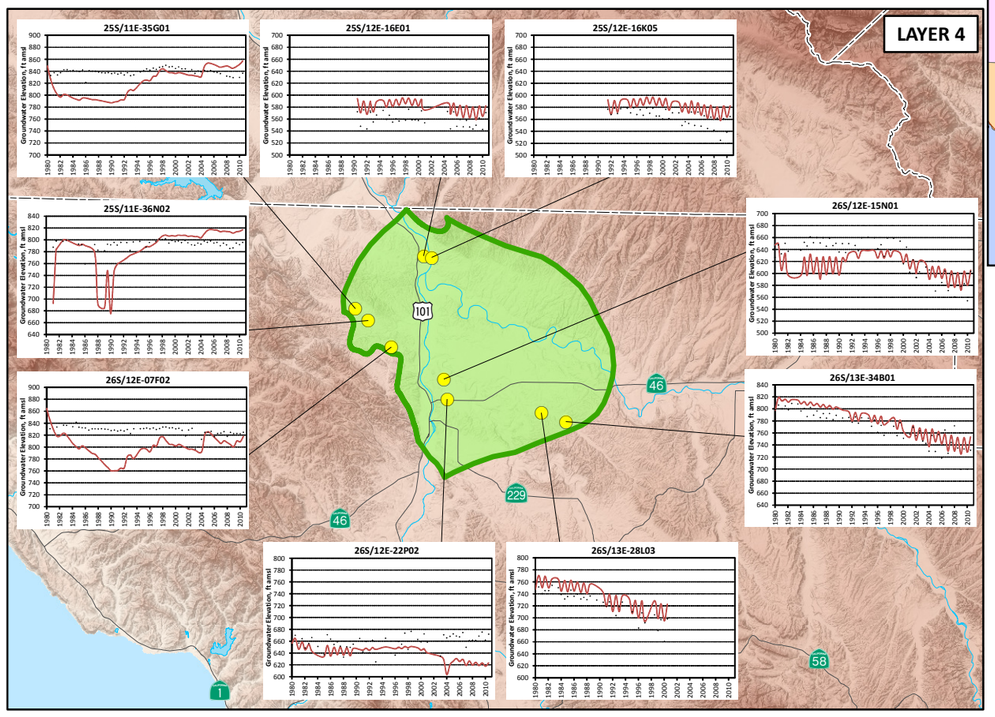
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

HYDROGRAPHS FOR RECALIBRATED BASIN MODEL ESTRELLA SUB-AREA





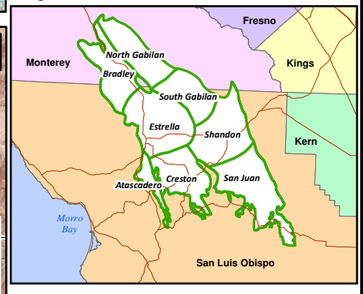




EXPLANATION

- Well Designation Within Sub-area
- Observed
- Model Generated
- Paso Robles Groundwater Basin with Sub-Area (Source: Fugro and Cleath, 2002)
- County Boundary

Regional Sub-Areas Inset



NORTH

0 4 8 Miles

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Figure 95

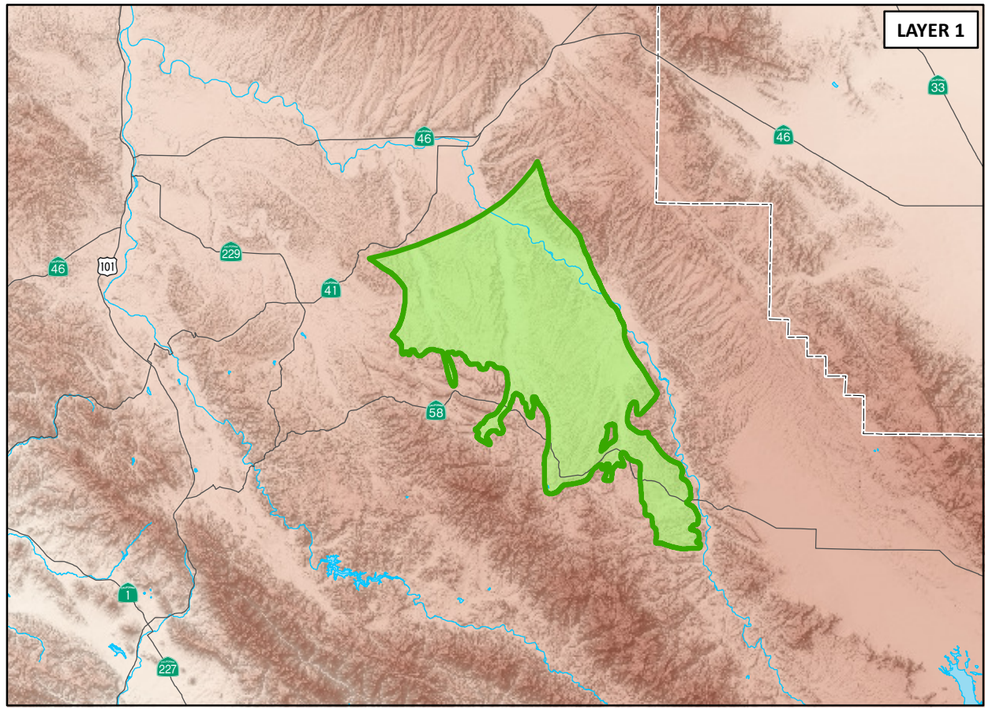
19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

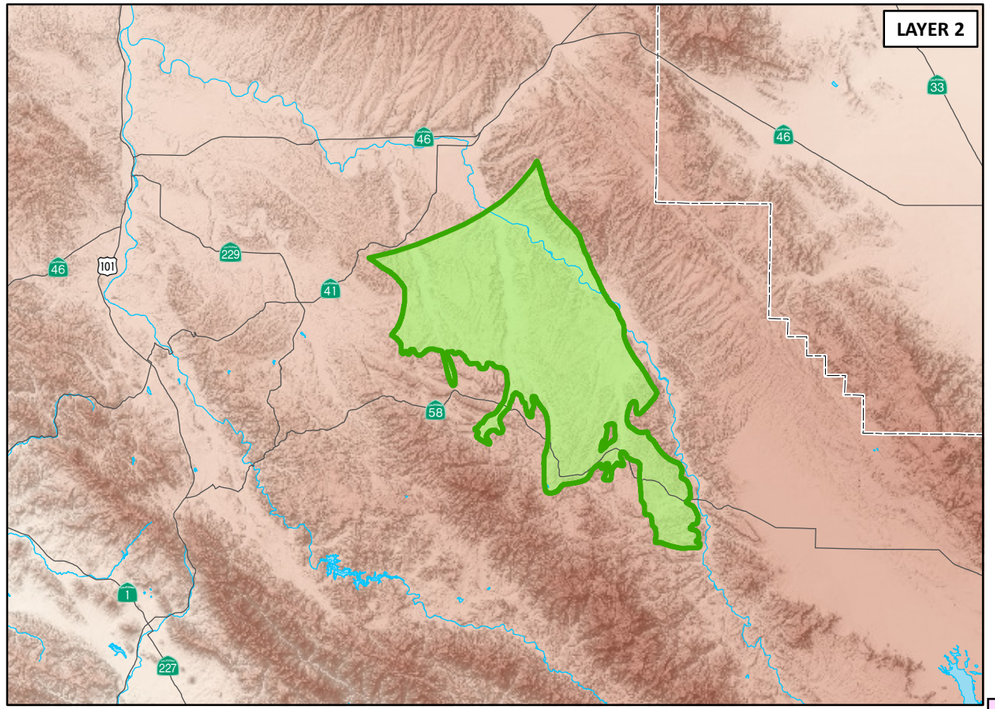
GIS_proj/co_slo_paso_robles_model/6_Fig_95_Hydrograph_EstrellaSubarea_12-14.mxd

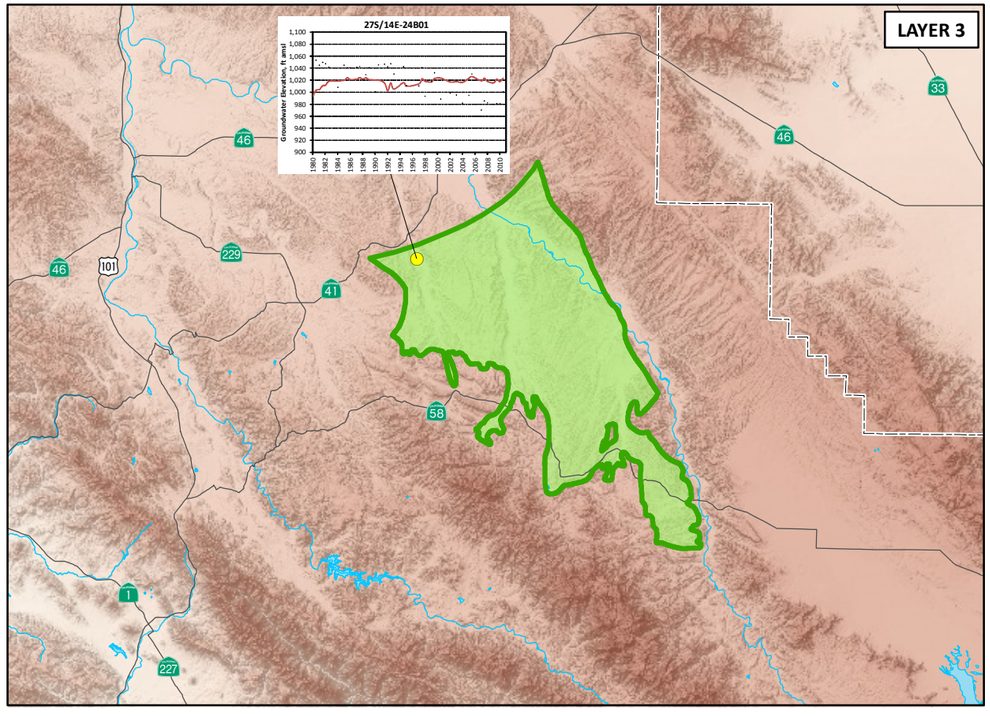
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

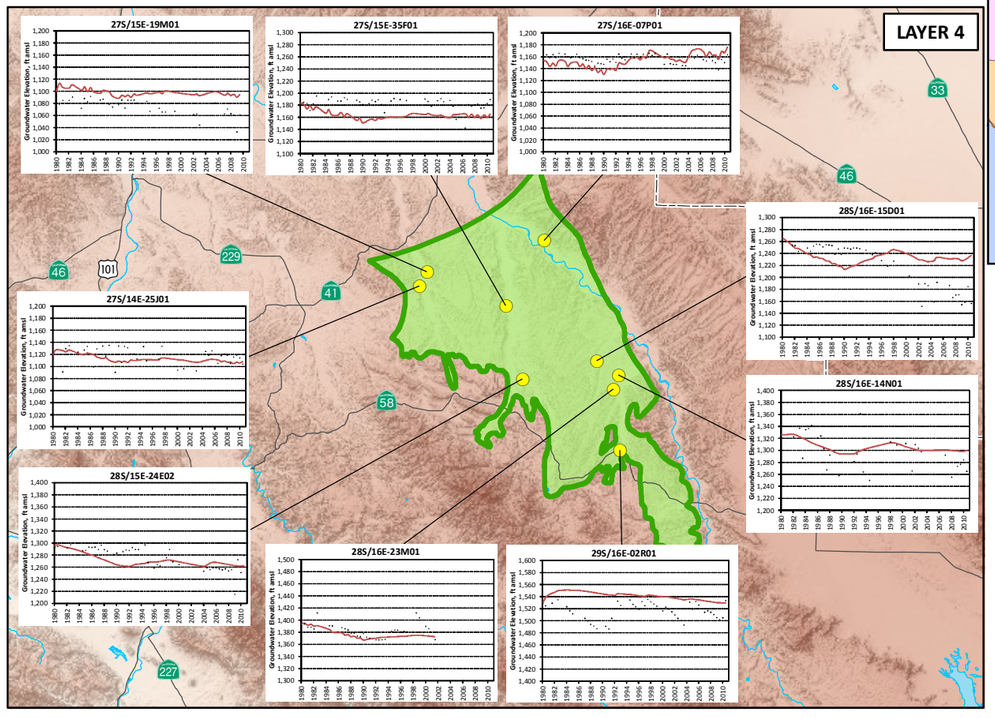
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

HYDROGRAPHS FOR RECALIBRATED BASIN MODEL SAN JUAN SUB-AREA





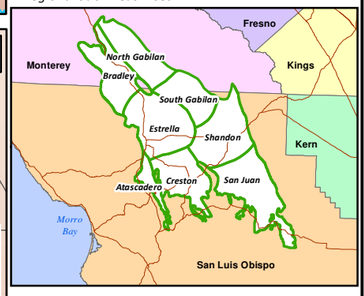




EXPLANATION

- Well Designation Within Sub-area
- Observed
- Model Generated
- Paso Robles Groundwater Basin with Sub-Area (Source: Fugro and Cleath, 2002)
- County Boundary

Regional Sub-Areas Inset



NORTH

0 4 8 Miles

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Figure 96

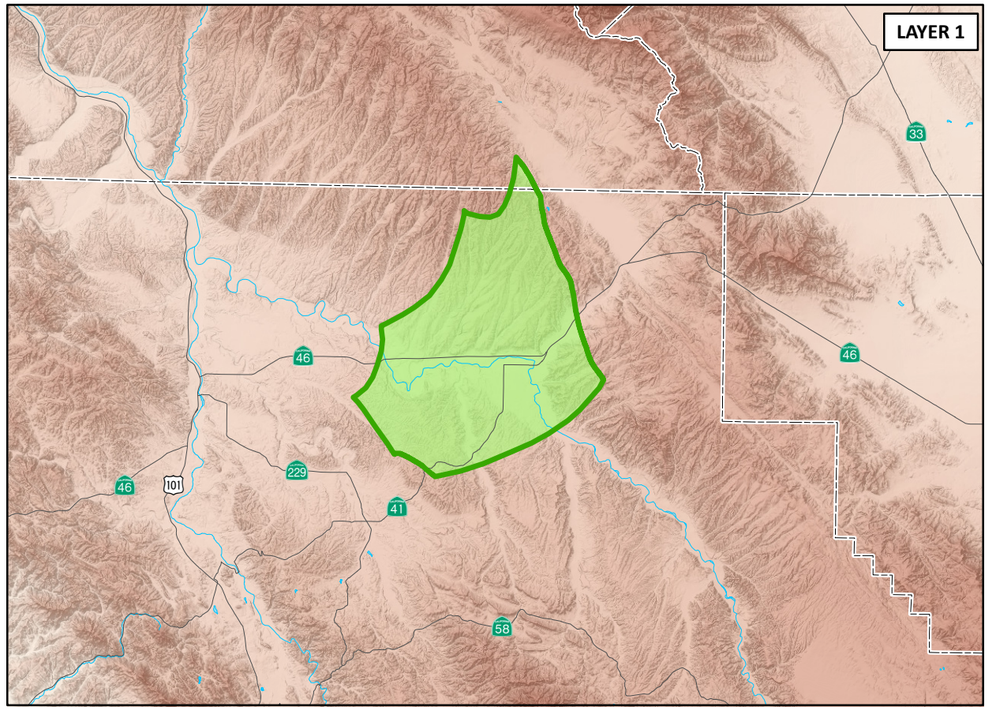
19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

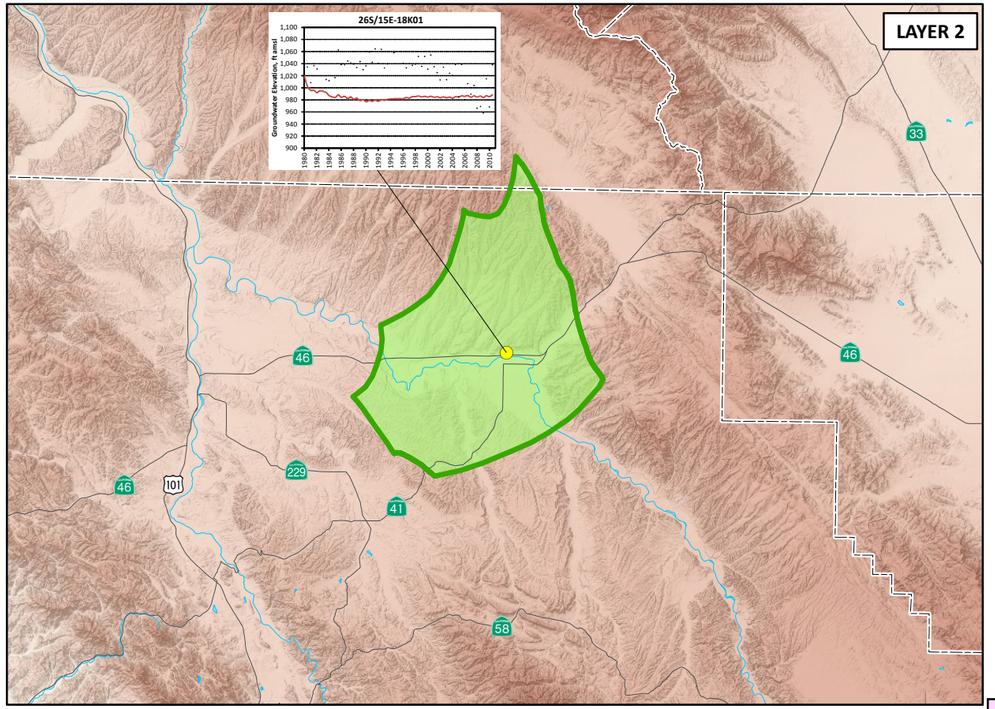
GIS_proj/co_slo_paso_robles_model/6_Fig_96_Hydrograph_SanJuanSubarea_12-14.mxd

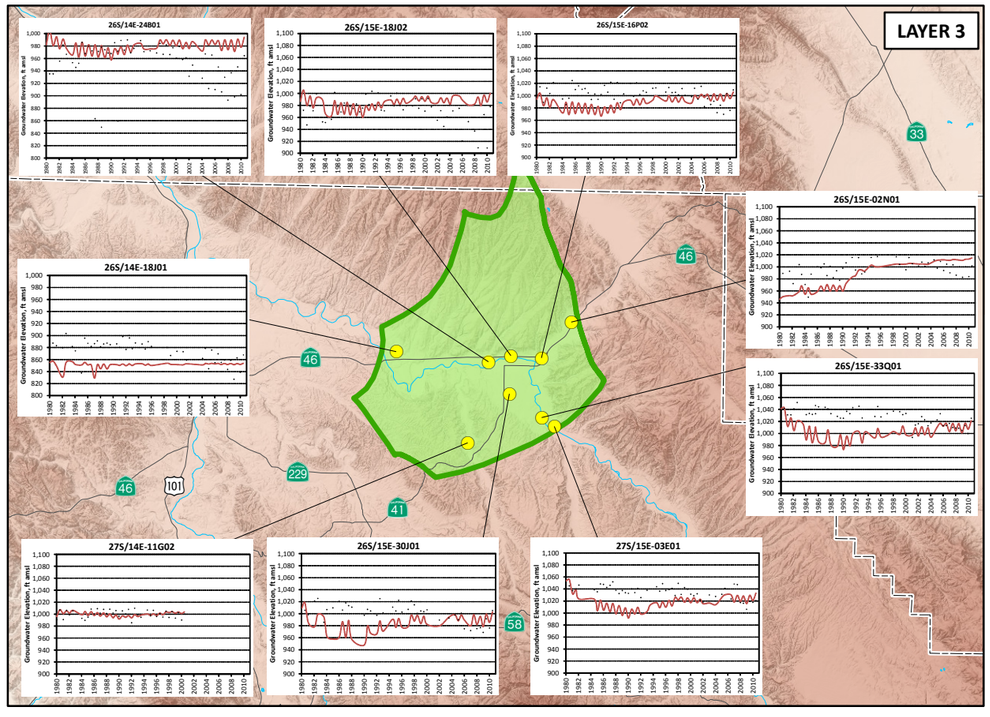
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

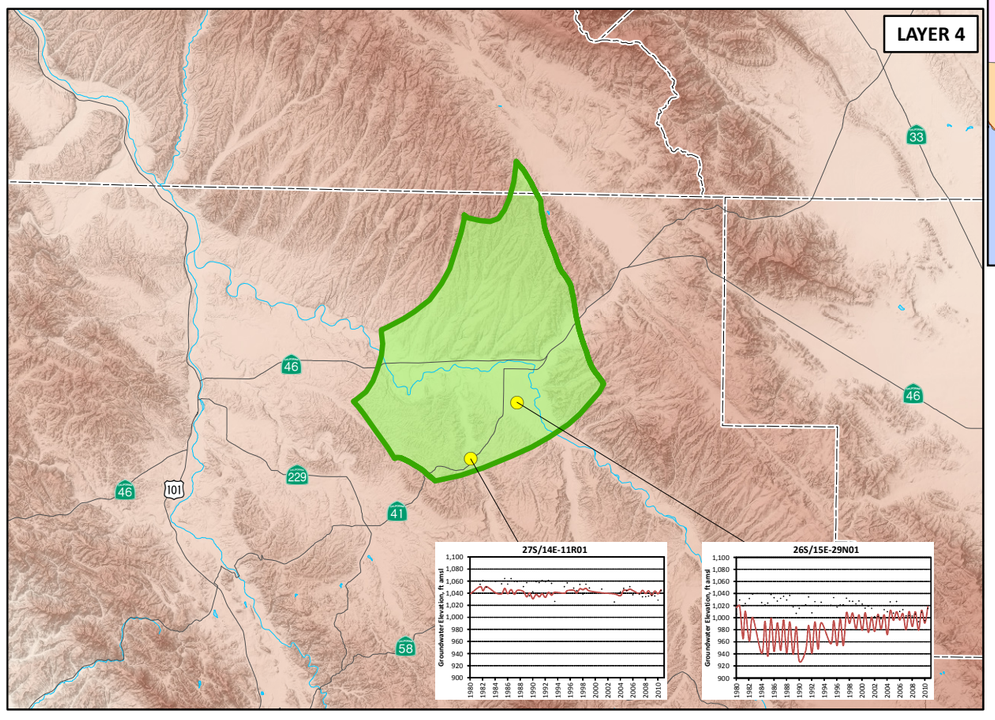
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

HYDROGRAPHS FOR RECALIBRATED BASIN MODEL SHANDON SUB-AREA









EXPLANATION

- Well Designation Within Sub-area
- Observed
- Model Generated
- Paso Robles Sub-Area Boundary (Source: Fugro and Cleath, 2002)
- County Boundary

Regional Sub-Areas Inset

NORTH

0 4 8 Miles

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Figure 97

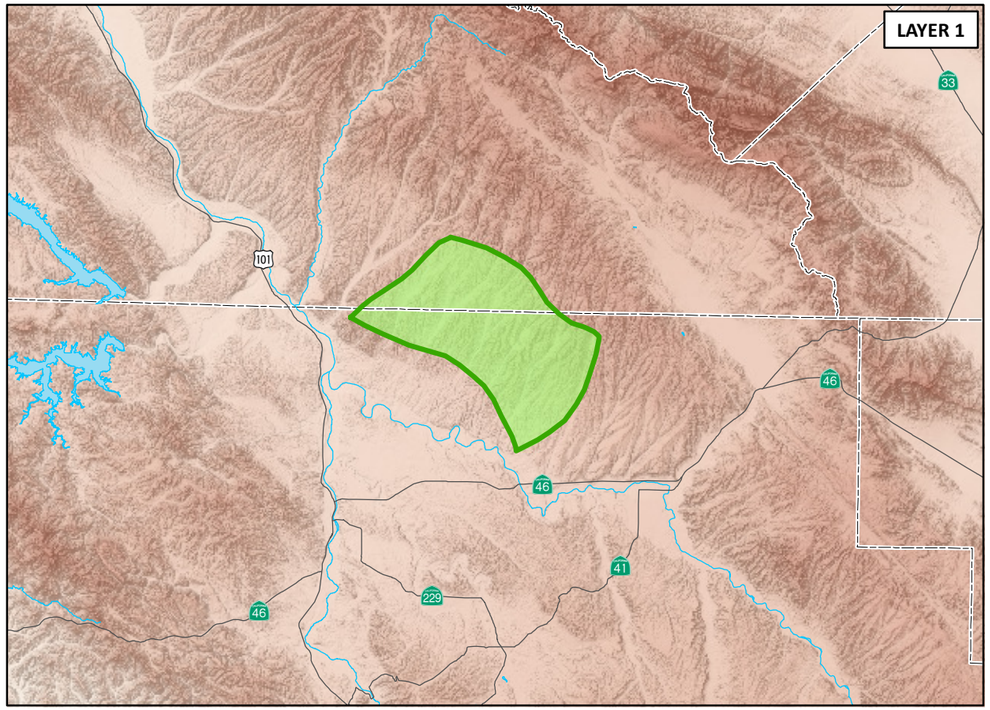
19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

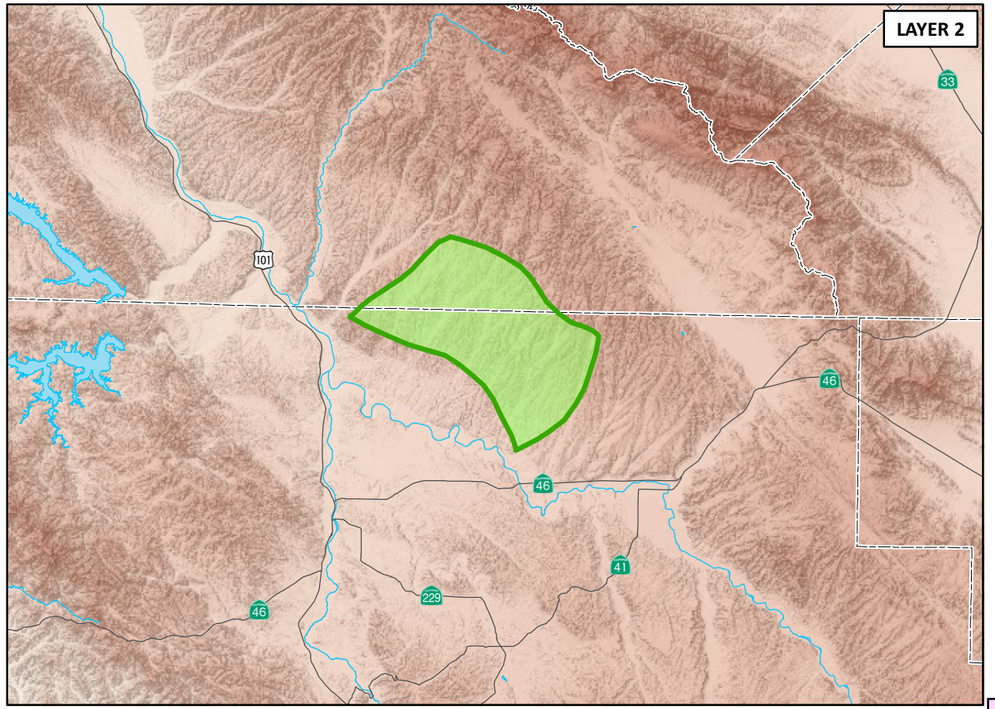
GIS_proj/co_slo_paso_robles_model/6_Fig_97_Hydrograph_ShandonSubarea_12-14.mxd

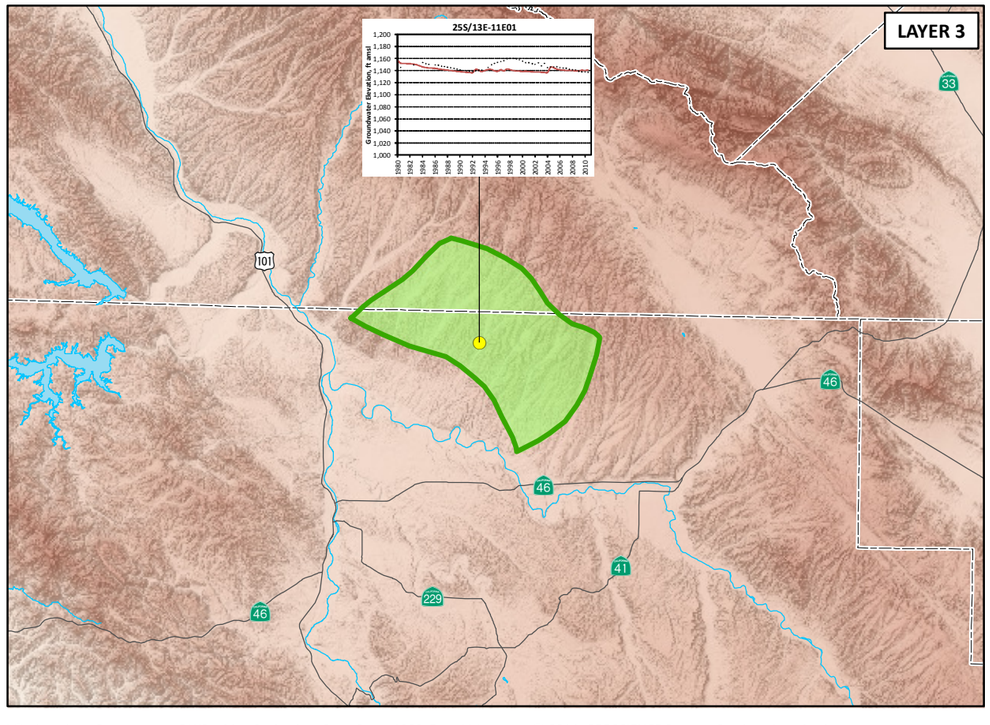
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

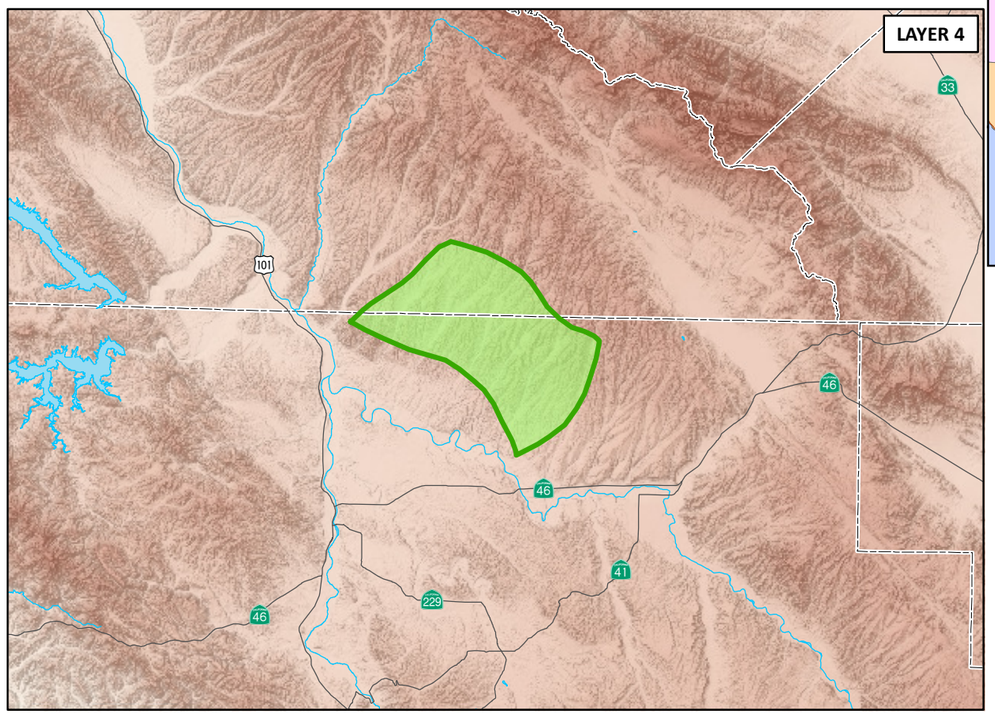
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

HYDROGRAPHS FOR RECALIBRATED BASIN MODEL SOUTH GABILAN SUB-AREA





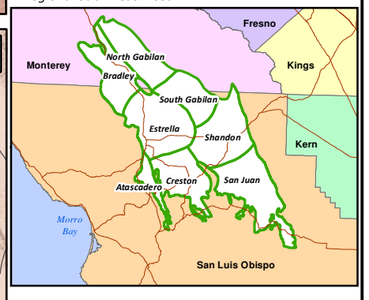




EXPLANATION

- Well Designation Within Sub-area
- Observed
- Model Generated
- Paso Robles Groundwater Basin with Sub-Area (Source: Fugro and Cleath, 2002)
- County Boundary

Regional Sub-Areas Inset



NORTH

0 4 8 Miles

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Figure 98

19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

GIS_proj/co_slo_paso_robles_model/6_Fig_98_Hydrograph_SouthGabilanSubarea_12-14.mxd

Comparison of Measured Versus Model-Calculated Groundwater Elevations
Transient Model Calibration (Water Years 1981-2011)

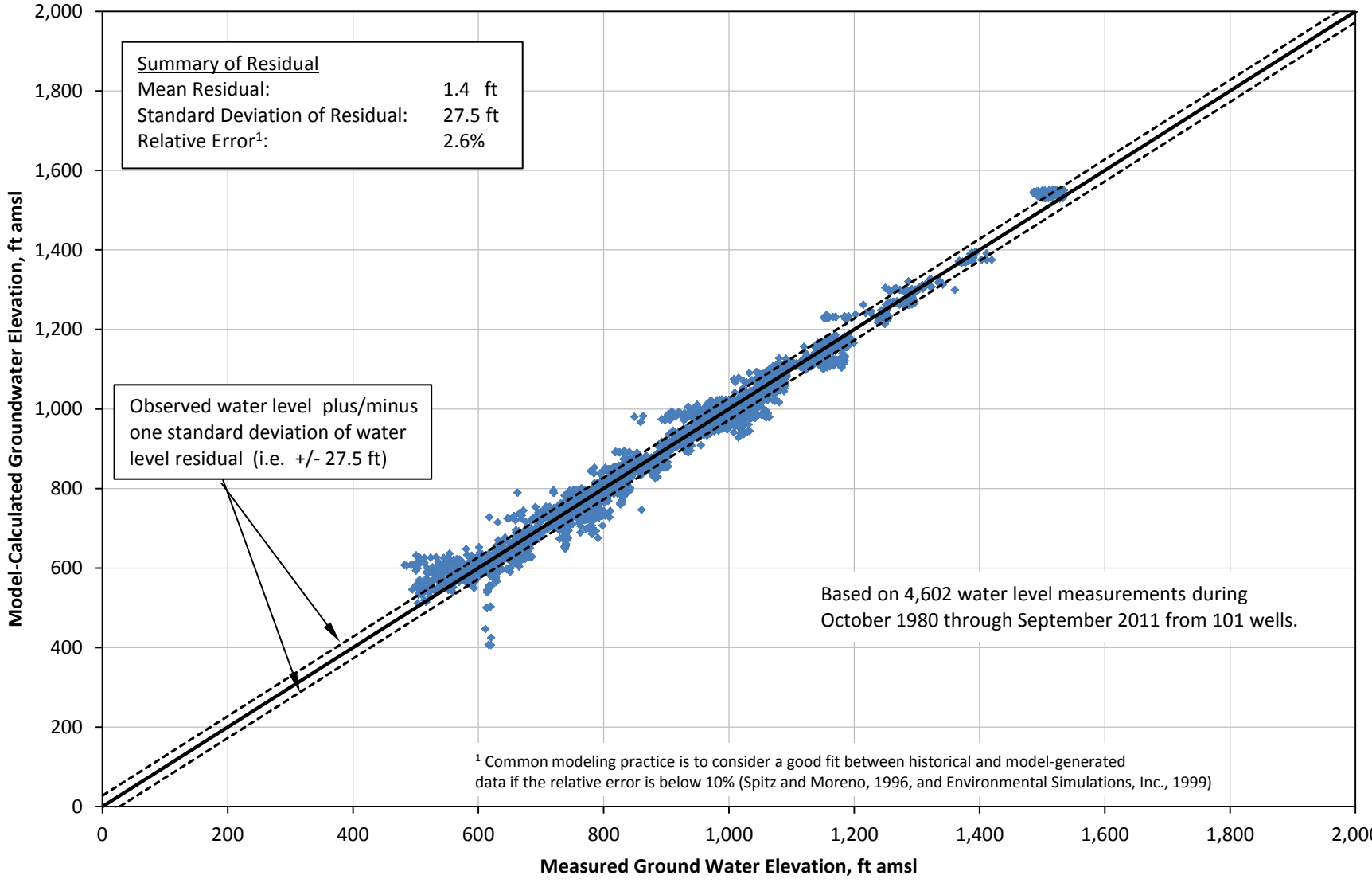


Figure 99

Temporal Distribution of Groundwater Level Residuals (Water Years 1981-2011)

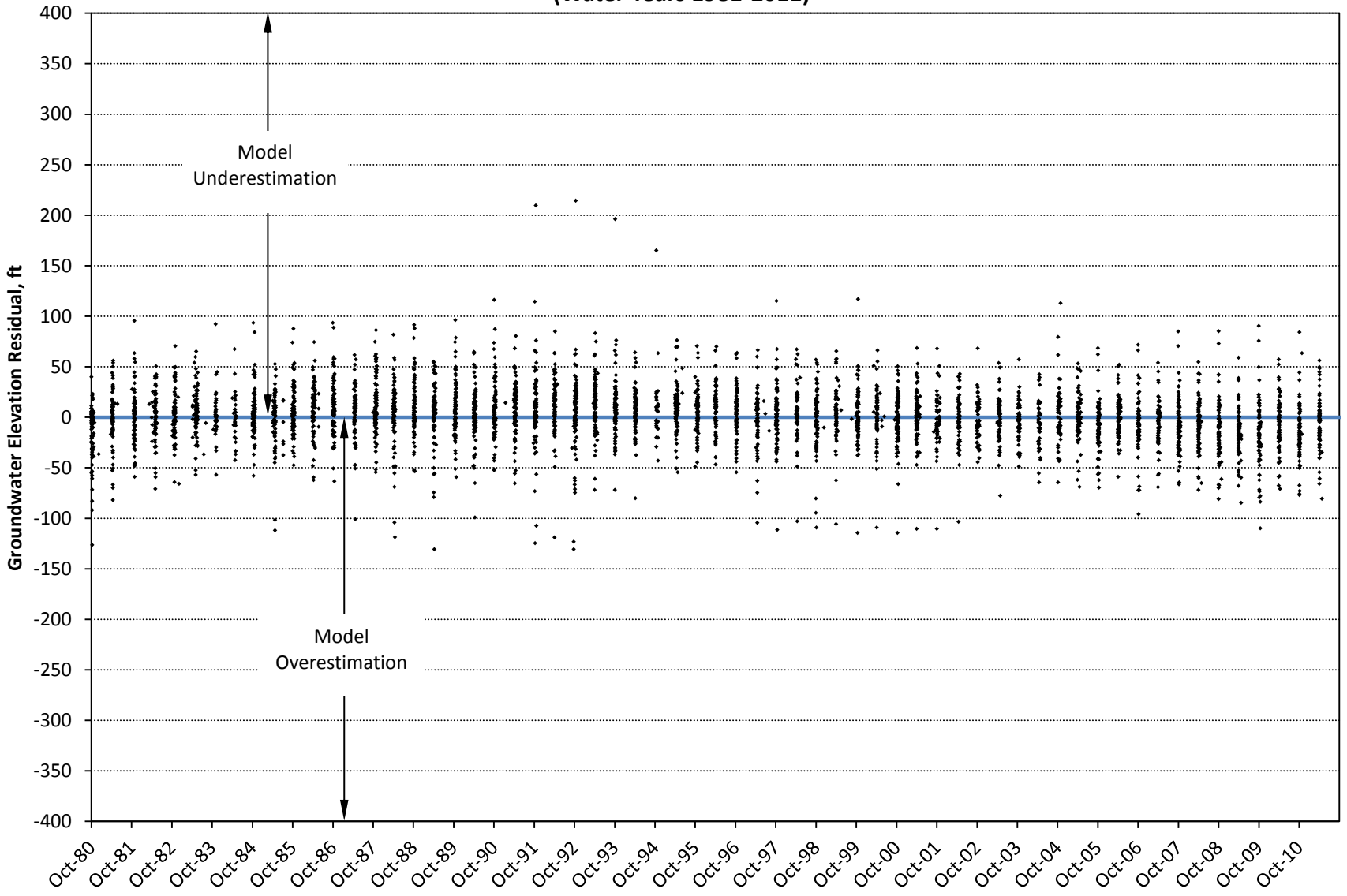


Figure 100

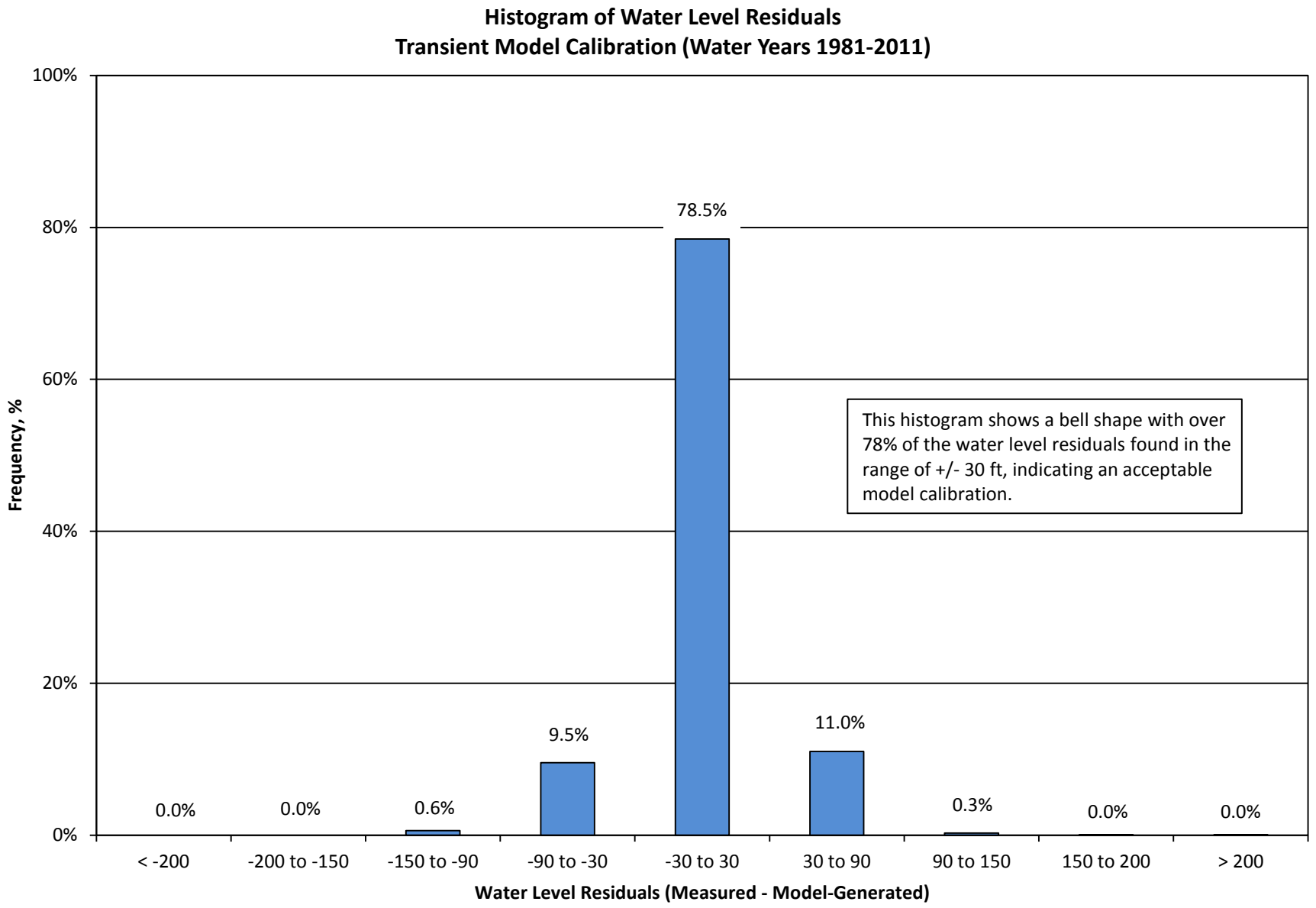

Histogram of Water Level Residuals
Transient Model Calibration (Water Years 1981-2011)
100%
80%
60%
40%
20%
0%
Frequency, %
78.5%
11.0%
9.5%
0.6%
0.3%
0.0%
0.0%
0.0%
0.0%
This histogram shows a bell shape with over 78% of the water level residuals found in the range of +/- 30 ft, indicating an acceptable model calibration.
< -200
-200 to -150
-150 to -90
-90 to -30
-30 to 30
30 to 90
90 to 150
150 to 200
> 200
Water Level Residuals (Measured - Model-Generated)

Figure 101

Normalized Sensitivity of Selected Model Parameters

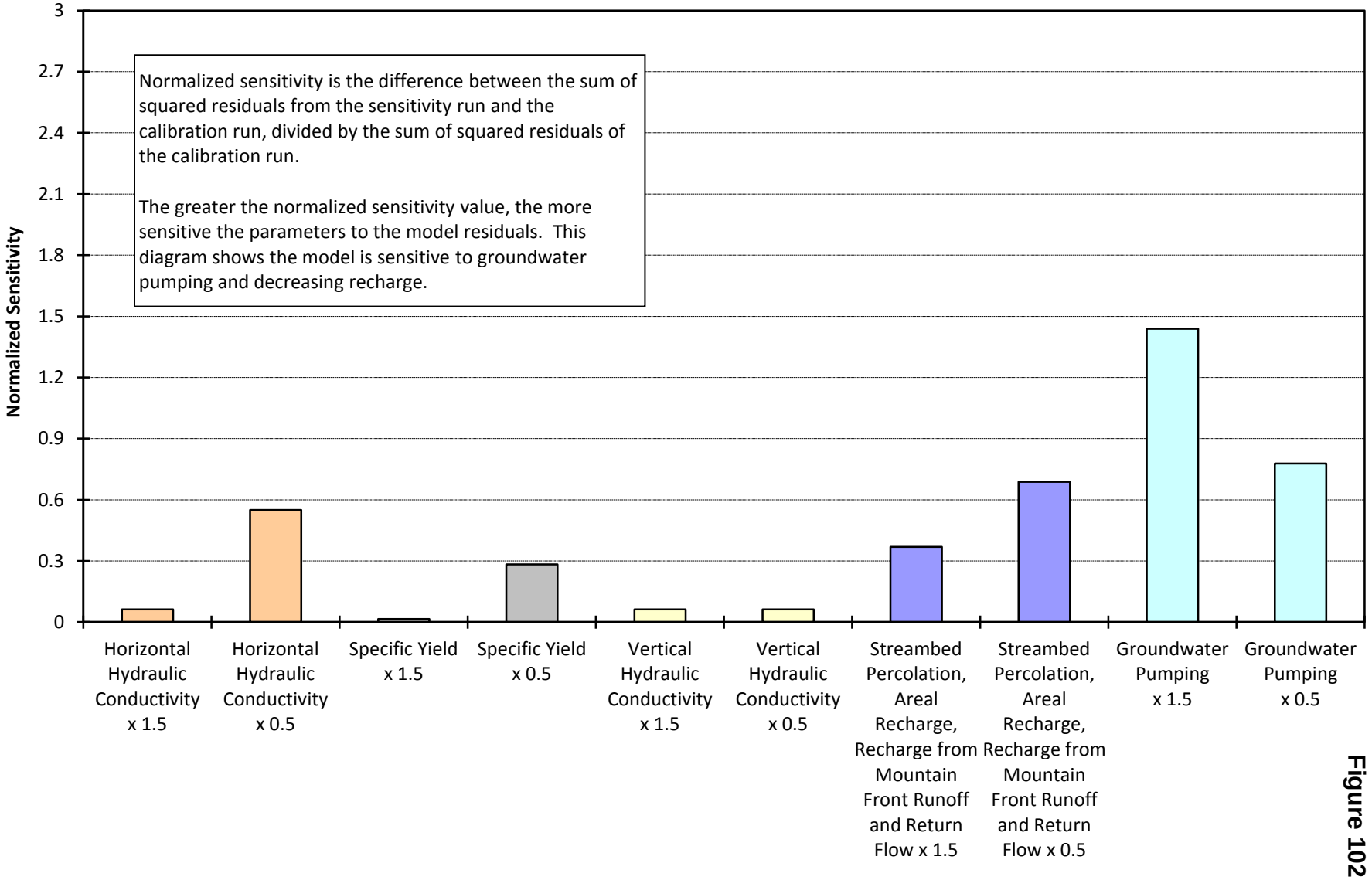


Figure 102

Annual Precipitation and Cumulative Departure from Mean Annual Precipitation
Paso Robles Station 046730 (Water Years 1907-2011)

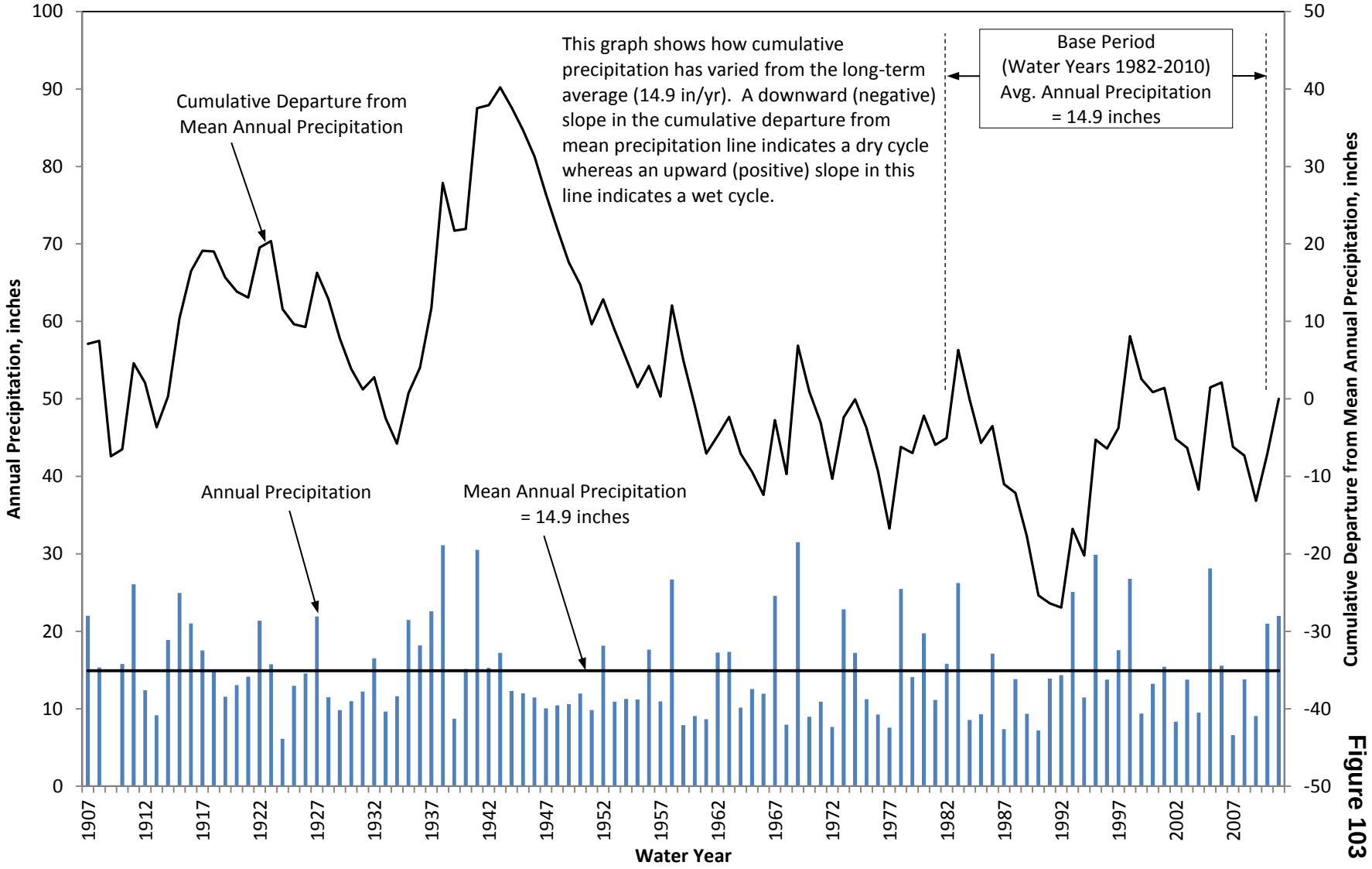
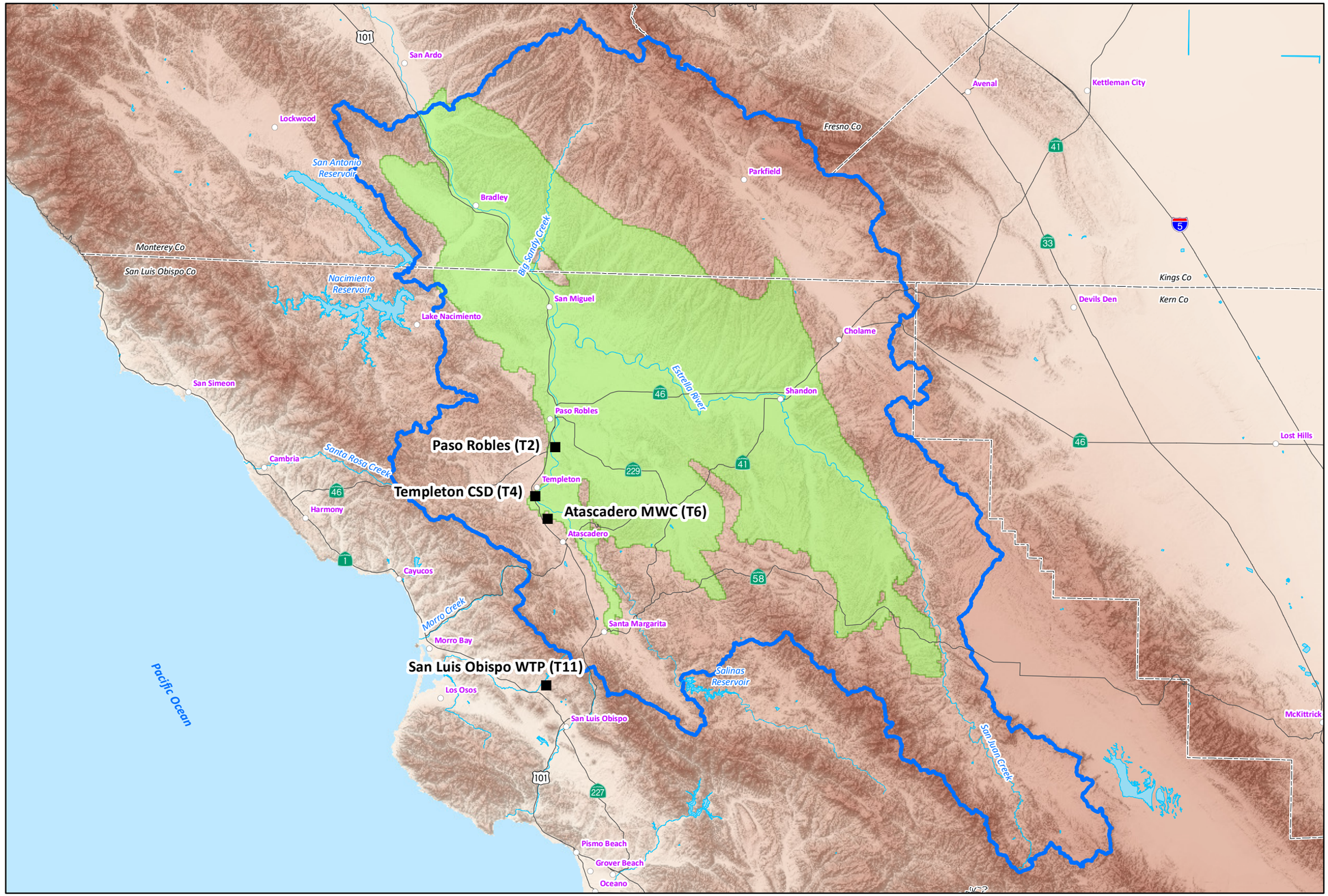


Figure 103

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE



NACIMIENTO WATER PROJECT TURNOUT LOCATIONS

EXPLANATION

- Nacimiento Water Project Turnout
- Paso Robles Groundwater Basin Model Active Area (Source: Fugro, ETIC Engineers and Cleath, 2005)
- Paso Robles Area Watershed Boundary
- County Boundary

19-Dec-14

Prepared by: DWB. Map Projection: State Plane 1983, Zone V.

NORTH

0 5 10 20 Miles

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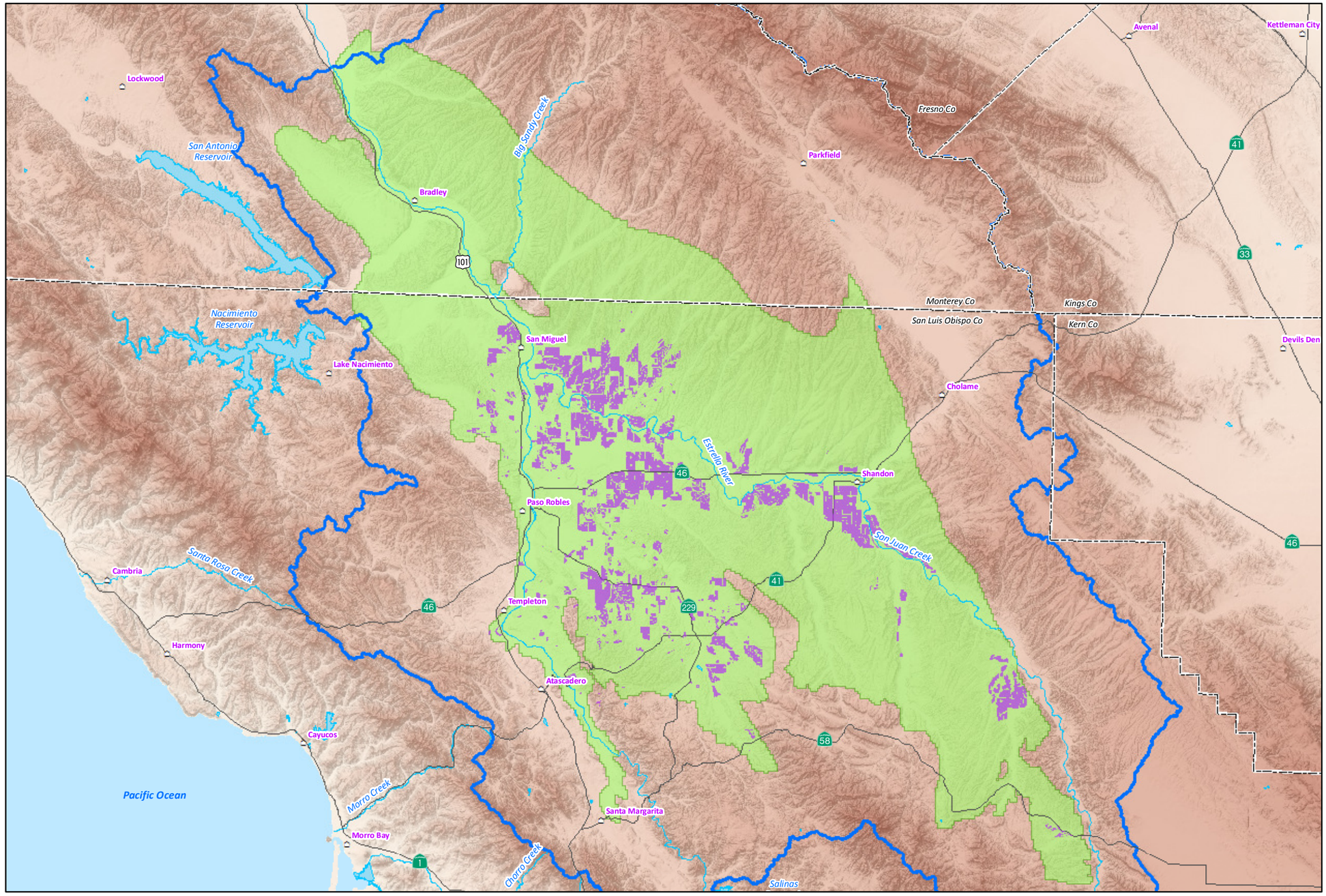
Figure 104

GIS_proj/co_slo_paso_robles_model/6_Fig_104_nacimiento_turnout_locs_12-14.mxd

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

PROJECTED 2013 VINEYARDS IN THE PASO ROBLES GROUNDWATER BASIN



EXPLANATION

Projected 2013 Vineyards in the Paso Robles Groundwater Basin (Source: SLOCFCWCD, 2013)

Vineyard

Paso Robles Groundwater Basin Model Active Area (Source: Fugro, ETIC Engineers and Cleath, 2005)

Paso Robles Area Watershed Boundary

County Boundary

19-Dec-14

Prepared by: DWB. Map Projection: State Plane 1983, Zone V.

NORTH

0 2.5 5 10 Miles

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Figure 105

GIS_proj/co_slo_paso_robles_model/6_Fig_105_2013_vineyard_areas_12-14.mxd

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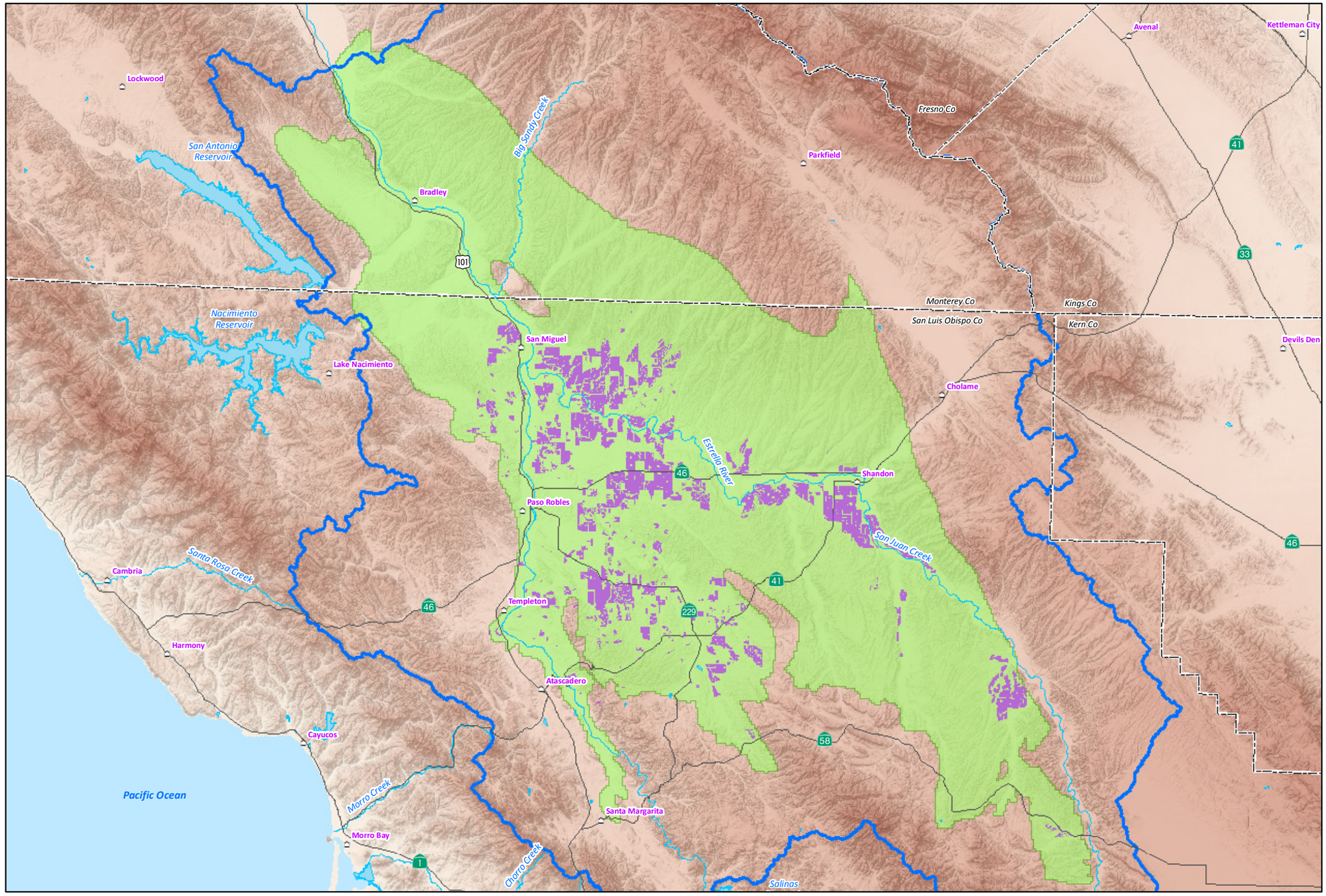
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE



PROJECTED 2014 VINEYARDS IN THE PASO ROBLES GROUNDWATER BASIN

EXPLANATION

Projected 2014 Vineyards in the Paso Robles Groundwater Basin (Source: SLOCFCWCD, 2013)

- Vineyard
- Paso Robles Groundwater Basin Model Active Area (Source: Fugro, ETIC Engineers and Cleath, 2005)
- Paso Robles Area Watershed Boundary
- County Boundary

19-Dec-14

Prepared by: DWB. Map Projection: State Plane 1983, Zone V.

NORTH

0 2.5 5 10 Miles

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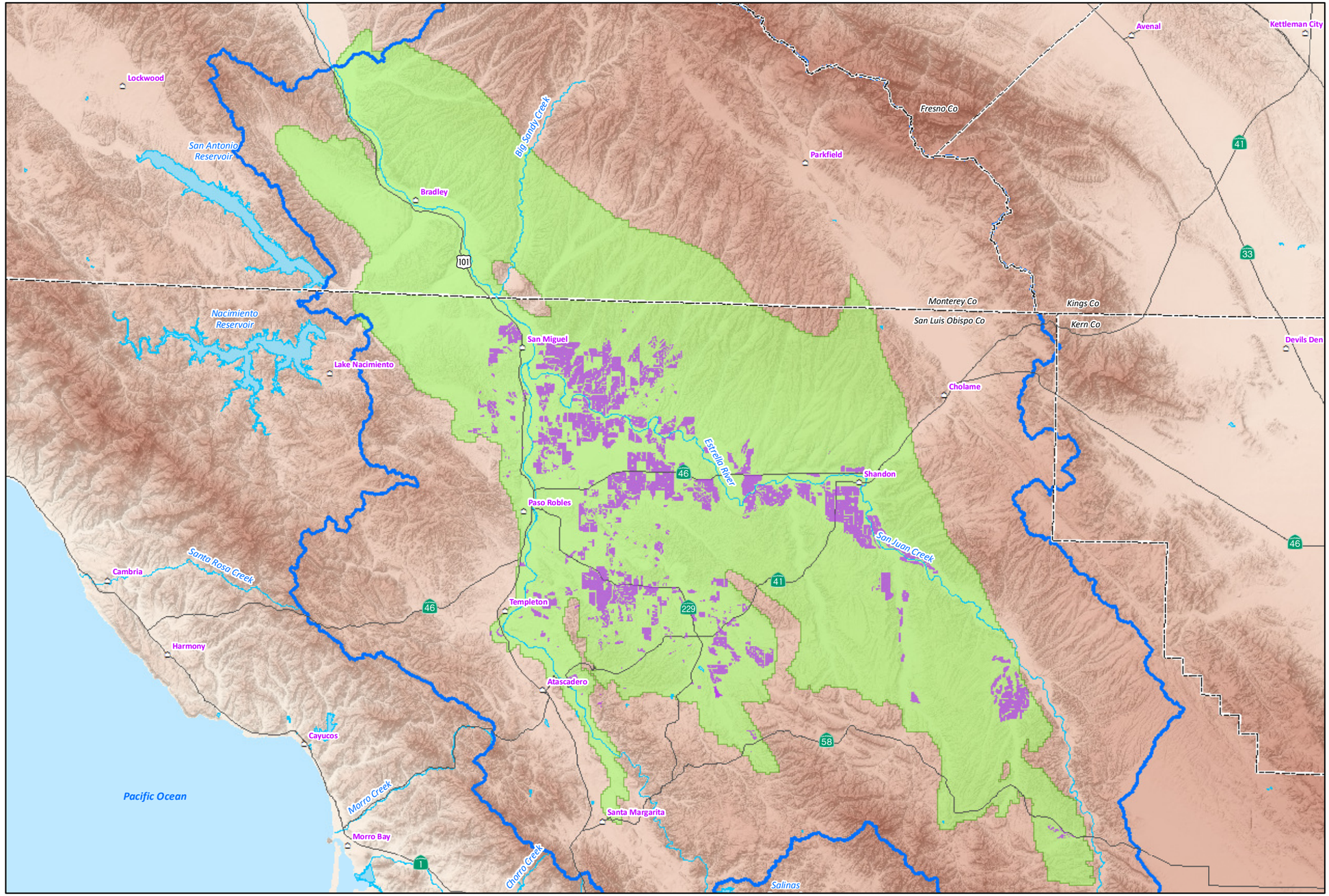
Figure 106

GIS_proj/co_slo_paso_robles_model/6_Fig_106_2014_vineyard_areas_12-14.mxd

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE



PROJECTED 2017 VINEYARDS IN THE PASO ROBLES GROUNDWATER BASIN

EXPLANATION

Projected 2017 Vineyards in the Paso Robles Groundwater Basin (Source: SLOCFCWCD, 2013)

- Vineyard
- Paso Robles Groundwater Basin Model Active Area (Source: Fugro, ETIC Engineers and Cleath, 2005)
- Paso Robles Area Watershed Boundary
- County Boundary

19-Dec-14

Prepared by: DWB. Map Projection: State Plane 1983, Zone V.

NORTH

0 2.5 5 10 Miles

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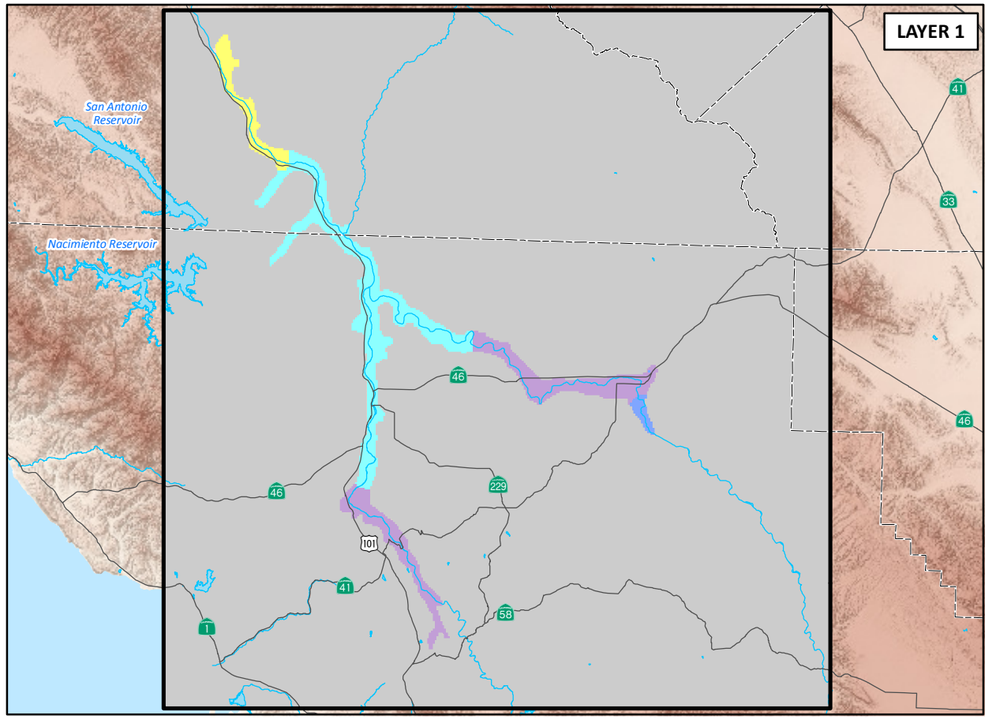
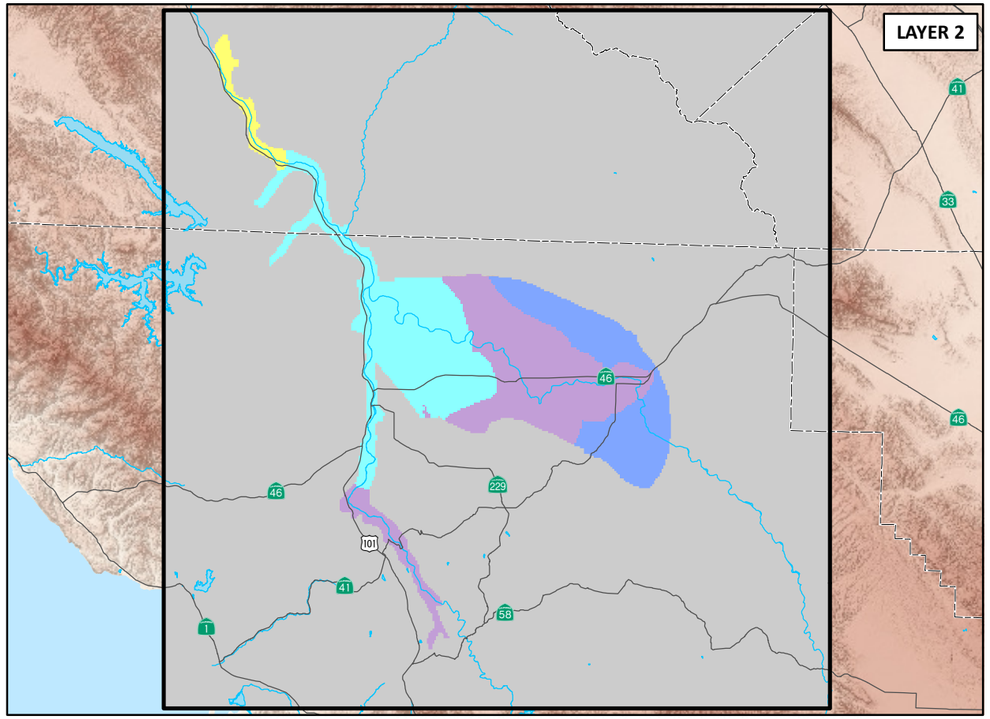
Figure 107

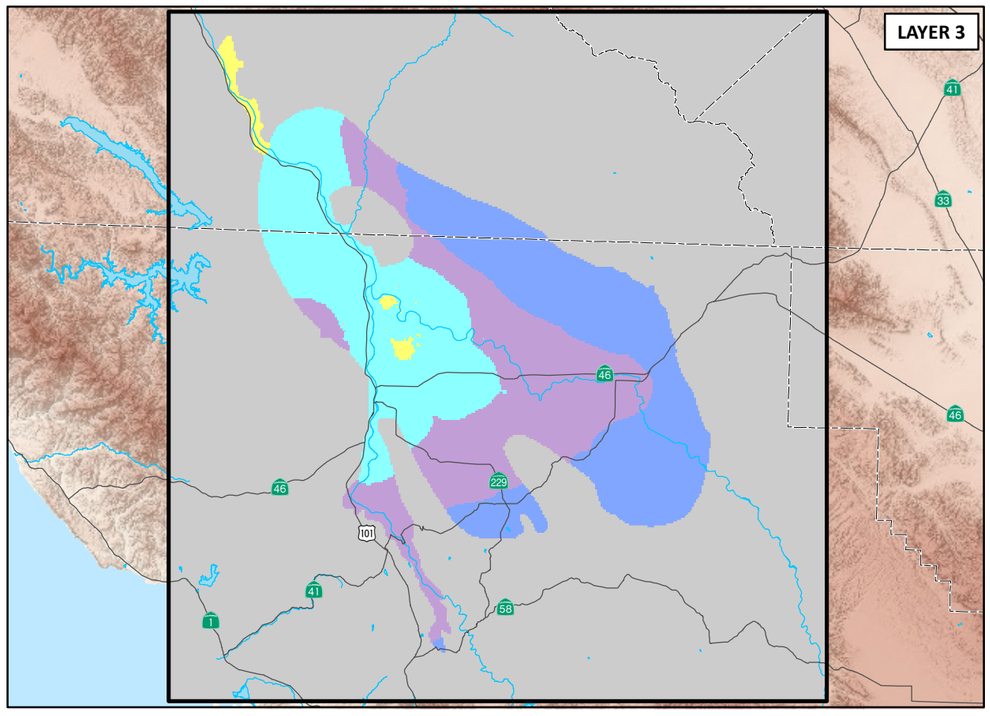
GIS_proj/co_slo_paso_robles_model/6_Fig_107_2017_vineyard_areas_12-14.mxd

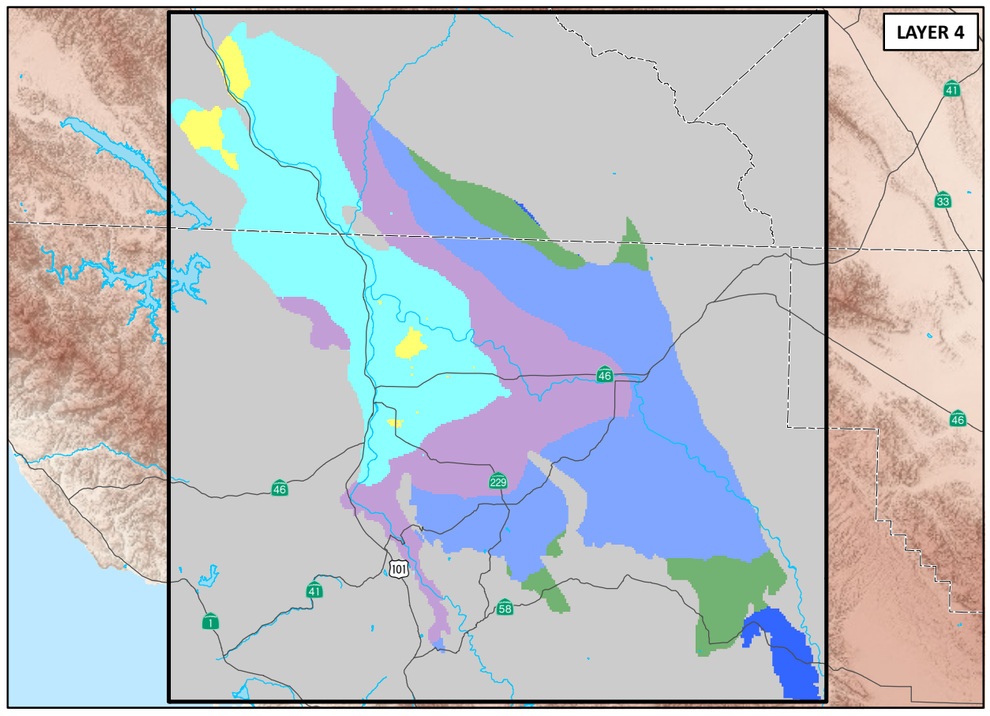
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE









INITIAL GROUNDWATER ELEVATIONS USED FOR PREDICTIVE MODEL RUNS END OF TRANSIENT CALIBRATION (SEPTEMBER 2011)

EXPLANATION

Initial Groundwater Elevation (ft amsl)

- 400 - 500
- 500 - 750
- 750 - 1,000
- 1,000 - 1,250
- 1,250 - 1,500
- 1,500 - 1,750

Paso Robles Groundwater Basin Model Domain

Paso Robles Groundwater Basin Model Inactive Area

(Source: Fugro, ETIC Engineers and Cleath, 2005)

County Boundary

NORTH

0 5 10 Miles

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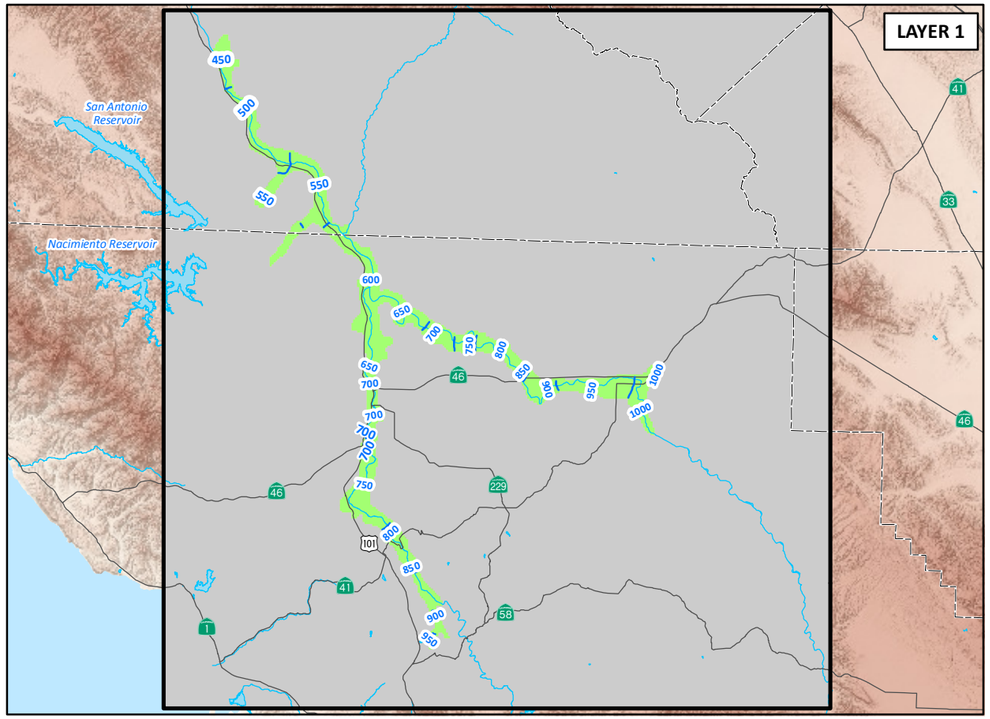
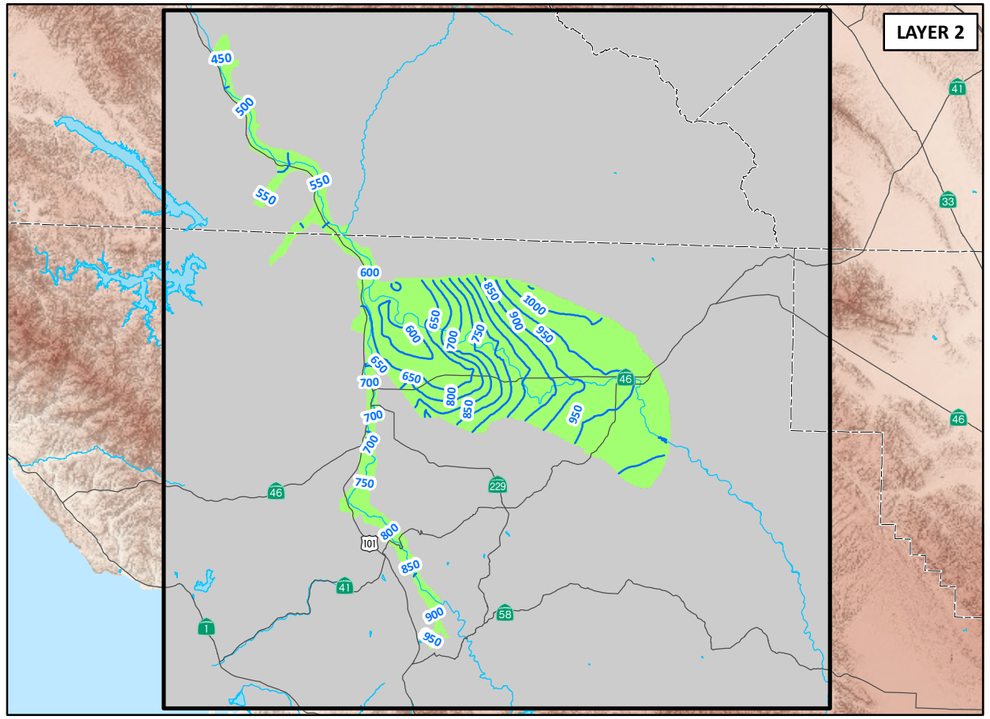
Figure 108

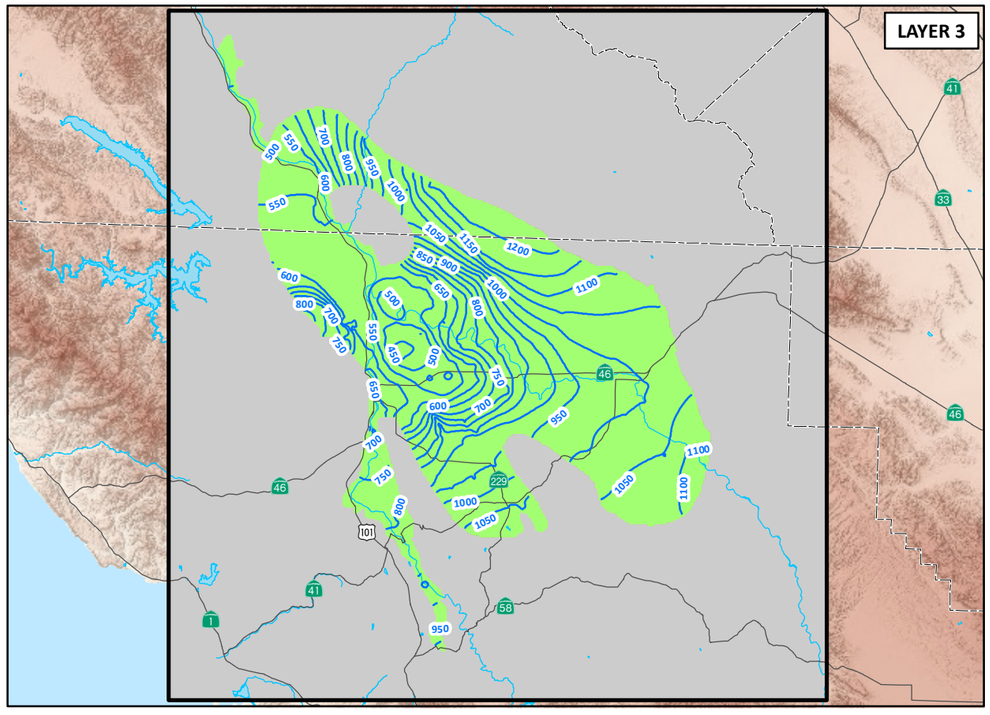
GIS_proj/co_slo_paso_robles_model/6_Fig_108_gw_elev_transient_calib_4panel_12-14.mxd

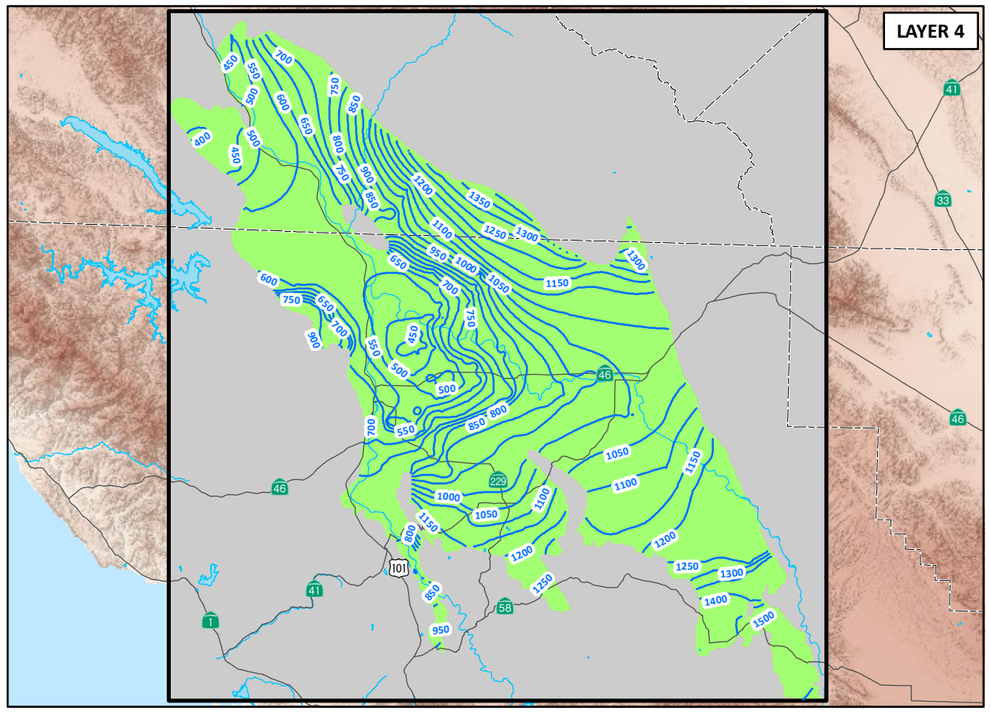
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE









MODEL-GENERATED GROUNDWATER ELEVATIONS IN SEPTEMBER 2040 MODEL RUN 1

EXPLANATION

— 1150 — Groundwater Elevations (ft amsl)

Paso Robles Groundwater Basin Model Domain

Paso Robles Groundwater Basin Model Active Area

Paso Robles Groundwater Basin Model Inactive Area

(Source: Fugro, ETIC Engineers and Cleath, 2005)

------ County Boundary

NORTH

0 5 10 Miles

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Figure 109

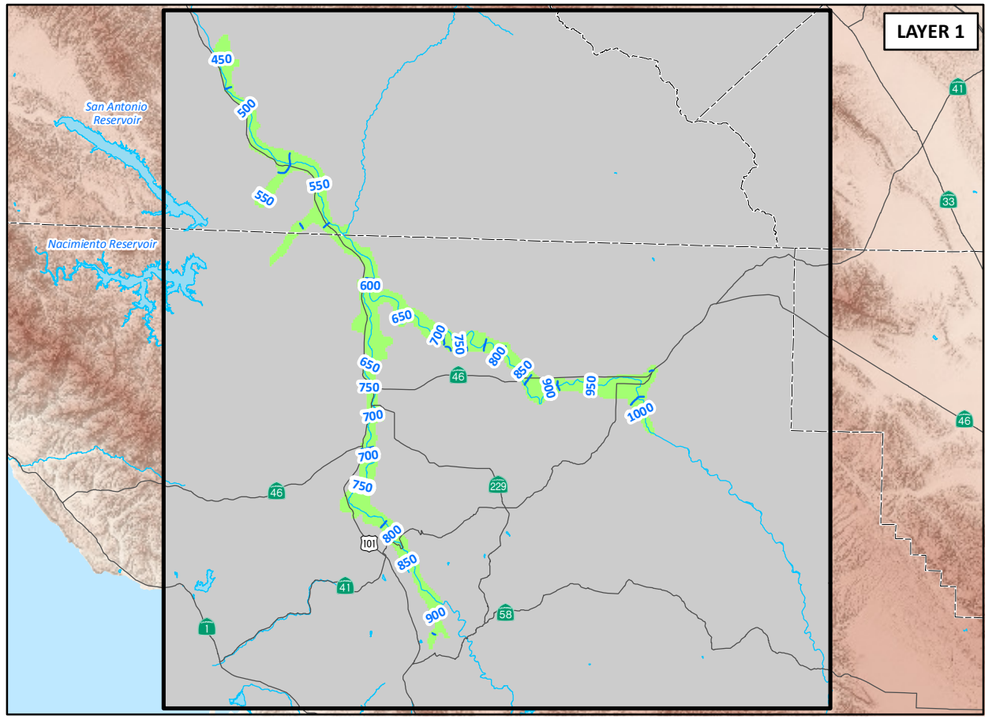
19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

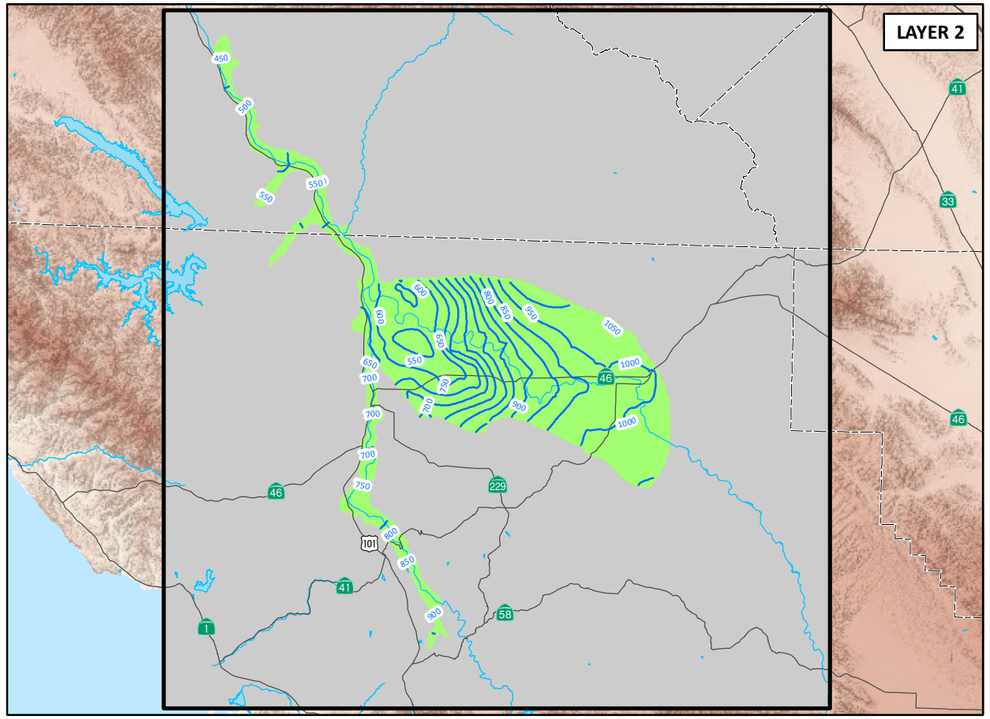
GIS_proj/co_slo_paso_robles_model/6_Fig_109_scen1_gw_elev_2040_4panel_12-14.mxd

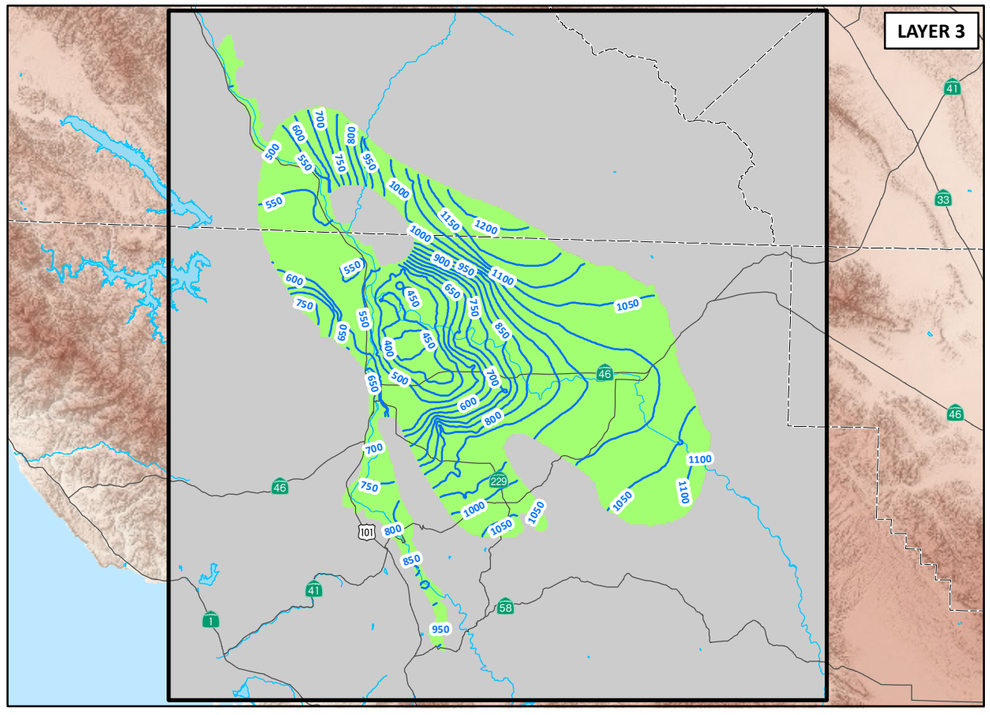
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

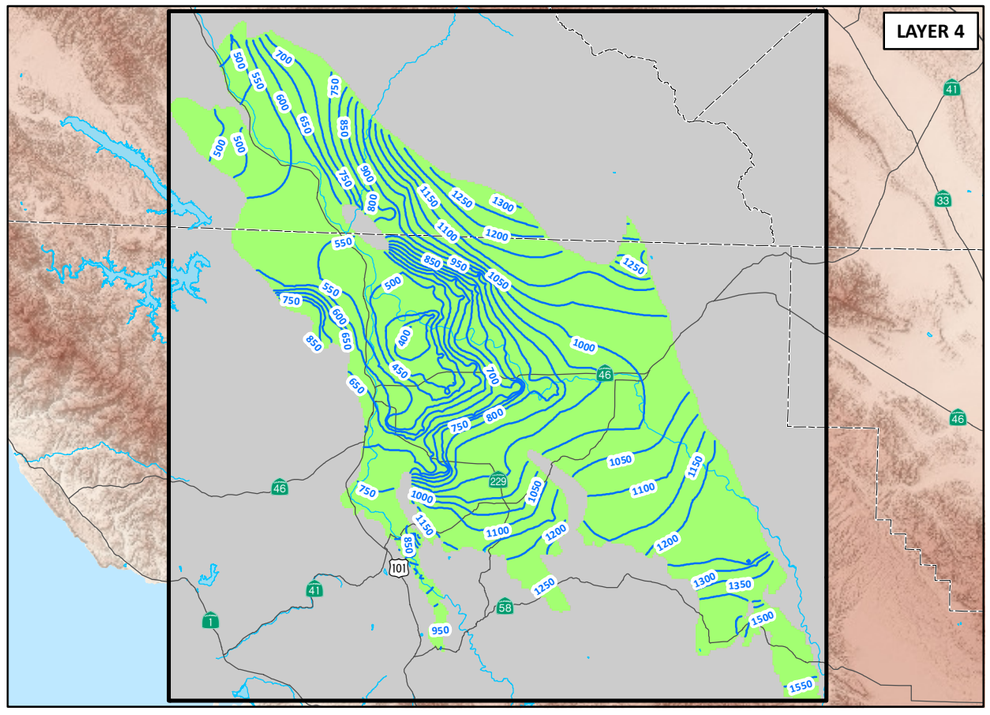
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

MODEL-GENERATED GROUNDWATER ELEVATIONS IN SEPTEMBER 2040 MODEL RUN 2









EXPLANATION

1150 — Groundwater Elevations (ft amsl)

Paso Robles Groundwater Basin Model Domain

Paso Robles Groundwater Basin Model Active Area

Paso Robles Groundwater Basin Model Inactive Area

(Source: Fugro, ETIC Engineers and Cleath, 2005)

County Boundary

NORTH

0 5 10 Miles

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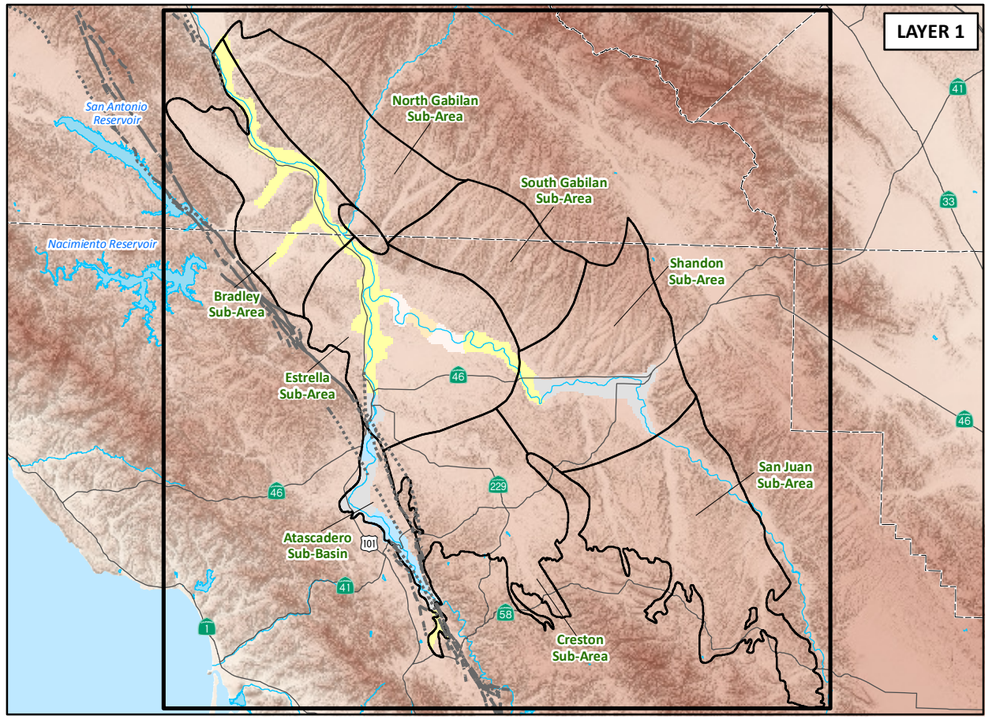
Figure 110

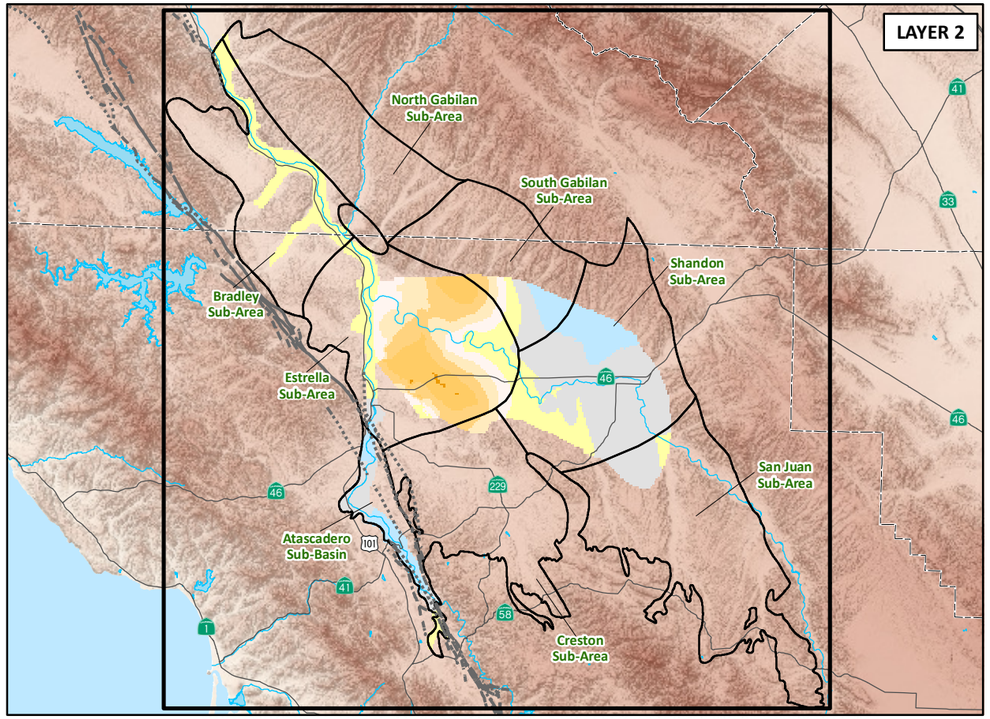
19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

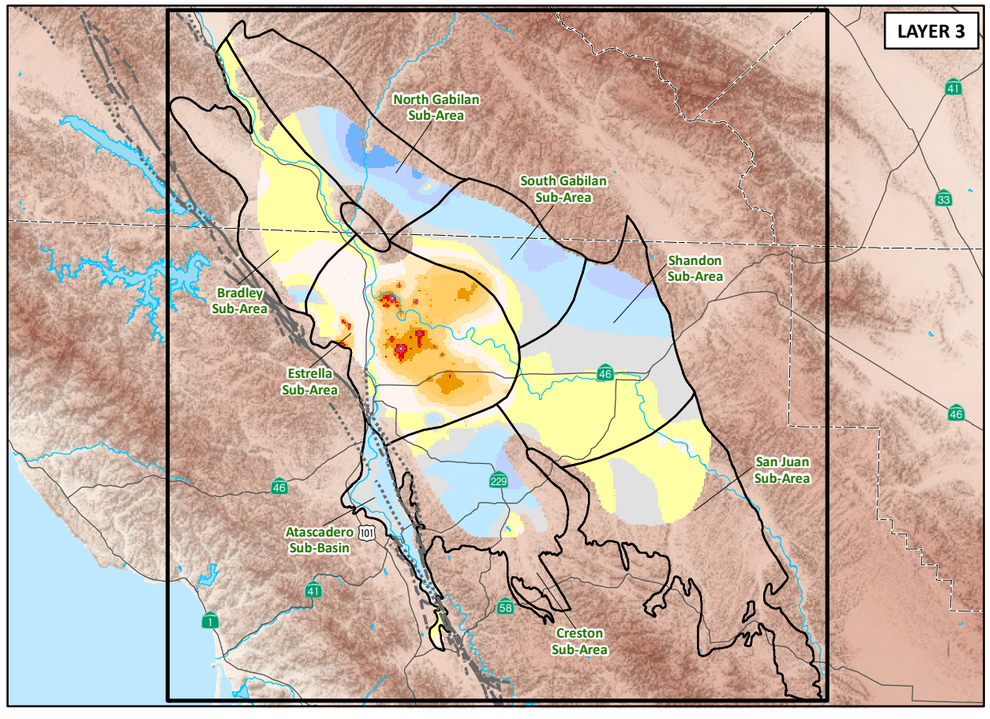
GIS_proj/co_slo_paso_robles_model/6_Fig_110_scen2_gw_elev_2040_4panel_12-14.mxd

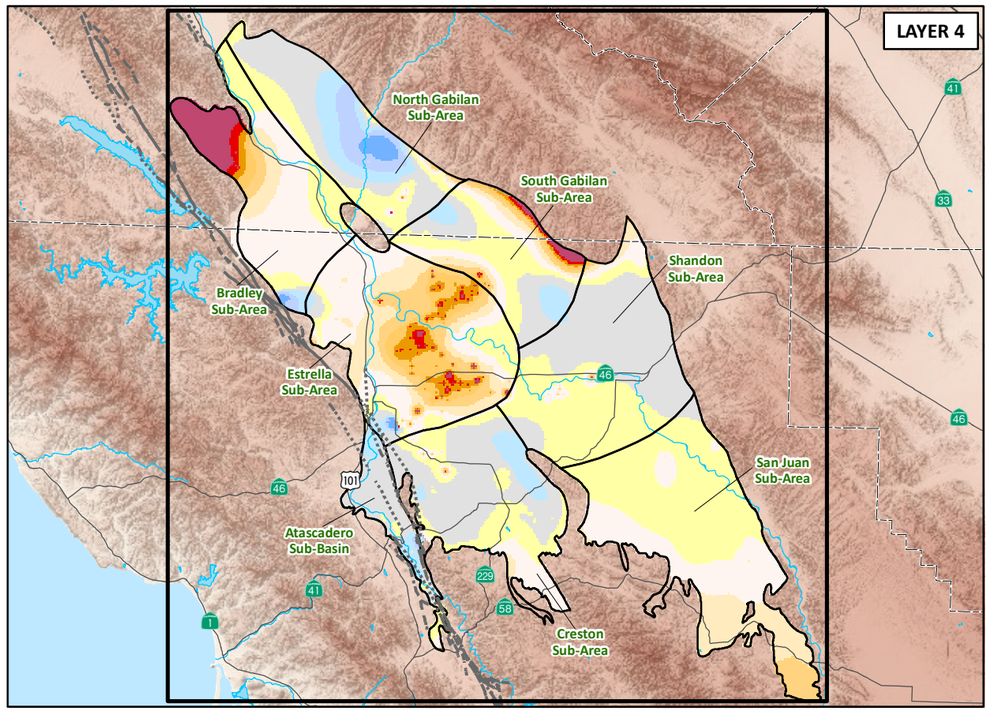
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE









MODEL-GENERATED CHANGES IN GROUNDWATER ELEVATIONS BETWEEN WATER YEAR 2011 AND 2040 MODEL RUN 1

EXPLANATION

Model-Generated Changes in Groundwater Elevations (ft)

- More than -70 ft
- -69 to -60 ft
- -59 to -50
- -49 to -40 ft
- -39 to -30 ft
- -29 to -20 ft
- -19 to -10 ft
- -9 to 0 ft
- 1 to 10 ft
- 10 to 20 ft
- 21 to 30 ft
- More than 30 ft

Paso Robles Groundwater Basin Model Domain

Paso Robles Groundwater Basin Boundary with Sub-Areas (Source: Fugro and Cleath, 2002)

Fault (solid where known, dashed where inferred, dotted where concealed)

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County Boundary

NORTH

0 5 10 Miles

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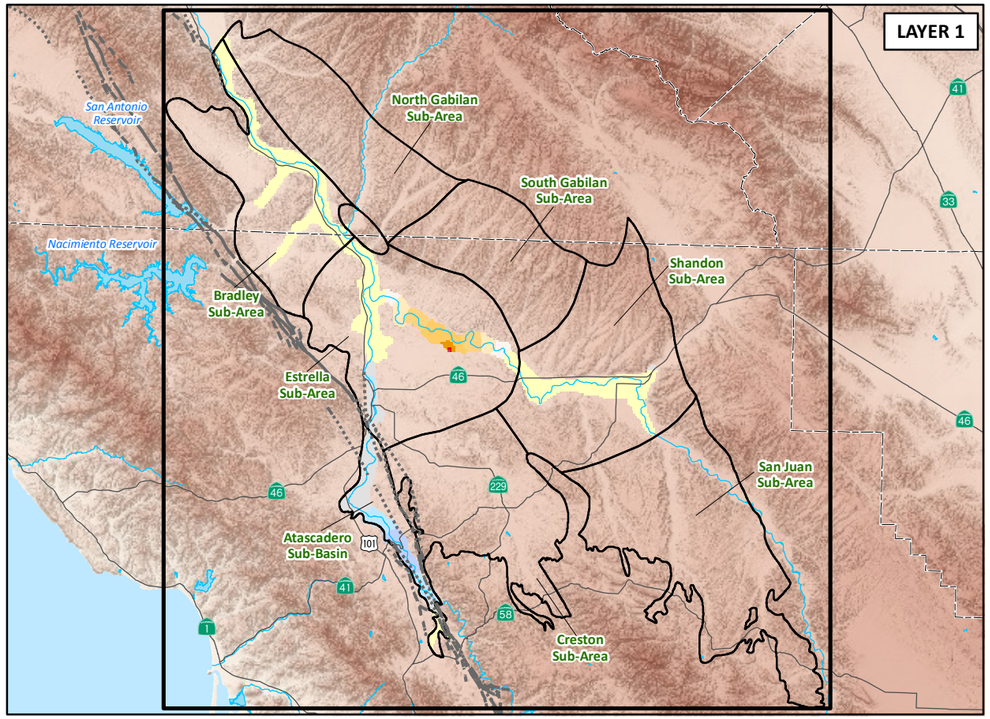
19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

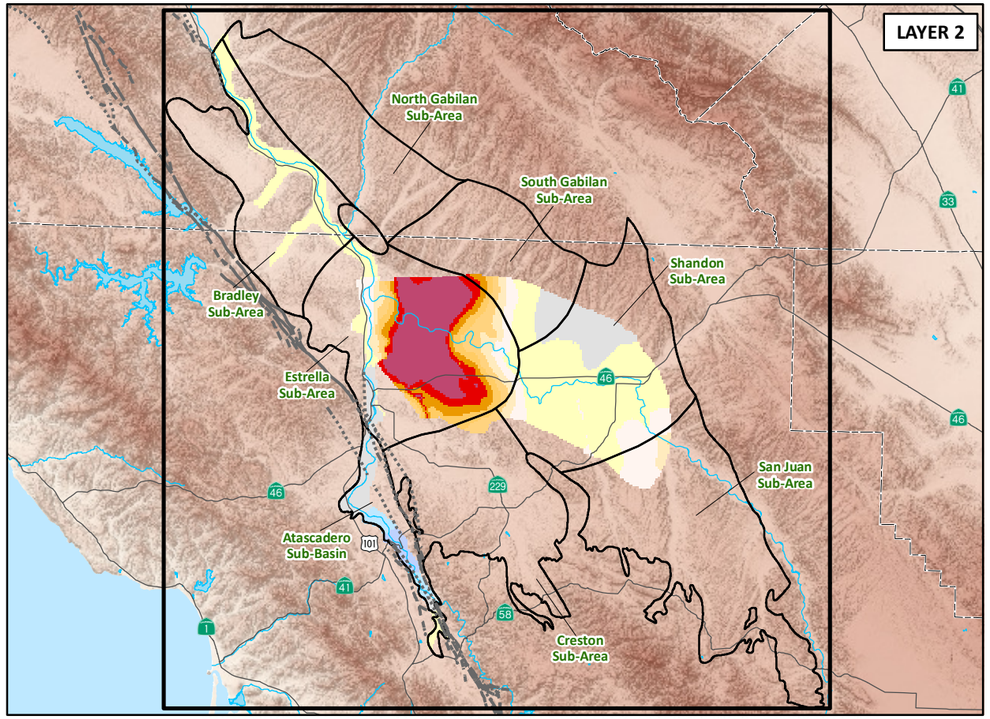
Figure 111

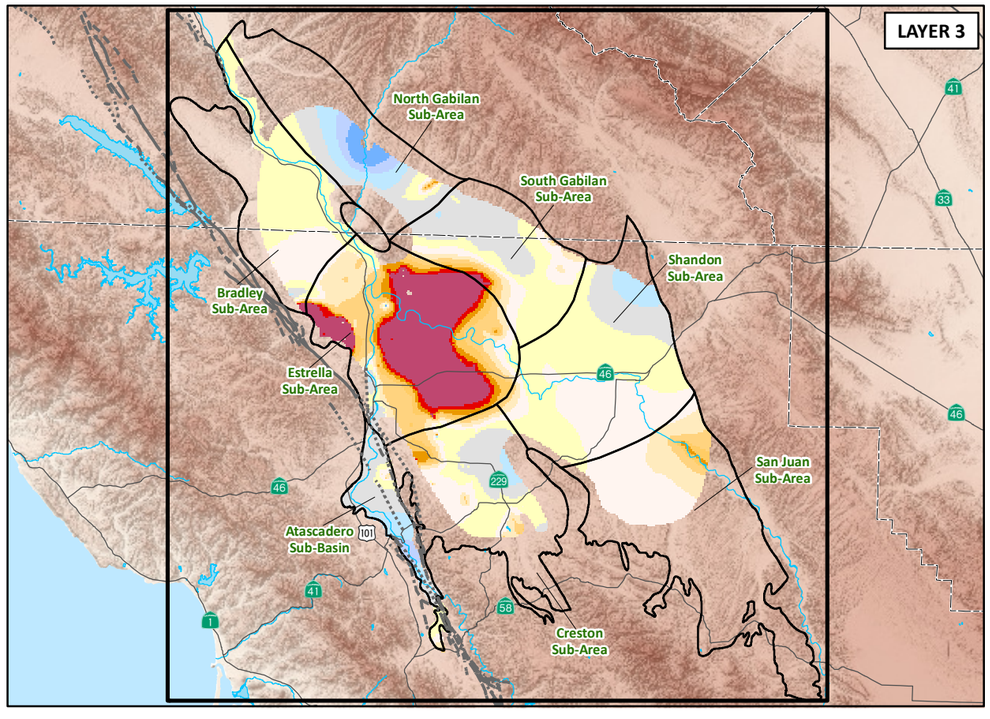
GIS_proj/co_slo_paso_robles_model/6_Fig_111_gw_elev_change_flood_2011-2040_scen1_4panel_12-14.mxd

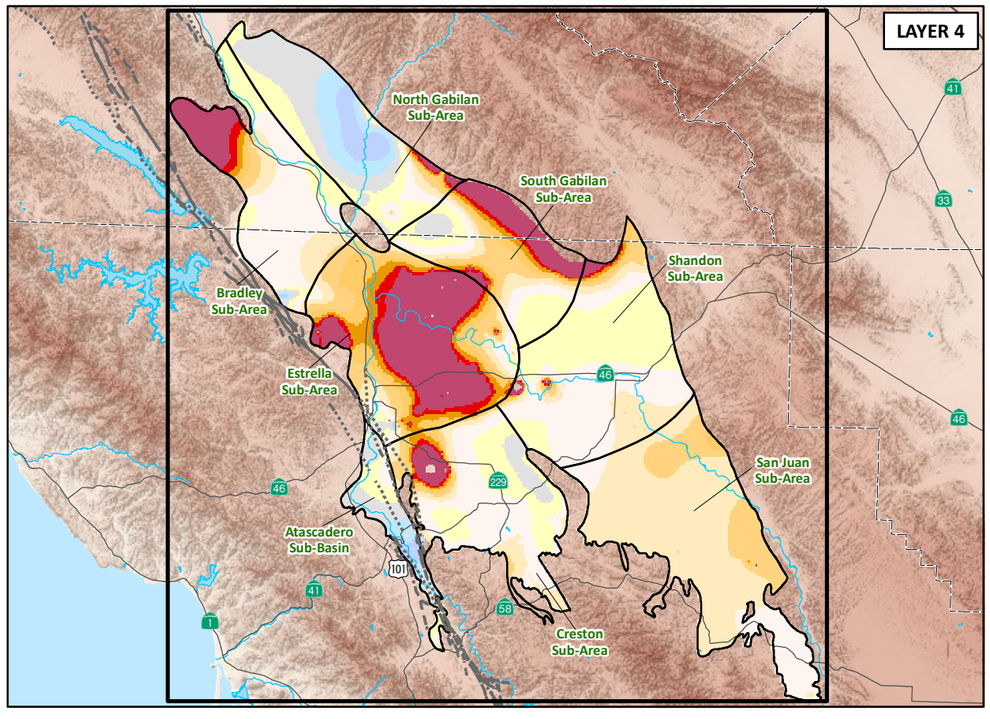
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE









MODEL-GENERATED CHANGES IN GROUNDWATER ELEVATIONS BETWEEN WATER YEAR 2011 AND 2040 MODEL RUN 2

EXPLANATION

Model-Generated Changes in Groundwater Elevations (ft)

- More than -70 ft
- -69 to -60 ft
- -59 to -50
- -49 to -40 ft
- -39 to -30 ft
- -29 to -20 ft
- -19 to -10 ft
- -9 to 0 ft
- 1 to 10 ft
- 10 to 20 ft
- 21 to 30 ft
- More than 30 ft

Paso Robles Groundwater Basin Model Domain

Paso Robles Groundwater Basin Boundary with Sub-Areas (Source: Fugro and Cleath, 2002)

Fault (solid where known, dashed where inferred, dotted where concealed)

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County Boundary

NORTH

0 5 10 Miles

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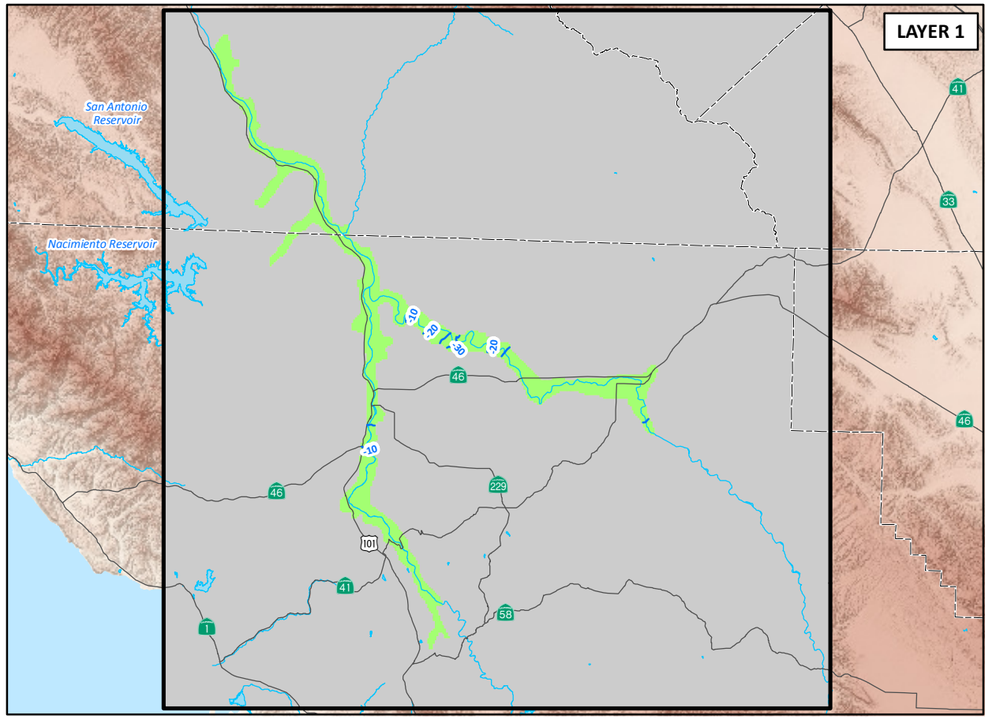
Figure 112

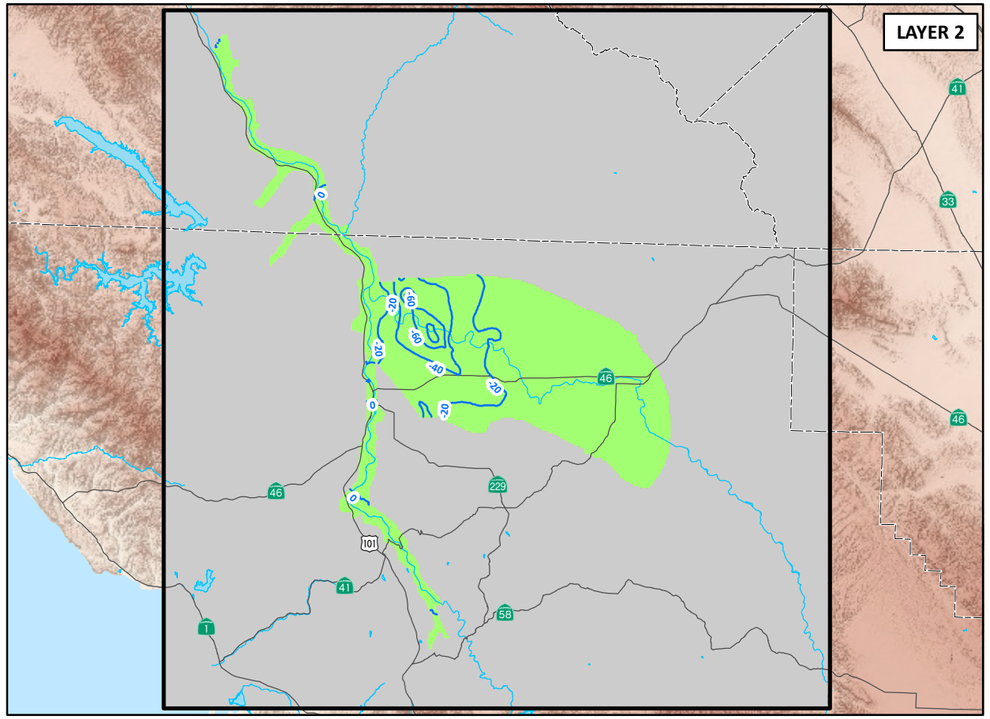
GIS_proj/co_slo_paso_robles_model/6_Fig_112_gw_elev_change_flood_2011-2040_scen2_4panel_12-14.mxd

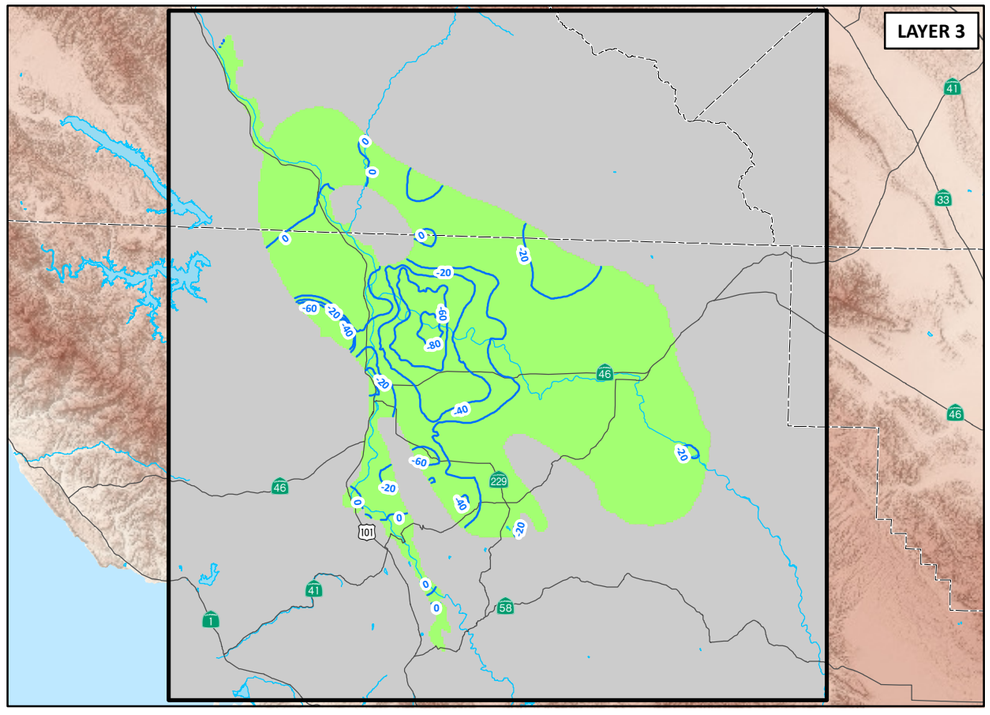
SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

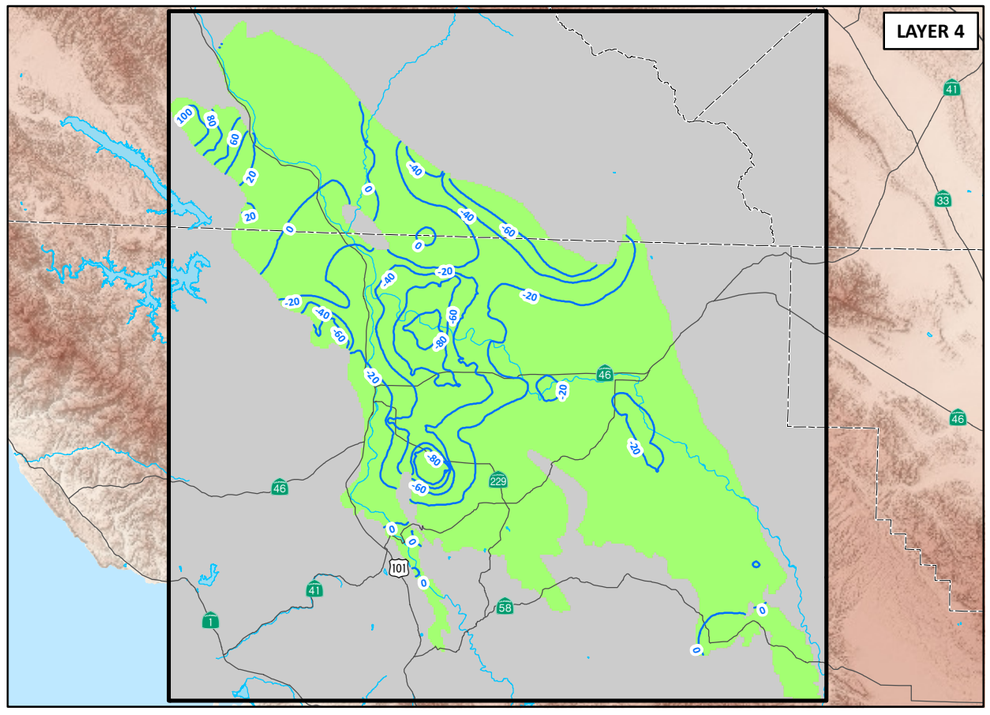
PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

MODEL-GENERATED DIFFERENCES IN GROUNDWATER ELEVATIONS BETWEEN MODEL RUN 1 AND MODEL RUN 2 END OF PREDICTIVE PERIOD (SEPTEMBER 2040)









EXPLANATION

10 — Model-Generated Differences in Groundwater Elevations (ft)

Paso Robles Groundwater Basin Model Domain

Paso Robles Groundwater Basin Model Active Area

Paso Robles Groundwater Basin Model Inactive Area

(Source: Fugro, ETIC Engineers and Cleath, 2005)

County Boundary

NORTH

0 5 10 Miles

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19-Dec-14 Prepared by: DWB. Map Projection: State Plane 1983, Zone V. feet.

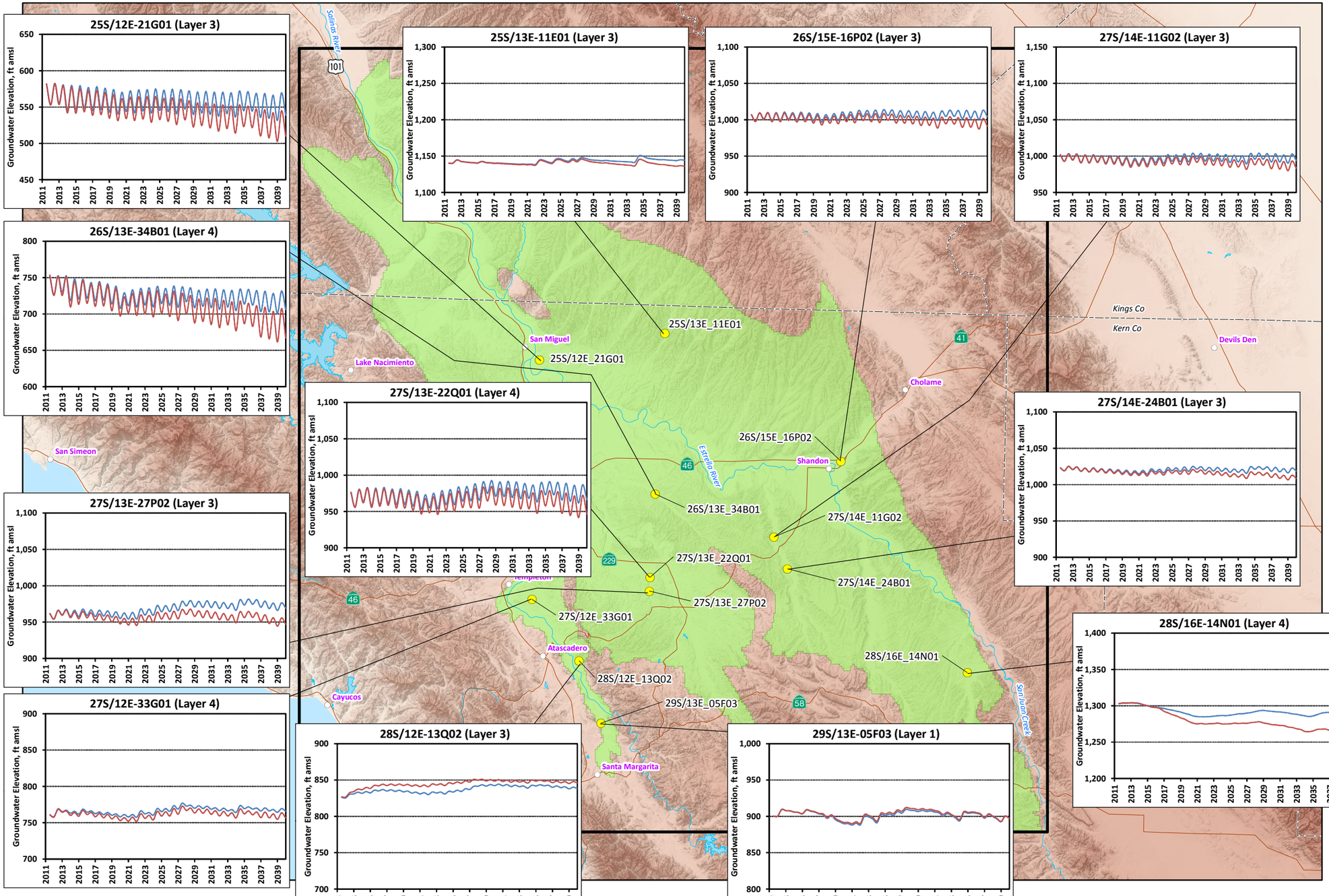
Figure 113

GIS_proj/co_slo_paso_robles_model/6_Fig_113_difference_gw_elev_2040_scen1and2_4panel_12-14.mxd

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

PASO ROBLES GROUNDWATER BASIN MODEL UPDATE

SELECTED HYDROGRAPHS UNDER MODEL RUN 1 AND MODEL RUN 2 CONDITIONS (WATER YEARS 2012 TO 2040)



EXPLANATION

Model Run 1

Model Run 2

Well Location

Paso Robles Groundwater Basin Model Domain

Paso Robles Groundwater Basin Model Active Area

(Source: Fugro, ETIC Engineers and Cleath, 2005)

County Boundary

NORTH

0 2.5 5 10 Miles

19-Dec-14

Prepared by: DWB. Map Projection: State Plane 1983, Zone V.

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Figure 114

GIS_proj/co_slo_paso_robles_model/6_Fig_114_hydrographs_scen1andscen2_12-14.mxd

Total Annual Inflow for Paso Robles Groundwater Basin
Model Run 1 (Water Years 2012-2040)

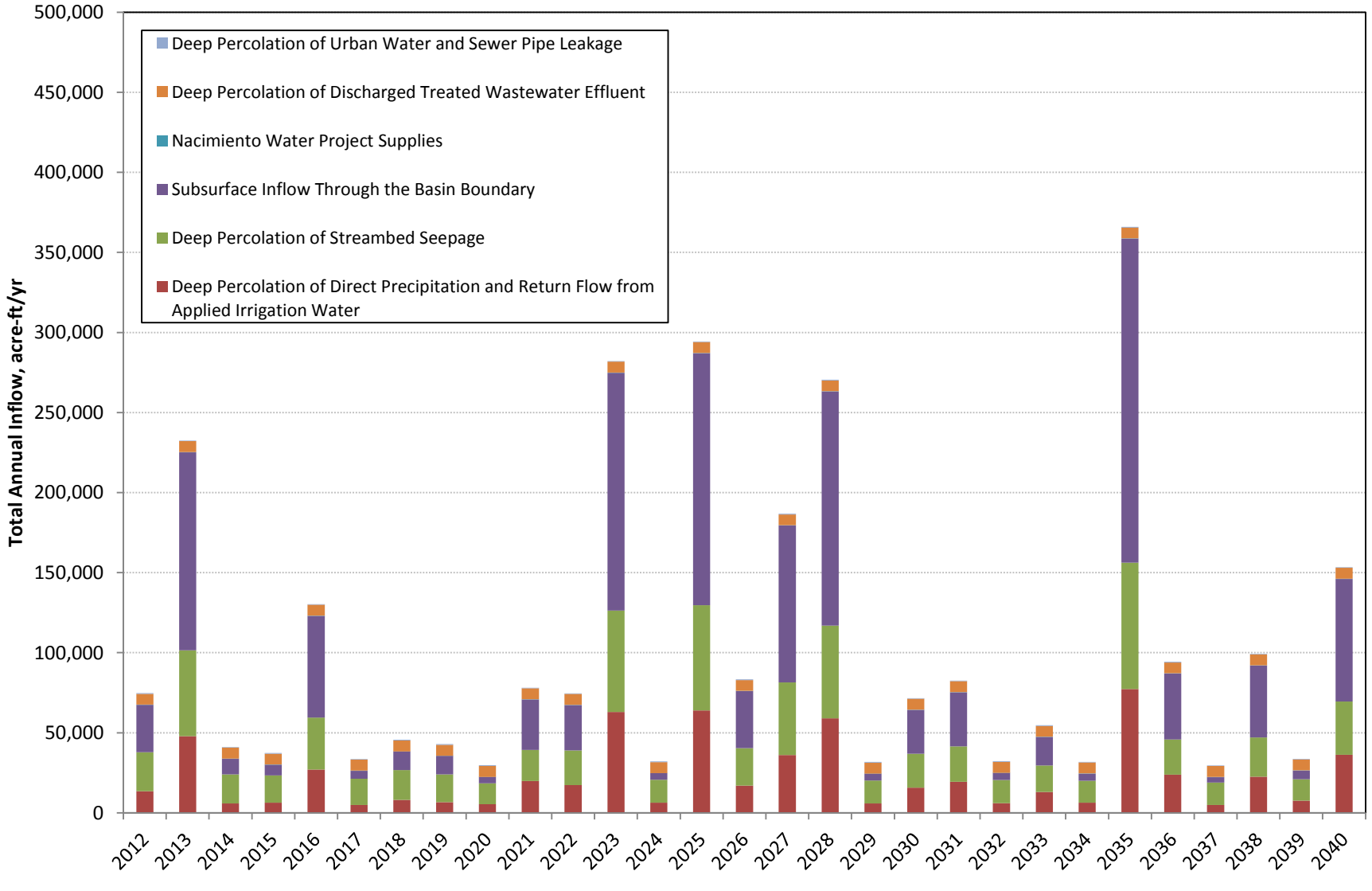

Figure 115

GEOSCIENCE Support Services, Inc.
Todd Groundwater

Total Annual Inflow for Paso Robles Groundwater Basin
Model Run 2 (Water Years 2012-2040)

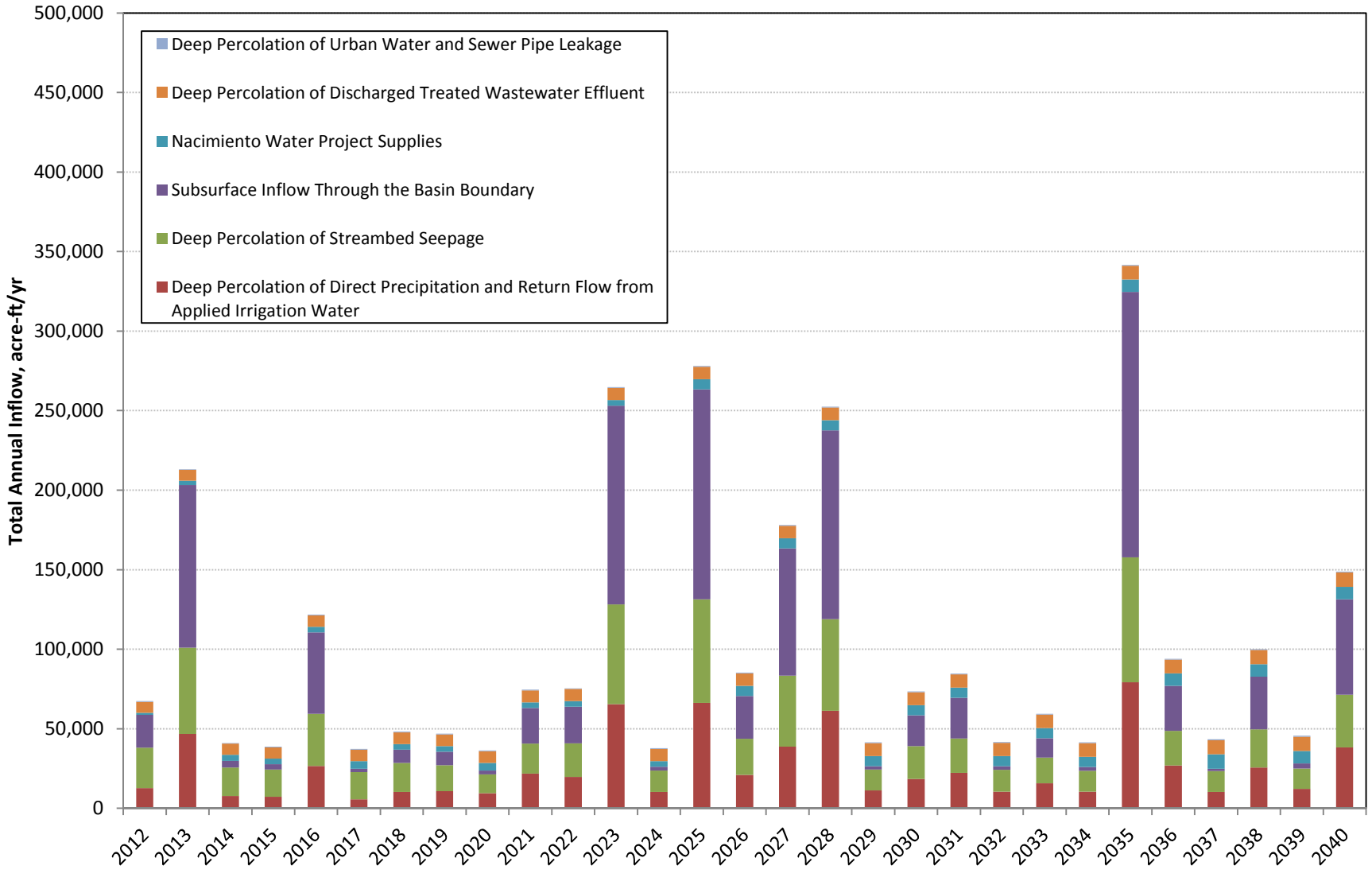

Figure 116

GEOSCIENCE Support Services, Inc.
Todd Groundwater

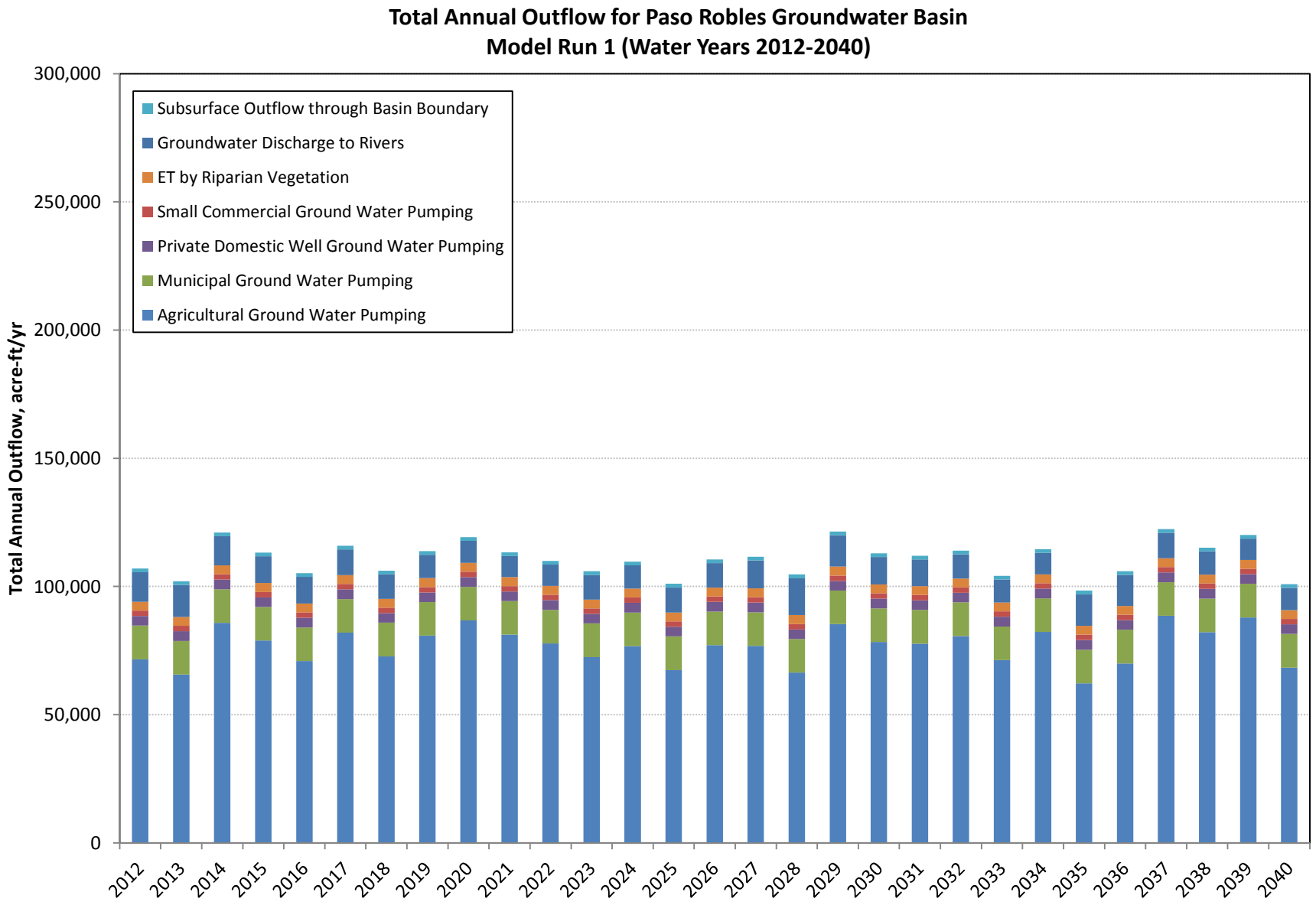

Figure 117

GEOSCIENCE Support Services, Inc.
Todd Groundwater

Total Annual Outflow for Paso Robles Groundwater Basin
Model Run 2 (Water Years 2012-2040)

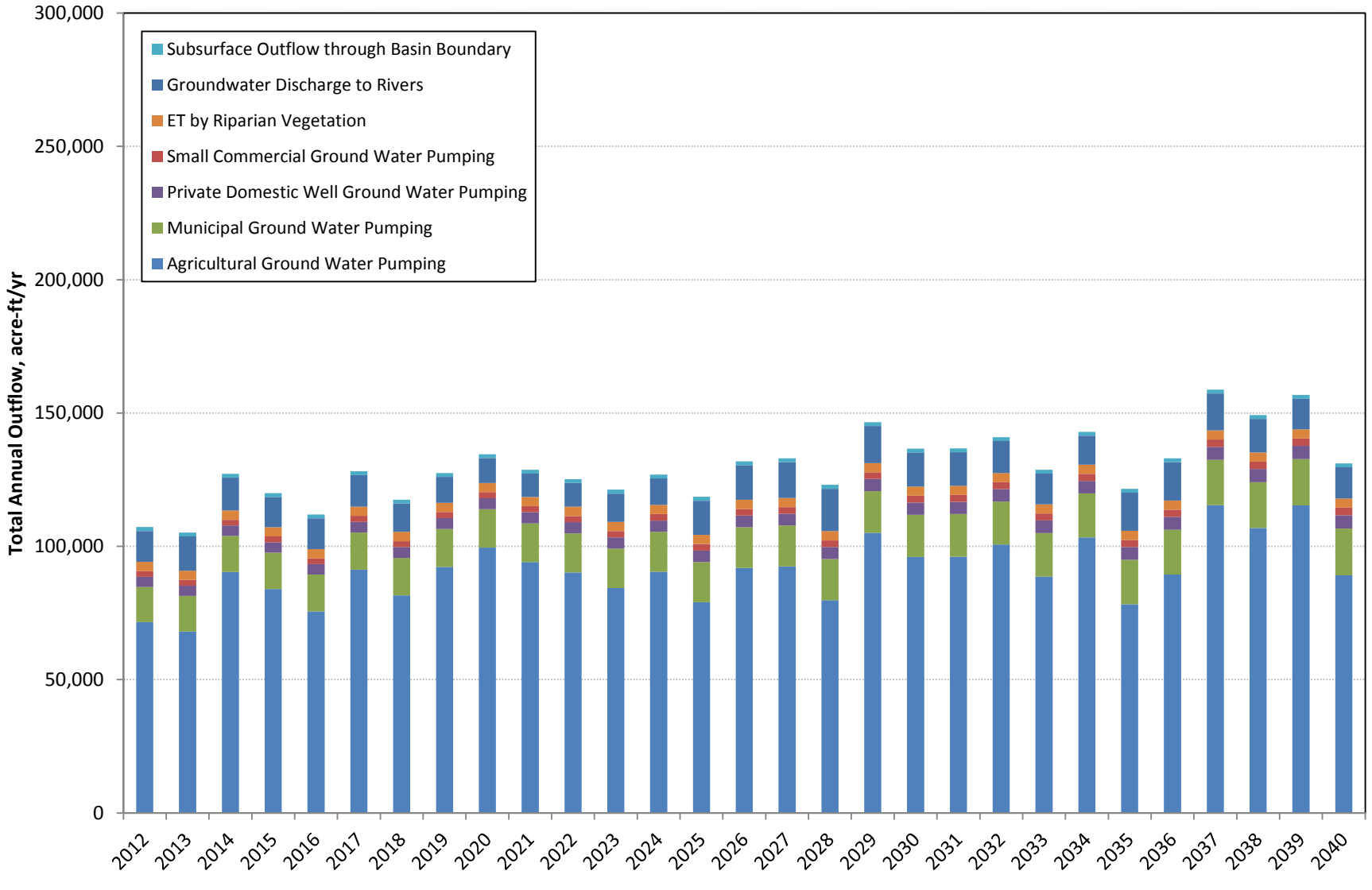

Figure 118

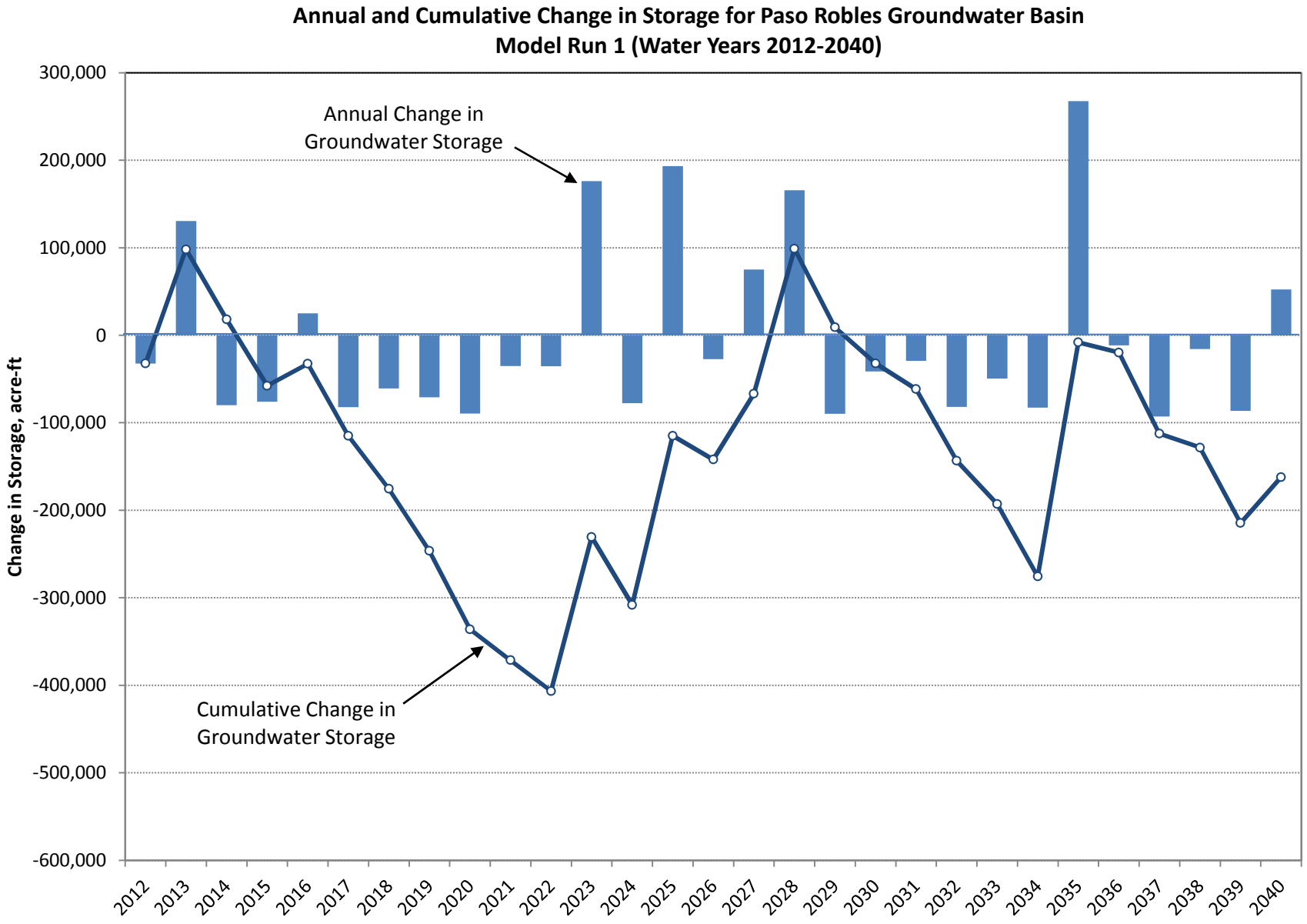
Annual and Cumulative Change in Storage for Paso Robles Groundwater Basin
Model Run 1 (Water Years 2012-2040)
Change in Storage, acre-ft
300,000
200,000
100,000
0
-100,000
-200,000
-300,000
-400,000
-500,000
-600,000
Annual Change in Groundwater Storage
Cumulative Change in Groundwater Storage
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040

Figure 119

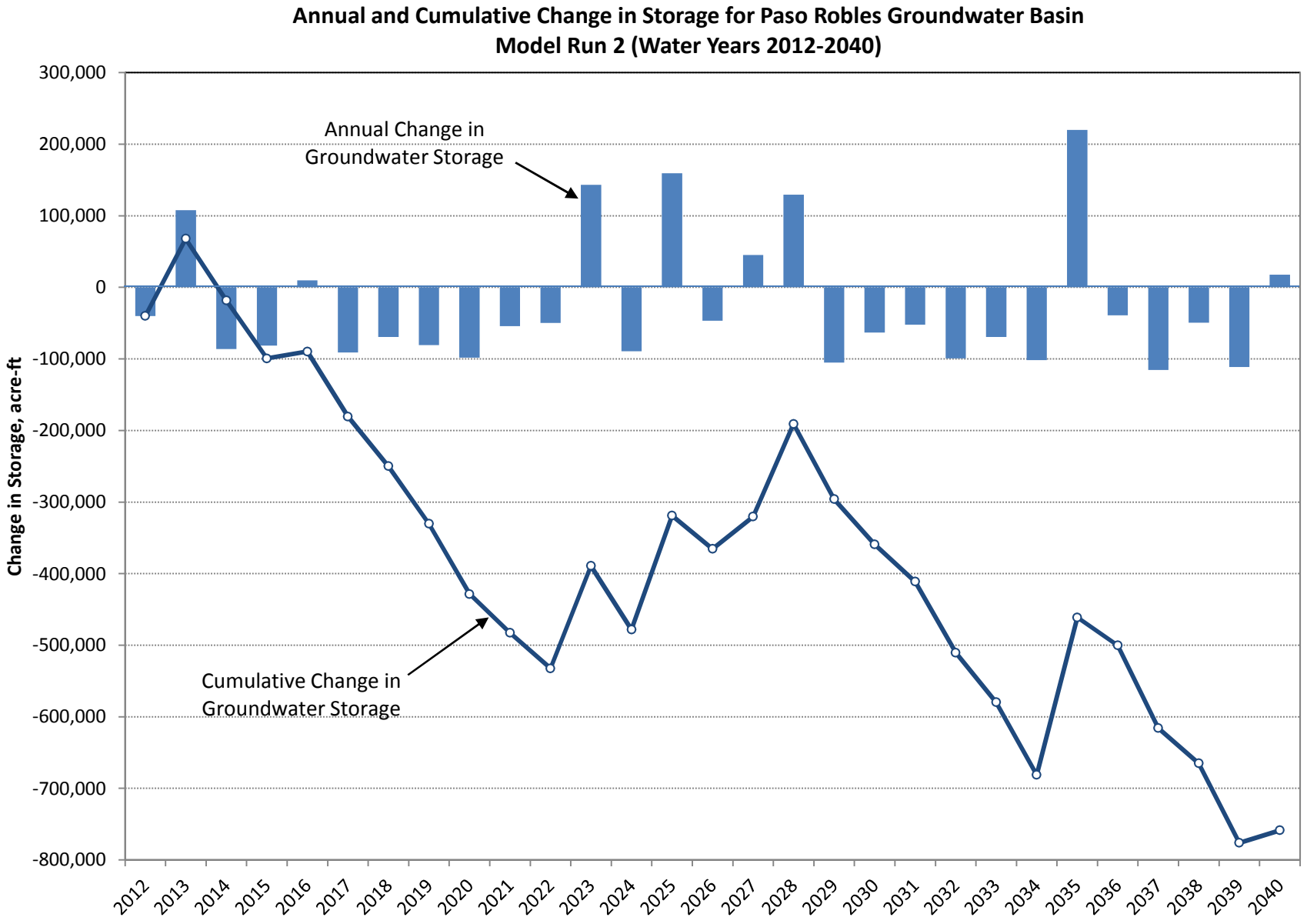

Figure 120

GEOSCIENCE Support Services, Inc.
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