
















OPEN MATERIALS SITES; NOT SAMPLED

LEGEND

	Trail or lane		Open materials site; not sampled
	Road		Center of section
	Railroad		Dwelling
	Hedge or trees		Cemetery
	Fence		School
	Major stream		Church
	Intermittent streams		Town or city
	Pond or lake		



MATERIAL SURVEY REPORT

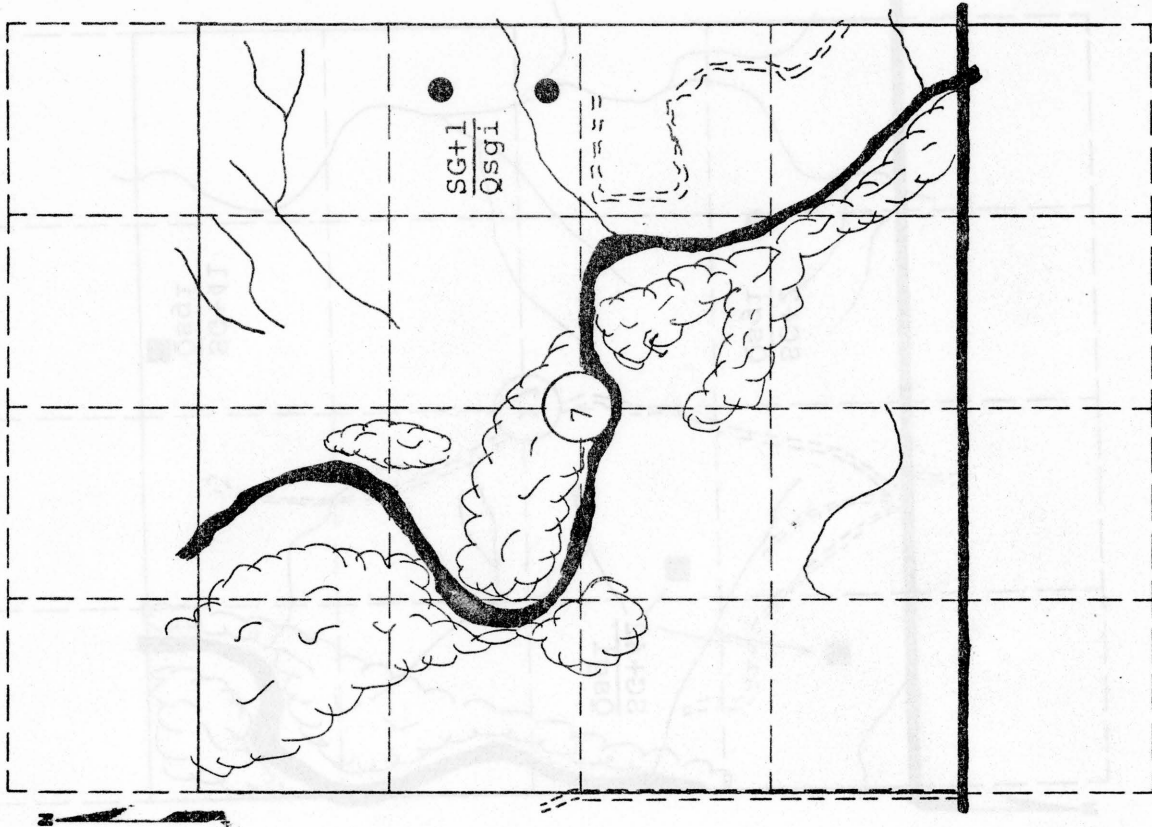
Site No. SG+1 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SE 1/4 NE 1/4 Sec. 7 Twp. 32S Range 33W  
 Owner See Remarks name address  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.						
				1/2	3/4	3/8	4	8	16					30	50	100			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks George F. & E. A. Morgan, 1320 S. Pine, Newton, Kansas



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. SG+2  
Qsg1

Material Sand & Gravel County Seward

Location NE 1/4 Sec. 17 Twp. 32S Range 33W

Owner See Remarks name \_\_\_\_\_ address \_\_\_\_\_

Nature of Deposit Dry Accessibility Fair Site Located on Plate I

Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.
				1 1/2	3/4	3/8	3/16	1/8				

CORRELATION DATA

Geological Age Quaternary

Geological Source Grand Island Formation

Material Similar To \_\_\_\_\_

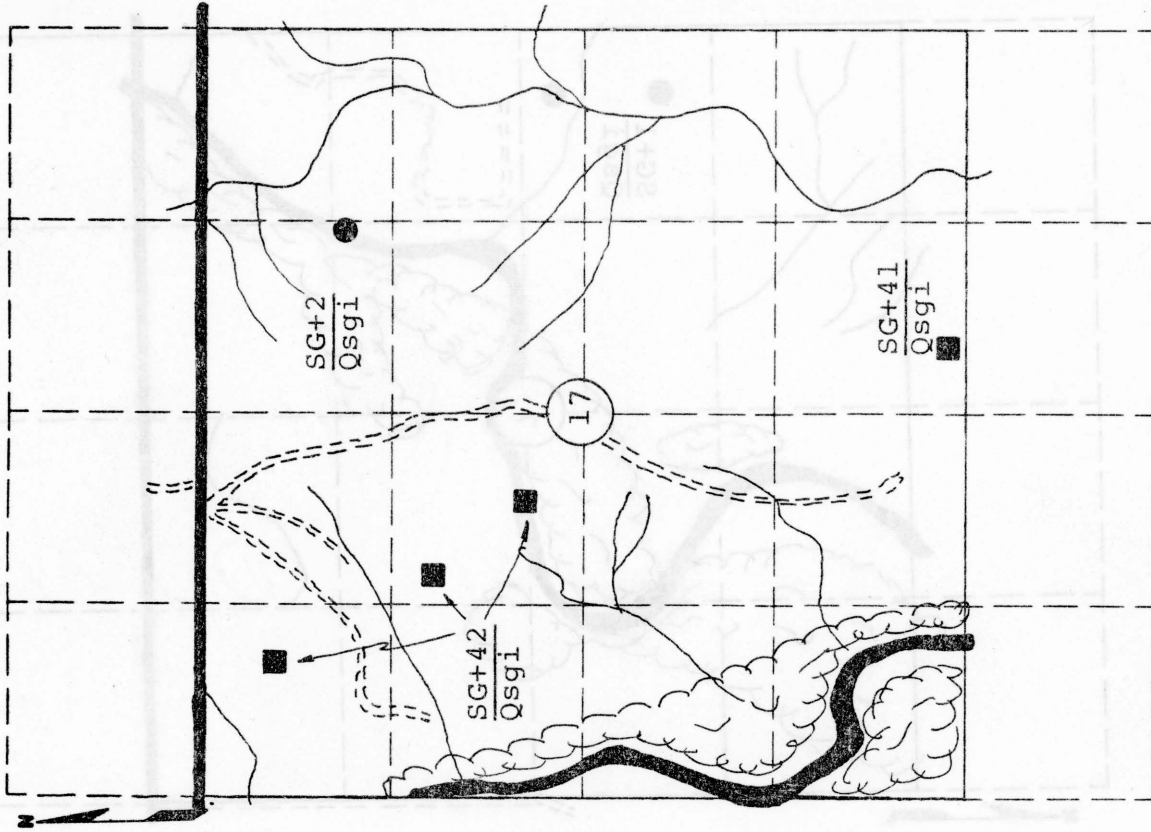
Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_

Los Angeles Wear \_\_\_\_\_

Absorption \_\_\_\_\_ Soundness \_\_\_\_\_

Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_

Remarks Wendy & Deanna Johnson, & H. Hoble, Jr., Liberal, Kansas



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

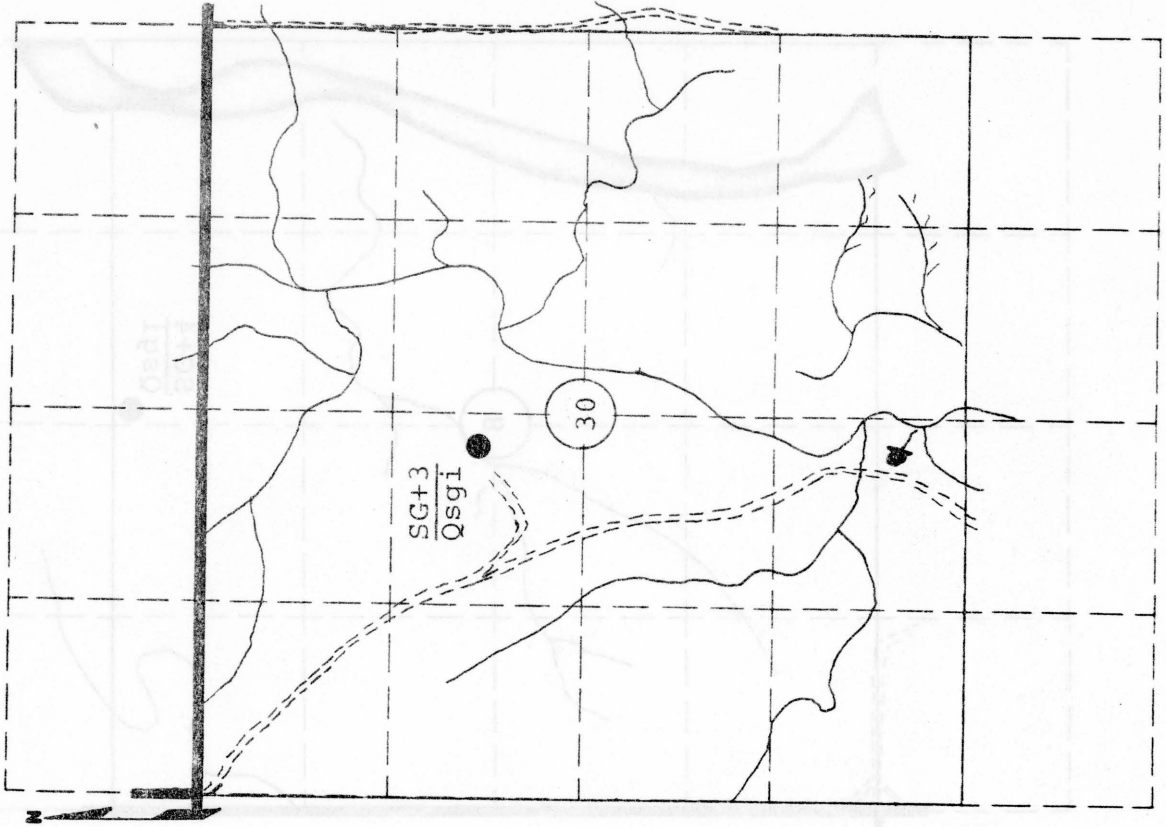
Site No. SG+3 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SE 1/4 NW 1/4 Sec. 30 Twp. 31S Range 33W  
 Owner Mrs. F. M. Beaty, 811 N. Jordan, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained							Wash	G.F.	L.L.	P.I.			
				1/2	3/4	1	3/8	1/2	3/4	1					200		

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar to \_\_\_\_\_  
 Specific Gravity (sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

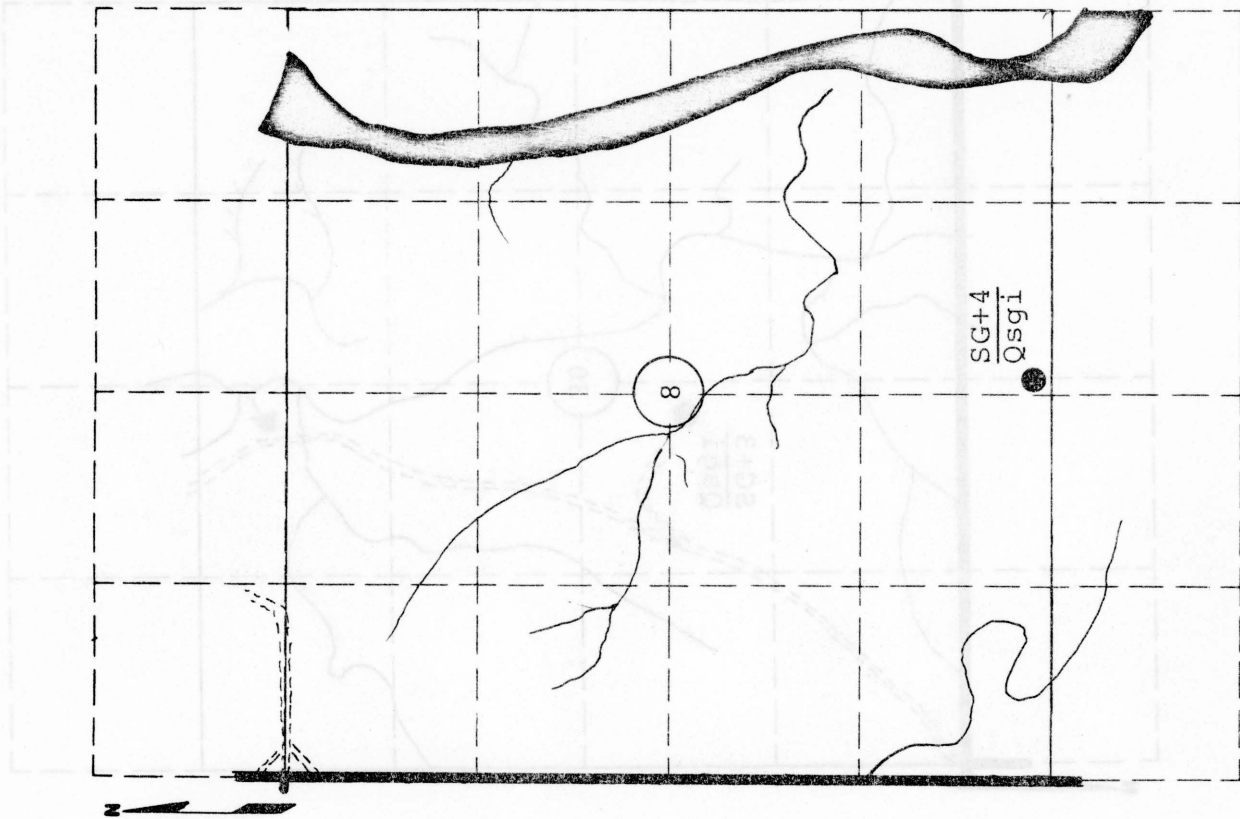
Site No. SG+4 Date March, 1967  
Qsgr  
 Material Sand & Gravel County Seward  
 Location SW 1/4 SE 1/4 Sec. 8 Twp. 31S Range 34W  
 Owner See Remarks name \_\_\_\_\_ address \_\_\_\_\_  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.						
				1/2	3/4	3/8	4	8	16					30	50	100			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks Mayme Day et al, % P. H. Day, Box 67  
Satanta, Kansas



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

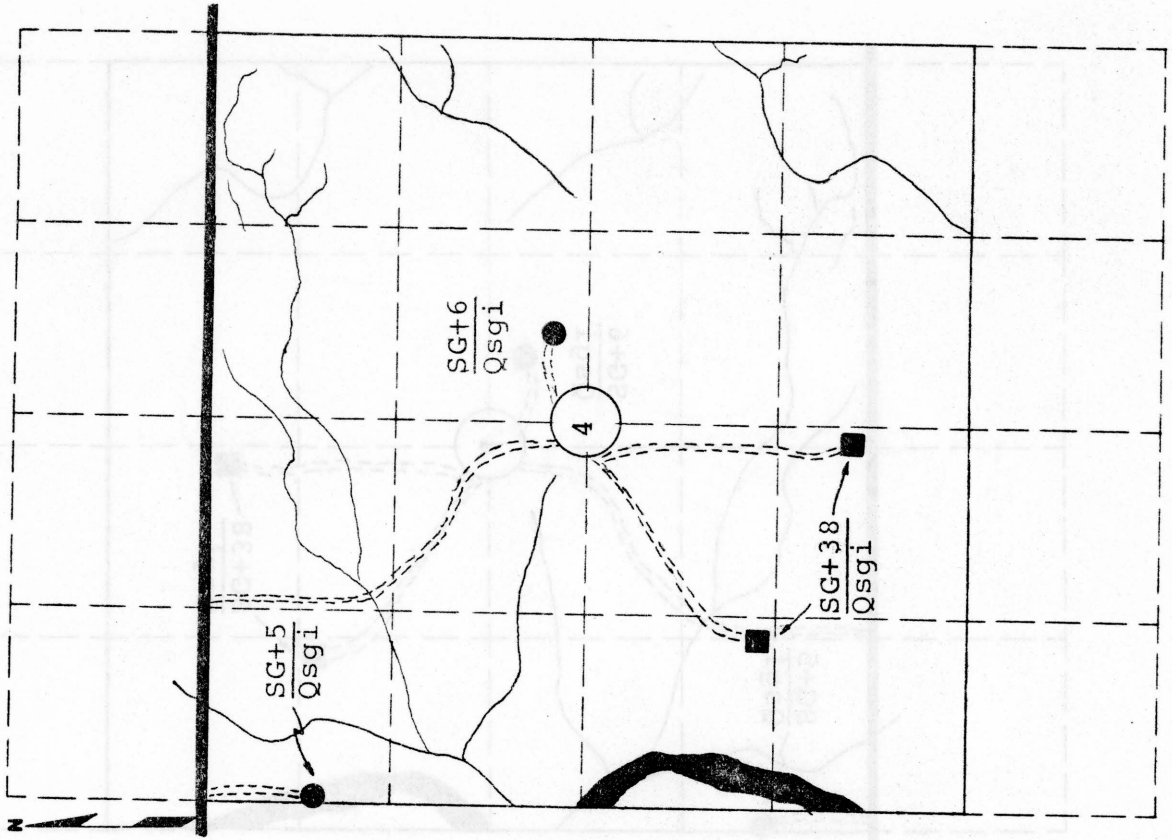
Site No. SG+5 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location NW 1/4 NW 1/4 Sec. 4 Twp. 31S Range 34W  
 Owner R. Y. Harlow name Satanta, Kansas address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.				
				1 1/2	3/4	3/8	4	8	16					30	50	100	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

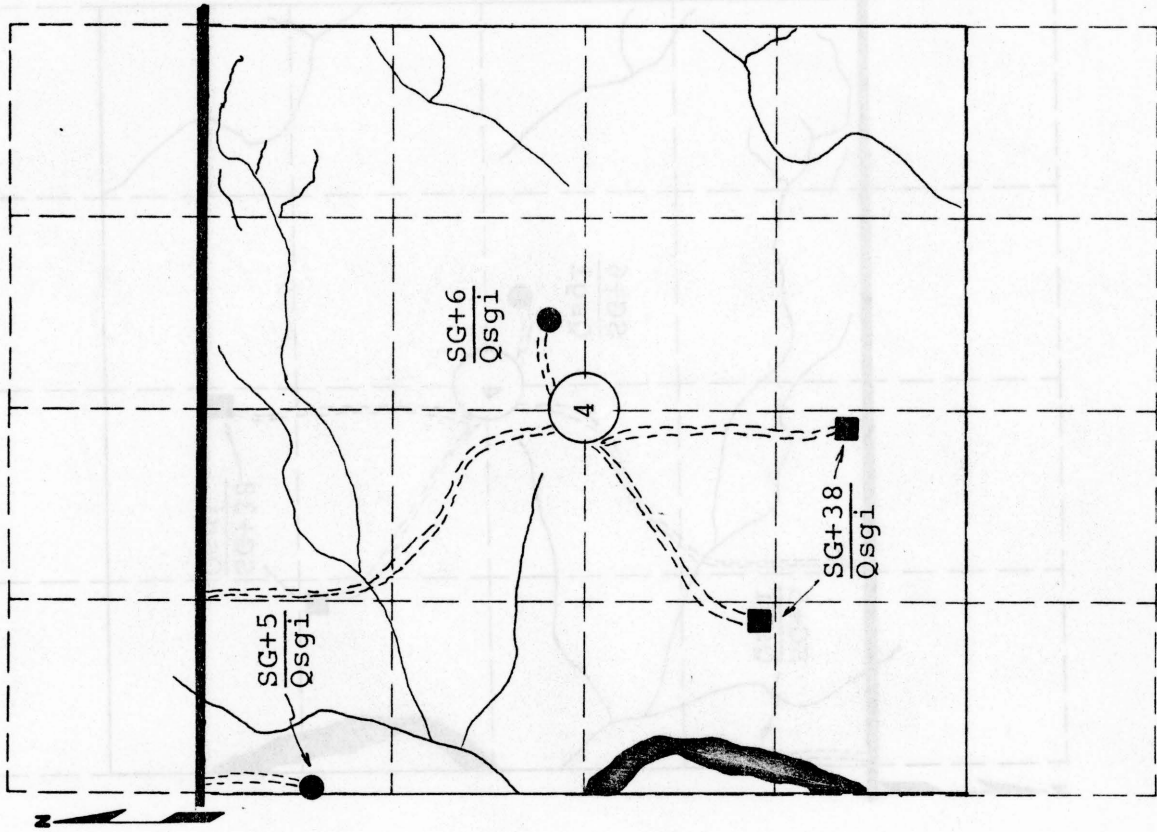
Site No. SG+6 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SW 1/4 NE 1/4 Sec. 4 Twp. 31S Range 34W  
 Owner See Remarks address \_\_\_\_\_  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30	50					100	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks Edith K. & Osby C. Lawson  
1902 N. Winfree, Dayton, Texas



Scale: 1" = 1/4 Mile



STATE HIGHWAY COMMISSION OF KANSAS

MATERIAL SURVEY REPORT

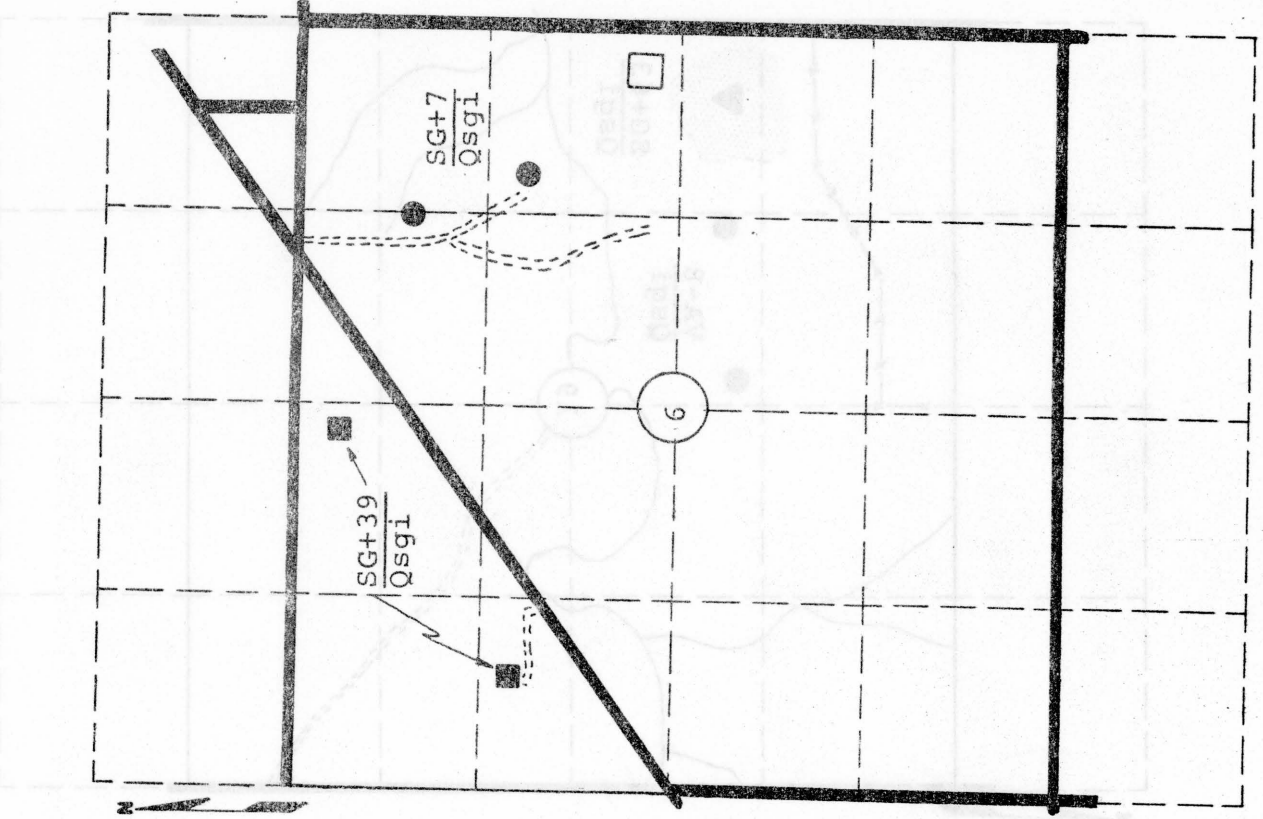
Site No. SG+7 Date March, 1967  
Qsgl  
 Material Sand & Gravel County Seward  
 Location NE $\frac{1}{4}$  Sec. 6 Twp. 31S Range 34W  
 Owner Arthur B. Davis Moscow, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at bottom of hole	Depth of over-burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.			
				1 1/2	3/4	3/8	1/8	16	30					50	100	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar to \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

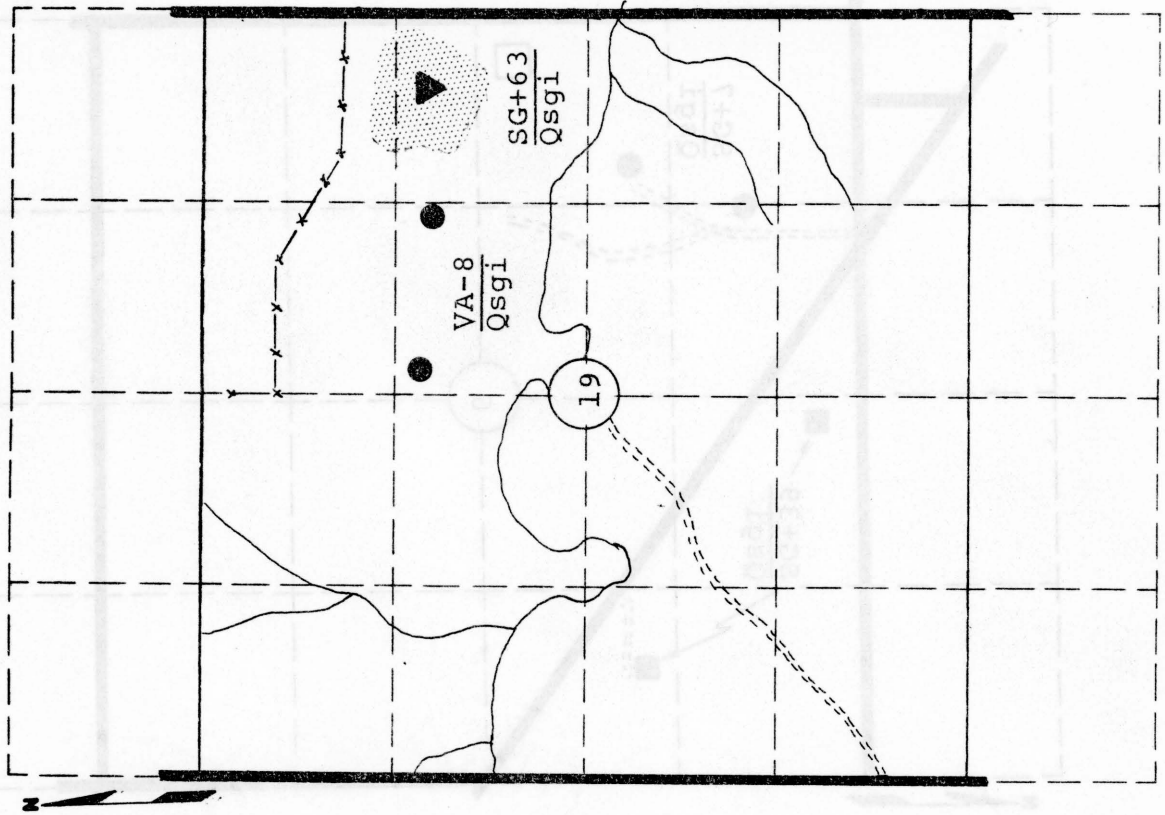
Site No. VA-8 Date March, 1967  
Qsgi  
 Material Volcanic Ash County Seward  
 Location SW 1/4 NE 1/4 Sec. 19 Twp. 31S Range 34W  
 Owner See Remarks name address  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.				
				1/2	3/4	3/8	4	8	16					30	50	100	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks Edith Yarbrough, & W. E. Yarbrough  
R. R. 1, Box 167, Eldon, Missouri



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

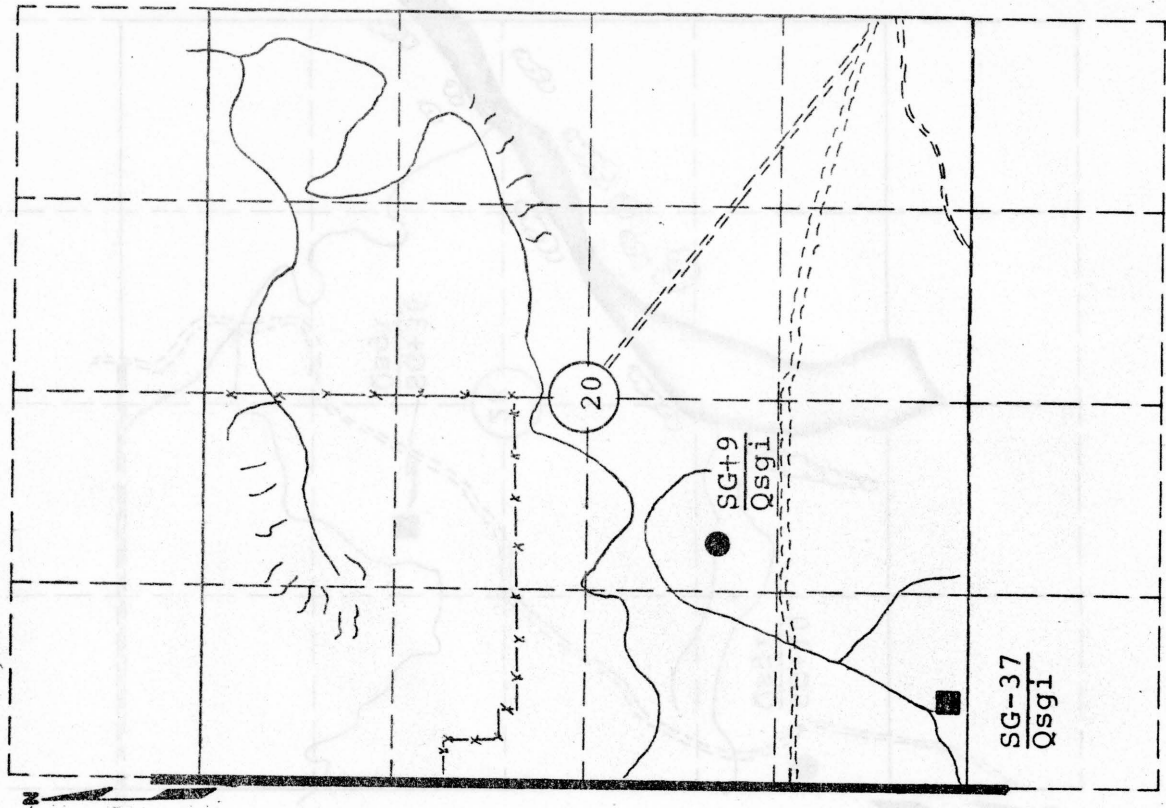
Site No. SG+9 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NE 1/4 SW 1/4 Sec. 20 Twp. 31S Range 34W  
 Owner Vance A. Lahey Moscow, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained						Wash 200	L.L.	P.L.			
				1/2	3/4	3/8	4	8	16				30	50	100

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formationn  
 Material Similar to \_\_\_\_\_  
 Specific Gravity (sat.) \_\_\_\_\_ (dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

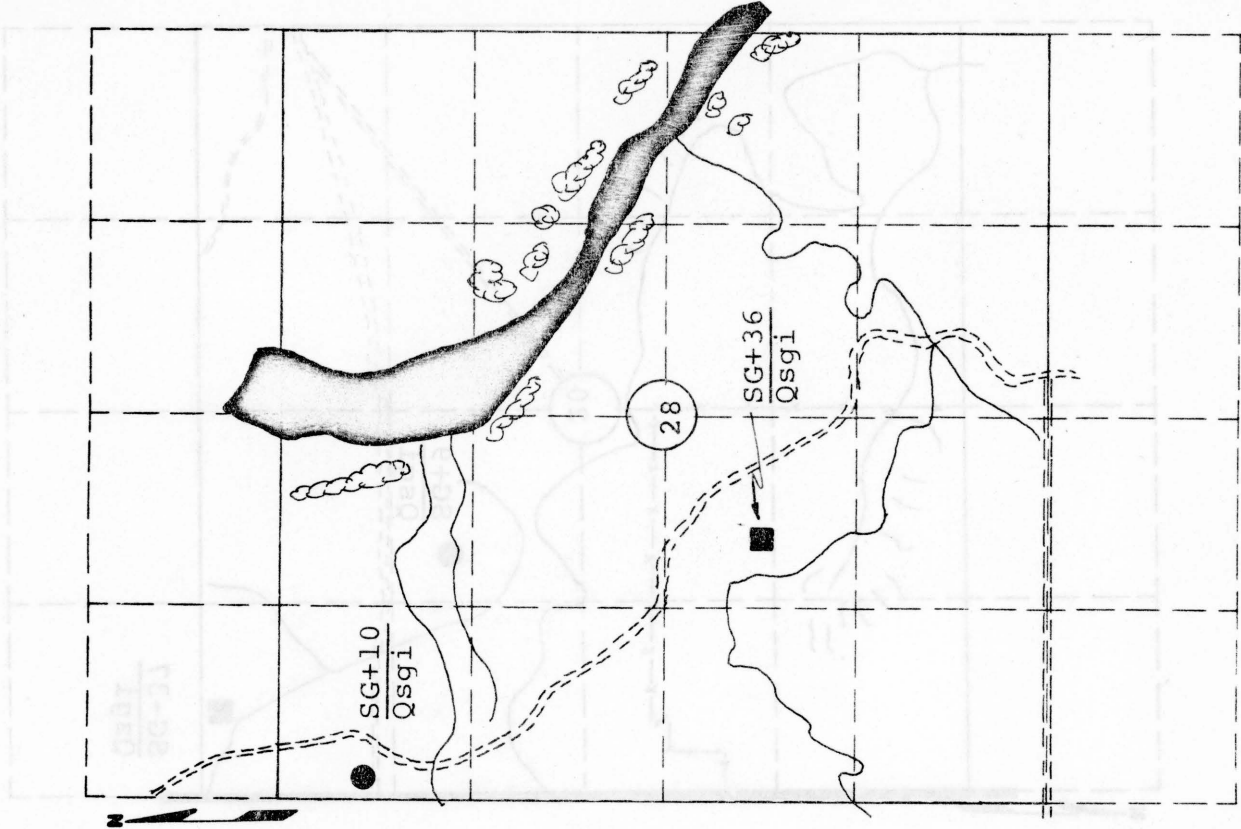
Site No. SG+10 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location NW 1/4 NW 1/4 Sec. 28 Twp. 31S Range 34W  
 Owner Vance Lahey Moscow, Kansas address  
 Nature of Deposit Dry Accessibility POOR Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.	
				1 1/2	3/4	3/8	4	8	16	30					50

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

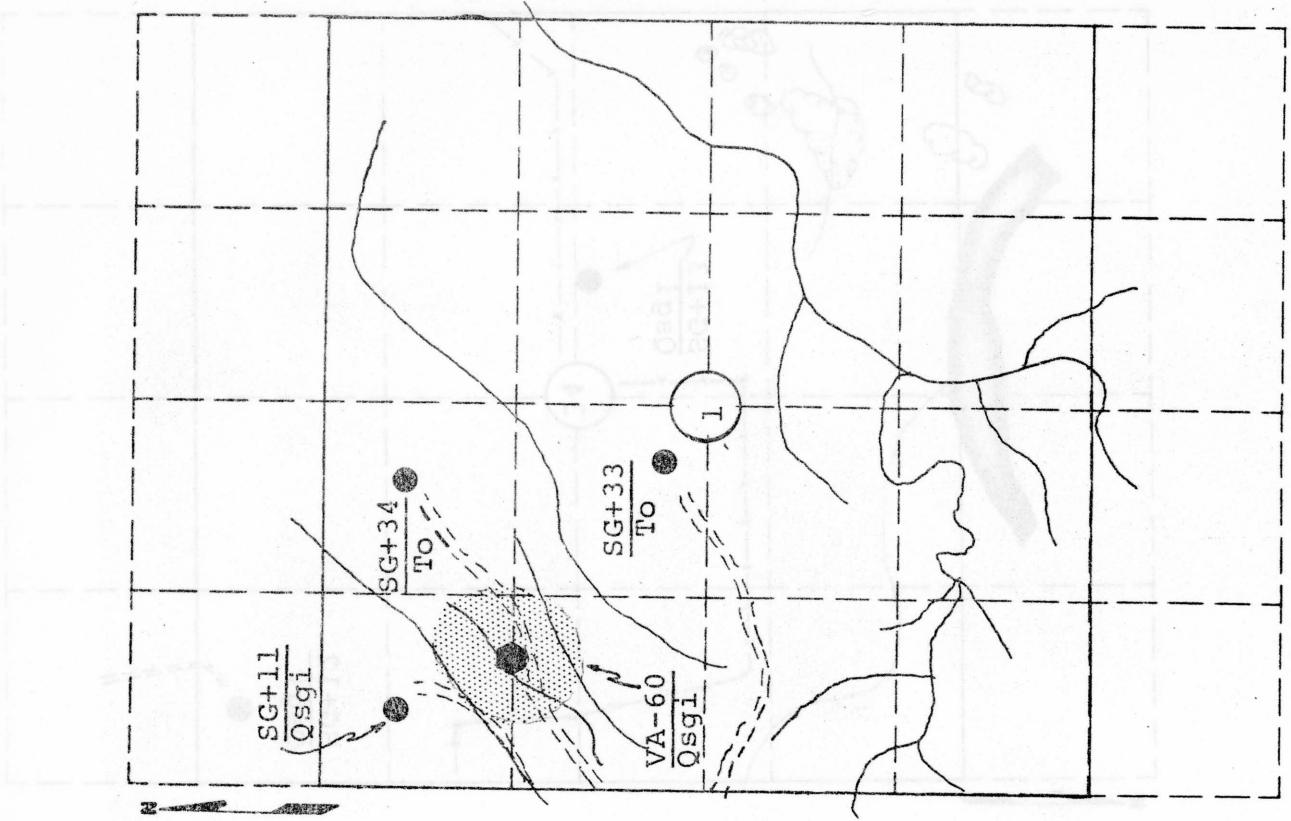
Site No. SG+11 Date March, 1967  
Qsgl  
 Material Sand & Gravel County Seward  
 Location NW 1/4 NW 1/4 Sec. 1 Twp. 35S Range 31W  
 Owner Paul Louderback R. R. 2, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Fair Site located on Plate VI  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material Bottom of Hole	Depth of overburden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.				
				1/2	3/4	3/8	5/16	3/16	1/8								

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. SG+12 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SW 1/4 SW 1/4 Sec. 34 Twp. 31S Range 34W  
 Owner H. A. Mack 412 S. Bowlus Jetmore, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

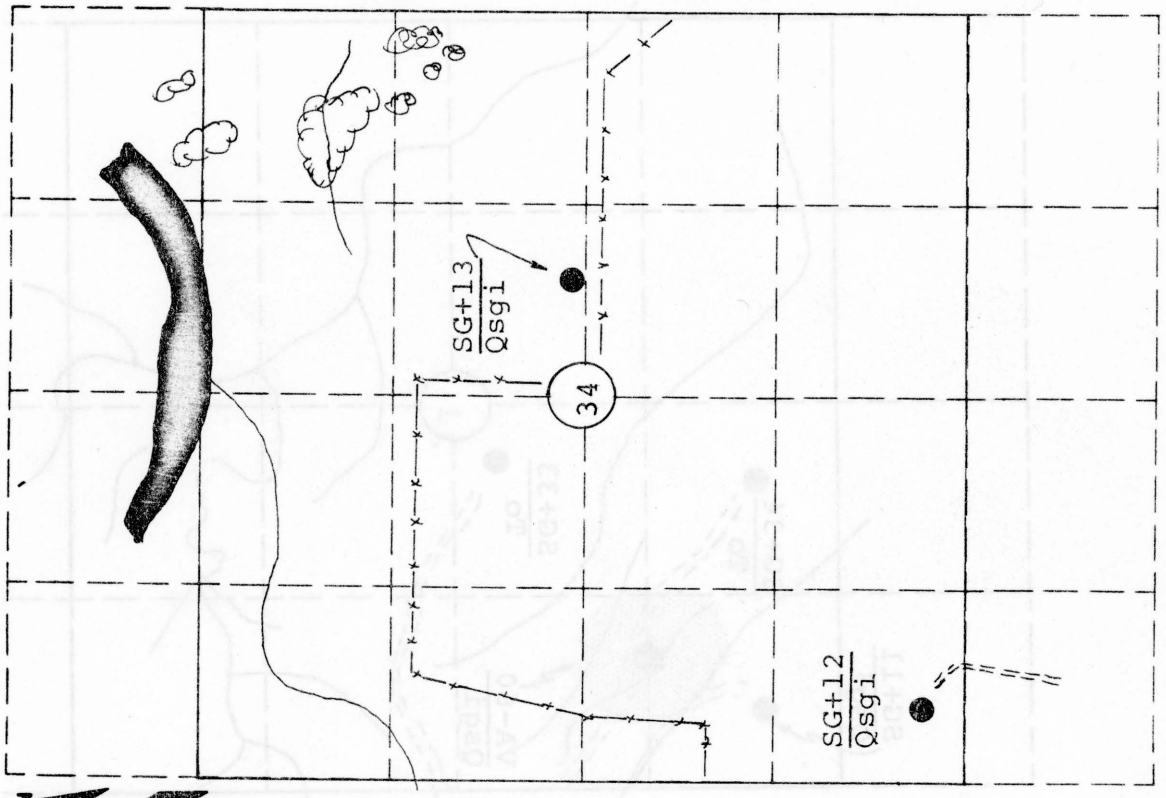
Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.
				1 1/2	3/4	3/8	4	8				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_

Scale: 1" = 1/4 Mile

1/4" = 1/4 Mile



MATERIAL SURVEY REPORT

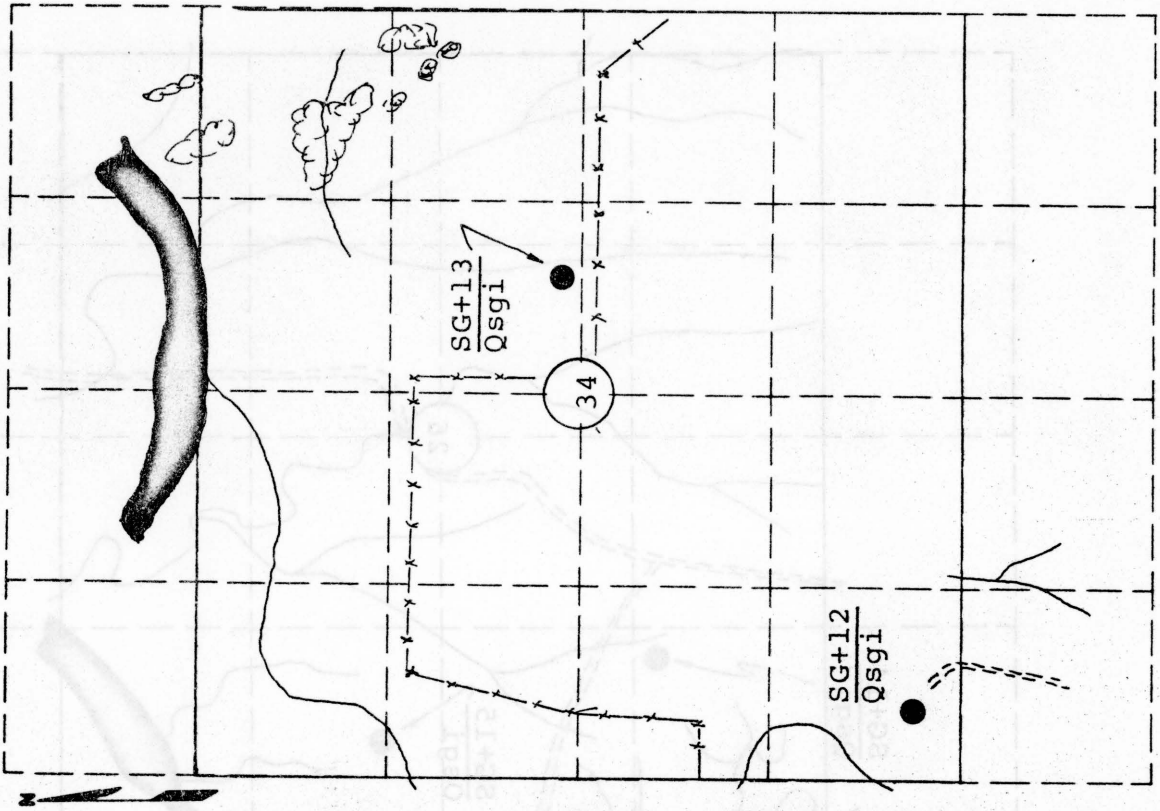
Site No. SG+13 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SW 1/4 NE 1/4 Sec. 34 Twp. 31S Range 34W  
 Owner C. J. Conover Satanta, Kansas  
 name address  
 Nature of Deposit Dry accessibility POOR Site located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P. I.
				1 1/2	3/4	3/8	1/8	1/16				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

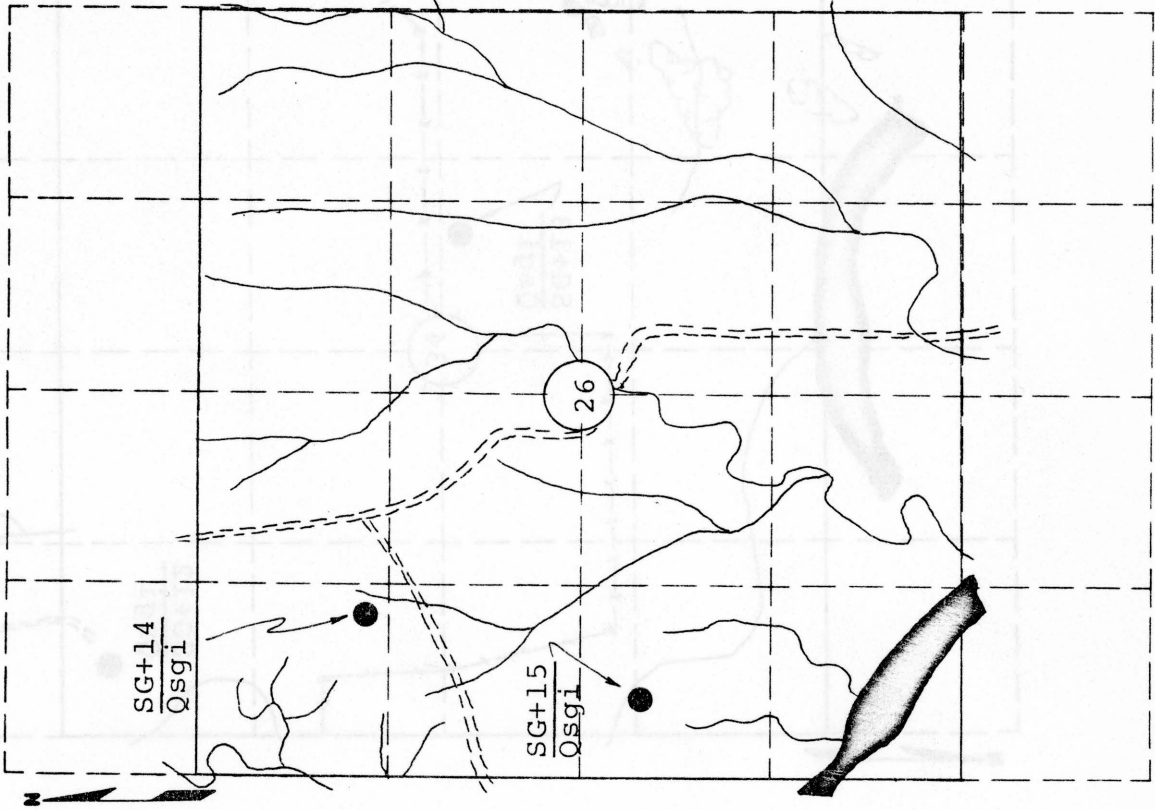
Site No. SG+14 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NW 1/4 Sec. 26 Twp. 31S Range 34W  
 Owner C. J. Conover Satanta, Kansas  
 name address  
 Nature of Deposit Dry Accessibility POOR Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of Material	Depth of over-burden	Percent Retained					Wash 200	G.F.	L.L.	P.I.
				1 1/2	3/4	3/8	4	8				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_





MATERIAL SURVEY REPORT

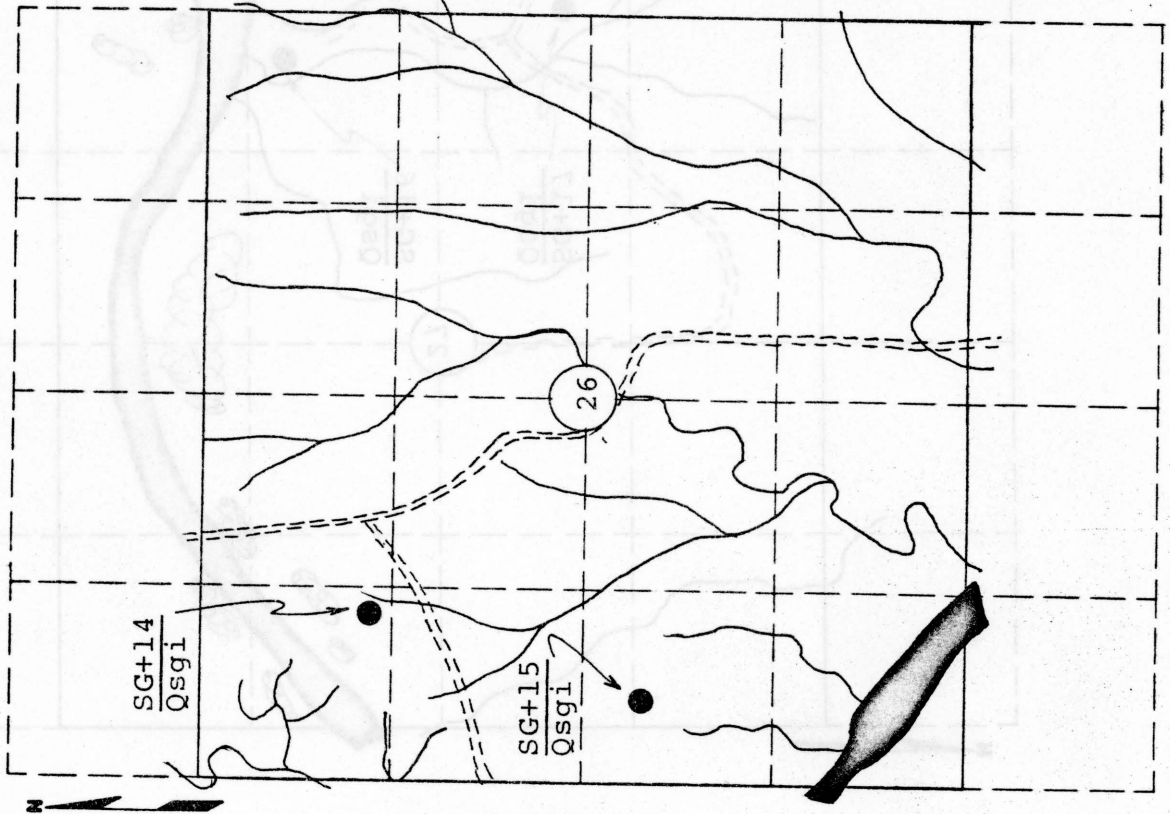
Site No. SG+15 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location NW 1/4 SW 1/4 Sec. 26 Twp. 31S Range 34W  
 Owner C. J. Conover Satanta, Kansas  
 name address  
 Nature of Deposit DRY Accessibility POOR Site Located on Plate I  
 Status of Site Open site; not sampled.

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.					
				1 1/2	3/4	3/8	4	8	16					30	50	100		

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Set.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu. Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



MATERIAL SURVEY REPORT

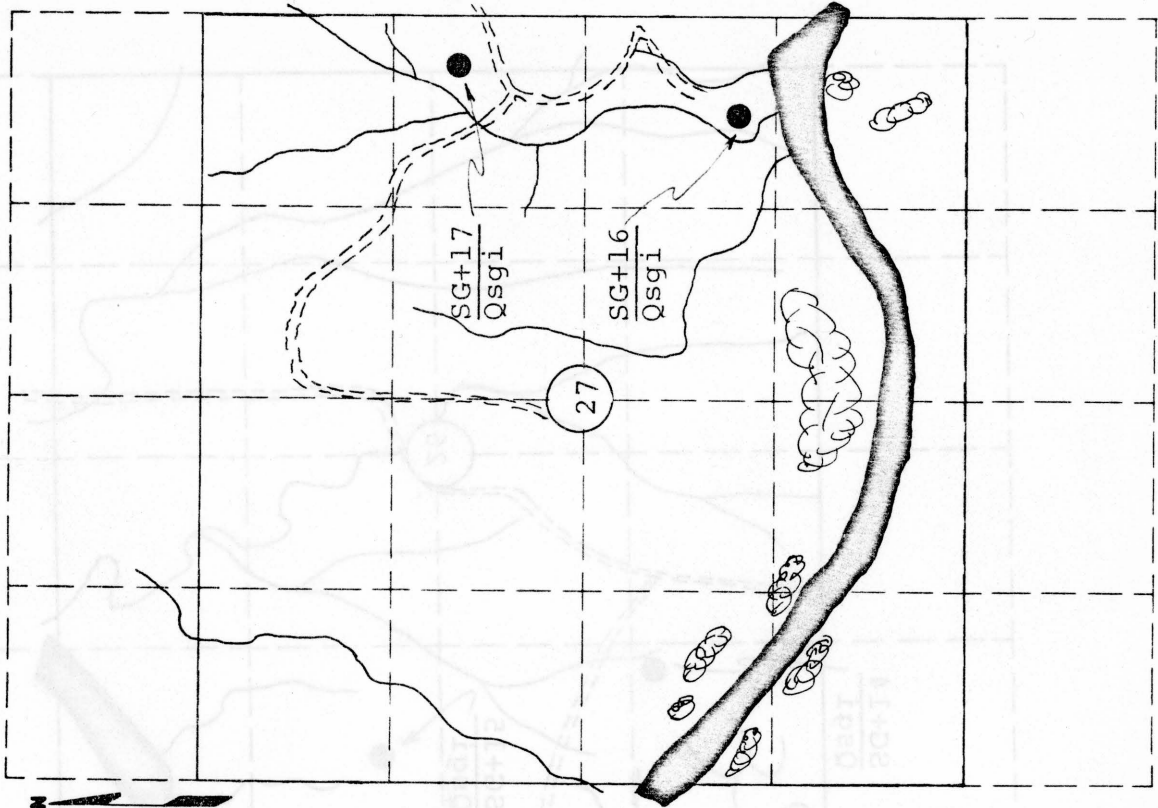
Site No. SG+16 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location NE 1/4 SE 1/4 Sec. 27 Twp. 31S Range 34W  
 Owner C. J. Conover Satanta, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Poor Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.	
				1/2	3/4	3/8	4	8	16	30					50

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

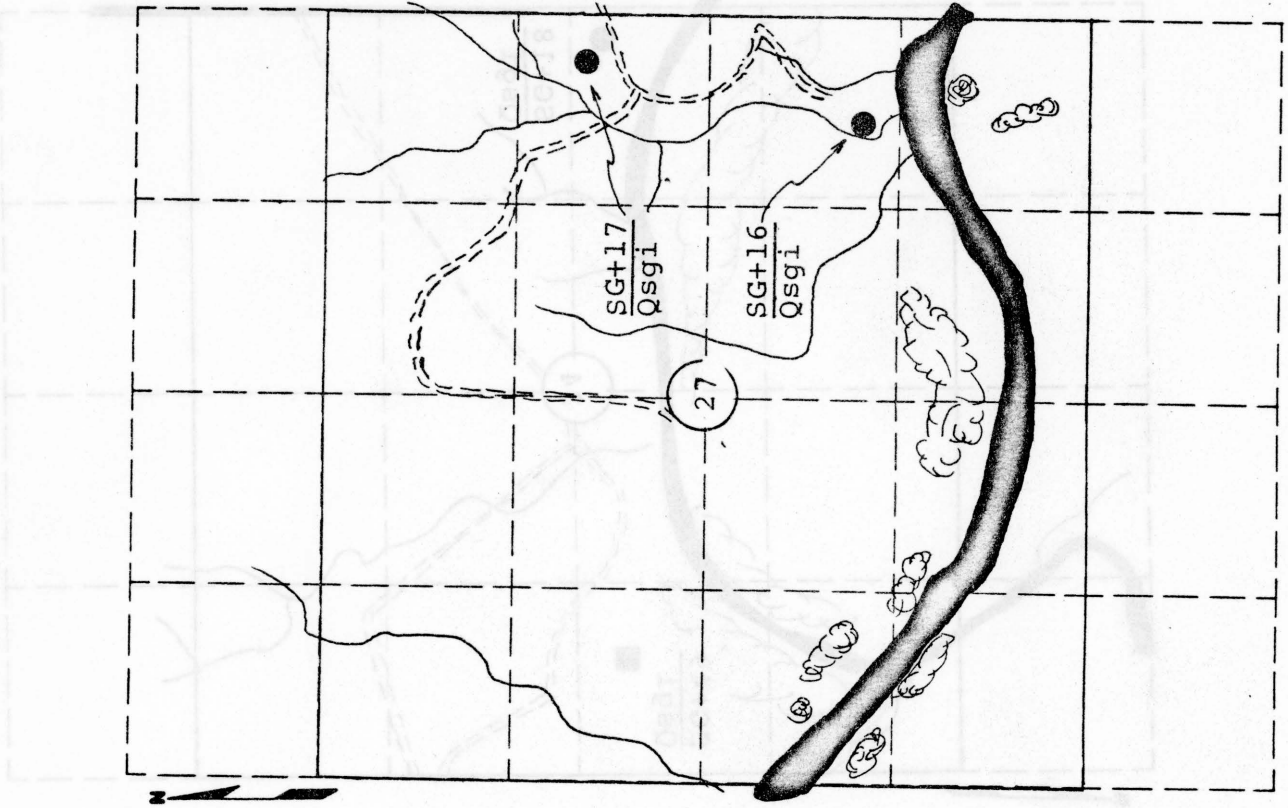
Site No. SG+17 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SE 1/4 NE 1/4 Sec. 27 Twp. 31S Range 34W  
 Owner Vance A. Lahey Moscow, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Poor Site Located on Plate I  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of overburden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	3/8	4	8				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu. Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

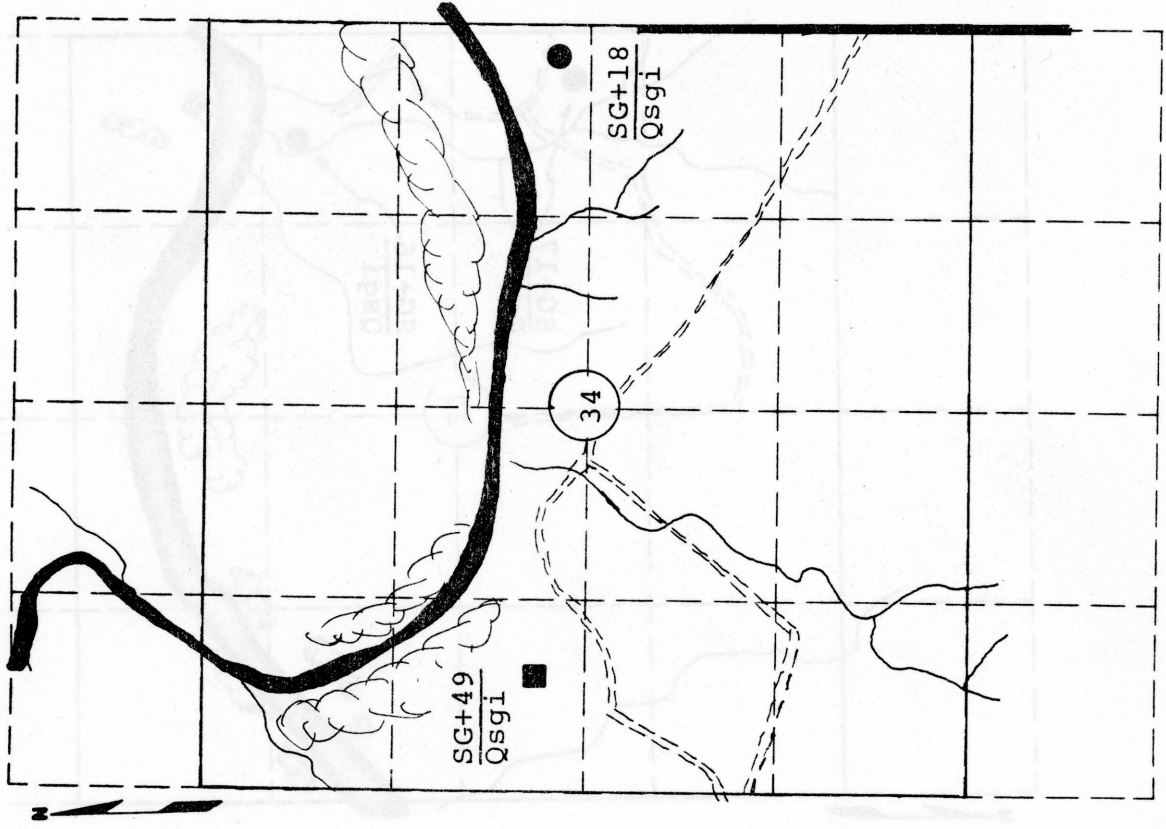
Site No. SG+18 Date March, 1967  
Qsgl  
 Material Sand & Gravel County Seward  
 Location NE 1/4 Sec. 34 Twp. 32S Range 33W  
 Owner Louie Lemert 1821 N. Calhoun, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate III  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained								Wash	G.F.	L.L.	P.I.		
				1/2	3/4	3/8	4	8	16	30	50					100	200

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

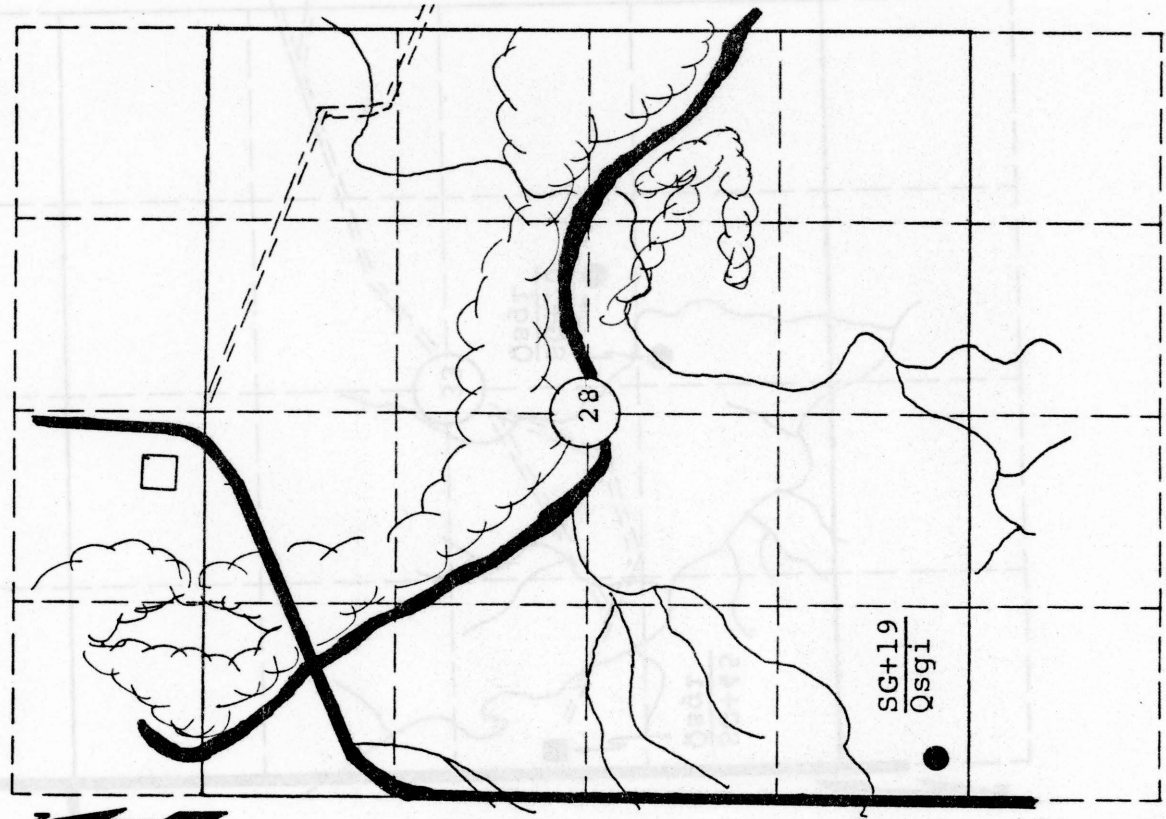
Site No. SG+19 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location SW 1/4 SW 1/4 Sec. 28 Twp. 32S Range 33W  
 Owner Bettie Lemert Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site located on Plate III  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	3/8	1/8	1/16				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

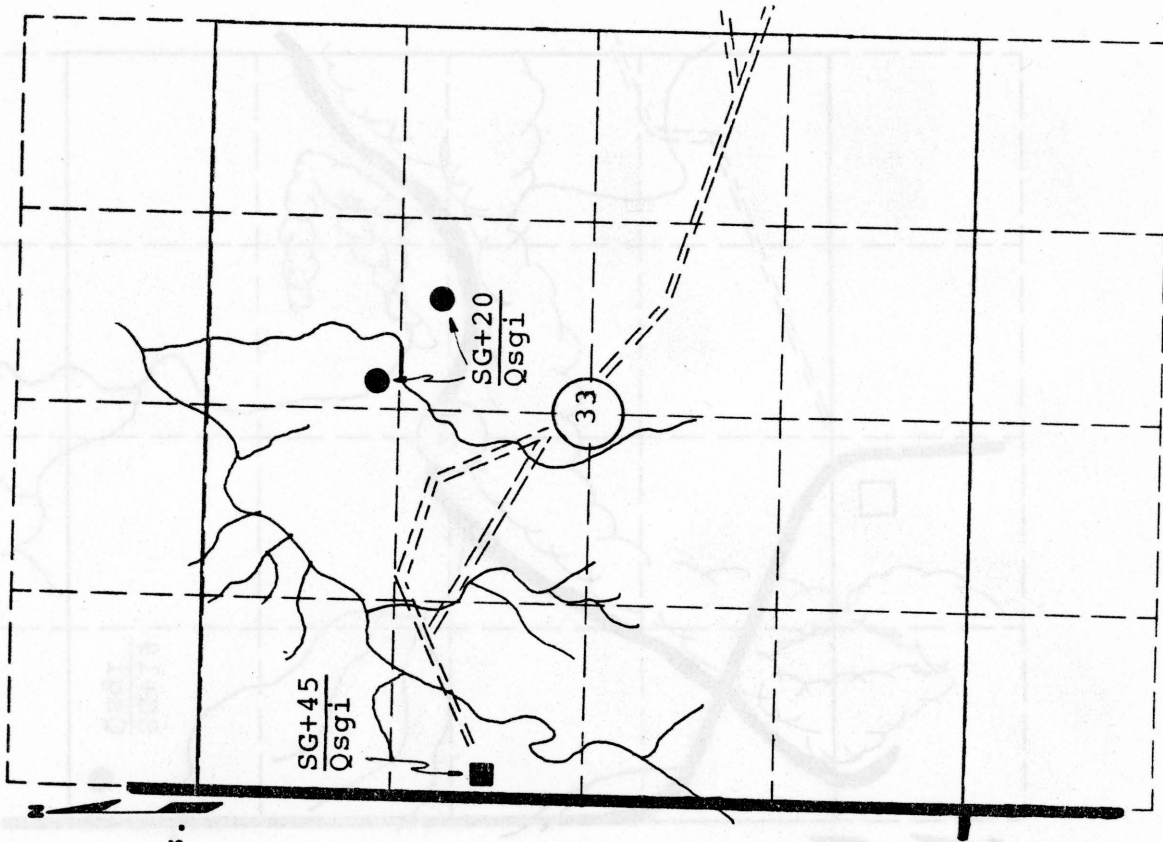
Site No. SG+20 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NE 1/4 Sec. 33 Twp. 32S Range 33W  
 Owner Bettie Lemert est. 1821 N. Calhoun, Liberal, Kans.  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate III  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at bottom of hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30					50	100

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

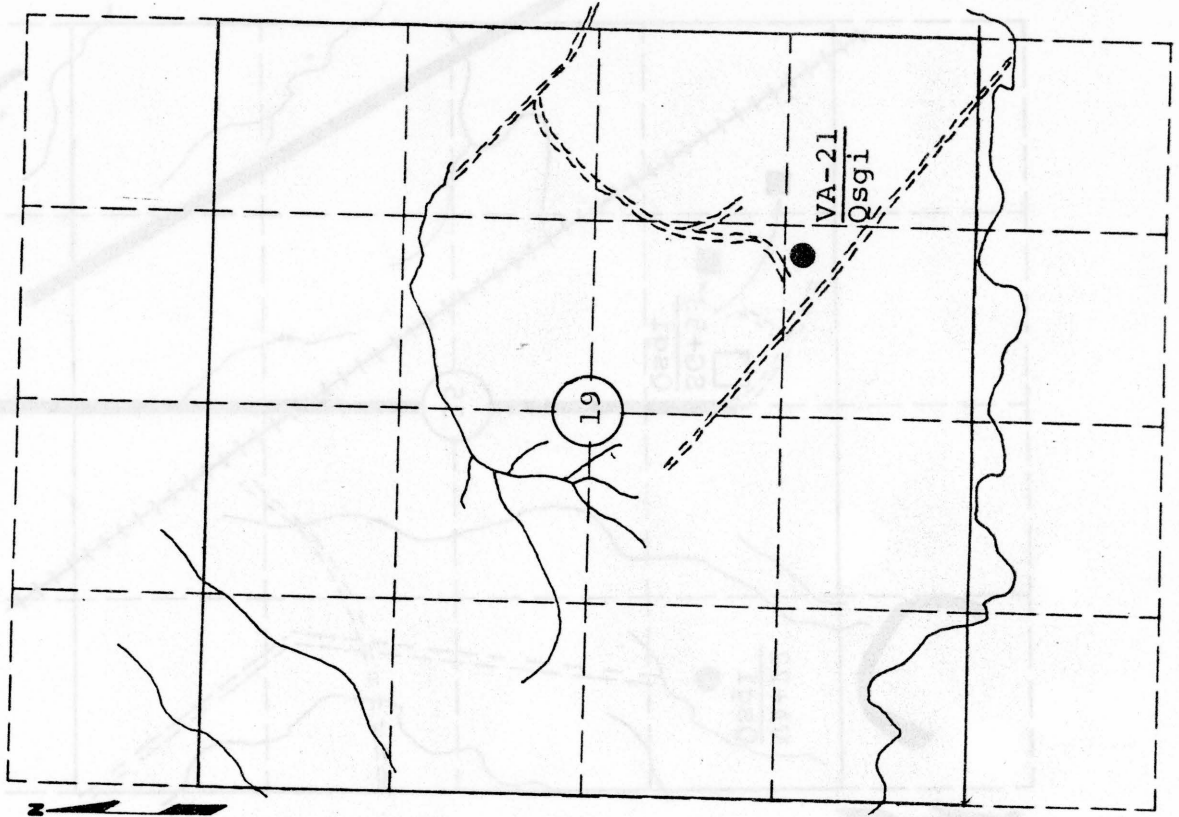
Site No. VA-21 Date March, 1967  
Qsgl  
 Material Volcanic Ash County Seward  
 Location SE 1/4 Sec. 19 Twp. 32S Range 33W  
 Owner See Remarks  
 Nature of Deposit Dry Accessibility Poor address \_\_\_\_\_ Site Located on Plate III  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	S.F.	L.L.	P.I.				
				1/2	3/4	3/8	4	8	16					30	50	100	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks This site has expansion possibilities.  
W. V. Griffith est., & Griffith & Griffith  
Liberal, Kansas



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

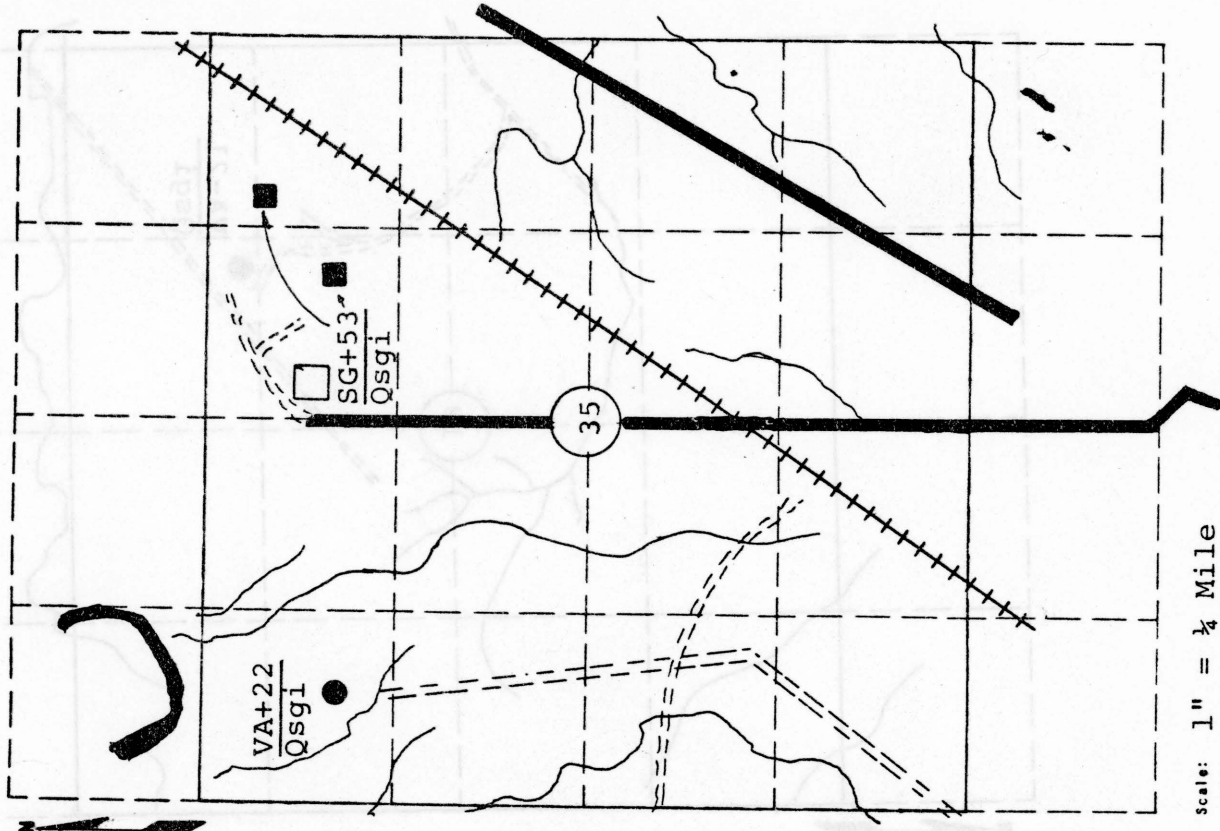
Site No. VA+22 Date March, 1967  
Qsg1  
 Material Volcanic Ash County Seward  
 Location NW $\frac{1}{4}$  NW $\frac{1}{4}$  35 Sec. 33S Range 32W  
 Owner Robert Combes & Star Lumber Co., Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate IV  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	1	1 1/2	2	3	4				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar to \_\_\_\_\_  
 Specific Gravity (sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks Approximately 8' of contaminated volcanic ash.





MATERIAL SURVEY REPORT

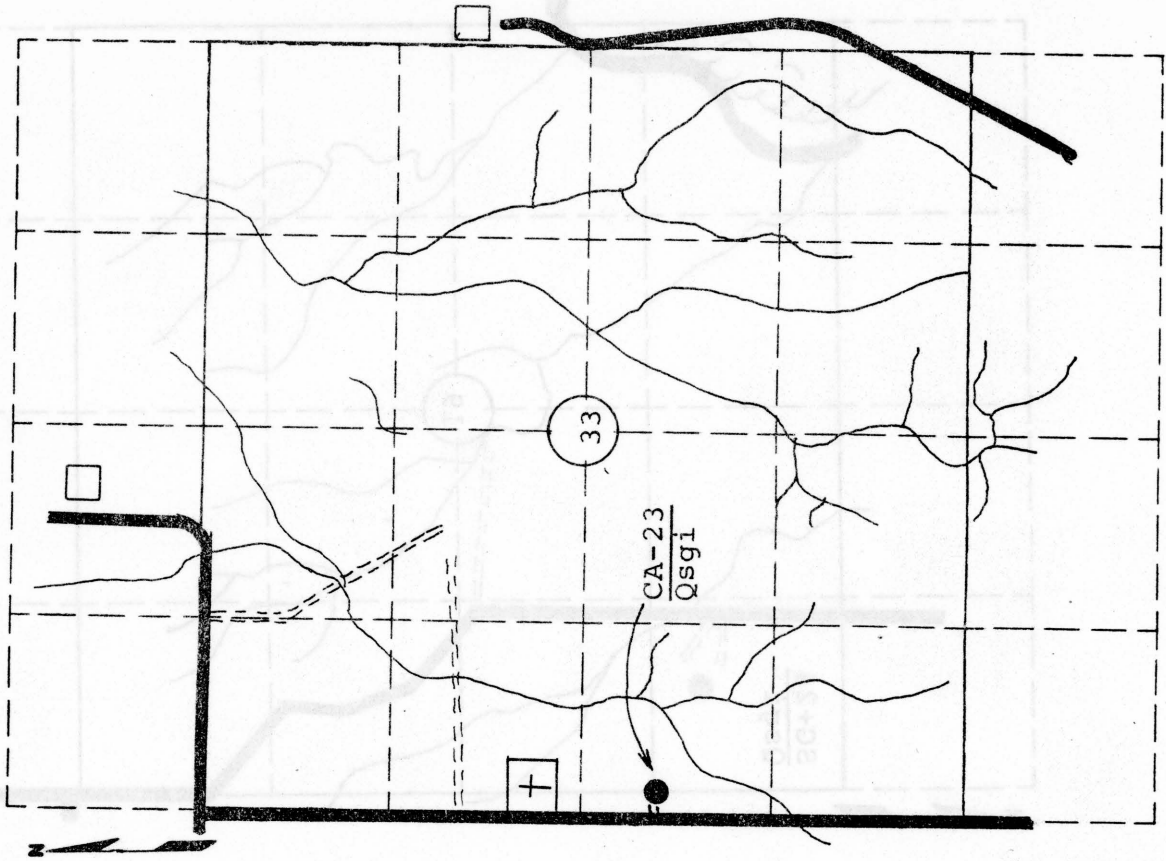
Site No. CA-23 Date March, 1967  
Qsg1  
 Material Caliche County Seward  
 Location NW 1/4 SW 1/4 Sec. 33 Twp. 33S Range 32W  
 Owner J. E. Alexander, 352 N. Broadway, Wichita, Kansas  
 name address  
 Nature of Deposit DRY Accessibility Good Site Located on Plate IV  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	3/8	1/8	16	30				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

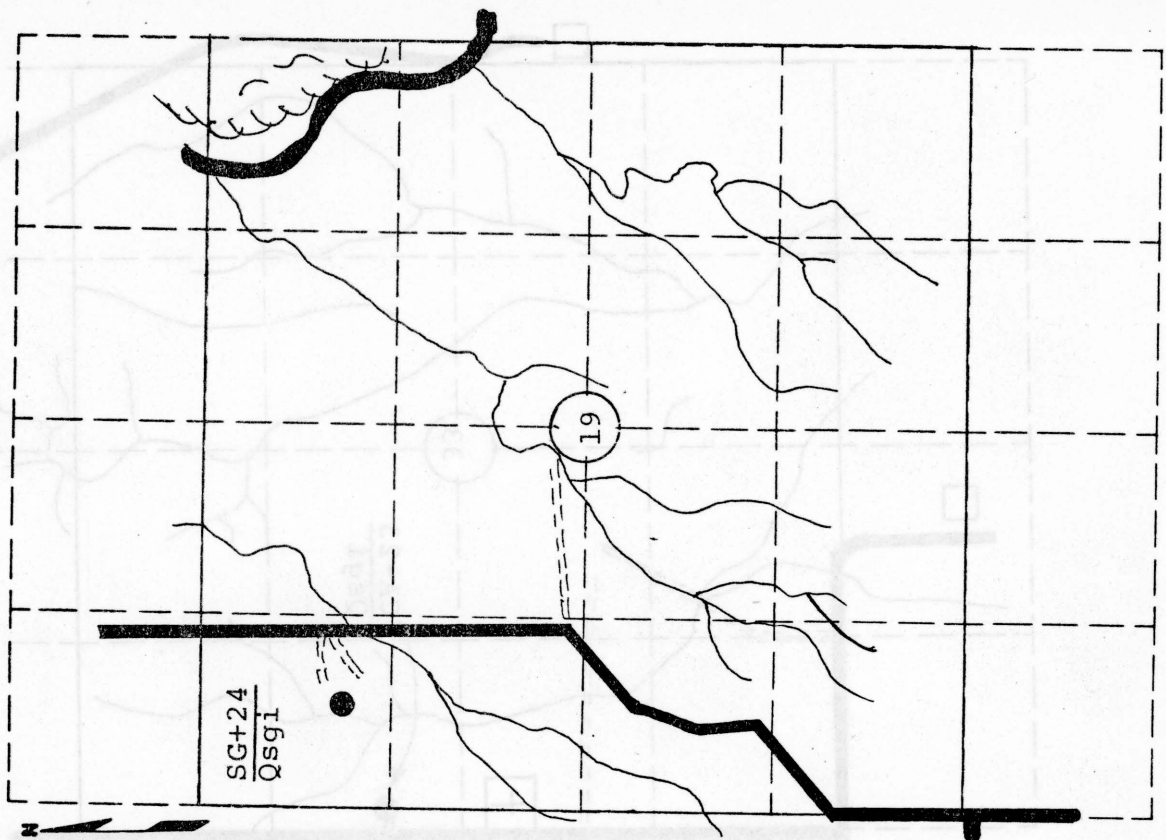
Site No. SG+24 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NW 1/4 NW 1/4 Sec. 19 Twp. 33S Range 32W  
 Owner George W. Palmer et. ux., R. R. 2, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate IV  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.					
				1/2	3/4	1	2	4	8					16	30	50	100	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

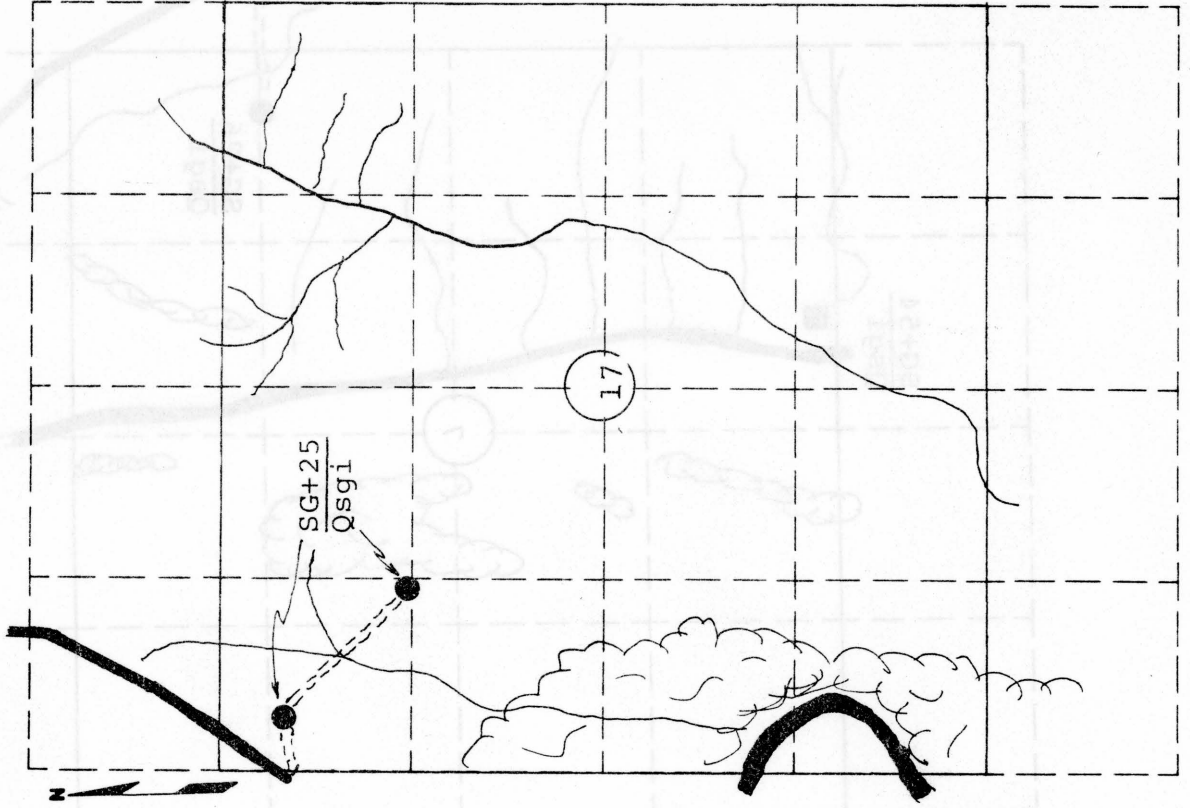
SG+25  
 Site No. Qsg1 Date March, 1967  
 Material Sand & Gravel County Seward  
 Location NW $\frac{1}{4}$  Sec. 17 Twp. 33S Range 32W  
 Owner Esther Hirn 213 N. Sherman, Liberal, Kansas  
 address  
 Nature of Deposit Dry Accessibility Good SITE Located on Plate IV  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	8	16	30				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

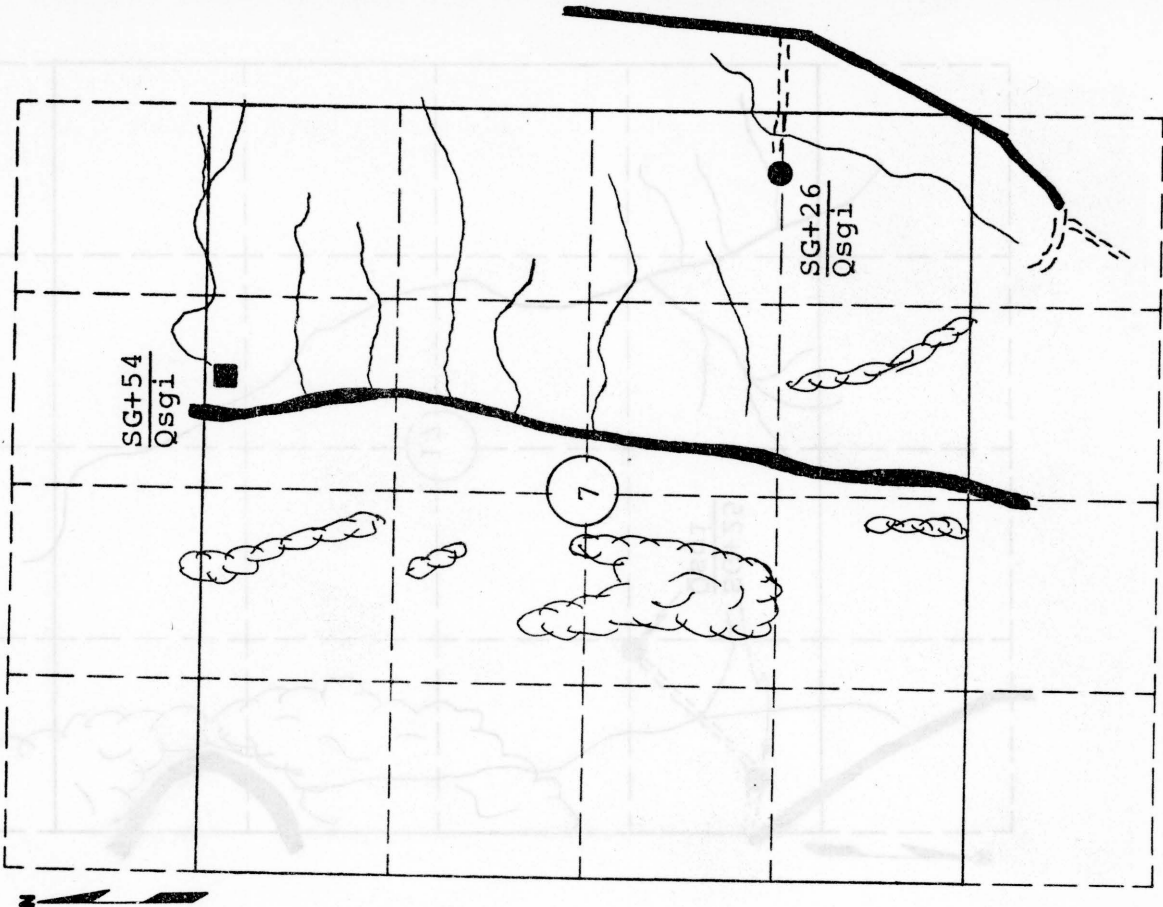
Site No. SG+26 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SE 1/4 Sec. 7 Twp. 33S Range 32W  
 Owner W. E. Hirn et.al. R. R. 1, Kismet, Kansas  
 name address  
 Nature of deposit Dry Accessibility Good Site located on Plate IV  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained					Wash	G.F.	L.L.	P. I.
				1/2	3/4	8	16	30				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

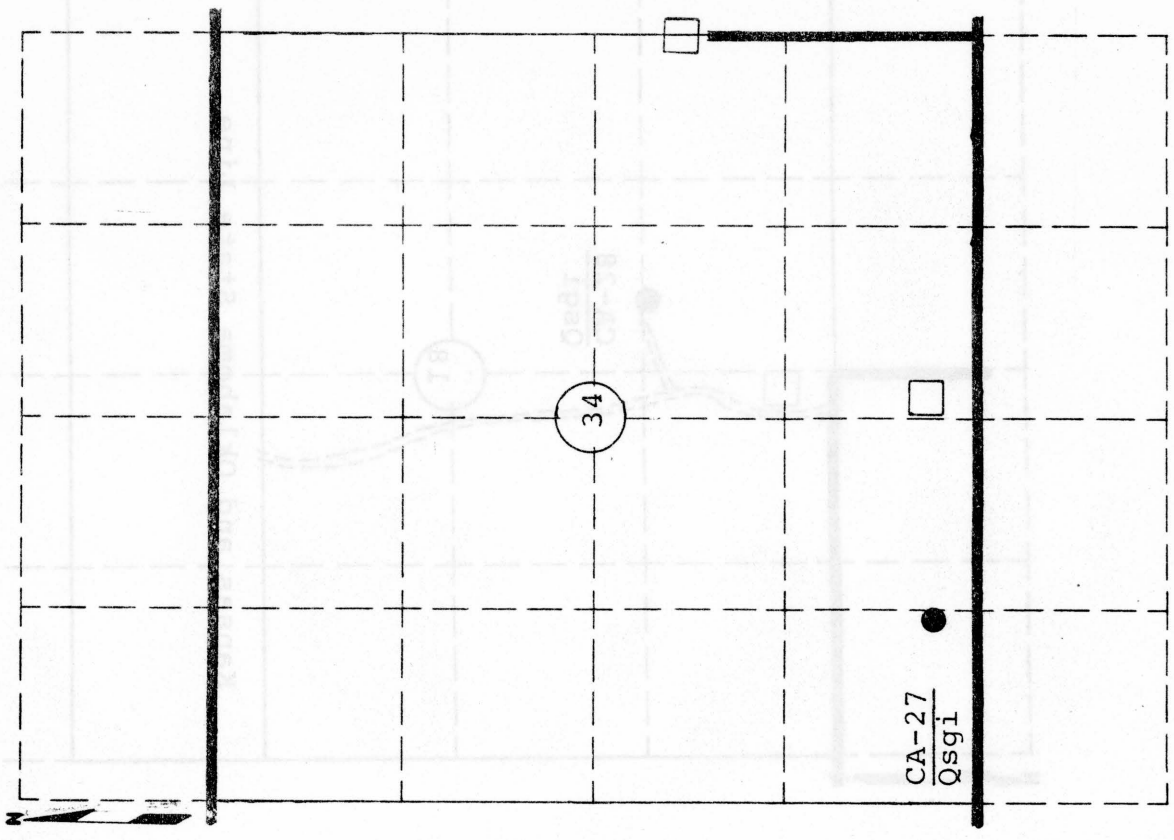
Site No. CA-27 Date March, 1967  
Qsgl  
 Material Caliche County Seward  
 Location SW $\frac{1}{4}$  Sec. 34 Twp. 34S Range 34W  
 Owner E. L. Long 601 N. Webster, Liberal, Kansas  
 address  
 Nature of Deposit Dry Accessibility Good Site located on Plate V  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	1	16	30	50				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. CA-28 Date March, 1967  
Qsg1  
 Material Caliche County Seward  
 Location NE 1/4 Sec. 18 Twp. 35S Range 31W  
 Owner Ted R. Cofland R. R. 1, Liberal, Kansas  
 address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate VI  
 Status of Site Open site; not sampled

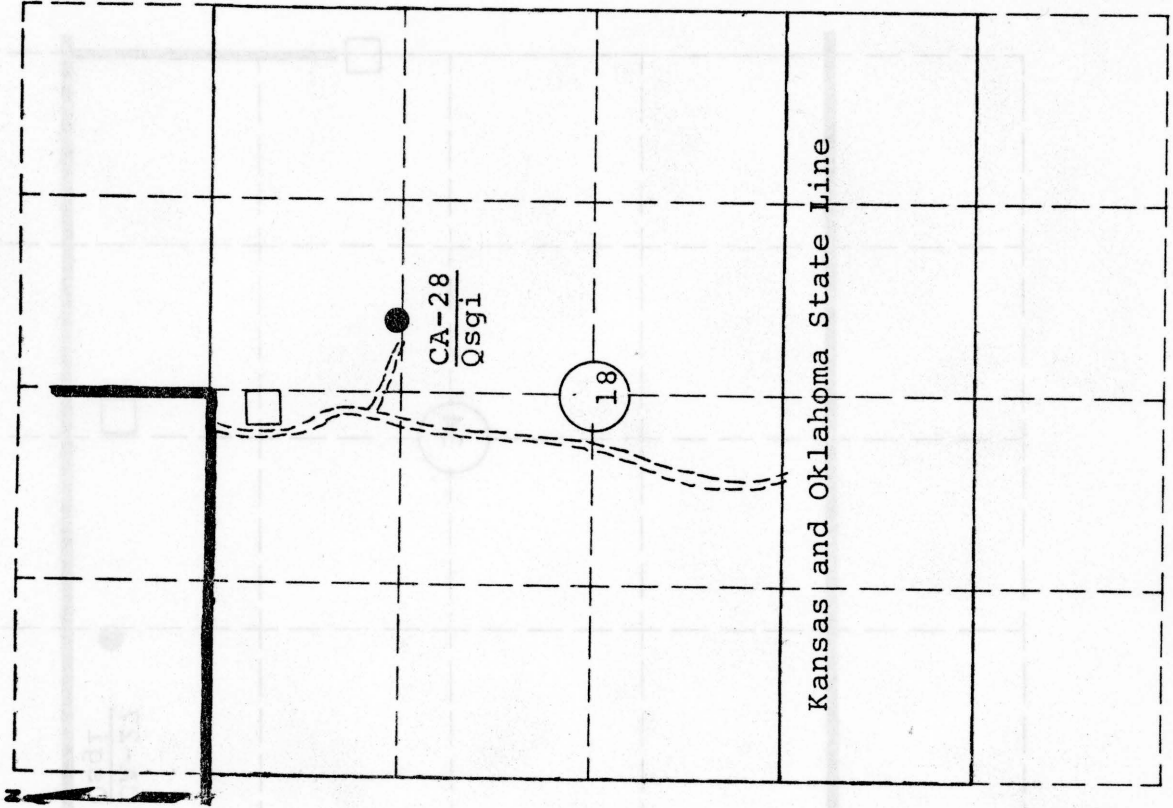
EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.					
				1/2	3/4	3/8	4	6	16					30	50	100		

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CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Near \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu. Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

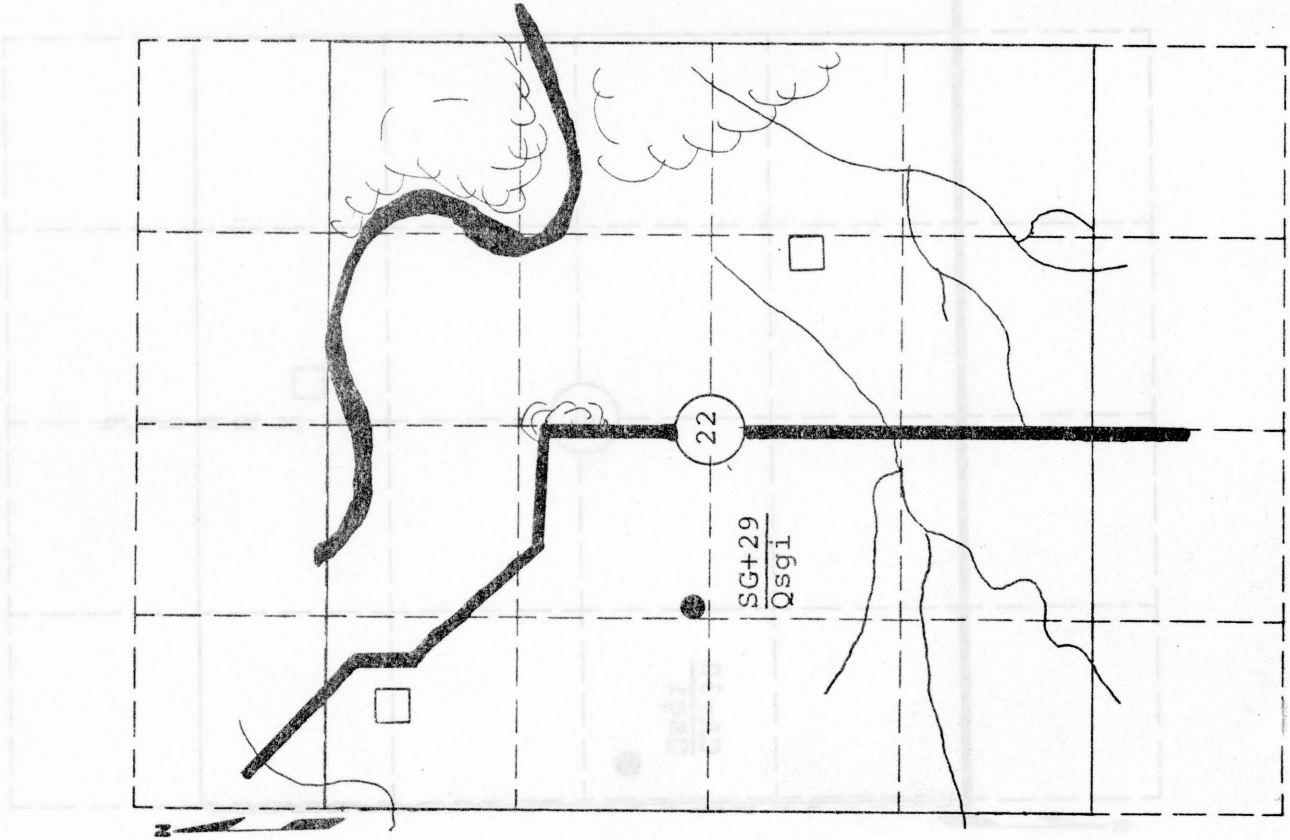
Site No. SG+29 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NW 1/4 Sec. 22 Twp. 34S Range 31W  
 Owner Thomas H. Dufield Box 25, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate VI  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of overburden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	1	1 1/2	2	3				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar to \_\_\_\_\_  
 Specific Gravity (Set.) \_\_\_\_\_ (Dry)  
 Los Angeles Near \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu. ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



MATERIAL SURVEY REPORT

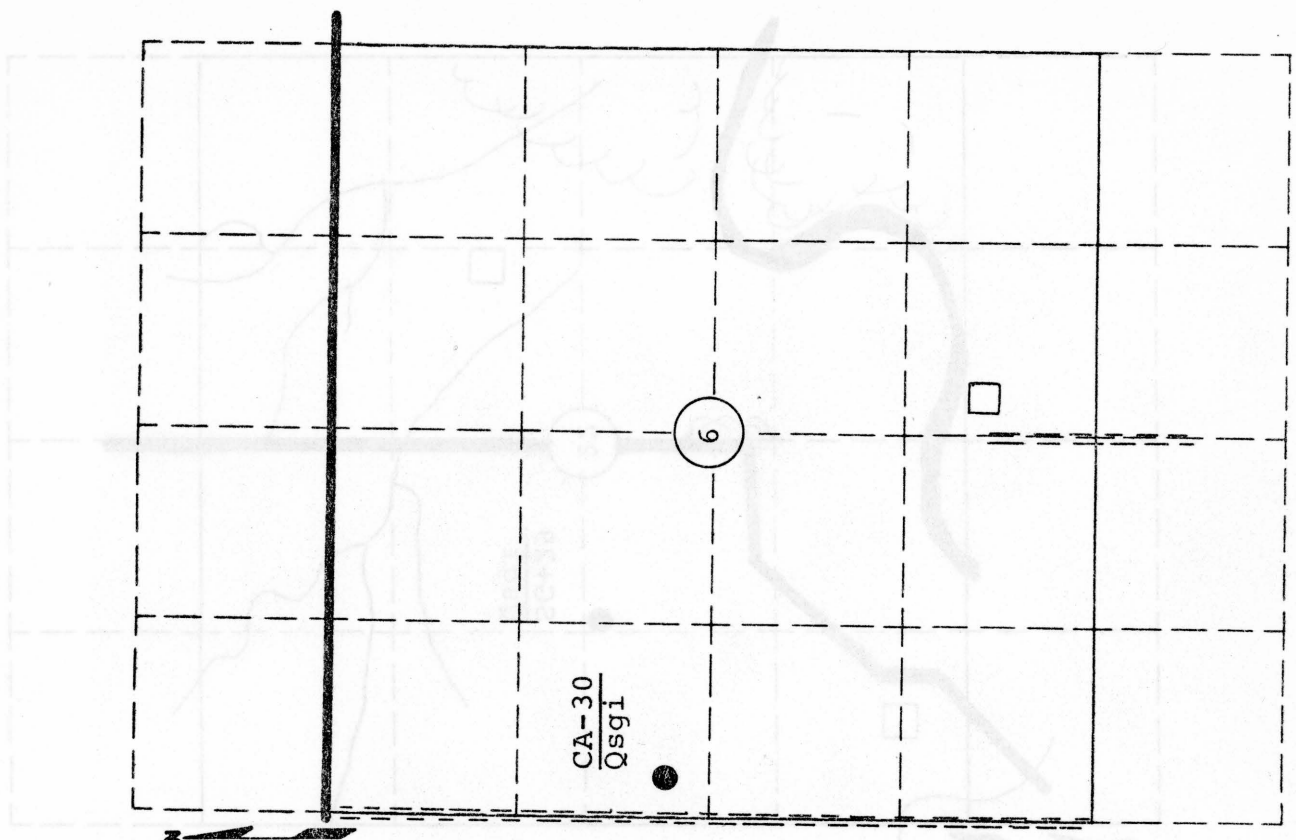
Site No. CA-30 Date March, 1967  
Qsgl  
 Material Caliche County Seward  
 Location SW 1/4 NW 1/4 Sec. 6 Twp. 35S Range 31W  
 Owner See Remarks  
 Nature of Deposit DRY Accessibility Fair Site Located on Plate VI  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.			
				1 1/2	3/4	3/8	4	8	16	30					50	100	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Ft. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks P. A. Zilliget, 5630 Park Hallow,  
Wichita, Kansas





MATERIAL SURVEY REPORT

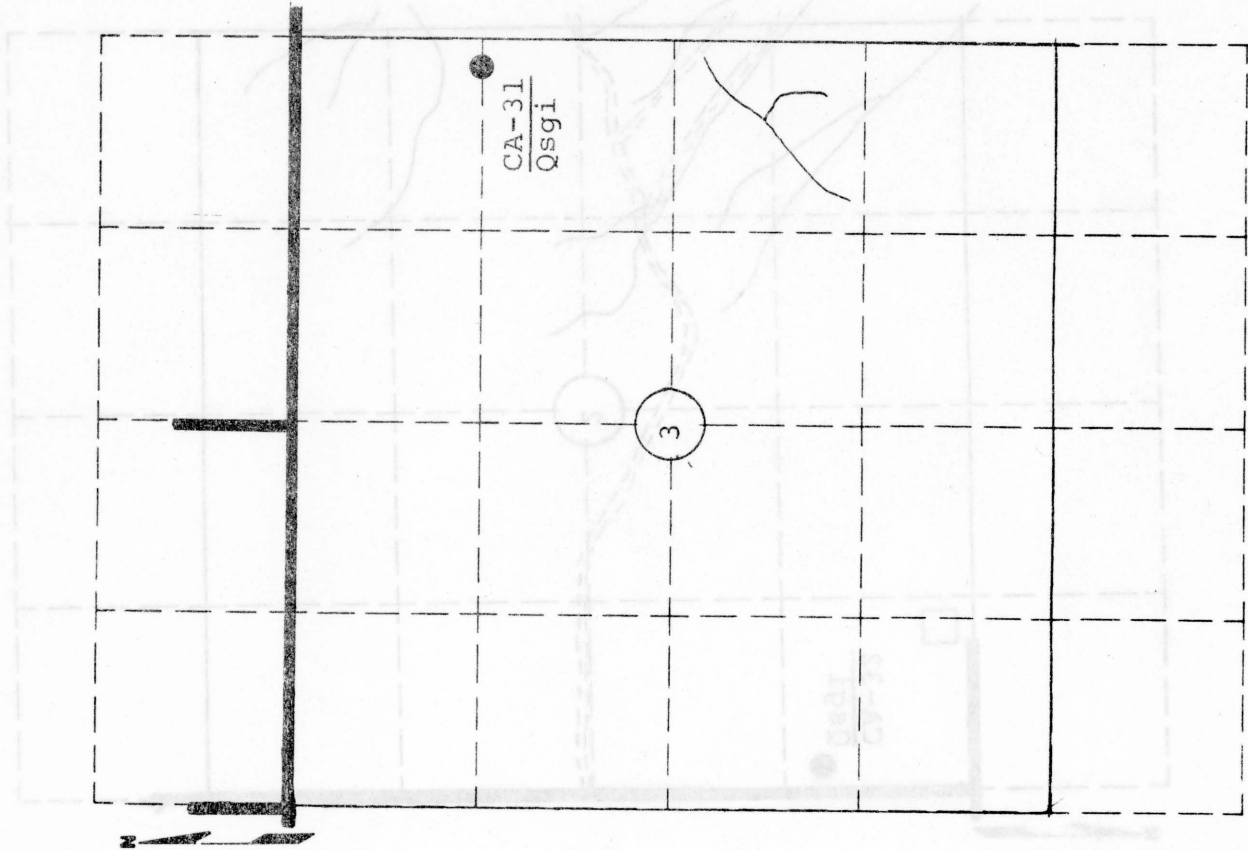
Site No. CA-31 Date March, 1967  
Qsgi County Seward  
 Material Caliche  
 Location NE 1/4 NE 1/4 Sec. 3 Twp. 35S Range 31W  
 Owner Johnnie Schlehafer Elmwood, Oklahoma  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate VI  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30					50	100

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

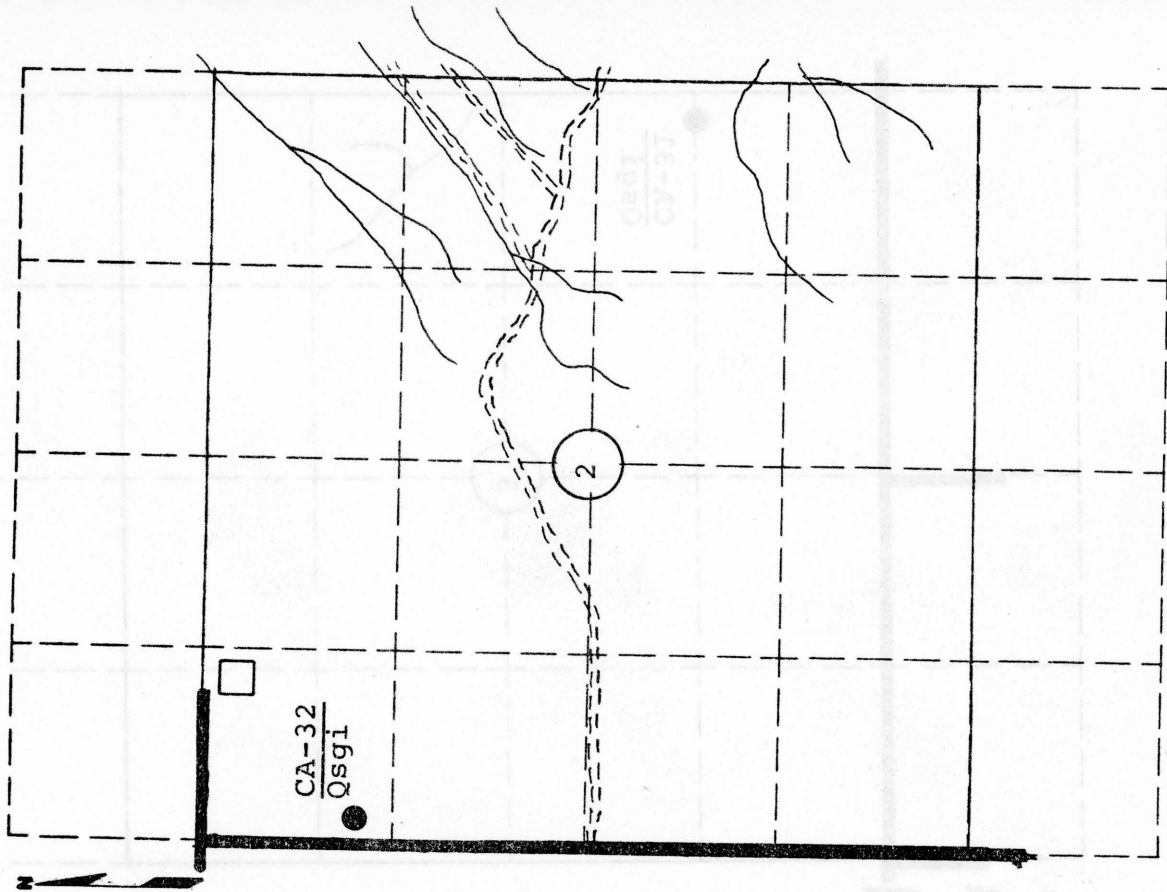
Site No. CA-32 Date March, 1967  
Qsgl  
Material Caliche County Seward  
Location NW 1/4 NW 1/4 Sec. 2 Twp. 35S Range 31W  
Owner Paul Louderback R. R. 2, Liberal, Kansas  
name address  
Nature of Deposit DRY Accessibility Good Site Located on Plate VI  
Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of overburden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.			
				1 1/2	3/4	3/8	4	8	16					30	50	100

CORRELATION DATA

Geological Age Quaternary  
Geological Source Sappa Formation  
Material Similar To \_\_\_\_\_  
Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
Los Angeles Near \_\_\_\_\_  
Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
Wt. Cu.ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

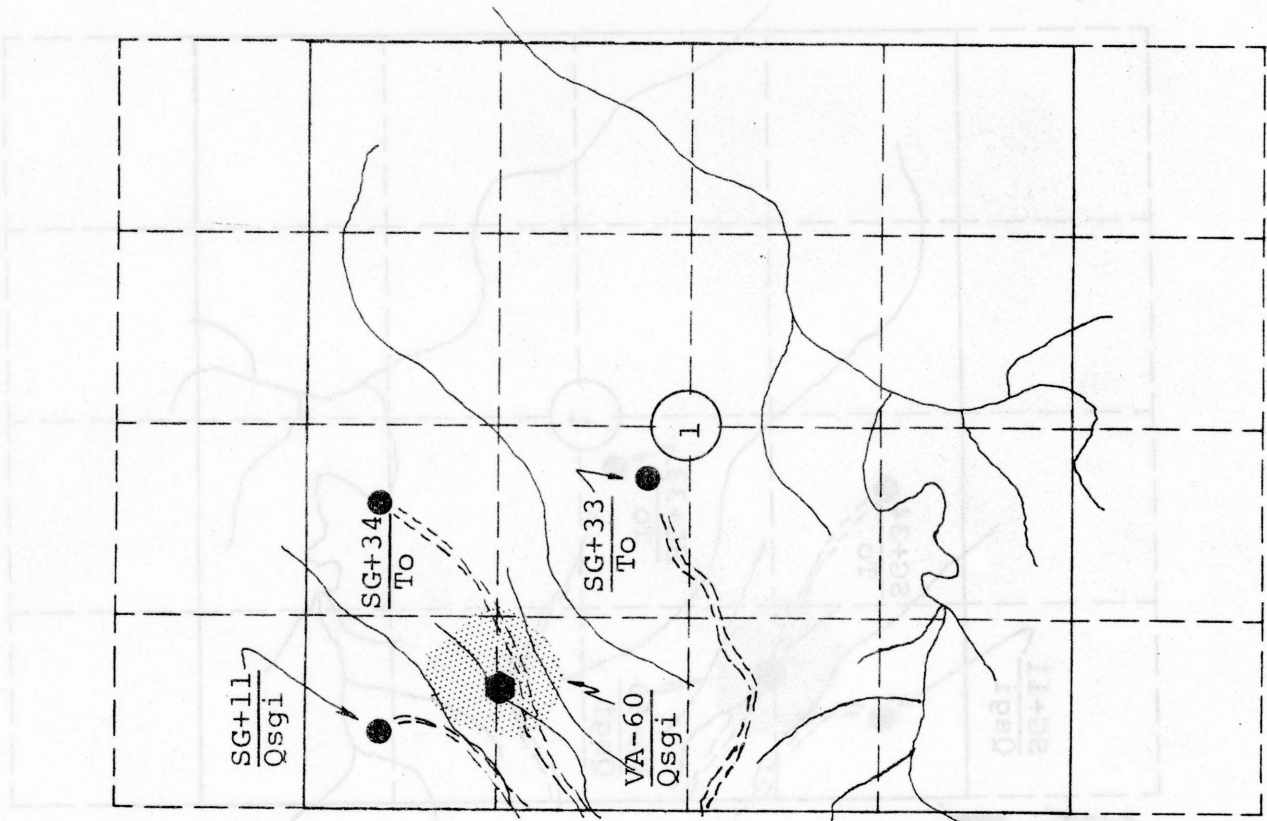
Site No. SG+33 Date March, 1967  
 TO  
 Material Sand & Gravel County Seward  
 Location SE 1/4 NW 1/4 Sec. 1 Twp. 35S Range 31W  
 Owner Paul Louderback R. R. 2, Liberal, Kansas  
 name address  
 Nature of Deposit DRY Accessibility Good Site Located on Plate VI  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G. F.	L. L.	P. I.		
				1 1/2	3/4	3/8	4	8	16	30					50	100

CORRELATION DATA

Geological Age Tertiary  
 Geological Source Ogallala Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu. Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

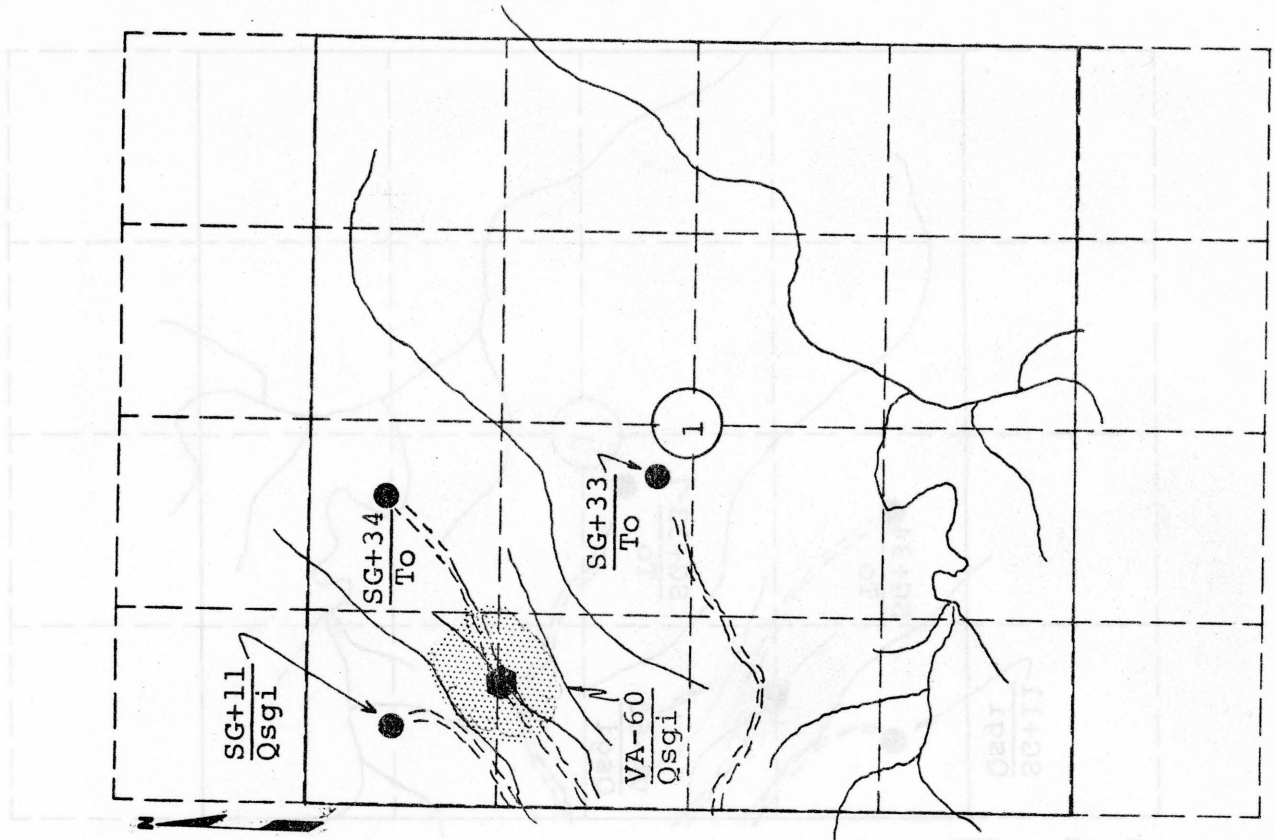
Site No. SG+34 Date March, 1967  
TO  
 Material Sand & Gravel County Seward  
 Location NE 1/4 NW 1/4 Sec. 1 Twp. 35S Range 31W  
 Owner Paul Louderback R. R. 2, Liberal, Kansas  
 Name of Deposit Dry Accessibility Fair Site Located on Plate VI  
 Status of Site Open site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained					Wash 200	S.F.	L.L.	P.I.
				1/2	3/4	3/8	4	5				

CORRELATION DATA

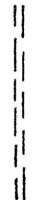














Geological Age Tertiary  
 Geological Source Ogallala Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

OPEN MATERIALS SITES; SAMPLED

LEGEND

	Trail or lane		Open materials sites; sampled
	Road		Center of section
	Railroad		Dwelling
	Hedge or trees		Cemetery
	Fence		School
	Major stream		Church
	Intermittent streams		Town or city
	Pond or lake		



MATERIAL SURVEY REPORT

Site No. SG+35 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NW 1/4 NW 1/4 Sec. 1 Twp. 34S Range 32W  
 Owner Rice Davies R. R. 2, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate VI  
 Status of Site Open site; sampled

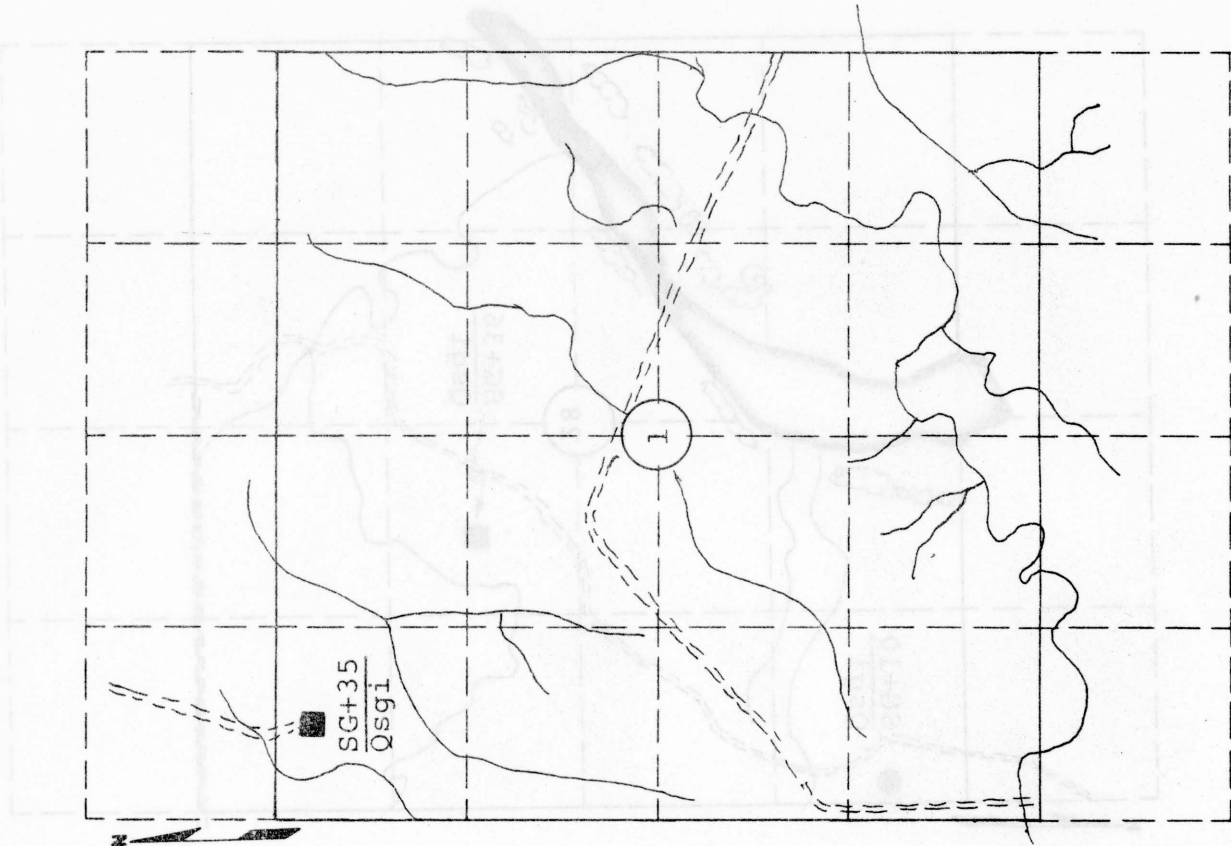
EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1/2	3/4	3/8	4	8	16	30					50	100
AV				0	1	4	6	14	27	59	92	98	5	3.01	17	2
3		1	16	0	4	6	12	22	39	77	91	99	3	3.50	14	0
7		10	7	0	0	1	3	8	21	51	90	98	5	2.72	19	4

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-7  
 Specific Gravity (Sat.) 2.58 (Dry)  
 Los Angeles Near 35.2(B)  
 Absorption 0.99 Soundness 0.99

Wt. Cu.Ft. 107.9 Str. Ratio 1 day 1.00, 3 day 1.41  
 Remarks Gradation data for test holes 3 and 7 represents the coarsest and finest material tested at this site.



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

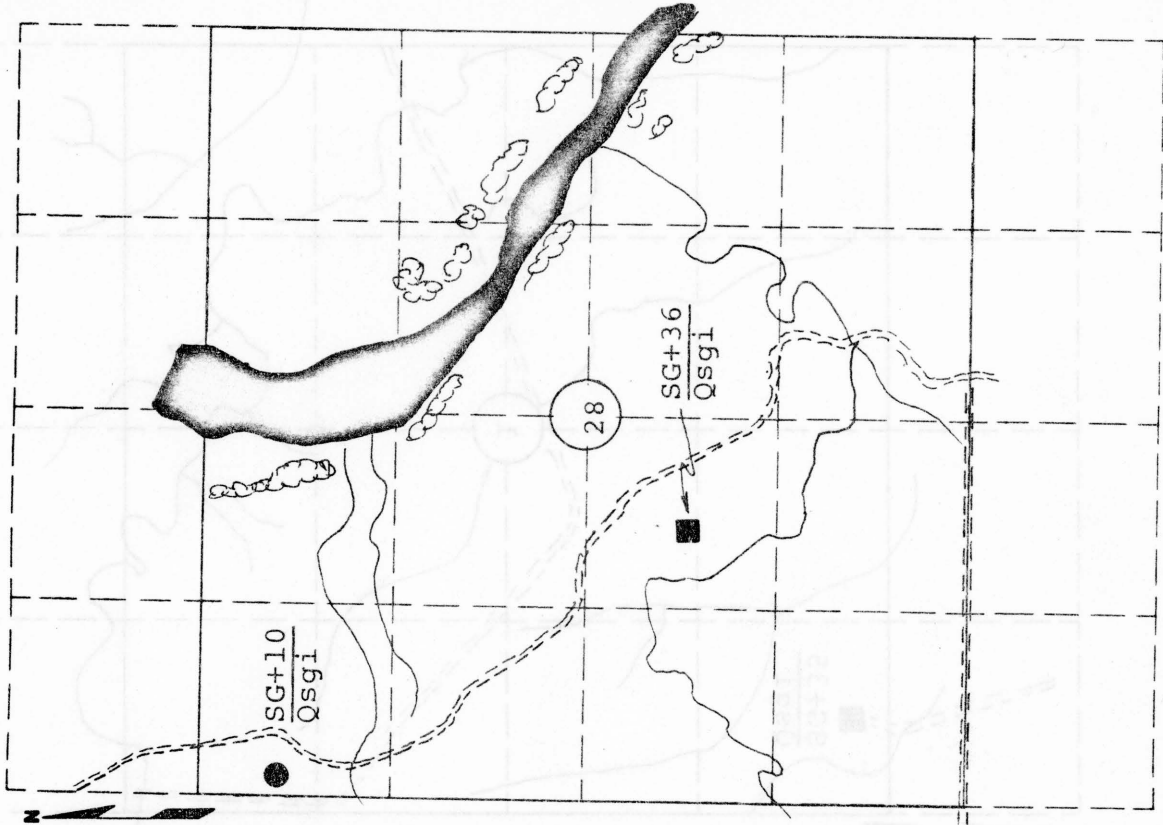
Site No. SG+36  
Qsgi  
 Material Sand & Gravel  
 Location SW 1/4 Sec. 28 Twp. 31S Range 34W  
 Owner C. E. Michels MOSCOW, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Poor Site Located on Plate I  
 Status of Site Open site; sampled

EXPLORATION DATA

Test hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.	
				1 1/2	3/4	3/8	4	8	16	30	50					100
			1	5	9	15	24	40	62	82	93		3.31			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 68708  
 Specific Gravity (Sat.) 2.60 (Dry)  
 Los Angeles Wear 33.3(B)  
 Absorption \_\_\_\_\_ Soundness 0.99  
 Wt. Cu.ft. 115.7 Str. Ratio 1 day 1.42, 3 day 1.43  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile



MATERIAL SURVEY REPORT

Site No. SG-37 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location SW 1/4 SW 1/4 Sec. 20 Twp. 31S Range 34W  
 Owner Vance A. Lahey Moscow, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate I  
 Status of Site Open site; sampled

EXPLORATION DATA

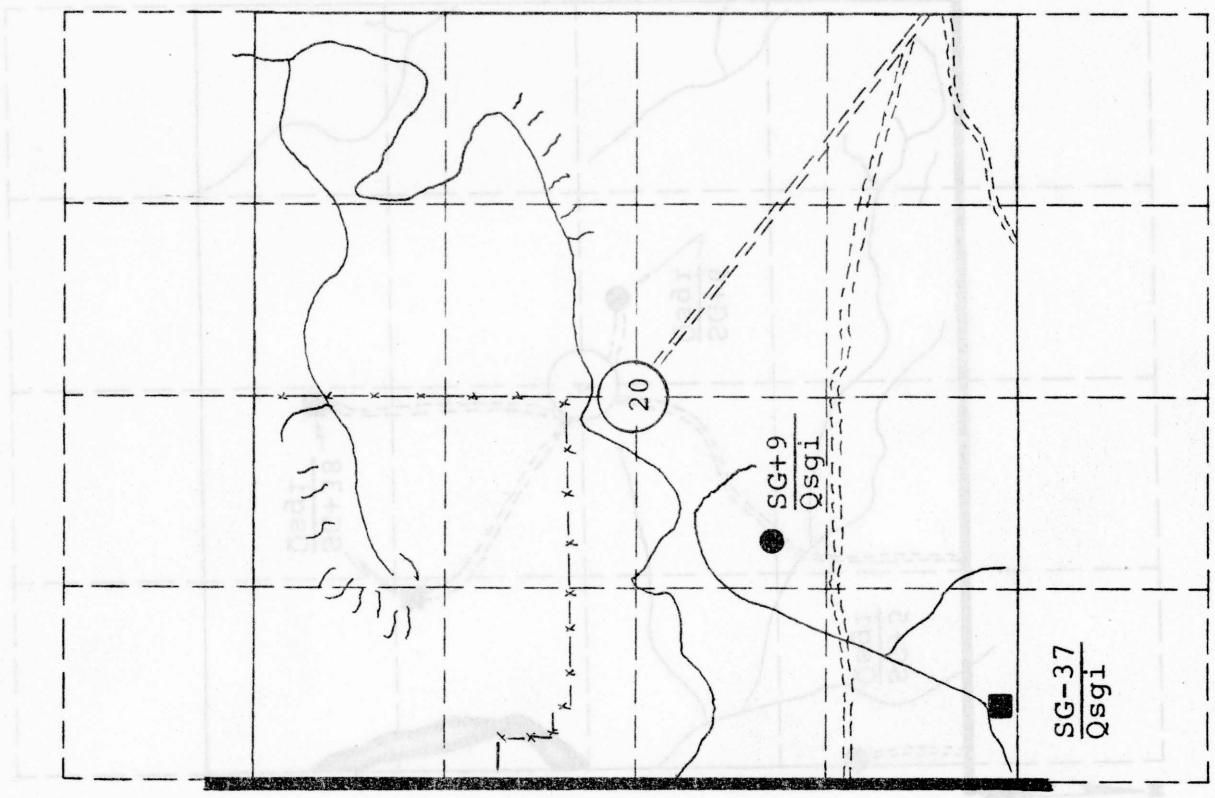
Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30					50	100
				1	5	10	27	57	83	94	96	3	3.73			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 45037

Specific Gravity (sat.) 2.57 (Dry)  
 Los Angeles Wear 35.0(B)  
 Absorption 0.94 Soundness 0.94  
 Wt. Cu.Ft. 110.0 Str. Ratio 1 day 1.13, 3 day 0.98

Remarks



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

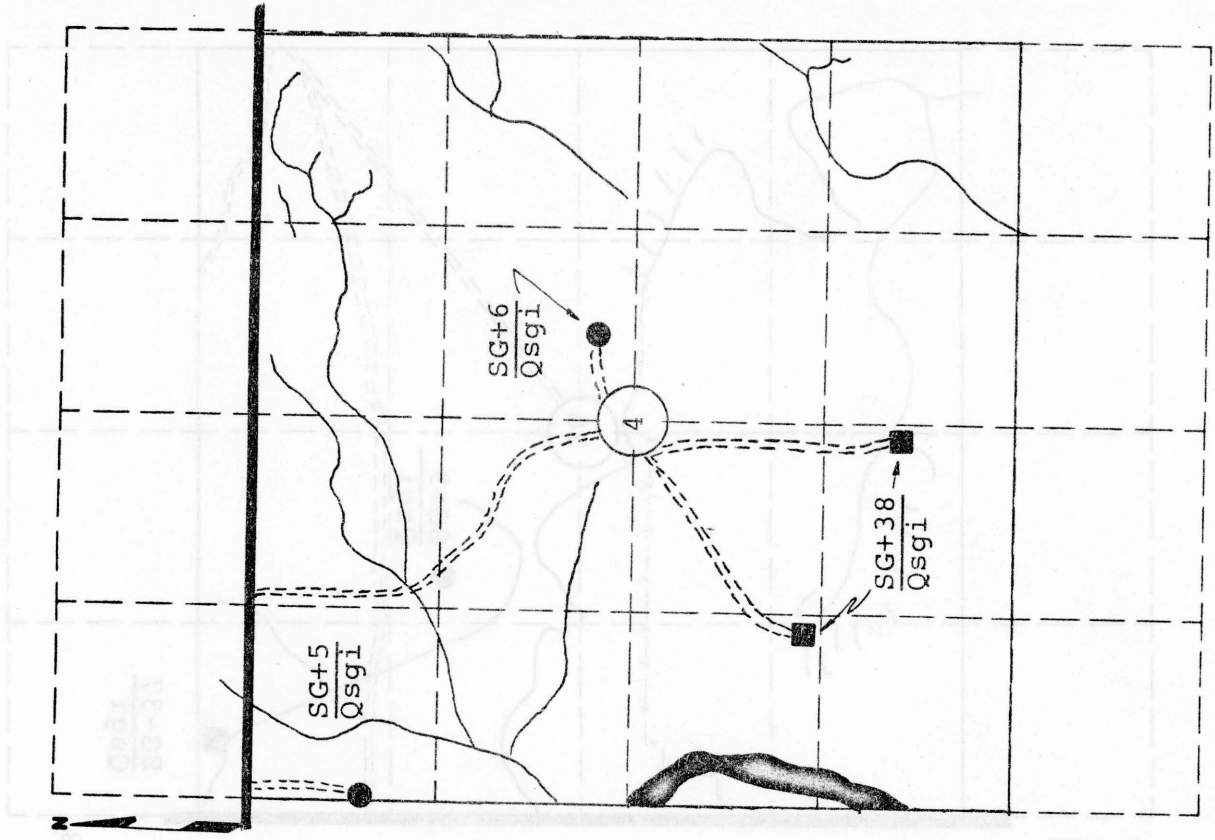
Site No. SG+38 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SW $\frac{1}{4}$  Sec. 4 Twp. 31S Range 34W  
 Owner See Remarks  
 Nature of Deposit Dry Accessibility Fair address I  
 Status of Site Open site; sampled Site Located on Plate I

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.
				1 1/2	3/4	3/8	4	8	16	30				
2	10	21	37	54	71	87	96	99	72	4.77				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 97867  
 Specific Gravity (Sat.) 2.61 (Dry)  
 Los Angeles Wear 28.8  
 Absorption 0.70 Soundness 0.98  
 Mt. Cu.Ft. 117.4 Str. Ratio 1 day 1.67, 3 day 1.49  
 Remarks N $\frac{1}{2}$  SW $\frac{1}{4}$ , Boyer Educ. Tr., & Robert H. Cobean  
119 E. Harvey, Wellington, Kansas  
S $\frac{1}{2}$  SW $\frac{1}{4}$ , Clyde & Earl E. Berlier  
Box 6, Wagon Mound, New Mexico



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. SG+39 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location NW 1/4 Sec. 6 Twp. 31S Range 34W  
 Owner Popejoy Const. Co., Box 905, Ulysses, Kansas  
 name address  
 Nature of Deposit DRY Accessibility Good Site Located on Plate I  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at bottom of hole	Depth of over-burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	1	1 1/2	2	3	4	5				
AV				3	7	14	26	41	66	91	97	3.5	3.46	16	2
6				2	4	8	18	34	52	93	98	2.3	3.09	16	0
8				6	12	25	35	49	67	90	96	2.4	3.78	16	4

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar to Material reported on SHC Form 619

NO. 88-14

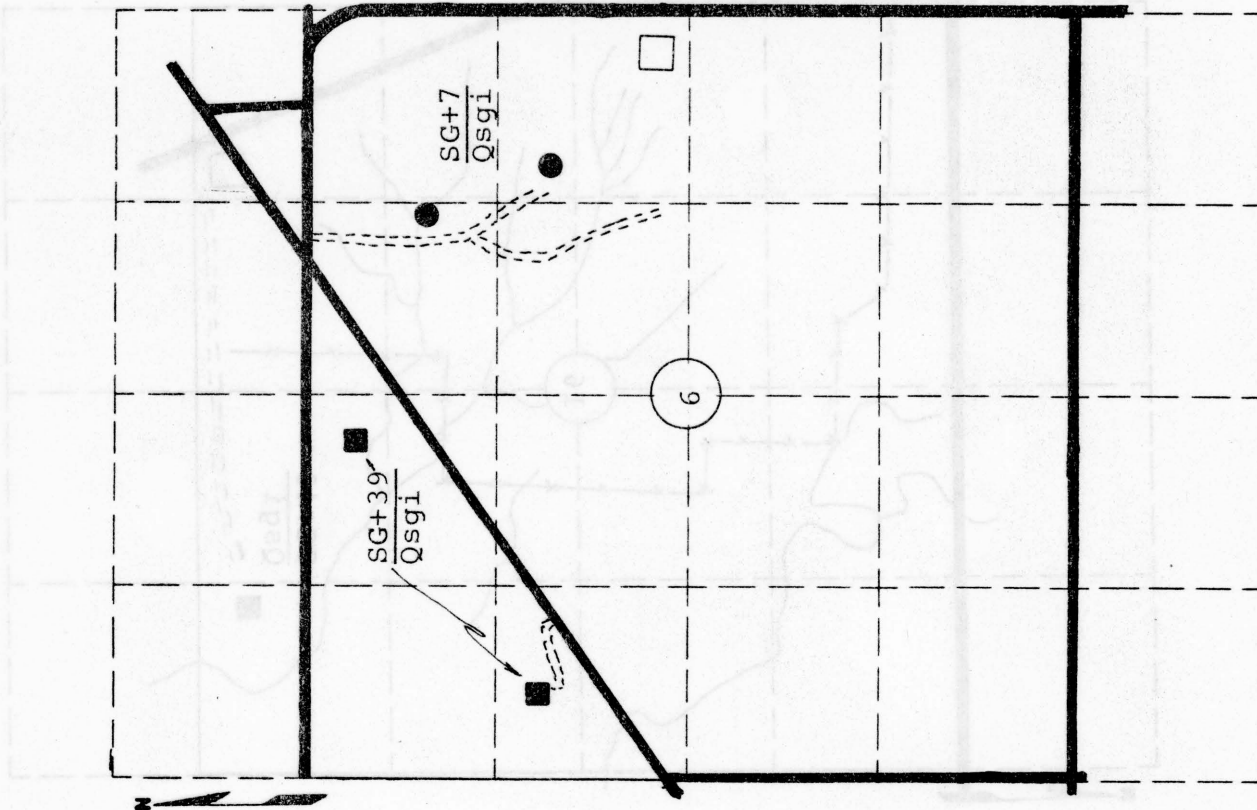
Specific Gravity (sat.) 2.59 (dry)

Los Angeles Wear 33.4

Absorption 0.98 Soundness

Wt. Cu.Ft. 117.4 Str. Ratio 1 day 1.17, 3 day 1.29

Remarks Gradation data for test holes 6 and 8 represents the finest and coarsest material tested at this site.



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

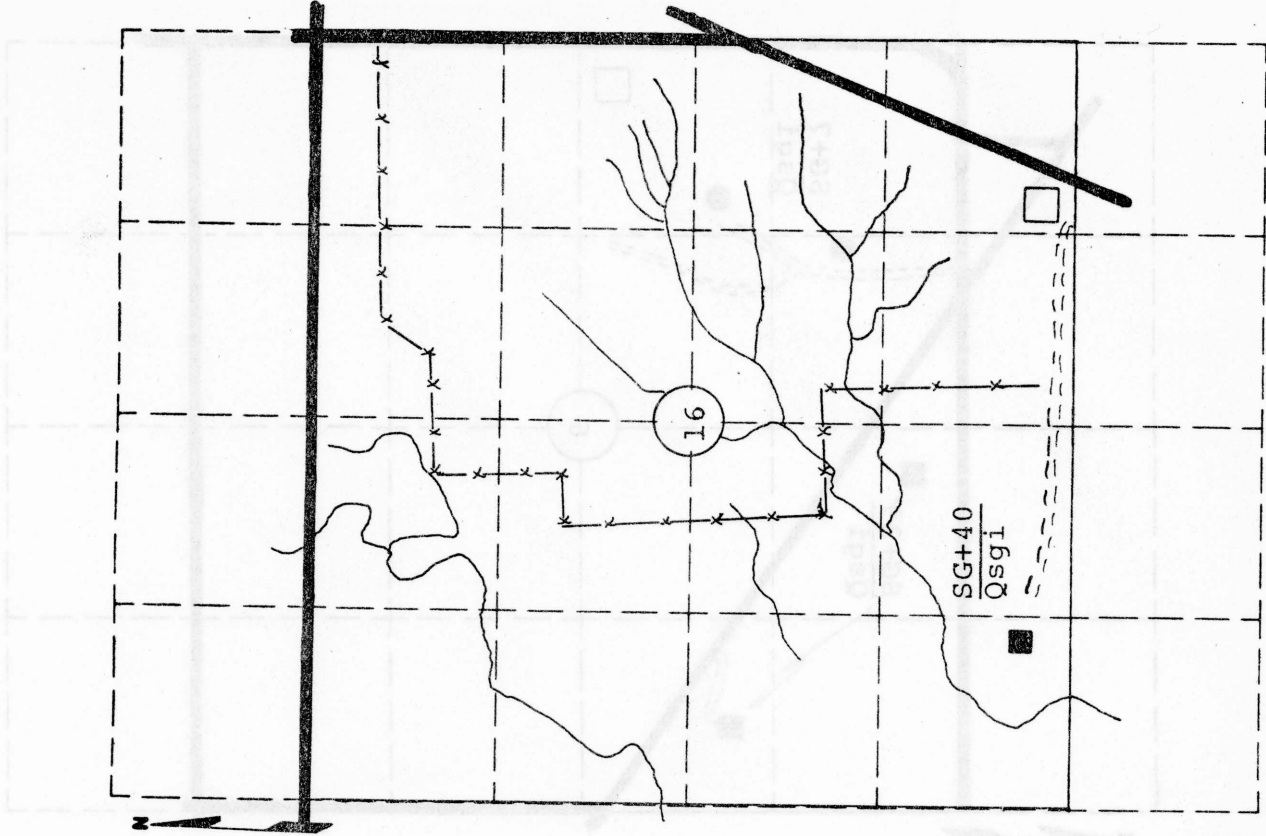
Site No. SG+40 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SW 1/4 Sec. 16 Twp. 32S Range 33W  
 Owner Coral I. Lambert 907 Maple, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate I  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.					
				1 1/2	3/4	3/8	4	8					16	30	50	100	
			0	8	15	22	32	49	72	92	96	2	3.86				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 44952  
 Specific Gravity (Sat.) 2.56 (Dry)  
 Los Angeles Wear 34.0 (B)  
 Absorption \_\_\_\_\_ Soundness 0.99  
 wt. Cu.ft. 111.5  
 Str. Ratio 1 day 1.30, 3 day 1.26  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

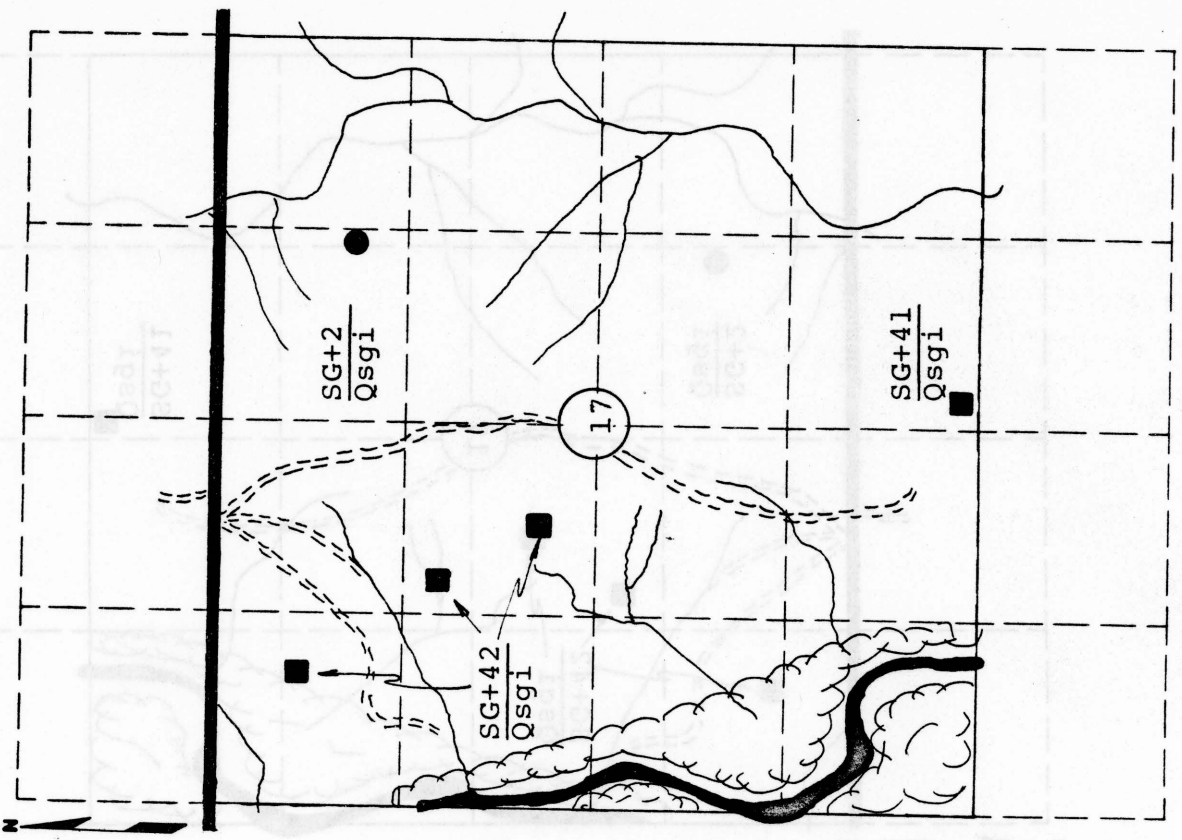
Site No. SG+41 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SE 1/4 Sec. 17 Twp. 32S Range 33W  
 Owner See Remarks  
 Nature of Deposit Dry Accessibility Fair Site located on Plate I  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of Material over Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30					50	100
			0	7	13	21	32	51	78	93	98	1.23	3.93			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar to Material reported on SHC Form 633  
 Lab. No. 79860  
 Specific Gravity (sat.) 2.62 (Dry)  
 Los Angeles Wear 30.0(C)  
 Absorption 0.99  
 Soundness 0.99  
 Wt. Cu.Ft. 114.6  
 Str. Ratio 1 day 1.93, 3 day 1.69  
 Remarks Wendy & Deanna Johnson, & H. Hoble, Jr.,  
Liberal, Kansas



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. SG+42 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NW 1/4 Sec. 17 Twp. 32S Range 33W  
 Owner See Remarks name address  
 Nature of Deposit Dry Accessibility Good Site Located on Plate I  
 Status of Site Open site; sampled

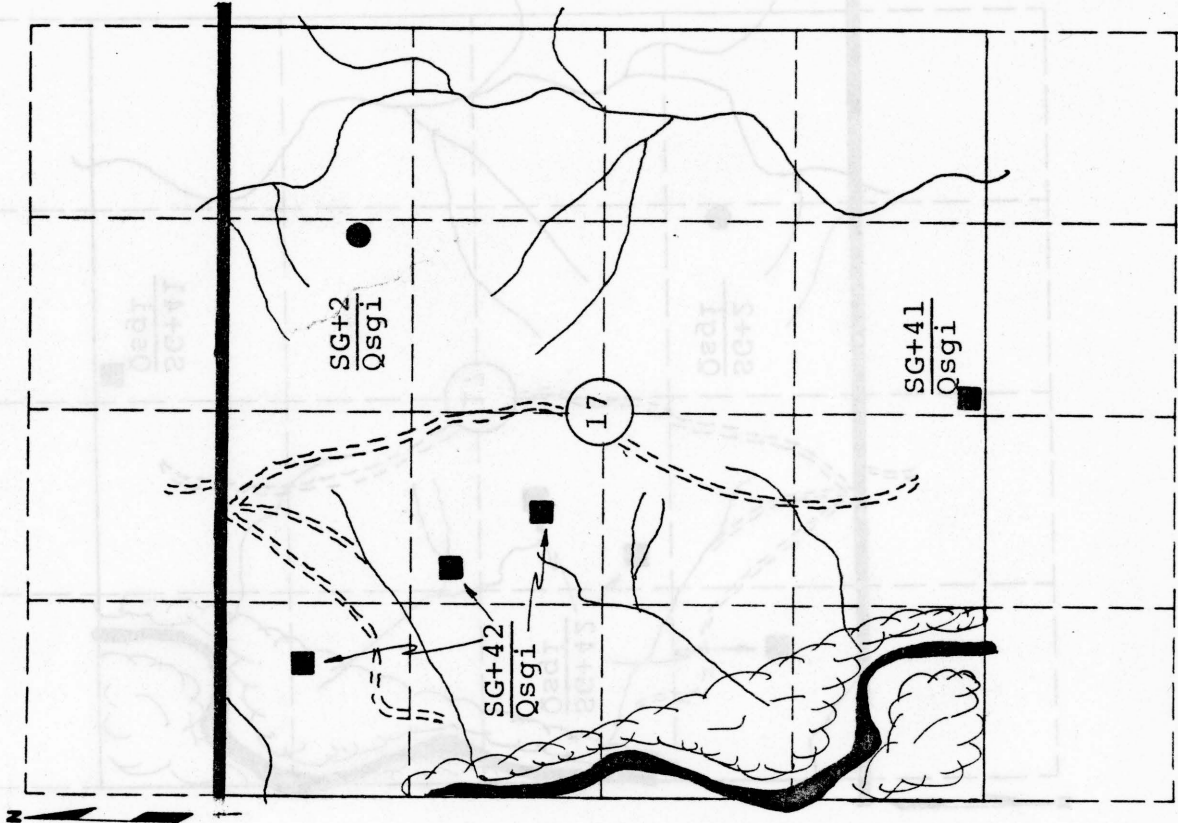
EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.	
				1 1/2	3/4	3/8	4	8	16	30	50					100
			0	2	10	22	43	63	82	95	97	2.2	4.14			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 556  
 Specific Gravity (sat.) 2.62 (dry)  
 Los Angeles Wear 26.0 (D)  
 Absorption 0.50 Soundness 0.98  
 ft. Cu.ft. 108.1 Str. Ratio 1 day 1.20, 3 day 1.18  
 Remarks This site has good expansion possibilities.  
Wendy & Deanna Johnson, & H. Hoble, Jr.,  
Liberal, Kansas

Scale: 1" = 1/4 Mile



STATE HIGHWAY COMMISSION OF KANSAS

MATERIAL SURVEY REPORT

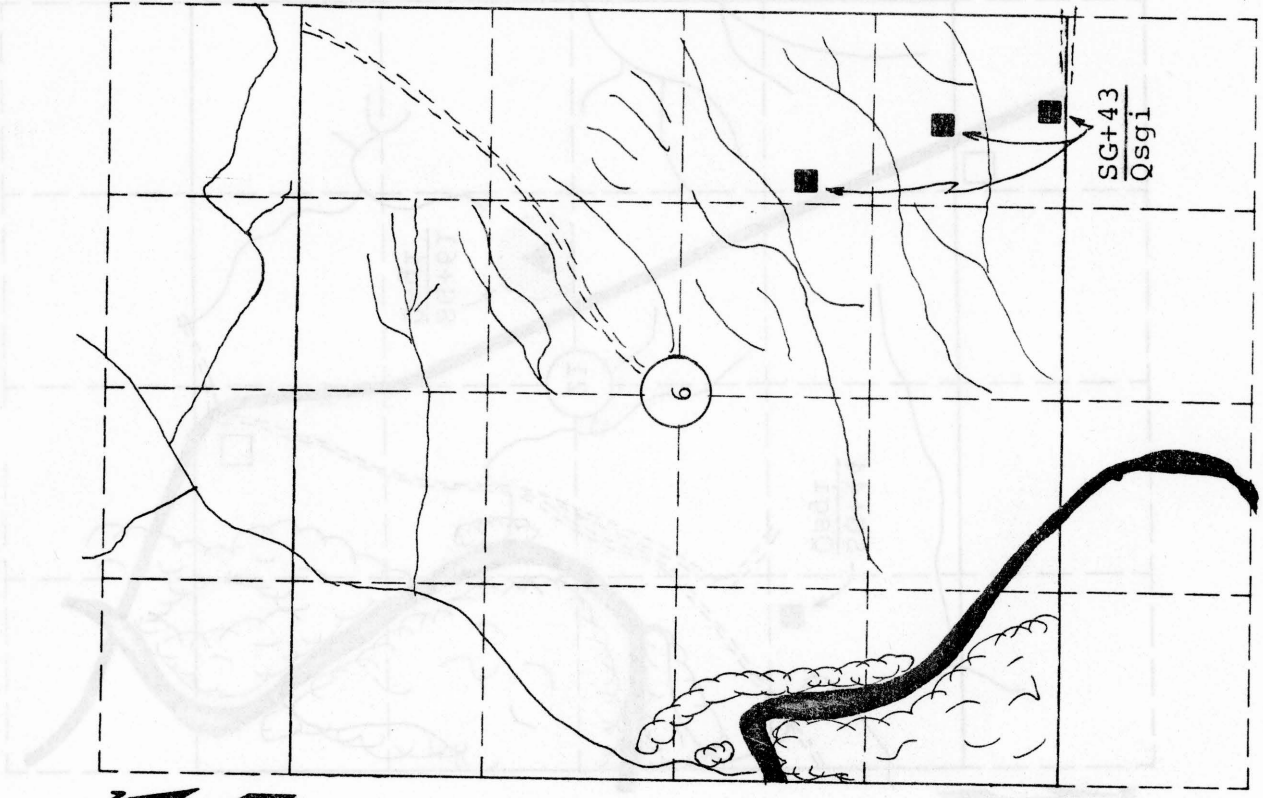
Site No. SG+43 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location SE 1/4 Sec. 6 Twp. 32S Range 33W  
 Owner See Remarks  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate I  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.	
				1 1/2	3/4	3/8	4	8	16	30	50					100
AV			0	3	7	11	21	37	62	85	93	4.7	3.19	18		

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-16  
 Specific Gravity (Sat.) 2.60 (Dry)  
 Los Angeles Wear 27.4 (D)  
 Absorption 0.98  
 wt. Cu.Ft. 114.4 Str. Ratio 1 day 1.06, 3 day 1.01  
 Remarks Gradation data for holes 3 and 5 represents the coarsest and finest material tested at this site.  
George F. & E. A. Morgan, 1320 S. Pine, Newton, Kansas



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

SG+44  
Qsgl

Site No. \_\_\_\_\_ Date March, 1967  
 Material Sand & Gravel County Seward  
 Location NW 1/4 Sec. 21 Twp. 32S Range 33W  
 Owner See Remarks  
 Nature of Deposit DRY Accessibility Fair address \_\_\_\_\_ Site located on Plate III  
 Status of Site Open site; sampled

EXPLORATION DATA

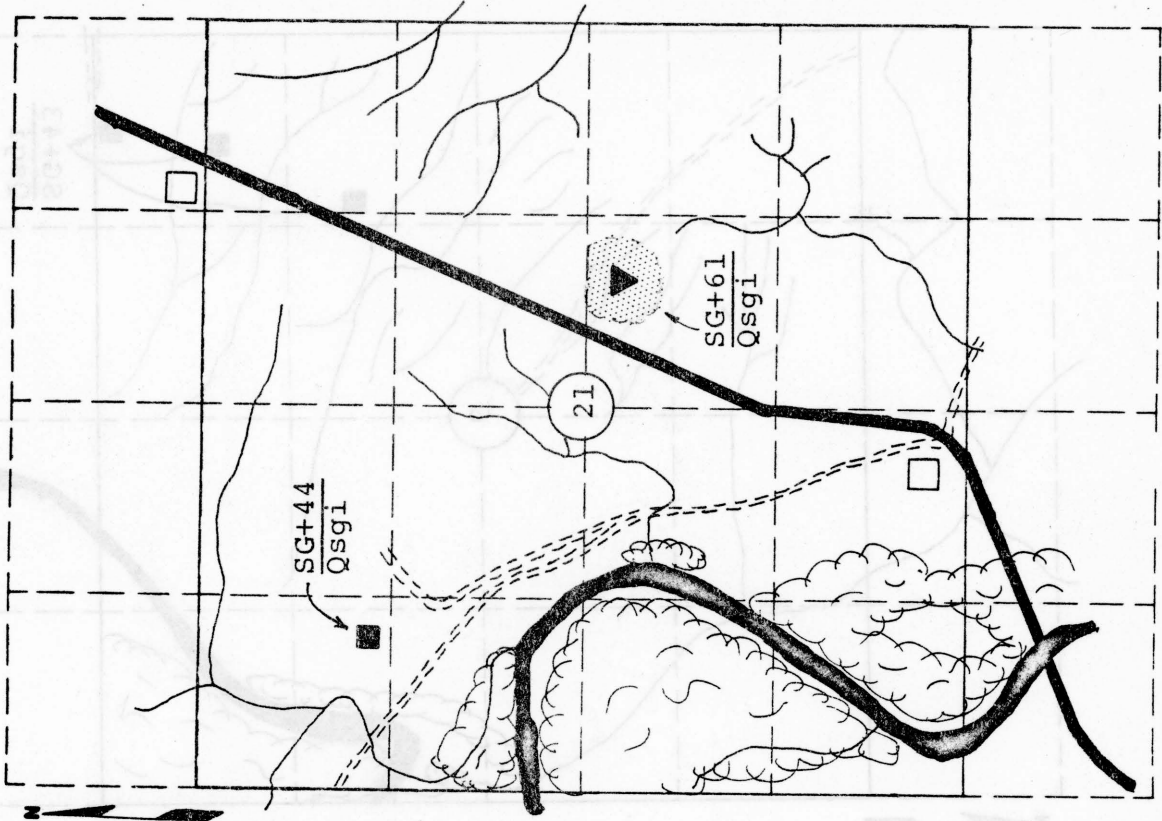
Test Hole	Material at Bottom of Hole	Depth of overburden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30					50	100
AV				0	2	4	8	19	37	73	94	98	4	3.35	19	1
2		4	13	0	5	9	13	22	38	74	95	98	2	3.54	18	2
7		2	15	0	1	2	5	15	33	75	94	98	4	3.23	19	0

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-8  
 Specific Gravity (Sat.) 2.59 (Dry)  
 Los Angeles Wear 35.0(B)  
 Absorption \_\_\_\_\_ Soundness 0.97

Wt. Cu.Ft. 112.9 Str. Ratio 1 day 1.07, 3 day 1.21  
 Remarks Gradation data for test holes 2 & 7 represents the finest and coarsest material tested at this site.

Homer E. & Billie Mae Mercer, R. R. 2, Liberal, Kansas





MATERIAL SURVEY REPORT

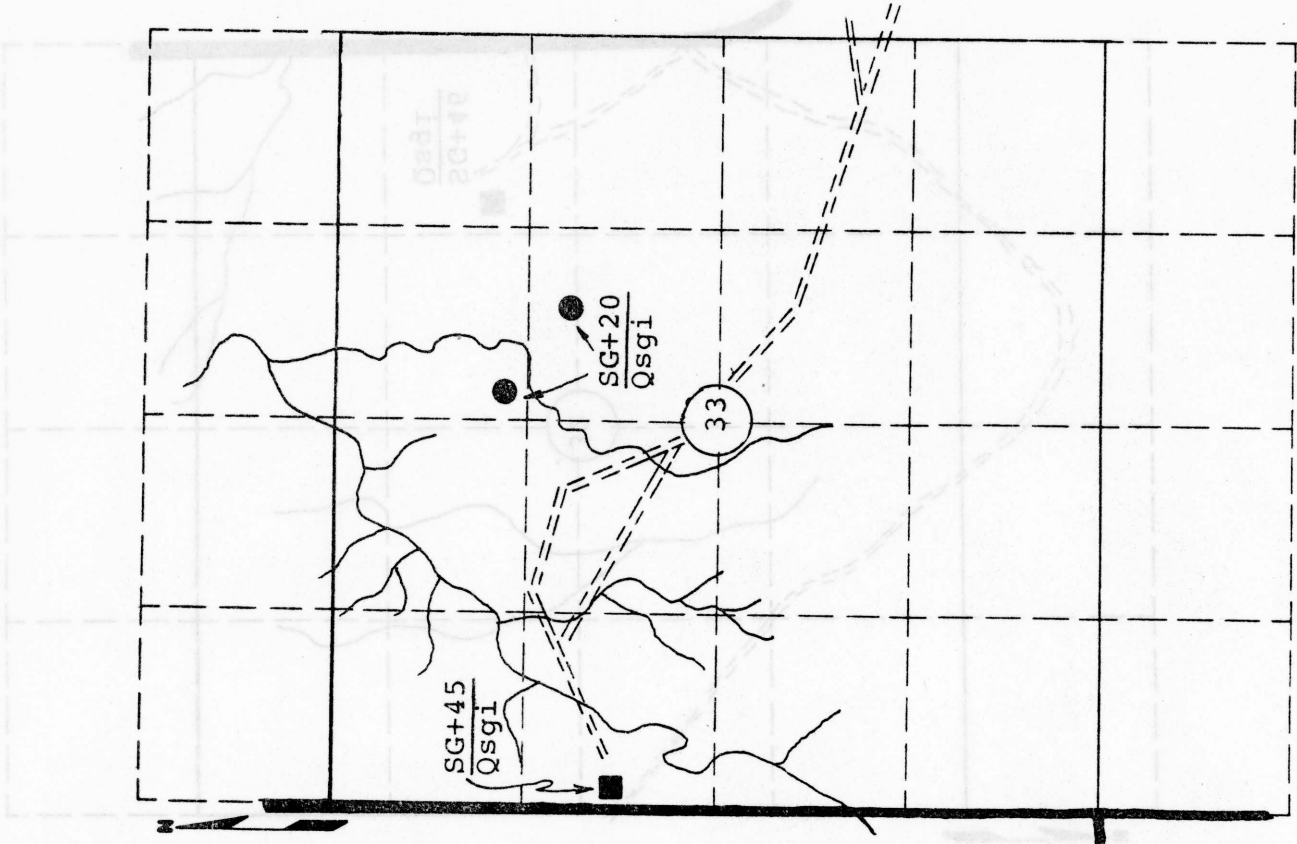
Site No. SG+45 Date March, 1967  
Osgi  
 Material Sand & Gravel County Seward  
 Location SW 1/4 NW 1/4 Sec. 33 Twp. 32S Range 33W  
 Owner Bettie Lemert 1821 N. Calhoun, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Good Site located on Plate III  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at bottom of hole	Depth of overburden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P. I.	
				1 1/2	3/4	3/8	1/4	3/16	1/8	3/32	1/32					
AV				0	2	4	8	19	39	71	91	97	4.5	3.35	18	2
6		2	15	0	0	3	11	29	57	83	95	98	2	3.76	17	2
7		5	11	0	1	3	7	13	29	60	84	96	8	2.93	17	2

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-11  
 Specific Gravity (sat.) 2.58 (dry)  
 Los Angeles Near 29.2(D)  
 Absorption 0.98 Soundness 0.98  
 Wt. Cu.Ft. 111.9 Str. Ratio 1 day 1.09, 3 day 1.15  
 Remarks Gradation data for test holes 6 & 7 represents the coarsest and finest material tested at this site.



Scale: 1" = 1/4 Mile

STATE HIGHWAY COMMISSION OF KANSAS

MATERIAL SURVEY REPORT

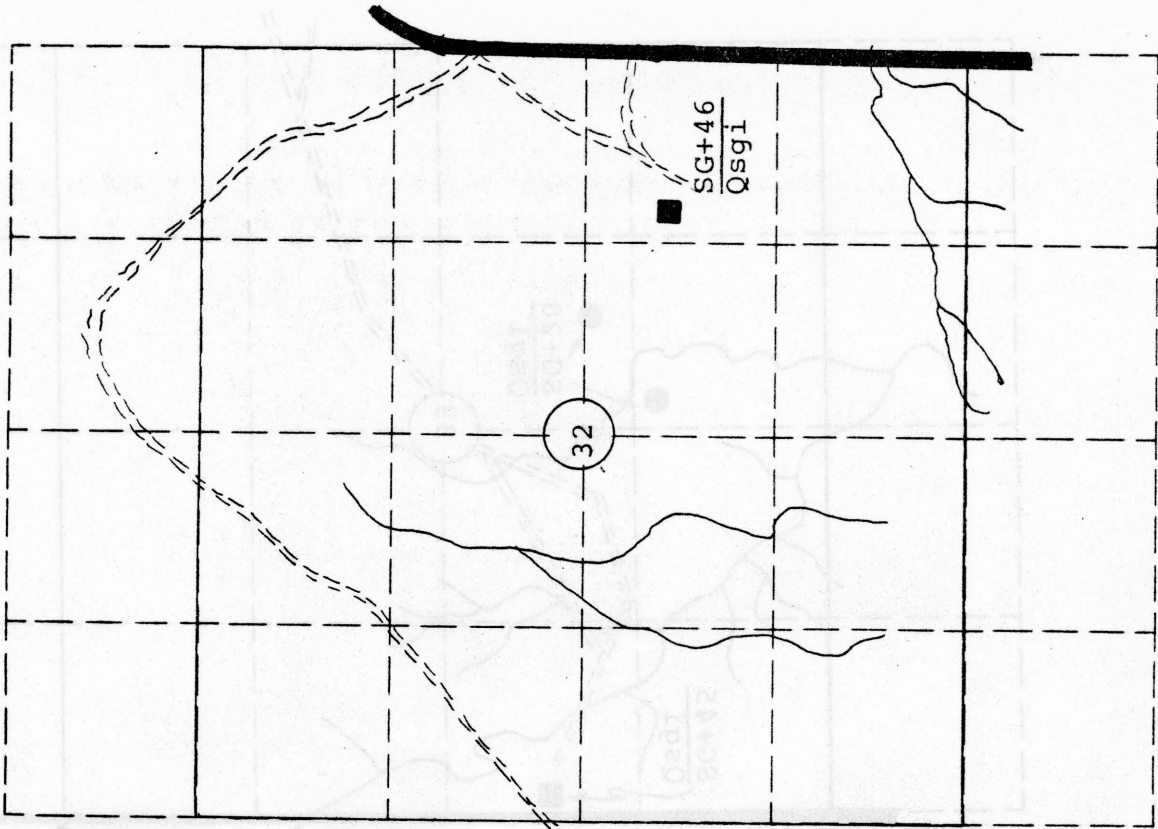
Site No. SG+46 Date March, 1967  
Qsgl  
 Material Sand & Gravel County Seward  
 Location NE 1/4 SE 1/4 Sec. 32 Twp. 32S Range 33W  
 Owner See Remarks  
 Nature of Deposit Dry accessibility Good Site Located on Plate III  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.			
				1 1/2	3/4	3/8	4	8	16					30	50	100
				3	8	17	28			96	1	3.63				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 12537  
 Specific Gravity (Sat.) (Dry)  
 Los Angeles Near \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Co. ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks George Winchell, 1018 N. Pershing, Liberal,  
Kansas



MATERIAL SURVEY REPORT

Site No. SG+47 Date March, 1967  
Qsgl  
 Material Sand & Gravel County Seward  
 Location E $\frac{1}{2}$  Sec. 29 Twp. 32S Range 33W  
 Owner See Remarks address \_\_\_\_\_  
 Nature of Deposit Dry accessibility Good Site Located on Plate III  
 Status of Site Open site; sampled

EXPLORATION DATA

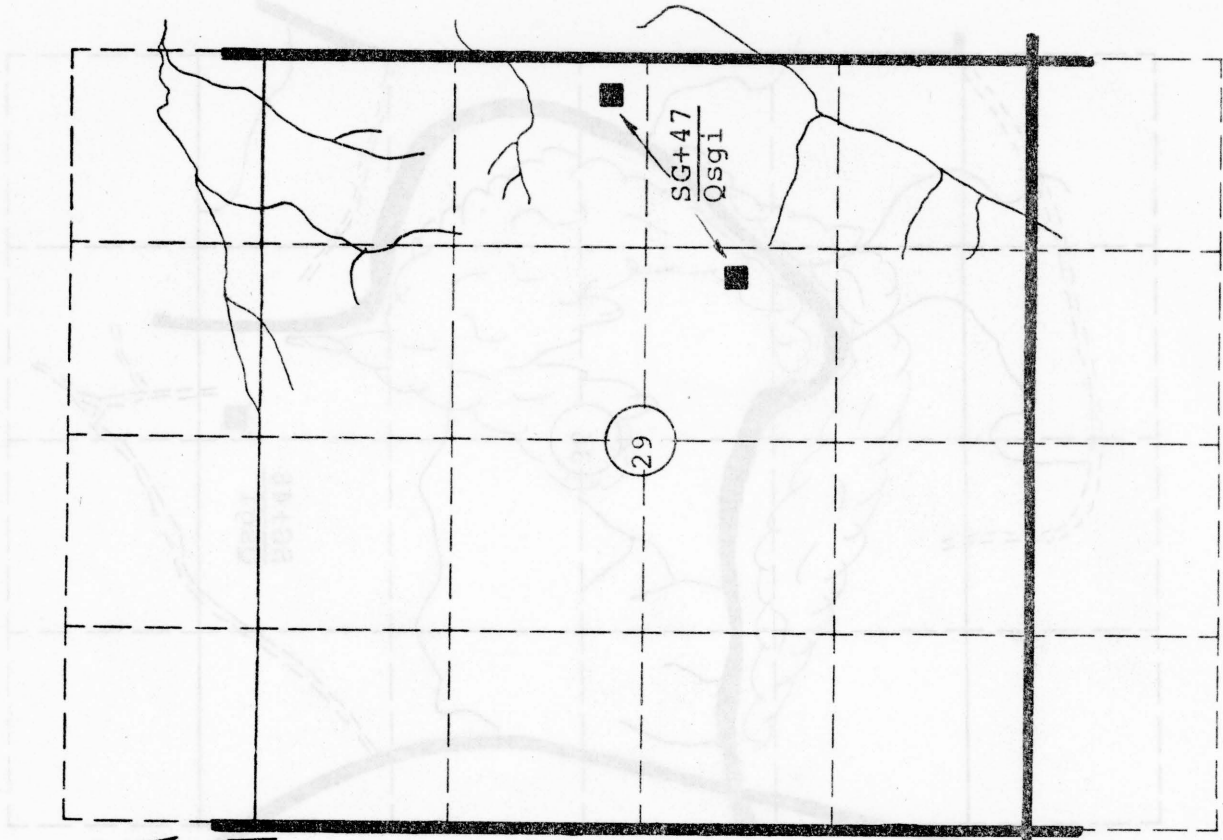
Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.	
				1/2	3/4	1	2	4	8	16	30					50
AV				0	0	2	6	15	35	63	87	95	3	3.03	18	
3		5	42	0	1	5	10	21	40	66	87	95	4	3.25	19	
5		5	27	0	0	1	5	13	29	58	85	94	4	2.85	18	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619

NO. 88-12  
 Specific Gravity (Sat.) 2.59 (Dry) \_\_\_\_\_  
 Los Angeles Wear 29.0 (D)  
 Absorption \_\_\_\_\_ Soundness 0.99  
 Wt. Cu.ft. 113.0 Str. Ratio 1 day 1.04, 3 day 0.99

Remarks Gradation data for test holes 3 & 5 represents the coarsest and finest material tested at this site. SE $\frac{1}{4}$ , Homer E. & Billie Mae Mercer, R.R. 2, Liberal, Kans. NE $\frac{1}{4}$ , Hitch, Land & Cattle Co., Box 76, Guyman, Oklahoma



Scale: 1" =  $\frac{1}{4}$  Mile

MATERIAL SURVEY REPORT

Site No. SG+48 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SW 1/4 SE 1/4 Sec. 36 Twp. 32S Range 33W  
 Owner Marguerite L. Frazier, 1711 N. Calhoun, Liberal  
 Name Liberal  
 Nature of Deposit Dry accessibility Good Site located on Plate III  
 Status of Site Open site; sampled

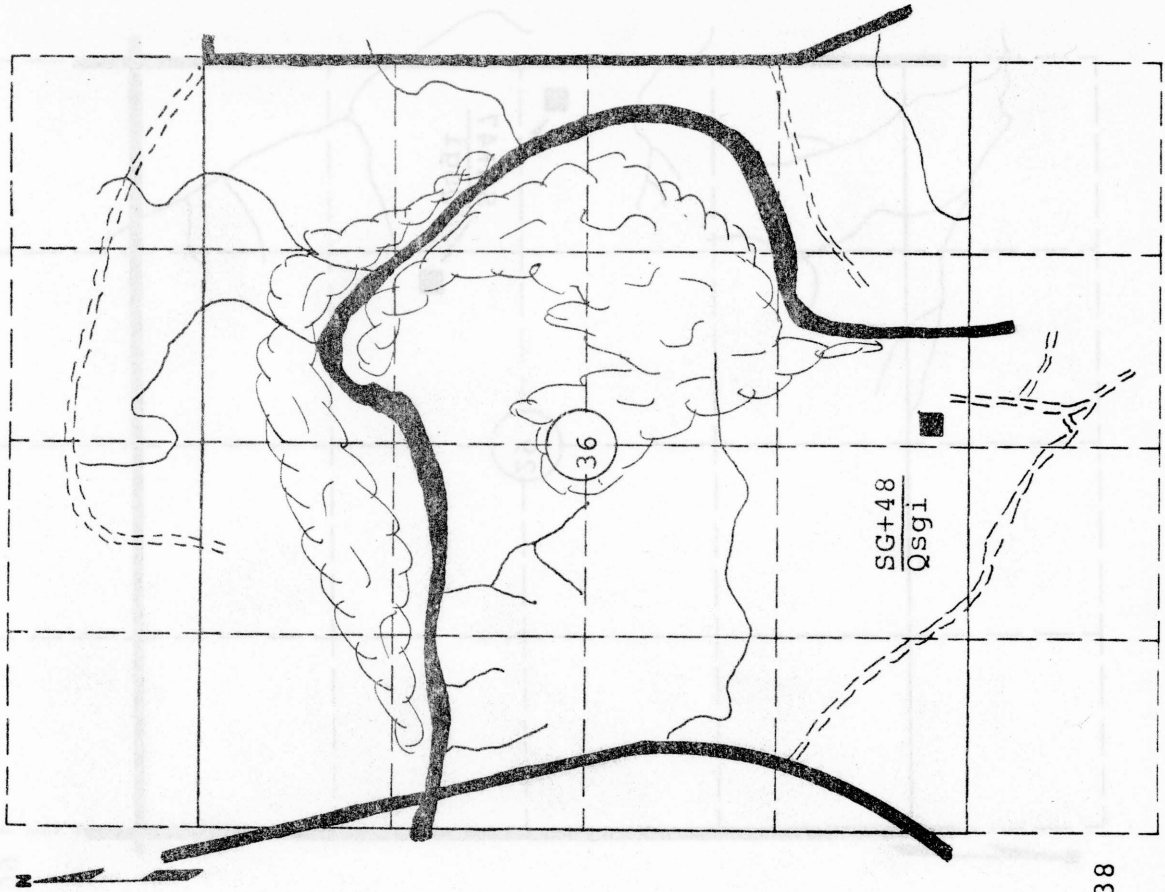
EXPLORATION DATA

Test Hole	Material at bottom of hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	1/4	1/8	16	30					50	100
			0	4	12	24	40	57	76	89	95	2.53	97			

CORRELATOR DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 65-3027  
 Specific Gravity (Sat.) 2.60 (Dry) 2.59  
 Los Angeles Wear 36.1(B)  
 Absorption 0.40 Soundness 0.98  
 Wt. Co. Ft. 119.0 Str. Ratio 1 day 1.35, 3 day 1.38

Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

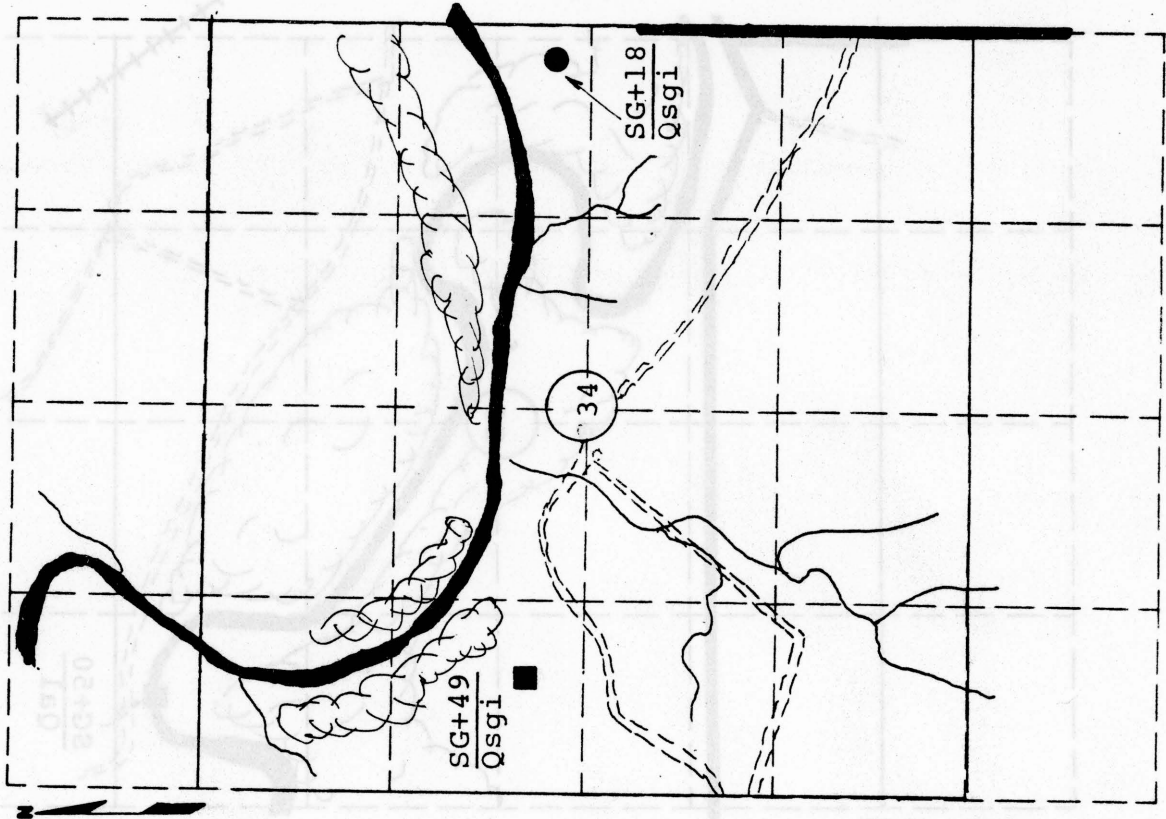
Site No. SG+49  
Qsgi  
 Material Sand & Gravel  
 Location SW 1/4 NW 1/4 Sec. 34 Twp. 32S Range 33W  
 Owner Louie Lemert, 1821 N. Calhoun, Liberal, Kansas  
 Nature of Deposit Dry Accessibility Good Site located on Plate III  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of Material	Depth of over-burden	Percent Retained							Wash 200	G.F.	L.L.	P.I.			
				1/2	3/4	1	5/8	3/4	7/8	1							
				0	1	5	9	15	31	55	83	91	4.6	2.92			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-19  
 Specific Gravity (Sat.) 2.59 (Dry)  
 Los Angeles Wear 34.4 (A)  
 Absorption 0.81 Soundness 0.93  
 Mt. Cu.Ft. 103.6. Str. Ratio 1 day 0.93, 3 day 1.14  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

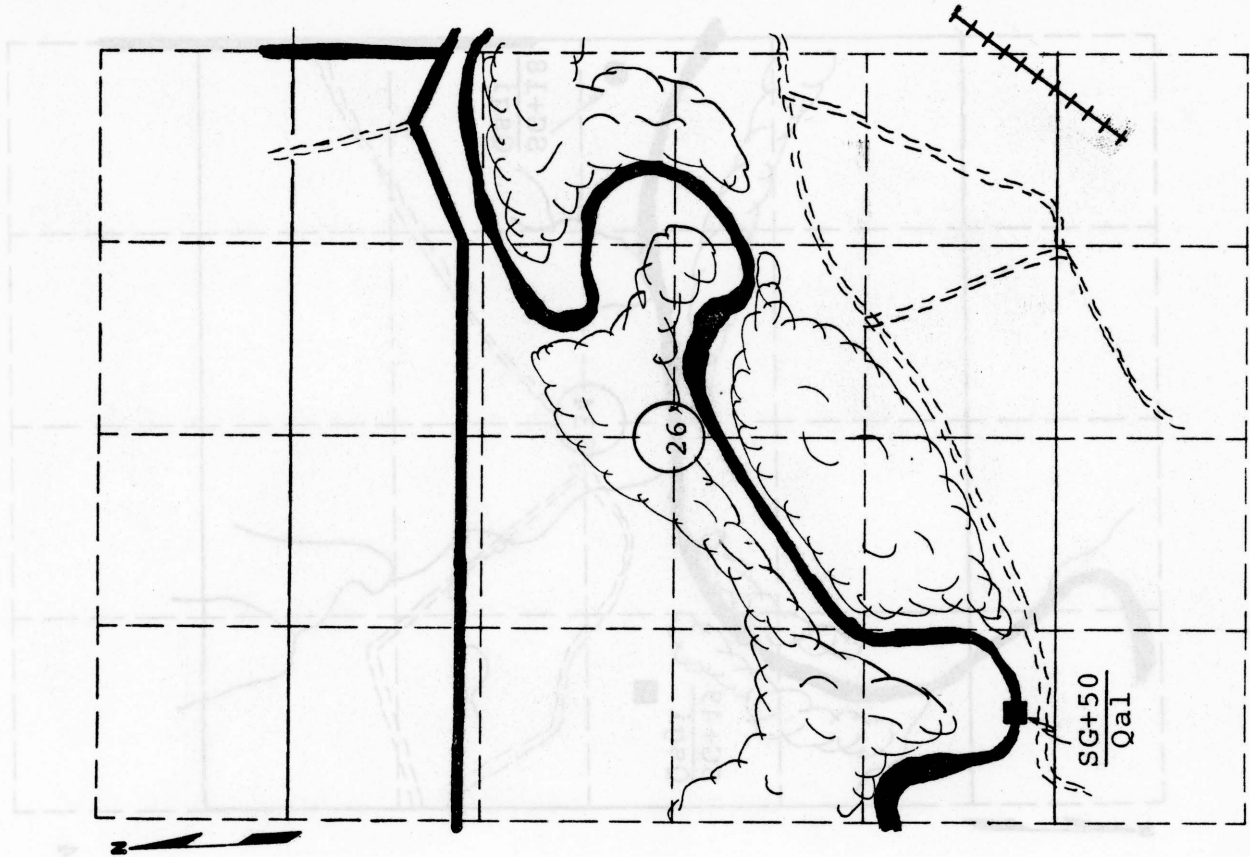
Site No. SG+50 Date March, 1967  
Qa1  
 Material Sand & Gravel County Seward  
 Location SW $\frac{1}{4}$  SW $\frac{1}{4}$  Sec. 26 Twp. 33S Range 32W  
 Owner J. E. Alexander, 352 N. Broadway, Wichita, Kansas  
 name address  
 Nature of Deposit Wet Accessibility Fair Site Located on Plate IV  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.
			1/2	3/4	3/8	1/4	1/8				
			8	17	31	43	99	1	4.25		

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Alluvium  
 Material Similar To Material reported on SHC Form 245  
 Lab. No. 28072  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Near \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks The material at this site was evidently taken from the river.



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. SG+51 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location SE 1/4 Sec. 21 Twp. 33S Range 32W  
 Owner William D. & Roy Green, R. R. 1, Liberal, Kansas  
 Nature of Deposit Dry Accessibility Good Site Located on Plate IV  
 Status of Site Open site; sampled

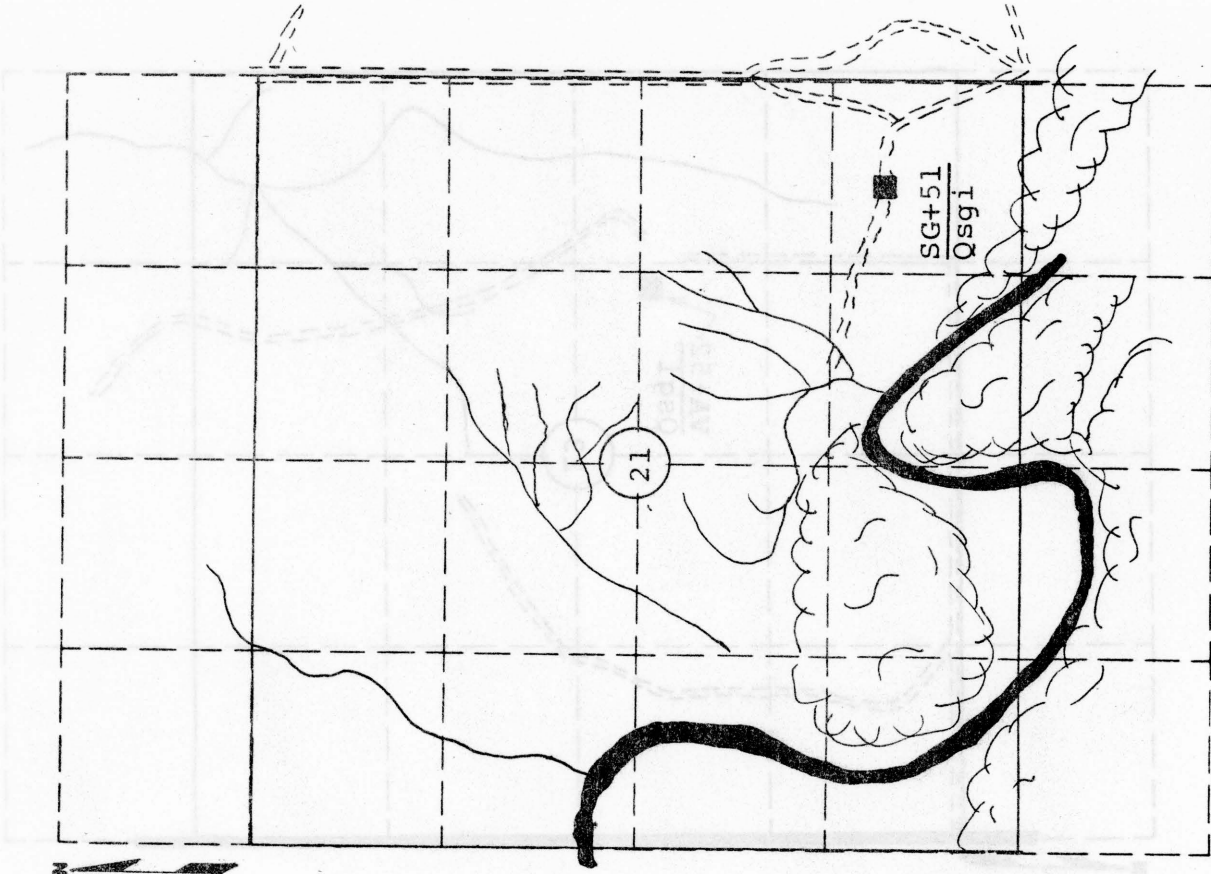
EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.I.	P.I.		
				1/2	3/4	3/8	4	8	16	30					50	100
			0	3	7	12	21	35	56	78	91	5.5	3.03			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 69699  
 Specific Gravity (Sat.) 2.57 (Dry)  
 Los Angeles-Wear 30.6 (C)  
 Absorption 0.97 Soundness 0.97  
 Wt. Cu.Ft. 110.2 Str. Ratio 1 day 1.05, 3 day 1.37

Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. VA+52 Date March, 1967  
Qsg1  
 Material Volcanic Ash County Seward  
 Location NE 1/4 Sec. 13 Twp. 33S Range 32W  
 Owner See Remarks  
 Nature of Deposit Dry Accessibility Good Site located on Plate IV  
 Status of Site Open site; sampled

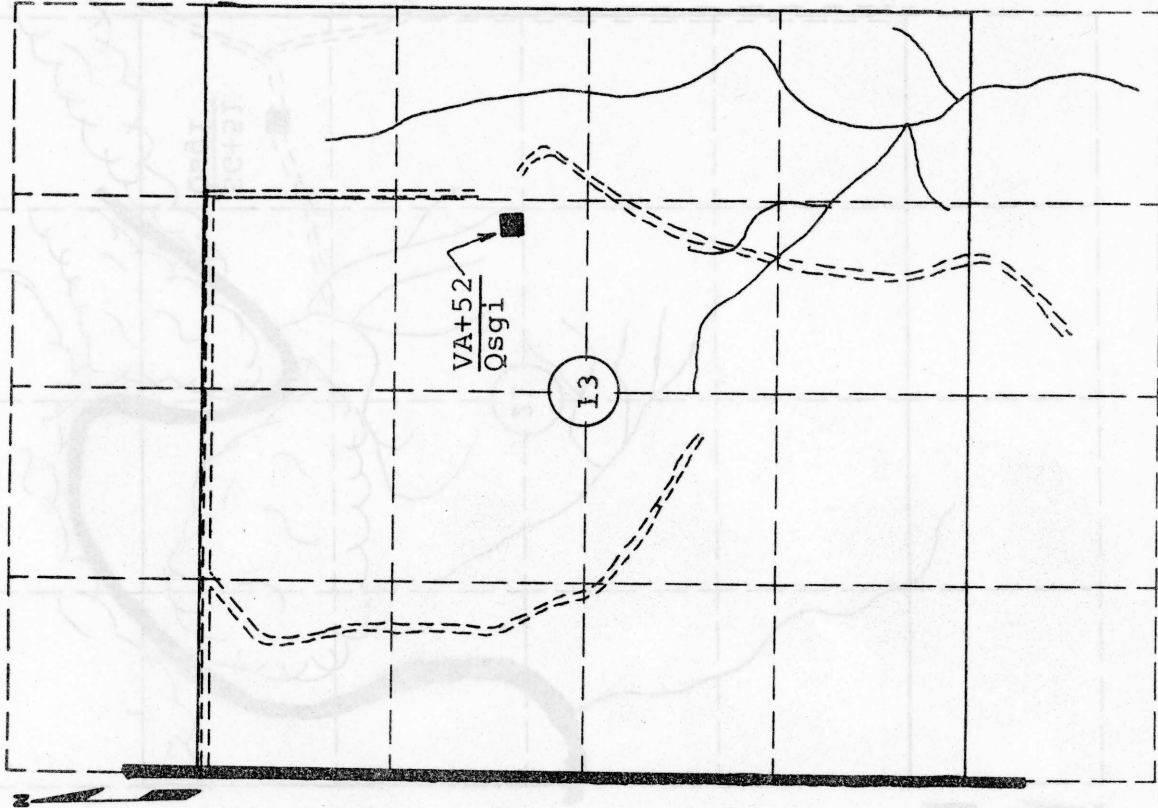
EXPLORATION DATA

Test Hole	Material at bottom of hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.			
				1/2	3/4	1	2	3	4	8					16	30	50
AV				0	0	1	2	3	4	6	14	75					

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-17  
 Specific Gravity (Set.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks Approximately 10' of volcanic ash with bentonite  
 Zones.

H. E. Smith, 7361 N. Ridge Blvd., Chicago, Illinois



Scale: 1" = 1/4 Mile



MATERIAL SURVEY REPORT

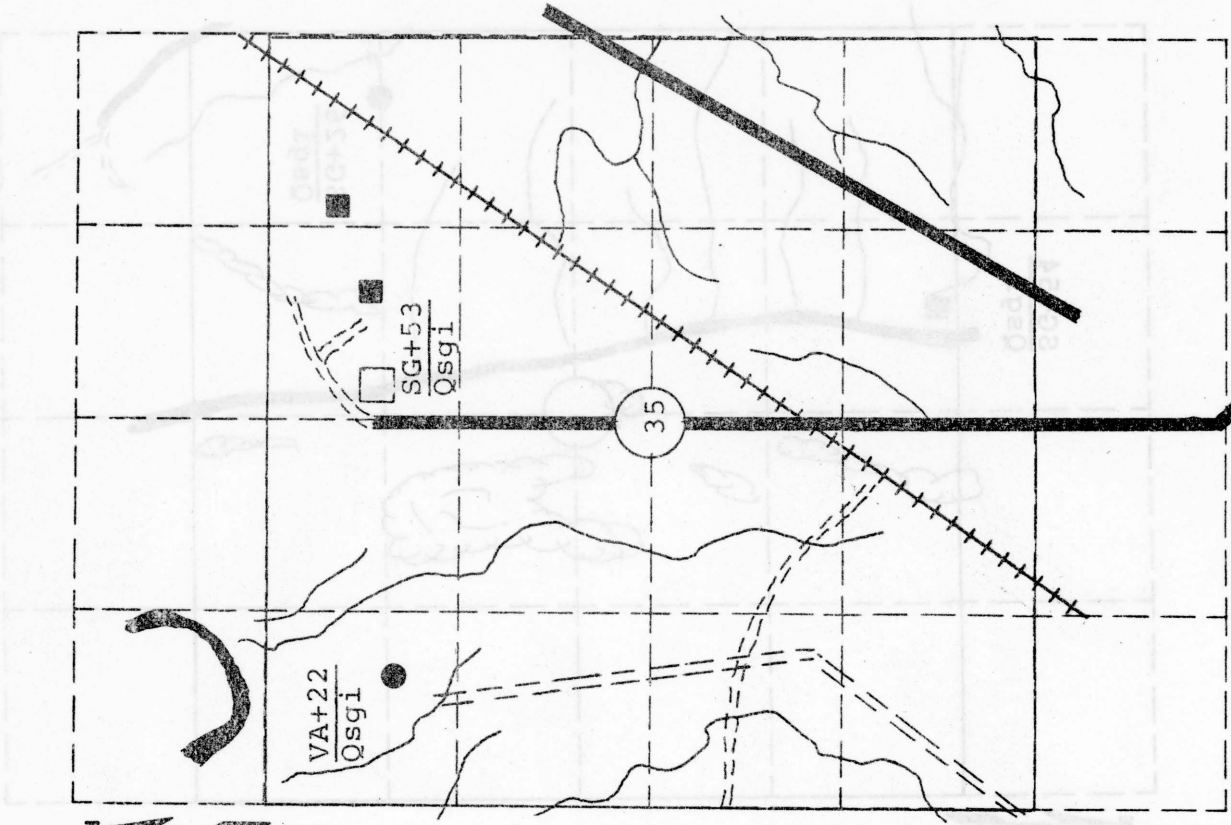
Site No. SG+53 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location NE 1/4 Sec. 35 Twp. 33S Range 32W  
 Owner William E. Carlile 521 W. Pine, Liberal, Kansas  
 name address  
 Nature of Deposit Dry accessibility Good Site Located on Plate IV  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.	
				1/2	3/4	1	3/8	1/2	3/16	1/8					
AV				5	10	16	24	34	60	90	98	3	3.40	16	1
4		9	8	0	12	20	27	37	50	74	94	2	4.13	16	0
8		9	8	0	3	5	6	9	20	47	89	2	2.78	17	1

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-9  
 Specific Gravity (Sat.) 2.60 (Dry)  
 Los Angeles Wear 34.1(B)  
 Absorption \_\_\_\_\_ Soundness 0.99  
 Wt. Cu.Ft. 114.0 Str. Ratio 1 day 1.30, 3 day 1.37  
 Remarks Gradation data for test holes 4 & 8 represents the coarsest and finest material tested of this site.



MATERIAL SURVEY REPORT

Site No. SG+54 Date March, 1967  
Qsgl  
 Material Sand & Gravel County Seward  
 Location NW 1/4 NE 1/4 Sec. 7 Twp. 33S Range 32W  
 Owner See Remarks  
 Nature of Deposit DRY Accessibility POOR Site located on Plate IV  
 Status of Site Open site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.L.	
				1 1/2	3/4	3/8	4	8	16	30	50					100
AV				4	11	17	29	43	68	87	98	6	3.58	15	0	
2		3	14	0	3	5	9	15	25	42	66	16	2.55	15	0	
4		2	12	0	8	20	32	55	68	82	94	98	3	4.57	15	0

CORRELATION DATA

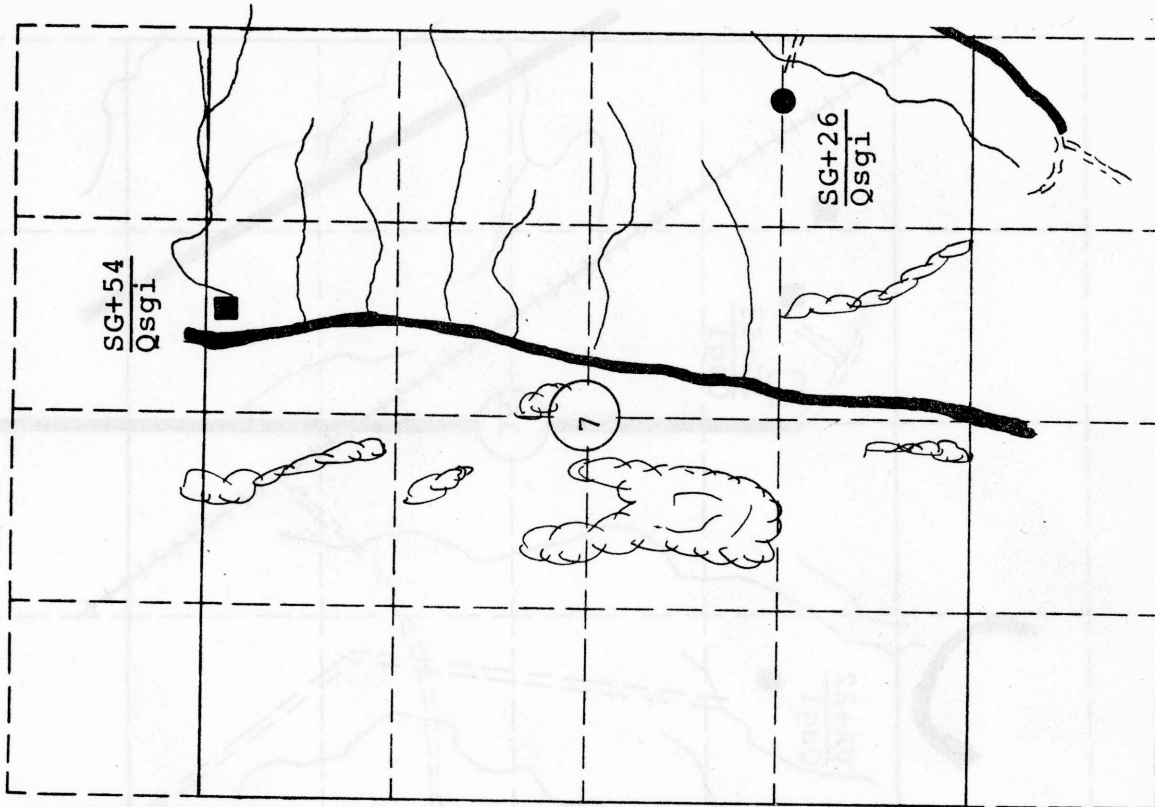
Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 No. 88-13  
 Specific Gravity (Sat.) 2.60 (Dry)  
 Los Angeles Wear 34.2(B)  
 Absorption \_\_\_\_\_ Soundness 0.98

Wt. Cu.ft. 119.8 Str. Ratio 1 day 1.33, 3 day 1.44

Remarks Gradation data for test holes 2 & 4 represents the finest and coarsest material tested at this site.
















Alice Bramlett etal, 439 W. First, San Bernardino, Calif.

Scale: 1" = 1/4 Mile



PROSPECTIVE MATERIALS SITES; NOT SAMPLED

LEGEND

	Trail or lane		Prospective materials site; not sampled
	Road		Center of section
	Railroad		Dwelling
	Hedge or trees		Cemetery
	Fence		School
	Major stream		Church
	Intermittent streams		Town or city
	Pond or lake		



MATERIAL SURVEY REPORT

Site No. SG+55  
Qsg1  
 Date March, 1967  
 Material Sand & Gravel County Seward  
 Location NE 1/4 Sec. 23 Twp. 33S Range 32W  
 Owner See Remarks  
 Nature of Deposit Dry Accessibility Good Site Located on Plate IV  
 Status of Site Prospective site; not sampled

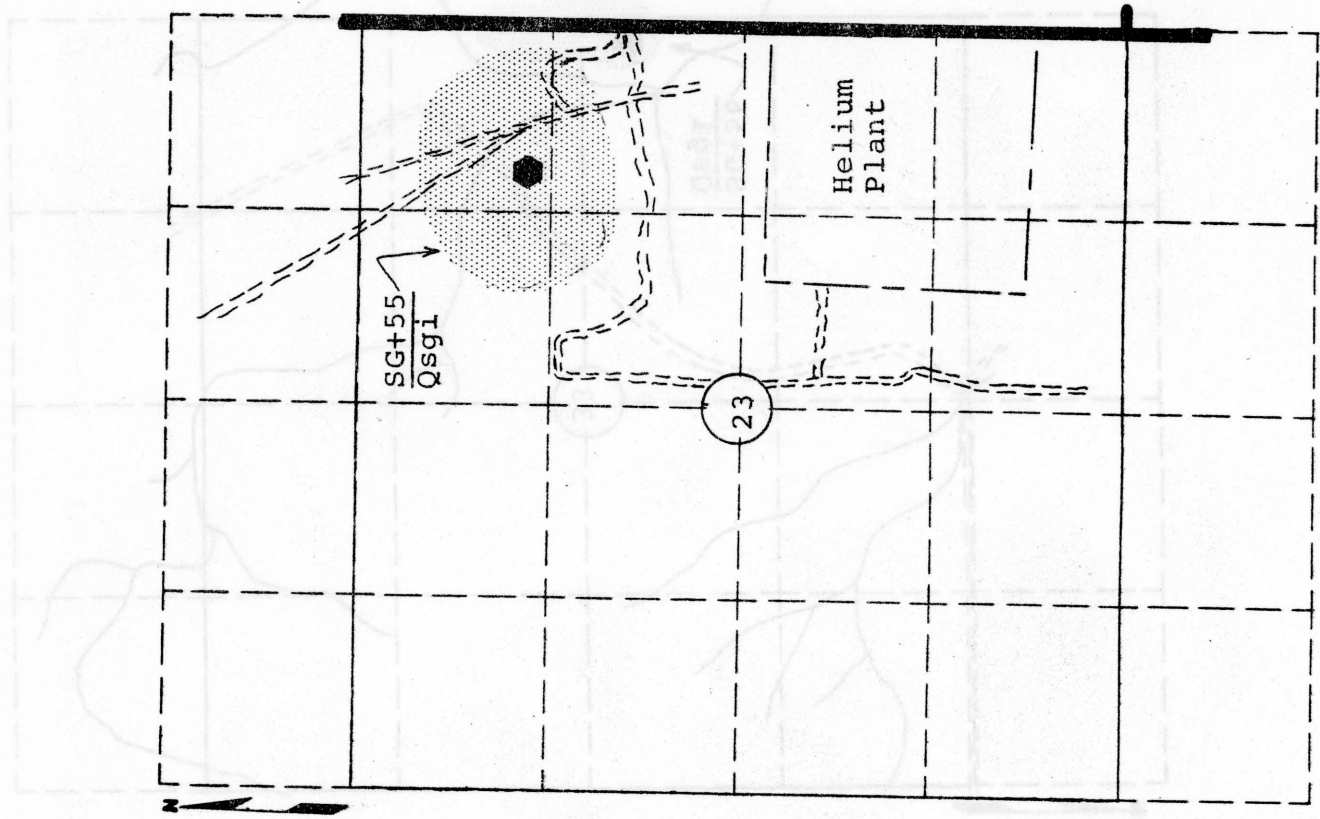
EXPLORATION DATA

Test Hole	Material at bottom of hole	Depth of over-burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.
				1 1/2	3/4	3/8	4	8				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Near \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks Lulu G. Morris, & Blanche Warden  
909 Elm, Liberal, Kansas

Fig. 10 - 7 MTG



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

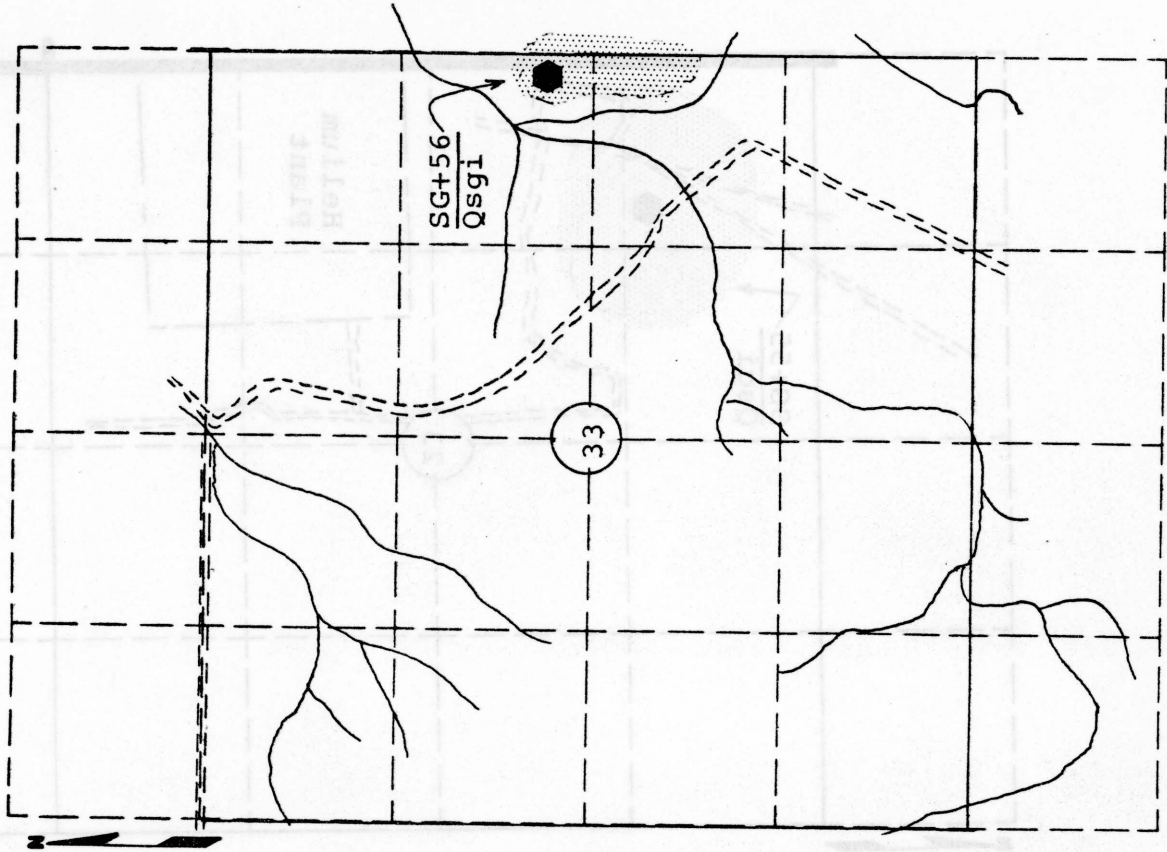
Site No. SG+56 Date March, 1967  
Qsgl  
 Material Sand & Gravel County Seward  
 Location SE 1/4 Sec. 33 Twp. 31S Range 34W  
 Owner Smith & Schnellbarker Satanta, Kansas  
 name address  
 Nature of Deposit DRY Accessibility POOR Site Located on Plate I  
 Status of Site Prospective site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained							Mash 200	G. F.	L. L.	P. I.				
				1/2	3/4	3/8	4	8	16	30					50	100		

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

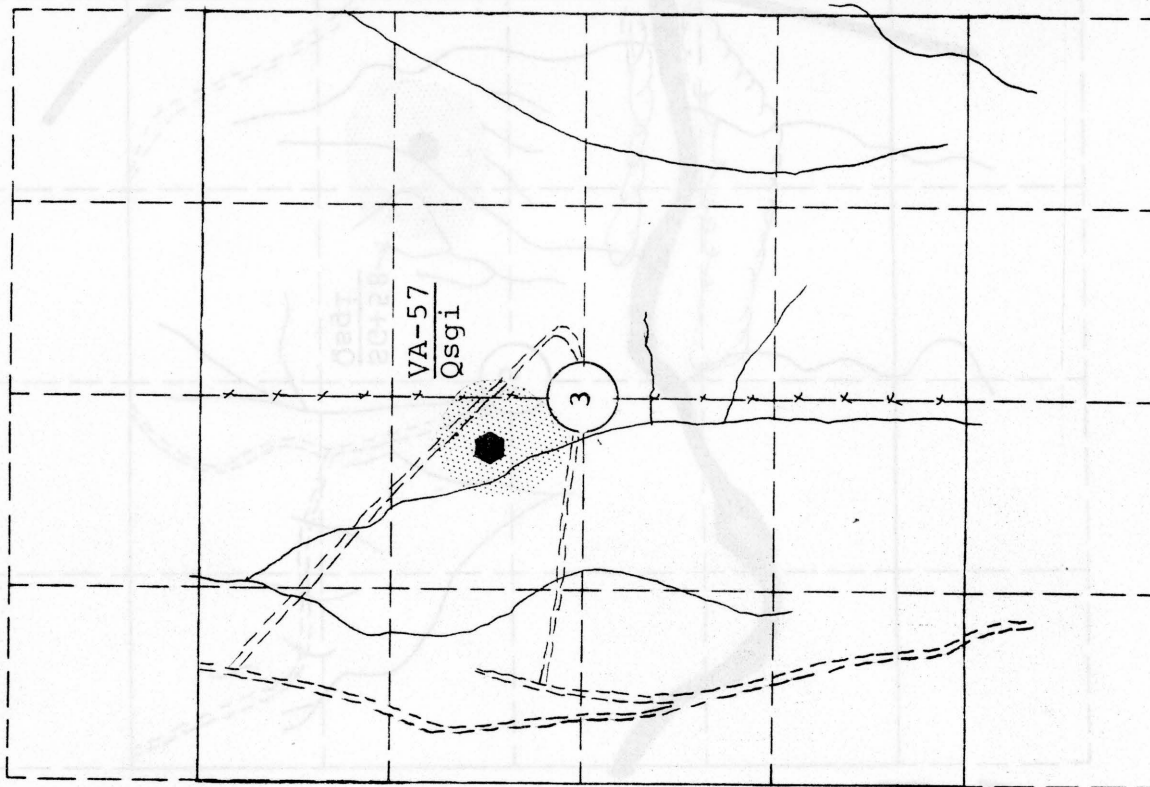
Site No. VA-57 Date March, 1967  
Qsg1  
 Material Volcanic Ash County Seward  
 Location SE 1/4 NW 1/4 Sec. 3 Twp. 32S Range 34W  
 Owner Smith & Schnellbarker, & H. E. Smith, Satanta, Kans.  
 name address  
 Nature of Deposit Dry Accessibility POOR Site Located on Plate I  
 Status of Site Prospective site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained						Wash 200	G.F.	L.L.	P.I.
				1/2	3/4	3/8	1/4	16	30				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry)  
 Los Angeles Near \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu.Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks Volcanic Ash exposed by the fence.



MATERIAL SURVEY REPORT

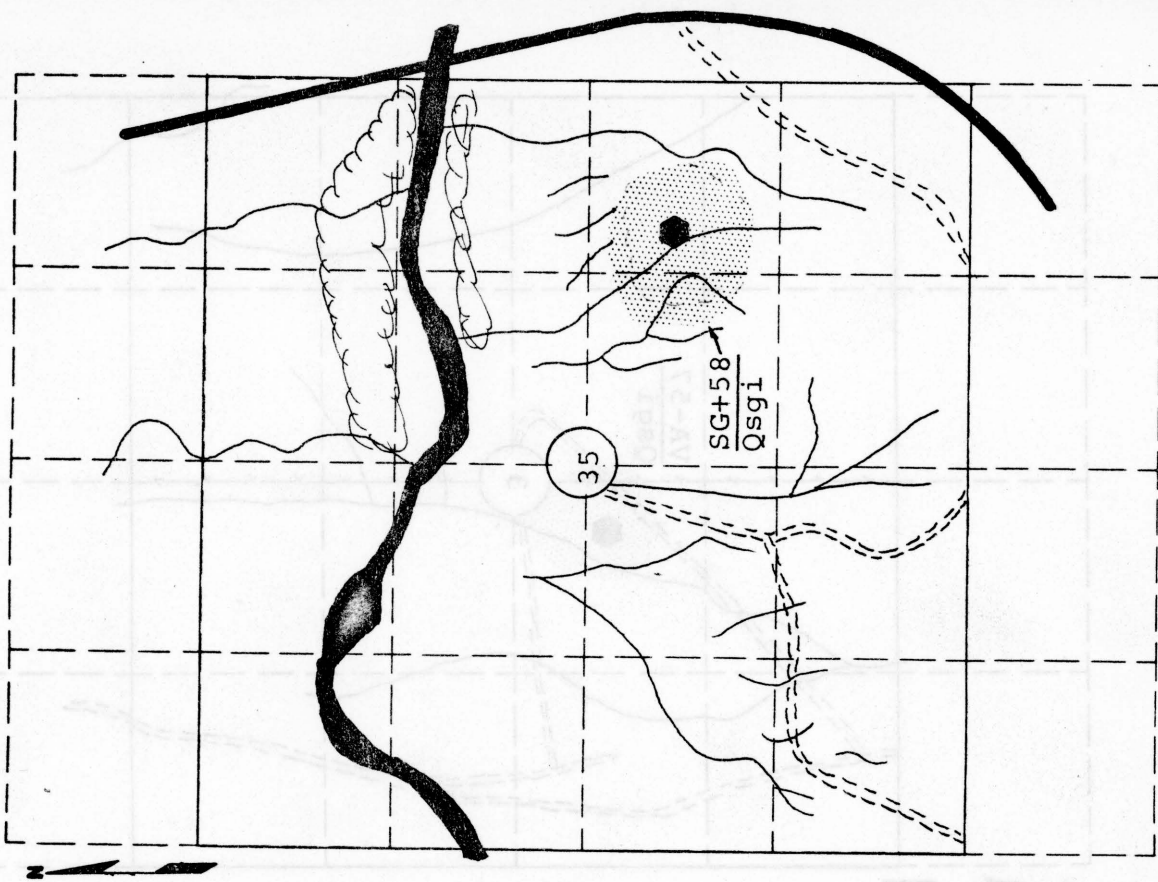
Site No. SG+58  
Qsgi  
 Material Sand & Gravel  
 Location SE 1/4 Sec. 35 Twp. 32S Range 33W  
 Owner See Remarks address  
 Nature of Deposit Dry accessibility Fair Site Located on Plate III  
 Status of Site Prospective site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30					50	100

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Sat.) \_\_\_\_\_ (Dry) \_\_\_\_\_  
 Los Angeles Near \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu.ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks H. B. Cooper, & F. A. Prater  
408 Tylane, Liberal, Kansas



Scale: 1" = 1/4 Mile



MATERIAL SURVEY REPORT

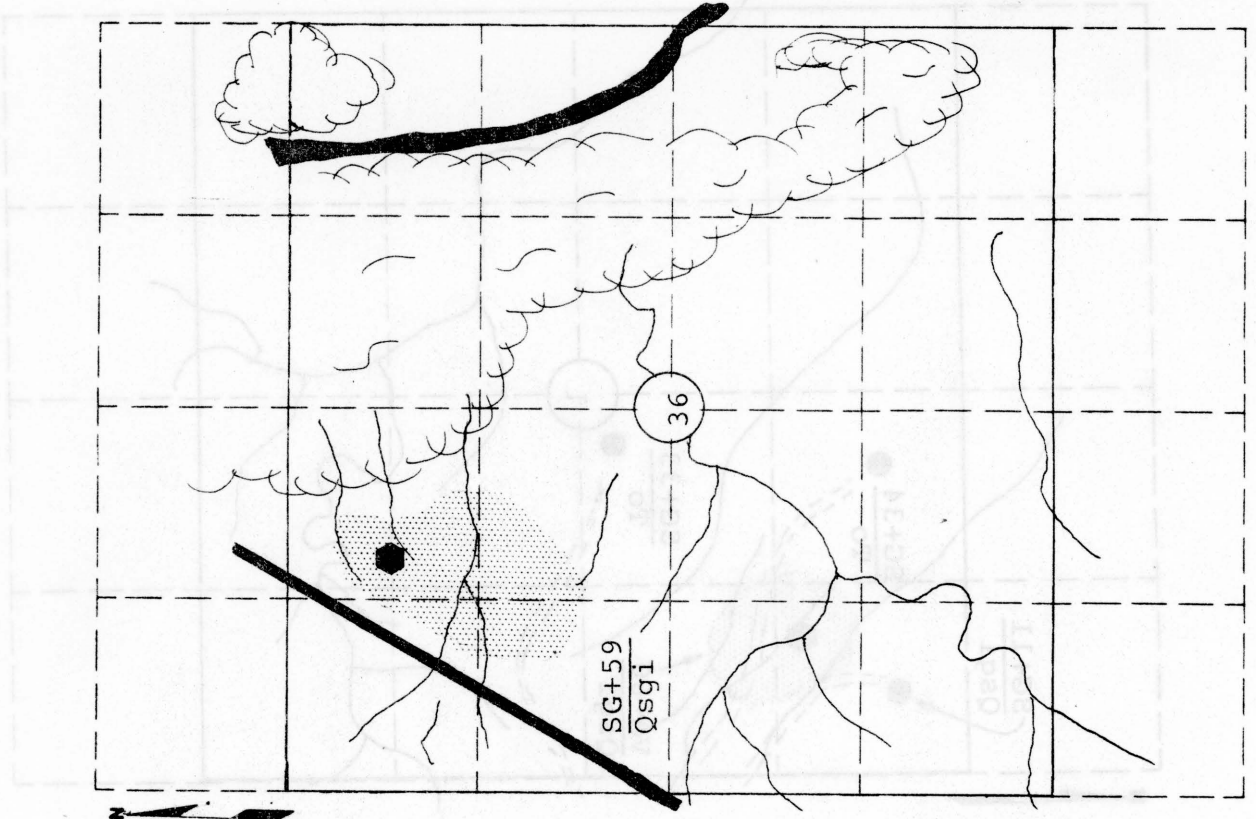
Site No. SG+59 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location NW 1/4 Sec. 36 Twp. 33S Range 32W  
 Owner Rice Davies R. R. 2, Liberal, Kansas  
 name address  
 Nature of Deposit DRY Accessibility Good Site located on Plate IV  
 Status of Site Prospective site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained						Wash 200	G. F.	L. L.	P. I.						
				1 1/2	3/4	3/8	4	8	16					30	50	100			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Set.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Wt. Cu. Ft. AV-20 Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

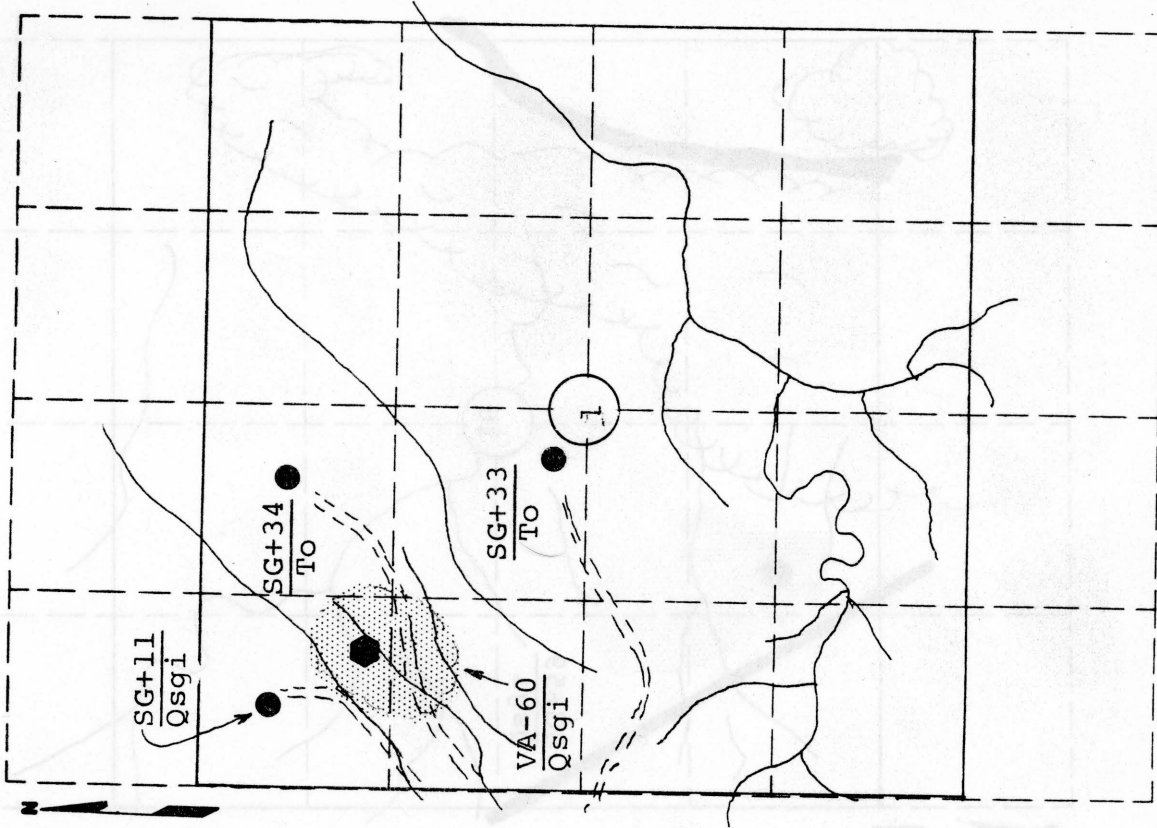
Site No. VA-60 Date March, 1967  
Qsg1  
 Material Volcanic Ash County Seward  
 Location NW 1/4 NW 1/4 Sec. 1 Twp. 35S Range 31W  
 Owner Paul Lauderback R. R. 2, Liberal, Kansas  
 name address  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate VI  
 Status of Site Prospective site; not sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained							Wash 200	G.F.	L.L.	P.I.			
				1 1/2	3/4	3/8	4	8	16	30					50	100	

CORRELATION DATA

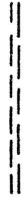














Geological Age Quaternary  
 Geological Source Sappa Formation  
 Material Similar To \_\_\_\_\_  
 Specific Gravity (Set.) \_\_\_\_\_ (Dry)  
 Los Angeles Wear \_\_\_\_\_  
 Absorption \_\_\_\_\_ Soundness \_\_\_\_\_  
 Mt. Cu. Ft. \_\_\_\_\_ Str. Ratio \_\_\_\_\_  
 Remarks \_\_\_\_\_



Scale: 1" = 1/4 Mile

PROSPECTIVE MATERIALS SITES; SAMPLED

LEGEND

	Trail or lane		Prospective materials sites; sampled
	Road		Center of section
	Railroad		Dwelling
	Hedge or trees		Cemetery
	Fence		School
	Major stream		Church
	Intermittent streams		Town or city
	Pond or lake		



MATERIAL SURVEY REPORT

Site No. SG+61  
Qsgi  
 Date March, 1967  
 Material Sand & Gravel County Seward  
 Location SE 1/4 Sec. 21 Twp. 32S Range 33W  
 Owner See Remarks address  
 Nature of Deposit Dry Accessibility Good Site located on Plate III  
 Status of Site Prospective site; sampled

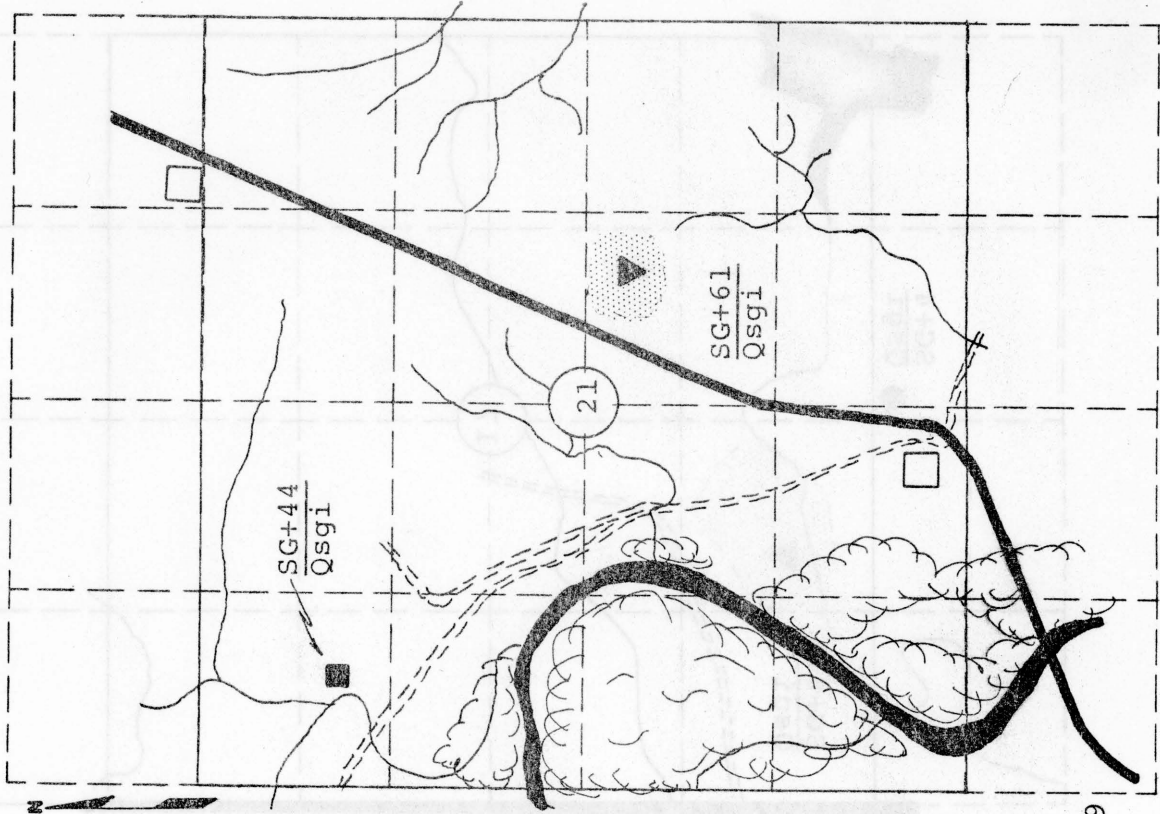
EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.	
				1 1/2	3/4	3/8	4	8	16	30	50					100
AV				0	1	3	7	15	31	59	85	95	4	3.29		
3		4	23	0	2	3	6	13	28	53	82	94	3	3.36	18	
4		1	30	0	4	7	11	20	35	62	87	94	4	3.20	17	

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar to Material reported on SHC Form 619  
 No. 88-1  
 Specific Gravity (Sat.) 2.57 (dry)  
 Los Angeles Wear 33.2(C)  
 Absorption \_\_\_\_\_ Soundness 0.99  
 Wt. Cu.ft. 108.0 Str. Ratio 1 day 1.05, 3 day 1.09

Remarks Gradation data for test holes 3 & 4 represents the finest and coarsest material tested at this site. Louie Lemert et al., 1821 N. Calhoun, Liberal, Kansas



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

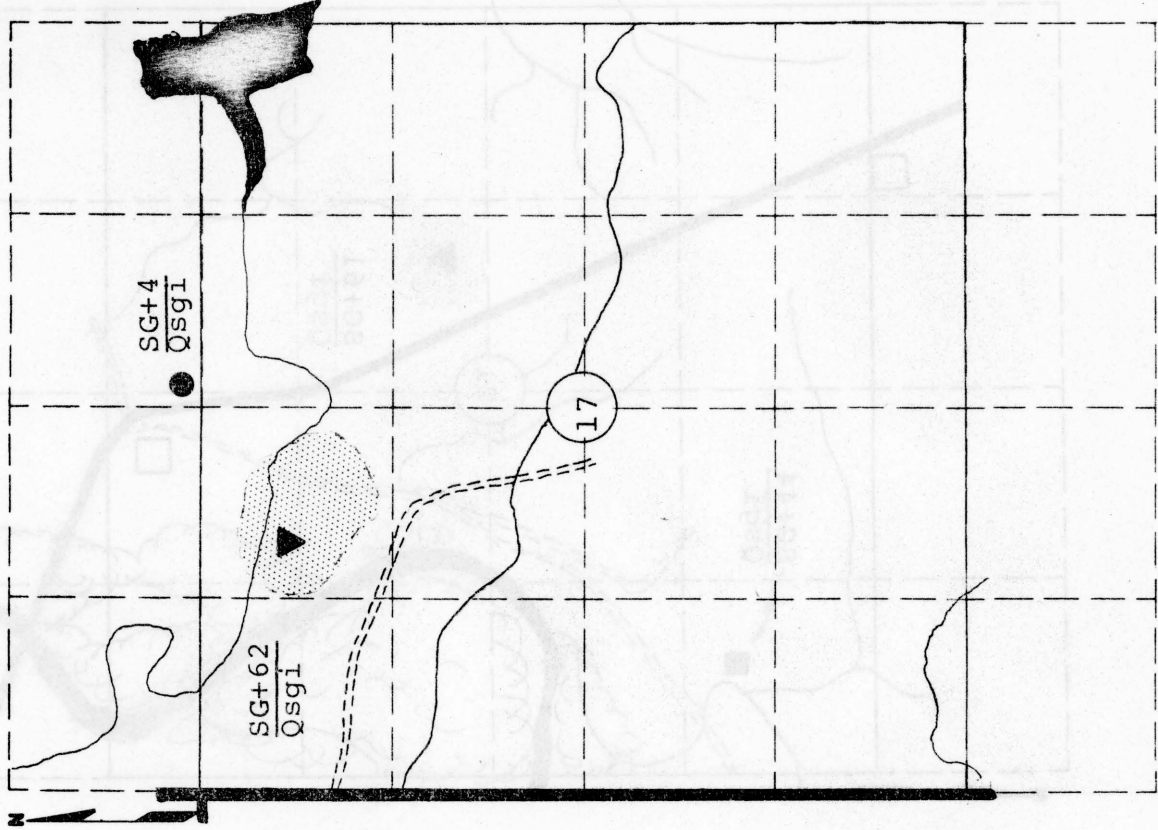
Site No. SG+62  
Qsgl  
 Material Sand & Gravel  
 Location NW 1/4 Sec. 17 Twp. 31S Range 34W  
 Owner Gale Young name address Moscow, Kansas  
 Nature of Deposit Dry Accessibility Fair Site Located on Plate I  
 Status of Site Prospective site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained					Wash 200	G.F.	L.L.	P.I.					
				1/2	3/4	3/8	4	8					16	30	50	100	
				5	10	17	30	48	67	84	94	6.23	53				

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 633  
 Lab. No. 66-4893  
 Specific Gravity (Sat.) 32.5(A) (Dry)  
 Los Angeles Wear 0.99  
 Absorption 0.99 Soundness  
 Wt. Cu.Ft. 0.99 Str. Ratio  
 Remarks



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

Site No. SG+63 Date March, 1967  
Qsgi  
 Material Sand & Gravel County Seward  
 Location NE 1/4 Sec. 19 Twp. 31S Range 34W  
 Owner See Remarks name \_\_\_\_\_ address \_\_\_\_\_  
 Nature of Deposit DRY Accessibility Good Site Located on Plate I  
 Status of Site Prospective site; sampled

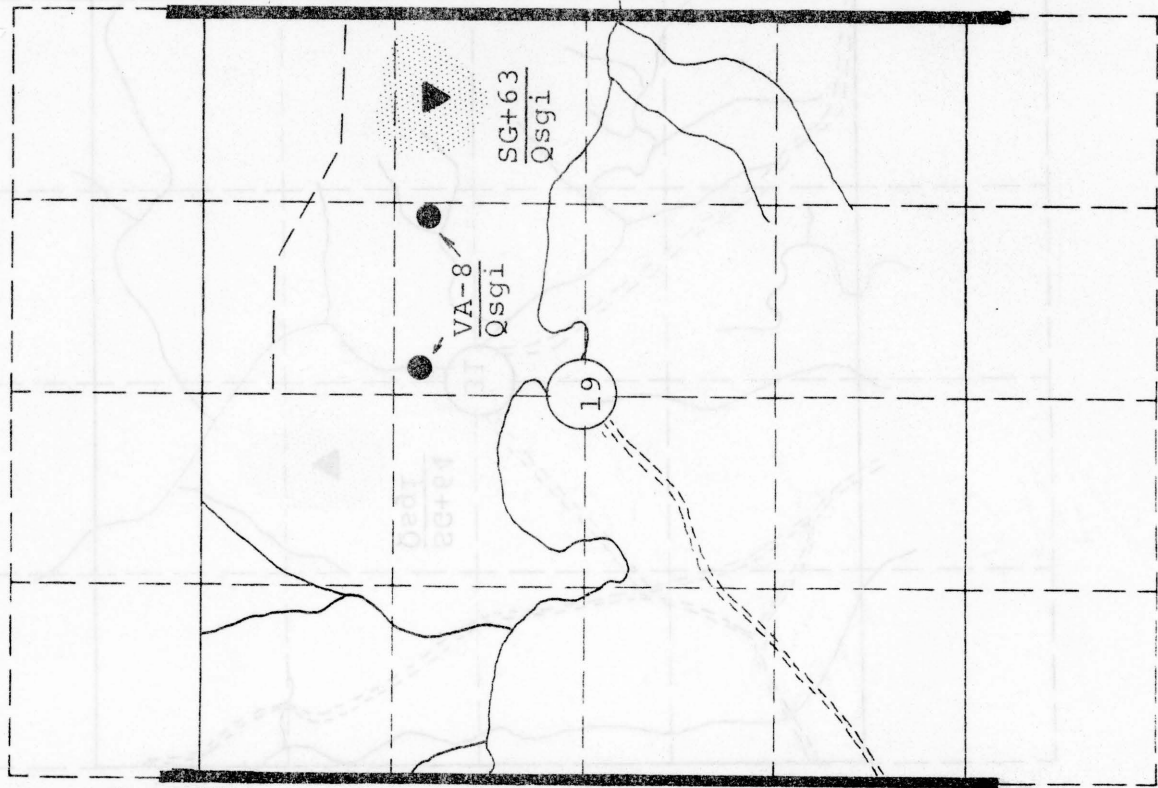
EXPLORATION DATA

Test Hole	Material Bottom of Hole	Depth of over-burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.
				1 1/2	3/4	3/8	4	8	16	30	50				
AV				3	5	12	24	43	73	95	99	4.7	3.53	18	2
3	4	13		1	5	10	20	36	67	94	99	3	3.32	17	0
7	2	15		6	11	18	32	51	74	94	99	5	3.67	18	3

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
 NO. 88-10  
 Specific Gravity (Sat.) 2.58 (Dry)  
 Los Angeles Wear 26.6(D)  
 Absorption \_\_\_\_\_ Soundness 0.99

Wt. Cu.Ft. 114.1 Str. Ratio 1 day 1.15, 3 day 1.14  
 Remarks Gradation data for test holes 3 & 7 represents the finest and coarsest material tested at this site. Edith Yarbrough, & W. E. Yarbrough, R. R. 1, Box 167 Eldon, Missouri



Scale: 1" = 1/4 Mile

MATERIAL SURVEY REPORT

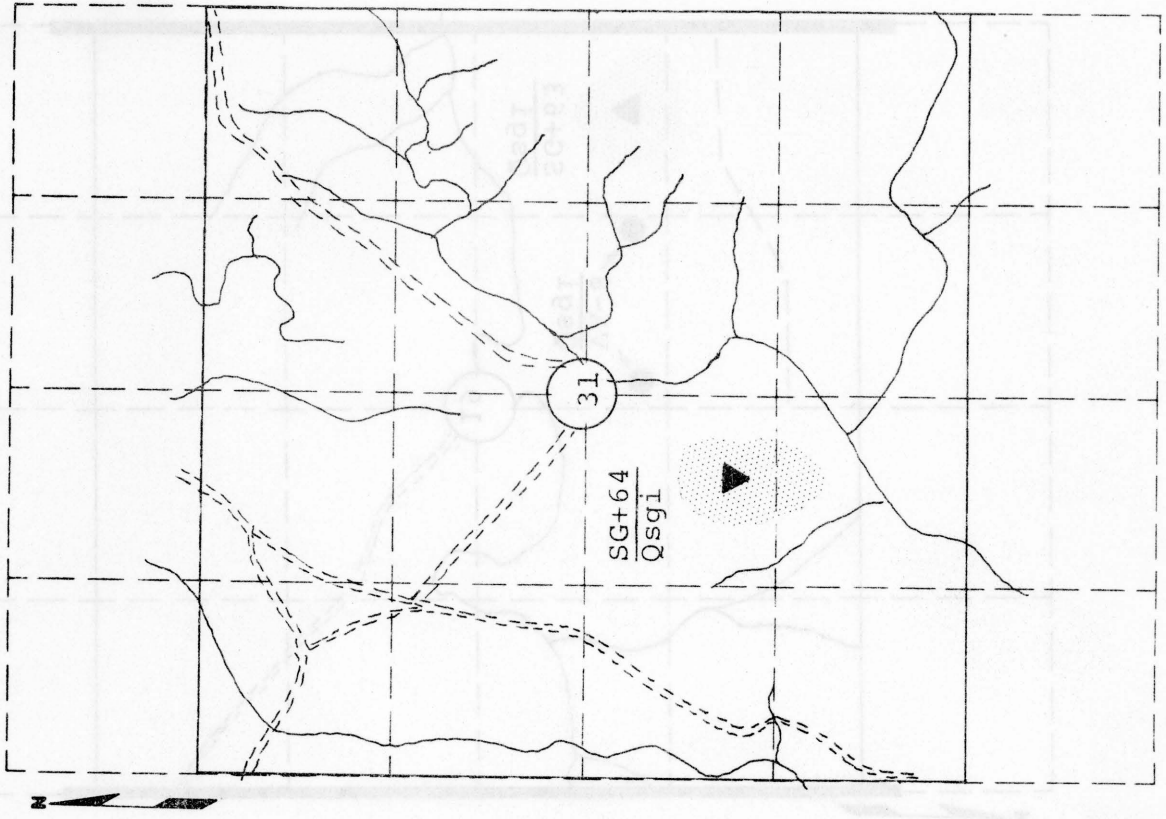
Site No. SG+64 Date March, 1967  
Qsg1  
 Material Sand & Gravel County Seward  
 Location SW $\frac{1}{4}$  Sec. 31 Twp. 31S Range 33W  
 Owner Mrs. F. M. Beaty, 811 N. Jordan, Liberal, Kansas  
 name address  
 Nature of Deposit Dry accessibility POOR Site located on Plate I  
 Status of Site Prospective site; sampled

EXPLORATION DATA

Test Hole	Material at Bottom of Hole	Depth of over-Burden	Depth of Material	Percent Retained								Wash 200	G.F.	L.L.	P.I.		
				1 1/2	3/4	3/8	4	8	16	30	50					100	
AV		1	9	0	0	7	14	25	45	71	90	96	3.2	3.49			
5		0	10	0	0	4	10	19	40	69	90	96		3.27			
6		1	8	0	0	8	16	29	49	74	91	95		3.62			

CORRELATION DATA

Geological Age Quaternary  
 Geological Source Grand Island Formation  
 Material Similar To Material reported on SHC Form 619  
No. 88-2  
 Specific Gravity (Sat.) 2.55 (Dry)  
 Los Angeles Near 36.2(B)  
 Absorption 0.97 Soundness  
 Wt. Cu.Ft. 113.0 Str. Ratio 1 day 1.12, 3 day 1.12  
 Remarks Gradation data for holes 5 & 6 represents the coarsest and finest material tested at this site.



Scale: 1" = 1/4 Mile



## GLOSSARY OF SIGNIFICANT TERMS

- A.A.S.H.O.: American Association of State Highway Officials.
- Absorption: Determined by tests performed in accordance with A.A.S.H.O. designation T 85.
- Aggrade: To raise the grade or level of a river valley or stream bed by depositing particles of clay, silt, sand, or gravel.
- Alluvium: A deposit of clay, silt, sand, or gravel laid down by flowing water.
- Aquifer: Water-bearing geologic unit.
- Arkosic gravel: Gravel composed of mineral fragments derived from weathered granite.
- Caliche: A secondary calcium carbonate accumulation prominent in some unconsolidated deposits.
- Colluvium: Heterogenous mixture of material resulting from the transportation action of gravity (e.g. talus at the base of a slope).
- Geologic period: A unit of geologic time (e.g. Mississippian, Pennsylvanian, and Permian are examples).
- Geologic unit: Term used in this report to denote a geologic formation or deposit.
- Gradation factor: The value obtained by adding the percentages of material retained on the 1 1/2", 3/4", 3/8", 4, 8, 16, 30, 50, and 100 sieves respectively and dividing the sum by 100.
- Igneous rocks: Rocks produced under conditions involving great heat as rocks crystallized from a molten material.
- Light type surfacing: A surface course constructed from aggregate which is not bound by water, cement, or bituminous material.
- Liquid limit: Determined by tests performed in accordance with section Y1-18 of the State Highway Commission of Kansas Standard Specifications, 1966 edition.
- Los Angeles wear: Determined by tests performed in accordance with A.A.S.H.O. designation T 96 as modified by section Y1-14 of the State Highway Commission of Kansas Standard Specifications, 1966 edition.
- Material source bed: A particular geologic unit, consolidated or unconsolidated, that provides material for construction purposes.

Metamorphic rock: Rock which has been crystallized or otherwise altered by intense heat and pressure.

Open materials site: A pit which has produced or is producing construction material.

Plastic index: Determined by tests performed in accordance with section Y1-18 of the State Highway Commission of Kansas Standard Specifications, 1966 edition.

Pleistocene Series: Deposits laid down during the Quaternary Period.

Prospective materials site: A geographical location where the geologic conditions are favorable for the discovery of construction material.

Soundness: Determined by tests performed in accordance with section Y1-15 of the State Highway Commission of Kansas Standard Specifications, 1966 edition.

Specific gravity: Determined by tests performed in accordance with A.A.S.H.O. designation T 84 for sand and gravel and T 85 for crushed stone.

Terrace deposit: A plain built up by the deposition of sediments by water.

Unconsolidated deposits: Deposits of clay, silt, sand, or gravel. These deposits may be laid down by wind or water action.

Wash: (Material passing the no. 200 sieve) Determined by tests performed in accordance with A.A.S.H.O. designation T 11.

Weight per cubic foot: Determined by tests performed in accordance with A.A.S.H.O. designation T 19-45.

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