

United Nuclear Corporation Superfund Site

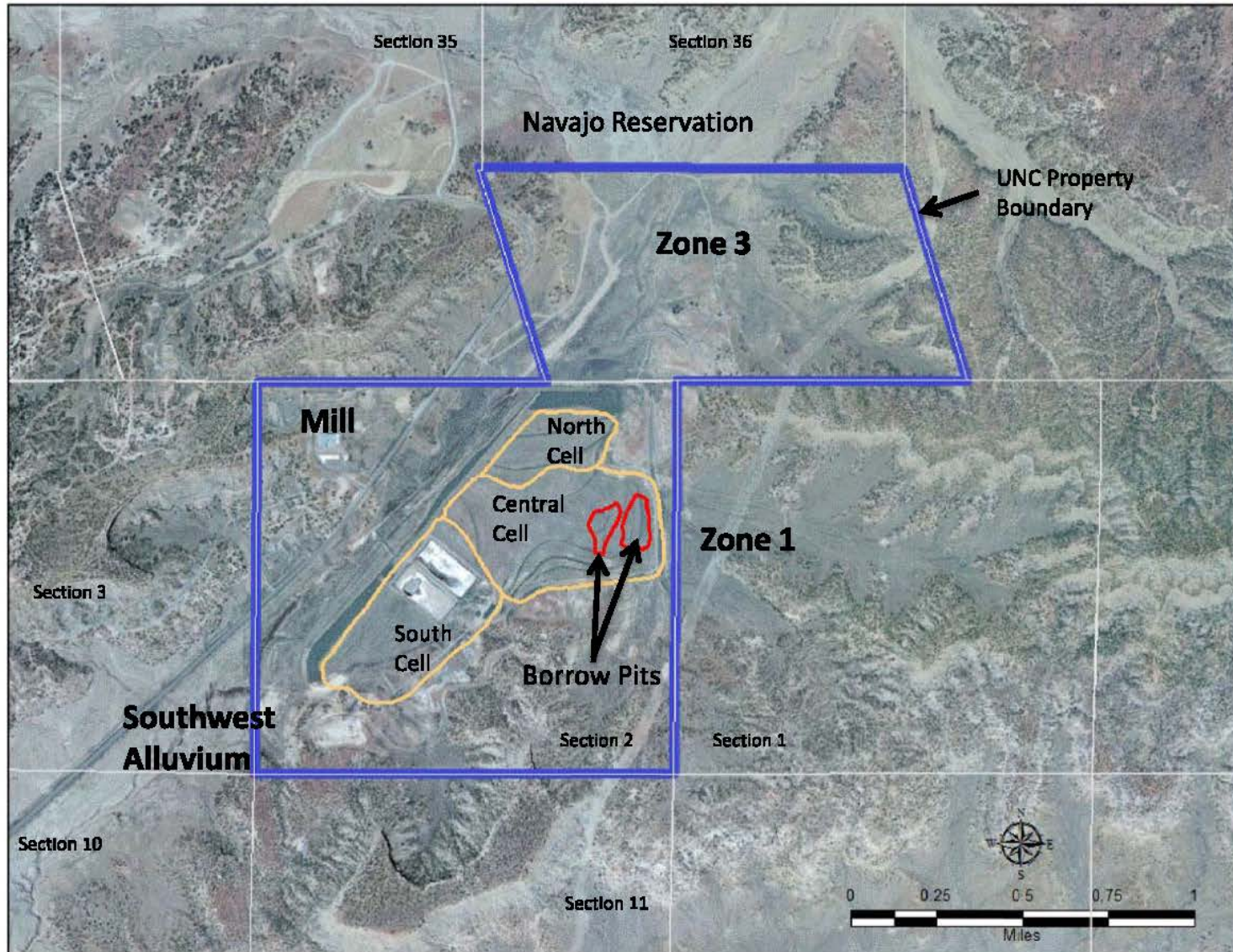
Ground Water Education Session
December 12, 2013

Janet Brooks – EPA Region 6
Earle Dixon – New Mexico Environment Department

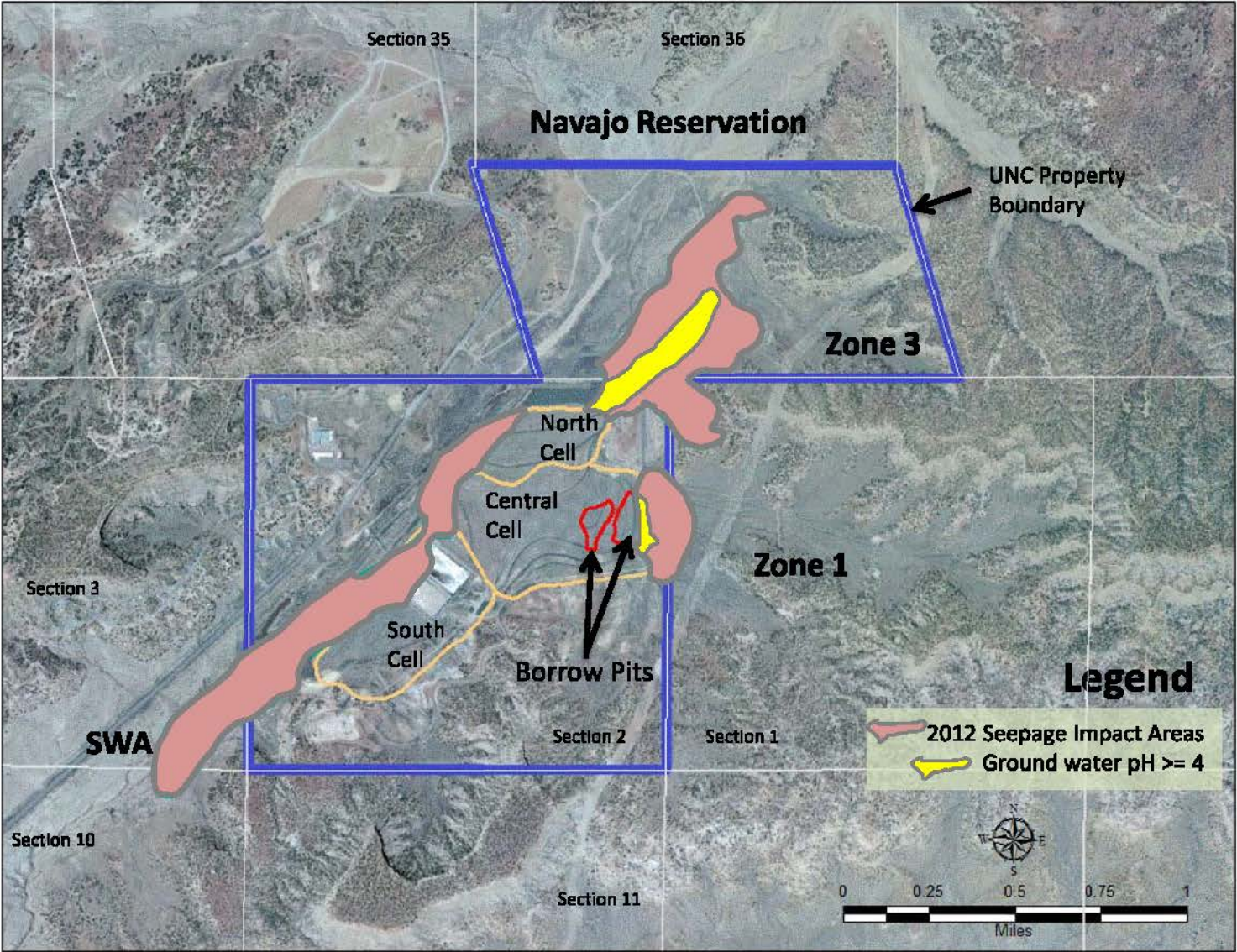


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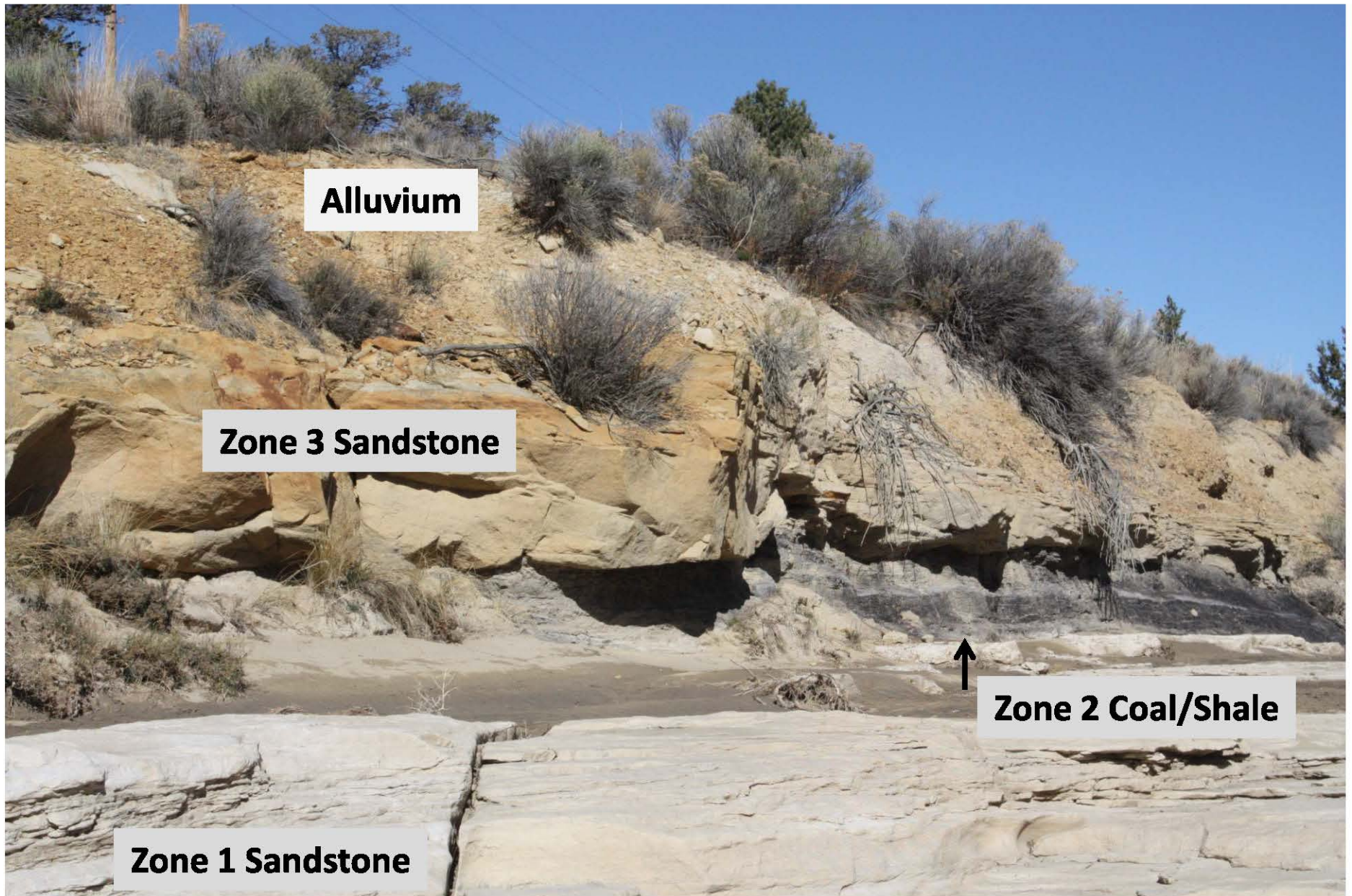
UNC Mill Site



2012 UNC Impacts to Ground Water



UNC Soil and Rocks



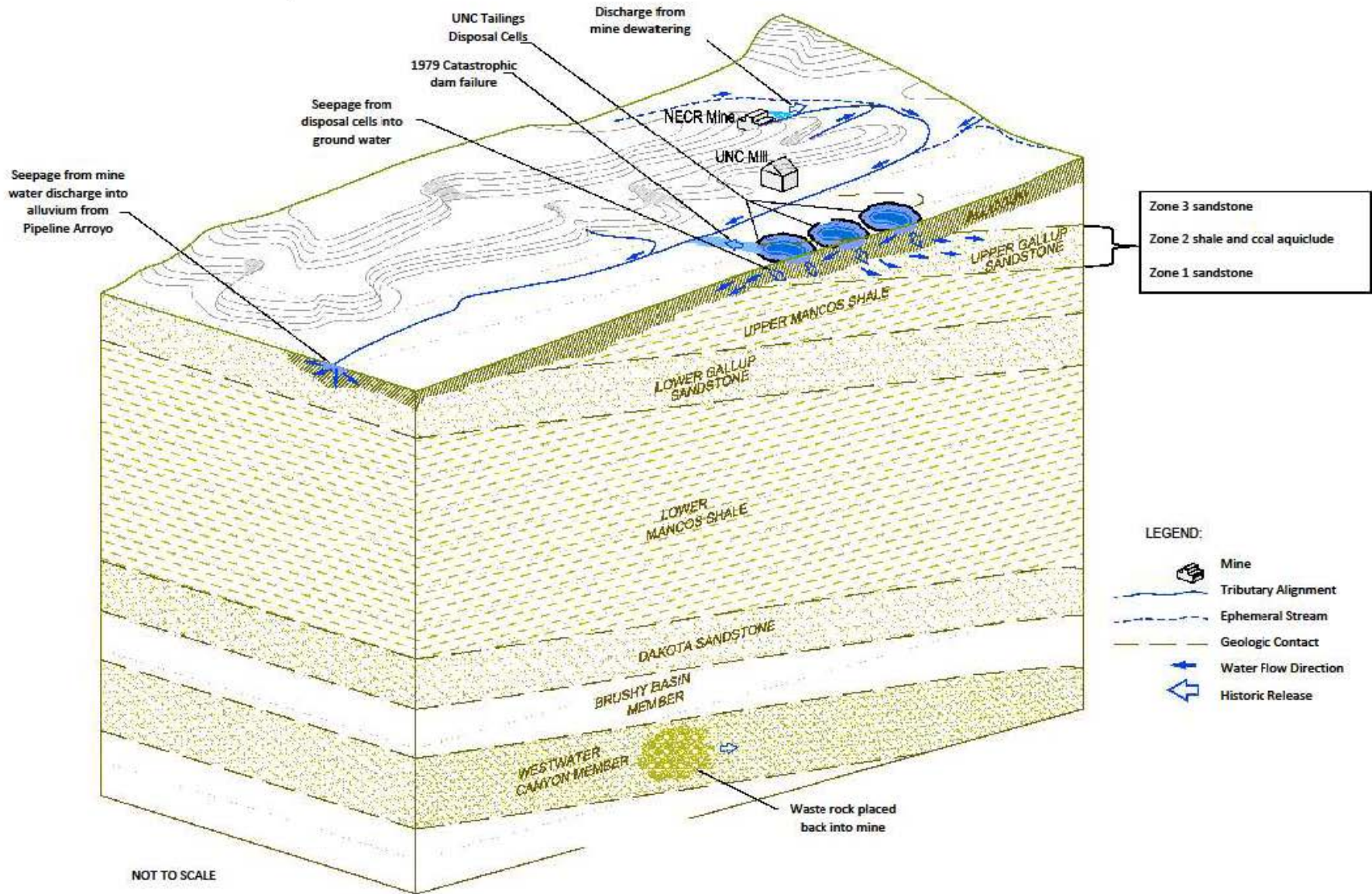
UNC Soil and Rocks



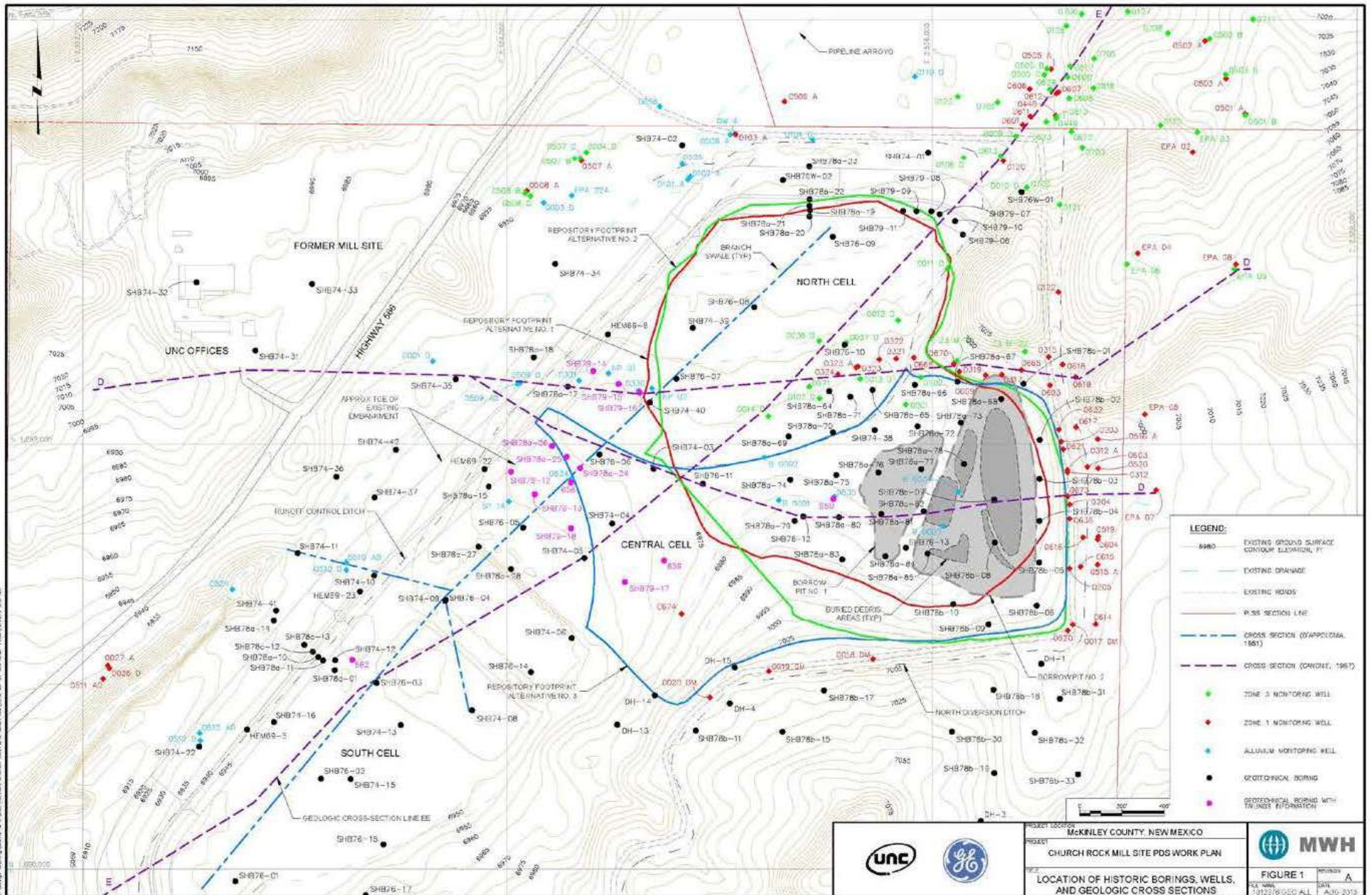
Alluvium

Zone 1 Sandstone

United Nuclear Corporation Nearby Sources of Contamination



Historic Boring and Well Locations



Geology at the United Nuclear Site

(Evolution of Zone 1 Water)

(Evolution of Zone 1 Water)

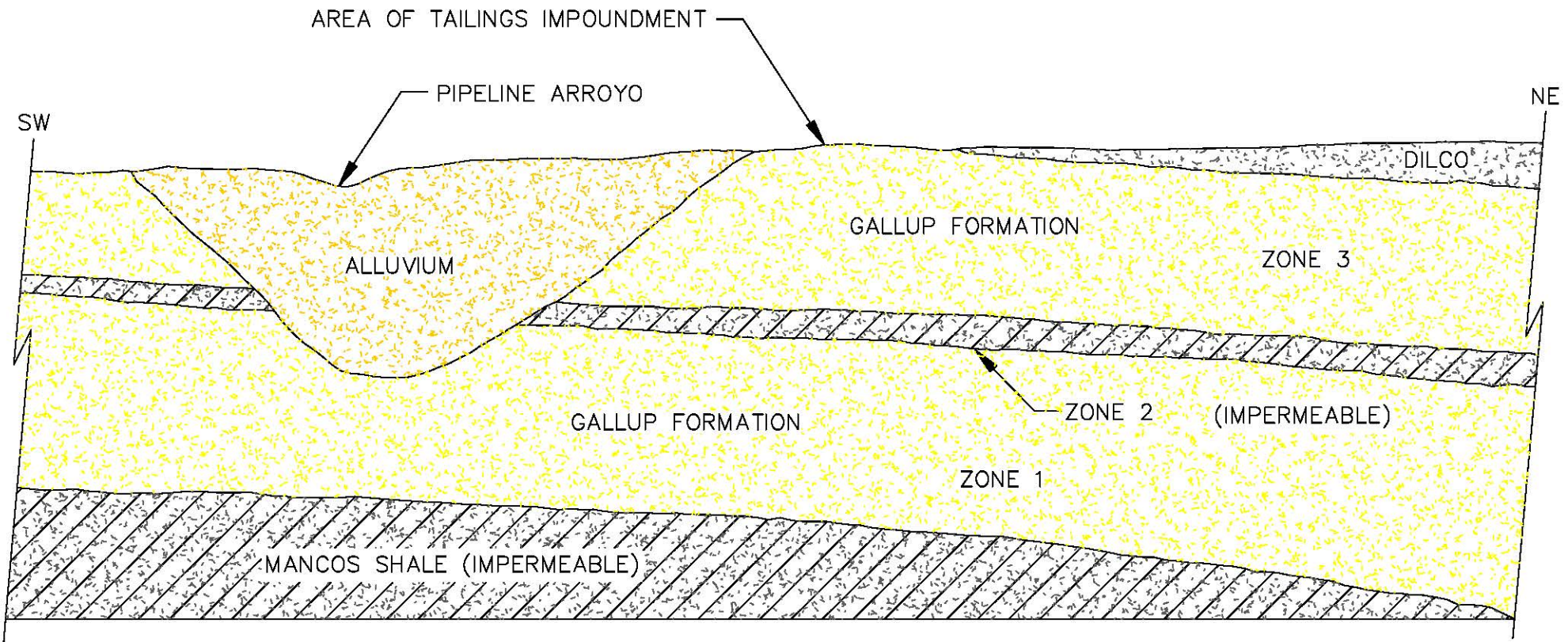


FIG. A864A

Condition Prior To Mine Water Discharge (No Contiguous Ground Water System Present) (Evolution of Zone 1 Water)

(Evolution of Zone 1 Water)

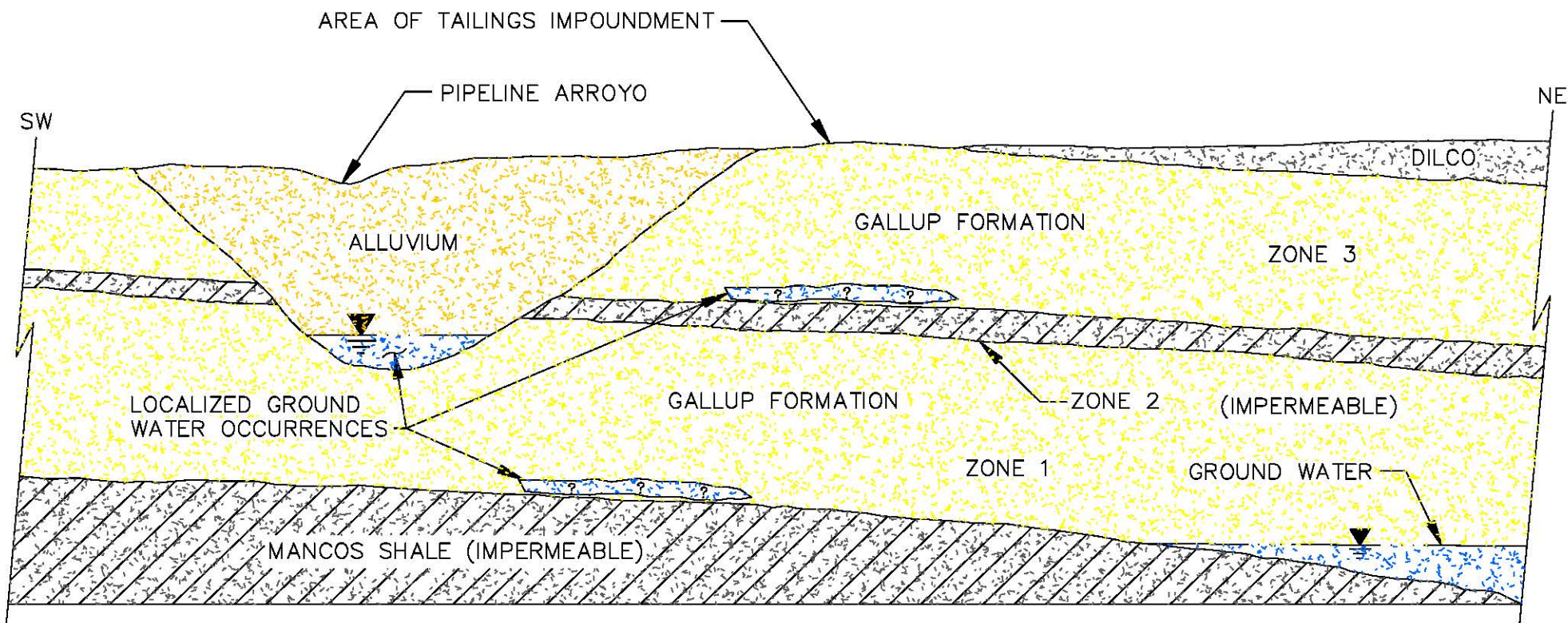


FIG. A865A

Condition During Mine Water Discharge (Develop "Post-mining Pre-tailings Background Water") (Evolution of Zone 1 Water)

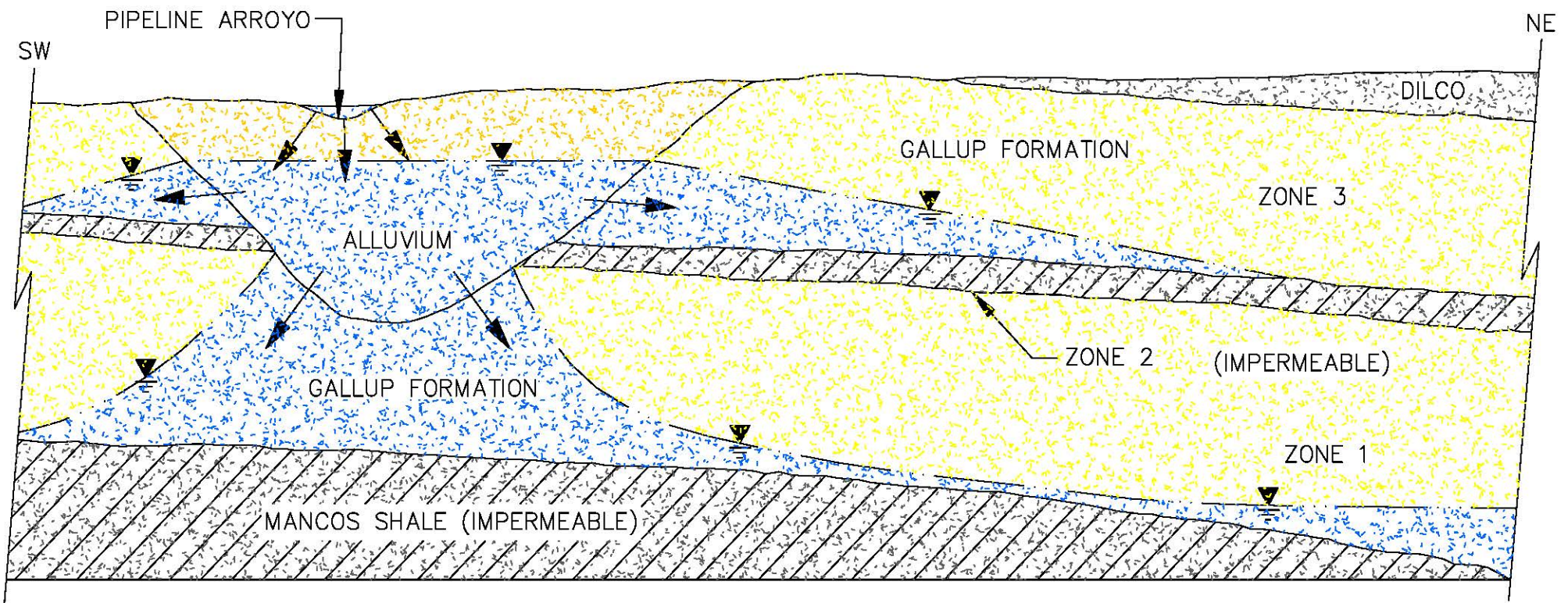


FIG. A866A 10

Tailings Seepage In Zone 1

(Evolution of Zone 1 Water)

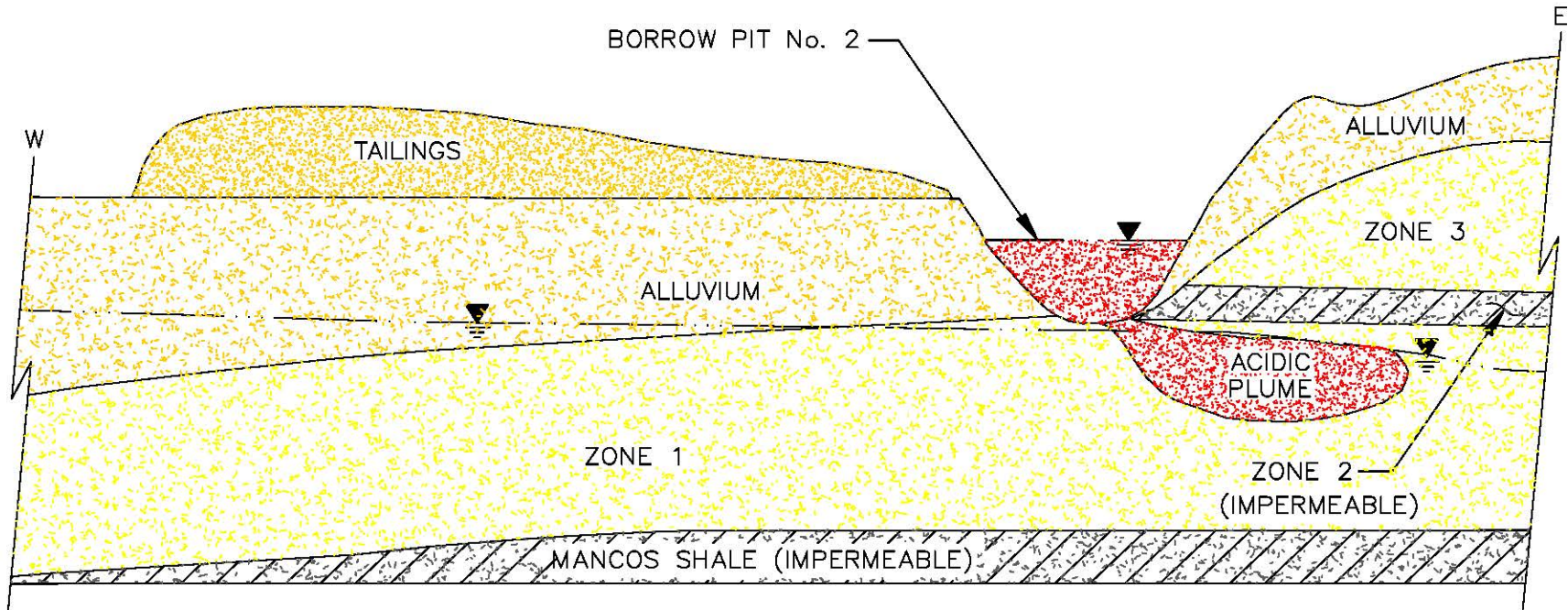
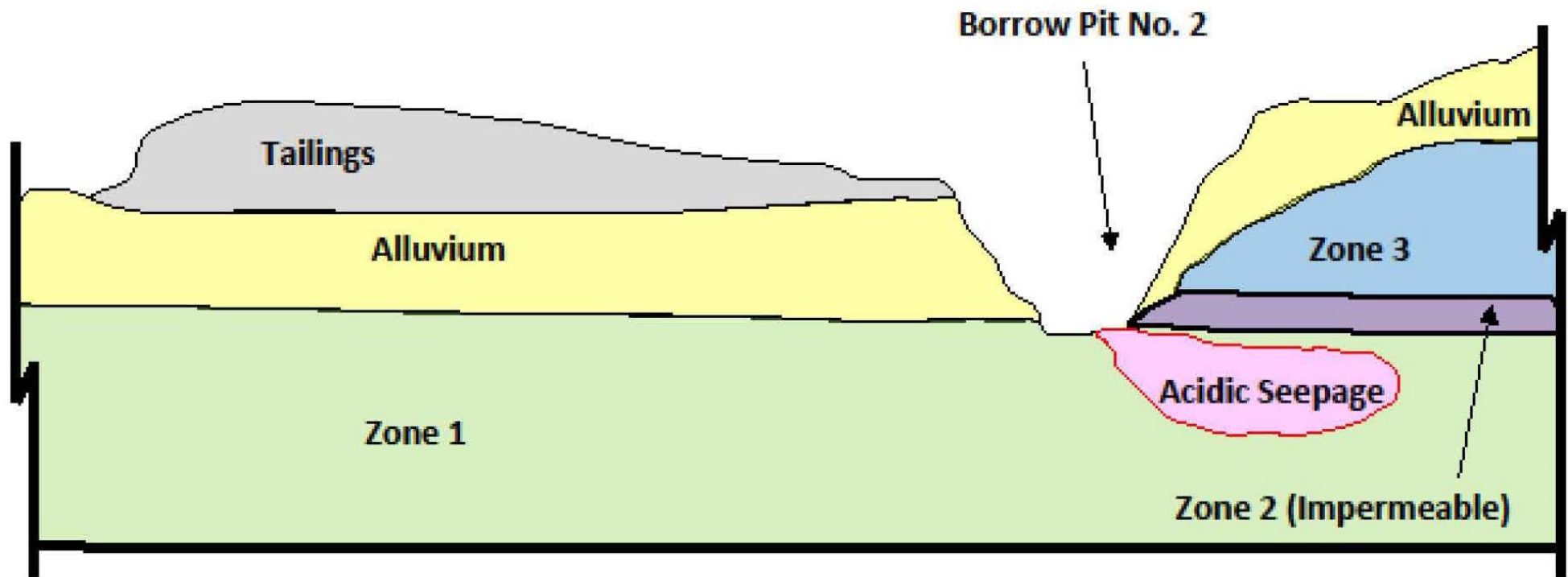


FIG. A877A

ACIDIC PLUME IN ZONE 1
SOURCE IS TAILINGS LIQUIDS IN BORROW PIT No. 2

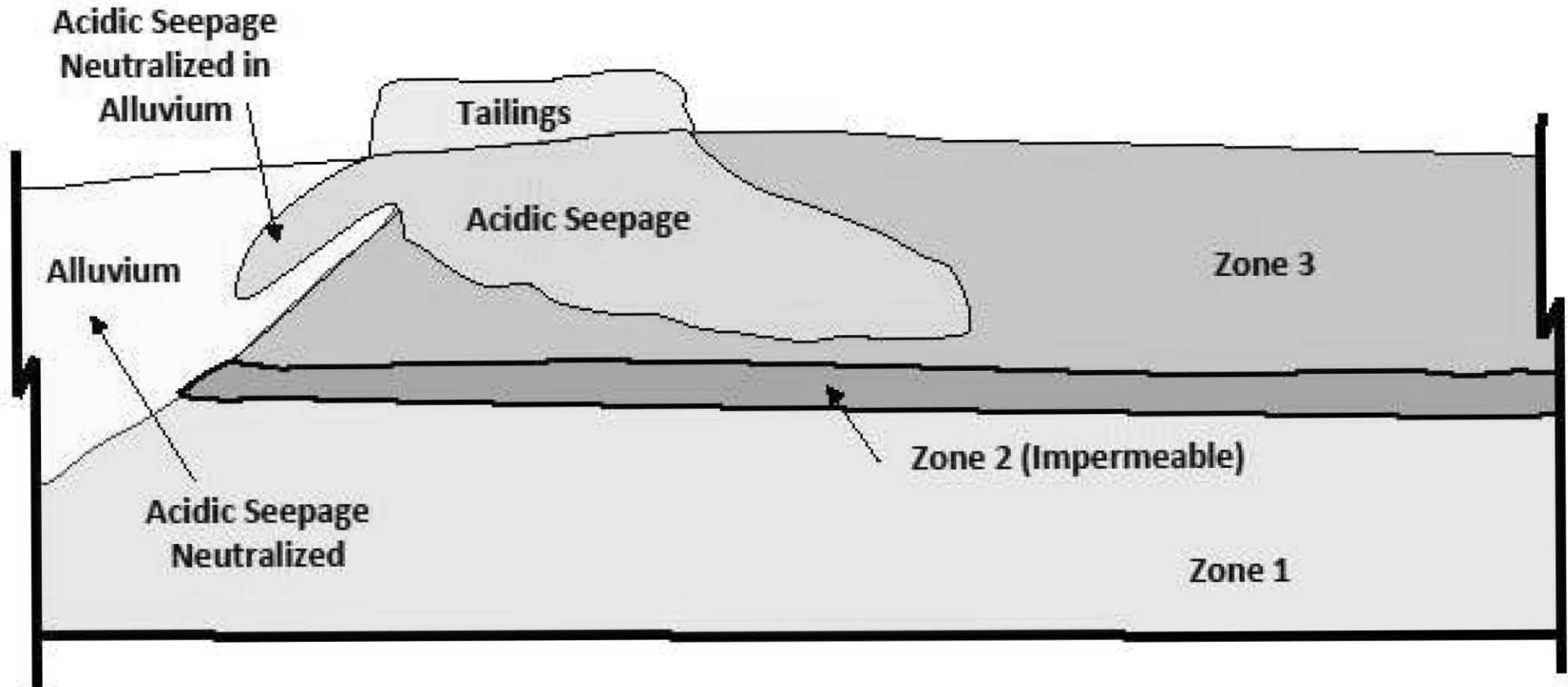
Acidic Seepage in Zone 1

Source is Tailings Liquids in Borrow Pit No. 2

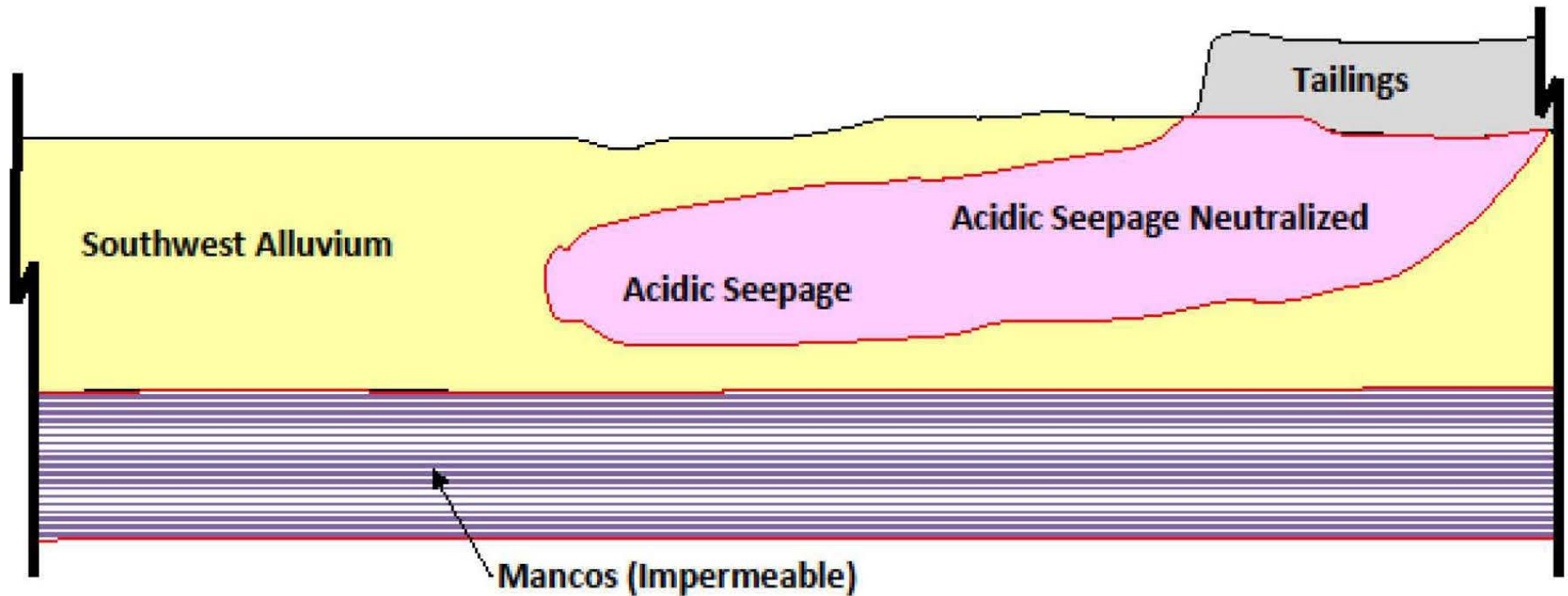


Acidic Seepage in Zone 3

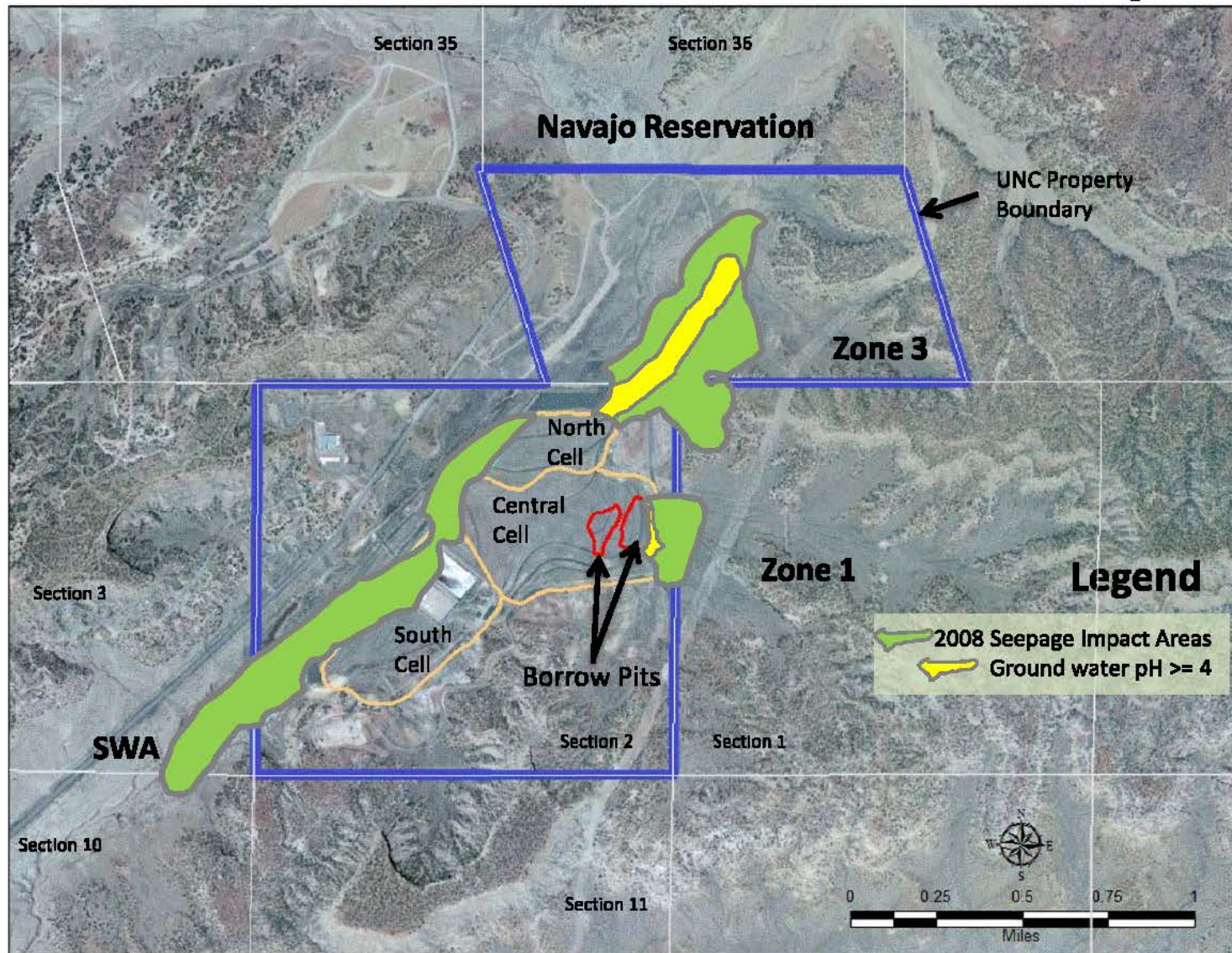
Source is Tailings in North Cell



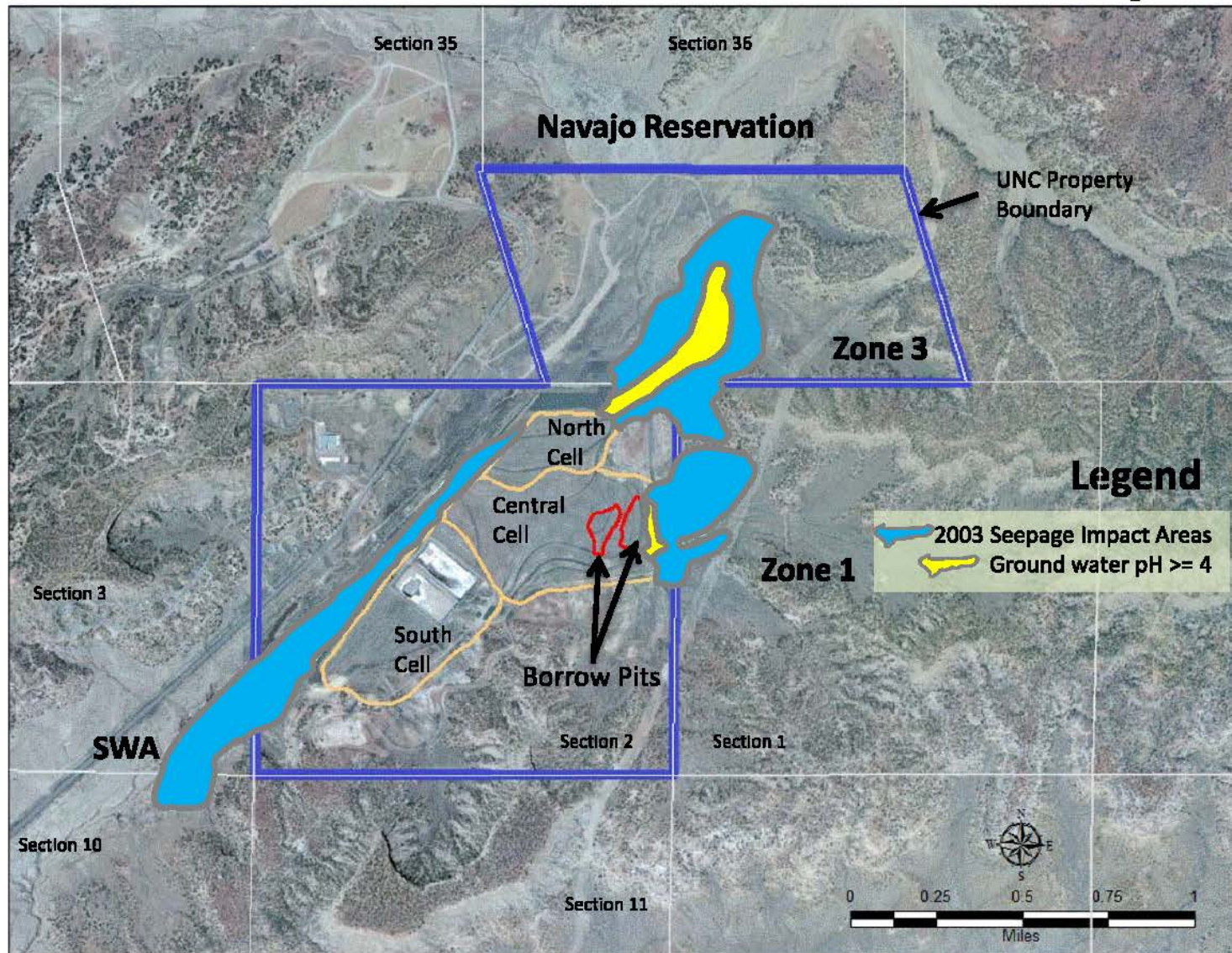
Chloride Seepage in Southwest Alluvium Source is Tailings in South Cell



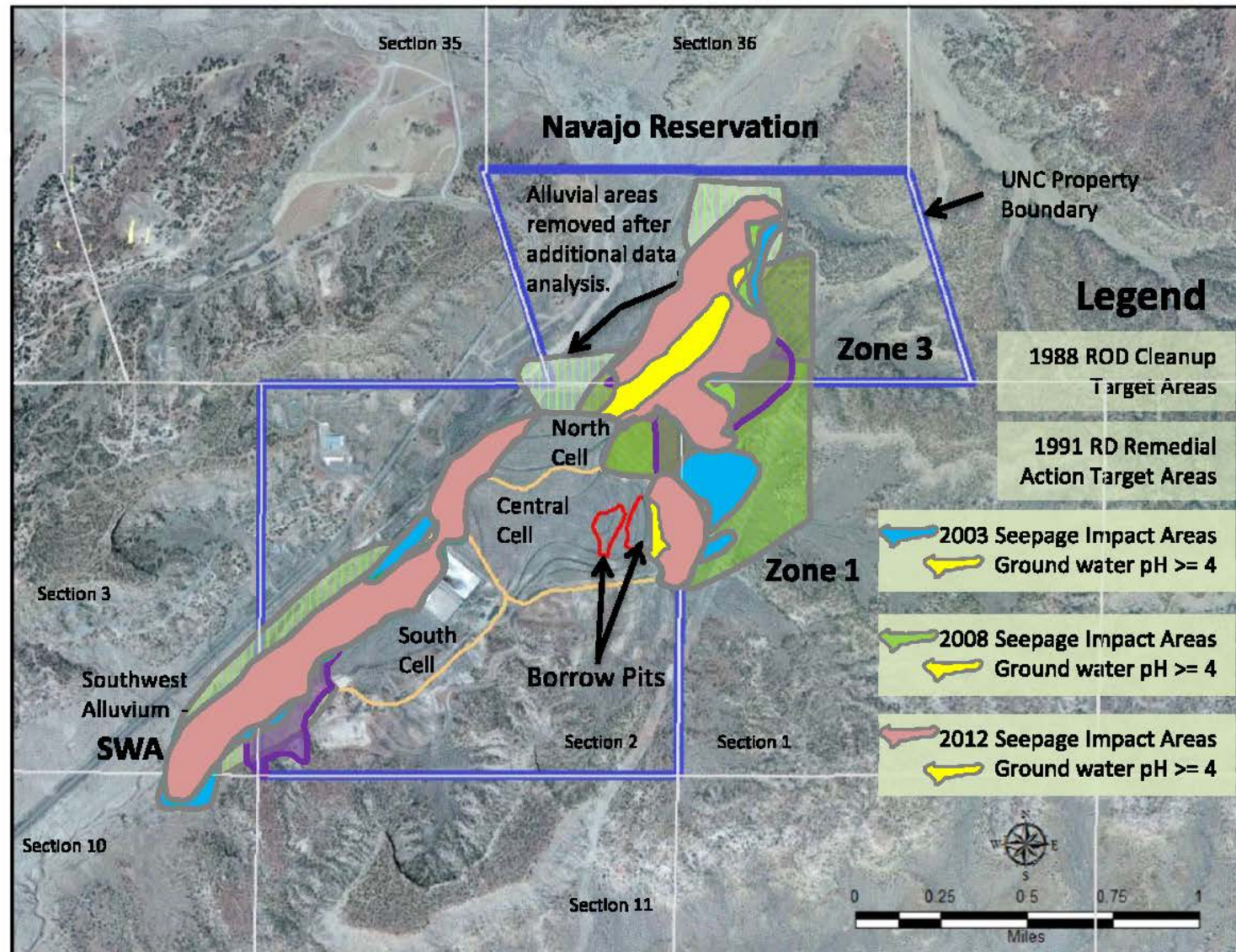
2008 UNC Ground Water Impacts



2003 UNC Ground Water Impacts



UNC Historical Ground Water Impacts



Tailings Liquor

Chemical Name	Tailings Chemistry
Aluminum	1,167 - 7,400
Ammonia (as N)	438 - 5,860
Arsenic	0.024 - 0.65
Beryllium	not available
Bicarbonate (HCO ₃)	0 - <1
Cadmium	0.013 - 0.24
Calcium	240 - 460
Chloride	608 - 730
Cobalt	5.5
Gross Alpha	120,000 - 130,000
Lead	0.6 - 15.9
Lead-210	4,200
Magnesium	287 - 1,100
Manganese	100 - 380
Molybdenum	<0.05 - 18.7
Nickel	3.5
Nitrate (NO ₃)	<50 - 282
pH (Lab)	1 - 3.34
Potassium	4
Radium-226	1.5 - 3.07
Radium-228	2.6
Radium 226 & 228	8000
Selenium	0.001 - <1.2
Sodium	526 - 890
Sulfate (SO ₄)	24,813 - 144,900
Thorium-230	13 - 277,733
Total Dissolved Solids (Lab)	38,462 - 148,100
Total Trihalomethanes (includes Chloroform)	not available
Uranium	7.6 - 54.5
Vanadium	180

Southwest Alluvium Contaminants

Chemical Name	Tailings Chemistry	Unit	Action Level	SWA Exceedances / # of Wells	SWA Maximum Detected Value
Chloride	608 - 730	mg/l	250	1/15	364
Manganese	100 - 380	mg/l	2.6	6/15	6.09
Nickel	3.5	mg/l	0.05	1/15	0.08
Sulfate (SO4)	24,813 - 144,900	mg/l	2125	13/15	5900
Total Dissolved Solids (Lab)	38,462 - 148,100	mg/l	4800	12/15	8730

Zone 3 Contaminants

Chemical Name	Tailings Chemistry	Unit	Action Level	Zone 3 Exceedances / # of Wells	Zone 3 Maximum Detected Value
Aluminum	1,167 - 7,400	mg/l	5	7/23	566
Beryllium	not available	mg/l	0.017	6/23	0.144
Cadmium	0.013 - 0.24	mg/l	0.01	2/23	0.036
Cobalt	5.5	mg/l	0.05	16/23	1.89
Lead	0.6 - 15.9	mg/l	0.05	1/23	0.074
Lead-210	4,200	pci/l	1	7/23	3.4
Manganese	100 - 380	mg/l	2.6	16/23	51.1
Nickel	3.5	mg/l	0.05	16/23	1.9
Radium 226 & 228	8000	pci/l	5	18/23	46
Sulfate (SO4)	24,813 - 144,900	mg/l	2125	17/23	8630
Thorium-230	13 - 277,733	pci/l	5	3/23	690
Total Dissolved Solids (Lab)	38,462 - 148,100	mg/l	4800	10/23	11900
Total Trihalomethanes (includes Chloroform)	not available	ug/l	80	1/23	88.8
Uranium	7.6 - 54.5	mg/l	0.3	3/23	0.989
Vanadium	180	mg/l	0.1	1/23	1.8

Zone 1 Contaminants

Chemical Name	Tailings Chemistry	Unit	Action Level	Zone 1 Exceedances / # of Wells	Zone 1 Maximum Detected Value
Chloride	608 - 730	mg/l	250	3/10	393
Cobalt	5.5	mg/l	0.05	2/10	0.15
Manganese	100 - 380	mg/l	2.6	4/10	8.12
Nickel	3.5	mg/l	0.05	5/10	0.27
Radium 226 & 228	8000	pci/l	5	4/10	11.2
Sulfate (SO4)	24,813 - 144,900	mg/l	2125	8/10	7340
Total Dissolved Solids (Lab)	38,462 - 148,100	mg/l	4800	6/10	11600
Total Trihalomethanes (includes Chloroform)	not available	ug/l	80	2/10	416

Questions and Comments

Presenters:

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UNC Region 6 Website:

http://www.epa.gov/earth1r6/6sf/newmexico/united_nuclear/index.html