RESULTS OF PHASE II – ADDITIONAL GEOPHYSICAL SURVEYS

ASSESSMENT OF THE POTENTIAL AVAILABILITY OF GROUNDWATER RESOURCES WITHIN THE LEACHMAN PROPERTY MARSHALL SERVICE DISTRICT

FAUQUIER COUNTY WATER RESOURCES MANAGEMENT PROGRAM
FAUQUIER COUNTY WATER & SANITATION AUTHORITY

July 2009

Prepared for the:

WATER RESOURCES MANAGEMENT PROGRAM
FAUQUIER COUNTY WATER & SANITATION AUTHORITY

EMERY & GARRETT GROUNDWATER, INC.

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Meredith, New Hampshire 03253

New England **Mid-Atlantic** **South Atlantic**

Emery & Garrett Groundwater, Inc.
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(603) 279-4425 *www.eggi.com* *Fax (603) 279-8717*

July 17, 2009

Mr. Barney Durrett
General Manager
Fauquier County WSA
7172 Kennedy Road
Warrenton, VA 20187-3907

Re: Marshall Service Area – Geophysical Surveys Performed on the Leachman Property

Dear Barney,

As a continuation of our groundwater exploration and development program for the Marshall Service Area, Emery & Garrett Groundwater, Inc. (EGGI) is pleased to present the results of our geophysical investigation of the three land parcels owned by Mr. Leachman. These lands are referred to as Parcel #1, Parcel #2, and Parcel #3 (Figures 1, 2 and 3).

Two geophysical methods were utilized during this investigation -- magnetic/VLF and electrical resistivity. Approximately 27,000 feet of magnetic/VLF and 18,600 feet of electrical resistivity geophysical surveys were completed on Mr. Leachman's properties. The specific geophysical anomalies used to help locate the proposed test well sites are shown on graphs L20, L90, L150, R6, R7, and R11, which are attached for your review.[1] Furthermore, Figure 1 shows the location of the survey lines.

With regard to potential contaminant threats to groundwater quality, some commercial/industrial and other land uses of concern were identified near Parcels #2 and #3, such that the quality of the groundwater resources could be potentially degraded (Figure 3)[2]. However, only after test wells have been drilled and representative samples of the groundwater have been chemically analyzed will the quality of the available water resources be fully known.

From the analyses of the data collected, combined with other hydrogeologic information we have previously acquired and evaluated for the area, we have identified five proposed exploratory test well sites labeled FMA-L1, FMA-L2, FMA-L3, FMA-L4, and FMA-L5 (Figures 1 and 2). These exploratory well sites have been ranked according to their relative favorability, such that FMA-L1 is considered more favorable for groundwater development than site FMA-L2, etc. We are encouraged by the data and recommend that permits be acquired so that one or more of these sites can be drilled to test the capacity of the fractured bedrock aquifer at these specific locations. Please note that proposed Test Wells FMA-L1, FMA-L3, and FMA-L5 are

[1] Data for survey lines 4L30, 4L40, 4L70, 4L80, and 4R1 were collected during our 2008 Phase II investigation of the Marshall Service Area.
[2] Please refer to the information in our Phase I report of 2007 on potential contaminant threats to groundwater quality in the Marshall area.

not far from existing supply Wells FSC-1, FSC-4, PW-1, and PW-2 (Figure 2). A long-term pumping test and monitoring program would need to be implemented to determine if the simultaneous use of these wells would have any adverse effects on their individual capacities or on other groundwater users in the area.

I hope the information contained herein is responsive to your needs. Please let me know when we might be able to proceed with the permitting of the proposed exploratory test well sites.

Best regards,

Ken Hardcastle, Ph.D., P.G.
Project Manager

Proposed Exploratory Test Well Sites and Geophysical Survey Lines on Parcels Owned by Mr. Leachman Marshall, Fauquier County, Virginia

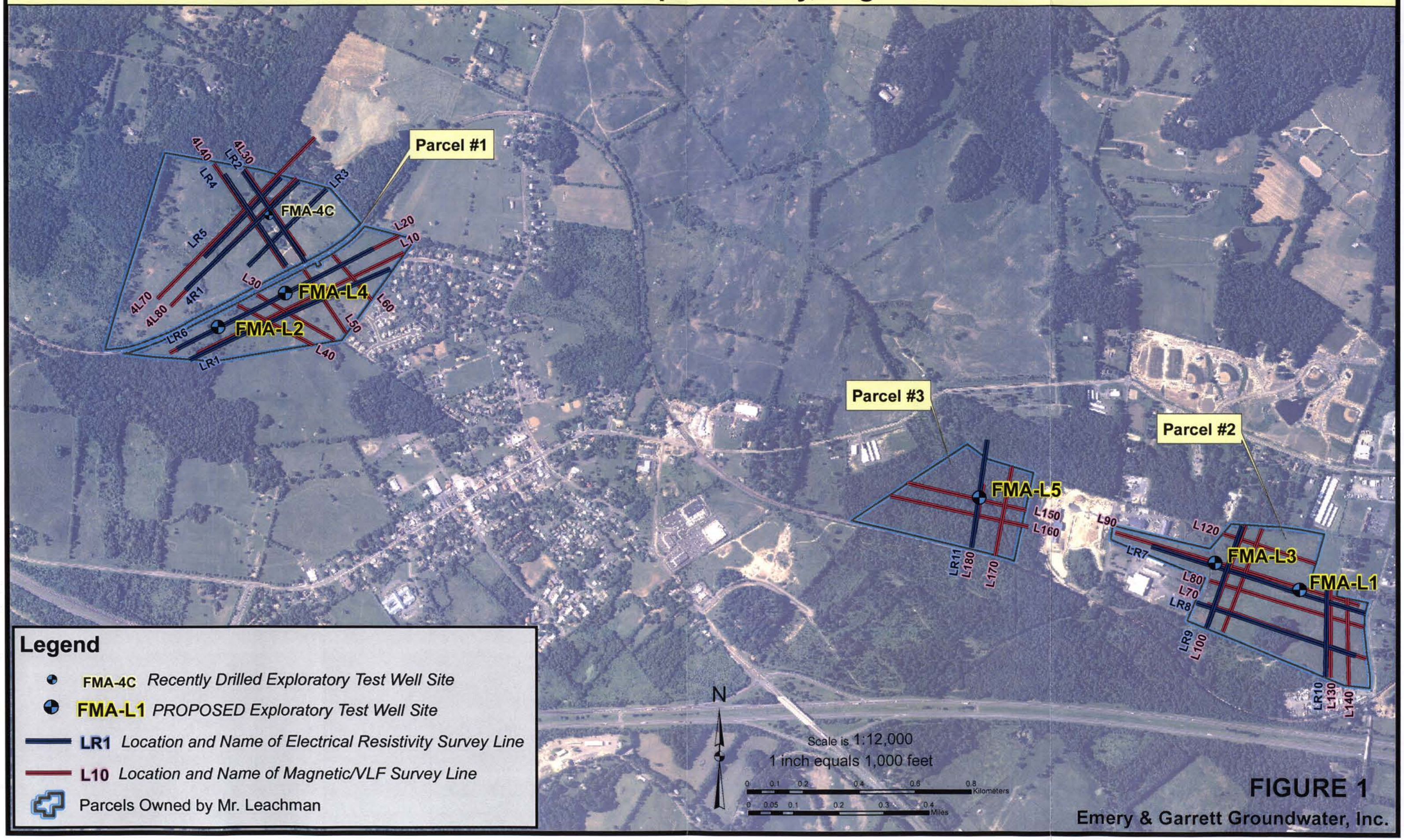


FIGURE 1

Emery & Garrett Groundwater, Inc.

V:\Val\fauquier\Marshall\2006\Ph2\Working\GIS\FMA_PhII_LeachmanParcels.mxd

Topography, Bedrock Geology, and Proposed Exploratory Test Well Sites on Parcels Owned by Mr. Leachman Marshall, Fauquier County, Virginia

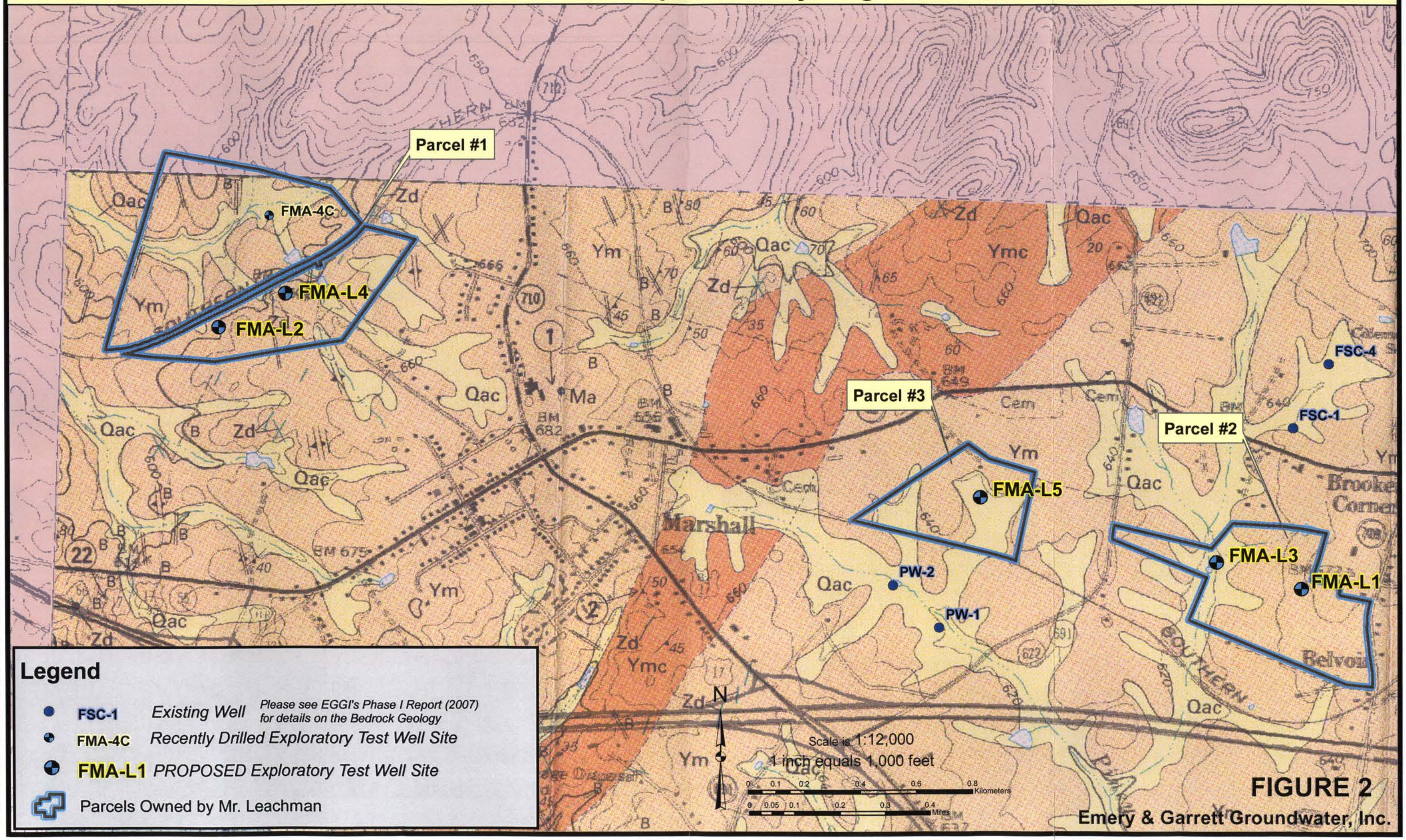


FIGURE 2

Emery & Garrett Groundwater, Inc.

V:\Valfauquier\Marshall\2006\Ph2\Working\GIS\FMA_PhII_Leachman_Fig2.mxd

Potential Contaminant Threats and Proposed Exploratory Test Well Sites on Parcels Owned by Mr. Leachman Marshall, Fauquier County, Virginia

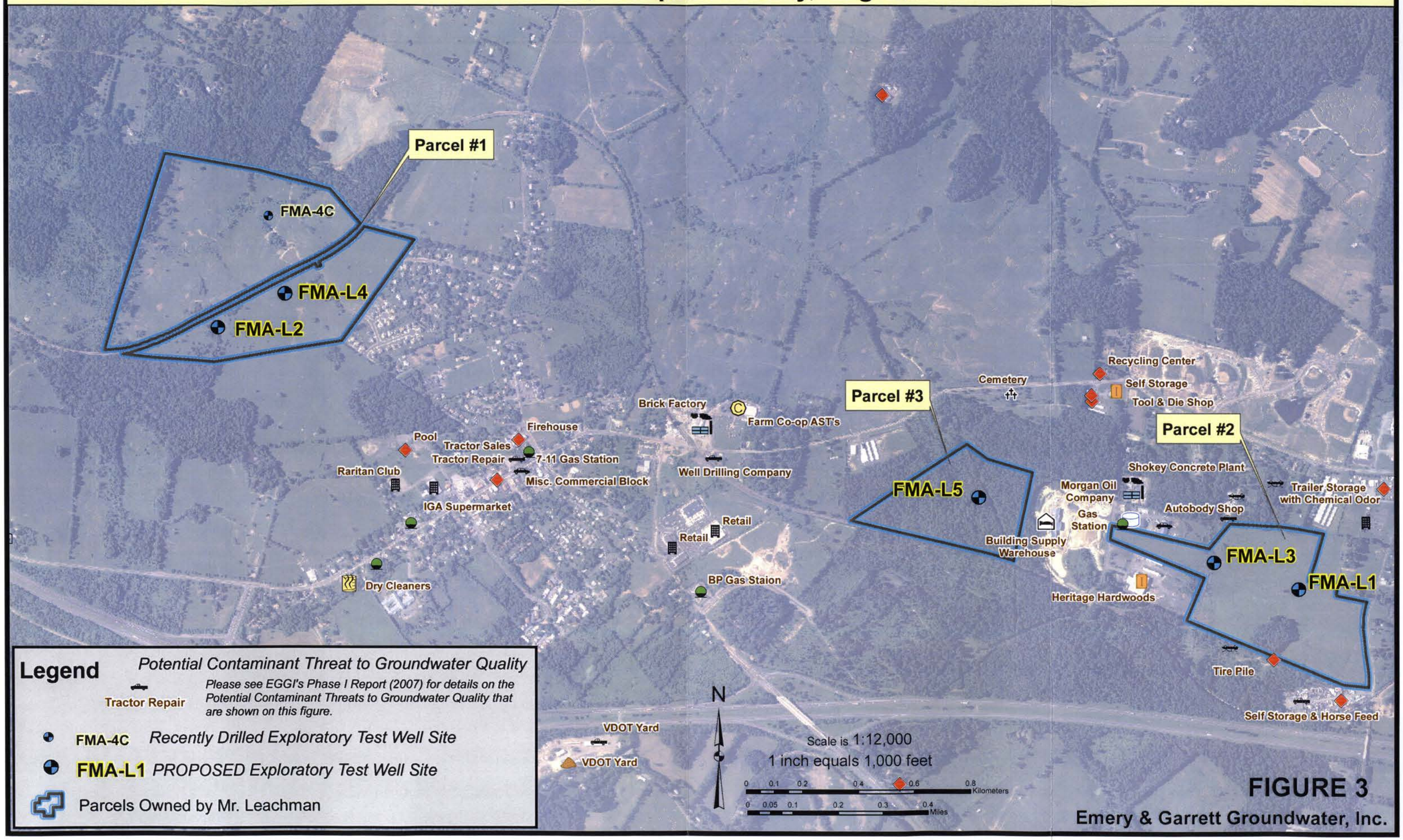


FIGURE 3

Emery & Garrett Groundwater, Inc.

V:\Va\fauquier\Marshall\2006\Ph2\Working\GIS\FMA_PhII_Leachman_Fig3.mxd

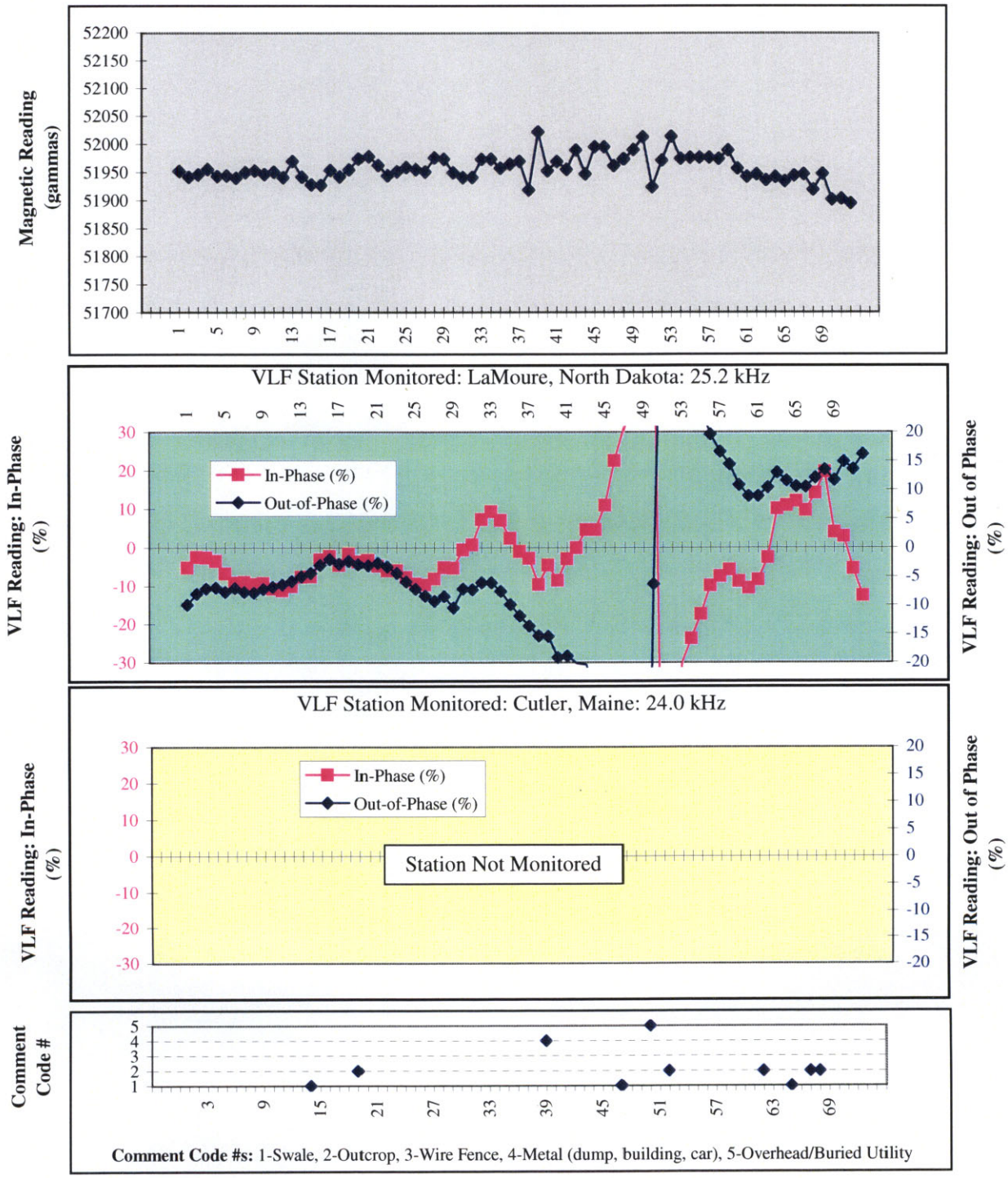
APPENDIX A

MAGNETOMETER AND VLF SURVEYS

Emery & Garrett Groundwater, Inc.

Data for Geophysical Survey Line
L10

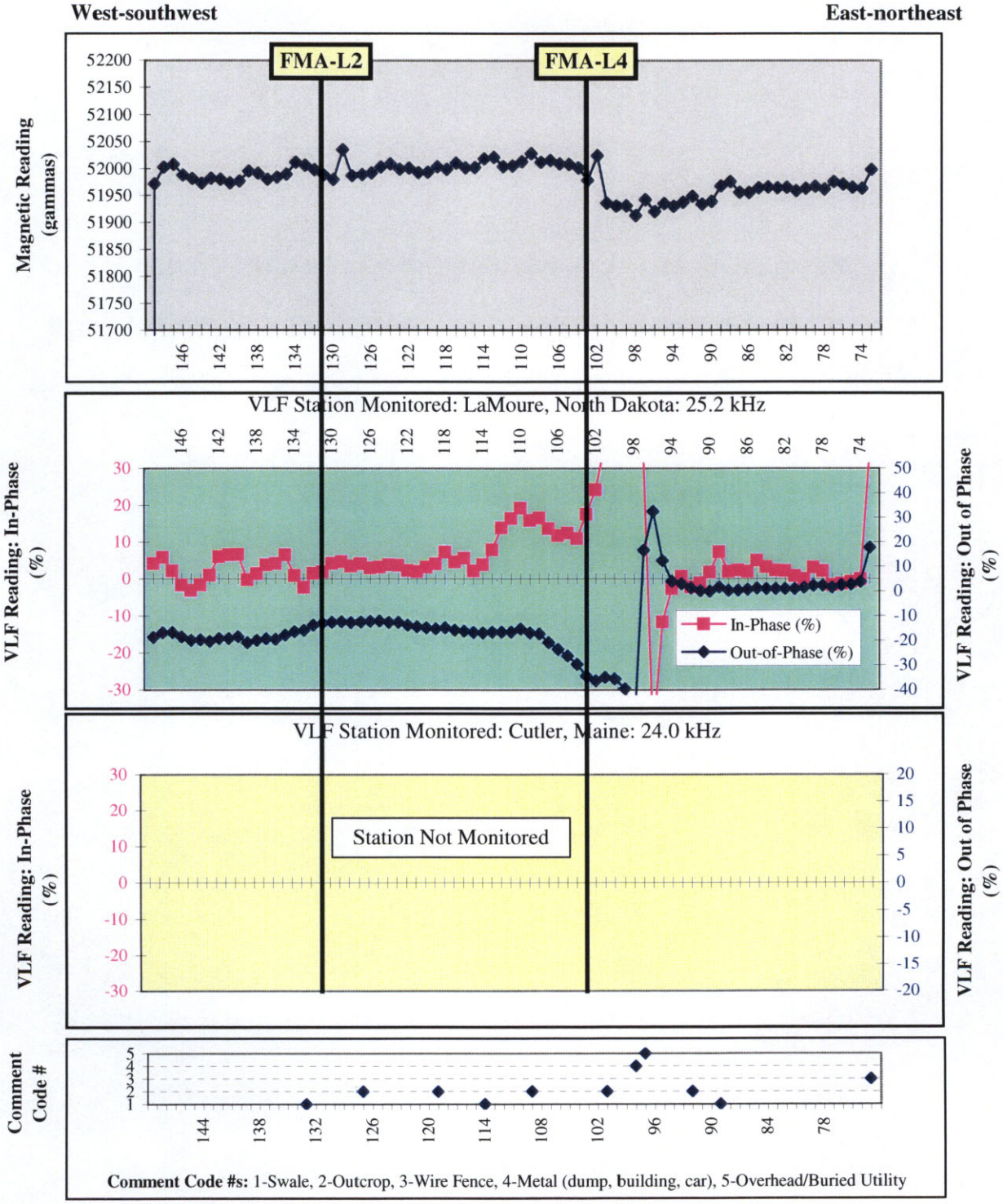
West-southwest **East-northeast**



Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L20

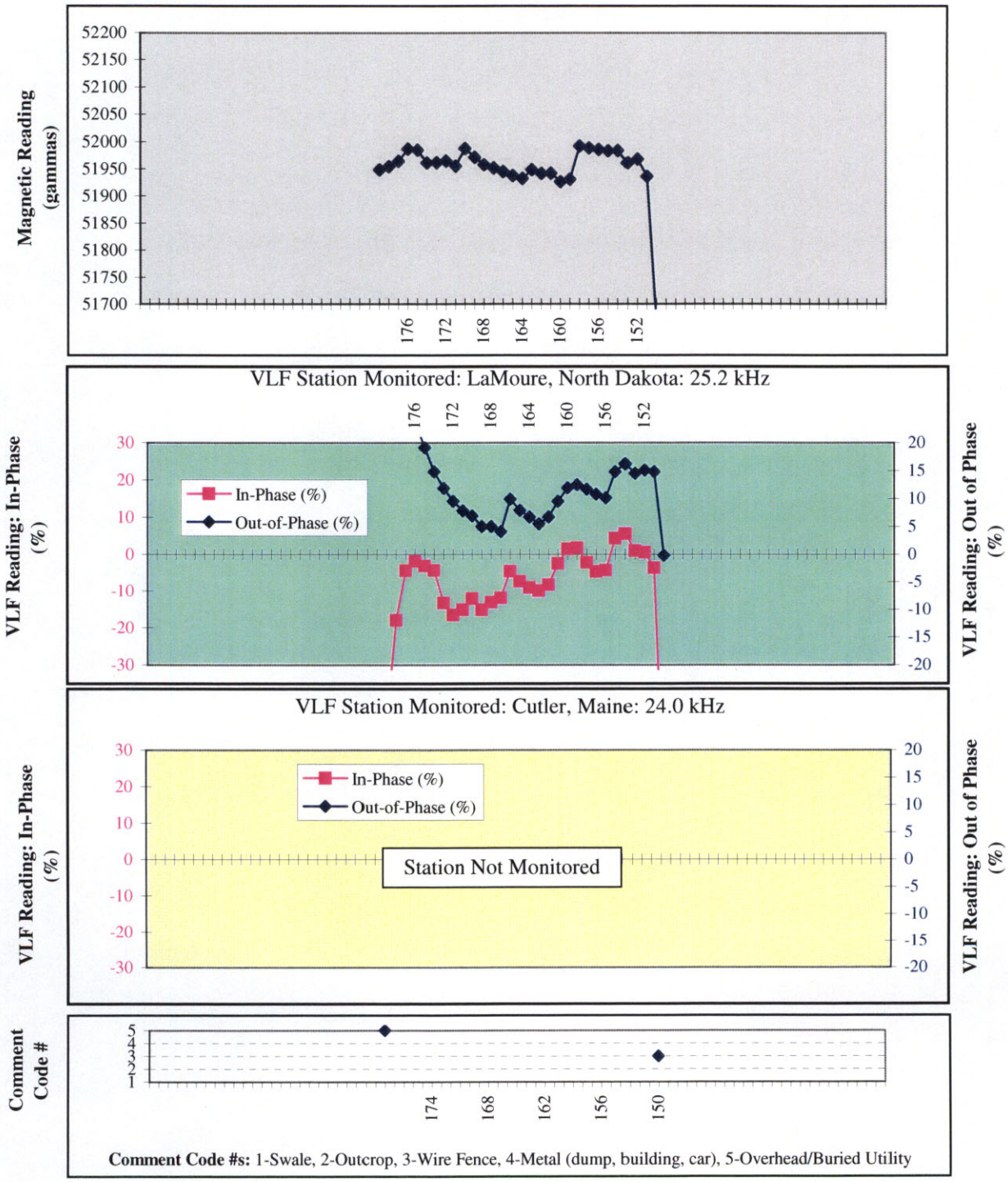


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L30

West-northwest **East-southeast**

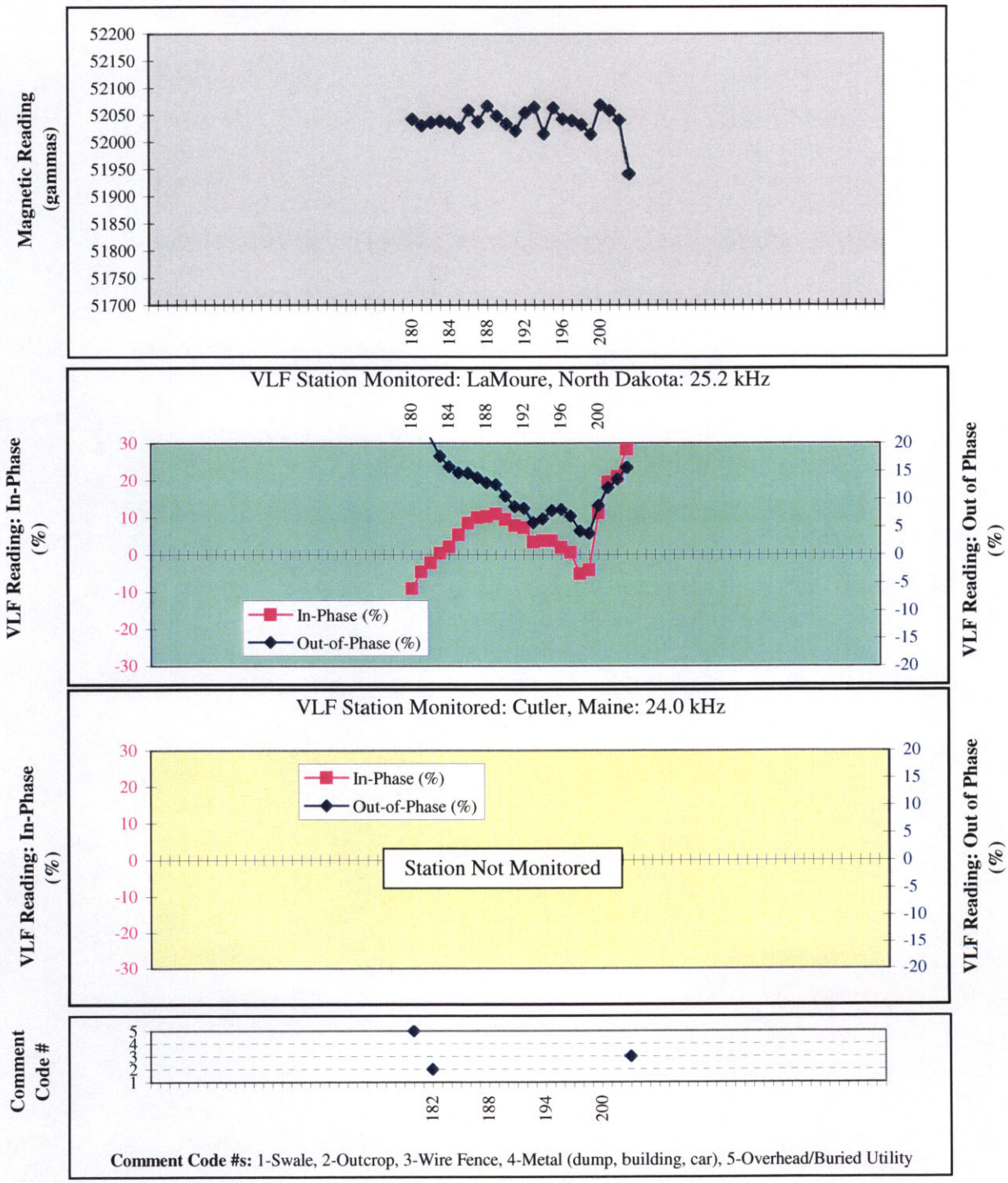


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L40

West-northwest **East-southeast**

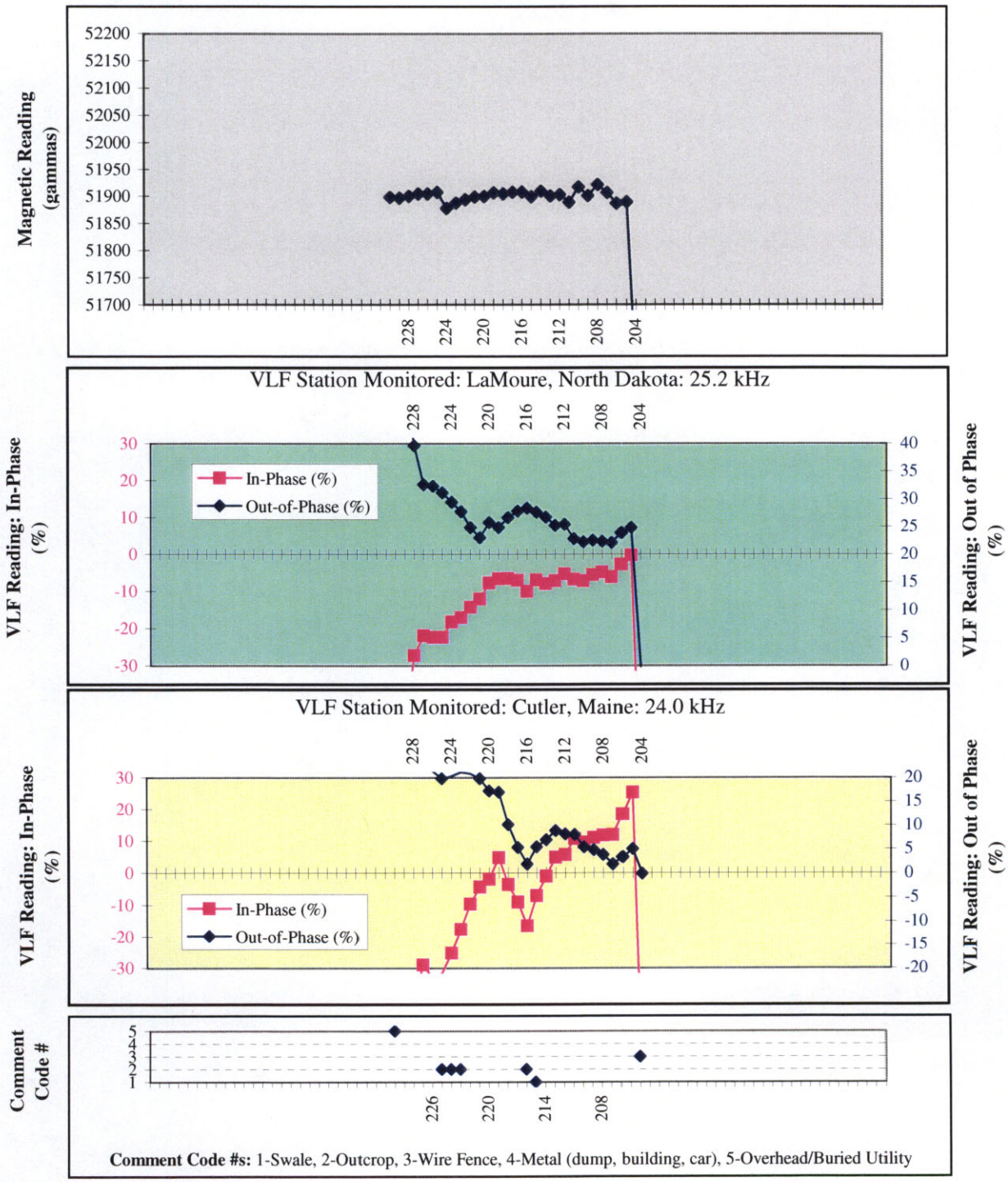


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L50

Northwest **Southeast**

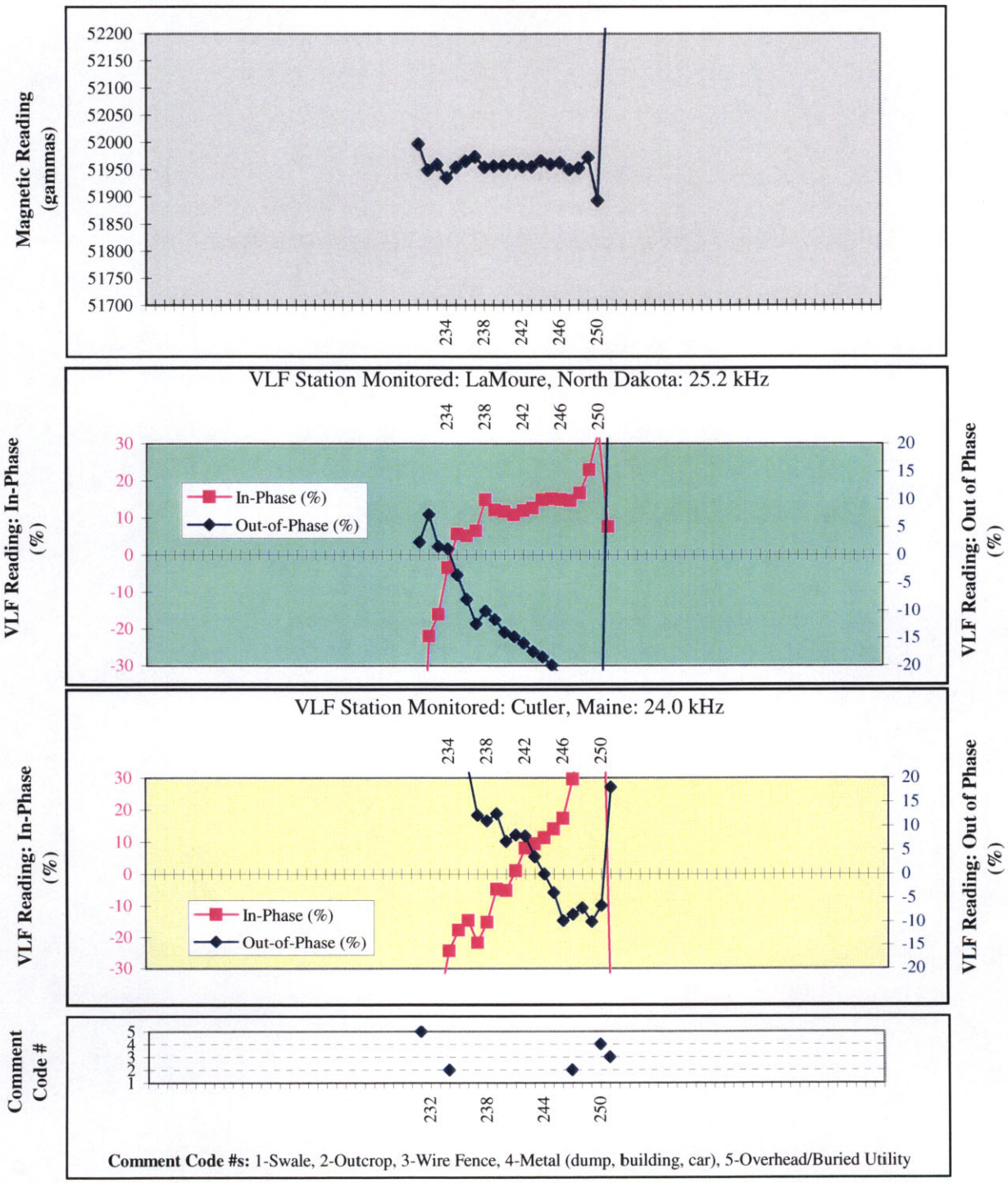


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L60

West-northwest **East-southeast**



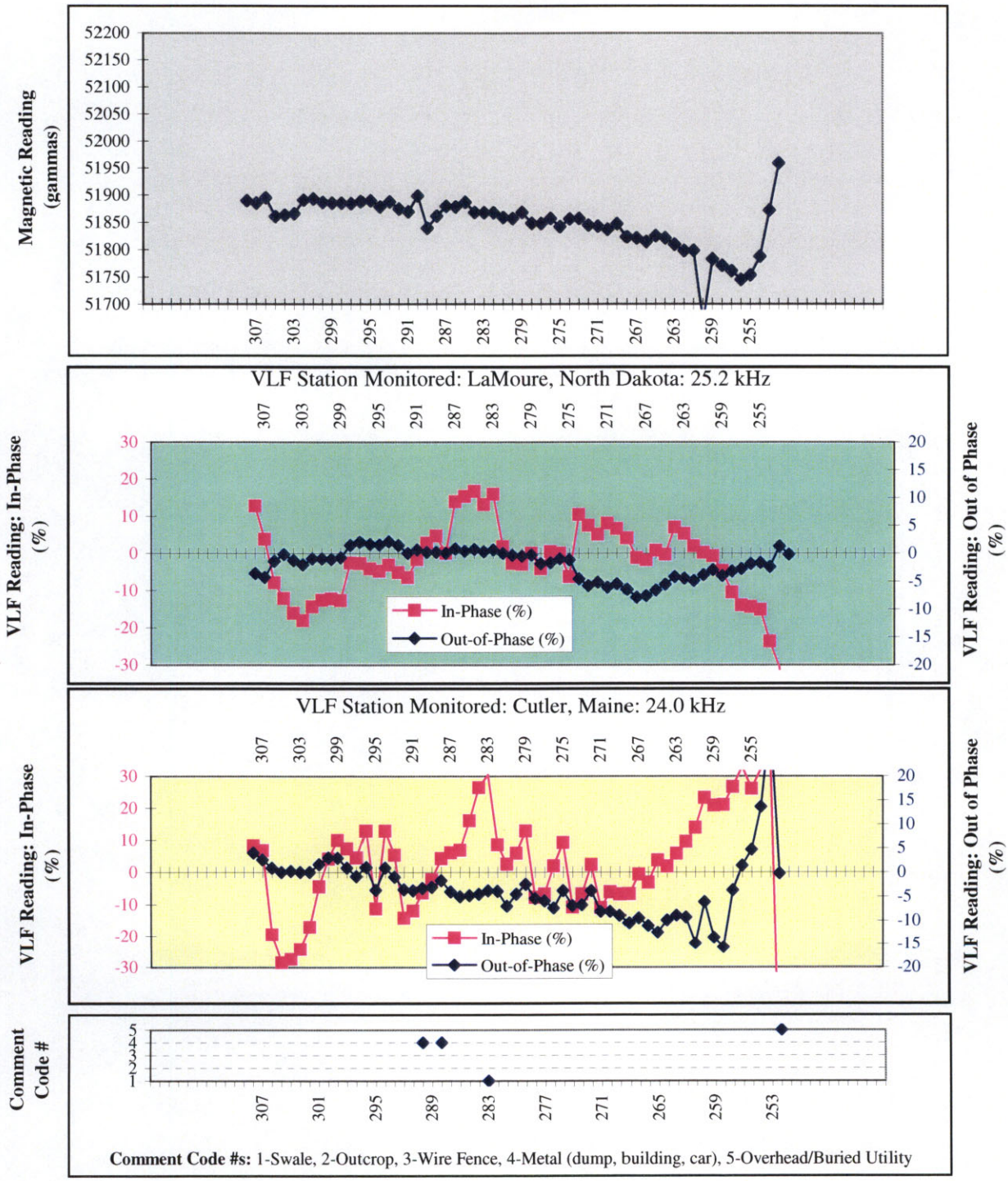
Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L70

West-northwest **East-southeast**



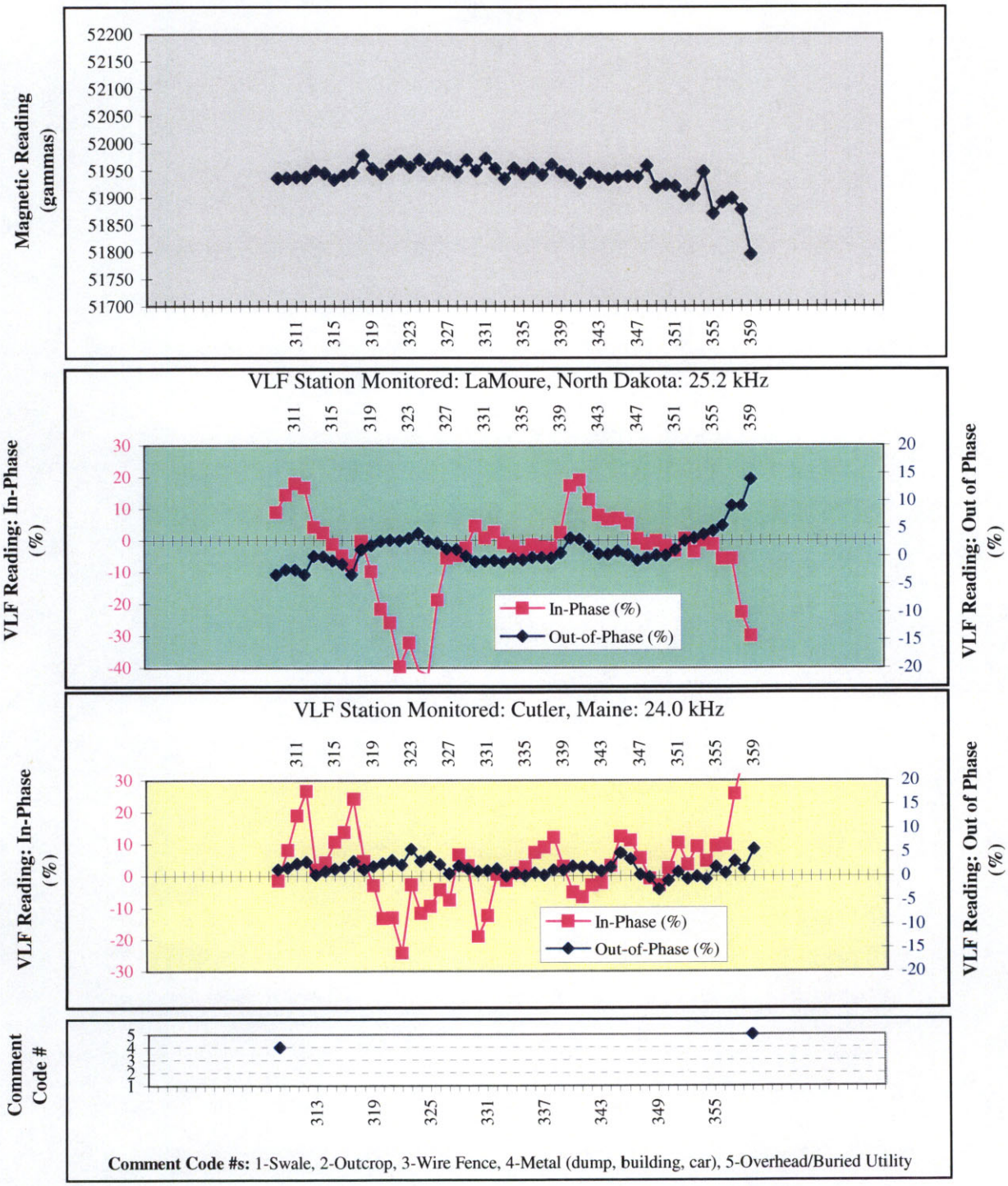
Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L80

West-northwest **East-southeast**

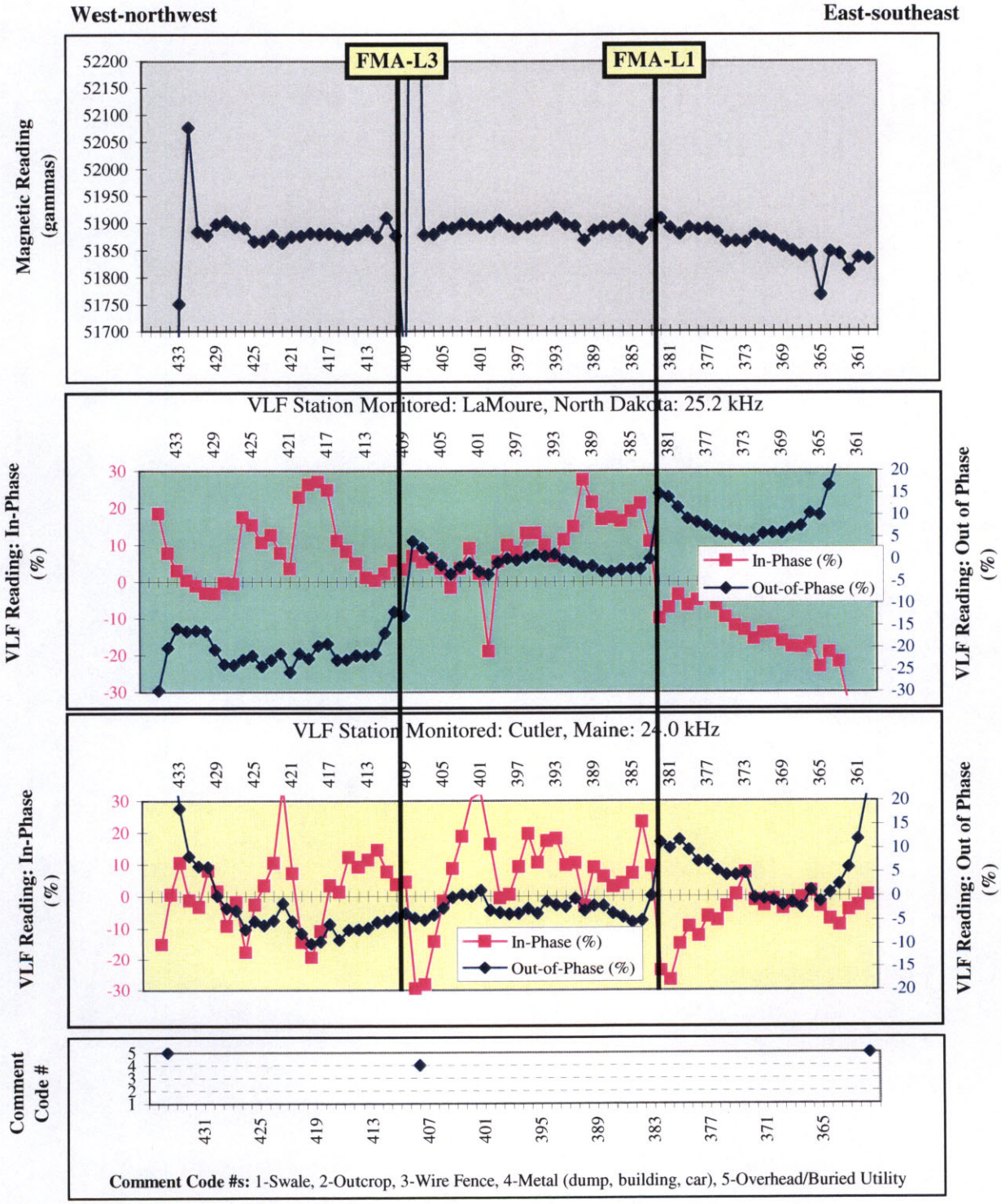


Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L90



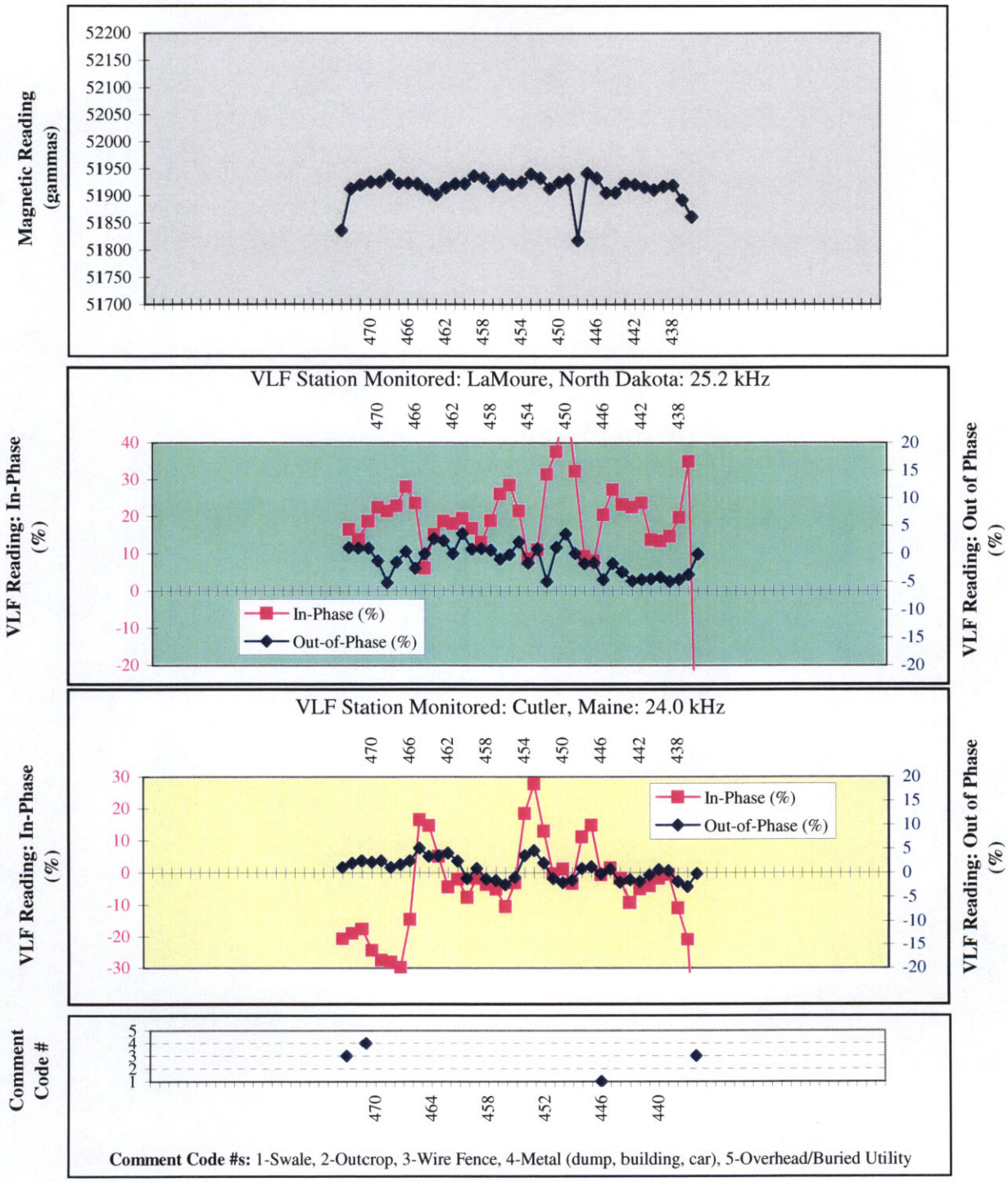
Station number along geophysical survey line

(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L100

South-southwest **North-northeast**



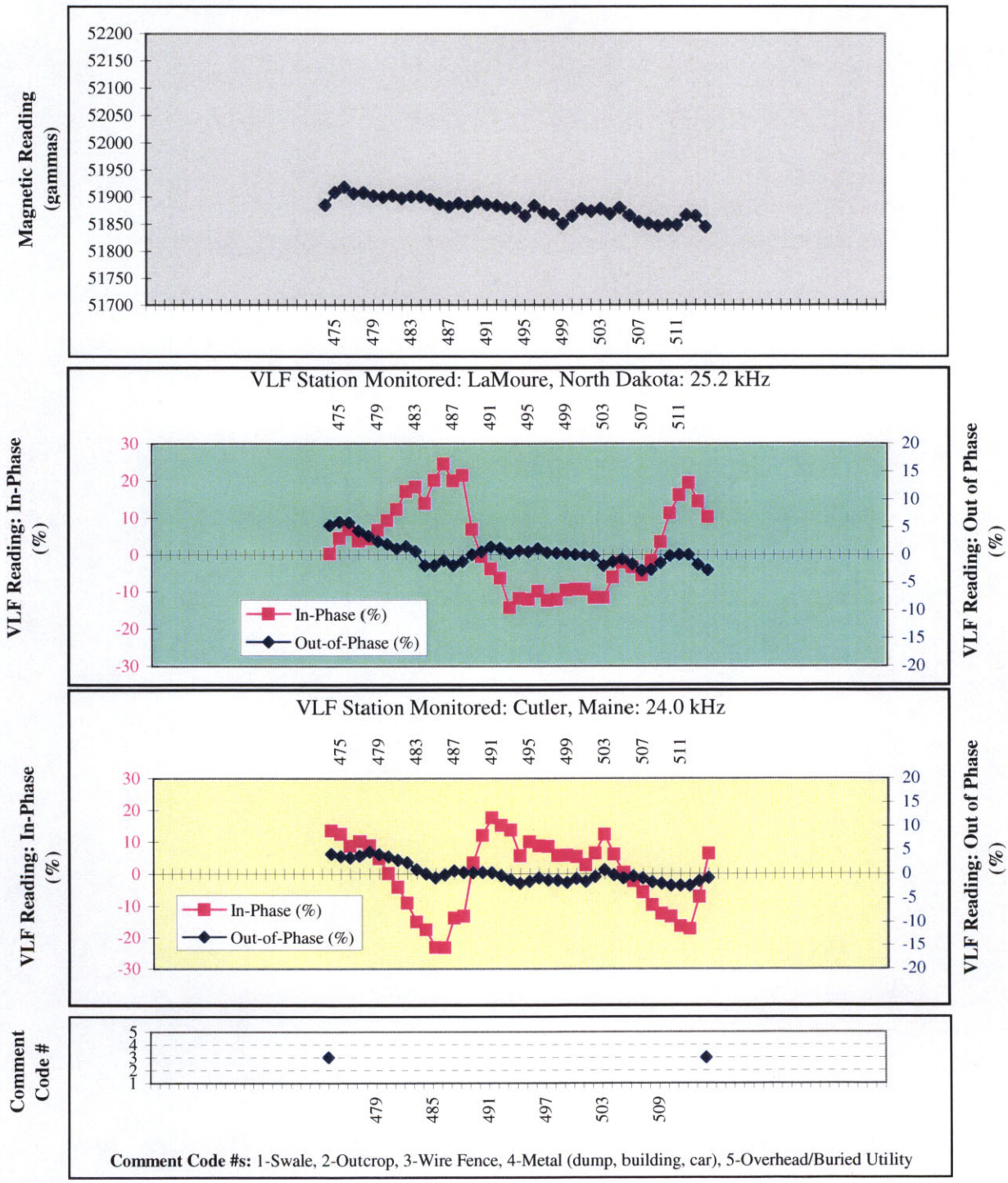
Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L110

South-southwest **North-northeast**

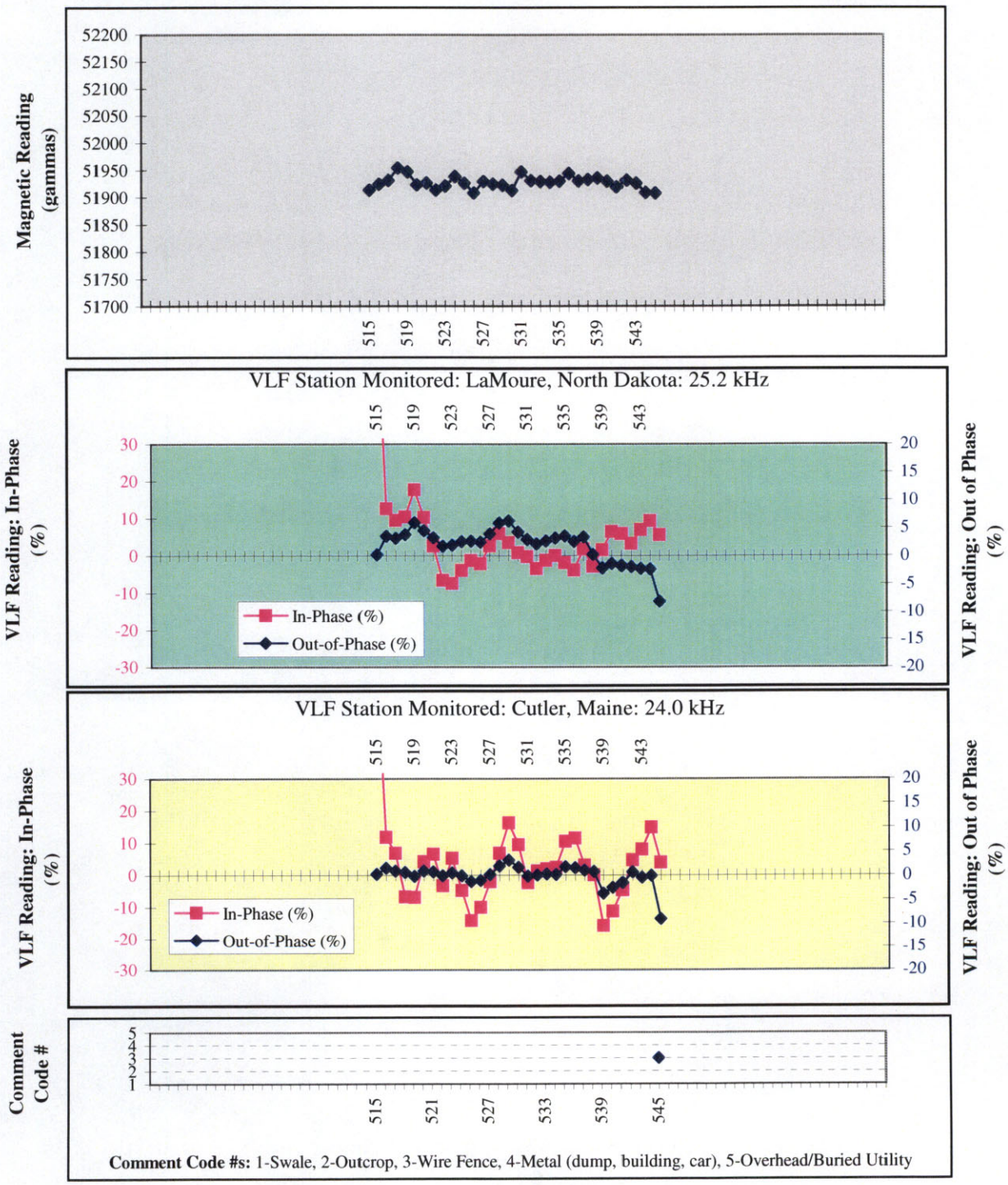


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L120

West-northwest **East-southeast**

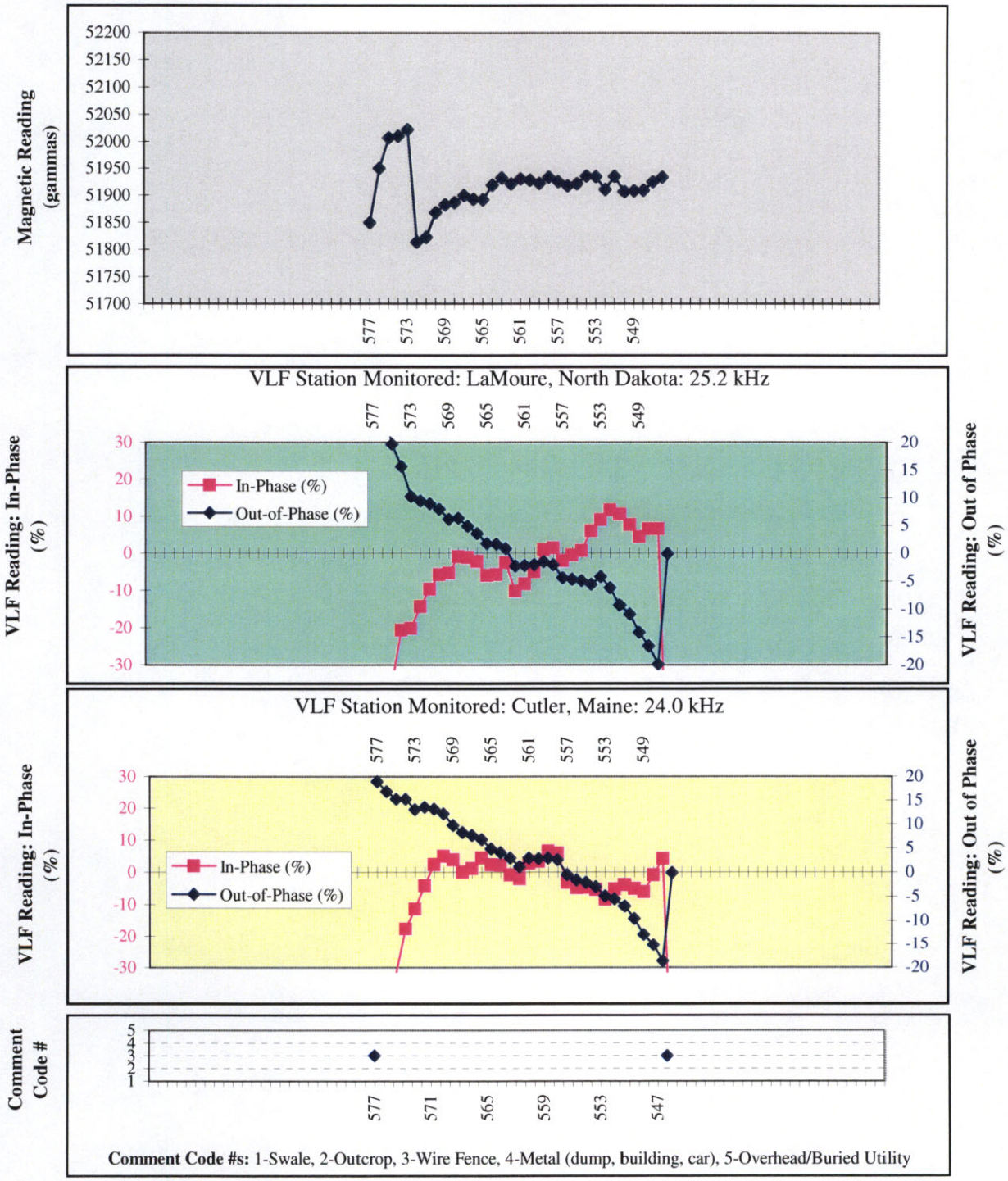


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L130

South-southwest **North-northeast**



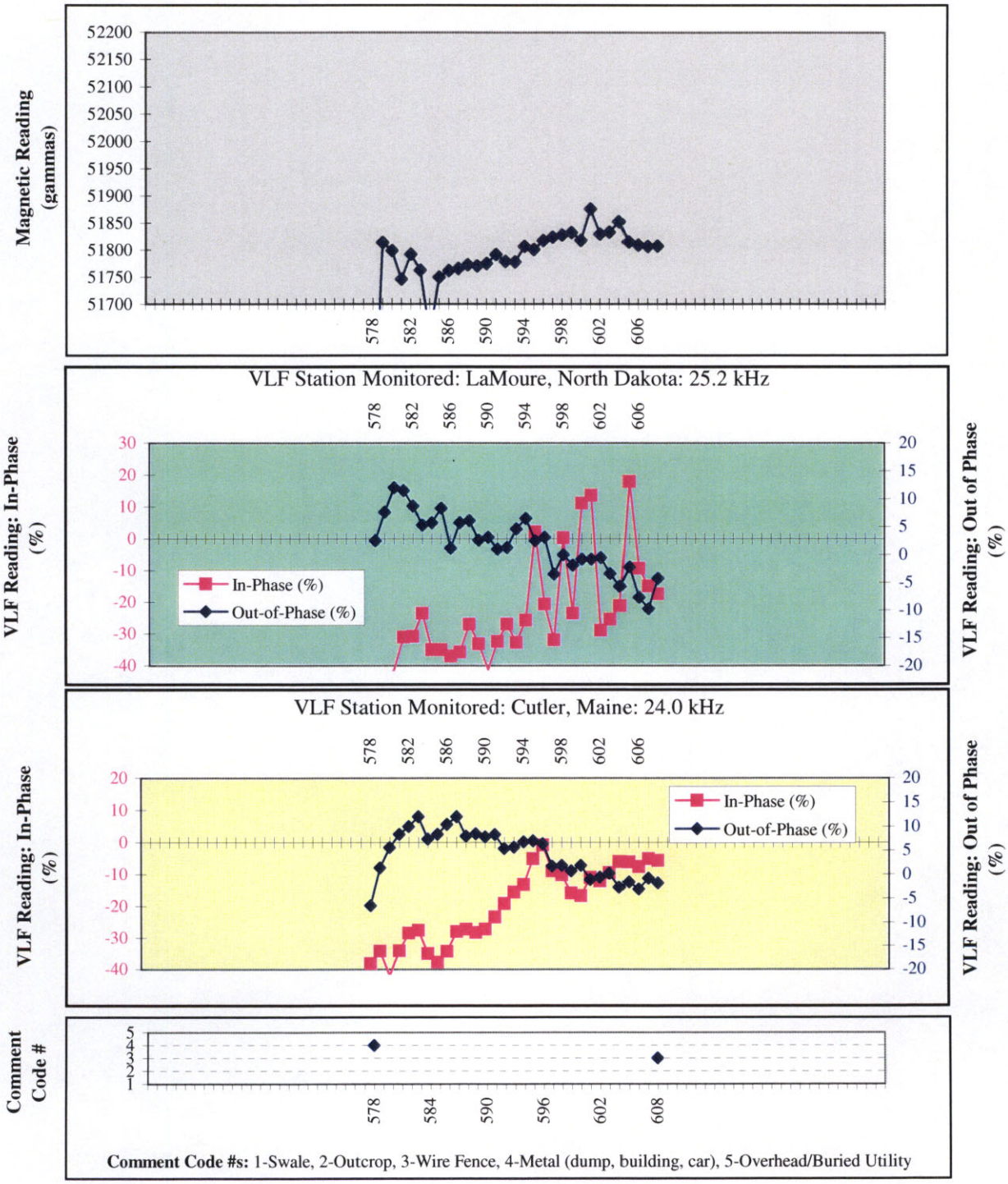
Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L140

South-southwest **North-northeast**

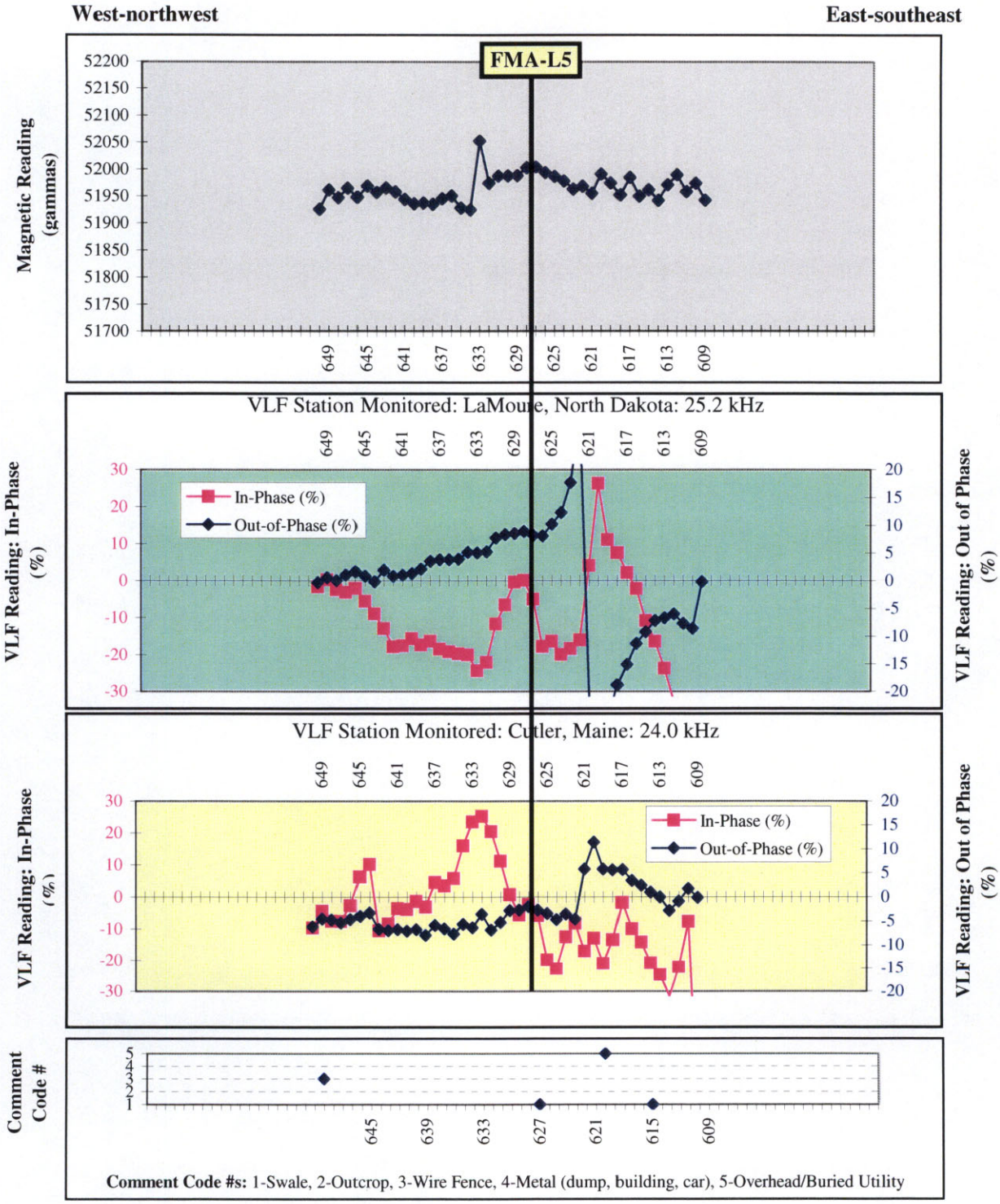


Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L150

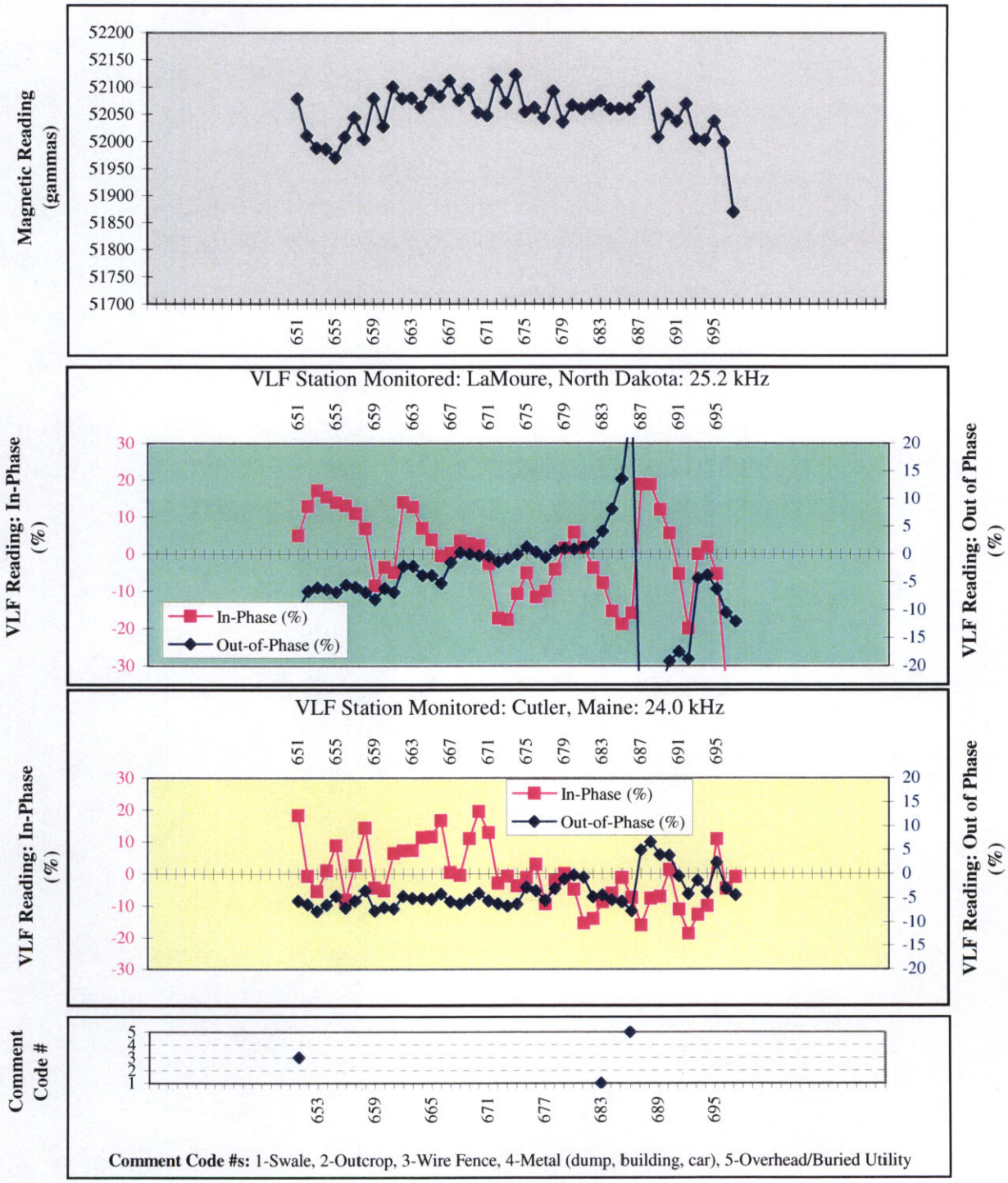


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L160

West-northwest **East-southeast**



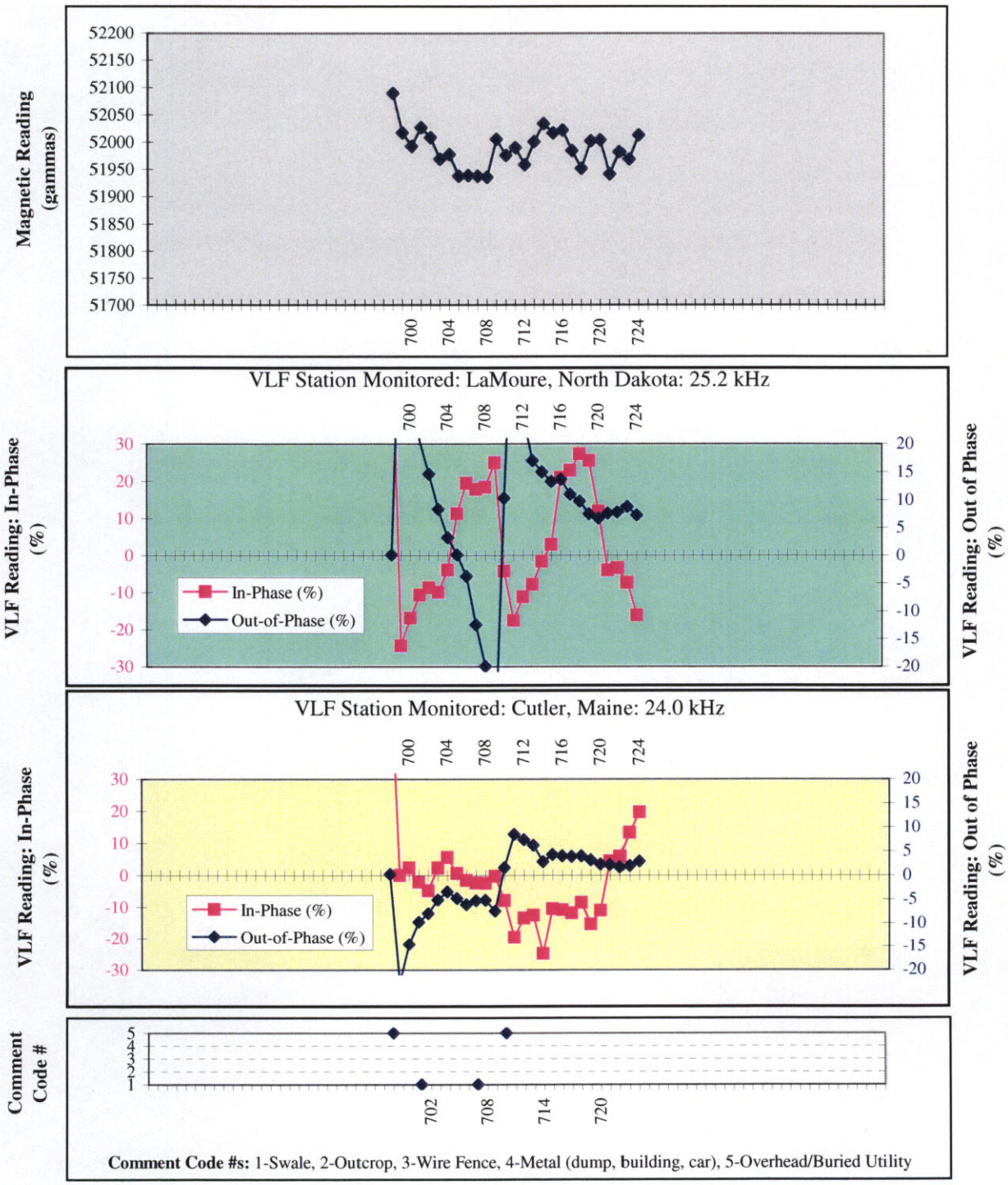
Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L170

South-southwest **North-northeast**

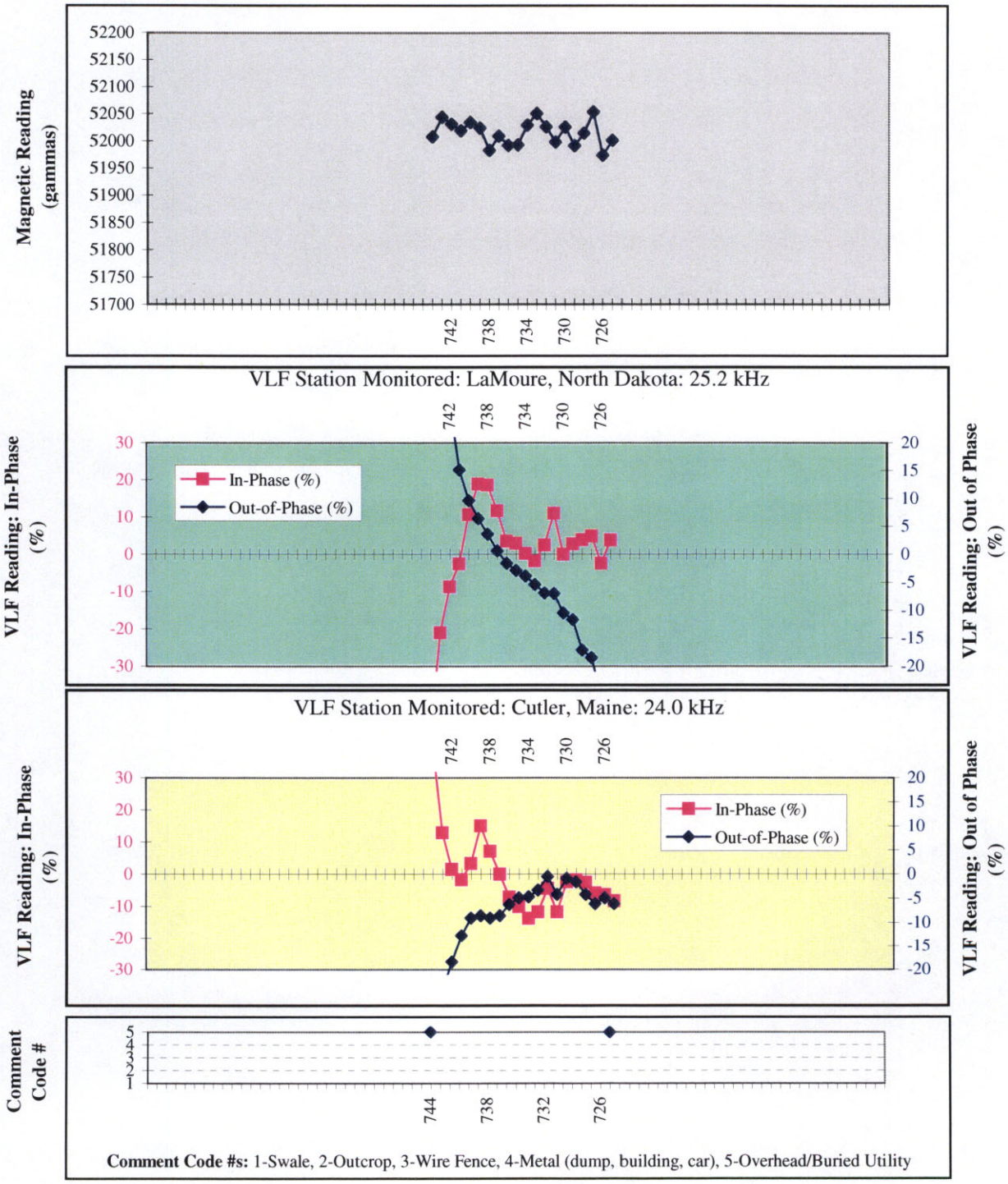


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line
L180

South-southwest **North-northeast**

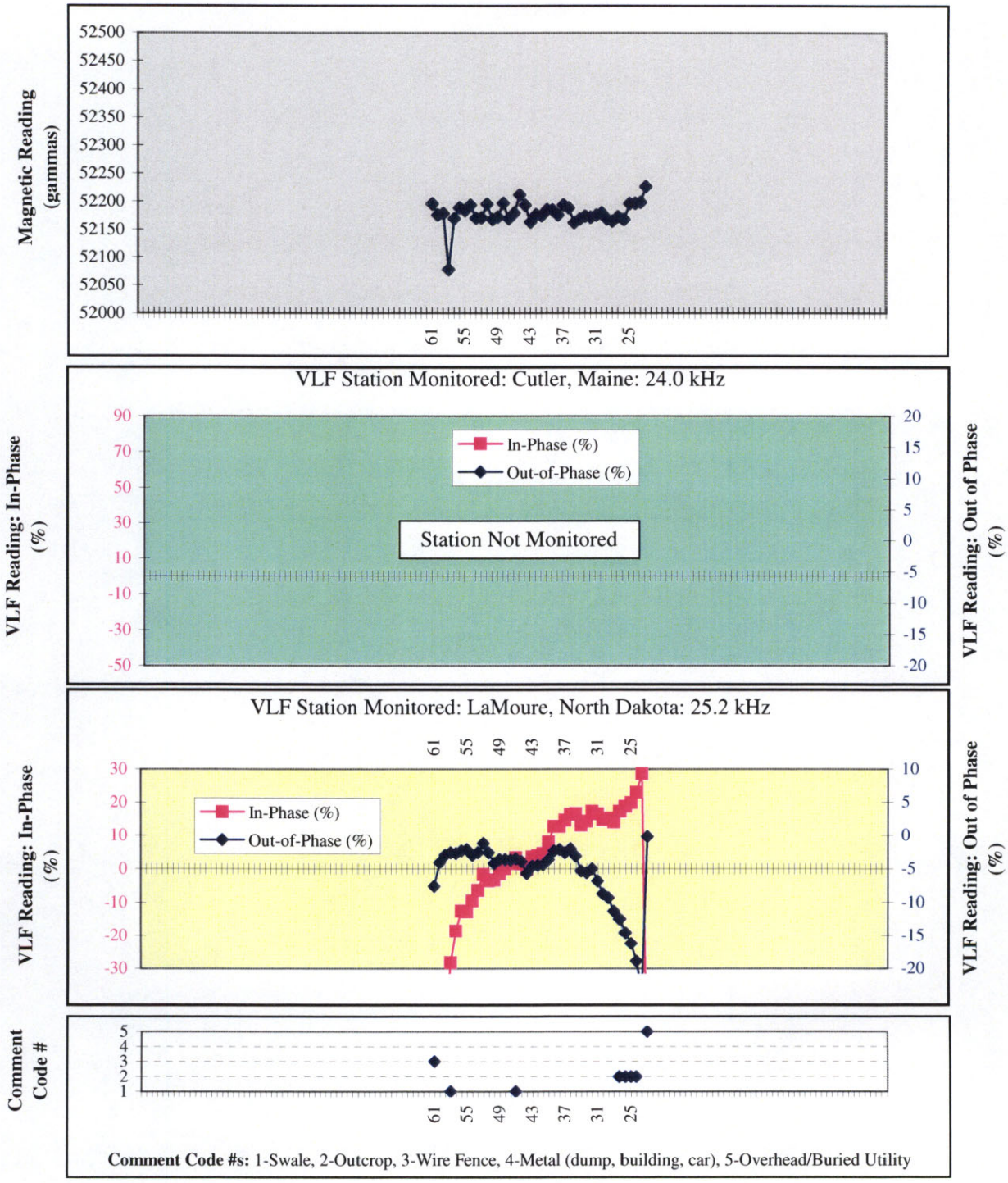


Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Leachman Parcels Marshall, Virginia

Data for Geophysical Survey Line 4L30

Northwest **Southeast**



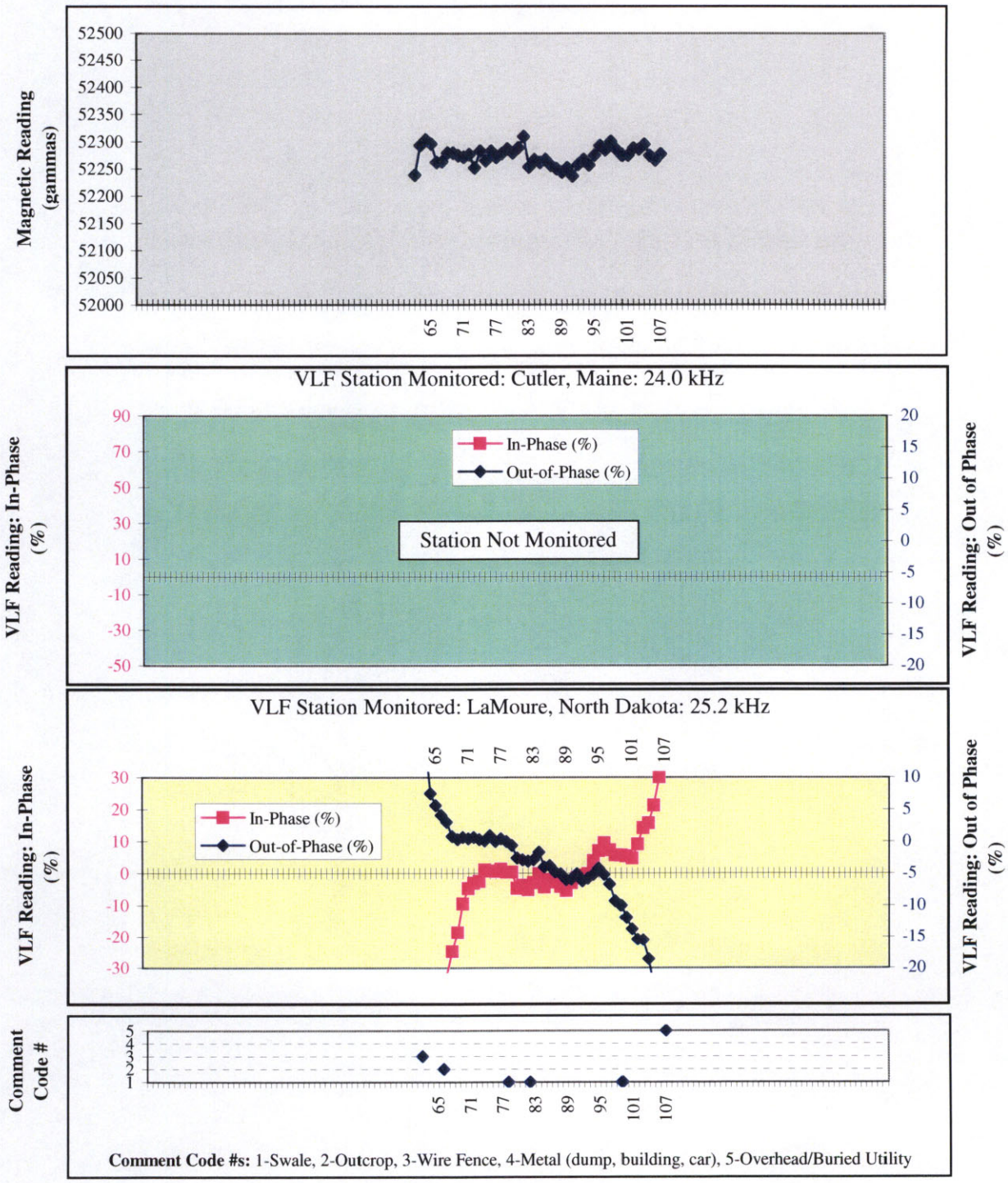
Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Potential Groundwater Development Zone FMA-4 Marshall, Virginia

Data for Geophysical Survey Line 4L40

Northwest **Southeast**



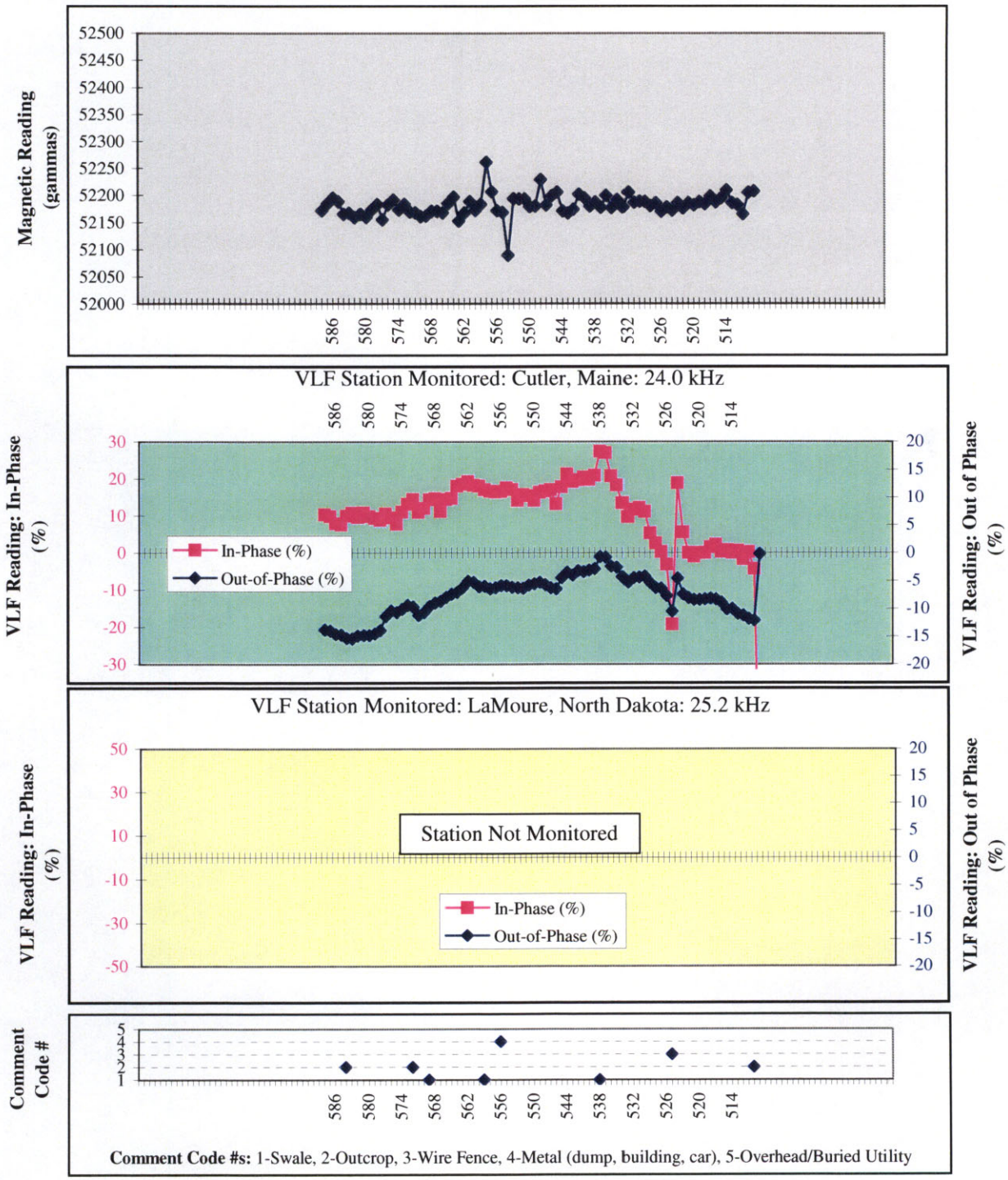
Comment Code #s: 1-Swale, 2-Outcrop, 3-Wire Fence, 4-Metal (dump, building, car), 5-Overhead/Buried Utility

Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Potential Groundwater Development Zone FMA-4 Marshall, Virginia

Data for Geophysical Survey Line
4L70

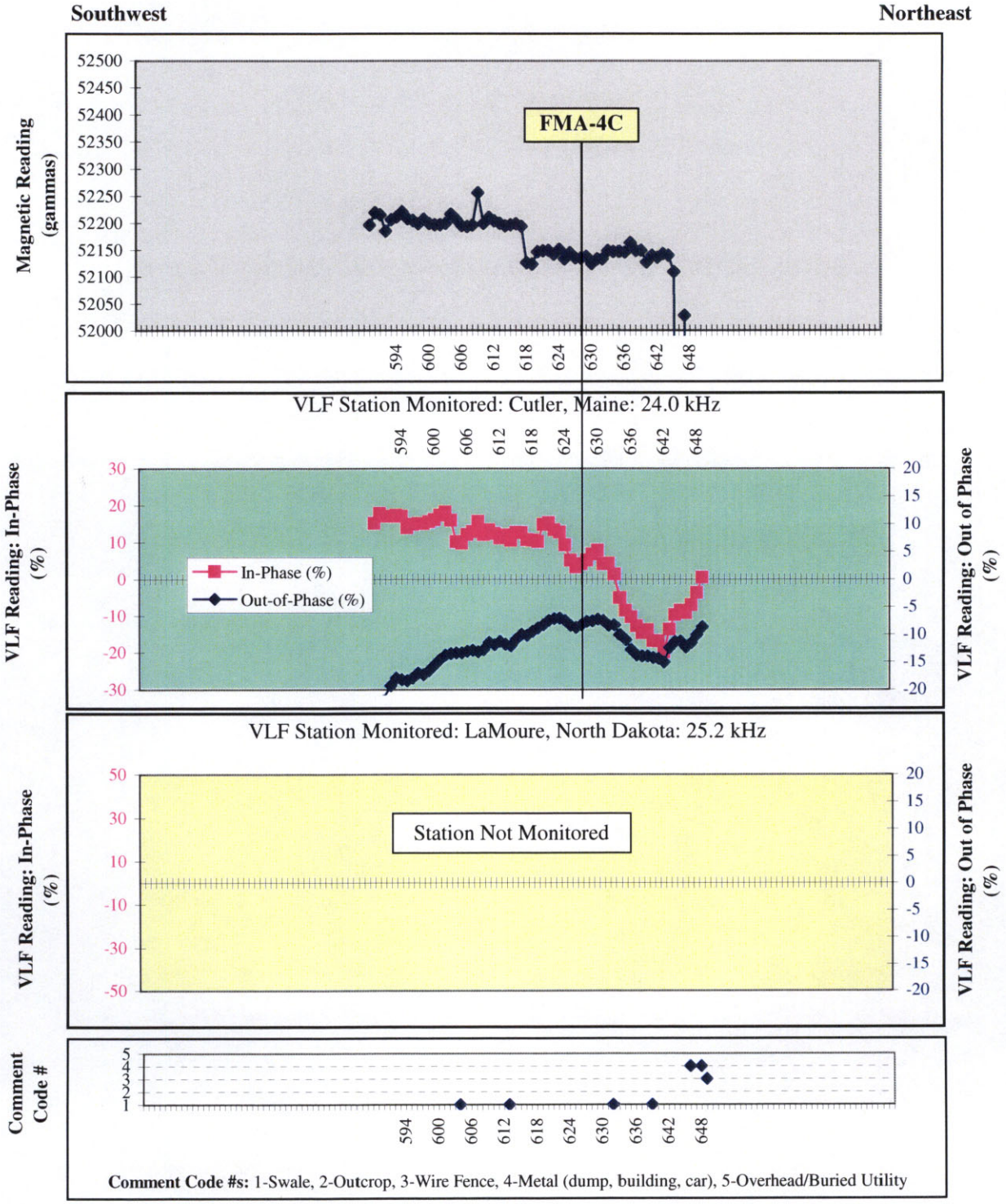
Southwest **Northeast**



Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Potential Groundwater Development Zone FMA-4 Marshall, Virginia

Data for Geophysical Survey Line 4L80



Station number along geophysical survey line
(Approximately 28 feet between stations)

Geophysical Signature of the Bedrock Underlying Potential Groundwater Development Zone FMA-4 Marshall, Virginia

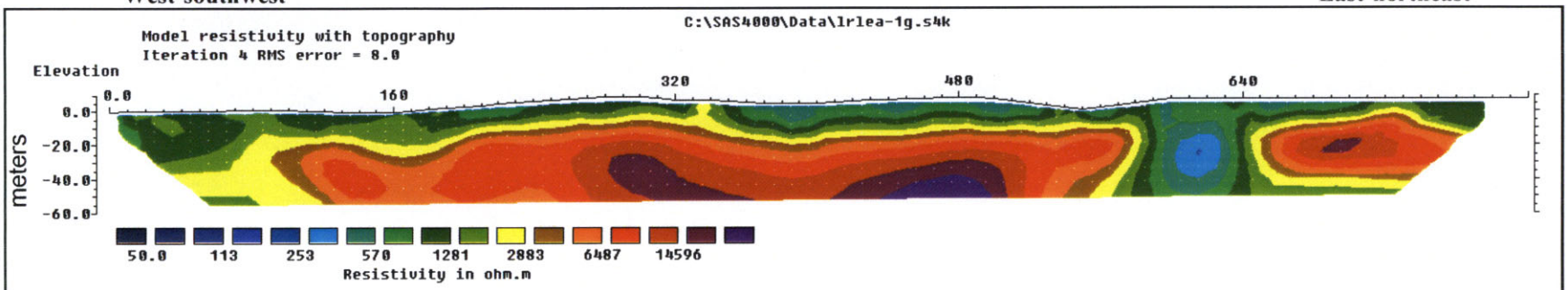
APPENDIX B

ABEM ELECTRICAL RESISTIVITY SURVEYS

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R1 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

West-southwest **East-northeast**



Horizontal and Vertical Axis Units are Meters

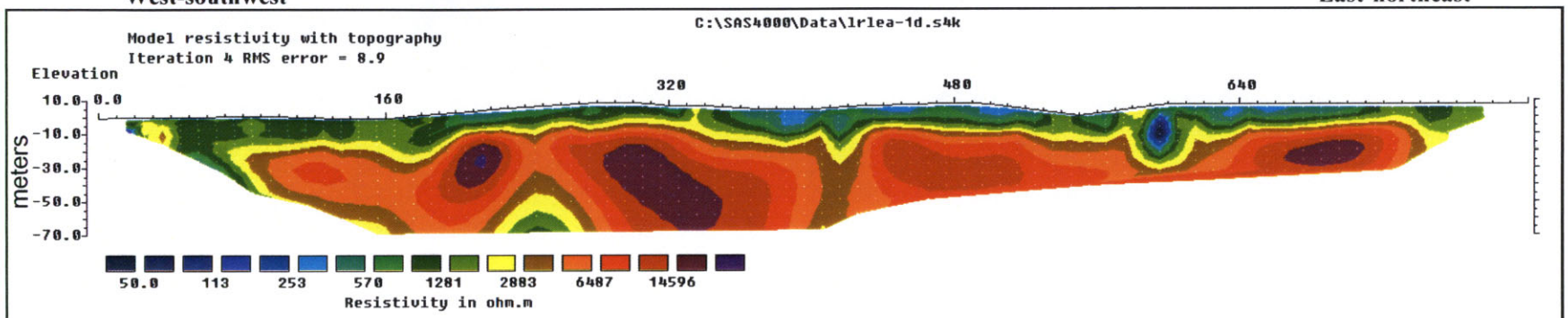
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 67

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	1069.1252	3.3156998

Number of Data Points		
Surveyed	After Modeling	Number Removed
984	891	93

Electrical Resistivity Survey Line R1 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

West-southwest **East-northeast**



Horizontal and Vertical Axis Units are Meters

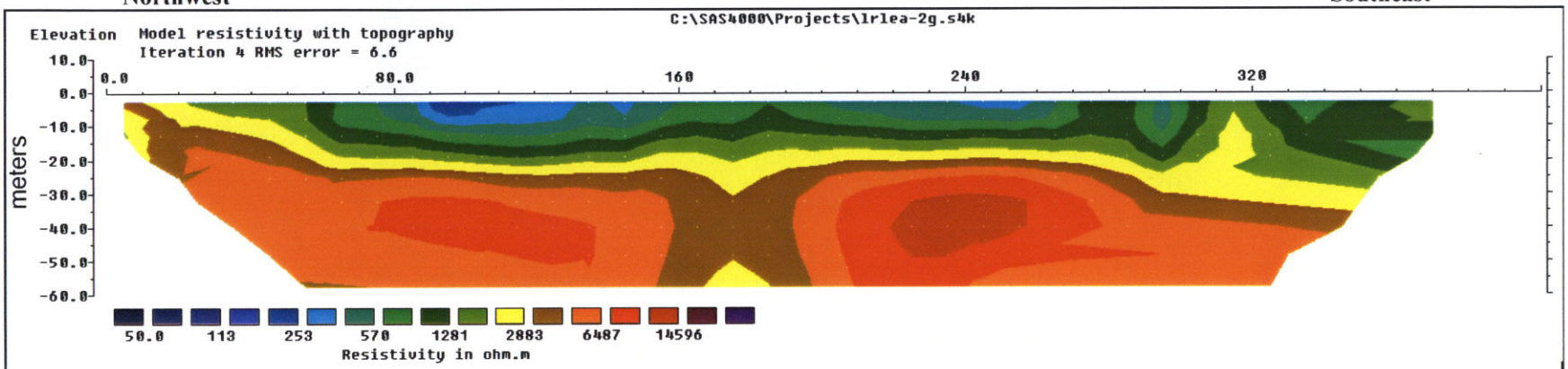
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 67

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	21.332291	0.3457715

Number of Data Points		
Surveyed	After Modeling	Number Removed
756	658	98

Electrical Resistivity Survey Line R2 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Northwest **Southeast**



Horizontal and Vertical Axis Units are Meters

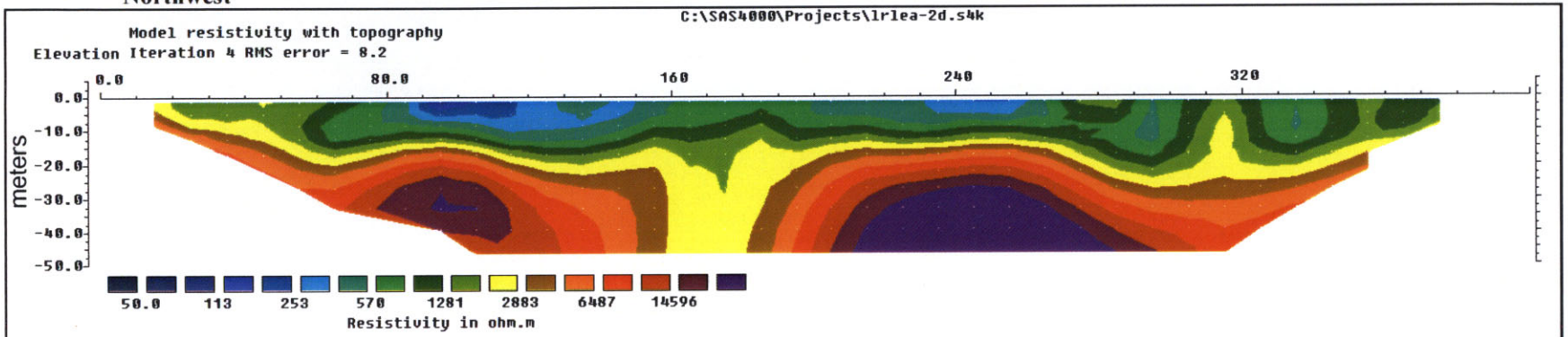
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 147

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	99.425499	0.6431357

Number of Data Points		
Surveyed	After Modeling	Number Removed
504	466	38

Electrical Resistivity Survey Line R2 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Northwest **Southeast**



Horizontal and Vertical Axis Units are Meters

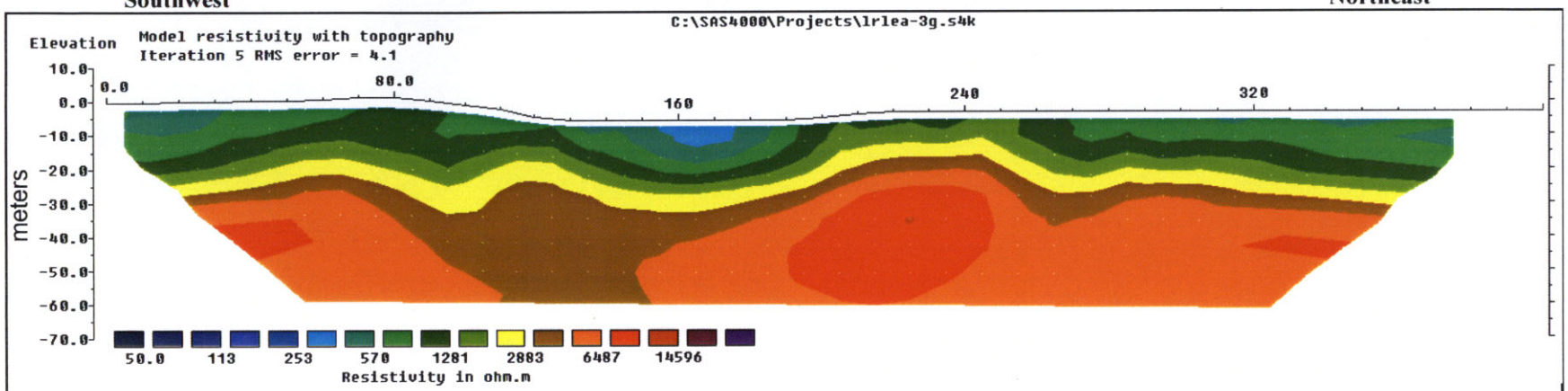
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 147

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.001	0.988014	0.1422326

Number of Data Points		
Surveyed	After Modeling	Number Removed
372	343	29

Electrical Resistivity Survey Line R3 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Southwest **Northeast**



Horizontal and Vertical Axis Units are Meters

Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 46

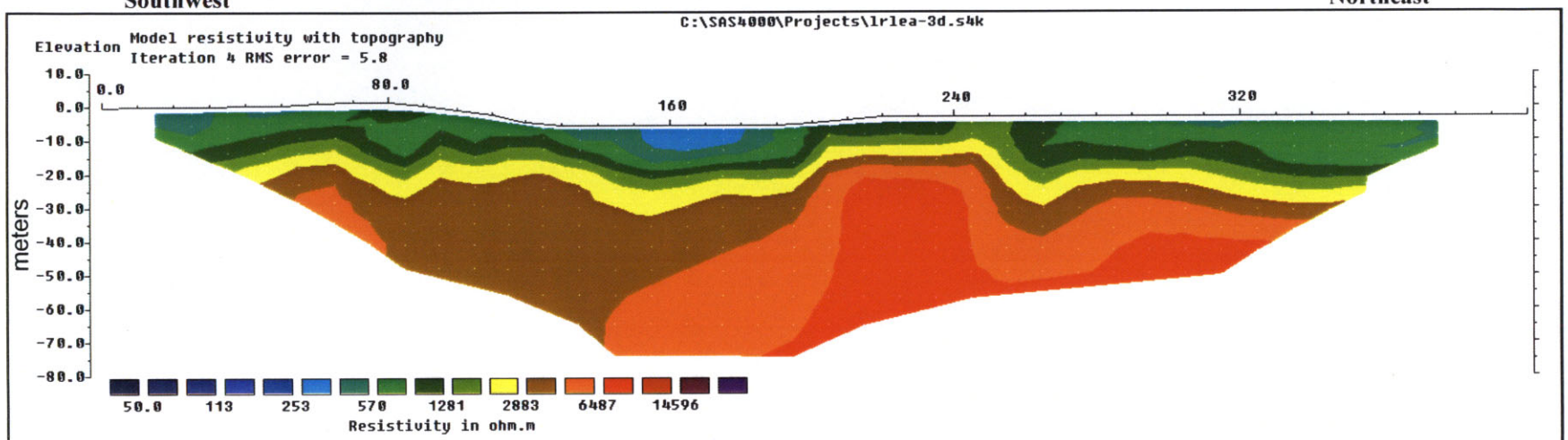
Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.002	0.112967	0.0374554

Number of Data Points		
Surveyed	After Modeling	Number Removed
504	488	16

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R3 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Southwest **Northeast**



Horizontal and Vertical Axis Units are Meters

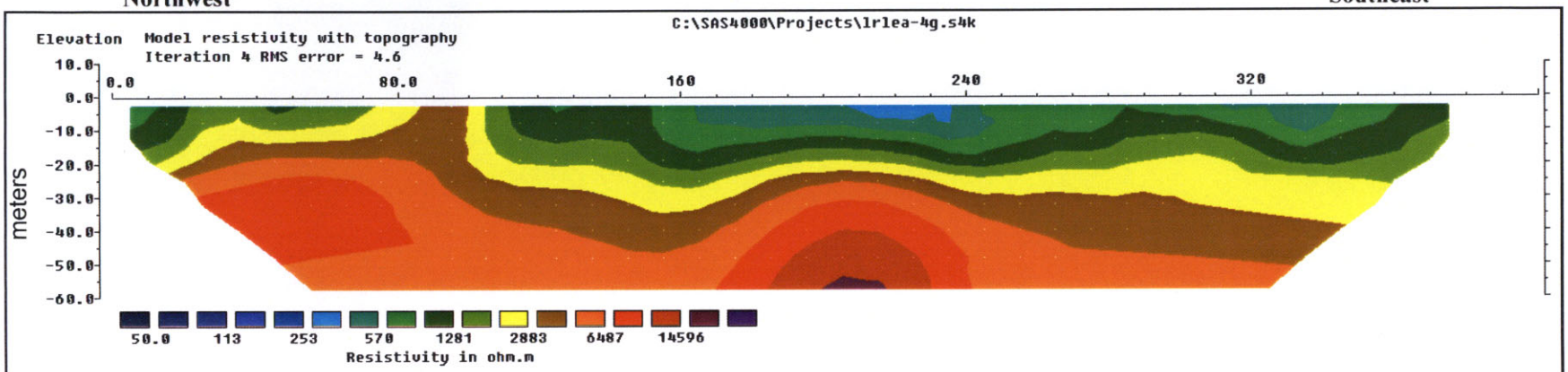
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 46

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	127.5156	0.6780898

Number of Data Points		
Surveyed	After Modeling	Number Removed
372	351	21

Electrical Resistivity Survey Line R4 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Northwest **Southeast**



Horizontal and Vertical Axis Units are Meters

Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 147

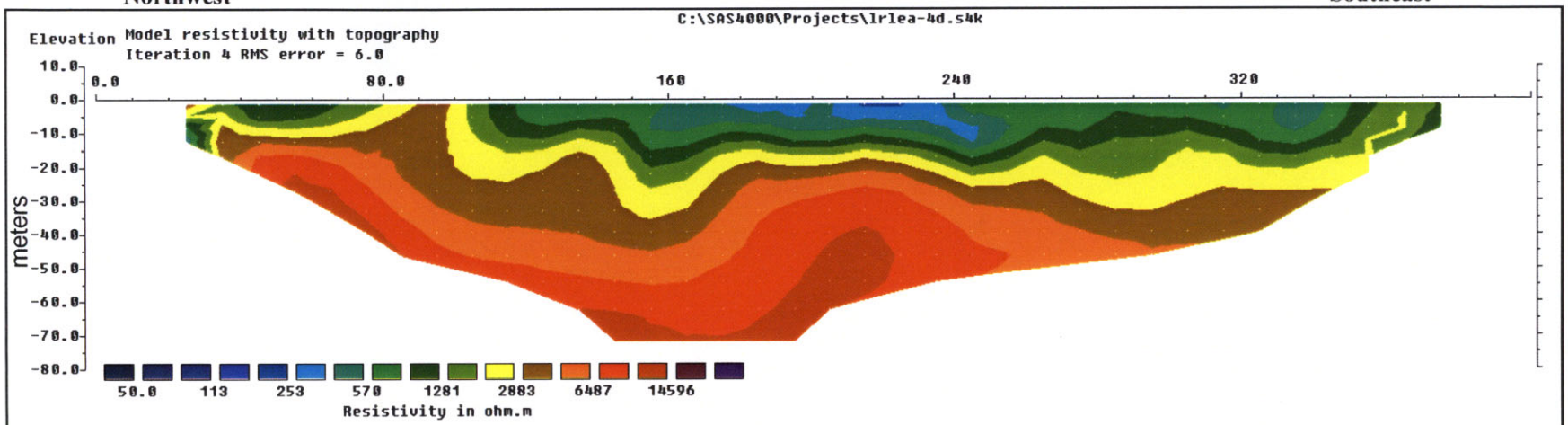
Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.001	156.72949	0.6435634

Number of Data Points		
Surveyed	After Modeling	Number Removed
504	459	45

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R4 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Northwest **Southeast**



Horizontal and Vertical Axis Units are Meters

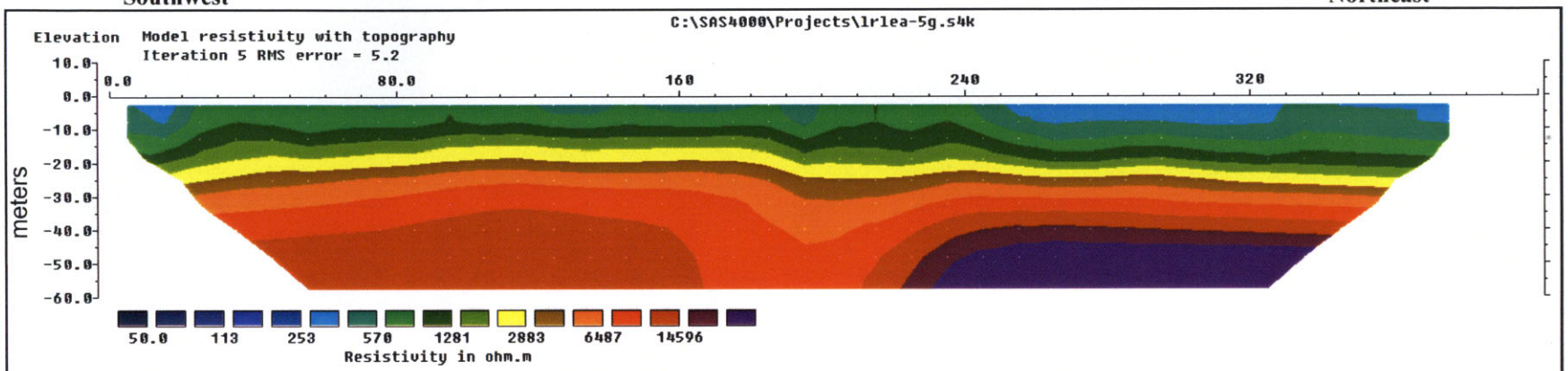
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 147

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	1225.4274	3.9408171

Number of Data Points		
Surveyed	After Modeling	Number Removed
372	333	39

Electrical Resistivity Survey Line R5 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Southwest **Northeast**



Horizontal and Vertical Axis Units are Meters

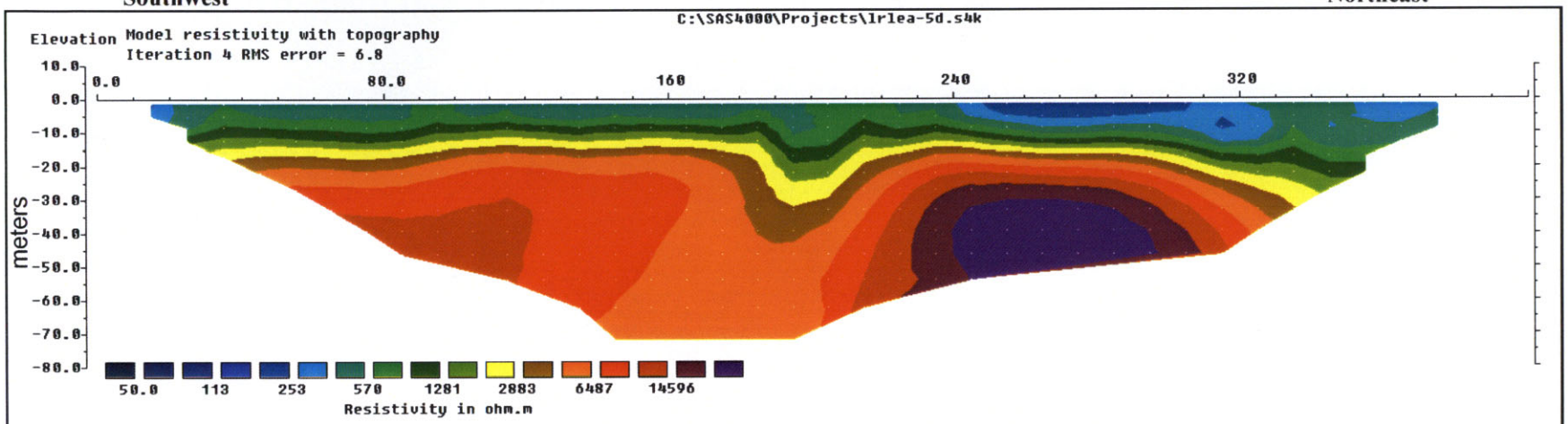
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 46

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	105.51885	0.4010177

Number of Data Points		
Surveyed	After Modeling	Number Removed
504	453	51

Electrical Resistivity Survey Line R5 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1

Southwest **Northeast**



Horizontal and Vertical Axis Units are Meters

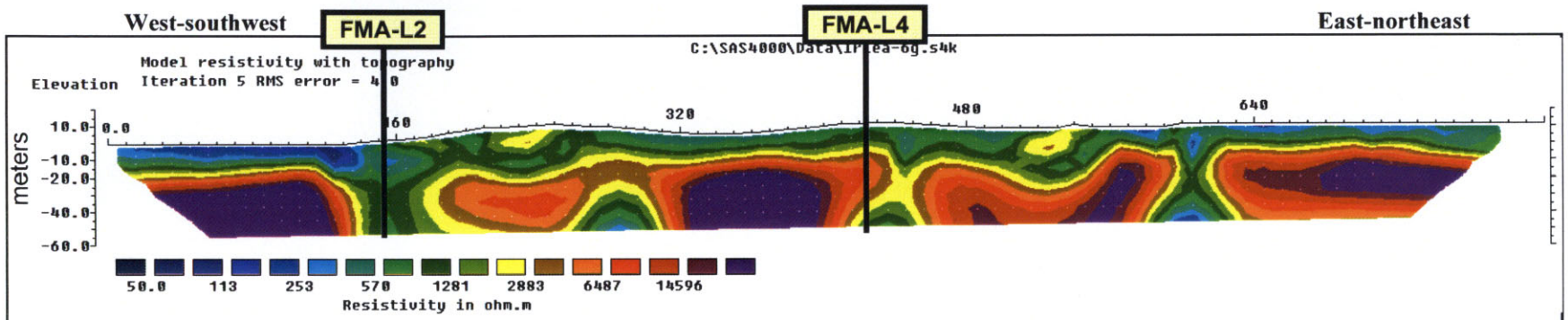
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 46

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	12297.639	55.029008

Number of Data Points		
Surveyed	After Modeling	Number Removed
372	341	31

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R6 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1



Horizontal and Vertical Axis Units are Meters

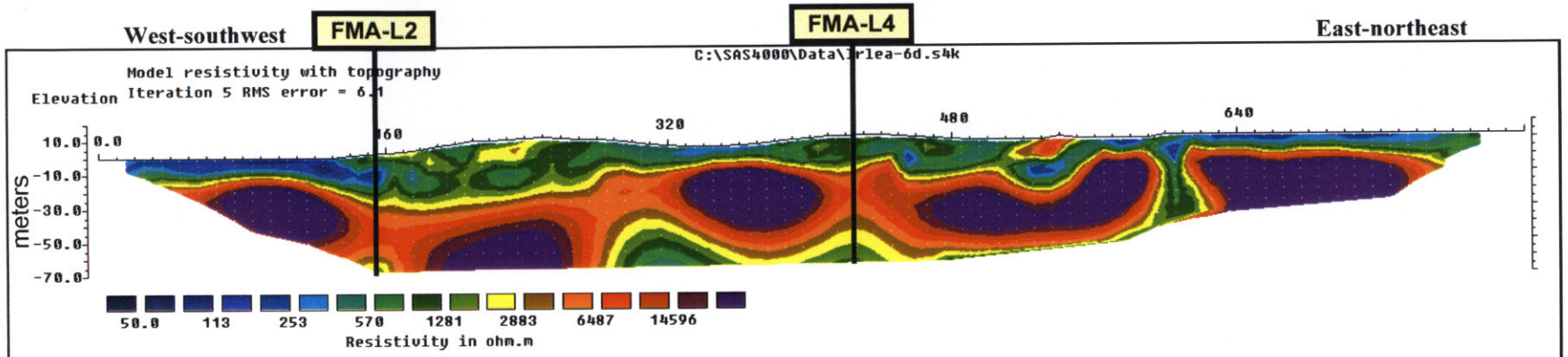
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 64

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	44.662861	0.2155481

Number of Data Points		
Surveyed	After Modeling	Number Removed
984	898	86

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R6 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 1



Horizontal and Vertical Axis Units are Meters

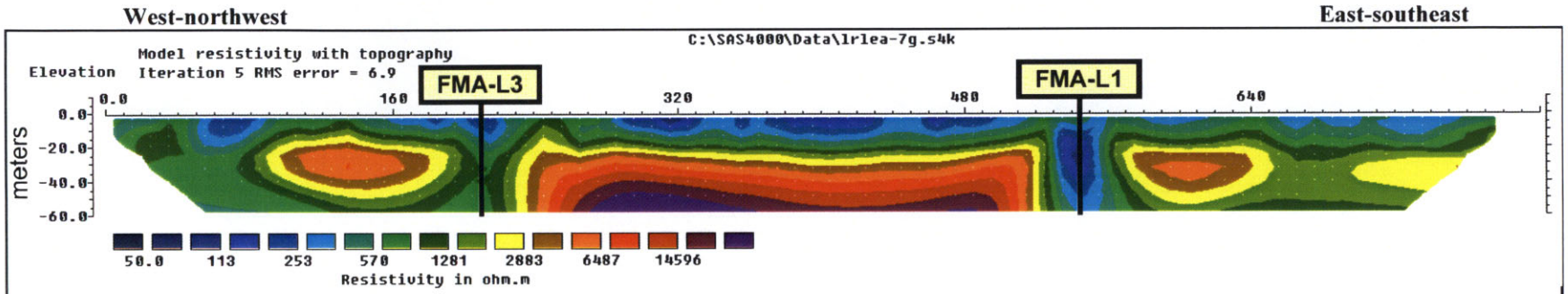
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 64

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	7.734543	0.1899328

Number of Data Points		
Surveyed	After Modeling	Number Removed
756	746	10

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R7 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2



Horizontal and Vertical Axis Units are Meters

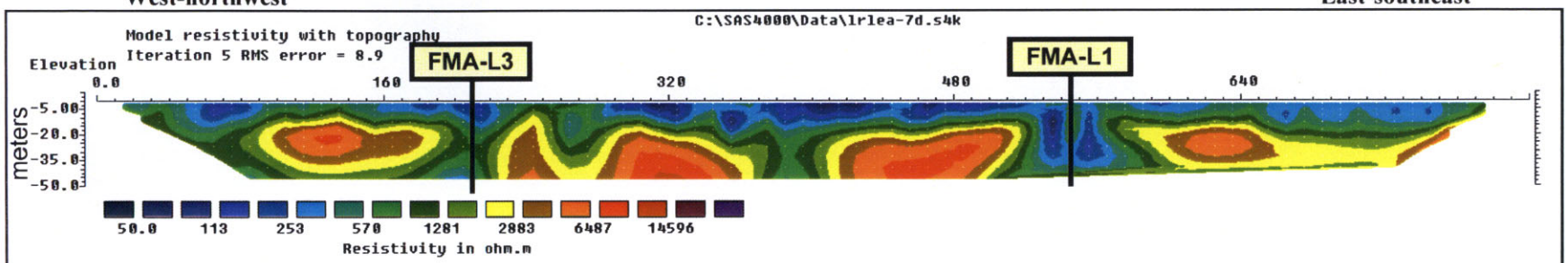
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 109

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	430.38126	0.9340314

Number of Data Points		
Surveyed	After Modeling	Number Removed
984	827	157

Electrical Resistivity Survey Line R7 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2

West-northwest **East-southeast**



Horizontal and Vertical Axis Units are Meters

Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 109

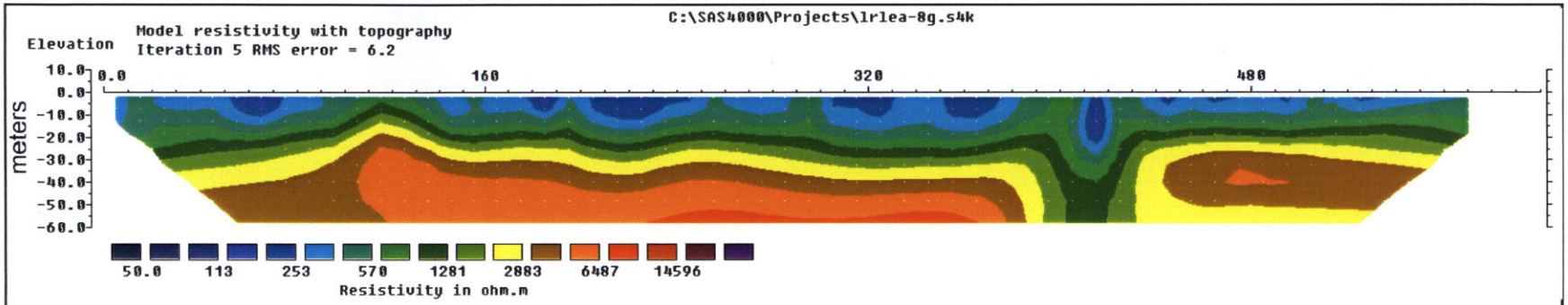
Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	6.710684	0.3267813

Number of Data Points		
Surveyed	After Modeling	Number Removed
756	687	69

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R8 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2

West-northwest **East-southeast**



Horizontal and Vertical Axis Units are Meters

Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 109

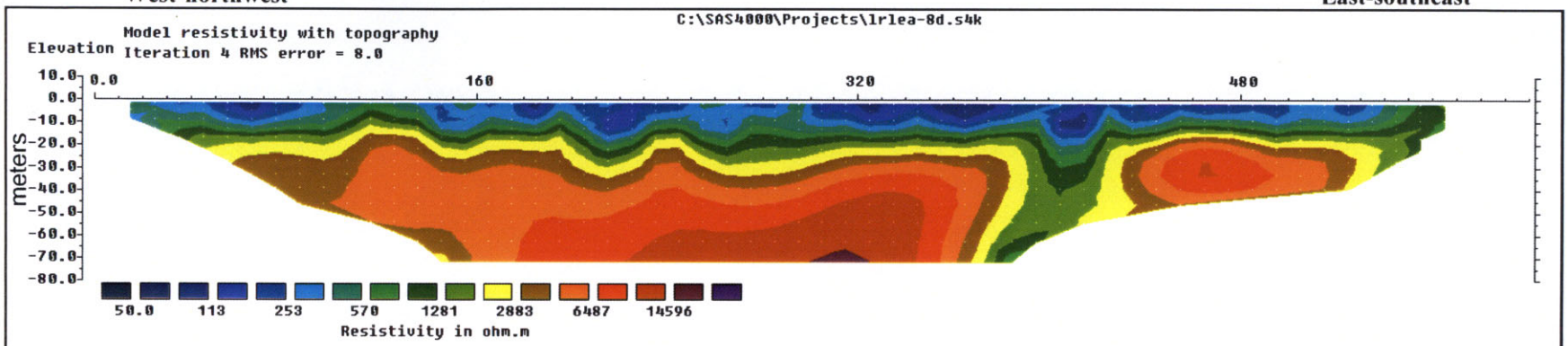
Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	240.78565	1.0500747

Number of Data Points		
Surveyed	After Modeling	Number Removed
744	608	136

Emery & Garrett Groundwater, Inc.

Electrical Resistivity Survey Line R8 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2

West-northwest **East-southeast**



Horizontal and Vertical Axis Units are Meters

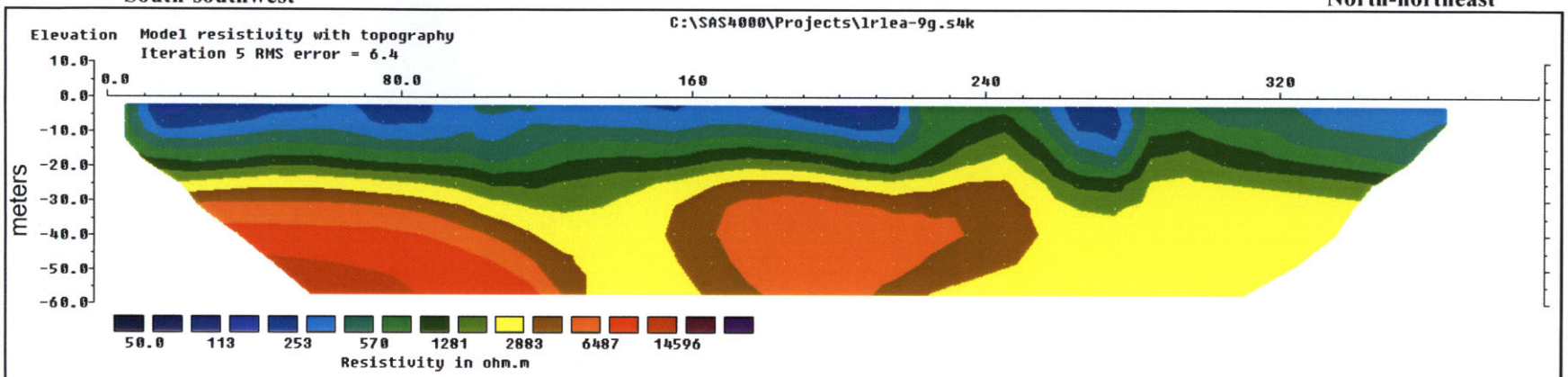
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 109

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	3.917027	0.2926993

Number of Data Points		
Surveyed	After Modeling	Number Removed
563	522	41

Electrical Resistivity Survey Line R9 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2

South-southwest **North-northeast**



Horizontal and Vertical Axis Units are Meters

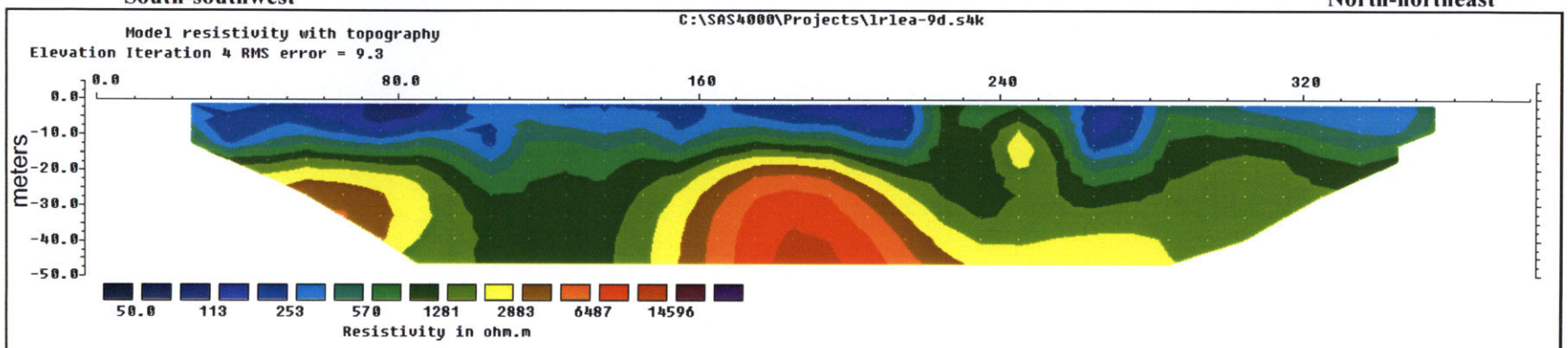
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 18

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	828.63483	2.3068131

Number of Data Points		
Surveyed	After Modeling	Number Removed
475	423	52

Electrical Resistivity Survey Line R9 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2

South-southwest **North-northeast**



Horizontal and Vertical Axis Units are Meters

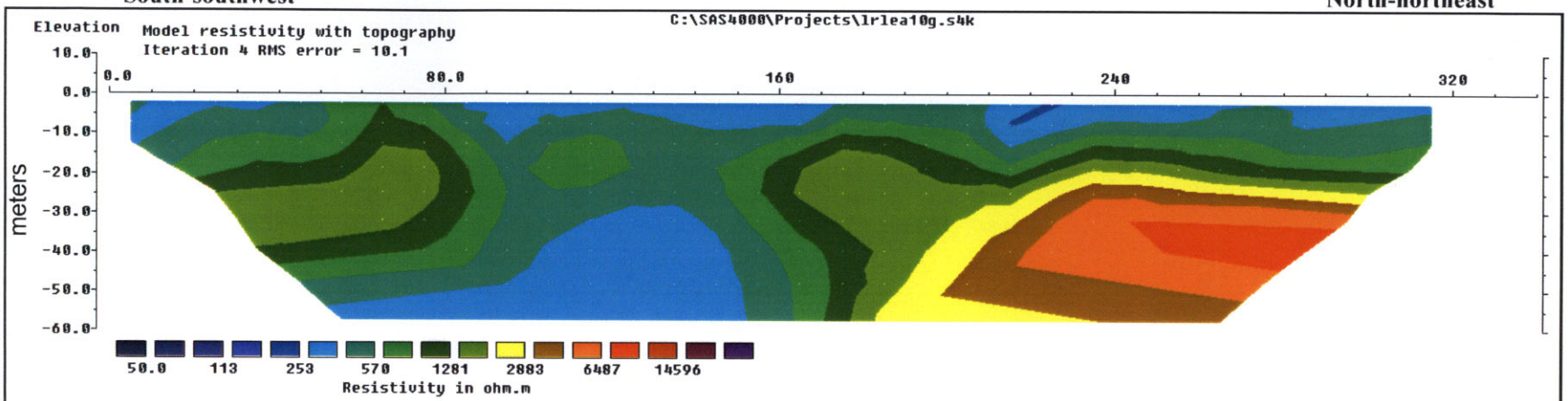
Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 18

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.002	16602.359	46.977097

Number of Data Points		
Surveyed	After Modeling	Number Removed
359	282	77

Electrical Resistivity Survey Line R10 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2

South-southwest **North-northeast**



Horizontal and Vertical Axis Units are Meters

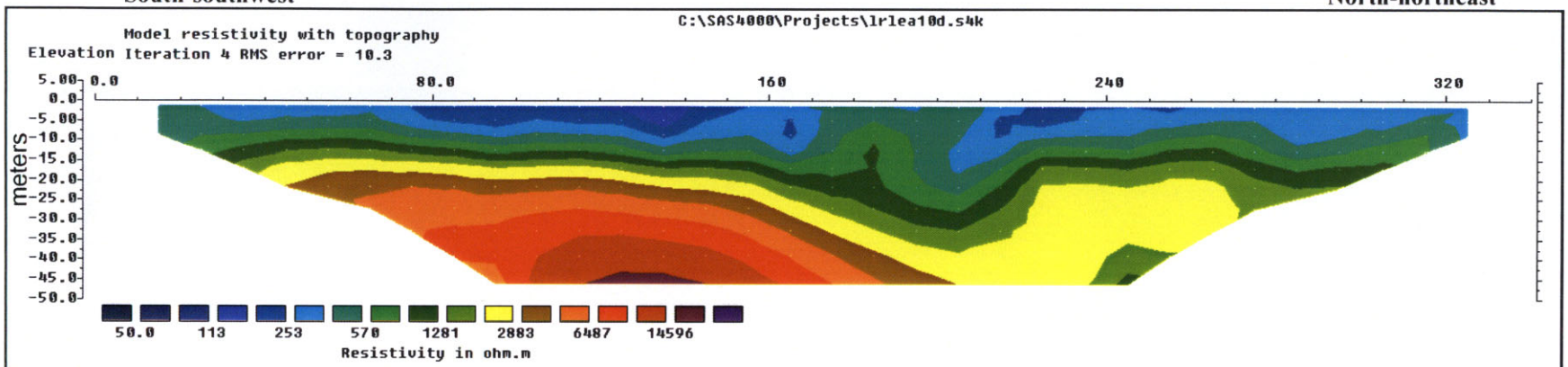
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 2

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	0.747624	0.0674803

Number of Data Points		
Surveyed	After Modeling	Number Removed
359	244	115

Electrical Resistivity Survey Line R10 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 2

South-southwest **North-northeast**



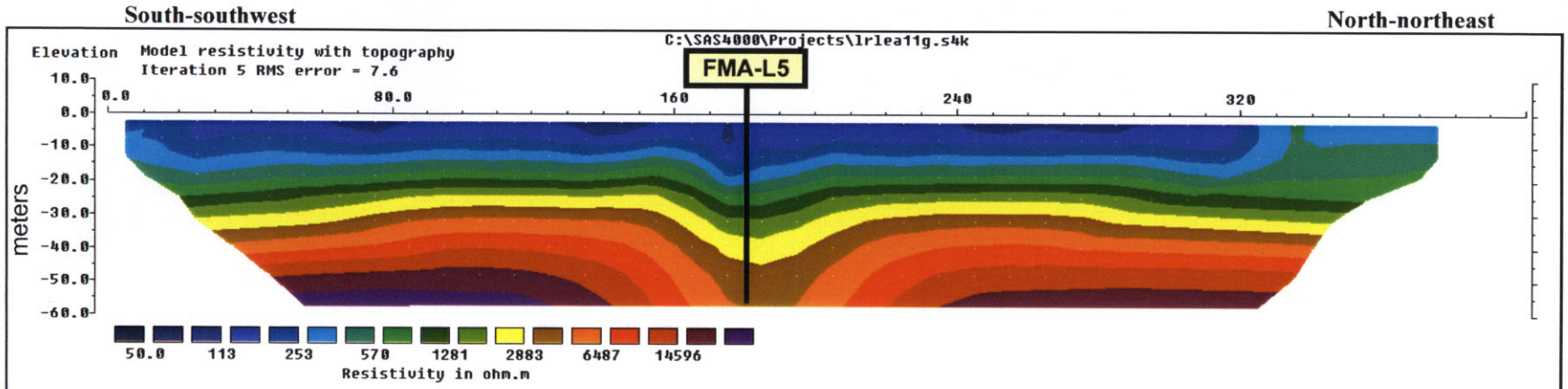
Horizontal and Vertical Axis Units are Meters

Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 2

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.001	10706.464	48.976707

Number of Data Points		
Surveyed	After Modeling	Number Removed
321	213	108

Electrical Resistivity Survey Line R11 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 3



Horizontal and Vertical Axis Units are Meters

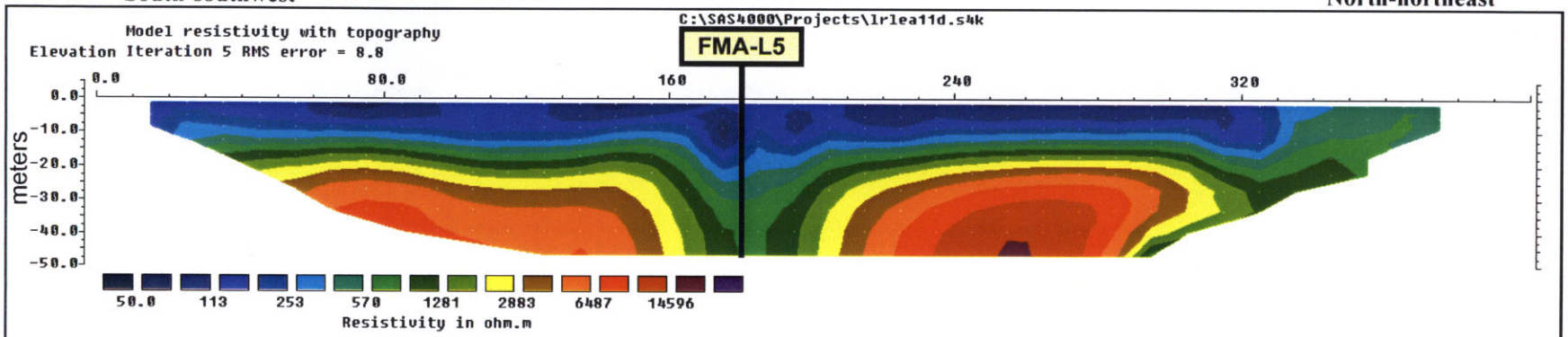
Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 6

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	419.0488	1.8660352

Number of Data Points		
Surveyed	After Modeling	Number Removed
504	441	63

Electrical Resistivity Survey Line R11 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Leachman Property - Parcel 3

South-southwest **North-northeast**



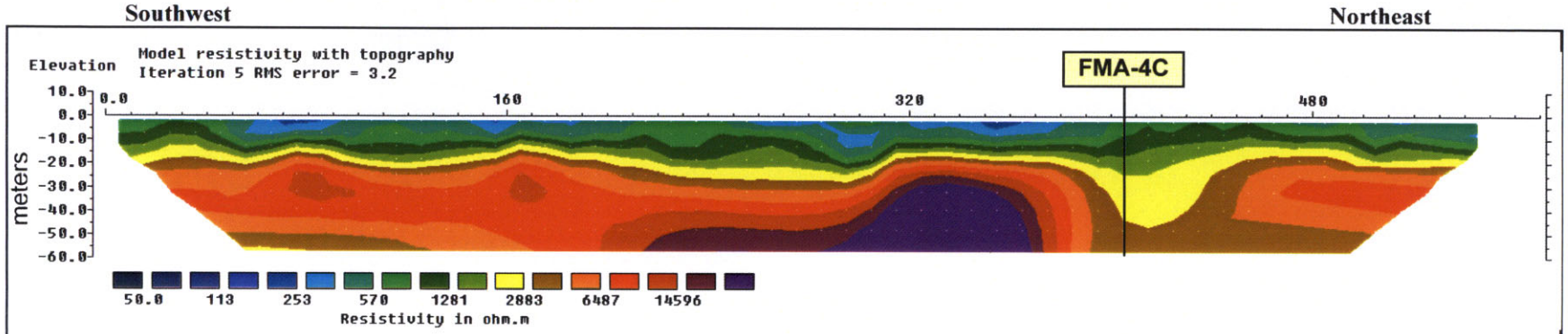
Horizontal and Vertical Axis Units are Meters

Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 6

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	4.43495	0.3186456

Number of Data Points		
Surveyed	After Modeling	Number Removed
372	318	54

Electrical Resistivity Survey Line 4R1 - Gradient Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Potential Groundwater Development Zone FMA-4



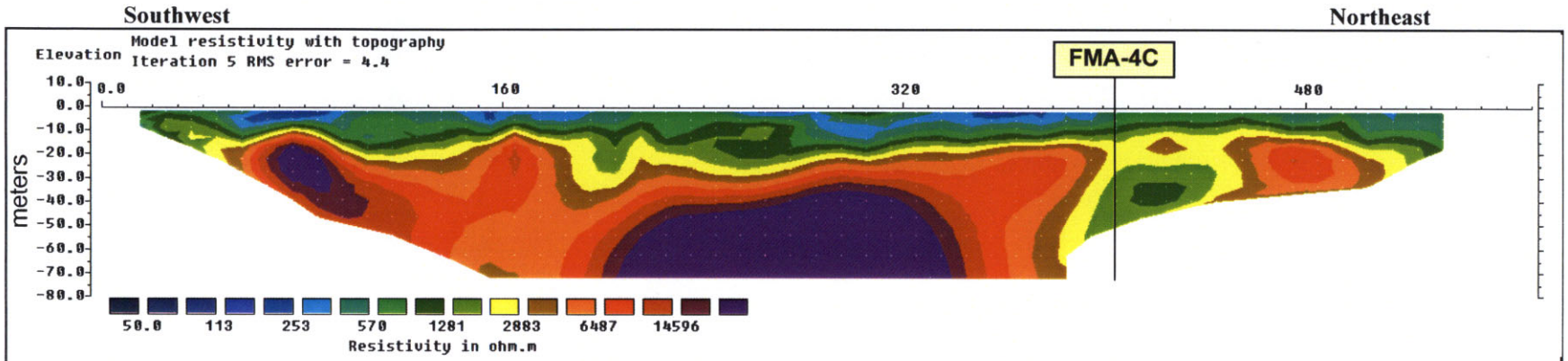
Horizontal and Vertical Axis Units are Meters

Survey Type: Gradient
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 46

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	4.019361	0.0520813

Number of Data Points		
Surveyed	After Modeling	Number Removed
672	672	0

Electrical Resistivity Survey Line 4R1 - Dipole-Dipole Method
Marshall Service District Study Area
Marshall, Virginia
Fauquier County Water & Sanitation Authority
Potential Groundwater Development Zone FMA-4



Horizontal and Vertical Axis Units are Meters

Survey Type: Dipole-Dipole
Electrode Spacing (m.): 10
Vertical Exaggeration: 1
Line orientation (geographic degrees): 46

Raw Data Quality Error Percent		
Minimum	Maximum	Average
0.000	7.443866	0.1207544

Number of Data Points		
Surveyed	After Modeling	Number Removed
543	543	0