



MARTIN COUNTY EXCAVATION & FILL ORDINANCE

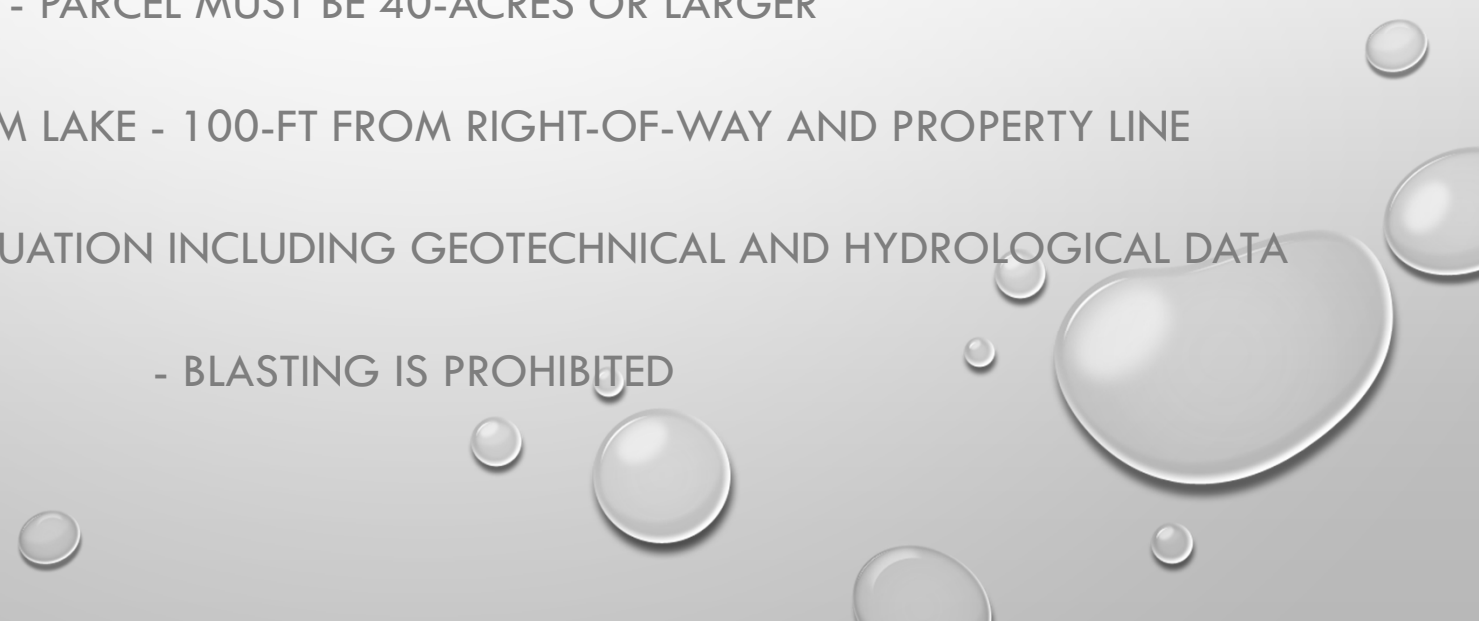
REQUESTING AN INCREASED EXCAVATION DEPTH

AS DIRECTED BY MARTIN COUNTY BOCC CHAIR ON TUESDAY, MAY 19, 2020





CRITERIA FOR A “MINE”

- ESTABLISHED SITE-SPECIFIC CRITERIA SUCH THAT EVERY FIVE-ACRE PARCEL ISN'T REQUESTING A MINE
 - PARCEL MUST BE 40-ACRES OR LARGER
 - SETBACKS FROM LAKE - 100-FT FROM RIGHT-OF-WAY AND PROPERTY LINE
 - SITE SPECIFIC EVALUATION INCLUDING GEOTECHNICAL AND HYDROLOGICAL DATA
 - BLASTING IS PROHIBITED
- 



WHY AN INCREASED EXCAVATION DEPTH?

SIMPLE ECONOMICS - TO AID IN THE DEVELOPMENT IN MARTIN COUNTY

MATERIAL IS USED FOR:

MASONRY SAND


HORSE BARNs

SEPTIC SYSTEMS

RIDING ARENAS

GOLF COURSES

BEACH RENOURISHMENT

- CURRENT CODE ALLOWS FOR 20-FT MAXIMUM EXCAVATION DEPTH
 - OFTEN TIMES THE FIRST 5+ FEET CONTAINS ONLY TOPSOIL
 - SAND DEPOSITS ARE OFTEN DEEPER THAN 20-FT
- 



WHAT IMPACT DOES A DEEPER LAKE HAVE ON THE ENVIRONMENT?

ALL POSITIVES - LAKES PROVIDE THE FOLLOWING:

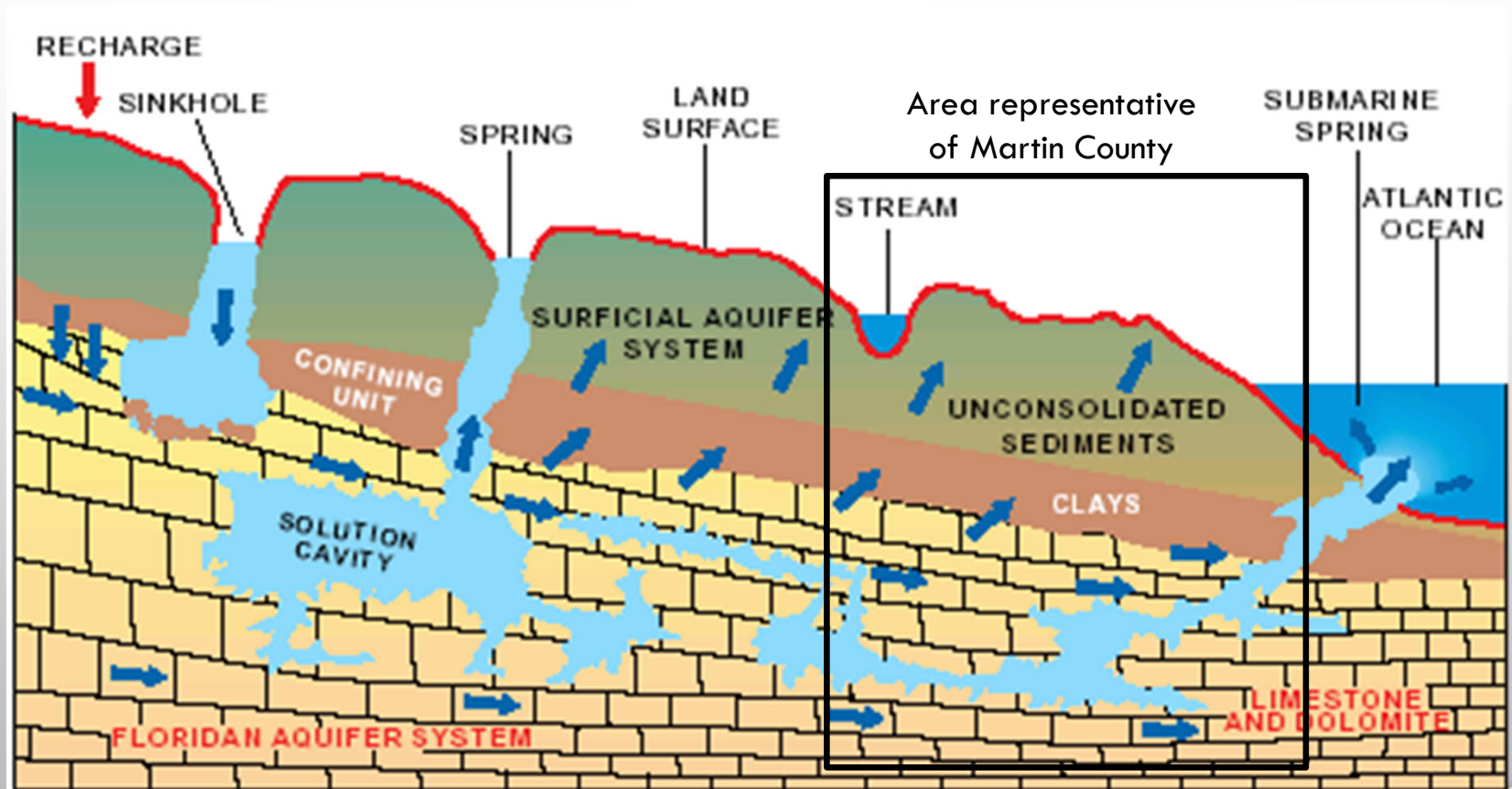
INCREASED RECHARGE AND STORAGE CAPACITY TO SURFICIAL AQUIFER

PROVIDE 5 TO 10 TIMES MORE STORAGE VOLUME COMPARED TO THE UNDISTURBED AQUIFER

DEEPER LAKE HAS MORE STABLE TEMPERATURE (COOLER IN SUMMER / WARMER IN WINTER)



THE HYDROLOGIC CYCLE



SURFICIAL AQUIFER SYSTEM IN MARTIN AND ST LUCIE COUNTIES

GEOLOGIC/HYDROGEOLOGIC COLUMN

SURFICIAL AQUIFER COMPRISED OF THE PAMLICO SAND
AND ANASTASIA, FT THOMPSON AND TAMIAMI
FORMATIONS

DEPTH OF SURFICIAL AQUIFER AND TO INTERMEDIATE
CONFINING UNIT RANGES FROM 50 FT TO 250 FT

REPORT: HYDROGEOLOGY, WATER QUALITY, AND DISTRIBUTION AND SOURCES OF SALINITY
IN THE FLORIDAN AQUIFER SYSTEM, MARTIN AND ST. LUCIE COUNTIES, FLORIDA, BY RONALD
S. REESE, U.S. GEOLOGICAL SURVEY, WATER-RESOURCES INVESTIGATIONS REPORT 03-4242

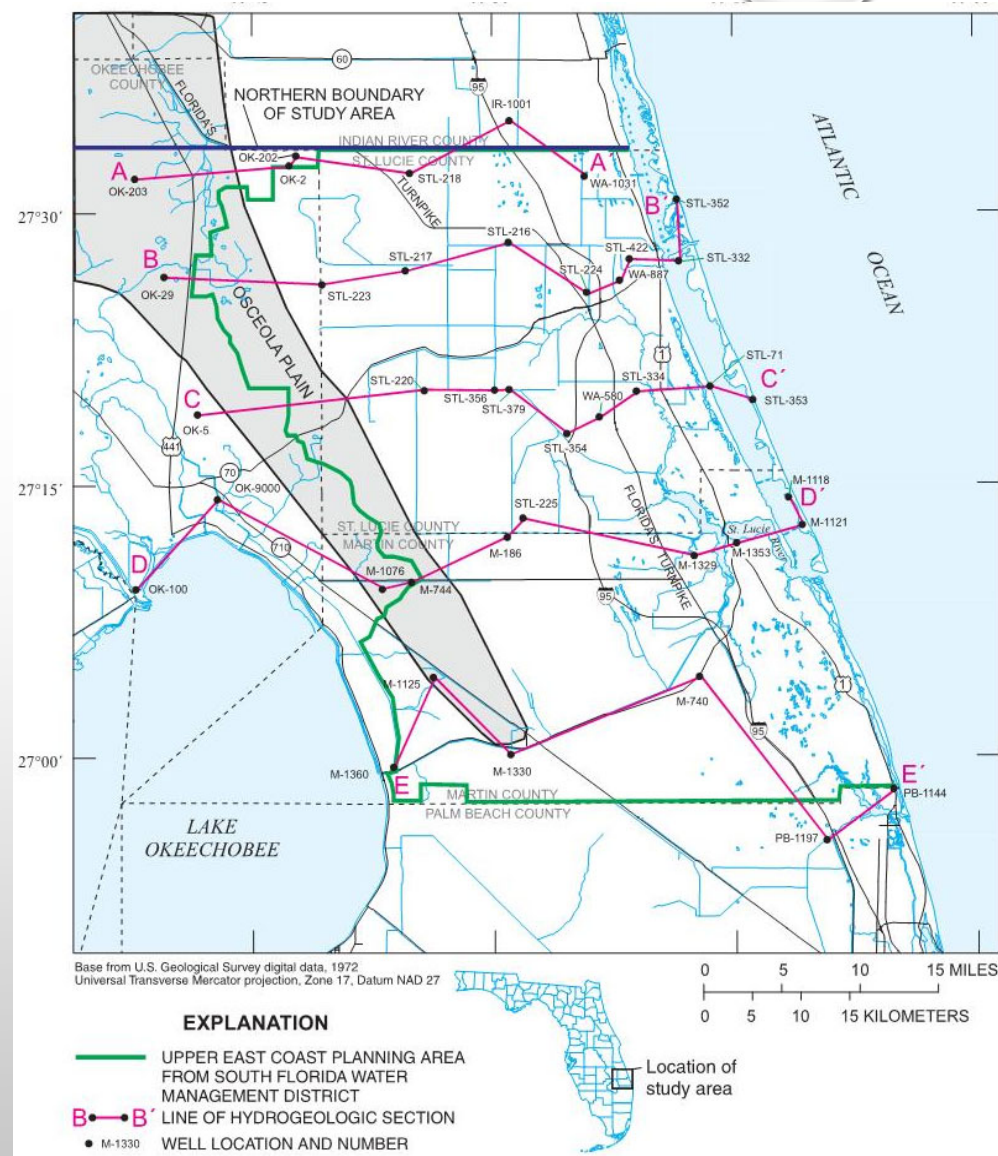
Series	Geologic unit		Hydrogeologic unit	Approximate thickness (feet)	
HOLOCENE	PAMLICO SAND		SURFICIAL AQUIFER SYSTEM	50-250	
PLEISTOCENE	ANASTASIA FORMATION				
	FT. THOMPSON FORMATION				
PLIOCENE	TAMIAMI FORMATION		INTERMEDIATE CONFINING UNIT	250-750	
MIOCENE AND LATE OLIGOCENE	HAWTHORN GROUP	PEACE RIVER FORMATION			
		ARCADIA FORMATION			
		MARKER UNIT			
		BASAL HAWTHORN/SUWANNEE UNIT			
— ? — EARLY OLIGOCENE		SUWANNEE LIMESTONE	FLORIDAN AQUIFER SYSTEM	300-500	
EOCENE	LATE	OCALA LIMESTONE			
	MIDDLE	AVON PARK FORMATION			
	EARLY	— ? — OLDSMAR FORMATION			
PALEOCENE	CEDAR KEYS FORMATION			SUB-FLORIDAN CONFINING UNIT	1,500?
			UPPER FLORIDAN AQUIFER		
			MIDDLE CONFINING UNIT	200-400	
			LOWER FLORIDAN AQUIFER	2,000	
			BOULDER ZONE	300-500	

SURFICIAL AQUIFER SYSTEM IN MARTIN AND ST LUCIE COUNTIES

PLAN VIEW OF GEOLOGIC/HYDROGEOLOGIC CROSS SECTIONS IN MARTIN AND ST LUCIE COUNTIES

SEE CROSS SECTION E-E' FOR MARTIN COUNTY CROSS SECTION

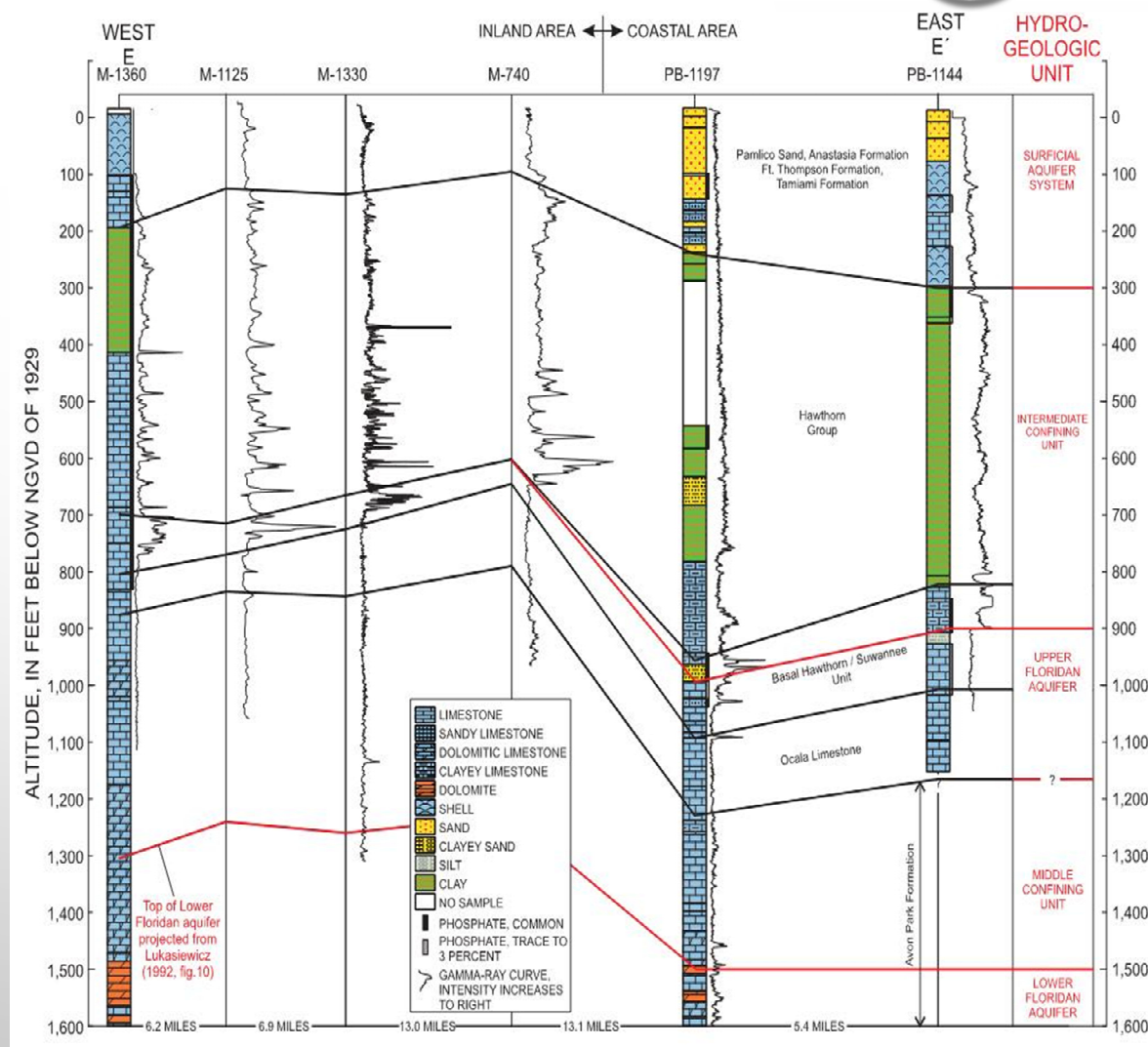
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SURFICIAL AQUIFER SYSTEM IN MARTIN COUNTY

CROSS SECTION E-E' SHOWS
MINIMUM DEPTH OF INTERMEDIATE
CONFINING UNIT IS APPROXIMATELY
100 FT

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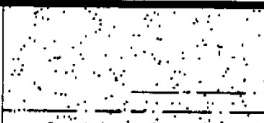
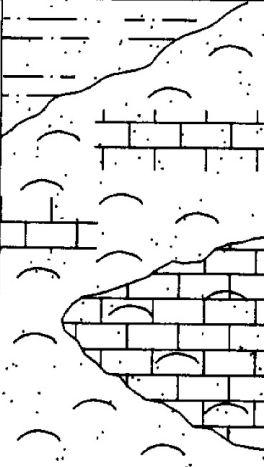
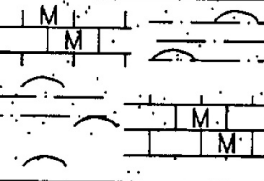
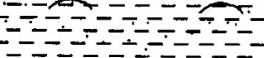
SURFICIAL AQUIFER SYSTEM IN MARTIN COUNTY

LAYER 1 REPRESENTS THE PAMLICO SAND.

LAYER 2 REPRESENTS THE ANASTASIA AND FORT THOMPSON FORMATIONS.

LAYER 3 REPRESENTS THE TAMIAMI FORMATION.

THE INTERMEDIATE CONFINING UNIT SHOWS AT THE BOTTOM OF THE STACK.

General Lithology	Lithology Schematic	General Hydraulic Characteristics	Model Layer
very fine to medium quartz sand with silty intervals, organics		low permeability	1
calcite cemented sand to sand, shell and thin limestone intervals to well cemented sandy biogenic limestone		moderate permeability	2
sand, shell, silt and moderate to poorly cemented micritic limestone		low permeability	3
olive green sandy silt/clay		very low permeability	base no flow boundary

REPORT: TECHNICAL PUBLICATION 92-02: A THREE-DIMENSIONAL FINITE DIFFERENCE GROUND WATER FLOW MODEL OF THE SURFICIAL AQUIFER IN MARTIN COUNTY, FLORIDA BY KARIN ADAMS, P.G., MARCH 1992

HYDROGEOLOGY DIVISION, SOUTH FLORIDA WATER MANAGEMENT DISTRICT



WHAT DO SURROUNDING COUNTIES ALLOW FOR EXCAVATION/MINING DEPTH?

ST. LUCIE COUNTY - MAXIMUM PERMITTED DEPTH IS 50-FT

INDIAN RIVER COUNTY – NO MAXIMUM PERMITTED DEPTH SPECIFIED; FOLLOW SFWMD OR FDEP REQUIREMENTS

OKEECHOBEE COUNTY – NO MAXIMUM PERMITTED DEPTH SPECIFIED; FOLLOW SFWMD OR FDEP REQUIREMENTS

PALM BEACH COUNTY – MAXIMUM PERMITTED DEPTH IS 20-FT

**SFWMD AND FDEP LIMIT EXCAVATION/MINING DEPTH TO THE
CONFINING UNIT AT THE BASE OF THE SURFICIAL AQUIFER**





REVIEW PROCESS

WE ARE NOT ASKING FOR ANYTHING THAT ISN'T PERMITTED THROUGH SFWMD OR FDEP

MINING REQUIRES AN ENVIRONMENTAL RESOURCE PERMIT (ERP) FROM EITHER SFWMD OR FDEP
WITH THE MAXIMUM EXCAVATION/MINING DEPTH LIMITED BY THE INTERMEDIATE CONFINING UNIT

BOTH AGENCIES ARE FAMILIAR WITH REVIEW OF THE GROUNDWATER AND DRAWDOWN ANALYSIS





RECOMMENDATIONS

SITE DRILLING REQUIREMENT

- DRILLING REQUIRED TO AT LEAST 50-FT TO DEMONSTRATE THAT EXCAVATION WILL NOT AFFECT/BREACH INTERMEDIATE CONFINING UNIT

WATER LEVEL MONITORING

- STAFF GAUGE FOR EXCAVATION LAKE MINIMUM WATER LEVEL
 - PIEZOMETER/MONITORING WELL FOR WETLAND BUFFER
- 



PRESENT TO ANSWER QUESTIONS:

APPLICANT: FRANK POMA

CIVIL ENGINEERING CONSULTANT: MELISSA CORBETT, P.E.

HYDROGEOLOGIC CONSULTANTS: TOM TESSIER, P.G. AND ELLIOTT MALLARD, P.G.

