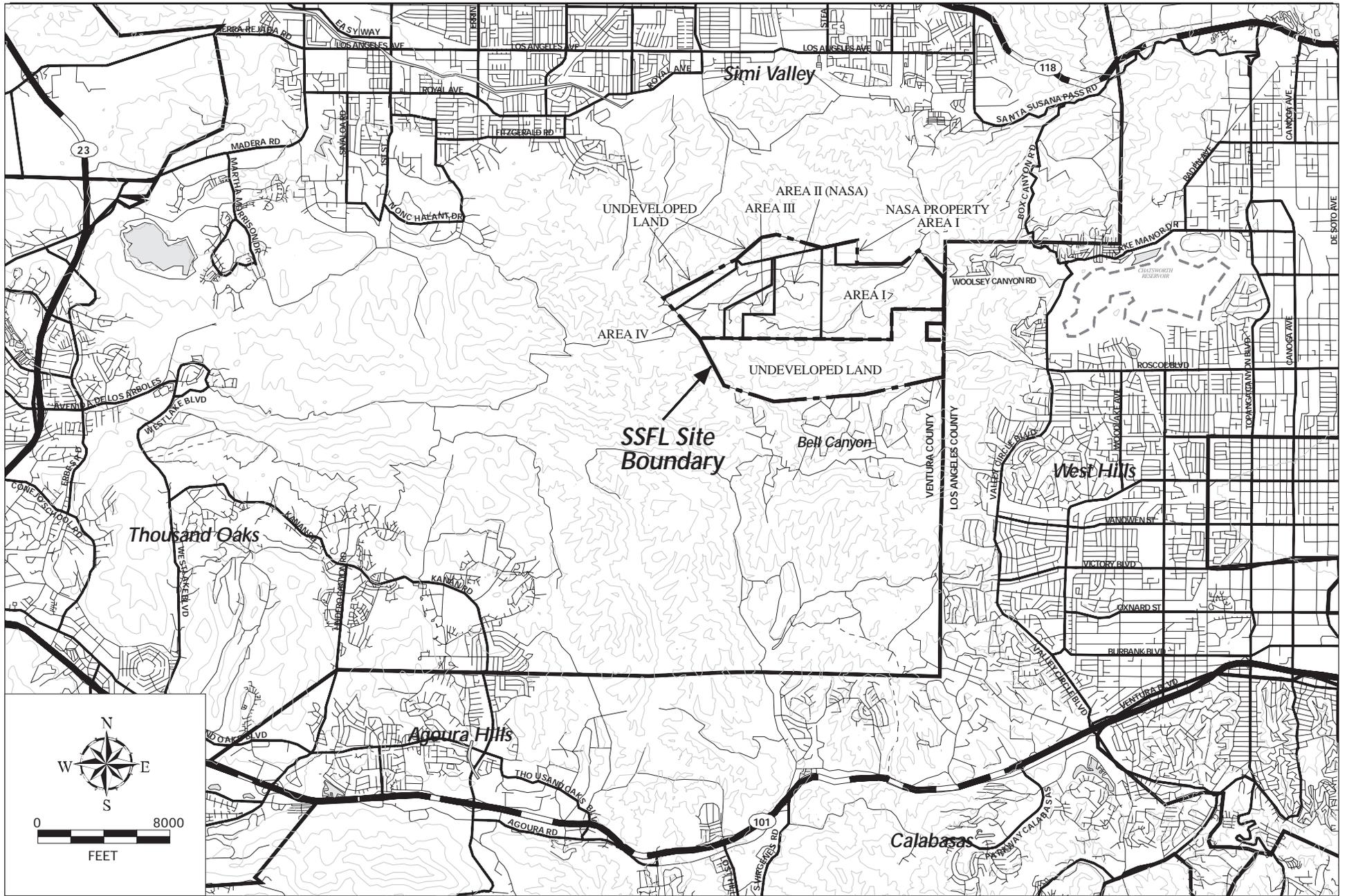


## FIGURES

- 1-1 Site Location
- 1-2 Cross Sectional Depiction of Operable Units
- 1-3 Site Plan
- 1-4 RFI Site Locations
- 1-5 Near-Surface Groundwater Monitoring Well Network Prior to 2000 Investigation
  
- 2-1 Shaded Relief Topographic Map of the SSFL
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- 3-2 Typical Piezometer Design
- 3-3 Graphic Summary of Water Level Measuring Events
  
- 4-1 Cross-Sectional Diagram of SSFL Groundwater
- 4-2 Near-Surface Groundwater Extent, March 2001
- 4-3 Near-Surface Groundwater Extent, November 2001
- 4-4 Near-Surface Groundwater Extent, February 2002
- 4-5 Near-Surface Groundwater Extent, May 2003
- 4-6 Comparison of Near-Surface Groundwater Extent, March 2001 and February 1998
- 4-7 Hydrographs of Near-Surface Wells/Piezometers at the Bowl RFI Site
- 4-8 Water Table Surface of Perched Groundwater at the Coca RFI Site
- 4-9 Locations of Perched and Continuous Near-Surface Groundwater
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- 6-1 Cross-Sectional Schematic Diagram of Model Domain
- 6-2 Vertical Cross-Section Fracture Network

- 6-3 Histograms of Fracture Apertures
- 6-4 Hydraulic Head Contours for the Base Case Simulation
- 6-5 Simulated TCE Contours
- 6-6 TCE Concentration Profiles (linear concentration scale)
- 6-7 TCE Concentration Profiles (log concentration scale)
- 6-8 Simulated Perchlorate Contours
- 6-9 Simulated NDMA/1,4-Dioxane Contours

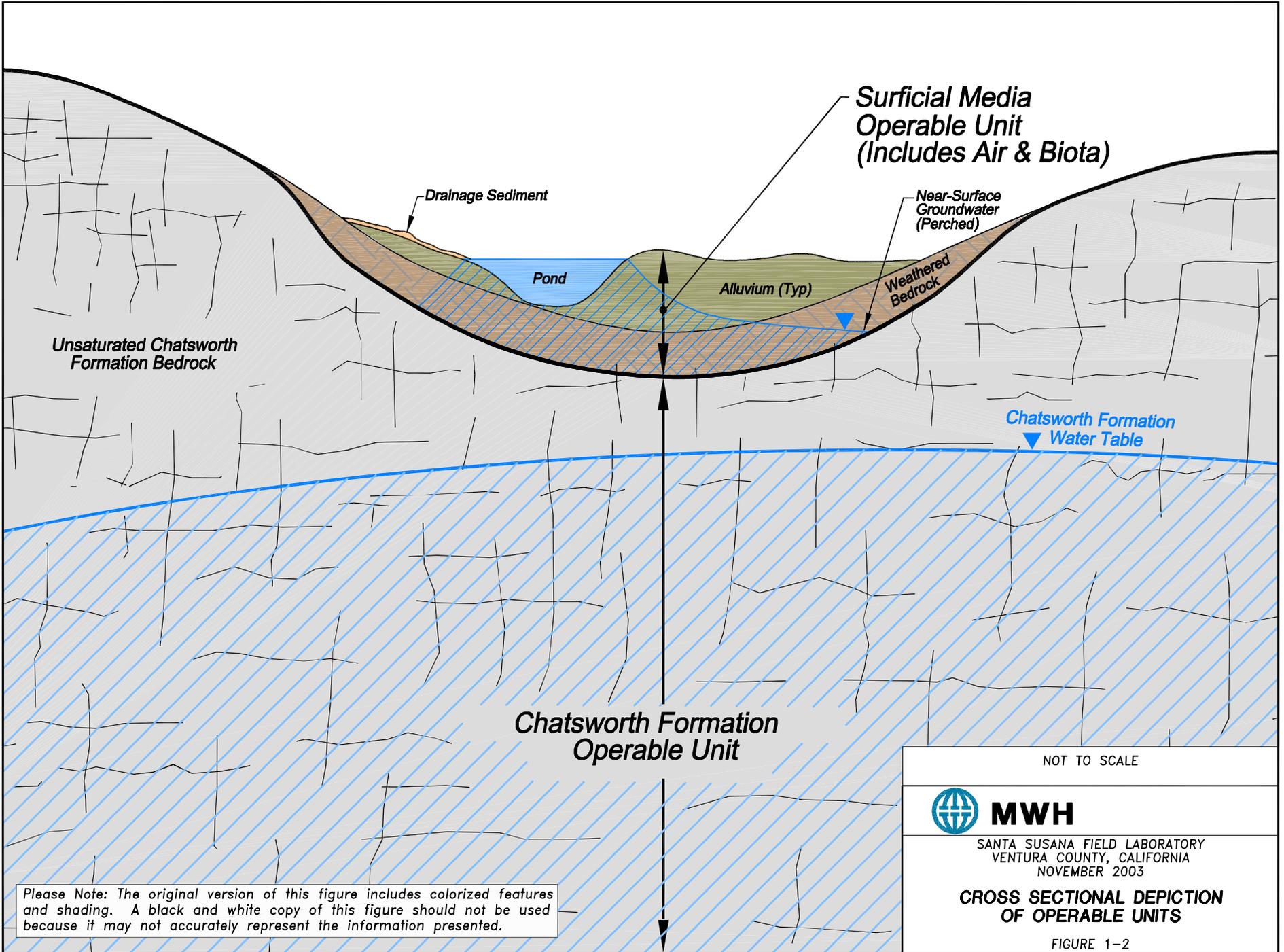


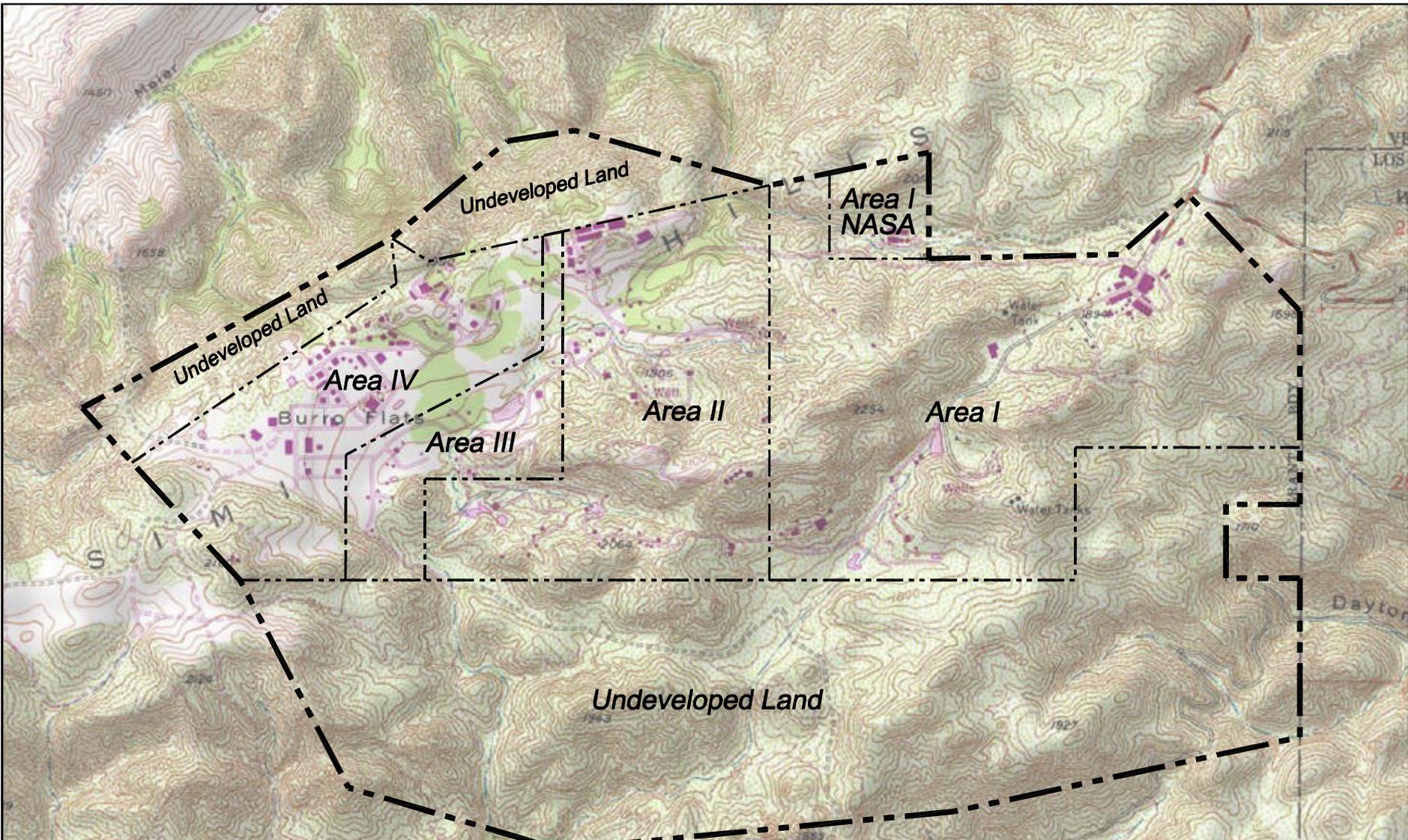
FIGURE

1-1



Regional Location Map  
Santa Susana Field Laboratory





**Legend**

-  SSFL Property Boundary
-  Area Boundary



Base Map Taken from TOPO Wildflower Topo Series (2000)

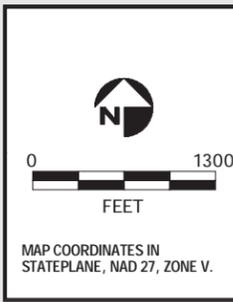
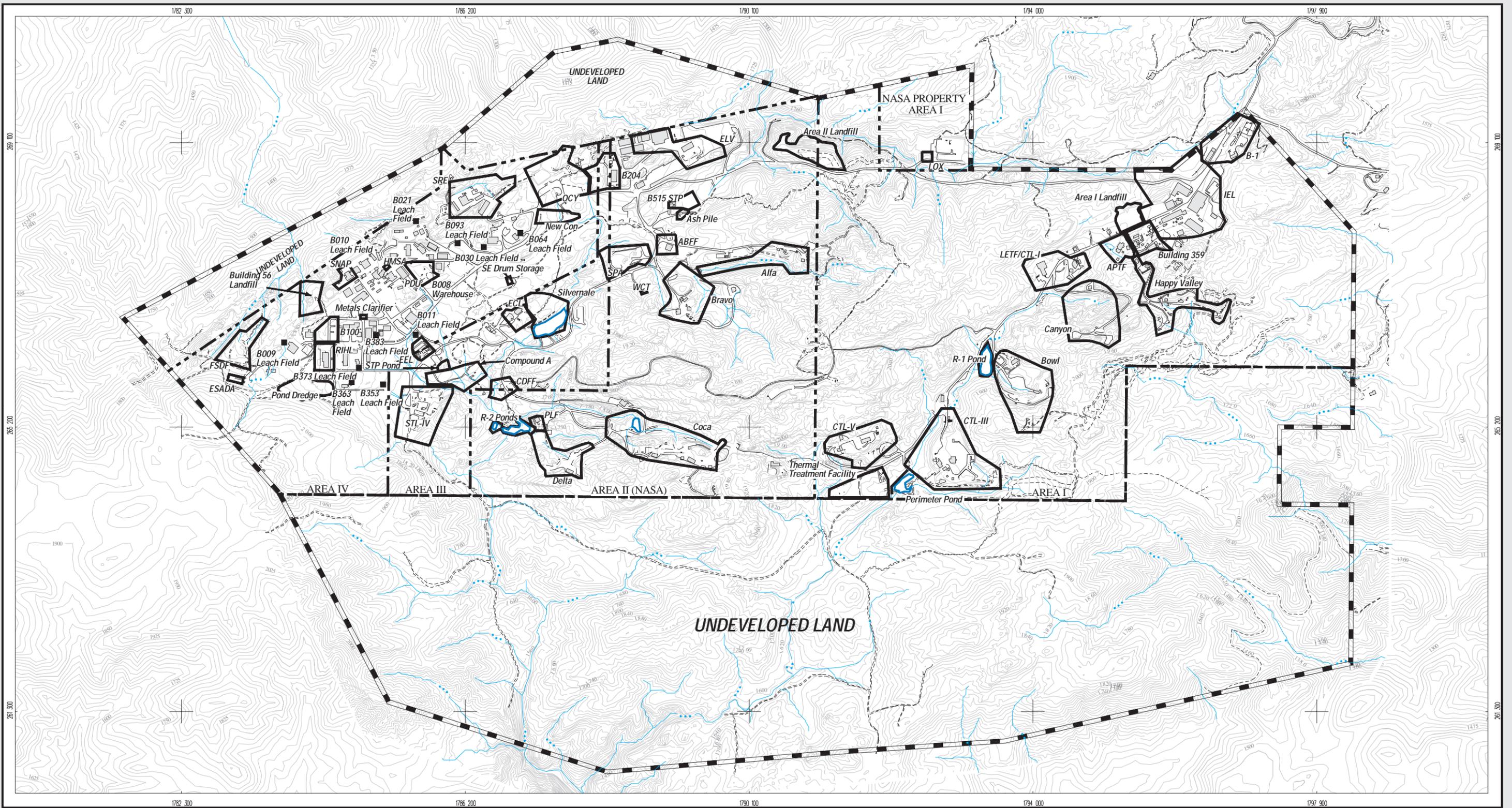


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NOVEMBER 2003

**SITE PLAN**

FIGURE 1-3



**RFI SITES**

- AREA I**  
 SWMU 4.1 - B-1 Area  
 SWMU 4.2 - Area I Landfill  
 SWMUs 4.3, 4.4 and AOC - Instrument and Equipment Laboratories (IEL)  
 SWMU 4.5, 4.6 - LOX Plant Former Sump/Clarifier and Drum Disposal Area  
 SWMU 4.7 - Component Test Laboratory III (CTL-III) Area  
 SWMU 4.8 - Thermal Treatment Facility (TTF) RCRA Permitted Unit  
 SWMU 4.9, AOC - Advanced Propulsion Test Facility (APTF) Area  
 SWMU 4.12 - Laser Engineering Test Facility (LETF)/Component Test Lab I (CTL-I) Area  
 SWMU 4.14 - Canyon Area  
 SWMU 4.15 and AOC - Bowl Area and Building 901 Leachfield  
 SWMU 4.16 - Area I Reservoir (R-1 Pond)  
 SWMU 4.17 - Perimeter Pond

**AREA I (cont)**

- AOC - Building 359 Sump  
 AOC - Happy Valley Area  
 AOC - Component Test Laboratory V (CTL-V)  
**AREA II**  
 SWMU 5.1 - Area II Landfill  
 SWMU 5.2 - ELV Final Assembly, Building 206  
 SWMU 5.5 and AOC - Building 204 Area  
 SWMU 5.6 - Former Incinerator Ash Pile  
 SWMU 5.7 - Hazardous Waste Storage Area Waste Coolant Tank (WCT)  
 SWMUs 5.9, 5.10, 5.11 - Alfa Area  
 SWMUs 5.12, 5.13, 5.14, 5.15 - Alfa/Bravo Skim Pond and Bravo Area  
 SWMUs 5.18, 5.19 - Coca Area  
 SWMUs 5.20, 5.21, 5.22 - Propellant Load Facility (PLF)  
 SWMU 5.23 - Delta Area

**AREA II (cont)**

- SWMU 5.26 - R-2A and R-2B Ponds  
 AOC - Building 515 Sewage Treatment Plant  
 AOC - Storable Propellant Area (SPA)  
 AOC - Alfa/Bravo Fuel Farm  
 AOC - Coca/Delta Fuel Farm  
**AREA III**  
 SWMUs 6.1, 6.3, AOC - Engineering Chemistry Laboratory (ECL) Area  
 SWMU 6.4 - Compound A Facility  
 SWMU 6.5 - Systems Test Laboratory IV (STL-IV) Area  
 SWMU 6.8 - Silvernale Reservoir  
 SWMU 6.9 - Environmental Effects Laboratory (EEL)  
 AOC - Sewage Treatment Plant (STP) Pond Area

**AREA IV**

- SWMU 7.1 - Building 56 Landfill  
 SWMU 7.3 - Former Sodium Disposal Facility (FSDF)  
 SWMU 7.4 - Old Conservation Yard (OCY)  
 SWMU 7.5 - Building 100 Trench  
 SWMU 7.7 - Rockwell International Hot Laboratory (RIHL)  
 SWMU 7.8 - New Conservation Yard (New Con)  
 SWMU 7.9 - ESADA Chemical Storage Area  
 SWMU 7.10 - Former Coal Gasification PDU  
 AOC - Former Hazardous Materials Storage Area (HMSA)  
 AOC - Chemistry Laboratory Metals Clarifier  
 AOC - Pond Dredge Area  
 AOC - Sodium Reactor Experiment (SRE) Area  
 AOC - SE Drum Storage Yard  
 AOC - SNAP Facility

**Basemap Legend**

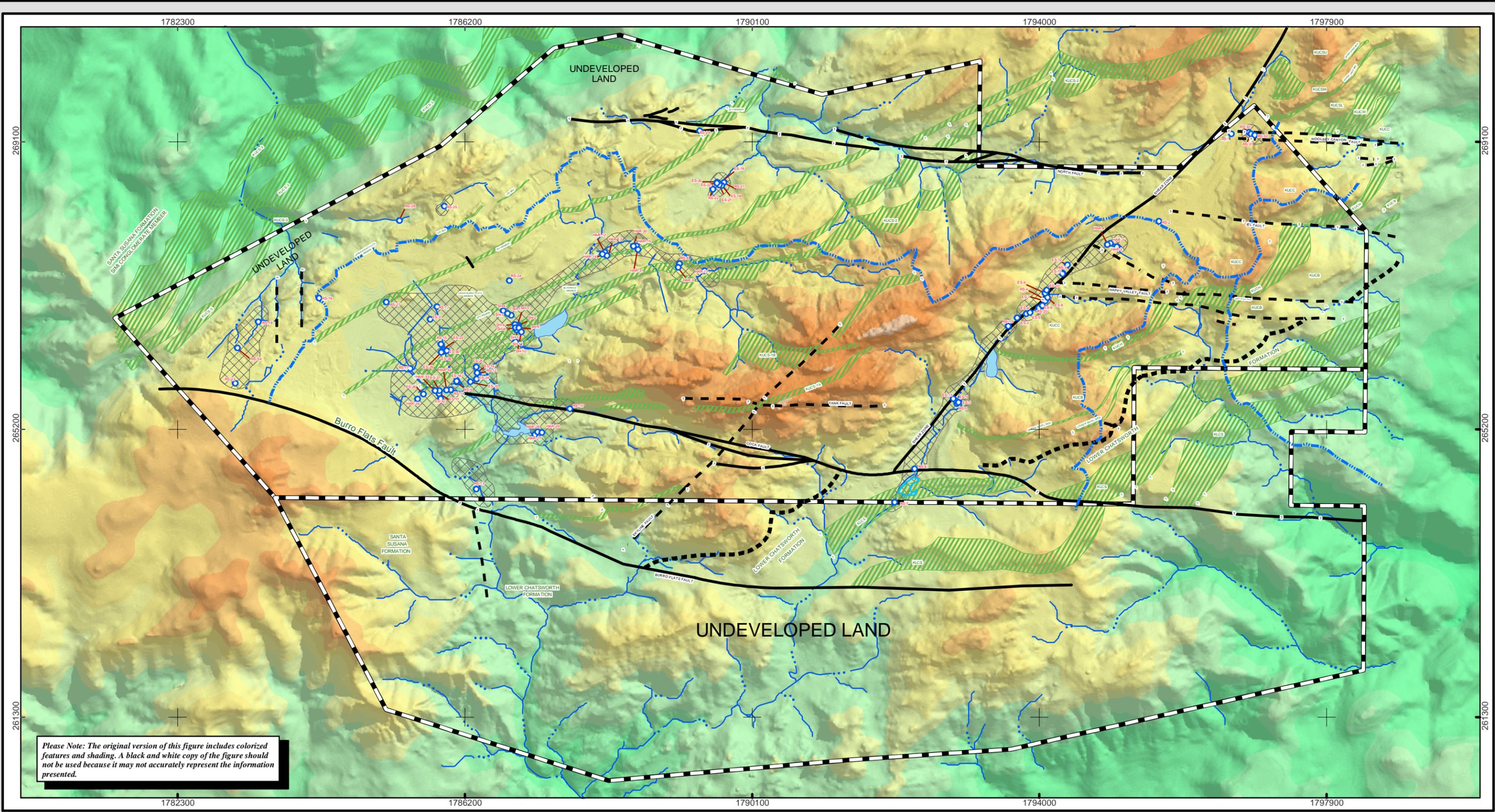
- |  |                              |  |              |
|--|------------------------------|--|--------------|
|  | Buildings                    |  | Ponds        |
|  | SSFL Property Boundary       |  | Contours     |
|  | Administrative Area Boundary |  | Dirt Roads   |
|  | RFI Site Boundary            |  | Roads        |
|  | Drainages                    |  | Leach Fields |

**RFI Site Location Map  
Santa Susana Field Laboratory**

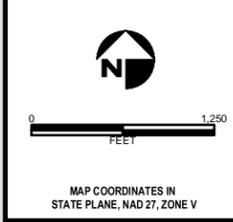
DATE: 10/17/03  
 FILE: rockplots/figures/wpa\_location.mxd



FIGURE 1-4



Please Note: The original version of this figure includes colored features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.



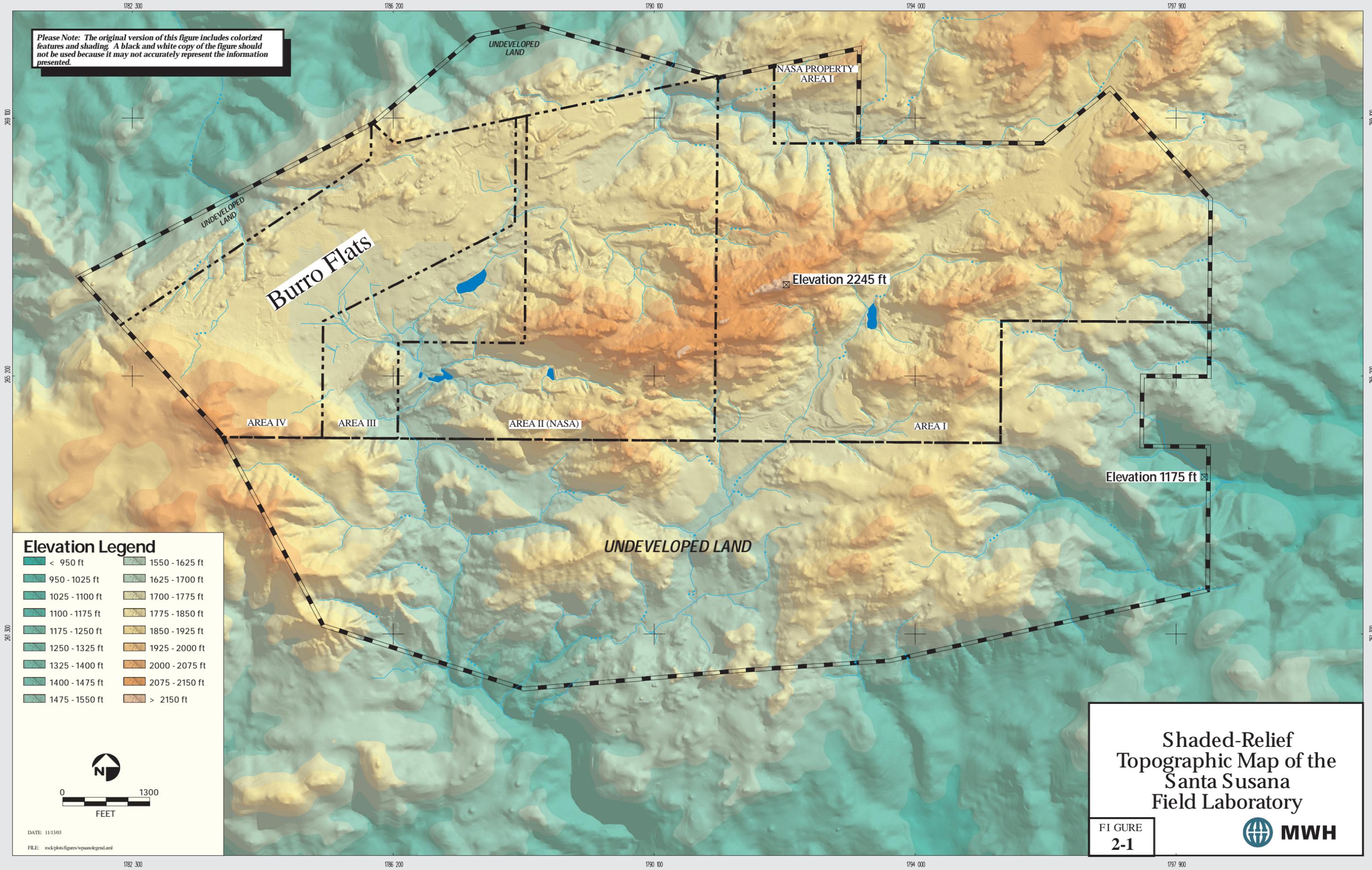
- Legend**
- Existing Near-Surface Groundwater Wells (Prior to 2000/2001 Well Installation Events)
  - Surface Water Divide
  - ▭ Surface Water Reclamation Ponds
  - Near-Surface Groundwater Extent (Feb 1998)

- Base Map Legend**
- SSFL Property Boundary
- GEOLOGY LEGEND**
- Estimated Contact Line
  - Faults (Approximate)
  - Shale Beds
  - Creeks/Streams

## Near-Surface Groundwater Monitoring Well Network (Prior to 2000 Investigation)

DATE: 11/13/03  
 FILE: r:\rock\plots\arcmap\surface\_water\_divides\_wells\_prior2000.mxd

Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.



**Elevation Legend**

< 950 ft	1550 - 1625 ft
950 - 1025 ft	1625 - 1700 ft
1025 - 1100 ft	1700 - 1775 ft
1100 - 1175 ft	1775 - 1850 ft
1175 - 1250 ft	1850 - 1925 ft
1250 - 1325 ft	1925 - 2000 ft
1325 - 1400 ft	2000 - 2075 ft
1400 - 1475 ft	2075 - 2150 ft
1475 - 1550 ft	> 2150 ft



DATE: 11/13/03

FILE: rock/plots/figures/wpaanolegend.html

**Shaded-Relief  
Topographic Map of the  
Santa Susana  
Field Laboratory**

FIGURE  
**2-1**



1782,300

1786,200

1790,100

1794,000

1797,900

265,100

265,200

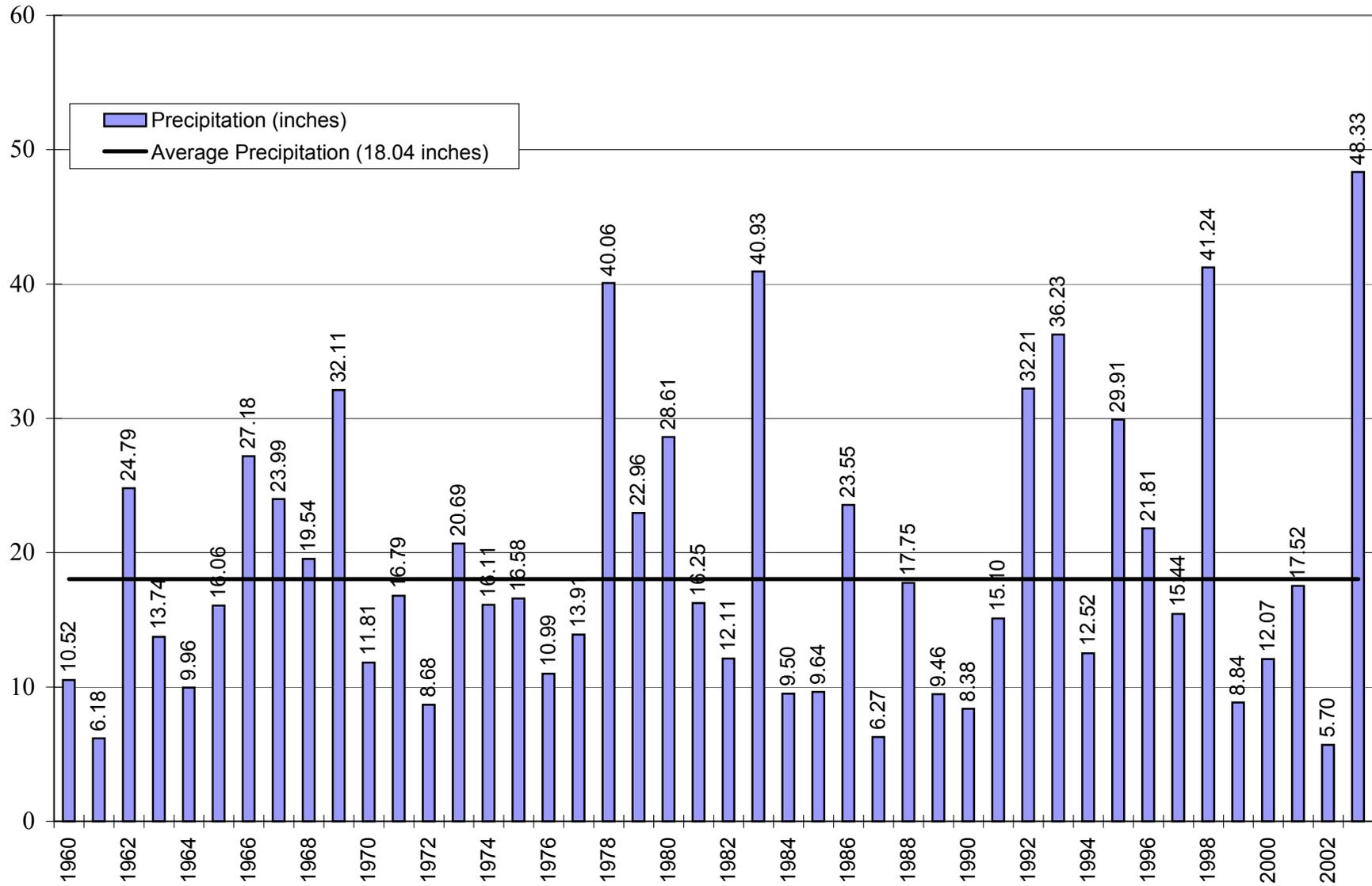
265,300

265,100

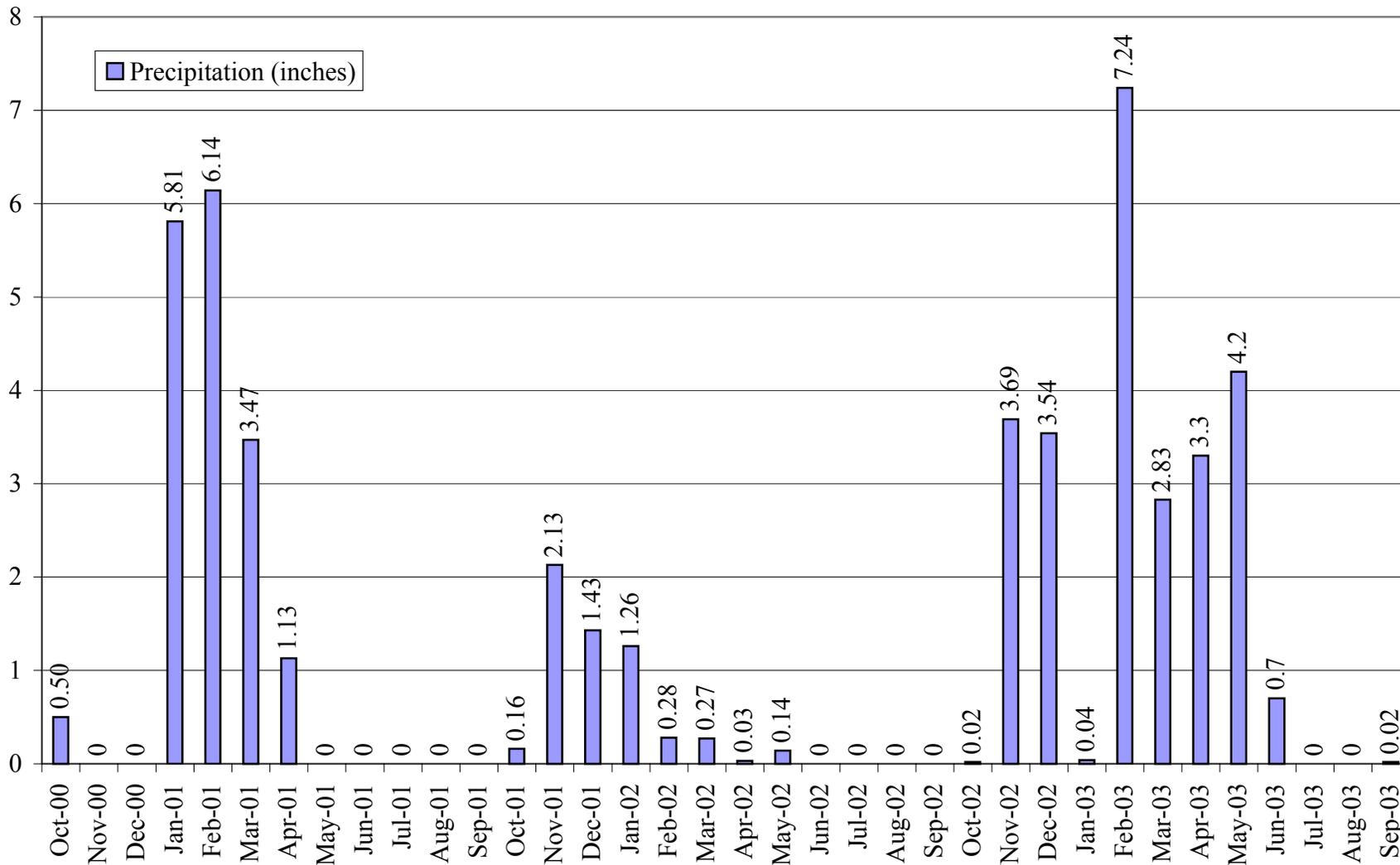
265,200

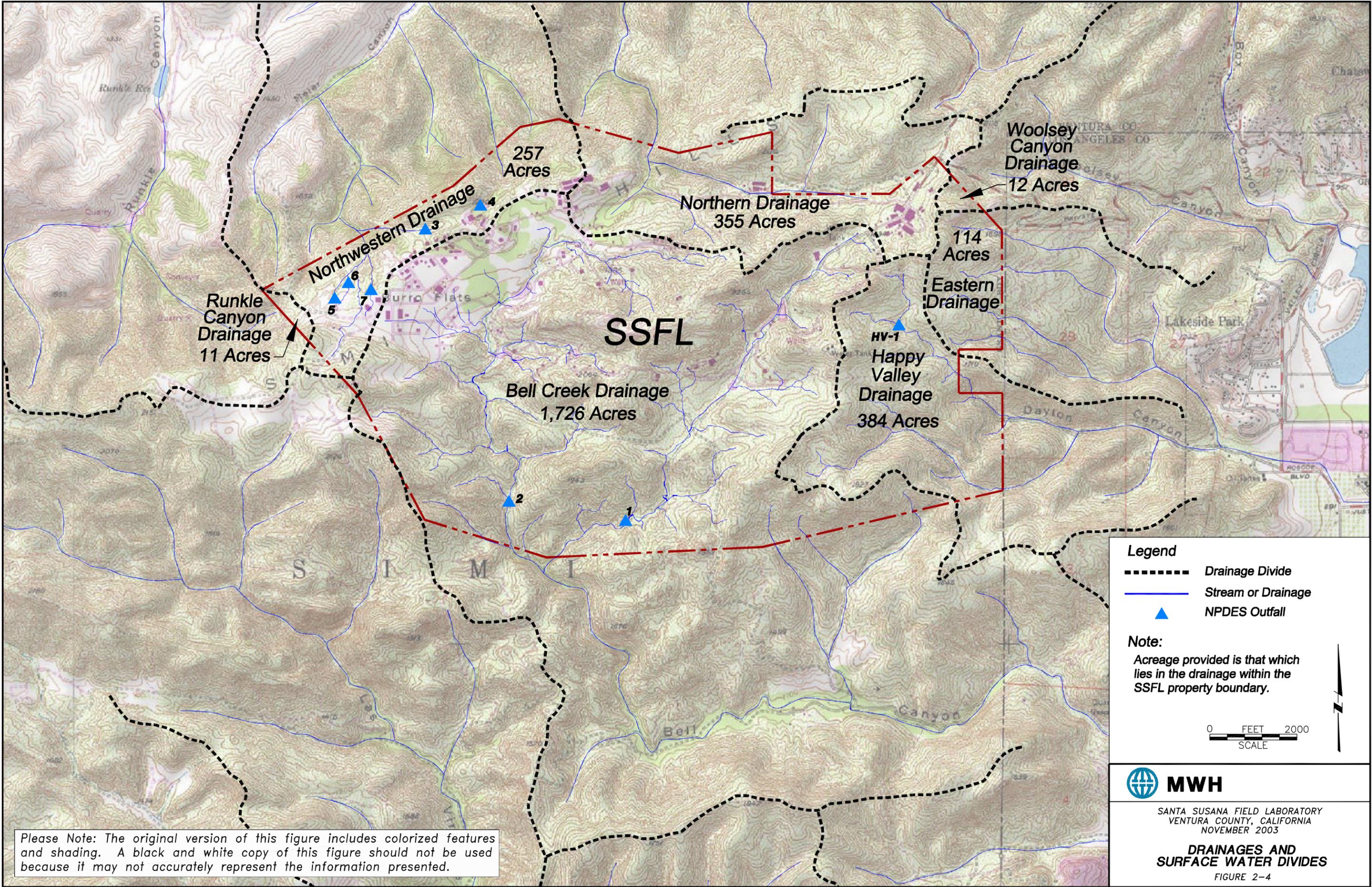
265,300

**FIGURE 2-2**  
**ANNUAL PRECIPITATION AT THE SSFL, 1960-2003**



**FIGURE 2-3**  
**MONTHLY PRECIPITATION AT SSFL, OCTOBER 2000 - SEPTEMBER 2003**





Please Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.

- Legend**
- Drainage Divide
  - Stream or Drainage
  - ▲ NPDES Outfall

**Note:**  
Acreage provided is that which lies in the drainage within the SSFL property boundary.

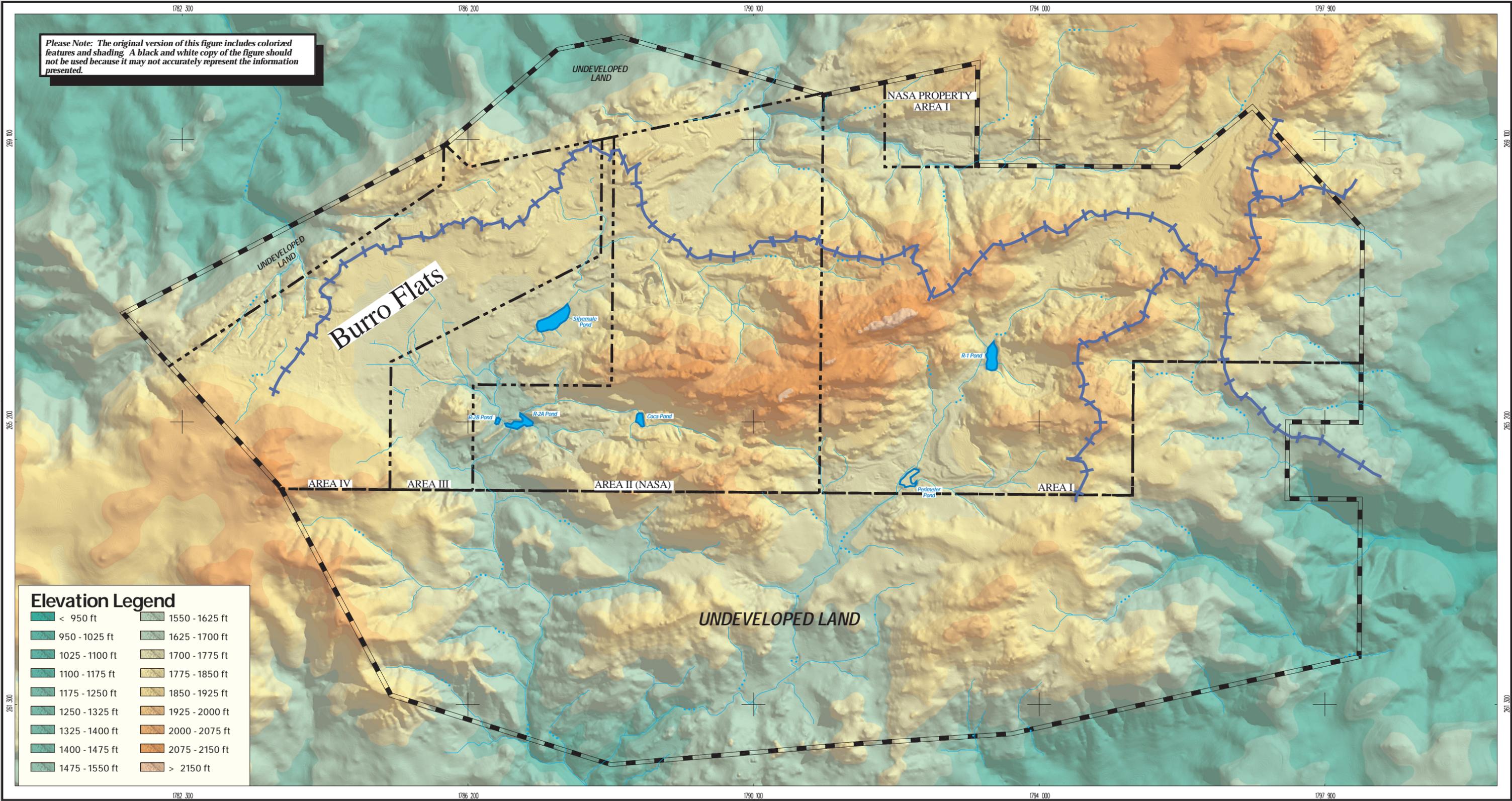


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**DRAINAGES AND  
SURFACE WATER DIVIDES**

FIGURE 2-4

Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.



### Elevation Legend

< 950 ft	1550 - 1625 ft
950 - 1025 ft	1625 - 1700 ft
1025 - 1100 ft	1700 - 1775 ft
1100 - 1175 ft	1775 - 1850 ft
1175 - 1250 ft	1850 - 1925 ft
1250 - 1325 ft	1925 - 2000 ft
1325 - 1400 ft	2000 - 2075 ft
1400 - 1475 ft	2075 - 2150 ft
1475 - 1550 ft	> 2150 ft

### Basemap Legend

- SSFL Property Boundary
- Administrative Area Boundary
- Drainages
- Surface Water Divide
- Ponds

## Perennial Ponds and Other Surface Water Features

FIGURE  
2-5

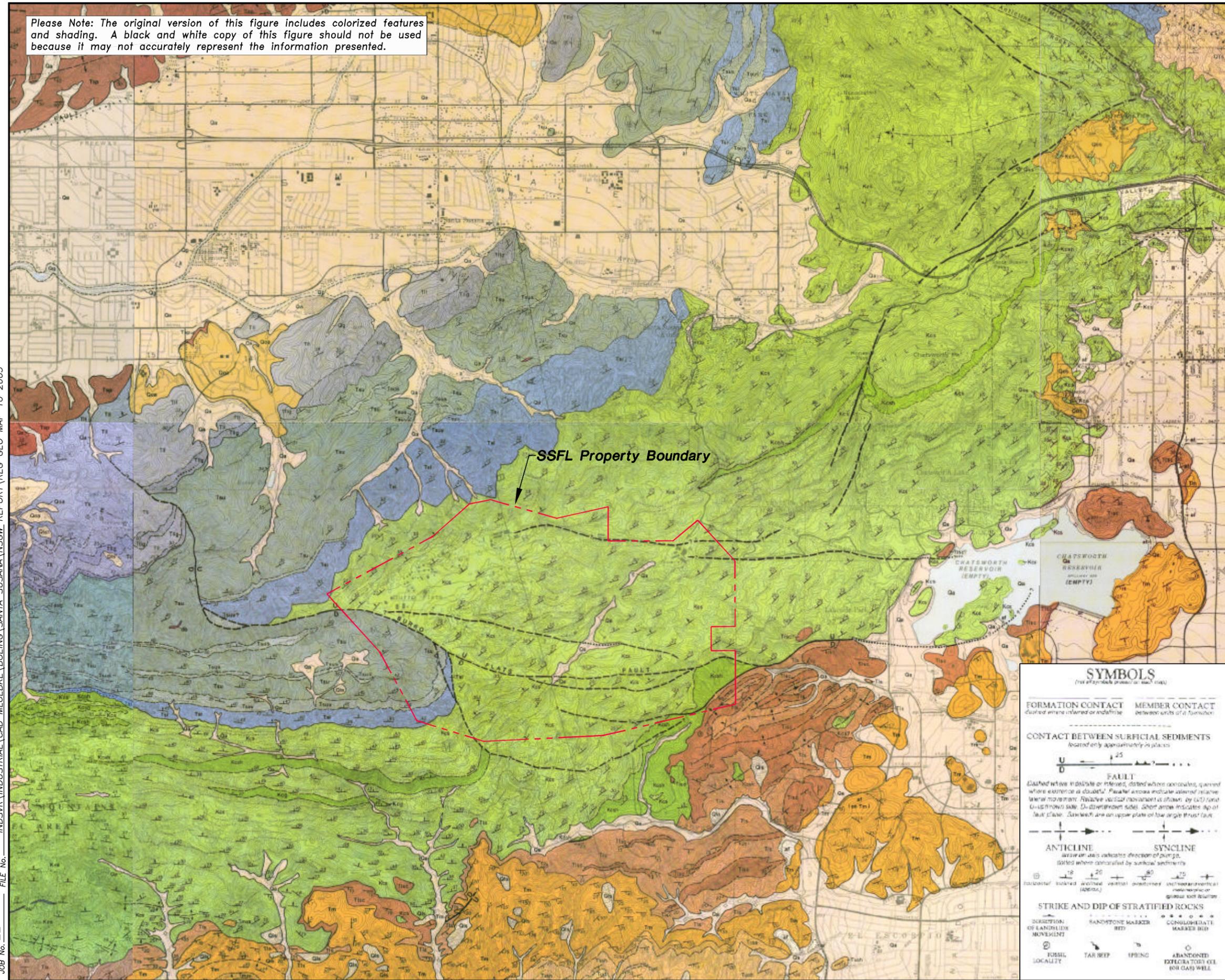
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FILE: rockplots/figures/perennial\_ponds.mxd



0 1300  
FEET

MAP COORDINATES IN  
STATEPLANE, NAD 27, ZONE V.

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**Legend**

**SURFICIAL SEDIMENTS**  
 af artificial cut and fill  
 Qa alluvium: gravel, sand and clay of valley areas, includes gravel and sand of stream channels, gravel and sand of alluvial fans, and slope wash; undisturbed to slightly dissected

**OLDER SURFICIAL SEDIMENTS**  
 Qoa older sandy alluvium, including slope wash, derived from Chatsworth Formation (Kca); Qoa older alluvium composed largely of angular pebble-size fragments of Miocene shale and some of sandstone

**MONTEREY FORMATION**  
 (lower part of Modelo Formation of Hoots 1931; Soper 1938; Durrell 1954; A.E.G. maps 1982; Modelo Formation of Yerkes and Campbell 1979; Weber 1984; Modelo-Monterey and lower Monterey Formation of Truex and Hall 1969; Truex 1976; equivalent to Monterey Formation of Dibblee 1989, in Ventura basin)  
 marine biogenic and clastic;  
 middle and late Miocene age [late Lutetian(?) and Mohnian Stages]  
 Tm gray-brown, white weathering siliceous shale, thin bedded, moderately hard with pesty fracture; includes soft fissile dolomitic shale, hard, brittle cherty shale, and few layers of hard, yellow weathering calcareous concretions or lenses  
 Tmss light gray to tan, semi-fractile bedded sandstone  
 Tmcg gray cobble conglomerate of mostly granitic detritus in sandstone matrix

**DETTRITAL SEDIMENTS OF LINDERO CANYON**  
 (included in Topanga Formation of Weber 1984; unconformable on Chatsworth Formation; best exposed in Lindero Canyon, Thousand Oaks quadrangle; may be equivalent to upper Topanga Formation of Durrell 1954, or Calabasas Formation of Yerkes and Campbell 1989)  
 marine transgressive clastic; middle Miocene age [Lutetian(?) Stage]  
 Tli light gray to nearly white massive sandstone, semi-thick, locally conglomeratic  
 Tlic light gray calcareous sandstone, massive to crudely bedded, with calcite veins; includes gray conglomerate composed of cobbles of metavolcanic, granitic and quartzitic rocks and of sandstone derived from Chatsworth Formation; sparsely fossiliferous

**LLAJAS FORMATION**  
 (of Cushman and McMasters 1936; Stipp 1943; Squires and Filewicz 1983)  
 marine clastic; middle Eocene age (Danian(?) and Campy molluscan Stages)  
 Tll gray micaceous claystone and siltstone, crumbly with alipoidal fracture where weathered  
 Tllg gray to brown cobble conglomerate of granitic, metavolcanic and quartzitic detritus in sandstone matrix; includes some brown sandstone strata

**SANTA SUSANA FORMATION**  
 (of Cushman and McMasters 1936; Stipp 1943; Squires and Filewicz 1983)  
 marine and nonmarine(?) clastic; lower Eocene and Paleocene ages (Mogonis and Martinez molluscan Stages)  
 Tsu gray micaceous claystone and siltstone, few minor thin sandstone beds  
 Tsus tan coherent fine grained sandstone, locally contains thin shale beds and calcareous concretions  
 Tsuv Las Virgenes Sandstone Member: tan semi-thick bedded sandstone, locally pebbly  
 Tsi Simi Conglomerate Member: gray to brown cobble conglomerate with smooth cobbles of quartzite, metavolcanic and granitic rocks in sandstone matrix that locally includes thin lenses of red clay, marine or nonmarine(?)

**CHATSWORTH FORMATION**  
 (of Colburn et al. 1981; Weber 1984; "Chico" Formation of Sage 1971)  
 marine clastic; late Cretaceous age (Mantolokingian and Campanian Stages)  
 Kca light gray to light brown sandstone, hard, coherent, azoic, micaceous, mostly medium grained, in thick strata separated by thin partings of siltstone  
 Kcg gray conglomerate of cobbles of metavolcanic and granitic detritus in hard sandstone matrix  
 Kcsh gray clay shale, crumbly with alipoidal fracture where weathered; includes some thin sandstone strata in western area

**SYMBOLS**  
 (not applicable to this map)

**FORMATION CONTACT**  
 dashed where inferred or indistinct

**MEMBER CONTACT**  
 between units of a formation

**CONTACT BETWEEN SURFICIAL SEDIMENTS**  
 located only approximately in places

**FAULT**  
 dashed where indistinct or inferred, dotted where concealed, queried where evidence is doubtful. Parallel arrows indicate sense of relative lateral movement. Reactor vertical movement is shown by up (U) and down (D) arrows. Qa development scale: short arrow indicates dip of fault plane. Sawtooth line on upper plate of low angle thrust fault.

**ANTICLINE**  
 arrow on axis indicates direction of plunging, dotted where concealed by surficial sediments

**SYNCLINE**  
 dotted where concealed by surficial sediments

**STRIKE AND DIP OF STRATIFIED ROCKS**

**DESCRIPTION OF LANDSLIDE MOVEMENT**

**SANDSTONE MARKER BED**

**CONGLOMERATE MARKER BED**

**FUSSIL LOCALITY**

**TAR REF.**

**SPRING**

**ABANDONED EXPLORATORY OIL (OR GAS) WELL**

**FROM DIBBLEE, 1992 and 1992a**

0 FEET 4000 SCALE

**MWH**

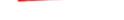
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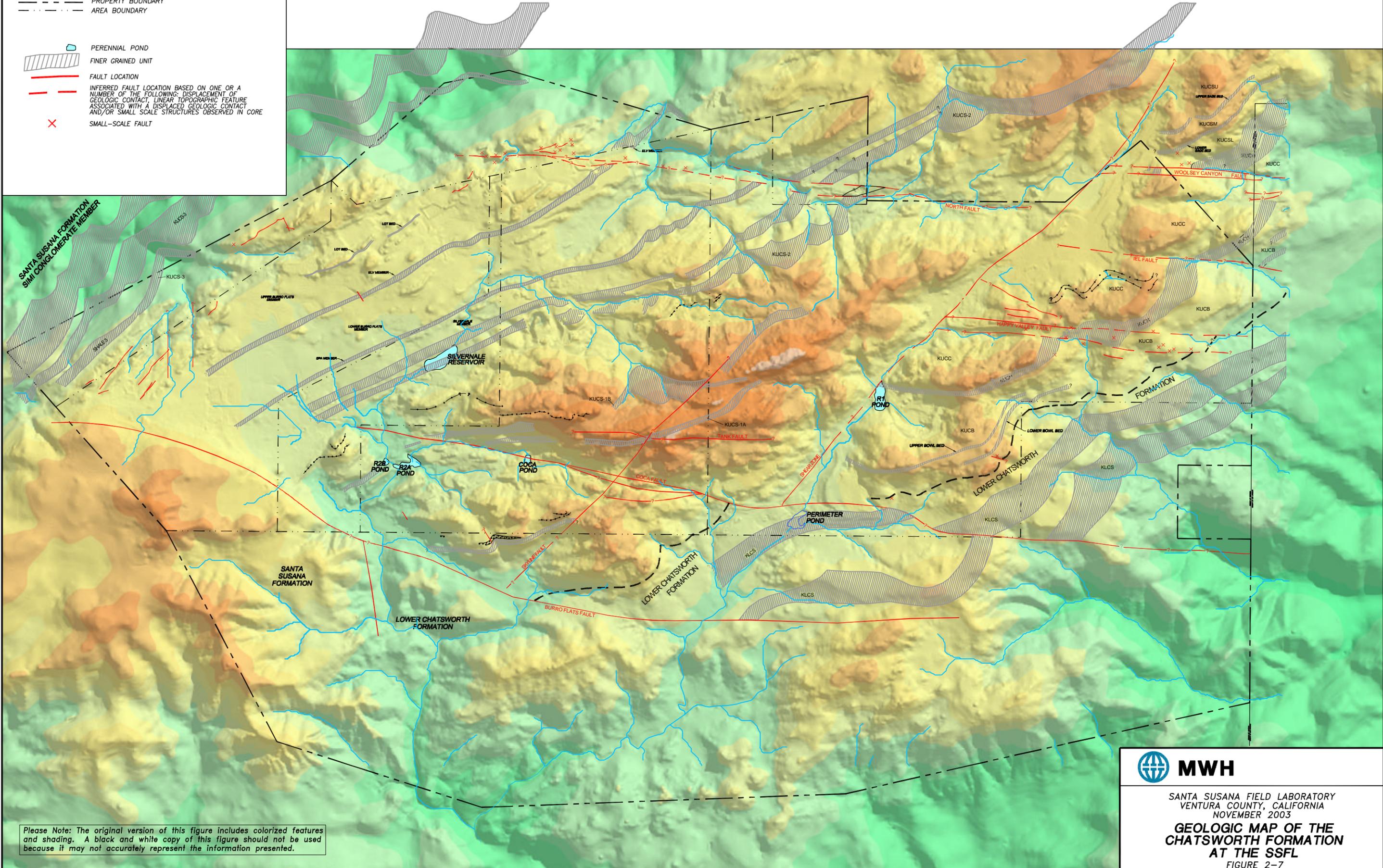
**REGIONAL GEOLOGIC MAP**

FIGURE 2-6

JOB No. \_\_\_\_\_ FILE No. \_\_\_\_\_ INDSTR\INDUSTRIAL\CAD\_MLUEBKE\BOEING\SANTA\_SUSANA\NSGW\_REPORT\CHATSWORTH WELLS 10 20 03

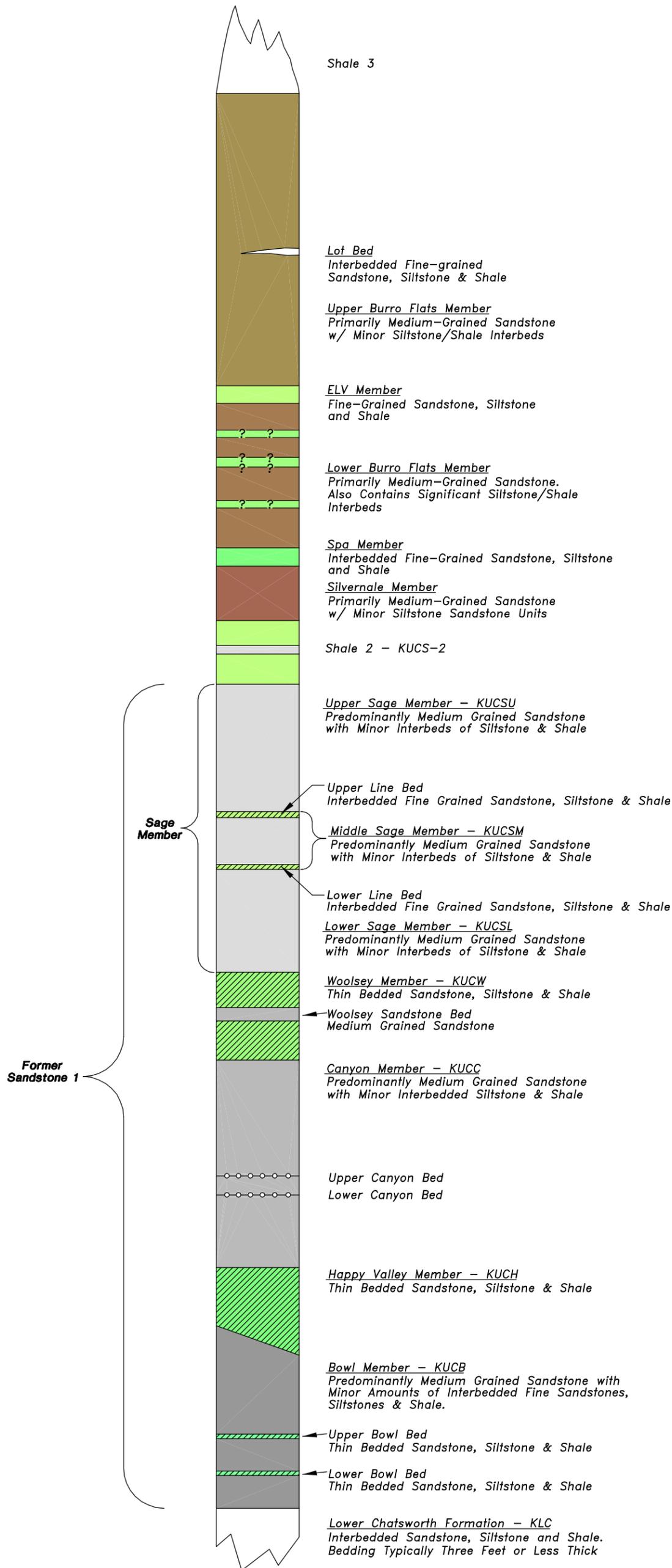
**LEGEND**

- PROPERTY BOUNDARY
- - - AREA BOUNDARY
-  PERENNIAL POND
-  FINER GRAINED UNIT
-  FAULT LOCATION
-  INFERRED FAULT LOCATION BASED ON ONE OR A NUMBER OF THE FOLLOWING: DISPLACEMENT OF GEOLOGIC CONTACT, LINEAR TOPOGRAPHIC FEATURE ASSOCIATED WITH A DISPLACED GEOLOGIC CONTACT AND/OR SMALL SCALE STRUCTURES OBSERVED IN CORE
-  SMALL-SCALE FAULT



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**GEOLOGIC MAP OF THE  
 CHATSWORTH FORMATION  
 AT THE SSFL**  
 FIGURE 2-7



**Legend**

Coarser Grained Units

Finer Grained Units

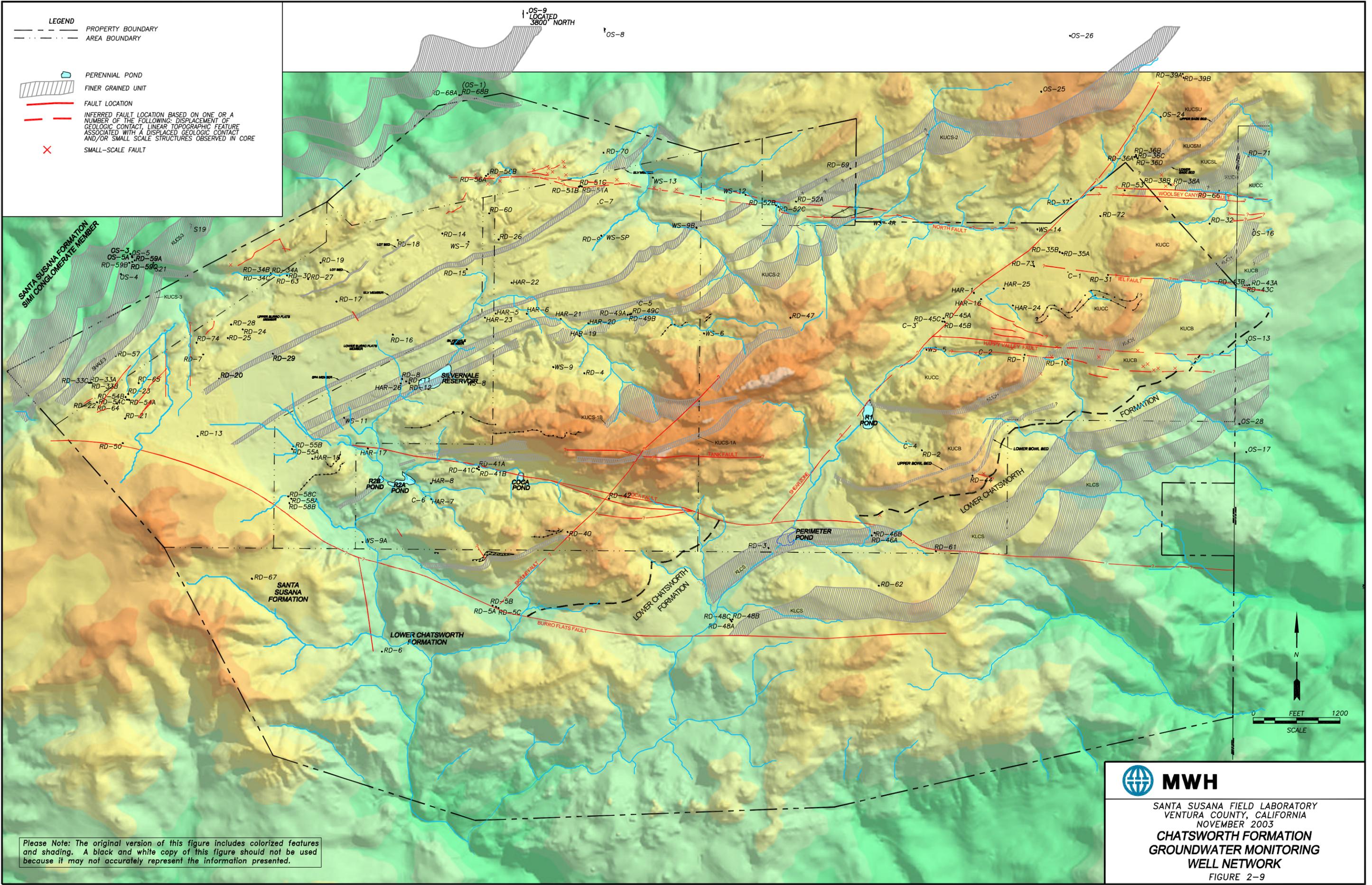
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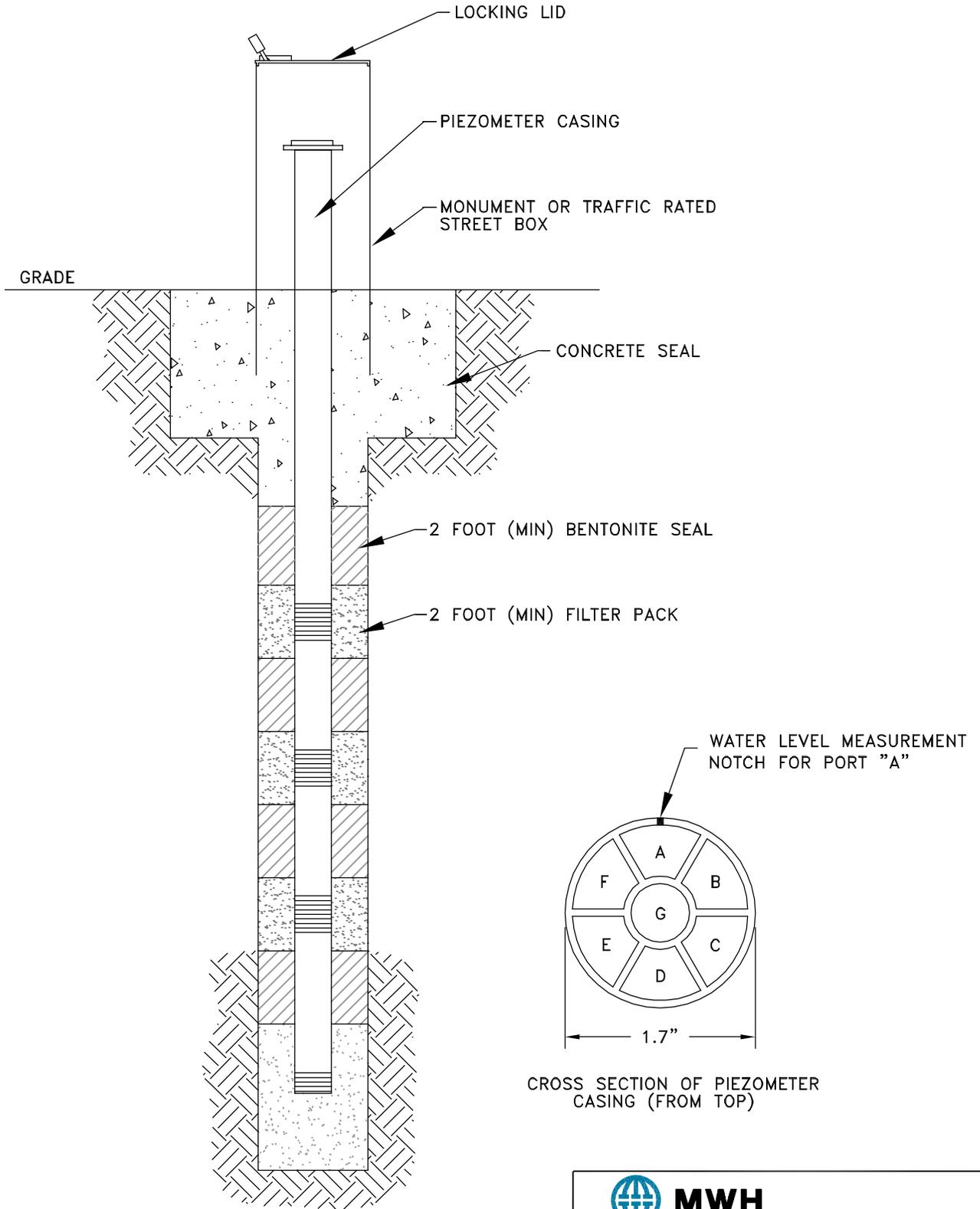
**STRATIGRAPHIC COLUMN OF THE CHATSWORTH FORMATION**

FIGURE 2-8



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**CHATSWORTH FORMATION  
 GROUNDWATER MONITORING  
 WELL NETWORK**  
 FIGURE 2-9



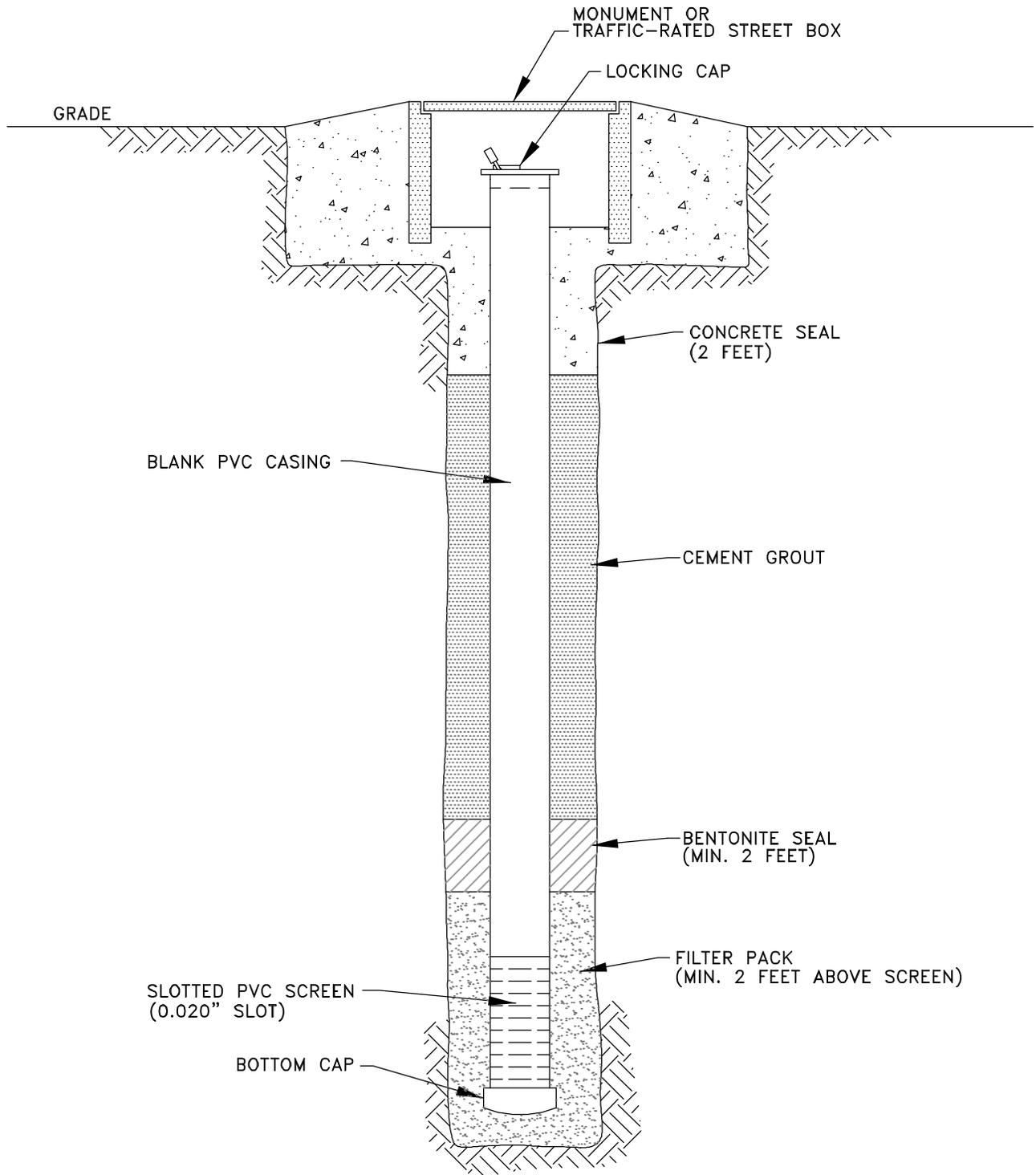
CROSS SECTION OF PIEZOMETER CASING (FROM TOP)



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NOVEMBER 2003

**TYPICAL MULTILEVEL PIEZOMETER DESIGN**

FIGURE 3-1



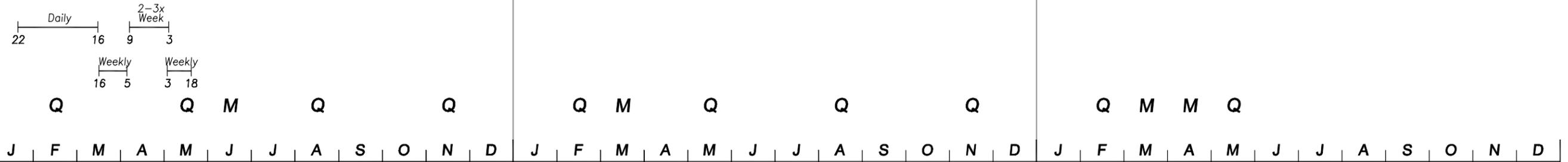
**MWH**

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VENTURA COUNTY, CALIFORNIA  
NOVEMBER 2003

**TYPICAL PIEZOMETER  
DESIGN**

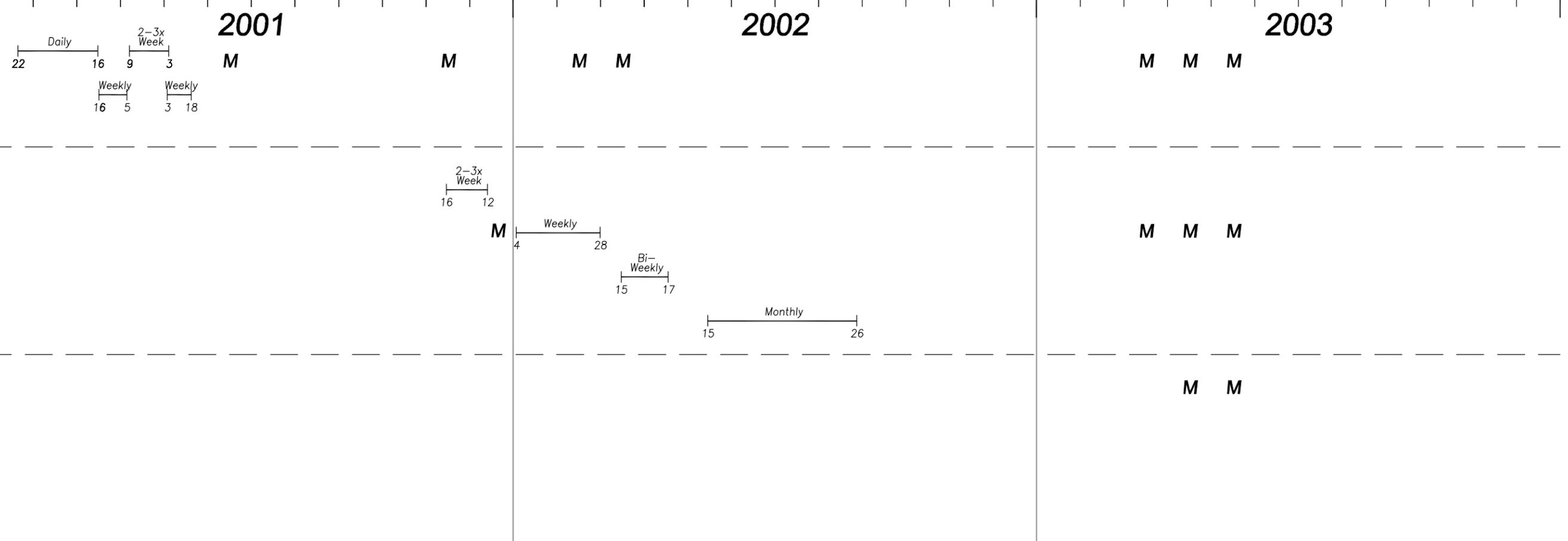
FIGURE 3-2

**Wells (92)**



**Piezometers**

PZ-001 thru PZ-096  
PZ-097 thru PZ-119  
PZ-120 thru PZ-127



Q = Quarterly  
M = Monthly



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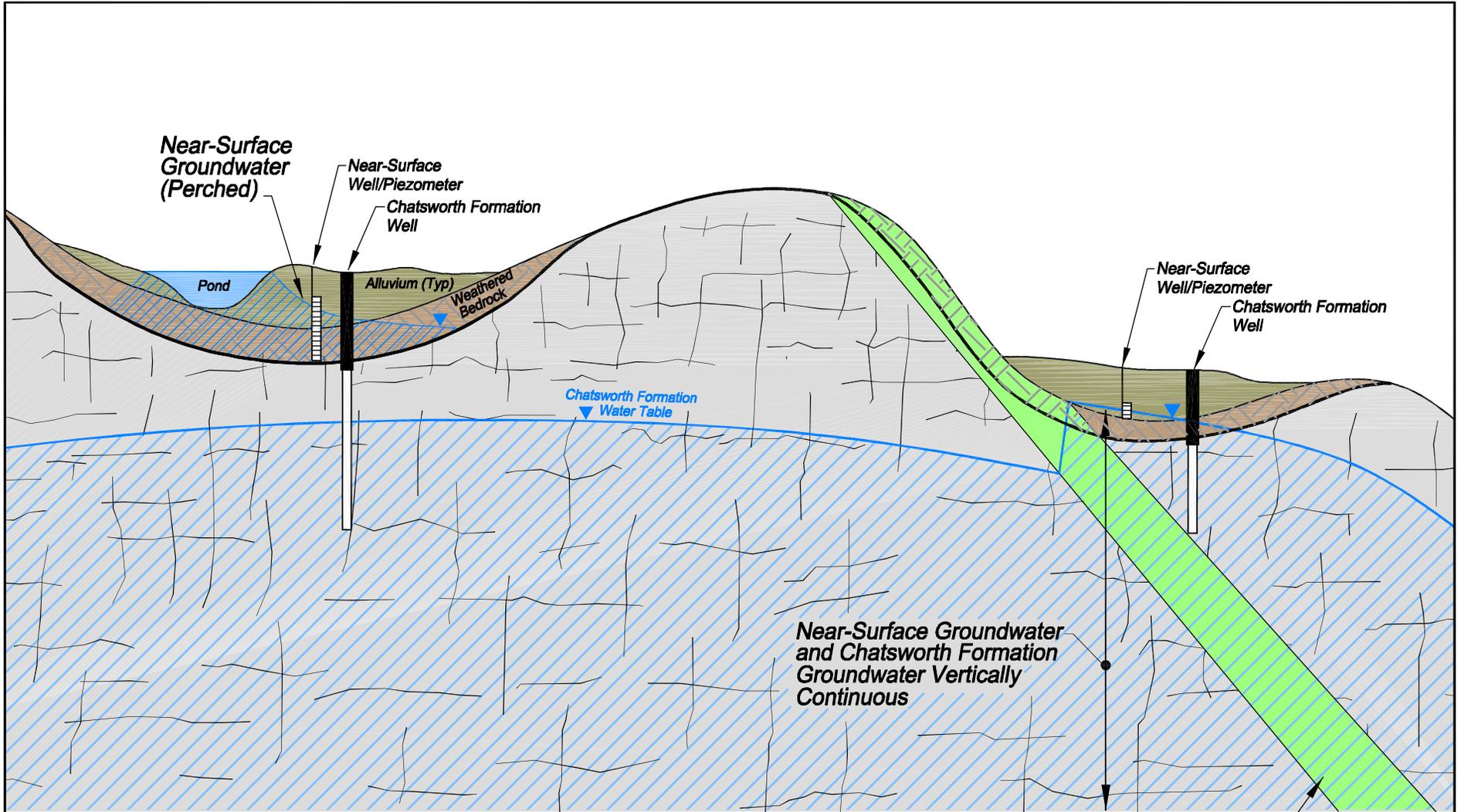
**GRAPHIC SUMMARY OF  
WATER LEVEL MEASURING EVENTS**

FIGURE 3-3

## FIGURES

- 1-1 Site Location
- 1-2 Cross Sectional Depiction of Operable Units
- 1-3 Site Plan
- 1-4 RFI Site Locations
- 1-5 Near-Surface Groundwater Monitoring Well Network Prior to 2000 Investigation
  
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- 6-9 Simulated NDMA/1,4-Dioxane Contours



Low Permeability Bed

NOT TO SCALE



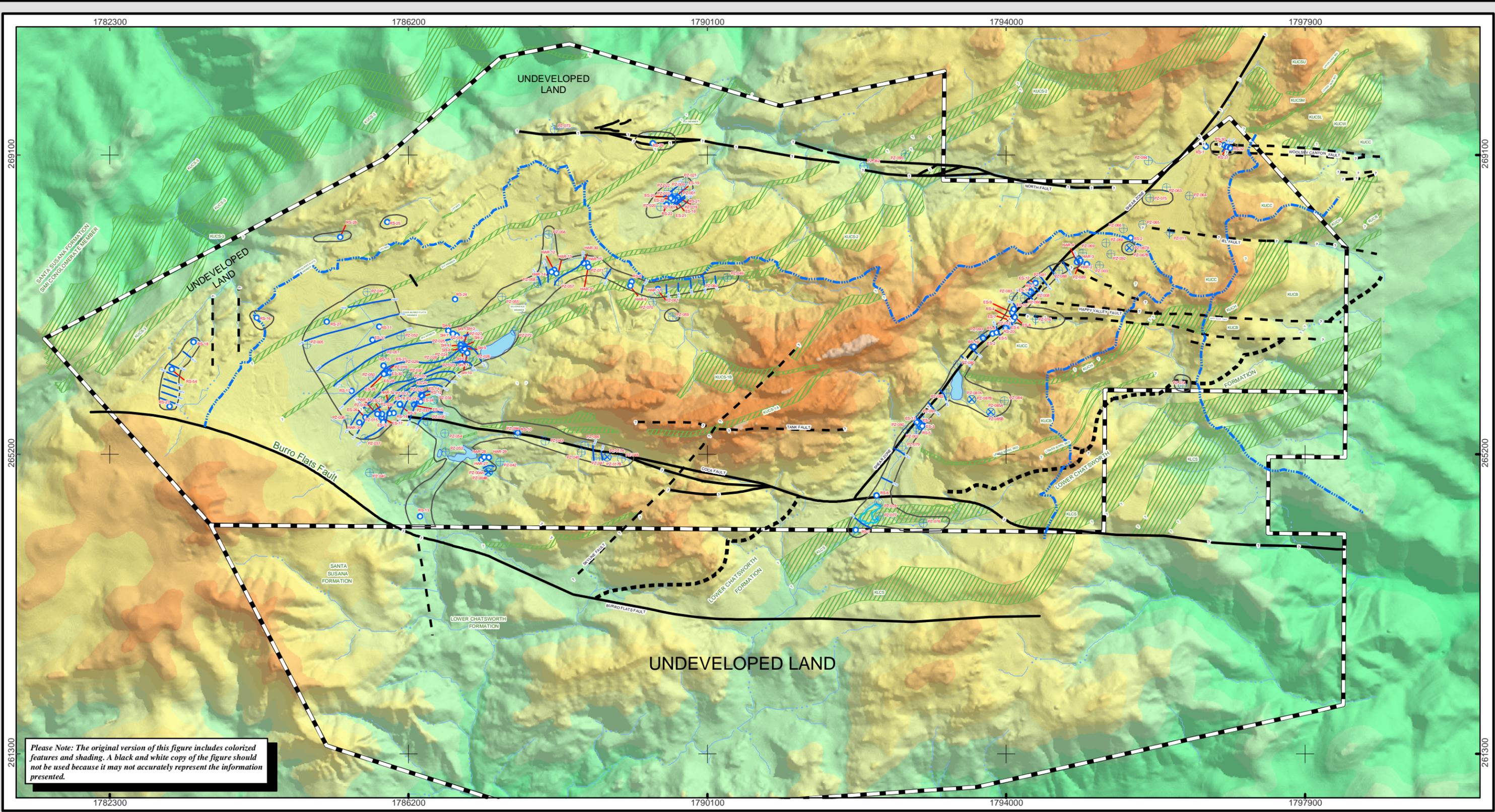
**MWH**

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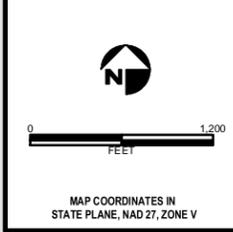
**CROSS SECTIONAL DIAGRAM  
OF SSFL GROUNDWATER**

FIGURE 4-1

Please Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.



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**Legend**

- Existing Near-Surface Groundwater Well
  - ⊕ Completed Standard Piezometer
  - ⊗ Completed Alluvium Piezometer
  - ⊗ Completed Paired Piezometer
  - ⊕ Completed Multilevel Piezometer
  - ▭ Surface Water Reclamation Ponds
  - Approximate Near-Surface Groundwater Extent (March 2001)
  - Surface Water Divide
- Water Elevations (feet above mean sea level)**
- Approximate Near-Surface Groundwater Elevation Contours in Feet Above Mean Sea Level (Dashed Where Inferred)

**Base Map Legend**

- SSFL Property Boundary

**GEOLOGY LEGEND**

- Estimated Contact Line
- Faults (Approximate)
- Shale Beds
- Creeks/Streams

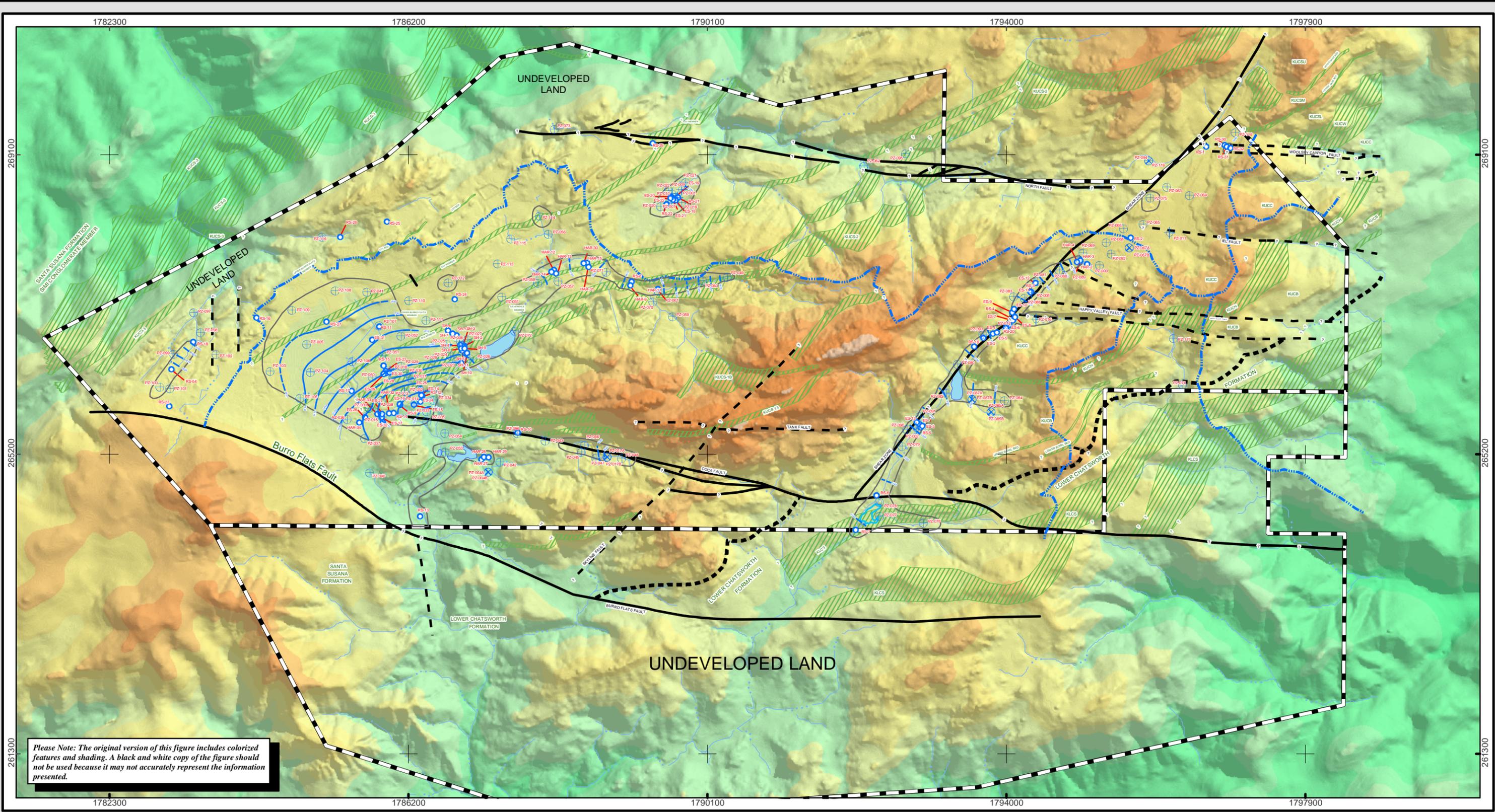
**NEAR-SURFACE GROUNDWATER EXTENT, MARCH 2001**

DATE: 11/13/03  
 FILE: r:\rock\plots\arcmap\ nsgw\_w\_wells\_cotts\_mar01.mxd

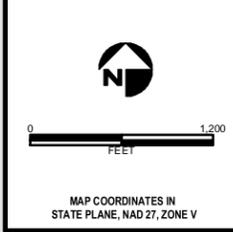


**FIGURE 4-2**

Note: Only the wells/piezometers that were in existence in March 2001 are shown.



Please Note: The original version of this figure includes colored features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.



**Legend**

- Existing Near-Surface Groundwater Well
- ⊕ Completed Standard Piezometer
- ⊙ Completed Alluvium Piezometer
- ⊗ Completed Paired Piezometer
- ⊕ Completed Multilevel Piezometer
- Surface Water Reclamation Ponds
- Approximate Near-Surface Groundwater Extent (November 2001)
- Surface Water Divide
- Water Elevations (feet above mean sea level)
- Approximate Near-Surface Groundwater Elevation Contours in Feet Above Mean Sea Level (Dashed Where Inferred)

**Base Map Legend**

- SSFL Property Boundary

**GEOLOGY LEGEND**

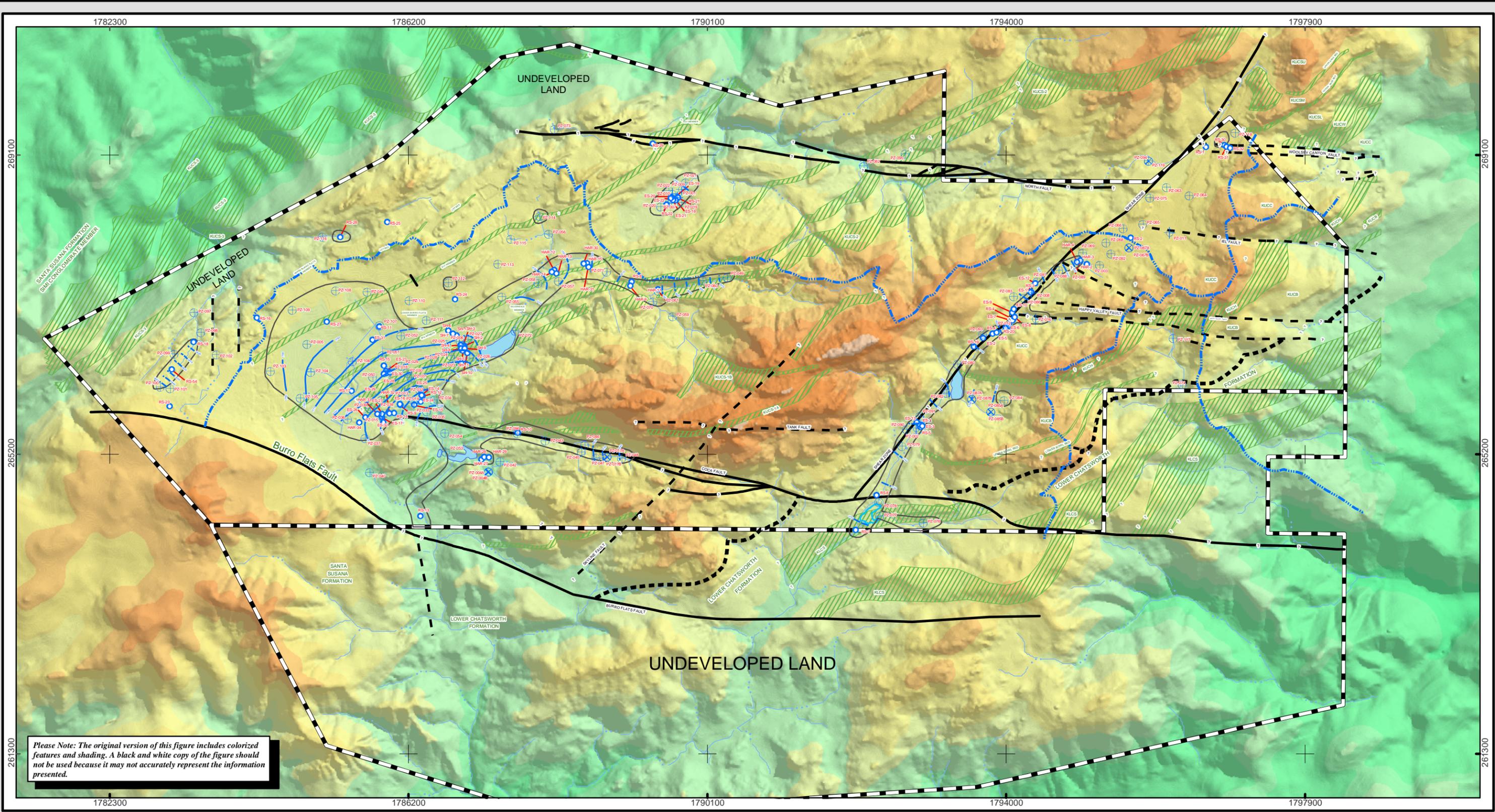
- Estimated Contact Line
- Faults (Approximate)
- Shale Beds
- Creeks/Streams

**NEAR-SURFACE GROUNDWATER EXTENT, NOVEMBER 2001**

Note: Only the wells/piezometers that were in existence in November 2001 are shown.

DATE: 11/13/03  
 FILE: r:\rock\plots\arcmap\ nsgw\_w\_wells\_conts\_nov01.mxd





Please Note: The original version of this figure includes colorized features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.



**Legend**

- Existing Near-Surface Groundwater Well
- Completed Standard Piezometer
- Completed Alluvium Piezometer
- Completed Paired Piezometer
- Completed Multilevel Piezometer
- Surface Water Reclamation Ponds
- Approximate Near-Surface Groundwater Extent (February 2002)
- Surface Water Divide
- Approximate Near-Surface Groundwater Elevation Contours in Feet Above Mean Sea Level (Dashed Where Inferred)

**Water Elevations (feet above mean sea level)**

- Approximate Near-Surface Groundwater Elevation Contours in Feet Above Mean Sea Level (Dashed Where Inferred)

**Base Map Legend**

- SSFL Property Boundary

**GEOLOGY LEGEND**

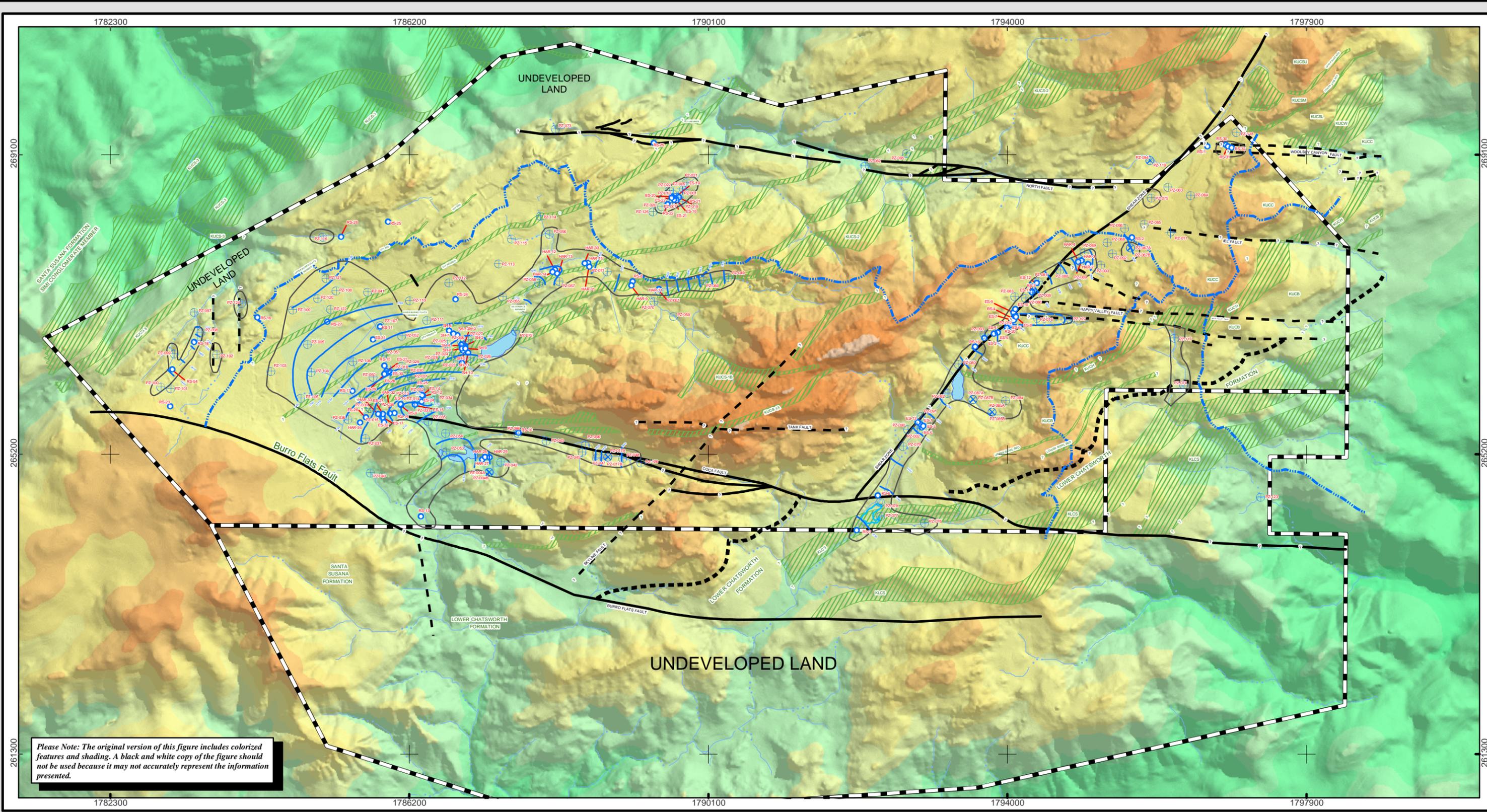
- Estimated Contact Line
- Faults
- Faults (Approximate)
- Shale Beds
- Creeks/Streams

**NEAR-SURFACE GROUNDWATER EXTENT, FEBRUARY 2002**

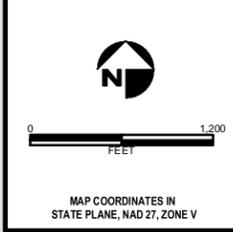
Note: Only the wells/piezometers that were in existence in February 2002 are shown. This network is the same as the November 2001 monitoring network.

DATE: 11/13/03  
FILE: r:\rock\plots\arcmap\nsgw\_w\_wells\_couts\_feb02.mxd





Please Note: The original version of this figure includes colored features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.



**Legend**

- Existing Near-Surface Groundwater Well
- ⊕ Completed Standard Piezometer
- ⊙ Completed Alluvium Piezometer
- ⊗ Completed Paired Piezometer
- ⊕ Completed Multilevel Piezometer
- Surface Water Reclamation Ponds
- Approximate Near-Surface Groundwater Extent (May 2003)
- Surface Water Divide
- Water Elevations (feet above mean sea level)
- Approximate Near-Surface Groundwater Elevation Contours in Feet Above Mean Sea Level (Dashed Where Inferred)

**Base Map Legend**

- SSFL Property Boundary

**GEOLOGY LEGEND**

- Estimated Contact Line
- Faults (Approximate)
- Shale Beds
- Creeks/Streams

Note: Some of the occurrences of near-surface groundwater identified in this map are from measurements collected in April 2003. Locations include the Happy Valley Area, and the drainages east of the FSDF.

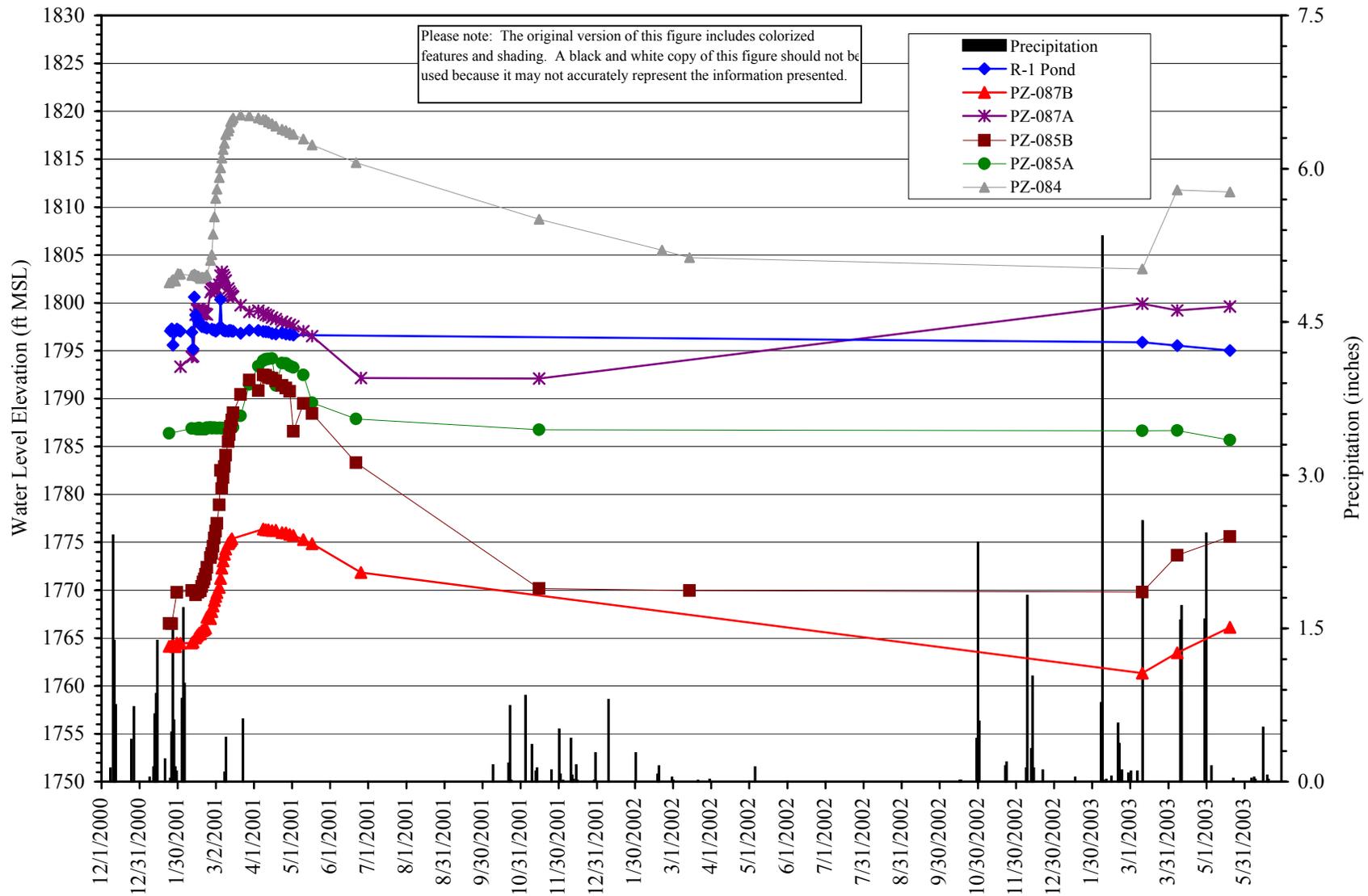
**NEAR-SURFACE GROUNDWATER EXTENT, MAY 2003**

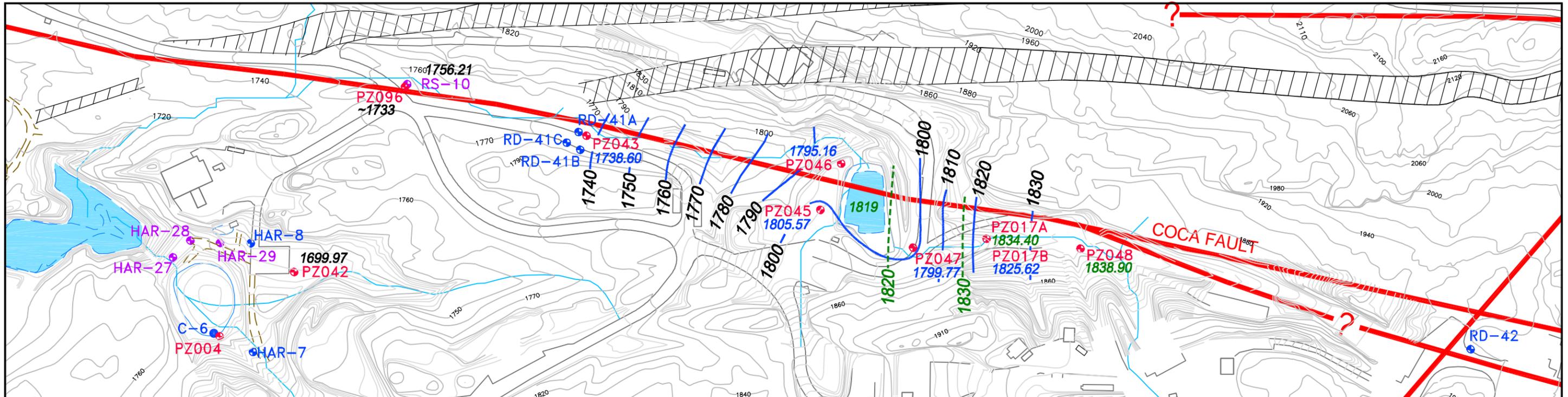
DATE: 11/13/03  
 FILE: r:\rock\plots\arcmap\nsgw\_w\_wells\_cmts\_may03.mxd



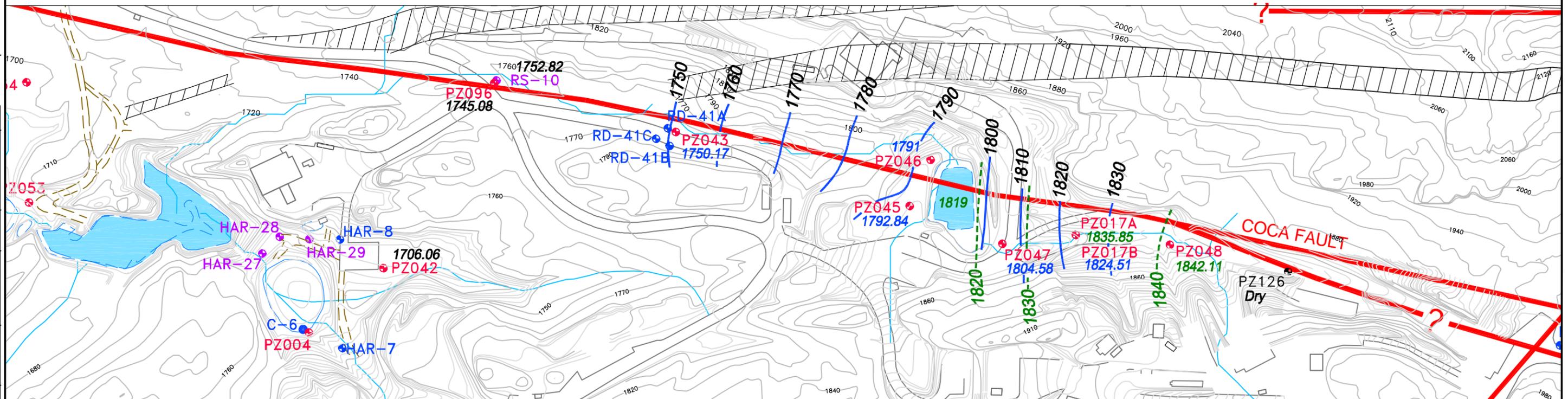


**Figure 4-7**  
**Hydrographs of Near-Surface Groundwater Piezometers at the Bowl RFI Site**





Water Table Surface 3/2001



Water Table Surface 5/2003

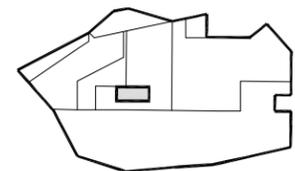
**Legend**

- RD-29 CHATSWORTH FORMATION GROUNDWATER MONITORING WELL
- RS-27 NEAR-SURFACE GROUNDWATER MONITORING WELL
- PZ075 NEAR-SURFACE GROUNDWATER PIEZOMETER
- FINER GRAINED UNIT
- FAULT LOCATION
- FIRST NEAR-SURFACE GROUNDWATER PERCHED ZONE
- DEEPER NEAR-SURFACE GROUNDWATER PERCHED ZONE

**Note:**

CONTOURS SHOWN IN GREEN CONTROLLED BY PZ-048, PZ-017A AND THE COCA POND.  
 CONTOURS SHOWN IN BLUE CONTROLLED BY PZ-017B, PZ-047, PZ-046, PZ-045 & PZ-043.

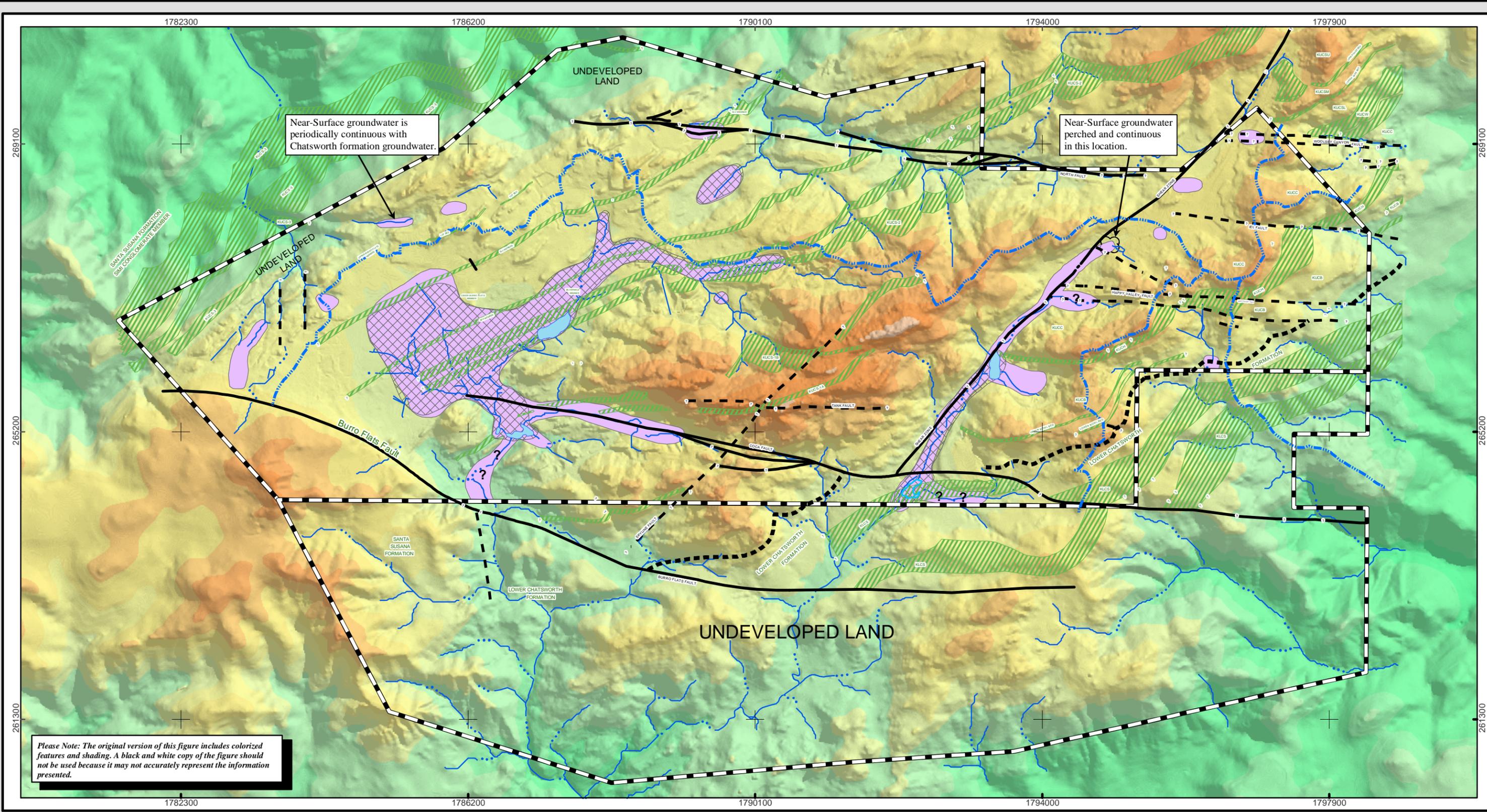
Please Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.



Area of Detail



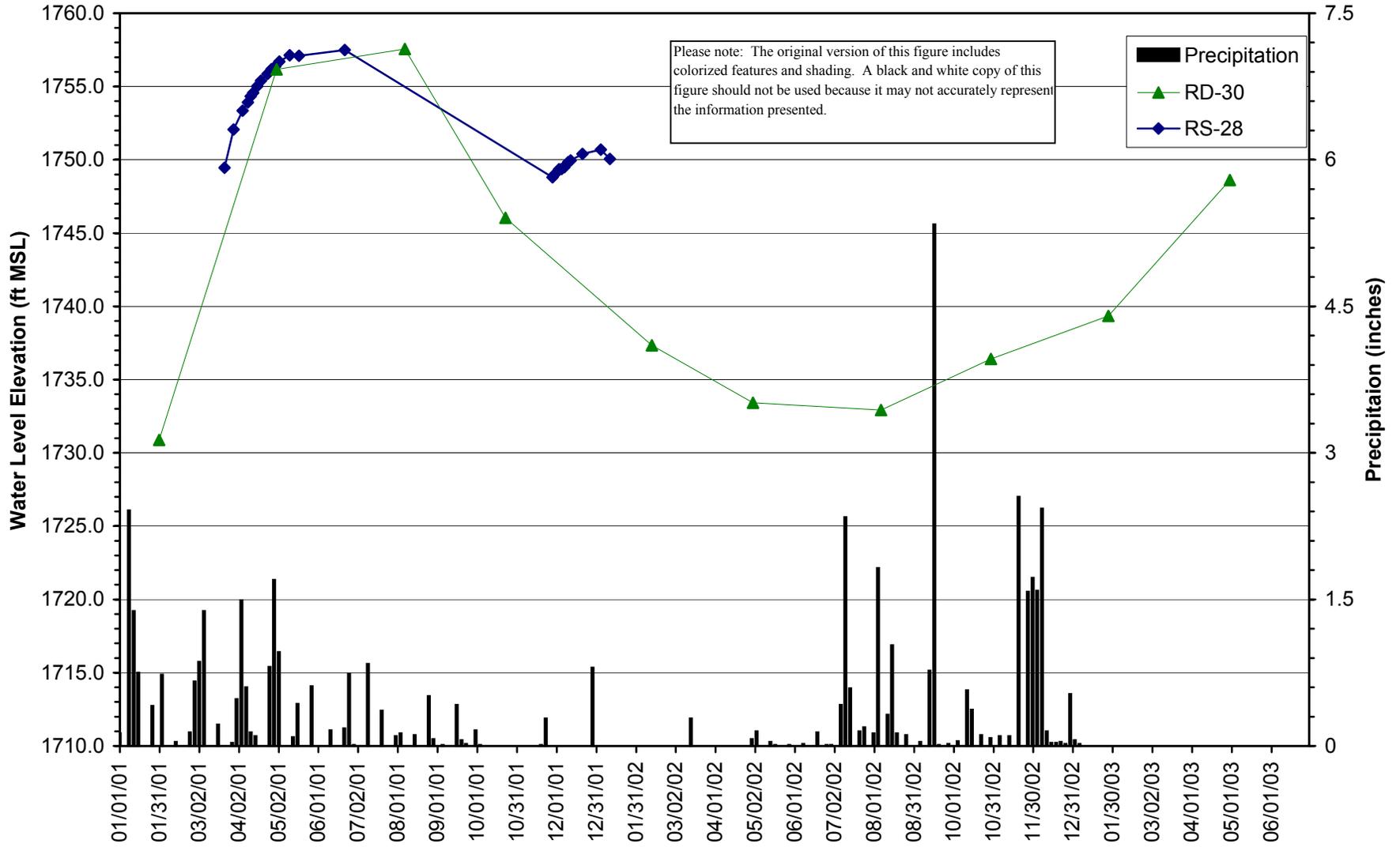
SANTA SUSANA FIELD LABORATORY  
 VENTURA COUNTY, CALIFORNIA  
 NOVEMBER 2003  
**WATER TABLE SURFACE OF  
 PERCHED GROUNDWATER  
 AT THE COCA RFI SITE**  
 FIGURE 4-8

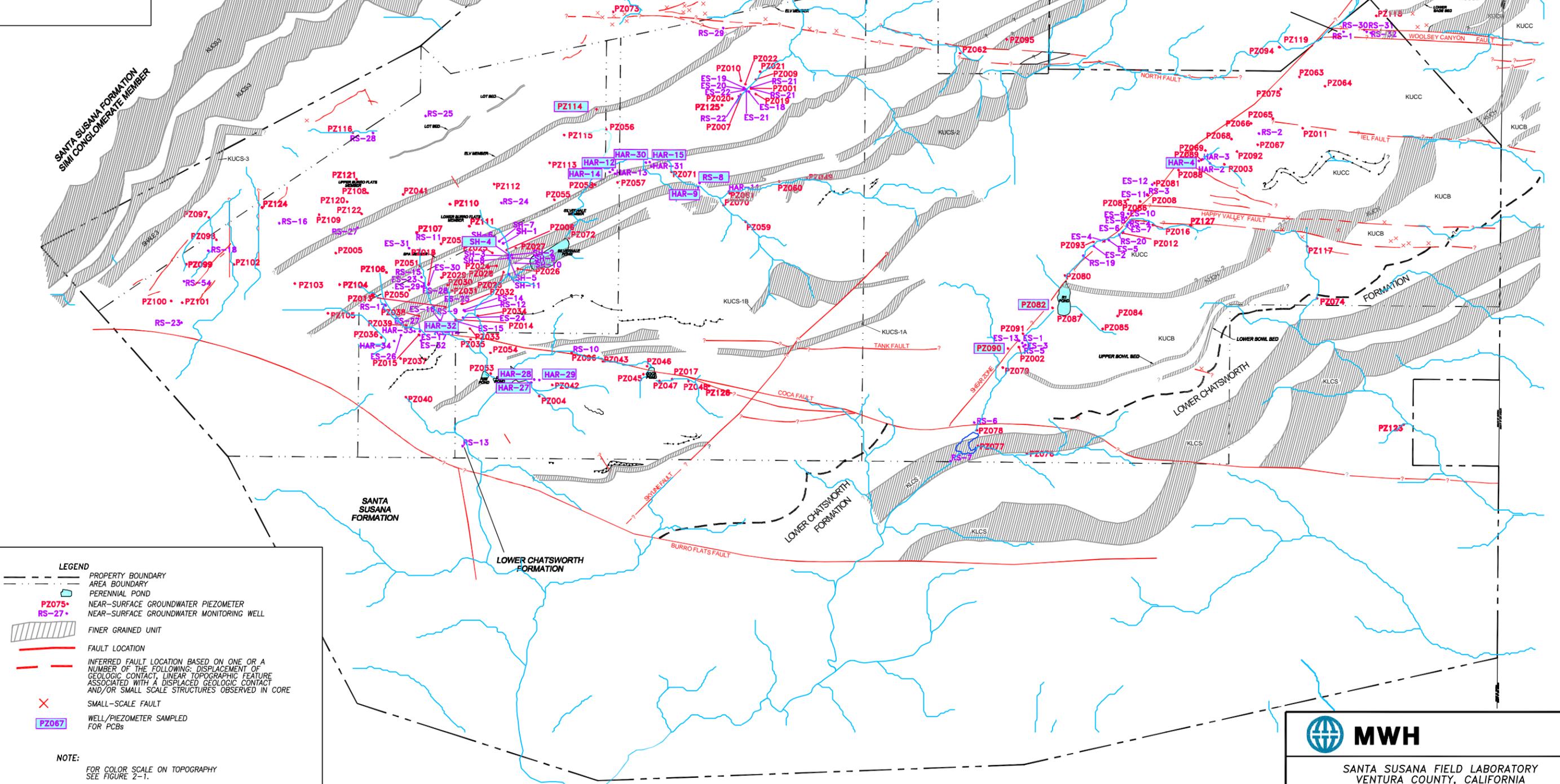
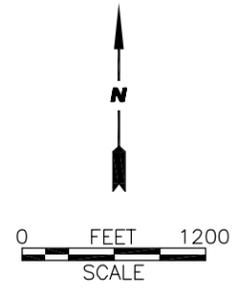


Please Note: The original version of this figure includes colored features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information presented.

<p>MAP COORDINATES IN STATE PLANE, NAD 27, ZONE V</p>	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li>Surface Water Reclamation Ponds</li> <li>Surface Water Divide</li> <li>Near-Surface Groundwater Extent (March 2001)</li> <li>Near-Surface Groundwater Extent Continuous with Chatsworth Formation Groundwater</li> <li>Near-Surface Groundwater Perched and Continuous in this Location</li> </ul>	<p><b>Base Map Legend</b></p> <ul style="list-style-type: none"> <li>SSFL Property Boundary</li> </ul>	<p><b>GEOLOGY LEGEND</b></p> <ul style="list-style-type: none"> <li>Estimated Contact Line</li> <li>Faults (Approximate)</li> <li>Shale Beds</li> <li>Creeks/Streams</li> </ul>	<p><b>Location of Perched and Continuous Near-Surface Groundwater</b></p> <p>DATE: 11/13/03          FILE: c:\rock\plots\arcmap\ngw_extents_perched.mxd</p> <p> <b>MWH</b></p> <p><b>FIGURE 4-9</b></p>
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**Figure 4-10**  
**Hydrograph of RS-28 and RD-30 Northwest of the RMHF RFI Site**





- LEGEND**
- PROPERTY BOUNDARY
  - - - AREA BOUNDARY
  - ◻ PERENNIAL POND
  - PZ075 • NEAR-SURFACE GROUNDWATER PIEZOMETER
  - RS-27 • NEAR-SURFACE GROUNDWATER MONITORING WELL
  - ▨ FINER GRAINED UNIT
  - FAULT LOCATION
  - - - INFERRED FAULT LOCATION BASED ON ONE OR A NUMBER OF THE FOLLOWING: DISPLACEMENT OF GEOLOGIC CONTACT, LINEAR TOPOGRAPHIC FEATURE ASSOCIATED WITH A DISPLACED GEOLOGIC CONTACT AND/OR SMALL SCALE STRUCTURES OBSERVED IN CORE
  - X SMALL-SCALE FAULT
  - PZ067 WELL/PIEZOMETER SAMPLED FOR PCBs

NOTE:  
FOR COLOR SCALE ON TOPOGRAPHY  
SEE FIGURE 2-1.

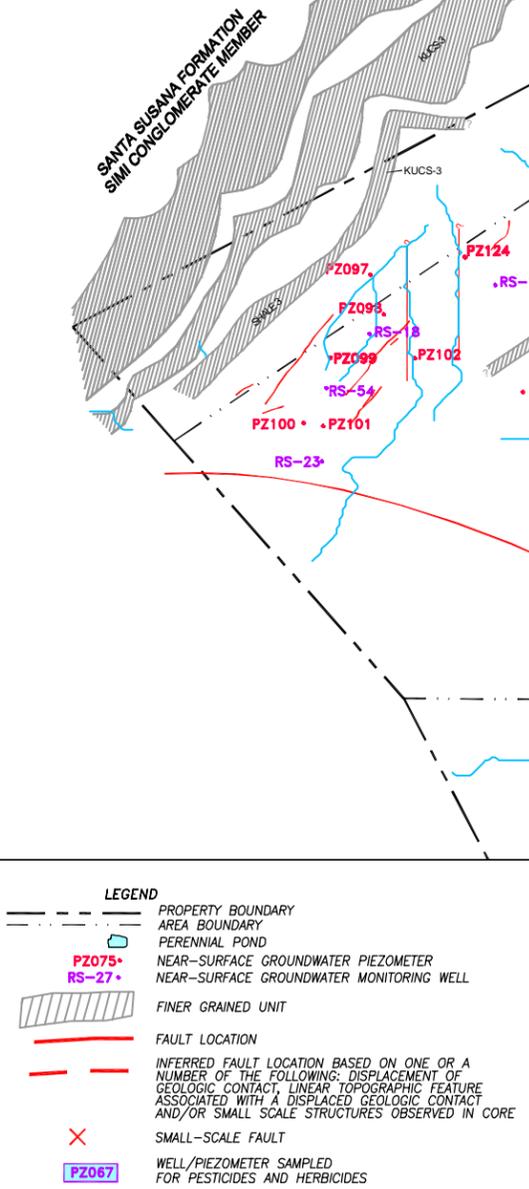
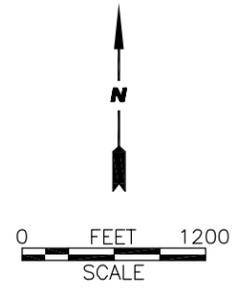
**MWH**

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VENTURA COUNTY, CALIFORNIA  
NOVEMBER 2003

**GROUNDWATER SAMPLE LOCATIONS  
ANALYZED FOR POLYCHLORINATED  
BIPHENYLS**

FIGURE 5-1

Please Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.



- LEGEND**
- PROPERTY BOUNDARY
  - - - AREA BOUNDARY
  - ◻ PERENNIAL POND
  - PZ075, RS-27 NEAR-SURFACE GROUNDWATER PIEZOMETER
  - NEAR-SURFACE GROUNDWATER MONITORING WELL
  - ▨ FINER GRAINED UNIT
  - FAULT LOCATION
  - - - INFERRED FAULT LOCATION BASED ON ONE OR A NUMBER OF THE FOLLOWING: DISPLACEMENT OF GEOLOGIC CONTACT, LINEAR TOPOGRAPHIC FEATURE ASSOCIATED WITH A DISPLACED GEOLOGIC CONTACT AND/OR SMALL SCALE STRUCTURES OBSERVED IN CORE
  - × SMALL-SCALE FAULT
  - ◻ PZ067 WELL/PIEZOMETER SAMPLED FOR PESTICIDES AND HERBICIDES

**NOTE:**  
FOR COLOR SCALE ON TOPOGRAPHY  
SEE FIGURE 2-1.

**MWH**

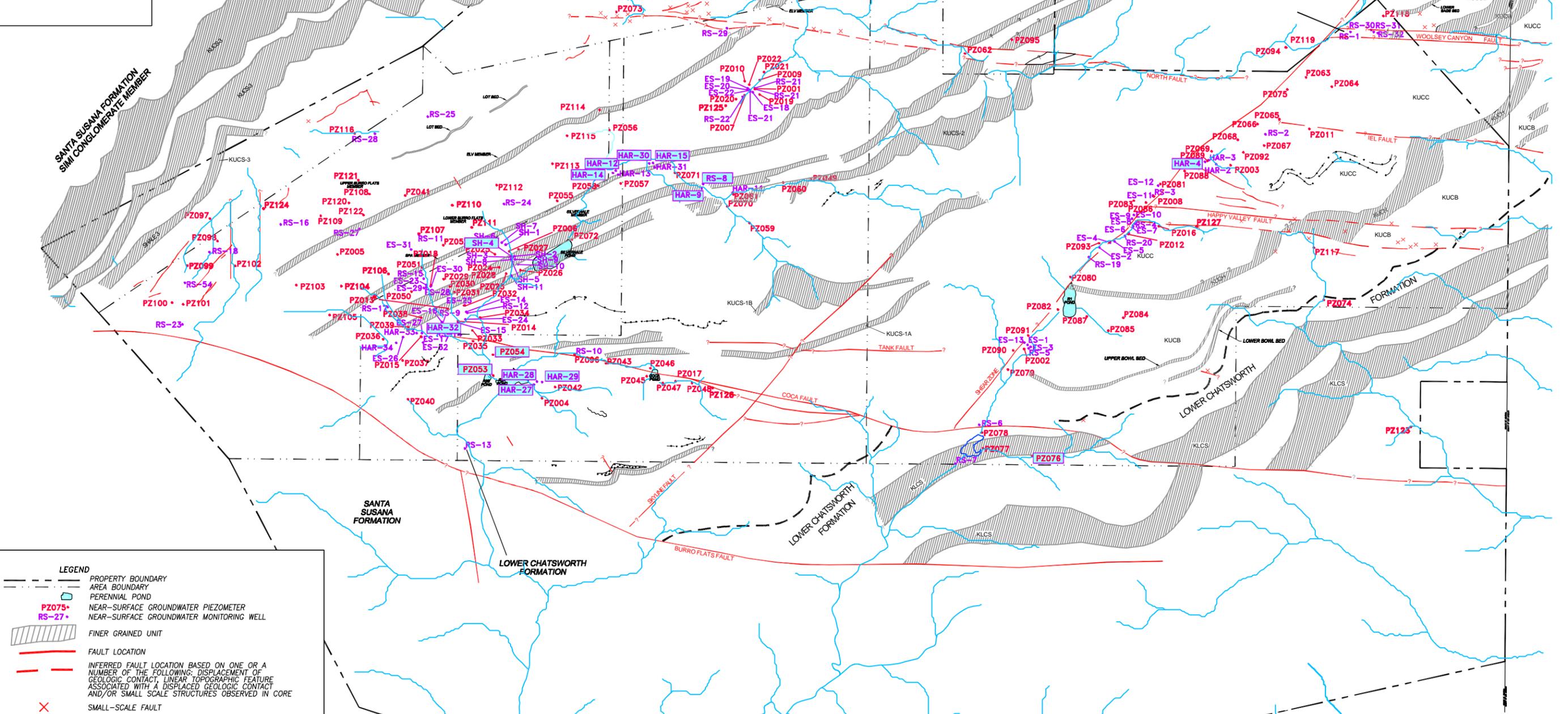
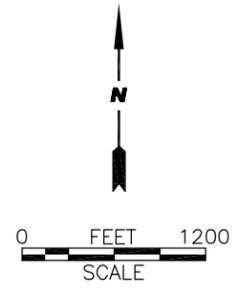
SANTA SUSANA FIELD LABORATORY  
VENTURA COUNTY, CALIFORNIA  
NOVEMBER 2003

**GROUNDWATER SAMPLE LOCATIONS  
ANALYZED FOR PESTICIDES  
AND HERBICIDES**

FIGURE 5-2

Please Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.

INDSVR\INDUSTRIAL\CAD\_MLUEBKE\BOEING\SNATA\_SUSANA\NSGW\_REPORT\FIG 5-3



- LEGEND**
- PROPERTY BOUNDARY
  - - - AREA BOUNDARY
  - ◻ PERENNIAL POND
  - PZ075 • NEAR-SURFACE GROUNDWATER PIEZOMETER
  - RS-27 • NEAR-SURFACE GROUNDWATER MONITORING WELL
  - ▨ FINER GRAINED UNIT
  - FAULT LOCATION
  - - - INFERRED FAULT LOCATION BASED ON ONE OR A NUMBER OF THE FOLLOWING: DISPLACEMENT OF GEOLOGIC CONTACT, LINEAR TOPOGRAPHIC FEATURE ASSOCIATED WITH A DISPLACED GEOLOGIC CONTACT AND/OR SMALL SCALE STRUCTURES OBSERVED IN CORE
  - × SMALL-SCALE FAULT
  - PZ067 ◻ WELL/PIEZOMETER SAMPLED FOR DIOXINS AND FURANS

NOTE:  
FOR COLOR SCALE ON TOPOGRAPHY  
SEE FIGURE 2-1.

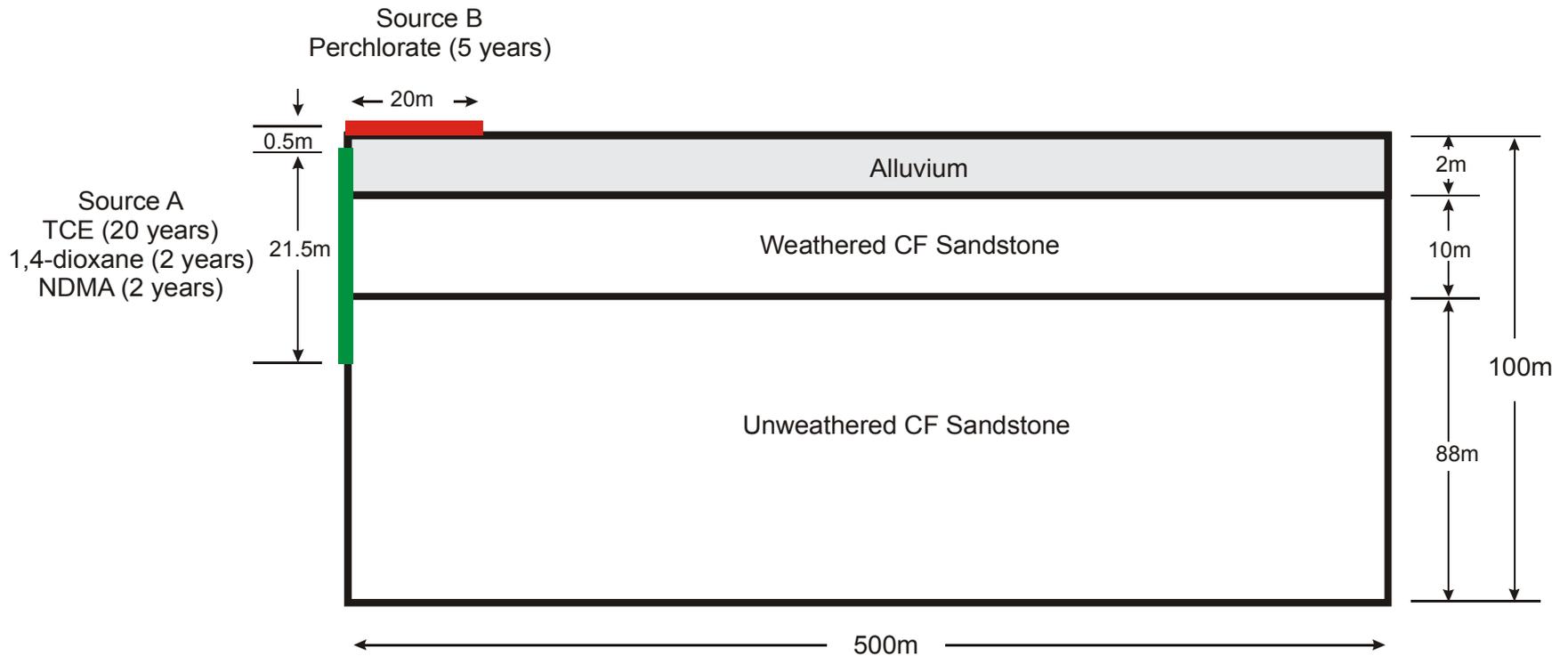
**MWH**

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VENTURA COUNTY, CALIFORNIA  
NOVEMBER 2003

**GROUNDWATER SAMPLE LOCATIONS  
ANALYZED FOR DIOXINS  
AND FURANS**

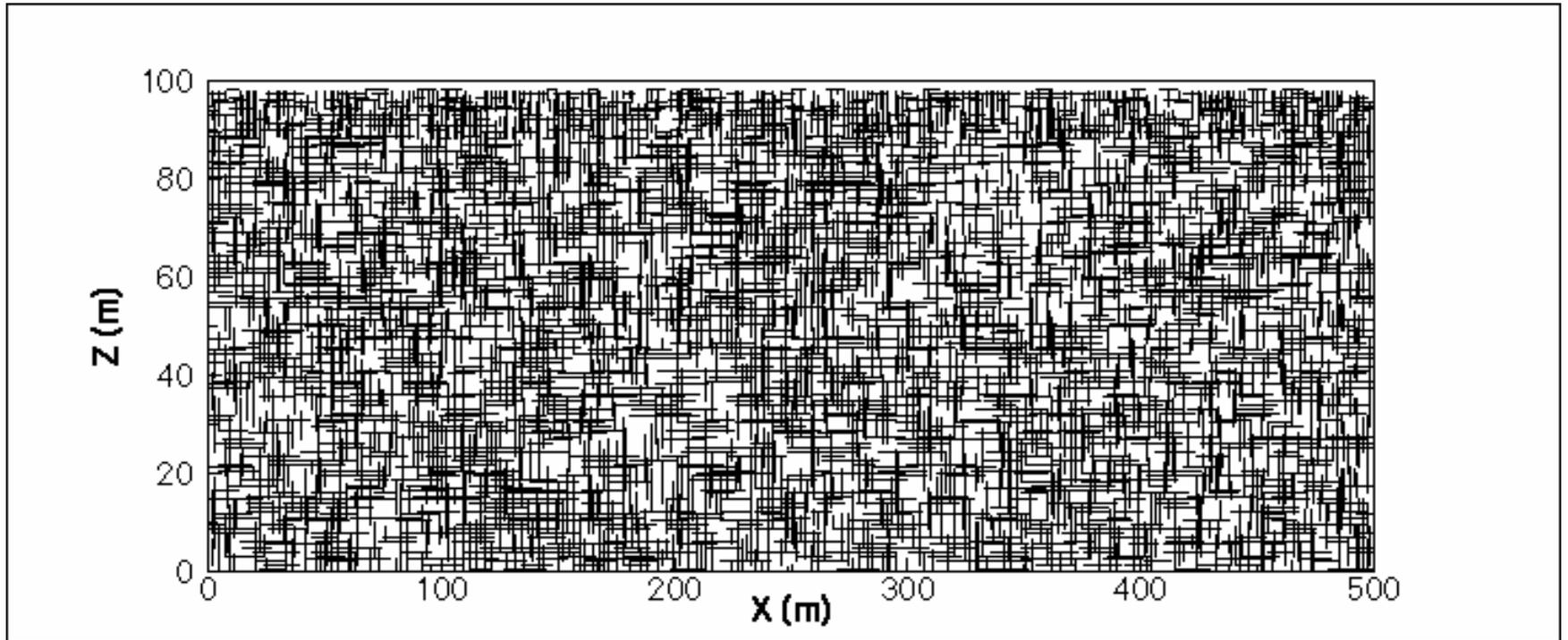
FIGURE 5-3

Please Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.

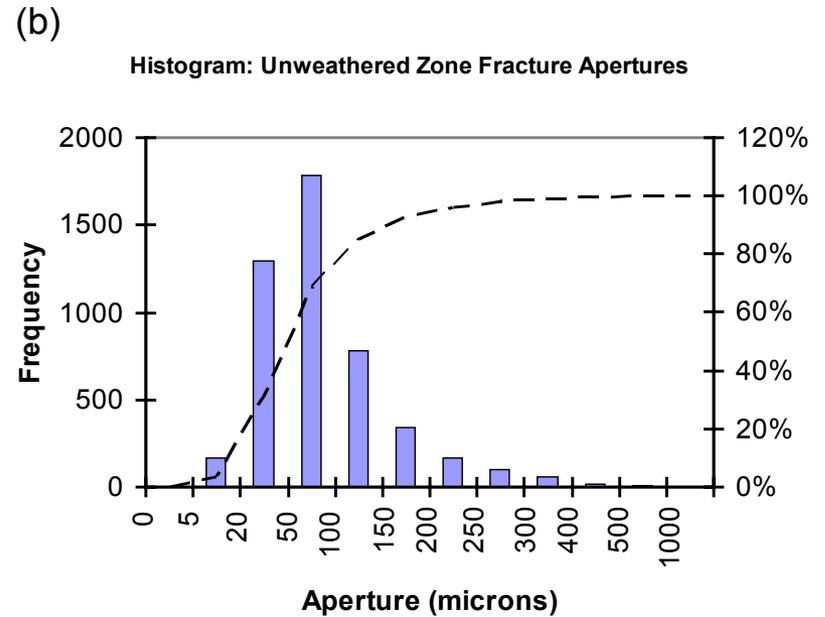
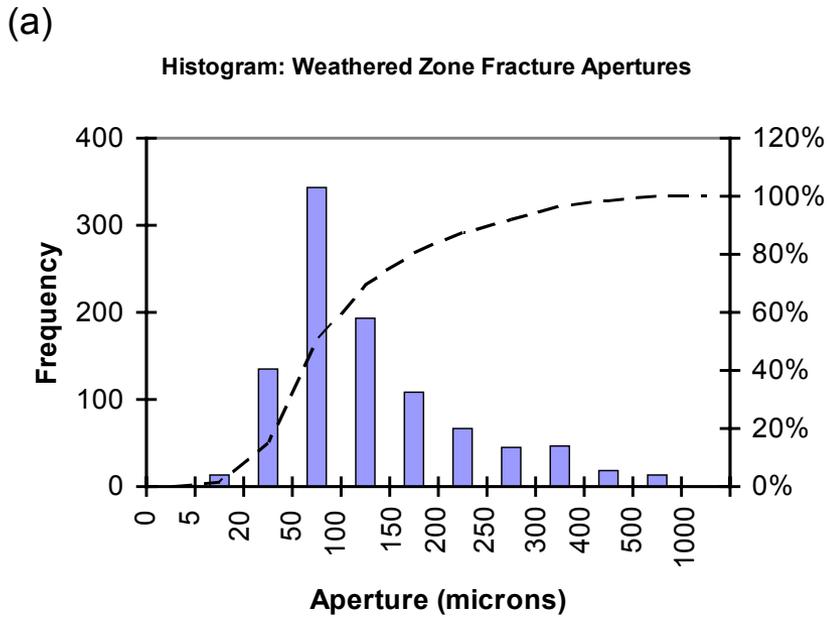


**Figure 6-1: Cross-Sectional Schematic Diagram of ModelDomian** with three layers (alluvium, weathered CF sandstone and unweathered CF sandstone). Source positions for TCE, 1,4-dioxane and NDMA (Source A) and perchlorate (Source B) and assumed source durations for the simulations are also shown.

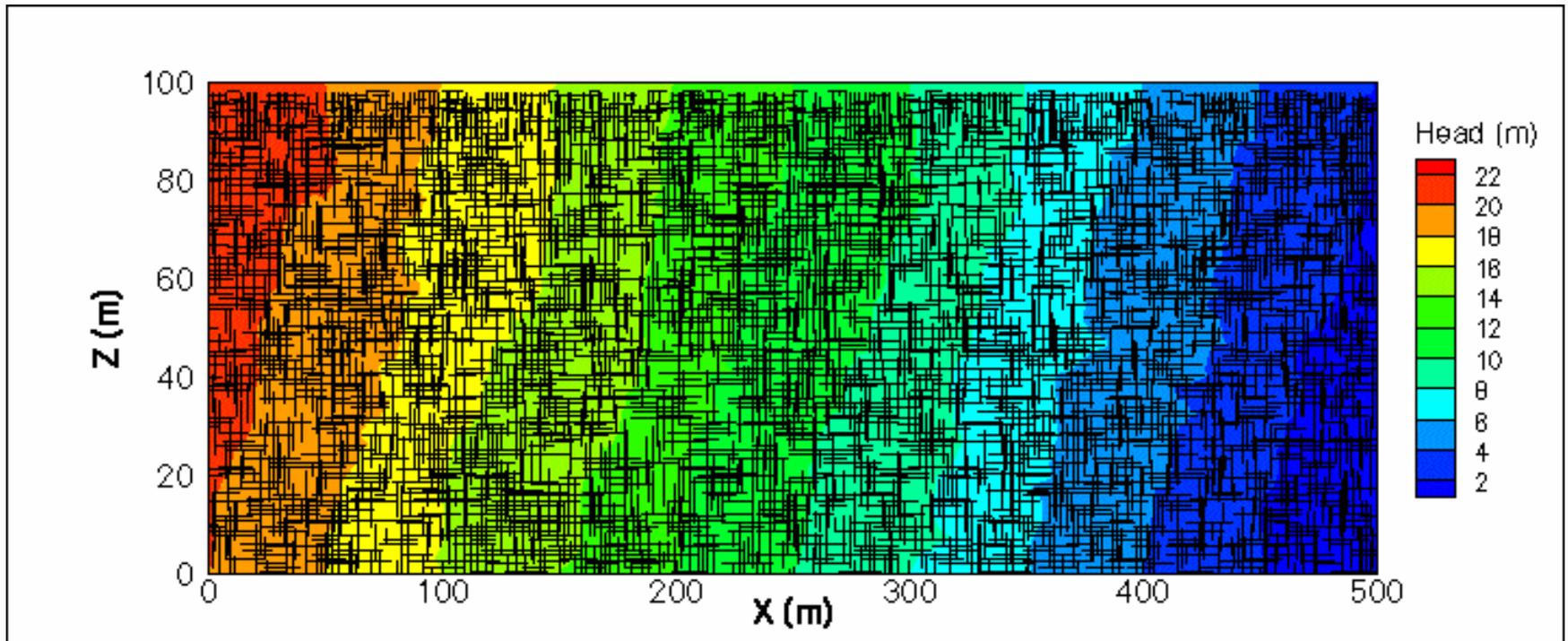
Note: The original version of this figure includes colorized features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.



**Figure 6-2: Vertical Cross-Section Fracture Network.** Single realization of randomly generated fracture network with variable fracture apertures (proportional to the plotted line thickness).



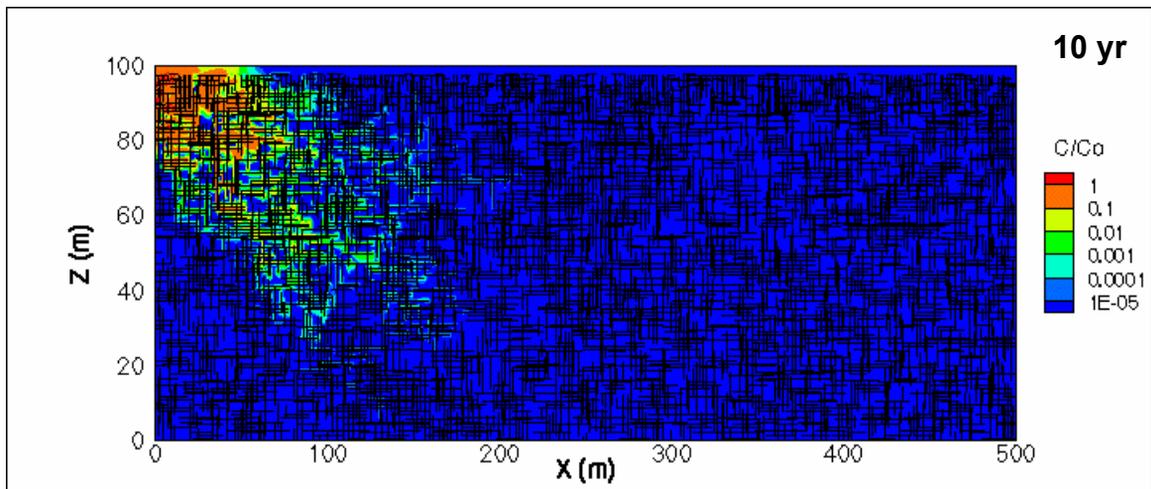
**Figure 6-3: Histograms of Fracture Apertures** (generated according to a log-normal distribution) for (a) weathered CF sandstone zone and (b) unweathered CF sandstone zone. The mean apertures for the weathered and unweathered zones are 100 and 70 microns, respectively, and apertures vary on a fracture-by-fracture basis.



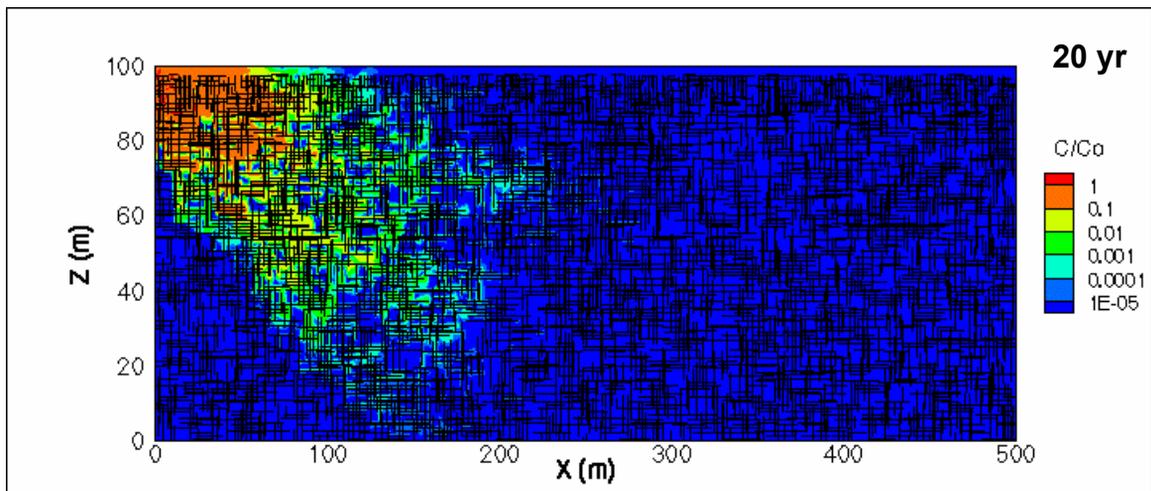
**Figure 6-4: Hydraulic Head Contours for the “Base Case” Simulation.** The average horizontal gradient is 4% and average vertical gradient is 2% (downward).

Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.

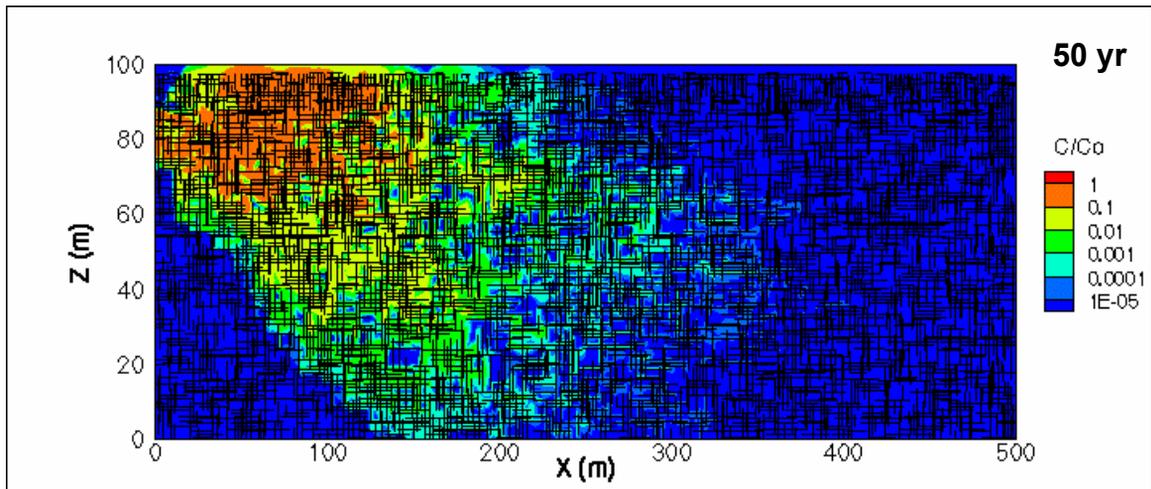
(a)



(b)

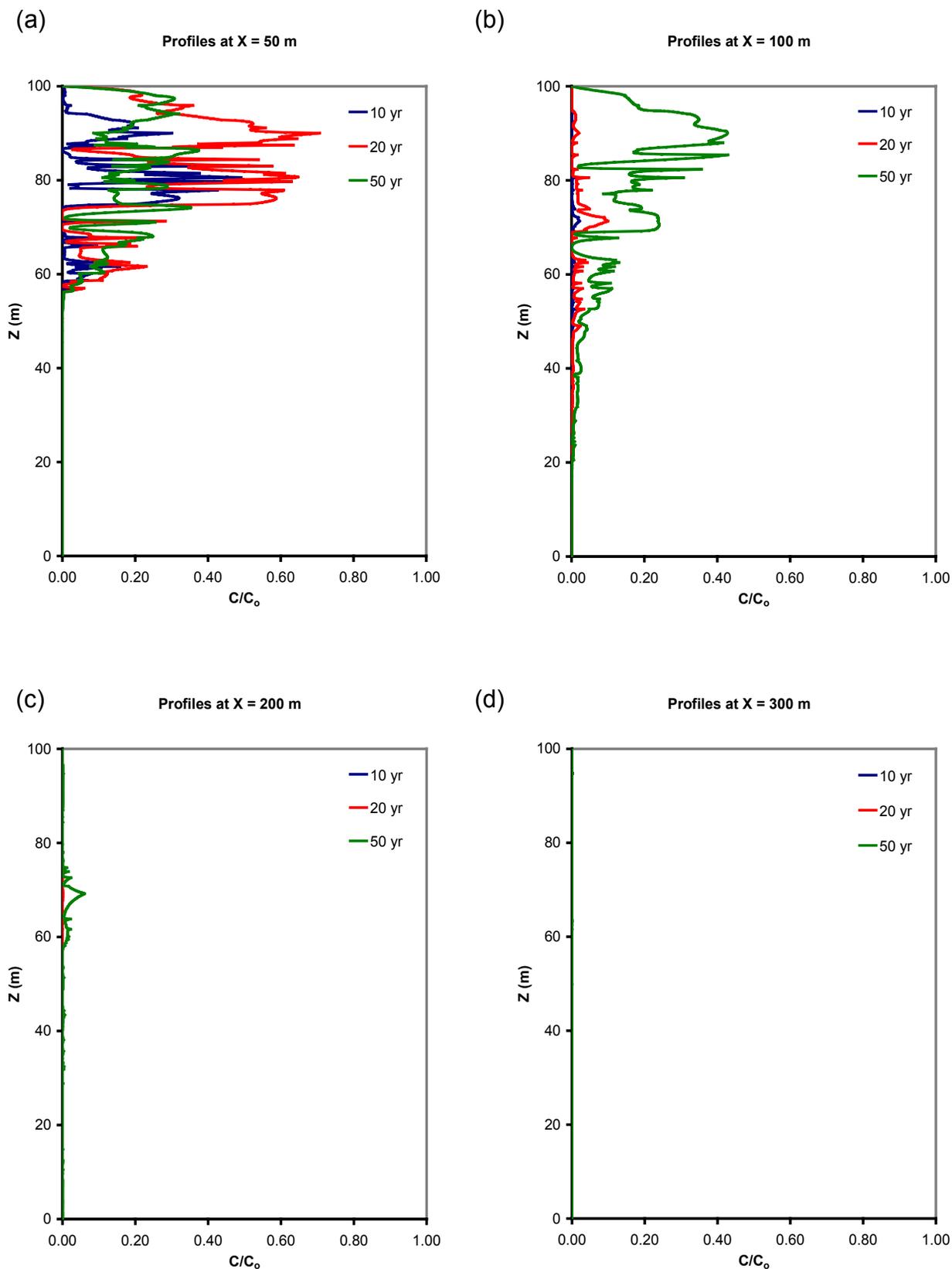


(c)



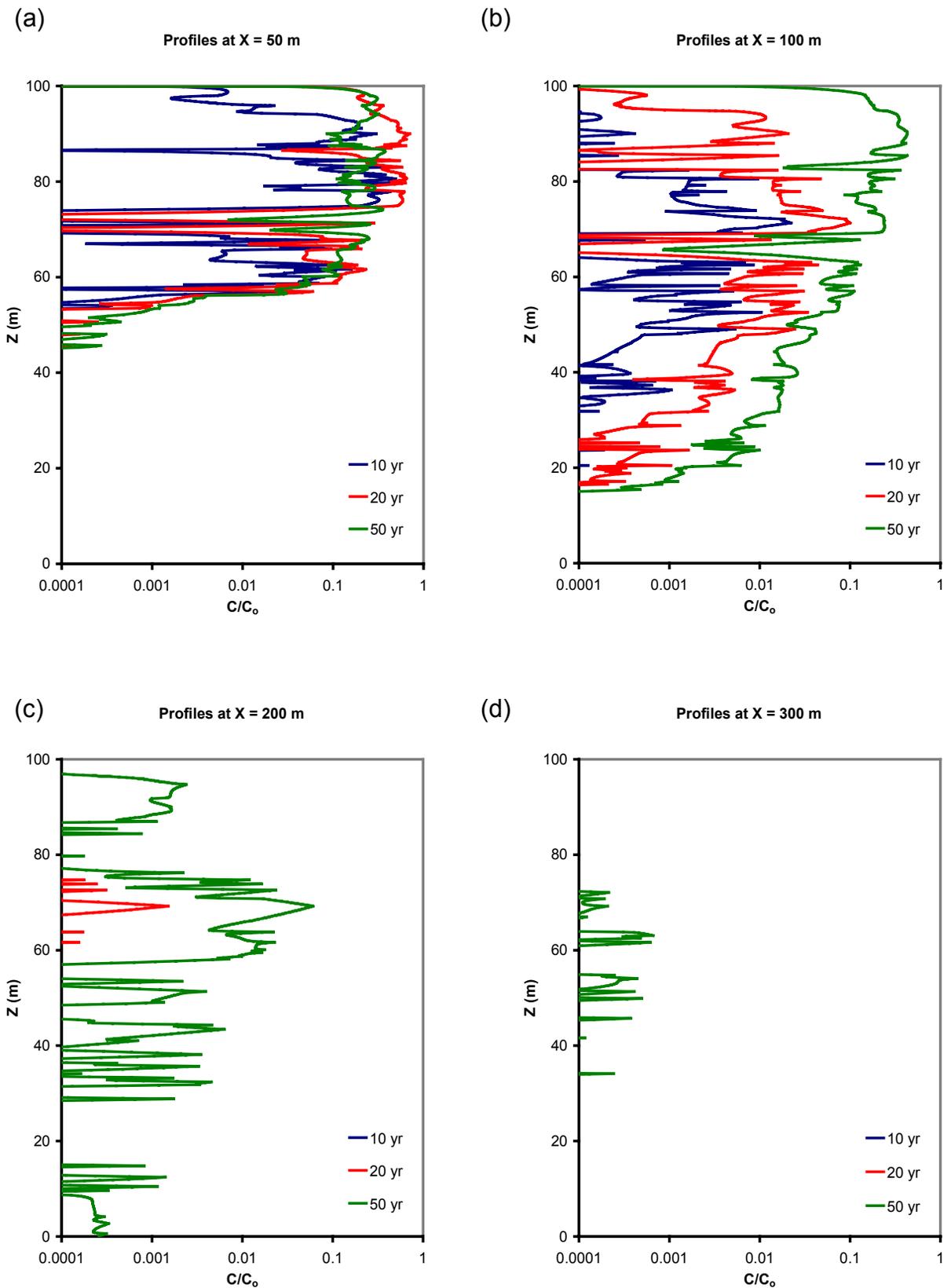
**Figure 6-5: Simulated TCE Contours - at (a) 10, (b) 20 and (c) 50 years for the “base case” conditions.**

Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.



**Figure 6-6: TCE Concentration Profiles** at (a) 50, (b) 100, (c) 200 and (d) 300 m from the source boundary for the “base case” conditions (linear concentration scale).

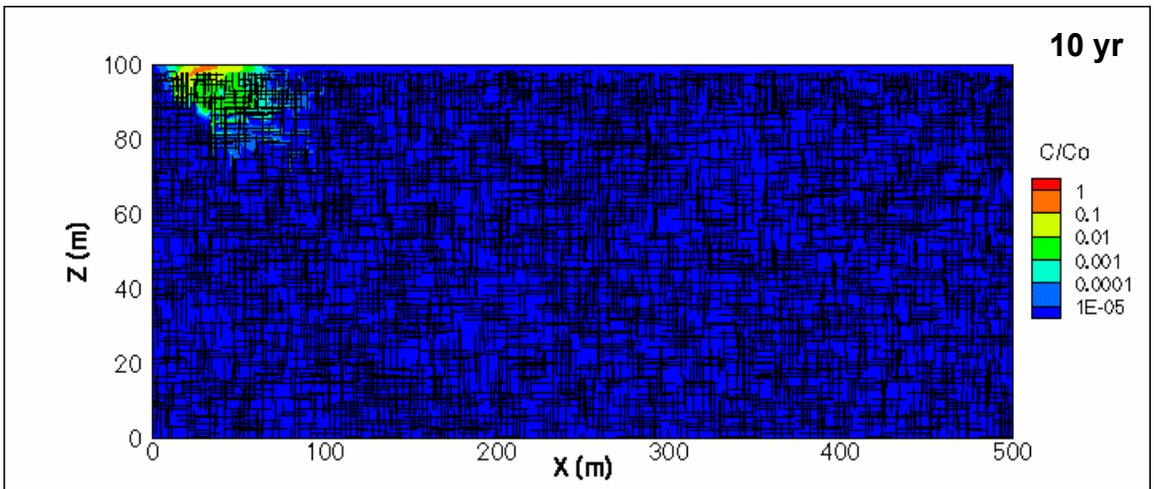
Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.



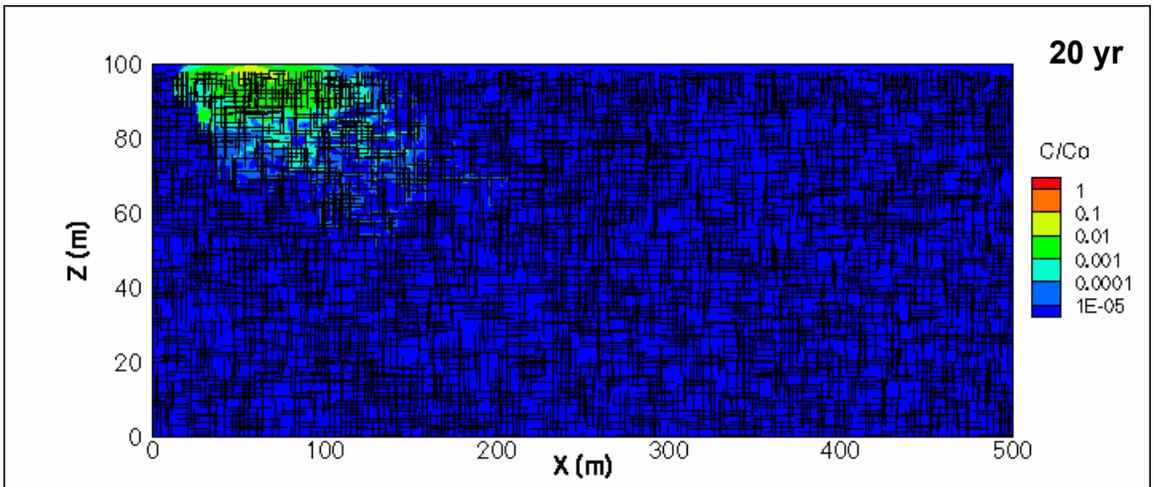
**Figure 6-7: TCE Concentration Profiles** at (a) 50, (b) 100, (c) 200 and (d) 300 m from the source boundary for the “base case” conditions (log concentration scale).

Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.

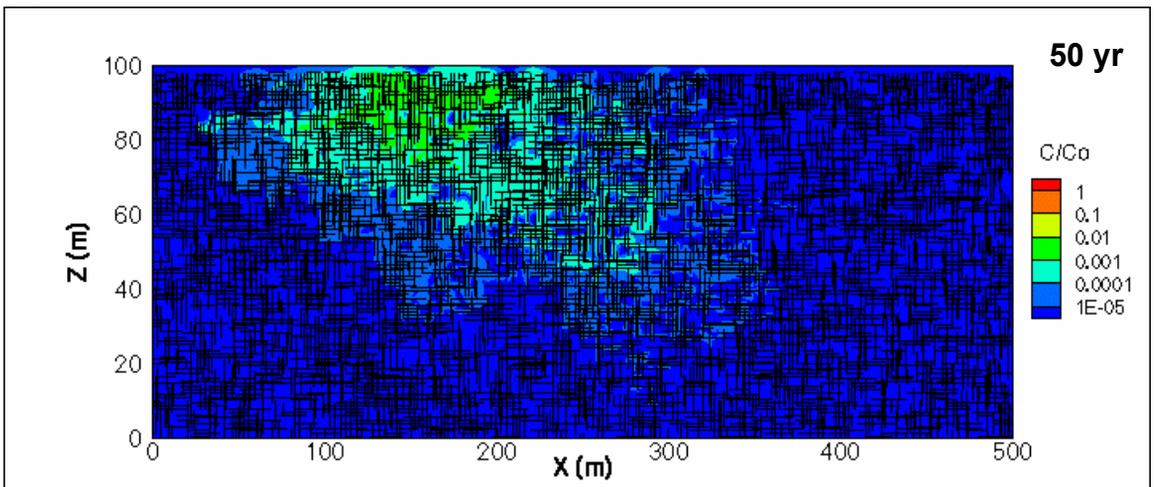
(a)



(b)



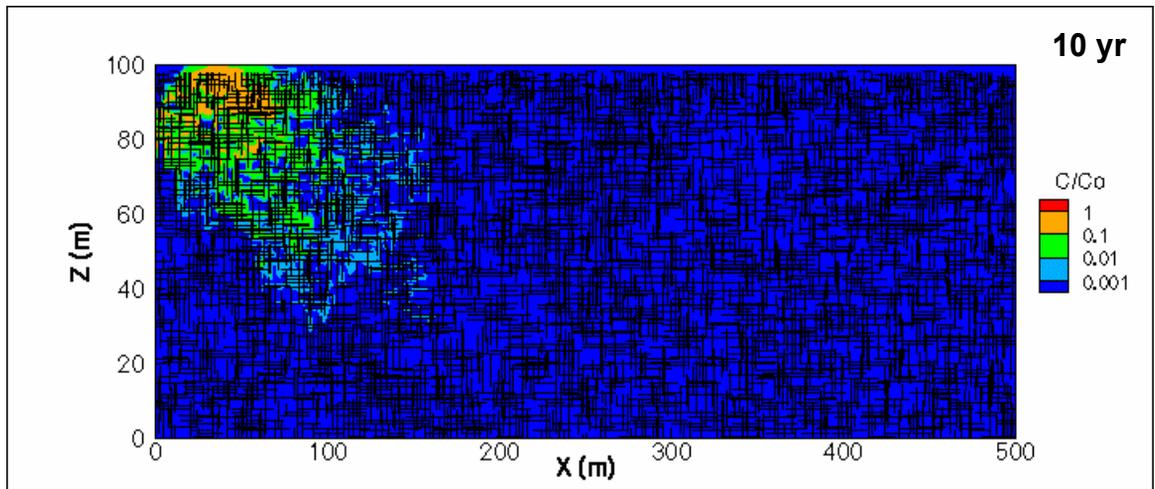
(c)



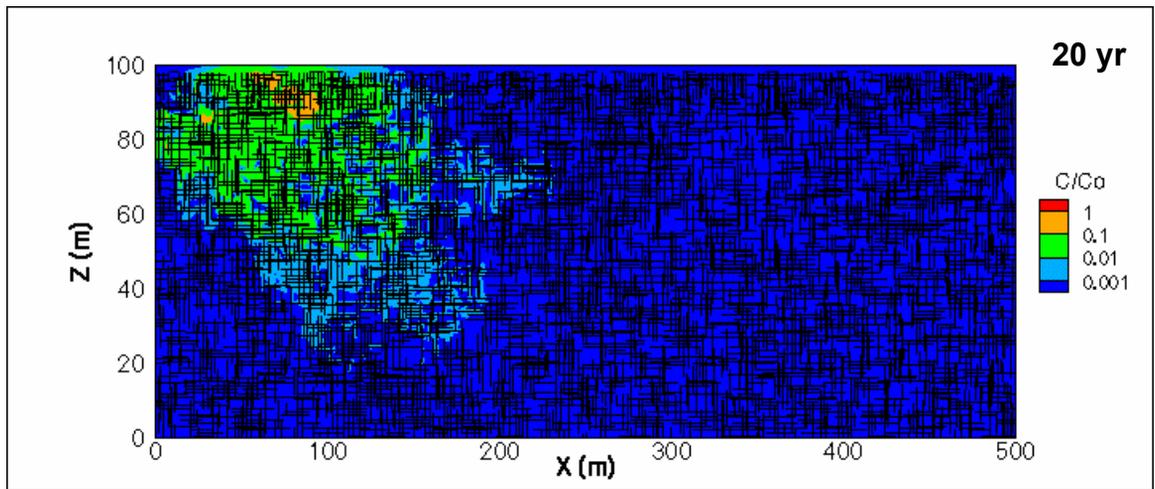
**Figure 6-8: Simulated Perchlorate Contours** at (a) 10, (b) 20 and (c) 50 years for the “base case” conditions.

Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.

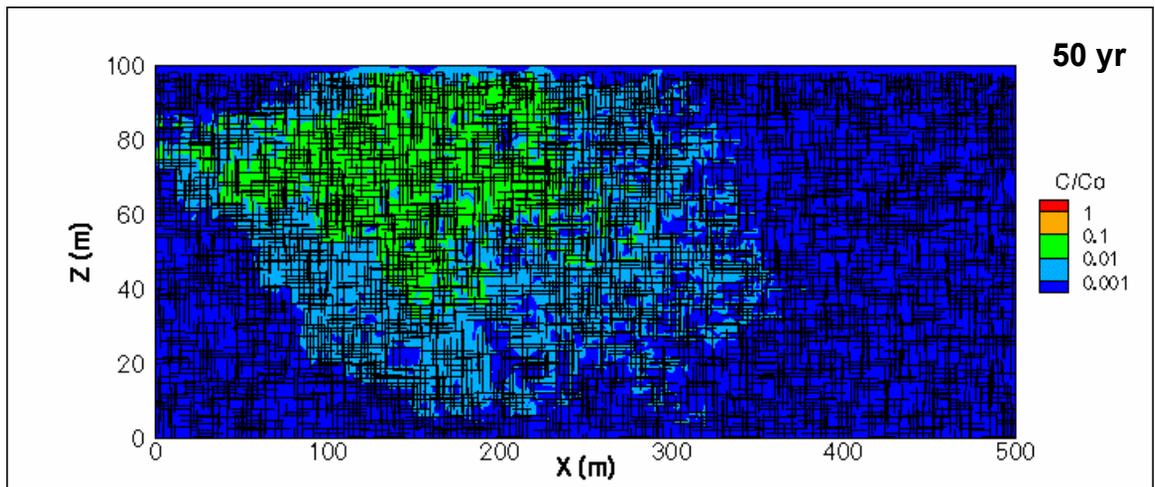
(a)



(b)



(c)



**Figure 6-9: Simulated NDMA/1,4-Dioxane Contours at (a) 10, (b) 20 and (c) 50 years for the “base case” conditions. The plume front is plotted out to  $C/C_0=10^{-3}$ .**

Note: The original version of this figure includes colored features and shading. A black and white copy of this figure should not be used because it may not accurately represent the information presented.