

# DeSoto County Board of County Commission

July 24, 2018





# DeSoto Mine Rezoning Application

- **Rezoning Application – Agricultural (A-10) to Phosphate Mining Industrial (PM-I)**

# DeSoto Mine Rezoning – Planning Commission

## Permitted Uses in PM-I District:

- Phosphate mining and related activities and structures
- Mining support systems such as rail transport and transmission line corridors
- Multiple agricultural uses activities, such as, but not limited to, field crops horticulture, fruit and nut production, forestry, ranching, beekeeping, poultry and egg production, milk production, animal breeding, raising, training, stabling, kenneling or aquaculture, gardening, animal hospitals, veterinary clinics, roadside produce stands, wholesale greenhouses and nurseries, agricultural produce transfer stations, light manufacturing (machine shops) in enclosed buildings.

# DeSoto Mine Rezoning – Planning Commission

## Intent of the PM-I Zoning District

Sec. 20-141. - Phosphate Mining-Industrial District (PM-I)

*It is the intent of the Phosphate Mining-Industrial District (PM-I) to permit the extraction of phosphate minerals in accordance with applicable ordinances and associated practices. In addition, this district will allow for industrial uses associated with and complementary to phosphate operations. This district will also allow for the productive use of land until such time as mining operations commence.*





# DeSoto Mine Rezoning – Planning Commission

## **Rezoning does not authorize mining activities**

- PM-I zoning requires mining to be in accordance with applicable ordinances
- Code of Ordinances has an entire section, Article IX, Division 2, setting forth the process for application and approval of phosphate mining
- Requires application and approval of a Phosphate Mining Master Plan (PMMP)
- Requires application and approval of an Operating Permit (OP)
- Requires that all applications for approval be considered in a quasi-judicial public hearing



# Land Development Code Regulations: Chapter 20

## DIVISION 2. - PHOSPHATE MINING AND RECLAMATION ACTIVITIES

Sec. 20-972. - Purpose and intent; applicability; administration

- (a) *Purpose and intent.* The purpose of this division is to protect the health, safety and general welfare of the citizens of the County. These provisions are intended to:
- (1) Implement the goals, policies and objectives of the County Comprehensive Plan;
  - (2) Ensure the orderly development of mineral resources in a manner compatible with the overall development of the County;
  - (3) Ensure consideration of the cumulative effects of phosphate mining activities;
  - (4) Protect and conserve natural resources and the environment for present and future generations;





# Land Development Code Regulations: Chapter 20 (cont.)

- (5) Assure the use of best management practices and the development of technology for maximum control of the adverse effects of phosphate mining activities;
- (6) Ensure that phosphate mining activities and reclamation will not preclude future beneficial uses of mined-out lands;
- (7) Ensure that land reclamation promotes economic development and enhances recreational opportunities for the benefit of County residents and visitors;

# DeSoto Mine Rezoning Application

**We are not asking for PMMP or OP approval at this time**



# DeSoto Mine Rezoning – Planning Commission



Evidence provided to support application:

1. Maps
2. Transportation Analysis
3. Air, Noise, Light & Vibration Analyses
4. Comprehensive Plan Consistency Analysis

# Expert Witness Introductions

NAME	BUSINESS INFORMATION
• Shelley Thornton, P.E.	Senior Permitting Engineer Mosaic Fertilizer, LLC
• Gary Uebelhoer	Principal Engineer Environmental Consulting & Technology, Inc. (ECT)
• Matt Ray, MAI	President Cantrell Ray Real Estate, LLC
• Steve Henry, P.E.	President Lincks & Associates, Inc.
• Darren Stowe, AICP	Urban and Regional Planner Environmental Consulting & Technology, Inc. (ECT)
• Scott Wuitschick, P.E.	Senior Manager- Geotechnical Mosaic Fertilizer, LLC
• Bill Brammell, AICP	Lead Ecologist Mosaic Fertilizer, LLC
• Russell Schweiss	Director, Public Affairs, Land & Resource Strategies Mosaic Fertilizer, LLC



# DeSoto Project Overview

## Shelley Thornton, P.E.

- Senior Permitting Engineer,  
Mosaic Fertilizer, LLC
- Master of Environmental Engineering &  
Sciences, University of Florida
- Bachelor of Science Civil Engineering,  
University of South Florida
- 18 years experience in engineering and  
project permitting



# Phosphate Mining vs. Fertilizer Manufacturing – Distinct Operations

## Phosphate Mining

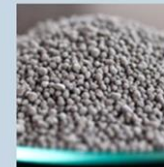


Phosphate Ore



Reclaimed Land

## Fertilizer Manufacturing



Biofos



DAP



MAP

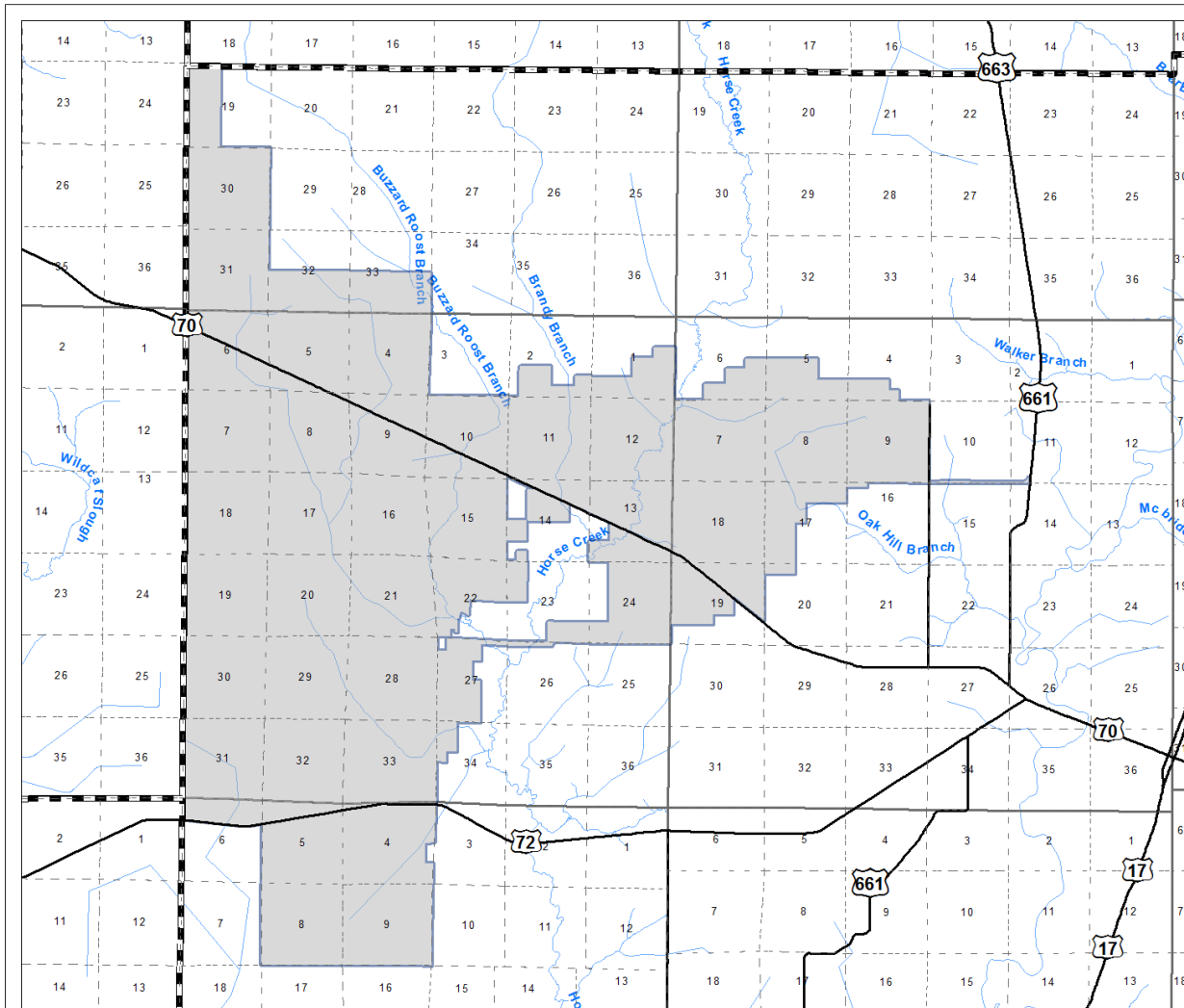
- No fertilizer manufacturing plants or gypsum stacks proposed in DeSoto County for the future DeSoto Mine

# DeSoto Mine Rezone Application Summary

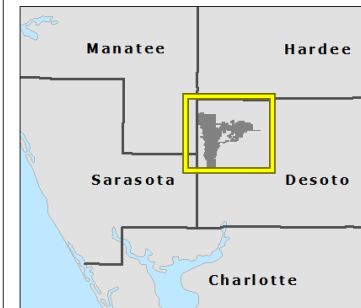
- Requesting the rezoning of certain properties from the current Agricultural 10 (A-10) to the Phosphate Mining-Industrial (PM-I) district allowing for phosphate mining and related activities
- Properties are designated on the Future Land Use Map as Rural/Agricultural
- Properties are also overlain by the Generalized Phosphate Mining Overlay Designation (GPMOD)
- All properties in the application include those lands owned and/or under unified control by Mosaic



# DeSoto County Generalized Phosphate Mining Overlay (GPMO) Designation

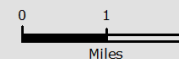
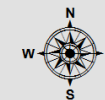


## Location Key



## Legend

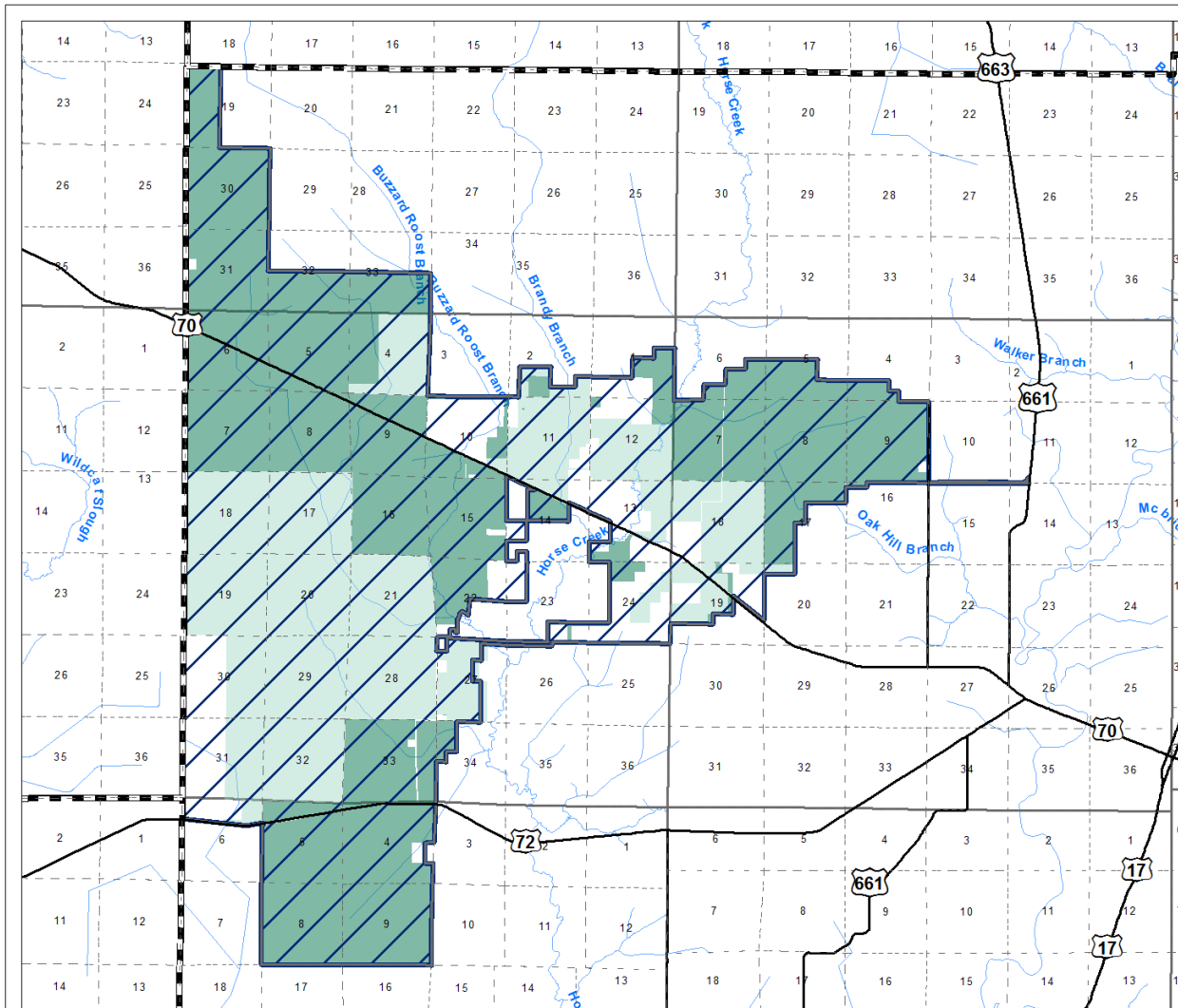
- Section Lines
- Roads
- County Lines
- Phosphate Mining Overlay Boundary
- Township Range
- Major Streams



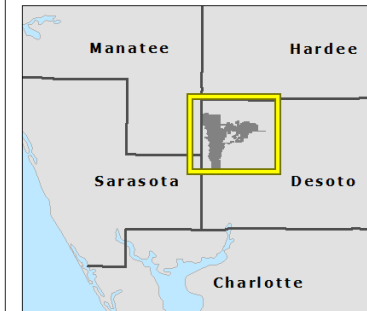
User: ymz date: 5/29/2018  
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 docs\Rezoning Application\RAI\maps\Zoning6.mxd

# DeSoto Phosphate Overlay Zoning Map

## Current/Proposed PM-I Zoning Designations

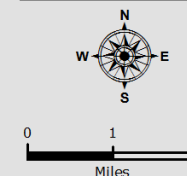


### Location Key



### Legend

- Section Lines
- Roads
- County Lines
- Phosphate Mining Overlay Boundary
- Mosaic Rezoning Boundary
- Existing PM-I
- Township Range
- Major Streams



User: ymz date: 5/25/2018  
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# DeSoto Mine Rezone Application Summary

	Existing A-10, Proposed to PM-I (acres)	Existing PM-I (acres)	Total PM-I Lands: Existing & Proposed (acres)
Totals	14,053.4	8,974.5	23,027.9

## DeSoto County

**Generalized Phosphate Mining Overlay Designation (GPMOD) =  
approximately 25,000 acres**



# DeSoto Mine Permitting Status

## All Permits Need to be Issued Prior to Any Mine Disturbances

Agency	Permit Name	Coverage	Status
DeSoto County	Rezoning	A-10 to PM-I	Today's Hearing
	Phosphate Mining Master Plan (PMMP)	Mining activities within mine boundary	Submitted, Future Hearing
	Operating Permit (OP)	Mining activities within a 5-year operating period	Submitted, Future Hearing
Florida Department of Environmental Protection (FDEP)	Environmental Resource Permit (ERP)	Activities that affect wetlands, alter surface water flows or contribute to water pollution	Issued
	Conceptual Reclamation Plan (CRP)	Conceptual framework of reclamation planning	Issued
Division of Historical Resources	Cultural Resource Assessment Survey	Archaeological Study Areas	SHPO Clearance Letter Received

# DeSoto Mine Permitting Status

Agency	Permit Name	Coverage	Status
FDEP (Delegated authority from EPA)	National Pollutant Discharge Elimination System (NPDES)	Point source discharges into waters of the US	Preparing Application
US Army Corps of Engineers (CORPS)	Clean Water Act-Section 404	Discharge of dredged or fill material into waters of the US, including wetlands	Submitted
US Fish & Wildlife Service/Florida Fish & Wildlife Commission	Authorization/Habitat Management Plans	Reviews adverse impacts to federal and state listed species	Reviews on-going
Southwest Florida Water Management District (SWFWMD)	Integrated Water Use Permit (IWUP)	Consumptive use of ground water	Issued

- Final permit approvals approximately 2-3 years
- Approximately 3-4 years infrastructure construction to follow
- Mosaic completing a 30-year rock strategy of all its facilities

# Public, Health & Welfare

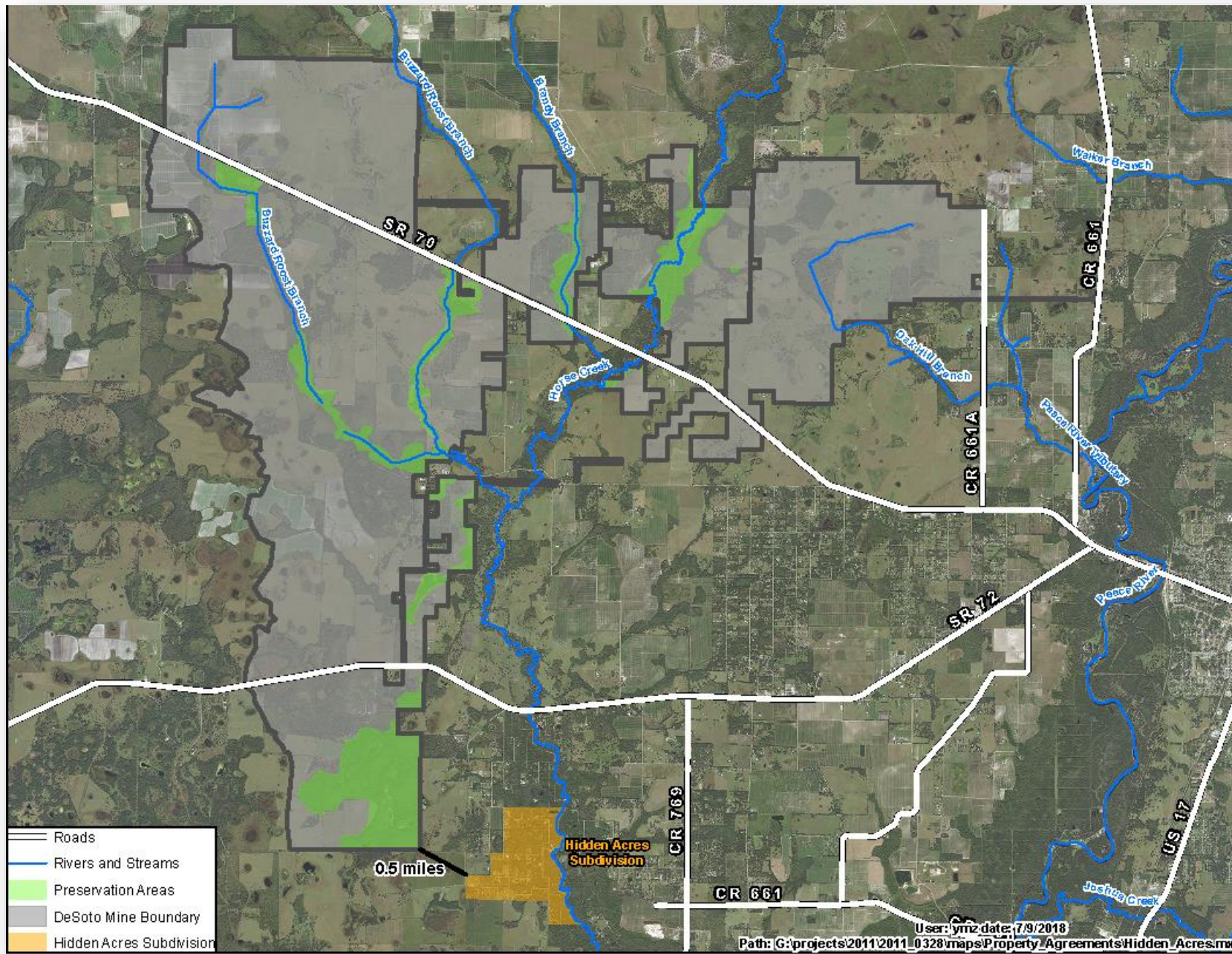
Gary Uebelhoer

- Principal Engineer
- Environmental Consulting & Technology, Inc., Tampa, Florida
- B.S. Environmental Engineering – Purdue University
- M.B.A. – Purdue University
- Over 40 years experience





# DeSoto Mine Proximity





# DeSoto Mine Rezoning – BOCC

LDR Section 20-1498(a) Considerations to be Addressed:

Consideration 7.      *Whether the proposed change will adversely affect living conditions in the area.*

- Noise, Light/Glare, Vibrations

Consideration 10.      Whether the proposed change will reduce light and air to adjacent areas.

- Air Quality

# Consideration 7: Noise Levels

**We are exposed to noise day and night in our daily lives**

Typical Sound Levels	Typical Sound Sources
120 dBA = rock concert	125 dBA = chain saw
117 dBA = football game	110 dBA = leaf blower
110 dBA = symphony concert	110 dBA = baby crying
80 dBA = truck traffic	95 dBA = electric drill
70 dBA = auto traffic	90 dBA = farm equipment
65 dBA = typical conversational speech	85 dBA = food processor
60 dBA = inside Walmart	75 dBA = hair dryer
50 dBA = typical home indoors	65 dBA = dishwasher
40 dBA = suburb at night	55 dBA = air conditioner
35 dBA = rural at night	50 dBA = refrigerator
20 dBA = sound studio	

# Consideration 7: Acceptable Noise Levels

## Health: OSHA Hearing Conservation Standard: 85 dBA - 8 hour average

- US EPA and World Health Organization (WHO) recommendations:
  - 60 dBA day time
  - 55 dBA night time
  - No speech interference
  - No sleep interference
  - Not annoying to vast majority of people
- Federal Highway Administration (FHWA) standards:
  - 57 dBA serenity is essential
  - 67 dBA residential, recreation, schools, hospitals
  - 72 dBA developed land
- Department of Housing and Urban Development (HUD) standards:
  - < 65 dBA acceptable
  - 65 – 75 dBA normally unacceptable
  - > 75 dBA unacceptable



# Consideration 7: Mining Noise Levels

Mining Area:      Equipment - Draglines, Bulldozers, etc.  
LDR Setback Churches/Parks/Cemeteries - 500 feet  
LDR Setback Schools/Dwelling Units - 1,000 feet:  
Sound Levels at 500 feet = 56 dBA  
Sound Levels at 1,000 feet = 50 dBA

Plant Site:        Located approximately one mile from nearest neighbor  
No measurable difference at this distance

**Setback distances protect neighbors**

**Noise levels similar to other allowable uses**

**Noise levels are less than recommended living standards**



# Consideration 7: Light/Glare Levels

Light diminishes with distance from mining activities

Mining Area: Located at 500 feet away: Equivalent to a full moon

Plant Site: Located approximately one mile from nearest neighbor  
No perceptible difference at this distance

**Setback Distances Protect Neighbors**





# Consideration 7: Vibration Levels

Land Development Regulation Standard:

“Prevent vibrations...from reaching a magnitude... sufficient to cause property damage...”

FAMU/FSU College of Engineering Study:

Noise and ground vibration monitoring related to phosphate mining

- All levels below damaging to structures thresholds
- All levels below “easily noticeable to persons” thresholds
- Over 200 feet away “barely noticeable by persons” thresholds

Plant site approximately one mile from nearest neighbor

**No blasting required or permitted**

**No abatement or setback distance required to conform**



# Consideration 10: Air Quality

Mining Process is a Wet Process

Dust Generation Limited to:

- Vehicles travel on dirt roads
- Cleared lands – before mining (earthwork)
- Cleared lands – before reclamation (vegetation)

Best Management Practices (BMPs):

- Water trucks
- Perimeter berms
- Limit clearing to land required



# Market Data & Property Value Analysis

## Matt P. Ray, MAI

- President, Cantrell Ray Real Estate, LLC
- Bachelor of Science Real Estate, Florida State University
- Florida State Certified General Real Estate Appraiser – License Number RZ 2663
- Appraisal Experience:
  - Vacant commercial, residential, agriculture
  - Land suitable for development
  - Aggregate Mine/Reclaimed Land
  - Phosphate Mine/Reclaimed Land
  - Property Tax Assessments
  - Permanent and Temporary Easements



# Market Data & Property Value Analysis

The purpose of the analysis is to assist in the understanding of any effects from mining on adjacent or nearby properties by:

- Gathering market data of recent sales located in close proximity to active, or recently active mining properties;
- Gathering market data of recent sales located distant from active, or recently active mining properties; and
- Compare two groups of sales to determine if the proximity to mining properties effects property values.

**Because DeSoto County does not currently have any active phosphate mines, the search of land sales was expanded to the adjacent nearby counties of Hardee and Manatee, all of which have active/recently active mines.**



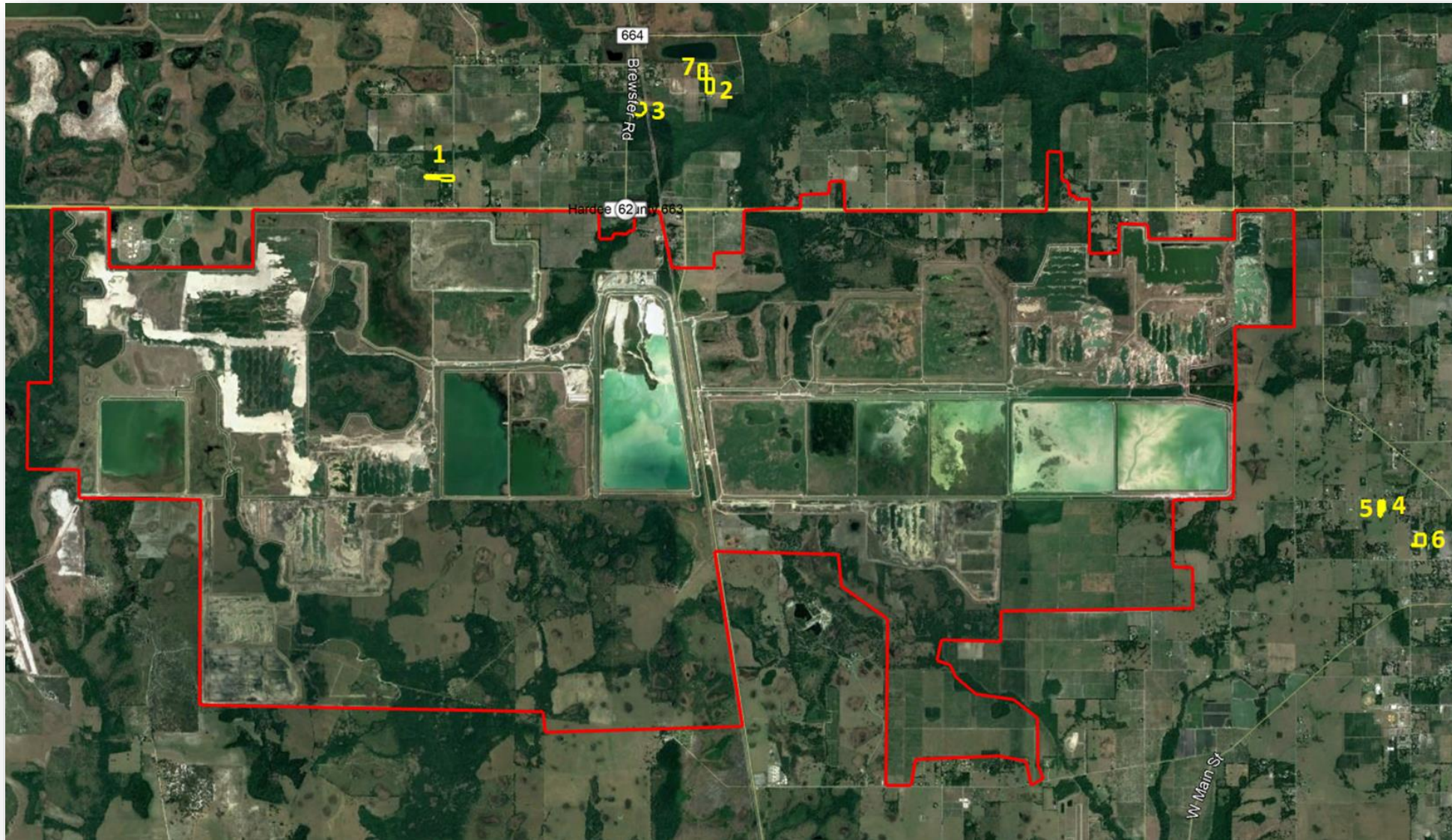
# Proximate Land Sales – Hardee County

## Proximate Land Sales - Phosphate Mine

No.	Location	Property Use	Sale Date	Sale Price	Acres	Cost/Acre (\$)
1	John Gill Road	Rural Residential	April-18	\$37,000	5.01	\$7,385
2	Alderman Road	Rural Residential	Jan-17	\$40,000	5.00	\$8,000
3	North CR 663	Rural Residential	Oct-16	\$49,900	6.93	\$7,201
4	Kazen Road	Rural Residential	Sept-16	\$15,000	1.61	\$9,317
5	Kazen Road	Rural Residential	Aug-16	\$22,000	2.03	\$10,837
6	Terrell Road	Rural Residential	Feb-15	\$45,000	5.39	\$8,349
7	Hollis Road	Rural Residential	Jan-15	\$37,500	5.00	\$7,500



# Proximate Sales Map – Hardee County



# Distant Land Sales – Hardee County

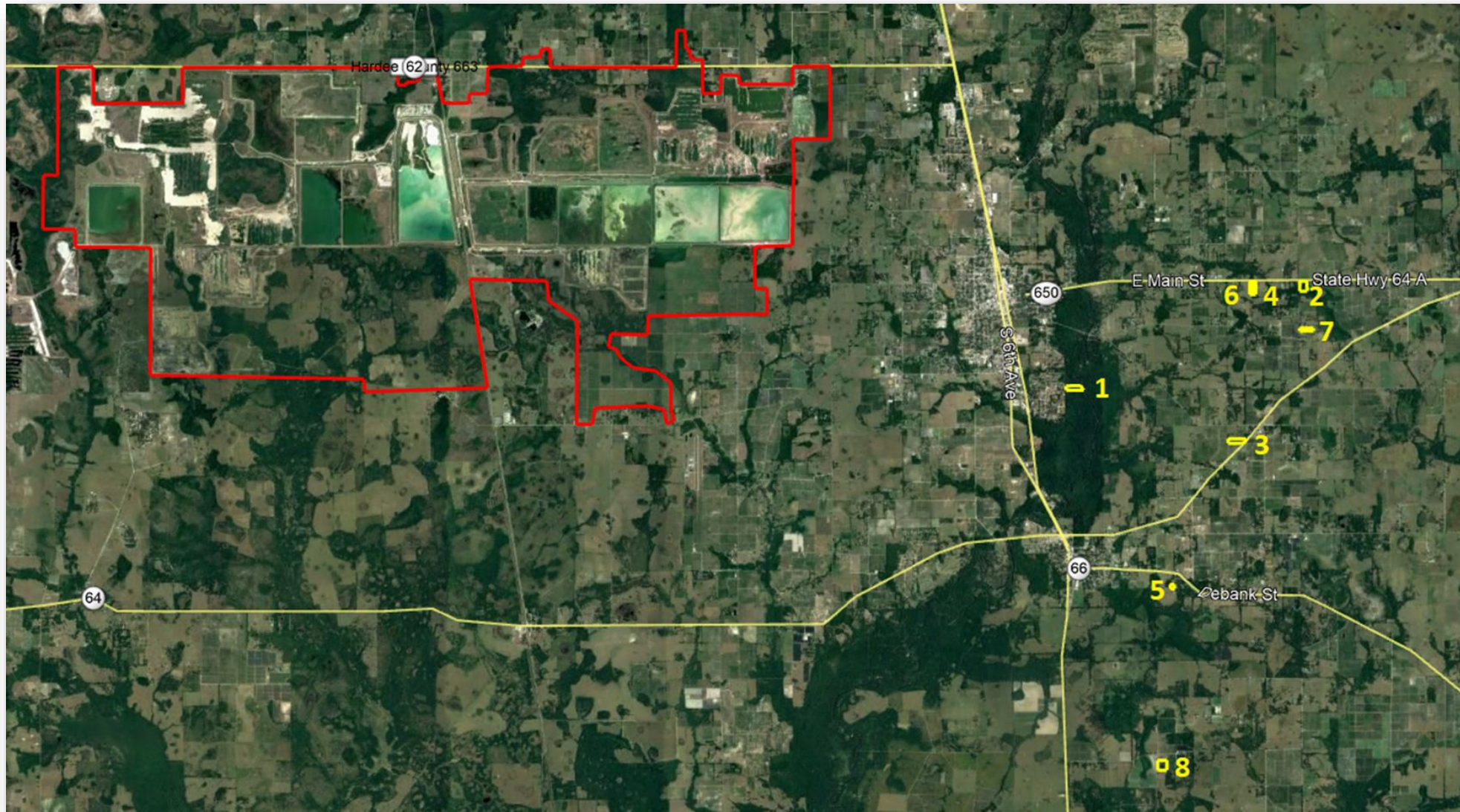
## Distant Land Sales- Phosphate Mine

No.	Location	Property Use	Sale Date	Sale Price	Acres	Cost/Acre (\$)
1	Hyde Street	Rural Residential	Dec-17	\$80,000	9.50	\$8,421
2	South Hollandtown Road	Rural Residential	Aug-17	\$78,000	9.83	\$7,935
3	East Road 64	Rural Residential	Jun-17	\$58,500	9.75	\$6,000
4	East Main Street	Rural Residential	Apr-17	\$35,000	5.02	\$6,972
5	Old Crewsville Road	Rural Residential	Feb-16	\$24,000	2.50	\$9,600
6	East Manin Street	Rural Residential	Jan-16	\$30,000	5.02	\$5,976
7	South Hollandtown Road	Rural Residential	Jun-15	\$35,000	5.00	\$7,000
8	Hirst Road	Rural Residential	Apr-15	\$74,800	11.00	\$6,800





# Distant Sales Map - Hardee County



# Property Value Analysis – Hardee County Conclusion

- Sales represent vacant land for residential and/or residential and agricultural use, along with mining, are the predominant land uses throughout Hardee County.
- Unit prices for sales of proximate properties range from \$7,201 to \$10,837 per gross acre- mean of \$8,370 per gross acre.
- Unit prices for sales of distant properties are less than the properties which are more proximate, ranging from \$5,976 to \$9,600 per gross acre- mean of \$7,338 per gross acre.

**There is no market evidence in Hardee County to substantially suggest that mining and reclamation activity diminishes the land value of non-mining properties in close proximity.**

**Market data suggests that land which is located near mining properties may sell for a higher unit value than the remote properties located distant from the mines.**

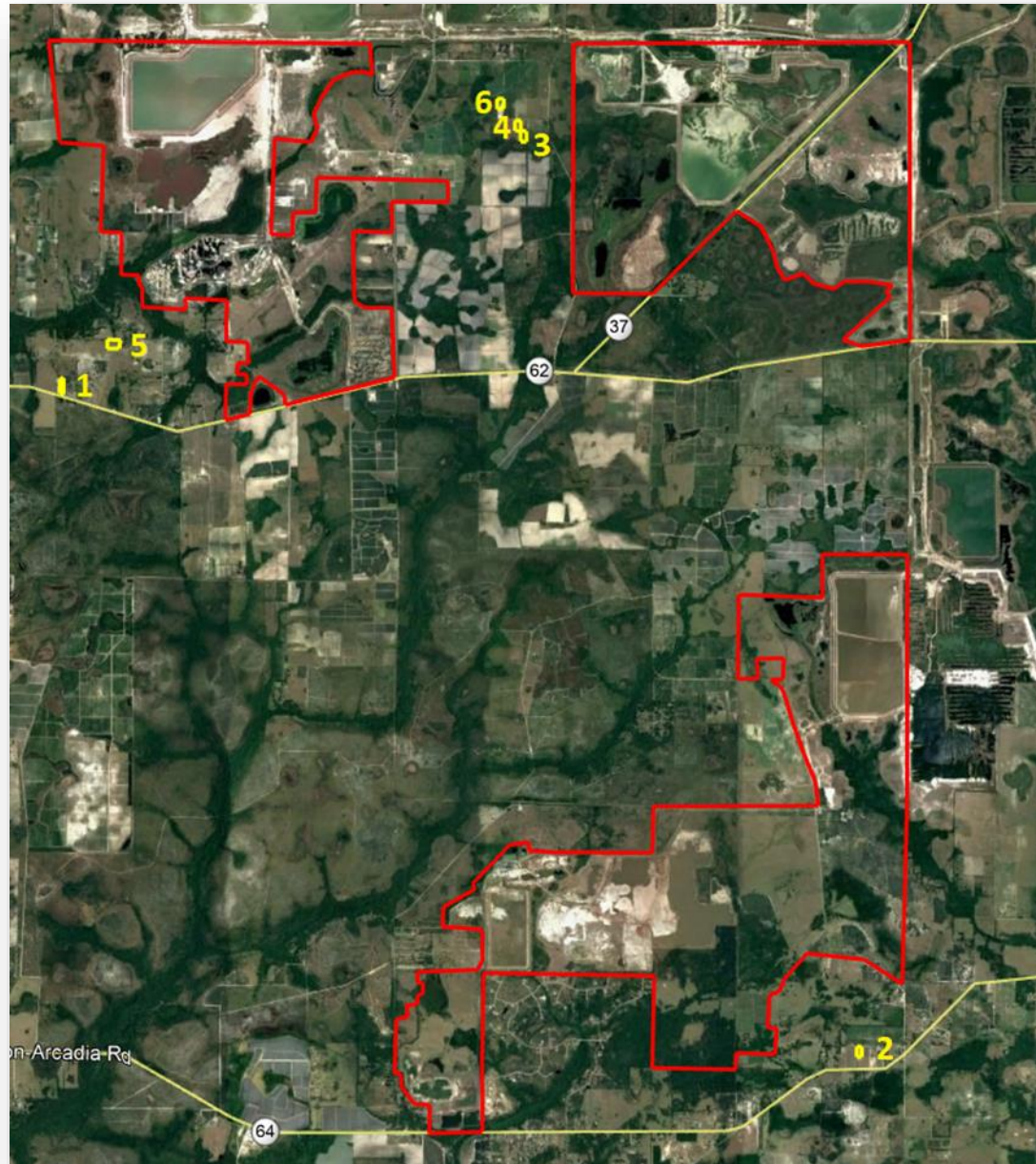
# Proximate Land Sales – Manatee County

## Proximate Land Sales - Phosphate Mine

No.	Location	Property Use	Sale Date	Sale Price	Acres	Cost/Acre (\$)
1	State Road 62	Rural Residential	May-18	\$85,000	5.41	\$15,712
2	East State Road 64	Rural Residential	Dec-17	\$41,000	5.24	\$7,820
3	Albritton Road	Rural Residential	Sep-17	\$59,000	5.42	\$10,878
4	Albritton Road	Rural Residential	July-16	\$60,000	5.41	\$11,093
5	326 <sup>th</sup> Avenue East	Rural Residential	May-16	\$110,000	10.00	\$11,000
6	Albritton Road	Rural Residential	Apr-16	\$70,000	5.99	\$11,686



# Proximate Sales Map – Manatee County





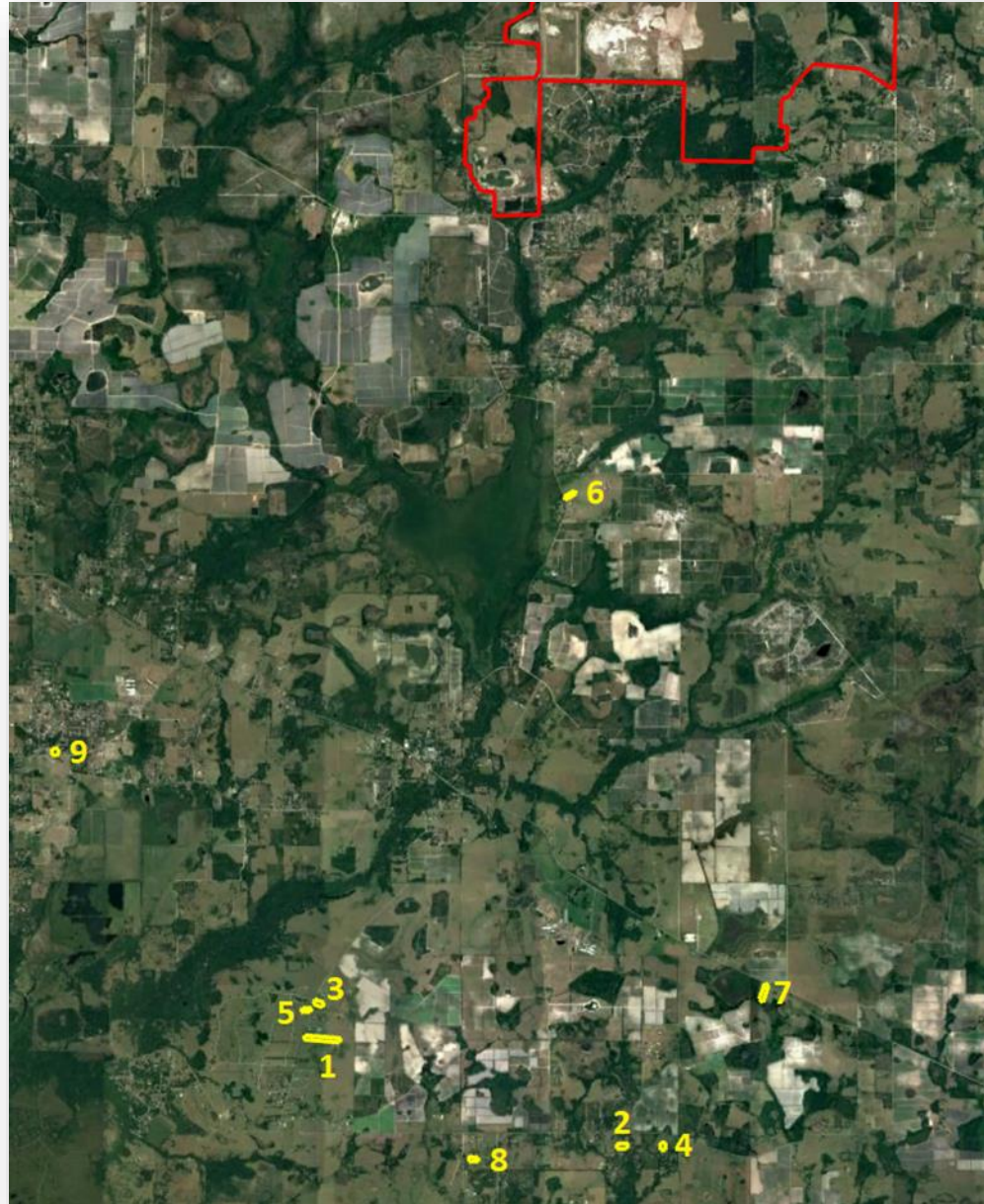
# Distant Land Sales – Manatee County

## Distant Land Sales - Phosphate Mine

No.	Location	Property Use	Sale Date	Sale Price	Acres	Cost/Acre (\$)
1	M-J Road	Rural Residential	Aug-17	\$195,000	20.01	\$9,745
2	Sugar Bowl Road	Rural Residential	May-17	\$85,000	6.99	\$12,165
3	M-J Road	Rural Residential	Mar-17	\$63,000	6.06	\$10,396
4	Clay Gulley Road	Rural Residential	Nov-16	\$32,000	5.06	\$6,329
5	M-J Road	Rural Residential	Nov-16	\$50,000	5.01	\$9,980
6	Wauchula Road	Rural Residential	Sept-16	\$39,000	5.10	\$7,646
7	East State Road 70	Rural Residential	May-16	\$67,000	10.00	\$6,700
8	Coker Gully Road	Rural Residential	May-16	\$59,900	5.30	\$11,304
9	104 <sup>th</sup> Drive East	Rural Residential	Jan-16	\$75,000	5.03	\$14,922



# Distant Sales Map – Manatee County



# Property Value Analysis – Manatee County Conclusion

- Sales represent vacant land for residential and/or residential and agricultural use, along with mining, are the predominant land uses throughout the eastern portion of Manatee County.
- Unit prices for sales of proximate properties range from \$7,820 to \$15,712 per gross acre- mean of \$11,365 per gross acre.
- Unit prices for sales of distant properties are less than the properties which are more proximate, ranging from \$6,329 to \$14,922 per gross acre- mean of \$9,910 per gross acre.

**There is no market evidence in Manatee County to substantially suggest that mining and reclamation activity diminishes the land value of non-mining properties in close proximity.**

**Market data suggests that land which is located near mining properties may sell for a higher unit value than the remote properties located distant from the mines.**



# Transportation Analysis

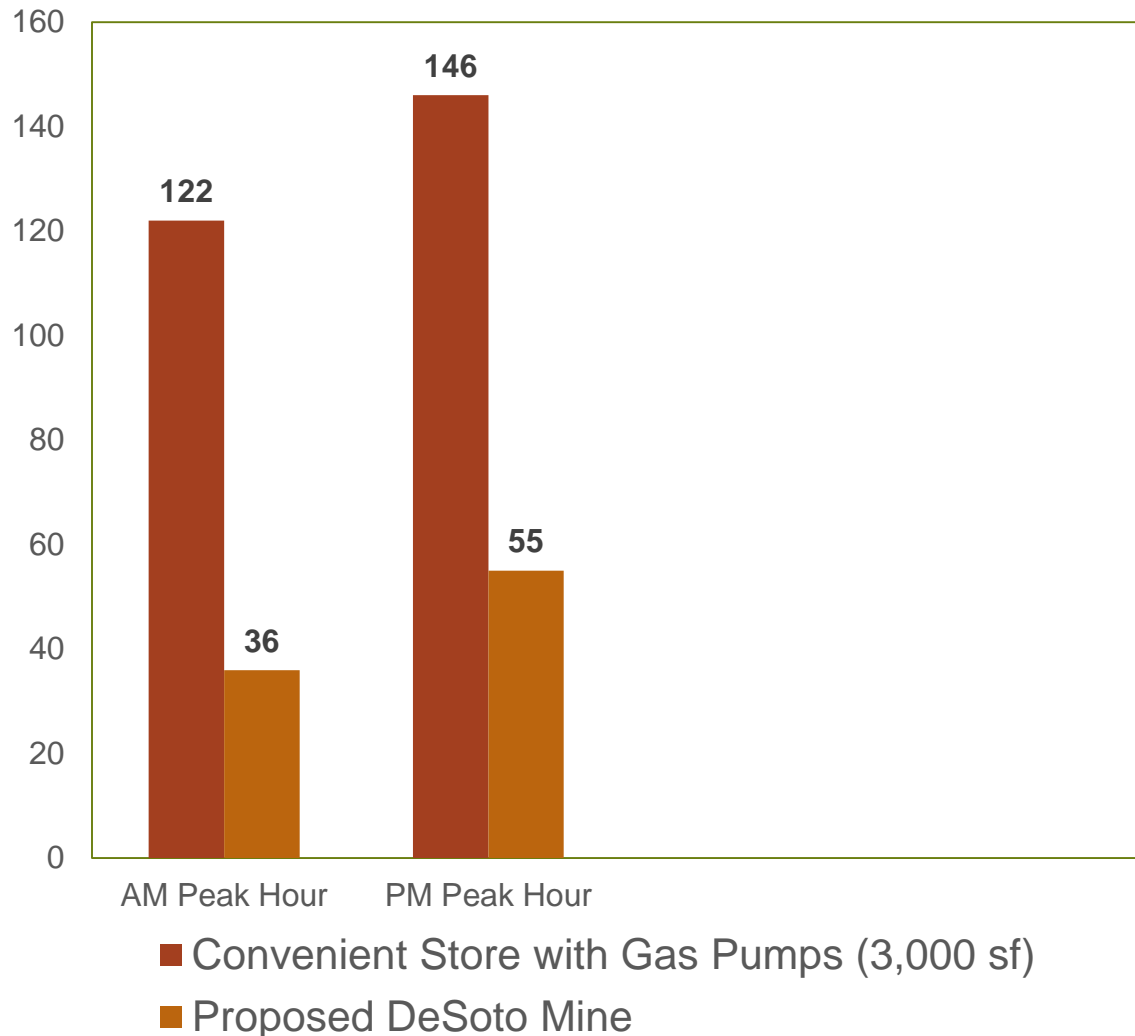
## Steven Henry, P.E.

- President, Lincks & Associates, Inc.
- Bachelor of Science Civil Engineering, North Carolina State University
- Professional Experience:
  - Site Engineering
  - Roadway Design
  - Development of Final Roadway Plans for State and City Projects
  - Preliminary and Final Geometric Design
  - Traffic Modeling
  - Transportation Analysis Studies



# Transportation Trip Generation Comparison

## DeSoto Mine - Convenient Store (Driveway Volumes)

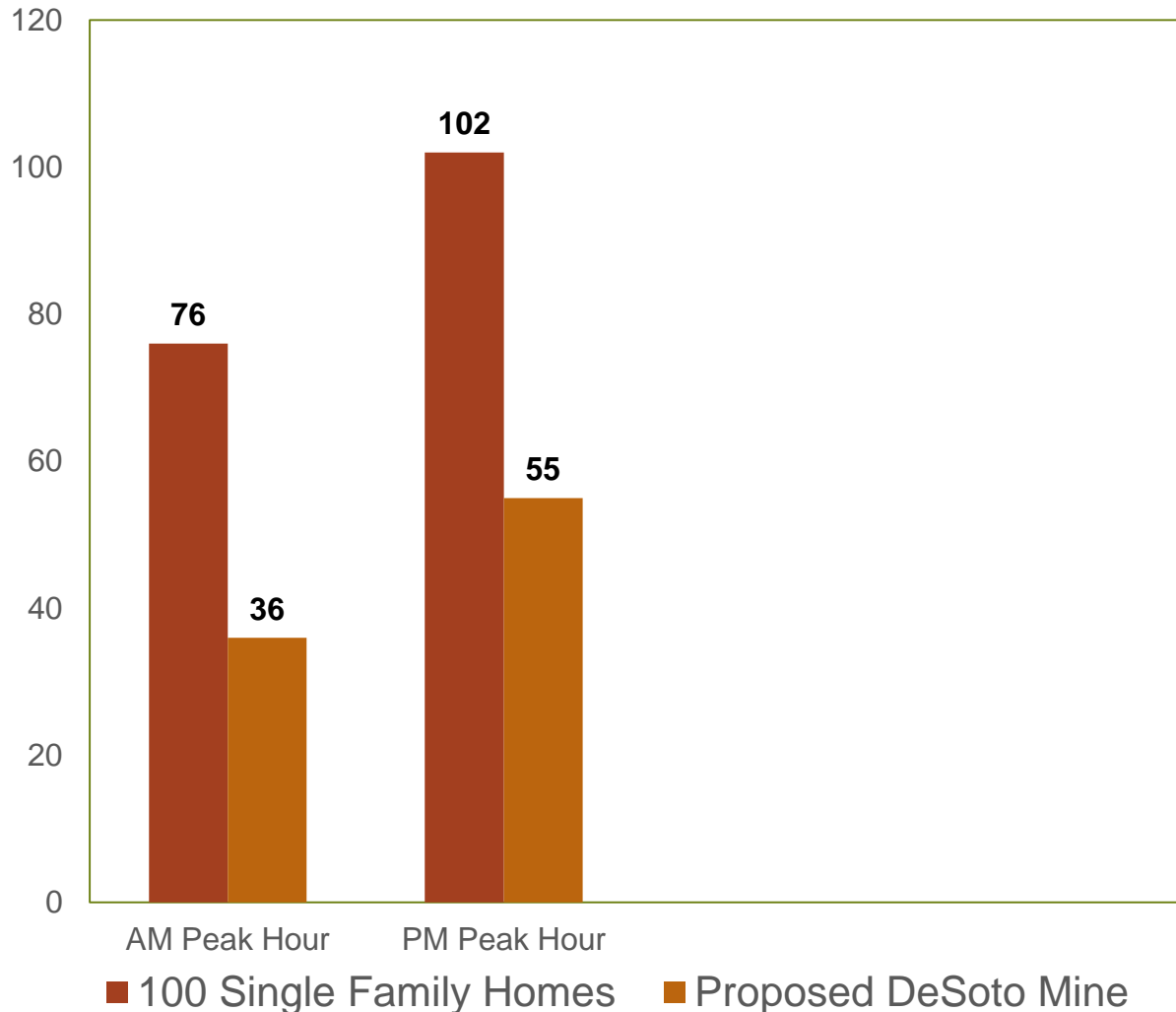


- The trip generation for the proposed DeSoto Mine was based on trip generation studies at the Mosaic Four Corners Mine
- The trip generation for the Convenience Market with Gas Pumps was based on data contained in the Institute of Transportation Engineers Trip Generation Manual, 10th Edition



# Transportation Trip Generation Comparison

## DeSoto Mine- 100 Single Family Homes (Driveway Volumes)

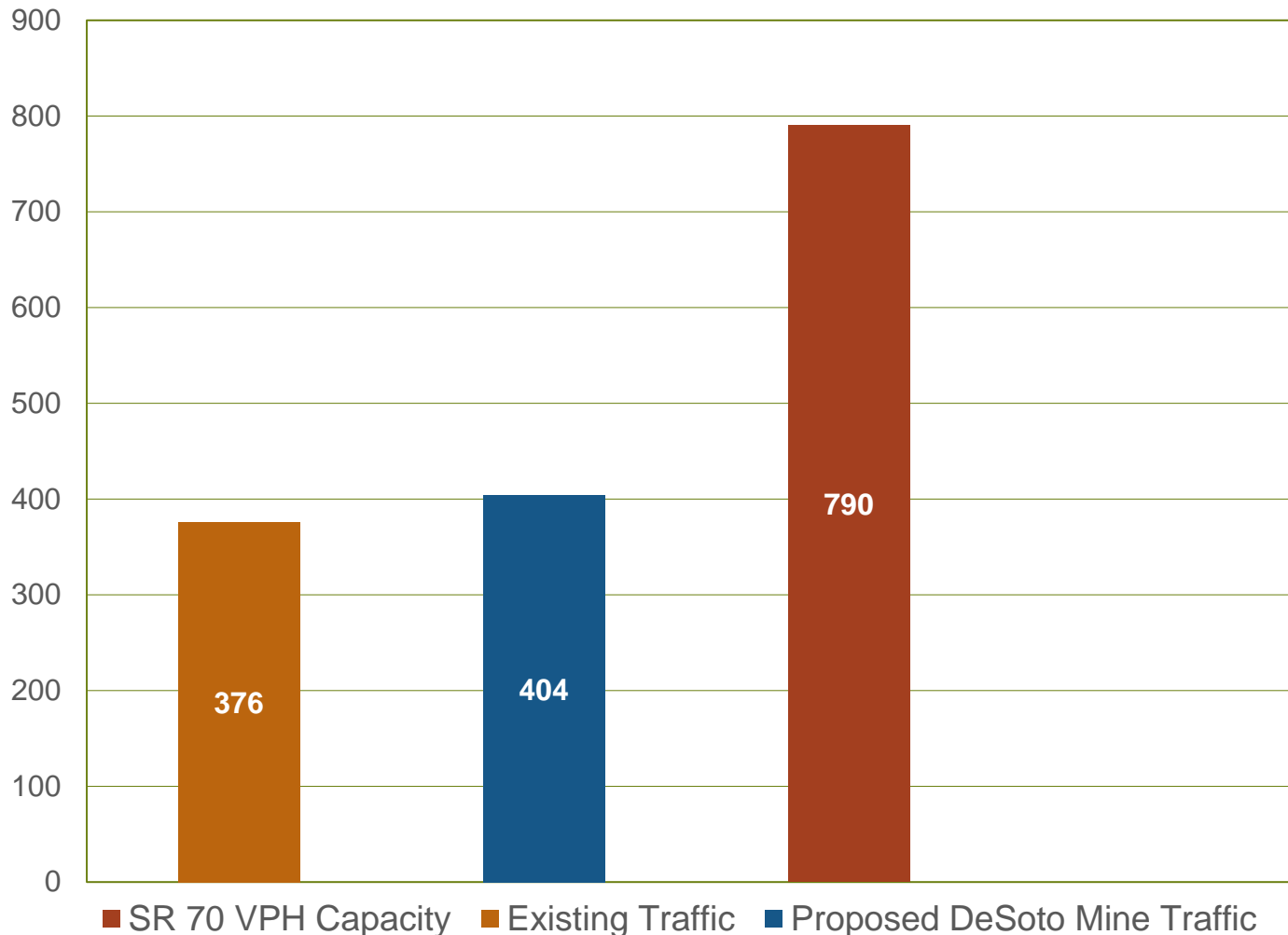


- The trip generation for the proposed DeSoto Mine was based on trip generation studies at the Mosaic Four Corners Mine
- The trip generation for the 100 Single Family Homes was based on data contained in the Institute of Transportation Engineers Trip Generation Manual, 10th Edition



# Transportation Trip Generation Comparison

**Level of Service SR 70  
County Line to NE Line Level Street**



- The trip generation for the proposed DeSoto Mine was based on trip generation studies at the Mosaic Four Corners Mine
- The Level of Service of SR 70 was determined from existing FDOT counts along SR70 and the addition of the proposed DeSoto Mine traffic



# Consistency with Land Development Regulations

## Darren Stowe, AICP

- Urban and Regional Planner, ECT
- 30 years experience
- Reviews Comprehensive Plans and Land Development Codes for Consistency and Compatibility for Jurisdictions throughout Florida



**ECT** Environmental  
Consulting &  
Technology, Inc.

# DeSoto Mine Rezoning – BOCC

- DeSoto County Comprehensive Plan (Comp Plan)
  - Rural/Agricultural Land Use Designation
  - Generalized Phosphate Mining Overlay Designation
    - Mining is allowed
- 25,000-Acre GPMOD
  - Areas in County recognized as containing phosphate minerals
  - Approximately 9,000 acres or 36 percent of GPMOD is zoned PM-I
  - Proposal will bring 92 percent of GPMOD into PM-I zoning district
- Consistent with Policy 1.12b.1
  - The GPMOD on the FLUM consists of lands identified as containing phosphate minerals within the Rural/Agriculture land use category and where phosphate is planned and is likely to occur.



# DeSoto Mine Rezoning – BOCC

## DeSoto Mine Zoning Summary

- GPMOD was approved in 2010
- The GPMOD was updated in 2015
- Property has had PM-I Zoning since 1978
- Mosaic owns or has mineral interests in 92 percent of the GPMOD

**Request: Convert existing A-10 zoning district that does not allow mining to PM-I**



# DeSoto Mine Rezoning – BOCC



## PM-I Zoning District

- Allows agriculture uses
- Agricultural uses to continue until mining
- Reclamation to follow mining (rolling process)
- Return/reclaim land for agricultural uses
- Other uses can be developed
- Allows for future approval of Phosphate Mining Master Plan (PMMP) and Operating Permit (OP) applications

# DeSoto Mine Rezoning – BOCC

## ➤ Fifteen Review Considerations (Not Criteria)

- **Comprehensive Plan Consistency**– Located in Rural/Agricultural land use category and in GPMOD
- **Existing Land Use Pattern**– Agricultural uses before and after mining
- **Isolated Districts/Illogical Current Boundaries**– In GPMOD and adjacent or proximate to existing PM-I zoning
- **Public Facilities, Traffic, Drainage**– Meet LOS standards and less than 5% roadway capacity
- **Rezoning Necessity/Existing Zoning**– Existing zoning does not allow for mining in GPMOD
- **Living Conditions Impact**– No adverse impact from many years of PM-I zoning and adoption of GPMOD



# DeSoto Mine Rezoning – BOCC

## ➤ Fifteen Review Considerations (Not Criteria) - Continued

- **Light, Air**– No reduction in light to adjacent properties. Measures to control dust emissions.
- **Property Value**– Staff has found no evidence of adverse impact from adoption of GPMOD in 2010. A real estate analysis found no market evidence of negatively impacted property values when comparing sales of properties in two counties where mining is occurring, which are proximate to active mining operations to similar, like-kind properties, located distant from a mine.
- **Development Pressure**– Development is directed to other areas of the County and away from this portion of the County. Use has remained consistent.
- **Special Privilege**– Any landowner has opportunity to rezone in GPMOD.
- **Scale**– Area of GPMOD surrounded by large areas of agricultural use.

# DeSoto Mine Rezoning – BOCC

## ➤ Conclusion

- Rezoning is required to allow for subsequent consideration of mining activities
- Entire area to be rezoned is in the GPMOD and is owned or controlled by Mosaic
- Request is consistent with the Comprehensive Plan
- Application presentation and staff review have addressed all 15 considerations in the LDRs

**Rezoning application has demonstrated consistency with the  
Comprehensive Plan and LDRs**



# Specific Mine Processes

Additional information is being provided on mining processes below to provide the Commissioners with more detail on common mining practices

- Clay Settling Areas (CSAs)
- CSA Water Quality
- Wildlife/Reclamation Overview
- Future Land Strategies

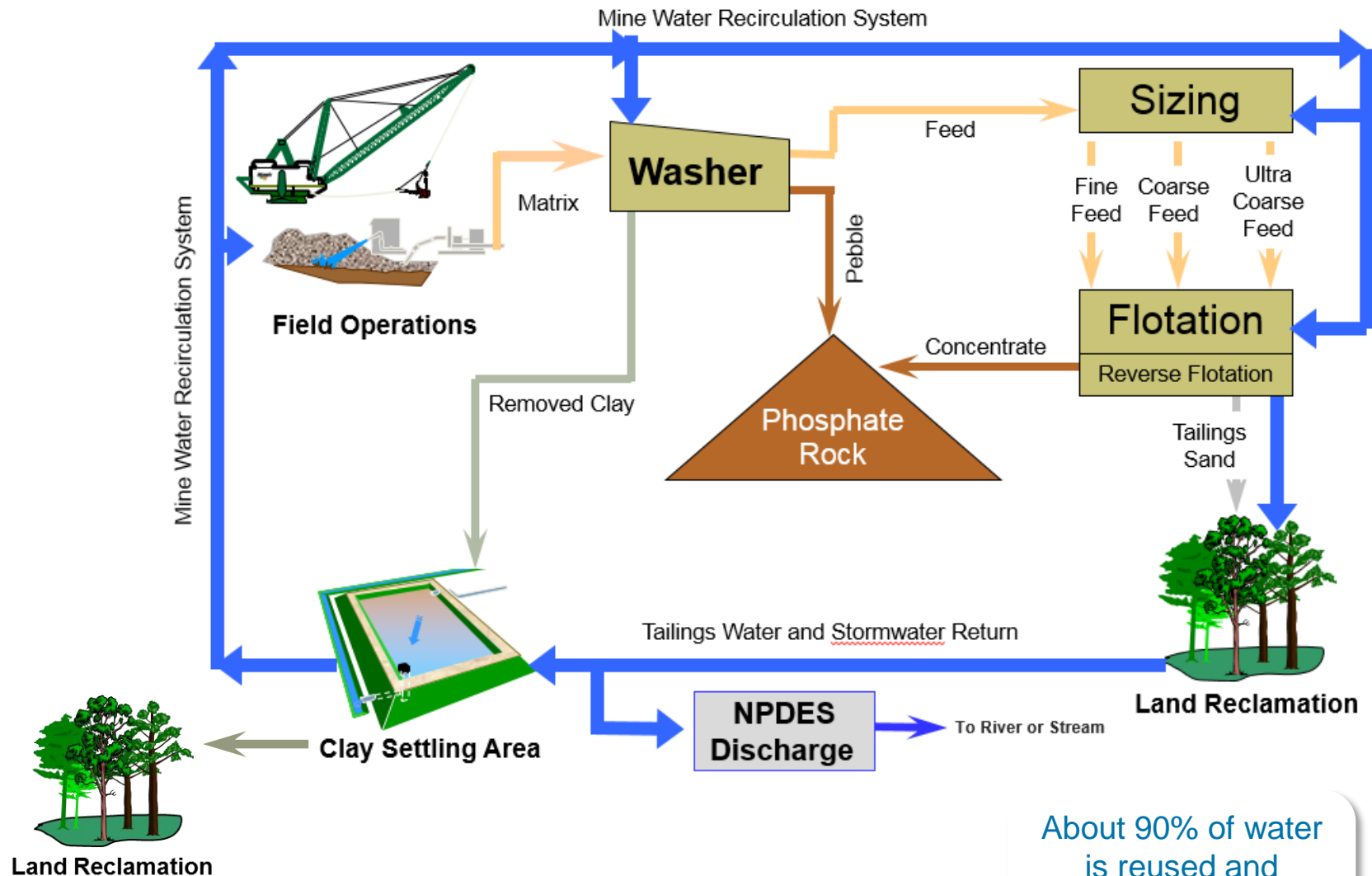


## Scott C. Wuitschick, P.E.

- Sr. Manager – Geotechnical  
Mosaic Fertilizer, LLC
- Bachelor of Science - Mining Engineering,  
South Dakota School of Mines & Technology  
(1992)
- Masters of Environmental Engineering –  
University of South Florida (1998)
- Florida Professional Engineer No. 54648
- Engineering, construction management,  
planning, and operational support related to  
clay settling areas, stormwater management,  
and mine infrastructure.

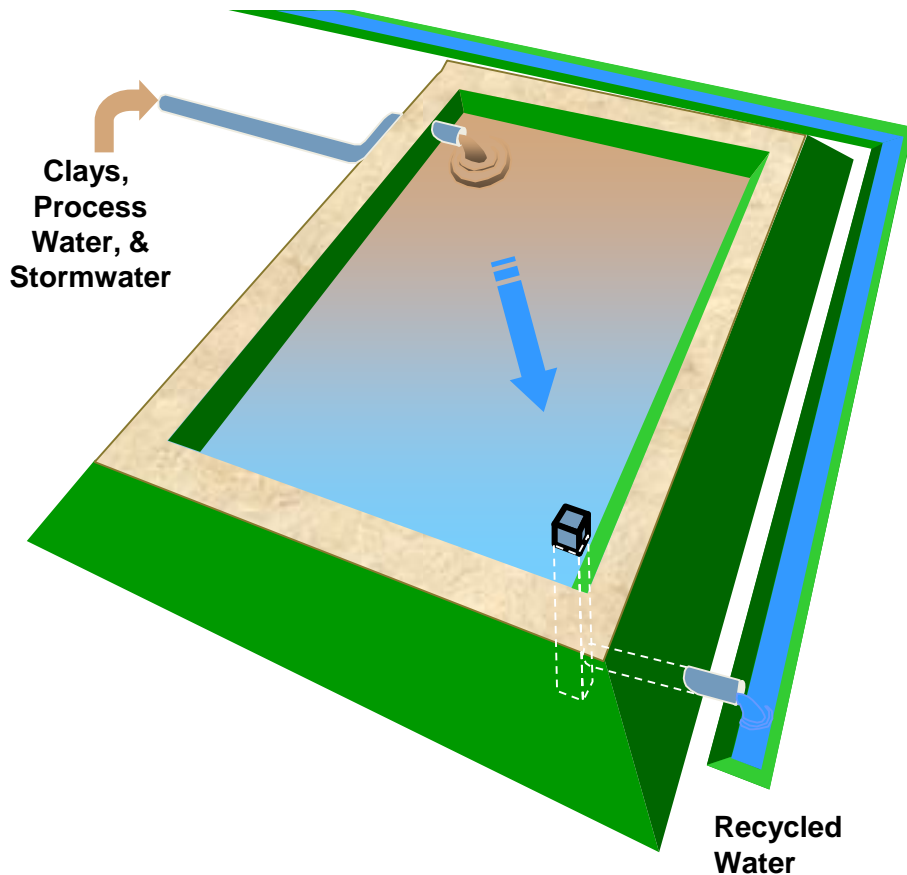


# Mining Process Overview



About 90% of water is reused and recycled at our Florida facilities

# Clay Settling Areas



- Clay settling areas act as a reservoir and allow mining operations to recycle and reuse water at a high rate
- Clay settling areas provide water treatment to clarify stormwater for discharge through permitted outfalls
- Clay settling areas maximize the amount of land reclaimed with sand tailings and minimize the amount of land reclaimed with clays



# Clay Settling Areas – Design & Construction



- Chapter 62-672 F.A.C. design standards
  - Site investigation requirements
  - Materials testing requirements
  - Engineering standards and specifications
  - Water control standards
- Chapter 62-672 F.A.C. construction standards
  - Materials testing and quality control oversight by third-party engineer of record
    - Site preparation
    - Material quality
    - Construction methods
    - Spillway installation and inspection
    - Documentation of construction quality and certification

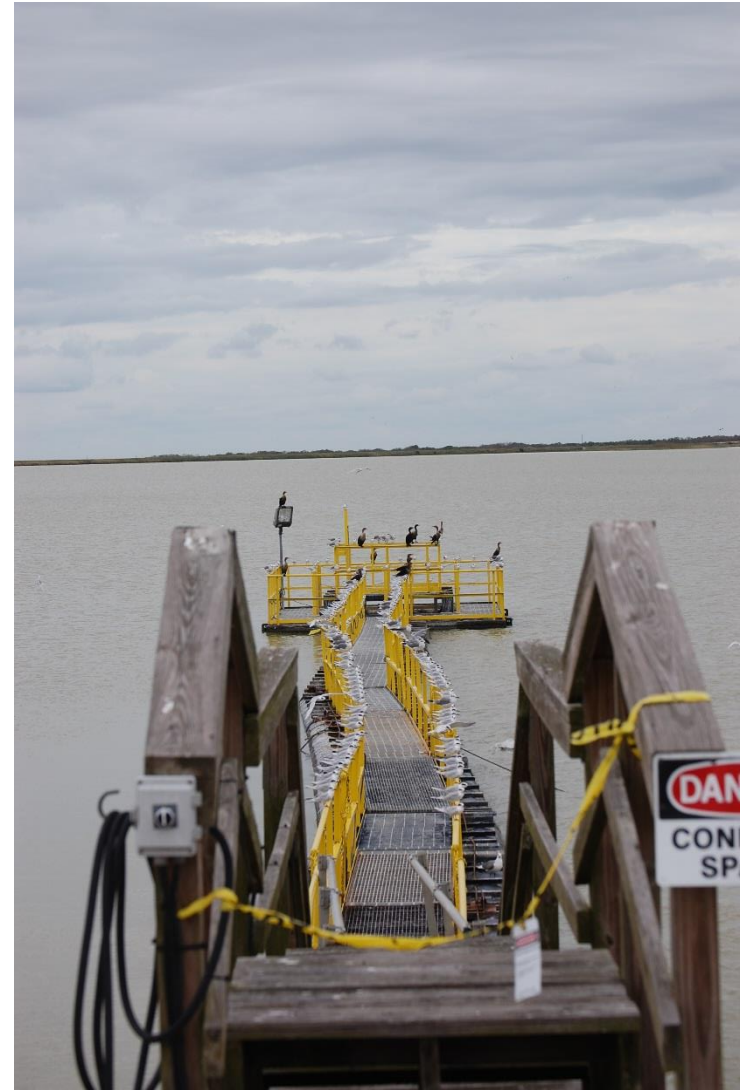
# Clay Settling Areas – Permitting



- Construction requires permit authorization through FDEP with concurrent review by local governments prior to approval for construction
  - Review of site investigation
  - Review of design report and drawings
- Additional approvals required prior to operation
  - As-built survey and construction documentation reviewed
  - Site Inspection
  - Approval to place into operation

# Clay Settling Areas – Operation

- Dam Inspection and Monitoring Program
  - Daily inspections by operations
  - Weekly inspections and monitoring by geotechnical technicians
  - Annual inspections by third-party geotechnical engineers with expertise in earthen dams
  - Annual training of inspectors
  - Maintenance and repair to maintain vegetation, drainage, roads, and embankment
  - Submittal of inspection and monitoring results to FDEP and local governments
  - Periodic inspections by FDEP, MSHA, and local governments
- Contingency Plan
  - Dam breach assessment
  - Notification & response

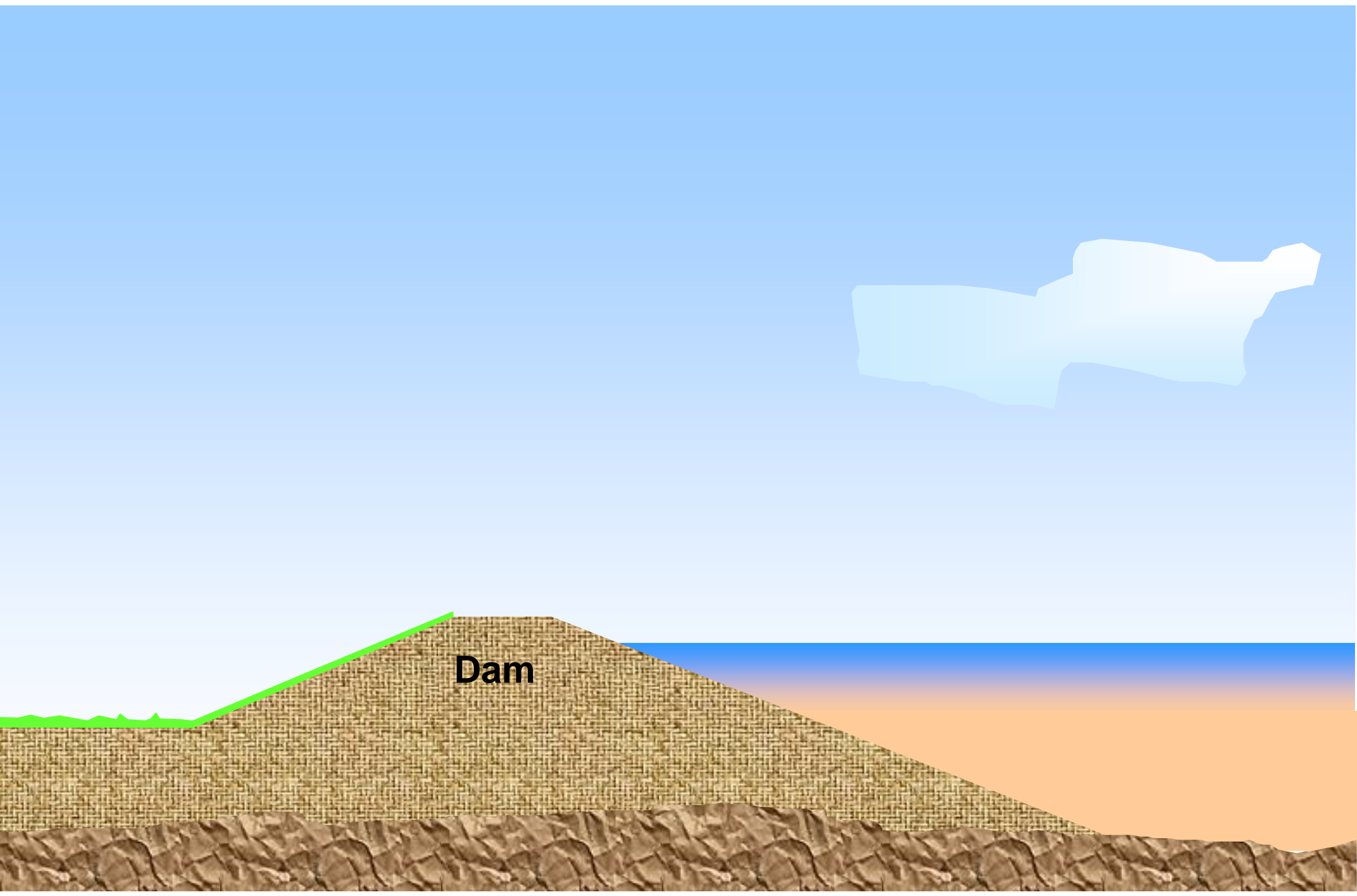




# Wildlife on Active Clay Settling Areas



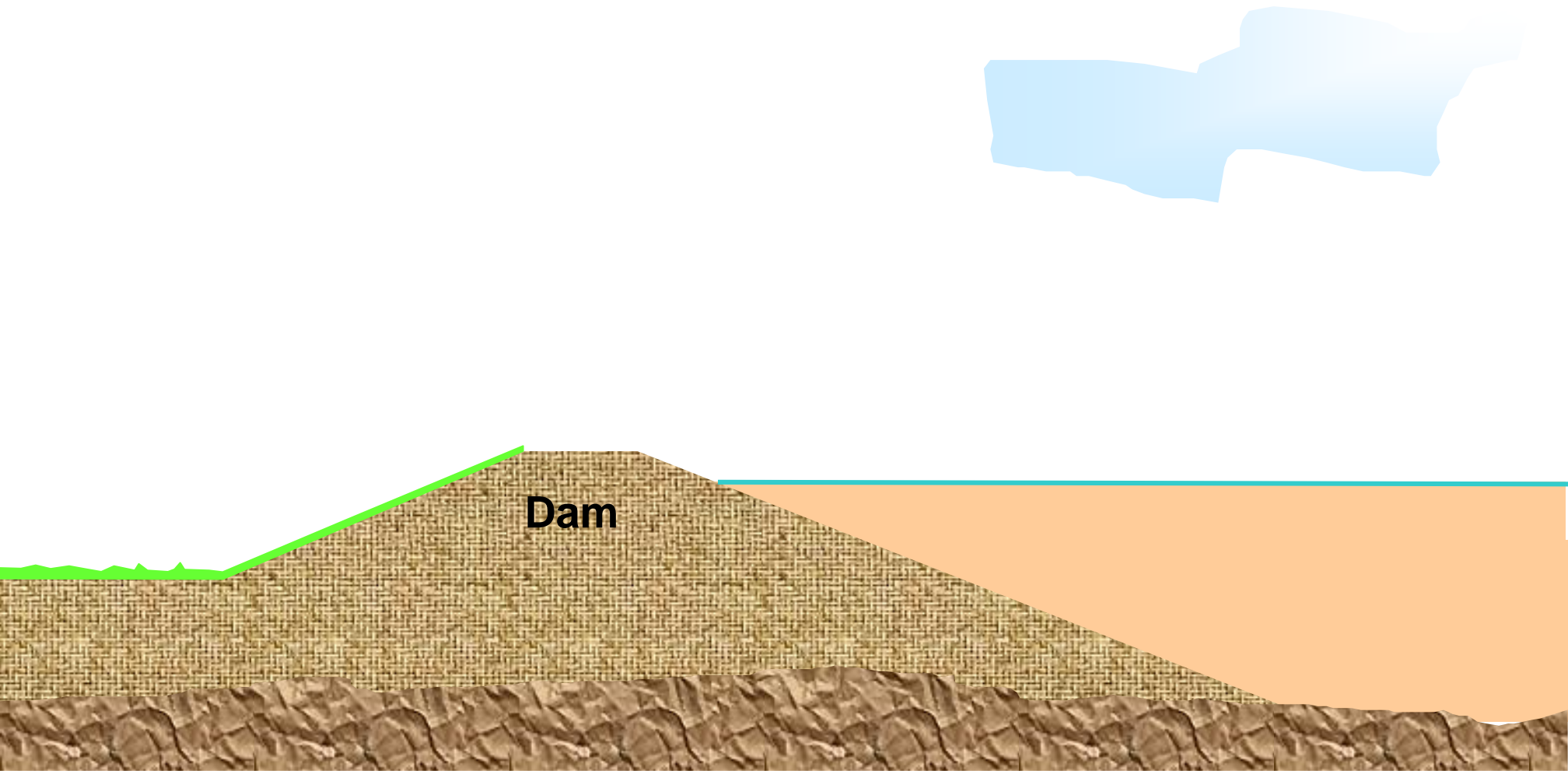
# Reclamation by Crustal Development





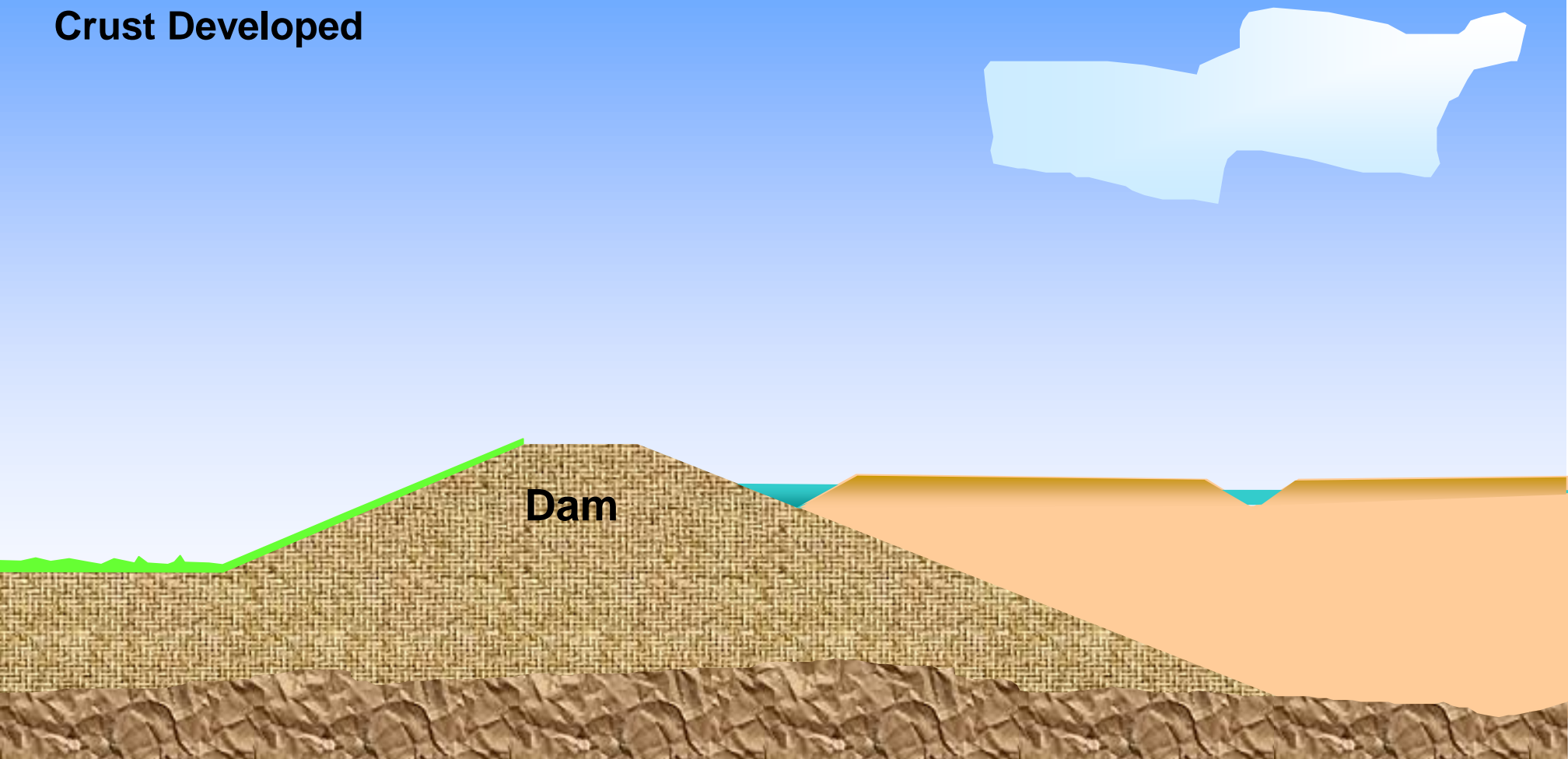
# Reclamation by Crustal Development

**Clay Settling Area Filling Complete**



# Reclamation by Crustal Development

**Rim Ditch Constructed,  
Surface Dewatered,  
Crust Developed**



# Reclamation by Crustal Development

**Clay Settling Area Reshaped**



# Reclamation by Crustal Development

**Revegetation Complete**





# Reclaimed Clay Settling Area – Active Pasture





# Clay Settling Area Water Quality

Publication No. 02-104-172

## FATE AND CONSEQUENCES TO THE ENVIRONMENT OF REAGENTS ASSOCIATED WITH ROCK PHOSPHATE PROCESSING

*Prepared by  
BCI Engineers & Scientists, Inc.  
under a grant sponsored by*



February 2001

**Over 20 years of monitoring  
has not detected reagents  
in groundwater during  
mining**



# DeSoto Wildlife/Habitat Overview

## William Brammell, AICP

- Lead Ecologist – Permitting  
Mosaic Fertilizer, LLC
- MPA Environmental Policy
- 24 years experience
  - Listed Species Surveying
  - Habitat Management Plans
  - Permitting - USACOE 404 and FDEP Environmental Resource Permit
  - Mitigation Design and Monitoring
  - Habitat Mapping
  - Authorized Gopher Tortoise Agent
  - Wetland Function Assessment and Delineation





# DeSoto Wildlife Overview



Reclaimed Wetland

## Species Survey Summary:

- Year-long survey effort initiated in 2006 to document habitat conditions & occurrence of listed species
- Multiple follow-up species specific surveys conducted for:
  - Caracara
  - Florida bonneted bat
  - Red-cockaded woodpecker
  - Scrub-jay
  - SE American kestrel
  - Florida grasshopper sparrow
  - Gopher tortoise
- Documented occurrence of 15 current or previously listed species



# Mosaic Wildlife Overview



Indigo Snake – Reclaimed Habitat



Florida Sandhill Crane-Reclaimed Marsh

## Specific Conservation Practices Include:

- Preservation, restoration, and enhancement of habitats used by listed species
- Avoiding breeding/nesting sites
- Translocation / Relocation to protected sites
- Reclamation of habitat connected to larger regional corridors



Translocated Scrub-Jay



# DeSoto Wildlife Overview

## Federally Listed Species:

- Biological Assessment (BA) submitted for effect determinations on federally listed species documented onsite:
  - Caracara
  - Eastern Indigo Snake
  - Wood Stork
- While not documented onsite, FWS will provide effect determinations for:
  - Florida Panther
  - Bonneted Bat
  - Scrub-jay
  - Florida Grasshopper Sparrow



**Wood Storks Foraging – Reclaimed Marsh**



# Mosaic Wildlife Overview



**Florida Burrowing Owl – Reclaimed Recipient Site**

## State Species Review

- Prepared site specific Wildlife Habitat Management Plan addressing state-listed species
- FWC review in accordance with authorities under Chapter 379 Florida Statutes
- FWC concurrence that the avoidance, minimization, and mitigation measures for state-listed species in the WHMP generally follow accepted guidelines for those species
- Successful Florida Burrowing Owl translocations to reclaimed habitat

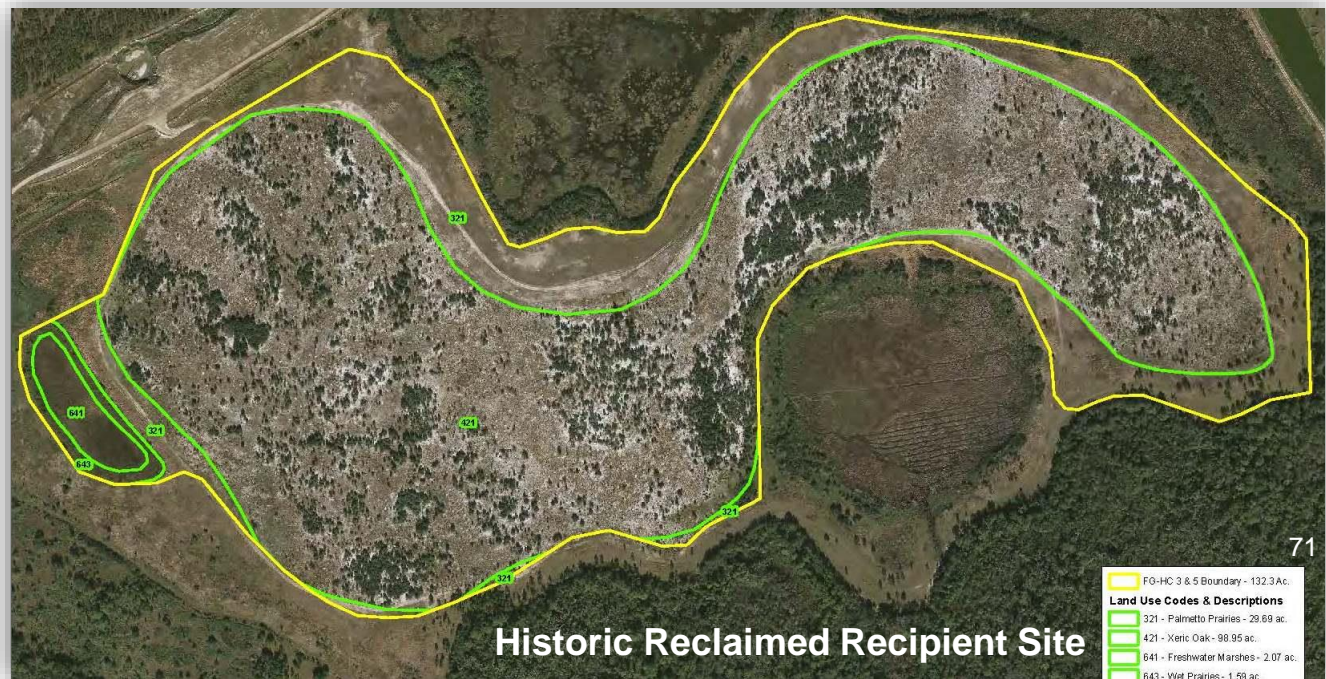
# Mosaic Wildlife Overview

## State Species Review Gopher Tortoise Relocations

- 30-year MOA with FWC providing a comprehensive approach to tortoise management and conservation
- Use a combination of Mosaic Recipient Sites (reclaimed and non-mined lands) and third party recipient sites
- All recipient sites under Conservation Easement and managed in perpetuity
- Currently providing 1,154 acres as long-term protected recipient sites

## Additional Conservation Measures from MOA

- Placing CE over 500 acres of reclaimed tortoise recipient sites managed in perpetuity
- \$60,000 annual contribution to The Nature Conservancy for management of tortoise habitat on non Mosaic land





# Mosaic Wildlife Overview

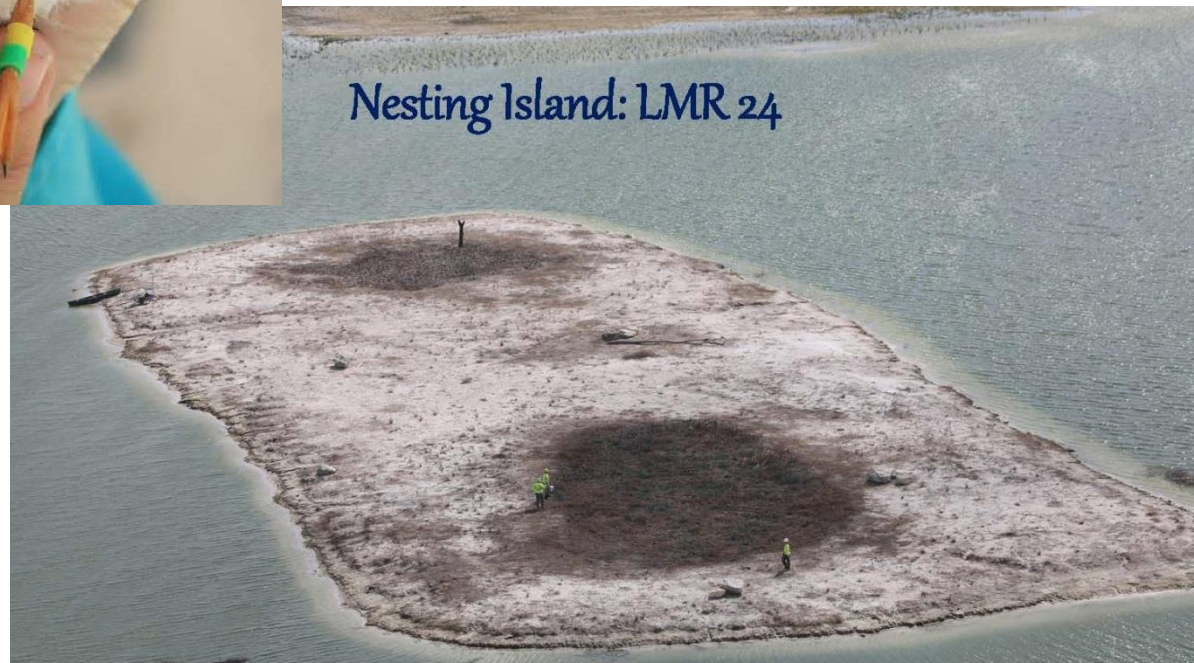


## State Species Review

- Creation of inland shorebird nesting habitat LMR (24)

- Banding study to collect data essential to the conservation of least terns – state listed as Threatened

Nesting Island: LMR 24





# Mosaic Wildlife Overview



## 2017 nesting season survey

- Over 30 active nests/over 70 adult terns documented

- Multiple banded juveniles from Mosaic site were sighted in Pinellas County (Outback Key/Courtney Campbell) and Pasco County (Anclote Key)



**Banded Juvenile Least Tern (SO-K)**  
**August 17, 2017**  
**Anclote Key**  
**Pasco County, Florida**



# Mosaic Wildlife Overview

## Trail Camera Monitoring

- Identify potential uses of trail cameras for wildlife management for game species on reclaimed habitat
- Animal movement
- Range size
- Demographic information





# Mosaic Wildlife Overview



## Trail Camera Monitoring

- Identify and help management decisions for non-native nuisance species (e.g. feral hog and coyote) and nest predators



# Wildlife Overview

USF Study on wildlife utilization of reclaimed land - ***Wildlife habitat and wildlife utilization of phosphate-mined lands***

What wildlife species are found on formerly mined lands?

## 299 Total Species

- 36 fish / 20 amphibians
- 28 reptiles / 186 birds
- 29 mammals

Where is wildlife found in the reclamation landscape?

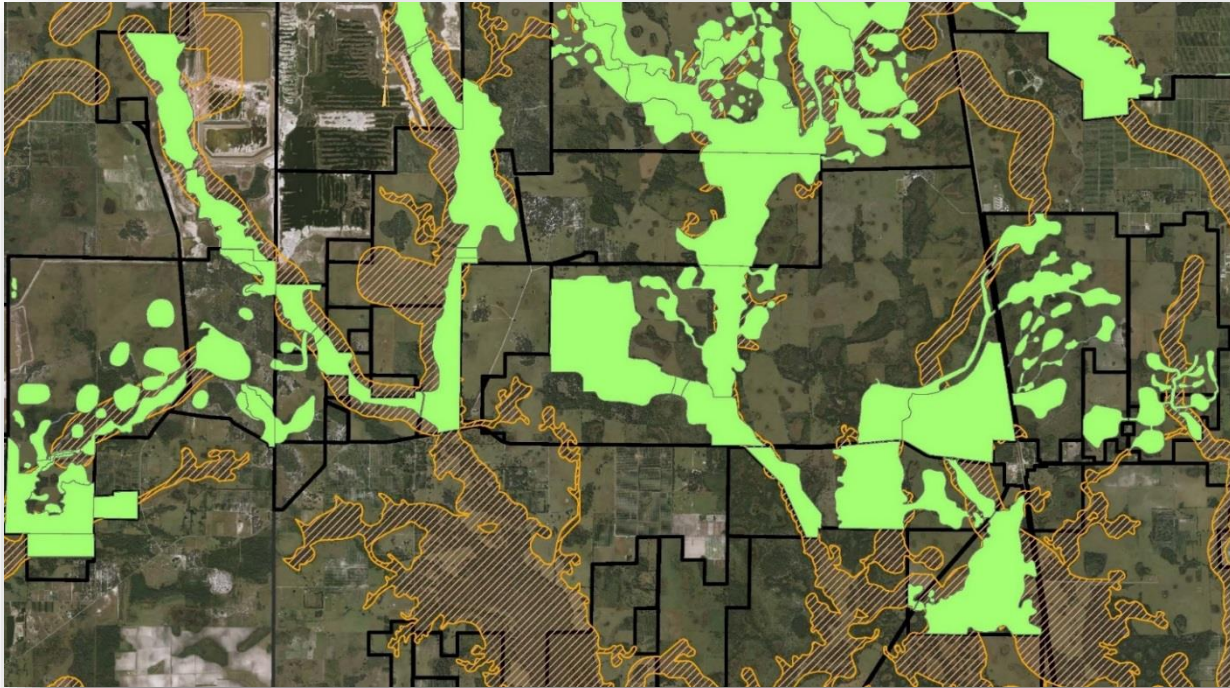
## Location

- Distance to water
- Distance to wildlife corridor
- Distance to natural area

What characteristics in the post-mining landscape are most important for wildlife?

## Heterogeneity of Habitat

# Mosaic Wildlife Overview



- Work cooperatively with all regulatory agencies to identify and preserve more fully functioning wildlife corridors
- Design/plan reclamation to expand on preserve areas reducing historic habitat fragmentation
- Provide regionally significant mitigation at the landscape-level benefiting multiple species
- With the addition of Ona, Wingate Extension, South Pasture Extension, and Desoto, approximately 43,000 acres of regionally significant habitat placed under CE



# Mosaic Reclamation Overview

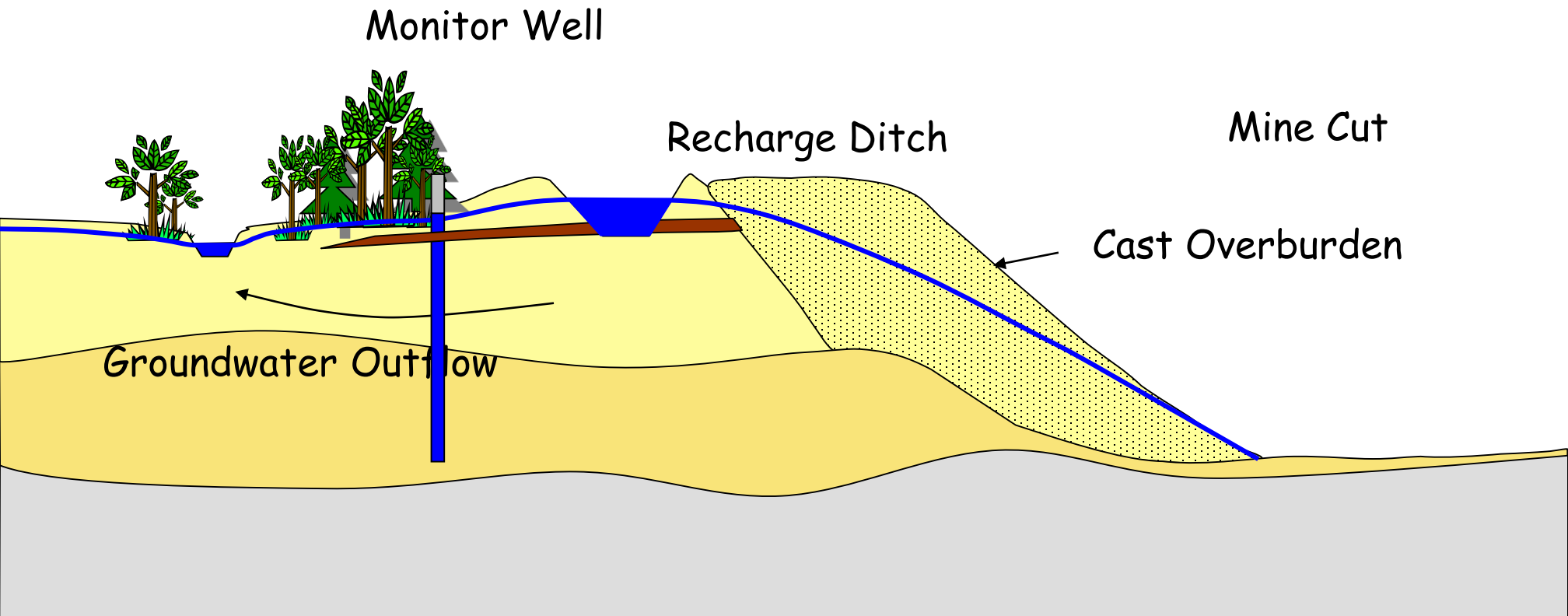


## Mining is a Temporary Land Use

Section 378.202(1), F.S. recognizes that phosphate mining is a temporary land use  
(1) .... *mining is a temporary land use.*  
*Therefore, it is the intent of the Legislature that mined lands be reclaimed to a beneficial use in a timely manner and in a manner which recognizes the diversity among mines, mining operations, and types of lands which are mined.*



# Wetland Protection – Berm & Recharge System



# Protections During Mining and Reclamation

- Sensitive areas are set back from mining activity
- Separated by a recharge ditch and berm system
- Protects the hydrology of wetlands near or adjacent to mining operations





# Overview of Today's Advanced Reclamation

- Every acre mined and disturbed is reclaimed; reclamation must be approved by regulatory authorities
- Returns mined land to productive uses for both wildlife and people
- Team comprised of dozens of managers, biologists, ecologists, engineers and other professionals
- Science-based wildlife surveying and monitoring on reclaimed land
- Restoring integrated habitats and connections on previously fragmented landscapes
- Advanced wetland hydrologic modeling supports preserved and reclaimed lands



# Overview of Today's Advanced Reclamation

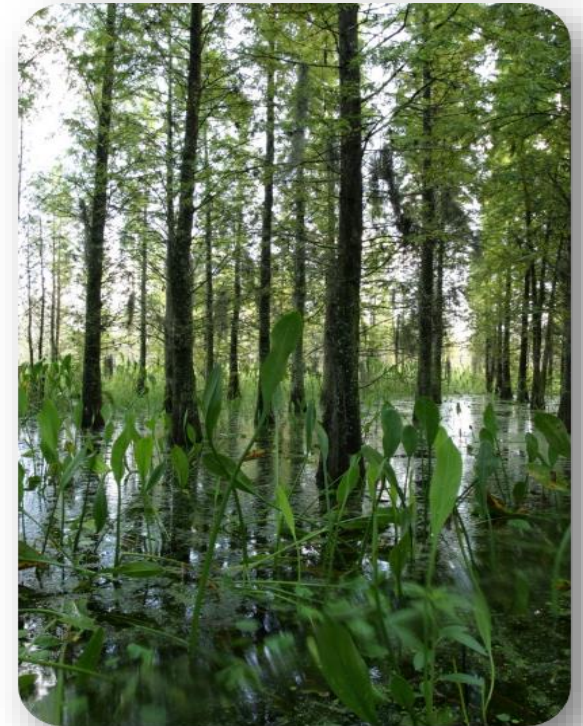


- Mining and Reclamation is a “Rolling” process
- Not all of the wetlands and streams will be impacted at the same time
- Some areas would be reclaimed before others would be disturbed
- Reclamation parcels are identified by Notice to Initiate a Major Disturbance (NOD's), typically less than 1,000 acres
- NOD's identify size of the parcel, beginning and ending dates of the disturbance, and the reclamation dates beginning and ending dates
- Dates are fluid due to the dynamics of mining



# Mosaic's Florida Land & Reclamation Facts

- Own or control more than 350,000 acres
- Planted more than 800,000 trees in 2016
- 198,500 acres have been mined or disturbed since FDEP 1975 Reclamation Rule
  - Reclaimed approximately 152,222 acres of the mined and disturbed acres (77%)
  - Released approximately 101,400 of the reclaimed acres (67%)
- Own or control more than 21,000 acres in Florida designated as non-impacted floodplain, preservation and granted conservation easements
  - Ensures long-term protection of these sensitive lands and waters



**“Released” means all reclamation obligations have been satisfied.**

# Mosaic Palmetto Prairie & Xeric Oak





# Mosaic Freshwater Marshes & Wet Prairies





# Mosaic Forested Wetlands





# Reclaimed Public Parks and Fishing Areas



# Mosaic Land Strategy

## Russell Schweiss

- Director, Public Affairs, Land & Resource Strategies
- 20+ years of experience in public affairs, economic development, public policy and regulatory and permitting matters
- Prior work experience with Rayonier, Harcourt Education, Executive Office of Governor Jeb Bush and the Florida Department of Environmental Protection





# Mosaic Land Strategy

- Build a diversified agricultural enterprise spanning land-holdings
  - Silviculture
  - Row crops
  - Cow/calf operation and cattle leases
  - Sod
  - Hoop houses
  - Commercial fishing
- Strategic divestitures only
  - Focus on sales into industrial/commercial land uses
    - Identify strategic geographic locations that provide lift to surrounding land values
  - May explore recreational land use sales of conservation areas
  - Must maintain buffers around and corridors connecting active operations

# Current Agricultural Operations

- 6000+ acres of citrus
- 350 acre sod farm
- 120,000 acres in cattle lease
- Experimental plantings of olives, pongamia, cottonwood, hops





# New Investments (2018/2019)



Eucalyptus



Hoop Houses



Sod Farm Expansion



Hay Fields



## New Investments (2018/2019)



# Commercial fisheries

- 825,000 lbs of restaurant grade tilapia harvested from reclaimed lakes in 2017
- Program expanded to additional waterbodies in 2018
  - Projected harvest is 1.4 million lbs





# Sports Fishing

- Reclaimed lakes often featured on Bill Dance programming
- Sports fish also sold for stocking
  - 5,998 lbs YTD in 2018





# DeSoto Mine Rezoning – BOCC

*With respect to the information presented in the second part of our presentation, note that all effects of the proposed DeSoto Mine will be addressed in much greater detail in the MMP and OP review and approval process.*

*If during that process the BOCC determines that significant adverse effects of mining have not been resolved or mitigated, the BOCC will deny the MMP and OP permits needed to mine.*

# DeSoto Mine Rezoning – BOCC

- Substantial, competent evidence supporting an approval
  - Application packet containing:
    - Maps
    - Transportation Analysis
    - Air, Noise, Light and Vibration Analyses
    - Analysis of 15 considerations
    - Analysis of Comprehensive Plan consistency
  - Expert Testimony

# DeSoto Mine Rezoning – BOCC

- Earl Hahn, Planning Expert
  - Application in compliance with all requirements of the LDRs
  - Requested rezoning conforms to all 15 considerations





# DeSoto Mine Rezoning – BOCC

- Shelley Thornton, Phosphate Mining Permitting Expert

- *CONSERVATION ELEMENT POLICY 1.7.10:*

For Phosphate Mining, a permit authorizing mitigation, reclamation or restoration of environmentally sensitive areas obtained from the Southwest Florida Water Management District, the Florida Department of Environmental Protection, and/or the US Army Corps of Engineers, as applicable, shall evidence that the resource extraction will not result in a reduction of ecological value of the area subject to resource extraction.



# DeSoto Mine Rezoning – BOCC

- SEC. 20-363. - *RELATIONSHIP TO OTHER REQUIREMENTS RELATING TO THE PROTECTION OF WETLANDS.*

All development and development plans shall comply with applicable provisions of the County Comprehensive Plan, Federal, State and Water Management District Regulations and Permitting Requirements. All development for which permits required by Federal, State and the Southwest Florida Water Management District regulations concerning wetland protection have been issued and which is in compliance with such permits and permit conditions, is presumed to be in compliance with the requirements of these LDRs.

- SEC. 20-392. - *RESTRICTIONS ON DEVELOPMENT.*

(A) No development shall take place which adversely impacts the quality or quantity of groundwater or surface water supply sources unless it is in compliance with the County comprehensive plan and a permit or other authorization regulating such impacts on ground or surface waters for such development has been issued by State, Federal regulatory agencies or the Southwest Florida Water Management District. All development for which permits required by Federal, State and the Southwest Florida Water Management District regulations concerning groundwater and surface water protection have been issued and which is in compliance with such permits and permit conditions, is presumed to be in compliance with the requirements of these LDRs.



# DeSoto Mine Rezoning – BOCC

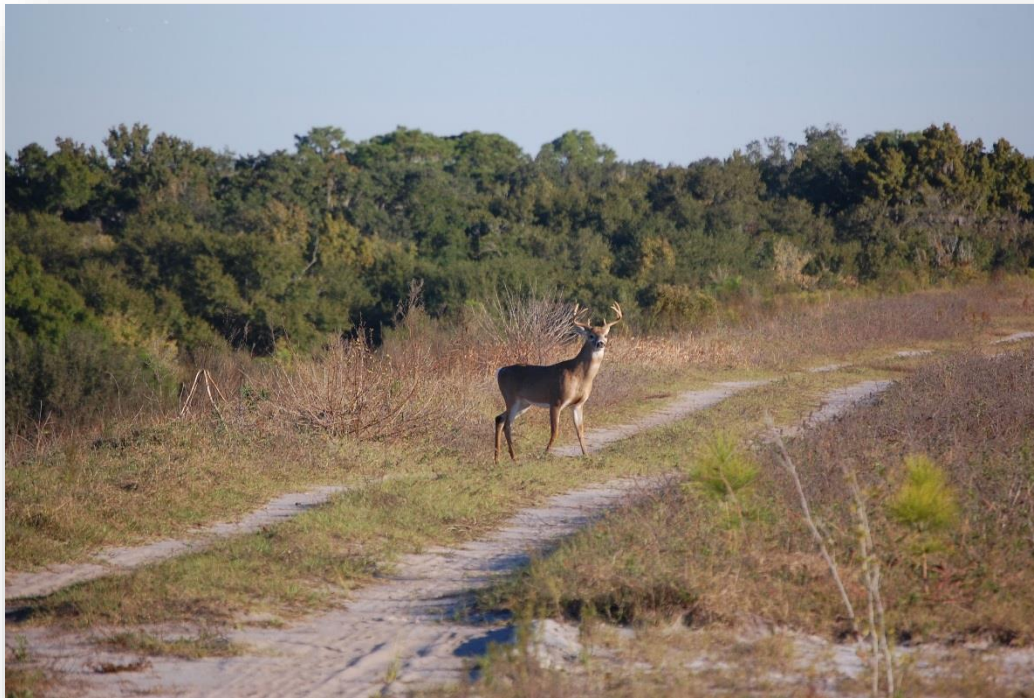
- Gary Uebelhoer, Phosphate Mining Operations Expert
  - **Air, Noise, Light and Vibration consistent with existing agricultural operations**





# DeSoto Mine Rezoning – BOCC

- Matt Ray, MAI
  - Requested rezoning will not negatively affect adjacent property values



# DeSoto Mine Rezoning – BOCC

- Steve Henry, P.E., Transportation Expert
  - **Peak hour traffic, with the addition of the Proposed DeSoto Mine traffic will remain within DeSoto County's adopted Level of Service**
  - **The Proposed DeSoto Mine traffic will account for less than 5% of the adopted Level of Service for SR 70**
  - **Railroad operations associated with the Proposed DeSoto Mine will not degrade the Level of Service of SR 70 below an acceptable Level of Service**

# DeSoto Mine Rezoning – BOCC

- Darren Stowe, Planning Expert
  - Requested rezoning is consistent with the Comprehensive Plan
  - Requested rezoning conforms to all 15 considerations





# DeSoto Mine Rezoning – BOCC

## ➤ Conclusion

- Requested rezoning not unexpected
- Implements the Comprehensive Plan
- Establishes a consistent zoning scheme within the GPMOD
- Allows for existing agricultural uses to continue
- One step in a comprehensive process

**Based on the substantial, competent evidence presented, the rezoning should be approved.**

