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## Description of Rocks From a Core Drilled at a Potential Low-Low Level Radioactive Waste Site in Nemaha County

R. R. Burchett

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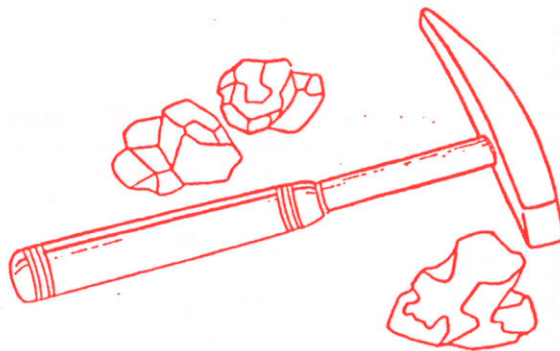
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# NEBRASKA GEONOTES

*Description of Rocks from a Core Drilled at a  
Potential Low-Level Radioactive Waste Site  
in Nemaha County*

**Raymond R. Burchett**



NEBRASKA GEOLOGICAL SURVEY

**Conservation and Survey Division  
Institute of Agriculture and Natural Resources  
University of Nebraska—Lincoln**



July 1992



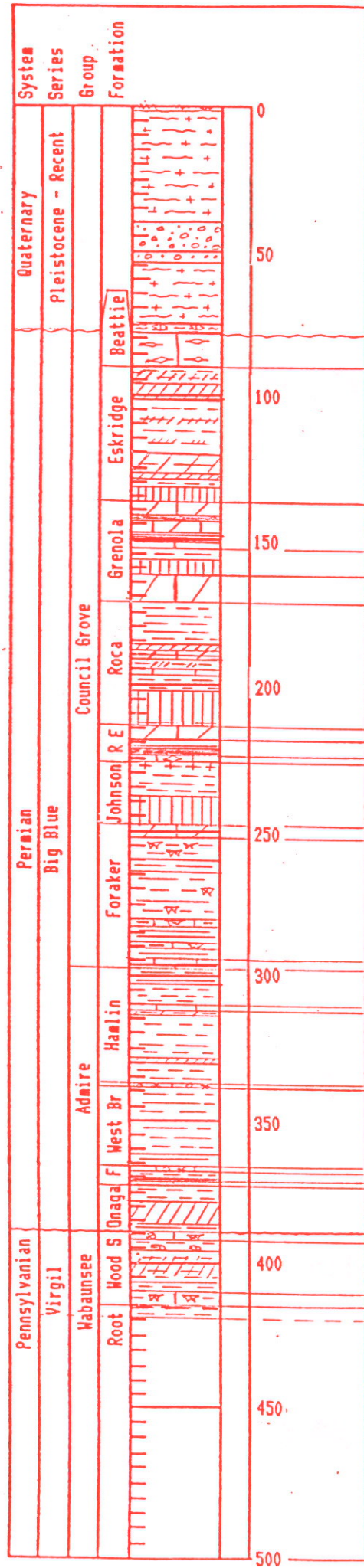
NEBRASKA GEOLOGICAL SURVEY

(Brock 7.5 min. quadrangle)

Location: NE SW NE NW Sec. 22, T. 5 N., R. 13 E. Co. NEMAHA COUNTY  
 Company: U.S. Ecology Farm Test Hole #BBG-3  
 Elev.: Ground elevation: 1,216.8 ft. TD 421.0 ft.  
 Described by: Raymond R. Burchett Date: July 19, 1989

Test Hole #BBG-3  
 Nemaha County

Location: NE SW NE NW sec. 22, T. 5 N., R. 13 E.  
 Ground elevation: 1,216.8 ft. (Brock 7.5 min. quadrangle)  
 Depth to water: unknown



KEY TO LITHOLOGY AND SYMBOLS

- |                           |                         |
|---------------------------|-------------------------|
| [---] Clay                | [◇] Fusulinids          |
| [+++] Silt                | [∞] Brachiopods         |
| [••••] Sand               | [*] Osagia              |
| [◦◦◦] Gravel              | [D] Limestone fragments |
| [ ] Limestone             | [◦◦] Oolites            |
| [ ] Dolomite              |                         |
| [ ] Gypsum                |                         |
| [---] Green or gray Shale |                         |
| [ ] Red Shale             |                         |
| [ ] Black Shale           |                         |
| [ ] Coal                  |                         |

Depth, in feet

Quaternary System - Recent and Pleistocene Series:

	From	To
Soil.....	0.0	1.0
Silty Clay, yellowish brown.....	1.0	19.0
Sand.....	19.0	19.4
Silty Clay, yellowish brown.....	19.4	20.0
Silty Clay, gray.....	20.0	40.0
Sand.....	40.0	40.5
Sand and gravel.....	40.5	54.0
Silty Clay, yellowish brown.....	54.0	60.0
Silty Clay, reddish brown.....	60.0	76.0
Silty Clay, light gray; contains limestone fragments	76.0	78.5

Permian System - Big Blue Series - Council Grove Group:

Beattie Formation:

Cottonwood Member:

Limestone, pale yellow, very finely crystalline; contains abundant fusulinids and manganese dendrites..... 78.5 87.7

Eskridge Formation:

Limestone, pale yellow and gray mottled, very finely crystalline..... 87.7 89.8

Shale, pale olive..... 89.8 91.9

Shale, light greenish gray with pale red mottling... 91.9 95.8

Shale, pale yellow with greenish gray mottling..... 95.8 96.5

Shale, pale red with greenish gray mottling..... 96.5 101.3

Shale, light greenish gray..... 101.3 102.6

Claystone, light greenish gray..... 102.6 103.2

Shale, pale red, green and yellow..... 103.2 105.0

Shale, pale olive..... 105.0 107.8

Shale, light greenish gray, limy, hard..... 107.8 110.5

Shale, light greenish gray with interbedded limy zones..... 110.5 115.0

Shale, light greenish gray with red mottling..... 115.0 116.0

Shale, light greenish gray..... 116.0 119.0

Shale, pale red and light greenish gray mottled..... 119.0 119.5

Shale, light greenish gray, hard..... 119.5 120.5

Shale, pale red and light greenish gray mottled.... 120.5 126.0

Shale, reddish brown..... 126.0 128.0

Shale, reddish brown with light greenish gray mottling..... 128.0 131.8

Gypsum, white to light gray..... 131.8 136.7

Grenola Formation:

Neva Member:

Dolomitic limestone, light gray, very finely crystalline, porous; contains gypsum crystals..... 136.7 139.0

Dolomitic limestone, light gray; contains brachiopods and crinoids..... 139.0 142.1

Shale, medium to dark gray..... 142.1 142.9

Gypsum, (selenite)..... 142.9 143.0

Shale, dark gray to black..... 143.0 144.1

Dolomite, gray, finely crystalline..... 144.1 146.1

Shale, greenish gray..... 146.1 147.3

Limestone, gray, very finely crystalline..... 147.3 148.0

Shale, black..... 148.0 150.9

Limestone, gray, very finely crystalline; contains crinoids and brachiopods..... 150.9 153.2

Salem Point Member:

Shale, gray.....	153.2	154.4
Shale, light greenish gray.....	154.4	156.4
Gypsum, white.....	156.4	156.5
Shale, greenish gray.....	156.5	157.2
Gypsum, white.....	157.2	162.2
Shale, light gray.....	162.2	162.7

Burr - Sallyards Members:

Dolomitic limestone, light gray.....	162.7	165.2
Shale, dark gray.....	165.2	166.0
Dolomitic limestone, light to medium gray.....	166.0	169.0
Shale, medium to dark gray.....	169.0	169.6
Dolomitic limestone, light to medium gray.....	169.6	171.7

Roca Formation:

Shale, light greenish gray, sandy, interbedded, in part "manganese specks"..... 171.7 173.2

Shale, light greenish gray; contains limy nodules... 173.2 176.6

Dolomitic limestone, light gray; contains gypsum nodules..... 176.6 177.6

Shale, light greenish gray with interbedded gypsum nodules..... 177.6 186.0

Shale, greenish gray with red mottling..... 186.0 187.7

Limestone, light gray, fragmental..... 187.7 188.0

Shale, greenish gray with red mottling..... 188.0 188.8

Dolomitic limestone, gray with interbedded light greenish gray shale and gypsum crystals..... 188.8 192.0

Shale, light greenish gray, silty; contains a trace of red mottling..... 192.0 195.9

Limestone, light gray, very finely crystalline..... 195.9 197.2

Shale, pale olive..... 197.2 200.0

Shale, light greenish gray..... 200.0 201.8

Shale, dark gray..... 201.8 202.0

Gypsum, white to light gray, irregular crystalline.. 202.0 211.5

Dolomitic limestone, light gray..... 211.5 212.1

Gypsum..... 212.1 212.2

Dolomitic limestone, light gray..... 212.2 212.5

Gypsum, white with thin gray shale partings..... 212.5 213.7

Red Eagle Formation:

Hove Member:

Dolomitic limestone, light gray; contains gypsum crystals, shale partings in bottom..... 213.7 219.3

Bennett Member:

Shale, light to medium gray..... 219.3 220.8

Shale, black, fissile..... 220.8 223.8

Glen Rock Member:

Limestone, bluish gray, finely crystalline; contains abundant fusulinids..... 223.8 225.2

Johnson Formation:

Shale, light gray with interbedded siltstone..... 225.2 227.0

Shale, light greenish gray..... 227.0 234.3

Gypsum, white..... 234.3 234.9

Shale, light greenish gray..... 234.9 238.3

Gypsum, white to light gray, irregular crystalline.. 238.3 248.4

Foraker Formation:

Long Creek Member:

Dolomitic limestone, light gray to gray, very finely crystalline with interbedded gypsum..... 248.4 252.2

<b>Hughes Creek Member:</b>			<b>West Branch Formation:</b>		
Shale, light to medium gray; contains brachiopods...	252.2	260.6	Shale, medium to dark gray.....	338.2	343.2
Shale, gray with gypsum crystals.....	260.6	261.6	Shale, black.....	343.2	343.6
Shale, light to medium gray; contains brachiopods...	261.6	264.5	Shale, light greenish gray, limy.....	343.6	353.0
Shale, light greenish gray.....	264.5	272.0	Shale, greenish gray, sandy.....	353.0	354.3
Shale, dark gray to black.....	272.0	273.0	Shale, light gray, limy.....	354.3	358.5
Shale, light greenish gray with some limy zones; contains brachiopods.....	273.0	280.0	Shale, gray.....	358.5	362.2
Limestone, light gray, shaly; contains brachiopods and interbedded shale seams.....	280.0	282.7	Shale, medium to dark gray.....	362.2	365.7
Shale, light to medium gray.....	282.7	285.0	<b>Falls City Formation:</b>		
Shale, dark gray.....	285.0	286.5	<b>Lehaur Member:</b>		
Shale, medium gray.....	286.5	289.0	Limestone, gray, finely crystalline, oolitic; con- tains Osagia.....	365.7	366.7
Limestone, light gray, shaly; contains brachiopods and interbedded shale seams.....	289.0	291.3	<b>Reserve Member:</b>		
Shale, gray; contains some brachiopods.....	291.3	295.4	Shale, medium gray.....	366.7	370.0
<b>Americus Member:</b>			Shale, dark gray to black.....	370.0	371.8
Limestone, gray, finely crystalline, impure, shaly; contains brachiopods.....	295.4	297.1	<b>Miles Member:</b>		
Shale, black, hard.....	297.1	297.4	Limestone, dark gray, finely crystalline; contains "black inclusions" and brachiopods.....	371.8	372.2
Limestone, gray, finely crystalline, impure; contains brachiopods.....	297.4	297.7	<b>Onaga Formation:</b>		
<b>Permian System - Big Blue Series - Adaire Group:</b>			<b>Hawxby - Towle Members:</b>		
<b>Hamlin Formation:</b>			Shale, light greenish gray.....	372.2	378.5
<b>Oaks Member:</b>			Shale, reddish gray with some limy nodules.....	378.5	382.8
Shale, dark gray to black at top 0.05.....	297.7	300.0	Shale, reddish gray mottled with greenish gray, micaceous, sandy and interbedded with sandstone...	382.8	385.7
Shale, medium to dark gray.....	300.0	302.8	Shale, reddish gray.....	385.7	386.5
Limestone, gray, very finely crystalline.....	302.8	303.0	Shale, dark gray.....	386.5	389.0
Shale, gray.....	303.0	304.0	<b>Pennsylvanian System - Virgil Series - Wabaunsee Group:</b>		
Shale, light grayish green; contains some limy zones	304.0	306.0	<b>Wood Siding Formation:</b>		
Shale, light greenish gray; contains some limy zones	306.0	310.3	<b>Brownville Member:</b>		
<b>Houchens Creek Member:</b>			Limestone, gray, very finely crystalline; contains crinoids and brachiopods.....	389.0	391.5
Limestone, cream, very finely crystalline to very fine-grained with light greenish gray shale inter- bedded.....	310.3	312.0	<b>Pony Creek - Plumb Members:</b>		
<b>Stine Member:</b>			Shale, olive.....	391.5	393.5
Shale, variegated green, gray and yellow.....	312.0	312.8	Shale, light greenish gray with interbedded limy zones.....	393.5	395.7
Shale, reddish brown.....	312.8	314.0	Shale, light greenish gray.....	395.7	397.0
Shale, light greenish gray.....	314.0	316.0	Shale, reddish gray with interbedded light greenish gray.....	397.0	400.0
Shale, pale olive.....	316.0	318.1	Shale, reddish brown mottled with light greenish gray.....	400.0	402.0
Shale, medium to dark gray.....	318.1	322.0	Shale, light greenish gray.....	402.0	405.0
Shale, gray, limy.....	322.0	325.8	Shale, reddish brown.....	405.0	407.3
Shale, gray to light greenish gray.....	325.8	328.0	Shale, gray.....	407.3	410.1
Shale, pale red with greenish gray mottling.....	328.0	329.8	<b>Nebraska City Member:</b>		
Shale, light greenish gray, limy to limestone.....	329.8	332.0	Limestone, gray, very finely crystalline, shaly; contains brachiopods and interbedded shale seams..	410.1	415.0
Shale, olive mottled with greenish gray and red....	332.0	336.4	<b>Root Formation:</b>		
Shale, dark gray to black.....	336.4	337.5	<b>French Creek Member:</b>		
<b>Five Point Formation:</b>			Shale, black, carbonaceous; contains pyrite.....	415.0	415.9
Limestone, light gray, very finely crystalline, pseudo oolitic; contains Osagia.....	337.5	338.2	Shale, coal.....	415.8	421.0
			Shale, light gray; contains pyrite.....	415.9	



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