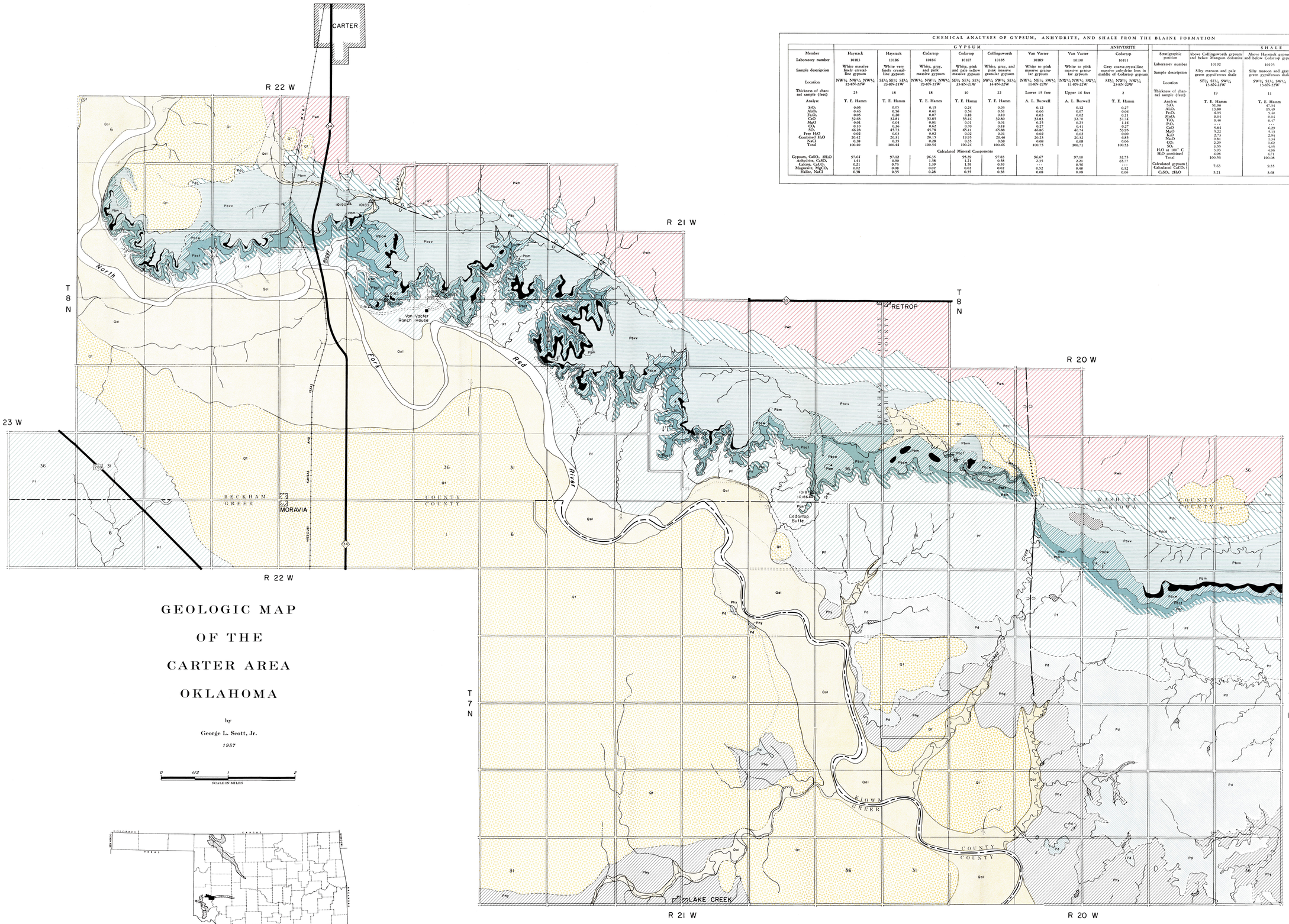


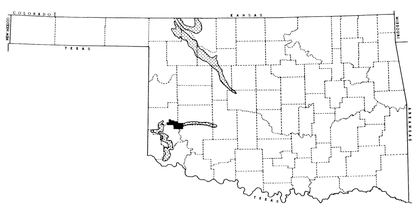
GEOLOGIC MAP OF THE CARTER AREA OKLAHOMA

by

George L. Scott, Jr.

1957

0 1/2 1 2
SCALE IN MILES



INDEX MAP OF OKLAHOMA SHOWING OUTCROP OF THE BLAINE GYPSUM (STIPPLED) AND LOCATION OF MAPPED AREA (BLACK).

CHEMICAL ANALYSES OF GYPSUM, ANHYDRITE, AND SHALE FROM THE BLAINE FORMATION

	GYPSUM							ANHYDRITE
Member	Haystack	Haystack	Cedartop	Cedartop	Collingsworth	Van Vacter	Van Vacter	Cedartop
Laboratory number	10183	10186	10184	10187	10185	10189	10190	10191
Sample description	White massive finely crystalline gypsum	White very finely crystalline gypsum	White, gray, and pink massive gypsum	White, pink and pale yellow massive gypsum	White, gray, and pink massive granular gypsum	White to pink massive granular gypsum	White to pink massive granular gypsum	Gray coarse-crystalline massive anhydrite lens in middle of Cedartop gypsum
Location	NW¼ NW¼ NW¼ 23-8N-22W	SE¼ SE¼ SE¼ 25-8N-21W	NW¼ NW¼ NW¼ 23-8N-22W	SE¼ SE¼ SE¼ 35-8N-21W	SW¼ SW¼ SE¼ 14-8N-22W	NW¼ NE¼ SW¼ 11-8N-22W	NW¼ NW¼ SW¼ 11-8N-22W	SE¼ NW¼ NW¼ 23-8N-22W
Thickness of channel sample (feet)	25	18	18	10	22	Lower 15 feet	Upper 16 feet	2
Analyst	T. E. Hamm	T. E. Hamm	T. E. Hamm	T. E. Hamm	T. E. Hamm	A. L. Burwell	A. L. Burwell	T. E. Hamm
SiO_2	0.05	0.05	0.15	0.24	0.03	0.12	0.12	0.27
Al_2O_3	0.46	0.56	0.61	0.54	0.61	0.06	0.07	0.04
Fe_2O_3	0.05	0.20	0.07	0.18	0.10	0.03	0.02	0.23
CaO	32.63	32.81	32.85	33.14	32.80	32.83	32.70	37.74
MgO	0.01	0.04	0.01	0.01	0.01	0.25	0.25	1.14
CO_2	0.10	0.36	0.62	0.70	0.18	0.27	0.41	0.27
SO_3	46.28	45.73	45.78	45.11	45.88	46.86	46.74	53.95
Free H_2O	0.02	0.03	0.02	0.02	0.01	0.02	0.02	0.00
Combined H_2O	20.42	20.31	20.15	19.95	20.46	20.25	20.32	6.85
NaCl	0.36	0.35	0.38	0.35	0.36	0.08	0.08	0.66
Total	100.40	100.44	100.54	100.24	100.46	100.75	100.71	100.55
Calculated Mineral Components								
Gypsum, $CaSO_4 \cdot 2H_2O$	97.64	97.12	96.35	95.99	97.83	96.67	97.10	32.75
Anhydrite, $CaSO_4$	1.41	0.90	1.58	1.21	0.58	2.35	2.21	65.77
Calcite, $CaCO_3$	0.21	0.73	1.39	1.70	0.39	---	0.36	---
Magnesite, $MgCO_3$	0.02	0.08	0.02	0.02	0.02	0.52	0.48	0.52
Halite, NaCl	0.38	0.35	0.28	0.35	0.38	0.08	0.08	0.05

	SHALE		
Stratigraphic position	Above Collingsworth gypsum and below Mangum dolomite	Above Haystack gypsum and below Cedartop gypsum	Above Cedartop gypsum and below Collingsworth gypsum
Laboratory number	10192	10193	10194
Sample description	Silty maroon and pale green gypsiferous shale	Silty maroon and gray-green gypsiferous shale	Silty maroon and green gypsiferous shale
Location	SE¼ SE¼ SW¼ 13-8N-22W	SW¼ SE¼ SW¼ 13-8N-22W	SE¼ SE¼ SW¼ 13-8N-22W
Thickness of channel sample (feet)	19	11	7.5
Analyst	T. E. Hamm	T. E. Hamm	R. O. Slate and T. E. Hamm
SiO_2	51.96	47.54	47.96
Al_2O_3	15.80	15.49	15.97
Fe_2O_3	4.94	5.40	5.30
TiO_2	0.64	0.64	0.64
MnO	0.46	0.47	0.46
P_2O_5	---	---	0.08
CaO	5.84	6.29	9.45
MgO	5.22	5.13	3.12
K_2O	2.73	2.94	2.05
Na_2O	0.81	1.34	1.10
CO_2	2.29	1.62	5.89
SO_3	3.54	4.35	2.09
H_2O at 105° C	3.93	4.96	3.87
H_2O combined	6.98	6.71	5.82
Total	100.56	100.08	100.12
Calculated gypsum	7.63	9.35	4.50
Calculated $CaCO_3$	---	---	---
$CaSO_4 \cdot 2H_2O$	5.21	3.68	15.40

EXPLANATION

QUATERNARY — *Pleistocene and Recent*

Qal — ALLUVIUM
(Sand, silt, and clay on flood plains of present streams)

Qt — TERRACE DEPOSITS
(Mainly high terrace sand.)

Unconformity

Pwh — WHITEHORSE GROUP
Undifferentiated
(Mostly red sandstones and siltstones of the Marlow formation below and the Rush Springs sandstone above. U pper most part not exposed in map area.)

Unconformity

Pdc, Pbr — DOG CREEK SHALE
(Red, brown, and green gypsiferous shale containing thin beds of light gray, fine-grained dolomite. The most conspicuous dolomite bed (Pbr) is near base in eastern part of map area. Thickness: 85 feet.)

SYSTEM — PERMIAN — *El Reno Group*

Pbvv, Pbm, Pbcr, Pbct, Pbc — BLAINE FORMATION
(Interstratified beds of white gypsum, gray dolomite, and red and green shale, divided into the following mapped units:
Pbvv: Van Vacter gypsum member; massive white gypsum, 85 feet thick in central part of map area.
Pbm: Mangum dolomite member; gray limy dolomite 1-5 feet thick, typically weathering to honeycombed pattern.
Pbcr: Collingsworth gypsum member; massive white gypsum 22 feet thick, underlain by an unnamed gray dolomite 1 foot thick and overlain by an unnamed red shale unit generally 15 feet thick.
Pbct: Cedartop gypsum member; massive white gypsum 7-20 feet thick, underlain by a yellowish-weathering limestone 1-2 inches thick and overlain by a red and green shale unit 6-18 feet thick.
Pbh: Haystack gypsum member; massive white and gray gypsum 18-32 feet thick, overlain by an unnamed red shale unit averaging 14 feet thick.
All the gypsum members of the Blaine formation are thin or absent in the eastern part of the map area, where they grade into shales.)

Pf — FLOWERPOT SHALE
(Red, brown, and green gypsiferous shale containing thin platy dolomite beds and thin chalky gypsum beds. Thin Kiser and Cheney gypsum members in upper part of formation are not mapped. Thickness: 165 feet.)

Pd — DUNCAN SANDSTONE
(Gray, cross-bedded, very fine-grained, dolomitic sandstone about 28 feet thick.)

Unconformity?

Phy — HENNESSEY SHALE
(Red and yellowish gray shale. Uppermost 40 feet exposed in map area.)

D — U — Fault
Dashed where inferred
Dotted where concealed
U, Upthrown side
D, Downthrown side

Contact between formations; dashed where contact is approximate, dotted where contact is covered.

Strike and dip of stratified rocks

Paved road

Improved road

Unimproved rural road

U.S. highway

State highway

Railroad

Perennial stream

Intermittent stream

Intermittent lake or pond

10187 △ Location of analyzed channel sample, showing laboratory number.

BASE COMPILED FROM 1942 AND 1950 AERIAL PHOTOGRAPHS