PROGRESS REPORT

September, 1959

Docket No. OME-6020

Contract No. 14-23-090-2002

Myers Prospect, Smyth Co., Va.

Roland F. Beers, Inc. Troy, New York

A section of the Ordovician Beekmantown Fm., measured along County Road #645, Myers Prospect, Smyth County, Virginia.

Lithology	Thickness
76. gray-green shale (strike N.45°W.; dip 29°SW.)	0' 2"
75. medium-bedded, buff, fine-grained, homogeneous dolomite; irregular and discontinuous (0-2") white chert 10" down; 1" irregular shale parting 29" down; lower contact of unit gradational.	4' 0"
74. gray, fine-grained, medium-bedded dolomite; laminated near base and carries minor sedimentary breccia from place to place; some mottling near top; chert balls and lenses in middle of unit.	2' 8"
73. gray-green shale.	0' 1"
72. tan, fine-grained dolomite.	1' 3"
71. medium-bedded, finely crystalline, faintly laminated, gray dolomite; sparse chert balls in lower 1/3 of unit.	1' 9"
70. well laminated, gray dolomite; numerous balls and lenses of white chert, elongate parallel bedding; chert concentrated along contact.	1' 10"
69. thick-bedded tan and gray dolomite; well laminated in lower ½ of unit, mottled in upper ½; chert balls occur in lower 6"; top contact well defined by highly sinuous stylolite seam with ¼" carbonaceous layer; relief on stylolite up to 6".	2' 10"
68. medium-bedded, blocky weathering, faintly laminated, buff dolomite; chert pods in upper 6" and concentrated on top contact (strike: N. 40° W.; dip 23° SW).	4' 4"
67. predominantly white-pink mottled chert with some residual tan dolomite.	0' 10"
66. cobbly weathering, fine-grained, buff dolomite.	2' 4"
65. white to pink mottled chert.	0' 4"

64.	gray-green shaly parting	0' ½"-2"
63.	thin- to medium-bedded, faintly laminated, buff and gray dolomite; top 24" more massive and less laminated than remainder; blocky ("cuneiform") jointly conspicuous.	3' 5"
62.	medium-bedded, homogeneous, medium-crystalline, buff dolomite; occasional small barite mass.	2' 10"
61.	medium-bedded, thinly laminated, gray and buff dolomite.	3' 0"
60.	gray-green, dolomitic shale.	0' 1"-1½"
59.	medium-bedded, finely-crystalline, buff dolomite; occasional chert "eye" or small barite mass.	6' 1"
58.	gray-green shale and interbedded, medium-crystalline, tan dolomite.	0' 3"
57.	medium-bedded, faintly laminated, buff dolomite.	1' 11"
56.	gray-green shale.	0' 1"
55.	medium-bedded, finely-crystalline, faintly laminated, buff dolomite; sparse small barite masses.	4' 5"
54.	green weathering shaly dolomite and dolomitic shale (strike: N. 44° W.; dip: 30° SW).	0' 7"
53.	medium-bedded, medium-crystalline, tan dolomite; minor fracturing with attendant solution effects best developed in lower 1/3 of unit; barite masses throughout unit but most common in lower 1/3; 2"-4" bedded, white chert 38" down; ½" shaly parting 58" down.	9' 5"
52.	dark gray to green sedimentary breccia with irregular shaly zone at top (shaly zone may not persist); ½" to 1½" white, bedded chert at base.	≤ 1' 0"
51.	fine-grained, silty, laminated tan dolomite; sparse barite masses at base.	1' 0"
50.	medium-coarse, thick-bedded, splotchy gray-brown dolomite; fractured and carries vein dolomite and minor barite; stylolotic.	4' 6"

49. chert-dolomite-shale zone; fractured (low-grade breccia):
    5" chert and sugary dlm
    6" laminated gray dlm
    1"-3" sugary dlm with barite
    1" green shale
    1"-4" gray chert
    ½"-1" green shale — 1' 4"

48. medium-bedded; fine-grained, tan dolomite with white, gray, and pink chert balls and plates; 0-3" chert nodules at base with ½" green shale; minor barite masses (strike: N. 46° W.; dip: 23° SW). — 2' 1"

47. fine- to medium-grained, medium bedded, faintly laminated, buff to gray dolomite; occasional chert ball and minor barite masses; grain size increases with depth and becomes mottled; probable 2" chert in middle of unit; 2" green shale 36" up from base; 2"-3" green shale 53" up from base; white chert balls in dolomite for 18" zone beginning 53" up from base. — 18' 10"

46. very fine-grained, brown dolomite with minor barite. — 1' 3"

45. medium- to thin-bedded medium coarse, gray-brown, mottled dolomite; thin cherty layers 42" and 49" down; ½" shaly parting at basal contact; very minor barite. — 5' 4"

44. fine-grained (vaughanitic) gray limestone with 0-2" gray chert at top and scattered chert balls within unit. — 1' 0"

43. bedded gray chert with ½" green shale at base. — 0' 2"

42. fine-grained gray limestone; medium bedded; laminations best developed in middle of unit. — 5' 4"

41. thick-bedded, medium-grained, gray limestone; faintly laminated and occasionally mottled; ½" shale 57" down; sparsely distributed barite masses, some with FeS_2 rims; some beds in unit may be high magnesian limestones. — 9' 4"

40. thin- to medium-bedded, buff, homogeneous dolomite. — 6' 1"

39. laminated gray chert with ½" gray-green shale. — 0' 4"

38.	fine-grained, gray limestone with thin clay partings and laminae; partings weather in relief; "birdseye" limestone in top 36"; unit includes thin intraformational conglomerates.	7' 3"
37.	thin-bedded, medium-grained; tan dolomite; sparse barite balls.	1' 8"
36.	fine-grained, light to medium gray, thick-bedded limestone; contains shaly partings which weather in relief; sparse chert balls along bedding; carries gastropods about 24" down from top; thin limestone conglomerate at base.	6' 9"
35.	thin-bedded, gray limestone; shaly partings common, especially near top and base.	0' 9"
34.	thick-bedded, medium gray limestone; carries moderate fauna, including Lecanospira cf. L. compacta and breviconic cephalopods; unit contains minor chert and some shaly partings.	7' 11"
33.	thin-bedded, tan dolomite.	1' 6"
32.	thin-bedded, probably magnesian, gray limestone with shaly partings.	0' 9"
31.	thick-bedded, impure, gray limestone; faintly banded in part; contains occasional thin-bedded zone with shaly partings; minor amounts of barite in fractures and replacement pods; traces of fluorite; unit constitutes top of potential ore zone (strike: N. 40° W.; dip: 28° SW).	7' 1"
30.	shaly magnesian limestone; very thin bedded.	0' 4"
29.	covered area (old trench) along roadside section; probably mostly limestone.	±28' 0"
28.	light gray, recrystalline dolomite; mottled with white areas; gradational with unit below.	0' 9"
27.	thin-bedded, gray limestone; shaly partings common.	3' 11"
26.	shaly, gray-brown dolomite.	0' 5"
25.	thin- to medium-bedded; shaly partings common; zone of chert lenses 24" down.	7' 2"

24.	thick-bedded, medium-grained, buff to brown dolomite; lower contact gradational.	7' 4"
23.	thin- to medium-bedded, fine-grained, gray limestone with shaly partings.	3' 8"
22.	dolomite; top 8" medium coarse, brown, crystalline; remainder laminated, tan dolomite, fine-grained.	2' 0"
21.	fine-grained, gray, magnesian limestone carrying heavy white chert as lenses and irregular masses in lower one-half; lower contact dolomitized;	1' 6"
20.	medium- to thick-bedded, gray-brown dolomite; medium coarse; occasional chert ball along lower contact.	6' 4"
19.	very coarse-grained, gray limestone with heavy white chert from place to place, chert concentration in lower one-half of unit.	1' 2"
18.	fine-grained, gray limestone with center 3" tightly laminated; occasional chert ball along upper contact.	1' 3"
17.	medium-grained, medium-bedded, tan dolomite; lower 8" coarse recrystalline, grading laterally to gray, fine-grained limestone; limestone partly dolomitic.	2' 9"
16.	laminated, fine-grained, gray limestone with shaly partings; some coarse dolomite grains.	2' 0"
15.	massive, fine-grained, gray limestone; dolomitized along fractures; limestone grades laterally to tan, coarse recrystalline dolomite; stylolitic action prominent throughout.	1' 9"
14.	medium-grained, gray dolomite.	0' 9"
13.	fine-grained, light to medium gray limestone with partings common. (max.)	1' 0"
12.	gray-green shale and associated sporadically distributed chert lenses (max.)	0' 4"
11.	medium-bedded, gray and tan, fine to medium-coarse dolomite; occasional cherty zone, especially in upper and lower units.	7' 1"

10. bedded, white chert. (max.)	0' 2"
9. fine-grained, buff dolomite.	1' 4"
8. white to gray chert; ranges from bedded to individual nodules (max.)	0' 4"
7. light gray limestone with heavy chert; unit nearly all chert in places; 1" solid chert at base.	1' 1"
6. tan dolomite.	0' 5"
5. light gray limestone which is gradational laterally with medium-grained, tan, re-crystalline dolomite.	1' 2"
4. tan, medium-grained dolomite, with chert balls, grading laterally to fine-grained, gray limestone. (max.)	0' 13"
3. medium-bedded, fine-grained, gray limestone with shale partings on bedding; thin intra-formational conglomerates in lower 24"; 2"-3" basal conglomerate of shale in limestone (strike: N. 29° W.; dip: 26° S.W.).	5' 0"
2. calcareous, green-gray shale.	0' 8"
1. fine-grained, gray limestone, upper 2"-3" carries sand grains.	

DRILL LOG

Hole No.: Myers #1
Location: 30' S. 65° E. of 0 + 4 S.
Elevation:

Depth: 300'
Angle: -90°

Logged by: RSY

Core size:
0' - 6' soil
6' - 10' BX
10' - 300' AX std.

Depth			Lithology
0	-	6'0"	soil; no core.
6'0"	-	12'10"	fine-grained, buff dolomite; faintly laminated in part; stylolites common; lightly fractured; 1/4" shale parting with sand grains immediately above and below at 9'6"; 1/2" green shale at base.
12'10"	-	17'6"	tan dolomite, slightly more coarse grained than above; lightly mottled; stylolitic action common in top 15".
17'6"	-	21'2"	very fine-grained, nearly white (buff) dolomite; zone broken, core recovery about 12".
21'2"	-	25'9"	medium-fine, tan dolomite; FeS_2 along stylolite seams and in fractures 22'-23' est. 3-5% by volume; shaly partings (stylolitic ?) 44" and 48" down; lower 6" mottled.
25'9"	-	28'7"	tan, fine-grained dolomite; faintly laminated with gray bands; 2" intra-formational conglomerate with sand grains top 11" down; lower contact stylolitic; minor FeS_2 in fractures and along stylolites in and below conglomerate-sand zone.
28'7"	-	36'10"	fine-grained, gray and tan, laminated dolomite; soft-sediment structures common (faults and flowage folds); 4" intraformational conglomerate with sand top 31'7"; chert nodule at 33'0".

36'10"	-	39'1"	tan, fine-grained dolomite, faintly mottled in lower 6".
39'1"	-	39'3"	white chert with basal green-gray shale.
39'3"	-	54'11"	tan, fine-grained dolomite; faintly laminated; stylolitic near top; lightly fractured; 2" white-gray chert and thin shale top at 41'8"; 1" collapse breccia 47'0"; 2" shaly zone top 43'7"; chert ball at 52'0"; 1" gray-green shale 52'11"; laminations best 49'-52'; dolomite coarsest between chert at 52'0" and shale at 52'11".
54'11"	-	55'3"	shaly breccia zone.
55'3"	-	55'9"	buff, fine-grained dolomite.
55'9"	-	55'11"	white and gray chert.
55'11"	-	57'9"	faintly laminated, tan dolomite.
57'9"	-	57'10"	gray-green shale.
57'10"	-	61'9"	tan dolomite, much as unit above except that mottling is more prominent than lamination.
61'9"	-	62'0"	white and gray chert and dolomite.
62'0"	-	65'0"	tan, fine-grained, faintly laminated and mottled dolomite.
65'0"	-	65'1"	gray-green shale.
65'1"	-	66'5"	tan, fine-grained, faintly laminated dolomite.
66'5"	-	66'6"	gray shale.
66'6"	-	68'4"	laminated tan and gray dolomite.
68'4"	-	68'9"	chert-dolomite zone; 1" white and gray chert at top; 2-1/2" tan dolomite in center; 1-1/2" white and gray chert at base.

68'9"	-	70'5"	faintly laminated, tan dolomite; chert balls 5" and 9" down.
70'5"	-	70'6"	white chert.
70'6"	-	78'4"	fine-grained, gray-mottled tan dolomite; faintly laminated in places; chert ball 14" down; laminae well defined and prominent beginning with 76'.
78'4"	-	78'9"	white and gray chert.
78'9"	-	81'9"	tan, fine-grained dolomite; broken zone; small cavities with barite crystals; chert balls at 80'4" and 81'0".
81'9"	-	81'11"	shale and dolomite.
81'11"	-	82'9"	mottled gray-green and tan dolomite.
82'9"	-	84'3"	mottled tan and brown dolomite.
84'3"	-	92'10"	laminated tan and gray dolomite; mottling prominent in center of section; barite in 1/4" fracture at 89'5".
92'10"	-	93'3"	green shale and shaly dolomite.
93'3"	-	96'1"	faintly laminated and gray mottled tan dolomite; stylolites common; small barite masses in lower 18".
96'1"	-	96'2"	gray and white chert.
96'2"	-	99'4"	faintly laminated tan dolomite; 1/2" chert 98'2"; 1/2" chert 2" above base; base marked by 1/2" green shale.
99'4"	-	99'11"	mottled gray and brown dolomite.
99'11"	-	108'0"	faintly laminated tan dolomite; 1/4" shale 26" down; mottled in lower 12"; chert ball at 107'3".
108'0"	-	108'5"	gray-green shale.

108'5"	- 109'1"	medium-coarse, brown dolomite with finely disseminated FeS_2, especially in upper 3" (est. 5%).
109'1"	- 116'7"	fine-grained, tan dolomite, faintly laminated in places; solution effects prominent in center of section; 1/4" shales at 110'7" and 110'9"; 4" zone of barite and purple fluorite top 111'4"; 6" barite-fluorite zone top 112'10"; barite and fluorite on fracture at 116'0"; fluorite "shines" on fracture at 114'6"; trace FeS_2 in unit.
116'7"	- 118'5"	green shale-dolomite breccia-shaly dolomite-chert; minor disseminated FeS_2; chert in middle and base.
118'5"	- 119'0"	laminated gray and tan dolomite.
119'0"	- 123'2"	medium-coarse, brown dolomite, coarsest at top; 1" chert top at 122'7".
123'2"	- 125'4"	principally chalky white chert.
125'4"	- 129'4"	fine-grained, buff dolomite.
129'4"	- 137'0"	medium-coarse, brown, mottled dolomite.
137'0"	- 138'8"	medium fine-grained, laminated, tan dolomite; chert balls 6" and 15" down.
138'8"	- 139'0"	gray-green shaly zone.
139'0"	- 144'11"	medium-grained, gray and tan dolomite; laminated near top, but mottled throughout; 1/4" barite in fracture at 141'1".
144'11"	- 145'0"	green shale.
145'0"	- 147'6"	coarse-grained, brown dolomite; gradational with unit below.
147'6"	- 149'9"	medium fine-grained, gray to tan dolomite; fractured and mineralized with FeS_2 147'2"-149'3" (est. 10%).

149'9"	-	150'7"	gray and white chert; est. 15% FeS_2 in top 2".
150'7"	-	154'2"	gray-brown dolomite; generally well laminated except lower 10" where mottled; grain size coarser at top and base; FeS_2 along thin bedding fracture 30" down.
154'2"	-	154'4"	gray chert.
154'4"	-	157'6"	medium fine, rudely laminated, gray dolomite; 2" shaly zone 27" down; unit gradational with that below.
157'6"	-	160'9"	principally brown dolomite, some gray layers near top; rudely laminated; healed fracturing prominent; minor FeS_2 in fractures below 159'.
160'9"	-	161'1"	shaly green dolomite or dolomitic shale.
161'1"	-	165'8"	mottled and rudely laminated gray dolomite; sparse FeS_2 on fractures and along solution seams in lower 2'; 2" dolomite breccia in stylolite zone 1' from base.
165'8"	-	171'3"	medium fine, brown dolomite, lightly mottled or laminated with gray; healed fracturing prominent (low-grade breccia); minor FeS_2 in fractures, especially in interval 166'-168'; 1" chert with thin FeS_2 basal layer top 170'10"; 1" green shale 165'5"; chert ball at 166'2".
171'3"	-	171'6"	2" white chert with 1" green shale at base; 1/4" band FeS_2 at top of shale.
171'6"	-	173'6"	light gray, fine-grained limestone; clay partings prominent in lower 15"; 1" shaly zone 172'4"; first fluorite immediately below shaly zone; lower 14" carries minor (minus 5%) white and purple fluorite and pyrite; thin limestone breccia 173'0".
173'6"	-	173'11"	interbedded green shale, medium coarse, brown dolomite and shaly dolomite.

173'11" -	180'3"	brown dolomite with gray mottled areas; fractures prominent, healed with fluorite, barite and pyrite; prominent mineralized zones are: 1" at top of unit, 8" top at 174'9", 20" top at 176'0", chert ball at 179'9"; fractures and solution effects prominent in lower 18" but mineralization very low.
180'3" -	181'0"	white barite with minor white fluorite and pyrite.
181'0" -	181'9"	interbedded light gray limestone (middle), shaly limestone (top) and shale with pyrite (base); central limestone has 2" section of barite with white and purple fluorite.
181'9" -	183'2"	gray limestone with clay partings.
183'2" -	184'3"	gray limestone, mottled gray and brown limestone and gray shale; 5-10% pyrite in lower one-half of unit; 1/2" shale at base.
184'3" -	185'8"	tan dolomite; 4" calcite and barite with minor fluorite and pyrite at base; trace fluorite on fractures.
185'8" -	194'2"	light gray limestone; clay partings common; 2" shaly zone top at 187'9"; lower contact gradational through dolomitization.
194'2" -	196'4"	tan, laminated dolomite; medium coarse in top 4"; 1/2" shaly parting at base.
196'4" -	201'4"	gray limestone; well laminated with partings in top 12"; crinkly partings in interval 197'4"-198'6"; 1/2" intraformational conglomerate at base; remainder relatively pure, massive limestone with some stylolites.
201'4" -	202'6"	interbedded gray limestone and gray-green shale; sand grains 4"-5" down; 1/2" white chert 5" down; 3" green shale with sand grains in top 1" at base of unit.

202'6"	-	215'7"	tan dolomite; faintly laminated in places; some gray mottling.
215'7"	-	216'9"	medium coarse, mottled gray and brown dolomite.
216'9"	-	219'7"	light gray limestone with some shaly partings; thin intraformational conglomerate near base; lower contact gradational through dolomitization.
219'7"	-	221'1"	medium coarse, tan dolomite; top 9" of unit mottled, lower part well laminated; lower 3" carries sand grains; chert ball 220'8".
221'1"	-	227'8"	light gray limestone with clay partings common; pyrite specks and blebs in lower 30"; small chert lenses 227'1".
227'8"	-	227'10"	gray chert.
227'10"	-	236'6"	medium coarse, brown dolomite; finer grained near base; some areas mottled with white vein dolomite; 18" oxidized zone starting 4" down.
236'6"	-	237'4"	light gray, recrystalline dolomite with minor shaly partings.
237'4"	-	237'7"	light gray limestone with clay partings.
237'7"	-	239'6"	mottled brown limy dolomite with green shale partings.
239'6"	-	241'5"	laminated tan dolomite.
241'5"	-	244'0"	coarse grained, brown dolomite; thin white cherts in lower 10"; 1/4" oolitic chert 243'8"; barite (?) in thin fractures.
244'0"	-	247'9"	mottled and rudely laminated, gray and tan dolomite.
247'9"	-	248'3"	gray and white chert.
248'3"	-	249'2"	dolomite as above, gradational with unit below.

249'2"	-	250'5"	coarse-grained (recrystalline), light brown dolomite.
250'5"	-	251'1"	laminated gray dolomite.
251'1"	-	251'2"	gray chert.
251'2"	-	251'10"	medium coarse, gray and brown dolomite; becomes mixed limestone and dolomite in lower 2".
251'10"	-	264'10"	gray limestone; shaly partings common; thin intraformational conglomerates common; unit oxidized in lower 18"; 3/4" gray chert at 257'.
264'10"	-	266'6"	contorted limy dolomite carrying thin shales in lower 6".
266'6"	-	267'9"	light gray limestone carrying 10-15% pyrite.
267'9"	-	268'1"	medium coarse, brown dolomite.
268'1"	-	272'0"	medium fine, tan, laminated dolomite; fractured and oxidized in lower 1'; chert ball 2" up from base.
272'0"	-	273'1"	medium coarse, mottled, brown and white dolomite.
273'1"	-	273'3"	gray and brown chert.
273'3"	-	273'10"	tan, laminated dolomite with 1" gray chert 1" up.
273'10"	-	282'4"	fine-grained, light gray limestone; clay partings and intraformational conglomerates common; 1/2" chert top at 275'4"; 1" chert top at 275'7"; 1" chert top at 280'3" (note 1' core loss 274'-275').
282'4"	-	282'9"	limy, gray shale (dip 15°-18° true).
282'9"	-	283'1"	limestone conglomerate with sand grains.
283'1"	-	294'2"	light gray limestone; clay partings common in upper 2'; 289'2" marks the top of two 3" cherts separated by 1" limestone; 3" limestone with sand grains subjacent to lower chert.

294'2"	-	294'4"	finely interbedded gray shale and limestone.
294'4"	-	294'8"	gray limestone.
294'8"	-	296'6"	broken zone (low-grade breccia) of limestone, vein dolomite, recrystalline dolomite, shaly partings and minor pyrite.
296'6"	-	297'0"	oxidized cave debris (spongy calcite).
297'0"	-	298'0"	cavern.
298'0"	-	300'0"	oxidized light gray limestone (and spongy calcite) with 1/2" limonite on the cavern floor at 298'.

* * * * TDA - 300' * * * *

DRILL LOG

Hole No.: Myers #2
Location: 2.25N / 2.10W
Elevation:

Depth: 250'
Angle: -90°
Logged by: RSY

Core size:		
	0' - 10'	soil
	10' - 15'	BX std.
	15' - 250'	AX std.

Depth		Lithology
0	- 10'0"	soil; no core.
10'0"	- 20'0"	mostly tan, fine-grained dolomite; unit laminated near top and bottom, mottled 13'-17'; fractures prominent 18½'-20', some calcite-healed but mostly with carbonaceous material; 1" white chert at about 11'.
20'0"	- 20'4"	gray-green shale and dolomitic shale.
20'4"	- 34'6"	principally buff to tan, fine-grained dolomite; unit is nearly massive in top ½, faintly laminated in lower ½; 1' fractured zone with carbonaceous material top at 22'; 2' fractured zone top at 30'; minor calcite eyes in unit; 1" white chert 25'9"; ½" white chert at 34'0".
34'6"	- 34'11"	gray-green shale; pyritic in lower 2½".
34'11"	- 45'2"	medium fine- to medium coarse-grained, tan to brown dolomite; coarsest at top (recrystalline for upper 6"); 3" shaly, fractured zone top at 36'1"; entire unit fractured, many cracks healed with chert; some low-grade breccia areas; ¼" shale at 38'3"; solution effects common; lower 4" of unit brecciated.
45'2"	- 45'11"	sedimentary breccia, gray-green shale and chert.
45'11"	- ≤50'0"	mostly coarse-grained, sugary, buff dolomite; 2" gray chert at about 46'6" (18" core recovery in the interval 47'6"-51'0").

~50'0"	- 52'8"	fine-grained, tan, faintly laminated dolomite, gradational above and below.
52'8"	- 62'3"	coarse-grained, sugary, brown and tan mottled dolomite; chert balls at 60'; 2" brown-white chert 31" up from base; 5" chert (4" chalky, 1" clear) top 25" up from base; dolomite finer-grained below lower chert.
62'3"	- 65'0"	fine-grained, gray limestone; shaly partings common; dolomitized toward base.
65'0"	- 65'6"	medium fine, brown dolomite.
65'6"	- 66'11"	laminated, fine-grained, gray limestone; green shaly partings; lower contact gradational.
66'11"	- 71'2"	medium fine, gray and tan dolomite; faintly mottled; fractures in middle of unit; sparse sand grains in lower 1" of unit.
71'2"	- 71'5"	gray-green shaly, white chert and thin dolomite.
71'5"	- 74'0"	medium coarse, recrystalline, brown, mottled dolomite; lower contact gradational.
74'0"	- 76'7"	tan dolomite; faintly laminated.
76'7"	- 77'8"	fine-grained, gray limestone; gray chert balls in top 2"; ¼" gray shale at base.
77'8"	- 77'11"	banded gray chert, shaly at base.
77'11"	- 80'0"	fine-grained, gray limestone; shaly partings.
80'0"	- 92'6"	medium fine, well laminated, gray and tan dolomite; ½" shaly parting 83'7"; unit mottled from place to place; calcite eyes in lower ½ of unit; 1" gray-green shale 88'8"; mottling becomes prominent below 90'.
92'6"	- 92'8"	gray and white chert.

92'8"	- 98'6"	fine-grained, buff dolomite; massive; minor pyrite along stylolites; very faintly laminated.
98'6"	- 98'8"	limy, gray-brown shale.
98'8"	- 106'1"	gray limestone; shaly partings common; 4" intraformational conglomerate top 100'10"; fractures carry calcite; very minor pyrite about 105'.
106'1"	- 108'4"	medium fine, brown dolomite; fractured in top 6"; 2" white chert 3" up; lower 3" contorted.
108'4"	- 123'4"	fine-grained, gray limestone; minor shaly partings; 2" brown chert top 14" down; fractures carry calcite; ¼" oxidized, gray shale parting 114'6"; limestone medium fine-grained from place to place.
123'4"	- 124'10"	medium fine, slightly oxidized, brown dolomite; faintly laminated; stylolitic; thin shaly parting at base; chert ball at top contact.
124'10"	- 134'4"	fine-grained, gray limestone; some shaly partings; oxidized in top ½ of unit; ½" shale parting 126'11"; limestone slightly coarser-grained below 128'6"; 2" shaly zone top 57" down.
134'4"	- 135'1"	medium coarse, brown and gray dolomite; 4" fractured zone with calcite near base.
135'1"	- 135'5"	limy, gray-green shale.
135'5"	- 138'6"	gray limestone; shaly partings common in upper ½; shaly parting at base.
138'6"	- 151'0"	faintly laminated, somewhat mottled, tan dolomite; numerous sandy zones, best developed in the interval 140'2"-142'2"; grain size increases with depth; lower contact gradational.
151'0"	- 152'6"	medium coarse, gray and brown dolomite.

152'6" - 155'0"	medium coarse, brown dolomite; minor fracturing.
155'0" - 159'2"	coarse-grained, brown and white mottled, recrystalline dolomite; minor fracturing; ½" green shaly zone 8" down; pyrite seam 22" down; unit finer-grained and oxidized in lower 12".
159'2" - 166'3"	gray limestone; medium fine; ½" chert 9" down; minor shaly partings; ¼" white chert 165'7"; 1" white chert top 165'10".
166'3" - 166'5"	white and gray chert.
166'5" - 175'0"	medium coarse, oxidized, gray and tan dolomite; calcite eyes; unit faintly laminated, but mottling predominates; trace barite; 6" gray dolomite (brecciated) at base of unit.
175'0" - 175'2"	sedimentary breccia; remainder shale and limestone.
175'4" - 176'0"	fine-grained, gray limestone; lower 4" dolomitic.
176'0" - 178'2"	medium coarse, brown and gray dolomite; lightly fractured 1' from base; 2" gray shaly zone top 8" down.
178'2" - 180'0"	fine-grained, laminated gray mottled tan dolomite; stylolitic action prominent; pyrite generally along stylolites.
180'0" - 180'3"	gray shale, white chert, and brown dolomite.
180'3" - 183'1"	medium coarse, mottled, brown dolomite; recrystalline in part.
183'1" - 187'8"	medium fine, gray mottled, tan dolomite; faintly laminated in part; 1" gray and white chert 185'7"; unit becomes coarse-grained, brown dolomite in lower 7".
187'8" - 187'10"	white chert.

187'10" - 196'2"	fine-grained, gray limestone; oxidized near top; 1" white chert 6" down; thin intraformational conglomerates; ½" gray chert 194'9".
196'2" - 196'7"	fine-grained, brown dolomite.
196'7" - 201'8"	gray limestone as above; ¼" oxidized shale 27" down.
201'8" - 210'4"	medium-grained, mottled gray-brown dolomite; ¼" white chert at top; faintly laminated; 1' recrystalline-type top 203'9"; unit oxidized in upper ½; minor dolomite eyes, some dolomite and calcite, some with pyrite.
210'4" - 210'7"	2" white chert with 1" green shaly-lime at base.
210'7" - 211'7"	fine-grained, gray limestone; 4" intraformational conglomerate at top.
211'7" - 212'1"	white chert zone; some residual gray limestone.
212'1" - 213'6"	fine-grained, gray limestone; ¼" green shale 8" down.
213'6" - 214'3"	laminated, gray dolomite; ½" gray chert 2" up; both contacts gradational.
214'3" - 219'3"	gray limestone; minor thin intra-formational conglomerates; shaly partings common; 1" white chert 217'11".
219'3" - 219'9"	6" mostly limy gray-green shale; minor white chert and sand grains.
219'9" - 250'0"	fine-grained, gray limestone; upper 3" intraformational conglomerate; shaly partings common in upper 2'; unit oxidized in middle; 6" intra-formational conglomerate top 222'9"; 3" zone with sand grains top 227'1"; 1" oxidized gray shale top 229'4"; 3" intraformational conglomerate with sand grains in matrix top 230'11"; 2" white chert top 237'2"; unit becomes more massive with depth; scattered sand grains in lower 1'.

********* TDA - 250' *********

DRILL LOG

Hole No.: Myers #3
Location: 0.0 / 1.25W
Elevation:

Depth: 225'
Angle: -90°
Logged by: RSY

Core size:		
	0' - 10'	soil
	10' - 20'	BX
	20' - 225'	AX

Depth		Lithology
0'	- 10'0"	soil; no core.
10'0"	- 10'6"	white chert.
10'6"	- 27'3"	tan dolomite, somewhat oxidized near top; faintly to well laminated; carries white chert balls; scattered sand grains about 18'3"; some calcite eyes; ½" green shale parting about 11'6"; ¼" shale parting at 21'6"; laminations best developed 16'-18'; 4" green shale and gray chert top at 26'9".
28'3"	- 30'0"	medium crystalline, brown dolomite; fractured, with vein calcite; some iron oxide (after pyrite).
30'0"	- 35'11"	gray dolomite; fracture system of two ages present, latest carry pyrite and calcite; stylolites common; minor chert in lower 8".
35'11"	- 38'6"	green shale, dolomite, gray limestone, and chert.
38'6"	- 41'0"	cavity.
41'0"	- 43'0"	medium coarse, mottled, tan dolomite.
43'0"	- 43'6"	white chert.
43'6"	- 49'6"	series of closely spaced caverns; 6" of buff dolomite and 1" white chert recovered.
49'6"	- 56'3"	medium coarse, tan dolomite with white chert mottling in places; chert balls from place to place.

56'3"	- 56'8"	white and gray chert.
		(15" core recovery 53'-56')
		(15" core recovery 56'-60')
56'8"	- 61'3"	rudely laminated gray and tan dolomite; occasional chert layer.
61'3"	- 61'9"	coarse-grained dolomite and gray-green shale; 2" of dolomite at top.
61'9"	- 66'5"	mottled gray and brown dolomite with 1" green shale zone and minor pyrite at base.
66'5"	- 67'10"	medium coarse, recrystalline-type brown dolomite.
67'10"	- 70'1"	medium fine, gray dolomite; 2" chert ball 68'4"; 2" white chert top 68'8".
70'1"	- 70'11"	white and gray chert; 1" of dolomite near base; thin gray shale at base of unit.
70'11"	- 71'11"	medium coarse, recrystalline-type brown dolomite, laminated; gradational with unit below.
71'11"	- 80'1"	medium-grained, well laminated, gray and brown dolomite with occasional chert ball; mottling prominent below 77'.
80'1"	- 80'11"	mottled white and brown dolomite, medium coarse; ½" gray shale at base.
80'11"	- 85'0"	mottled gray and brown, medium-grained dolomite; light fracturing filled with calcite.
85'0"	- 92'2"	medium- to fine-grained, tan dolomite; thin gray shale 7" down; unit faintly laminated.
92'2"	- 92'5"	gray and white chert and thin gray shale.
92'5"	- 96'1"	fine- to medium-grained, gray limestone; shaly partings common; 1" shaly zone 94'2".
96'1"	- 101'10"	gray dolomite, medium-grained; sparse chert balls; unit grades to predominantly brown at about 98'; lower 3" of unit is coarse-grained dolomite with basal 1" green shale.

101'10" - 115'0"	fine-grained, gray limestone; fine shaly partings prominent; gray chert ball 2' down; scattered thin intraformational conglomerates.
115'0" - 116'6"	fine-grained, gray dolomite; unit oxidized to brown in top 8"; ½" green shale parting at base.
116'6" - 134'6"	fine-grained, gray limestone; 4" zone of dolomitized limestone top 124'11".
134'6" - 135'0"	gray limestone and white chert with sand grains; thin shales.
135'0" - 144'9"	poorly laminated, medium-grained dolomite, gray where fresh, brown where oxidized; gradational with unit below.
144'9" - 148'2"	fine- to medium-grained, brown dolomite; occasional calcite eye.
148'2" - 149'5"	mottled brown and white, medium coarse dolomite.
149'5" - 151'6"	gray limestone; thin shaly partings common; gradational with unit below.
151'6" - 152'3"	medium coarse, brown dolomite.
152'3" - 158'1"	light gray, fine-grained limestone.
158'1" - 171'1"	gray, medium-grained dolomite, brown where oxidized near top; fracture near top carries chalky white chert, top 161'2"; minor fractures and vugs with calcite; unit laminated lower 18".
171'1" - 173'5"	coarse-grained, mottled, brown and white dolomite; gradational with unit below; 5" zone brown and white chert top 9" down; chert in part oölitic.
173'5" - 177'11"	gray and brown, medium-grained dolomite, laminated.
177'11" - 178'4"	gray and white chert with minor coarse-grained dolomite.
178'4" - 179'6"	laminated brown dolomite; 1" gray chert top 9" down.

179'6" - 187'9"	light gray limestone; scattered minor blebs of pyrite; thin intraformational conglomerates; some shaly partings; 4" gray shale zone with 1" gray chert at top 185'0"; 1" white chert top 186'; 1" shaly limestone top 186'6"; pyrite common between two shaly zones occurring as disseminated grains.
187'9" - 188'6"	gray and white chert.
188'6" - 189'0"	light gray, fine-grained limestone.
189'0" - 197'6"	medium-grained, gray dolomite; 1" gray chert top 22" down; gray chert balls prominent in interval 22"-30" down; 2½" bedded gray chert top 5" from base.
197'6" - 198'6"	medium coarse, brown dolomite.
198'6" - 198'9"	gray and white chert.
198'9" - 199'3"	fine-grained, gray dolomite.
199'3" - 199'10"	light gray limestone; gradational with unit below; 2" gray chert top 3" down.
199'10" - 200'10"	medium-grained, gray dolomite; 1" gray chert at base.
200'10" - 223'2"	fine-grained, gray limestone; shaly partings prominent from place to place; thin intraformational conglomerates; 2" zone of limy, gray shale top 206'1"; scattered sand grains in limestone for 2" below shale; 1" brown chert top 213'6"; sand grains in limestone for 1" below chert; 2" of shaly limestone, sand grains in top 1", at 215'6"; 2" with sand grains top at 217'1".
223'2" - 225'0"	rudely laminated, gray and brown dolomite.

******** TDA - 225' ********

DRILL LOG

Hole No.: Myers #4
Location: 2.35S / 1.65W
Elevation:

Depth: 250'
Angle: -90°
Logged by: RSY

Core size:		
	0' - 6'	soil
	6' - 10'	BX
	10' -250'	AX std.

Depth		Lithology
0'	- 6'0"	soil; no core.
6'0"	- 21'3"	tan dolomite, faintly laminated; 2" white chert top at 7'2"; white chert ball from place to place; 2" white and brown chert top 18'7"; scattered sand grains in dolomite for 2" above chert; 2" brown chert top 21'1".
21'3"	- 48'1"	mottled gray dolomite, medium-grained; unit moderately well laminated for 18" beginning at 23'9"; ½" shaly zone top at 25'7"; scattered sand grains immediately above shaly zone; laminations good in interval 29'-32'; 1" green shale top 31'11"; ½" chert top at 36'9"; 5" gray and white chert and thin green shales top at 38'0"; chert balls 45'4".
48'1"	- 49'1"	green shale, dolomite and gray and white chert; may be sedimentary breccia in part.
49'1"	- 50'0"	medium coarse, recrystalline-type brown dolomite.
50'0"	- 57'3"	medium-fine, gray dolomite; minor fractures with pyrite and pyrite along stylolite seams; 2" zone with chert stringers top 51'6"; ¼" shaly zone at 52'.
57'3"	- 57'11"	dolomitic green shale.
57'11"	- 59'0"	fine-grained, gray limestone; ¼" gray chert 1" up from base.

59'0"	- 59'4"	principally gray-green shale; some gray chert.
59'4"	- 59'10"	laminated, gray limestone; thin gray shale at base, intruded upward along fractures.
59'10"	- 63'8"	medium-grained, mottled brown dolomite; 1-1½" gray and white chert top at 62'10".
63'8"	- 64'6"	gray chert with 1½" included green shale near base.
64'6"	- 69'0"	gray to tan, medium-fine dolomite.
69'0"	- 92'5"	medium coarse, brown and gray dolomite; grain size decreases somewhat with depth; chert balls at 77'; chert ball at 79'8"; 1" gray chert at 80'; 4" zone with chert balls top 81'3"; 5" zone green and gray shale top at 82'10"; dolomite coarser grained for 18" below shaly zone; ¼" green shale at base.
92'5"	- 95'6"	medium coarse, recrystalline-type brown dolomite; gradational with unit below.
95'6"	- 99'3"	medium fine, gray-brown dolomite; ½" shaly zone at 96'2"; chert ball at 96'3"; 2" zone with chert balls top 97'1"; 1" chert top 97'8".
99'3"	- 100'8"	zone of mixed coarse-grained, mottled dolomite and laminated brown dolomite with abundant gray chert balls and 3" massive chert at base.
100'8"	- 101'6"	medium coarse, poorly laminated, brown dolomite; gradational with unit below.
101'6"	- 104'1"	well laminated, medium fine, gray and tan dolomite.
104'1"	- 104'4"	gray and white chert.
104'4"	- 105'5"	fine-grained, poorly laminated, limy dolomite and magnesian limestone.
105'5"	- 105'9"	white and gray chert.
105'9"	- 106'10"	laminated, brown dolomite with 1" magnesian limestone at base.

106'10" - 107'10"	zone of medium coarse, mottled, brown dolomite, chert and gray-brown dolomite; gradational with unit below.
107'10" - 131'7"	mottled, medium fine, gray and brown dolomite; transverse fracture with ½" calcite at 114'6"; 1" shaly zone top 114'9"; 8" zone recrystalline dolomite with minor pyrite top 114'10"; 2" breccia top 118'9"; 2½" white chert top 124'; ¼" green shale at 125'5"; ½" shaly zone at 126'9".
131'7" - 135'1"	gray-brown dolomite in a low grade breccia; breccia cemented by vein calcite, vein dolomite and minor pyrite; 3" massive chert at base.
135'1" - 136'6"	faintly laminated, tan dolomite.
136'6" - 137'4"	chert, gray dolomite and green shale.
137'4" - 137'10"	gray-brown dolomite.
137'10" - 140'5"	breccia of tan dolomite blocks in shaly, recrystalline dolomite; 2" gray chert at top; thin shale at base.
140'5" - 144'2"	gray limestone; 1" gray-green shale 2" down; 6" zone of limestone, green shale and sand top 141'9"; 2" green shale at base of unit.
144'2" - 167'6_	fine-grained, gray-brown dolomite; solution effects prominent for 2½' top 145'9"; unit oxidized for 6" top 150'6"; unit fractured and carrying calcite for 18" top 151'3"; unit highly oxidized 154'-160'; good breccia 154'6"-157'; ½" shale 161'; 1" white chert 163'6"; 4" shaly zone top 164'2"; recrystalline lower 18".
	(14" core recovery 165'6"-168'0")
167'6" - 169'6"	chalky-white chert with gray chert eyes; thin (1") shale at base.
169'6" - 171'6"	cavity.
171'6" - 179'3"	heterogeneous dolomite-chert unit; dolomites range from light brown recrystalline to dark mottled; white chalky chert scattered throughout unit, but best developed for 6" top 173'4".

179'3" - 180'3"	principally white, chalky chert; some residual dolomite and shale.
180'3" - 180'9"	medium coarse, brown dolomite; gradational with unit above.
180'9" - 181'1"	green-gray shale with dolomite; shale has flowed and injects dolomite below.
181'1" - 183'2"	medium fine, brown dolomite; faintly laminated; brecciated in upper 6".
183'2" - 184'6"	chert; top 8" is chert breccia of translucent gray-brown fragments in a white matrix, remainder white and gray chert.
184'6" - 185'3"	medium coarse, recrystalline-type, brown dolomite; minor white chert near top.
185'3" - 191'1"	medium-grained, gray-brown dolomite; oxidized to brown in upper 2' and lower 1'.
191'1" - 192'0"	coarse, brown, recrystalline-type dolomite with 2" white chert at top and 1" gray chert in center.
192'0" - 197'0"	fine-grained, gray limestone; shaly partings common; 2" gray chert top 192'2"; lower contact gradational.
197'0" - 199'2"	medium-grained, brown dolomite; residual shaly partings visible; 2" gray chert at base.
199'2" - 204'6"	fine-grained, gray limestone; 1½" gray chert top at 199'7"; 1" shaly zone top at 200'0"; thin intraformational conglomerates below 201'6"; 1½" gray chert at base; 1" shaly zone at 203'8".
204'6" - 215'9"	principally medium fine, gray-brown dolomite; moderately well banded; chert ball at 207'; unit oxidized for 1' centering at 209'6"; 1½" gray chert top at 213'0"; dolomite noticeably coarser grained near cherts, especially for 8" above base.
215'9" - 216'9"	gray chert.

216'9" - 218'9"	principally medium-grained, gray-brown dolomite; ½" gray chert 6" down; 6" recrystalline-type at base of unit.
218'9" - 220'10"	fine-grained, gray limestone; thin intraformational conglomerate at 219'6".
220'10" - 221'4"	medium-grained, brown dolomite; both contacts gradational.
221'4" - 245'6"	fine-grained, gray limestone; 4" zone of limestone, thin shale, intraformational conglomerate with sand grains top at 222'10"; 6" brown (oxidized) shale zone top at 225'3", contacts of shale zone show solution effects; 1" shale at 231'5"; 1" sand zone at 233'0".
245'6" - 249'0"	principally medium coarse, brown dolomite; unit oxidized throughout; 2" zone carrying sand grains top 6" down; 2" shaly zone top 8" down; scattered sand grains for 6" top at 246'11"; 5" white and brown chert top 247'4"; few scattered sand grains 248'3"-248'6".
249'0" - 250'0"	white and brown chert.

******** TDA - 250' ********

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FINAL REPORT

January, 1960

Docket No. OME-6020

Contract No. 14-23-090-2002

Myers Prospect, Smyth Co., Va.

Roland F. Beers, Inc. Troy, New York

-Introduction-

This report constitutes a final evaluation, by the Operator, of the drilling program recently completed on the Myers Prospect, Smyth County, Virginia. Termination of the contract, with authorization of final report, came by letter from R. A. Laurence, dated January 15, 1960.

In this report, certain general information will be restated or summarized, but the fundamental drilling data (logs) will not be reproduced, per se, from the Sept. 1959 and Oct. 1959 Progress Reports.

-Chronology-

The exploration contract (short form) covering cooperative drilling between OME and Beers, Inc. in Smyth Co., Virginia, was made on June 16, 1959. This contract called for work to begin on or before August 1, 1959, and be completed within six months of the date of the contract. At the request of the Operator, Amendment No. 1, dated July 17, 1959, was executed. This amendment provided that the beginning date be changed from August 1, 1959 to September 15, 1959, and that the date for completing the work be changed from six months to eight months from the date of the contract. As specified, work began at the Myers Prospect on September 2, 1959, with the selection of four drill sites. The drilling crew from Joy Manufacturing arrived at the property September 3, 1959, and bedrock drilling began September 8, 1959. Stage I drilling consisted of 2,050 linear feet (2,025' OME participation) distributed among eight drill holes. Drilling was recessed upon the completion of drill hole M-8, October 29, 1959. The drilling contractor removed the equipment from the property on October 29-30, 1959. A conference between Operator and Government representatives was held November 19-20, 1959, to formulate recommendations on the disposition of the program. Amendment No. 2, dated December 18, 1959, provided that drill holes, under certain conditions, could be finished EX size. This amendment was effective June 16, 1959.

By letter of December 31, 1959, to R. A. Laurence, Roland F. Beers, president of the operating corporation, requested termination of the contract. The Field Team concurred with the recommendations then pending and the contract was automatically terminated when Stage II operations were not approved. Notification of this action came by letter, R. A. Laurence to R. F. Beers, dated January 15, 1960.

-Drilling Data-

The drilling program on the Myers and Meek properties totalled 2,050 feet (covering all categories: soil, BX, AX, EX). The cost of 25 feet of drilling was borne solely by the Operator. Eight holes were drilled, ranging in depth from 225 feet to 300 feet. The physical characteristics of the holes are tabulated below:

No.	Location	Depth	Elevation*	Attitude
M-1	0.28S ∠ 3.9W	300'	2182.1'	-90°
M-2	2.25N ∠ 2.1W	250'	2203.1'	-90°
M-3	0.0 ∠ 1.25W	225'	2218.6'	-90°
M-4	2.35S ∠ 1.65W	250'	2222.5'	-90°
M-5	1.5N ∠ 0.5W	225'	2219.2'	-90°
M-6	1.5S ∠ 0.5E	225'	2229.4'	-90°
M-7	0.0 ∠ 2.5W	275'	2203.4'	-90°
M-8	0.5N ∠ 1.25W	300'	2220.4'	-60° N.45°E.

In order to provide fundamental data for future drilling in this general area, and geological environment, the following information was abstracted from the driller's reports.

Table 1. Drilling data.

Hole No.	Rate per drilling hour.
M-1	3.75 ft.
M-2	5.2 ft.
M-3	4.3 ft.
M-4	4.1 ft.
M-5	4.7 ft.
M-6	3.4 ft.
M-7	4.6 ft.
M-8	2.7 ft.

Moves (max. 500'): 8 hours each (average).
Reaming time: 44 hours
Breakdown: 12 hours
Down time, convenience of driller: 16 hours

The drilling was accomplished with a skid-mount, Joy 12-B machine rigged for standard equipment. Core recovery was satisfactory, especially in light of the rather abundant, clay-and-sand filled cavities encountered. All of the below-casing drilling was done AX size, with the exception of the lower fifty-three feet of M-6, which was completed EX.

*assumed.

The core, which is being stored at 114 W. Park Drive, Charlottesville, Va., will not be destroyed without proper notice to the Field Team.

-Geology-

The details of stratigraphy, as interpreted from the drill cores, have been reported in drill logs accompanying monthly progress reports. Certain elements in the stratigraphy are preserved in the less detailed cross-sections which make up part of this report.

The only faunal elements which could be identified with any certainty were depressed-spiral gastropods of the genus Lecanospira (cf. L. compacta). The occurrence of this form, and associated breviconic cephalopods, suggests that the mineralized zone is in the lower member of the Beekmantown, the so-called "Nittany limestone" member. The fine-grained, buff, massive dolomites above the limestone sequence are indistinguishable from beds identified as the Bellefonte member at other places in Virginia. No attempt is made here to correlate the mineralized sequence of the Beekmantown in Smyth County with the Lower Ordovician zinc-bearing strata of the East Tennessee district.

In terms of volume, the vast majority of the rock encountered in drilling was dolomite. The majority of the dolomite encountered was the massive, evenly bedded, tan to buff variety referred to by many as "primary dolomite". The other dolomite extreme was the coarser-grained, mottled variety referred to as "recrystalline". Use of the term "recrystalline", carries the connotation of a secondary origin, alteration and/or recrystallization of pre-existing limestones or dolomites. There is no evidence that the mineralizing fluids effected large scale recrystallization at this particular prospect.

The limestone beds exposed on the surface and cut by drilling are more or less typical Beekmantown limestones, very fine-grained, medium gray and with rather abundant clay partings.

Potential ore minerals, sphalerite-barite-fluorite, were noted in both dolomite and limestone host rocks.

Minor features of sedimentation include intraformational conglomerates, zones of sand grain concentration, sedimentary breccias, and thin shales. Sandy zones and

sedimentary breccias were used to correlate between drill holes.

The mineralized zones encountered in the drill holes were mineralogically those anticipated; pyrite-sphalerite-fluorite-barite-calcite; however, the relative abundance of each was not that anticipated. Sphalerite was detected in the drill core, but in trace amounts only. Several mineralized breccia zones of barite-fluorite were cut; in no case did these zones present mining widths of ore grade. Significant mineralization is always closely associated with zones of brecciation, presumably tectonic in origin.

The general paragenetic sequence, as determined by examination of dump rock and drill core, was: pyrite-sphalerite-fluorite-barite-calcite. The various stages of deposition show considerable overlap, and even reversals in sequence. The mode of occurrence is definitely "vein or breccia filling" and, with one exception, replacement was not an important process. This one exception may, however, partly account for the near-absence of sphalerite. In the polished specimens which displayed significant amounts of sphalerite it was noted that in practically every case the sphalerite was replaced to some extent by fluorite. In some cases, presently existing fluorite veinlets may represent replacement of sphalerite stringers. However, it is probable in most cases that no sphalerite was deposited prior to fluorite.

-Conclusions-

It is obvious from examination of the drill core that the target sought was not encountered. The drilling program, laid out on the basis of surface structure, fracture patterns, and former workings, was designed to test a breccia zone in the limestone sequence, which carried relatively large amounts of sphalerite. Although a breccia zone in limestone was cut in drilling (hole M-1), it carried no zinc sulfide and the detailed structure of the breccia was not the same as that exposed in dump rock. The thirty-foot interval of barite-fluorite in the top of drill hole M-8 was in well developed dolomite, in part brecciated.

The following possibilities exist:

1. the breccia zone from which the sphalerite-bearing limestone was extracted was so small that it was not cut in the drilling grid employed.

2. the breccia zone was encountered, but in a dolomitic, non-sphalerite-bearing sequence, and was, therefore, not recognized.

3. the breccia zone is in near-vertical attitude and strikes in a manner such that it lies between presently existing drill holes. If this is the case, the zone is probably fairly narrow, but with unrestricted length and depth.

4. the breccia zone parallels the strike (very minor structural terrace?) and lies between presently existing drill holes.

5. the breccia zone is a "chimney" type, perhaps only a few feet in diameter, but extending to considerable depth.

Because no outcrop, or float, of mineralized breccia is known, "possibilities" 3 and 4 seem rather remote. Based on present knowledge, "possibility" 1 appears the more likely.

Due to the nature of the drilling pattern, it is not possible to evaluate the economic potential of the barite-fluorite mineralization. It should be emphasized, however, that the only significant barite-fluorite zone mapped is that in the upper part of drill hole M-8.

At this time, the Operator plans no work of exploratory or development nature on the prospect.

* * *

5007

EXTRA COPY
DMEA

July 3, 1958

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

From: Field Team, DMEA, Region V, Knoxville, Tennessee

Subject: Field Examination Report, DMEA-5007 (Zinc-copper)
Roland W. Beers, Inc., Troy, New York
Myers Prospect, Smyth County, Virginia

Enclosed are the original and two copies of the field examination report on the Myers prospect.

Although the field examination was made on May 16, the lack of certain essential data necessitated a second visit, and it became impossible to complete the report before June 30. Much of the geologic interpretation, sections, etc., in this report represent work which should have been done by the Applicant's geologic staff and presented with the application. Had this been done, the field report and recommendations could have been submitted in time for full consideration by the Washington staff before the expiration of DMEA's authority on June 30.

The report proposes a somewhat different approach to the problem from that presented by the Applicant, because more emphasis is placed upon the probability of fracture-control of inferred ore shoots.

Although it may be totally unrelated to this prospect, it seems worth noting that the only known occurrence of intrusive igneous rocks cutting across Paleozoic sediments in southwest Virginia is in the Marion area, about four miles from the Myers prospect (See Virginia Geol. Survey Bull. 16-L, pp. 158 and 166).

We recommend approval of a contract as outlined in the report. It should be recognized that the plan and spacing of holes, as shown on figure 2 and discussed on pages 10 to 12 is tentative and subject to revision as work progresses.

Robert A. Laurence
Executive Officer

Reviewed by
DMEA OPERATING COMMITTEE

W. J. Lynch, Member
U. S. Bureau of Mines

RAL/mg
cc - Operating Committee (2)
Mr. W. J. Lynch
Mr. L. E. Shirley

(date)

UNITED STATES

DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

FIELD EXAMINATION REPORT, REGION V

DATE JUL 7 1958 DATE

DMEA-5007 (Zinc-Copper), MYERS PROSPECT
Smyth County, Virginia

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

L. E. Shirley, Mining Engineer
U. S. Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE

(date)

July 1, 1958

FIELD EXAMINATION REPORT

DMMA-5007 (Zinc-Copper, MYERS PROSPECT
Smyth County, Virginia

Applicant: Roland F. Beers, Inc., Troy, New York

SUMMARY

The recognition of significant amounts of sphalerite in breccia blocks and fragments in old dumps at the Myers barite mine in the Marion (Smyth County) district, Virginia suggests that the prospect may well be worth exploring for moderate size bodies of commercial zinc ore. In addition to sphalerite such ores will contain barite, fluorite, pyrite, and minor amounts of chalcopyrite; galena may also be present. The prospect lies near the long axis of the assymetrical, elliptical Marion dome. Ore bodies, if present, will probably be relatively narrow, pencil-like shoots in breccia zones formed by fractures that may be related to the folding of the dome. The most likely position for such ore bodies will be where the fractures form breccia zones in a favorable 120-foot thick stratigraphic unit of the Lower Ordovician Beekmantown formation. This unit consists of alternating limestone and "recrystalline" dolomite beds with suggestions of algal structures. The lithology of the country rock and the nature of the zinc-bearing breccia is very similar to that of the Mascot-Jefferson City and Copper Ridge districts of East Tennessee where commercial zinc ores are mined from beds of approximately the same stratigraphic position. The examiners recommend a program consisting of 4,000 feet of diamond drilling to explore the gross ore potential of the prospect area.

INTRODUCTION

Location and access

The Myers prospect is located in Smyth County, Virginia, about four miles due west of Marion, the county seat. (See fig. 1; also see Marion 7½' planimetric quadrangle, Virginia, scale 1:24,000) Access to the prospect is gained from U. S. Highway 11 by hard surfaced or graveled roads. The prospect area lies to the east and south of State Road 645 (Wassum Valley Road) about a half-mile north of Mt. Zion Church (figs. 2 and 3). It is the westernmost barite mine of the Marion (Smyth County) barite district (Edmundson, 1938, pl. 13).

History

The Myers prospect was worked extensively for barite during a period of several decades over 50 years ago. When active it was known as the Myers-L. Copenhaver mines (Edmundson, 1938, pp. 77-78). The amount of barite produced is not known, but the mines were said to be probably among the largest in the Marion district. The chief production was apparently from residual deposits mined from opencuts over a distance of more than 2,000 feet. However, some barite was won from bedrock occurrences some of which were mined underground from short adits and drifts and in one case from a shaft reported to have been almost 100 feet deep (figs. 2 and 3). No sulfide ores are reported to have been produced while the Myers-L. Copenhaver mines were producing barite, although a large amount of barite- and sphalerite-bearing breccia occurs on the dump between the adit and shaft (fig. 3) and was reported to have come chiefly from the stopes developed laterally from the shaft. Elsewhere in the district, however, a carload of copper ore (probably chalcopyrite with some malachite) is reported (Edmundson, 1938, p. 76) to have been mined from a shaft at the Henderlite mine at the easternmost end of the district, approximately seven miles east-northeast of the Myers prospect. As far as is known, the occurrence of sphalerite at the Myers prospect was first noted and considered significant by geologists of the U. S. Steel Corporation. U. S. Steel's plans for the exploration of the deposit apparently were abandoned when that company closed out its southwest Virginia exploration office in 1957 presumably because of the adverse economic condition of the zinc market. Knowledge of the sphalerite

mineralization at the Myers prospect was then passed along to the Applicant by the U. S. Steel's resident geologist at Marion. Leasing of three properties initiated in 1957 and the completion of geological and geochemical studies in early 1958 resulted in the application for DMEA assistance in exploratory drilling.

Property

The properties surrounding the Myers prospect and included in this application are the Myers, Meek, and Cullop tracts, totalling about 150 acres. The areal distribution of these tracts is shown on the property map (fig. 2). The area immediately involved in the exploration program is shown on figure 3. The Applicant's leases on the tracts were taken between September 5 and December 1, 1957. All leases (including an extension provision on one property) are to run for a period of at least three years. Final expiration dates are also shown on figure 2.

Field examination

The field examination of the Myers prospect was undertaken on the morning of May 16, 1958. The examination consumed a total of about four hours including travel time to and from Marion. The examiners were accompanied by Mr. V. R. Geyer, of the Applicant's geologic staff, and by Mr. V. J. Lynch, U. S. Bureau of Mines member of the DMEA Region V Field Team. The examiners spent an additional four hours at the prospect on June 20, 1958 to evaluate additional information submitted by the Applicant after the initial field examination.

Applicant

The Applicant, Roland F. Beers, Inc., has successfully completed DMEA contracts in the past and is currently operating a DMEA drilling contract in North Carolina (DMEA-4896).

GEOLOGY

Stratigraphy

The Myers prospect is in the Lower Ordovician Beekmantown dolomite and limestone formation about 450 to 500 feet below the unconformable contact with the Middle Ordovician Moshein limestone. Thus, the prospect is in rocks equivalent to the zinc-bearing upper part of the Knox dolomite group of East Tennessee. Direct correlation with the zinc-bearing formation of the Knox group in Tennessee is not attempted at this time, but it is likely that the prospect occurs in equivalents of the Kingsport formation. The lithology of the rocks in the vicinity of the Myers prospect is very similar to Kingsport sequences in the Copper Ridge and in the Mascot-Jefferson City zinc districts. Alternating dense limestone and "recrystalline" dolomite beds with suggestions of algal structures lie below a 1-foot thick bed of greenish shaly sedimentary chert breccia similar to the marker at the top of the "R" bed in Copper Ridge and to the "28" bed at Jefferson City. Above this sedimentary breccia are fine-grained dolomites with various sandy zones similar to the upper Kingsport and Mascot formations in Tennessee. The entire sequence of rocks in the target area are well exposed along the new cuts made in the recent widening of State Road 645 (fig. 3).

Structure

The Myers prospect lies on the southwest flank of the roughly elliptical Marion Dome in the Walker Mountain shingle or thrust-fault block (Cooper, 1936, pl. 14). In cross-section the dome is typically assymetrical with a steep dipping northwest limb and a gently-dipping southeast limb

after the habit of the majority of Appalachian Valley anticlinal structures. The trace of the long axis of the dome probably lies only a few hundred feet north of the prospect, apparently along the valley of Wassum Creek (fig. 3). In the immediate area of the prospect it has a trend of about S. 70° W. and a plunge of about 25° SW. The bedrock at the prospect has an attitude of about N. 40° W., 25° SW.

The bedrock barite and sulfide mineral occurrences at the Myers prospect are both fracture filling and replacement masses in breccia zones. The breccia zones appear to lie along two main sets of fractures, one of which trends about due north or a few degrees west of north and the other about due east or a few degrees south of east. The strongest brecciation probably occurs at the intersections of the strongest fractures of the two systems. The dips on these factures generally varies from about 70 degrees east or north, depending on the system, to vertical.

Mineralogy

The mineralogy of the zinc-bearing material at the Myers prospect is relatively simple in a fashion similar to the zinc ore in the East Tennessee deposits. The Myers material contains barite, sphalerite, pyrite, fluorite, and traces of chalcopyrite cementing breccia fragments of the country rock. Although most of the breccia fragments are limestone, a few fragments of dolomite or dolomitic limestone were noted. The material closely resembles specimens of Kingsport breccia ore from Tennessee except that the chief secondary gangue mineral is barite with a minor amount of fluorite rather than the usual white coarse crystalline dolomite. Preliminary study of the paragenesis suggests the following stages in the formation of zinc-bearing material:

1) formation of the breccia; (2) deposition of sphalerite and other sulfides in voids and partially replacing some of the brecciated material; and (3) filling of remaining voids and replacement of some breccia fragments by barite and fluorite.

The exposures along State Road 645 (fig. 3) show all of the minerals mentioned above except for the sphalerite. Barite, fluorite, and traces of pyrite fill narrow fractures in the strata above the greenish sedimentary breccia. Below this breccia, barite with some fluorite and pyrite, and rare traces of chalcopyrite occur both as fracture and vug fillings and as replacement masses. Some of the sedimentary structures interpreted to be of algal origin in the beds below the sedimentary breccia are hemispherical with the flat side down and have been replaced by coarsely crystalline barite with radial structure. Others of these hemispherical masses are relatively coarse "recrystalline" dolomite surrounded by fine-grained sediments.

Southeastward from the filled shaft (fig. 3) along the trend of the old open cuts fragments of barite and limonite are found in the old dumps. The amount of limonite appears to increase toward the southeast, suggesting that more sulfide may have been present in that direction.

GEOCHEMISTRY

The Applicant took an initial 20 soil or related samples from the Myers prospect and vicinity for zinc analysis to determine whether anomalous amounts of the metal occurred in the vicinity of the old barite workings. After the field examination in May, the Applicant took an additional 35 samples. Review of this geochemical data by the examiners

pointed up certain discrepancies between the analysis of the two sets of samples, which were pointed out to the Applicant. The samples were then reanalysed at McGill University. The two sets of analyses are compared in Table 1. The locations of the samples are shown on figure 3. Values (McGill data) of 25 ppm or greater zinc are contoured also on figure 3. With a background of 20 ppm zinc the maximum value is 4 times background. Review of the geochemical sample sites in the field shows that the entire area of the major anomaly (fig. 3) lies over old dump material, much of which contains the zinc-bearing breccia material from the old shaft. However, other anomalies lie outside of dump area and may have more significance than merely indicating the presence of zinc in spoil. The obvious N. 45° W. trend of the anomalies is probably due mostly to the orientation of the rectangular sampling grid. The relatively low value of soil zinc in all analyses may be due in part to the general shallowness of the sampling as most of the samples were taken from depth of about 18 inches rather than from 2 to 4 feet, depths commonly used by other Operators in Tennessee and Virginia. Thus, the samples taken at 18 inches are probably chiefly from the eberty "A" soil horizon rather than from the more clayey "B" horizon. It is the "B" horizon that in general presents a truer picture of the distribution of residual soil zinc.

Table 1.--Geochemical analyses of soil samples from the Myers prospect, Smyth County, Virginia

NOTE: Analyses listed in the column under "Beers" were made in the Applicant's laboratory at Troy, New York; analyses listed under "McGill" were made independently at McGill University, Montreal, Quebec.

Sample No.	Location	Zinc (ppm) Beers	Zinc (ppm) McGill
1	0 , 0	103	70
2	0 , 100-NE	82	20
3	0 , 100-SW	134	25
4	0 , 200-SW	62	20
5	0 , 300-SW	82	20
6	0 , 400-SW	92	40
7	200-SE, 0	92	20
8	200-SE, 100-SW	154	20
9	200-SE, 200-SW	134	25
10	200-SE, 300-SW	92	20
11	150-NW, 300-SW	113	10
12	150-NW, 200-SW	134	20
13	150-NW, 100-SW	154	30
14	150-NW, 0	185	55
15	300-NW, 0	205	80
16	300-NW, 100-SW	216	20
17	300-NW, 200-SW	98	15
18	300-NW, 300-SW	200	15
19*	780-NW, 290-SW	82	10
20	0 ,1225-SW	82	60
1A	(Same as Sample 7)	21-26	15
2A	400-SE, 0	41-41	15
3A	400-SE, 100-SW	51-41	20
4A	400-SE, 200-SW	62-56	15
5A	400-SE, 300-SW	103-92	15
6A	400-SE, 400-SW	72-67	20
7A	400-SE, 90-NE	51-51	20
8A	400-SE, 200-NE	51-62	20
9A	400-SE, 300-NE	113-92	25
10A	400-SE, 400-NE	113-92	30
11A	600-SE, 0	51-51	20
12A	600-SE, 100-SW	62-62	20
13A	600-SE, 200-SW	31-41	20
14A	600-SE, 100-NE	46-41	15
15A	600-SE, 200-NE	31-41	20
16A	600-SE, 300-NE	72-72	50
17A	600-SE, 400-NE	51-41	20
18A	200-SE, 400-SW	62-72	20
19A	200-SE, 500-SW	62-51	20

Table 1.--Geochemical analyses of soil samples from the Myers prospect, Smyth County, Virginia - Continued

Sample No.	Location	Zinc (ppm) Beers	McGill
20A	200-SE, 100-NE	31-51	20
21A	200-SE, 200-NE	41-51	20
22A	200-SE, 300-NE	31-51	20
23A	0 , 200-NE	41-56	20
24A	0 , 300-NE	51-67	20
25A	0 , 500-SW	41-51	10
26A	150-NW, 500-SW	51-51	15
27A	150-NW, 400-SW	31-51	20
28A	300-NW, 500-SW	51-46	15
29A	300-NW, 400-SW	31-41	20
30A	450-NW, 400-SW	31-41	15
31A	450-NW, 500-SW	41-51	20
32A	450-NW, 300-SW	31-41	10
33A	450-NW, 200-SW	82-72	15
34A	600-NW, 200-SW	62-62	10
35A	600-NW, 300-SW	82-82	15

*Sample 19 is "rock dust" from percussion drill-hole for blasting in road cut.

EXPLORATION

Drilling proposed by Applicant

As far as is known no previous exploration for zinc or other base metals has been conducted at the Myers prospect and vicinity. The Applicant proposed an exploration program consisting of 2,025 feet of diamond drilling in 10 holes with an additional 1,800 feet of drilling to follow significant ore trends should they be discovered. The drilling pattern proposed was to be an 250-foot centers in a rhombic grid. The presumed purpose of this grid pattern was to test the stratigraphic zone containing the zinc-bearing barite deposits at relatively widely spaced intervals. Apparently no emphasis had been placed on the possible importance of possible rake directions of breccia zones within the favorable stratigraphic zone. All holes planned were to be inclined at an angle of minus-70 degrees in order to penetrate the beds normal to the plane of stratification.

Drilling proposed by Field Examiners

The Field Examiners propose a program of approximately the same magnitude as that of the Applicant. However, a review of the geologic and geochemical data available suggests that more emphasis should be placed on possible zones of brecciation within the favorable stratigraphic sequence. Consequently, two intersecting exploration fences are proposed with each fence designed to penetrate a potential breccia zone. The suggested minimum spacing for the initial holes on each fence is 100 feet. However, as the possible ore shoots may be relatively narrow, it will be necessary to provide for drilling of a few selected intermediate holes on 50-foot centers. In addition, if a contract is granted, the examiners

believe provision should also be made to drill selected angle holes. The purpose of such angle holes will be to test more adequately, if necessary, for certain geologic structures if it is found that the possible ore bodies are more closely controlled by the steeply dipping fractures rather than by the favorable stratigraphic zone.

The positions of the drilling fences, as shown on figure 3, have been drawn tentatively along the indicated trends of two postulated favorable breccia zones. The rake sections (fig. 4) sketched along these zones show hypothetical intersections with other strong fracture zones, which loci may be more favorable for ore. The logical initial drill-hole site for the project, thus, is that of proposed Hole 5 at the intersection of the proposed fences. The order of subsequent drilling should not be arbitrary but rather should be based solely on the results obtained by the drilling of each hole and the reinterpretation of all data as each hole is completed. As reinterpretation may require changes in the drilling pattern, the proviso for such change should be in the contract, if such is granted.

The 10 tentative initial holes proposed would be vertical, in order to gain the maximum information possible on the attitude of bedrock. Their depths range from 100 to about 240 feet, averaging 180 feet and totalling 1,800 feet. Additional drilling in the amount of 2,200 feet for an ultimate total of 4,000 feet is also proposed. The additional footage will be necessary for: (1) possible needed deepening of any of the initial 10 holes if encountered ore extends deeper than anticipated; (2) the extension of either initial fence to the west or south; (3) selected intermediate holes on 50-foot centers;

(4) the drilling of additional holes or fences, if warranted by earlier results, elsewhere on the property; or (5) as mentioned above, the drilling of such angle holes as may be necessary to test for certain controlling structural conditions. Although the maximum depth anticipated in any of the first 10 proposed holes is about 240 feet, any of the five items listed above may require somewhat deeper drilling. The tentative bottom of each of the 10 initial holes should be about 150 feet (vertical penetration) below the greenish sedimentary breccia marker described in the section on stratigraphy. However, conditions encountered in drilling may require modification of this bottoming depth, and it is suggested that the maximum depth of any hole on the project be 500 feet, in order to permit sufficient latitude in the exploration.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion the examiners believe that the possibility for zinc- and possibly copper-bearing ores at the Myers prospect is well worth exploring. If such ores are found here, the potential for new sulfide districts in the Southwest Virginia region is considerably enhanced. The indications for the occurrence of such ores at the Myers prospect are as good or better than those of the prospects explored by the New Jersey Zinc Company with DMEA assistance (Beaver Creek, DMEA-4178; Porter Bank, DMEA-4174; and James-Woodruff, DMEA-4173) in the same general region.

Estimated costs for 4,000 feet of diamond drilling (AX-size or larger) and related expenses are given below. Although the project submitted by the Applicant was for "Zinc-fluorite", the examiners believe that the amount of fluorite is not sufficient for commercial possibilities. On the other hand the picture for copper is favorable because of the early

production of commercial-grade copper from another prospect in the same district. Thus, because lead may also be present in this type of deposit as well as the zinc and copper, provision is made in the cost estimate for assaying for all three metals, provided, of course, that minerals carrying any or all of these metals are recognized visually, or if the occurrence of large quantities of pyrite suggests that significant amounts of any of the three metals may be obscured.

Independent Contracts:

Diamond drilling 0-500 ft (including overburden)		
AX core, 4,000 ft @ $2.65	$10,600.00	
(EX drilling @ $2.50/ft)		
Building (rentals)		
Core storage shed . . . 3½ months @ $10/Mo. . .	35.00	
Miscellaneous costs (unit costs)		
40 samples for Zn, Cu, Pb @ $4.00/each	160.00	
Core boxes - 100 @ $3.00 each	300.00	
Total		$11,095.00
Incidental Allowances:		
4,000 ft @ $0.54/ft		2,157.00

Breakdown of various costs included in the incidental allowance, is as follows:

1 - Geologist, ⅓ time, 3½ mos. @ $800/Mo.	$1,400.00
Accounting and stenographic services, 3½ mos. @ $30/Mo.	105.00
Surveying and drafting	350.00
Transportation, 2,500 miles @ 8¢ mile	200.00
Liability Insurance, Social Security and payroll tax (Virginia 5.52%)	102.00
	$2,157.00

Total Estimated Cost of Project	$13,252.00

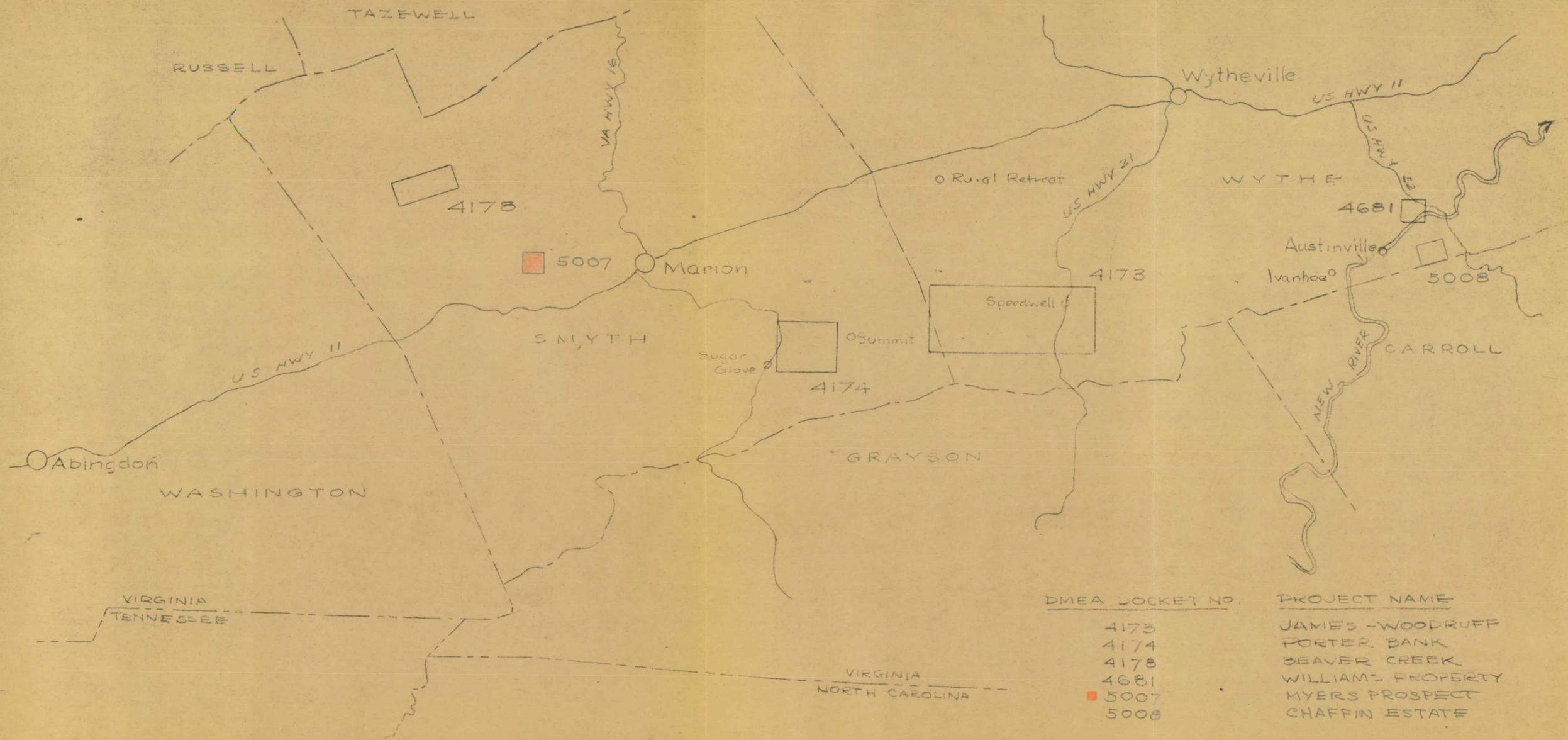
REFERENCES CITED

Cooper, B. N., 1936, Stratigraphy and structure of the Marion area, Virginia: Virginia Geol. Survey Bull. 46-L, pp. 125-166.

Edmundson, R. S., 1938, Barite deposits of Virginia: Virginia Geol. Survey Bull. 53.

DMEA ZINC PROJECTS IN SOUTHWEST VIRGINIA

SCALE 1/250,000



DMEA DOCKET NO.	PROJECT NAME
4173	JAMES-WOODRUFF
4174	PORTER BANK
4178	BEAVER CREEK
4681	WILLIAMS PROPERTY
5007	MYERS PROSPECT
5008	CHAFFIN ESTATE

HW-4/57

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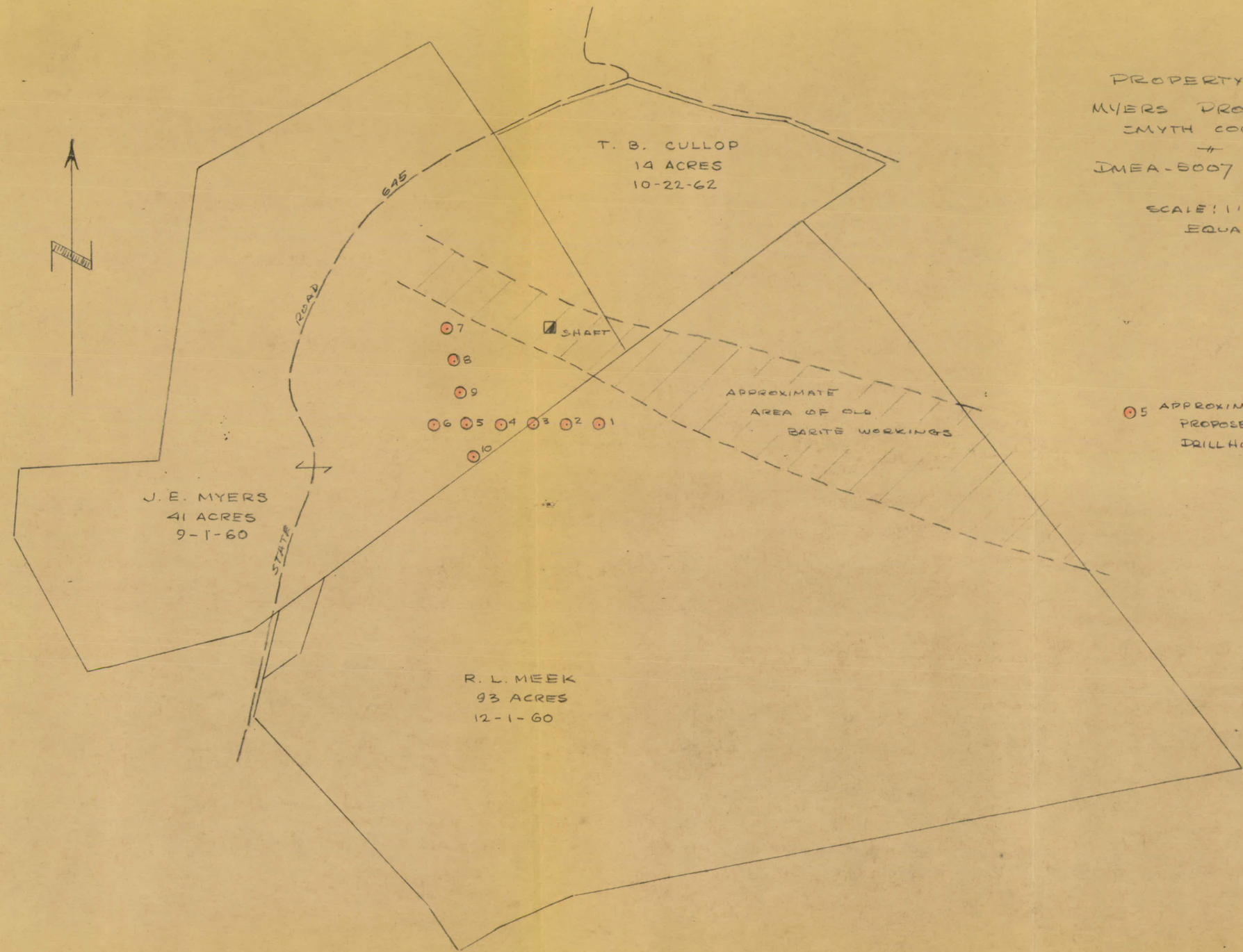
FIGURE 2

PROPERTY MAP
MYERS PROSPECT
SMYTH COUNTY, VIRGINIA
#
SMEA-5007 (ZINC-COPPER)

SCALE: 1 INCH
EQUALS 300 FEET



⊙5 APPROXIMATE LOCATION OF PROPOSED INITIAL DIAMOND-DRILLHOLES

HW - 6/58

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FIGURE 4

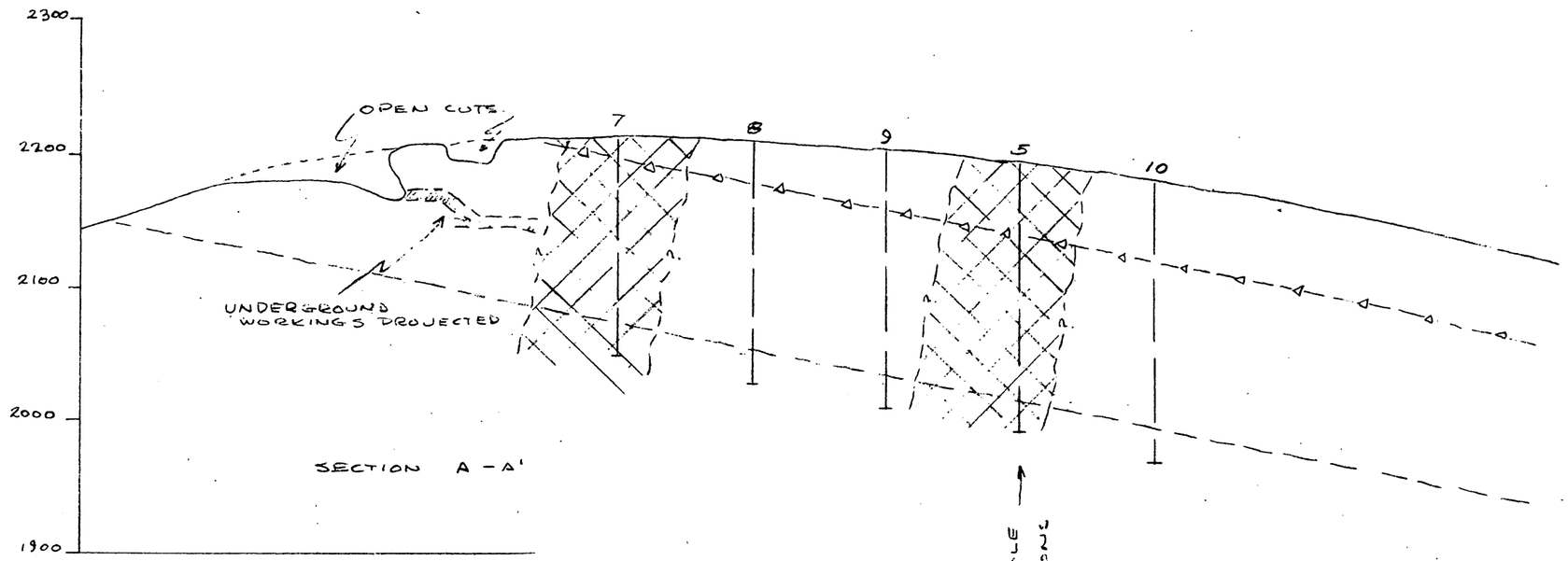
MYERS PROSPECT
SMYTH COUNTY, VIRGINIA

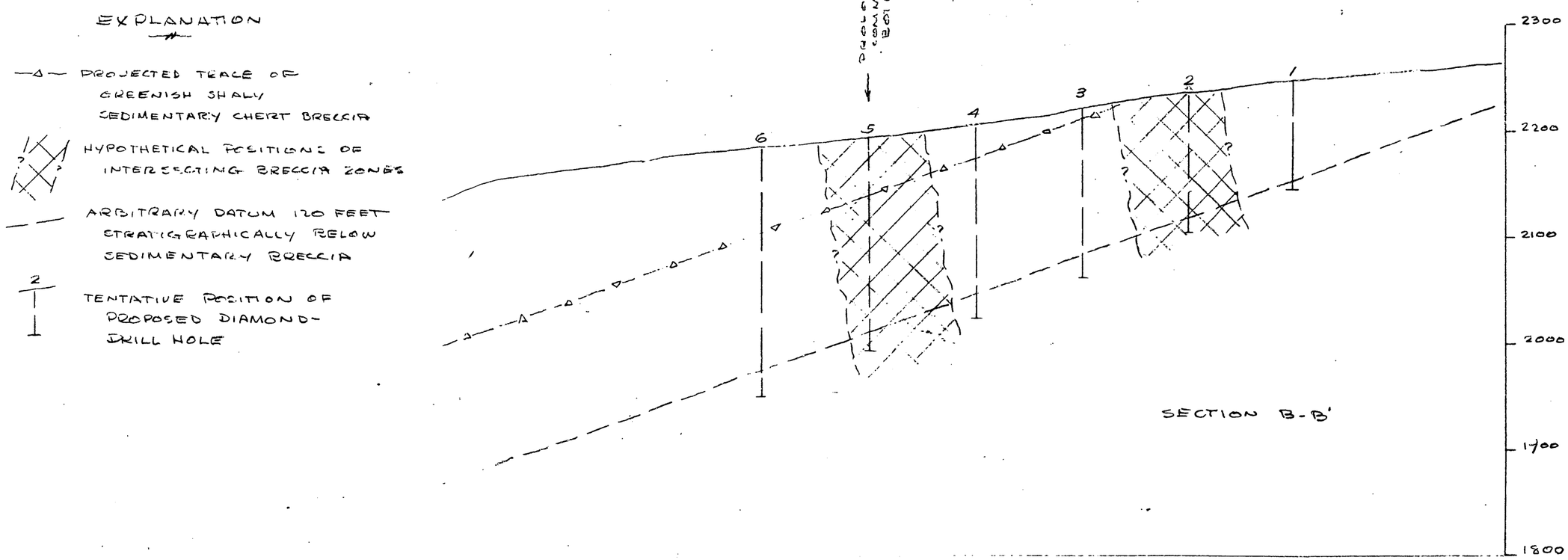
DMEA-5007 (ZINC-COPPER)

RAKE SECTIONS
SHOWING
PROPOSED DRILLING

VERTICAL AND HORIZONTAL
SCALES

1 INCH = 100 FEET





HW - 6/58

July 22, 1958
Re: DMEA 5007
Roland F. Beers, Inc.
Myers Prospect
Smith County, Virginia
Appl. Est. $ 7,538.43
Rec'd Est. $13,252.00 - Zinc-Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team Report

The applicant requested assistance in prospecting, by drilling, for inferred zinc ore bodies on the crest of an anticline imposed on a domal structure. From shallow open cuts along the crest residual barite in quantity was mined. Pieces of sphalerite-bearing breccia occurring in old dumps, suggest such material might exist in underlying Beekmantown beds. (Lower Ordovician)

Based on the presence of the zinc-bearing breccia, results of geochemical prospecting, and general inference, the applicant proposed a modest grid drilling program which would test the underlying beds. The geochemical tests when checked were found to be less anomalous than as presented.

The examiners drawing on experience in other areas, recommend a drilling program consisting of 2 fences at 90° to one another, which would search for postulated breccia-making fracture zones. The examiners consider the chances of finding worthwhile ore deposits better than those presented at the more or less neighboring New Jersey Zinc Co.'s projects DMEA 4173, 4174, 4178 and 4681 which, although well recommended, failed to reveal 'commercial ore'. Like unfavorable results were obtained in a tract further east and adjoining the Austinville mine, explored under DMEA 4681.

The examiners' report proposes an approach unlike that employed at the neighboring unsuccessful projects. I concur with the recommendation of the examiners.

N. E. Nelson

cc: DMEA (3)
O.M. Bishop, 3617
Director's reading
Branch reading
Chron. file
Docket file
NENelson/mm
G-MD-7-22-58

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

August 1, 1958

Re: DMEA 3007; Zinc-Copper
$13,250
Roland F. Beers, Inc.
Myers Prospect
Smyth County, Virginia

Memorandum

To: W. R. Griswold, DMEA

From: O. H. Bishop, USBM

Subject: Comments on field examiners report dated July 1 and recommendation by the Field Team Region V, dated July 3 and received Washington July 7, 1958.

In response to an application by Roland F. Beers, Inc. the field examiners have inspected the Myers property. They conclude there is sufficient evidence to support hopes for a commercial discovery of zinc. I agree with their conclusions, but with less enthusiasm for the following reasons:

(1) Subsoil samples whose values are centered in the pit area are of doubtful significance. Normal shallow-sea deposited sediments have 20 to 70 parts of zinc per million - quantities that suggest that few, if any, of the samples taken represented anomalous conditions.

(2) Barite and fluorite are often associated with only weak zinc concentrations and are indicative of a temperature range too low for copper in more than accessory amounts.

If our purpose is to measure the gross ore potential of the prospect, I believe the initial 1,800 feet of drilling recommended by the field examiners are warranted. Consideration of the results may properly lead to second stage work dependent on results of the initial drilling.

O. H. Bishop

Copy to: Division of Minerals
Branch of Base Metals
Mr. Killingsard
Mr. Lamb
FILES

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O. M. E.
RECEIVED OCT 1 1959

DATE	INITIALS	CODE

INTERIM REPORT

OME-6020, Idm-E2002 (zinc-lead-copper)

Operator: Roland F. Beers, Inc., Troy, New York

Location: Myers prospect, Smyth County, Virginia

Summary of drilling completed

	Since last inspection	To date
Number of holes.....	2	2
Footage.....	550	550

Number of holes showing:

a) Commercial-grade base metal ore..... 0
b) Non-commercial base-metal mineralization.. 0
c) No base-metal mineralization..... 0

Available information on the two holes completed is given below:

Myers No.1: Located on the Myers tract at coordinates 0.2-S; 3.78-W (see coordinate grid used on large scale map in application). Collar elevation not yet available. Total depth 300 feet. Summary log: 0-6 overburden; 6-300 Nittany (?) formation; chiefly interbedded dolomite and limestone with scattered cherty zones and thin beds of green shale. No markers yet established for correlation. Mineralization: No base-metal mineralization. Rock below about 100 feet contains fractures with scattered traces and shines of barite, fluorite, and pyrite.

Myers No.2 : Located on Myers tract at coordinates : 2.25-N; 2.10-W. Collar elevation not yet available. Total depth 250 feet. Summary log: Similar to hole Myers No. 1. Mineralization: None, nor any fractures containing barite-fluorite gangue

Drilling in progress

At the time of inspection Hole Myers No.3 was drilling at a site 125 feet down-dip from the old filled shaft. The coordinates are 0; 1.25-W/ Core was observed to a depth of 52 feet. Anticipated bottoming depth is 225 feet. No base-metal mineralization was observed to that depth.

Inspected: September 19, 1959

Helmuth Wedow, Jr., Geologist
Geological Survey (OME)

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DATE	INITIALS	CODE
		~~130~~

OFFICE OF MINERALS EXPLORATION

INTERIM REPORT

OME-6020, Idm-E2002(Zinc-lead-copper)

Operator: Roland F. Beers, Inc., Troy, New York

Location: Myers prospect, Smyth County, Virginia

Summary of drilling completed

	Since last inspection	Todate
Number of holes.....	5	7
Footage.....	1,200	1,750 300 2,050

Number of holes showing:

a)	Commercial-grade mineralization.....	0
b)	Non-commercial mineralization.....	1
c)	No mineralization.....	6

The locations of the seven holes completed and the one hole in progress are shown on the accompanying sketch map of the Myers area. The data on the seven holes are summarized as follows:

Hole no.	Depth	Remarks
#1	300	0-6 overburden; 6-300 Nittany dolomite. Sedimentary cherty breccia marker (see Field Exam. Report) @116½. Section below S-B marker contains approximately 34% limestone. Mineralization: No copper-lead-zinc minerals noted--other minerals of significance as follows: Traces of barite @ 79-82, 89½, 94½-96; strong "shines" of barite and fluorite @ 111½-113, 114½, 116, 180-181, 181½, 185; traces of fluorite @ 172½-173½; strong shines of pyrite @ 147-149, 159-161, 184, 266½-268.
#2	250	0-10 overburden; 10-250 Nittany dolomite. S-B marker approximately 43% limestone. Mineralization: No copper-lead-zinc minerals noted. Nor any fluorite; traces of pyrite @ 35, 105,157,202-210 with a trace of barite @ approx. 170.

Hole no.	Depth	Remarks
#3	225	0-10 overburden; 10-225 Nittany dolomite. S-B. marker @ 36. Section below S-B marker contains approximately 39% limestone. Mineralization: No copper-lead-zinc minerals noted; no barite or fluorite; traces of pyrite @ 66½ and 185-186½.
#4	250	0-6 overburden; 6-250 Nittany dolomite. S-B marker @ 48. Section below S-B marker contains approximately 15% limestone. Mineralization: No copper-lead-zinc minerals or barite or fluorite; traces of pyrite @ 50-57, 131½-135.
#5	225	These last three holes have not yet been logged in detail. Both nos. 5 and 6 collared a few feet below the S-B marker. Because of caving conditions Hole #6 was completed with EX from 162-225 feet and an amendment permitting reduction to EX-size core has been requested. Hole #7 showed a few minute traces of sphalerite associated with fluorite at a depth of about 150 feet.
#6	225	
#7	275	

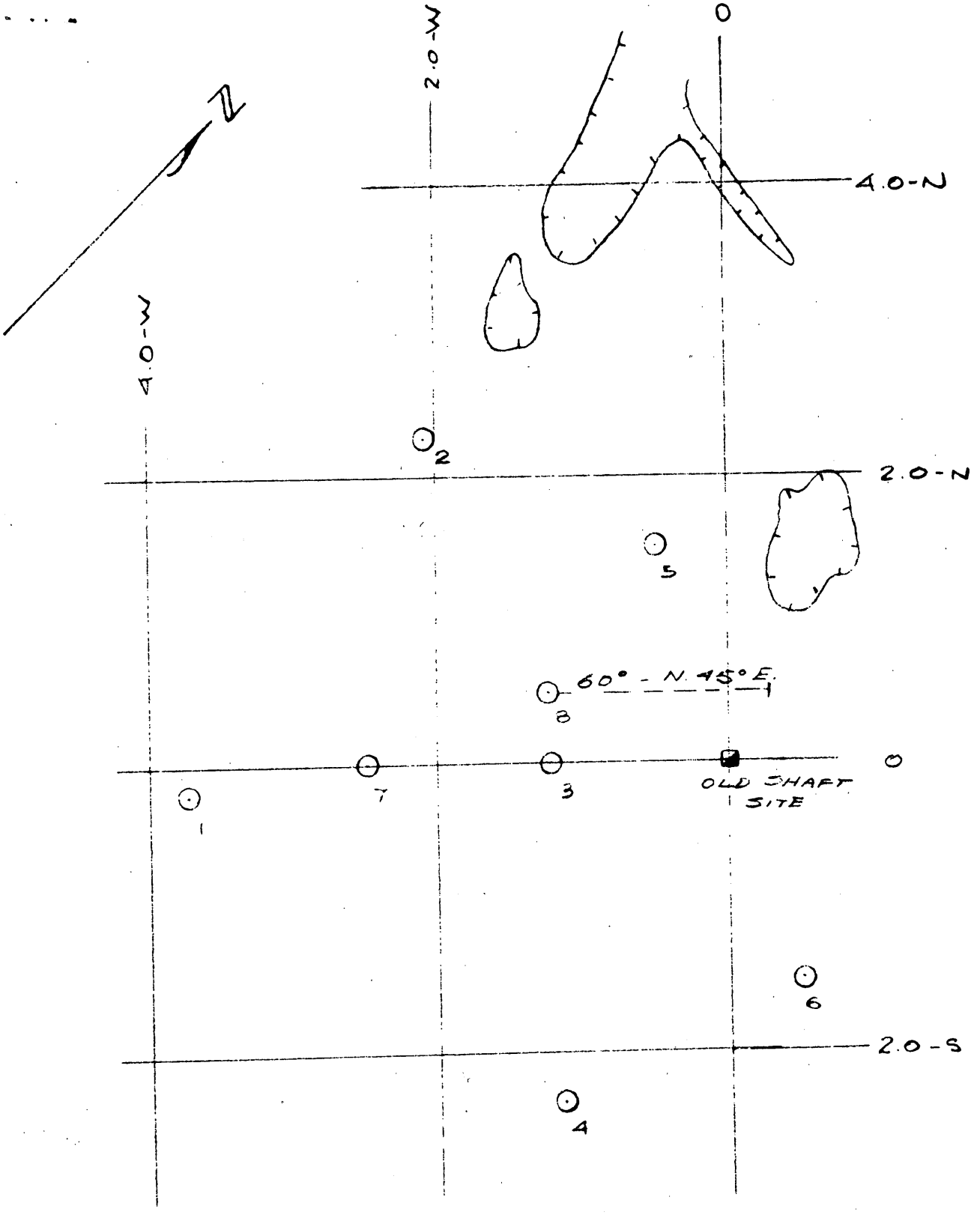
Drilling in progress

Hole # 8 is an angle hole (holes 1-7 were vertical) designed to penetrate the mineralized breccia zone in the vicinity of the old filled shaft. Core from this hole was observed to a depth of 24 feet. The anticipated bottom is about 300-325 feet. The inclination and bearing are -60° and N45°E., respectively. On the completion of Hole 8, the project will be recessed temporarily while the data from the first stage of drilling are reviewed and the Operator makes a decision either to request termination or to continue drilling.

Inspected: October 17, 1959

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey (OME)

z



⊙ VERTICAL DIAMOND-DRILL HOLES

⊙—| INCLINED DIAMOND-DRILL HOLE

MYERS PROSPECT
SMYTH COUNTY
VIRGINIA

ONE-60 ~~20~~, Idm-E 2002
(ZINC-LEAD-COPPER)

SCALE 1" = 100'

MME Form 40
Dec. 1958

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

Budget Bureau No. 42-R1368
Approval expires Dec. 31, 1963

6020

MAR 16 1959 O.M.E.

APPLICATION FOR FINANCIAL ASSISTANCE IN MINERALS EXPLORATION

Pursuant to Public Law 85-701 (72 Stat. 700; 30 U.S.C. 641)

NAME OF APPLICANT *(Full legal name and mailing address as they should appear on contract if one is executed.)*

ROLAND F. BEERS, INC.
P. O. BOX 1019
TROY, NEW YORK

APPLICANT DO NOT USE THIS BLOCK

DOCKET NUMBER: 6020

DATE RECEIVED: 3-16-59

REGION: V

DIVISION CODE: 500

BUSINESS ORGANIZATION *(Check one)*

- INDIVIDUAL [ ]
- CORPORATION [X]
- PARTNERSHIP [ ]
- OTHER *(Specify)* [ ]

STATE IN WHICH FIRM IS ORGANIZED: New York

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

NAME	ADDRESS	TITLE
Roland F. Beers	Troy, New York	President - Treasurer
Helen C. Beers	Troy, New York	Vice President
Frank A. McNamee	Albany, New York	Secretary

MINERAL(S) FOR WHICH YOU WISH TO EXPLORE: Sphalerite and Fluorite

ESTIMATED COST OF PROJECT: $ $7,538.43

PROPERTY NAME	LOCATION COUNTY	STATE
Myers	Smyth	Virginia

GENERAL INSTRUCTIONS

Before filling out this application, please read the *OME Regulations for Obtaining Federal Assistance in Financing Explorations for Mineral Reserves* (30 CFR Chap. III). To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit four copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 2, existing mine workings and geology in item 3, and the proposed exploration work in item 5. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 3(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals*, of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Office of Minerals Exploration, Department of the Interior, Washington 25, D. C., or with the nearest OME Field Office.*

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief, and that he would not ordinarily undertake the proposed exploration under current conditions and circumstances at his sole expense.

March 12, 1959
DATED

Robert S. Young
BY *(Signature)*

BRANCH MANAGER
TITLE

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

INFORMATION REQUIRED WITH THIS APPLICATION

1. Financial Eligibility:

(a) Submit evidence of efforts made within 90 days preceding the filing of this application to obtain credit from your bank of account and at least one other banking institution or other private source of credit. Such evidence shall include true copies of correspondence which show: (1) date of loan request, (2) amount and terms requested, (3) proposed use of loan funds, and (4) the replies from credit sources. If the loan was offered under terms which you consider unreasonable, state why you consider them so.

(b) List names and addresses of affiliated, parent, or controlling companies or organizations and state extent and nature of their interest.

(c) State how you propose to furnish your share of the exploration [redacted] cost.

2. Applicant's Rights in Land:

(a) State your interest in the land and mineral rights, whether owner, lessee, purchaser under contract, or other. If you are not the owner, submit one true copy of the lease, contract, or other document (with address of owner) under which you control the property. Describe all liens, mortgages, or other encumbrances on the land and state book and page number and official place where recorded.

(b) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all adjacent land which you own or control. Describe any part of the land or workings which should not be subject to Government royalty and liens. If the land consists of unpatented claims, state book and page number for each recorded location notice, including amended locations, and official place where recorded. State all the names by which you know the property.

(c) For all land or mineral rights encumbered or not owned, submit five copies of Lien and Subordination Agreements on MME Form 52. If the agreements cannot be obtained, state reasons and provide copies of letters of refusal.

3. Physical Description:

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the land. Include existing mine workings and all production facilities.

(b) State your interest, if any, in operations described in (a).

(c) State, if you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves, giving quantities and grades and sampling methods used. Support your statement with copies of assay certificates and assay maps if available.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) State your reasons for expecting to find ore, and if you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you have, indicating whether you require their return.

4. Accessibility of Property:

(a) To aid the OME representative who may examine the property, state name and address of person who will meet him; give directions for reaching the property; and describe accessibility of property and of any mine workings.

(b) Name the shipping and supply points and state the distances to the property.

5. Exploration Work:

(a) Describe fully the proposed exploration work giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and sections as necessary. Show location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show also the relation of the proposed work to any existing mine workings and to *land boundaries* or to the closest identifiable corner.

(b) If an access road must be built, show the proposed location on the property map and state the length, type and construction methods proposed.

(c) If an OME contract is executed, state how soon thereafter work would be started and finished. State your anticipated average daily or monthly rate of progress for each type of work.

6. Experience:

State your operating experience and background to conduct this exploration work and also that of the person who will supervise the work.

7. Estimate of Costs:

Furnish detailed estimates of the necessary costs *for each item of the work proposed in 5(a)* under the headings listed below with a total for each heading and the estimated total cost of the work. Costs for any work to be performed by an independent contractor should be listed separately under category (a) below. Costs for any work that is not to be performed by an independent contractor should be listed under categories (b) through (g).

(a) Independent contracts. State the total cost of any proposed independent contract for all or any part of the work, and the number of units and the unit cost for each type of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, or per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. (*Note*—If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. The cost of supervision, engineering and geological services, outside consultants, and labor should be itemized by numbers and classes of employees; rates of wages, salaries or fees; and periods of employment. State whether these services are available.

(c) Operating materials and supplies. List items of material and supplies giving quantity and cost of each. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of equipment and tools costing $50 or more per unit. Give specifications and indicate how each item is to be acquired—i.e., rented, purchased or provided by the applicant. If rented or purchased, state the estimated rental or purchase price. If furnished by the applicant, state condition and present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant which will be used in the exploration work.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration work, stating specifications and cost including labor, materials, and supervision.

(g) Miscellaneous. Describe the type and estimate the cost of repairs and maintenance of the operating equipment listed in 7(d). Do not repeat initial repairs listed in 7(e). Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories. [*Note*—The Government will not contribute to costs incurred before the date of the contract, or to costs of or incident to: (1) acquiring, using, or possessing land and any existing improvements, facilities, buildings, installations, and appurtenances, or the depreciation and depletion thereof; (2) general overhead, corporate management, interest and taxes (other than payroll and sales taxes); (3) insurance (other than employees' liability insurance); and (4) damages to persons or property (other than authorized repair to or replacement of equipment or other property used in the work).]

INT.-DUP. SEC., WASH., D.C. 48740

Form MF-103
Revised Oct. 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR

Budget Bureau No. 42-R1035.3
Approval expires June 30, 1958

DEFENSE MINERALS EXPLORATION ADMINISTRATION

APPLICATION FOR AID IN AN EXPLORATION PROJECT

PURSUANT TO DMEA ORDER I, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

NAME OF APPLICANT (Full legal name and mailing address as it should appear on contract if one is executed)

Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

APPLICANT NOT TO USE THIS BLOCK

Docket Number: DMEA-5007

Date Received: 5-6-58

Government Participation %:

Region: V.

Division Code: 500

BUSINESS ORGANIZATION (Check one)

- Individual [ ]
- Corporation [X]
- Partnership [ ]
- Other (Specify) [ ]

State in which firm is organized: New York

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

Name	Address	Title
See Attachment A		

Mineral(s) for which you wish to explore: sphalerite and fluorite

Estimated Cost of Project: $ 7,538.43

LOCATION OF PROPERTY

Name	County	State
Myers	Smyth	Virginia

GENERAL INSTRUCTIONS

Before filling out this application, please read DMEA Order-I, Revised, "Government Aid in Defense Exploration Projects." To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit four copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 1, existing mine workings and geology in item 2, and the proposed exploration project in item 4. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 2(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals*, of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest DMEA Field Office.*

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

May 1, 1958
Dated

Robert L. Young
BY (Signature)

Branch Manager
Title

RECEIVED MAY 6 1958 D.M.E.A.

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

INFORMATION REQUIRED WITH THIS APPLICATION

1. *Applicant's Property Rights:* **See Attachment B**

(a) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all land adjacent to the proposed project area which you own or control. Describe any part of the project land or workings which should not be subject to Government lien for royalty payments. If the land consists of unpatented claims, state the book and page number for each recorded location notice, including amended locations, and the place where recorded (courthouse, recorder's office, county, and state).

(b) State all the names by which you know the property.

(c) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise. If you are not the owner, submit with this application one exact copy of the lease, contract, or other document (with address of owner) under which you control the property.

(d) Describe all liens, mortgages, or other encumbrances on the property.

2. *Physical Description:* **See Attachment C**

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the lands, including existing mine workings. Describe all production facilities.

(b) State your interest, if any, in operations stated in 2*(a)*.

(c) State, as far as you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves on the property giving quantities and grades and sampling methods used, supporting your statement with copies of assay certificates and assay maps if available.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) State your reasons for expecting to find ore, and if you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you may have, indicating on each whether you require its return to you.

3. *Accessibility of Project:* **See Attachment D**

(a) To aid DMEA representatives who may be required to examine the property, state the name and address of the person who will meet the DMEA representative; give directions for reaching the property; and describe accessibility of the property including the mine workings.

(b) Name the shipping and supply points and places where employees reside and state the distances between them and the property.

4. *The Exploration Project:* **See Attachment E**

(a) Describe fully the proposed exploration project giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and longitudinal and cross sections as necessary. Show the location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show also the relation of the proposed work to any existing mine workings and to *property boundaries* or to the closest identifiable corner.

(b) If an access road to the project must be built, show the location on the property map and state the length, type, and construction methods proposed.

(c) In the event that an exploration contract with DMEA is executed, how soon will the work start and how many months will be required to complete it? State your anticipated average daily or monthly rate of progress for each type of work.

5. *Experience:* **See Attachment F**

State your operating experience and background with relation to your ability to carry out this exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of Costs:* **See Attachment G**

Furnish detailed estimates of the costs *for each item of the work proposed in 4(a)* under the headings listed below with a total for each heading and the estimated total cost of the project. Costs for any work to be performed by an independent contractor should be shown separately under category *(a)* below. Costs for any work that is not to be performed by an independent contractor should be given in detail under categories *(b)* through *(g)*.

(a) Independent contracts. State the cost of any proposed independent contract for the performance of all or any part of the work, expressed in units of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. *(Note* – If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. For necessary supervision, engineering and geological services, and labor, include an itemized schedule of numbers, classes, rates of wages, salaries or fees, and periods of employment. State whether these technicians and employees are available.

(c) Operating materials and supplies. List items of material and supplies with their cost. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of operating equipment to be used giving specifications and indicating how each item is to be acquired – i.e., rented, purchased, or provided by the applicant. If it is rented or purchased, state the estimated rental or purchase price. If it is to be furnished by the applicant, give its present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of necessary *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant, which will be used on the exploration project.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration project stating specifications and cost including labor, materials and supervision.

(g) Miscellaneous. For the operating equipment listed in 6*(d)*, describe the type and estimate the cost of repairs and maintenance expected during project operations. Do not repeat initial repairs listed in 6*(e)*. Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories.

Note – No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. *(a)* State whether you are prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation stated in Sec. 7 of DMEA Order–I, Revised. **See Attachment H**

(b) Explain to what extent you propose to furnish your share of the costs by providing money, by use of equipment owned by you, or otherwise.

* * * * *

INT.-DUP. SEC., WASH., D.C. 25960

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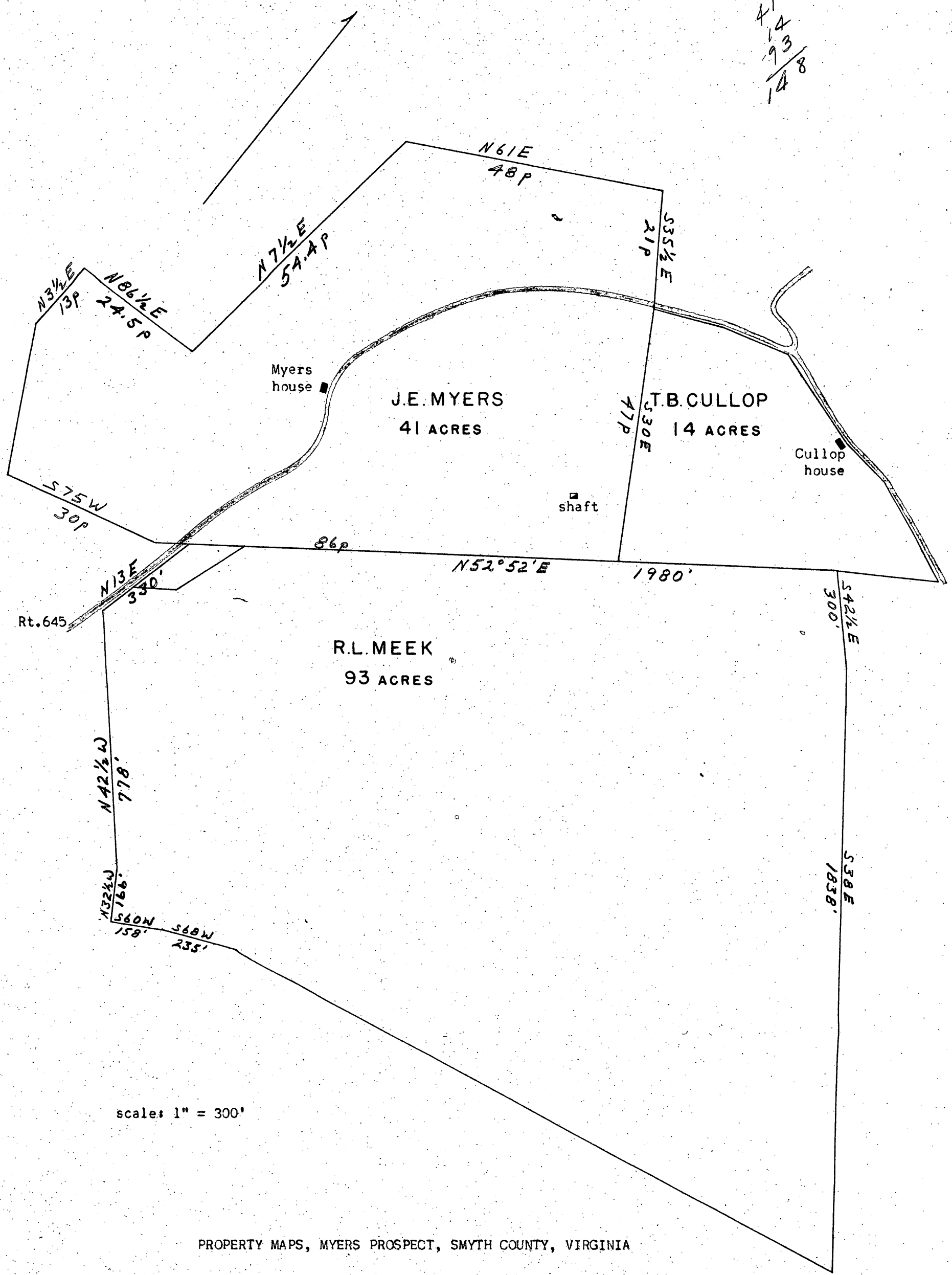

PROPERTY MAPS, MYERS PROSPECT, SMYTH COUNTY, VIRGINIA

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D M E A
RECEIVE MA 6 1958

DATE		CODE

Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

2. (a) Barite mines on the Myers property were the most extensively worked in Smyth County. The developments began about 100 feet southeast of Route 645 (see attached map) and extended S70°E for more than 1,500 feet. Some of the larger open cuts are 400 feet long, 100 feet wide and 40 feet deep, covering a total area of nearly five acres.

Mining operations ceased over 50 years ago.

See Contour-Culture Map (Attachment E).

(b) A comprehensive geological and geochemical survey initiated in 1957 was completed by geologists of Roland F. Beers, Inc., during April, 1958.

(c) There was no production of Zn and CaF_2 from the Myers mine and the amount of barite produced is unknown.

(d) The amount and grade of ore reserves are unknown. Analyses of soil samples show local zinc values of at least $2\frac{1}{2}$ times background. These tests were made by the geochemical laboratory of Roland F. Beers, Inc., at Troy, New York. A composite sample, from available surface material, was prepared and assayed for Zn and CaF_2 by the Union Assay Offices, Inc., Salt Lake City, Utah. A true copy of the assay certificate is a part of this application.

(e) The Myers prospect is on the west side of the Marion Dome, a folded complex of gross dome-like character on the hanging wall of the Greenwood fault. The prospect, as defined in this application, is on the axial area of a northeast-southwest trending subsidiary anticline, which extends nearly completely across the dome and is transected by the Greenwood fault. The anticline is one of a series of flank folds and is typical of Appalachian folds, being slightly overturned to the northwest. Outcrops are scarce along the axial part of the fold; however, the fold appears to plunge about 25° SW at the Beekmantown-Mosheim contact. The amount of plunge possibly increases with depth.

The ore minerals, as presently known, are sphalerite and fluorite. These minerals are in a gangue of calcite, pyrite and barite. Quartz is present, but in small quantities. The ore and gangue minerals occur in intimate association. The sphalerite is a pale honey color, and typical of Valley-type mineralization; fluorite is present as small, purple and colorless crystals and irregular masses.

Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

The mineralized section, a fractured and brecciated limestone series, is in the Lower Ordovician Beekmantown formation. The Beekmantown, in the Marion area, is dominantly dolomite and is about 1,200 feet thick. The individual dolomite beds are typically thick-bedded, massive, and light-gray to buff. The Beekmantown formation is bounded below by dark-gray limestones of the basal Ordovician Chepultepec limestone and overlain by the light-gray limestones of the Middle Ordovician Mosheim limestone.

The mineral-bearing mid-Beekmantown limestone section is apparently continuous over a considerable lateral extent. It was the host for the extensively mined barite, and in at least one place host to the zinc sulfide. The fluorite is present with both barite and sphalerite.

Sphalerite-bearing limestone breccia, visible now only in dump rock, was mined from a shaft at grid coordinates 0 + 0. This vertical shaft, some 90 feet deep, was filled by Mr. Myers, the present property owner. This particular part of the barite mining operation was orally described by a Mr. Goodman, who worked in the shaft prior to World War I.

The type of deposit must remain a matter of some conjecture until the prospect is drilled. However, certain inferences may be drawn which will serve to limit the possibilities. Zinc deposits of the Valley-type are localized by some strucutre -- fold, fault, or zone of brecciation. The Myers prospect is on the axis of a well-defined anticline. A vertical shaft was put down in the axial area during the period of barite mining, and sphalerite in the breccia was encountered. The zinc-bearing limestone is a well-developed breccia, consisting of limestone blocks cemented by calcite, barite, sphalerite, and fluorite. Insofar as is known, the sphalerite is restricted to brecciated limestone. Fluorspar and barite, although nearly always restricted to the limesone sequence, did not depend upon brecciation for localization.

It is logical, then, to assume that the anticline is heavily fractured along certain parts of the axial region. Where these fractured areas involve the mid-Beekmantown limestones and where they were subject to sulfide-bearing solutions, sphalerite is localized. Fluorite always accompanies the sphalerite. It is probable that the sphalerite is in an irregular breccia body, lying along the axial region of an anticline.

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(f) The Myers prospect is in the Southwest Virginia mineral province, and in an area of abundant evidence of sulfide mineralization. The significant sulfide prospects in this region are structurally controlled. The Myers prospect occupies a crest position on a well-defined anticline, and is thus favorably located structurally. Further, the zinc-bearing limestone present at the prospect is in breccia. In the absence of visible faulting, it is most probable that the breccia was formed along the anticlinal axis. This probability is strengthened by the areal location of the shaft from which the mineralizaed breccia was mined.

The Myers prospect is the location of a set of conditions, which when integrated, demonstrate the strong possibility of a sphalerite-fluorite orebody. The desired ore minerals are present; a susceptible host rock is present in sufficient thickness; structures capable of localizing a moderate-size orebody have been mapped. The prospect has not been tested beyond the limits of the previous shallow barite operations.

(g) See attachments.

Telephone EMpire 3-3302 Hand Sample Serial 32996

Mine Roland F. Beers Incorporated

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

J. V. SADLER, President
A. C. SELBY, Vice-Pres. & Treas.
LILY M. HOTTINGER, Secretary

Salt Lake City 10, Utah

RESULTS PER TON OF 2000 POUNDS April 15, 1958

NO.	GOLD Ozs. per Ton	SILVER Ozs. per ton	LEAD Per Cent Wet	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	~~XXXXX~~ Per Cent CaF_2	LIME Per Cent	Per Cent	Per Cent	VALUE GOLD
						10.4		7.13				

Remarks

Charges $ 6.00

W. C. Woolsey

Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

3. (a) DMEA representatives desiring to inspect the property will be met by Robert S. Young or Vernon R. Geyer of Roland F. Beers, Inc., Charlottesville, Virginia. The property is easily accessible and directions for reaching it are shown on the attached location maps.

(b) The Norfolk and Western Railway is 1.5 miles south of the prospect. Stations and loading facilities exist in Marion and Chilhowie, 4 and 6 miles distant. Both of these towns will adequately serve as supply and residence points. Abundant water is available in local streams.

ATTACHMENT E

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4. (a) The drilling program proposed to explore the Myers prospect consists of a total of 3,825 feet of drilling. For the most effective utilization of this total recommended footage, it is suggested that the program be approached in two distinct, though necessarily continuous, stages. The first stage consists of 2,025 feet of drilling distributed among 10 holes. The locations of these drill holes and their relation to the local geologic features are depicted on the accompanying maps.

The physical character of each hole follows:

Drill Hole #1 - Inclination: -70°; bearing: N45°E; elevation at collar: 2220.0'; total inclined depth: 150'.

Drill Hole #2 - Inclination: -70°; bearing: N45°E; elevation at collar: 2236.4'; total inclined depth: 150'.

Drill Hole #3 - Inclination: -70°; bearing: N45°E; elevation at collar: 2243.0'; total inclined depth: 150'.

Drill Hole #4 - Inclination: -70°; bearing: N45°E; elevation at collar: 2212.6'; total inclined depth: 175'.

Drill Hole #5 - Inclination: -70°; bearing: N45°E; elevation at collar: 2216.0'; total inclined depth: 175'.

Drill Hole #6 - Inclination: -70°; bearing: N45°E; elevation at collar: 2162.0'; total inclined depth: 225'.

Drill Hole #7 - Inclination: -70°; bearing: N45°E; elevation at collar: 2174.5'; total inclined depth: 225'.

Drill Hole #8 - Inclination: -70°; bearing: N45°E; elevation at collar: 2165.4'; total inclined depth: 225'.

Drill Hole #9 - Inclination: -70°; bearing: N45°E; elevation at collar: 2143.2'; total inclined depth: 275'.

Drill Hole #10 - Inclination: -70°; bearing: N45°E; elevation at collar: 2150.0'; total inclined depth: 275'.

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The pattern drilling recommended in this application appears to be the most reasonable and economic approach to testing and delineating a possible moderate-size orebody. The relatively close spacing of the Stage I exploratory holes (± 250') has proved necessary, in past drilling, to evaluate mineralized strucutres of the inferred type.

Stage II drilling is reserved to extend, either in length or depth, any significantly mineralized trend discovered by Stage I operations.

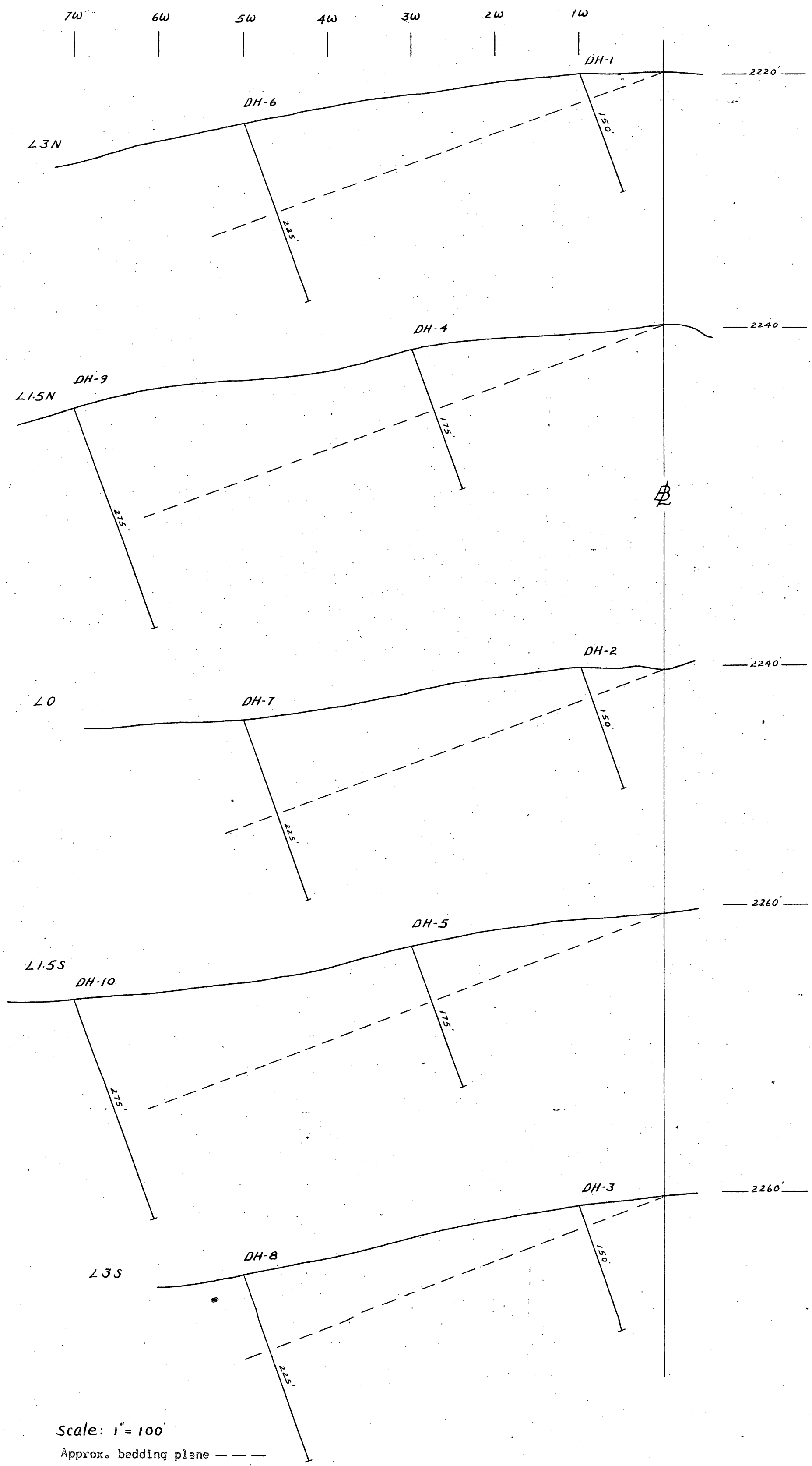
The footage reserved for the second phase of drilling should be 1800 feet. A breakdown of the footage requested in this application follows:

I. Committed drilling:		
DH-1:	150'	
DH-2:	150'	
DH-3:	150'	
DH-4:	175'	
DH-5:	175'	
DH-6:	225'	
DH-7:	225'	
DH-8:	225'	
DH-9:	275'	
DH-10:	275'	
		2025 feet
II. Reserve drilling:		1800 feet
	Total drilling:	3825 feet

(b) No additional access roads needed.

(c) With the execution of a DMEA contract, work will begin within 30 days and the final report will be tendered within 4½ months of the starting date.

A daily drilling average of 80 feet (one drill, two shifts) is anticipated.



CROSS SECTIONS OF PROPOSED DRILL HOLES,
MYERS PROSPECT, SMYTH CO., VIRGINIA

Roland F. Beers, Inc.

Troy, New York

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DATE	INITIALS	CODE

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P. O. Box 1019
Troy, New York

5. This exploration program, although localized, will have access to the entire technical staff and facilities of Roland F. Beers, Inc. The geological interpretation was accomplished by the Charlottesville staff of Roland F. Beers, Inc. The Corporation has for several years been conducting an extensive geological, geophysical, and geochemical prospecting program in the eastern United States. This program has included prospect drilling.

Robert S. Young and Vernon R. Geyer are geologists-in-charge of the Myers-Copenhaver project. Biographical sketches follow:

Robert S. Young, 114 West Park Drive, Charlottesville, Va., b. April 14, 1922; m. '45; c. 2; B.A. '50; M.A. '51; Ph.D. '54; U.S.A.A.F. '42-'45.

Field geologist, State Geological Survey, Va. '52; Stratigrapher-Structural Geologist, Va. Div. Geol. '53-'56; Lecturer, Harpur Coll. '53-'54; Consulting Geol. '54-'56, Exploration Projects, United Carbon Co., Roland F. Beers, Inc.; Branch Manager and Regional Geol. Roland F. Beers, Inc. '56-current.

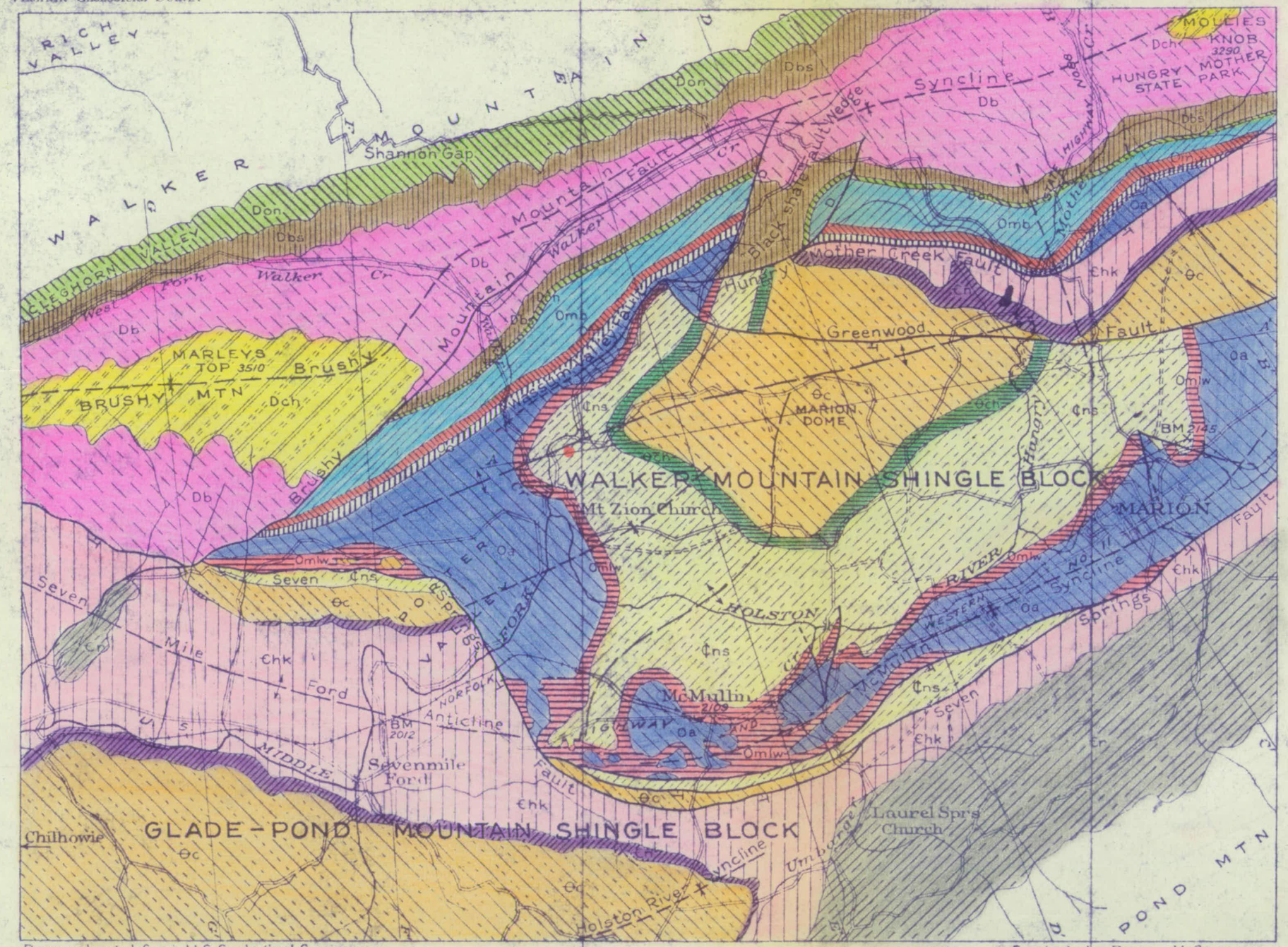
Stratigraphic, structural and economic studies in northern Shenandoah Valley; geological and geophysical exploration for sulfides in southeastern United States.

Soc. Econ. Paleo. and Min.; Min. Soc. Am.; Paleo. Soc.; Am. Assn. Petrol. Geol.; Geol. Soc. Am.; R. E. S.A. ; Sigma Xi; Sigma Gamma Epsilon, App. Geol. Soc.

Vernon R. Geyer, 114 Observatory Ave., Charlottesville, Va., b. August 4, 1922; m. '47; c. 2; B.S. '49; U.S.Army '42-'45.

Grad. student and lab. inst., University of N. C. '49-'51; field geologist, Zonolite Co. '51; chief geol. So. Div. Zonolite Co., '51-'53; ground water and economic geol., Va. Div. Geol. '53-'56; district geologist, Roland F. Beers, Inc., '56-current.

Carolina Geol. Soc.; Geol. Soc. Am.; Va. Acad. Sci.; Sigma Gamma Epsilon.



Base enlarged from U.S. Geological Survey Abingdon, Va., quadrangle, Scale 1:125,000. Surveyed in 1908-1909.

1 0 1 2 3 Miles

Geology by Byron N. Cooper. Surveyed in 1934.

EXPLANATION

SEDIMENTARY ROCKS

DEVONIAN

- Dch — Chemung shale
- Db — Brallier shale
- Dbs — Black shale
- Don — Onondaga chert

ORDOVICIAN

- Omb — Martinsburg shale
- Om — Moccasin limestone
- Oo — Ottosee limestone
- Oa — Athens shale
- Omlw — Mosheim, Lenoir, and Whitesburg limestones

OZARKIAN CANADIAN

- Ꞓns — Nittany and Stonehenge dolomites
- Och — Chepultepec limestone
- Oc — Conococheague dolomite

CAMBRIAN

- Ꞓnl — Nolichucky shale
- Ꞓhk — Honaker dolomite
- Ꞓr — Rome formation

IGNEOUS ROCKS

- Dike

GEOLOGIC MAP OF THE MARION AREA, VIRGINIA.

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DATE
1958
CODE

GEOLOGIC MAP, MYERS PROSPECT, SMYTH COUNTY, VIRGINIA

Scale: 1"=1200'

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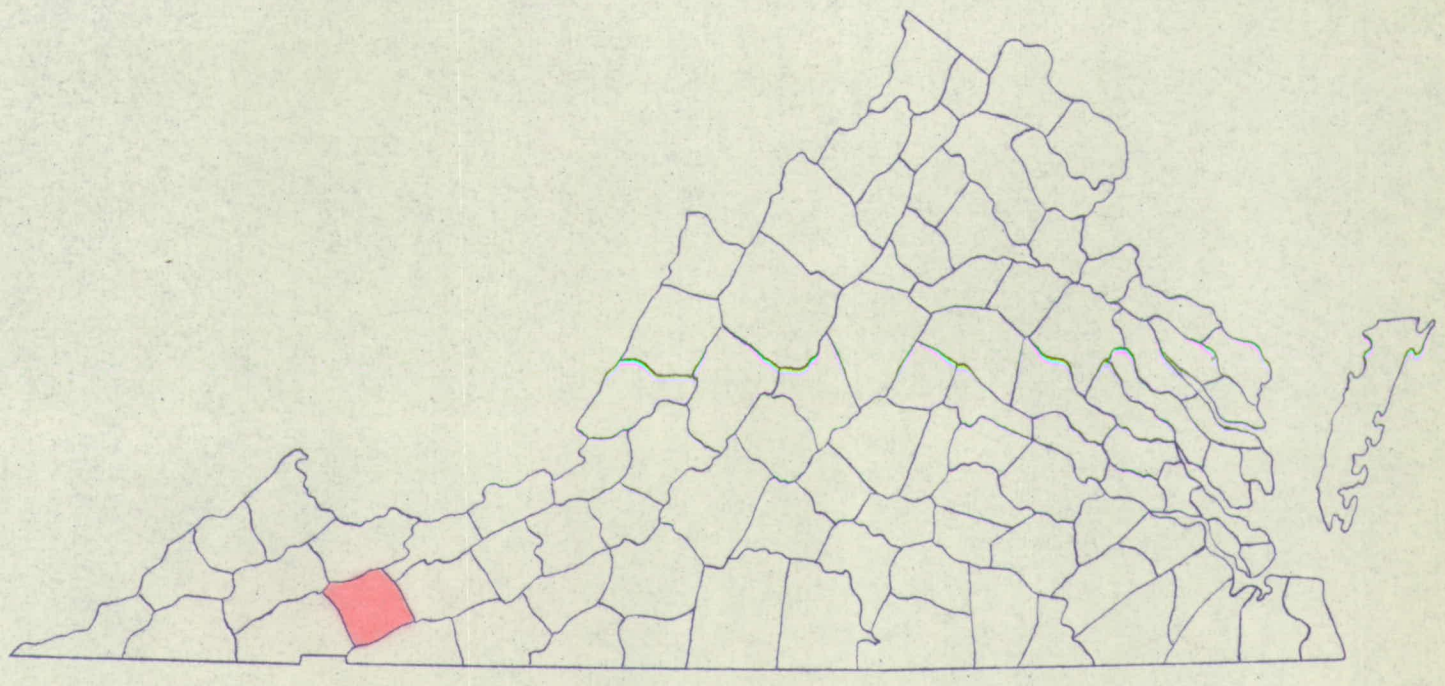
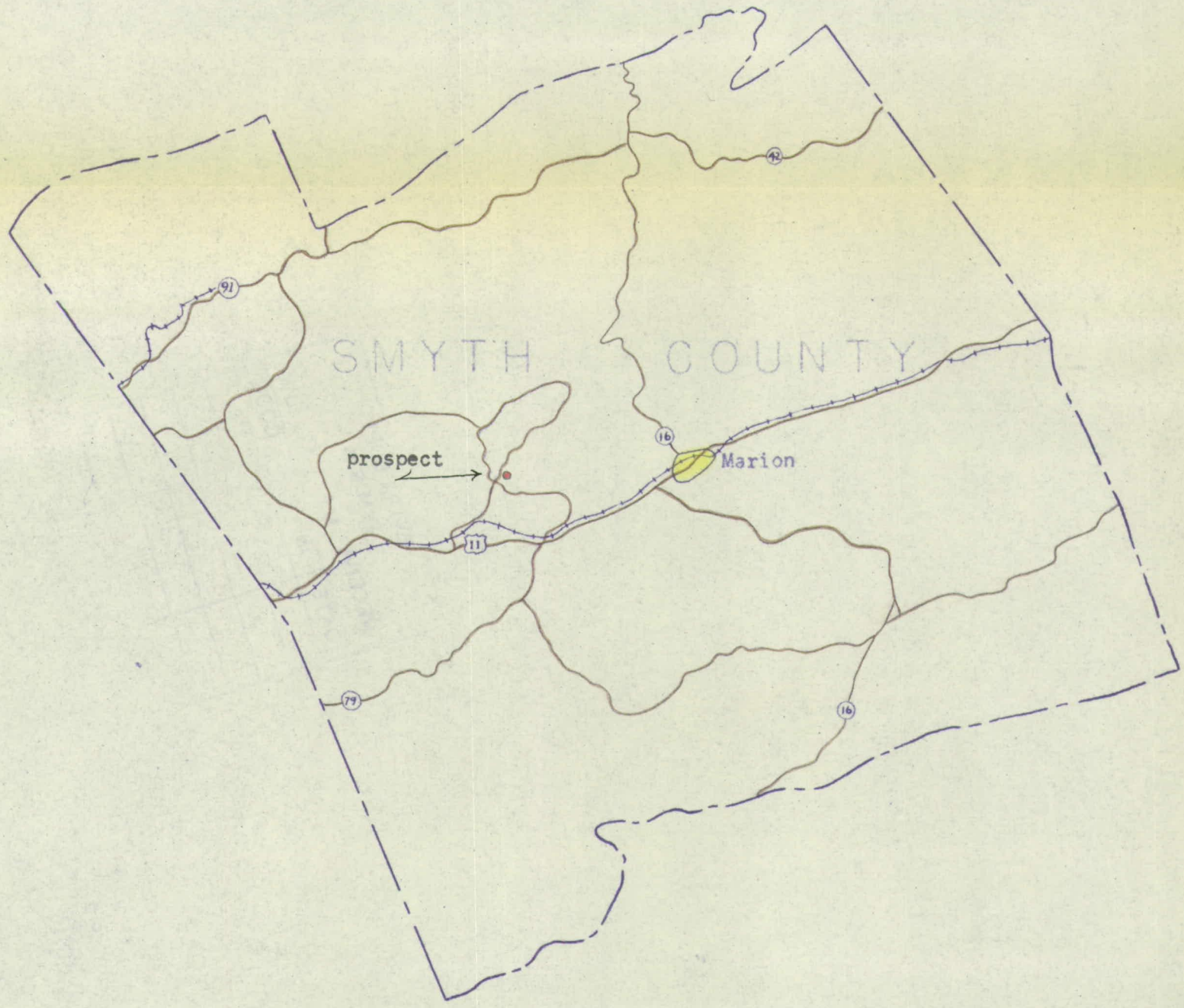
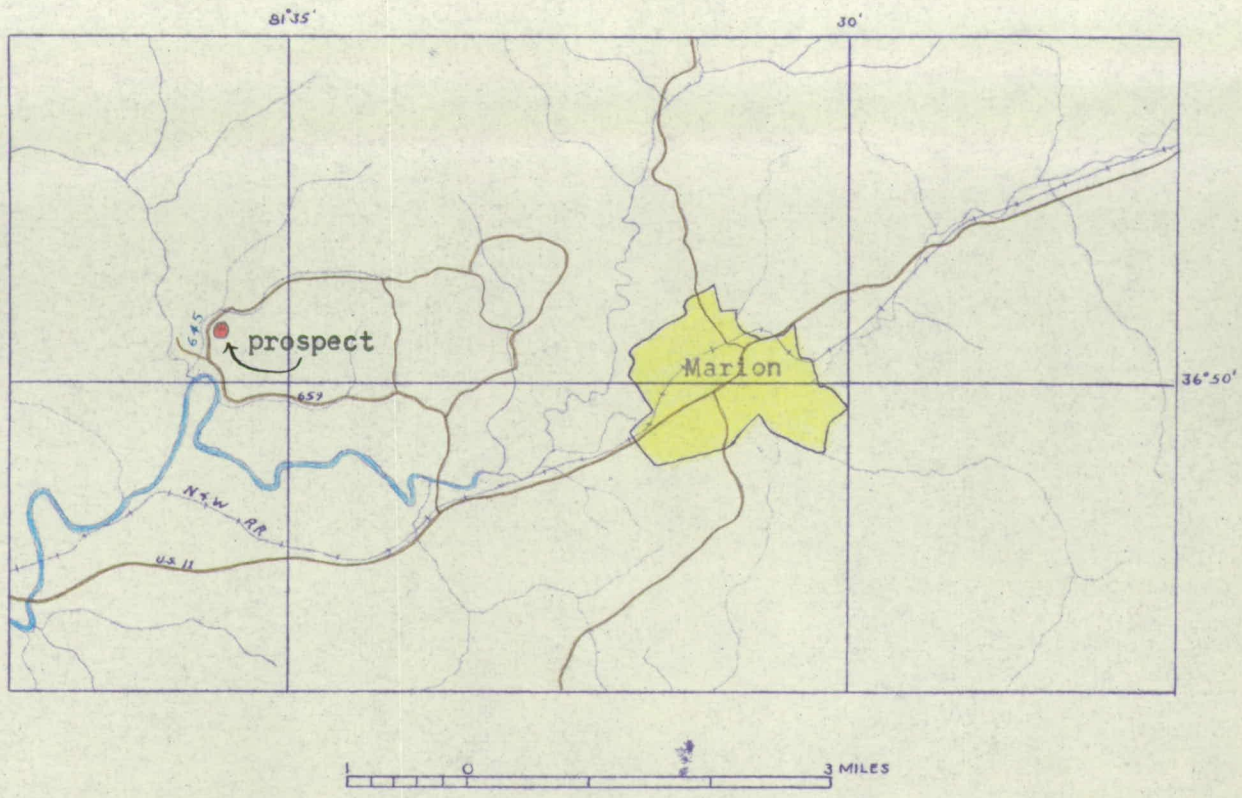
D M E A
RECEIVED MAY 6 1958

DATE	INITIALS	CODE







INDEX MAPS SHOWING MYERS PROSPECT, SMYTH COUNTY, VIRGINIA

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RECEIVED MAY 6 1958

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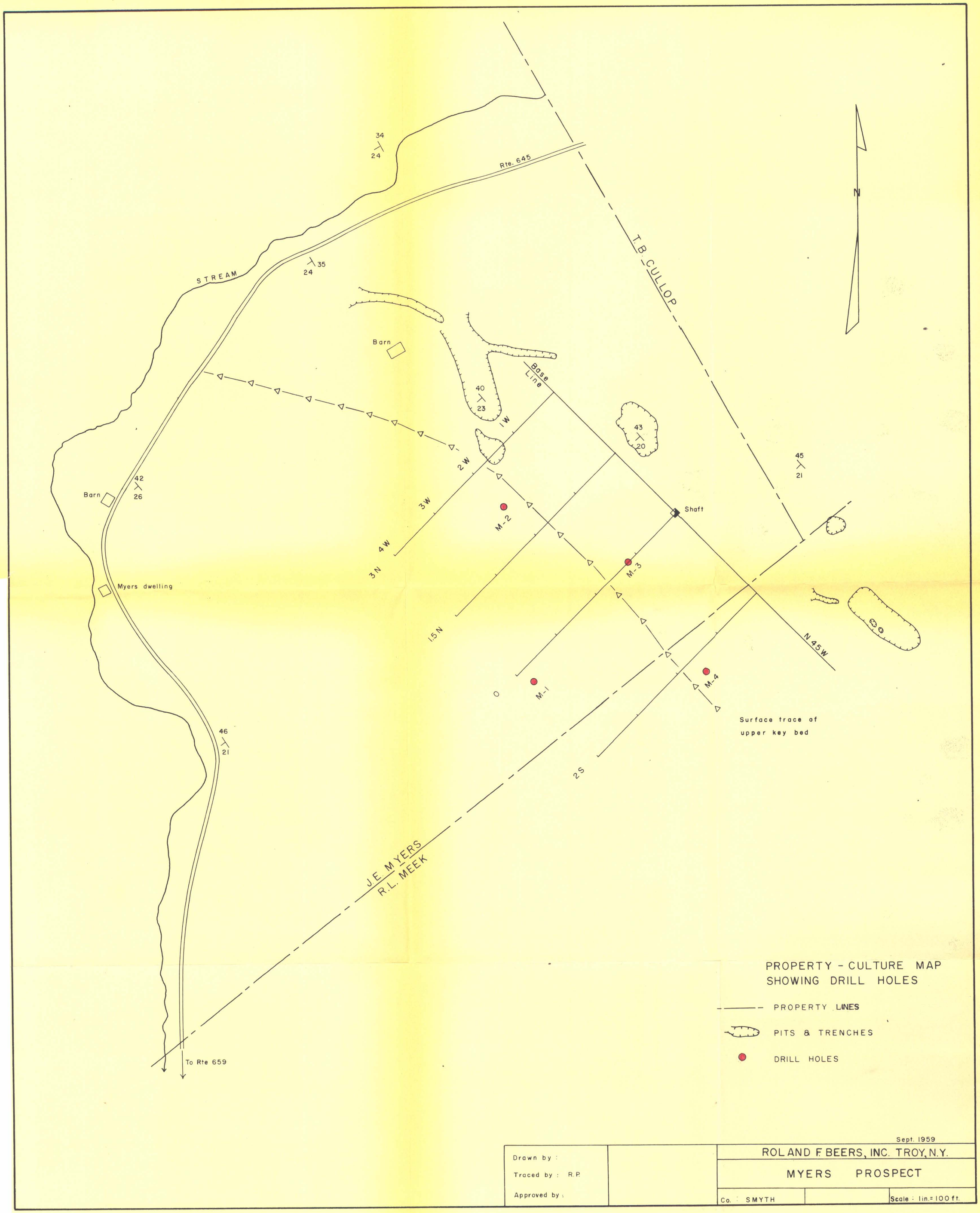
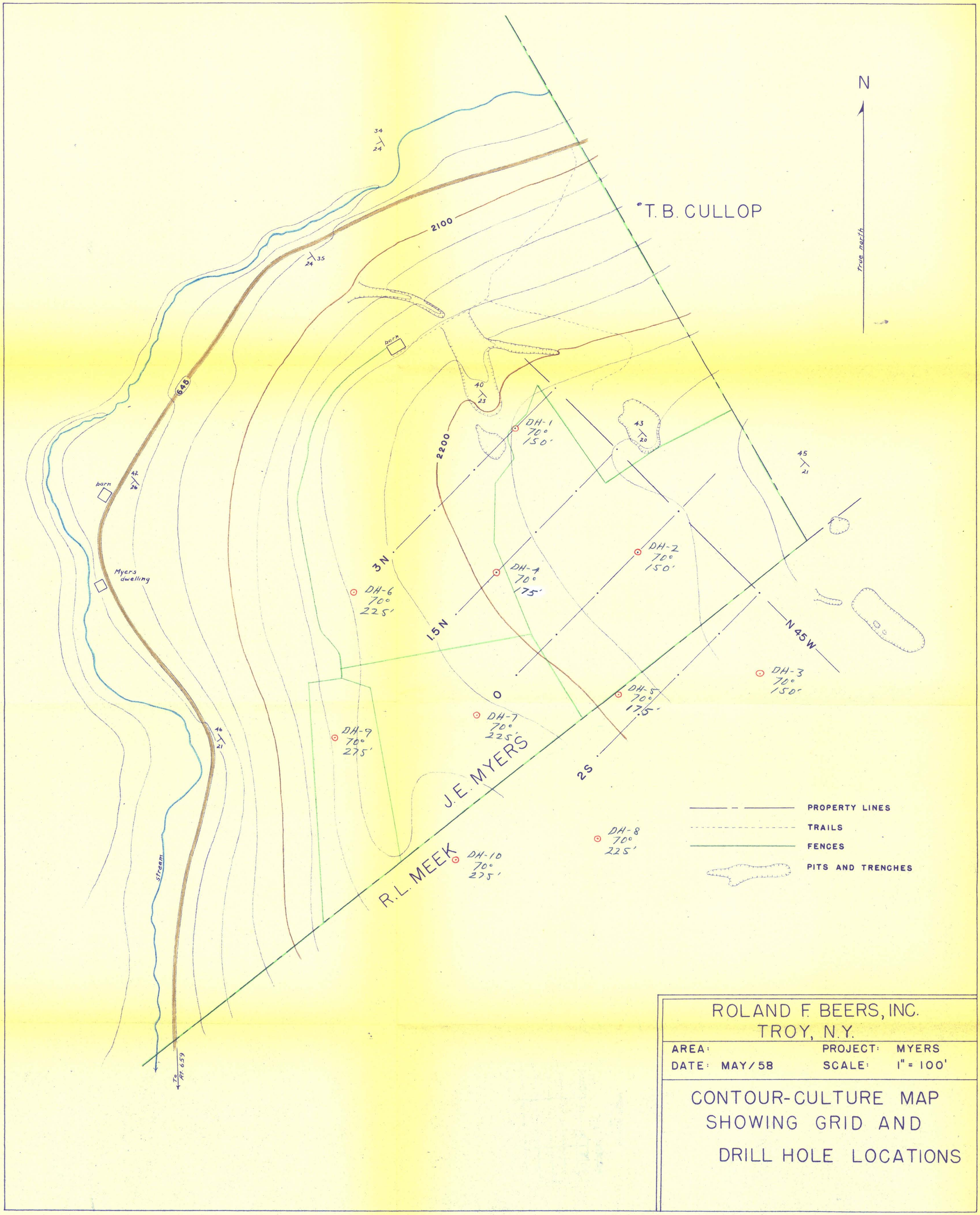

34
24
Rte. 645
STREAM
35
24
T.B. CULLOP
N
Barn
Base Line
40
23
1W
43
20
45
21
2W
42
26
Barn
3W
M-2
Shaft
4W
3N
M-3
Myers dwelling
1.5N
N 45W
0
M-1
M-4
Surface trace of upper key bed
46
21
2S
J.E. MYERS
R.L. MEEK
To Rte 659
PROPERTY - CULTURE MAP
SHOWING DRILL HOLES
PROPERTY LINES
PITS & TRENCHES
DRILL HOLES
Sept. 1959
Drawn by :
Traced by : R.P.
Approved by :
ROLAND F. BEERS, INC. TROY, N.Y.
MYERS PROSPECT
Co. : SMYTH
Scale : 1in.= 100 ft.



ROLAND F. BEERS, INC.
TROY, N.Y.

AREA: PROJECT: MYERS
DATE: MAY/58 SCALE: 1" = 100'

CONTOUR-CULTURE MAP
SHOWING GRID AND
DRILL HOLE LOCATIONS

FIGURE 3

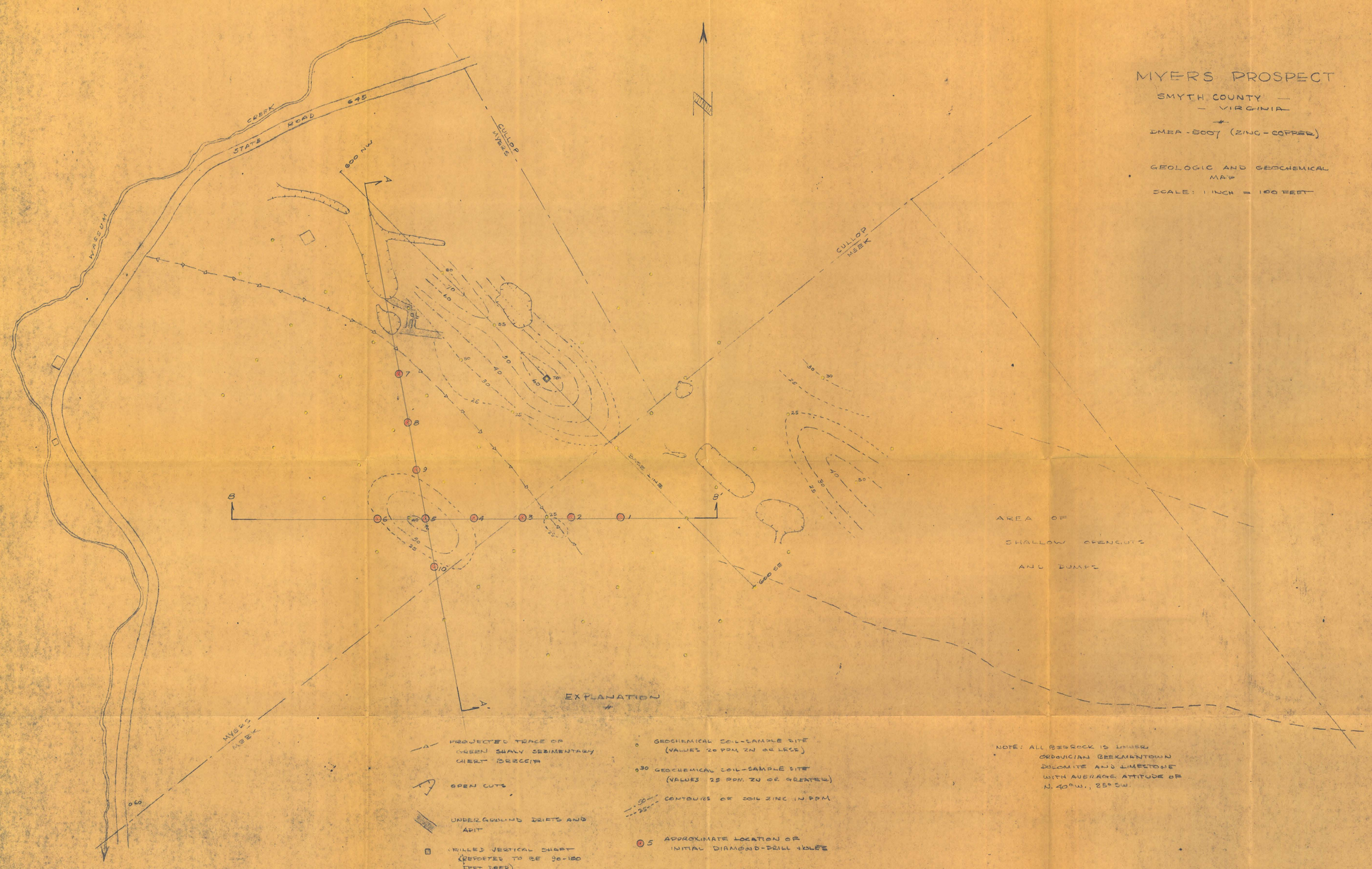
MYERS PROSPECT

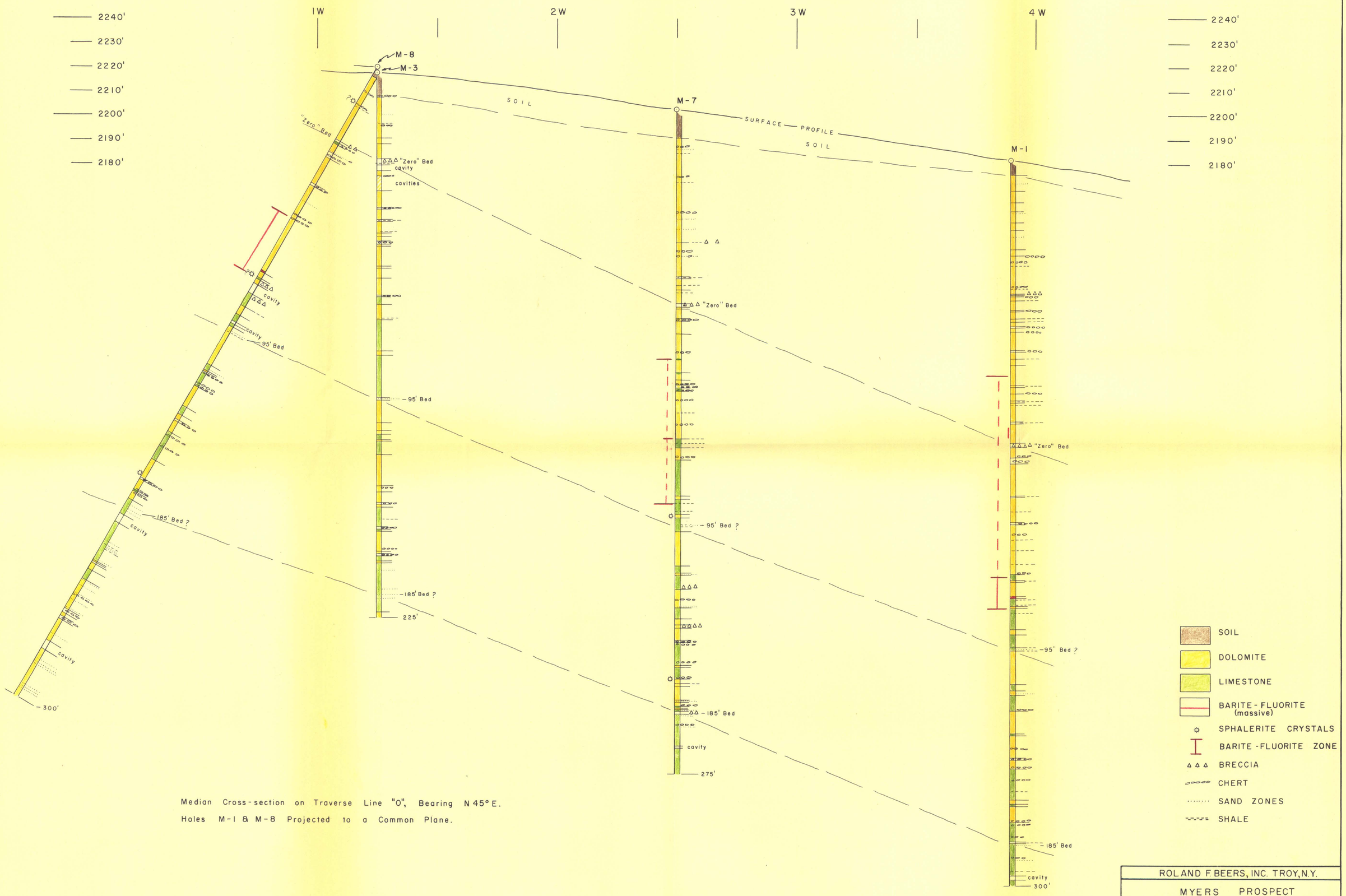
SMYTH COUNTY
— VIRGINIA —

DMEA - 8007 (ZINC - COPPER)

GEOLOGIC AND GEOCHEMICAL MAP

SCALE: 1 INCH = 100 FEET



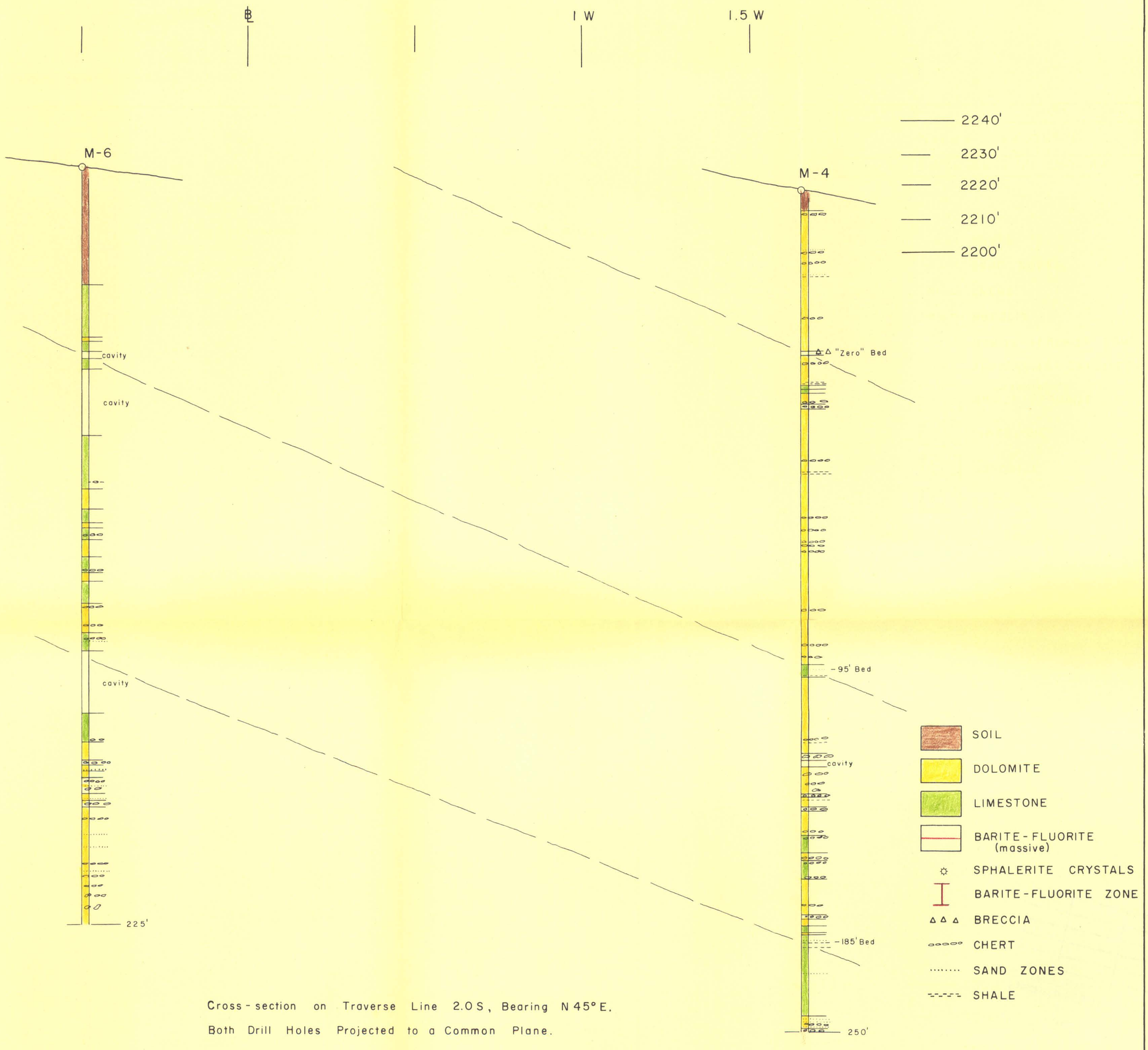


Median Cross-section on Traverse Line "O", Bearing N 45° E.
Holes M-1 & M-8 Projected to a Common Plane.

ROLAND F. BEERS, INC. TROY, N.Y.

MYERS PROSPECT

SMYTH Co., Va. Scale: 1 in. = 20 ft.

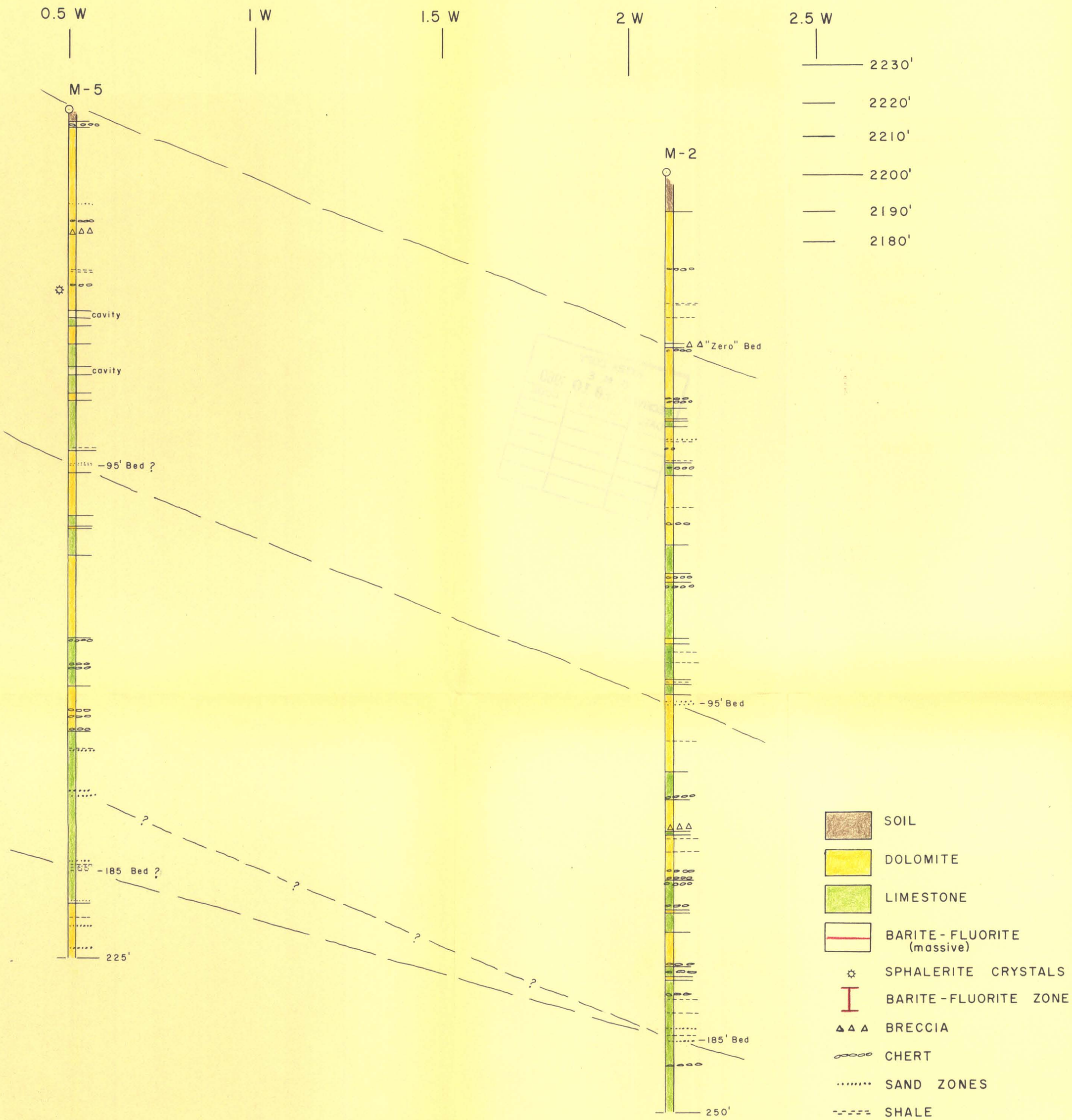


Cross-section on Traverse Line 2.0 S, Bearing N 45° E.
Both Drill Holes Projected to a Common Plane.

ROLAND F. BEERS, INC. TROY, N.Y.

MYERS PROSPECT

SMYTH Co., Va. Scale: 1 in. = 20 ft.



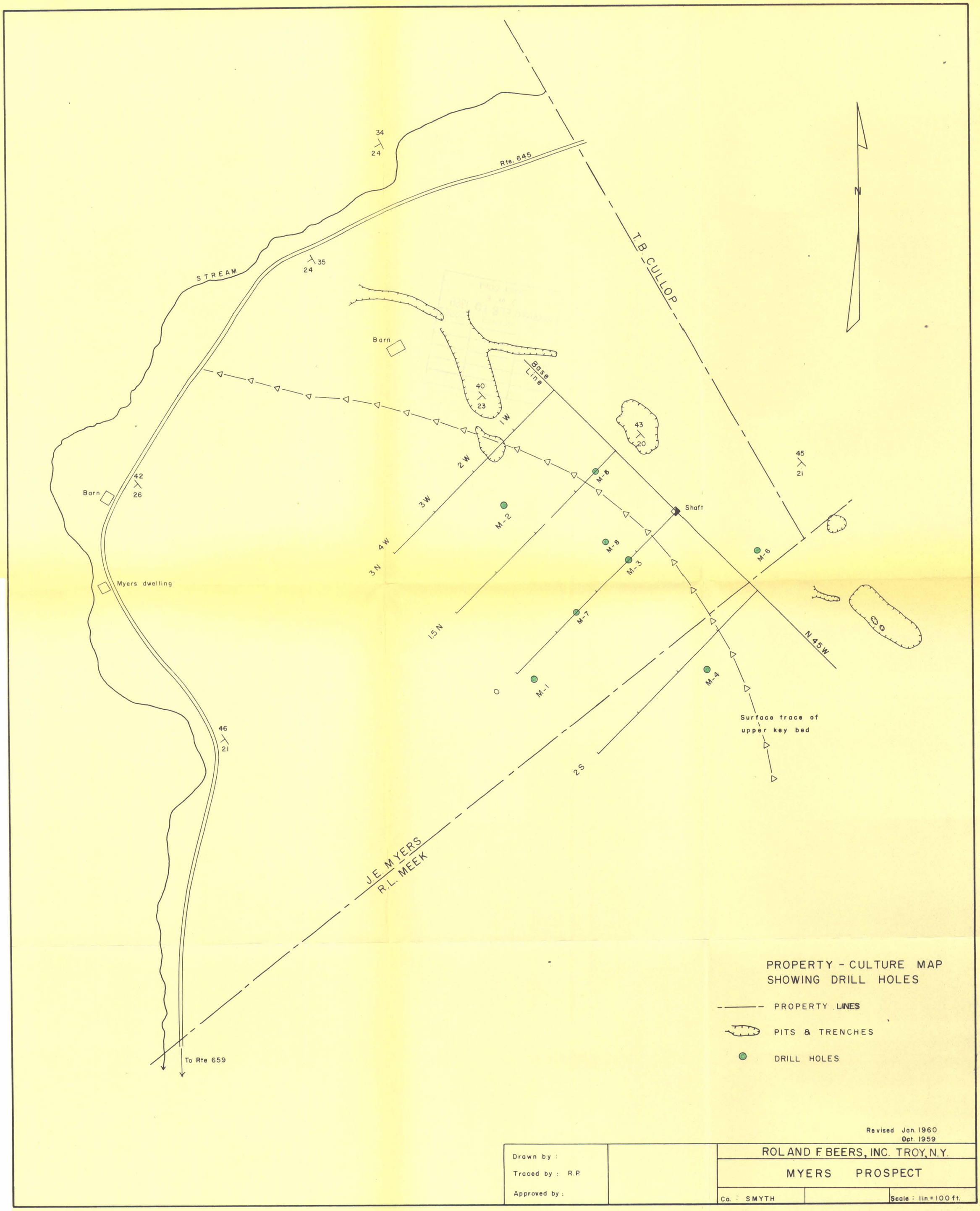
Cross-section on Traverse Line 1.5 N, Bearing N 45° E.

Hole M-2 Projected to Plane.

ROLAND F. BEERS, INC. TROY, N.Y

MYERS PROSPECT

SMYTH Co., Va. Scale: 1 in. = 20 ft.



PROPERTY - CULTURE MAP
SHOWING DRILL HOLES

PROPERTY LINES

PITS & TRENCHES

DRILL HOLES

Revised Jan. 1960
Oct. 1959

Drawn by :		ROLAND F. BEERS, INC. TROY, N.Y.
Traced by : R.P.		MYERS PROSPECT
Approved by :		Co. : SMYTH — Scale : 1in.= 100 ft.