1-21-81

G. H. New

MacARTHUR TRACT EXECUTIVE SUMMARY

-- SPECIAL NOTES --

The MacArthur Tract sites represent a joint effort of both the Project Development Section and the ROMP & QWIP Sections of the District staff. Throughout the project, the Resource Development Division (RDD) maintained project control. The RDD undertook this project at the request of Sarasota County to investigate the possibility of developing a well field for Sarasota County in this area. Geraghty & Miller, Inc. (G&M) (a hydrogeologic consulting firm from Tampa) was contracted to accomplish the majority of the investigative work for this phase of the project. G&M is scheduled to publish a report (due in March 1981) about this investigation. The report will include data from well construction, extensive water sampling (during and after well construction) and several pump tests which were performed at these sites.

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WAM.1

IIA

Executive Summary
MacArthur Tract
Eastern and Western Monitor Well Sites

ROMP 19

Location

Romp Sites 19 and 19X are located along an access road from S.R. 72, approximately 22 miles east of the city of Sarasota in Sarasota County (eastern site is ROMP Site #19X, western site is ROMP Site #19). The eastern site is approximately 3 miles south of S.R. 72 along a controlled access route in the NE 1/4, NE 1/4, SE 1/4 of Section 13, Township 38 South and Range 20 east at latitude 27°10'21" and longitude 82°15'16". The western site is located approximately 6 3/4 miles west of the eastern site and southeast of the eastern boundary of the Myakka State Park. This site is in the SE 1/4, SW 1/4, SE 1/4 of Section 18, Township 38 South and Range 20 East at latitude 27°09'59" and longitude 82°20'30".

Site Easement

These sites are located on the MacArthur Tract known as Trust #202, dated June 6, 1952. Two drill sites (perpetual easements) and controlled access route easements were granted to the District on June 12, 1980, by a representative of the Banker's Life Corporation of America for the sum of ten dollars. The perpetual easement at both sites is 20'x20' with a total temporary construction area of 80'x100' at each site.

Geology

The MacArthur Tract eastern site is located on the Talbot Terrace at an elevation of ±31', and the MacArthur Tract western site is located on the Pamlico Terrace at an elevation of ±20' above mean sea level. All of the following geologic data was obtained from an examination of split spoon samples, drill cuttings and geophysical logs. The split spoon samples were analyzed by Geraghty & Miller, Inc. (G&M). The drill cuttings are described within these files by both G&M and Richard H. Wolcott, a private geologic consultant, contracted for

this project by the Sarasota office of the U. S. Geological Survey (USGS). A full suite of geophysical logs (including static and pumping) was run by the Sarasota USGS with their unit and reproductions are included within the files. However, the nature of this report allows space for a geologic summary at best and the formation picks are subject to the prejudices of this author.

	Eastern Site	Western Site	
A)	0' - 25'	0' - 50'	undifferentiated terrace, sand and clays
B)	25' - 125'	50' - 125'	upper Hawthorn (TAMIAMI?) limestone, dolo-
C)	125' - 205'	125' - 170'	upper Hawthorn (lower Hawthorn) mite, chert, sand,
D)	205' - 258'	170' - 270'	lower Hawthorn phosphatic, grey, cream, brown, tan
E)	258' - 398'	270' - 395'	TAMPA - eastern-predominantly sandy limestone and dolomite western-predominantly clayey limestone and dolomite
F)	398' - 420'+	395' - 425'	SUWANNEE - eastern-fossiliferous tan limestone western-tan dolomite

A - Undifferentiated grey, brown, white, quartz and phosphatic sand and clay.

B, C, & D - Interbedded limestone, sand and clay, color ranges from grey, through cream, to tan or brown, the eastern site is predominated by limestone, sandstone (including phosphatic) and sandy (quartz) pockets, while the western site is predominated by clays, dolomite and chert. It is apparent that the two sites existed in contrasting depositional environments of which the western site most likely represents deeper water. It is also apparent that areal weathering has affected both unequally or the sites were subjected to varing degrees of weathering.

Hydrology

A number of drill stem specific capacity tests were conducted by the consultant during the construction of the artesian monitors at both the eastern and western sites. However, these tests are subject to a number of inaccuracies which is why their data is not present in this report. The majority of the errors from these tests results lies in the fact that the type of air-lift pumping employed did not create high enough discharge rates to cause sufficient drawdown for accurate specific capacity calculations (drawdown should be $\geq$2'-3', specify capacity=gpm/ft drawdown). After the wells were completed, several pump tests were conducted by the consultant. These data and resultant calculations are the subject of a report which has not been written and

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are, therefore, unavailable at this time. Both static and pumping flow meter profiles were also produced by the USGS geophysical logger. These profiles indicate the following zones of likely water producing intervals:

Eastern				Western			
Depth	Magnitude	Geologic Strata	Comments	Depth	Magnitude	Geologic Strata	Comments
90'-110'	Major	upper Hawthorn	affected by csg proximity	100'-180'	Major	upper Hawthorn	affected by csg proximity
160'-240'	Major	lower Hawthorn	---	220'-240'	Minor	lower Hawthorn	not stressed equally
290'-315'	Minor	Tampa	not stressed equally	320'-370'	Minor	Tampa	not stressed equally
335'-360'	Minor	Tampa	not stressed equally				
390'-415'	Minor	Tampa-Suwannee	not stressed equally				

Well Construction*

The ROMP wells at both MacArthur Tract sites were constructed by the District-owned Port-A-Drill and crew. The eastern site wells were constructed between June 1980 and August 1980, and the western site wells were constructed between August 1980 and November 1980.

A) Eastern Artesian Monitor. This well consists of the following:

1) 18" diameter steel surface casing from 6' above lsd to 80' below lsd pressure grouted into place with cement.
2) One 4" diameter A.B.S. plastic monitor tube from 10' above lsd to 40' below to monitor the open interval from 80'-121'.
3) One 2" diameter A.B.S. plastic tube from 8 1/2' above lsd to 221' below lsd. This tube has 10' of #30 slot PVC well screen and is sand packed with #6-#20 sand from 200'-221' below lsd. The interval from 220'-121' below lsd is grouted up with neat cement.
4) One 4" diameter A.B.S. plastic monitor tube from 8 1/2' above lsd to 425' below with 10' of PVC well screen #25 slot from 410'-420'. This monitor is packed with #6-#20 sand from 400'-425'. Cement grout has been placed in the interval from 221'-400'.

B) Eastern Shallow Wells.

There are three surficial wells at the eastern site, two are 1 1/4" diameter PVC plastic piezometers and one 6" diameter PVC plastic shallow production well for test purposes. These wells are 34.5' deep and screened with #30 PVC slot from 14.5' below lsd to 34.5'. The interval from 10-34.5' has been packed

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with a mixture of 75% #6-#20 and 25% #20-#30 sand while the interval from 0'-10' has been grouted with neat cement.

C) Western Artesian Monitor. This well consists of the following:

1) Eighteen inch diameter steel casing from 6' above lsd to 87' below lsd, pressure grouted with cement.
2) One 4" diameter A.B.S. plastic monitor tube from 10' above lsd to 40' below which is designed to monitor the open interval from 87'-205'.
3) One 4" diameter A.B.S. plastic monitor from 10' above lsd to 425' below lsd. This monitor is screened with 10' of #25 slot PVC well screen from 410'-420'. The interval from 400'-425' is packed with #6-#20 sand and the interval from 205'-400' has been grouted with cement.

D) Western Shallow Wells.

There are three surficial wells at the western site, two 1 1/4" diameter piezometers and one 6" diameter shallow production well for test purposes. All of the wells are screened with #35 slot PVC from 32'-62' below lsd. The interval from 25'-67' is packed with #6-#20 sand in each well. All of the wells have been grouted from land surface to 25' below with cement.

*As built diagrams of each well are included in the individual files.

Geophysical Logs

Fluid velocity profiles (static and pumping) gamma, caliper, electric (sp&r) and temperature logs were run on this well.

Type of Monitor

These wells are designed to monitor the water table, Hawthorn, Tampa and Suwannee Formations at both sites.

Water Quality

A number of water quality samples were retrieved at both sites for both laboratory and field analysis. A tabulation of these results is presented in this report. In general, all of the water samples at the western site exceed EPA drinking standards in at least one category with sulfates and fluorides being the most common parameter in excess. The eastern site appears to have two productive zones with water of acceptable drinking quality from 90-240' below lsd. However, below this depth, sulfates and fluorides become excessive.

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USGS Notification

The Southwest Florida Water Management District Technical Support Division was notified that these wells are complete and ready for monitoring in February 1981.

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LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W-14717
TOTAL DEPTH: 00072 FT.
SAMPLES - NONE

COUNTY - SARASOTA
LOCATION: T.38S R.20E S.13 BD
LAT = 27D 10M 21S
LON = 82D 15M 16S
ELEVATION: 31 FT

COMPLETION DATE: N/A
OTHER TYPES OF LOGS AVAILABLE - GEOLOGIST

OWNER/DRILLER:S.W.F.W.M.D. [ROMP 19X]

WORKED BY:SWFWMD GEOLOGISTS; ENTERED BY TOMMY SEAL (3-20-91)
TWO SEPARATE DESCRIPTIONS OF THIS WELL EXIST: THE FIRST SHORT DESCRIPTION IS BY GEOLOGISTS WITH GERAGHTY AND MILLER, AND THE SECOND LONGER DESCRIPTION TO FOLLOW IS BY RICHARD WALCOTT, A PRIVATE GEOLOGIC CONSULTANT HIRED TO DESCRIBE THE TOTAL CORE OF 420 FEET.
SAMPLES CONSIST OF DRILL CUTTINGS AND SPLIT-SPOON SAMPLES
EASTERN MONITOR WELL SITE, LOCATED APPROXIMATELY THREE MILES SOPUTH OF S.R.72 ALONG A CONTROLLED ACCESS ROAD, THE EASTERN SITE IS LOCATED APPROXIMATELY 6.75 MILES EAST OF THE WESTERN DRILL SITE

0 - 2 SAND; LIGHT GRAY TO DARK GRAY
GRAIN SIZE: FINE
FOSSILS: ORGANICS

2 - 4 SAND; MODERATE BROWN
GRAIN SIZE: FINE
FOSSILS: ORGANICS

4 - 5.5 SAND; MODERATE GRAY
GRAIN SIZE: FINE

5.5- 7.5 CLAY; MODERATE GRAY TO MODERATE BROWN
ACCESSORY MINERALS: QUARTZ SAND-%

7.5- 11.5 CLAY; MODERATE BROWN TO MODERATE REDDISH BROWN
ACCESSORY MINERALS: QUARTZ SAND-%
SAND-RICH INTERVAL FROM 7.5-8.0

11.5- 12 ; MODERATE GRAY

12 - 14.5 CLAY; MODERATE GRAY TO MODERATE BROWN
ACCESSORY MINERALS: QUARTZ SAND-%

14.5- 16.5 SAND; MODERATE GRAY
RANGE: FINE TO COARSE
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: PHOSPHATIC SAND-%

16.5- 18.5 ; MODERATE GRAY
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND- %, DOLOMITE- %
FOSSILS: FOSSIL FRAGMENTS

18.5- 20 CLAY; MODERATE GRAY
ACCESSORY MINERALS: QUARTZ SAND- %
OTHER FEATURES: CALCAREOUS

20 - 26 SAND; MODERATE GRAY
RANGE: MEDIUM TO COARSE
ACCESSORY MINERALS: CLAY- %, PHOSPHATIC SAND- %
FOSSILS: FOSSIL FRAGMENTS

26 - 30.5 LIMESTONE; LIGHT GRAY
ACCESSORY MINERALS: QUARTZ SAND- %, CLAY- %
PHOSPHATIC SAND- %
FOSSILS: FOSSIL FRAGMENTS

30.5- 32.5 CLAY; LIGHT GRAY
ACCESSORY MINERALS: QUARTZ SAND-%

32.5- 34.5 NO SAMPLES

34.5- 35.5 CLAY; CREAM TO TAN
ACCESSORY MINERALS: PHOSPHATIC SAND-%

35.5- 44 LIMESTONE; MODERATE GRAY
ACCESSORY MINERALS: CLAY- %, QUARTZ SAND- %
PHOSPHATIC SAND-%
SANDY CLAY AT 39-39.5 INTERVAL

44 - 45 CLAY; GREENISH GRAY
ACCESSORY MINERALS: LIMESTONE-%

45 - 48 CLAY; GREENISH GRAY
ACCESSORY MINERALS: PHOSPHATIC SAND-%
WAXY APPEARANCE

48 - 49.5 CLAY; MODERATE GRAY
ACCESSORY MINERALS: QUARTZ SAND- %, PHOSPHATIC SAND-%

49.5- 52 CLAY; GREENISH GRAY TO MODERATE GRAY
ACCESSORY MINERALS: PHOSPHATIC SAND- %, LIMESTONE-%

52 - 55 AS ABOVE

55 - 57 LIMESTONE;
POOR INDURATION
ACCESSORY MINERALS: CLAY- %, PHOSPHATIC SAND- %
DOLOMITE-%

57 - 58 ; MODERATE GRAY
POROSITY: LOW PERMEABILITY; POOR INDURATION
ACCESSORY MINERALS: CLAY- %, PHOSPHATIC SAND-%

58 - 71.5 LIMESTONE; LIGHT GRAY
POROSITY: LOW PERMEABILITY
GRAIN SIZE: COARSE; POOR INDURATION
ACCESSORY MINERALS: PHOSPHATIC SAND- %, CLAY-%

71.5 TOTAL DEPTH