

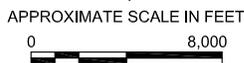
Leviathan Mine

SITE LOCATION MAP
 Leviathan Mine Site
 Alpine County, California

By: dpv Date: 6/01/09 Project No. 13091A.109

AMEC Geomatrix

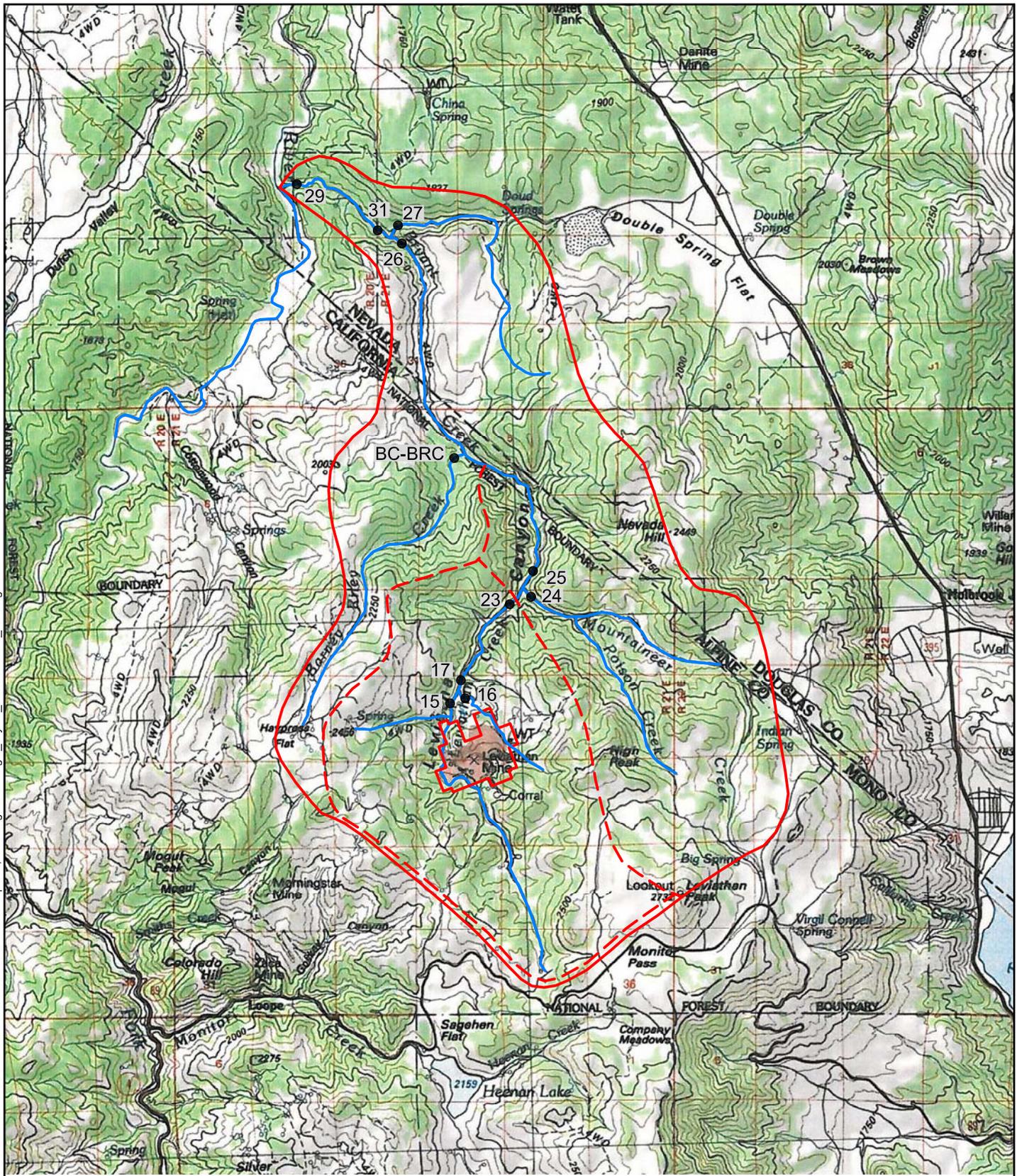
Figure 1



Plot Date: 06/30/09 - 9:44am. Plotted by: donna.valasek
 Drawing Path: P:\Project\13091A\Leviathan\14000 Database and CAD\RIFS Report\Drawing Name: Site Map.dwg

Source: National Geographic USGS Topographic Maps (California)

Plot Date: 06/30/09 - 9:48am, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091A\Leviathan\14000 Database and CAD\CAD_RIFS Report\Drawing Name: Fig 2_Bryant_Leviathan Crk. rev.dwg



Explanation

- Leviathan Creek Watershed
- Bryant Creek Watershed
- 25 Surface Water Monitoring Location and Designation



APPROXIMATE SCALE IN FEET



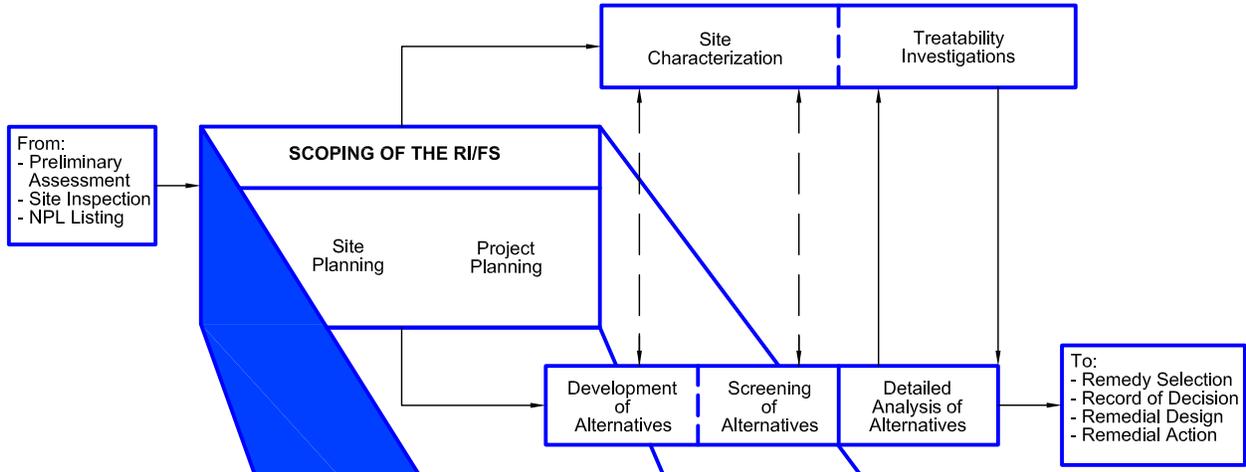
**BRYANT AND LEVIATHAN
 CREEK WATERSHEDS**
 Leviathan Mine Site
 Alpine County, California

By: dpv Date: 6/01/09 Project No. 13091A.109

AMEC Geomatrix

Figure 2

Source: National Geographic USGS Topographic Maps (California)



SCOPING OF THE RI/FS

SITE PLANNING

- Evaluate Existing Data
- Develop Conceptual Site Model
- Develop Site Management Strategy

PROJECT PLANNING

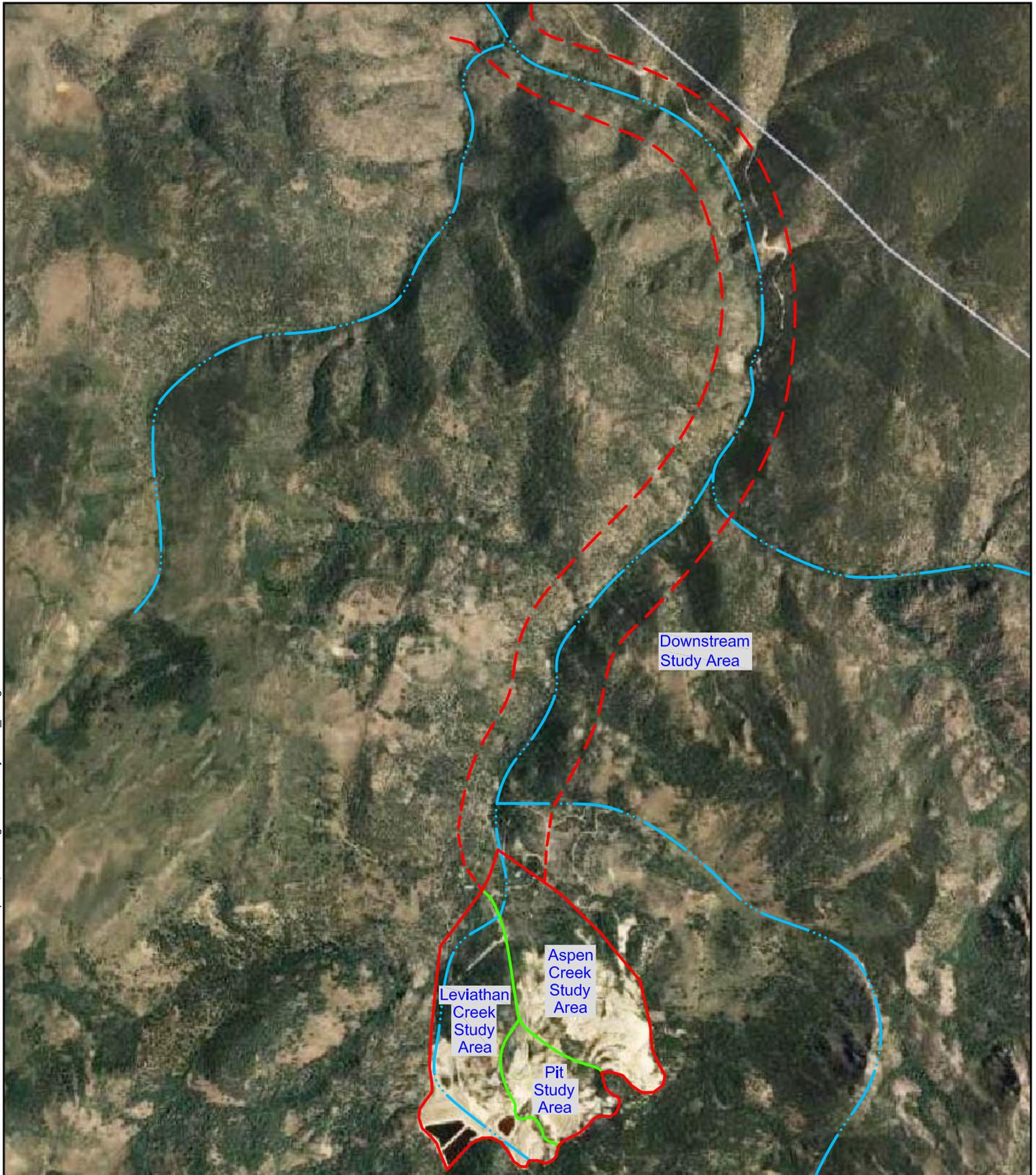
- Identify Initial Project/Operable Unit, Like Response Scenarios & Remedial Action Objectives
- Identify Potential State/Federal ARARs, Determine Initial Action Levels
- Identify Initial Data Quality Objectives (DQOs)
- Prepare Project Plans

<p>SCOPING OF THE RI/FS Leviathan Mine Site Alpine County, California</p>		
By: dpv	Date: 6/1/09	Project No. 13091A.109
<p>AMEC Geomatrix</p>		<p>Figure 3</p>

Reference: OSWER Directive 9335.3-01

Plot Date: 06/30/09 - 9:49am, Plotted by: doma.valasek
 Drawing Path: P:\Project\13000us\13091 Leviathan\14000 Database and CAD\CAD\RI/FS Report\, Drawing Name: Scoping Figure_rev.dwg

Plot Date: 06/30/09 - 9:51am, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091\Leviathan\14000 Database and CAD\CAD\RIFS Report\, Drawing Name: Study Areas_3.dwg



Explanation

- - - - - Downstream Study Area Boundary
- Study Area Boundary
- Limits of the Site
- · · · · Creek

Note

Background area will be identified in the future.



APPROXIMATE SCALE IN FEET
 0 ————— 1,500
 Source: 2008 Google Earth Pro

STUDY AREAS Leviathan Mine Site Alpine County, California		
By: dpv	Date: 6/01/09	Project No. 13091A.109
		Figure 4

Plot Date: 06/30/09 - 3:41pm, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091\Leviathan\14000 Database and CAD\CAD\RIFS Report\ Drawing Name: Fig 5-7_ Leviathan mine Site.dwg



Explanation

- Boundary of Study Area
- Creek
- Leviathan Creek Basin Landslide
- Discharge Point

Note

Aspen Creek Area extends off map to confluence of Leviathan Creek and Aspen Creek.

Source: Summit Engineering, October 2, 2007



ASPEN CREEK STUDY AREA Leviathan Mine Site Alpine County, California		
By: dpv	Date: 6/01/09	Project No. 13091A.109
AMEC Geomatrix		Figure 5

Plot Date: 06/30/09 - 9:59am, Plotted by: donna.valasek
 Drawing Path: P:\Project\13000s\13091 Leviathan\14000 Database and CAD\CAD\RIFS Report\1 Drawing Name: Fig 5-7_Leviathan mine Site.dwg



Explanation

- Adit Tunnel
- Boundary of Study Area
- - - Approximate Location of PUD Features



APPROXIMATE SCALE IN FEET
 0 450

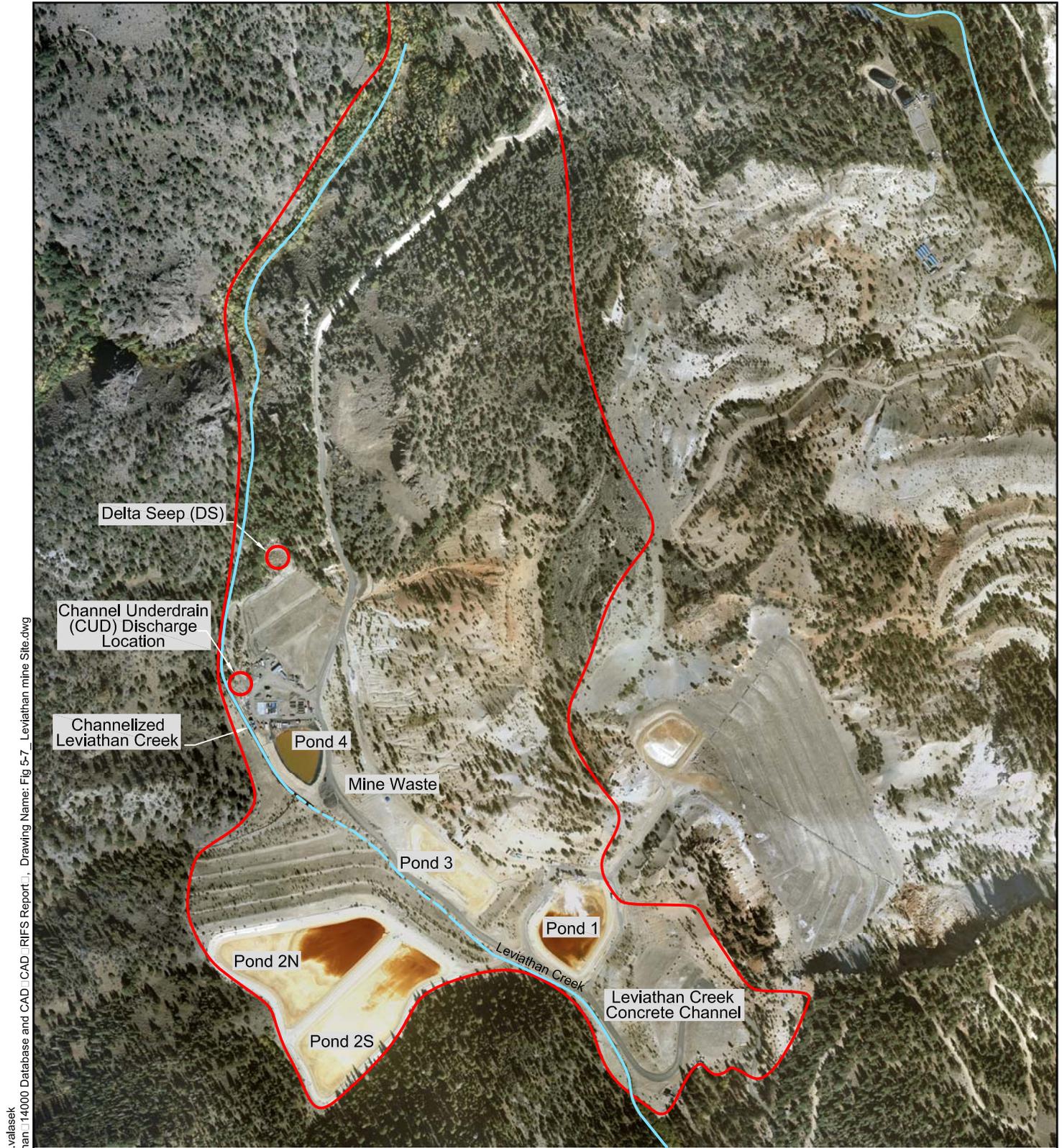
Source: Summit Engineering, October 2, 2007

**PIT STUDY AREA
 Leviathan Mine Site
 Alpine County, California**

By: dpv Date: 6/01/09 Project No. 13091A.109

AMEC Geomatrix

Figure 6



Plot Date: 06/30/09 - 10:02am. Plotted by: donna.valasek
 Drawing Path: P:\Project\13000s\13091_Leviathan\14000 Database and CAD\CAD\RIFS Report\... Drawing Name: Fig 5-7_Leviathan mine Site.dwg
 Source: Summit Engineering, October 2, 2007

Explanation

- Discharge Point
- Boundary of Study Area
- Creek
- Pond 2S Study Area Features

Note

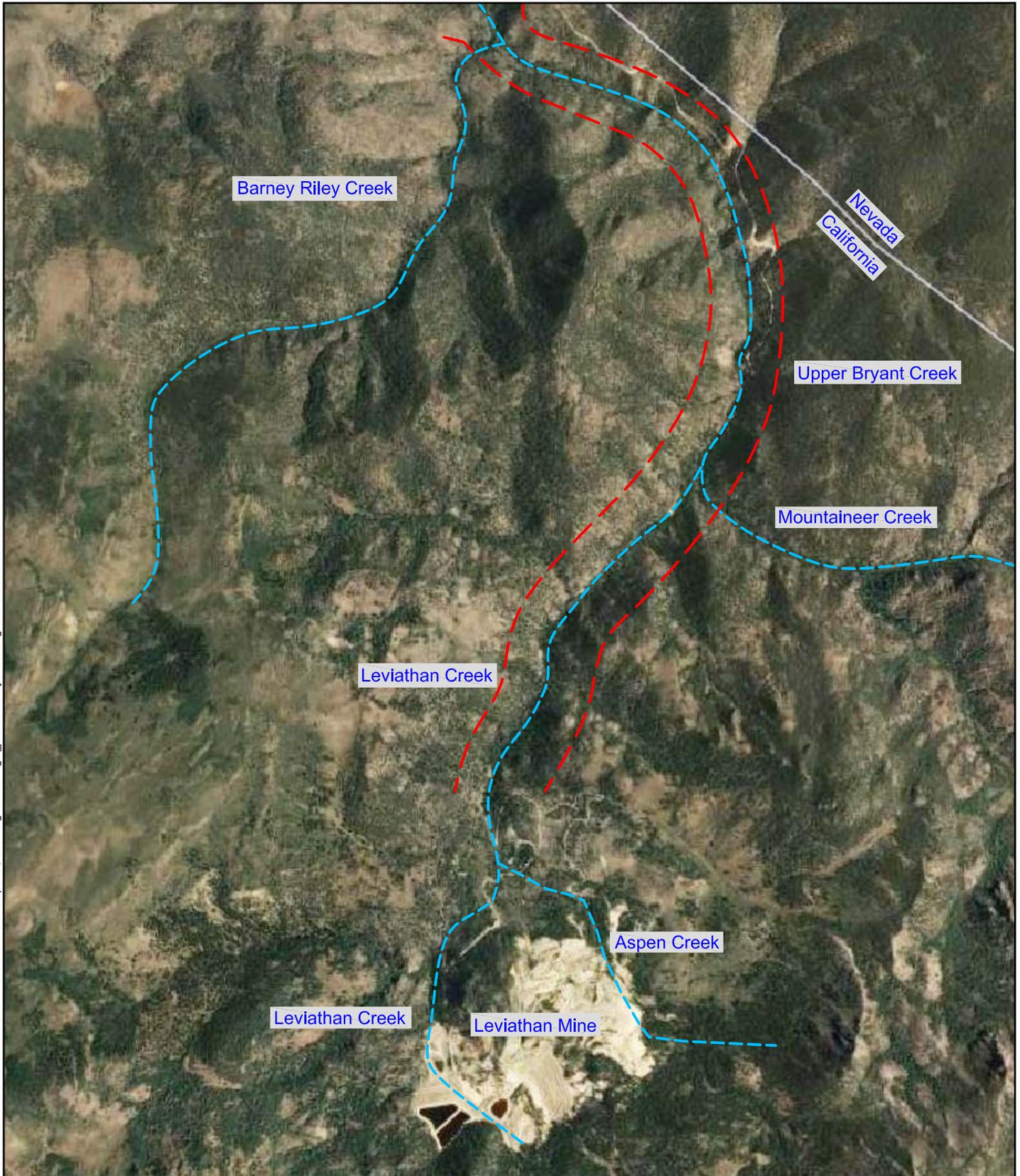
LCSA extends off map to confluence of Leviathan Creek and Aspen Creek.



APPROXIMATE SCALE IN FEET
 0 700

LEVIATHAN CREEK STUDY AREA Leviathan Mine Site Alpine County, California		
By: dpv	Date: 6/01/09	Project No. 13091A.109
AMEC Geomatrix		Figure 7

Plot Date: 06/30/09 - 10:03am, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091\Leviathan\14000 Database and CAD\CAD\RIFS Report\, Drawing Name: Fig 8 - Offsite Study Area.dwg



Explanation

- - - - - Creeks
- - - - - Off-site Study Area



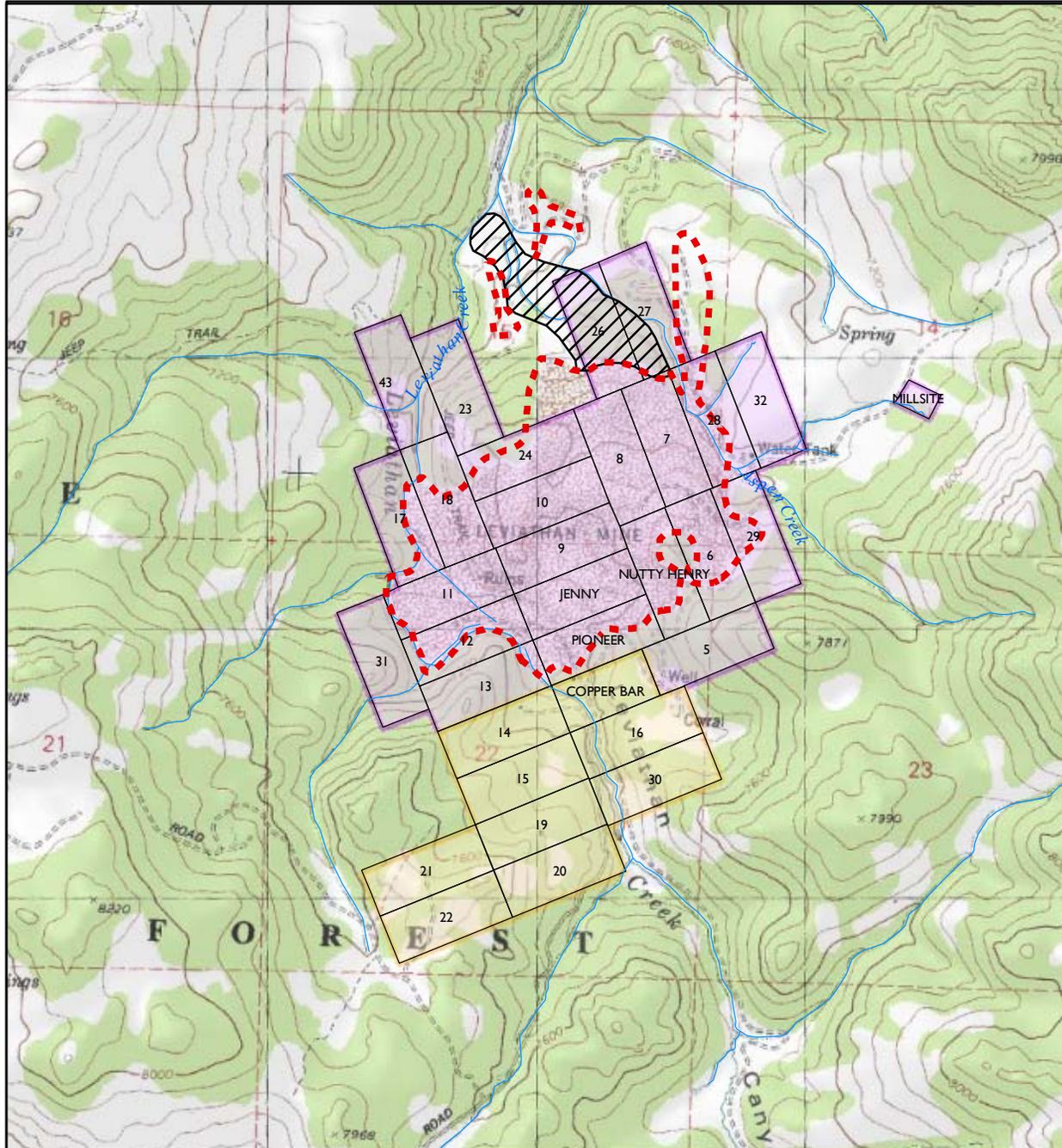
APPROXIMATE SCALE IN FEET
 0 1,500
 2008 Google Earth

DOWNSTREAM STUDY AREA
 Leviathan Mine Site
 Alpine County, California

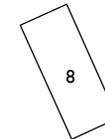
By: dpv	Date: 6/01/09	Project No. 13091A.109
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AMEC Geomatrix

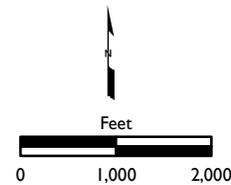
Figure 8



- - - Approximate Limits of the Disturbed Area
- Privately Owned Land
- State-Owned Land
- Approximate Limits of the Leviathan Creek Basin Landslide



8
Parcels of the Leviathan Mine Property
and designation



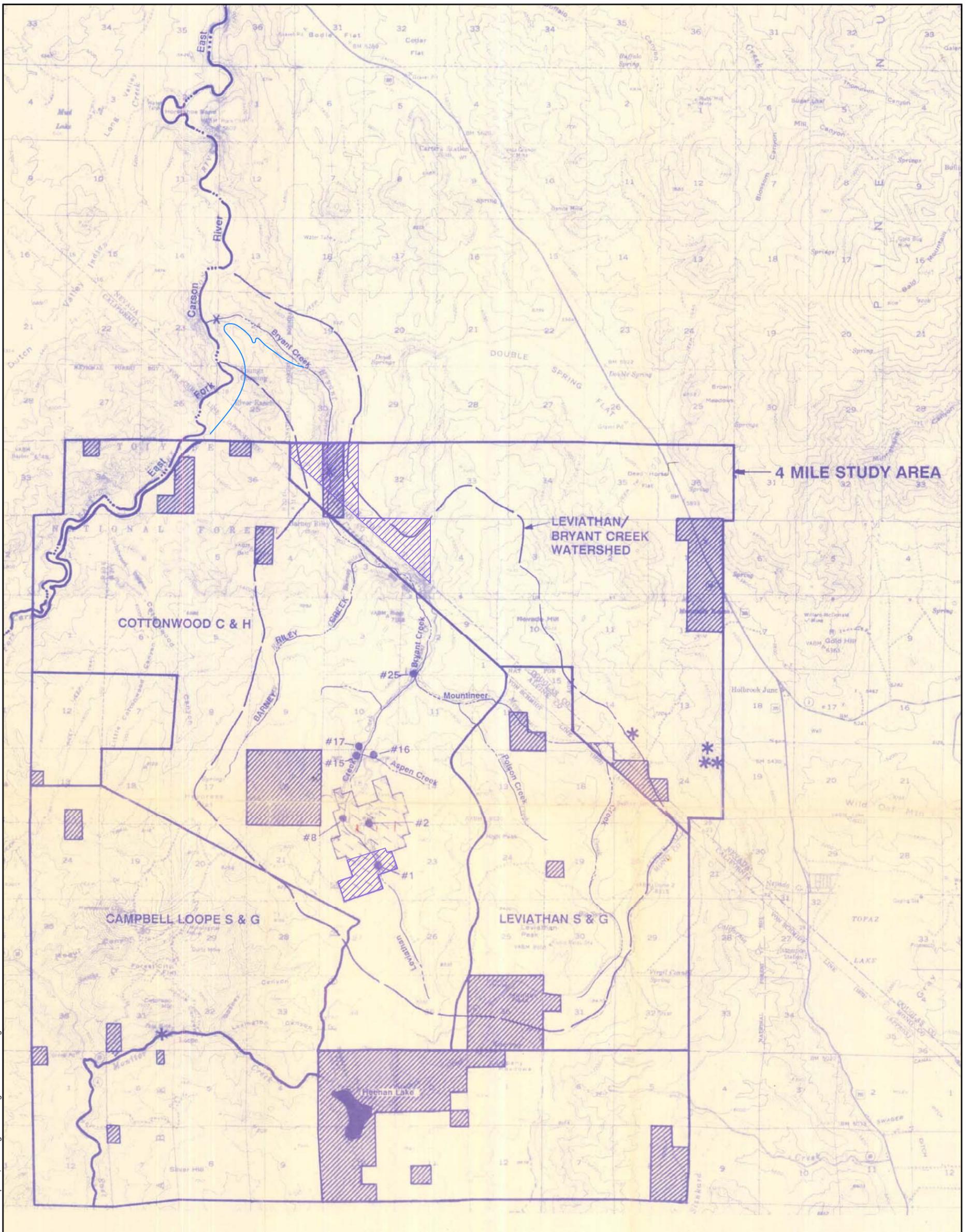
- Sources:
1. The California Spatial Information Library, NAIP, 2005 and RWWCB, 1995a
 2. Science Applications International Corporation, Final Title Search and Survey for the Leviathan Mine Site, January 31, 2000

LEVIATHAN MINE PATENTED MINERAL CLAIMS
 Leviathan Mine Site
 Alpine County, California

By: SF Date: 5/15/2009 Project No. 13091.109

AMEC Geomatrix

Figure 9



Plot Date: 06/30/09 - 1:45pm, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091A\13091A.dwg, Drawing Name: Regional Site Use.dwg

Explanation

- * Well Sites
- X Irrigation Diversion
- [Solid Color Box] Federal Lands (USFS, BLM, BIA)
- [Diagonal Hatching Box] Private Lands
- [Wavy Hatching Box] State Lands (Leviathan Mine)
- [Dashed Line] Grazing Allotments
- Surface Water Monitoring Locations
- [Blue Line] Redirected Water



APPROXIMATE SCALE IN FEET
 0 250,000

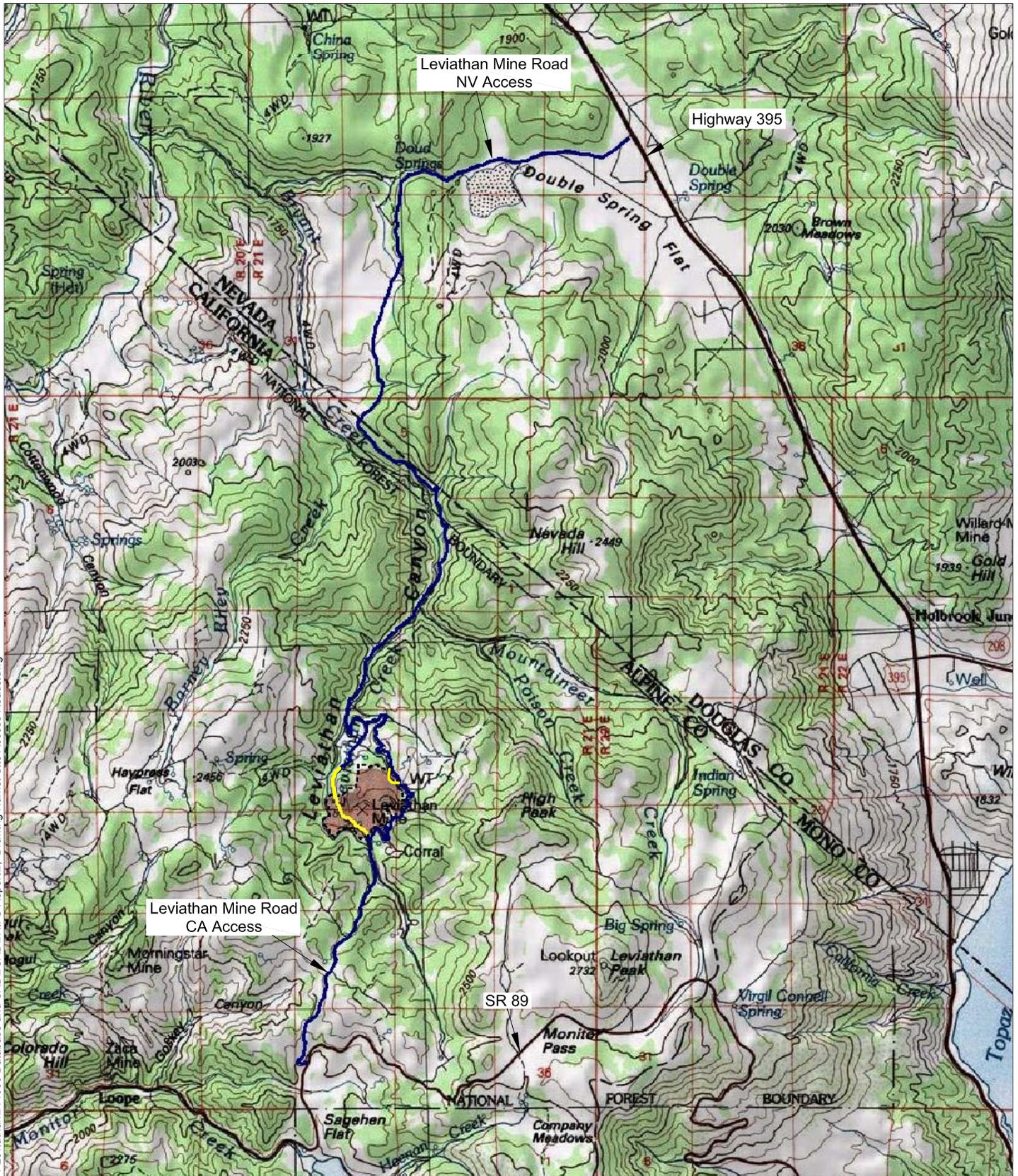
Source: Greystone Development Consultants, Inc., prepared March 22, 1991, and Science Applications International Corporation Final Title Search and Survey for the Leviathan Mine Site, January 31, 2000.

REGIONAL SITE USE
 Leviathan Mine Site
 Alpine County, California

By: dpv Date: 06/30/09 Project No. 13091A.109

AMEC Geomatrix

Figure 10



Leviathan Mine Road
NV Access

Highway 395

Leviathan Mine Road
CA Access

Explanation

- Leviathan Mine Road - Public Access
- Leviathan Mine Road - No Public Access



SITE ACCESS ROADS
Leviathan Mine Site
Alpine County, California

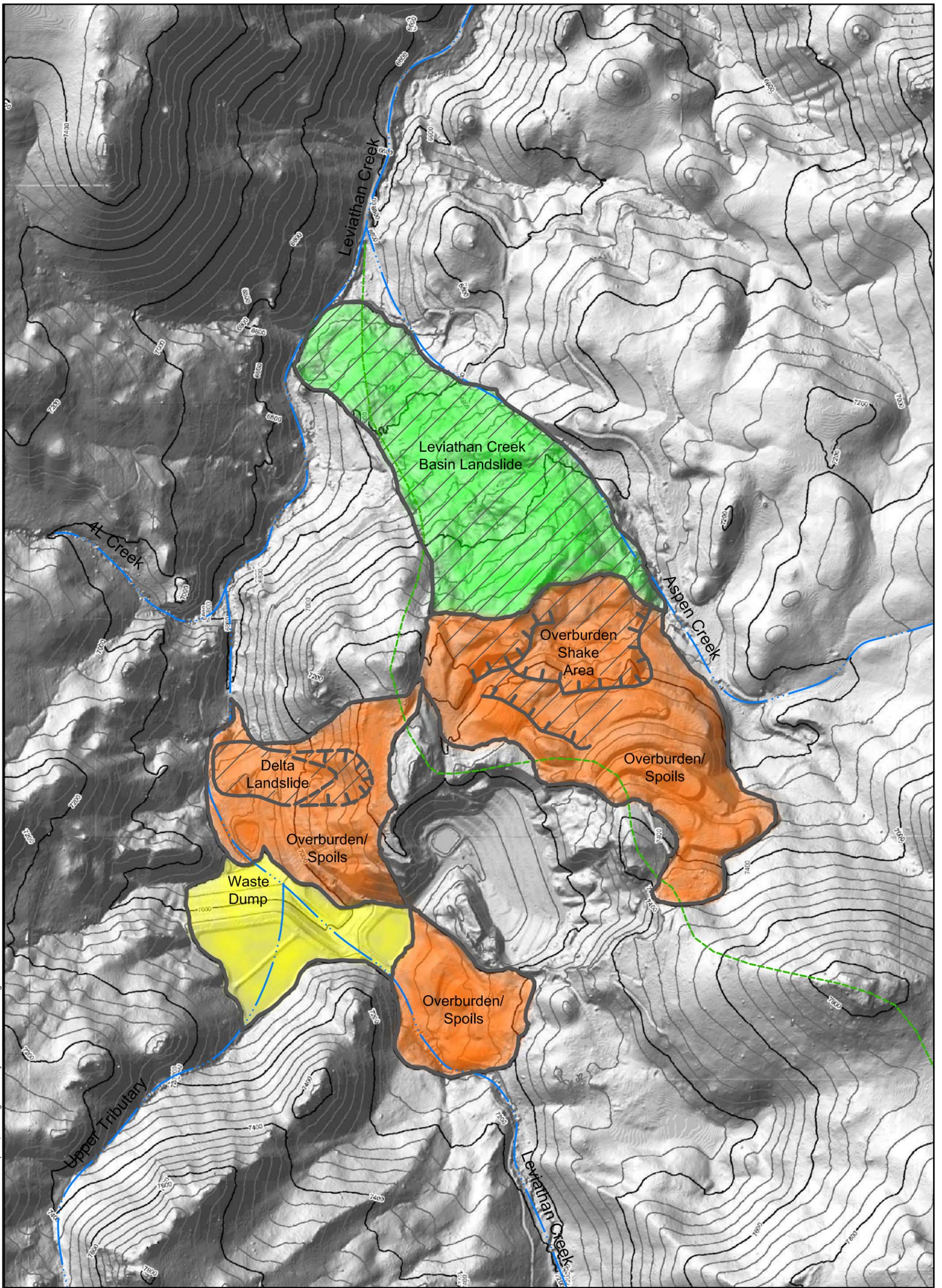
By: dpv	Date: 06/30/09	Project No. 13091A.109
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AMEC Geomatrix

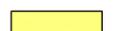
Figure 11

Plot Date: 06/30/09 - 10:08am, Plotted by: donna.valasek
 Drawing Path: P:\Project\13000s\13091\Leviathan - 14000 Database and CAD - CAD - RIFS Report\1 - Drawing Name: Site Access Roads.dwg

Source: National Geographic USGS Topographic Maps (California)



Explanation

-  Creek
-  Approximate extent overburden/spills
-  Approximate extent waste dump
-  Approximate extent of landslides

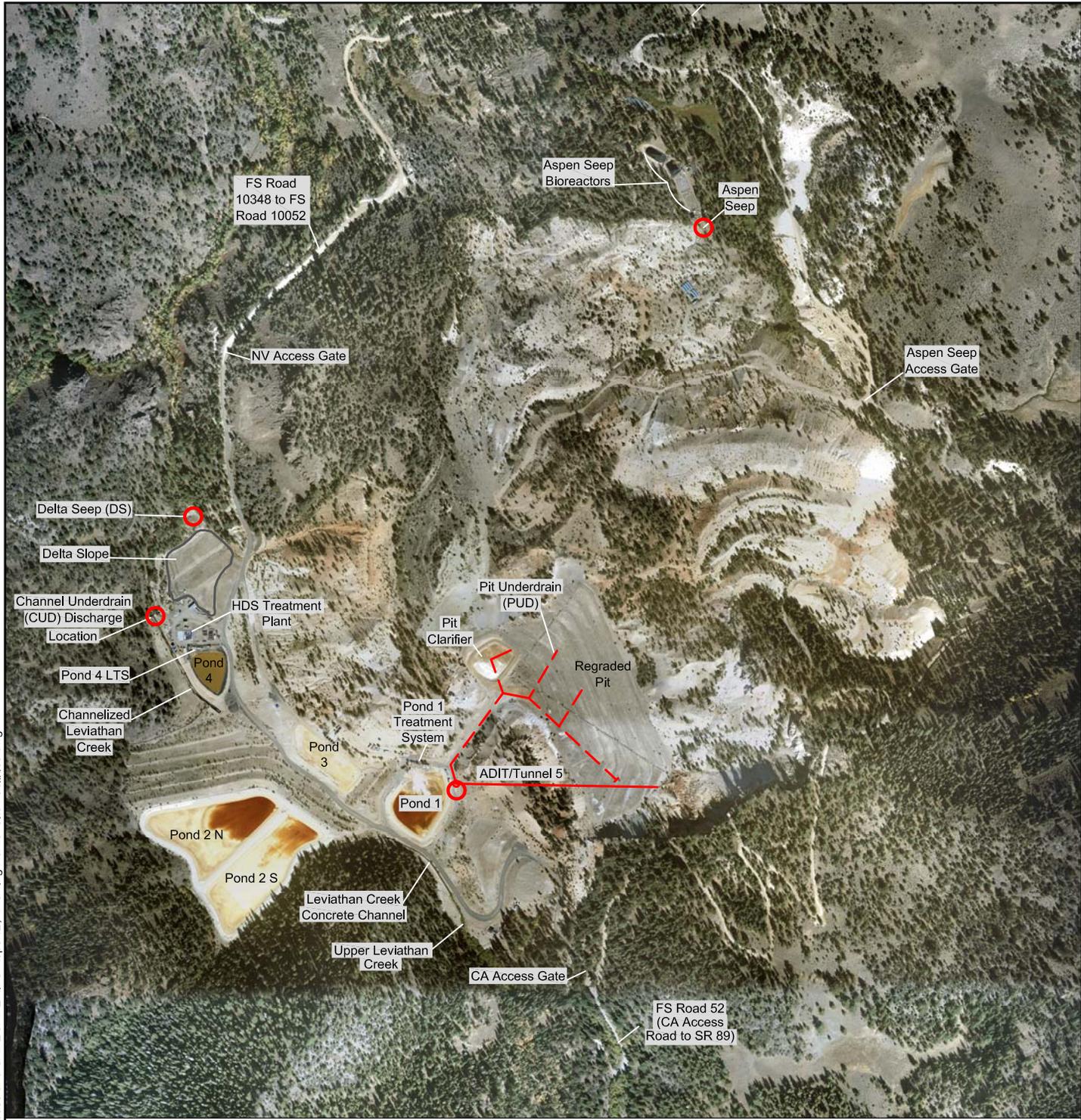
-  Fault scarp ticks indicate the direction of the dip
-  Inferred fault scarp ticks indicate the direction of the dip

Source: U. S. Geological Survey. LIDAR data collected on May 25, 2006.
 Fault scarps transposed from Plate 1 of Brown and Caldwell (1983).

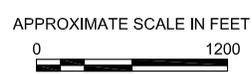
APPROXIMATE SCALE IN FEET
 0 1,200

PHYSICAL SITE FEATURES Leviathan Mine Site Alpine County, California		
By: dpv	Date: 07/02/09	Project No. 13091A.109
AMEC Geomatrix		Figure 12

Plot Date: 07/02/09 - 4:26pm, Plotted by: donna.valasek
 Drawing Path: P:\Project\13000s\13091 Leviathan\14000 Database and CAD\CAD\RIFS Report\... Drawing Name: Site Facilities.dwg

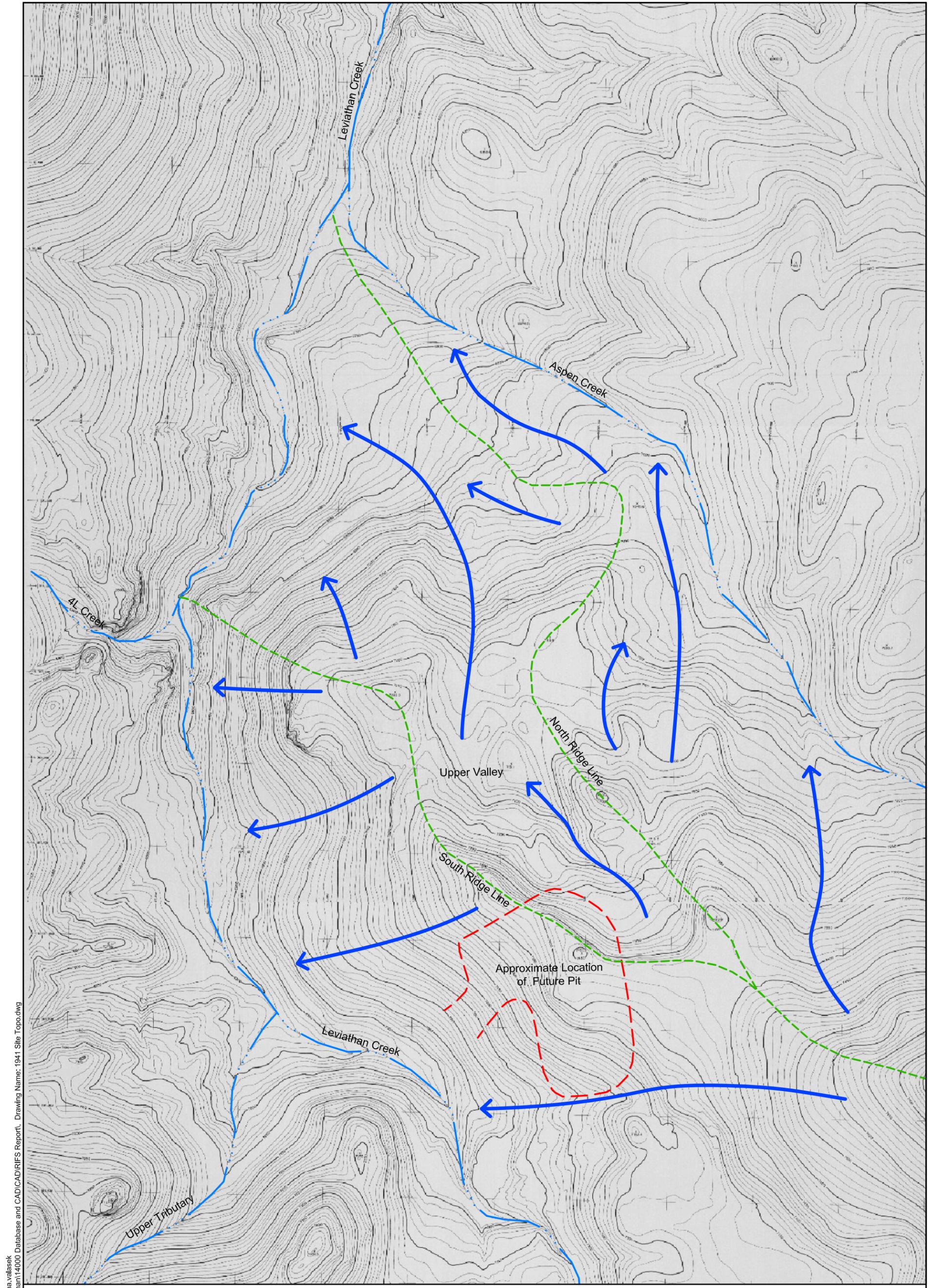


Explanation
 ○ Discharge Point



Source: Summit Engineering, October 2, 2007

EXISTING SITE LAYOUT Leviathan Mine Site Alpine County, California		
By: dpv	Date: 6/01/09	Project No. 13091A.109
AMEC Geomatrix		Figure 13

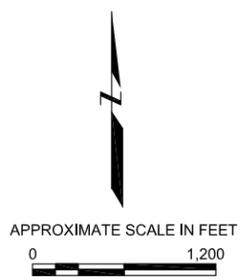


Plot Date: 06/30/09 - 3:42pm, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091A\13091 Leviathan\14000 Database and CAD\CAD\RIFS Report, Drawing Name: 1941 Site Topo.dwg

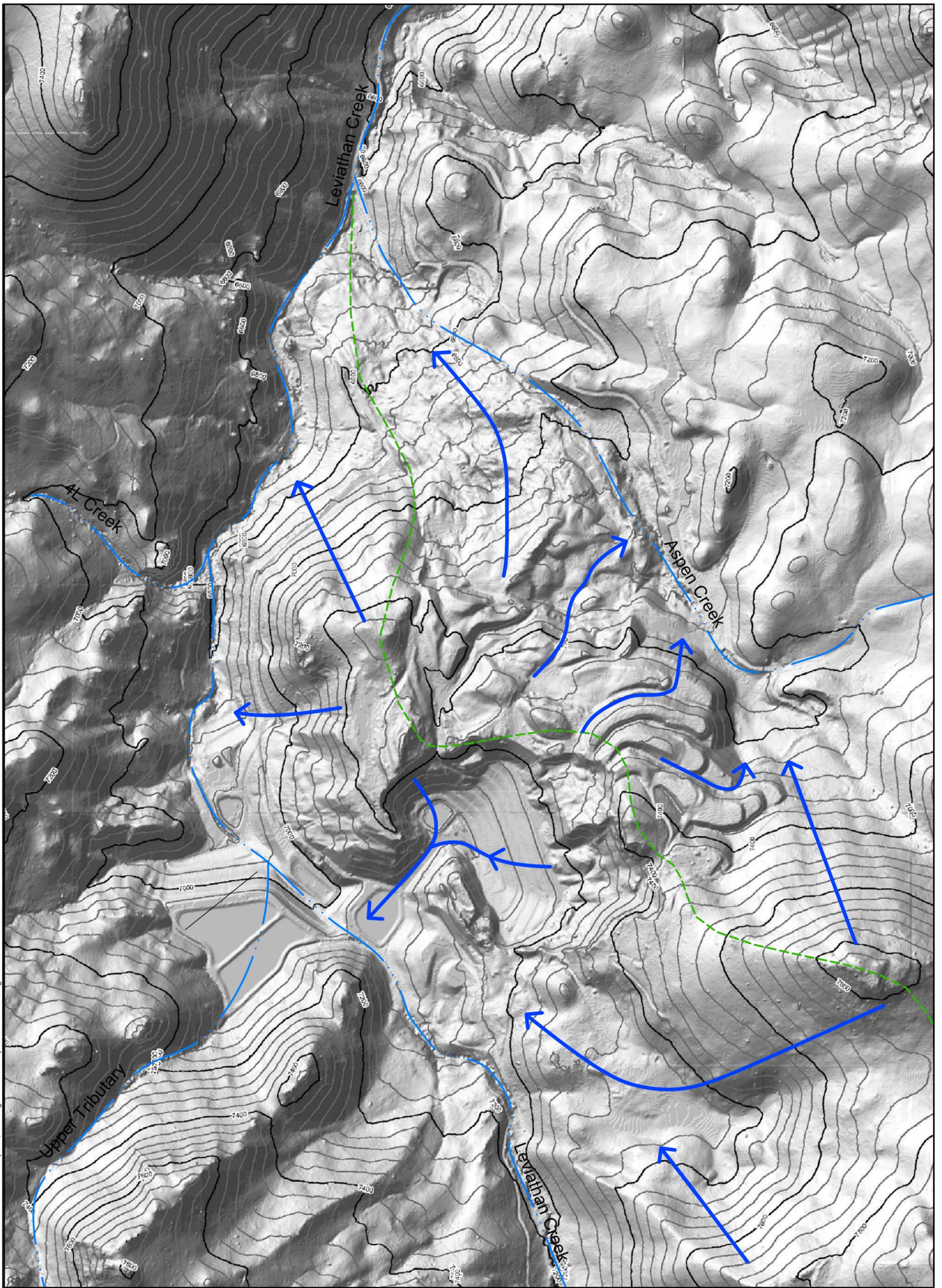
Explanation

- Direction of Surface Drainage
- Creek
- Aspen Creek/Leviathan Creek Drainage Boundary

Source: State of California Department of Water Resources. Data collected on July 21, 1940.



1940 SITE TOPOGRAPHY AND DRAINAGE PATTERN Leviathan Mine Site Alpine County, California		
By: dpv	Date: 06/30/09	Project No. 13091A.109
AMEC Geomatrix		Figure 14

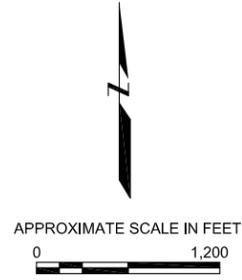


Plot Date: 06/30/09 - 1:54pm, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091\13091A\13091A.14000 Database and CAD\CAD_RIFS Report\1, Drawing Name: Site Topo and SW Flow.dwg

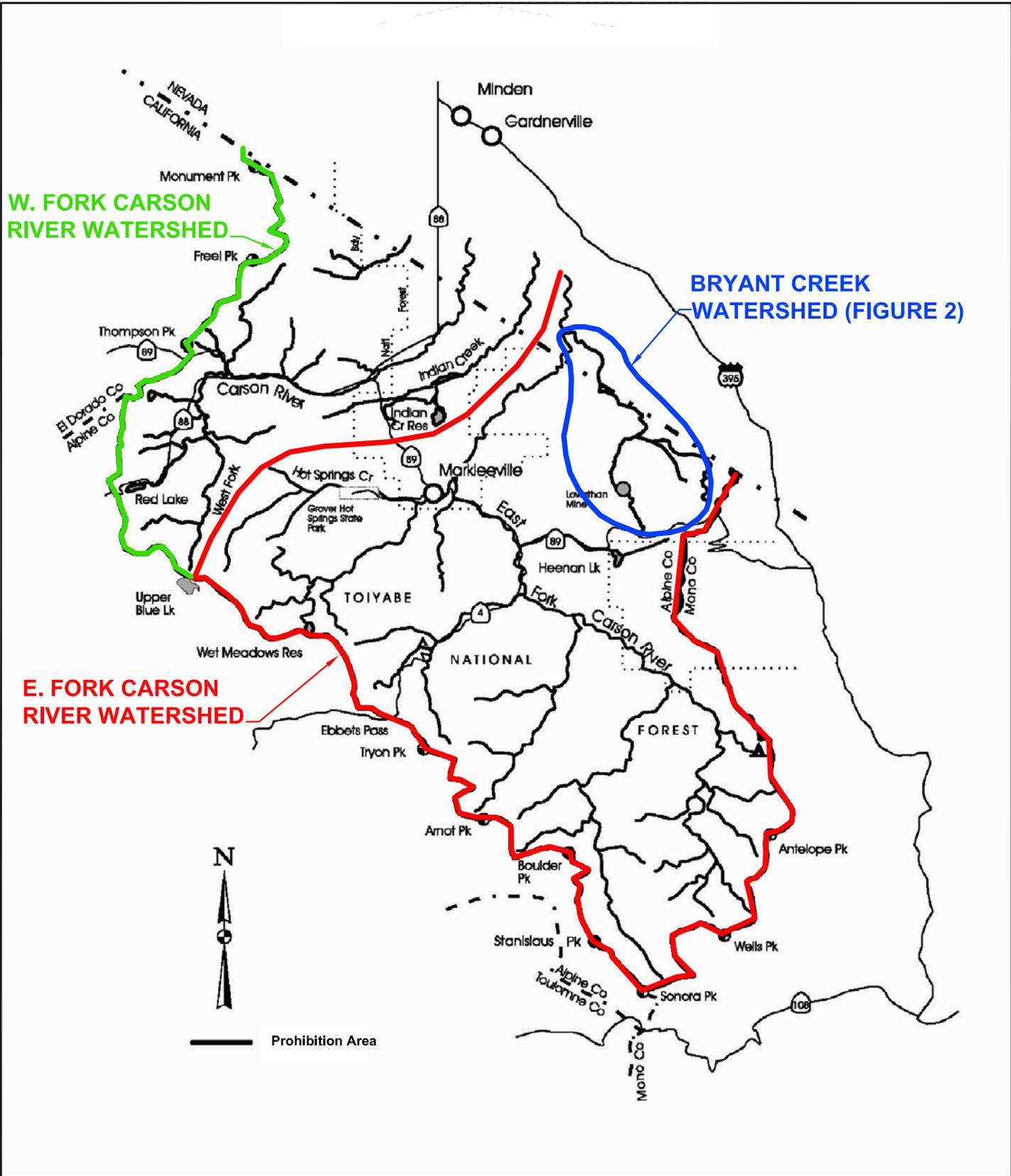
Explanation

-  Direction of Surface Drainage
-  Creek
-  Aspen Creek/Leviathan Creek Drainage Boundary

Source: U. S. Geological Survey. Data collected on May 25, 2006.



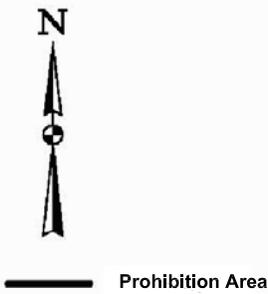
2006 SITE TOPOGRAPHY AND DRAINAGE PATTERN Leviathan Mine Site Alpine County, California		
By: dpv	Date: 06/30/09	Project No. 13091A.109
AMEC Geomatrix		Figure 15



W. FORK CARSON RIVER WATERSHED

BRYANT CREEK WATERSHED (FIGURE 2)

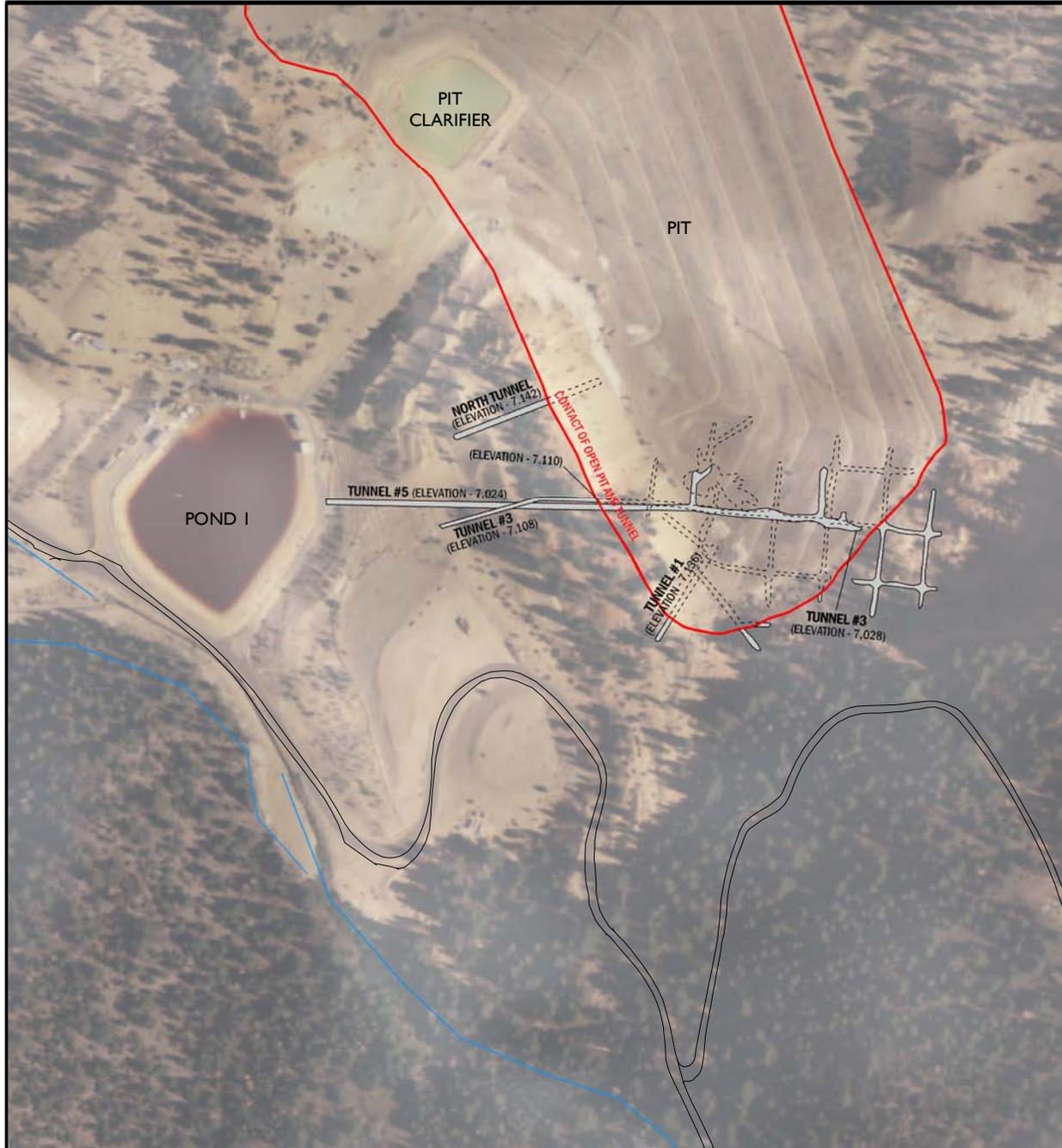
E. FORK CARSON RIVER WATERSHED



<p>CARSON RIVER WATERSHED WITHIN ALPINE COUNTY Leviathan Mine Site Alpine County, California</p>		
By: dpv	Date: 6/01/09	Project No. 13091A.109
<p>AMEC Geomatrix</p>		<p>Figure 16</p>

Plot Date: 06/30/09 - 10:16am. Plotted by: donna.valasek
 Drawing Path: P:\Project\13091A\13091A.dwg
 Database and CAD: CAD\RIFS Report\... Drawing Name: Carson River Watershed.dwg

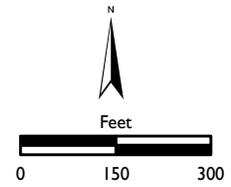
Source: Base map from LRWQCB (1995b)



- Approximate Pit Boundary
- Unexcavated Tunnel
- Excavated Tunnel - Excavated in open-pit operation

Notes:

1. Elevations shown are adapted from existing mine maps and may not correspond to present elevation datum.
2. Portal, elevation for Adits No. 1 and 2 are shown relative to the assumed elevation given for Adit No. 1 on existing mine maps.
3. Adit No. 3 is reportedly approximately 84 feet above Adit No. 5. Only the elevation shown for Adit No. 5 portal is considered reasonably accurate.



Sources: The California Spatial Information Library; Brown & Caldwell, 1983

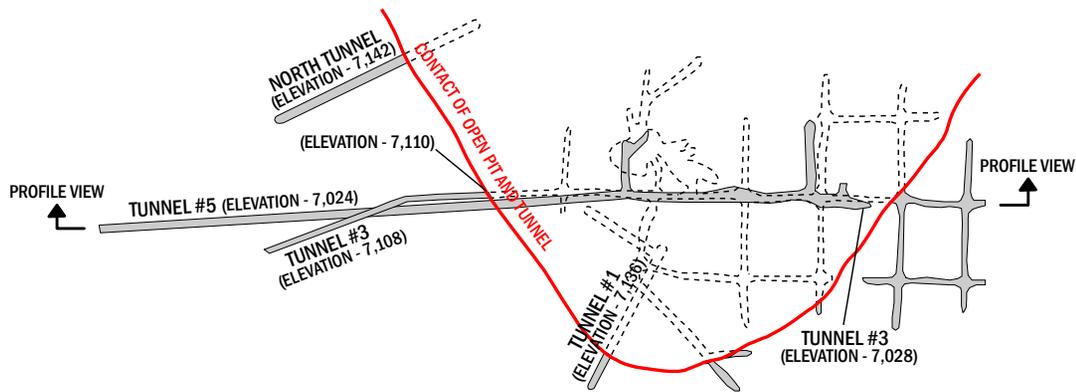
**PROBABLE REMAINING
UNDERGROUND MINE WORKINGS**
Leviathan Mine Site
Alpine County, California

By: SF	Date: 5/28/2009	Project No. 13091.109
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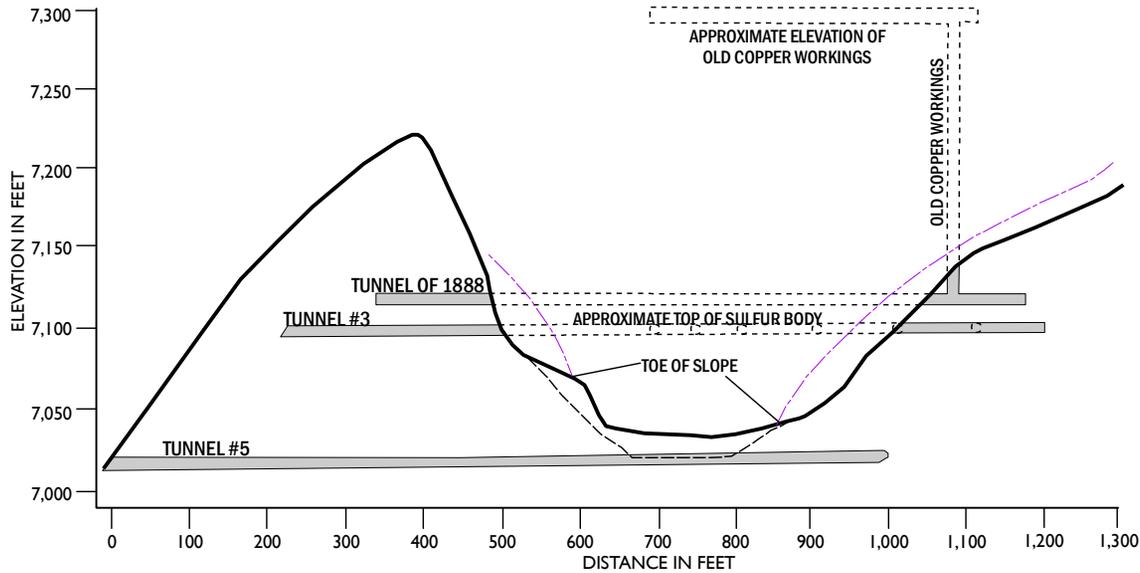
AMEC Geomatrix

Figure 17

PLAN VIEW - HISTORIC UNDERGROUND WORKINGS

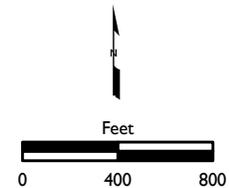


PROFILE VIEW - HISTORIC UNDERGROUND WORKINGS



- Unexcavated Tunnel
- Excavated Tunnel - Excavated in open-pit operation
- Contact of Open Pit and Tunnel
- As Built
- Proposed
- Slide 1957

Note:
1: Location of Tunnel of 1888 Not Available in Plan View



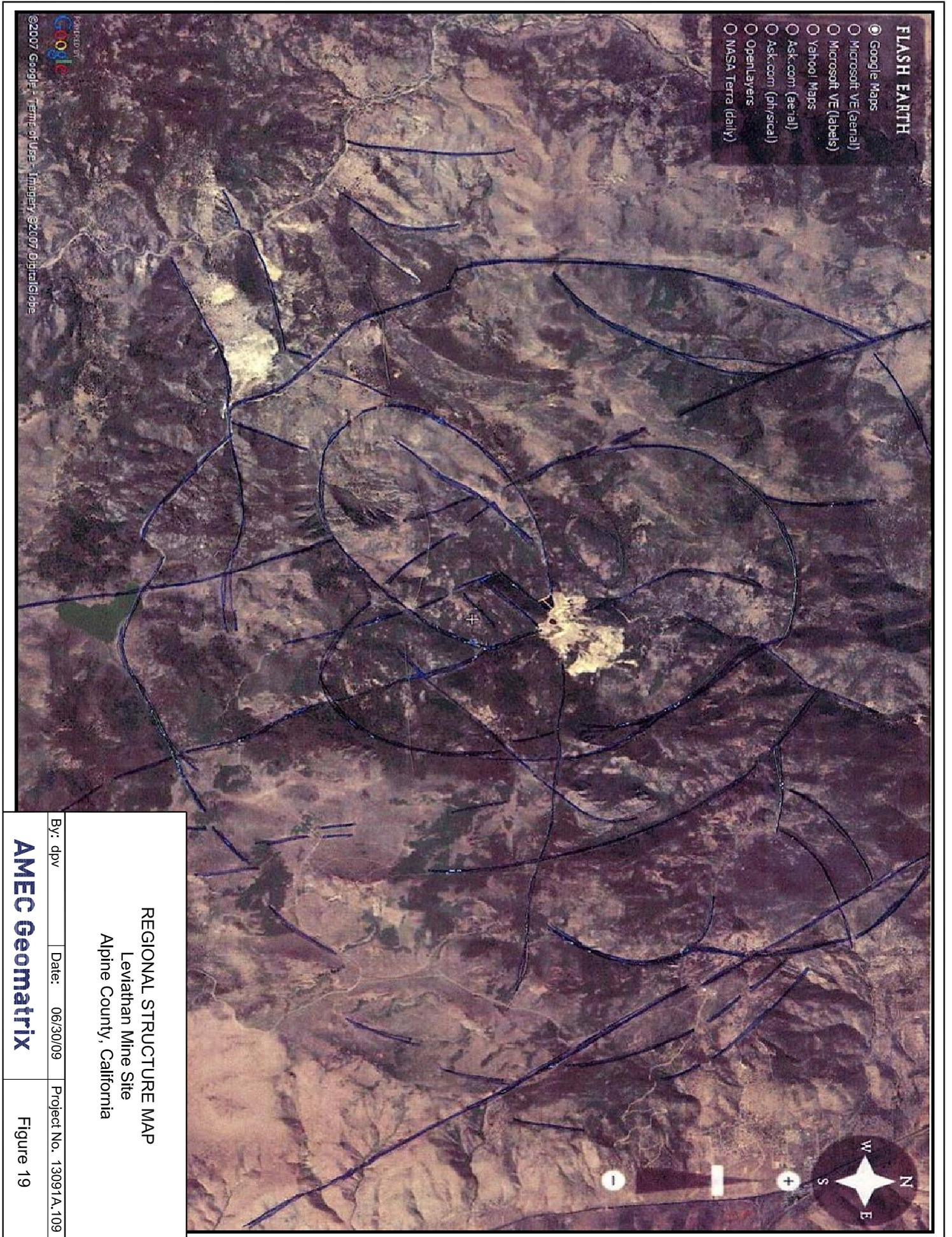
Source: Leviathan Mine 5-Year Workplan, California Regional Water Board, Lahontan Region, July 1995

PLAN AND PROFILE VIEW OF PIT AND UNDERGROUND MINE WORKINGS
Leviathan Mine Site
Alpine County, California

By: SF | Date: 6/28/2009 | Project No. 13091.109

AMEC Geomatrix

Figure 18



- FLASH EARTH**
- Google Maps
 - Microsoft VE (aerial)
 - Microsoft VE (labels)
 - Yahoo! Maps
 - Ask.com (aerial)
 - Ask.com (physical)
 - OpenLayers
 - NASA Terra (daily)

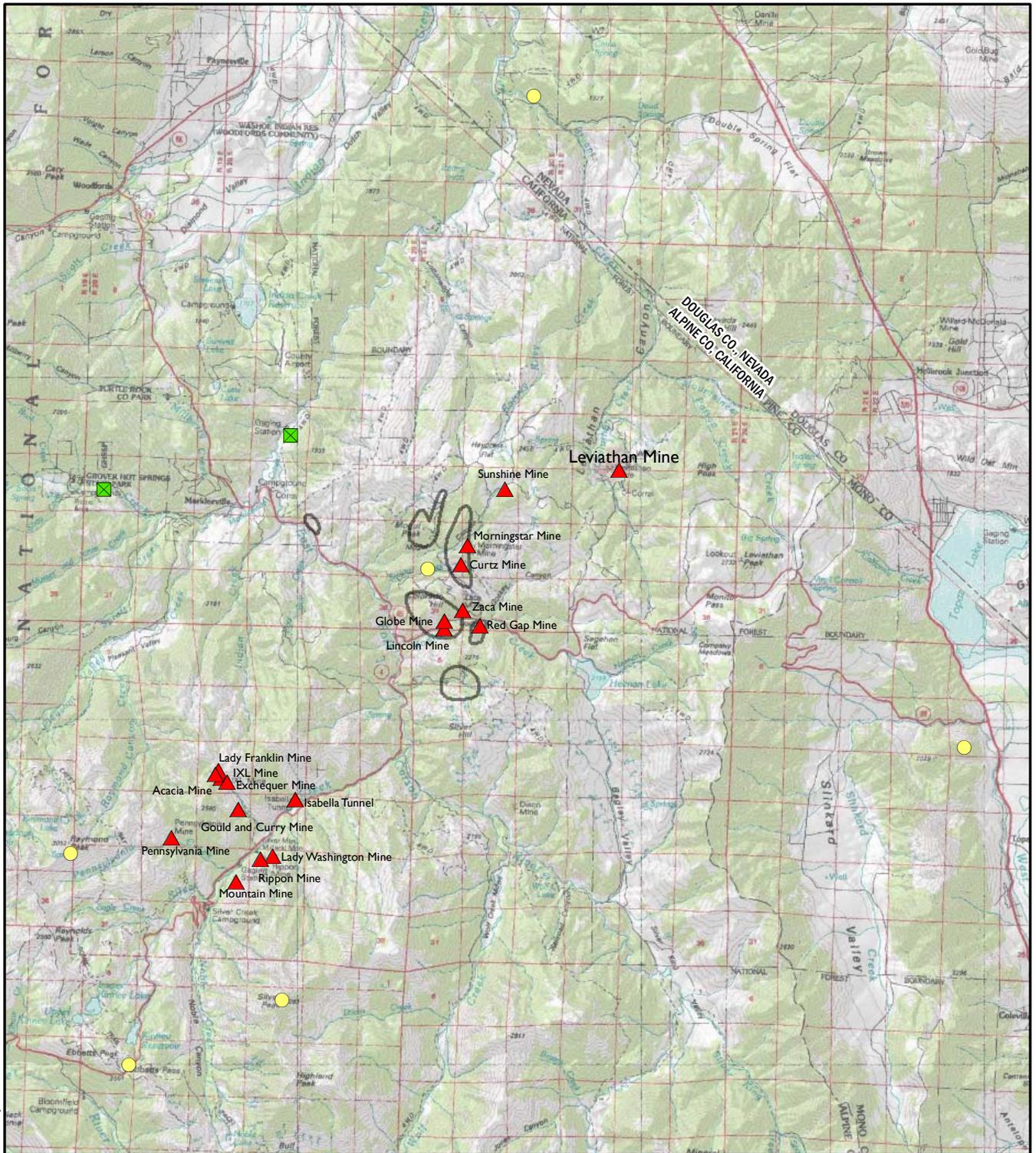
©2007 Google - Terms of Use - Imbrey 92607 DigitalGlobe

REGIONAL STRUCTURE MAP
Leviathan Mine Site
Alpine County, California

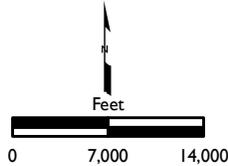
By: dpv | Date: 06/30/09 | Project No. 13091A.109

AMEC Geomatrix

Figure 19



- Approximate Areas of Alteration and Silicification
- Alteration and Silicification Area
- ▲ Mine Location
- Active Hot Spring



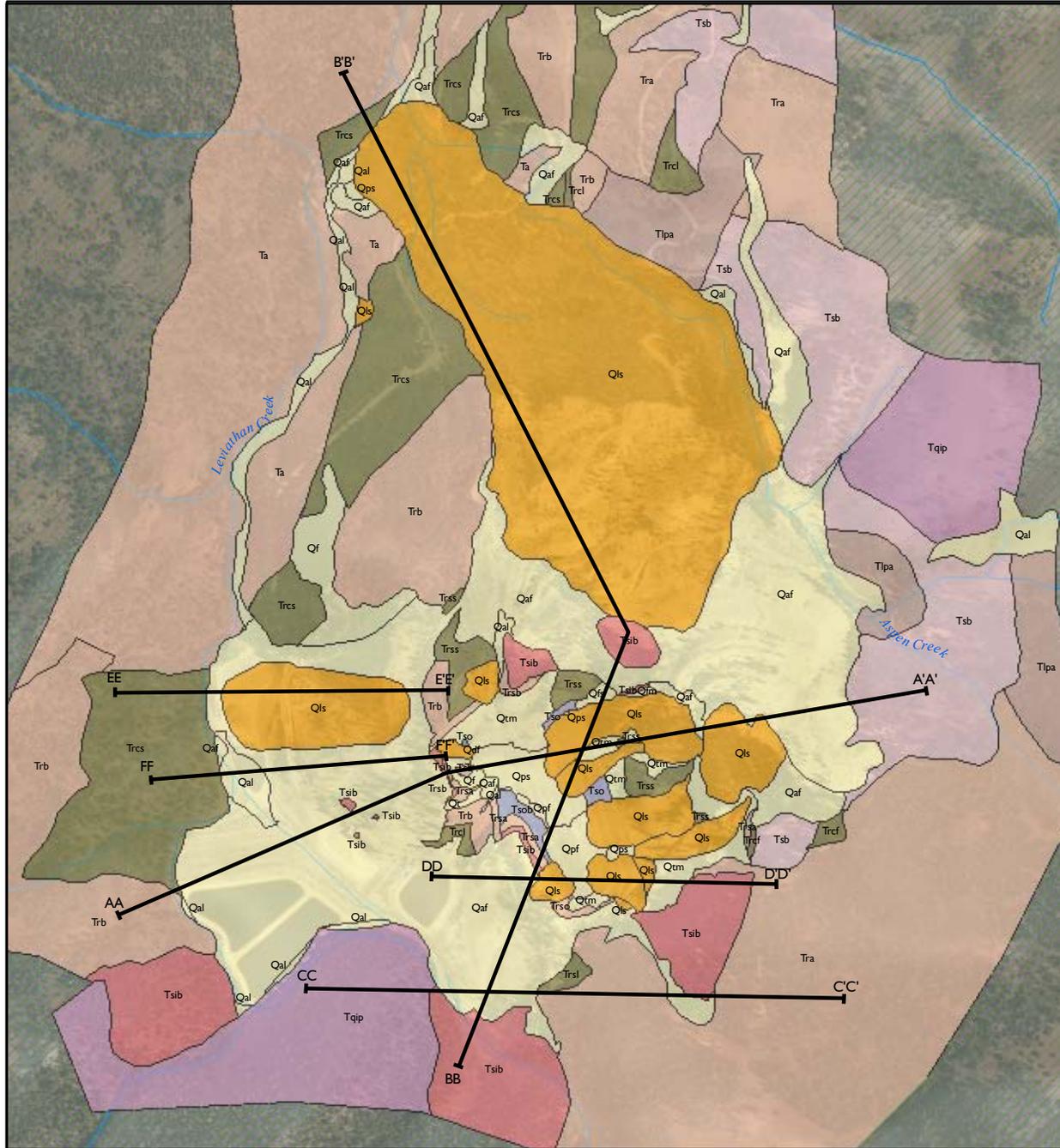
Note: Base map from California Spatial Information Library

MINES AND REGIONAL ALTERATION Leviathan Mine Site Alpine County, California

By: SF	Date: 5/15/2009	Project No. 13091
--------	-----------------	-------------------

AMEC Geomatrix

Figure 20



Geologic Units

Qtm	Qdf	Qls	Qps		Qls - Landslide
			Qaf		Qdf - Debris Flow
Qt					Qal - Alluvium
					Qps - Poned Sediments
					Qaf - Artificial Fill
					Qt - Talus
					Qtm - Talus Resulting From Mining
					Tsib - Silicified Iron-Stained Breccia
					Tsb - Silicified Breccia
					Trs - Upper Sedimentary Sequence
					Trss - Sandstone
					Trsl - Lahar
					Trsa - Argillically Altered Sandstone
					Trsb - Chloritized Breccia
					Tso - Ore Rock
					Tsob - Ore Rock with Relict Breccia Texture
					Trsa ₀ - Argillically Altered Lahar
					Trb - Basalt (Trba where autobrecciated)
					Trc - Lower Sedimentary Sequence
					Trcs - Sandstone
					Trcl - Lahar
					INTRUSIVE UNITS
					Tqip - Quartz Latite Porphyry
					Tlpa - Leviathan Peak Andesite
					Tlpaa - Altered Leviathan Peak Andesite
					Ta - Biotite Pyroxene Hornblende Andesite
					Tra - Hornblende Pyroxene Andesite

Symbols

AA A'A'
Trace of Cross Section and Designation

QUATERNARY

TERTIARY

INTRUSIVE UNITS

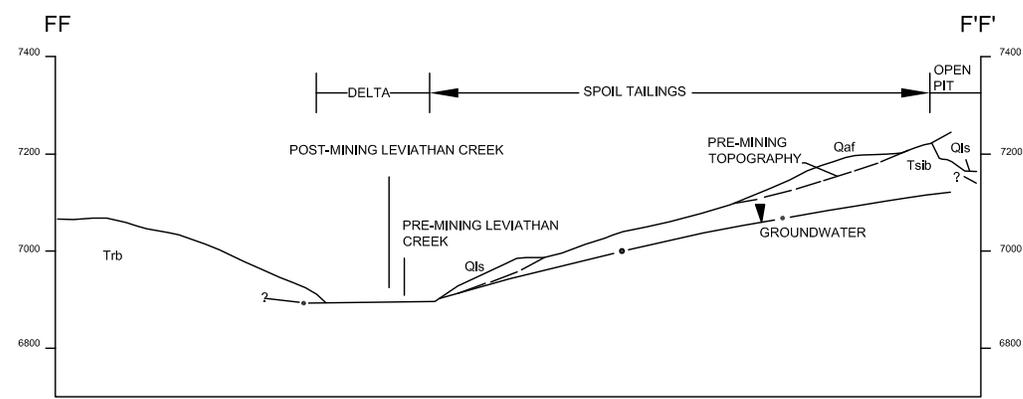
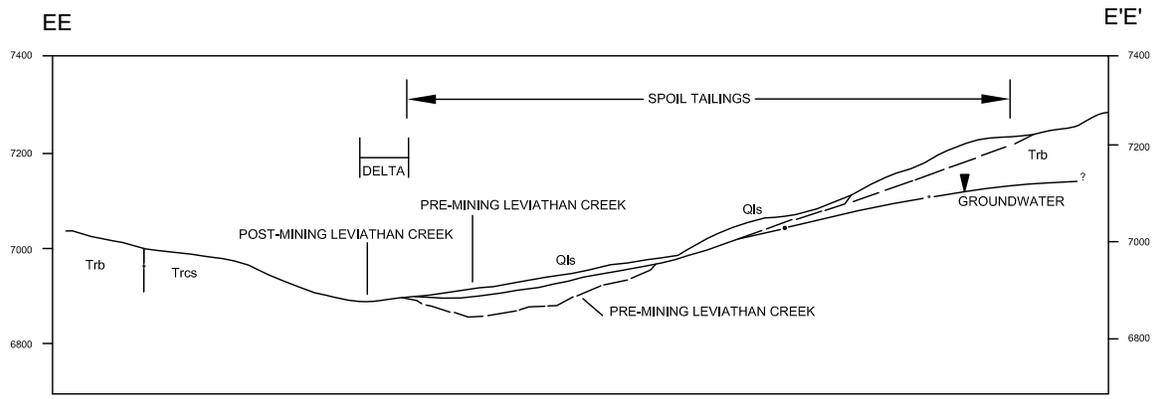
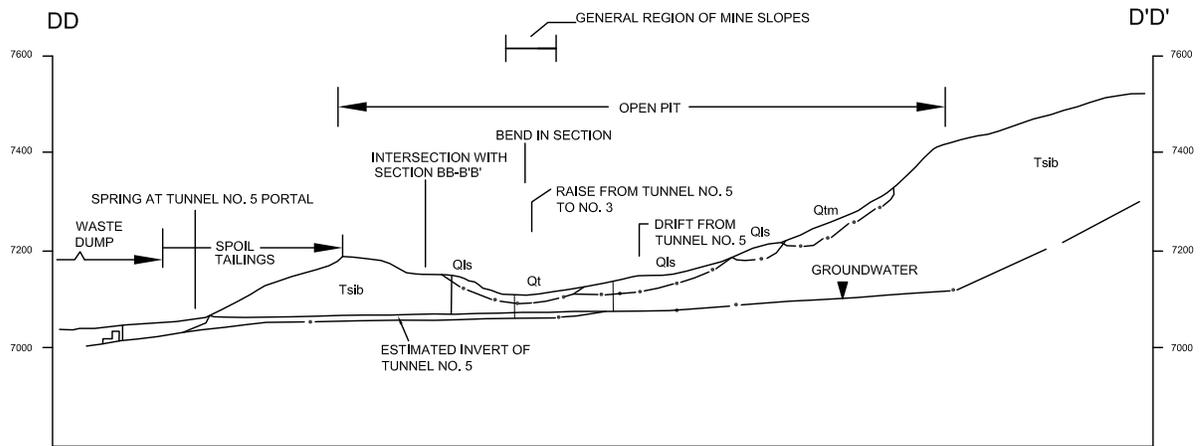
0 500 1,000
Feet

Sources: Herbst and Sciacca (1982)
Brown and Caldwell (1983)

**TRACE OF CROSS SECTIONS
AA - A'A' THROUGH FF - F'F'
Leviathan Mine Site
Alpine County, California**

By: SF	Date: 5/15/2009	Project No. 13091.109
AMEC Geomatrix		Figure 23

Plot Date: 06/30/09 - 10:25am, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091\Leviathan\14000 Database and CAD\CAD\RIFS Report\1, Drawing Name: DD_FF Cross Sections.dwg



Explanation

- Trsb Chloritized Breccia
- Trsa Argillically Altered Sandstone
- Trb Basalt
- Trc Lower Sedimentary Sequence
- Ta Biotite Pyroxene Hornblende Andesite
- Qtm Talus
- Qls Landslide
- Qaf Artificial Fill
- Qal Alluvium
- Qt Talus
- Tsib Silicified Iron-Stained Breccia
- Tqlp Quartz Latite Porphyry
- Trcl Lahar
- Trcs Sandstone
- Tso Ore Rock

Note

1. Groundwater levels shown are schematic.
2. This figure has been excerpted from Brown and Caldwell (1983).

APPROXIMATE SCALE IN FEET

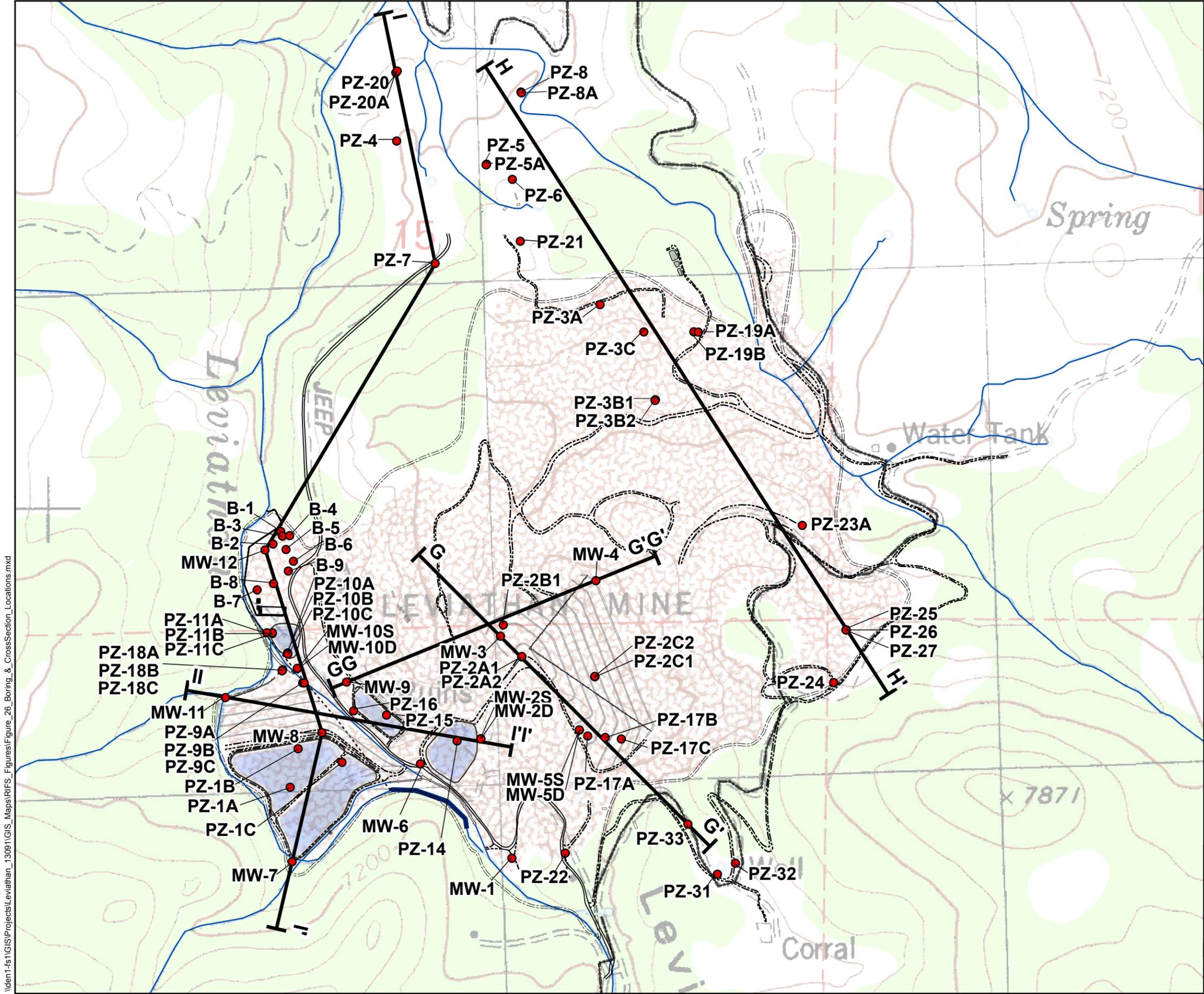


**GEOLOGIC CROSS-SECTIONS
 DD-D'D' THROUGH FF-F'F'
 Leviathan Mine Site
 Alpine County, California**

By: dpv Date: 06/30/09 Project No. 13091A.109

AMEC Geomatrix

Figure 25



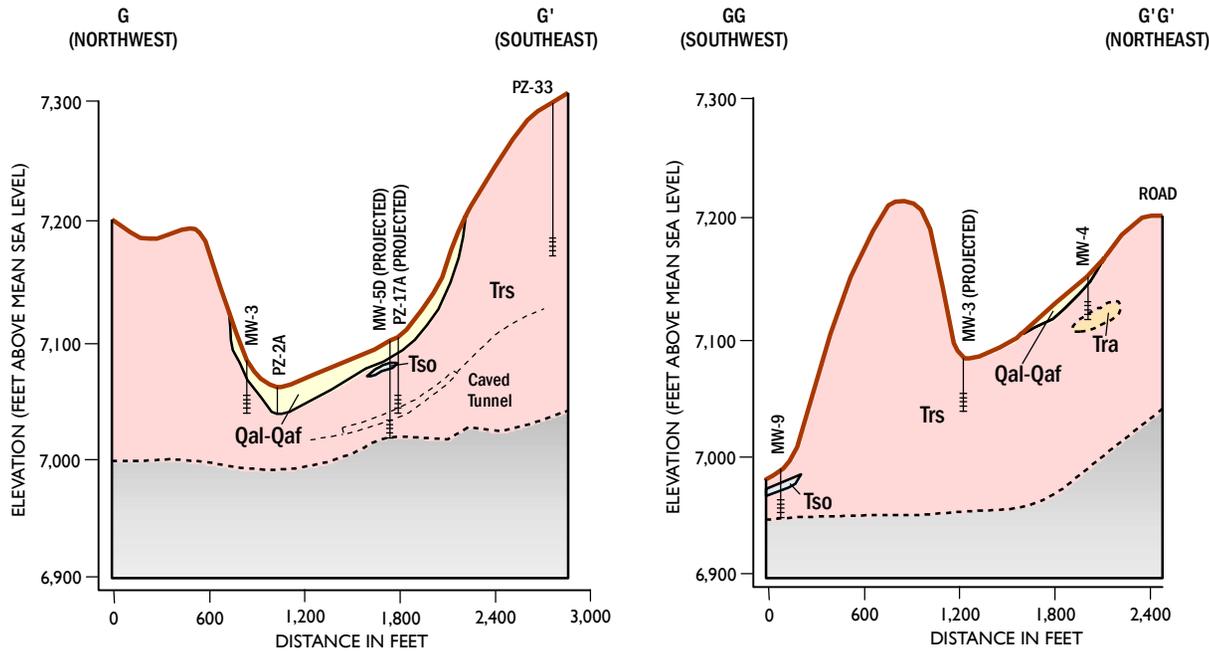
- Explanation**
- GG G'G' Trace of cross section
 - PZ-23 Piezometer location and designation. Installed by the USGS in 1981-1983.
 - MW-12 Monitoring well location and designation. Installed by SRK Consulting in 1998.
 - B-3 Geotechnical well location and designation. Installed by Kleinfelder in 2001.

TRACE OF CROSS SECTIONS G-G' THROUGH I-I' AND LOCATIONS OF PREVIOUS BORINGS, MONITORING WELLS, AND PIEZOMETERS
 Leviathan Mine Site
 Alpine County, California

By: CBT Date: 5/1/2009 Project No. 13091A.109

I:\den1-fs1\GIS\Projects\Leviathan_13091\GIS_Maps\RIFS_Figures\Figure_26_Boring_& CrossSection_Locations.mxd

CROSS SECTIONS - PIT STUDY AREA



- Notes:
1. Piezometers by USGS (1985), monitoring wells (MW) by SRK (1999)
 2. Geologic unit description in Herbst and Sciacca (1982)
 3. Well screens displayed for those reported to be remaining as of 1998 according to SRK (1999)
 4. Trace of cross section shown on Figure 6
 5. All locations & elevations are approximate

Explanation

- MW-4
Well Location and Designation
- Well Screen Interval
- Exact Limits Are Unknown
- Qal-Qaf - Quaternary-Age Units
- Ta - Tertiary-Age Andesite
- Trs - Tertiary-Age Upper Sedimentary Sequence
- Tso - Tertiary-Age Ore Rock

Horizontal Scale: 1" = 1,200'
Vertical Scale: 1" = 160'



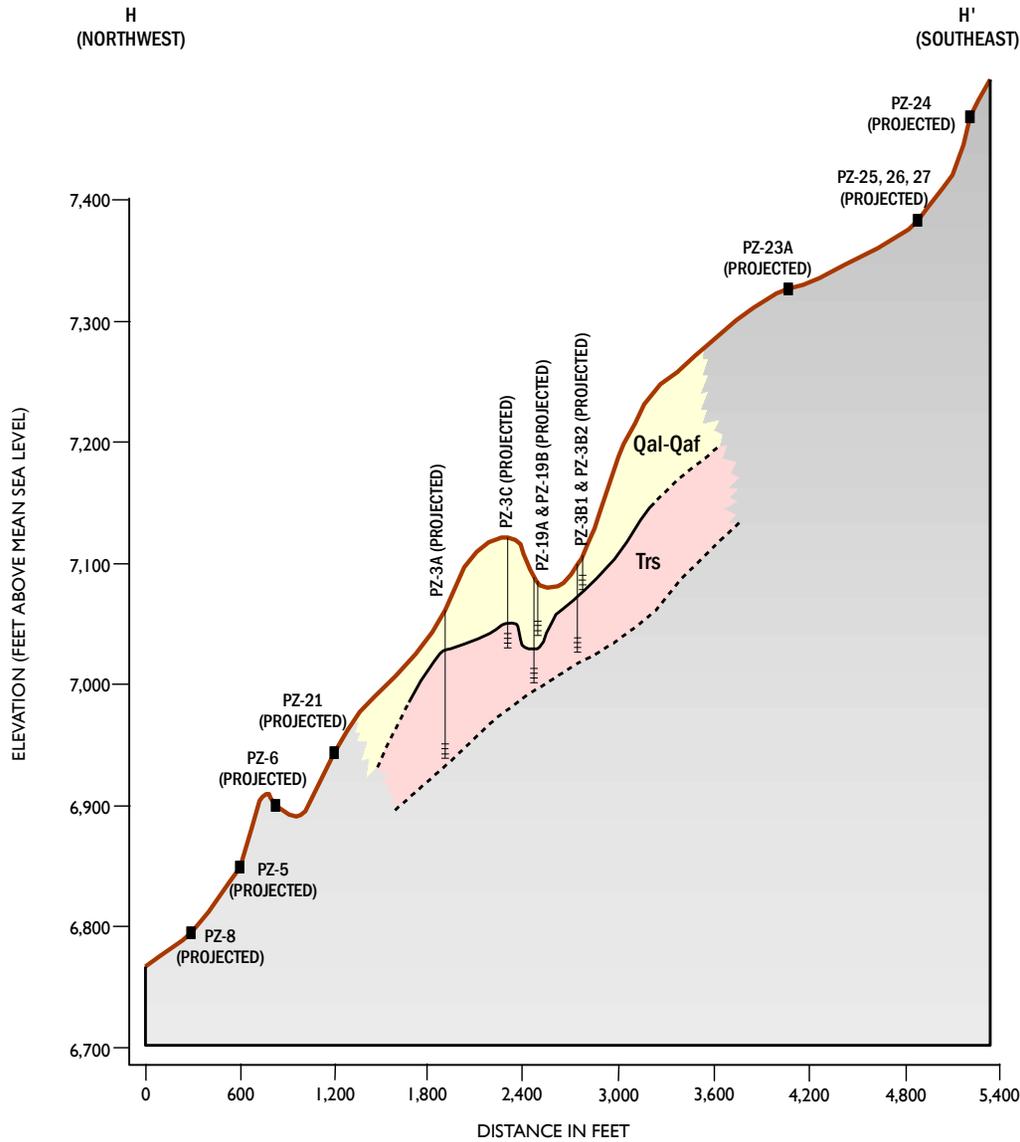
GEOLOGIC CROSS SECTIONS G-G' AND GG-G'G' PIT STUDY AREA Leviathan Mine Site Alpine County, California

By: SF Date: 5/4/2009 Project No. 13091.109

AMEC Geomatrix

Figure 27

CROSS SECTION - ASPEN CREEK STUDY AREA



Explanation

- MW-4 Well Location and Designation
- Well Screen Interval
- Exact Limits Are Unknown
- Qal-Qaf - Quaternary-Age Units
- Trs - Tertiary-Age Upper Sedimentary Sequence

Notes:

1. Surface elevations based on surveyed well & piezometers installed by SRK (1999) and USGS (1985)
2. Geologic unit description in Herbst and Sciacca (1982)
3. Trace of cross section shown on Figure 6
4. Geologic units could not be assigned to piezometers PZ-5, 6, 8, 21, & 23-27 due to poor legibility or inadequate notes in USGS (1985)
5. Well screens displayed for those reported to be remaining as of 1998 according to SRK (1999)



Horizontal Scale: 1" = 1,200'
Vertical Scale: 1" = 160'



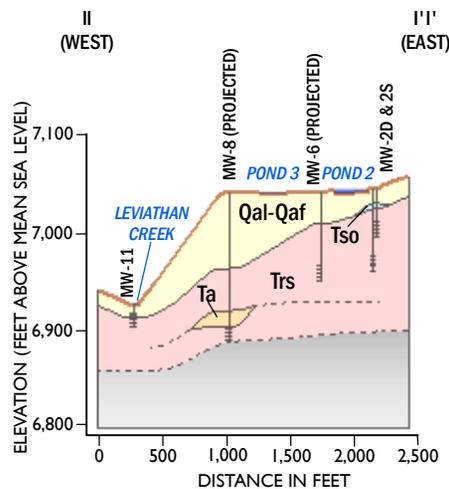
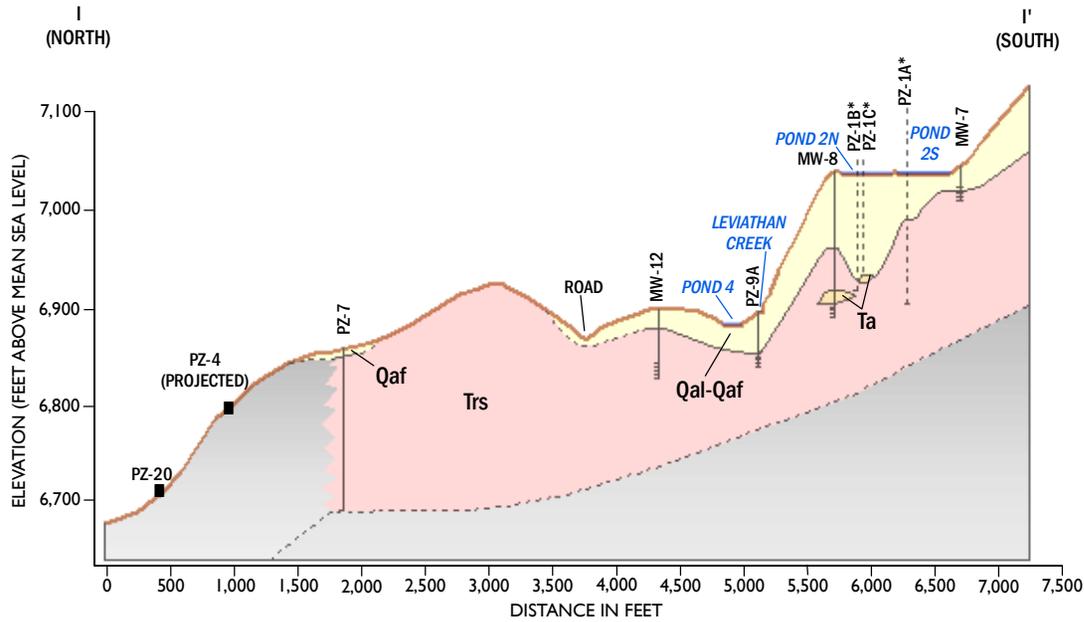
GEOLOGIC CROSS SECTION H-H'
ASPEN CREEK STUDY AREA
Leviathan Mine Site
Alpine County, California

By: SF | Date: 5/4/2009 | Project No. 13091.109

AMEC Geomatrix

Figure 28

CROSS SECTIONS - LEVIATHAN CREEK STUDY AREA



Explanation

- MW-4
Well Location and Designation
- Well Screen Interval
- Exact Limits Are Unknown
- Qal-Qaf - Quaternary-Age Units
- Ta - Tertiary-Age Andesite
- Trs - Tertiary-Age Upper Sedimentary Sequence

Notes:

1. Surface elevations based on surveyed well & piezometers installed by SRK (1999) & USGS (1985)
2. Geologic unit description in Herbst and Sciacca (1982)
3. Trace of cross section shown on Figure 6
4. Well screens displayed for those reported to be remaining as of 1998 according to SRK (1999)



Horizontal Scale: 1" = 1,500'
Vertical Scale: 1" = 200'

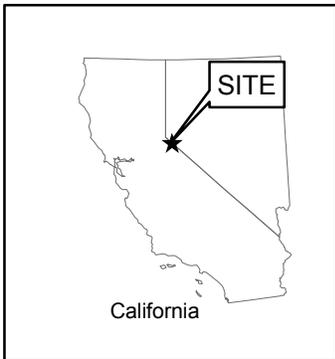
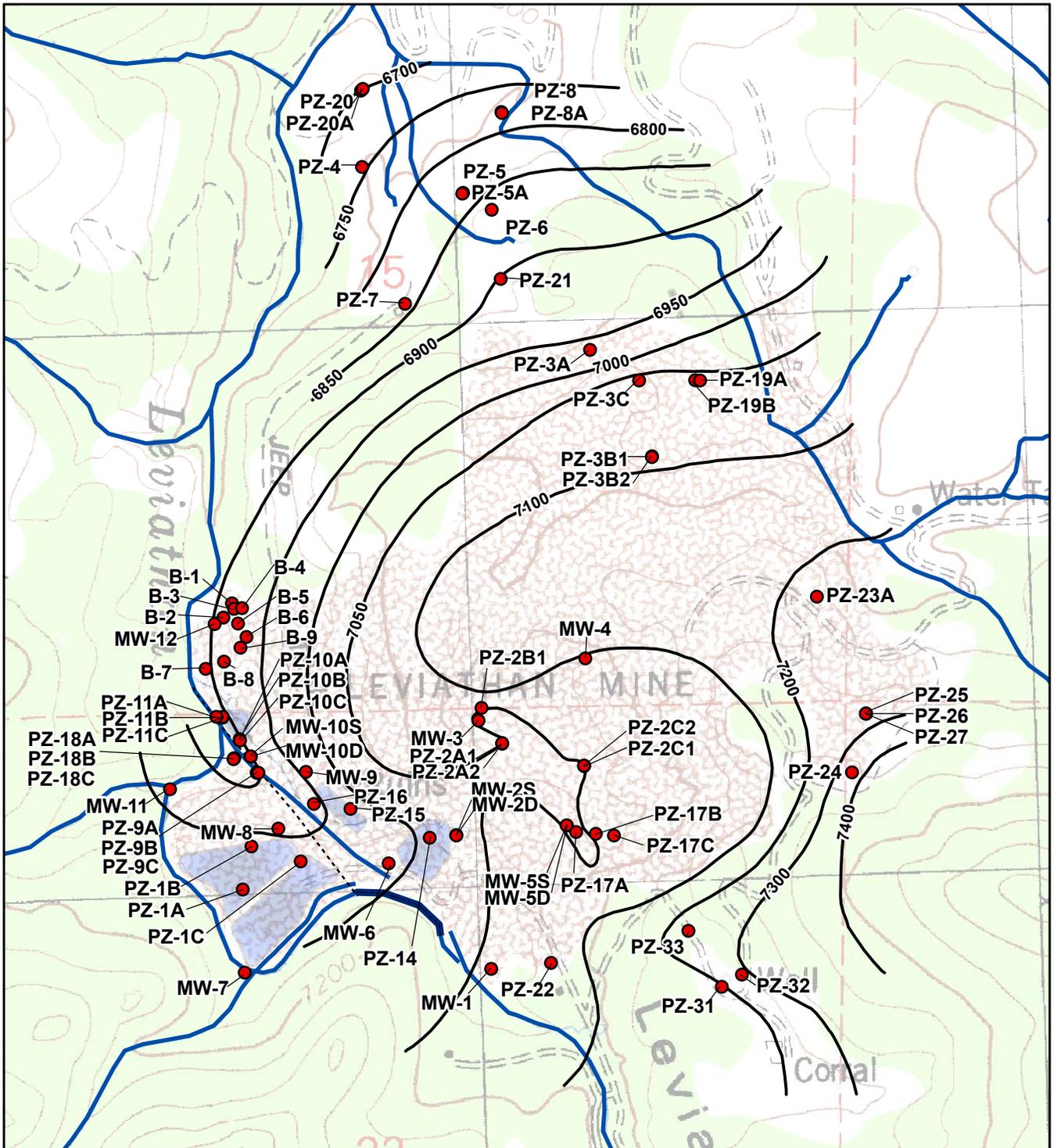
GEOLOGIC CROSS SECTIONS I-I' AND II-I'
LEVIATHAN CREEK STUDY AREA
Leviathan Mine Site
Alpine County, California

By: SF Date: 5/4/2009 Project No. 13091.109

AMEC Geomatrix

Figure 29

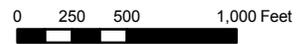
\\den1-fs1\GIS\Projects\Leviathan_13091\GIS_Maps\RIFS_Figures\hydro\Fig_30_PotSurfMaps1983_BC_original.mxd



Explanation

● Monitoring well/
piezometer location

Contours from Figure 2-25,
Leviathan Mine Pollution
Abatement Project
Design Report and
Draft Environmental
Impact Report,
(Brown and Caldwell, 1983)

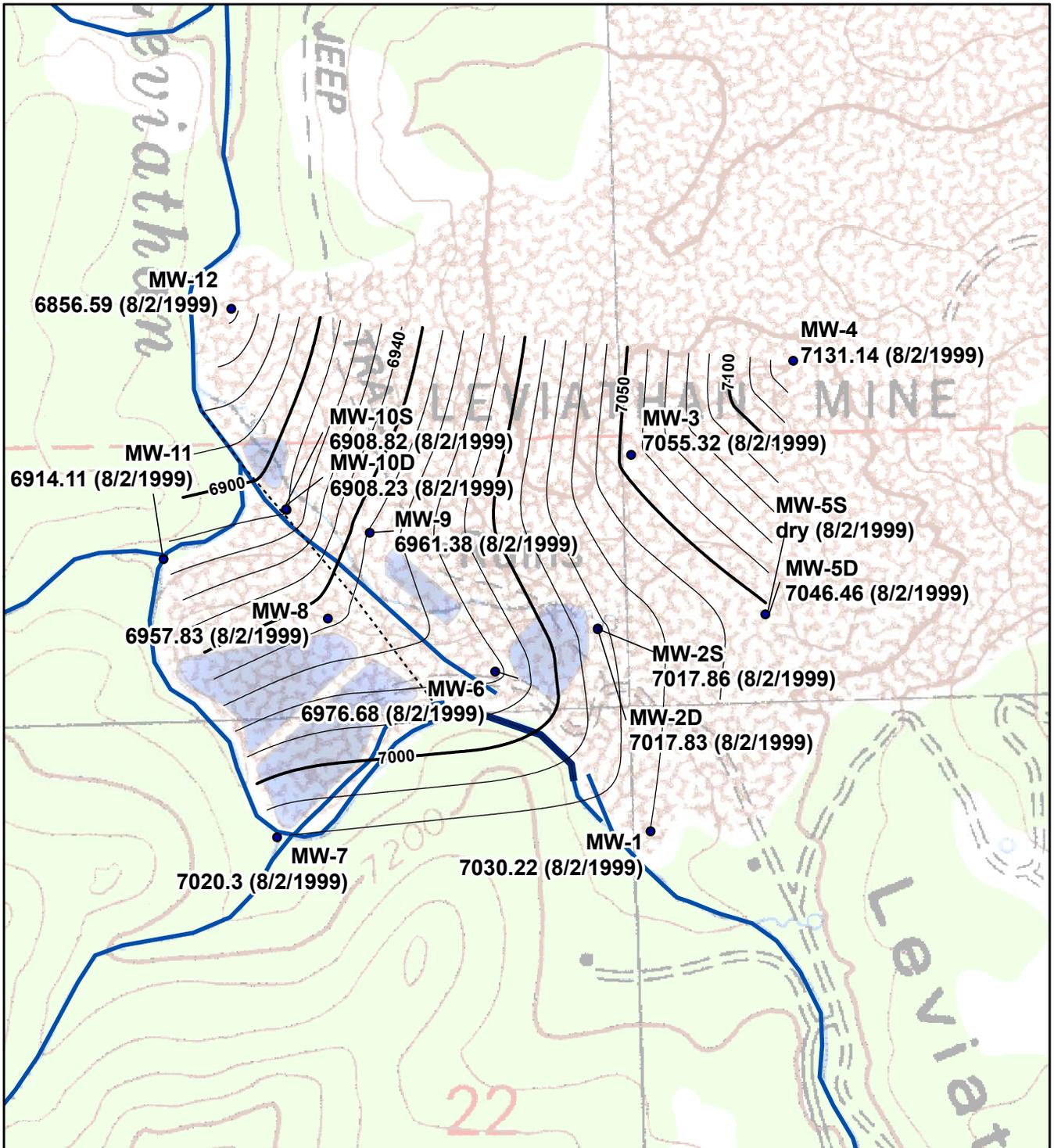


**OCTOBER THROUGH NOVEMBER 1982
POTENTIOMETRIC SURFACE MAP
Leviathan Mine Site
Alpine County, California**

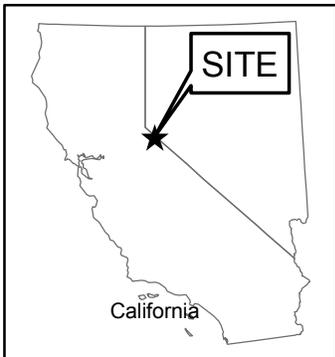
By: CBT Date: 5/19/09 Project No. 13091A.109

AMEC Geomatrix

Figure 30



\\den1-fs1\GIS\Projects\Leviathan_13091\GIS_Maps\RIFS_Figures\hydro\PotSurfMaps1999.mxd



Source: SRK (1999)

Explanation

- Monitoring well/ piezometer location

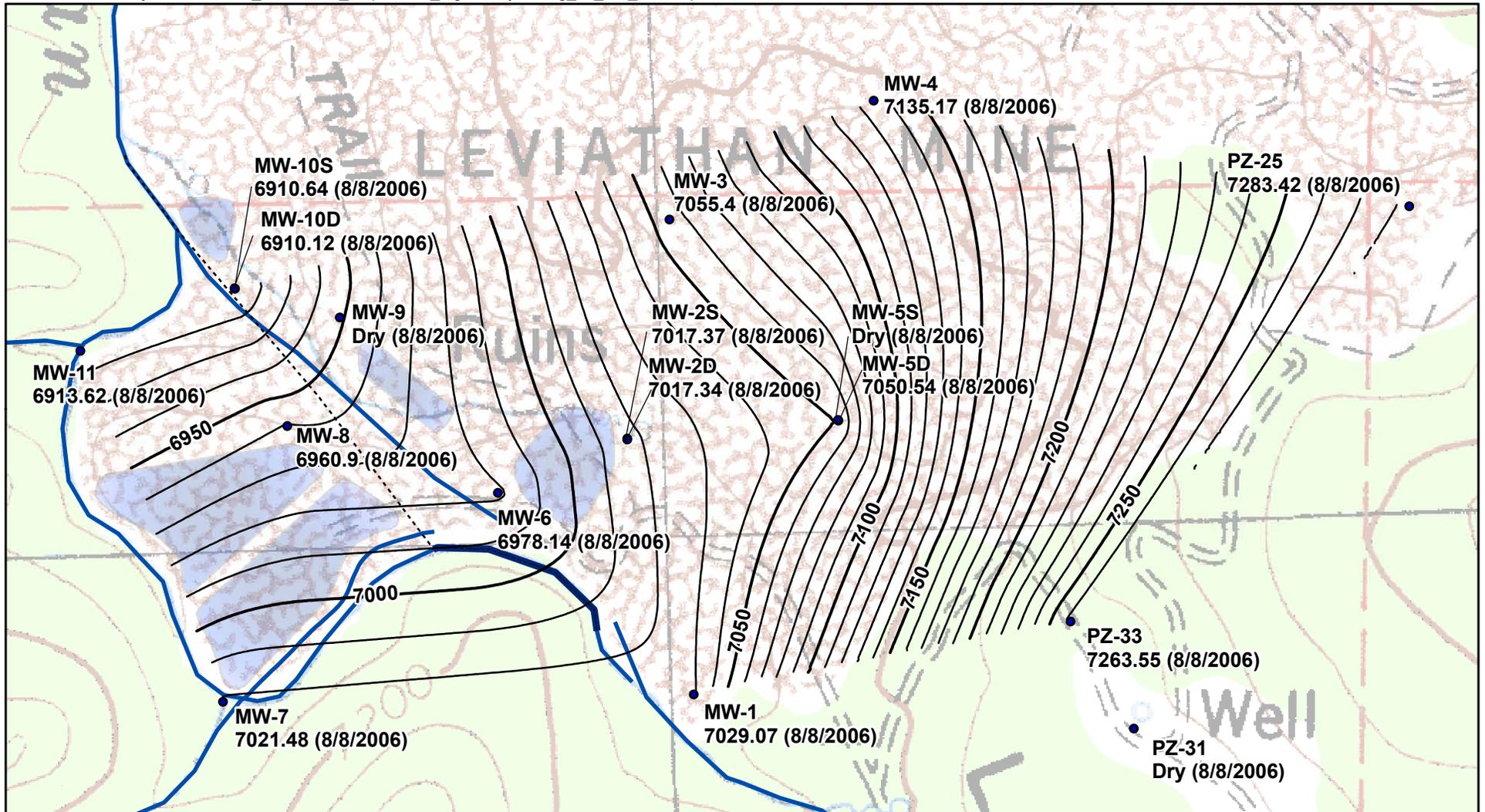


AUGUST 1999
 POTENTIOMETRIC SURFACE MAP
 Leviathan Mine Site
 Alpine County, California

By: CBT	Date: 5/19/09	Project No. 13091A.109
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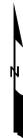
AMEC Geomatrix

Figure 31



Explanation

- Monitoring well/ piezometer location



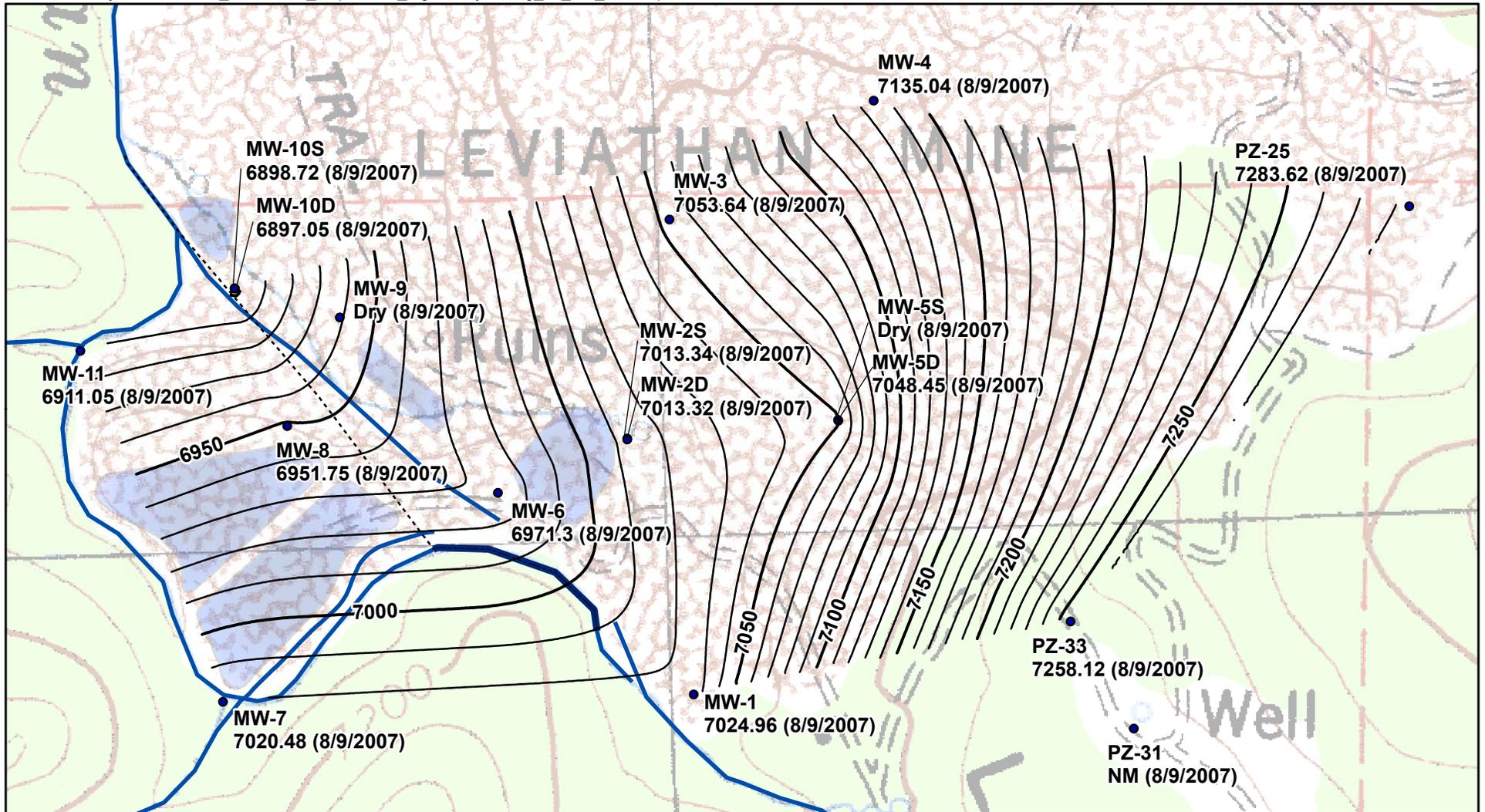
Source: Measurements made by Tetra Tech on 8/8/2006

AUGUST 2006
 POTENTIOMETRIC SURFACE MAP
 Leviathan Mine Site
 Alpine County, California

By: CBT	Date: 5/19/09	Project No. 13091A.109
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AMEC Geomatrix

Figure 32



Explanation

- Monitoring well/
piezometer location



AUGUST 2007
POTENTIOMETRIC SURFACE MAP
Leviathan Mine Site
Alpine County, California

By: CBT

Date: 5/19/09

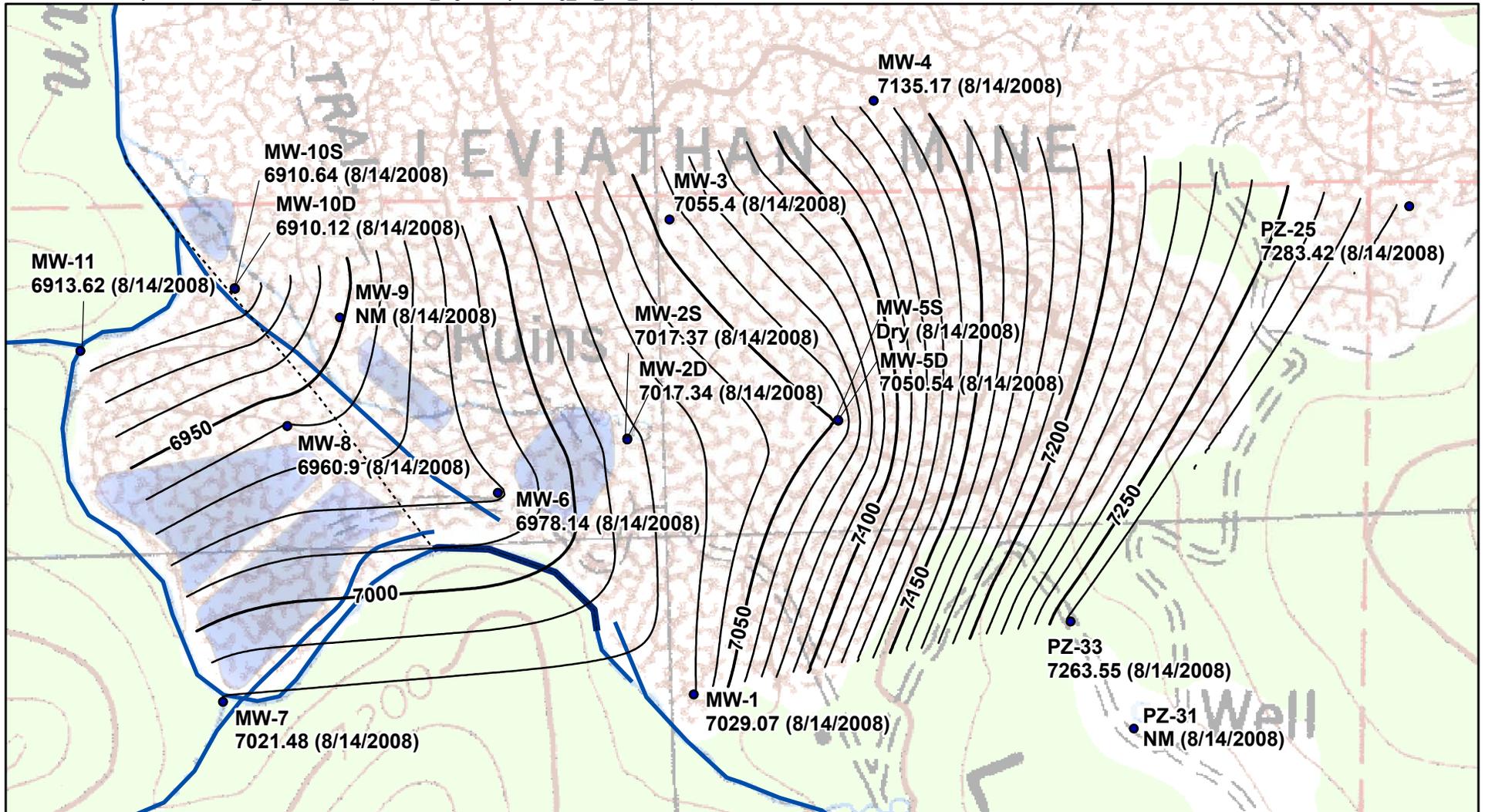
Project No. 13091A.109

Source: Measurements made by U.S. Army Corps of Engineers on 8/9/2007



AMEC Geomatrix

Figure 33



Explanation

- Monitoring well/
piezometer location



Source: Measurements made by Burseson Consulting on 8/14/2008

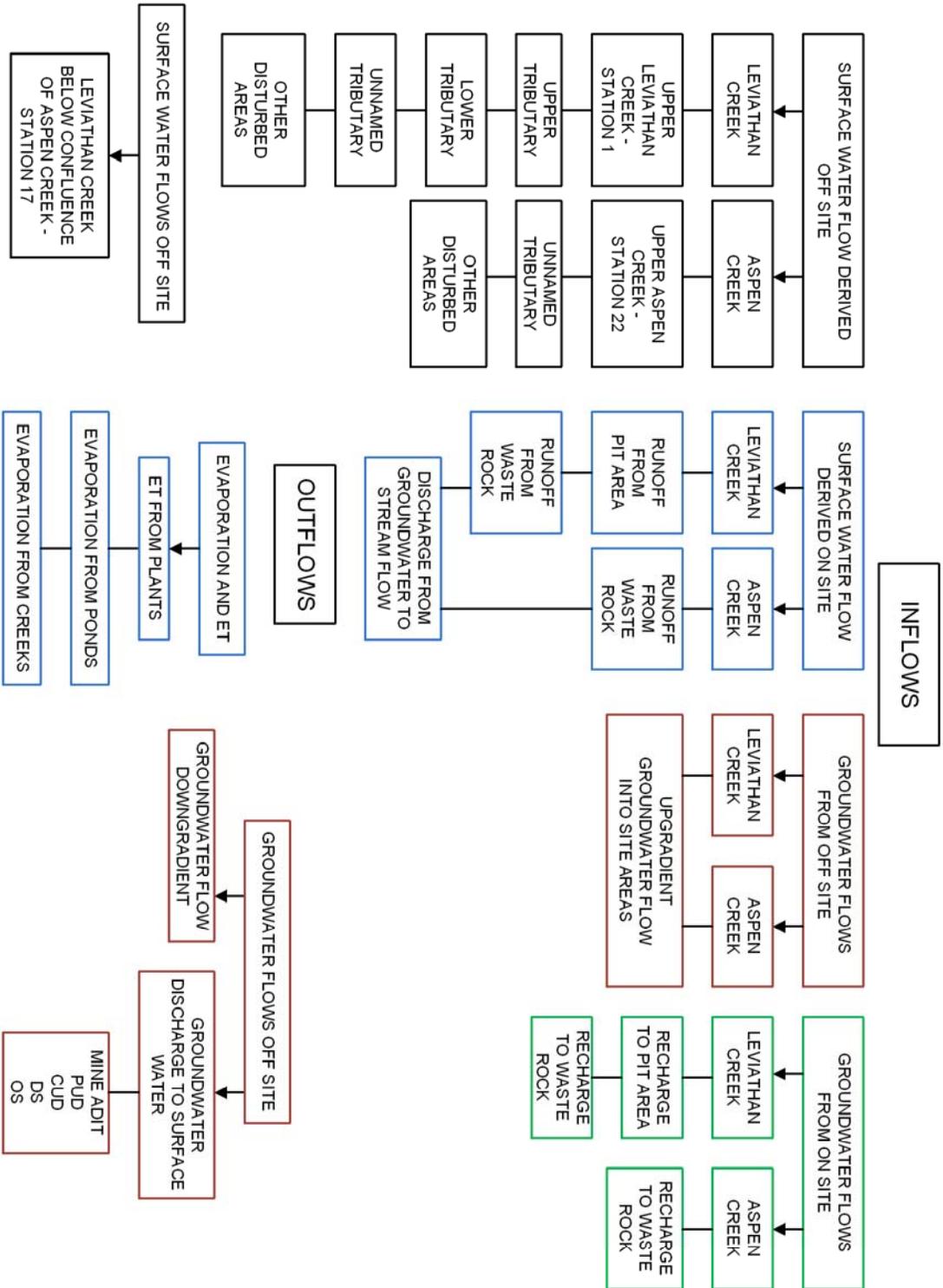
AUGUST 2008
 POTENTIOMETRIC SURFACE MAP
 Leviathan Mine Site
 Alpine County, California

By: CBT	Date: 5/19/09	Project No. 13091A.109
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AMEC Geomatrix

Figure 34

Leviathan Water Balance Schematic



Explanation

- CUD Channel Underdrain
- DS Delta Seep
- ET Evapotranspiration
- OS Aspen Seep
- PUD Pit Underdrain

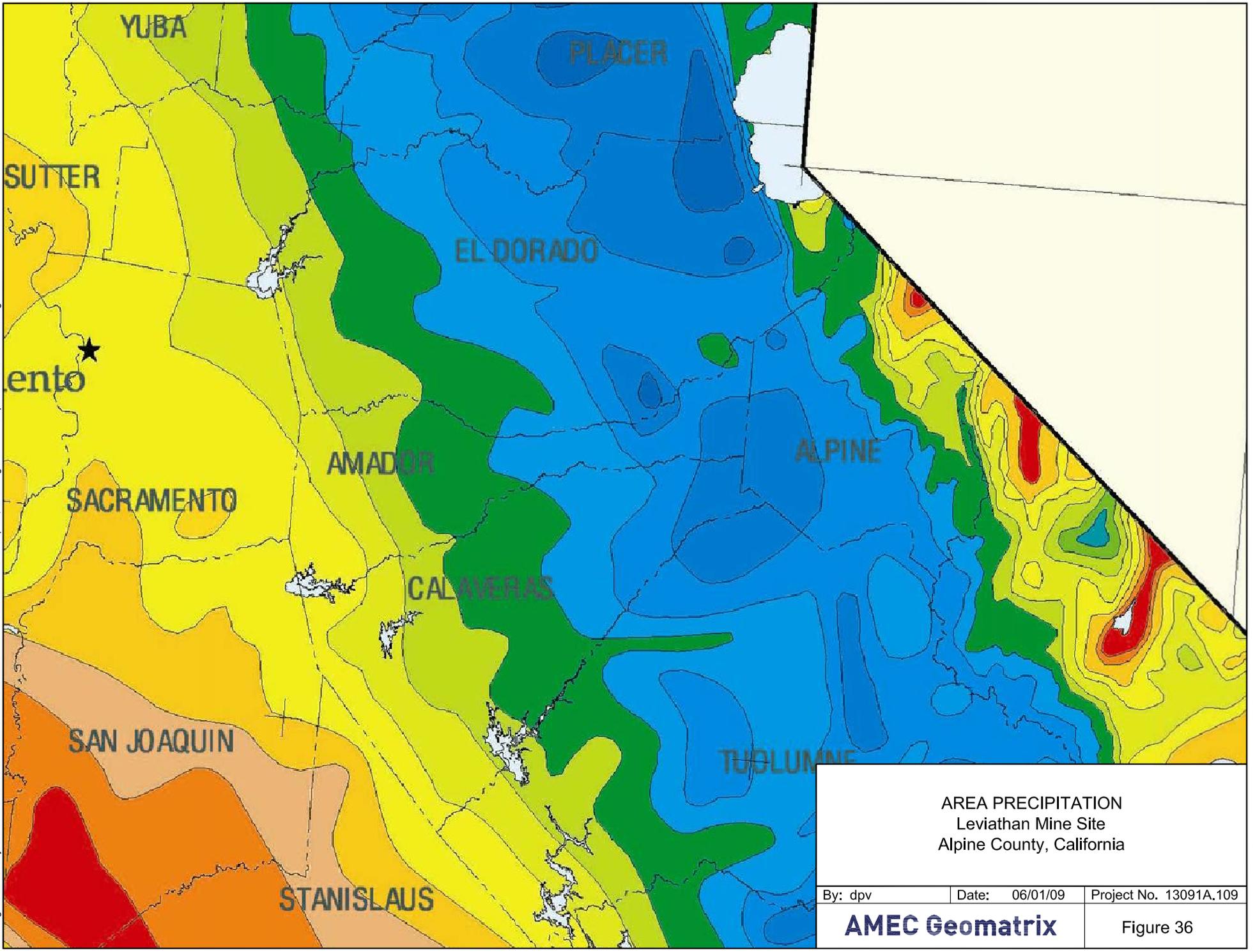
LEVIATHAN WATER BALANCE SCHEMATIC
 Leviathan Mine Site
 Alpine County, California

By: dpv | Date: 06/30/09 | Project No. 13091A.109

AMEC Geomatrix

Figure 35

Plot Date: 06/01/09 - 11:53am, Plotted by: donna.valasek
Drawing Path: P:\Project\13091A\13091A\Leviathan\14000 Database and CAD\CAD\RIFRS Report\ Drawing Name: Precipitation Inside Area.dwg



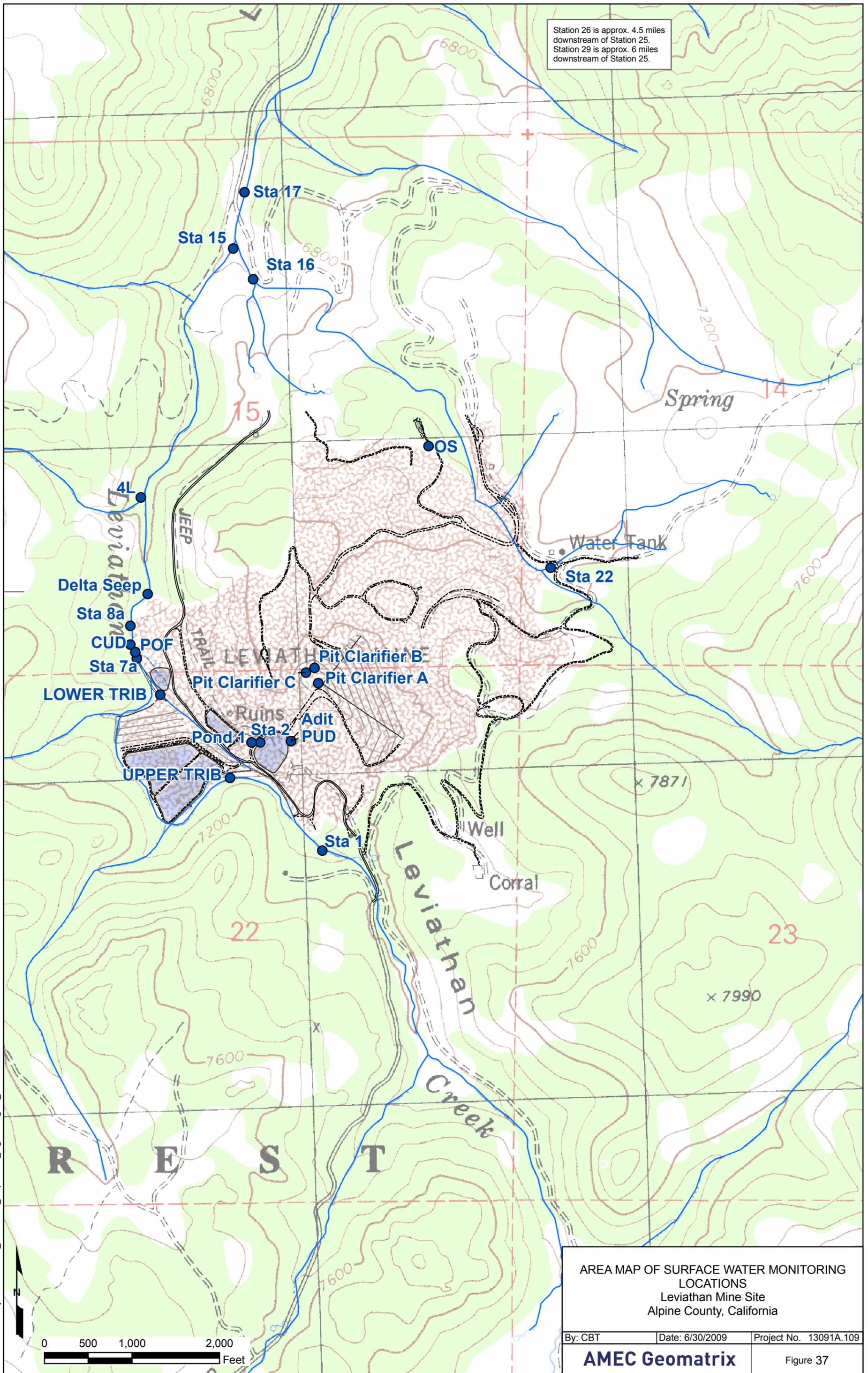
AREA PRECIPITATION
Leviathan Mine Site
Alpine County, California

By: dpv | Date: 06/01/09 | Project No. 13091A.109

AMEC Geomatrix

Figure 36

Station 26 is approx. 4.5 miles downstream of Station 25.
Station 29 is approx. 6 miles downstream of Station 25.



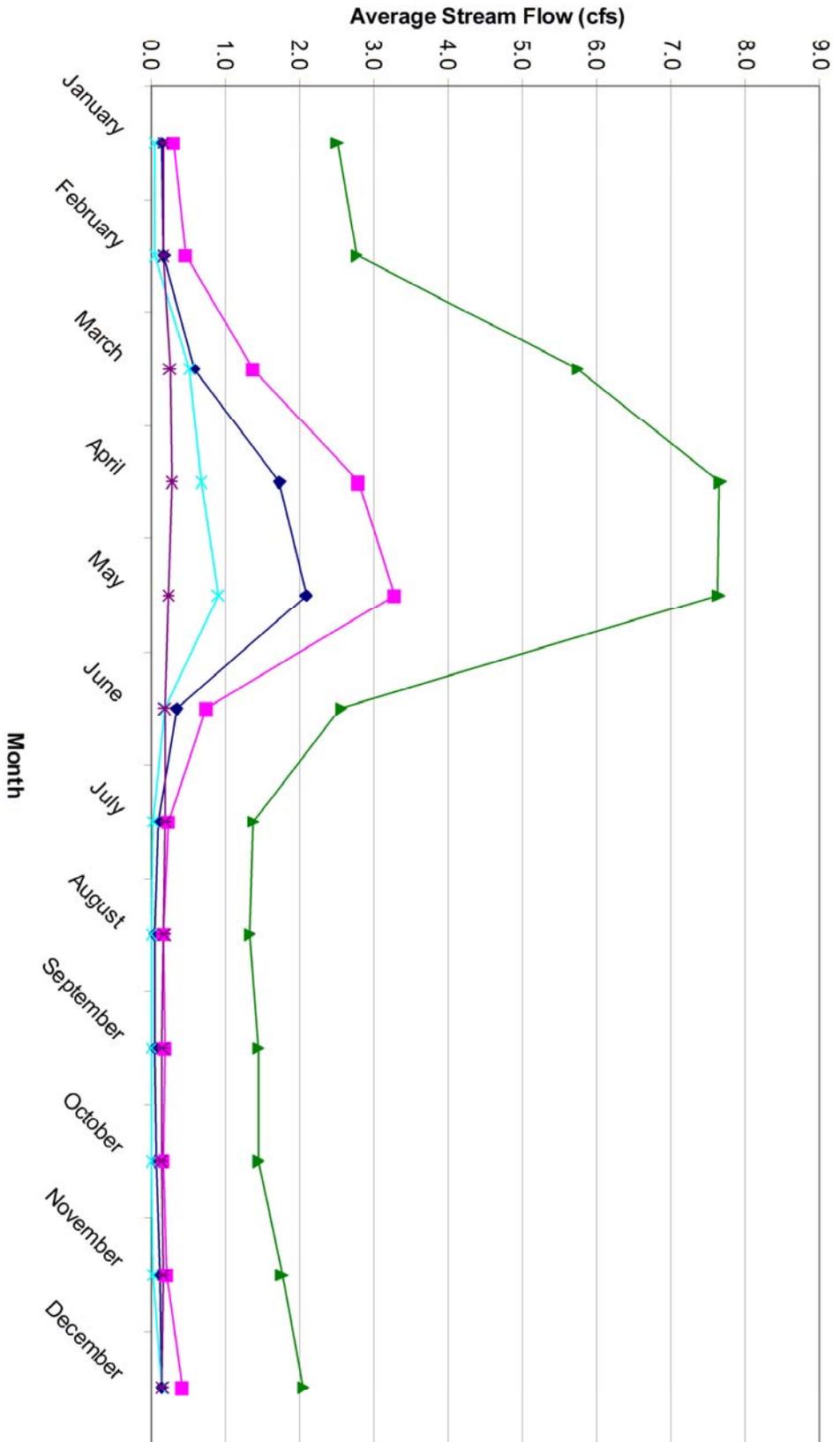
AREA MAP OF SURFACE WATER MONITORING LOCATIONS
Leviathan Mine Site
Alpine County, California

By: CBT Date: 6/30/2009 Project No. 13091A.109

AMEC Geomatrix

Figure 37

Monthly Average Streamflow



Note
 cfs cubic feet per second

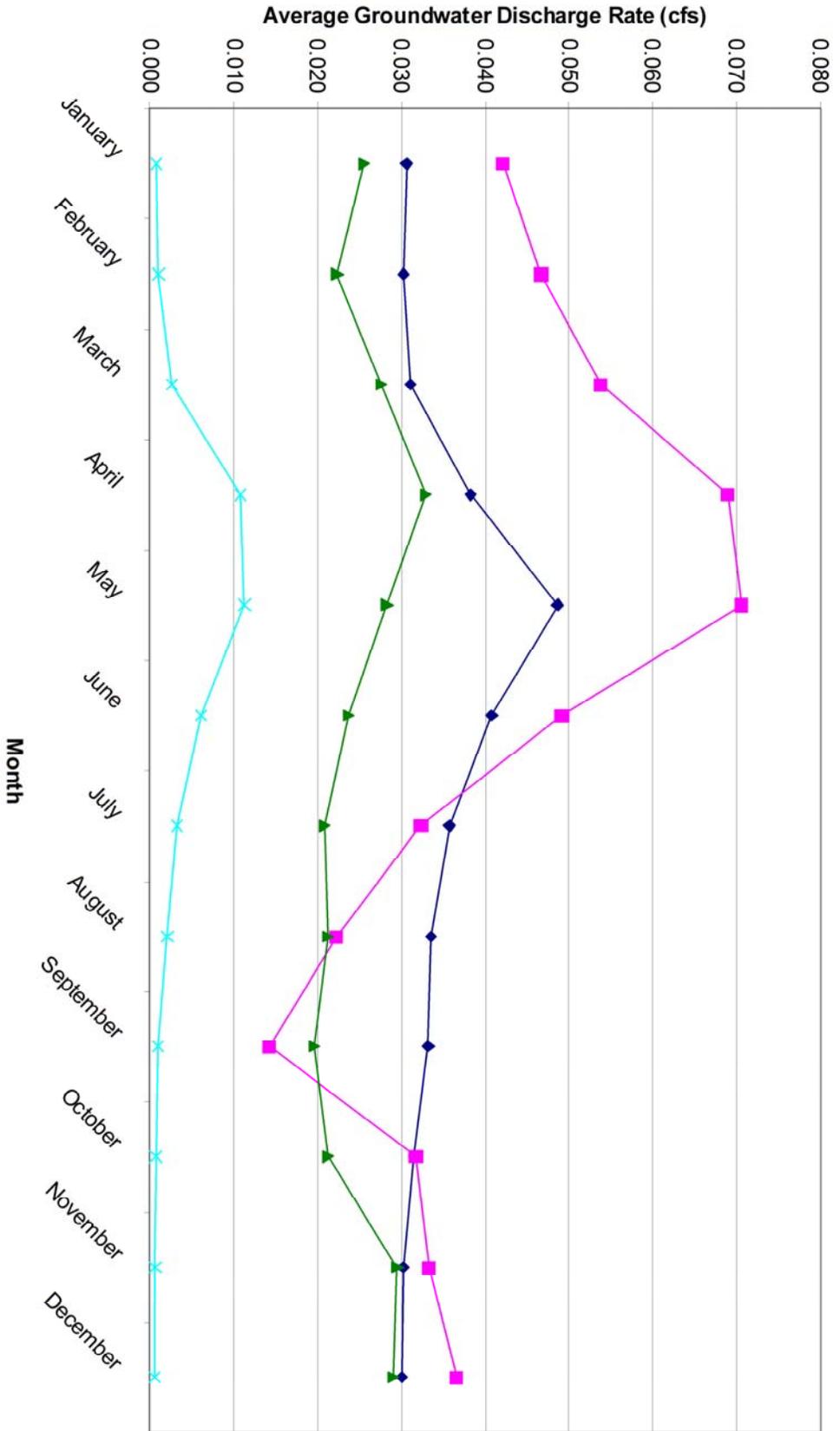
MONTHLY AVERAGE STREAMFLOW
 Leviathan Mine Site
 Alpine County, California

By: dpv Date: 06/30/09 Project No. 13091A.109

AMEC Geomatrix

Figure 38

Monthly Average Groundwater Discharge Rates



Note
 cfs cubic feet per second

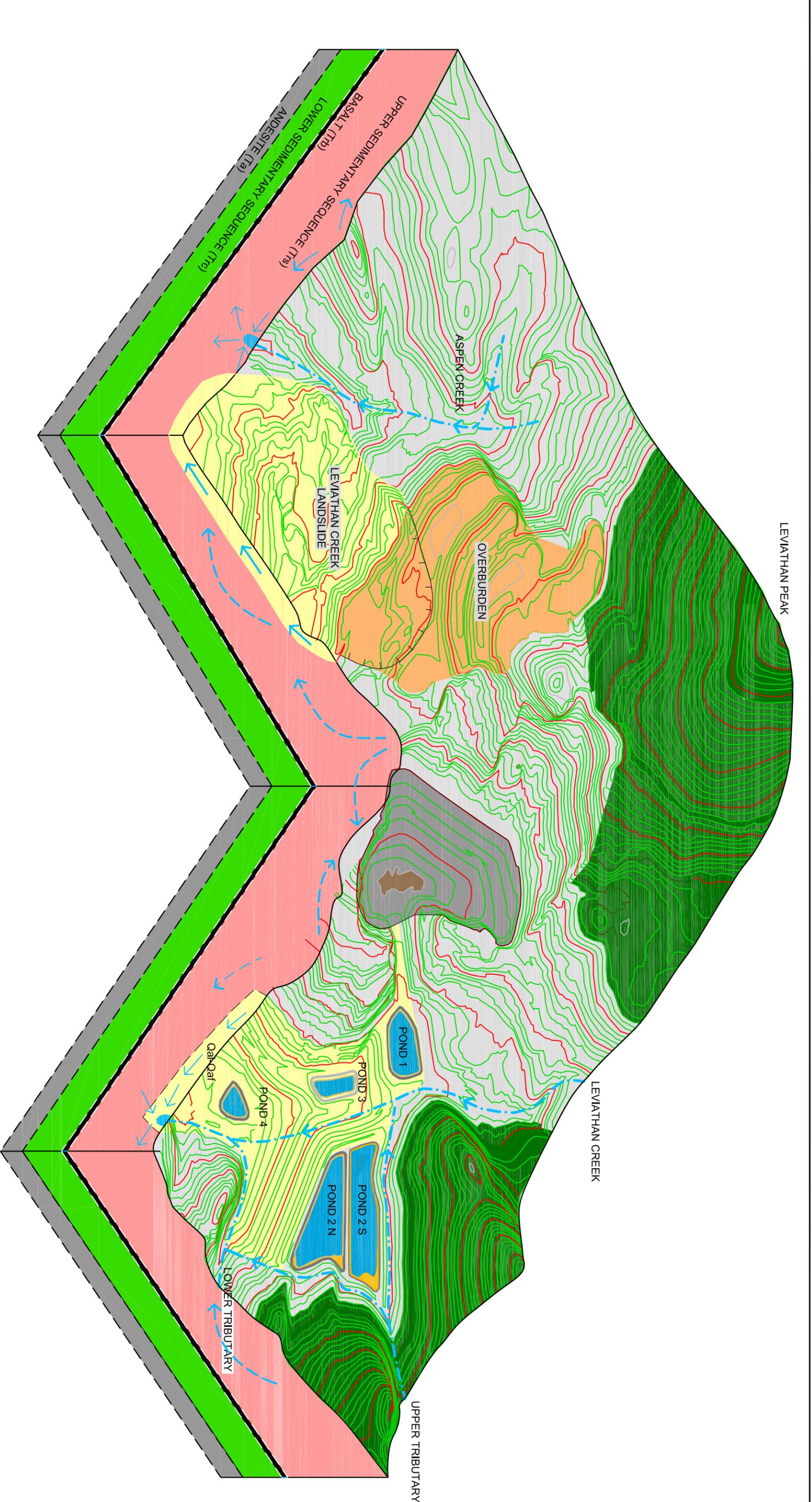
Legend:
 —◆— Mine Adit
 —■— CUD
 —▲— AS
 —×— PUD

MONTHLY AVERAGE GROUNDWATER
 DISCHARGE RATES
 Leviathan Mine Site
 Alpine County, California

By: dpv | Date: 06/30/09 | Project No. 13091A.109

AMEC Geomatrix

Figure 39

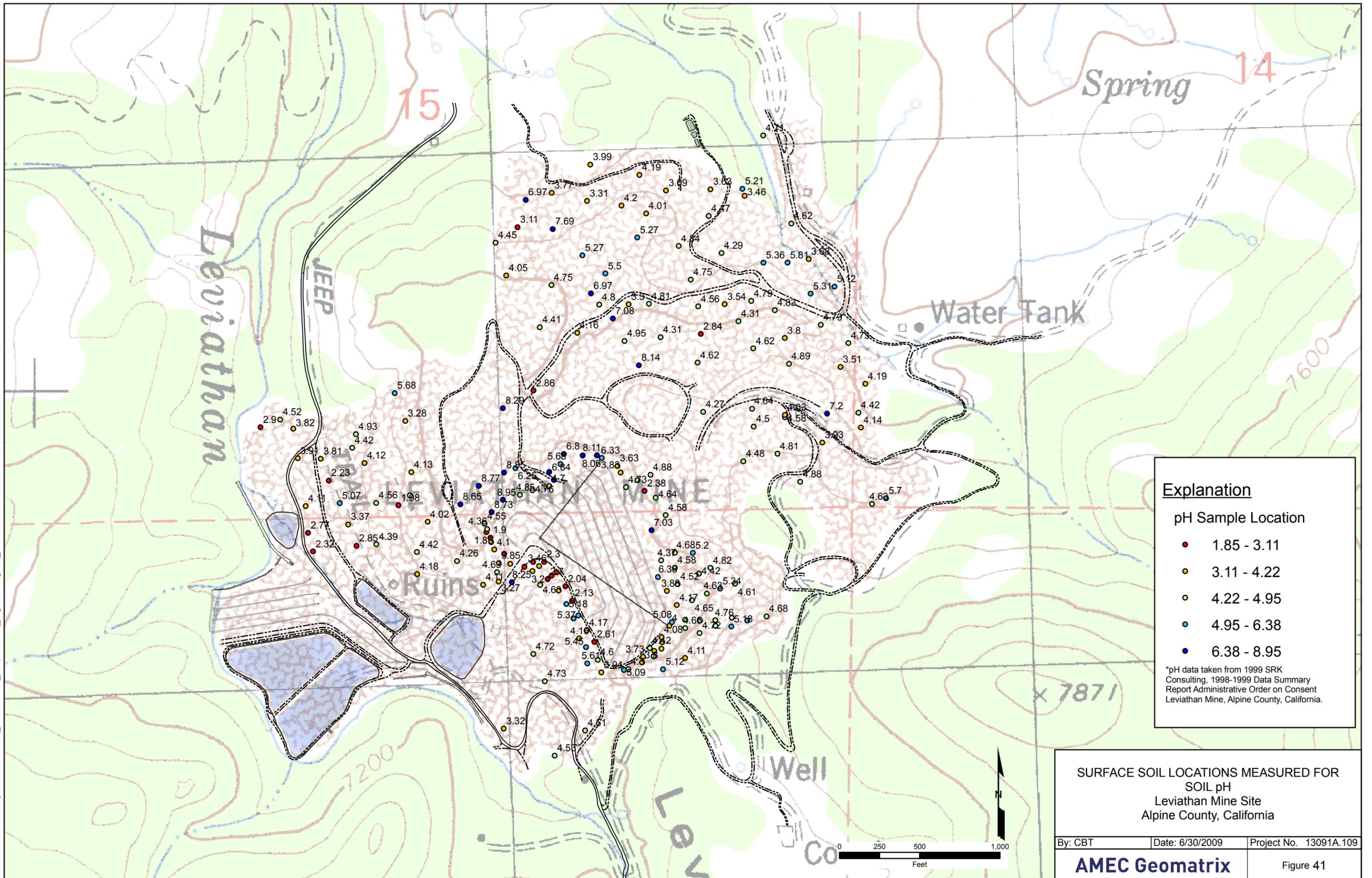


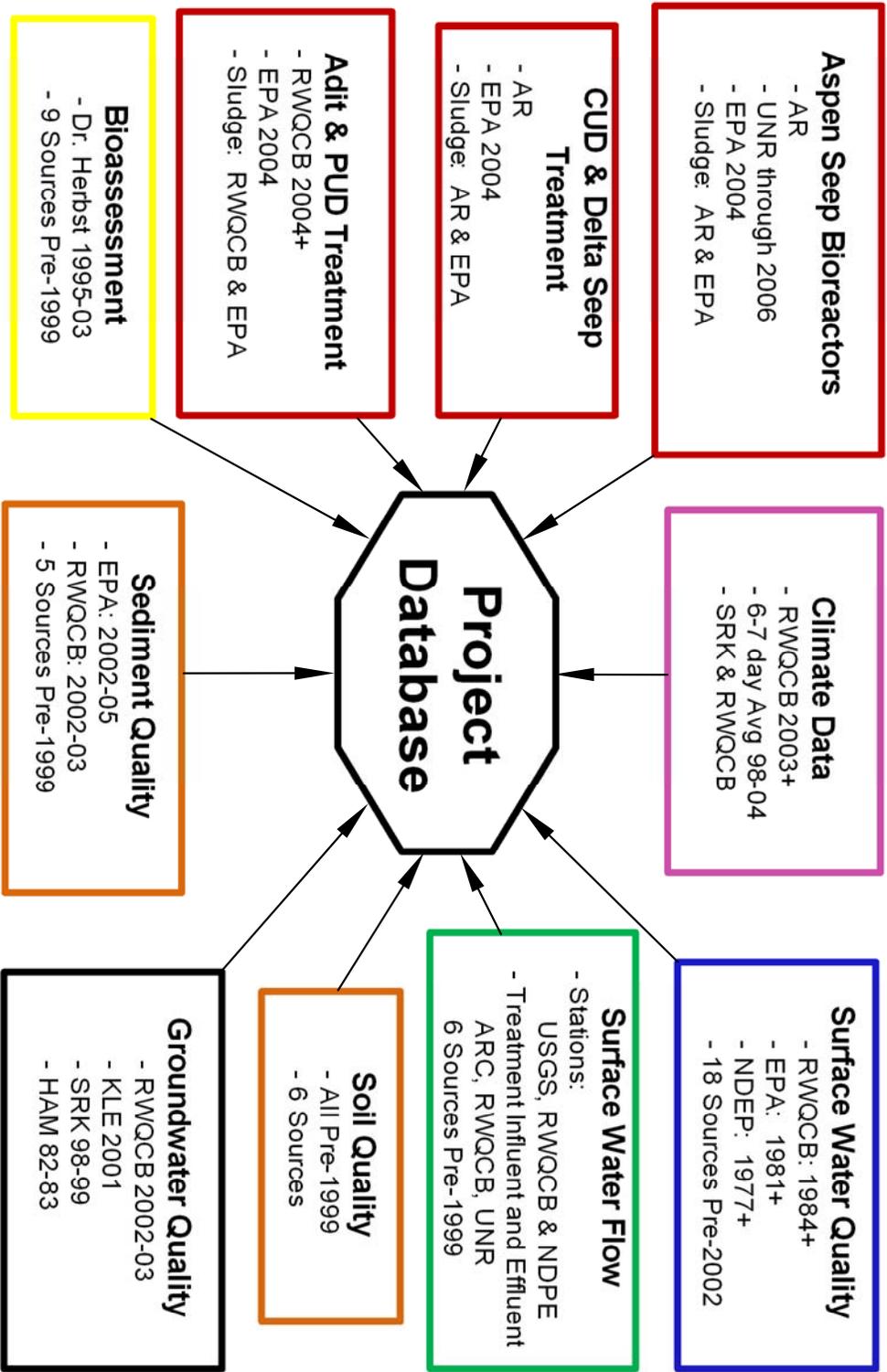
- Explanation**
- Tributaries and flow direction
 - Fault scarp and down-dip direction
 - Conceptual groundwater flow direction

CONCEPTUAL HYDROGEOLOGIC MODEL
 Leviathan Mine Site
 Alpine County, California

By: dpv	Date: 06/30/09
AMEC Geomatrix	
Project No. 13091A.109	
Figure 40	

\\den1-fs1\GIS\Projects\Leviathan_13091\GIS_Maps\RIFS_Figures\Figure_41.mxd



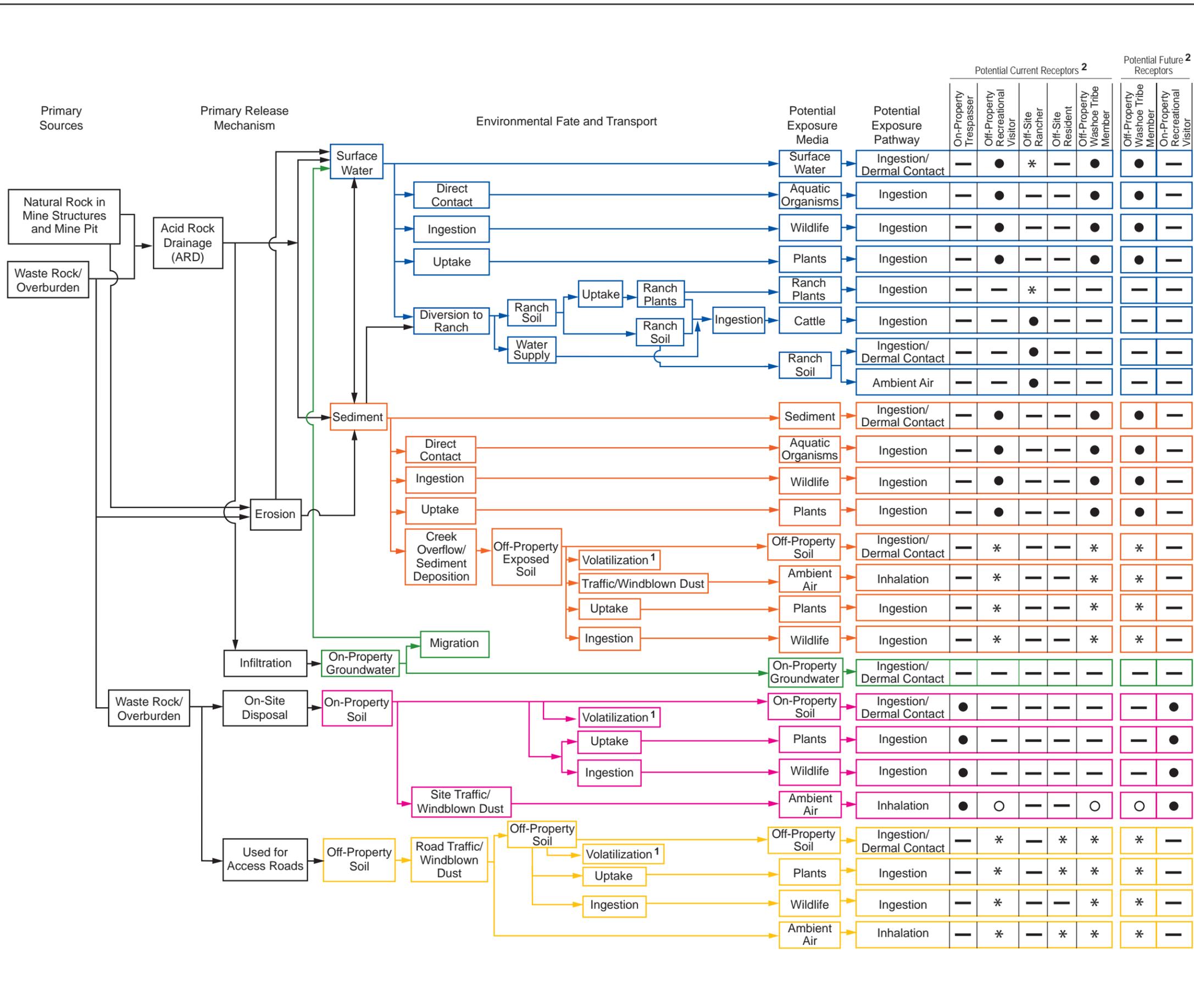


LEVIATHAN PROJECT DATABASE
 Leviathan Mine Site
 Alpine County, California

By: dpv | Date: 06/30/09 | Project No. 13091A.109

AMEC Geomatrix | Figure 42

S:\1300013091\109.8\task_801.A\fig_43.ai



Explanation

- Potentially complete exposure pathway
- * Potentially complete exposure pathway, pending additional data
- Insignificant exposure pathway
- Incomplete exposure pathway

Pathways related to:

- Surface water
- Groundwater
- Sediment
- On-site Soil
- Off-site Soil

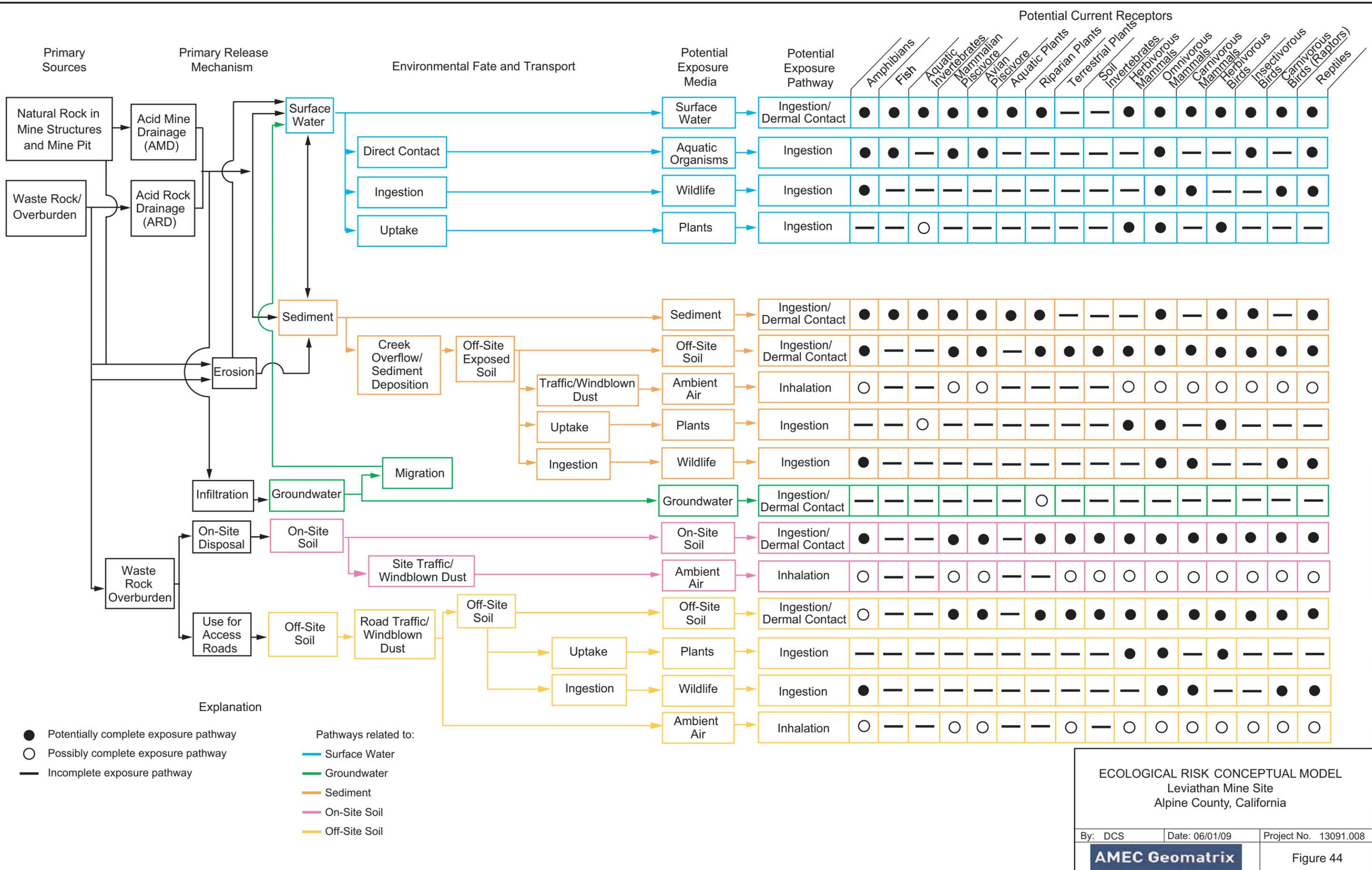
Notes

1. Only one chemical of potential concern is considered volatile: mercury. As discussed in the text, potential exposure to mercury volatilized from soil at this site is not considered significant.
2. For the purpose of this Work Plan, the Leviathan Mine site is comprised of two general areas: the disturbed portion Mine property (referred to as on-property and defined on Figure 1) and the off-property areas (referred to as off-property and defined as all other areas "disturbed by mining activities").

HUMAN HEALTH CONCEPTUAL SITE MODEL
Leviathan Mine Site
Alpine County, California

By: TS	Date: 07/09/2009	Project No. 13091.000
AMEC Geomatrix		Figure 43

U:\Atlantic_Richfield\13091-001 Leviathan Mine\eraworkplan\leviathan_era_figure_6.ai



Downstream
Study Area

Leviathan Creek

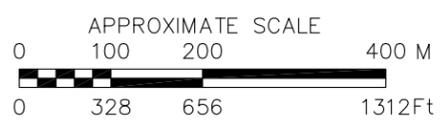
Aspen Creek
Study Area

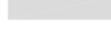
Leviathan Creek
Study Area

Pit Study Area

Aspen Creek

Aerial Imagery Courtesy of:
USDA (US Department of Agriculture), 2006, National Agricultural Program Mosaic for Alpine, El Dorado, and Mono counties, CA and Douglas and Lyon counties, NV,
USDA Geospatial Gateway <http://datagateway.nrcs.usda.gov/GatewayHome.html> (accessed December 2008).



-  Study Area Boundaries
-  Leviathan Mine Property Boundary
-  Road
-  Impact Area
-  Stream/Riparian
-  Open Water
-  Wetland
-  Barren
-  Grassland
-  Scrub-Shrub
-  Forested

HABITAT WITHIN THE LEVIATHAN MINE
PROPERTY BOUNDARY
Leviathan Mine
Alpine County, California

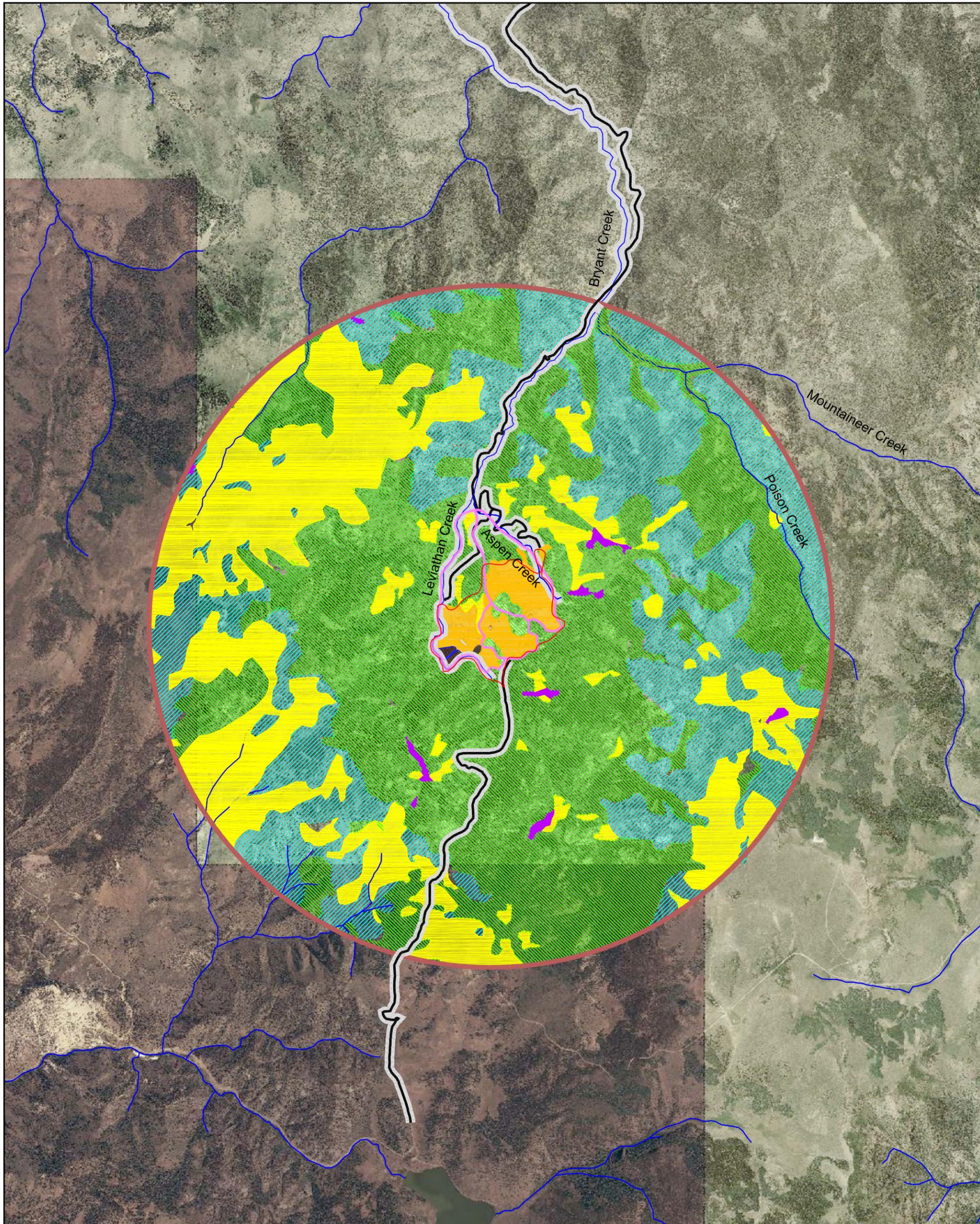
By: GSM Date: 6/30/2009 Project No. 13091.109

AMEC Geomatrix

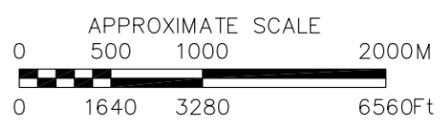
Figure 45

Plot Date: 06/30/09 - 2:56pm, Plotted by: donna.valasek
Drawing Path: P:\Project\13091\Leviathan\14000 Database and CAD\CAD_RIFS Report\, Drawing Name: Habitat Report 3.dwg

Plot Date: 06/30/09 - 2:50pm, Plotted by: donna.valasek
 Drawing Path: P:\Project\13091\Leviathan\14000 Database and CAD\CAD_RIFS Report\, Drawing Name: Habitat Report 3.dwg

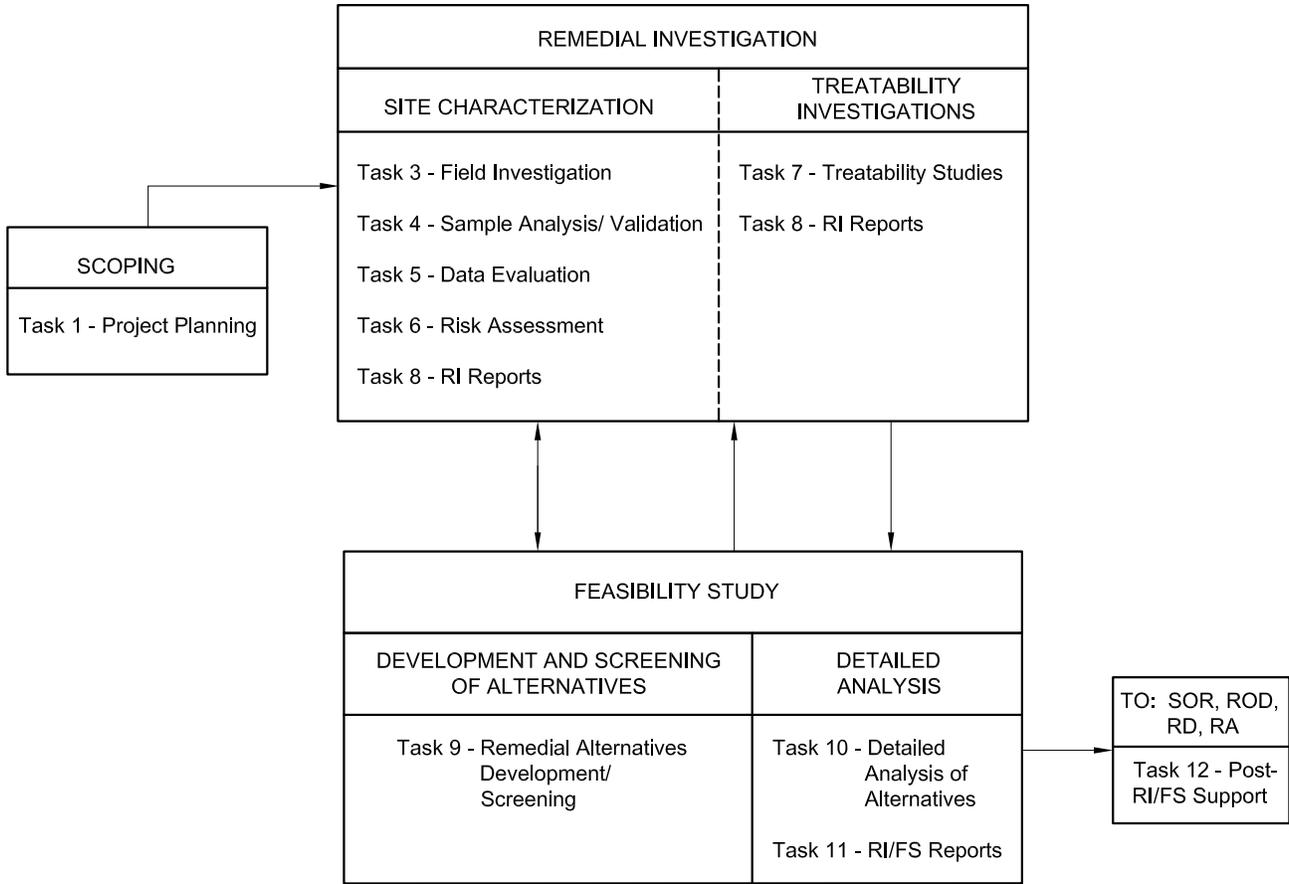


Aerial Imagery Courtesy of:
 USDA (U.S. Department of Agriculture), 2006, National Agricultural Program Mosaic for Alpine, El Dorado, and Mono counties, CA and Douglas and Lyon counties, NV,
 USDA Geospatial Gateway <http://datagateway.nrcs.usda.gov/GatewayHome.html> (accessed December 2008).



- Study Area Boundaries
- Leviathan Mine Property Boundary
- ERA Study Area
- Road
- Impact Area
- Stream/Riparian
- Open Water
- Wetland
- Barren
- Grassland
- Scrub-Shrub
- Forested

HABITAT STUDY AREA Leviathan Mine Alpine County, California		
By: GSM	Date: 6/30/2009	Project No. 13091.109
AMEC Geomatrix		Figure 46



RI/FS WORK PLAN
STANDARD TASKS

TASK	TITLE	TASK	TITLE
1	Project Planning	11	Feasibility Study (RI/FS) Reports
2	Community Relations *	12	Post RI/FS Support
3	Field Investigation	13	Enforcement Support *
4	Sample Analysis/Validation	14	Miscellaneous Support *
5	Data Evaluation		
6	Risk Assessment		
7	Treatability Study/Pilot Testing		
8	Remedial Investigation Reports		
9	Remedial Alternatives Development/ Screening		
10	Detailed Analysis of Alternatives		

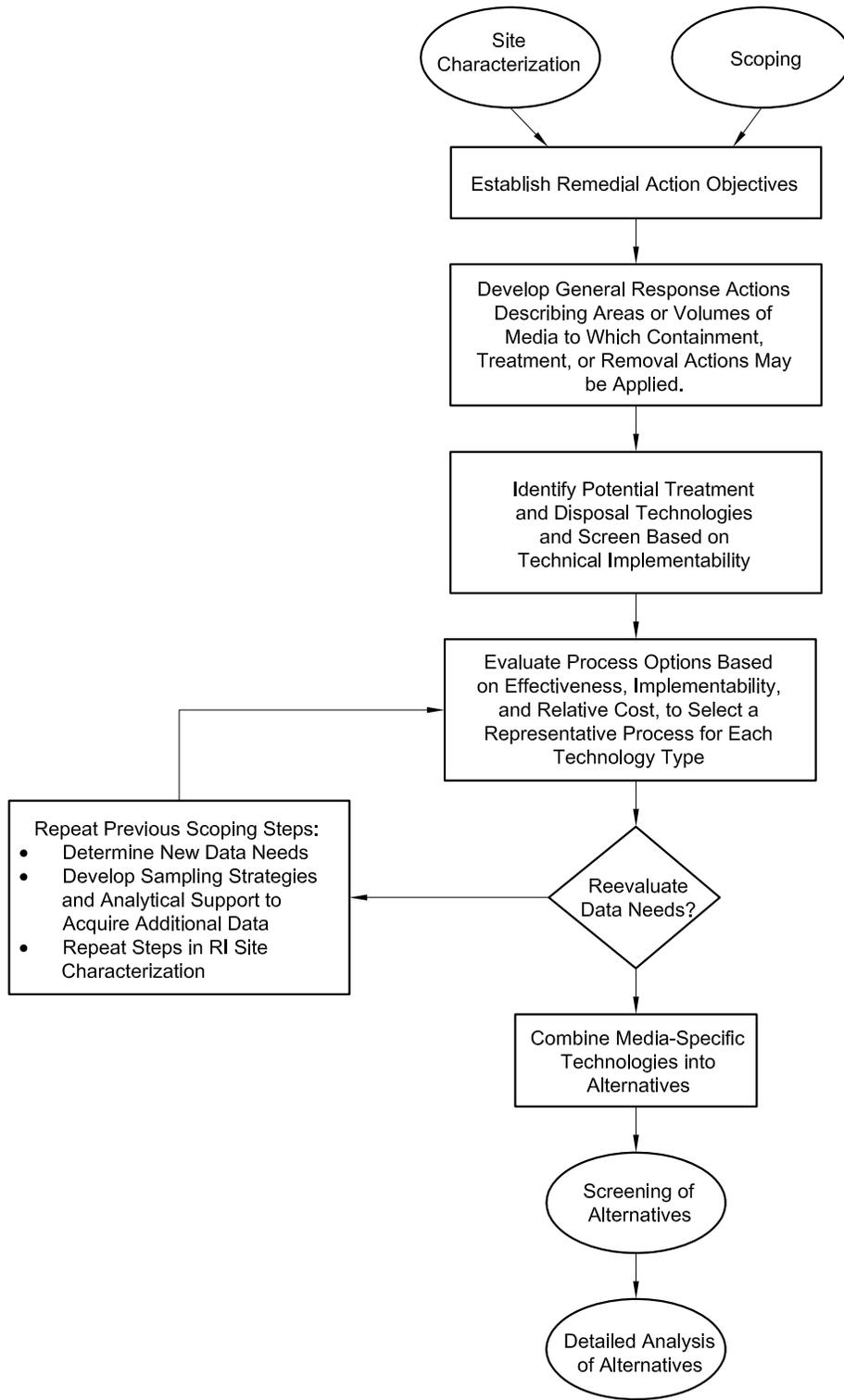
* Tasks that can occur in any phase of the RI/FS

RELATIONSHIP OF RI/FS TASKS TO THE RI/FS APPROACH
Leviathan Mine Site
Alpine County, California

By: dpv	Date: 6/01/09	Project No. 13091A.109
AMEC Geomatrix		Figure 47

Plot Date: 06/30/09 - 1:28pm, Plotted by: donna.valasek
Drawing Path: P:\Project\13000us\13091 Leviathan\14000 Database and CAD\CAD\RI/FS Report\, Drawing Name: Figs 34-42.dwg

Plot Date: 06/30/09 - 1:30pm, Plotted by: donna.valasek
 Drawing Path: P:\Project\13000s\13091_Leviathan\14000 Database and CAD\CAD\RIFS Report\ Drawing Name: Figs 34-42.dwg

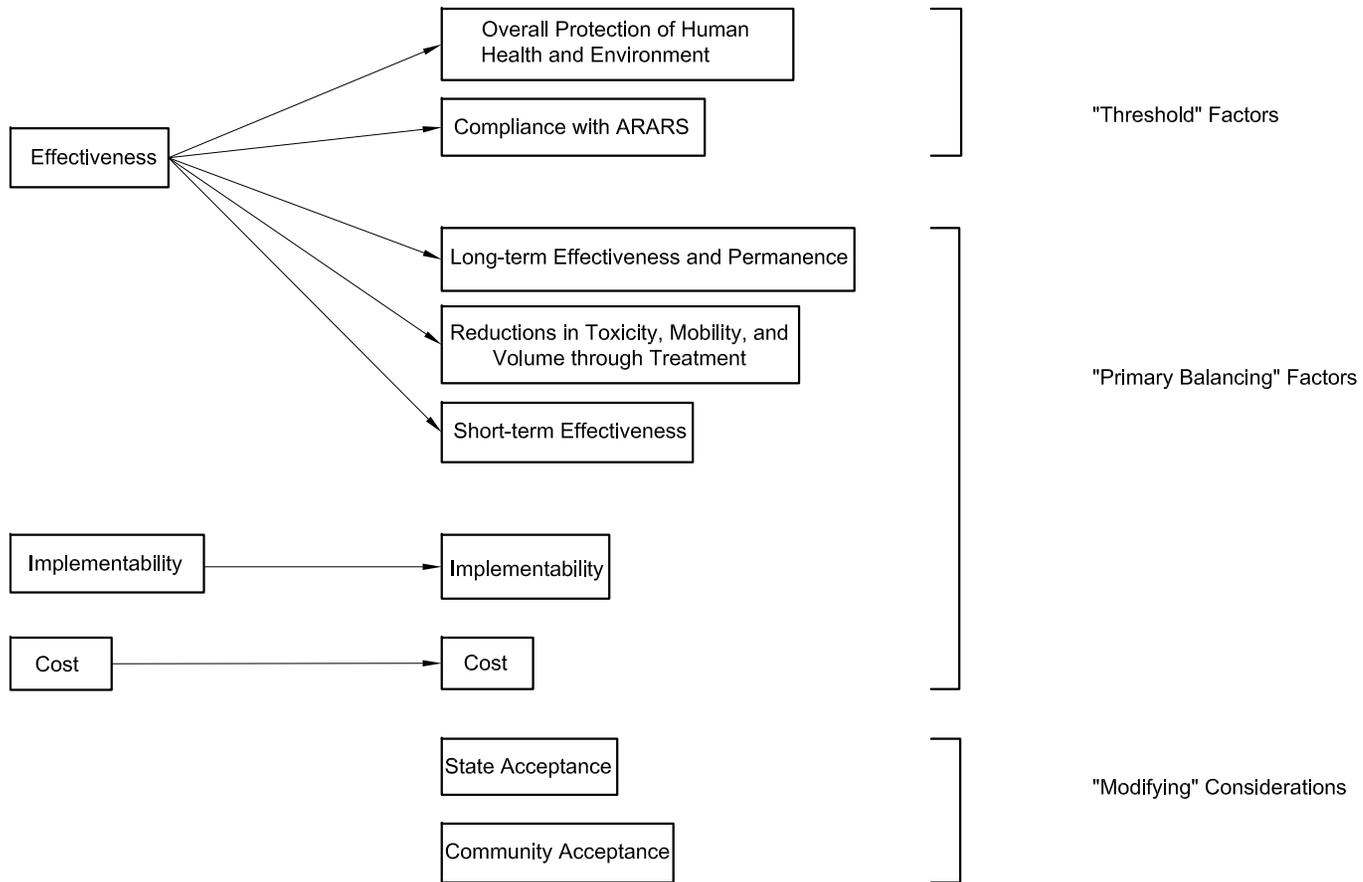


ALTERNATIVE DEVELOPMENT PROCESS
 Leviathan Mine Site
 Alpine County, California

By: dpv Date: 6/01/09 Project No. 13091A.109

AMEC Geomatrix

Figure 48

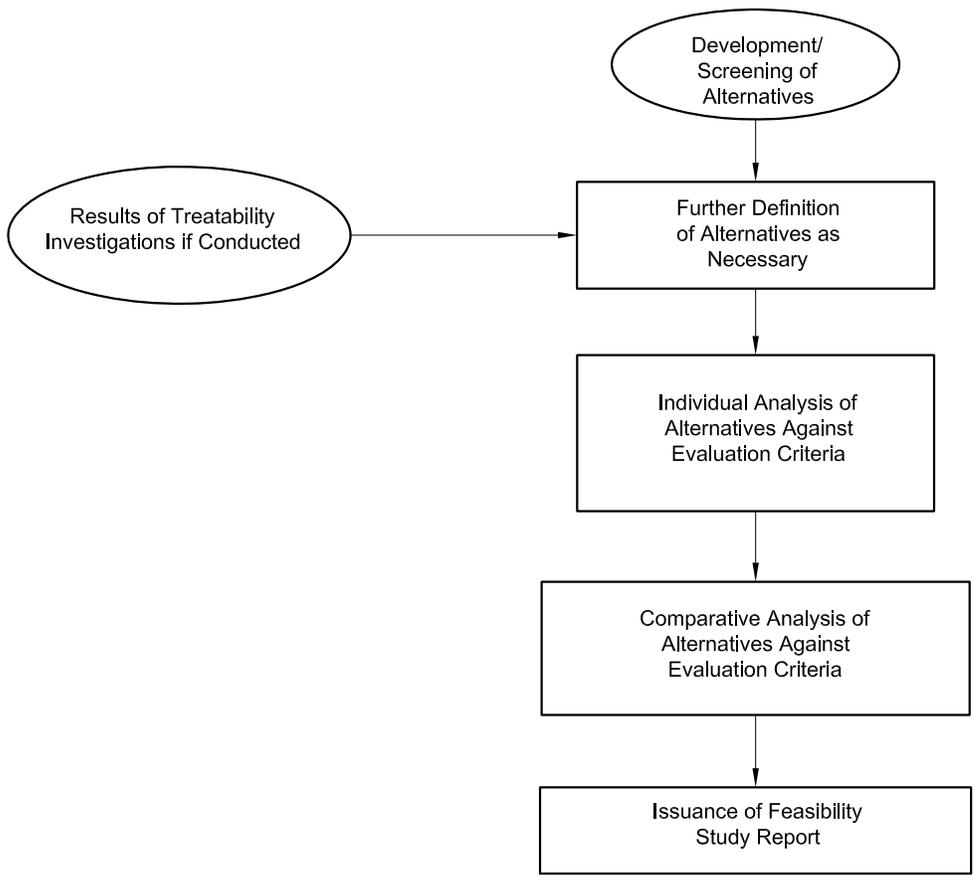


RELATIONSHIP OF SCREENING CRITERIA TO
THE NINE EVALUATION CRITERIA
Leviathan Mine Site
Alpine County, California

By: dpv Date: 06/01/09 Project No. 13091A.109

AMEC Geomatrix

Figure 49

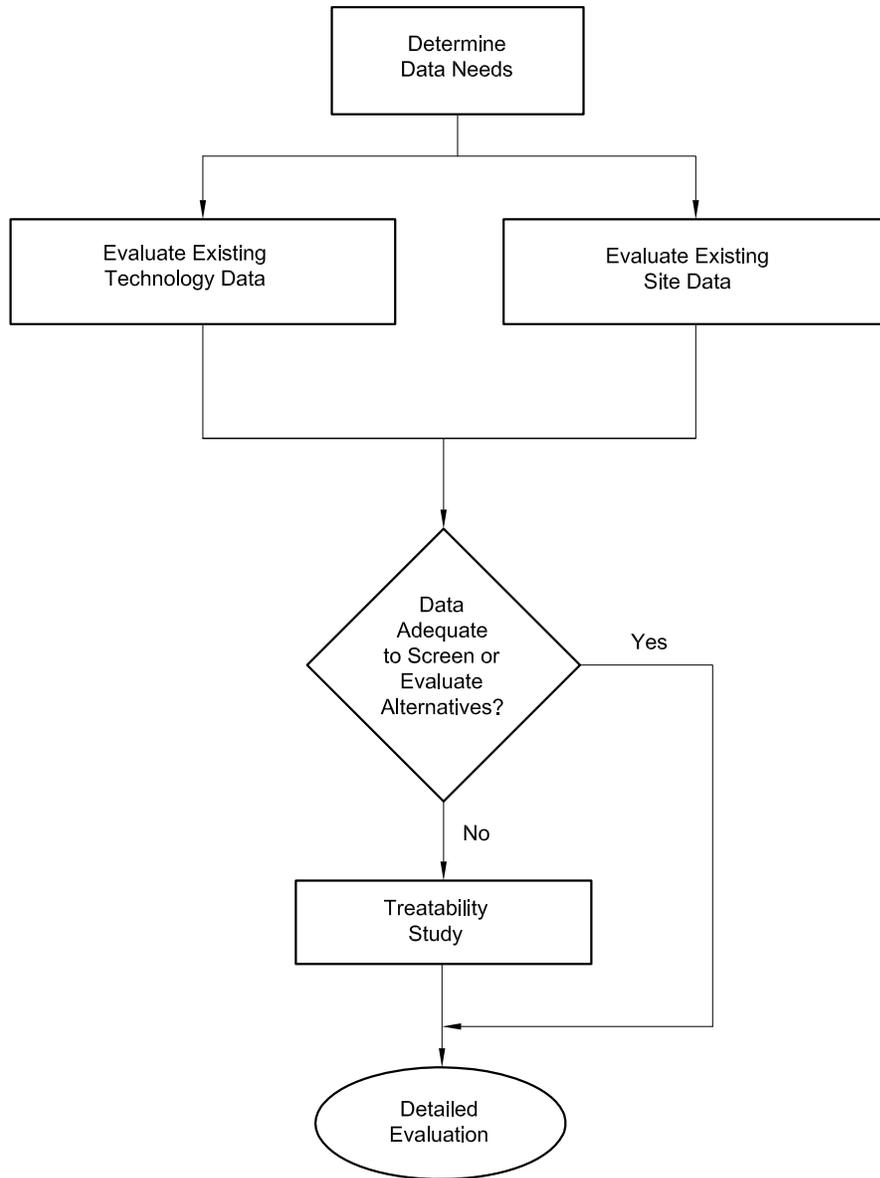


DETAILED ANALYSIS OF ALTERNATIVES
 Leviathan Mine Site
 Alpine County, California

By: dpv	Date: 6/01/09	Project No. 13091A.109
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AMEC Geomatrix	Figure 50
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Plot Date: 06/01/09 - 12:13pm. Plotted by: donna.valasek
Drawing Path: P:\Project\13000s\13091 Leviathan\14000 Database and CAD\CAD\RIFS Report\ Drawing Name: Figs 34-42.dwg



TREATABILITY INVESTIGATIONS
Leviathan Mine Site
Alpine County, California

By: dpv	Date: 6/01/09	Project No. 13091A.109
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AMEC Geomatrix

Figure 51

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

- How Alternative Provides Human Health and Environmental Protection

COMPLIANCE WITH ARARS

- Compliance with Action-Specific ARARS
- Compliance with Location-Specific ARARS
- Compliance with Other Criteria, Advisories, and Guidances

LONG-TERM EFFECTIVENESS AND PERMANENCE

- Magnitude of Residual Risk
- Adequacy and Reliability of Controls

REDUCTION OF TOXICITY MOBILITY, AND VOLUME THROUGH TREATMENT

- Treatment Process Used and Materials Treated
- Amount of Hazardous Materials Destroyed or Treated
- Degree of Expected Reductions in Toxicity, Mobility, and Volume
- Degree to Which Treatment is Irreversible
- Type and Quantity of Residuals Remaining After Treatment

SHORT-TERM EFFECTIVENESS

- Protection of Community During Remedial Actions
- Protection of Workers During Remedial Actions
- Environmental Impacts

IMPLEMENTABILITY

- Ability to Construct and Operate the Technology
- Reliability of the Technology
- Ease of Undertaking Additional Remedial Actions, if Necessary

COST

- Capital Costs
- Operating and Maintenance Costs
- Present Worth Cost

STATE ACCEPTANCE *

COMMUNITY ACCEPTANCE *

- Availability of Necessary Equipment and Specialists
- Availability of Prospective Technologies
- Availability of Off-site Treatment, Storage, and Disposal Services and Capacity

* These criteria are assessed following comment on the RIFS report and the proposed plan.

CRITERIA FOR DETAILED ANALYSIS OF ALTERNATIVES
 Leviathan Mine Site
 Alpine County, California

By: dpv	Date: 07/02/09	Project No. 13091A.109
AMEC Geomatrix		Figure 52