

Martin Marietta Materials



P.O. Box 30013
Raleigh, North Carolina 27622-0013
Telephone (919) 783-4631
Facsimile (919) 510-4739
E-Mail: horace.willson@martinmarietta.com

Horace S. Willson
Environmental Services

May 13, 2008

Mr. Nat Wilson, PG
Ground Water Management Section
Division of Water Resources
NCDENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Subject: Hydrogeologic Characterization and Modeling Analysis
Vanceboro Quarry Greensite
Wilmar, North Carolina

Dear Mr. Wilson:

Martin Marietta is submitting duplicate copies of this study to you today as part of the permitting process related to our quarry greensite located in both Craven and Beaufort Counties near Wilmar, NC.

This study has been prepared by Groundwater Management Associates, Inc. of Greenville, North Carolina. During this meeting with you today, GMA will present a brief overview of the findings of this study and answer any questions that you may have.

Duplicate copies of this report are also being submitted to the Division of Land Resources for their review.

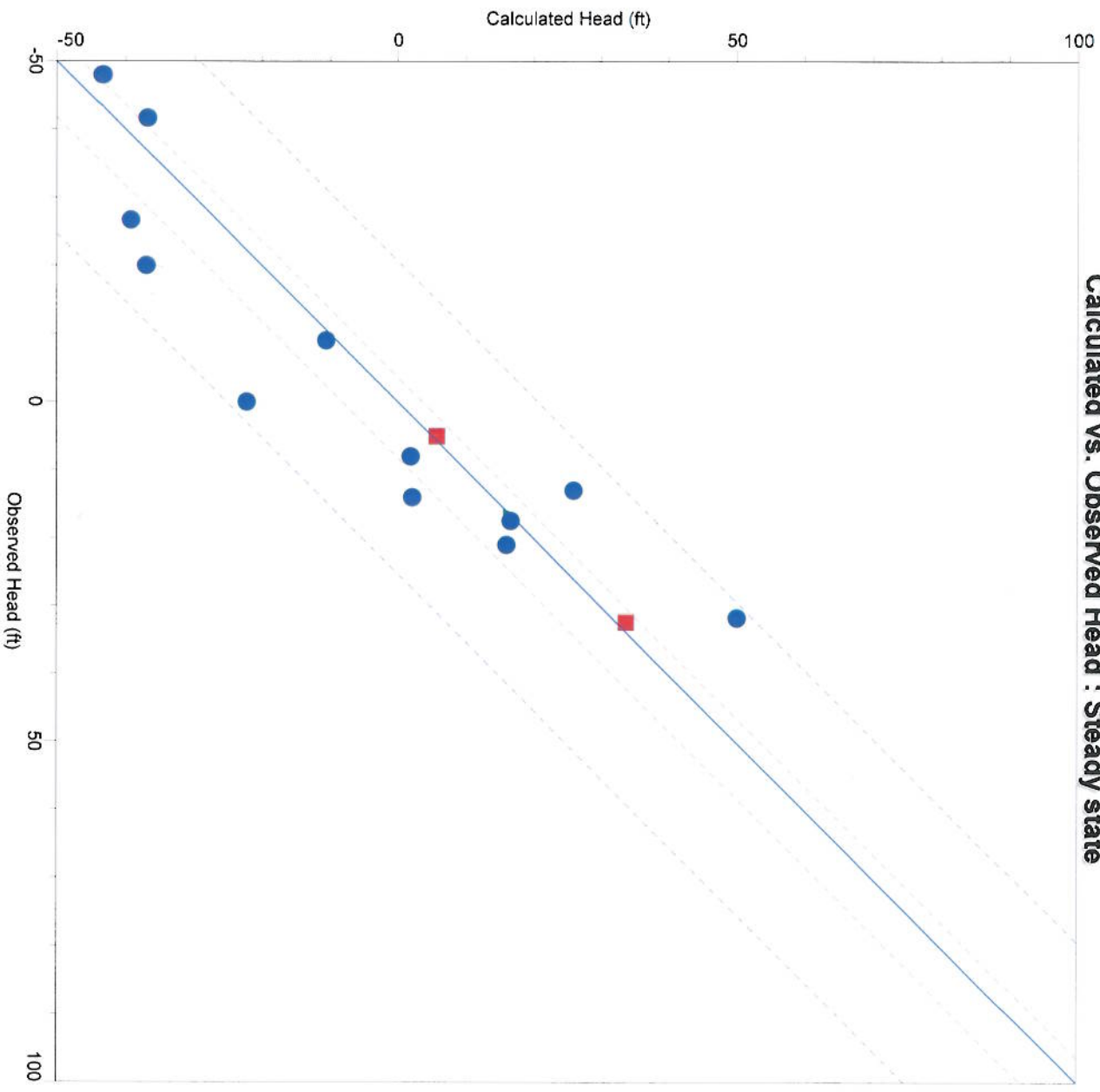
We trust that this report covers the concerns that you may have concerning this proposed operation. Please give me a call at 919/783-4631 if you have any questions or the need for additional information.

Respectfully Submitted,

Horace Willson

cc: Mr. Floyd Williams
State Mining Specialist
Land Quality Section
Division of Land Resources
1612 Mail Service Center

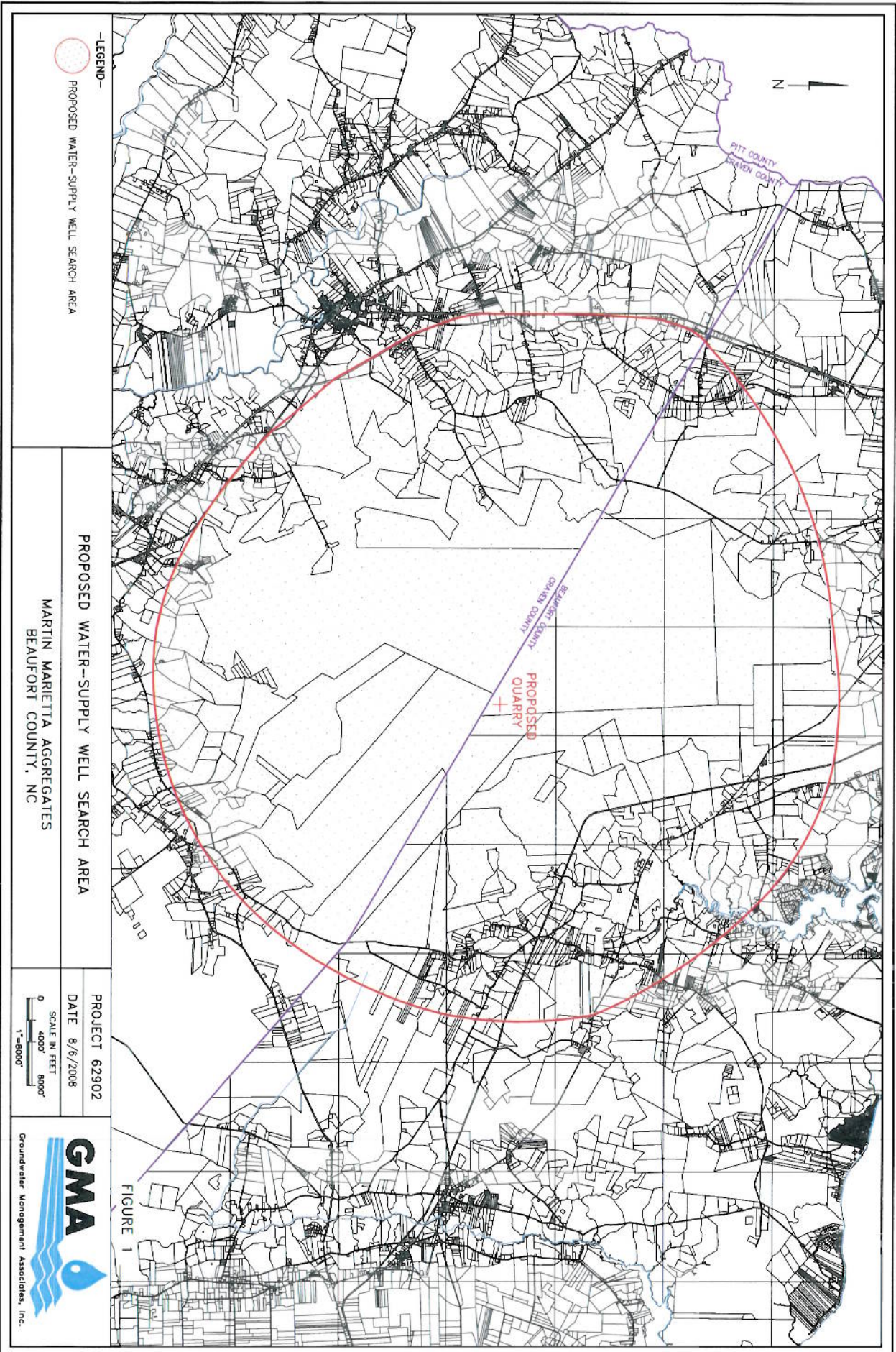
Calculated vs. Observed Head : Steady state

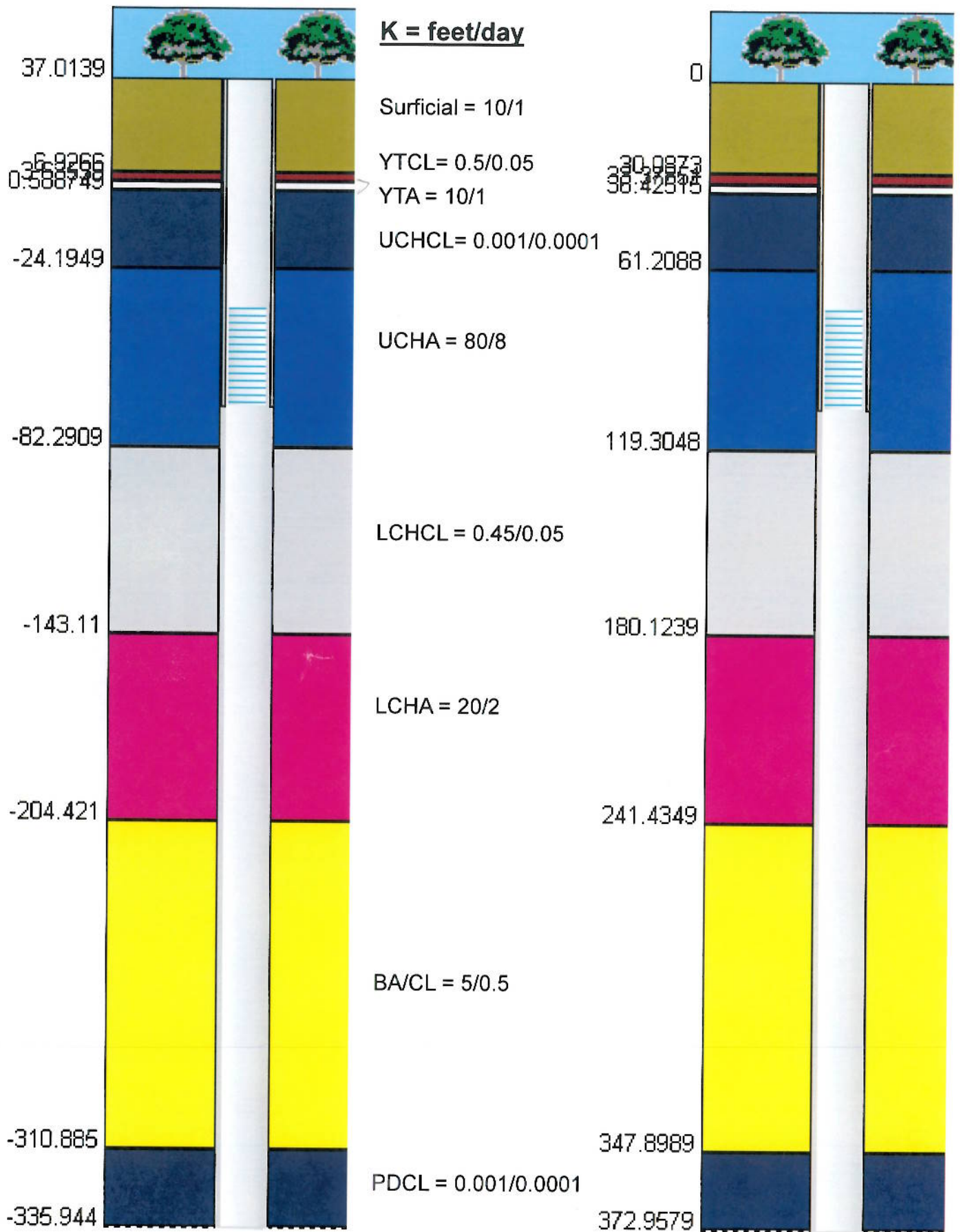


■ Layer #1
● Layer #5
▲ Layer #7
— 95% confidence interval
- - - 95% interval

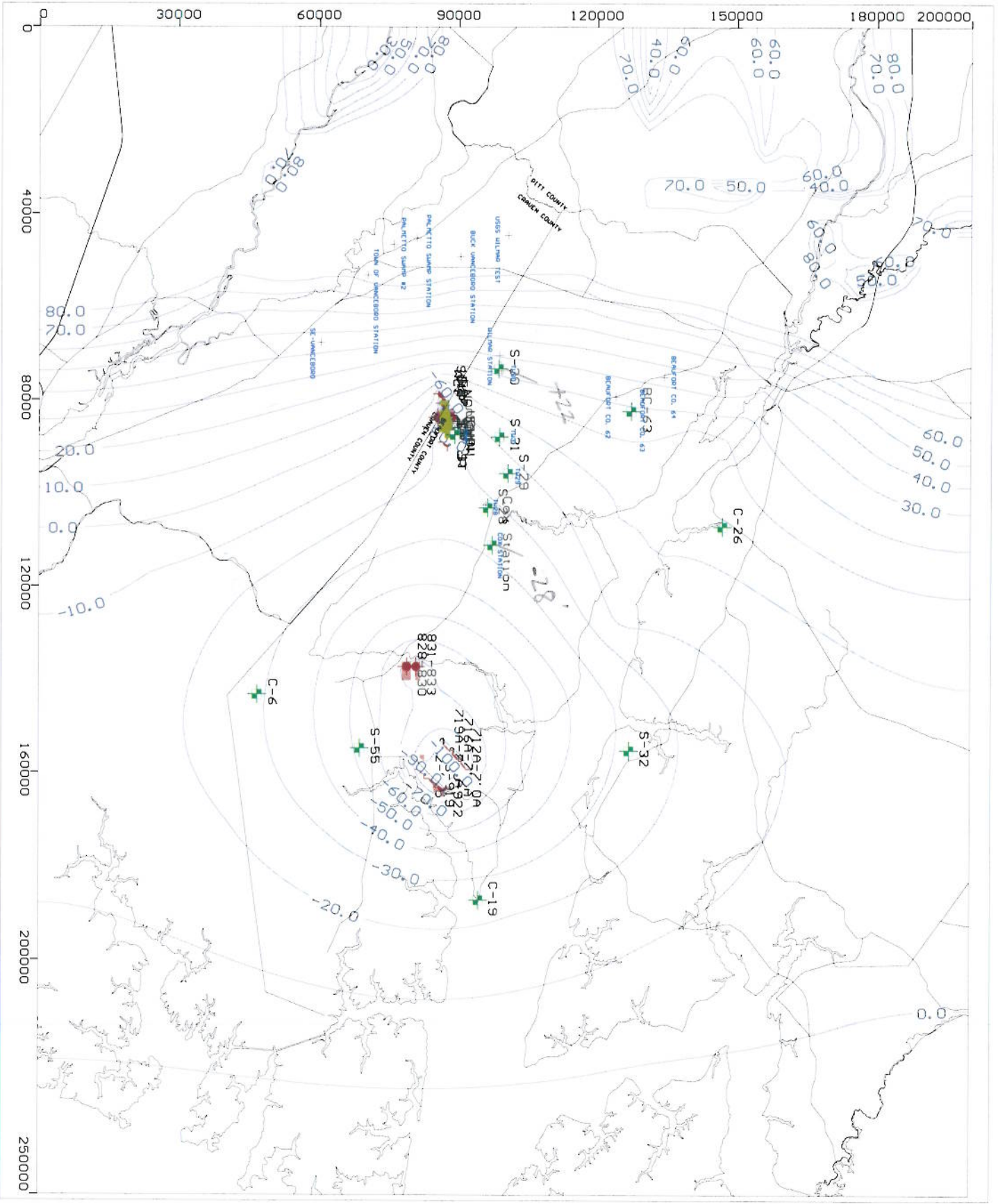
Max. Residual: -22.218 (ft) at COX STATION/A
 Min. Residual: -0.032 (ft) at LCHOW/A
 Residual Mean : -2.256 (ft)
 Abs. Residual Mean : 8.026 (ft)

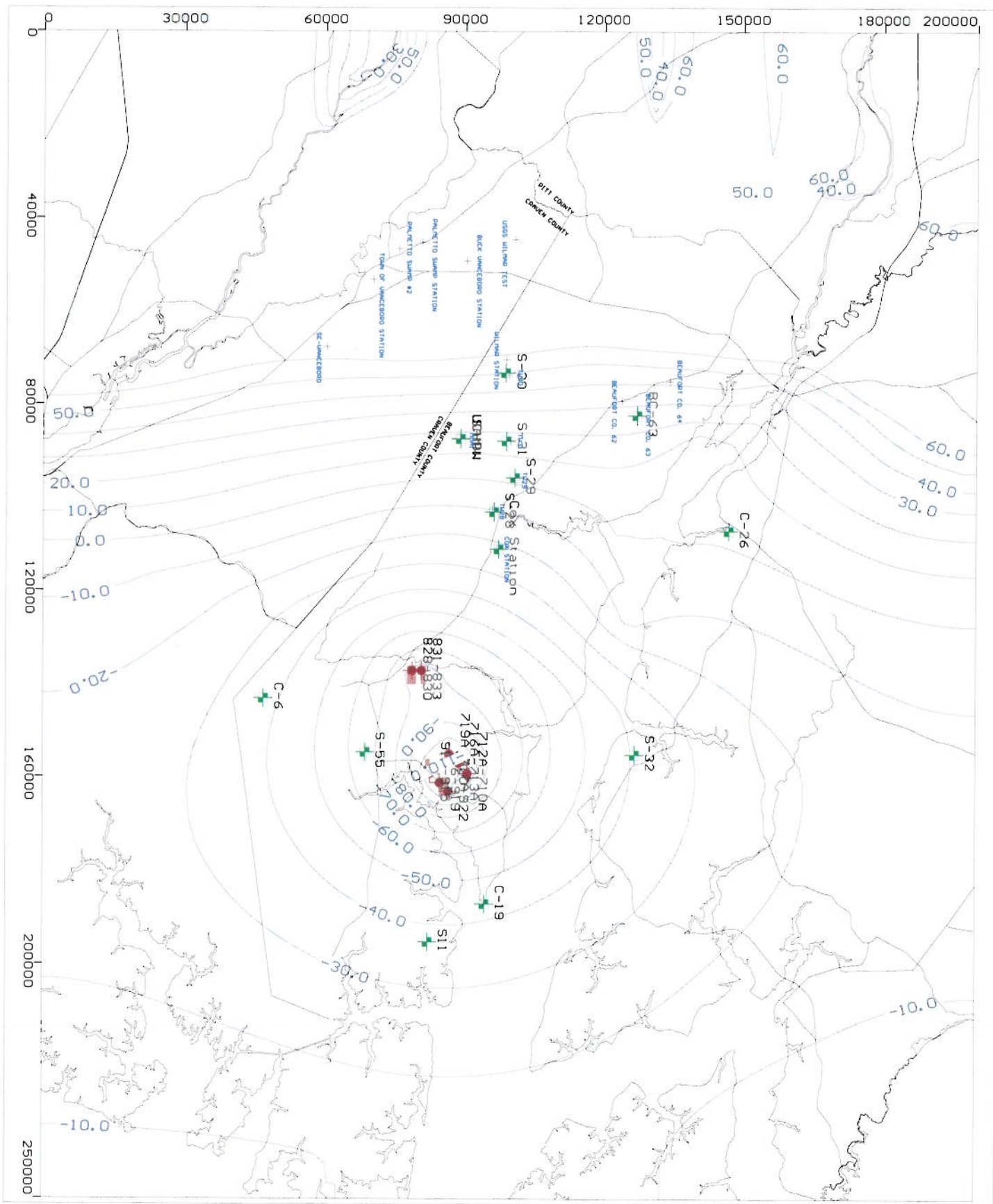
Num. of Data Points : 15
 Standard Error of the Estimate : 2.782 (ft)
 Root Mean Squared : 10.65 (ft)
 Normalized RMS : 13.263 (%)
 Correlation Coefficient : 0.932



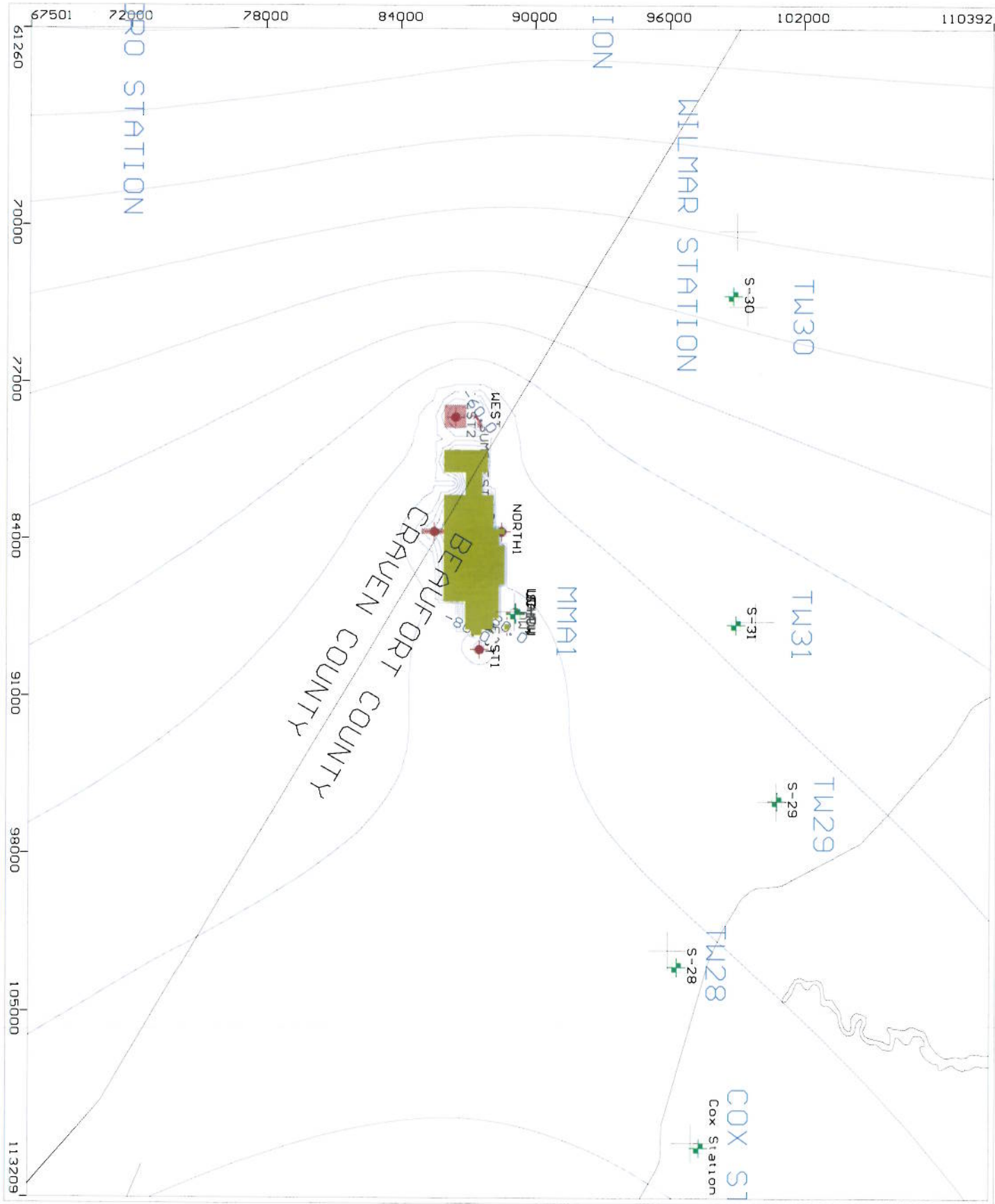


14-AQ

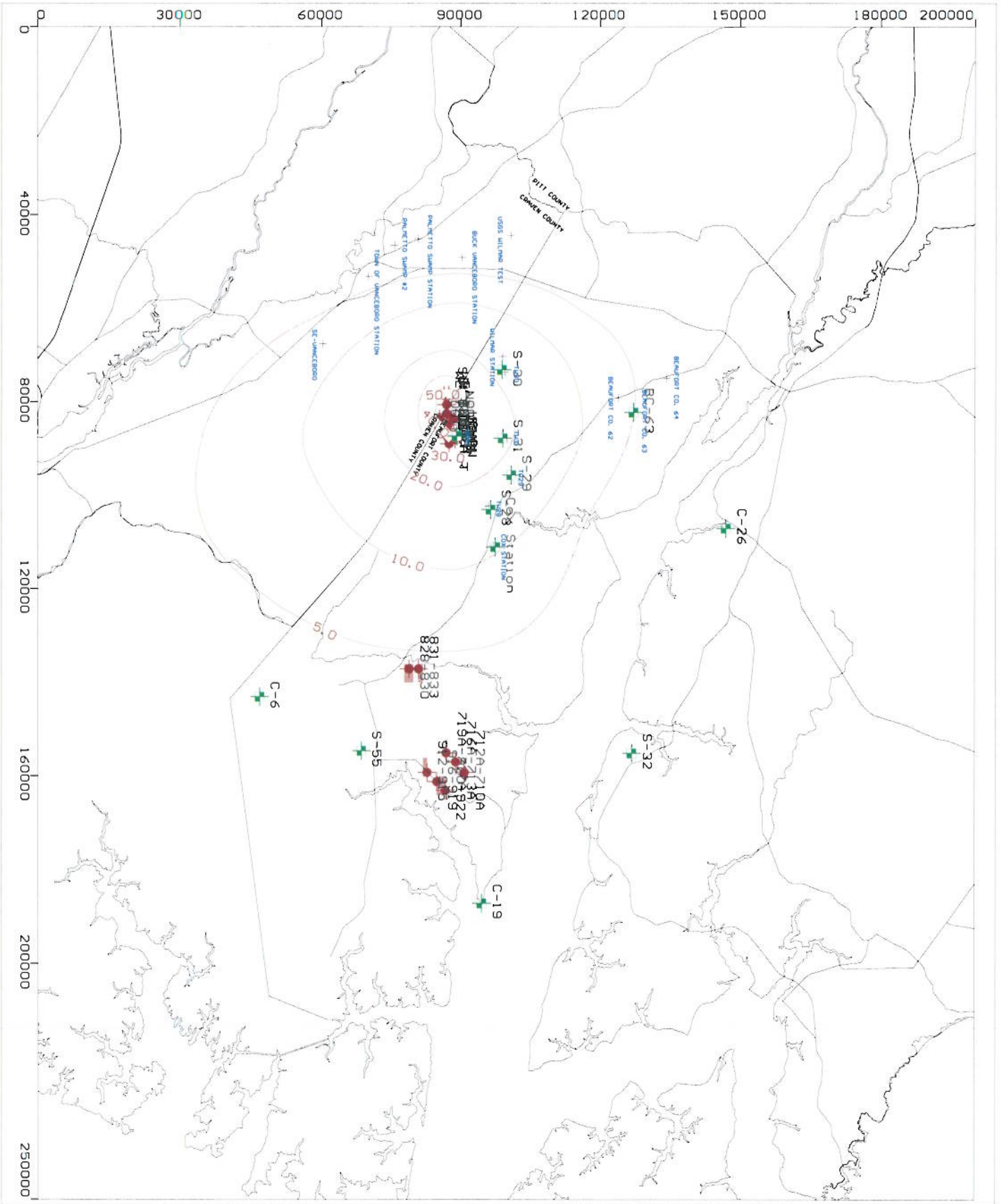




UCMAP



Lower CH Standown



Lower

Simulation Name
BaseSimulation

Well ID	Pumping Rate (gpm)	MGD
East1	-500	0.720
North1	-500	0.720
South1	-150	0.216
West1	-700	1.008
West2	-800	1.152
DW1	-1000	1.440
DW2	-1000	1.440
DW3	-2000	2.880
SumpCenter	-2000	2.880
SumpEast	-1500	2.160
SumpWest	-1500	2.160
Total	-10,250	16.776

Results

Complete dewatering of the mine

West Dewater

Well ID	Pumping Rate (gpm)	MGD
North1	-150	0.216
South1	-600	0.864
West1	-150	0.216
West2	-50	0.072
DW1	-1500	2.160
DW4	-1600	2.304
DW5	-1000	1.440
DW6	-1600	2.304
DW7	-800	1.152
SumpWest	-1000	1.440
Total	-8,450	12.168

33% of Mine Pit Dewatered

Simulation Name
Dewater Center

Well ID	Pumping Rate (gpm)	MGD
North1	-150	0.216
South1	-600	0.864
DW1	-1500	2.160
DW2	-1500	2.160
DW5	-1500	2.160
SumpCenter	-2500	3.600
Total	-7,750	11.160

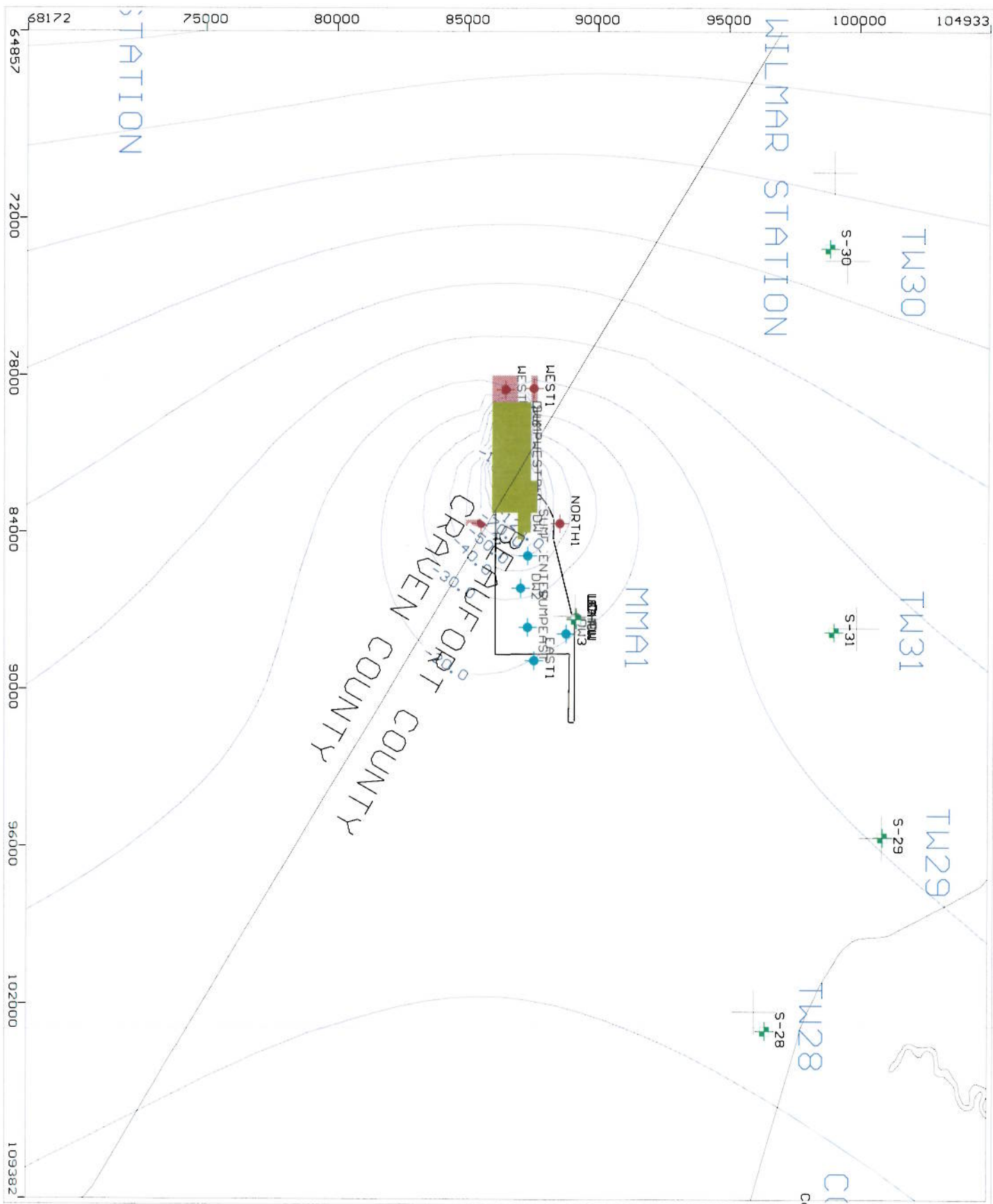
Results

33% of Mine Pit Dewatered

Dewater East

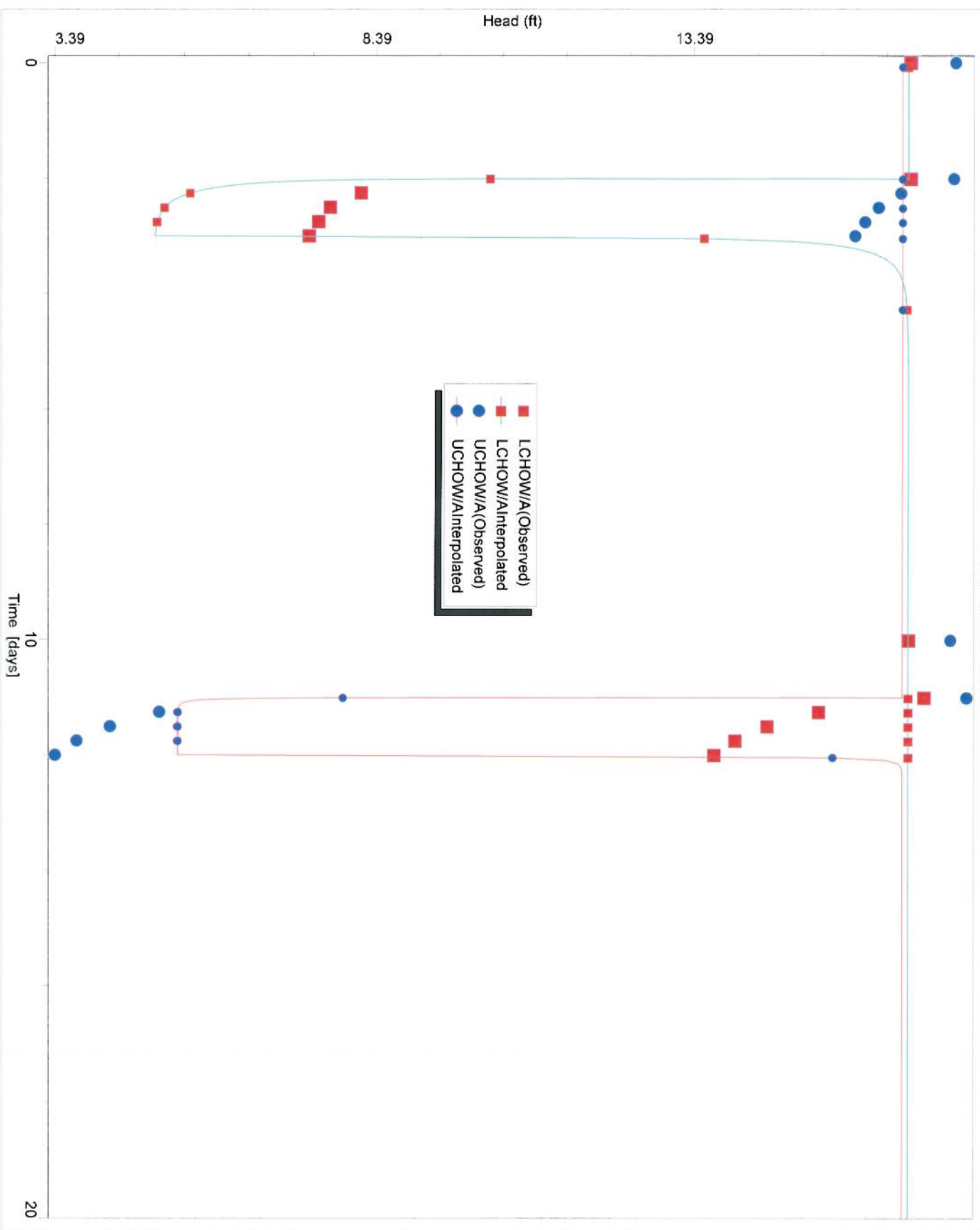
Well ID	Pumping Rate (gpm)	MGD
East1	-1500	2.160
DW2	-1200	1.728
DW3	-500	0.720
DW8	-1500	2.160
DW9	-1000	1.440
SumpCenter	-2000	2.880
SumpEast	-1500	2.160
Total	-9,200	13.248

33% of Mine Pit Dewatered

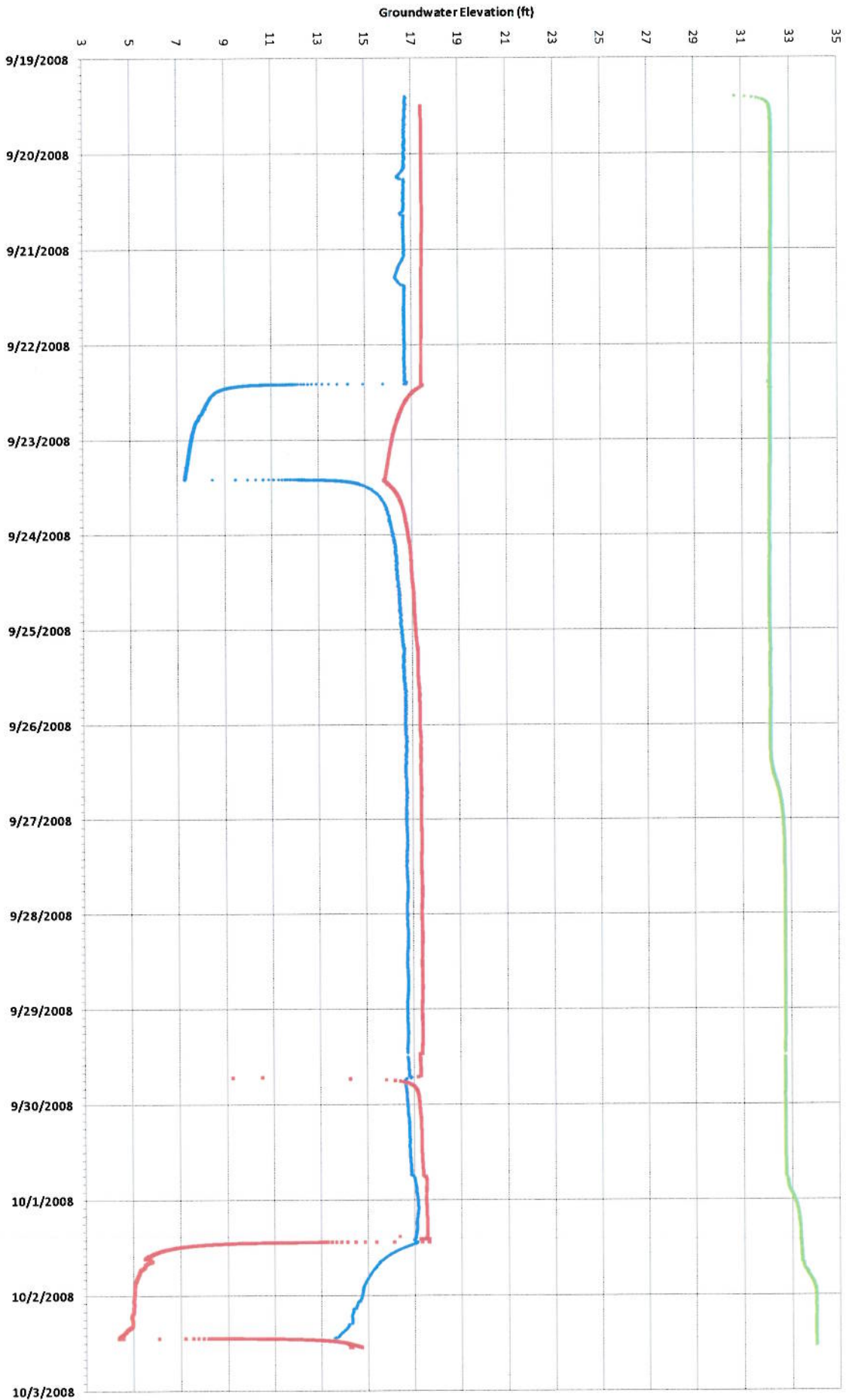


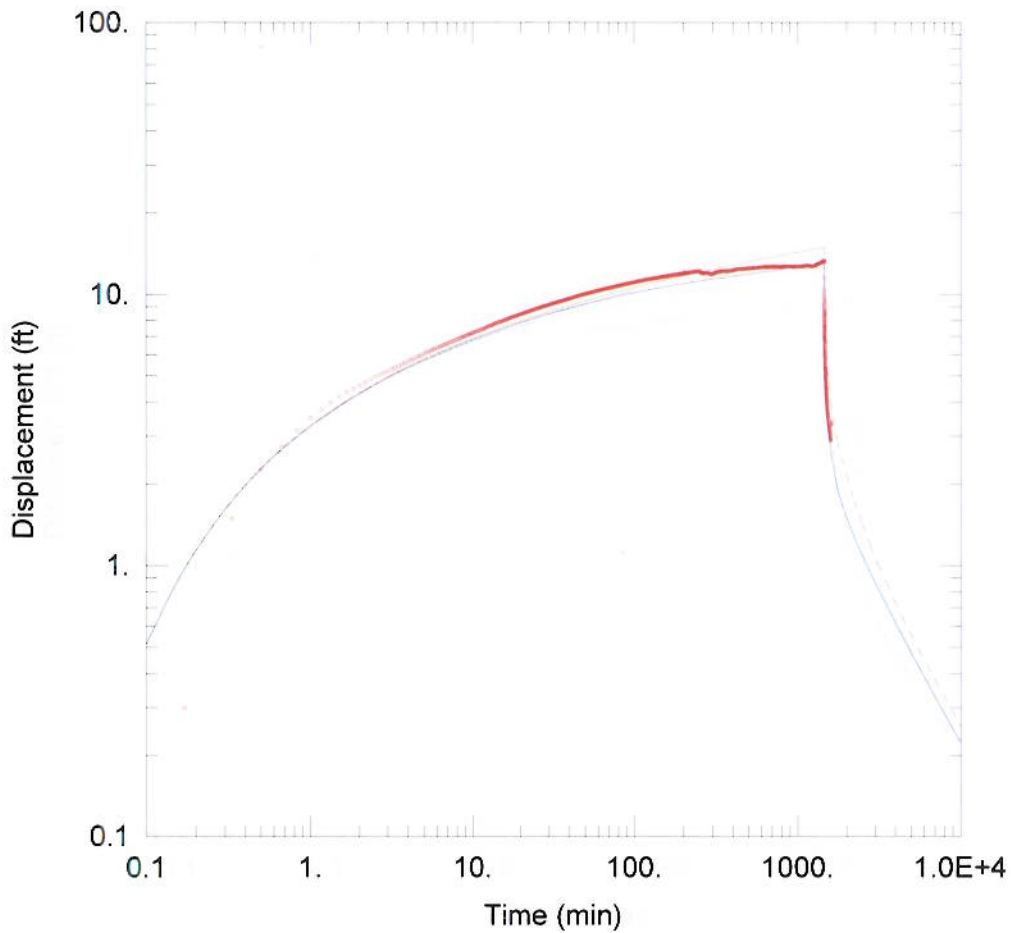
Colors Revised from previous chart

Head vs. Time



Groundwater Elevations (Sept. 19, 2008 through Oct. 2, 2008)





MARTIN MARIETTA AGGREGATES - VANCEBORO

Data Set: Z:\...\UCHAOW 24hr. NW2.aqt
 Date: 03/20/09

Time: 16:14:34

PROJECT INFORMATION

Company: GMA
 Client: Martin Marietta Aggregates
 Project: 62902
 Location: Vanceboro
 Test Well: UCHAPW
 Test Date: 10/1/08

AQUIFER DATA

Saturated Thickness: 60. ft

Anisotropy Ratio (Kz/Kr): 0.01788

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
UCHAPW	0	0	UCHAOW	0	75.5

SOLUTION

Aquifer Model: Leaky

Solution Method: Neuman-Witherspoon

T = 4925. ft²/day

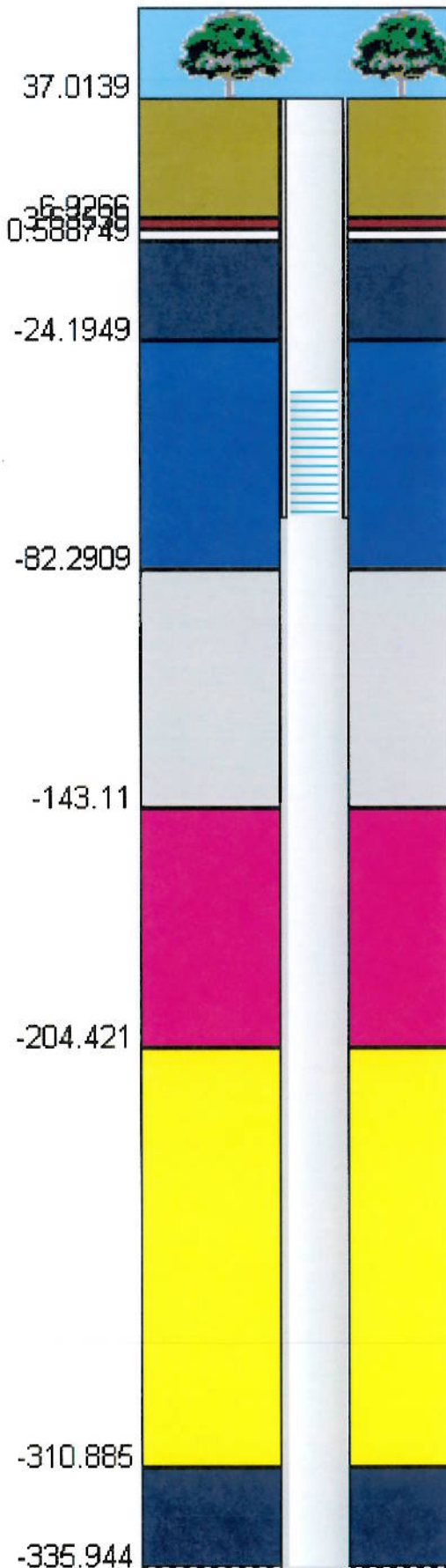
S = 0.00019

r/B = 0.03

β = 0.002

T' = 620. ft²/day

S' = 0.0003



K = feet/day

Surficial = 10/1

YTCL = 0.5/0.05

YTA = 10/1

UCHCL = 0.001/0.0001

UCHA = 80/8

LCHCL = 0.45/0.05

LCHA = 20/2

BA/CL = 5/0.5

PDCL = 0.001/0.0001

