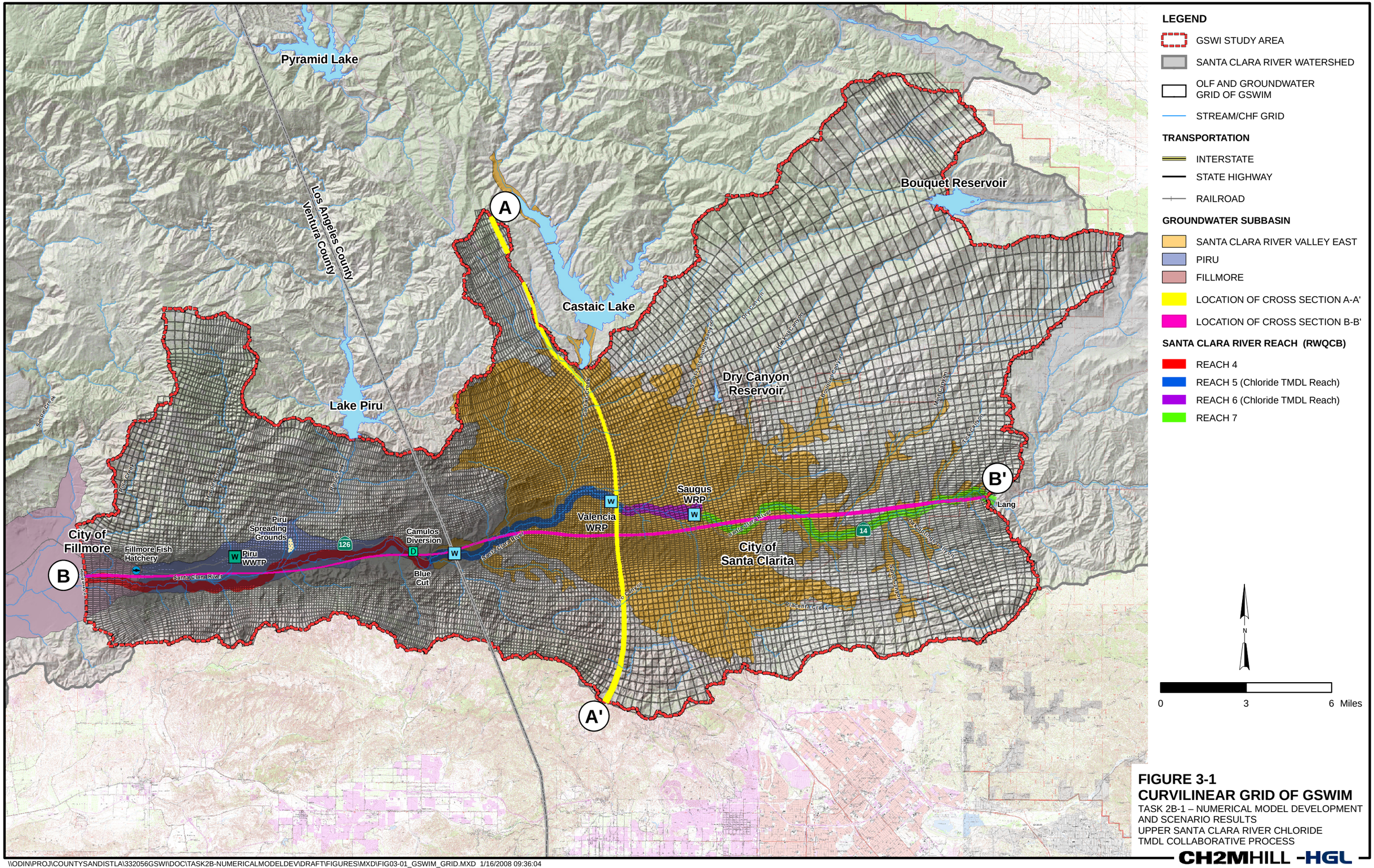


FIGURE 3-1
CURVILINEAR GRID OF GSWIM
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-01_GSWIM_GRID.MXD 1/16/2008 09:36:04

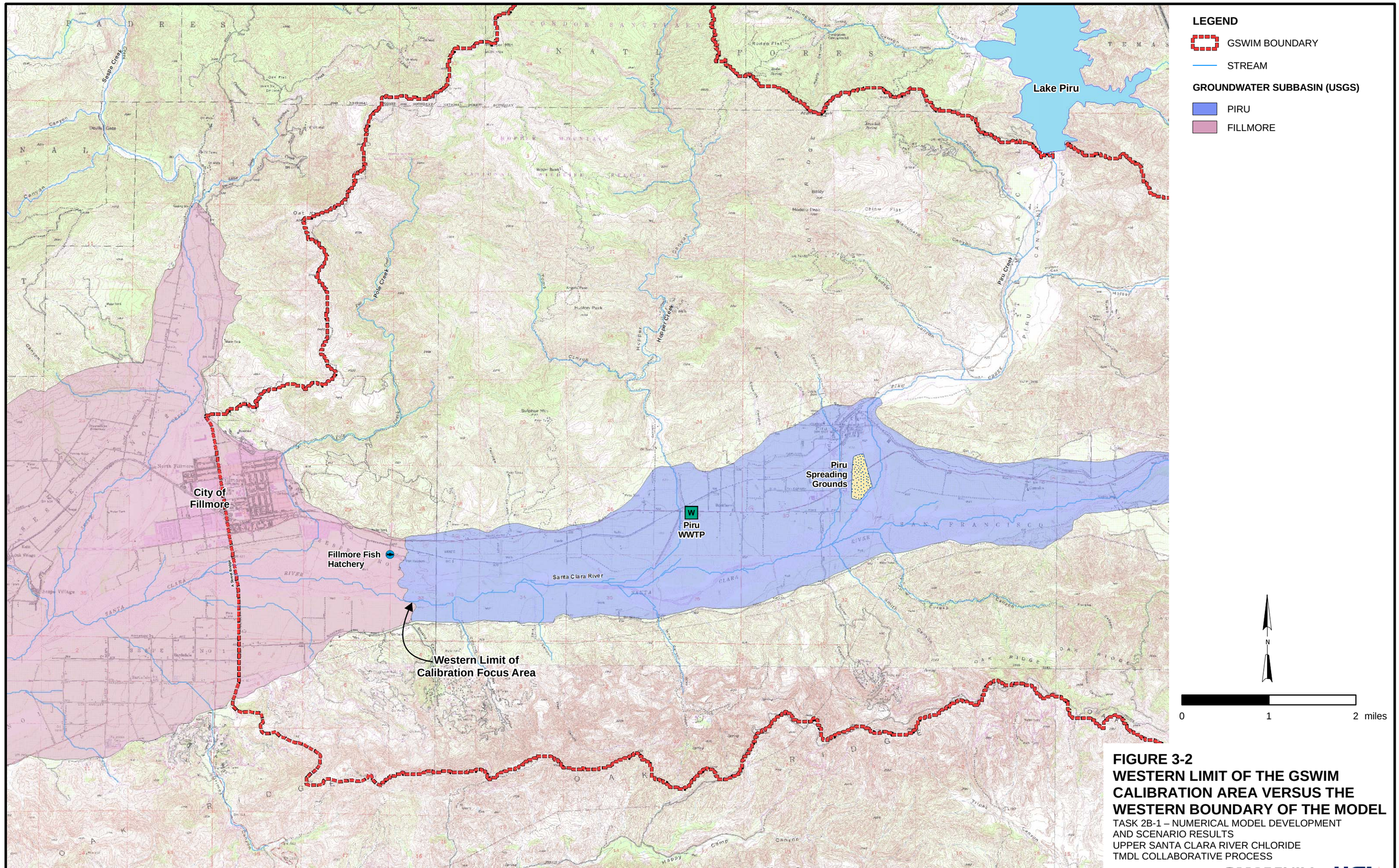


FIGURE 3-2
WESTERN LIMIT OF THE GSWIM CALIBRATION AREA VERSUS THE WESTERN BOUNDARY OF THE MODEL
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL – HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-02_WESTERNBOUNDARYAREA.MXD 1/15/2008 12:36:25

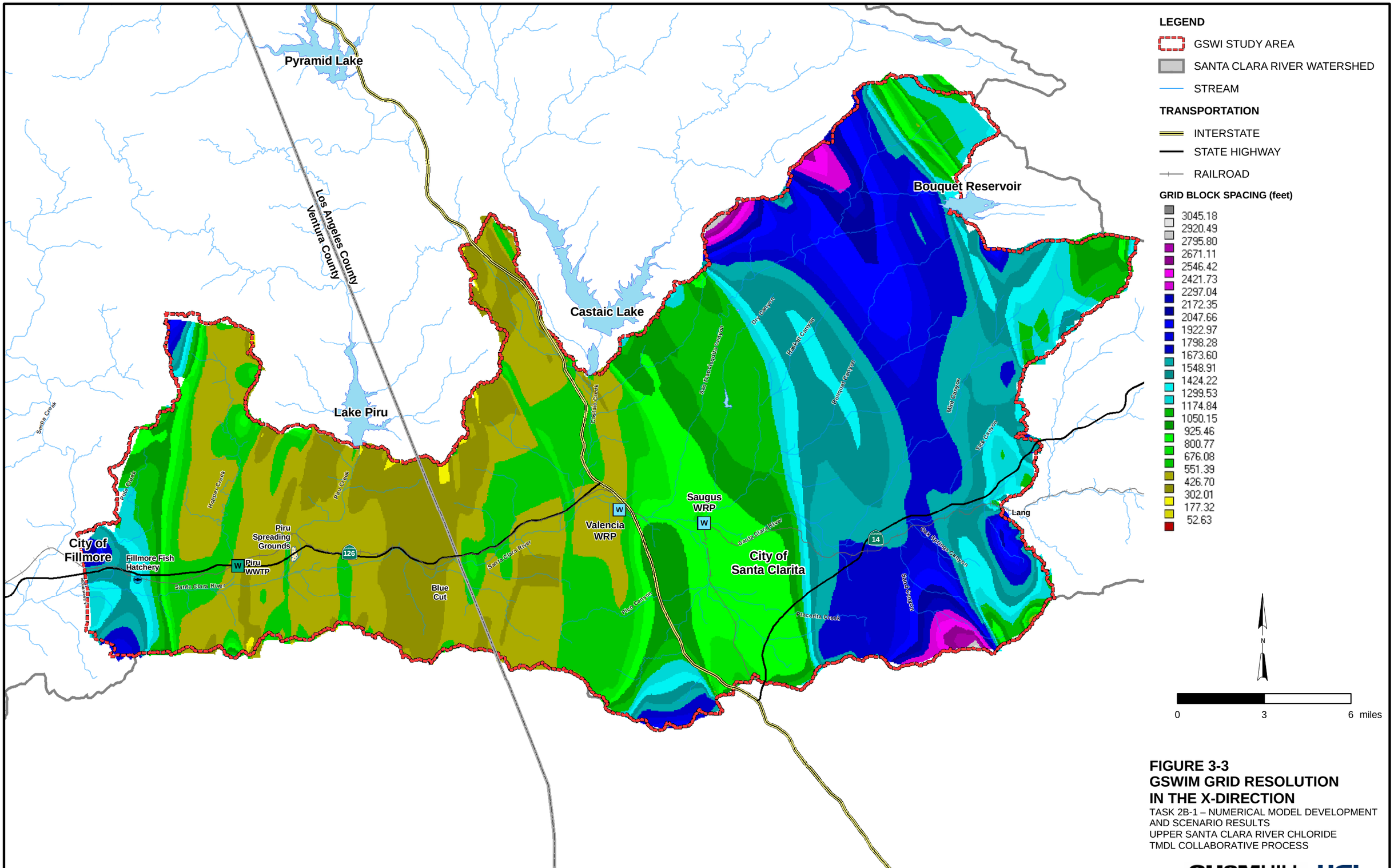


FIGURE 3-3
GSWIM GRID RESOLUTION IN THE X-DIRECTION

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-03_XDIRECTION.MXD 1/15/2008 12:45:16

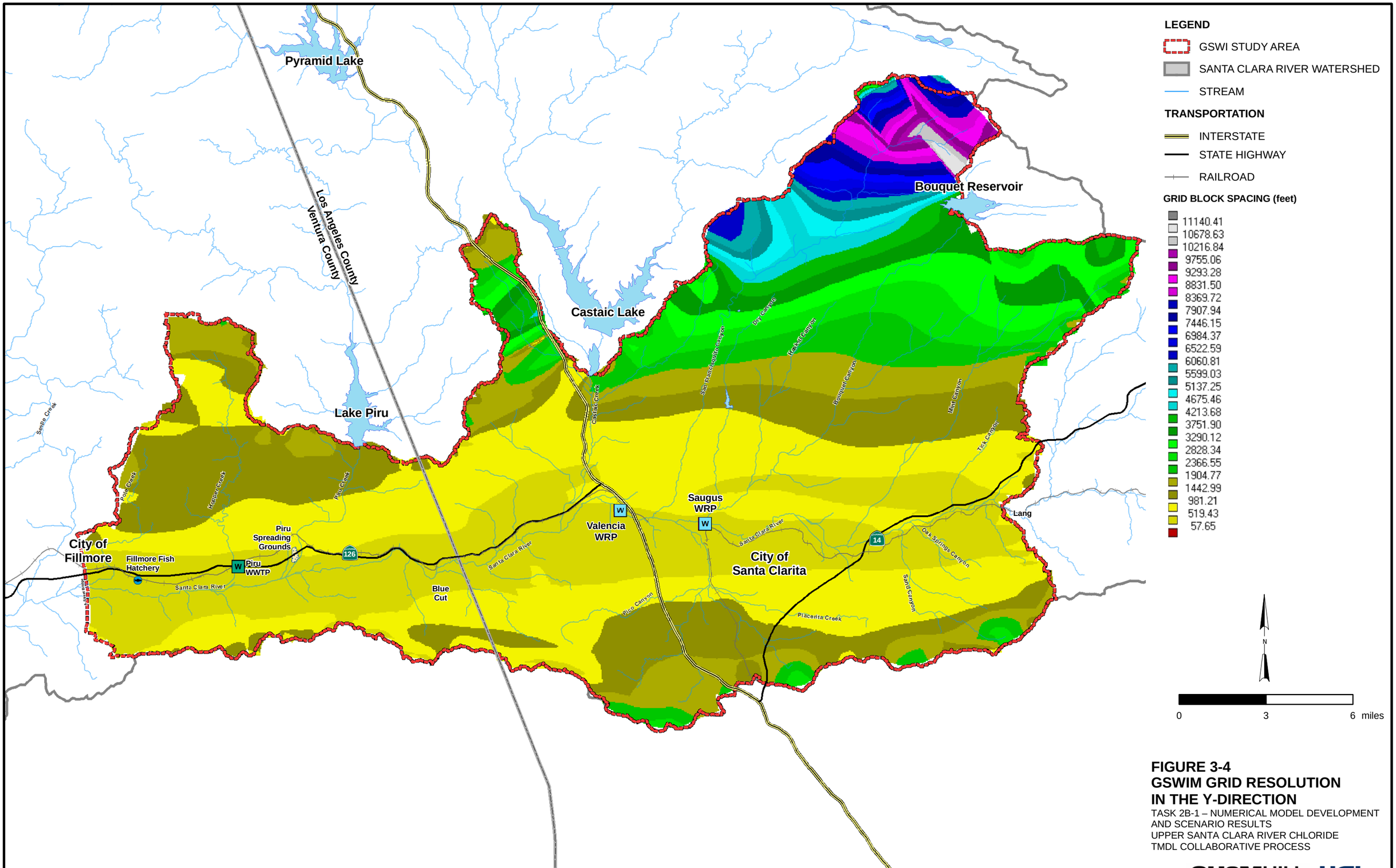
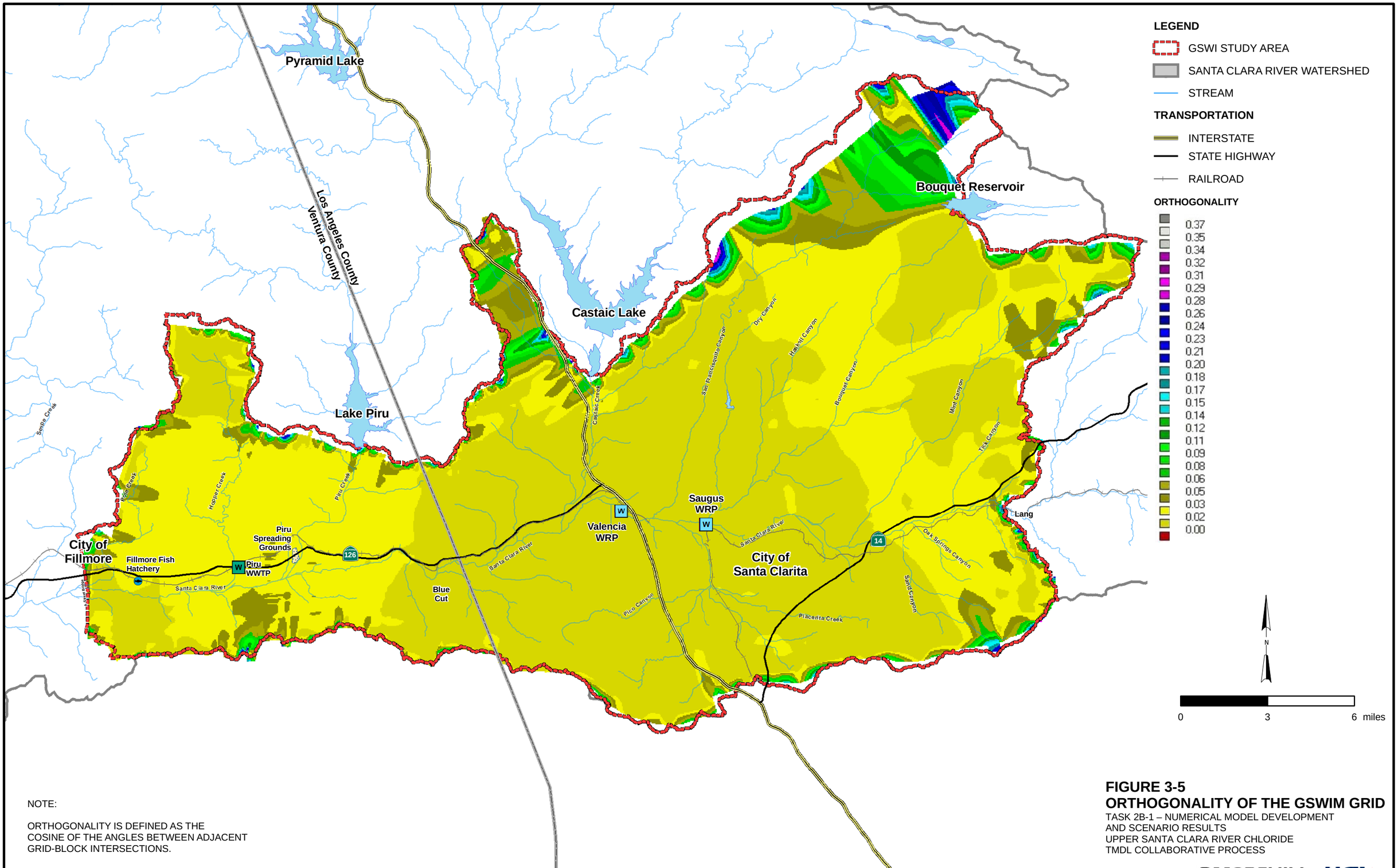


FIGURE 3-4
GSWIM GRID RESOLUTION IN THE Y-DIRECTION

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-04_YDIRECTION.MXD 1/15/2008 12:55:50

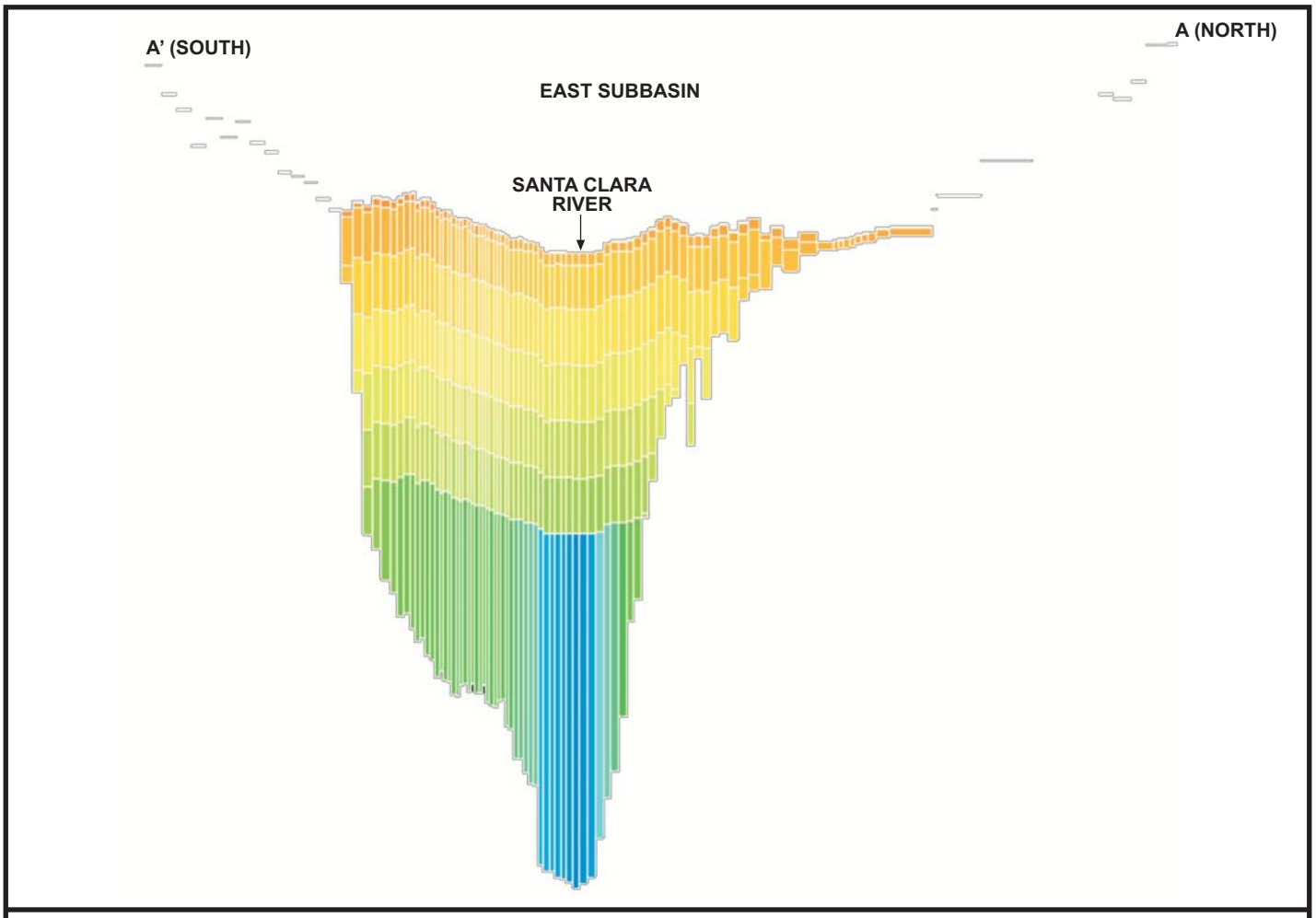


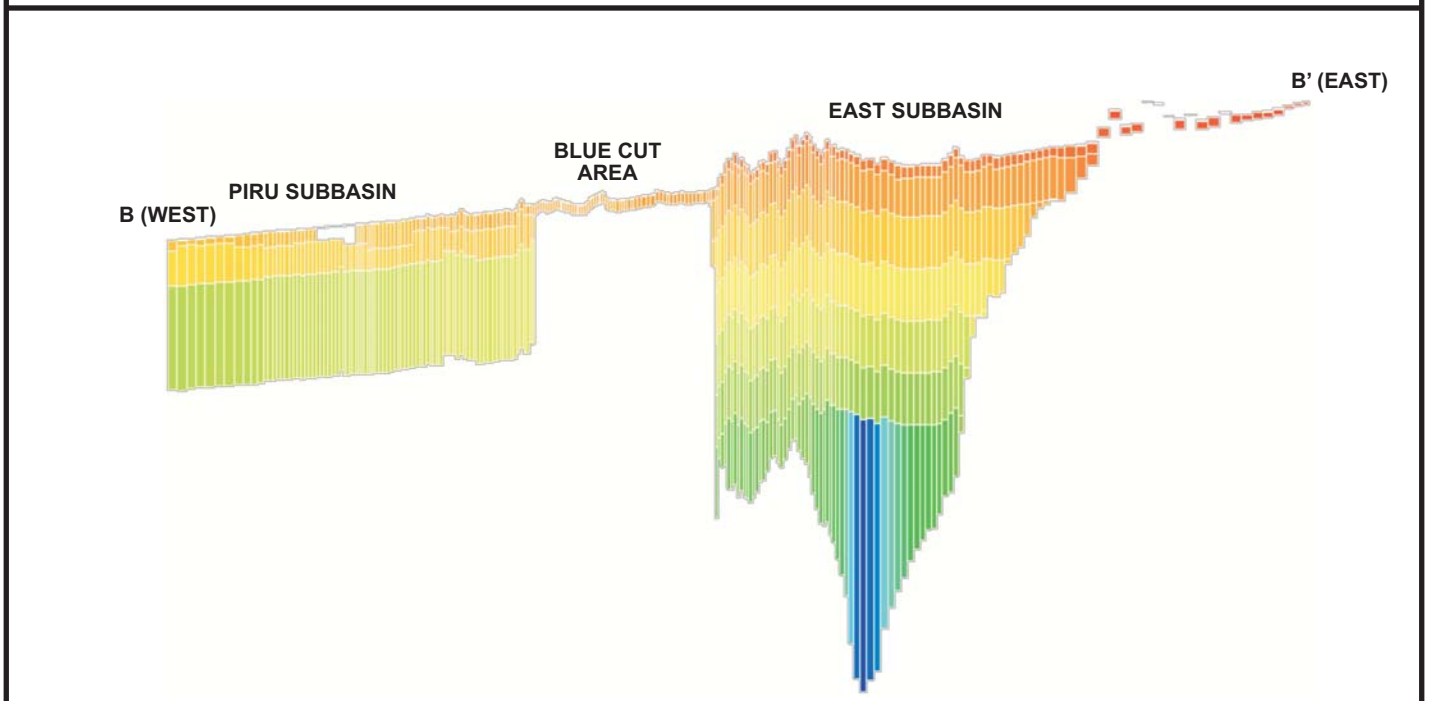
NOTE:

ORTHOGONALITY IS DEFINED AS THE COSINE OF THE ANGLES BETWEEN ADJACENT GRID-BLOCK INTERSECTIONS.

FIGURE 3-5
ORTHOGONALITY OF THE GSWIM GRID
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL





NOTES:

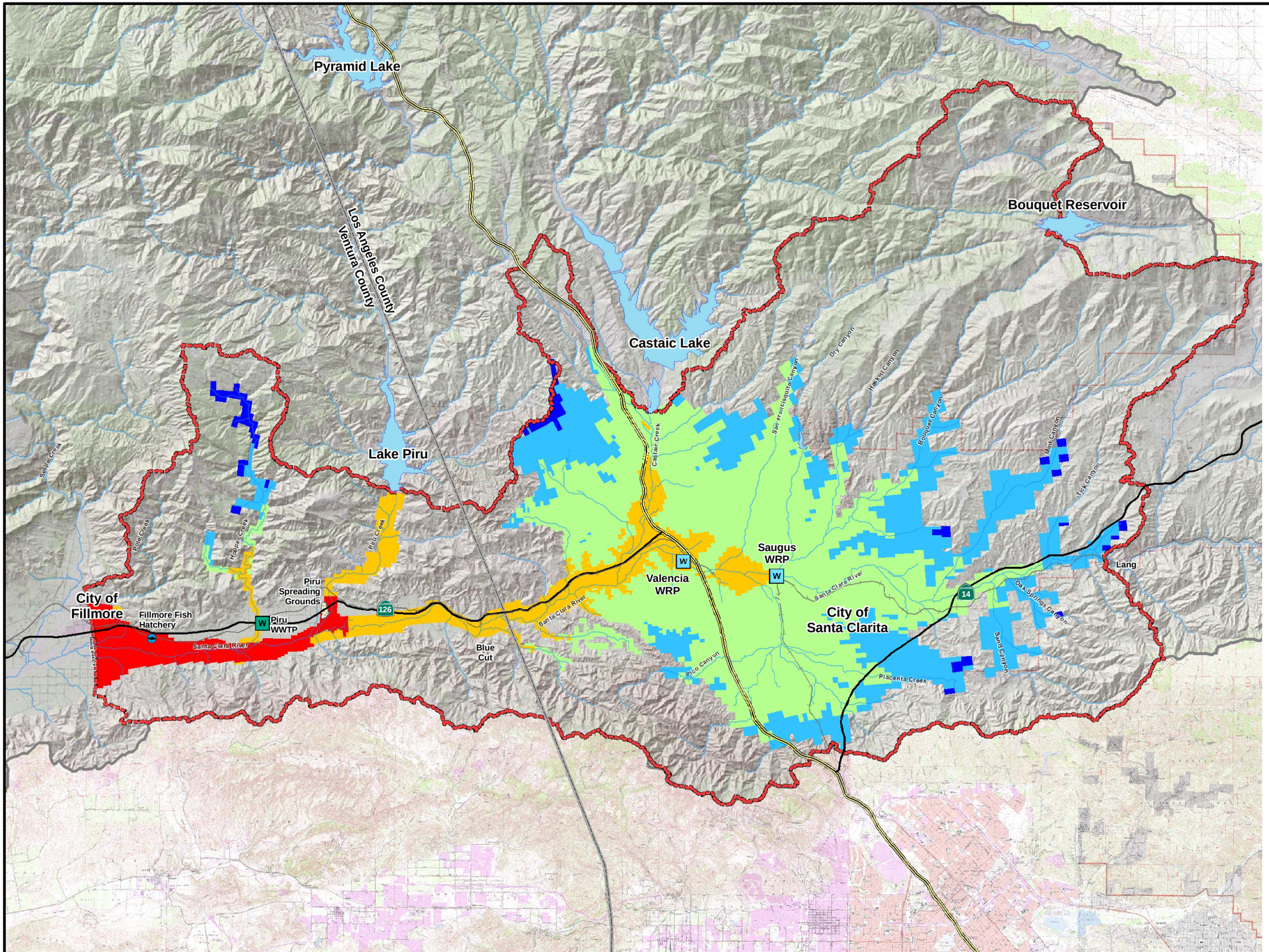
1. LOCATION OF CROSS SECTION SHOWN ON FIGURE 3-1.
2. IMAGES ARE NOT TO SCALE AND THE VERTICAL TO HORIZONTAL SCALE IS EXAGGERATED.

FIGURE 3-6
SCHEMATIC CROSS-SECTIONAL VIEW ALONG ROW 69 AND COLUMN 187 OF THE GSWIM GRID

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

FIG03-06_SchematicXSect.FH10

CH2MHILL-HGL



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

BOTTOM ELEVATION (feet msl)

- 2,000 and Above
- 1,500 to 2,000
- 1,000 to 1,500
- 500 to 1,000
- 500 and Below

NOTES:

1. BOTTOM ELEVATION OF MODEL LAYER 1 SET AT 1-FOOT BELOW LAND SURFACE ELEVATION.
2. BOTTOM ELEVATION OF MODEL LAYER 2 SET AT 6-FEET BELOW LAND SURFACE ELEVATION (i.e., 5-FEET THICK).

N

0 3 6 miles

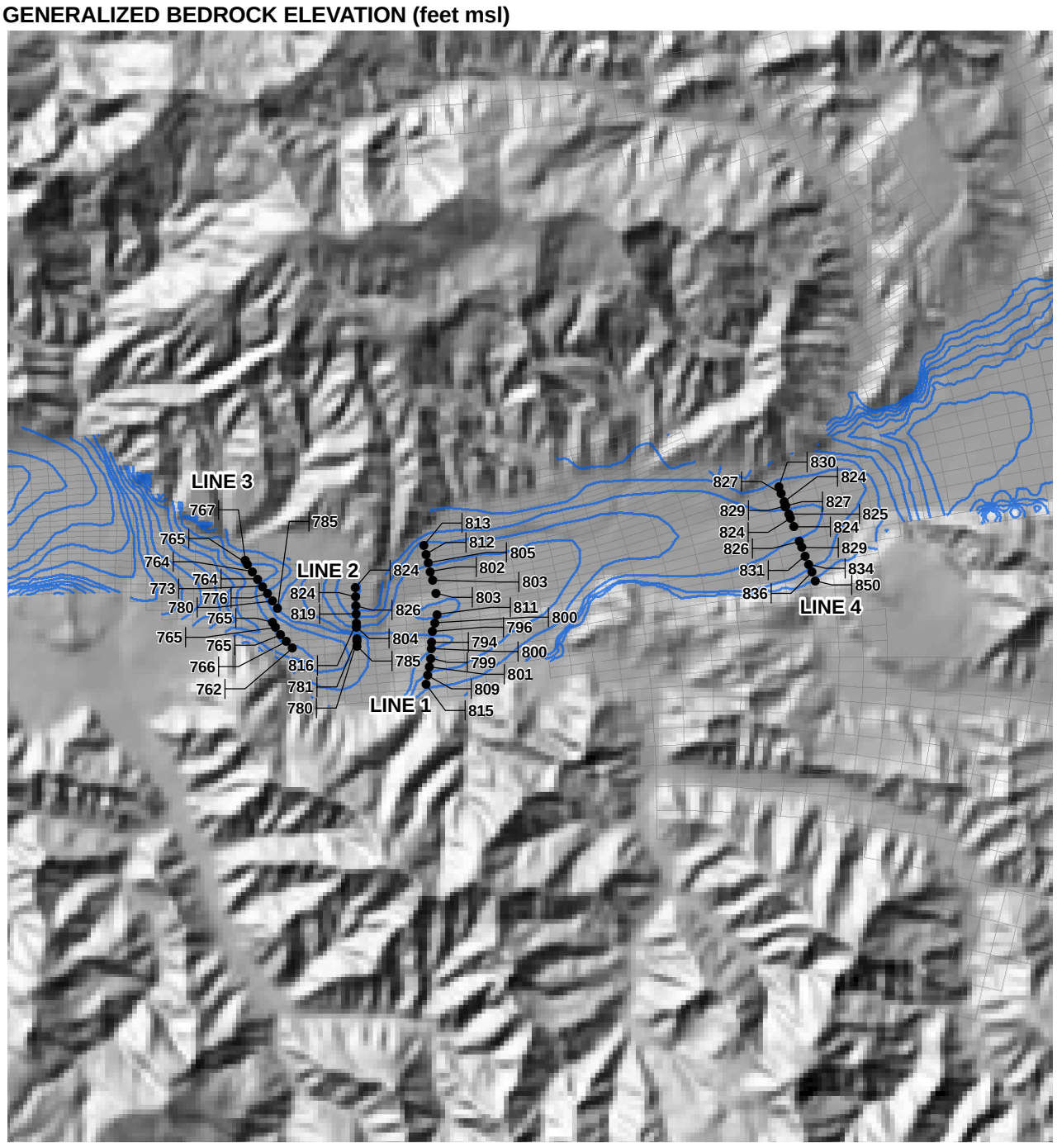
FIGURE 3-7
BOTTOM ELEVATION OF MODEL LAYER 3

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-07_BOTELEV_L3.MXD 3/11/2008 08:51:59

GENERALIZED BEDROCK ELEVATION (feet msl)



LEGEND

- ● BEDROCK ELEVATION ESTIMATED FROM SURFACE GEOPHYSICS (feet msl)
- INFERRED BEDROCK ELEVATION CONTOUR
- GRID-BLOCK

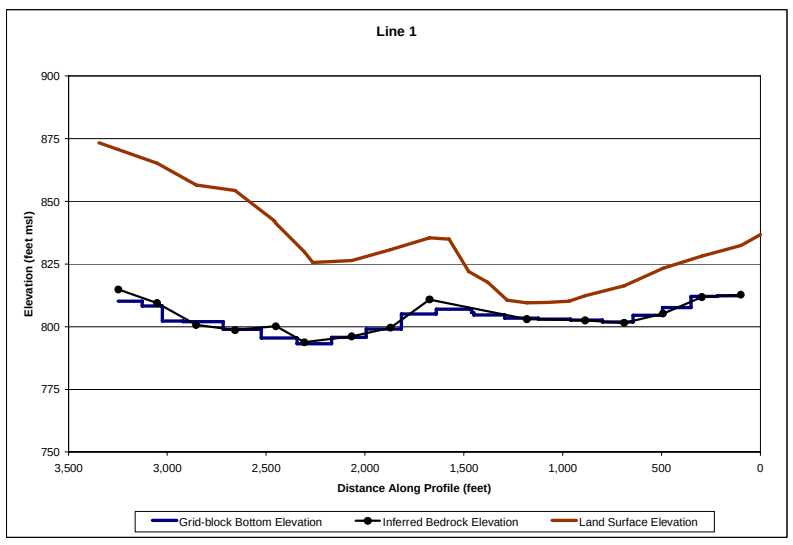
NOTES:

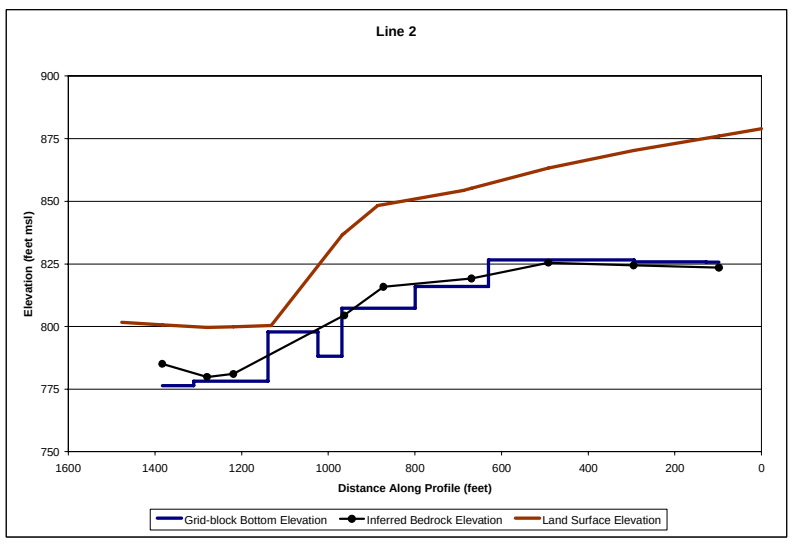
1. CONTOUR INTERVAL = 10 feet.
2. SOURCE OF DATA: GEOMATRIX CONSULTANTS.

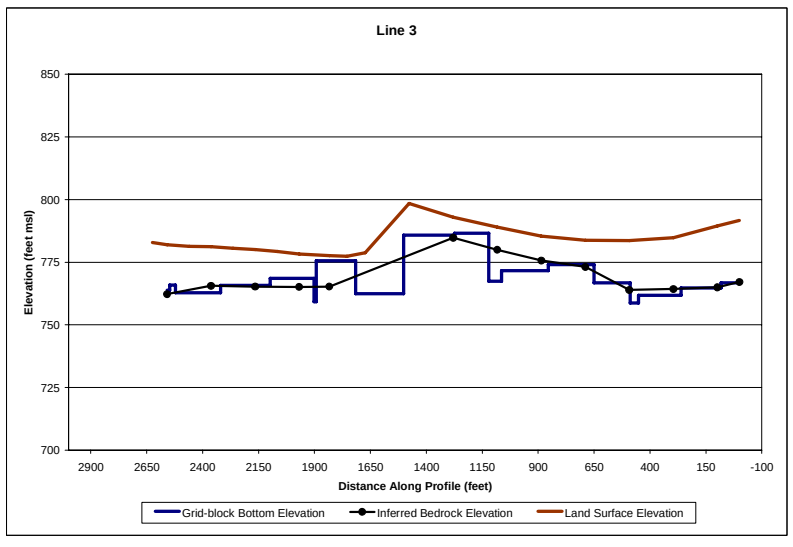
N

0 3,500 7,000 feet

REVISED BEDROCK ELEVATIONS BOTTOM OF MODEL LAYER 3







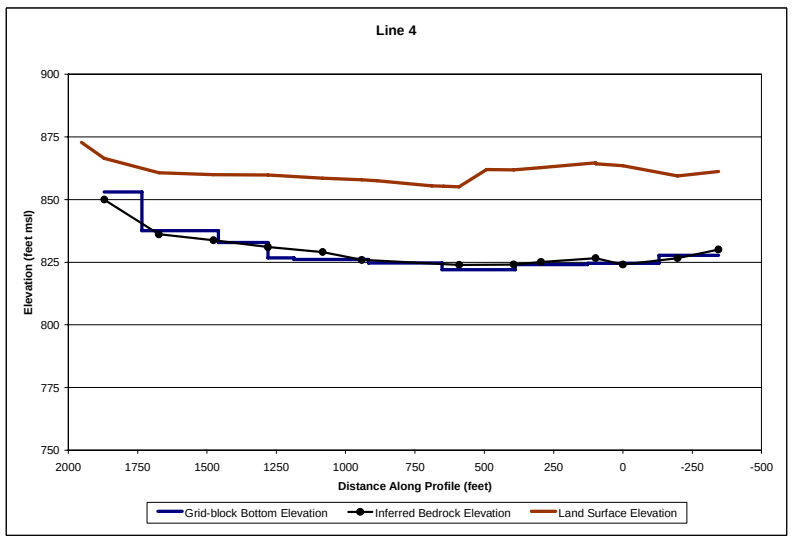


FIGURE 3-8
REVISIONS TO BEDROCK ELEVATIONS IN THE BLUE CUT AREA
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL – HGL

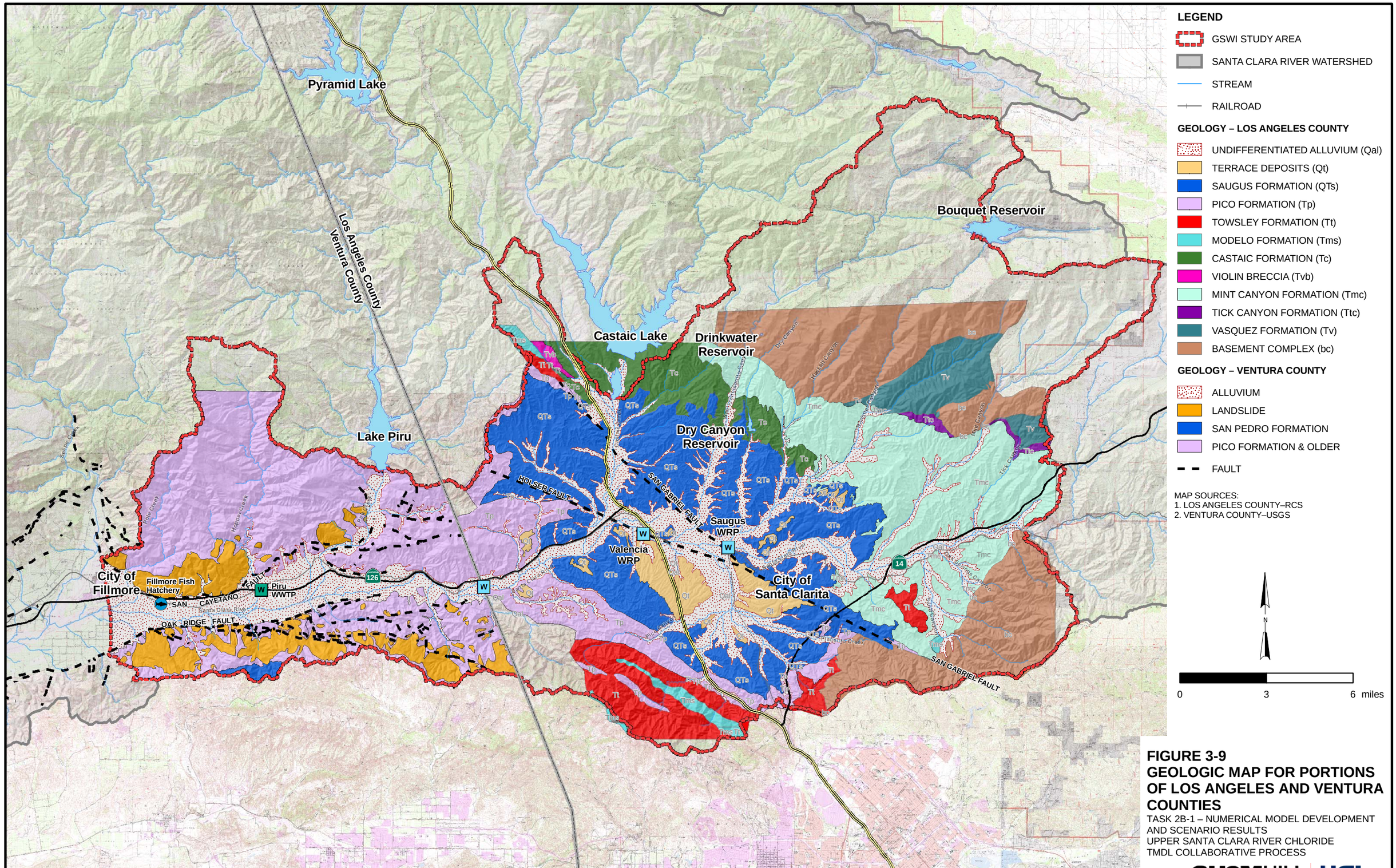
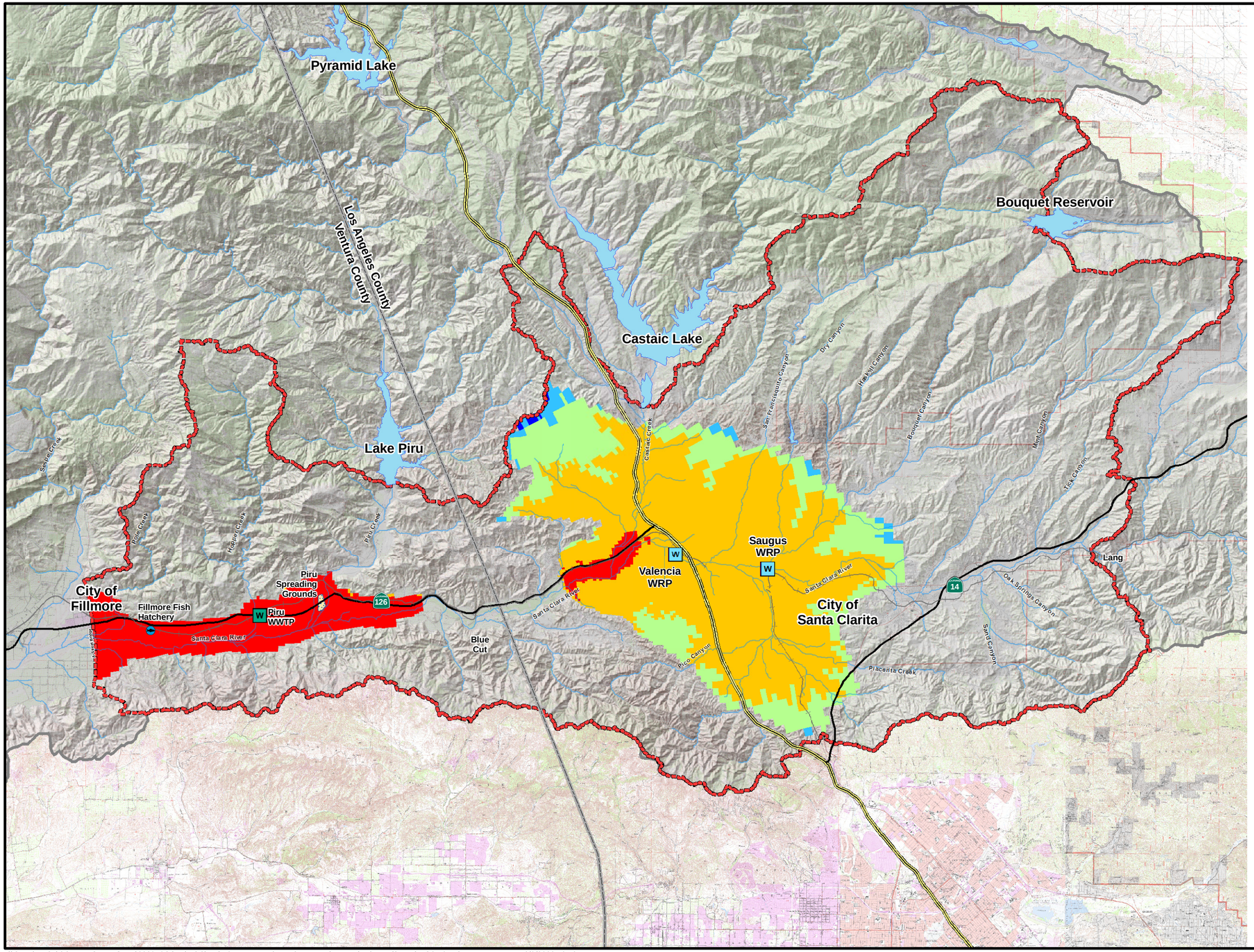


FIGURE 3-9
GEOLOGIC MAP FOR PORTIONS OF LOS ANGELES AND VENTURA COUNTIES

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-09_GEOLOGY.MXD 1/16/2008 08:53:40



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

BOTTOM ELEVATION (feet msl)

- 2,000 and Above
- 1,500 to 2,000
- 1,000 to 1,500
- 500 to 1,000
- 500 and Below

N

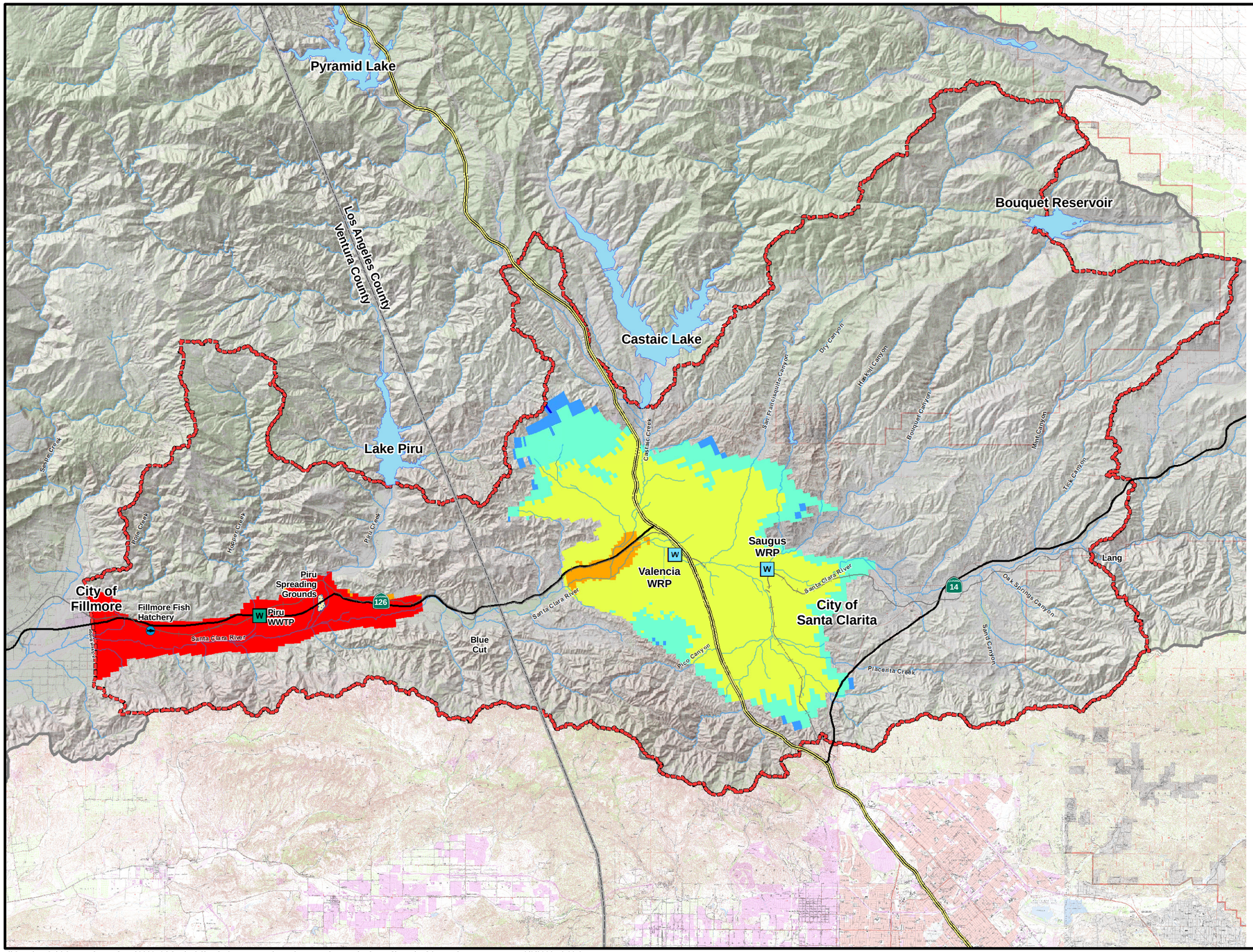
0 3 6 miles

FIGURE 3-10
BOTTOM ELEVATION OF MODEL LAYER 4

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-10_BOTELEV_L4.MXD 3/9/2008 12:58:51



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

BOTTOM ELEVATION (feet msl)

- 1,500 and Below
- 1,000 to 1,500
- 500 to 1,000
- 0 to 500
- -500 to 0
- -500 and Above

N

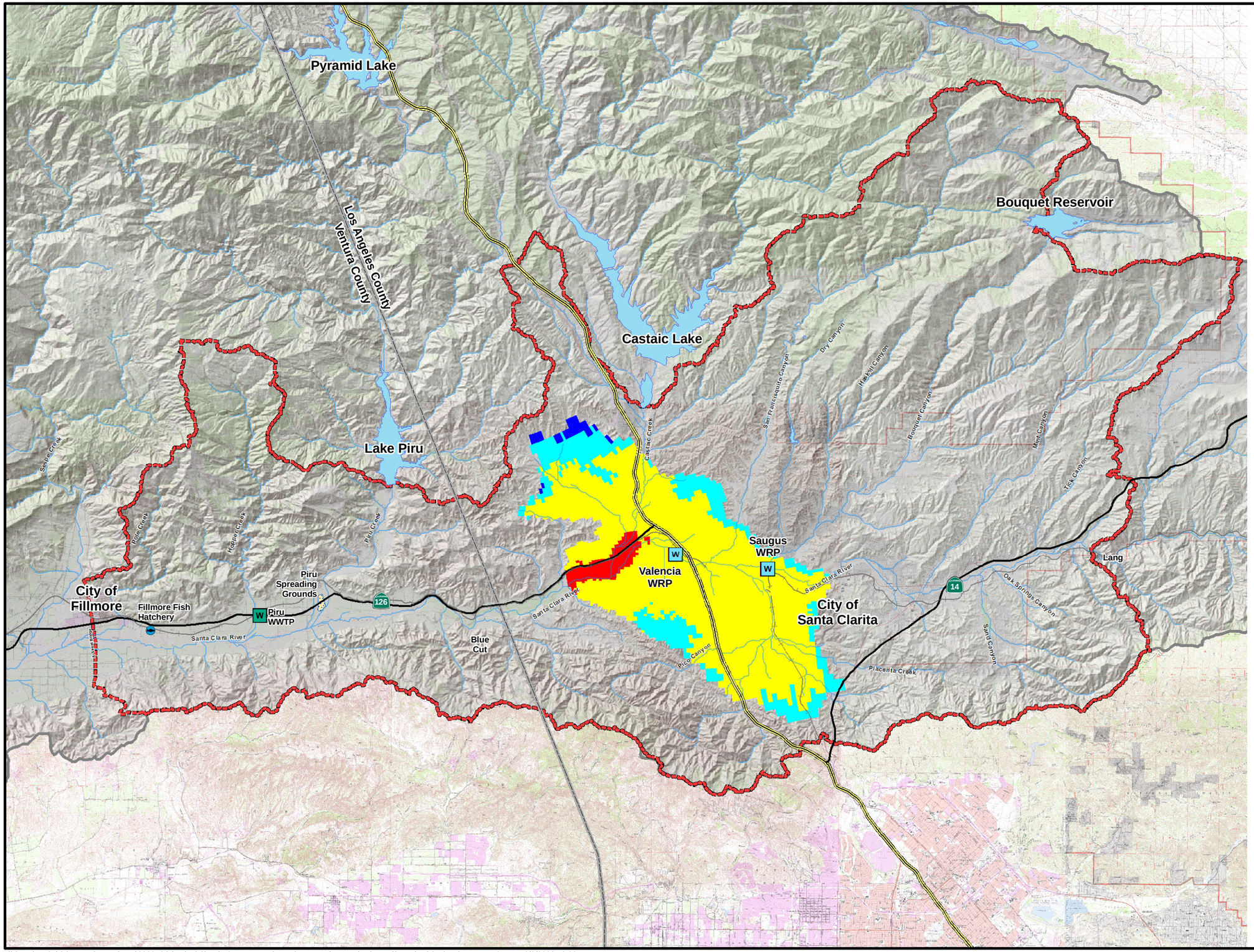
0 3 6 miles

FIGURE 3-11
BOTTOM ELEVATION OF MODEL LAYER 5

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-11_BOTELEV_L5.MXD 3/9/2008 13:02:27



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

BOTTOM ELEVATION (feet msl)

- 500 to 1,000
- 0 to 500
- -500 to 0
- -500 and Above

N

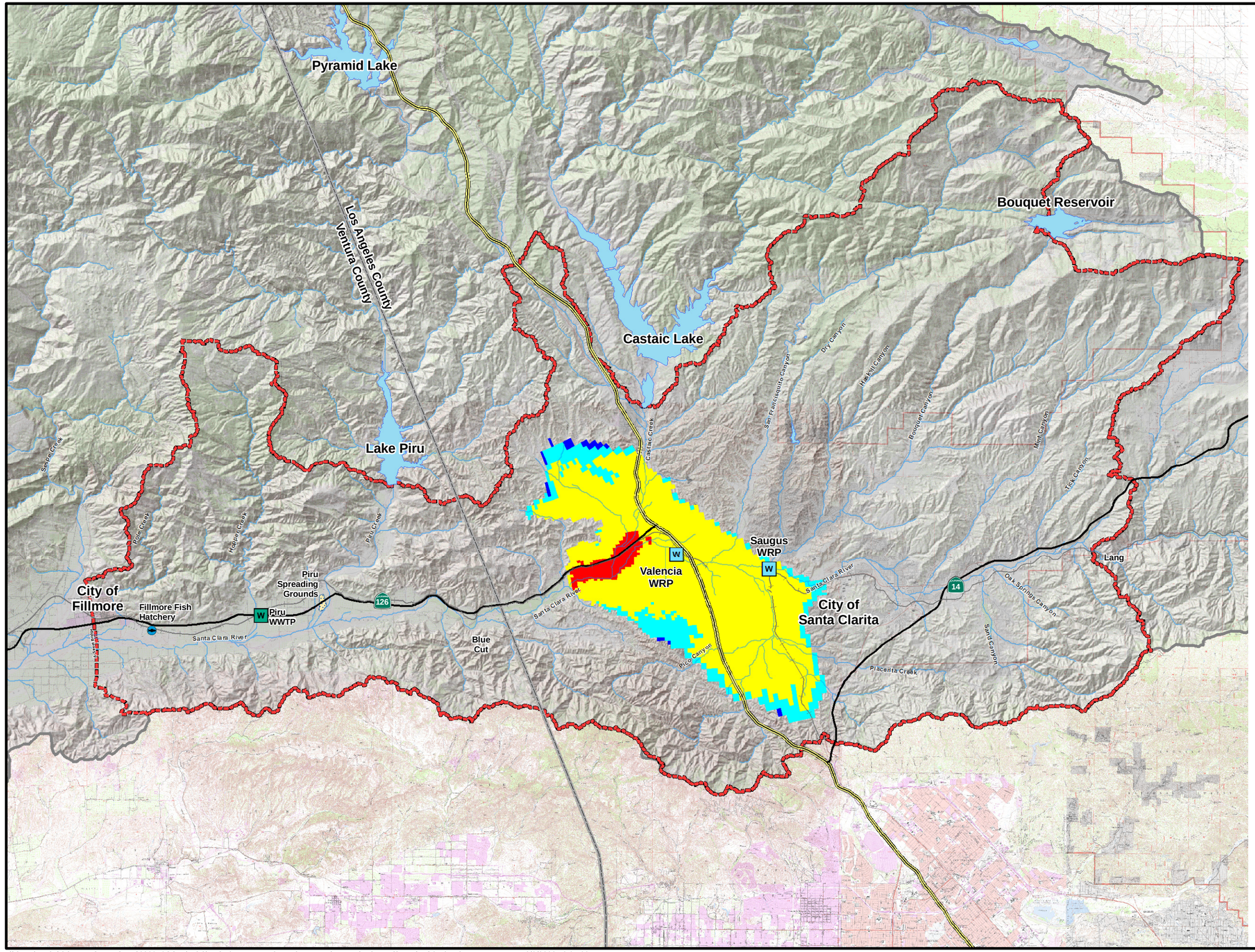
0 3 6 miles

FIGURE 3-12
BOTTOM ELEVATION OF MODEL LAYER 6

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-12_BOTELEV_L6.MXD 3/9/2008 13:03:51



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

BOTTOM ELEVATION (feet msl)

- 0 to 500
- -500 to 0
- -1,000 to -500
- -1,000 and Above

N

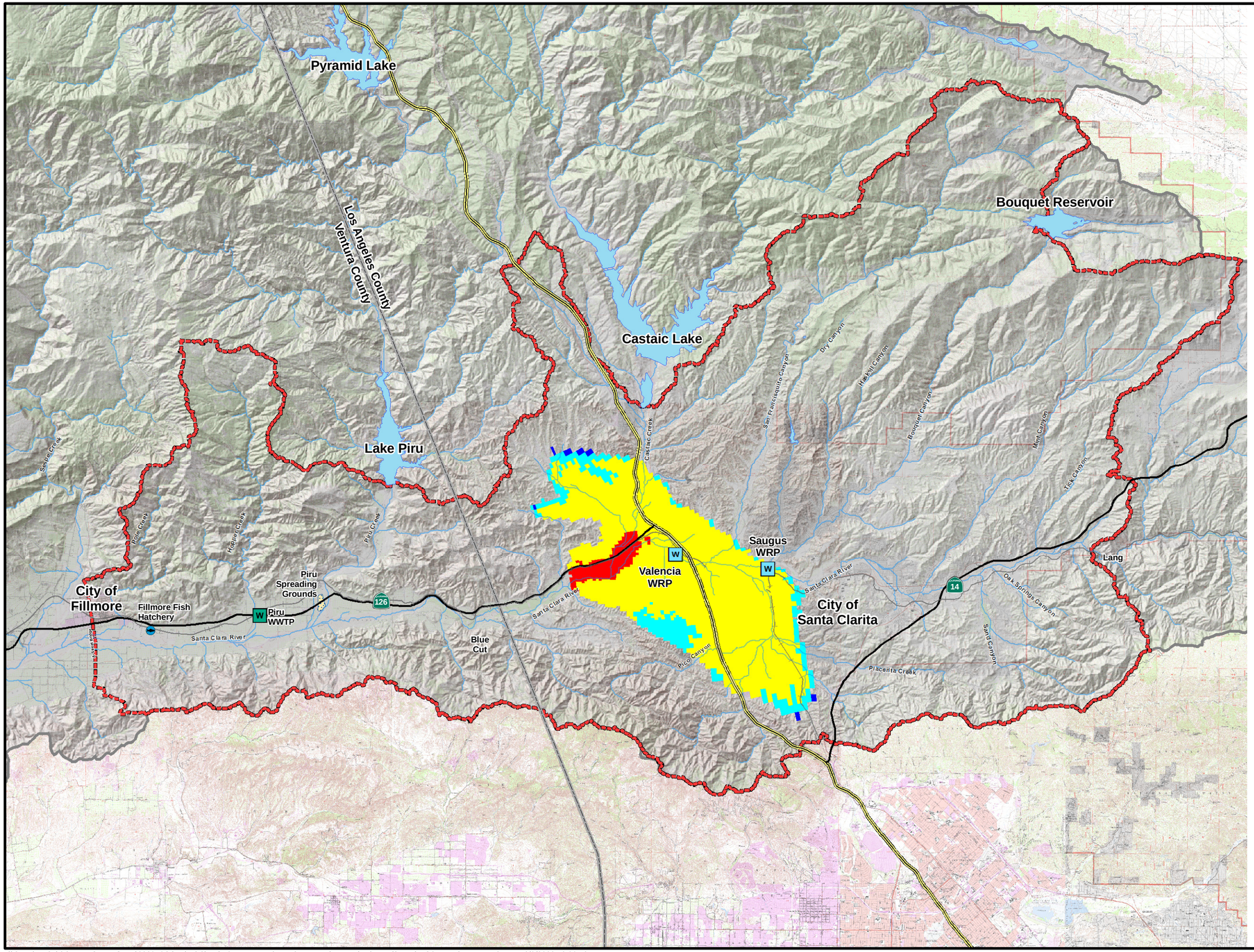
0 3 6 miles

FIGURE 3-13
BOTTOM ELEVATION OF MODEL LAYER 7

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-13_BOTELEV_L7.MXD 3/9/2008 13:05:06



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

BOTTOM ELEVATION (feet msl)

- -500 and Below
- -1,000 to -500
- -1,500 to -1,000
- -1,500 and Above

N

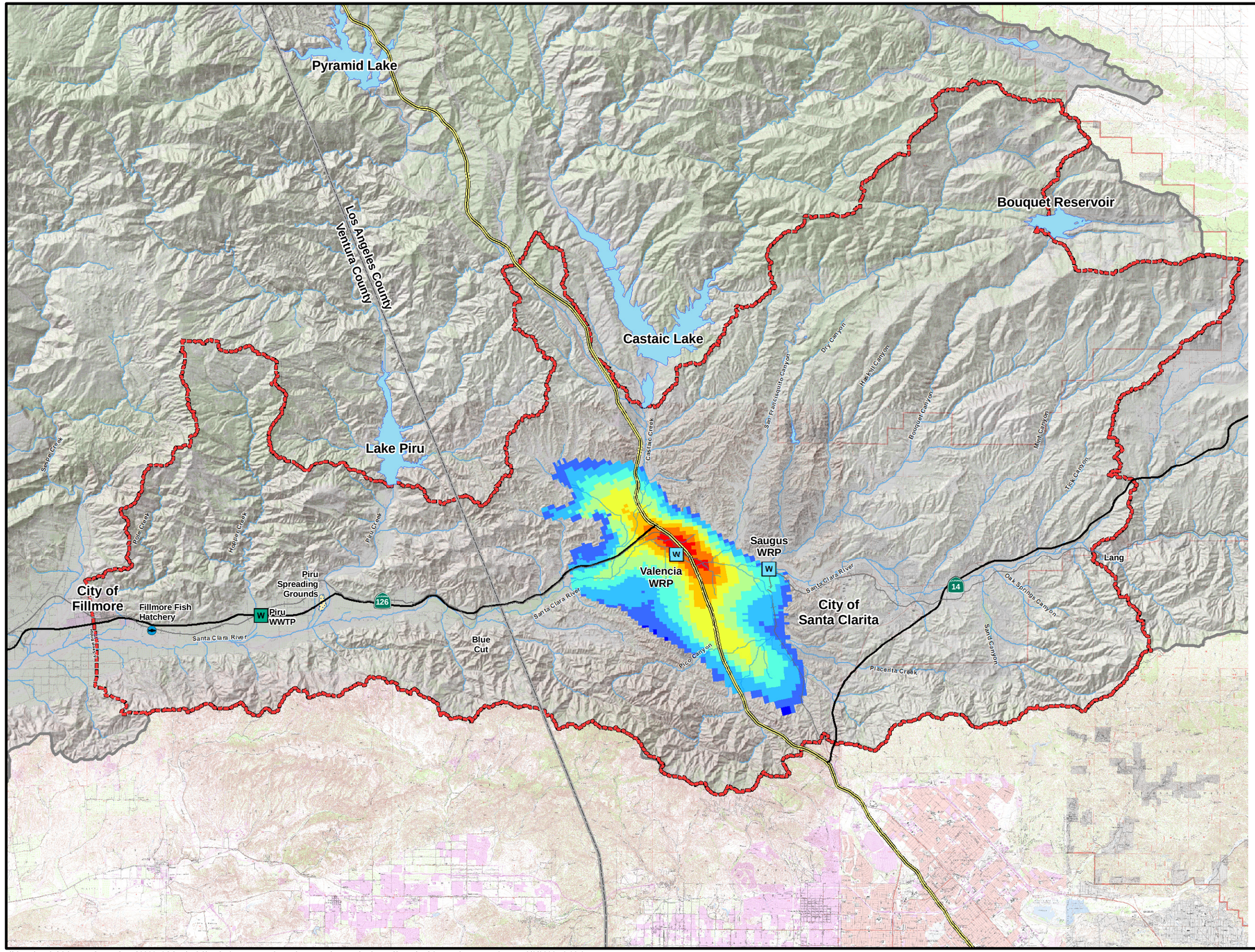
0 3 6 miles

FIGURE 3-14
BOTTOM ELEVATION OF MODEL LAYER 8

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-14_BOTELEV_L8.MXD 3/9/2008 13:06:52



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

BOTTOM ELEVATION (feet msl)

- -1,000 and Below
- -1,500 to -1,000
- -2,000 to 1,500
- -2,500 to -2,000
- -3,000 to 2,500
- -3,500 to -3,000
- -4,000 to 3,500
- -4,500 to -4,000
- -4,500 and Above

N

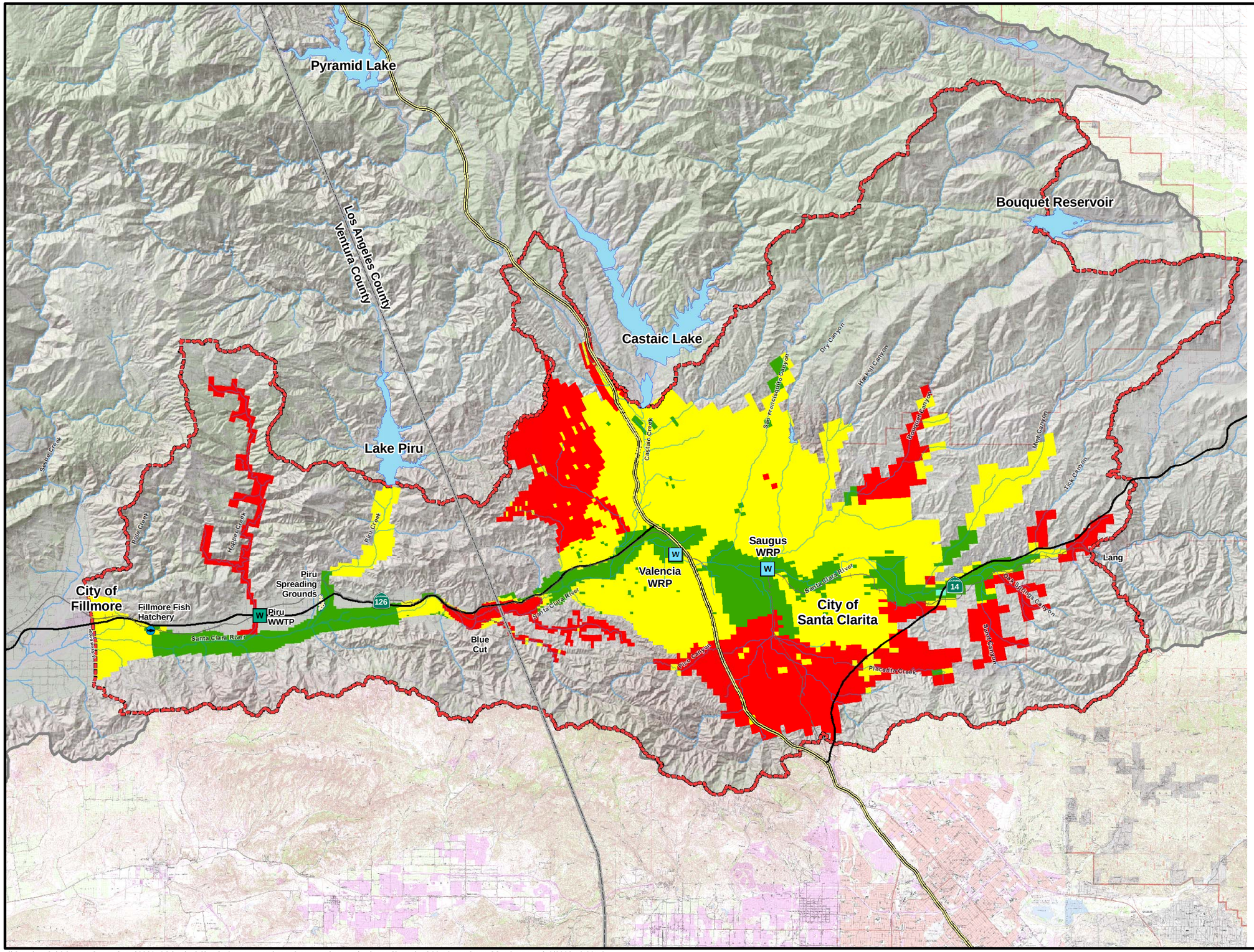
0 3 6 miles

FIGURE 3-15
BOTTOM ELEVATION OF MODEL LAYER 9

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG3-15_BOTELEV_L9.MXD 3/9/2008 13:08:25



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

MODEL LAYER THICKNESS (feet)

- Up to 50
- 50 to 100
- 100 to 250
- 250 to 500
- 500 to 1,000
- > 1,000

NOTES:

1. MODEL LAYER 1 THICKNESS = 1 feet
2. MODEL LAYER 2 THICKNESS = 5 feet

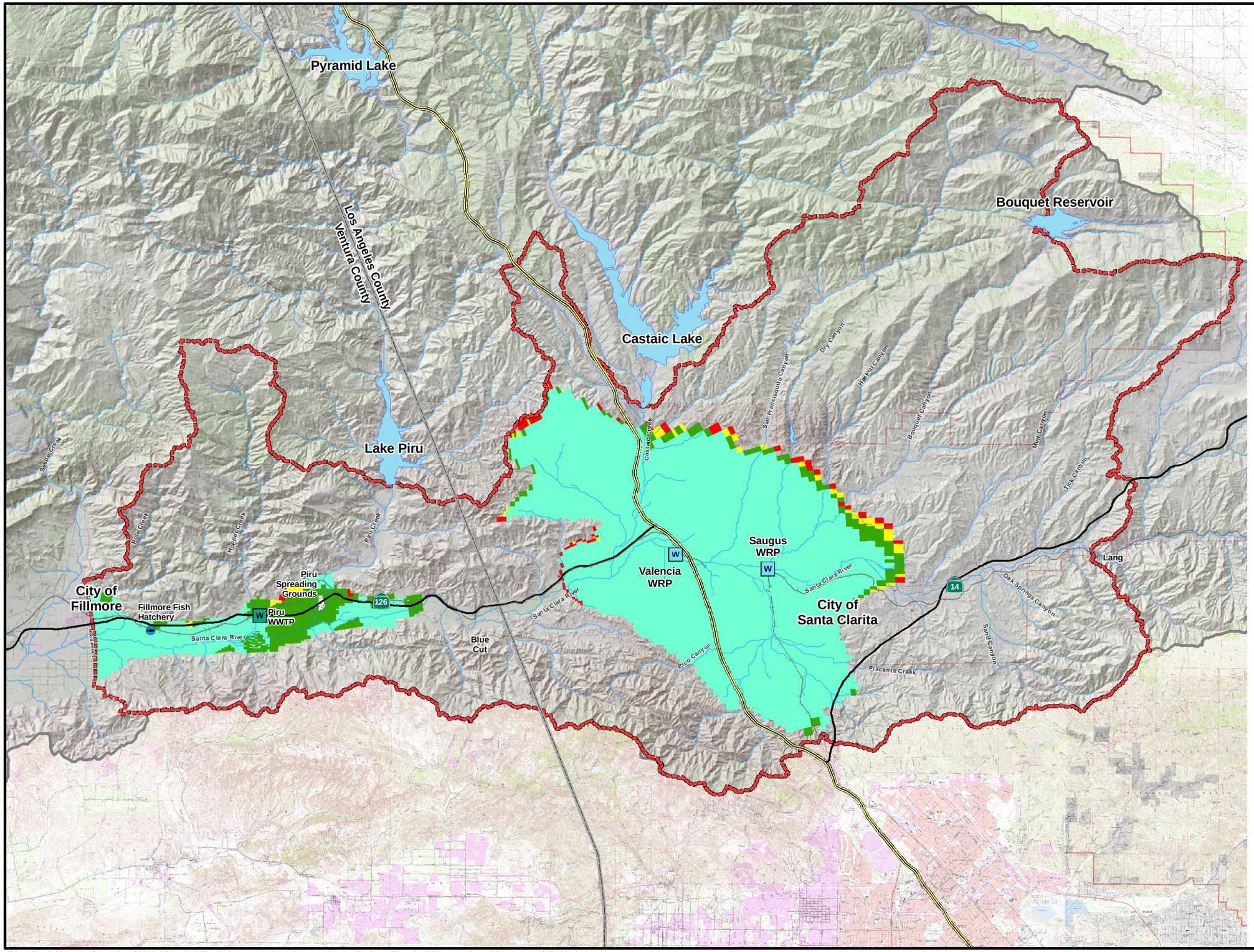
N

0 3 6 miles

FIGURE 3-16
THICKNESS OF MODEL LAYER 3
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-16_THICKNESS_L3.MXD 1/16/2008 10:09:50



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

MODEL LAYER THICKNESS (feet)

- Up to 50
- 50 to 100
- 100 to 250
- 250 to 500
- 500 to 1,000
- > 1,000

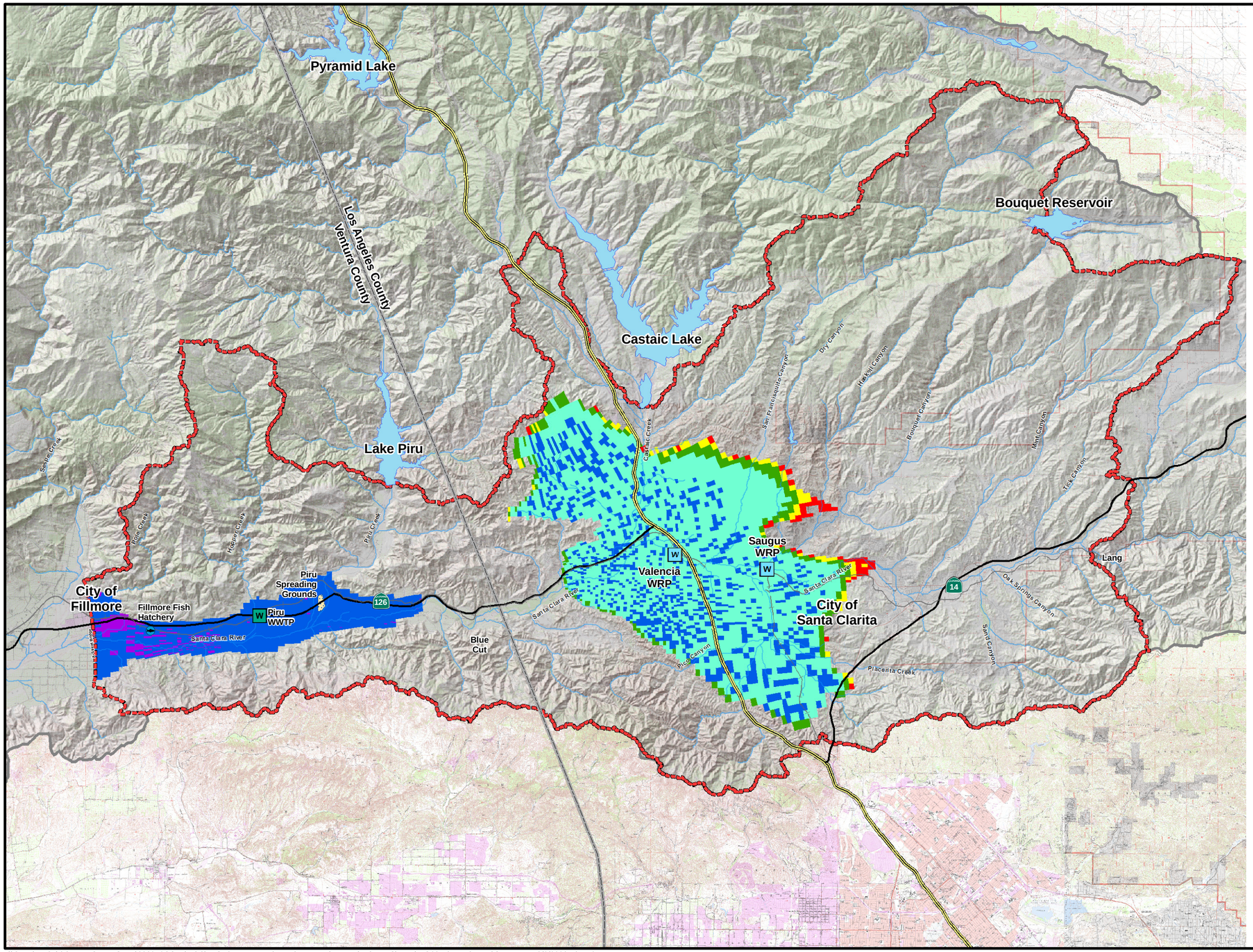
N

0 3 6 miles

FIGURE 3-17
THICKNESS OF MODEL LAYER 4
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-17_THICKNESS_L4.MXD 3/9/2008 13:10:07



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

MODEL LAYER THICKNESS (feet)

- Up to 50
- 50 to 100
- 100 to 250
- 250 to 500
- 500 to 1,000
- > 1,000

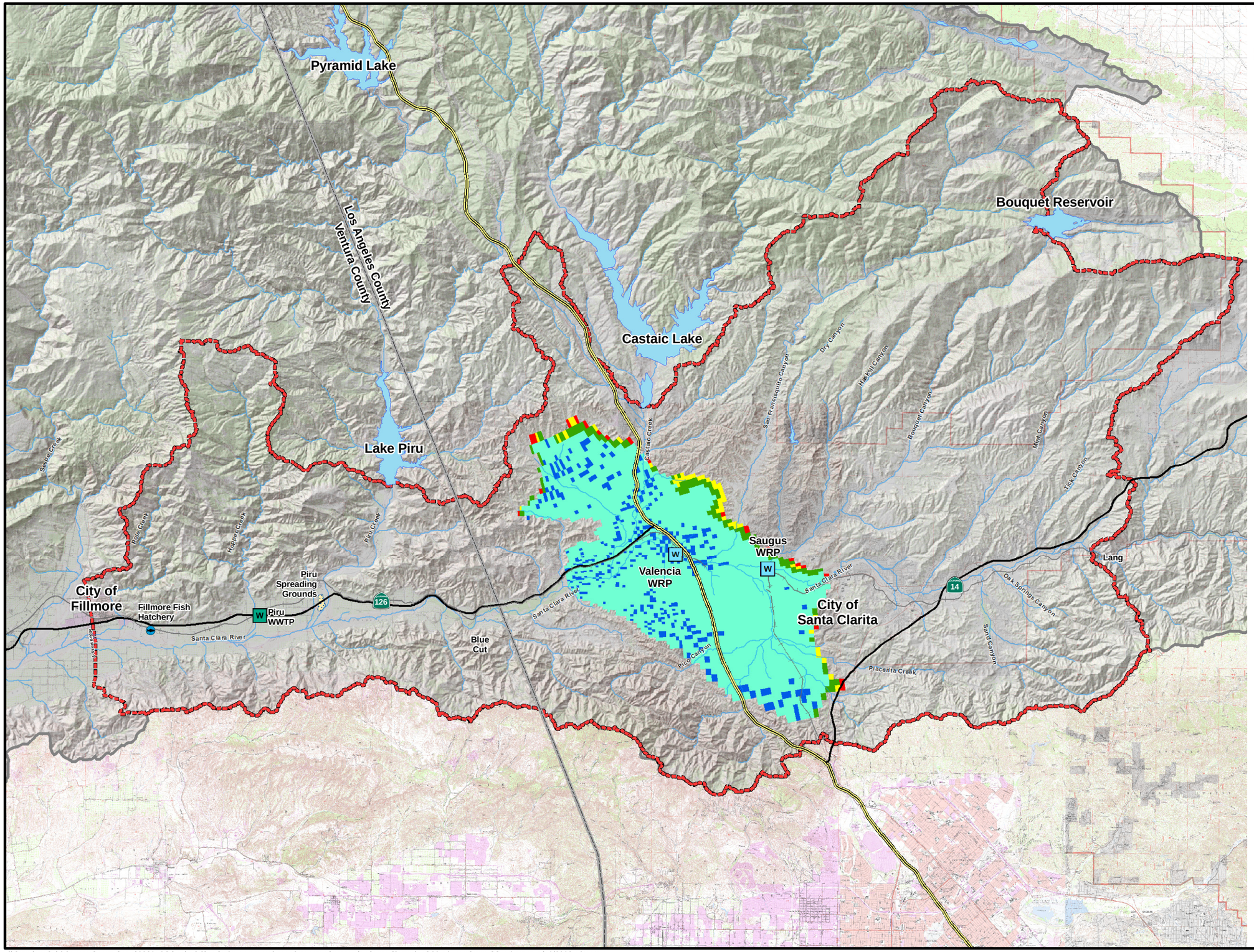
N

0 3 6 miles

FIGURE 3-18
THICKNESS OF MODEL LAYER 5
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-18_THICKNESS_L5.MXD 3/9/2008 13:11:04



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

MODEL LAYER THICKNESS (feet)

- Up to 50
- 50 to 100
- 100 to 250
- 250 to 500
- 500 to 1,000
- > 1,000

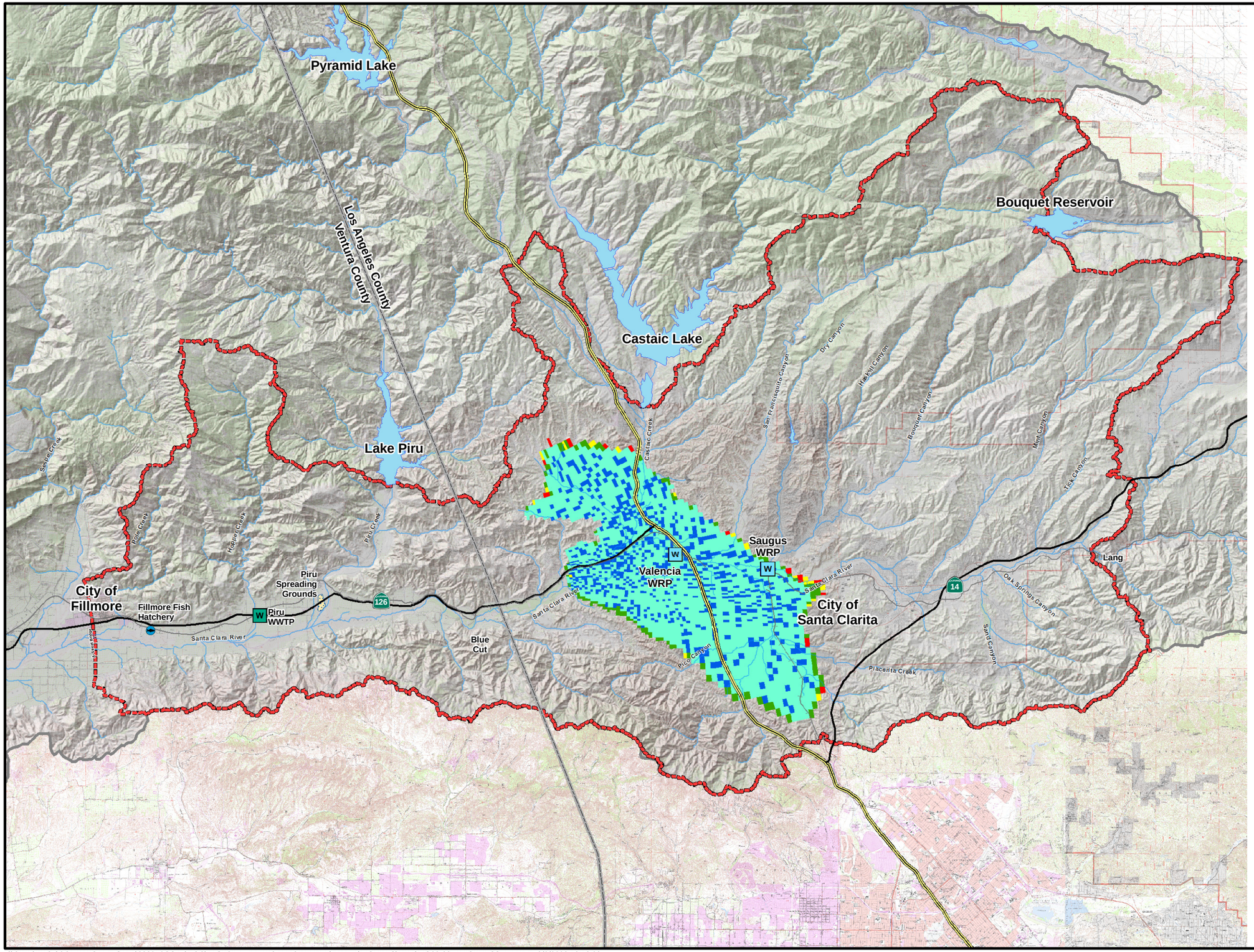
N

0 3 6 miles

FIGURE 3-19
THICKNESS OF MODEL LAYER 6
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL - HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-19_THICKNESS_L6.MXD 1/16/2008 10:15:17



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

MODEL LAYER THICKNESS (feet)

- Up to 50
- 50 to 100
- 100 to 250
- 250 to 500
- 500 to 1,000
- > 1,000

N

0 3 6 miles

FIGURE 3-20
THICKNESS OF MODEL LAYER 7

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL - HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-20_THICKNESS_L7.MXD 3/9/2008 13:13:23

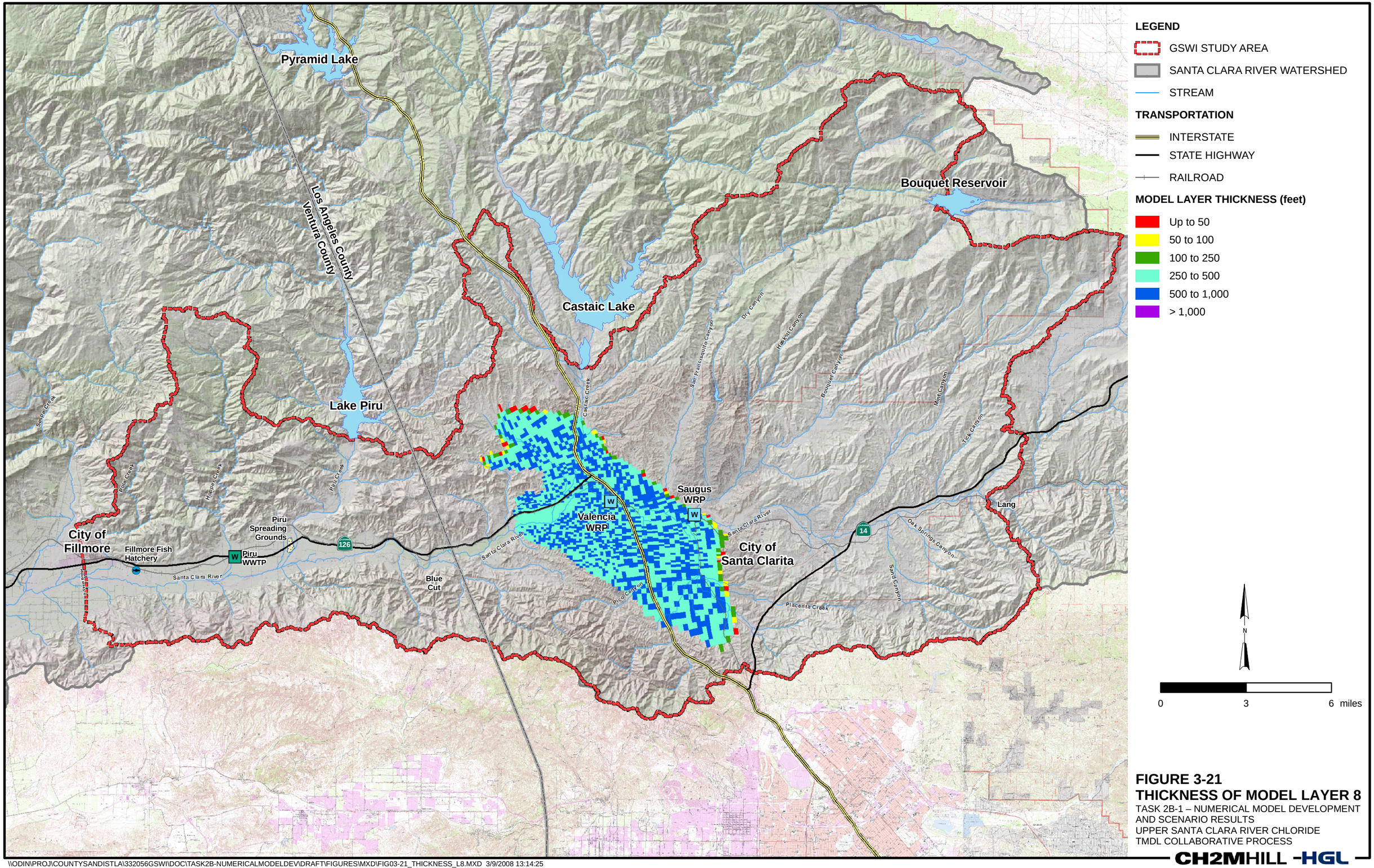


FIGURE 3-21
THICKNESS OF MODEL LAYER 8
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-21_THICKNESS_L8.MXD 3/9/2008 13:14:25

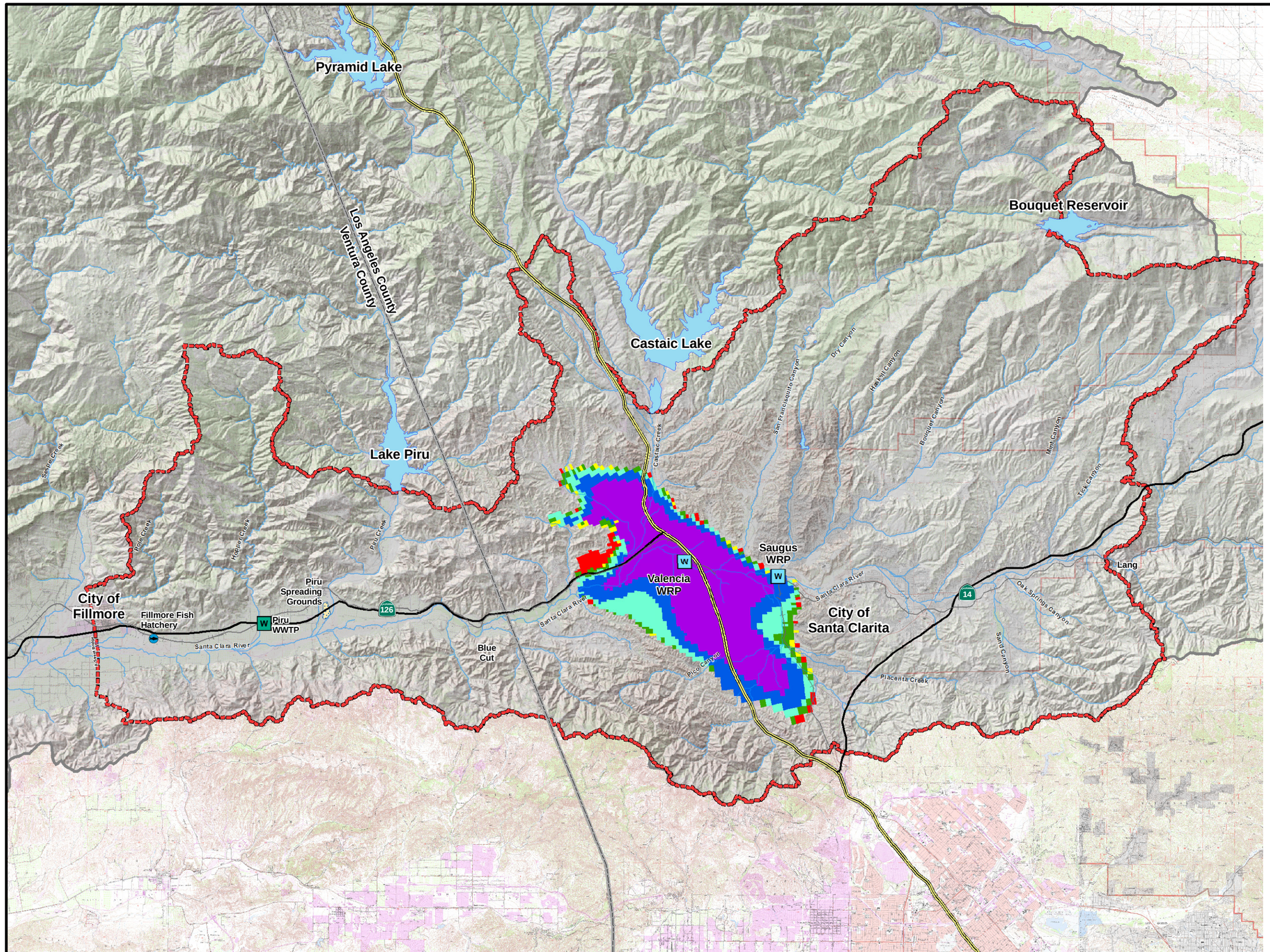
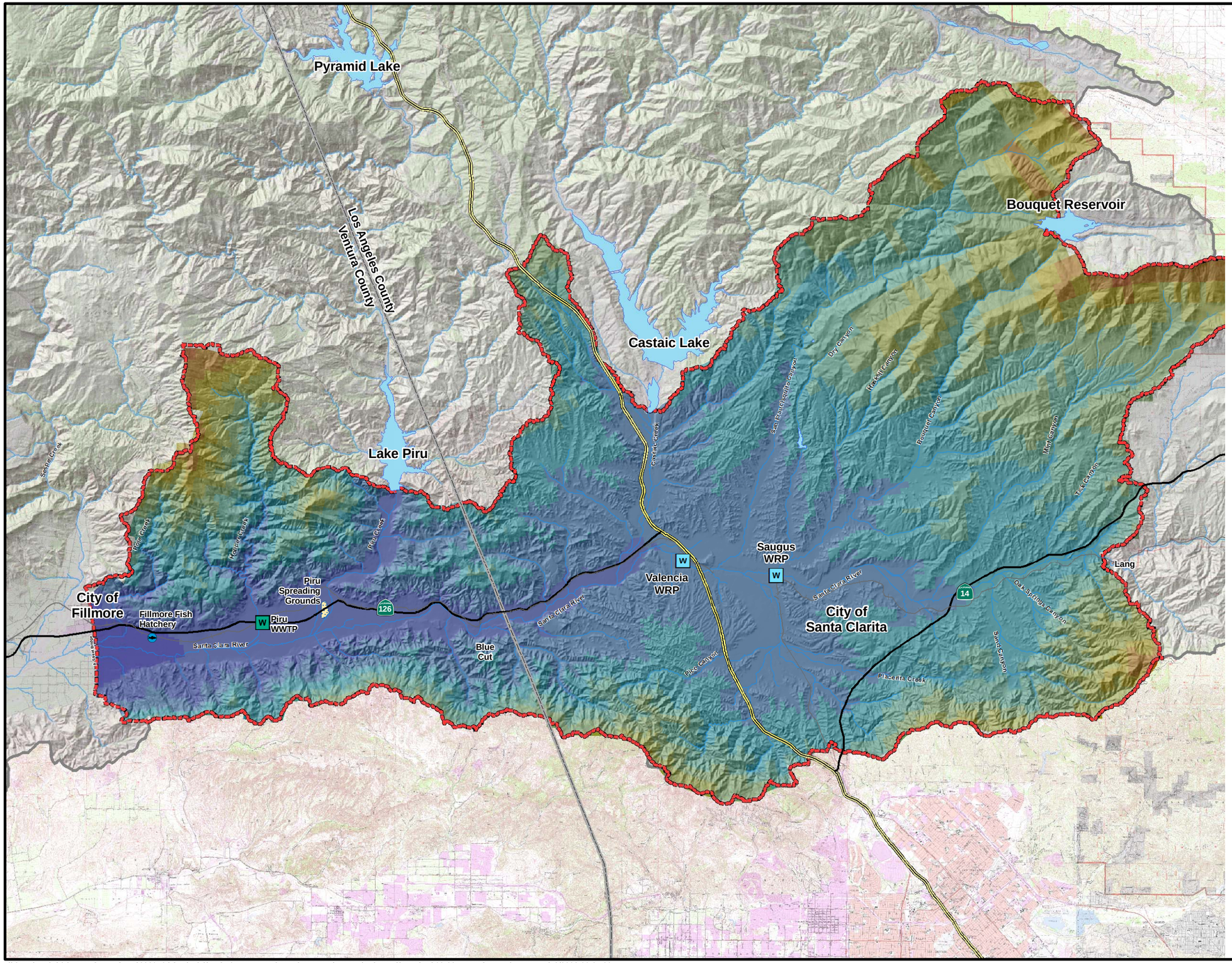


FIGURE 3-22
THICKNESS OF MODEL LAYER 9
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-22_THICKNESS_L9.MXD 3/9/2008 13:15:23



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

LAND SURFACE ELEVATION (feet msl)

- 350 to 500
- 500 to 1,000
- 1,000 to 1,500
- 1,500 to 2,000
- 2,000 to 2,500
- 2,500 to 3,000
- 3,000 to 3,500
- 3,500 to 4,000
- 4,000 to 4,500
- 4,500 to 5,000
- 5,000 to 5,200

N

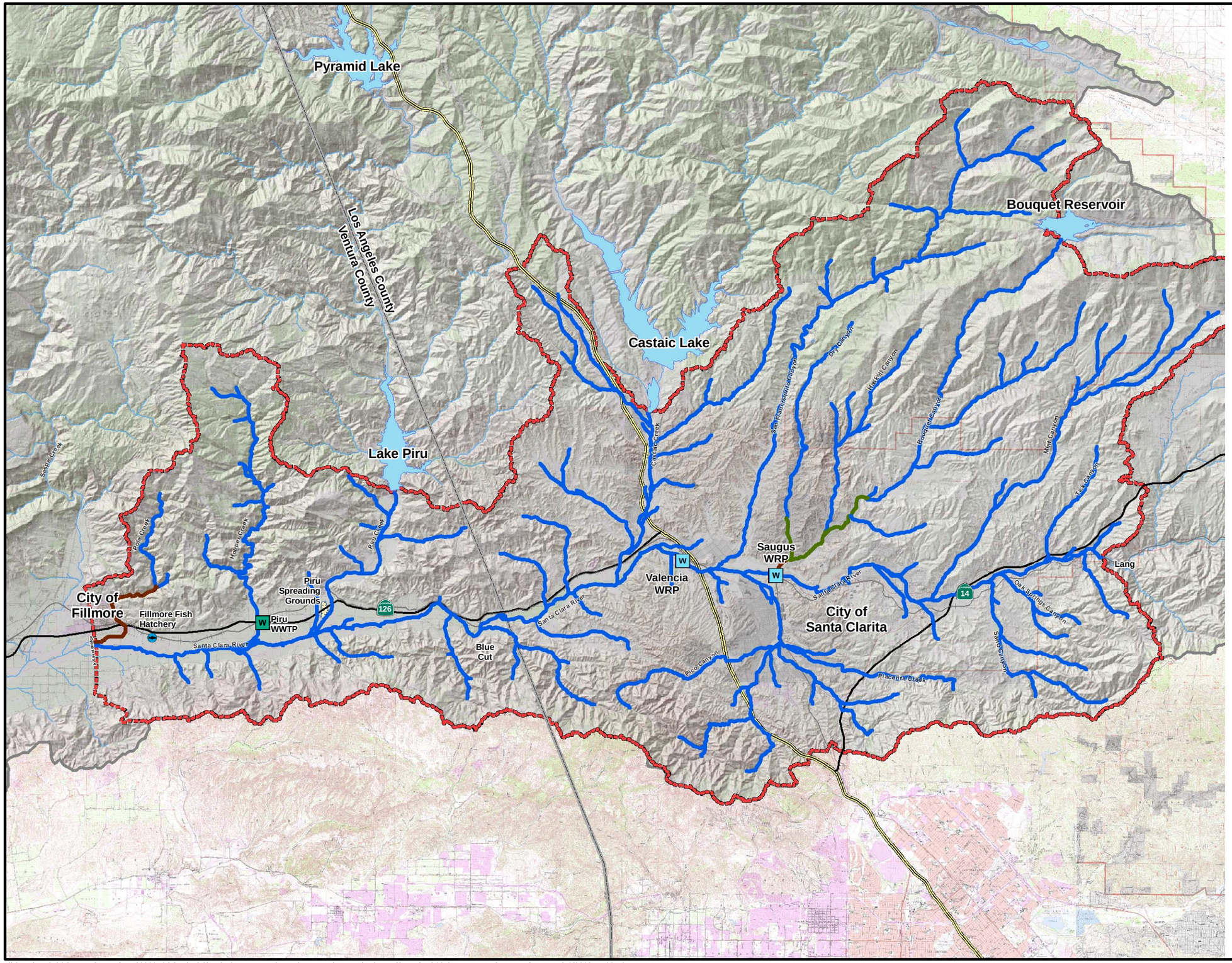
0 3 6 miles

FIGURE 3-23
LAND SURFACE ELEVATION IN GSWIM

TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-23_LANDSURFACE.MXD 1/18/2008 09:25:39



LEGEND

- GSWI STUDY AREA
- SANTA CLARA RIVER WATERSHED
- UNLINED STREAM
- LINED STREAM
- BERMED STREAM

TRANSPORTATION

- INTERSTATE
- STATE HIGHWAY
- RAILROAD

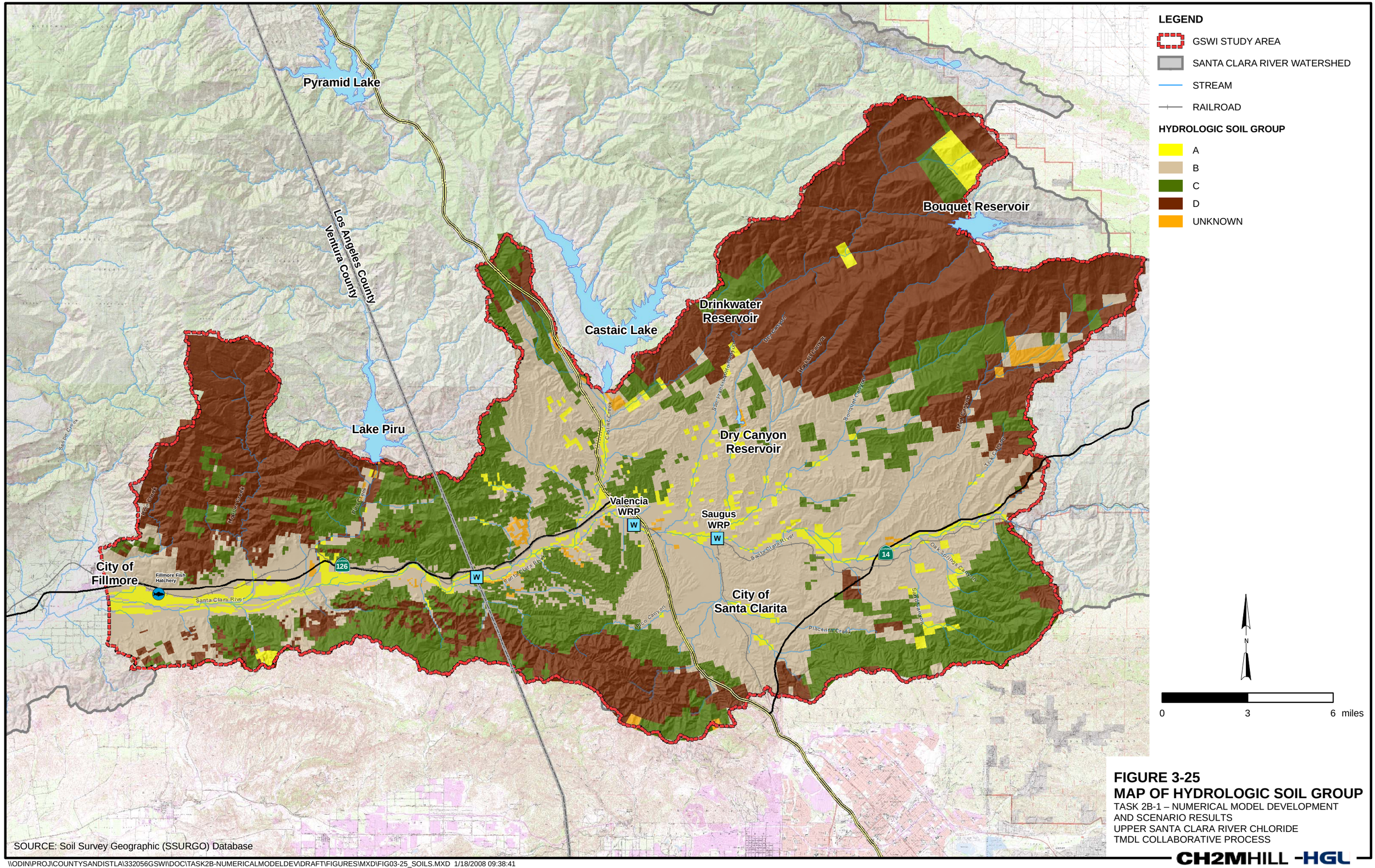
N

0 3 6 miles

FIGURE 3-24
ASSUMED LOCATIONS OF UNLINED, LINED, AND BERMED STREAMS
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL

\\ODIN\PROJ\COUNTYSANDISTLA\332056GSWI\DOC\TASK2B-NUMERICALMODELDEV\DRAFT\FIGURES\MXD\FIG03-24_BERMEDSTREAMS.MXD 1/16/2008 14:39:50



SOURCE: Soil Survey Geographic (SSURGO) Database

FIGURE 3-25
MAP OF HYDROLOGIC SOIL GROUP
TASK 2B-1 – NUMERICAL MODEL DEVELOPMENT
AND SCENARIO RESULTS
UPPER SANTA CLARA RIVER CHLORIDE
TMDL COLLABORATIVE PROCESS

CH2MHILL -HGL