



**A Hydrostratigraphic Framework Model and Alternatives
for the Groundwater Flow and Contaminant Transport
Model of Corrective Action Unit 98: Frenchman Flat,
Clark, Lincoln and Nye Counties, Nevada**

**Prepared for
U.S. Department of Energy
National Nuclear Security Administration
Nevada Site Office
Las Vegas, Nevada**

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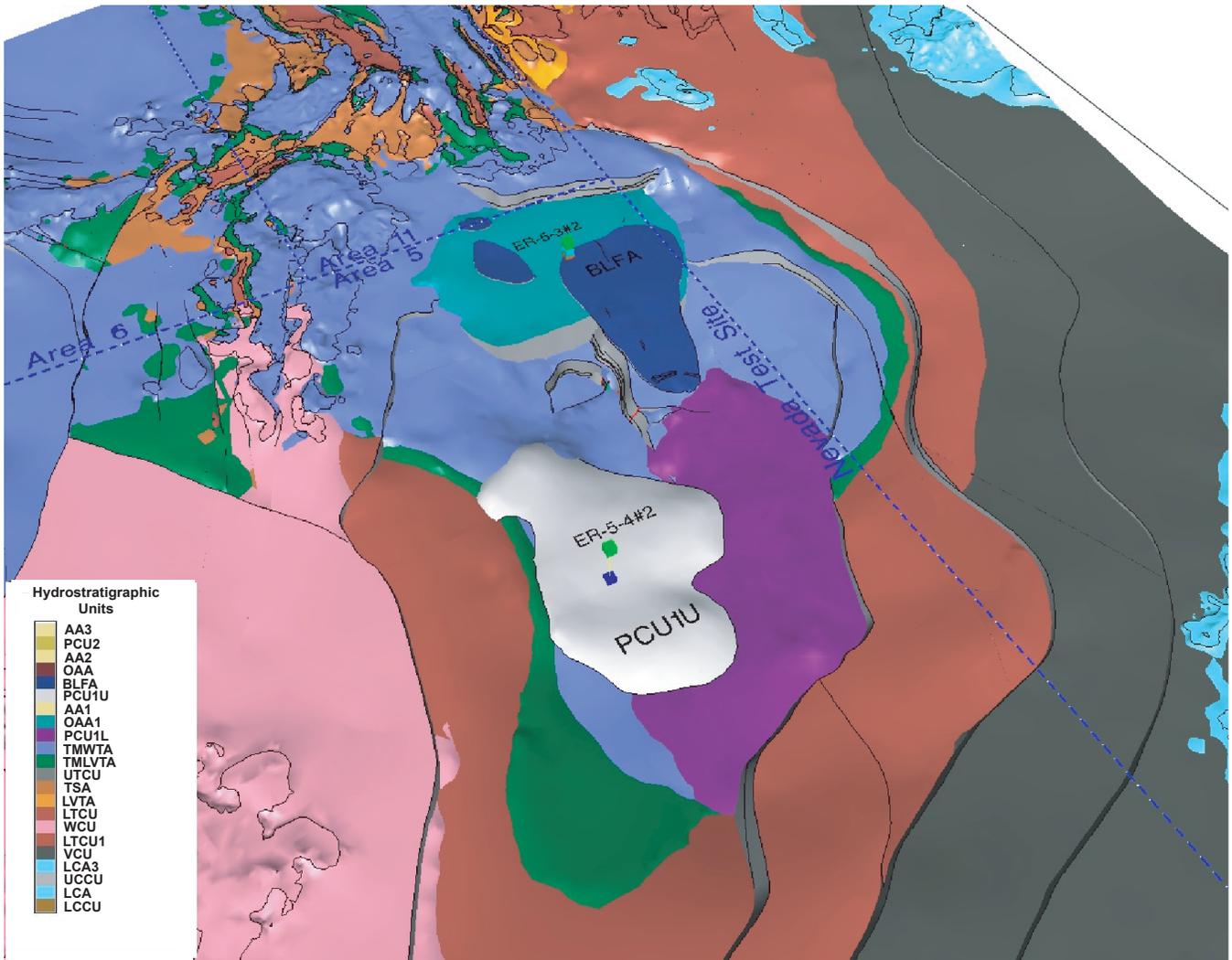


Figure 4-8
Perspective View Showing Extent of the Playa Confining Unit (PCU1U) and the
Basalt Lava-Flow Aquifer (BLFA) within the Frenchman Flat Model Area

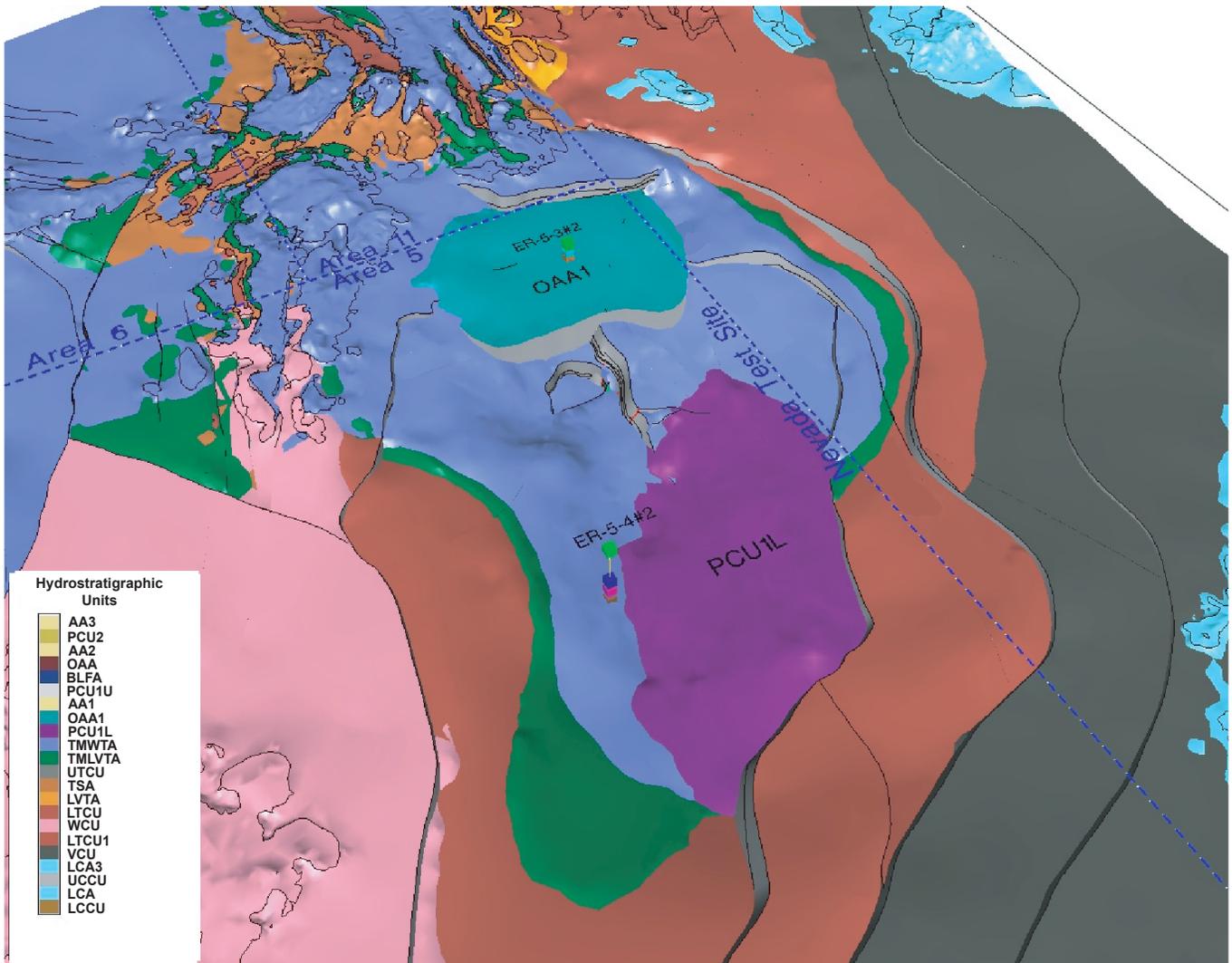
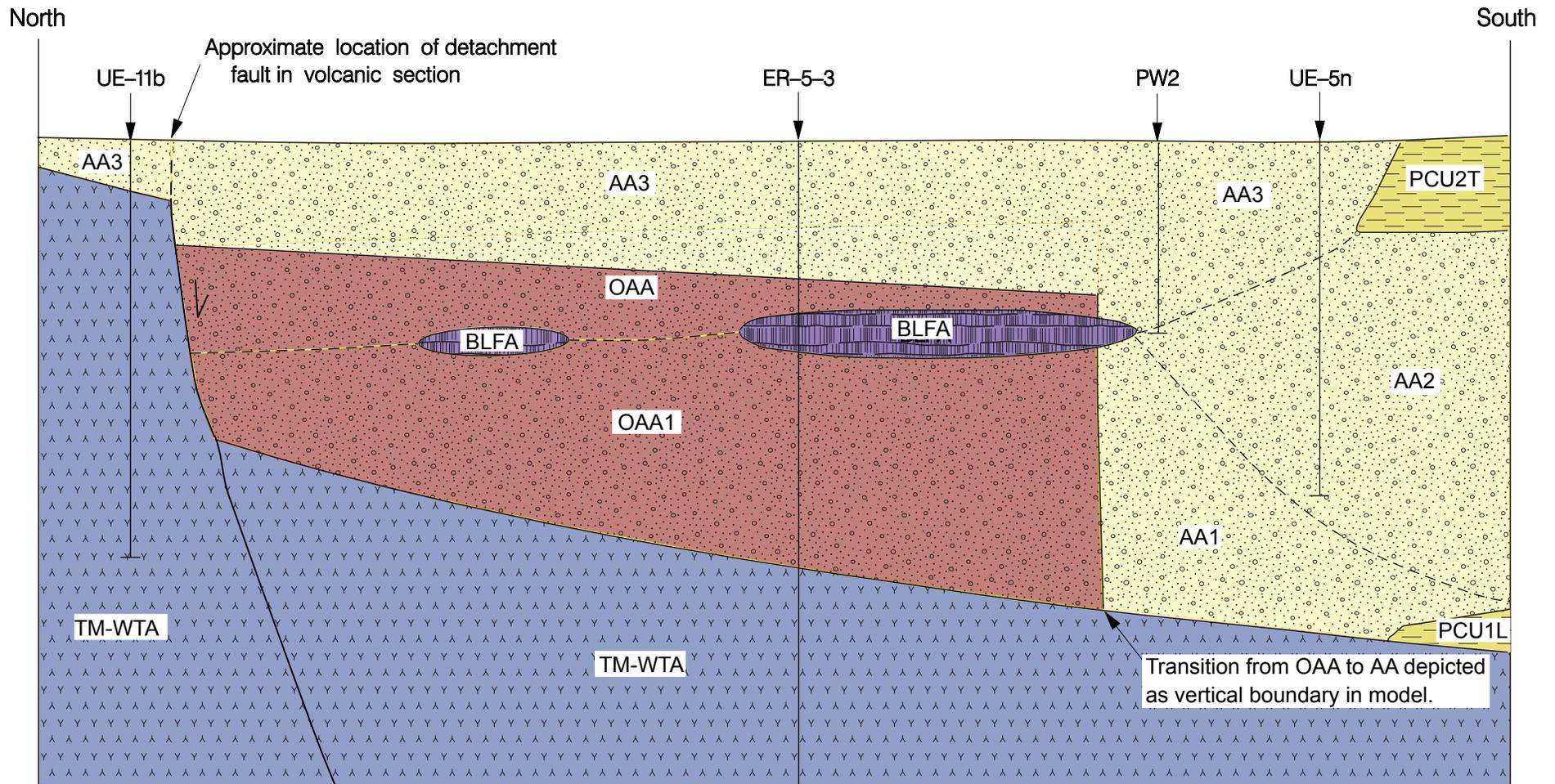


Figure 4-9
Perspective View Showing Extent of the Playa Confining Unit (PCU1L) and the Older Alluvial Aquifer (OAA1) Within the Frenchman Flat Model Area



Hydrogeologic Units

-  Alluvial aquifer
-  Lava flow aquifer
-  Playa confining unit
-  Welded tuff aquifer

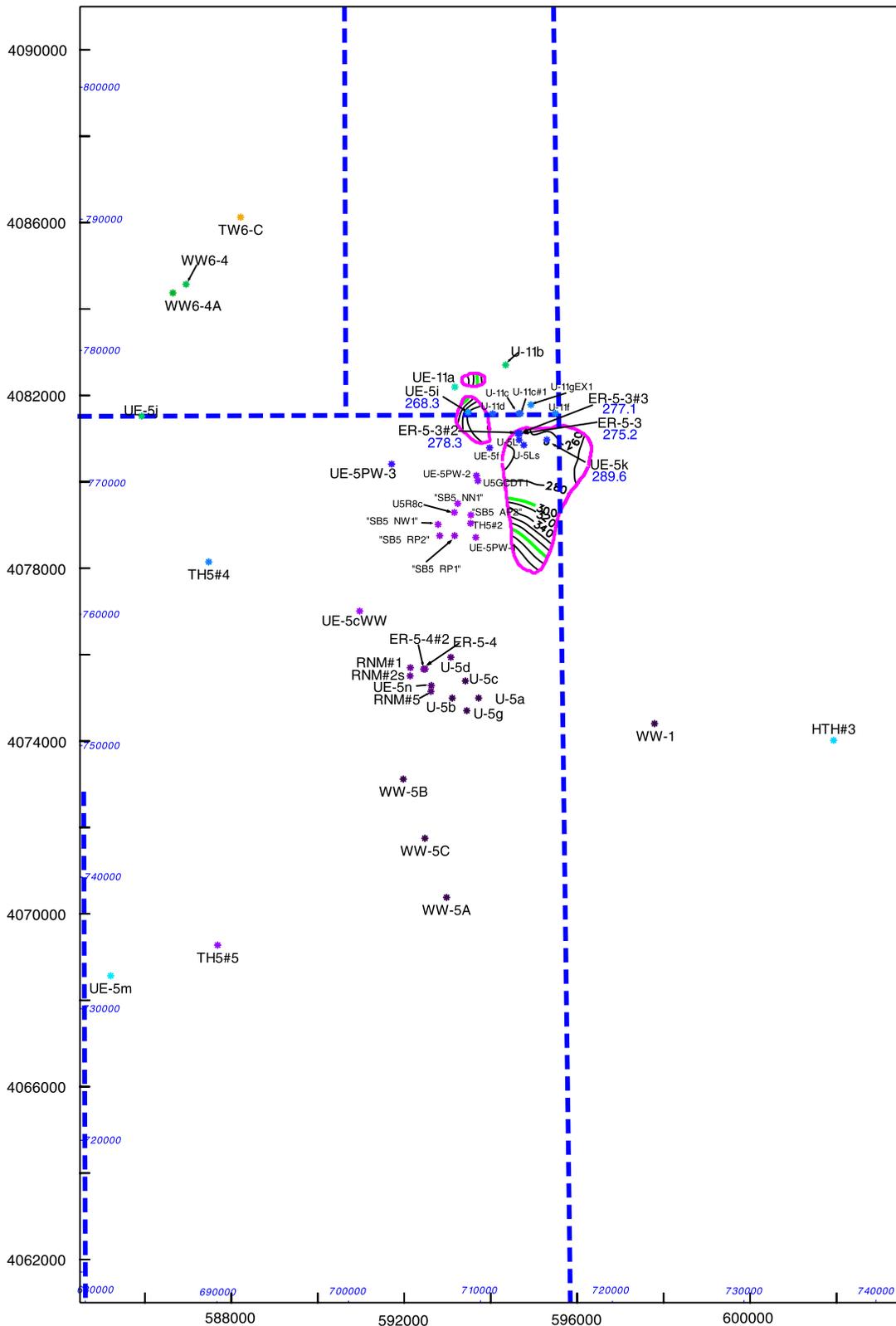
Hydrostratigraphic Units

- | | | | |
|-------|------------------------------|--------|-------------------------------------|
| AA3 | Alluvial aquifer 3 | BLFA | Basalt lava flow aquifer |
| AA2 | Alluvial aquifer 2 | OAA | Older altered alluvium |
| AA1 | Alluvial aquifer 1 | OAA1 | Older altered alluvium 1 |
| PCU2T | Playa confining unit 2T | TM-WTA | Timber Mountain welded tuff aquifer |
| PCU1L | Playa confining unit 1 lower | | |

Not to scale

-  Subdivision of the unit into subunits (e.g. AA1, AA2, AA3) is necessary due to software limitations, and does not represent differences in the properties of the unit.
-  Fault; arrow show sense of movement

Figure 4-10
Schematic North-South Hydrostratigraphic Cross Section Showing Relationships Among the Alluvial Aquifers and the Basalt Lava-Flow Aquifer in Northern Frenchman Flat.



depth2bfa.ps

ER-5-4
897.6

Well location
depth to HSU
below ground surface (m)

Major contours

Minor contours

Legend

0 0.5 1
KM

0 0.5 1
MILES

UTM Zone 11 NAD 27 meters
Nevada State Plane (2702) feet
Contour interval = 20 meters

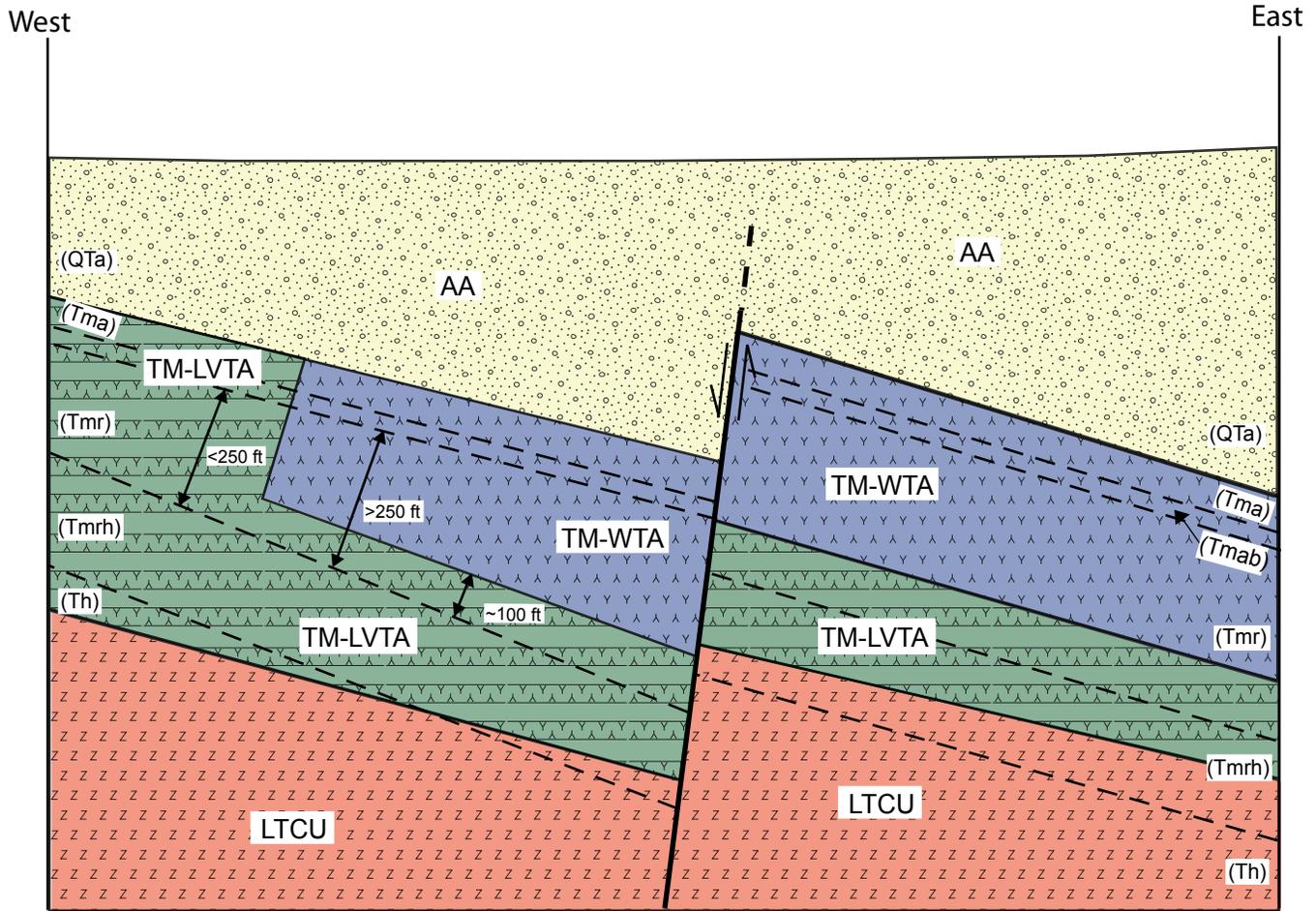
HSU extent

Outcrop boundary

NTS Area boundaries

NOTE. Depth is calculated from surface elevation but contours are shown only to 926 m elevation.

Figure 4-11
Depth to Top of Basalt Lava-Flow Aquifer (BLFA)



Not to scale

Hydrogeologic Units

-  Alluvial aquifer
-  Welded-tuff aquifer
-  Vitric-tuff aquifer
-  Tuff confining unit

 Fault; arrows showing sense of movement

 Stratigraphic contact

 Hydrostratigraphic contact

Hydrostratigraphic Units

- AA Alluvial aquifer
- TM-UVTA Timber Mountain upper vitric tuff aquifer
- TM-WTA Timber Mountain welded tuff aquifer
- TM-LVTA Timber Mountain lower vitric tuff aquifer
- LTCU Lower tuff confining unit

Stratigraphic Units

- (QTa) Alluvium
- (Tma) Ammonia Tanks Tuff
- (Tmab) Bedded Ammonia Tanks Tuff
- (Tmr) Rainier Mesa Tuff
- (Tmrh) Tuff of Holmes Road
- (Th) Calico Hills Formation

Figure 4-12
Schematic West-East Cross Section Across Northern Frenchman Flat Showing
Variability in Hydrogeologic Character of the Timber Mountain Hydrostratigraphic Units

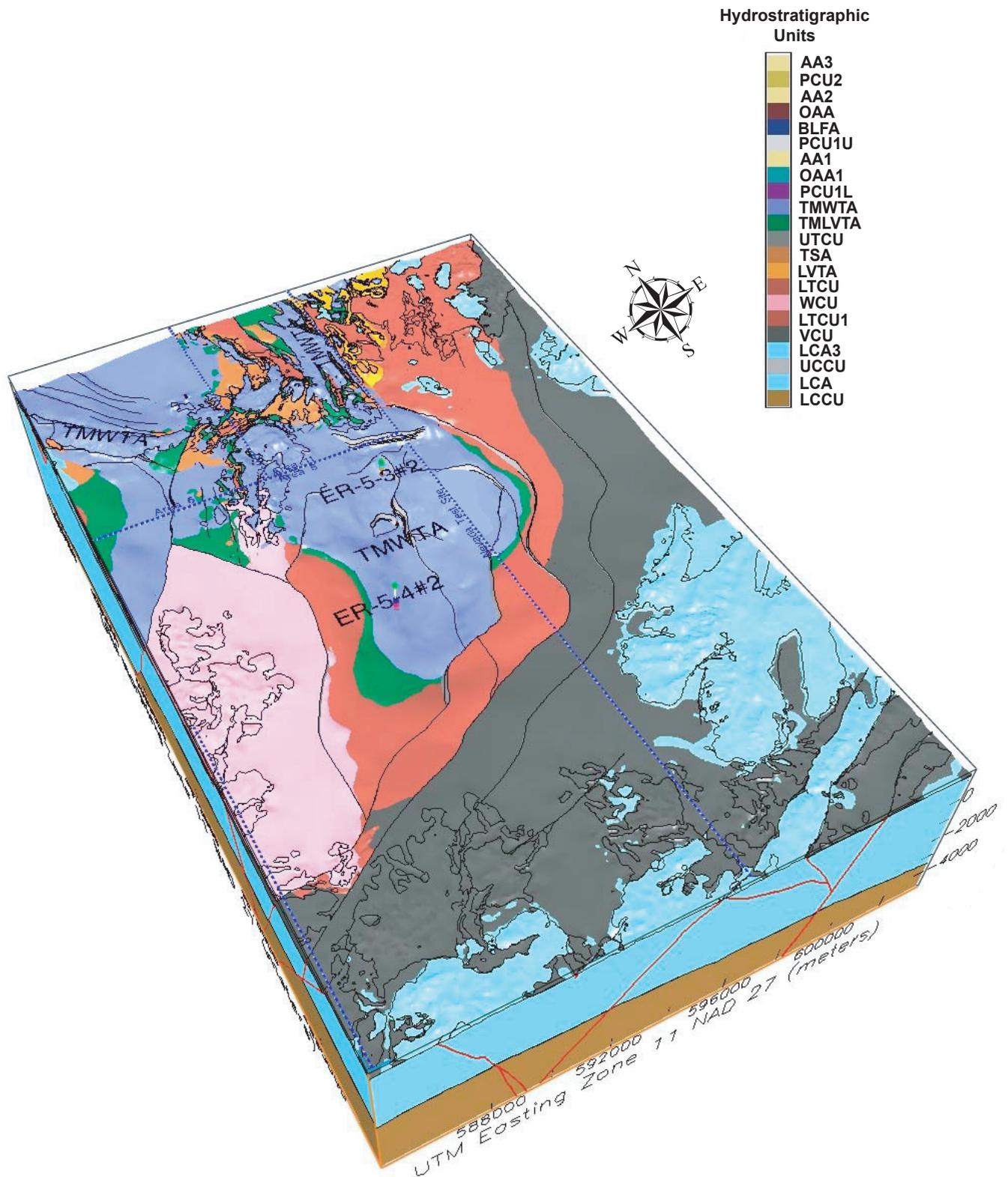
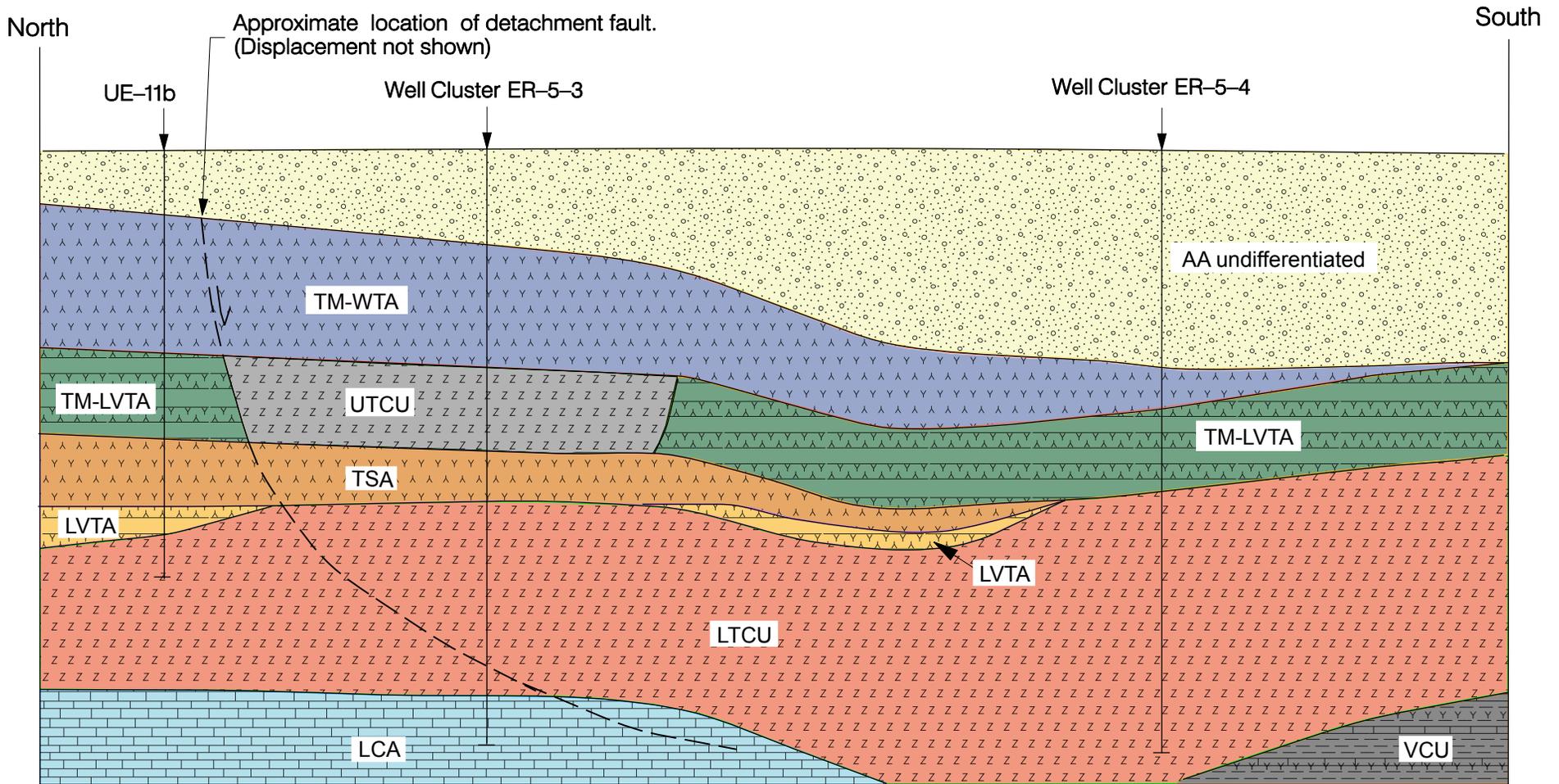


Figure 4-13
Block Model View Showing Extent of the Timber Mountain Welded-Tuff
Aquifer (TM-WTA) within the Frenchman Flat Model Area



Hydrogeologic Units

-  Alluvial aquifer
-  Welded tuff aquifer
-  Vitric tuff aquifer
-  Tuff confining unit
-  Volcaniclastic confining unit
-  Carbonate aquifer

Hydrogeologic Units

- AA Alluvial aquifer
- TM-WTA Timber Mountain welded tuff aquifer
- TM-LVTA Timber Mountain lower vitric tuff aquifer
- UTCU Upper tuff confining unit
- TSA Topopah Spring aquifer

- LVTA Lower vitric tuff aquifer
- LTCU Lower tuff confining unit
- VCU Volcaniclastic confining unit
- LCA Lower carbonate aquifer

Not to scale.

 Fault; arrow shows sense of movement

Figure 4-14
Schematic North-South Hydrostratigraphic Cross Section Showing Relationships
Among the Volcanic HSUs in Northern Frenchman Flat.

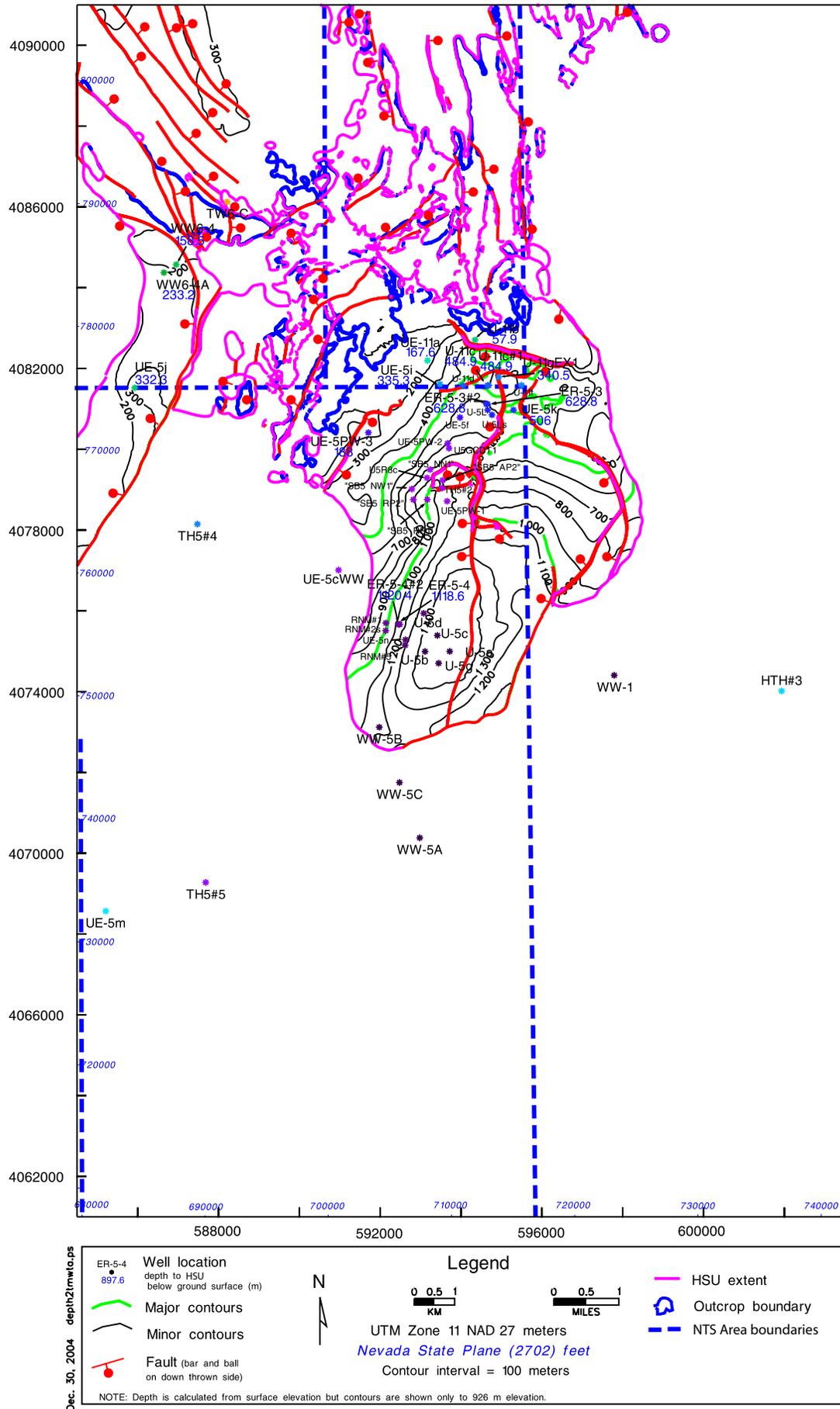


Figure 4-15
Depth to Top of Timber Mountain Welded-Tuff Aquifer (TM-WTA)

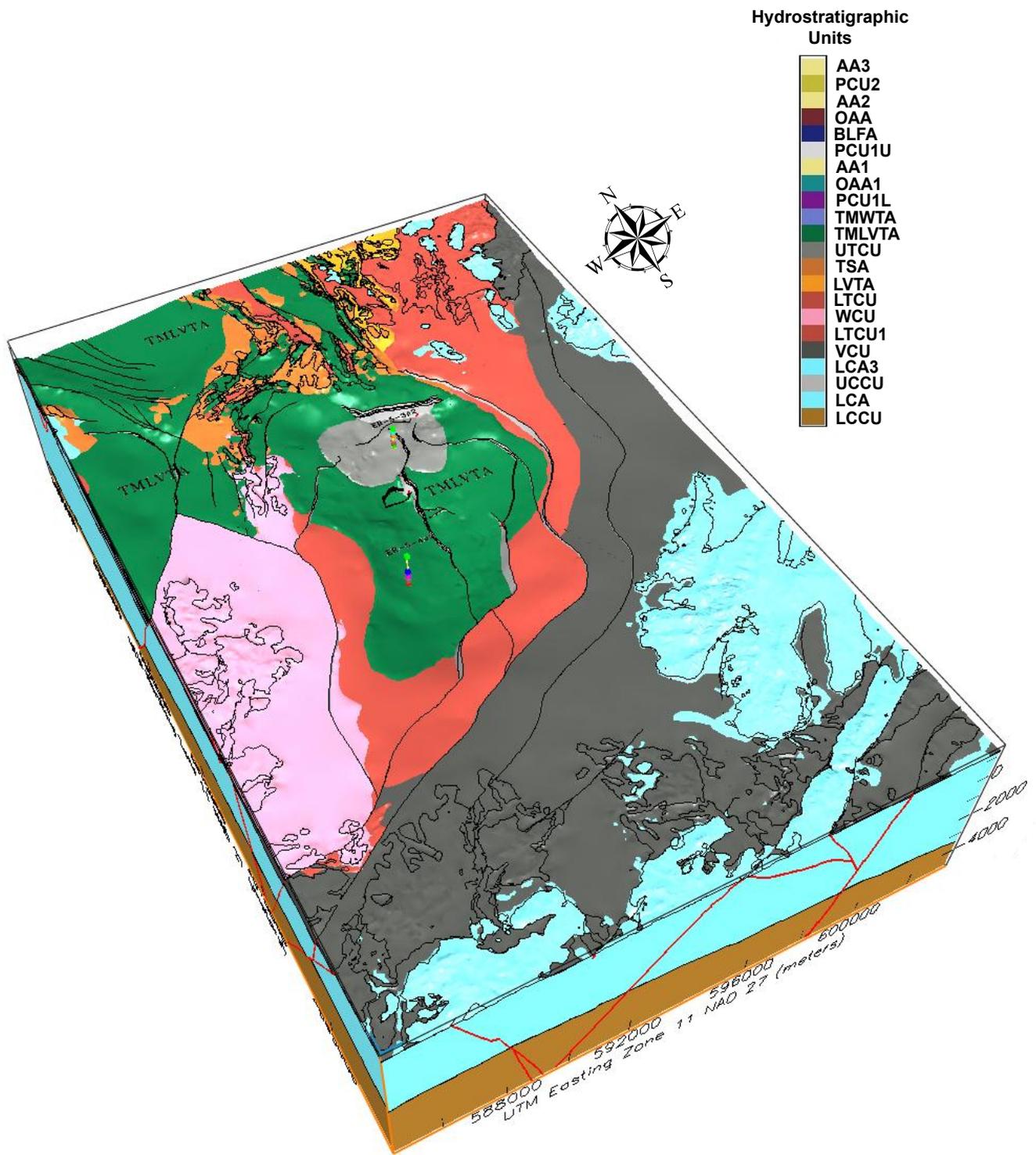
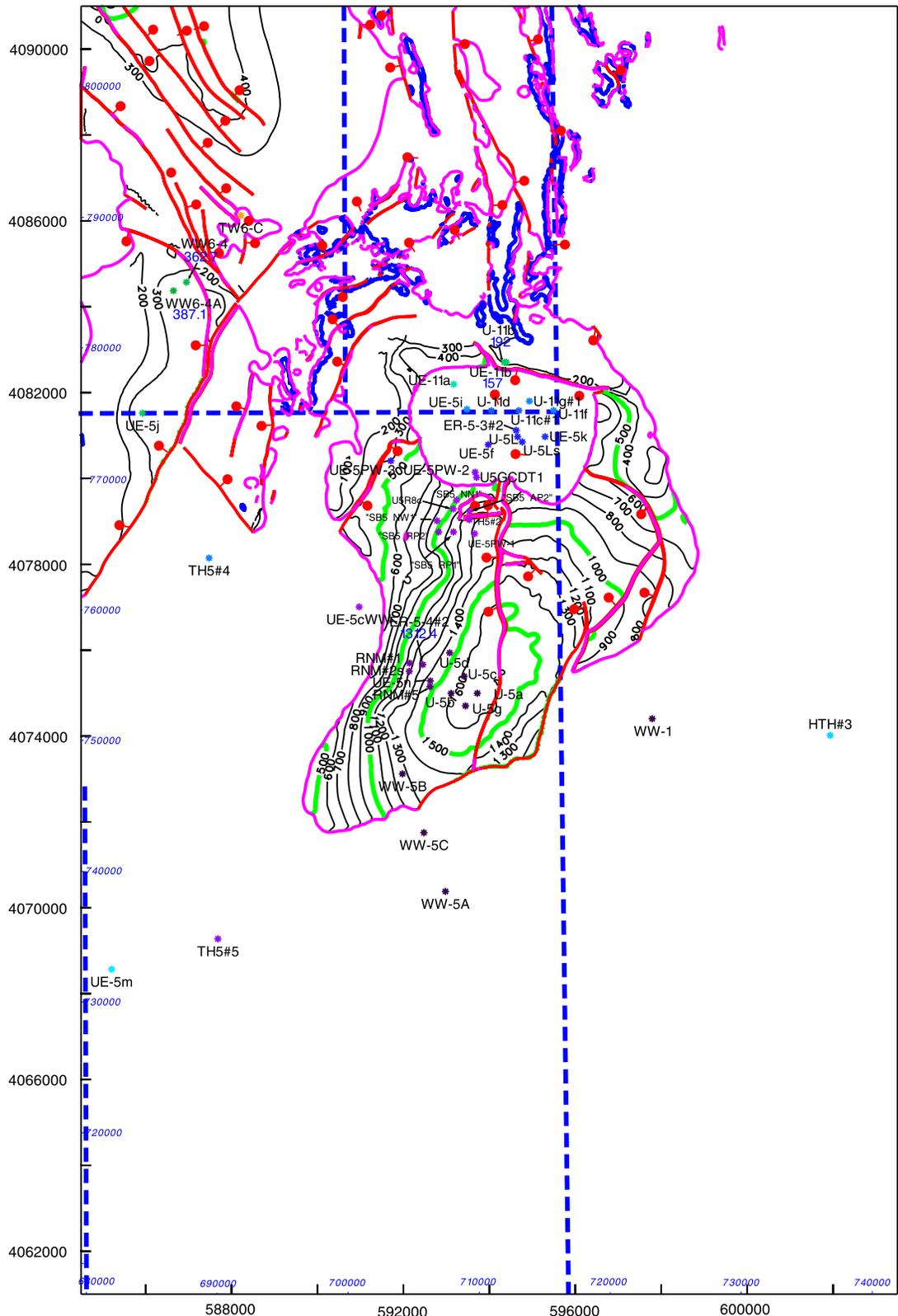


Figure 4-16
Block Model View Showing Extent of the Timber Mountain Lower Vitric-Tuff
Aquifer within the Frenchman Flat Model Area



Dec. 31, 2004 depth21m\mva.ps

ER-5-4 ● 897.6	Well location depth to HSU below ground surface (m)	N	Legend		— HSU extent
—	Major contours		0 0.5 1 KM	0 0.5 1 MILES	⬮ Outcrop boundary
—	Minor contours		UTM Zone 11 NAD 27 meters Nevada State Plane (2702) feet Contour interval = 100 meters		— NTS Area boundaries
—	Fault (bar and ball on down thrown side)		NOTE: Depth is calculated from surface elevation but contours are shown only to 926 m elevation.		

Figure 4-17
Depth to Top of Timber Mountain Lower Vitric-Tuff Aquifer (TM-LVTA)

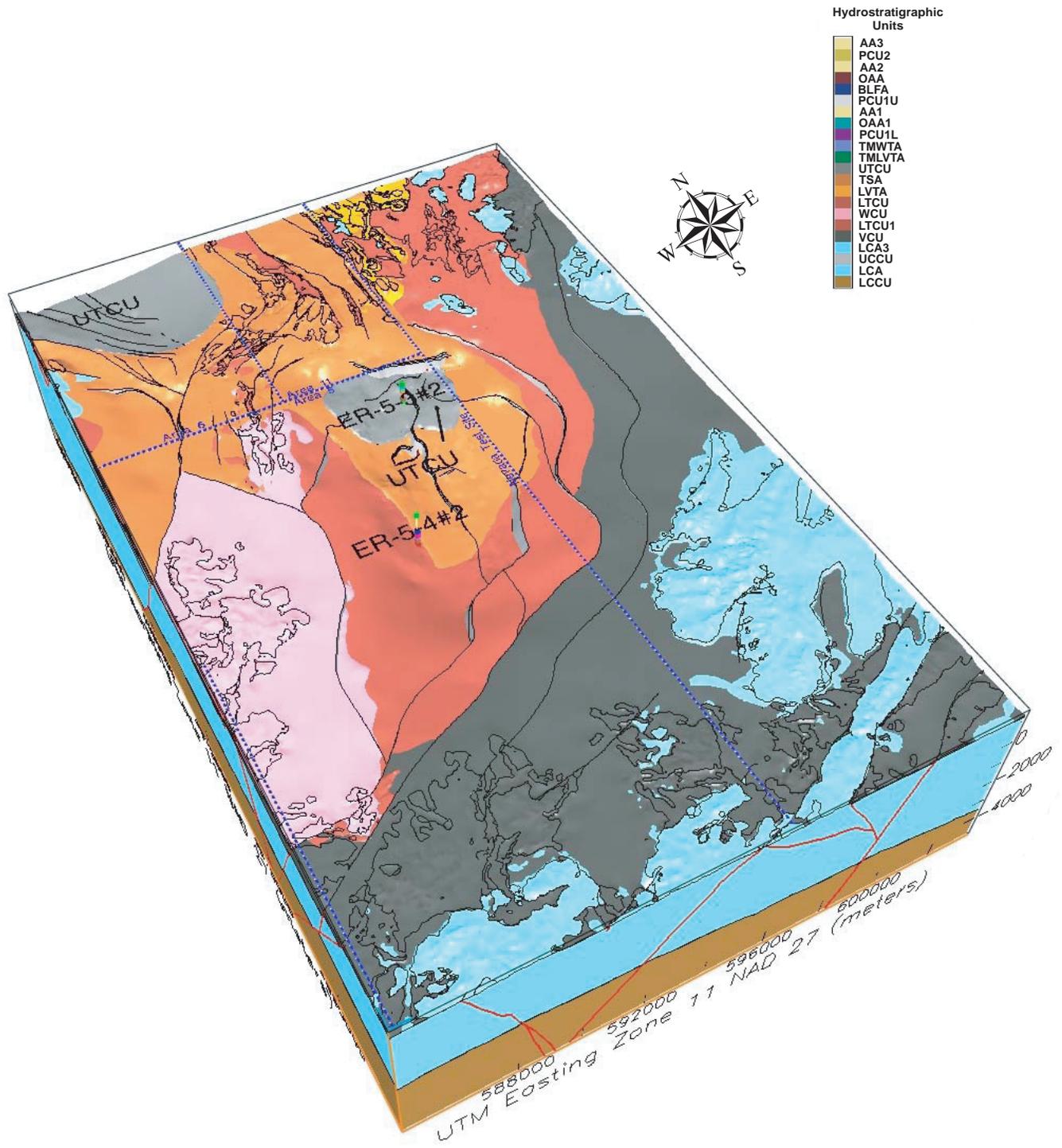


Figure 4-18
Block Model View Showing Extent of the Upper Tuff Confining Unit (UTCU)
within the Frenchman Flat Model Area

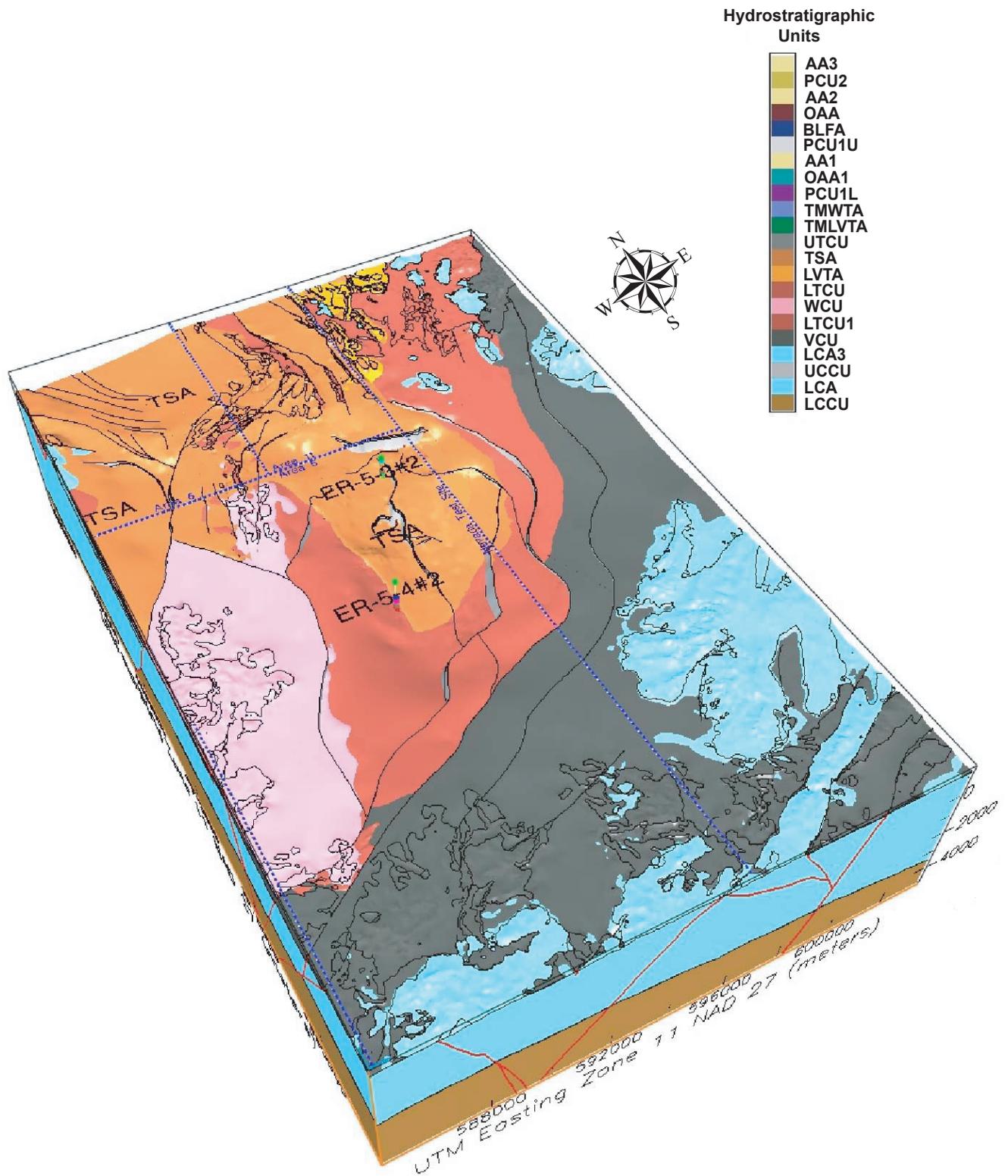


Figure 4-19
Block Model View Showing Extent of the Topopah Spring Aquifer (TSA)
within the Frenchman Flat Model Area