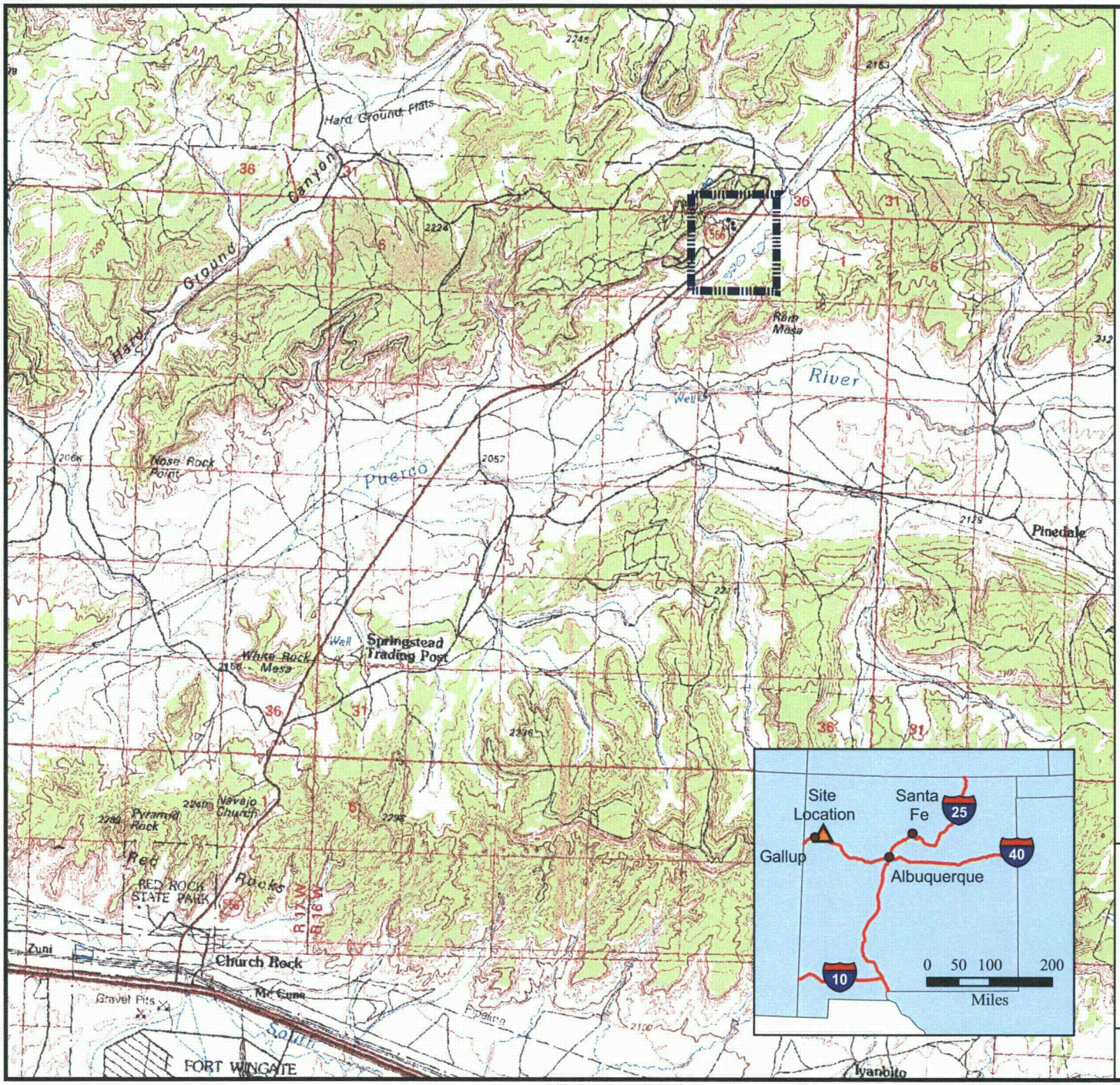
Figures



N

LEGEND

Approximate Site Location

NEW MEXICO INSET LEGEND

- Major City
- Church Rock Site Location
- Interstate Highway
- State Boundary

Notes:

1. Topographic basemap taken from the United States Geologic Survey 30x60 minute, 1:100,000 scale, Gallup, New Mexico Topographic Map, 1981.
2. Data for New Mexico Inset map taken from ESRI Data & Maps 2002 CD-ROM set.

1 0.5 0 1
Miles

FIGURE 1

Site Location Map

United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

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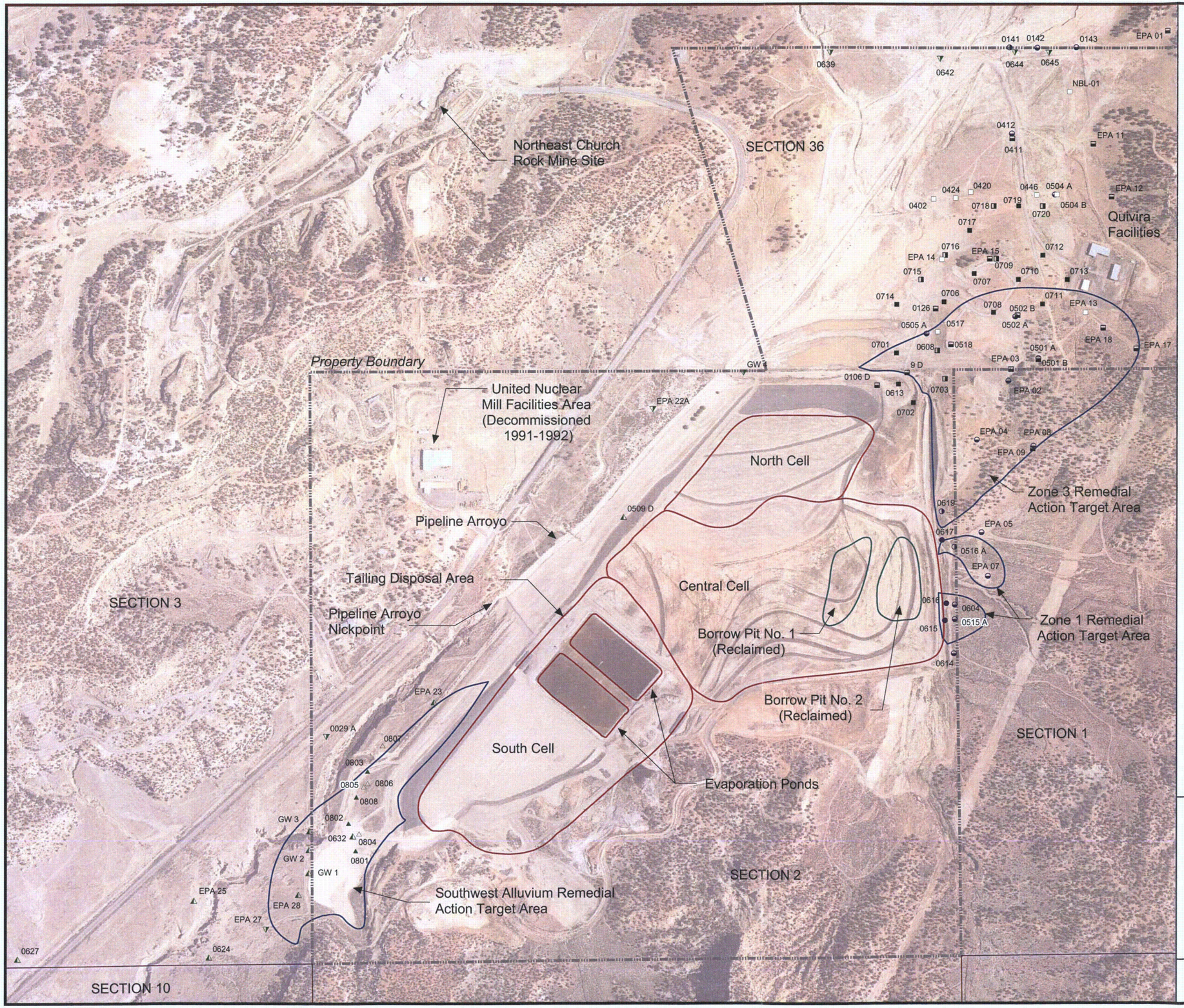
Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2008_annual_report\f01_site_location.mxd; January 13, 2009



Legend

Southwest Alluvium

- Idled Extraction Well
- Monitoring Well
- Water Level Monitoring Well
- Dry Monitoring Well

Zone 3

- Idled Extraction Well Used for Monitoring
- Decommissioned or Idle Extraction Well
- Monitoring Well
- Dry or Decommissioned Monitoring Well

Zone 1

- Decommissioned Extraction Well
- Decommissioned Monitoring Well
- Monitoring Well

0 400 800 1,600
Feet

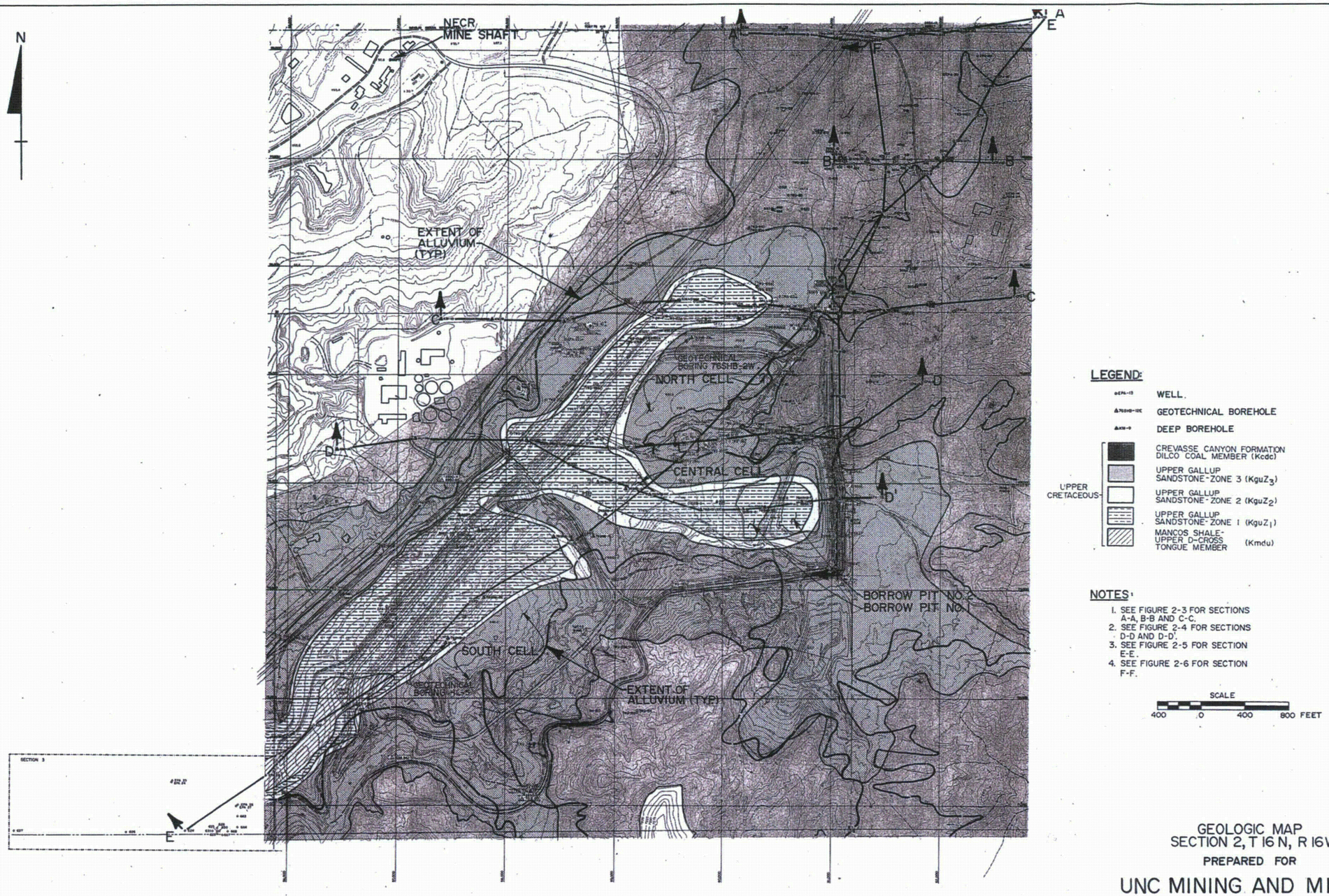
FIGURE 2

Site Layout and Performance Monitoring Well Locations 2010 Operating Year

United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

CHESTER ENGINEERS

Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2008_annual_report\f02_site_layout.mxd; January 13, 2009



GEOLOGIC MAP
SECTION 2, T 16 N, R 16W

PREPARED FOR

UNC MINING AND MILLING
GALLUP, NEW MEXICO

REV NO	ISSUE DATE	DRAWN BY	CHECKED BY	APPROVED BY
		DRAFTING		ENGINEERING

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SCALE

TITLE

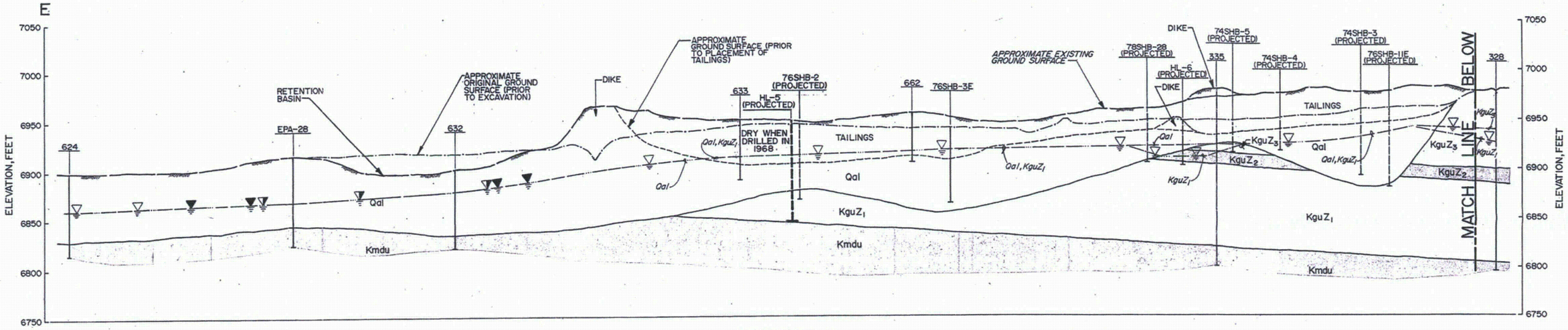
Geologic Map of the Site

From Canonie Environmental, May 1987, Geohydrologic Report, Figure 2-3

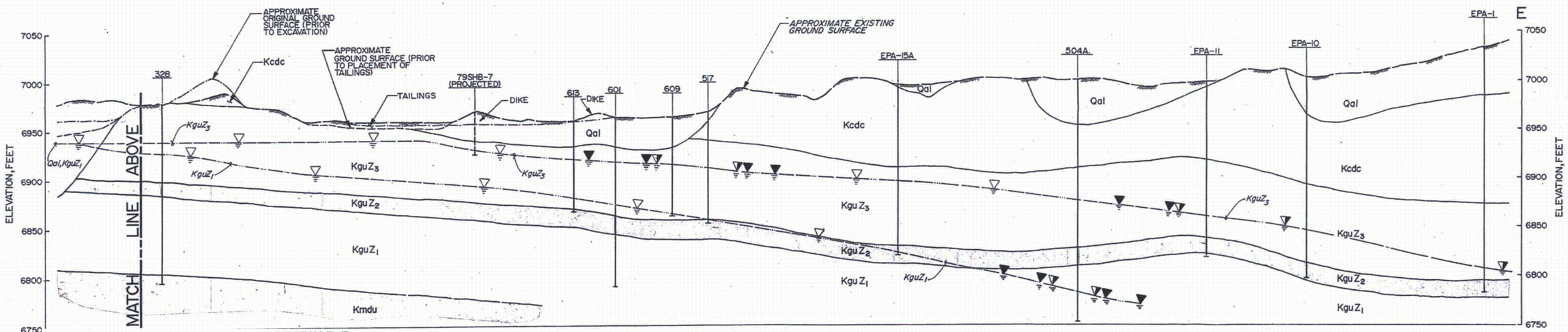
CONTRACT NO 56007747

DWG NO Figure 3

REV



SECTION E-E
(LOOKING NORTHWEST)



SECTION E-E
(LOOKING NORTHWEST)

SECTION E-E
(LOOKING NORTHWEST)

LEGEND:

QUATERNARY — Qal — ALLUVIUM

UPPER CRETACEOUS
- Kcdc — CREVASSE CANYON FORMATION DILCO COAL MEMBER
- KguZ3 — UPPER GALLUP SANDSTONE-ZONE 3
- KguZ2 — UPPER GALLUP SANDSTONE-ZONE 2
- KguZ1 — UPPER GALLUP SANDSTONE-ZONE 1
- Kmdu — MANCOS SHALE-UPPER D-CROSS TONGUE MEMBER

643A — BOREHOLE, FOR EXACT ELEVATION AND DEPTH REFER TO APPENDIX A.

MEASURED WATER LEVEL, MAY 1986

INFERRED WATER LEVEL, MAY 1986

ESTIMATED WATER LEVEL FROM CONTOURS SHOWN ON FIGURES 3-1, 3-2 AND 3-3.

VERTICAL SCALE: 50 0 50 100 FEET

HORIZONTAL SCALE: 200 0 200 400 FEET

VERTICAL EXAGGERATION = 4X

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State College, PA 16801

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SCALE

TITLE

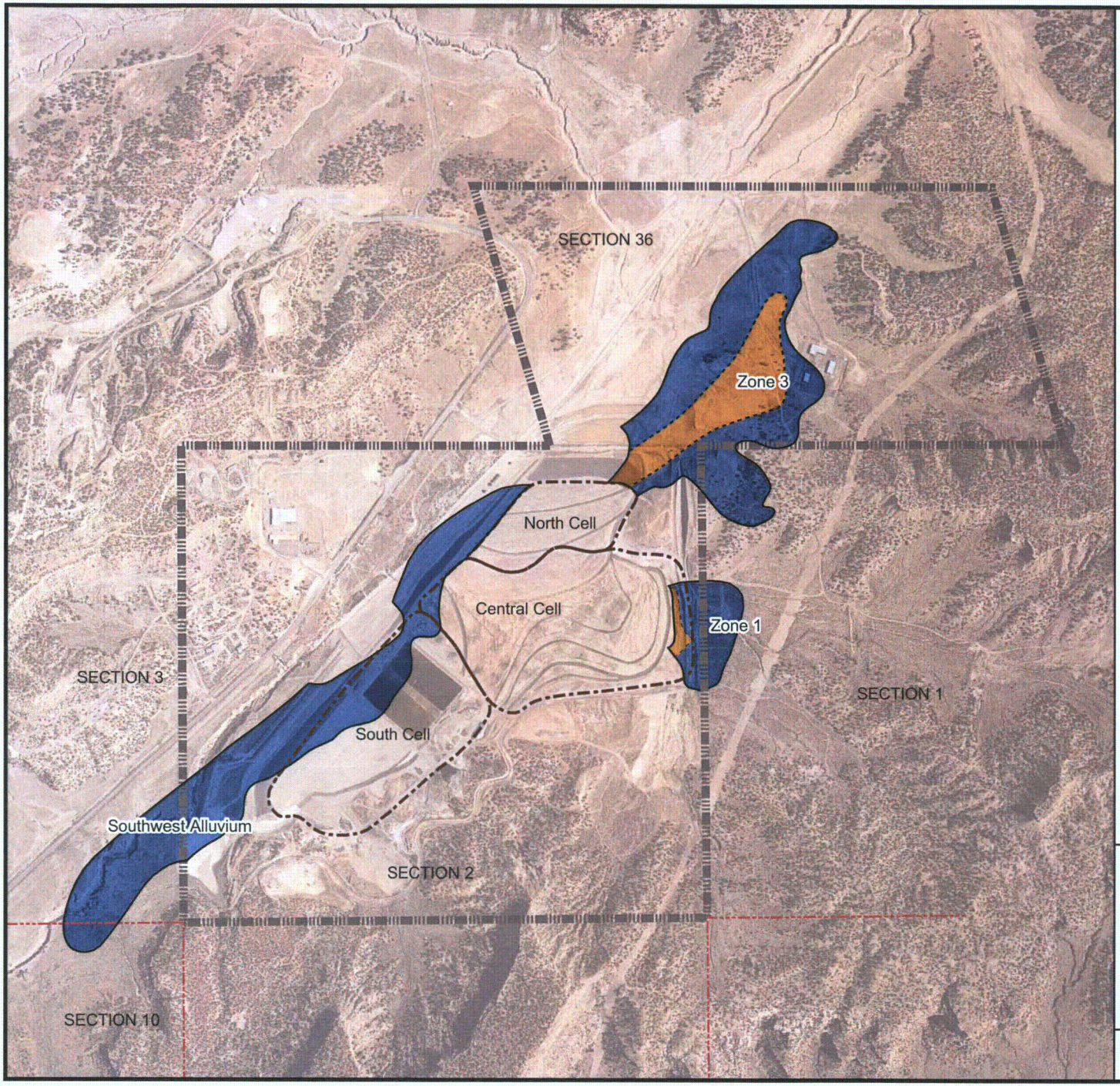
Geologic Cross-Section along a Northeast-Southwest Line

From Canonie Environmental, May 1987, Geohydrologic Report, Figure 2-6

CONTRACT NO. 56007747

DWG NO. Figure 4

REV



N

LEGEND

- Section Boundary
- Property Boundary
- Tailings Pond
- Groundwater with pH <= 4
- Seepage-Impacted Groundwater

Aerial photo taken on August 1, 1996.

0 750 1,500 3,000
Feet

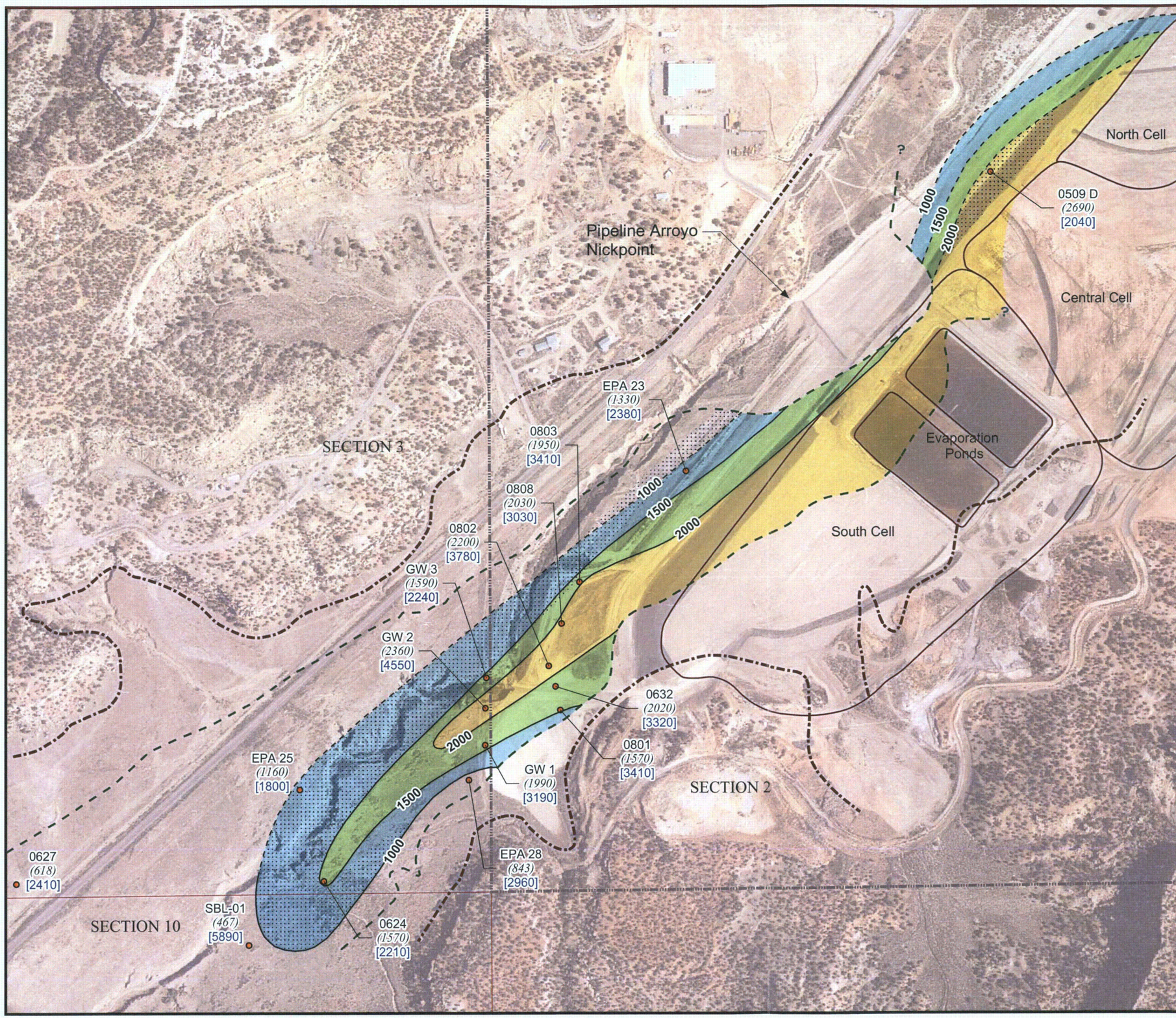
FIGURE 5

Extent of Seepage-Impacted Groundwater, October 2010

United Nuclear Corporation Church Rock Site
Church Rock, New Mexico

CHESTER ENGINEERS

Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2010_annual_report\f06_seepage_extents.mxd; January 7, 2010



Legend

- Southwest Alluvium Well
- Approximate Extent of Saturated Alluvium
- Approximate Extent of Alluvium
- Bicarbonate Isoconcentration Contour in mg/L
- Inferred Bicarbonate Isoconcentration Contour in mg/L

Bicarbonate Concentrations (mg/L)

- 1000 - 1500
- 1500 - 2000
- >2000
- Property Boundary
- Section Boundary
- Tailings Pond
- Sulfate Below 2125 mg/L
- *(2350)* Bicarbonate result in mg/L
- [3580] Sulfate result in mg/L

Notes:

1. Well names are displayed with black text.
2. Aerial photo taken on August 1, 1996.

0 250 500 1,000
Feet

FIGURE 6

Southwest Alluvium Bicarbonate Isoconcentration Map and Distribution of Sulfate Below 2125 mg/L, October 2010

United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

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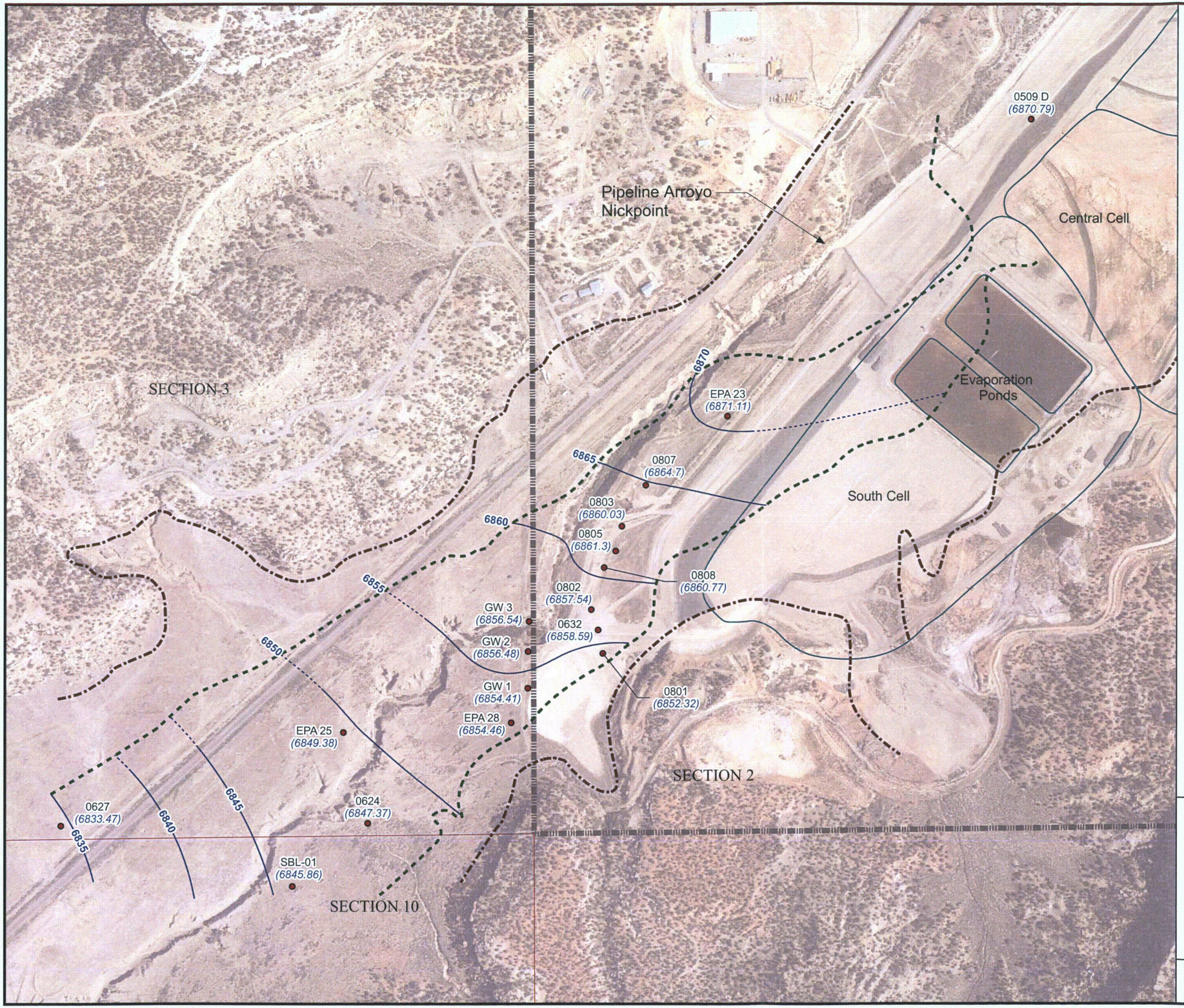
Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2010_annual_report\f08_swa_sulfate.mxd; January 4, 2011



N

Legend

- Southwest Alluvium Monitoring Well
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- Approximate Extent of Alluvium
- Approximate Extent of Saturated Alluvium
- Property Boundary
- Section Boundary
- Cell Boundary

Notes:

1. Groundwater elevation values are displayed in feet above mean sea level.
2. Well names are displayed with black text.
3. Groundwater elevations are shown with blue text and enclosed in parentheses.
4. Aerial photo taken on August 1, 1996.

0 250 500 1,000
Feet

FIGURE 7

Southwest Alluvium
Potentiometric Surface Map
October 2010

United Nuclear Corporation Church Rock Site,
Church Rock, New Mexico

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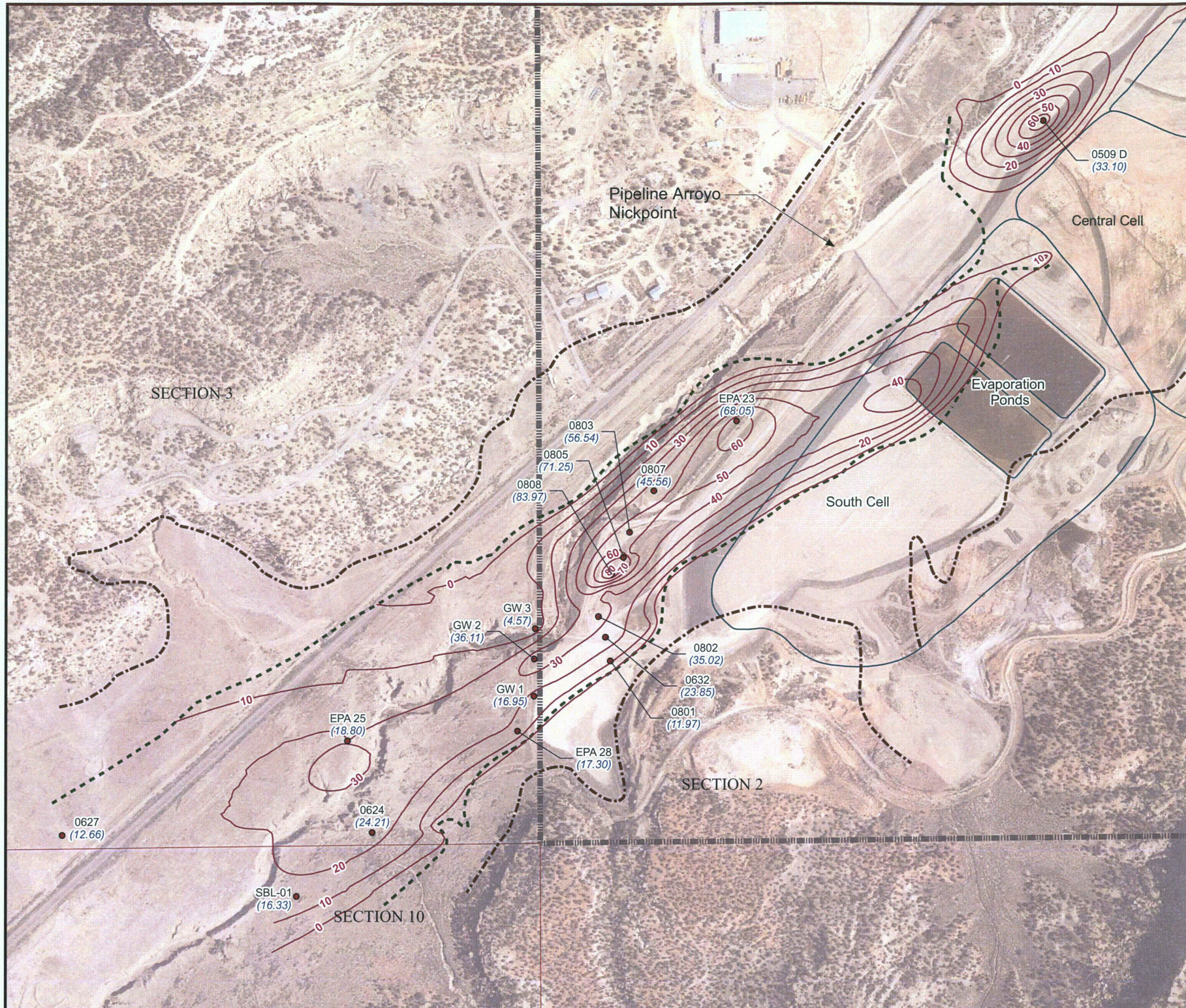
Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2010_annual_report\f03_swa_piezo.mxd; January 3, 2011



N

Legend

- Southwest Alluvium Monitoring Well
- Approximate Extent of Alluvium
- Approximate Extent of Saturated Alluvium
- Property Boundary
- Section Boundary
- Cell Boundary
- Saturated Thickness Contours (feet)

Notes:

1. Well names are displayed with black text.
2. Saturated thicknesses (feet) are shown with blue text and enclosed in parentheses.
3. Aerial photo taken on August 1, 1996.
4. The posted value of saturated thickness at well 0509 D derives from reference to the screen bottom. The alluvium extends as much as 38 feet below this depth in the vicinity of this well.

0 250 500 1,000
Feet

FIGURE 8

Southwest Alluvium
Saturated Thickness Map
October 2010

United Nuclear Corporation Church Rock Site,
Church Rock, New Mexico

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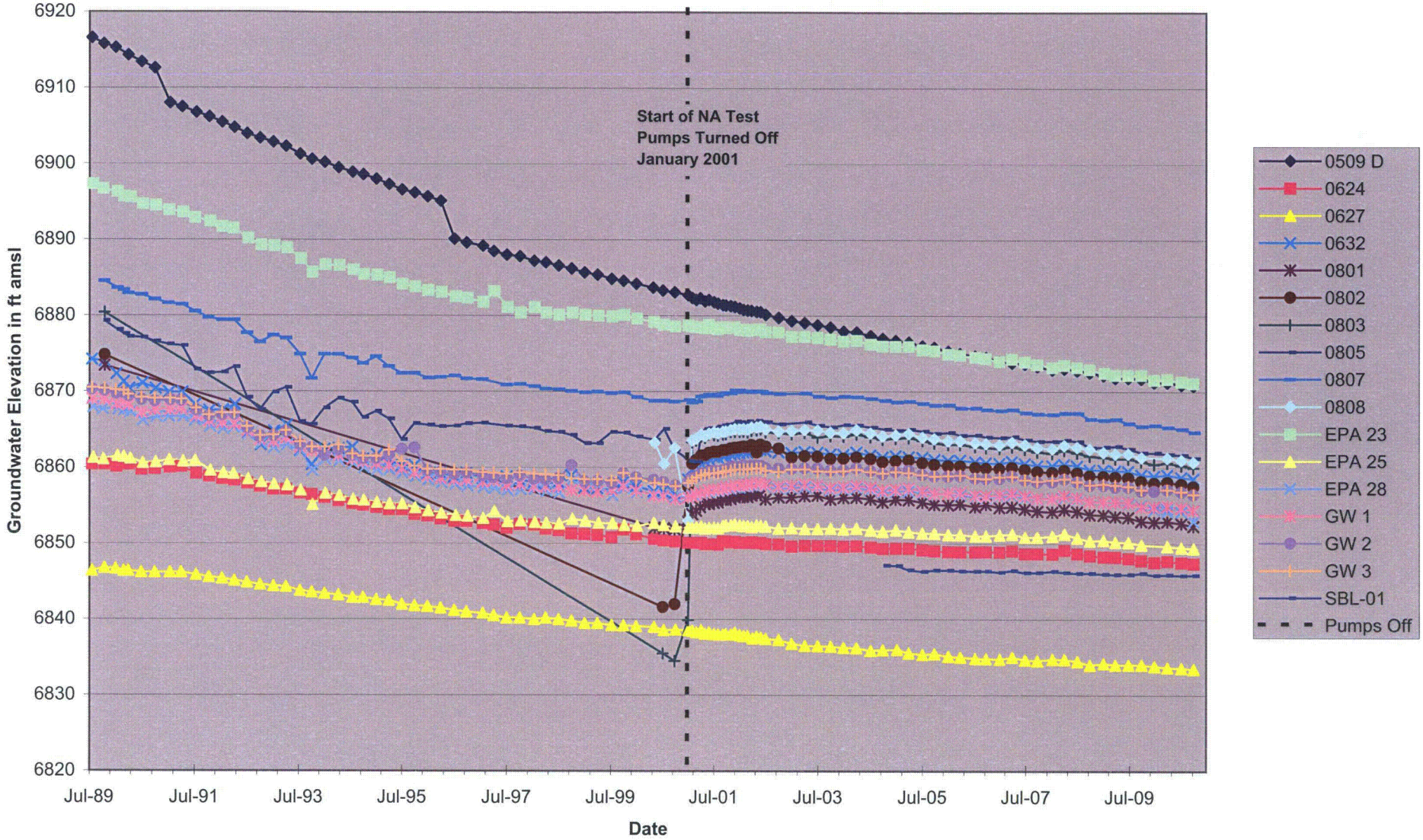
Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2010_annual_report\f03b_swa_sat_thick.mxd; January 3, 2011

FIGURE 9

Southwest Alluvium Water Levels Over Time

United Nuclear Corporation, Church Rock Site, Church Rock New Mexico



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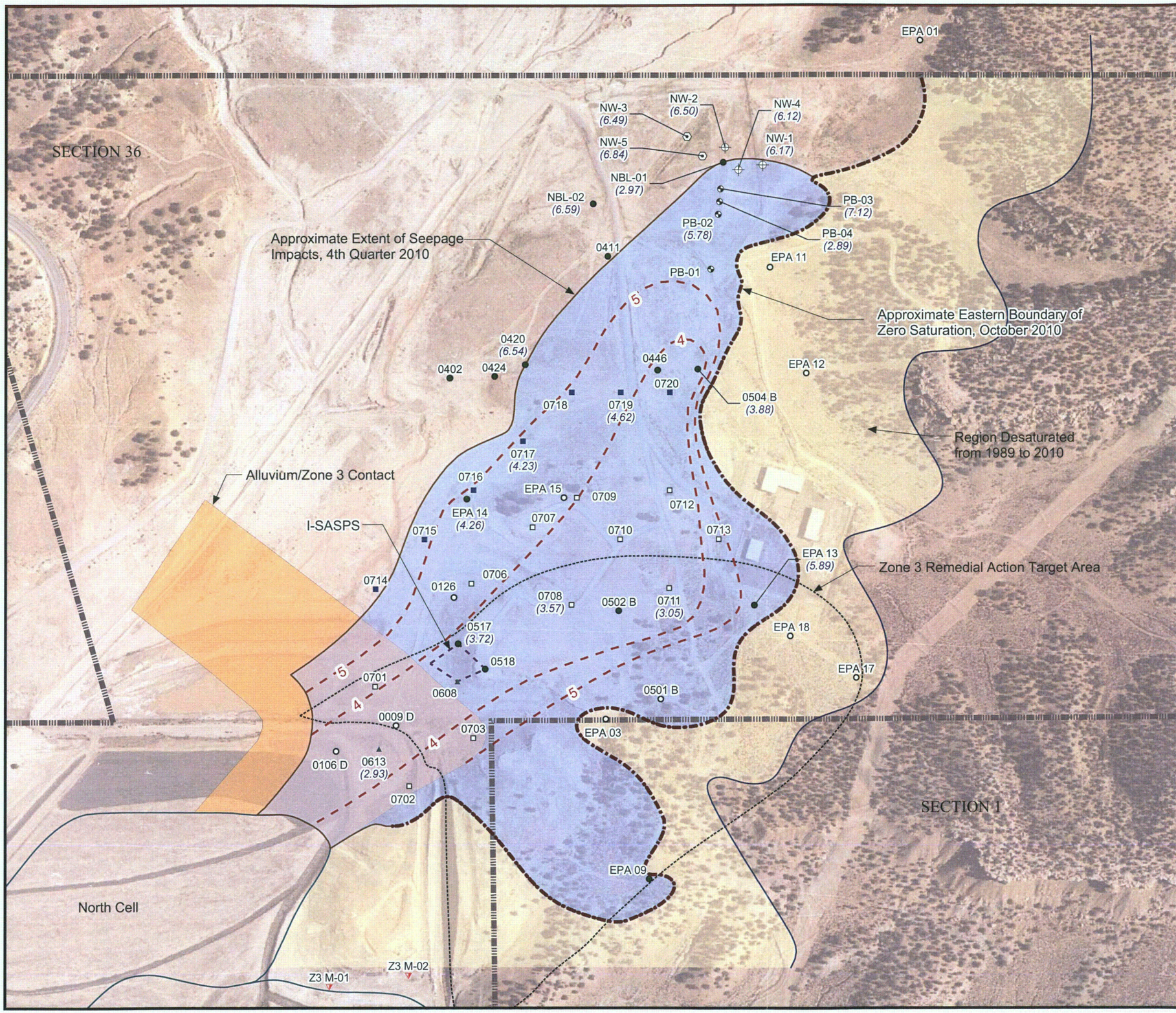

Legend

- Property Boundary
- Zone 3 Target Remedial Action Area
- Section Boundary
- Cell Boundary
- Approximate Area Impacted by Tailings Seepage

Well Type

- Monitoring
- Northernmost Pumping Wells
- Northernmost Pumping Wells (Off)
- Dry Monitoring
- Stage I Extraction
- Stage II Extraction
- Plume Boundary
- Northeast Pump-Back
- Piezometer
- Approximate Eastern Boundary of Zero Saturation
- pH contour
- I-SASPS

Notes:

1. Well names are displayed with black text.
2. Values for field measured pH are shown with purple text and enclosed in parentheses.
3. Aerial photo taken on August 1, 1996.
4. I-SASPS is defined as "In-Situ Alkalinity Stabilization Pilot Study, 2006-2007."

0 200 400 800
Feet

FIGURE 10

Zone 3 Approximate Extent of Seepage Impacts, October 2010

United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

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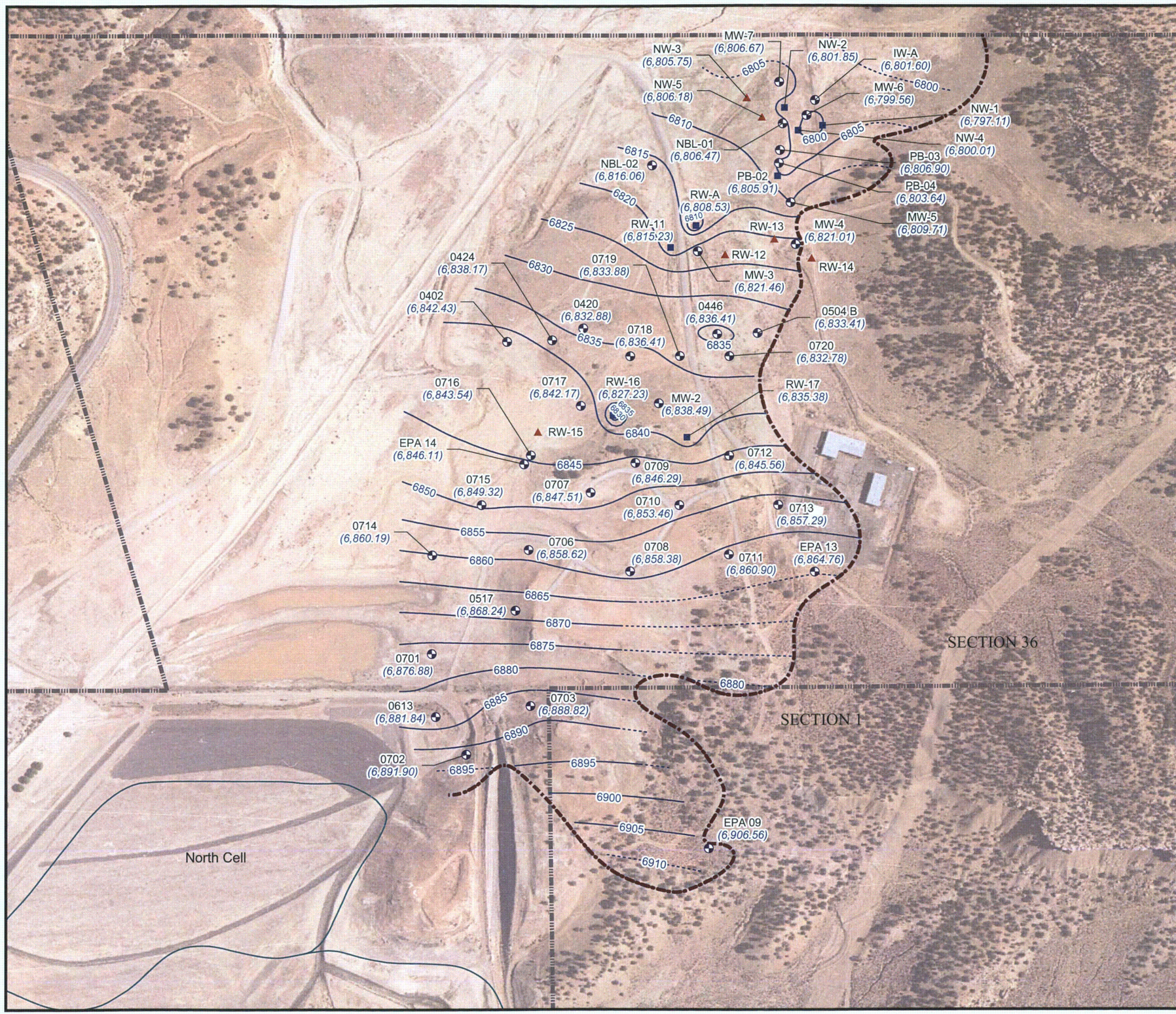
Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2011\f10_z3_seepage_ISASPS.mxd; April 19, 2011



Legend

- Monitoring Well
- Non-Pumping Well
- Pumping Well
- Cell Boundary
- Property Boundary
- Approximate Eastern Boundary of Zero Saturation
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- *(6906.46)* Measured Groundwater Elevation

Notes:

1. Groundwater elevation values are displayed in feet above mean sea level.
2. Well names are displayed with black text.
3. Aerial photo taken on August 1, 1996.

0 200 400 800
Feet

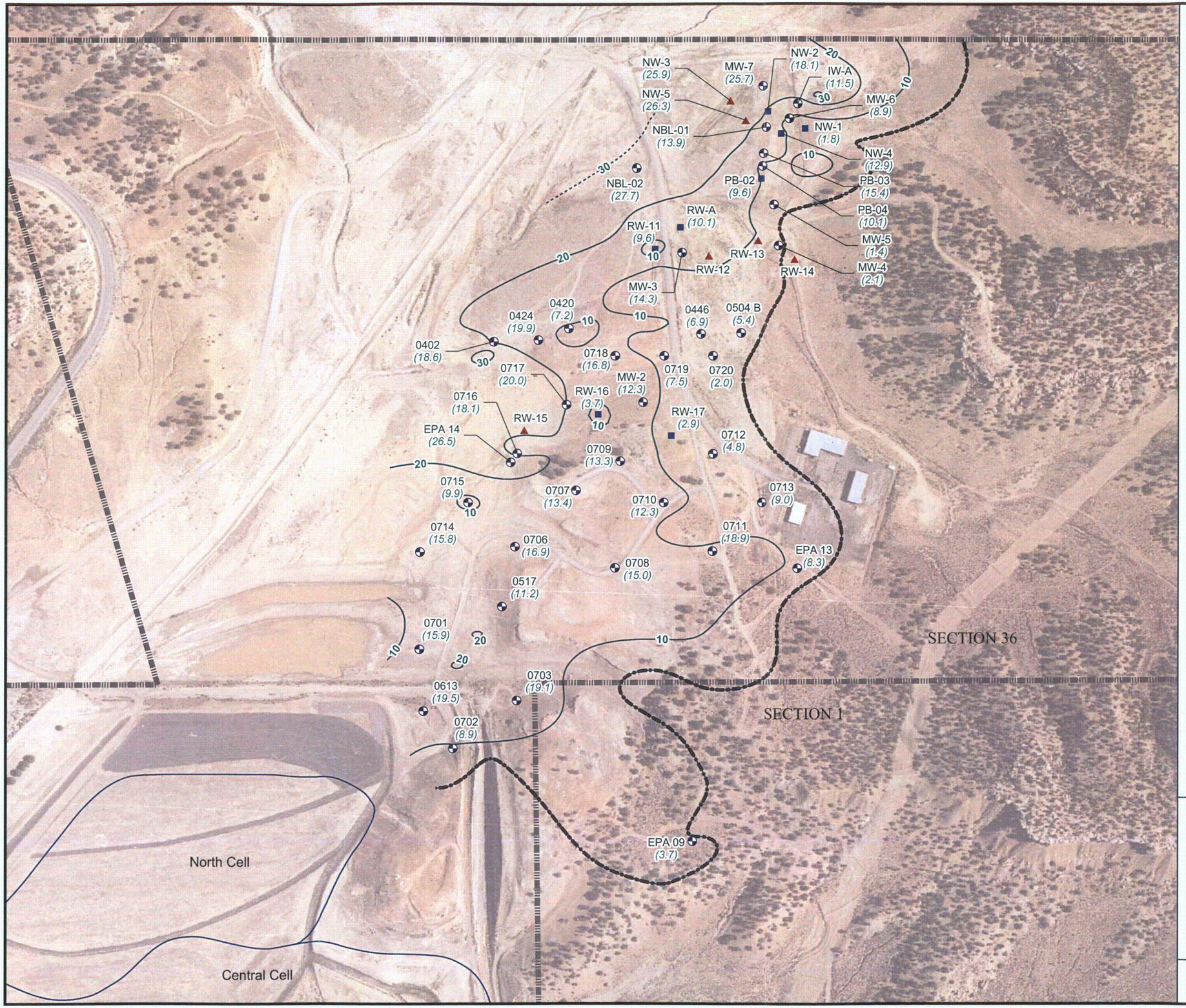
FIGURE 11

Zone 3 Potentiometric Surface Map
October 2010

United Nuclear Corporation Church Rock Site,
Church Rock, New Mexico

CHESTER ENGINEERS

Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2010_annual_report\f37_z3_piezo.mxd; January 4, 2011



N

Legend

- Monitoring Well
- Non-Pumping Well
- Pumping Well
- Saturated Thickness Contour
- Inferred Saturated Thickness Contour
- Approximate Eastern Boundary of Zero Saturation
- Cell Boundary
- Property Boundary
- (3.6) Measured Saturated Thickness

Notes:

1. Saturated thickness values shown in feet.
2. Well names are displayed with black text.
3. Aerial photo taken on August 1, 1996.

0 200 400 800
Feet

FIGURE 12

Zone 3 Saturated Thickness Map
October 2010

United Nuclear Corporation Church Rock Site,
Church Rock, New Mexico

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Z:\databases\6209_GE_CR\GISDATA\arcmap_doc\2010_annual_report\f38_z3_sat_thick.mxd; January 4, 2011