HOMESTAKE MINING COMPANY BACKGROUND REPORT

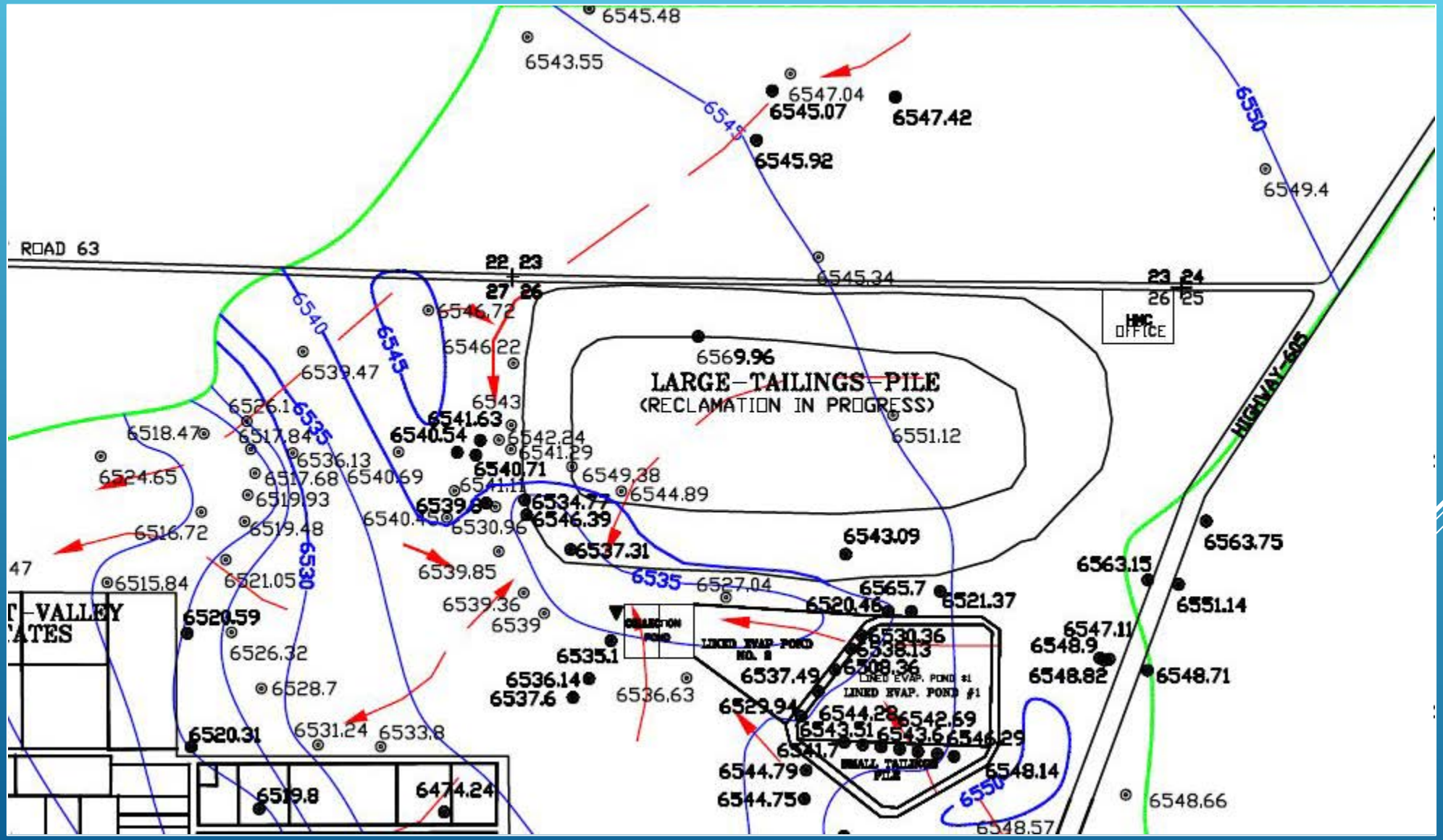
HOMESTAKE NPL SITE

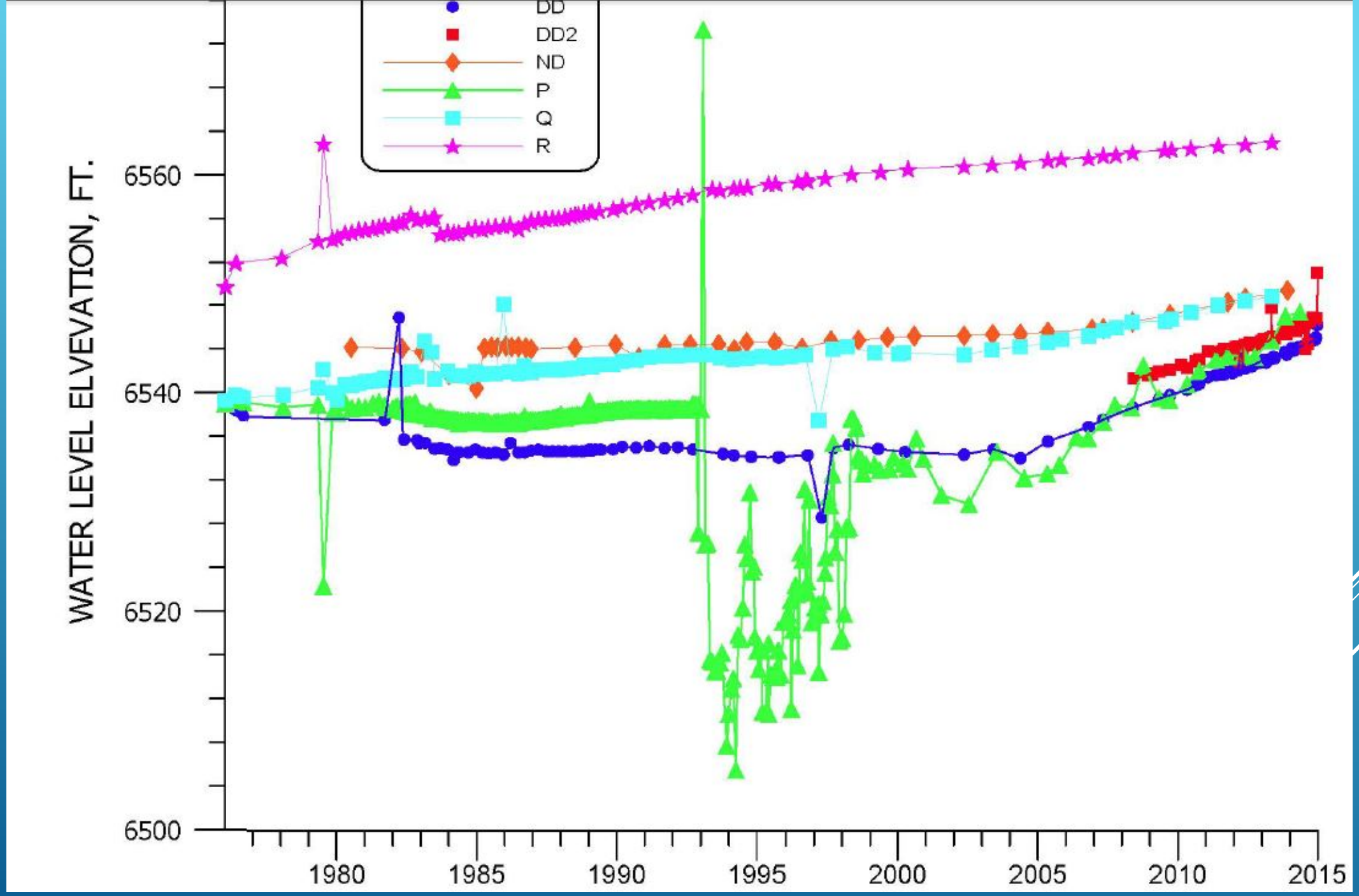
August 12, 2015

9787433

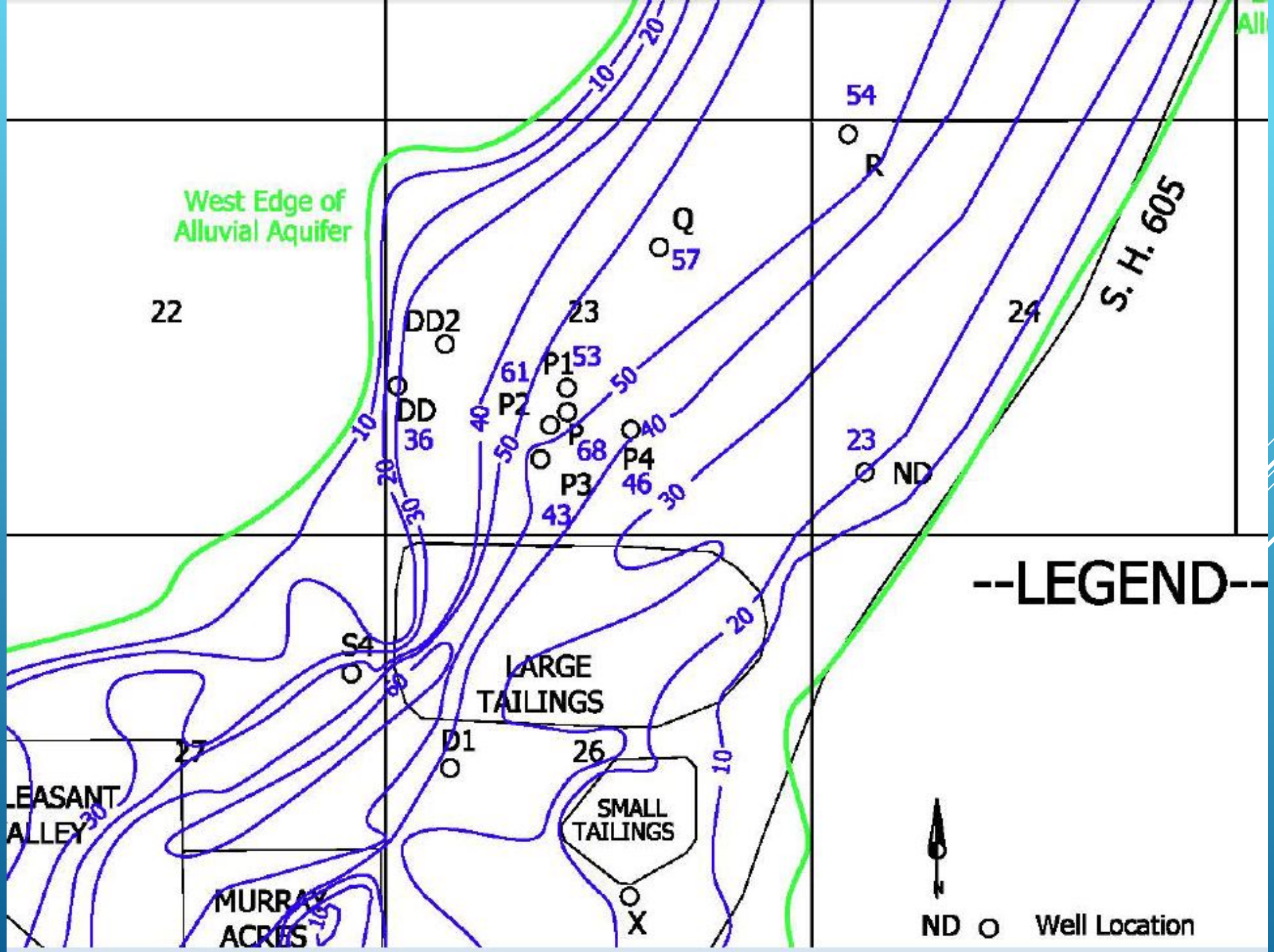
ALLUVIUM POTENTIOMETRIC SURFACE MAP

HOMESTAKE 2013 ANNUAL REPORT

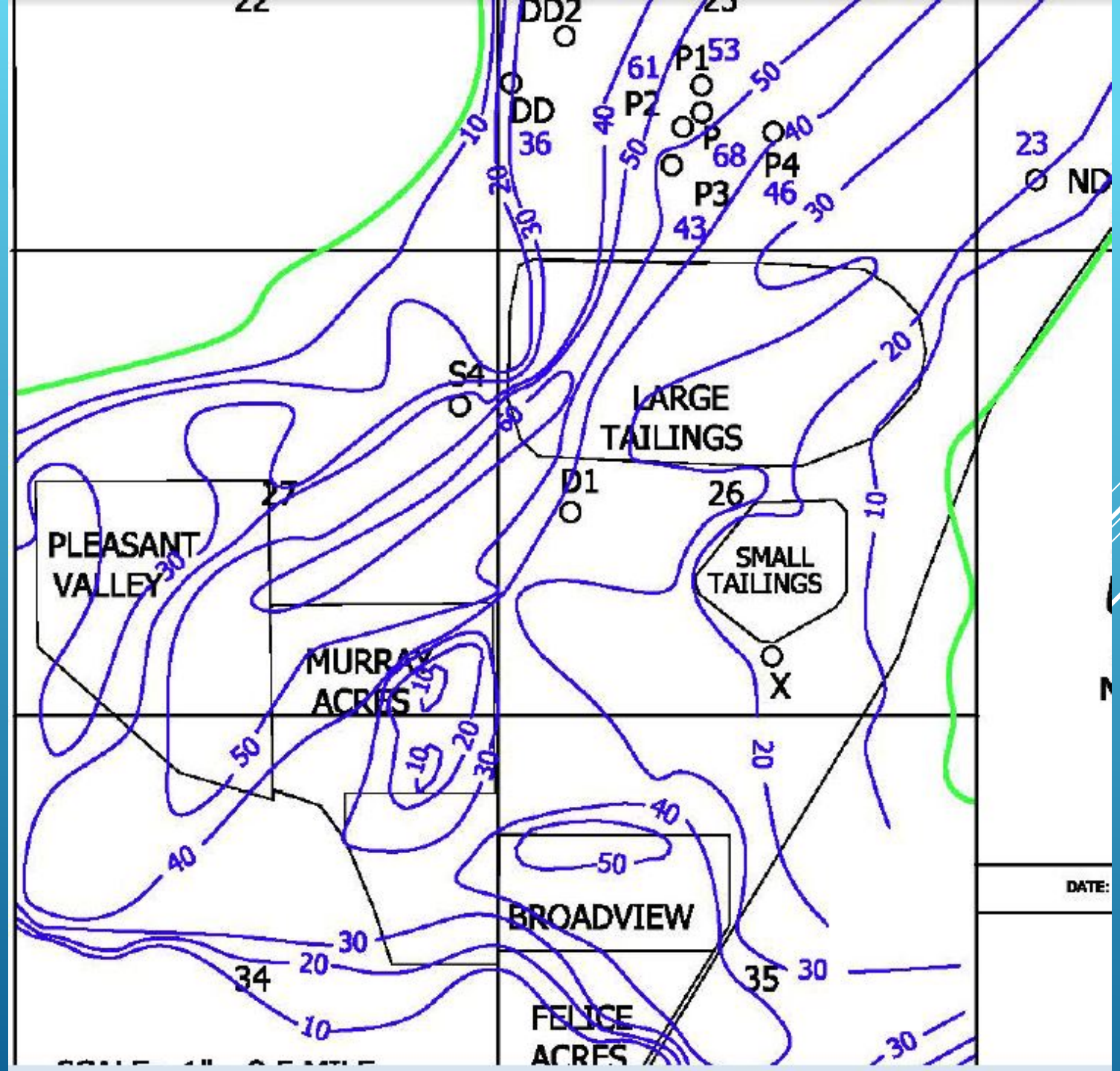


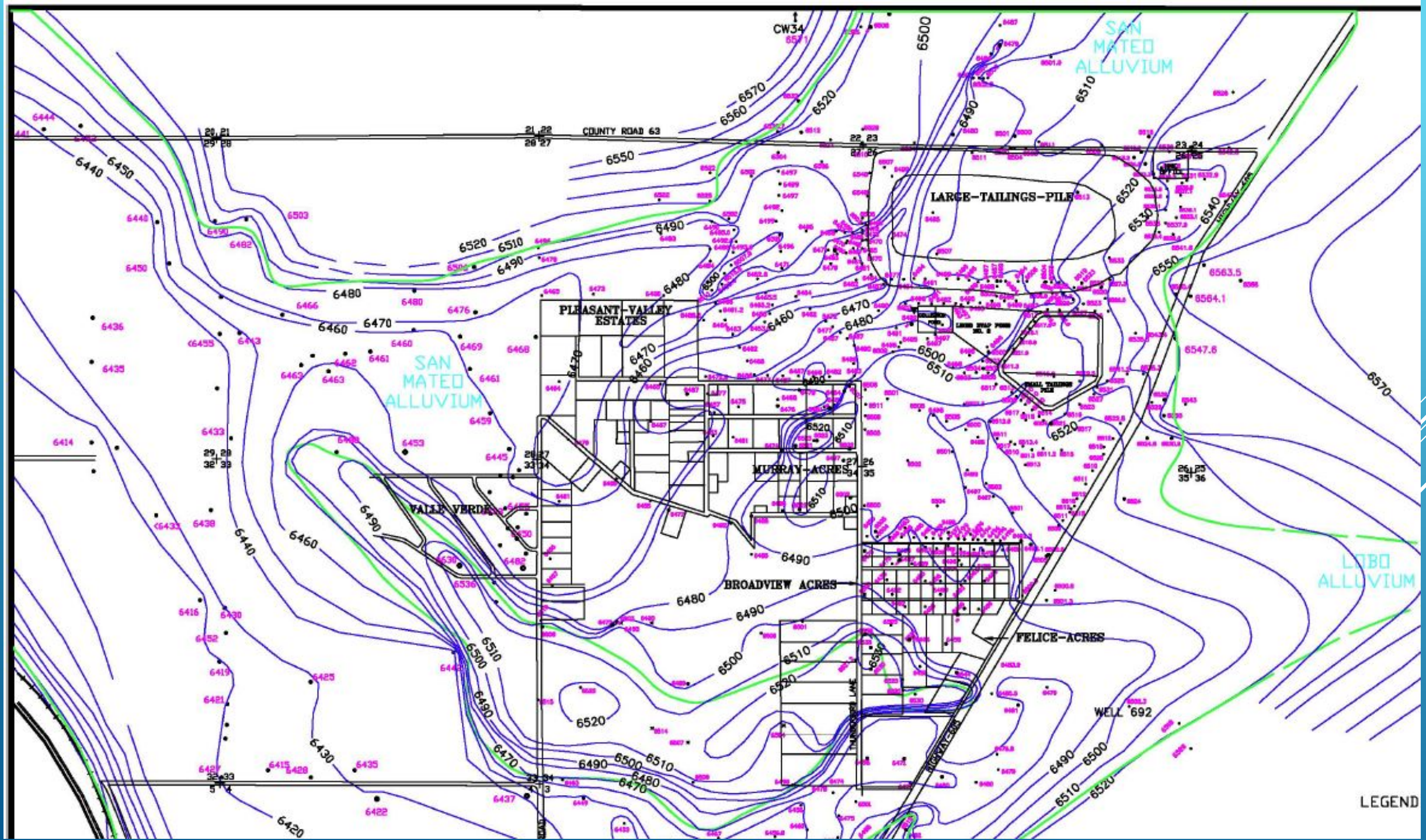

DD
DD2
ND
P
Q
R
WATER LEVEL ELVEVATION, FT.
6560
6540
6520
6500
1980
1985
1990
1995
2000
2005
2010
2015

ALLUVIUM THICKNESS MAP

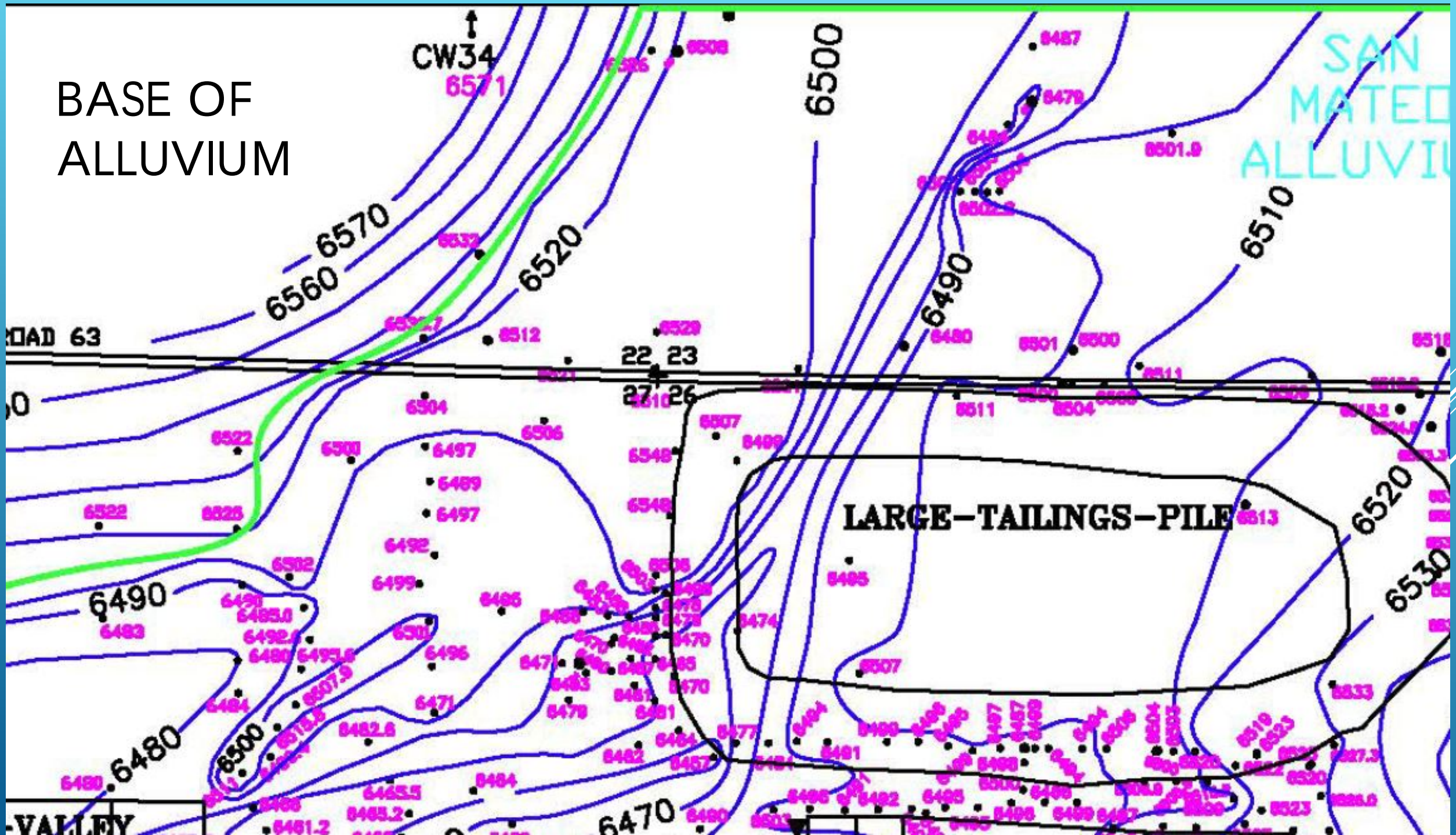


ALLUVIUM THICKNESS MAP

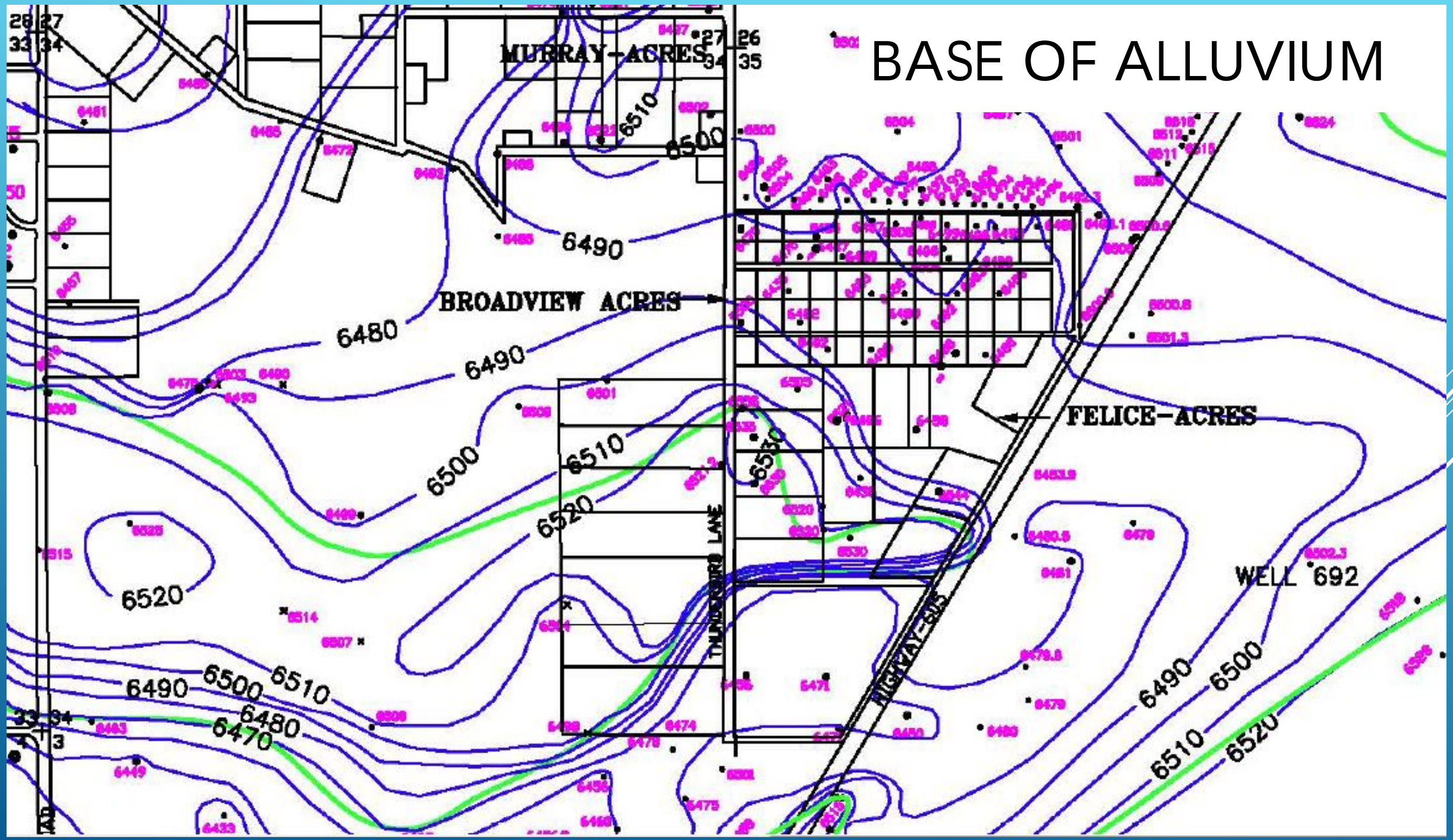


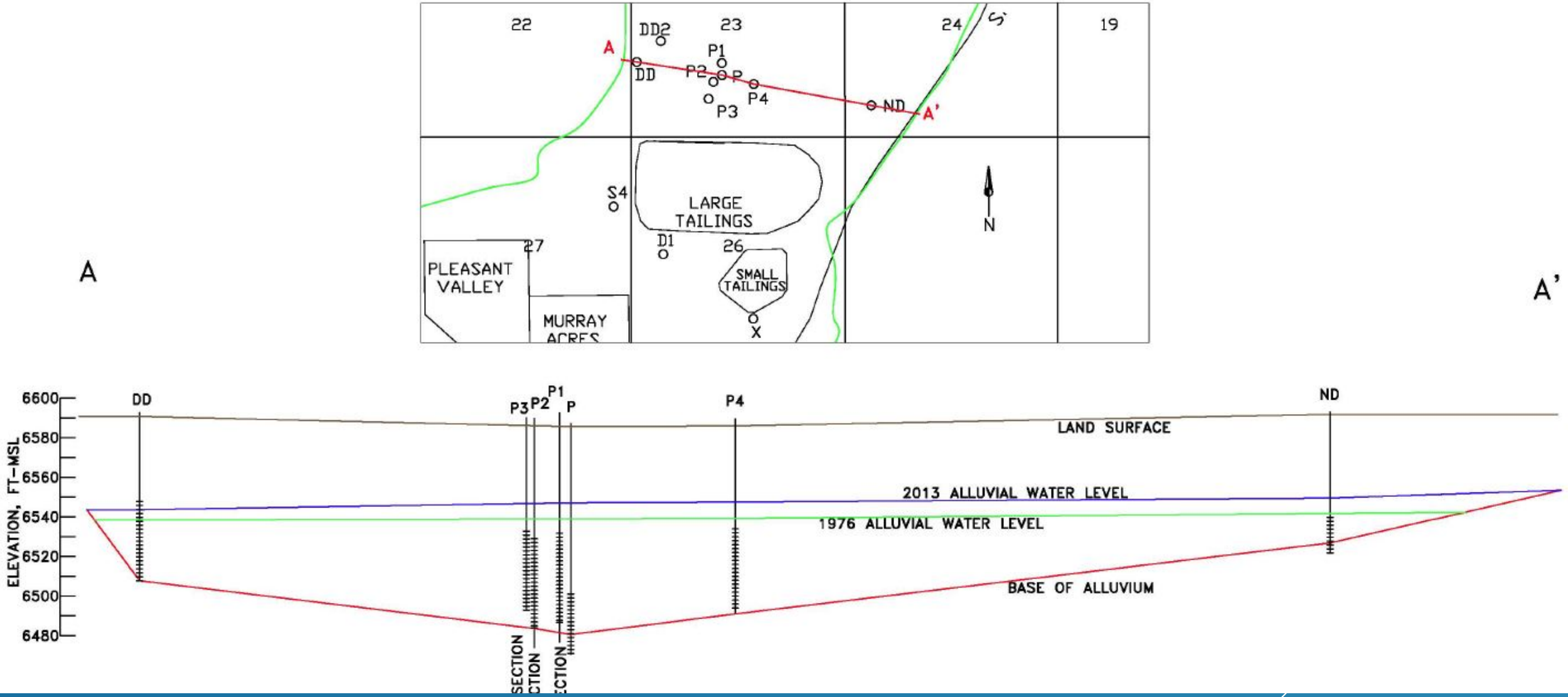

CW34
COUNTY ROAD 63
SAN MATEO ALLUVIUM
LARGE-TAILINGS-PILE
PLEASANT-VALLEY ESTATES
MURRAY-ACRES
VALLE VERDE
BROADVIEW ACRES
FELICE-ACRES
WELL 692
LOBO ALLUVIUM
LEGEND

BASE OF ALLUVIUM



BASE OF ALLUVIUM

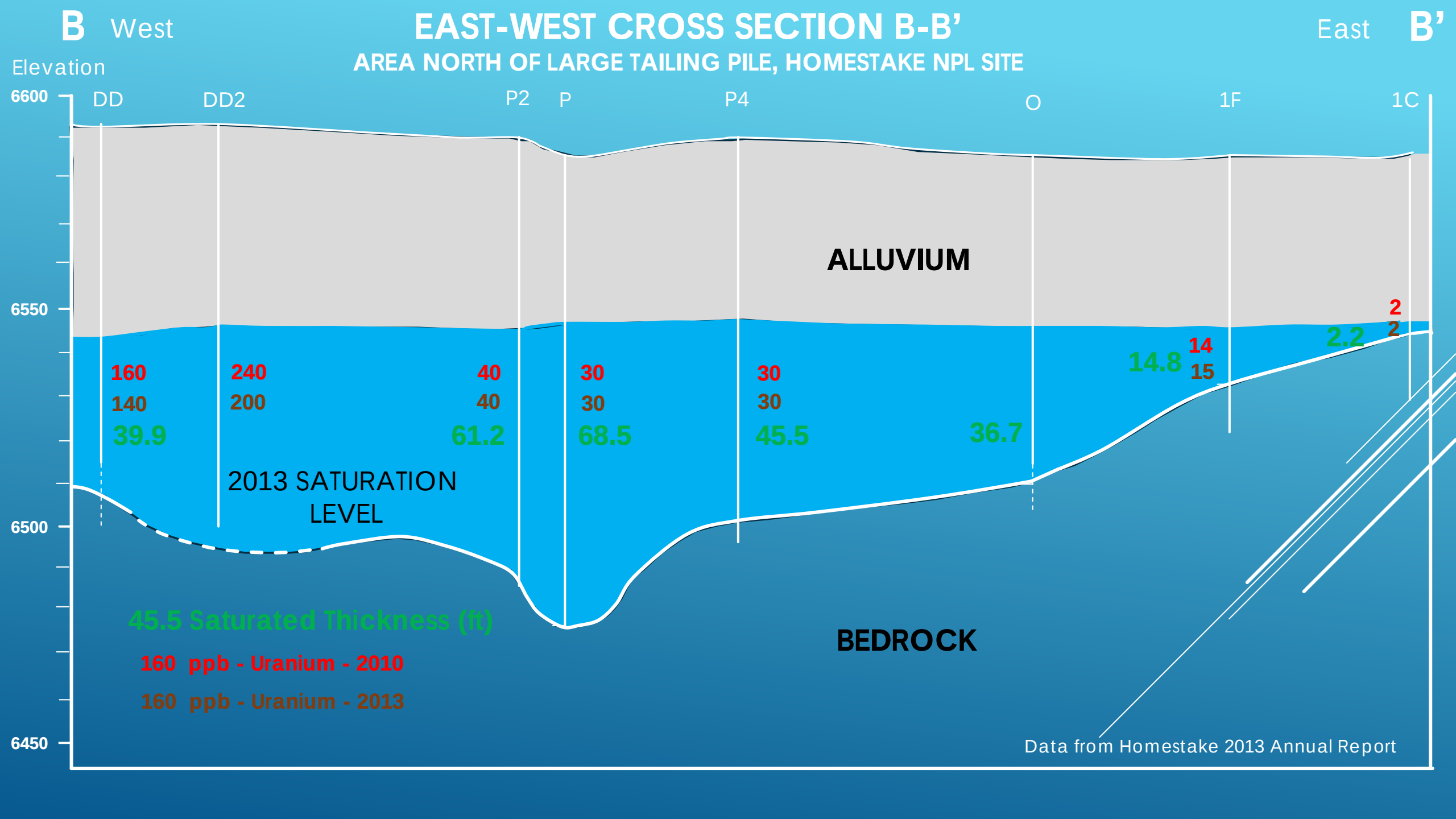




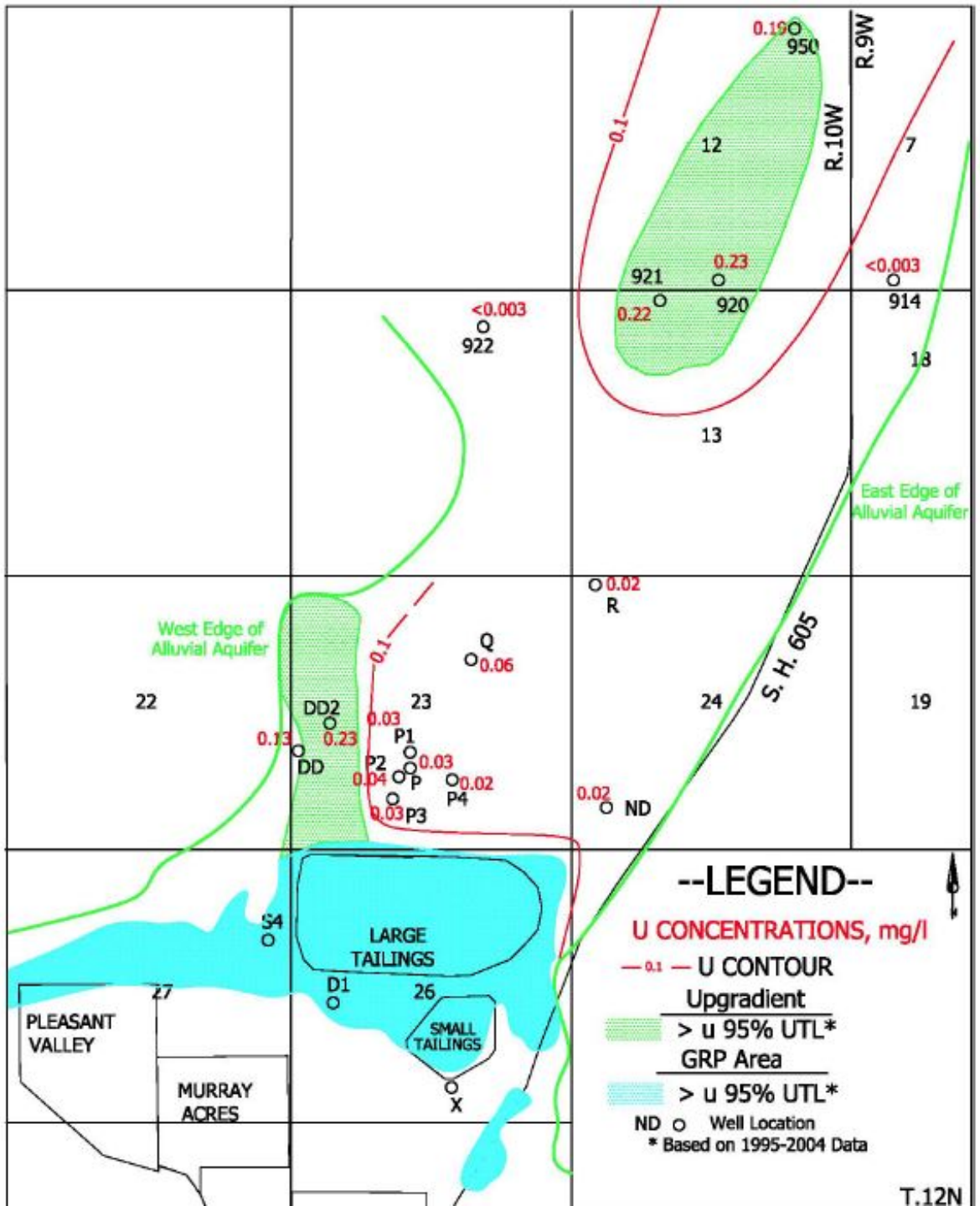
CROSS SECTION A-A'

EAST-WEST CROSS SECTION B-B'

AREA NORTH OF LARGE TAILING PILE, HOMESTAKE NPL SITE



URANIUM CONCENTRATION MAP



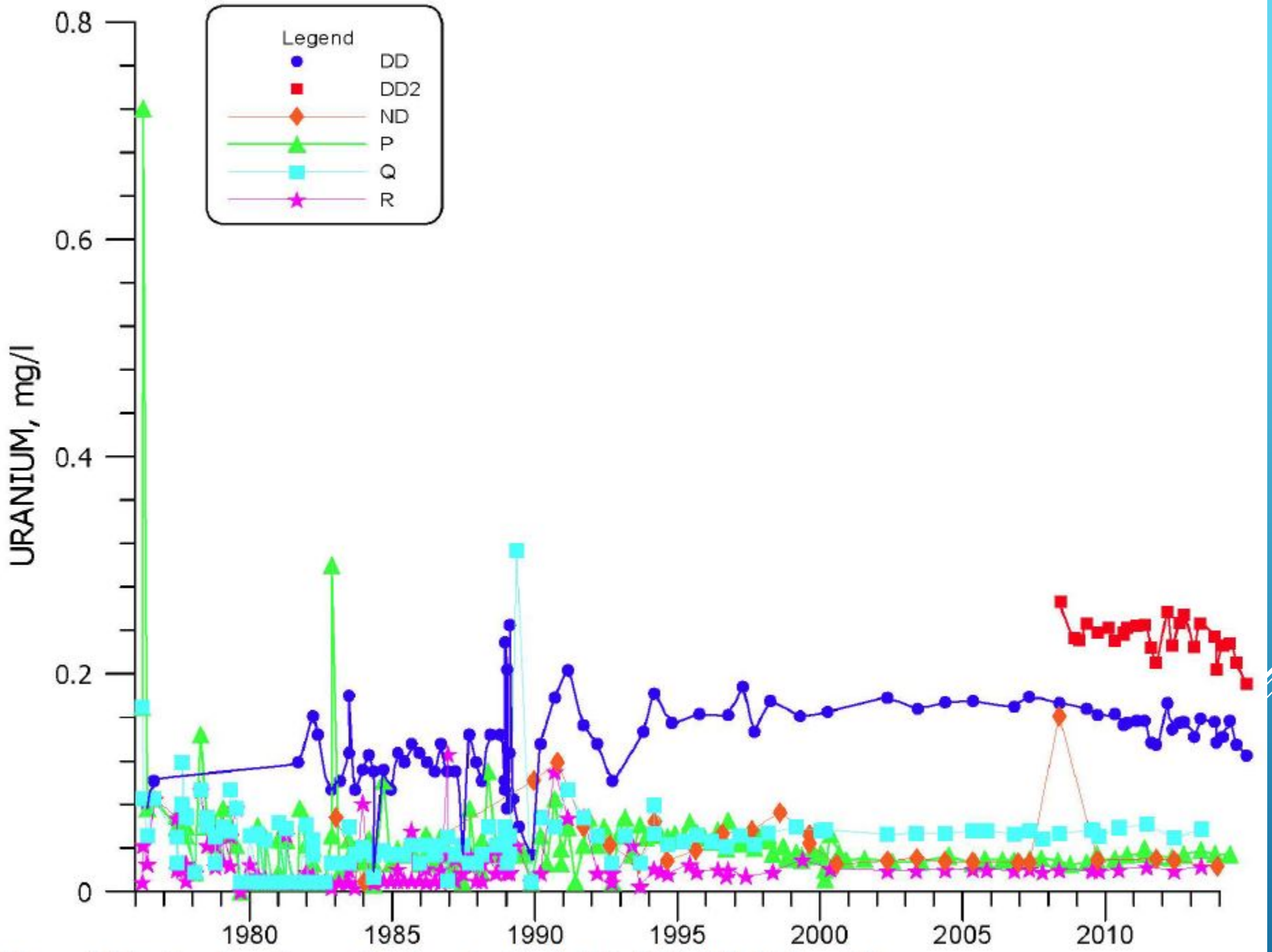
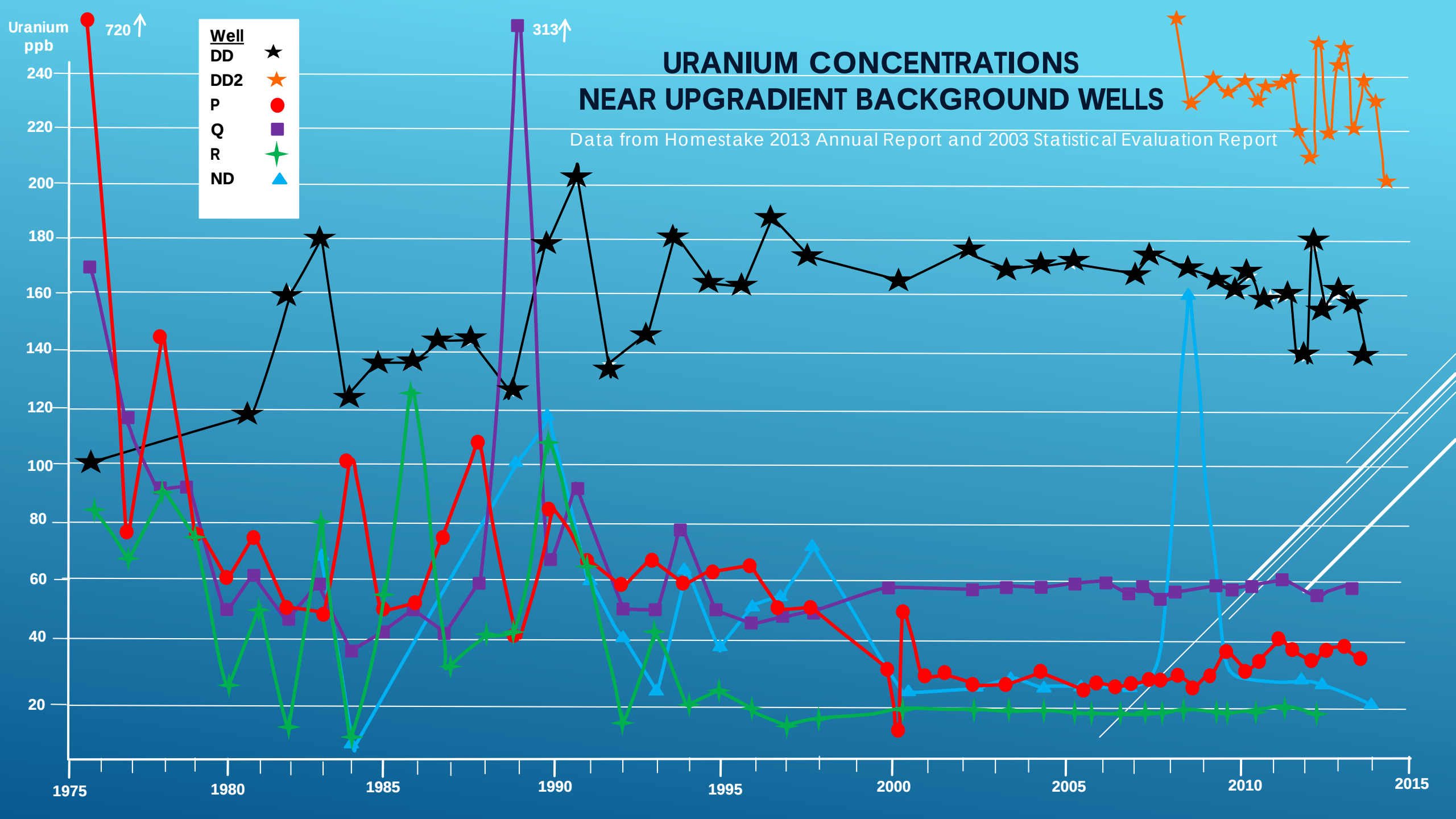


Figure 2-12. Uranium Concentrations for Wells DD, DD2, ND, P, Q and R


URANIUM CONCENTRATIONS
NEAR UPGRADIENT BACKGROUND WELLS
Data from Homestake 2013 Annual Report and 2003 Statistical Evaluation Report
Uranium ppb
720
313
Well
DD
DD2
P
Q
R
ND
240
220
200
180
160
140
120
100
80
60
40
20
1975
1980
1985
1990
1995
2000
2005
2010
2015

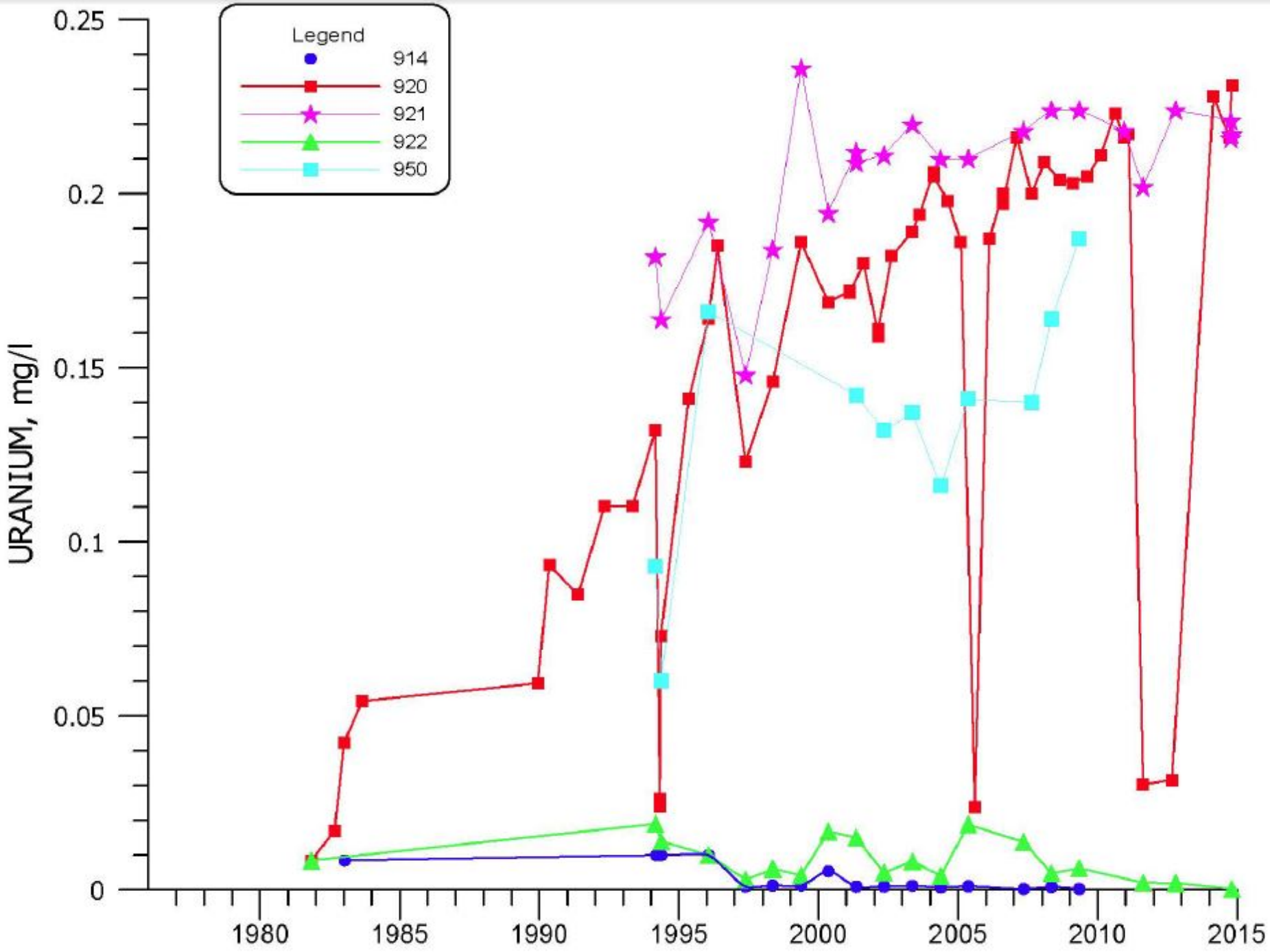
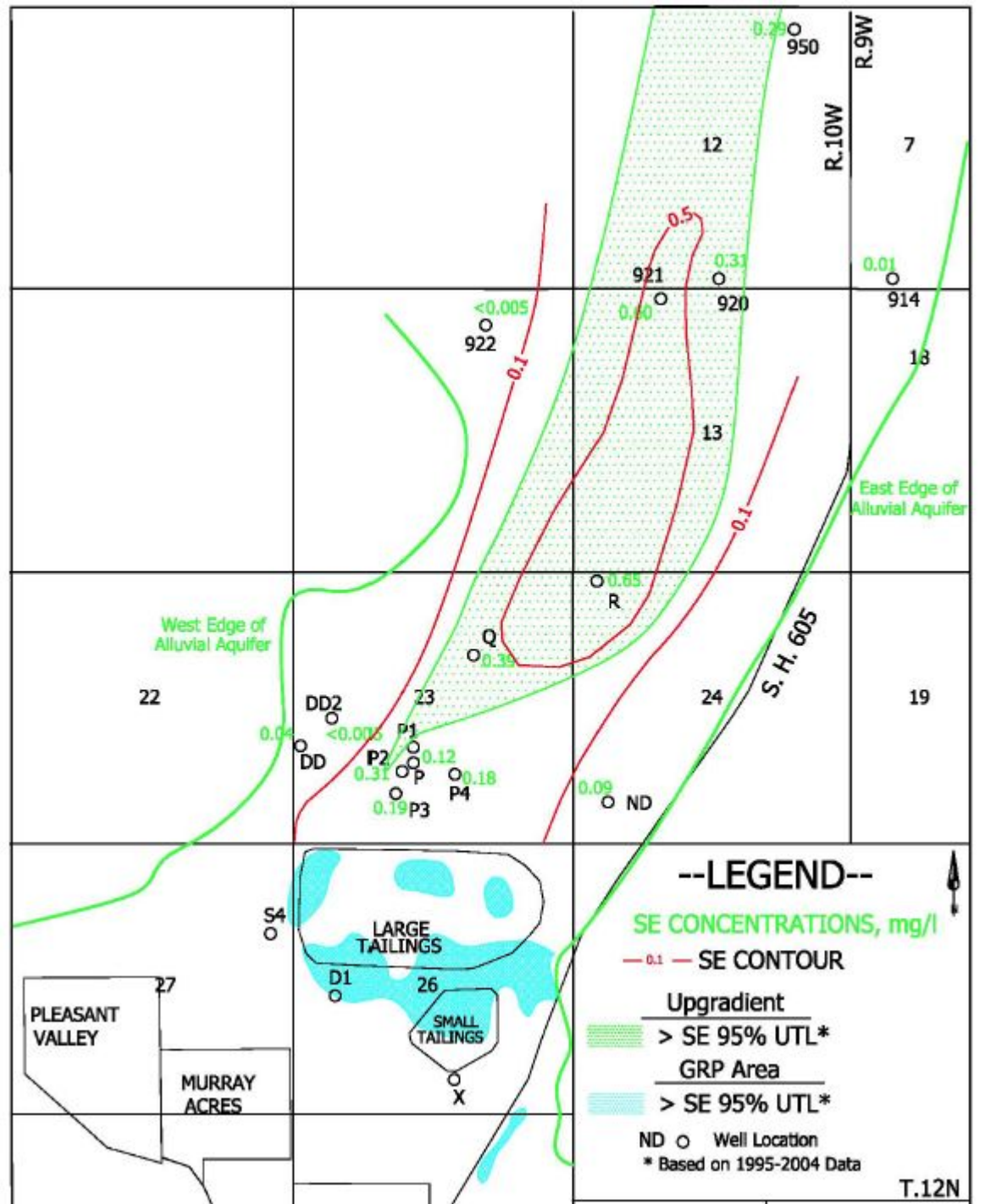


Figure 2-13. Uranium Concentrations for Wells 914, 920, 921, 922 and 950

SELENIUM CONCENTRATION MAP



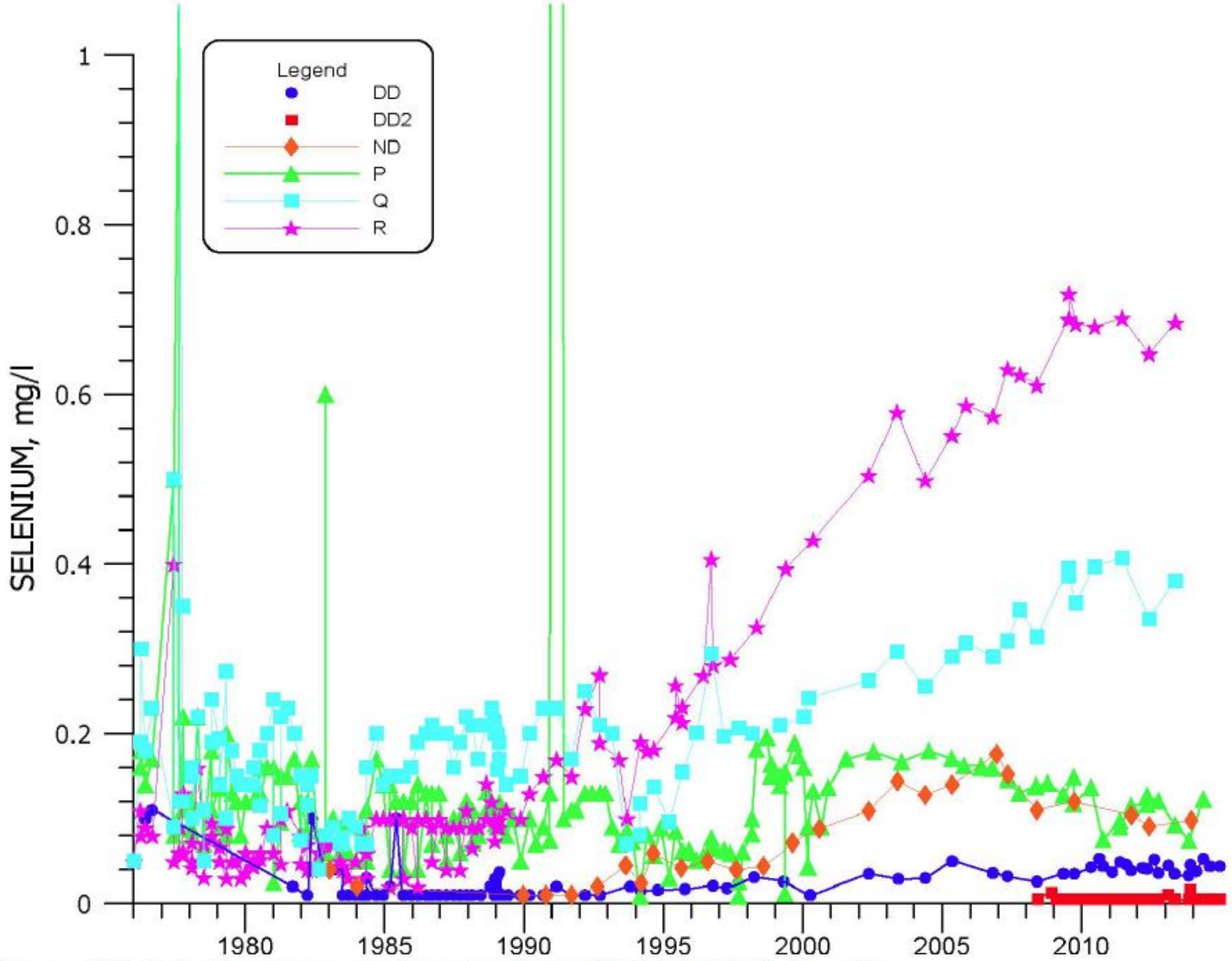


Figure 2-9. Selenium Concentrations for Wells DD, DD2, ND, P, Q and R

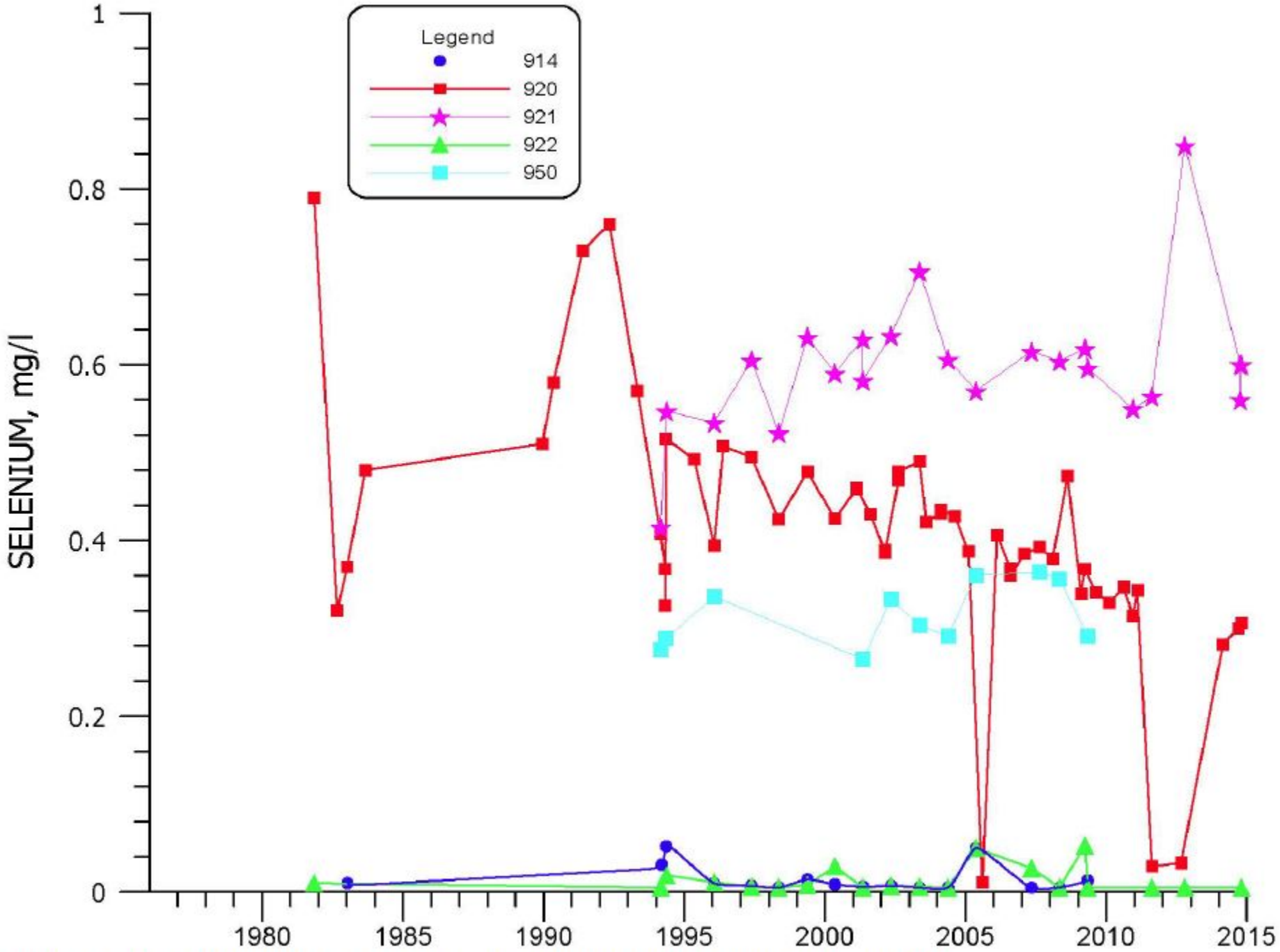


Figure 2-10. Selenium Concentrations for Wells 914, 920, 921, 922 and 950

Table 2-2. Comparison of Near and Far Up-Gradient COC Concentrations

Location and Included Wells	Comparison Monitoring Period	Average Uranium Concentration	Average Selenium Concentration	Average Nitrate Concentration	Average Chloride Concentration
		(mg/L)	(mg/L)	(mg/L)	(mg/L)
Far Up-Gradient Wells 920, 921 and 950	2005 - 2014	0.19	0.4	12.7	69
Near Up-Gradient Wells DD and DD2	2005 - 2014	0.19	0.022	3.1	65
Near Up-Gradient Wells DD and DD2	1976 - 2014	0.16	0.022	8.6	64
Near Up-Gradient Wells Q and R	2005 - 2014	0.037	0.49	15.7	64
Near Up-Gradient Wells P and ND	2005 - 2014	0.035	0.13	3.7	64

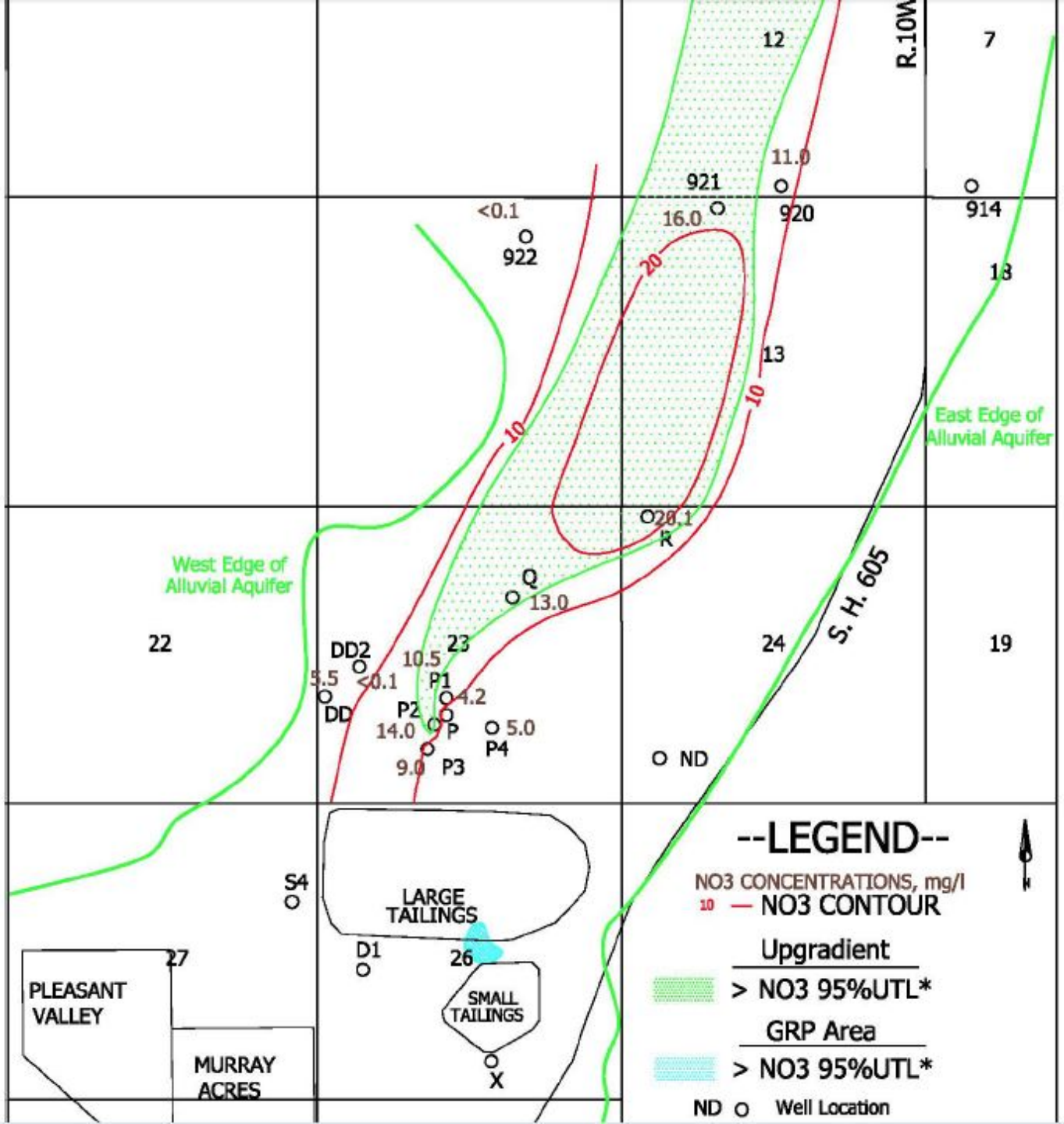
Table 2-3. Uranium to Selenium Ratios for Up-Gradient Wells

Location and Included Wells	Comparison Monitoring Period	Average Uranium Concentration	Average Selenium Concentration	Uranium to Selenium Ratio
		(mg/L)	(mg/L)	
Far Up-Gradient Wells 920, 921 and 950	2005 - 2014	0.19	0.4	0.5
Near Up-Gradient Wells DD and DD2	2005 - 2014	0.19	0.022	8.6
Near Up-Gradient Wells DD and DD2	1976 - 2014	0.16	0.022	7.3

Table 2-4. Comparison of Wells DD and DD2 COC Concentrations with LTP Area COC Concentrations

Location and Included Wells	Comparison Monitoring Period	Average Uranium Concentration	Average Selenium Concentration	Average Nitrate Concentration	Average Chloride Concentration	Average Molybdenum Concentration	Average Sulfate Concentration
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Near Up-Gradient Wells DD and DD2	1976 - 2014	0 16	0 022	8 6	64	0 016	1666
LTP Area Alluvial Well B1	1982-1985	37	2 07	21	377	33 3	4387
LTP Area Alluvial Well B11	1994	38	4 44	195	1045	23 5	6551
LTP Area Alluvial Well DA	1977 - 1984	49	2 17	19	450	72 2	6256
LTP Area Alluvial Well D1	1986 - 1988	6 4	0 67	9 3	207	7	1872
LTP Area Alluvial Well DB	1978 - 1981	30	2 46	15 5	342	41 7	3605

NITRATE CONCENTRATION MAP



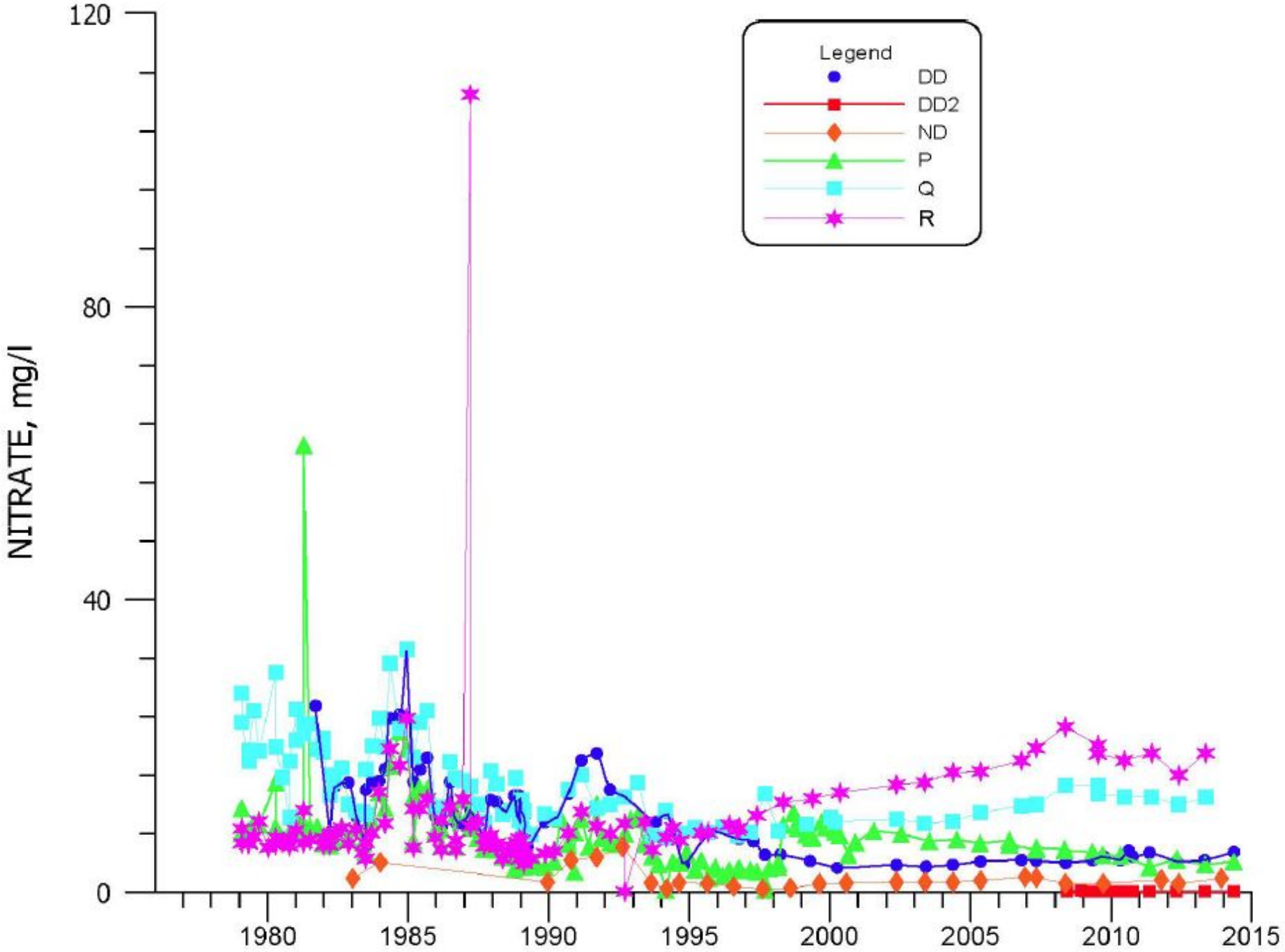


Figure 2-15. Nitrate Concentrations for Wells DD, DD2, ND, P, Q and R

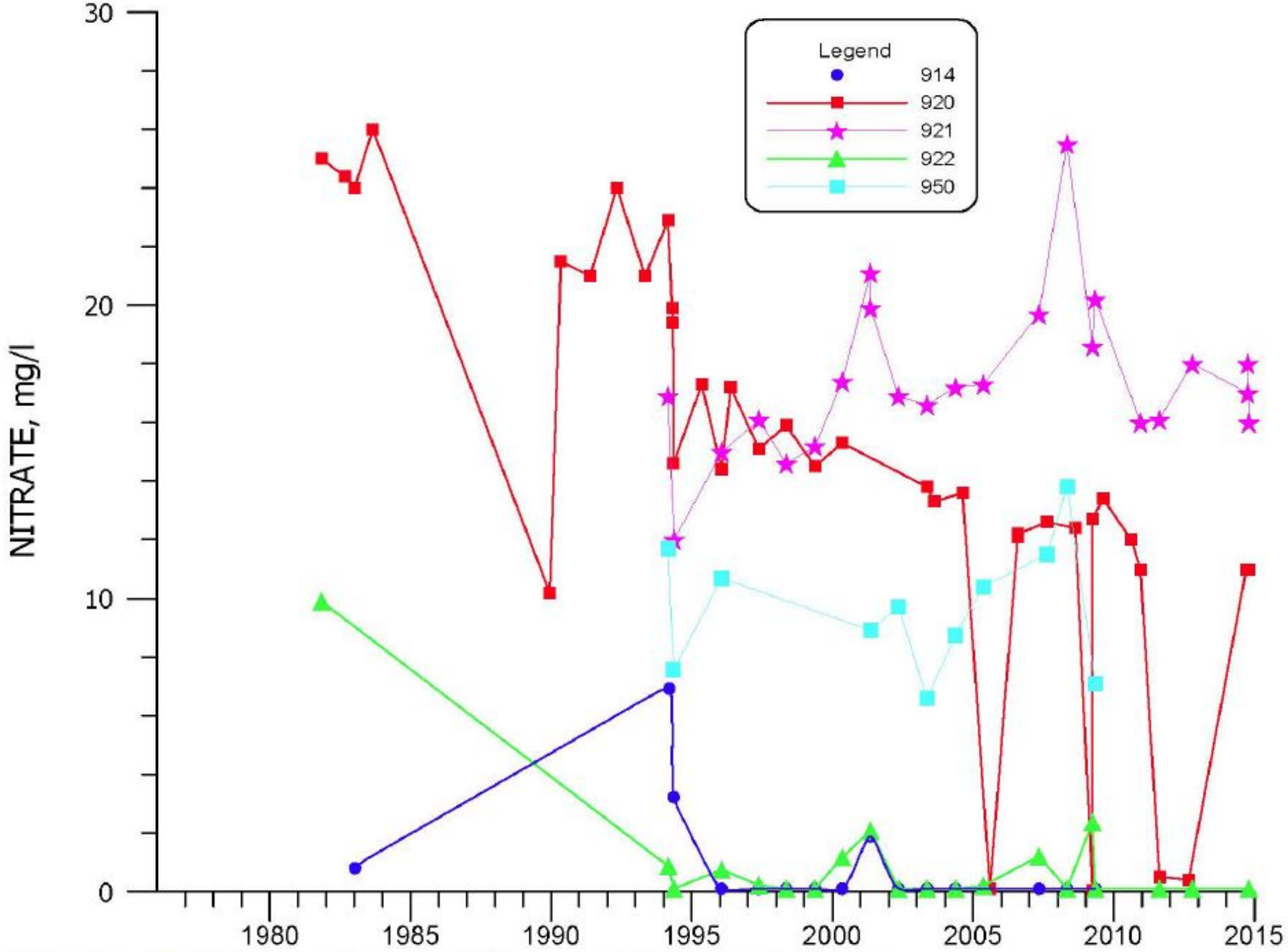
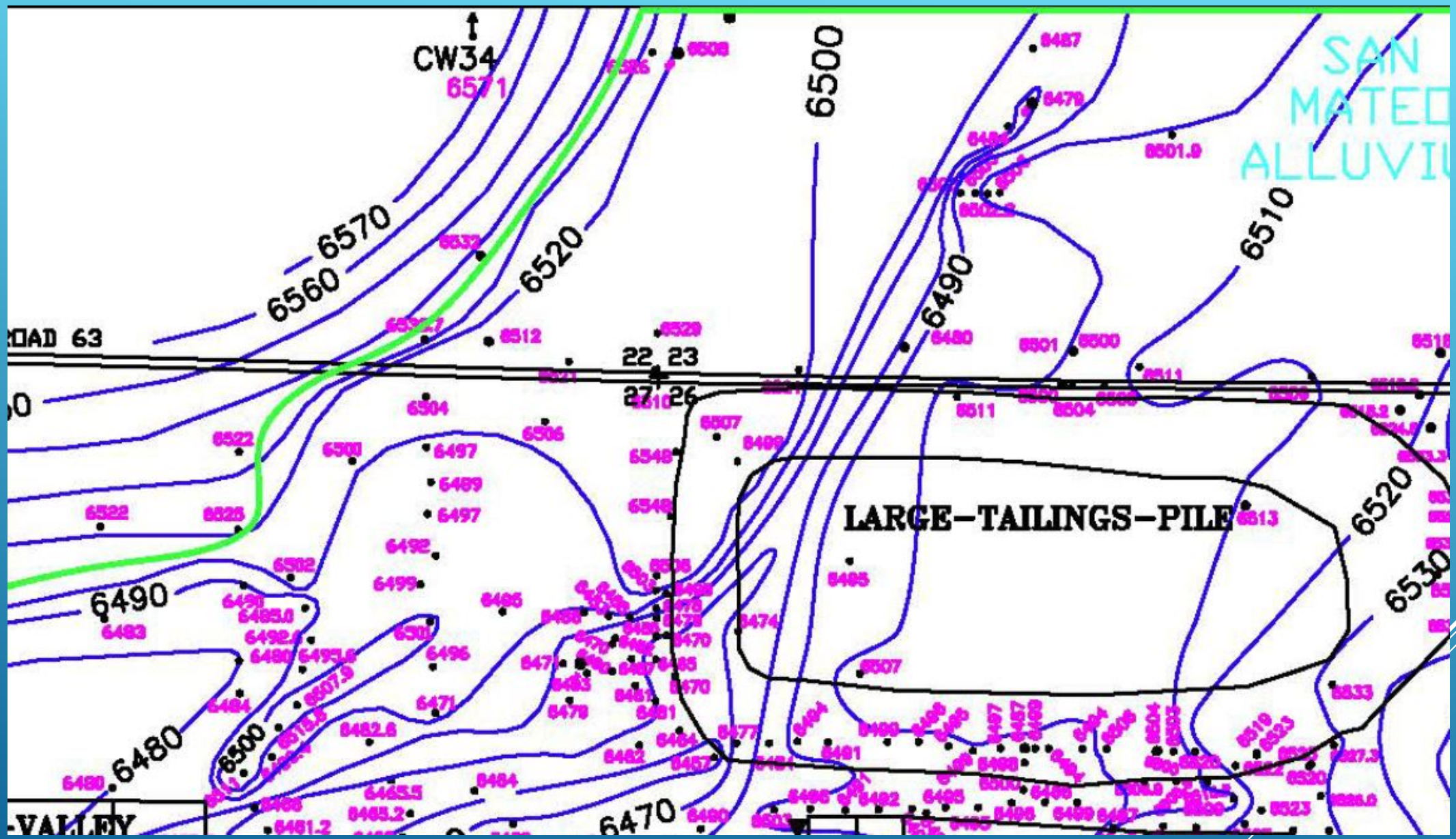
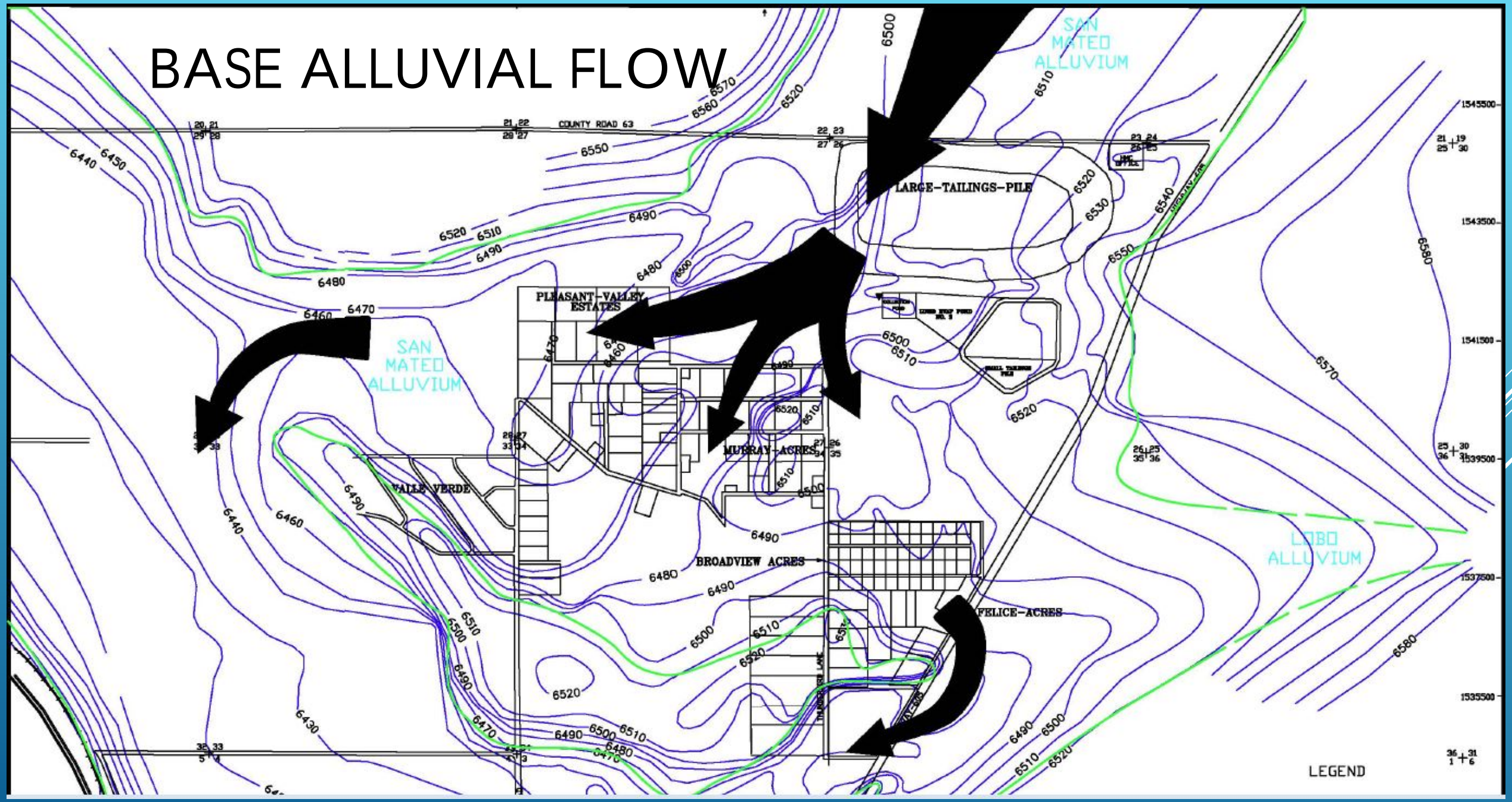
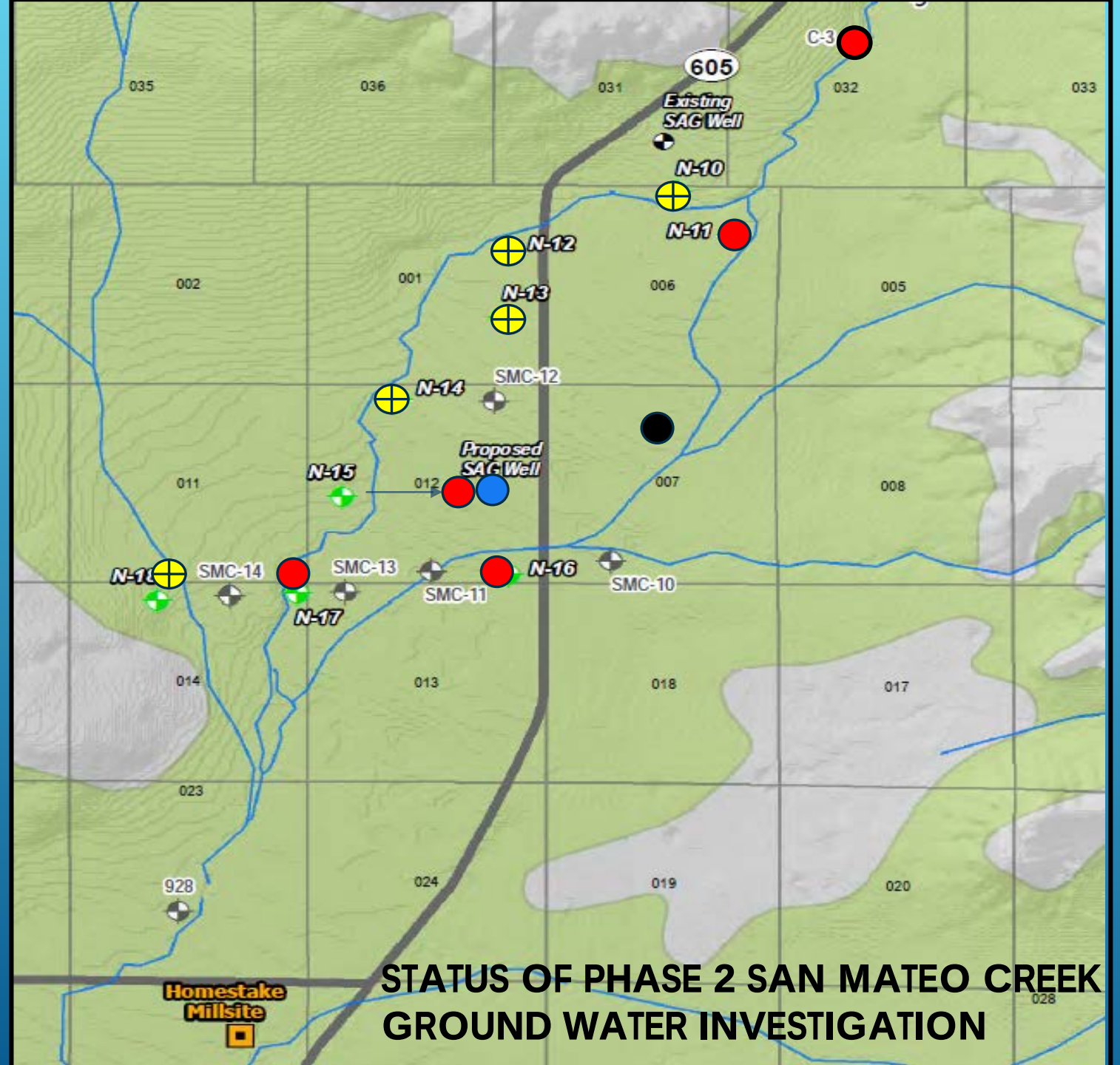


Figure 2-16. Nitrate Concentrations for Wells 914, 920, 921, 922 and 950


CW34
6571
6500
6570
6560
6520
6490
6510
6520
6530
6490
6480
6500
6470
ROAD 63
22 23
27 26
LARGE-TAILINGS-PILE
SAN
MATEO
ALLUVIU
VALLEY

BASE ALLUVIAL FLOW

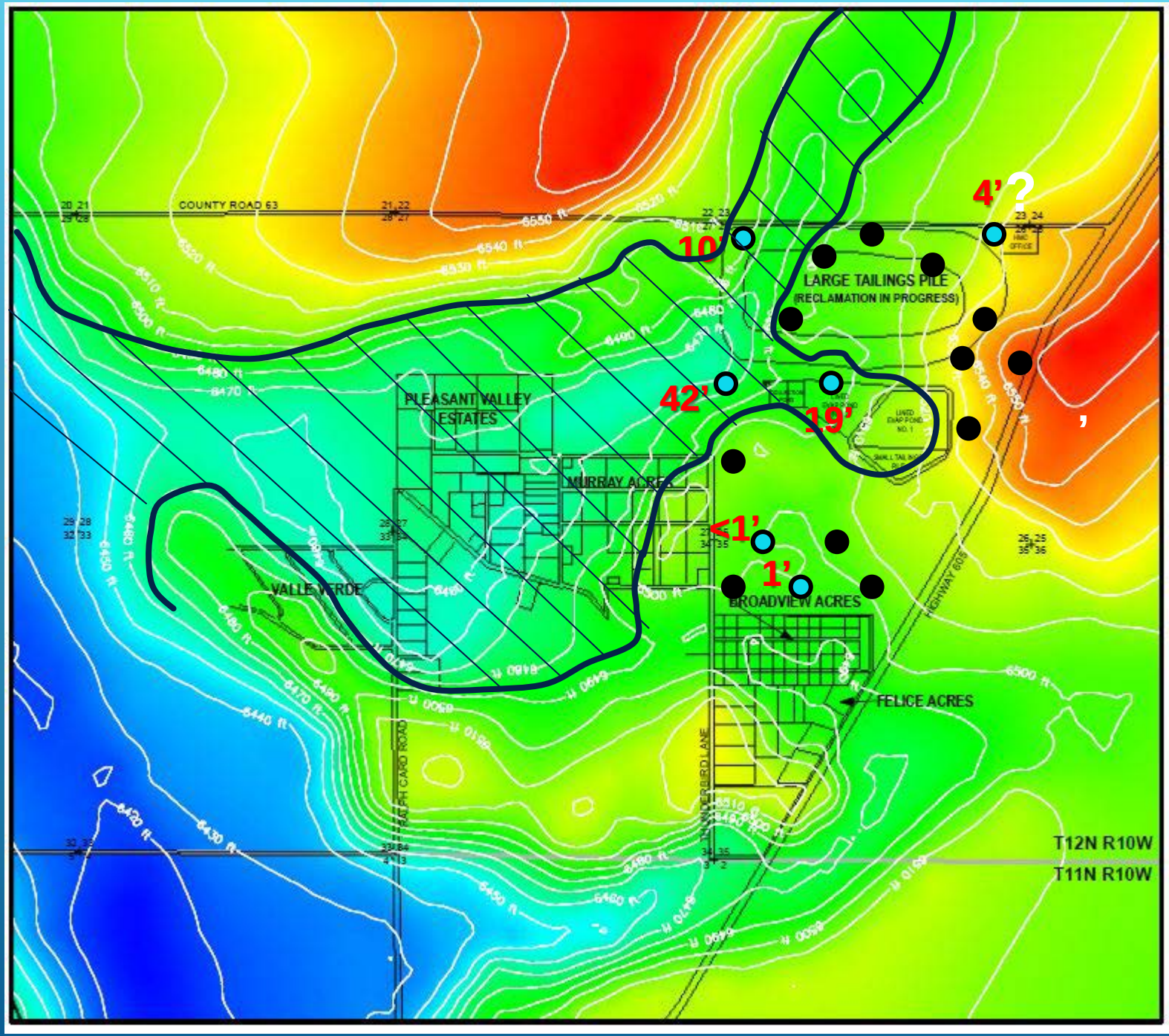




STATUS OF PHASE 2 SAN MATEO CREEK GROUND WATER INVESTIGATION

Legend

- Dry Boring
- Well Installed
- Planned Alluvial Well
- Phase 1 Well
- Planned SAG Well



- Water in Borehole
- Dry Borehole

ESTIMATION Of SATURATED ALLUVIUM 1960

BASE OF ALLUVIUM ELEVATION (FT-AMSL)

Modified From Homestake CAP

Water

Dry

42' Saturation Thickness (feet)

10 Bore Hole No.

6508 Water Elevation

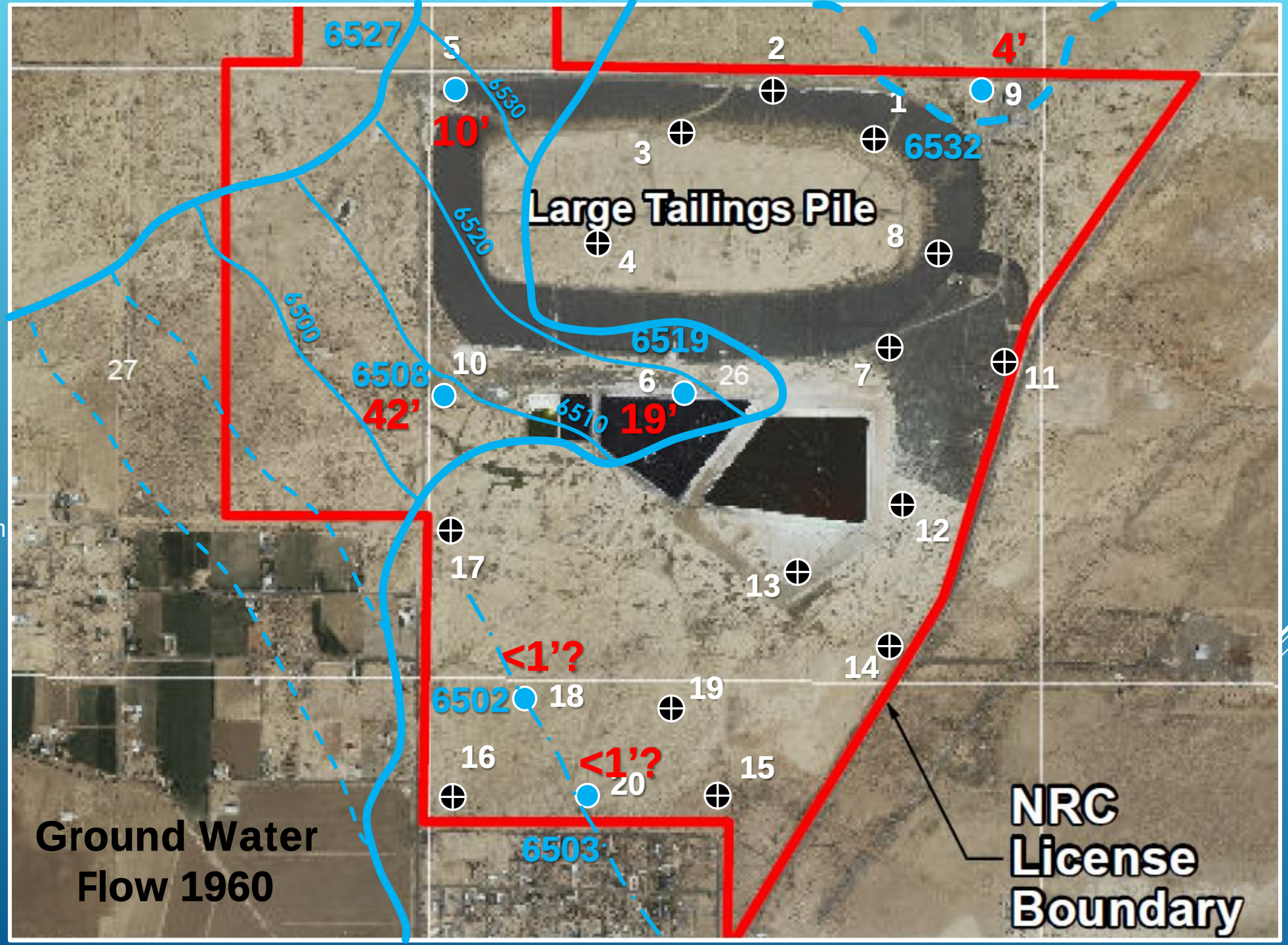
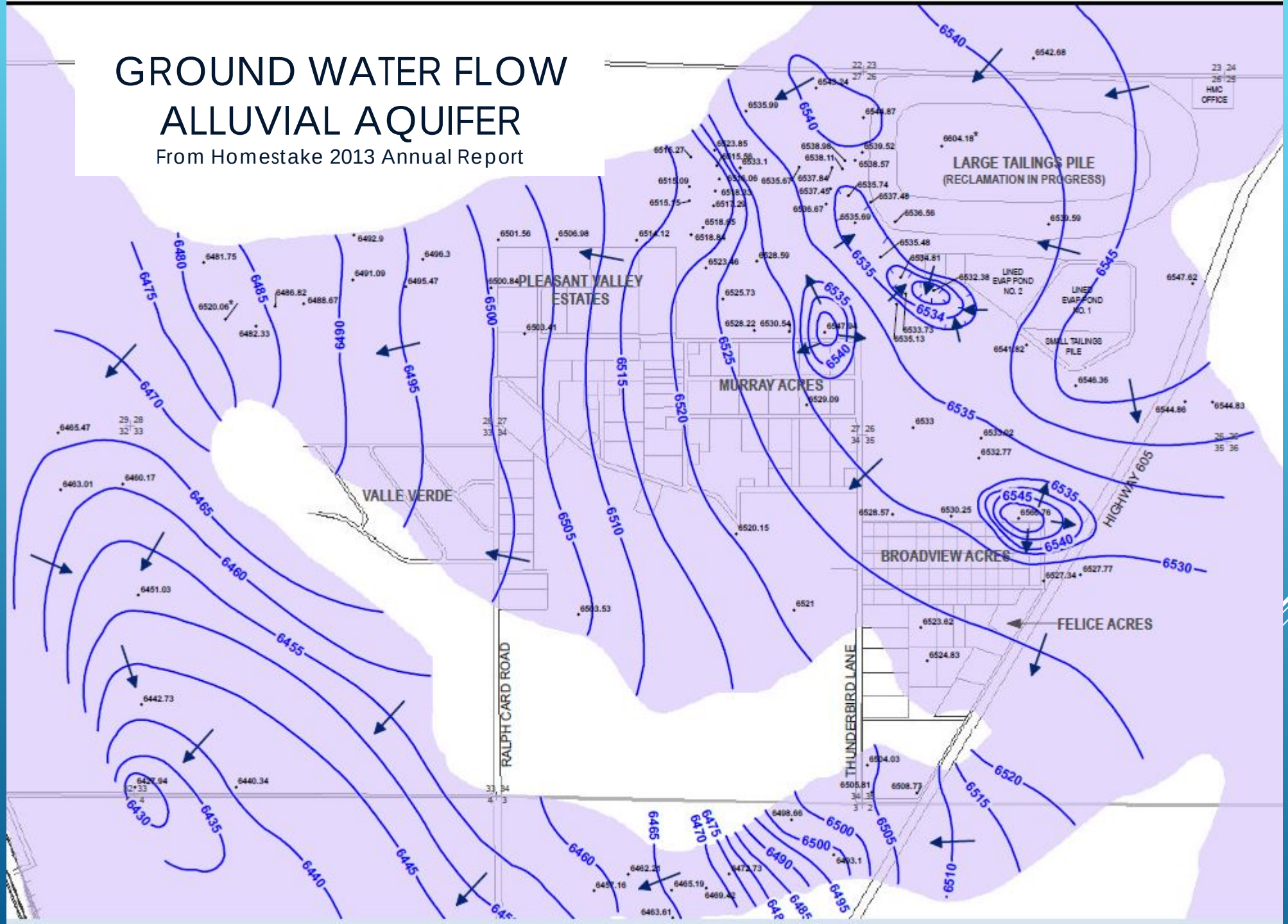


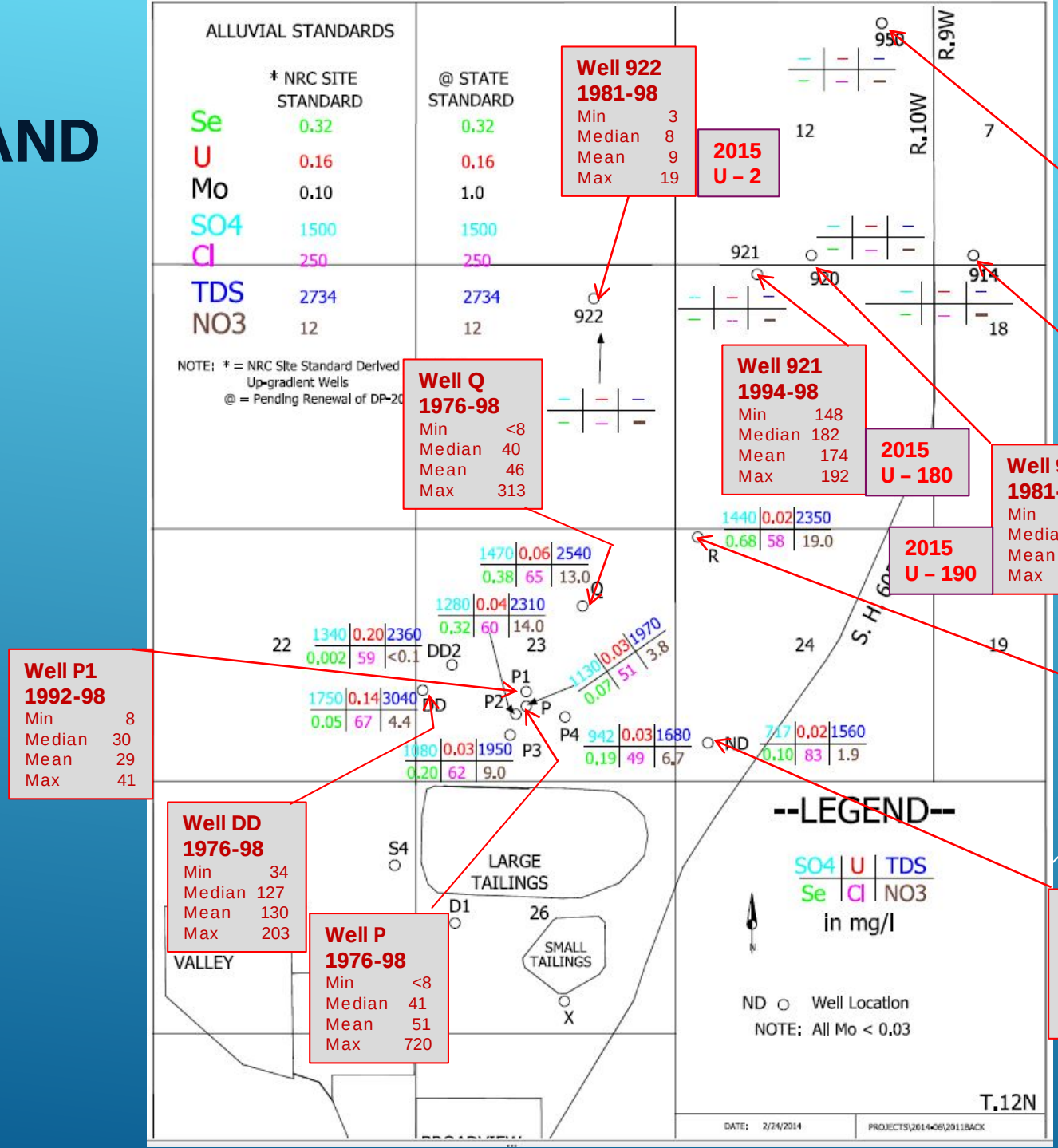
Figure Modified From Homestake CAP

GROUND WATER FLOW ALLUVIAL AQUIFER

From Homestake 2013 Annual Report



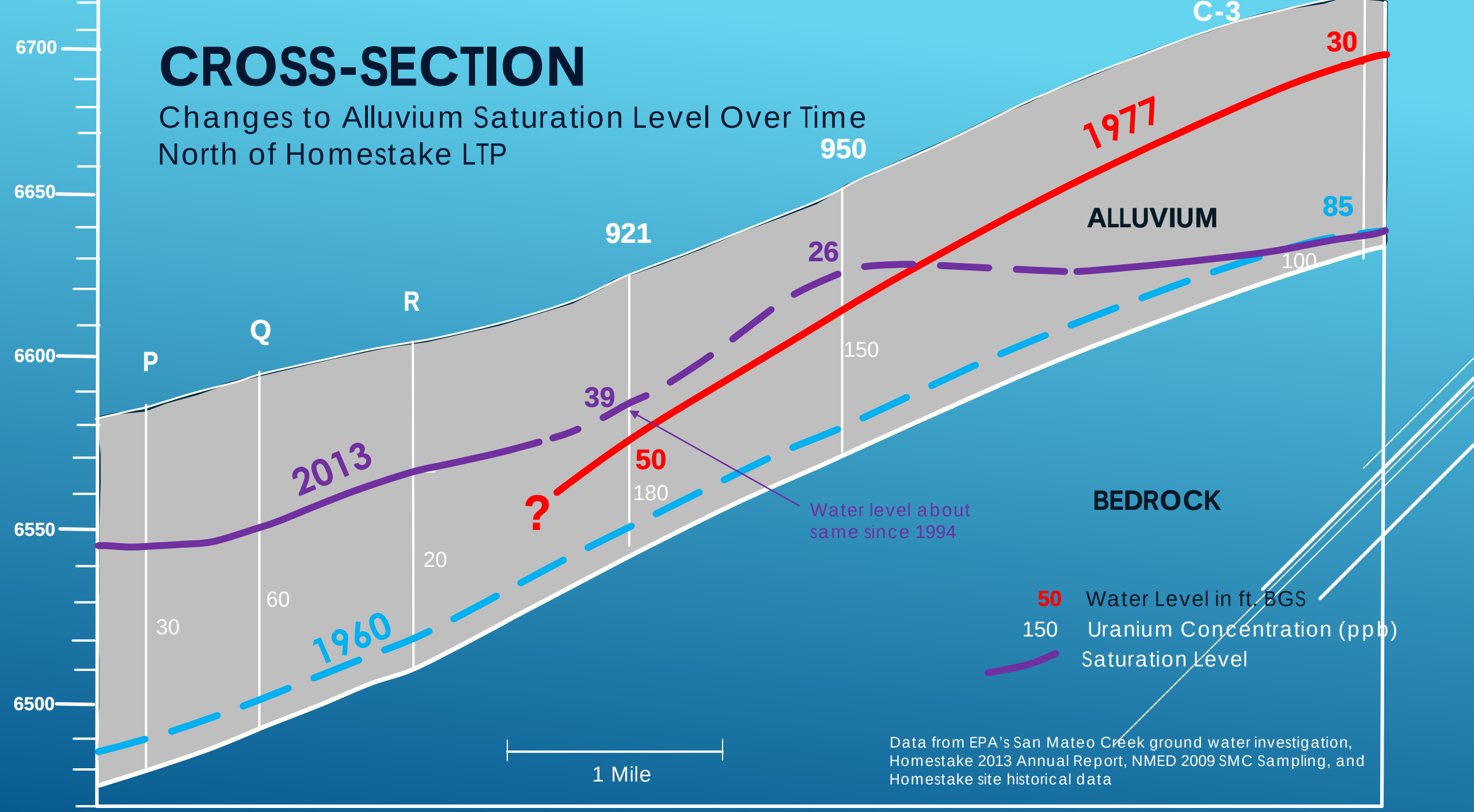
NEAR UPGRADIENT AND FAR UPGRADIENT BACKGROUND WELL CHEMISTRY DATA - URANIUM



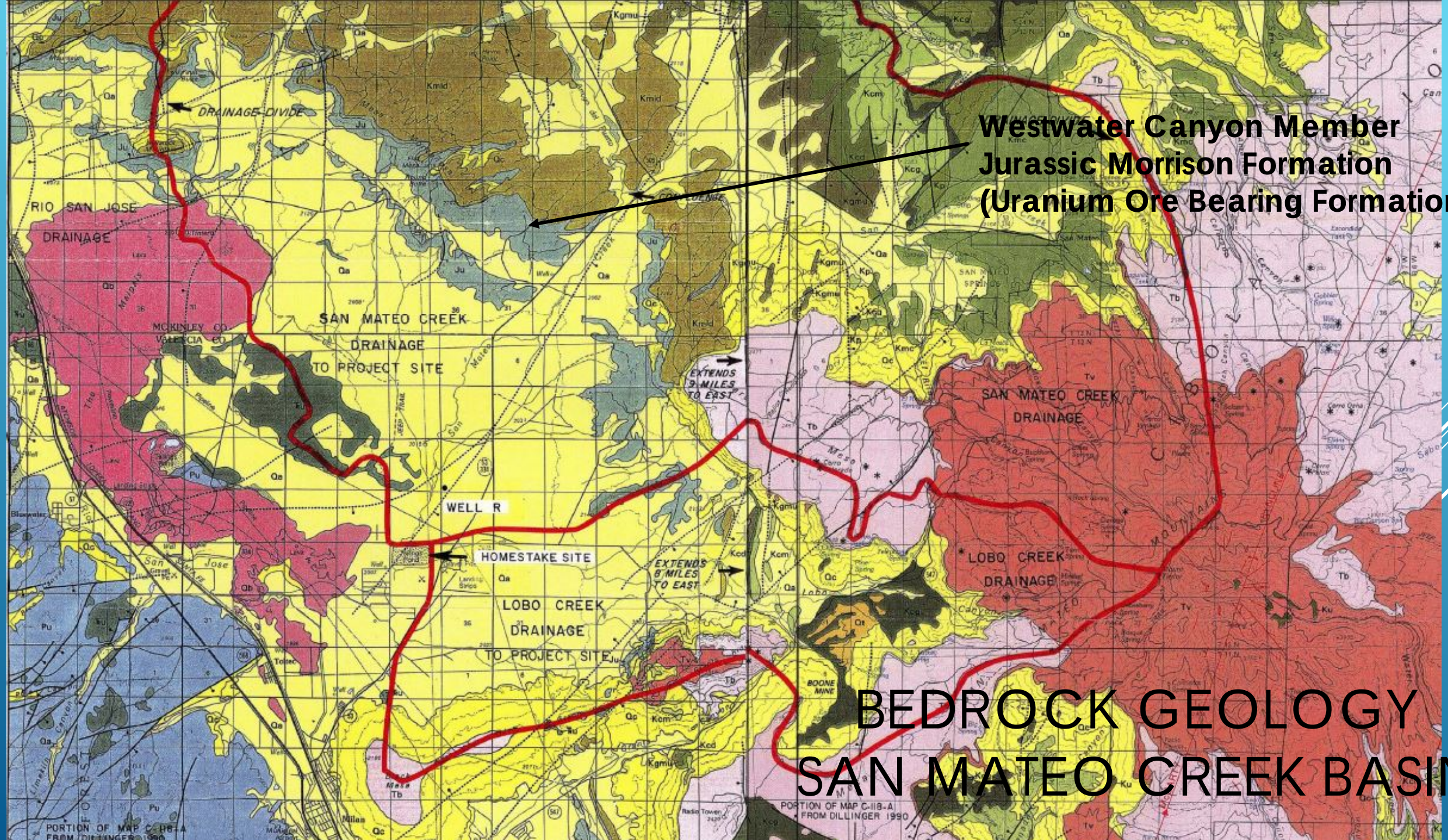
From Homestake 2013 Annual Report
And 2003 Statistical Evaluation Report

CROSS-SECTION

Changes to Alluvium Saturation Level Over Time
North of Homestake LTP

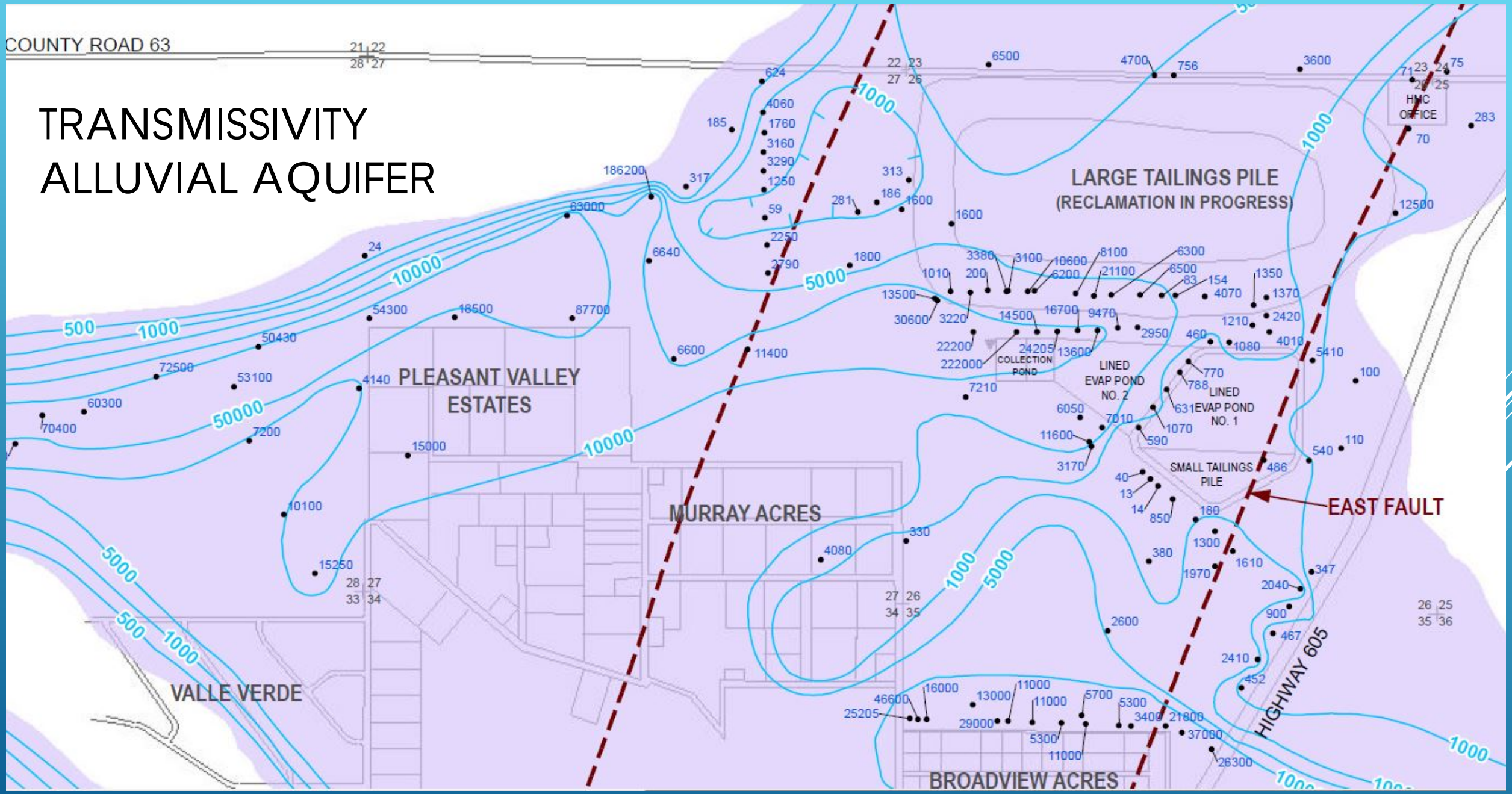


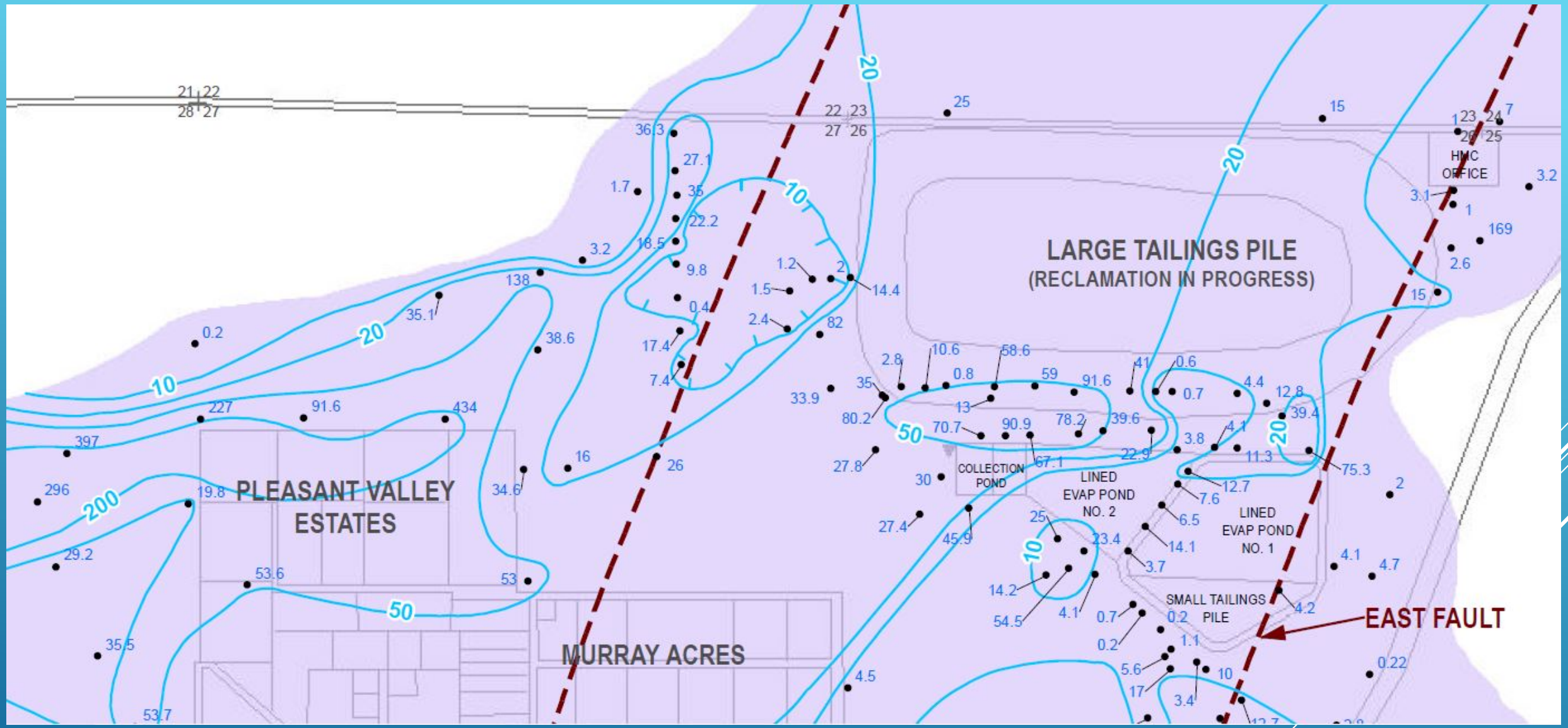
Data from EPA's San Mateo Creek ground water investigation, Homestake 2013 Annual Report, NMED 2009 SMC Sampling, and Homestake site historical data



BEDROCK GEOLOGY
SAN MATEO CREEK BASIN

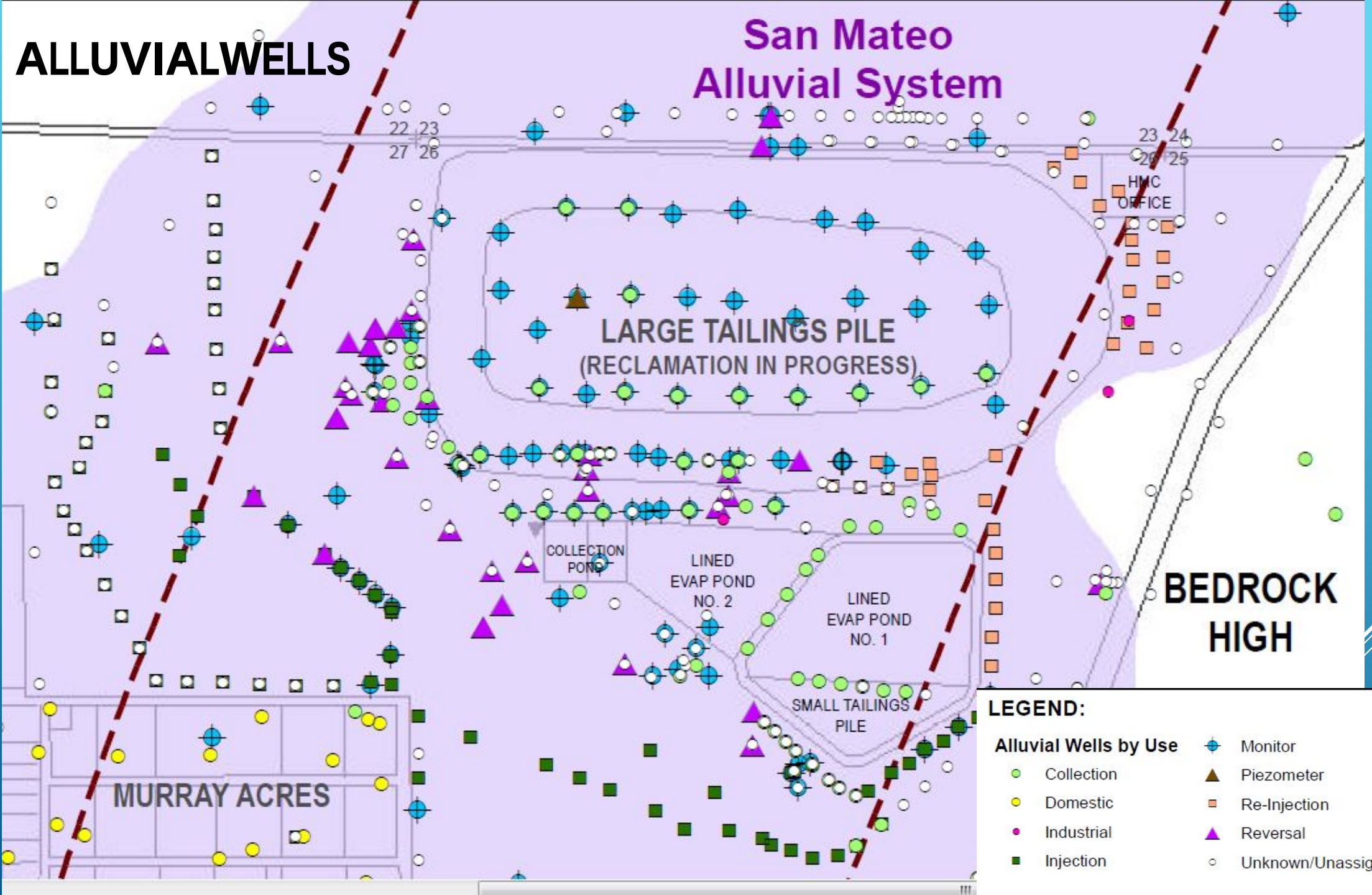
TRANSMISSIVITY ALLUVIAL AQUIFER





HYDRAULIC CONDUCTIVITY
ALLUVIAL AQUIFER

ALLUVIALWELLS



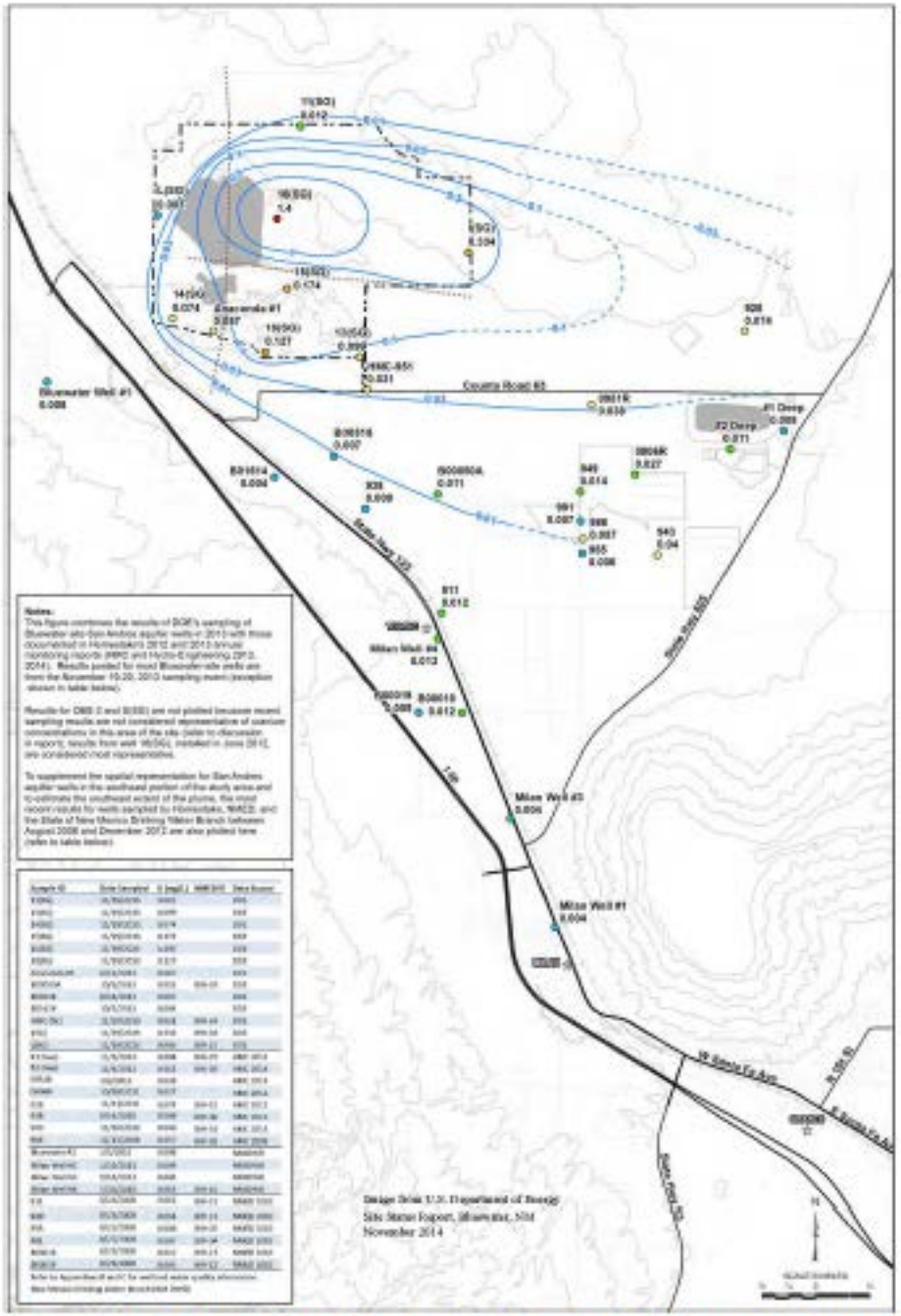


Figure 9-4. Recent Uranium Concentrations in the San Andres – Glorieta Aquifer