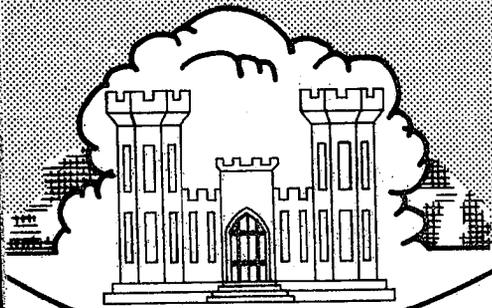


DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA



SUPPLEMENTAL REPORT
TEST WELL DRILLING
AND STUDY OF
HYDROGEOLOGIC CONDITIONS

FORT HUACHUCA
COCHISE COUNTY, ARIZONA

JANUARY 1974



Fort Huachuca, Arizona
Geologic Log
Test Well No. 4

4978ASPL

- 0.0 Terrace gravels
Gravelly clayey sand, reddish brown,
rounded gravel to 1", less than 10% gravel.
- 12.0 Clayey gravelly sand, brown, rounded gravel
to 1-1/4", 20% gravel.
- 24.0 Gravelly sandy clay, reddish brown, rounded
gravel to 1/2".
- 30.0 Clayey sand, brown, sand fine to coarse, sub-
angular to rounded, 80% fine to medium, scattered
rounded pea gravel.
- 37.0 Sandy clay, brown, moderately plastic, 30% fine
to medium sand.
- 43.0 Clayey gravelly sand, 20% subangular to
rounded gravel to 1-1/4", sand fine to coarse,
subangular to rounded, 5-10% brown clay.
- 46.0 Sandy clay, brown, 20% fine to medium sand.
- 51.0 Gravelly clayey sand, rounded gravel to 1",
sand fine to coarse, rounded to subangular,
10-15% clay.
- 57.0 Sandy clay, brown, 30-40% sand, fine to
coarse, subangular to rounded.
- 69.0 Upper Unit of Basin Fill
Clayey sand, with scattered gravel
to 1-1/2", brown.
- 73.0 Gravelly sand, sand medium to coarse,
subangular to rounded.
- 82.0 Sandy clay, brown, with scattered
gravel to 3/4", 20-30% fine to coarse sand.
- 94.0 Sandy clay, brown, with scattered gravels
to 3/4", 20-30% fine to medium sand.

Test Well No. 4 (Cont'd)

- 108.0 Clayey gravelly sand, medium to coarse, sub-rounded to angular, gravels to 1-1/2" rounded to subangular, trace tan clay in scattered layers.
- 114.0 Sandy clay with scattered gravels to 3/4".
- 135.0 Sandy clay, brown, with scattered gravel to 1", fine to coarse sand, rounded to angular, scattered thin seams sand and sandy gravel.
- 146.0 Gravelly sand, sand rounded to angular, medium to coarse, with rounded to angular gravels to 2", encountered boulders.
- 168.0 Gravelly sandy clay, brown, moderately plastic, 40% fine to coarse sand, rounded to angular, scattered gravels.
- 177.0 Gravelly clayey sand, medium to coarse, rounded to angular, scattered gravels.
- 194.0 Gravelly sandy clay as at 168.0 feet.
- 213.0 Sandy clay, brown, 20-30% fine to medium sand, clay moderately plastic.
- 221.0 Gravelly sand, fine to coarse, less than 5% fine, subangular to subrounded, gravel subrounded to broken angular chips to 1-1/2".
- 231.0 Sandy clay, brown, sand 20%, mostly fine to medium.
- 236.0 Gravelly sand as at 221.0 feet.
- 238.0 Sandy clay as at 231.0 feet.
- 249.0 Gravelly clayey sand, medium to coarse, sub-angular to subrounded, scattered gravel to 1-1/2", 15-25% clay.
- 253.0 Sandy clay, brown, less than 15% fine to medium sand, clay moderately plastic.
- 266.0 Gravelly sand.
- 270.0 Sandy clay as at 253.0 feet.

- 278.0 Sandy clay, brown, sand mostly fine with scattered, medium to coarse grains, clay moderately plastic.
- 290.0 Gravelly clayey sand.
- 291.0 Sandy clay as at 278.0 feet.
- 304.0 Clayey gravelly sand, fine to coarse but less than 10% fine, 30-40% gravel to 3/4".
- 310.0 Lower Unit of Basin Fill
Sandy clay, brown, 10-20% fine to medium sand.
- 314.0 Sandy clay, 30% medium to coarse sand.
- 316.0 Sandy clay as at 310.0 feet.
- 318.0 Sandy clay, brown, sand fine to coarse 30-40%, clay moderately plastic.
- 326.0 Clayey gravelly sand, clay less than 5%, gravel 25%.
- 328.0 Sandy clay as at 318.0 feet.
- 330.0 Gravelly clayey sand, fine to coarse, less than 10% fine, subangular to subrounded, 20% gravel to 3/4".
- 343.0 Clayey sand to sandy clay, brown, sand fine to coarse, 40% fine, scattered gravel to 1/2".
- 356.0 Gravelly clayey sand, 20% clay, sand fine to coarse, 30-40%, scattered gravel to 1".
- 359.0 Gravelly sand, less than 5% clay, gravel to 3/4", sand medium to coarse.
- 360.0 Gravelly clayey sand as at 356.0 feet.
- 364.0 Gravelly sand as at 359.0 feet.
- 365.0 Gravelly clayey sand as at 356.0 feet.

Test Well No. 4 (Cont'd)

4978ASPL

- 369.0 Gravelly sandy clay, brown, sand fine to coarse 30-40%, 5% gravel to 1".
- 377.0 Gravelly sand, fine to coarse, 10% fine, less than 5% clay, gravel to 1/2".
- 386.0 Sandy clay, brown, moderately plastic, 30-40% fine to coarse sand.
- 408.0 Sandy clay, brown, with scattered gravels to 3/4", sand fine to medium with scattered coarse grains.
- 416.0 Clayey gravelly sand.
- 417.0 Sandy clay as at 408.0 feet.
- 428.0 Gravelly sand with trace clay.
- 430.0 Sandy clay as at 408.0 feet.
- 434.0 Sandy clay, brown, sand fine to coarse 30-40%.
- 437.0 Clayey gravelly sand, fine to coarse, less than 10% fine, gravel angular chips to subrounded up to 3/4", less than 5% clay.
- 442.0 Sandy clay, brown, 30% sand.
- 443.0 Clayey gravelly sand as at 437.0 feet.
- 447.0 Clayey gravelly sand, fine to coarse, angular to subrounded, 10-15% fine, 10-20% brown clay.
- 462.0 Gravelly sand, fine to coarse, less than 10% fine, angular to subrounded, gravel angular chips to subrounded to 3/4", less than 5% brown clay.
- 482.0 Gravelly sand, less than 5% brown clay, fine to coarse sand less than 10% fine, 10-15% gravel to 1-1/4".
- 508.0 Gravelly sand, less than 10% clay, 5-10% fine sand, gravel to 1" angular to subrounded.

- 521.0 Pantano Formation
Gravelly sand, trace clay, less than 5% fine sand.
- 534.0 Gravelly sand, medium to coarse grained, rounded to angular, gravels to 1-1/2" subrounded to angular, less than 10% brown clay, evidence of cementation.
- 573.0 Gravelly sand as at 534.0 feet, less than 5% clay, 15% gravel to 1".
- 586.0 Gravelly sand, fine to coarse, angular to subrounded, gravel angular to subrounded to 1", trace brown clay.
- 599.0 Gravelly sand, fine to coarse, less than 5% fine, angular to subrounded, angular to subrounded gravel to 1-1/4", less than 5% clay.
- 601.0 Sandy gravel to 3/4" size.
- 602.0 Gravelly sand as at 599.0 feet, clay content up to 10%.
- 603.0 Sandy gravel as at 601.0 feet.
- 608.0 Gravelly sand as at 599.0 feet.
- 618.0 Clay increase to 10-15%.
- 619.0 Clay content down to less than 5%.
- 625.0 Gravelly sand as at 599.0 feet with increase in clay to 10%.
- 638.0 Gravelly sand, fine to coarse, subangular to subrounded, less than 5% fine, gravel to 3/4", less than 10% clay.
- 664.0 Clayey gravelly sand, fine to coarse, angular to rounded, gravels to 3/4".
- 677.0 Clayey sand, with scattered fine gravel to 3/4" 10-20% clay.
- 690.0 Gravelly sand with trace clay, sand fine to coarse, 5-10% gravel in angular chips to subrounded to 1-1/8" size.

Test Well No. 4 (Cont'd)

4978A SPL

- 703.0 Gravelly sand with clay content varying from a trace to 10%, sand fine to coarse, gravel angular chips to rounded to 1".
- 716.0 Clayey gravelly sand as at 703.0 feet with clay content varying to 30%.
- 729.0 Gravelly clayey sand, mostly medium to coarse, rounded to angular, 30% clay moderately to highly plastic, 10% gravel to 1".
- 768.0 Gravelly clayey sand, fine to coarse grained, rounded to angular, 30% brown cohesive clay, greater than 20% gravels to 1".
- 807.0 Bottom of hole.

Fort Huachuca, Arizona
Geologic Log
Test Well No. 5

New Well #8

- 0.0 Terrace gravels
Silty sand, tannish brown, loose to firm, dry,
30% silt 65% sand, 5% gravels to 2", low plasticity.
- 0.8 Gravelly sand, tannish brown, firm, dry, 15%
silt, 50% sand, 33% gravels to 3", trace caliche,
gravels and sands angular to rounded, fines have
low plasticity.
- 6.0 Silty sand, light reddish brown, firm, dry, 30%
silt, 55% fine sand, small percent of angular
coarse sand, 15% rounded gravels to 1-1/2" mostly
smaller, caliche coated, low plasticity.
- 10.0 Silty sand, tan, firm, dry, 30% silt, 55% sand,
mostly fine, small percent coarse, angular to
subrounded, 15% gravels to 1-1/2" some caliche
coating, low to no plasticity.
- 14.0 Silty gravelly sand, tan, firm, dry, 30% silt,
40% subrounded to rounded, sand, mostly fine,
a small percent coarse, 30% rounded gravels to
3-1/2", trace caliche.
- 16.0 Silty gravelly sand, tannish brown, firm, dry,
15-20% silt, 50% sand well graded from fine to
coarse, subangular to rounded, +30% gravels to
4", rounded to angular with some caliche coating
and iron stains.
- 18.0 Cobbles to 6".
- 19.0 Silty gravelly sand as at 16.0 feet.
- 25.0 Silty gravelly sand, reddish brown, loose to
firm, dry, 10% silt, 70% sand fine to medium
grained with some coarse, angular, 20% gravels
to 3", rounded to subangular, scattered cobbles
to 9".
- 30.0 Silty sand, reddish brown, loose to firm, dry,
30% silt, +70% sand, fine with scattered coarse
grains, rounded to subrounded, scattered gravel
to 2-1/2" rounded.
- 37.0 Cobbly sand, reddish brown, firm, dry, +30%
silt, 50% sand mostly fine with scattered medium
to coarse, 20% gravels and cobbles to 8".
- 38.0 Silty sand, reddish brown, loose, dry, +30% silt,
65% sand mostly fine, trace gravel to 3/4".

Test Well No. 5 (Cont'd)

- 49.0 Silty sand as at 38.0 feet, but 40% silt, 60% sand, firm, dense.
- 52.0 Silty sand as at 49.0 feet with scattered cobbles to 9".
- 53.0 Clayey sandy gravel, brown, gravel to 2", rounded to angular, sand medium to coarse 40-50%.
- 55.0 Upper Unit of Basin Fill
Clayey sand with scattered fragments of mudstone to 1/2", 10% brown clay, sand fine to coarse 10% medium, rounded to angular.
- 58.5 Gravelly sand, medium to coarse, rounded gravel to 1-1/2".
- 59.5 Clayey sand with scattered subangular gravel to 1/2", 25-35% brown clay, sand fine to coarse.
- 63.5 Gravelly sand, sand medium to coarse, rounded to subangular, gravel to 1", rounded to broken angular, trace brown clay.
- 75.0 Clayey gravelly sand, about 15% clay, yellow brown, with estimated 65% sand, fine to coarse, rounded to subangular, gravels to 1-1/2".
- 77.0 Same as above but with less than 5% clay.
- 82.0 Coarse sandy gravel.
- 84.0 Clayey gravelly sand as at 75.0 feet.
- 93.0 Gravelly clayey sand grading in and out of sandy clay, sand medium to coarse, rounded to angular, gravels to 1-1/2".
- 97.0 Sandy clay to clayey sand, brown as above.
- 102.0 Sandy gravel, gravel rounded to angular to 2", sand medium to coarse, rounded to angular, trace brown clay.

Test Well No. 5 (Cont'd)

- 105.0 Sandy clay to clayey sand as at 97.0 with gravel to 2", brown moderately plastic clay.
- 103.0 Same as above, but decreased clay content for 1 foot.
- 121.0 Same as above, but decreased clay content for 3 feet.
- 124.0 Sandy clay, about 50% brown clay, moderately plastic. Sand, fine to coarse, rounded to angular, scattered gravels to 3/4".
- 130.0 Gravel, angular to rounded up to 1", trace of sand.
- 136.0 1 foot layer of brown moderately plastic clay.
- 143.0 Sandy clay, brown, moderately plastic. Sand medium to coarse, round to angular, scattered gravel to 3/4".
- 148.0 1 foot of clean sandy gravel up to 1-1/2" size.
- 149.0 Sandy clay as at 143.0 feet.
- 163.0 Sandy gravel, gravel to 2", subrounded to angular, sand
- 165.0 Thin clay seams present in sandy gravel.
- 171.0 Sandy clay, brown, moderately plastic, contains about 25% fine to coarse, subangular to rounded sand.
- 183.5 Gravelly sand, medium to coarse, rounded to angular, gravel to 5/8".
- 185.5 Sandy clay, brown, about 40% fine to medium sand.
- 190.0 Clayey sand, sand fine to coarse, rounded to subangular, 20-30% brown clay.

Test Well No. 5 (Cont'd)

- 326.0 Silty sandy clay, brown, moderately plastic, sand, medium to coarse, some small gravels.
- 342.0 Clayey sand, sand medium to coarse angular to subrounded about 30% clay, brown, moderately plastic.
- 348- 1.5 foot layer of sandy gravel.
349.5
- 352.0 Sandy gravel, angular to rounded gravels up to 3/4", sand, medium to coarse, variable amount of clay.
- 355.0 0.5 foot clay layer.
- 359.0 1.5 foot clay layer.
- 373.0 Clayey sandy gravel, angular to subrounded gravel to 1", sand medium to coarse, angular to subrounded, about 15% brown clay.
- 394.0 Clayey sand, brown, fine to medium with scattered coarse grains, 30% clay.
- 395.0 Gravelly sand, sand medium to coarse, rounded to angular, 20-30% rounded to broken angular gravel to 2", less than 5% clay.
- 401.0 1.5 foot layer of sandy silty clay, brown, about 30% fine sand.
- 404.5 Gravelly clayey sand similar to 395.5 feet, silty clay content to 30%.
- 405.5 Gravelly sand as at 395.5 feet.
- 408.5 Clayey silty sand with scattered fine gravel, brown, 20% silty clay.
- 410.0 Clayey gravelly sand, fine to coarse, gravel subrounded to angular to 1", 10% clay.
- 414.0 1.0 foot layer of clayey silty sand as at 408.5 feet.
- 422.0 Pantano Formation
Clayey gravelly sand, medium to coarse, gravel angular to subrounded.

Test Well No. 5 (Cont'd)

- 435.0 Clayey gravelly sand, medium to coarse grained, angular to rounded, gravels to 3/4", angular, traces of brown clay.
- 461.0 Gravelly sand, medium to coarse, rounded to angular, 20-30% gravel to 1-3/8", subrounded to broken angular.
- 476.0- 2.0 foot layer with 15 to 20% fine sandy
478.0 clay, gravel to 1-1/4".
- 487.0 Gravelly sand, sand medium to coarse, subrounded to angular, gravel rounded to broken angular to 1-1/4", 20% gravel.
- 492.5- Gravelly sand, sand medium to coarse,
494.0 subrounded to angular, gravel rounded to broken angular to 1-1/4", 20% gravel.
- 513.0 Gravelly sand as above with up to 5% brown sandy clay.
- 526.0 Gravelly sand, as at 461.0 feet.
- 535.5 Clayey sand, brown, fine to coarse, scattered gravels, 15% clay.
- 538.0 Clayey gravelly sand, fine to coarse with fine sand mixed in with clay in lumps, 20-30% gravel to 3/4" rounded to broken angular, 5-10% clay.
- 552.0 Gravelly sand, fine to coarse, subrounded to angular, 30% gravels to 3/4", rounded to broken angular, trace clay.
- 578.0 Gravelly sand, medium to coarse, angular to subrounded, gravels to 1-1/2", broken angular to subrounded
- 604.0 Gravelly sand, slightly cemented, sand medium to coarse. Angular to subrounded gravels to 1-1/2" (35%) broken angular to subrounded cementation indicated.

Test Well No. 5 (Cont'd)

- 630.0 Gravelly sand, sand fine to coarse, angular to subrounded. Gravels to 1-1/2" angular to subrounded 25% indication of cementation here to bottom of hole.
- 643.0 Gravelly sand, same as above.
- 656.0 Gravelly sand, sand medium to coarse subrounded to angular, gravel to 1-1/2" subrounded to angular 20% trace brown clay.
- 669.0 Gravelly sand as above
- 672.5 1.5 foot layer contains about 10% fine sandy clay.
- 682.0 Gravelly sand as above
- 695.0 Gravelly sand as above.
- 708.0 Gravelly sand, medium to coarse subrounded to angular, gravel to 1-3/8" subrounded to angular 25%.
- 721.0 Gravelly sand as at 708.0 feet.
- 734.0 Gravelly sand as above with gravel to 1-1/2" +30-40%.
- 747.0 Gravelly sand. Sand medium to coarse, angular to subrounded. Gravels 25% to 1-1/2" subrounded to angular.
- 760.0 Gravelly sand, as above.
- 773.0 Gravelly sand, sand medium to coarse, angular to rounded, gravels 30%, to 1" rounded to angular
- 786.0 Gravelly sand as above.
- 799.0 Gravelly sand as above.
- 807.0 Bottom of hole.

Fort Huachuca, Arizona
Geologic Log
Test Well No. 7

- 0.0 Terrace deposits
Clayey sand, reddish brown, sand is mostly fine to medium, some coarse, angular to subround, variable amount of lean clay.
- 3.5 Clayey Sand as above with scattered small gravel, 10 to 20 percent reddish brown clay.
- 20.0 Sand, mostly fine to medium grained, few coarse grains, angular to subround, trace to 5 percent reddish brown clay.
- 52.0 Upper Unit of Basin Fill
Sand, mostly medium to coarse, angular to subround, trace of brown clay.
- 93.0 Clayey sand, fine to coarse angular to subround sand with 20 to 30 percent brown, moderately plastic clay.
- 105.0 Sand is fine to medium grained, 10 to 20 percent brown clay.
- 130.0 Clayey sand as above, 20 to 30 percent brown clay.
- 150.0 Clayey sand as above, 30 to 40 percent clay.
- 158.0 Sand, fine to medium, angular to subround, less than 5 percent clay.
- 164.0 Sandy clay, brown, moderately plastic, 30 to 40 percent fine to medium grained sand.
- 181.0 Clayey sand, fine to medium grained. Few coarse grains, 30 to 40 percent brown, moderately plastic clay.
- 198.0 Sandy clay-clayey sand, cuttings are mixture of fine to medium sand and brown clay in varying proportions, probably layers of sand and sandy clay.
- 215.0 Lower Unit of Basin Fill
Sandy clay, brown, moderately plastic, 10 to 20 percent fine to medium sand.

Test Well No. 7 (Cont'd)

- 245.0 Thin layer of fine to medium sand, may be slightly clayey.
- 248.0 Sandy clay as at 220.0 feet.
- 263.0 Sand, fine to coarse, angular to subround, mostly medium to coarse, trace of brown clay.
- 279.0 Clayey sandy gravel, gravel is fine, subangular to rounded, sand is fine to coarse, 10 to 20 percent brown, moderately plastic clay.
- 284.0 Sand, fine to medium, mostly fine, angular to subrounded, trace of brown clay.
- 289.0 Sandy clay, brown, moderately plastic
- 294.0 Sand, fine to medium with few coarse grains angular to subround, variable amount of brown clay
- 315.0 Clayey sand, same as at 294.0 feet with 10 to 15 percent brown clay.
- 330.0 Sand, fine to medium, angular to subround, few coarse grains, trace to about 5 percent brown clay, may be thin layers of clay or clayey sand.
- 431.0 Thin streaks of clayey sand, sand is fine to medium coarse.
- 436.0 Sand as at 330.0 feet.
- 450.0 Clayey sand, fine to medium, angular to subangular few coarse grains, trace to 10 percent brown clay.
- 463.0 + 15 percent light brown clay.
- 485.0 Clayey sand as at 450.0 feet.
- 510.0 Slight increase in number of dark brown and maroon sand grains, continues to increase with depth, decrease in quartz grains.
- 551.0 Sand, fine to medium, few coarse grains, angular to subrounded, clean, darker grains continue to increase (looks like reworked Pantano Formation).

Test Well No. 7 (Cont'd)

590.0 Hard streaks caused by cementation, becomes more cemented with depth.

635.0 Pantano Formation

Sand, fine to coarse, angular to subround, scattered gravels and cobbles, mostly dark colored grains, dark green, dark gray, brown, maroon, overall brown color, slightly to moderately cemented, slight increase in cementation and hardness with increasing depth.

700.0 A few zones are softer, overall moderately cemented.

750.0 Cuttings are fine to medium grained, formation is harder, moderately well cemented, scattered softer zones.

1002.0 Bottom of hole

TEST WELL # 5 FORT HUACHUCA

Feet

0.0	Silty sand, tannish brown, loose to firm, dry
0.8	Gravelly sand, tannish brown, firm, dry
6.0	Silty sand, light reddish brown, firm, dry
10.0	Silty sand, tan, firm, dry
14.0	Silty gravelly sand, tan, firm, dry
16.0	Silty gravelly sand, tannish brown, firm, dry
18.0	Cobbles
25.0	Silty gravelly sand, reddish brown, loose to firm, dry
30.0	Silty sand, reddish brown, loose to firm, dry
37.0	Cobbly sand, reddish brown, firm, dry
38.0	Silty sand, reddish brown, loose, dry
53.0	Clayey sandy gravel, brown
55.0	Clayey sand with scattered fragments mudstone
58.5	Gravelly sand, medium to coarse
59.5	Clayey sand
63.5	Gravelly sand
75.0	Clayey gravelly sand
93.0	Gravelly clayey sand
97.0	Sandy clay
102.0	Sandy gravel
105.0	Sandy clay
130.0	Sandy gravel
143.0	Sandy clay
163.0	Sandy gravel

171.0	Sandy clay
183.5	Gravelly sand
185.5	Sandy clay
190.0	Clayey sand, sand fine
192.5	Sandy clay, brown sand
198.0	Gravelly sand, sand medium to coarse
203.0	Sandy clay, brown
205-207.5	Sand fine to medium
224.0	Gravelly sand
228.0	Clayey sand, fine to medium
235.5	Sandy silty clay, brown
241.0	Clayey silty sand, brown
245.5	Gravelly sand
248.5-249.5	Clayey sand, brown
254.5	Gravelly sand
261.5	Clayey sand, fine to medium
261.5	Clayey sand, fine to medium
279.0	Sandy silty clay, brown
290.0	Sandy silty clay, brown
316.0	Sandy gravel
326.0	Silty sandy clay, clay brown
342.0	Clayey sand
352.0	Sandy gravel
373.0	Clayey sandy gravel
394.0	Clayey sand, brown, fine to medium
395.5	Gravelly sand, sand medium to coarse

401-402.5 Sandy silty clay, brown
408.5 Clayey silty sand
410.0 Clayey gravelly sand
461.0 Gravelly sand, sand medium to coarse
535.5 Clayey sand, brown, fine to coarse
538.0 Clayey gravelly sand, sand fine to coarse
552.0 Gravelly sand with traces of clay
565.0 Gravelly sand, sand fine to coarse
800.0 Gravelly sand, sand fine to coarse

0216

Fort Huachuca, Arizona
Geologic Log
Test Well No. 4

4978ASPL

- 0.0 Terrace gravels
Gravelly clayey sand, reddish brown,
rounded gravel to 1", less than 10% gravel.
- 12.0 Clayey gravelly sand, brown, rounded gravel
to 1-1/4", 20% gravel.
- 24.0 Gravelly sandy clay, reddish brown, rounded
gravel to 1/2".
- 30.0 Clayey sand, brown, sand fine to coarse, sub-
angular to rounded, 80% fine to medium, scattered
rounded pea gravel.
- 37.0 Sandy clay, brown, moderately plastic, 30% fine
to medium sand.
- 43.0 Clayey gravelly sand, 20% subangular to
rounded gravel to 1-1/4", sand fine to coarse,
subangular to rounded, 5-10% brown clay.
- 46.0 Sandy clay, brown, 20% fine to medium sand.
- 51.0 Gravelly clayey sand, rounded gravel to 1",
sand fine to coarse, rounded to subangular,
10-15% clay.
- 57.0 Sandy clay, brown, 30-40% sand, fine to
coarse, subangular to rounded.
- 69.0 Upper Unit of Basin Fill
Clayey sand, with scattered gravel
to 1-1/2", brown.
- 73.0 Gravelly sand, sand medium to coarse,
subangular to rounded.
- 82.0 Sandy clay, brown, with scattered
gravel to 3/4", 20-30% fine to coarse sand.
- 94.0 Sandy clay, brown, with scattered gravels
to 3/4", 20-30% fine to medium sand.

Test Well No. 4 (Cont'd)

- 108.0 Clayey gravelly sand, medium to coarse, sub-rounded to angular, gravels to 1-1/2" rounded to subangular, trace tan clay in scattered layers.
- 114.0 Sandy clay with scattered gravels to 3/4".
- 135.0 Sandy clay, brown, with scattered gravel to 1", fine to coarse sand, rounded to angular, scattered thin seams sand and sandy gravel.
- 146.0 Gravelly sand, sand rounded to angular, medium to coarse, with rounded to angular gravels to 2", encountered boulders.
- 168.0 Gravelly sandy clay, brown, moderately plastic, 40% fine to coarse sand, rounded to angular, scattered gravels.
- 177.0 Gravelly clayey sand, medium to coarse, rounded to angular, scattered gravels.
- 194.0 Gravelly sandy clay as at 168.0 feet.
- 213.0 Sandy clay, brown, 20-30% fine to medium sand, clay moderately plastic.
- 221.0 Gravelly sand, fine to coarse, less than 5% fine, subangular to subrounded, gravel subrounded to broken angular chips to 1-1/2".
- 231.0 Sandy clay, brown, sand 20%, mostly fine to medium.
- 236.0 Gravelly sand as at 221.0 feet.
- 238.0 Sandy clay as at 231.0 feet.
- 249.0 Gravelly clayey sand, medium to coarse, sub-angular to subrounded, scattered gravel to 1-1/2", 15-25% clay.
- 253.0 Sandy clay, brown, less than 15% fine to medium sand, clay moderately plastic.
- 266.0 Gravelly sand.
- 270.0 Sandy clay as at 253.0 feet.

- 278.0 Sandy clay, brown, sand mostly fine with scattered, medium to coarse grains, clay moderately plastic.
- 290.0 Gravelly clayey sand.
- 291.0 Sandy clay as at 278.0 feet.
- 304.0 Clayey gravelly sand, fine to coarse but less than 10% fine, 30-40% gravel to 3/4".
- 310.0 Lower Unit of Basin Fill
Sandy clay, brown, 10-20% fine to medium sand.
- 314.0 Sandy clay, 30% medium to coarse sand.
- 316.0 Sandy clay as at 310.0 feet.
- 318.0 Sandy clay, brown, sand fine to coarse 30-40%, clay moderately plastic.
- 326.0 Clayey gravelly sand, clay less than 5%, gravel 25%.
- 328.0 Sandy clay as at 318.0 feet.
- 330.0 Gravelly clayey sand, fine to coarse, less than 10% fine, subangular to subrounded, 20% gravel to 3/4".
- 343.0 Clayey sand to sandy clay, brown, sand fine to coarse, 40% fine, scattered gravel to 1/2".
- 356.0 Gravelly clayey sand, 20% clay, sand fine to coarse, 30-40%, scattered gravel to 1".
- 359.0 Gravelly sand, less than 5% clay, gravel to 3/4", sand medium to coarse.
- 360.0 Gravelly clayey sand as at 356.0 feet.
- 364.0 Gravelly sand as at 359.0 feet.
- 365.0 Gravelly clayey sand as at 356.0 feet.

Test Well No. 4 (Cont'd)

4978ASPL

- 369.0 Gravelly sandy clay, brown, sand fine to coarse 30-40%, 5% gravel to 1".
- 377.0 Gravelly sand, fine to coarse, 10% fine, less than 5% clay, gravel to 1/2".
- 386.0 Sandy clay, brown, moderately plastic, 30-40% fine to coarse sand.
- 408.0 Sandy clay, brown, with scattered gravels to 3/4", sand fine to medium with scattered coarse grains.
- 416.0 Clayey gravelly sand.
- 417.0 Sandy clay as at 408.0 feet.
- 428.0 Gravelly sand with trace clay.
- 430.0 Sandy clay as at 408.0 feet.
- 434.0 Sandy clay, brown, sand fine to coarse 30-40%.
- 437.0 Clayey gravelly sand, fine to coarse, less than 10% fine, gravel angular chips to subrounded up to 3/4", less than 5% clay.
- 442.0 Sandy clay, brown, 30% sand.
- 443.0 Clayey gravelly sand as at 437.0 feet.
- 447.0 Clayey gravelly sand, fine to coarse, angular to subrounded, 10-15% fine, 10-20% brown clay.
- 462.0 Gravelly sand, fine to coarse, less than 10% fine, angular to subrounded, gravel angular chips to subrounded to 3/4", less than 5% brown clay.
- 482.0 Gravelly sand, less than 5% brown clay, fine to coarse sand less than 10% fine, 10-15% gravel to 1-1/4".
- 508.0 Gravelly sand, less than 10% clay, 5-10% fine sand, gravel to 1" angular to subrounded.

- 521.0 Pantano Formation
Gravelly sand, trace clay, less than 5% fine sand.
- 534.0 Gravelly sand, medium to coarse grained, rounded to angular, gravels to 1-1/2" subrounded to angular, less than 10% brown clay, evidence of cementation.
- 573.0 Gravelly sand as at 534.0 feet, less than 5% clay, 15% gravel to 1".
- 586.0 Gravelly sand, fine to coarse, angular to subrounded, gravel angular to subrounded to 1", trace brown clay.
- 599.0 Gravelly sand, fine to coarse, less than 5% fine, angular to subrounded, angular to subrounded gravel to 1-1/4", less than 5% clay.
- 601.0 Sandy gravel to 3/4" size.
- 602.0 Gravelly sand as at 599.0 feet, clay content up to 10%.
- 603.0 Sandy gravel as at 601.0 feet.
- 608.0 Gravelly sand as at 599.0 feet.
- 618.0 Clay increase to 10-15%.
- 619.0 Clay content down to less than 5%.
- 625.0 Gravelly sand as at 599.0 feet with increase in clay to 10%.
- 638.0 Gravelly sand, fine to coarse, subangular to subrounded, less than 5% fine, gravel to 3/4", less than 10% clay.
- 664.0 Clayey gravelly sand, fine to coarse, angular to rounded, gravels to 3/4".
- 677.0 Clayey sand, with scattered fine gravel to 3/4" 10-20% clay.
- 690.0 Gravelly sand with trace clay, sand fine to coarse, 5-10% gravel in angular chips to subrounded to 1-1/8" size.

Test Well No. 4 (Cont'd)

4978A SPL

703.0 Gravelly sand with clay content varying from a trace to 10%, sand fine to coarse, gravel angular chips to rounded to 1".

716.0 Clayey gravelly sand as at 703.0 feet with clay content varying to 30%.

729.0 Gravelly clayey sand, mostly medium to coarse, rounded to angular, 30% clay moderately to highly plastic, 10% gravel to 1".

768.0 Gravelly clayey sand, fine to coarse grained, rounded to angular, 30% brown cohesive clay, greater than 20% gravels to 1".

807.0 Bottom of hole.

Fort Huachuca, Arizona
 Geologic Log
 Test Well No. 5

Now Well # 8

- 0.0 Terrace gravels
 Silty sand, tannish brown, loose to firm, dry,
 30% silt 65% sand, 5% gravels to 2", low plasticity.
- 0.8 Gravelly sand, tannish brown, firm, dry, 15%
 silt, 50% sand, 33% gravels to 3", trace caliche,
 gravels and sands angular to rounded, fines have
 low plasticity.
- 6.0 Silty sand, light reddish brown, firm, dry, 30%
 silt, 55% fine sand, small percent of angular
 coarse sand, 15% rounded gravels to 1-1/2" mostly
 smaller, caliche coated, low plasticity.
- 10.0 Silty sand, tan, firm, dry, 30% silt, 55% sand,
 mostly fine, small percent coarse, angular to
 subrounded, 15% gravels to 1-1/2" some caliche
 coating, low to no plasticity.
- 14.0 Silty gravelly sand, tan, firm, dry, 30% silt,
 40% subrounded to rounded, sand, mostly fine,
 a small percent coarse, 30% rounded gravels to
 3-1/2", trace caliche.
- 16.0 Silty gravelly sand, tannish brown, firm, dry,
 15-20% silt, 50% sand well graded from fine to
 coarse, subangular to rounded, +30% gravels to
 4", rounded to angular with some caliche coating
 and iron stains.
- 18.0 Cobbles to 6".
- 19.0 Silty gravelly sand as at 16.0 feet.
- 25.0 Silty gravelly sand, reddish brown, loose to
 firm, dry, 10% silt, 70% sand fine to medium
 grained with some coarse, angular, 20% gravels
 to 3", rounded to subangular, scattered cobbles
 to 9".
- 30.0 Silty sand, reddish brown, loose to firm, dry,
 30% silt, +70% sand, fine with scattered coarse
 grains, rounded to subrounded, scattered gravel
 to 2-1/2" rounded.
- 37.0 Cobbly sand, reddish brown, firm, dry, +30%
 silt, 50% sand mostly fine with scattered medium
 to coarse, 20% gravels and cobbles to 8".
- 38.0 Silty sand, reddish brown, loose, dry, +30% silt,
 65% sand mostly fine, trace gravel to 3/4".

Test Well No. 5 (Cont'd)

- 49.0 Silty sand as at 38.0 feet, but 40% silt, 60% sand, firm, dense.
- 52.0 Silty sand as at 49.0 feet with scattered cobbles to 9".
- 53.0 Clayey sandy gravel, brown, gravel to 2", rounded to angular, sand medium to coarse 40-50%.
- 55.0 Upper Unit of Basin Fill
Clayey sand with scattered fragments of mudstone to 1/2", 10% brown clay, sand fine to coarse 10% medium, rounded to angular.
- 58.5 Gravelly sand, medium to coarse, rounded gravel to 1-1/2".
- 59.5 Clayey sand with scattered subangular gravel to 1/2", 25-35% brown clay, sand fine to coarse.
- 63.5 Gravelly sand, sand medium to coarse, rounded to subangular, gravel to 1", rounded to broken angular, trace brown clay.
- 75.0 Clayey gravelly sand, about 15% clay, yellow brown, with estimated 65% sand, fine to coarse, rounded to subangular, gravels to 1-1/2".
- 77.0 Same as above but with less than 5% clay.
- 82.0 Coarse sandy gravel.
- 84.0 Clayey gravelly sand as at 75.0 feet.
- 93.0 Gravelly clayey sand grading in and out of sandy clay, sand medium to coarse, rounded to angular, gravels to 1-1/2".
- 97.0 Sandy clay to clayey sand, brown as above.
- 102.0 Sandy gravel, gravel rounded to angular to 2", sand medium to coarse, rounded to angular, trace brown clay.

Test Well No. 5 (Cont'd)

- 105.0 Sandy clay to clayey sand as at 97.0 with gravel to 2", brown moderately plastic clay.
- 103.0 Same as above, but decreased clay content for 1 foot.
- 121.0 Same as above, but decreased clay content for 3 feet.
- 124.0 Sandy clay, about 50% brown clay, moderately plastic. Sand, fine to coarse, rounded to angular, scattered gravels to 3/4".
- 130.0 Gravel, angular to rounded up to 1", trace of sand.
- 136.0 1 foot layer of brown moderately plastic clay.
- 143.0 Sandy clay, brown, moderately plastic. Sand medium to coarse, round to angular, scattered gravel to 3/4".
- 148.0 1 foot of clean sandy gravel up to 1-1/2" size.
- 149.0 Sandy clay as at 143.0 feet.
- 163.0 Sandy gravel, gravel to 2", subrounded to angular, sand
- 165.0 Thin clay seams present in sandy gravel.
- 171.0 Sandy clay, brown, moderately plastic, contains about 25% fine to coarse, subangular to rounded sand.
- 183.5 Gravelly sand, medium to coarse, rounded to angular, gravel to 5/8".
- 185.5 Sandy clay, brown, about 40% fine to medium sand.
- 190.0 Clayey sand, sand fine to coarse, rounded to subangular, 20-30% brown clay.

Test Well No. 5 (Cont'd)

- 326.0 Silty sandy clay, brown, moderately plastic, sand, medium to coarse, some small gravels.
- 342.0 Clayey sand, sand medium to coarse angular to subrounded about 30% clay, brown, moderately plastic.
- 348- 1.5 foot layer of sandy gravel.
349.5
- 352.0 Sandy gravel, angular to rounded gravels up to 3/4", sand, medium to coarse, variable amount of clay.
- 355.0 0.5 foot clay layer.
- 359.0 1.5 foot clay layer.
- 373.0 Clayey sandy gravel, angular to subrounded gravel to 1", sand medium to coarse, angular to subrounded, about 15% brown clay.
- 394.0 Clayey sand, brown, fine to medium with scattered coarse grains, 30% clay.
- 395.0 Gravelly sand, sand medium to coarse, rounded to angular, 20-30% rounded to broken angular gravel to 2", less than 5% clay.
- 401.0 1.5 foot layer of sandy silty clay, brown, about 30% fine sand.
- 404.5 Gravelly clayey sand similar to 395.5 feet, silty clay content to 30%.
- 405.5 Gravelly sand as at 395.5 feet.
- 408.5 Clayey silty sand with scattered fine gravel, brown, 20% silty clay.
- 410.0 Clayey gravelly sand, fine to coarse, gravel subrounded to angular to 1", 10% clay.
- 414.0 1.0 foot layer of clayey silty sand as at 408.5 feet.
- 422.0 Pantano Formation
Clayey gravelly sand, medium to coarse, gravel angular to subrounded.

Test Well No. 5 (Cont'd)

- 435.0 Clayey gravelly sand, medium to coarse grained, angular to rounded, gravels to 3/4", angular, traces of brown clay.
- 461.0 Gravelly sand, medium to coarse, rounded to angular, 20-30% gravel to 1-3/8" , sub-rounded to broken angular.
- 476.0- 2.0 foot layer with 15 to 20% fine sandy
478.0 clay, gravel to 1-1/4".
- 487.0 Gravelly sand, sand medium to coarse, subrounded to angular, gravel rounded to broken angular to 1-1/4", 20% gravel.
- 492.5- Gravelly sand, sand medium to coarse,
494.0 subrounded to angular, gravel rounded to broken angular to 1-1/4", 20% gravel.
- 513.0 Gravelly sand as above with up to 5% brown sandy clay.
- 526.0 Gravelly sand, as at 461.0 feet.
- 535.5 Clayey sand, brown, fine to coarse, scattered gravels, 15% clay.
- 538.0 Clayey gravelly sand, fine to coarse with fine sand mixed in with clay in lumps, 20-30% gravel to 3/4" rounded to broken angular, 5-10% clay.
- 552.0 Gravelly sand, fine to coarse, subrounded to angular, 30% gravels to 3/4", rounded to broken angular, trace clay.
- 578.0 Gravelly sand, medium to coarse, angular to subrounded, gravels to 1-1/2", broken angular to subrounded
- 604.0 Gravelly sand, slightly cemented, sand medium to coarse. Angular to subrounded gravels to 1-1/2" (35%) broken angular to subrounded cementation indicated.

Test Well No. 5 (Cont'd)

- 630.0 Gravelly sand, sand fine to coarse, angular to subrounded. Gravels to 1-1/2" angular to subrounded 25% indication of cementation here to bottom of hole.
- 643.0 Gravelly sand, same as above.
- 656.0 Gravelly sand, sand medium to coarse subrounded to angular, gravel to 1-1/2" subrounded to angular 20% trace brown clay.
- 669.0 Gravelly sand as above
- 672.5 1.5 foot layer contains about 10% fine sandy clay.
- 682.0 Gravelly sand as above
- 695.0 Gravelly sand as above.
- 708.0 Gravelly sand, medium to coarse subrounded to angular, gravel to 1-3/8" subrounded to angular 25%.
- 721.0 Gravelly sand as at 708.0 feet.
- 734.0 Gravelly sand as above with gravel to 1-1/2" +30-40%.
- 747.0 Gravelly sand. Sand medium to coarse, angular to subrounded. Gravels 25% to 1-1/2" subrounded to angular.
- 760.0 Gravelly sand, as above.
- 773.0 Gravelly sand, sand medium to coarse, angular to rounded, gravels 30%, to 1" rounded to angular
- 786.0 Gravelly sand as above.
- 799.0 Gravelly sand as above.
- 807.0 Bottom of hole.

Fort Huachuca, Arizona
Geologic Log
Test Well No. 7

- 0.0 Terrace deposits
Clayey sand, reddish brown, sand is mostly fine to medium, some coarse, angular to subround, variable amount of lean clay.
- 3.5 Clayey Sand as above with scattered small gravel, 10 to 20 percent reddish brown clay.
- 20.0 Sand, mostly fine to medium grained, few coarse grains, angular to subround, trace to 5 percent reddish brown clay.
- 52.0 Upper Unit of Basin Fill
Sand, mostly medium to coarse, angular to subround, trace of brown clay.
- 93.0 Clayey sand, fine to coarse angular to subround sand with 20 to 30 percent brown, moderately plastic clay.
- 105.0 Sand is fine to medium grained, 10 to 20 percent brown clay.
- 130.0 Clayey sand as above, 20 to 30 percent brown clay.
- 150.0 Clayey sand as above, 30 to 40 percent clay.
- 158.0 Sand, fine to medium, angular to subround, less than 5 percent clay.
- 164.0 Sandy clay, brown, moderately plastic, 30 to 40 percent fine to medium grained sand.
- 181.0 Clayey sand, fine to medium grained. Few coarse grains, 30 to 40 percent brown, moderately plastic clay.
- 198.0 Sandy clay-clayey sand, cuttings are mixture of fine to medium sand and brown clay in varying proportions, probably layers of sand and sandy clay.
- 215.0 Lower Unit of Basin Fill
Sandy clay, brown, moderately plastic, 10 to 20 percent fine to medium sand.

Test Well No. 7 (Cont'd)

4710(SM)

- 245.0 Thin layer of fine to medium sand, may be slightly clayey.
- 248.0 Sandy clay as at 220.0 feet.
- 263.0 Sand, fine to coarse, angular to subround, mostly medium to coarse, trace of brown clay.
- 279.0 Clayey sandy gravel, gravel is fine, subangular to rounded, sand is fine to coarse, 10 to 20 percent brown, moderately plastic clay.
- 284.0 Sand, fine to medium, mostly fine, angular to subrounded, trace of brown clay.
- 289.0 Sandy clay, brown, moderately plastic
- 294.0 Sand, fine to medium with few coarse grains angular to subround, variable amount of brown clay
- 315.0 Clayey sand, same as at 294.0 feet with 10 to 15 percent brown clay.
- 330.0 Sand, fine to medium, angular to subround, few coarse grains, trace to about 5 percent brown clay, may be thin layers of clay or clayey sand.
- 431.0 Thin streaks of clayey sand, sand is fine to medium coarse.
- 436.0 Sand as at 330.0 feet.
- 450.0 Clayey sand, fine to medium, angular to subangular few coarse grains, trace to 10 percent brown clay.
- 463.0 ± 15 percent light brown clay.
- 485.0 Clayey sand as at 450.0 feet.
- 510.0 Slight increase in number of dark brown and maroon sand grains, continues to increase with depth, decrease in quartz grains.
- 551.0 Sand, fine to medium, few coarse grains, angular to subrounded, clean, darker grains continue to increase (looks like reworked Pantano Formation).

Test Well No. 7 (Cont'd)

590.0 Hard streaks caused by cementation, becomes more cemented with depth.

635.0 Pantano Formation

Sand, fine to coarse, angular to subround, scattered gravels and cobbles, mostly dark colored grains, dark green, dark gray, brown, maroon, overall brown color, slightly to moderately cemented, slight increase in cementation and hardness with increasing depth.

700.0 A few zones are softer, overall moderately cemented.

750.0 Cuttings are fine to medium grained, formation is harder, moderately well cemented, scattered softer zones.

1002.0 Bottom of hole

INVENTORY OF WATER USES
FORT HUACHUCA, ARIZONA

Claim No. 39-10774

Date Inspected Aug 89

1. Water Inventory I.D. TW4 - Test Well #4 and Arizona Department of Water Resources I.D. W15
2. Priority Date 1971/2 acquired land
3. County Cochise 4. USGS Quad Name Fort Huachuca, AZ
5. Location SWSENE 15 21S 20E 6. Elevation 4,425 feet
7. Claimed Use Capped
8. Diversion Well
9. Water Course or Source Well water from Upper Unit of Basin Fill-Quaternary.
10. Annual Use none
11. Well Data:
 - a. Casing Size - b. Equipment - Pump none
 - c. Power none d. Discharge Measurement none gpm.
12. Comments This is a test well and is not presently used.

Location Map

nw	ne	nw	ne	nw	ne	nw	ne
	nw		ne		nw		ne
sw	se	sw	se	sw	se	sw	se
		NW				NE	
nw	ne	nw	ne	nw	ne	nw	ne
	sw		se		sw	x	se
sw	se	sw	se	* sw	se	sw	se
nw	ne	nw	ne	* nw	ne	nw	ne
	nw		ne		nw		ne
sw	se	sw	se	sw	se	sw	se
		SW				SE	
nw	ne	nw	ne	nw	ne	nw	ne
	sw		se		sw		se
sw	se	sw	se	sw	se	sw	se



Old Test Well #5

INVENTORY OF WATER USES
FORT HUACHUCA, ARIZONA

Claim No. 39-10774

Date Inspected Aug 89

1. Water Inventory I.D. W8 - Well #8 and Arizona Department of Water Resources I.D. W01/MU
2. Priority Date 1982 withdrawn land
3. County Cochise 4. USGS Quad Name Fort Huachuca, AZ
5. Location NESENE 16 21S 20E 6. Elevation 4,425 feet
7. Claimed Use Domestic/military
8. Diversion Well
9. Water Course or Source Well water from Upper Unit of Basin Fill-Quaternary
10. Annual Use 134,539 Kgal
11. Well Data:
 - a. Casing Size 16" diameter b. Equipment - Pump turbine
 - c. Power Elec d. Discharge Measurement 800 gpm.
12. Comments Pipeline steel cement coated, 24" dia; 6 miles pipeline to first use and total length of pipeline pumped directly into Post distribution system; 807' casing depth and total well depth; 500' to water.

Location Map

nw	ne	nw	ne	nw	ne	nw	ne
	nw		ne		nw		ne
sw	se	sw	se	sw	se	sw	se
		NW				NE	
nw	ne	nw	ne	nw	ne	nw	ne
	sw		se		sw		se
sw	se	sw	se	* sw	se	sw	se
nw	ne	nw	ne	* nw	ne	nw	ne
	nw		ne		nw		ne
sw	se	sw	se	sw	se	sw	se
		SW				SE	
nw	ne	nw	ne	nw	ne	nw	ne
	sw		se		sw		se
sw	se	sw	se	sw	se	sw	se



INVENTORY OF WATER USES
FORT HUACHUCA, ARIZONA

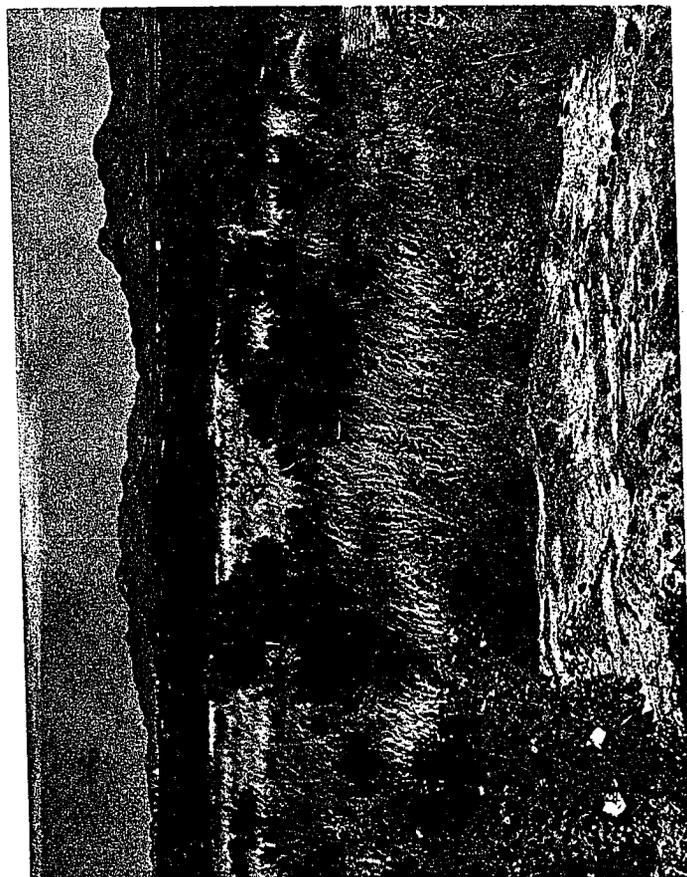
Claim No. 39-10774

Date Inspected Aug 89

1. Water Inventory I.D. TW7 - Test Well #7 and Arizona Department of Water Resources I.D. W17
2. Priority Date 1973 acquired land
3. County Cochise 4. USGS Quad Name Fort Huachuca, AZ
5. Location SESWNW 11 21S 20E 6. Elevation 4,350 feet
7. Claimed Use Capped
8. Diversion Well
9. Water Course or Source Well water from Upper Unit of Basin Fill-Quaternary.
10. Annual Use none
11. Well Data:
 - a. Casing Size - b. Equipment - Pump none
 - c. Power none d. Discharge Measurement none gpm.
12. Comments This is a test well and is not presently used

Location Map

nw	ne	nw	ne	nw	ne	nw	ne
	nw		ne		nw		ne
sw	se	sw	se	sw	se	sw	se
		NW				NE	
nw	ne	nw	ne	nw	ne	nw	ne
	sw		se		sw		se
sw	se ^x	sw	se*	sw	se	sw	se
nw	ne	nw	ne*	nw	ne	nw	ne
	nw		ne		nw		ne
sw	se	sw	se	sw	se	sw	se
		SW				SE	
nw	ne	nw	ne	nw	ne	nw	ne
	sw		se		sw		se
sw	se	sw	se	sw	se	sw	se



1982

NESENE 16 215 20E

4978A SPL

Fort Huachuca, Arizona
Geologic Log
Test Well No. 5

Now WELL # 8

- 0.0 Terrace gravels
Silty sand, tannish brown, loose to firm, dry,
30% silt 65% sand, 5% gravels to 2", low plasticity.
- 0.8 Gravelly sand, tannish brown, firm, dry, 15%
silt, 50% sand, 33% gravels to 3", trace caliche,
gravels and sands angular to rounded, fines have
low plasticity.
- 6.0 Silty sand, light reddish brown, firm, dry, 30%
silt, 55% fine sand, small percent of angular
coarse sand, 15% rounded gravels to 1-1/2" mostly
smaller, caliche coated, low plasticity.
- 10.0 Silty sand, tan, firm, dry, 30% silt, 55% sand,
mostly fine, small percent coarse, angular to
subrounded, 15% gravels to 1-1/2" some caliche
coating, low to no plasticity.
- 14.0 Silty gravelly sand, tan, firm, dry, 30% silt,
40% subrounded to rounded, sand, mostly fine,
a small percent coarse, 30% rounded gravels to
3-1/2", trace caliche.
- 16.0 Silty gravelly sand, tannish brown, firm, dry,
15-20% silt, 50% sand well graded from fine to
coarse, subangular to rounded, +30% gravels to
4", rounded to angular with some caliche coating
and iron stains.
- 18.0 Cobbles to 6".
- 19.0 Silty gravelly sand as at 16.0 feet.
- 25.0 Silty gravelly sand, reddish brown, loose to
firm, dry, 10% silt, 70% sand fine to medium
grained with some coarse, angular, 20% gravels
to 3", rounded to subangular, scattered cobbles
to 9".
- 30.0 Silty sand, reddish brown, loose to firm, dry,
30% silt, +70% sand, fine with scattered coarse
grains, rounded to subrounded, scattered gravel
to 2-1/2" rounded.
- 37.0 Cobbly sand, reddish brown, firm, dry, +30%
silt, 50% sand mostly fine with scattered medium
to coarse, 20% gravels and cobbles to 8".
- 38.0 Silty sand, reddish brown, loose, dry, +30% silt,
to 2 1/2"

Test Well No. 5 (Cont'd)

- 49.0 Silty sand as at 38.0 feet, but 40% silt, 60% sand, firm, dense.
- 52.0 Silty sand as at 49.0 feet with scattered cobbles to 9".
- 53.0 Clayey sandy gravel, brown, gravel to 2", rounded to angular, sand medium to coarse 40-50%.
- 55.0 Upper Unit of Basin Fill
Clayey sand with scattered fragments of mudstone to 1/2", 10% brown clay, sand fine to coarse 10% medium, rounded to angular.
- 58.5 Gravelly sand, medium to coarse, rounded gravel to 1-1/2".
- 59.5 Clayey sand with scattered subangular gravel to 1/2", 25-35% brown clay, sand fine to coarse.
- 63.5 Gravelly sand, sand medium to coarse, rounded to subangular, gravel to 1", rounded to broken angular, trace brown clay.
- 75.0 Clayey gravelly sand, about 15% clay, yellow brown, with estimated 65% sand, fine to coarse, rounded to subangular, gravels to 1-1/2".
- 77.0 Same as above but with less than 5% clay.
- 82.0 Coarse sandy gravel.
- 84.0 Clayey gravelly sand as at 75.0 feet.
- 93.0 Gravelly clayey sand grading in and out of sandy clay, sand medium to coarse, rounded to angular, gravels to 1-1/2".
- 97.0 Sandy clay to clayey sand, brown as above.
- 102.0 Sandy gravel, gravel rounded to angular to 2", sand medium to coarse, rounded to angular, trace brown clay.

Test Well No. 5 (Cont'd)

- 105.0 Sandy clay to clayey sand as at 97.0 with gravel to 2", brown moderately plastic clay.
- 103.0 Same as above, but decreased clay content for 1 foot.
- 121.0 Same as above, but decreased clay content for 3 feet.
- 124.0 Sandy clay, about 50% brown clay, moderately plastic. Sand, fine to coarse, rounded to angular, scattered gravels to 3/4".
- 130.0 Gravel, angular to rounded up to 1", trace of sand.
- 136.0 1 foot layer of brown moderately plastic clay.
- 143.0 Sandy clay, brown, moderately plastic. Sand medium to coarse, round to angular, scattered gravel to 3/4".
- 148.0 1 foot of clean sandy gravel up to 1-1/2" size.
- 149.0 Sandy clay as at 143.0 feet.
- 163.0 Sandy gravel, gravel to 2", subrounded to angular, sand
- 165.0 Thin clay seams present in sandy gravel.
- 171.0 Sandy clay, brown, moderately plastic, contains about 25% fine to coarse, subangular to rounded sand.
- 183.5 Gravelly sand, medium to coarse, rounded to angular, gravel to 5/8".
- 185.5 Sandy clay, brown, about 40% fine to medium sand.
- 190.0 Clayey sand, sand fine to coarse, rounded to subangular, 20-30% brown clay.

Test Well No. 5 (Cont'd)

- 326.0 Silty sandy clay, brown, moderately plastic, sand, medium to coarse, some small gravels.
- 342.0 Clayey sand, sand medium to coarse angular to subrounded about 30% clay, brown, moderately plastic.
- 348- 1.5 foot layer of sandy gravel.
349.5
- 352.0 Sandy gravel, angular to rounded gravels up to 3/4", sand, medium to coarse, variable amount of clay.
- 355.0 0.5 foot clay layer.
- 359.0 1.5 foot clay layer.
- 373.0 Clayey sandy gravel, angular to subrounded gravel to 1", sand medium to coarse, angular to subrounded, about 15% brown clay.
- 394.0 Clayey sand, brown, fine to medium with scattered coarse grains, 30% clay.
- 395.0 Gravelly sand, sand medium to coarse, rounded to angular, 20-30% rounded to broken angular gravel to 2", less than 5% clay.
- 401.0 1.5 foot layer of sandy silty clay, brown, about 30% fine sand.
- 404.5 Gravelly clayey sand similar to 395.5 feet, silty clay content to 30%.
- 405.5 Gravelly sand as at 395.5 feet.
- 408.5 Clayey silty sand with scattered fine gravel, brown, 20% silty clay.
- 410.0 Clayey gravelly sand, fine to coarse, gravel subrounded to angular to 1", 10% clay.
- 414.0 1.0 foot layer of clayey silty sand as at 408.5 feet.
- 422.0 Pantano Formation
Clayey gravelly sand, medium to coarse, gravel angular to subrounded.

Test Well No. 5 (Cont'd)

- 435.0 Clayey gravelly sand, medium to coarse grained, angular to rounded, gravels to 3/4", angular, traces of brown clay.
- 461.0 Gravelly sand, medium to coarse, rounded to angular, 20-30% gravel to 1-3/8", subrounded to broken angular.
- 476.0- 2.0 foot layer with 15 to 20% fine sandy
478.0 clay, gravel to 1-1/4".
- 487.0 Gravelly sand, sand medium to coarse, subrounded to angular, gravel rounded to broken angular to 1-1/4", 20% gravel.
- 492.5- Gravelly sand, sand medium to coarse,
494.0 subrounded to angular, gravel rounded to broken angular to 1-1/4", 20% gravel.
- 513.0 Gravelly sand as above with up to 5% brown sandy clay.
- 526.0 Gravelly sand, as at 461.0 feet.
- 535.5 Clayey sand, brown, fine to coarse, scattered gravels, 15% clay.
- 538.0 Clayey gravelly sand, fine to coarse with fine sand mixed in with clay in lumps, 20-30% gravel to 3/4" rounded to broken angular, 5-10% clay.
- 552.0 Gravelly sand, fine to coarse, subrounded to angular, 30% gravels to 3/4", rounded to broken angular, trace clay.
- 578.0 Gravelly sand, medium to coarse, angular to subrounded, gravels to 1-1/2", broken angular to subrounded
- 604.0 Gravelly sand, slightly cemented, sand medium to coarse. Angular to subrounded gravels to 1-1/2" (35%) broken angular to subrounded cementation indicated.

4978ASPL

Test Well No. 5 (Cont'd)

630.0 Gravelly sand, sand fine to coarse, angular to subrounded. Gravels to 1-1/2" angular to subrounded 25% indication of cementation here to bottom of hole.

643.0 Gravelly sand, same as above.

656.0 Gravelly sand, sand medium to coarse subrounded to angular, gravel to 1-1/2" subrounded to angular 20% trace brown clay.

669.0 Gravelly sand as above

672.5 1.5 foot layer contains about 10% fine sandy clay.

682.0 Gravelly sand as above

695.0 Gravelly sand as above.

708.0 Gravelly sand, medium to coarse subrounded to angular, gravel to 1-3/8" subrounded to angular 25%.

721.0 Gravelly sand as at 708.0 feet.

734.0 Gravelly sand as above with gravel to 1-1/2" +30-40%.

747.0 Gravelly sand. Sand medium to coarse, angular to subrounded. Gravels 25% to 1-1/2" subrounded to angular.

760.0 Gravelly sand, as above.

773.0 Gravelly sand, sand medium to coarse, angular to rounded, gravels 30%, to 1" rounded to angular

786.0 Gravelly sand as above.

799.0 Gravelly sand as above.

807.0 Bottom of hole.