

**South Florida Dairies, LLC  
Barns 3 and 4  
Environmental Improvement Project**

October 28, 2025

Prepared by:



**Royal Consulting Services, Inc.**

211 West Warren Avenue  
Longwood, FL 32750  
Phone (407) 831-3095  
Fax (407) 831-5095  
Florida C.A. Lic. No. 7290



**Table of Contents**

Section 1 Background ..... 1

Section 2 Project Description and Purpose ..... 1

    2.1 Stormwater Management Enhancements ..... 6

    2.2 Conversion to Full Confinement and Nutrient Management Improvements ..... 6

    2.3 Overall Environmental Benefits ..... 6

Section 3 Project Overview ..... 6

    3.1 Design Components ..... 7

    3.2 Environmental Benefits ..... 7

Section 4 Nutrient Load Reduction ..... 8

Section 5 Permitting Plan ..... 8

Section 6 Monitoring & Reporting Plan ..... 10

    6.1 Water Quality Monitoring ..... 10

    6.2 Water Use and Level Monitoring ..... 10

    6.3 Final Report ..... 11

Section 7 Operations Plan ..... 11

Section 8 Project Funding Plan ..... 11

Section 9 Implementation Schedule ..... 12

Section 10 References ..... 12

Appendix A Conceptual Plans

Appendix B Cost Estimates

**List of Figures**

Figure 1 Project Location ..... 2

Figure 2 Waste and Stormwater Management Systems ..... 3

Figure 3 Existing Farm Operation ..... 4

Figure 4 Proposed Farm Operation ..... 5

**List of Tables**

Table 1 Existing and Proposed Conditions Nutrient Load Calculations (TP) ..... 9

Table 2 Project Funding Plan ..... 11

Table 3 Cost Effectiveness Totals ..... 12

Table 4 Implementation Schedule ..... 12



## Section 1 Background

Royal Consulting Services, Inc. (RCS), as an authorized agent for South Florida Dairies, LLC (SFD), is pleased to submit this unsolicited proposal on their behalf. RCS and SFD have teamed together to design and construct an environmental improvement project on SFD property in Okeechobee County, Florida. SFD manages two permitted Confined Animal Feeding Operations (CAFOs) in Okeechobee. Barns 3 and 4 Dairies are located on the west of US Highway 441 and south of county Road 68 and about 17 miles northeast of the city of Okeechobee and are managed under the CAFO permit FLA139211. SFD Stormwater Pond 4 (SP-4) is located in sections 15, 16, 21, and 22 of township 35S and range 35E, while Stormwater Pond 3 (SP-3) is located in sections 3, 4, 9, and 10 of township 35S and range 35E. The farm is located within the Taylor Creek/Nubbin Slough sub basin within the Lake Okeechobee Watershed (LOW) and a South Florida Water Management District (SFWMD) Focus Area (**Figure 1**).

Currently, Barn 3 operates as a confinement-based system with permitted average annual herd size of 2,000 lactating cows. Barn 4 operates as a pasture-based dairy with a permitted herd of 2,200 lactating cows. **Figure 2** identifies the primary waste and stormwater management systems on the farm. Approximately 572 dry cows are grazed on the farm and **Figure 3** identifies the current land use of the dairy, with 183.6 acres of heavy use pastures and 918 acres of outer pastures used to manage the Barn 4 lactating herd and dry cows. The waste management system (WMS) at Barn 3 receives wastewater generated from barn flush operations, milk parlor washdown, and runoff from the High Intensity Area (HIA) and routes it to waste storage pond 3 (WSP3). The WMS for Barn 4 collects wastewater from barn and parlor operations and runoff from the feed yard and Heavy Use Area (HUA) pastures and directs it to WSP4. The wastewater from both WSP3 and WSP4 is reused for irrigation on 548 acres of permitted sprayfields, providing nutrient recycling and reducing reliance on freshwater. Drainage from the existing sprayfields is collected in SP-3 and SP-4 prior to discharge offsite.

## Section 2 Project Description and Purpose

To improve operational efficiency, water quality protection, and long-term nutrient sustainability, SFD is undertaking a comprehensive upgrade of the Barns 3 and 4 system. The project focuses on two key strategies:

1. Transitioning Barn 4 from a pasture -based management system to a fully confinement-based operation.
2. Expanding and enhancing the stormwater and irrigation infrastructure to increase reuse capacity, reduce offsite discharges, and improve nutrient utilization.

**Figure 4** identifies the proposed land use changes. Together, these strategies provide a holistic approach to nutrient control and water conservation within the Taylor Creek Basin, aligning with regional watershed restoration goals for the LOW.

The primary objective of this project is to enhance nutrient management and reduce runoff impacts to Lake Okeechobee through targeted infrastructure improvements and implementation of best management practices (BMPs).

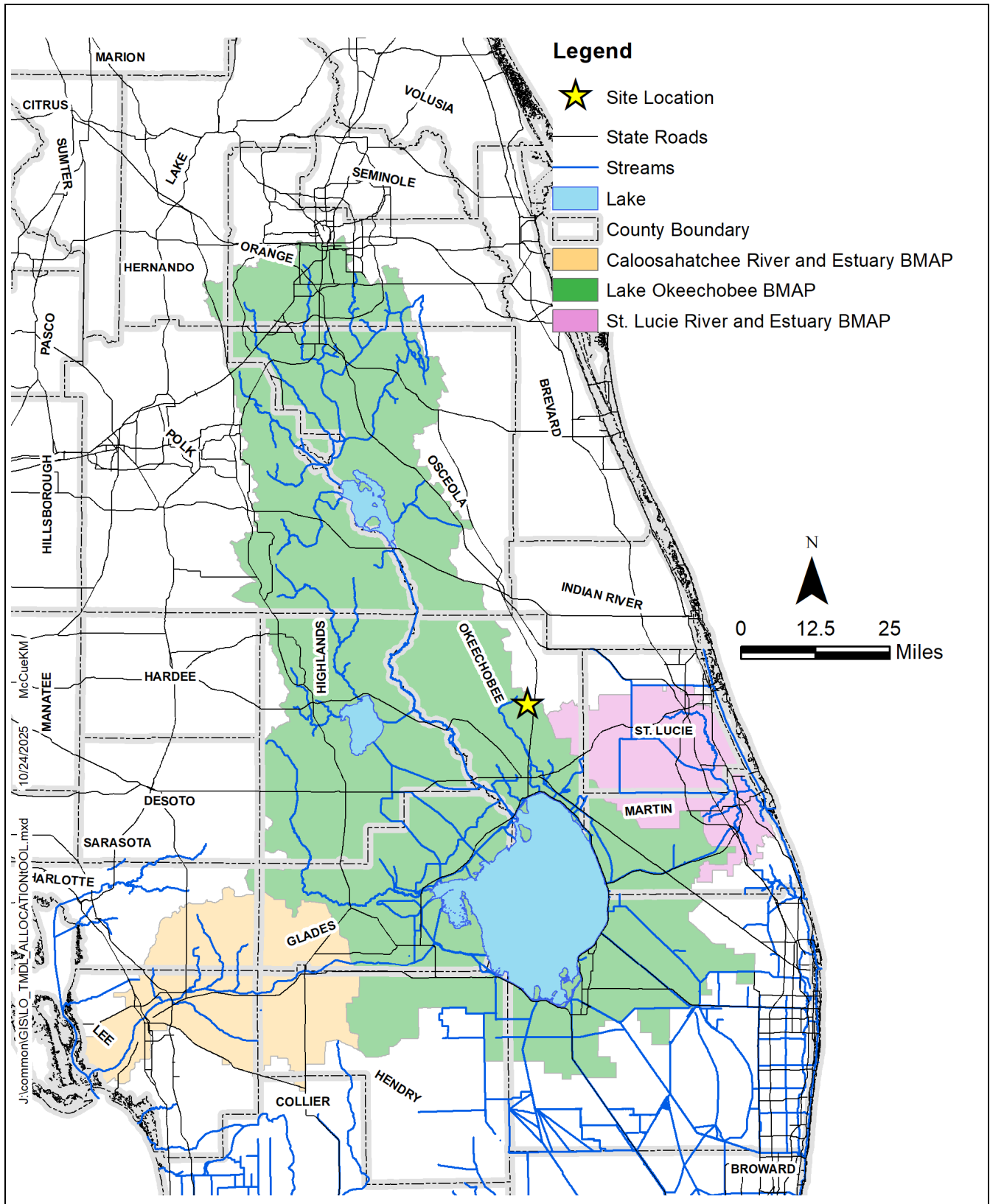


Figure 1 Project Location

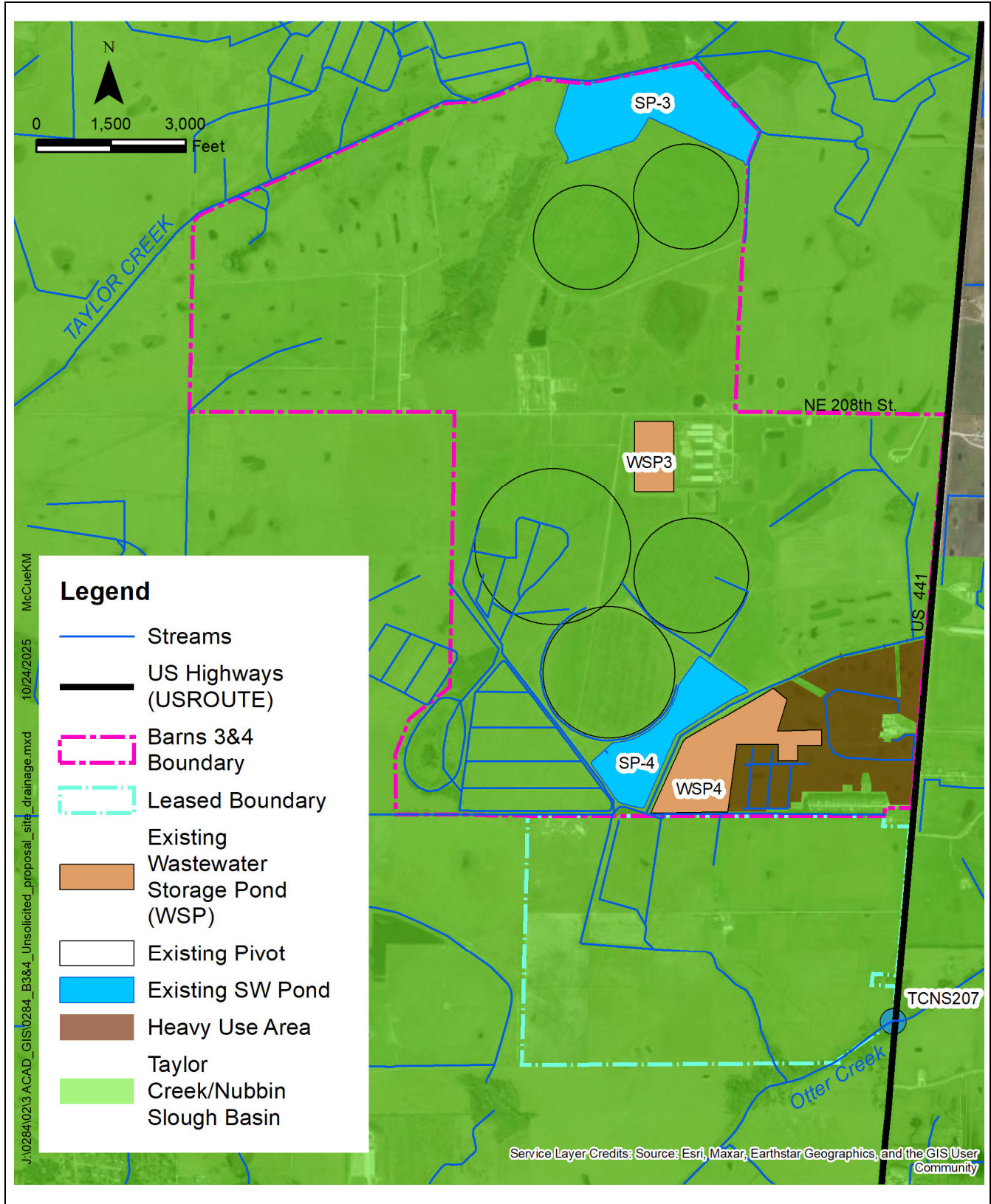


Figure 2 Waste and Stormwater Management Systems

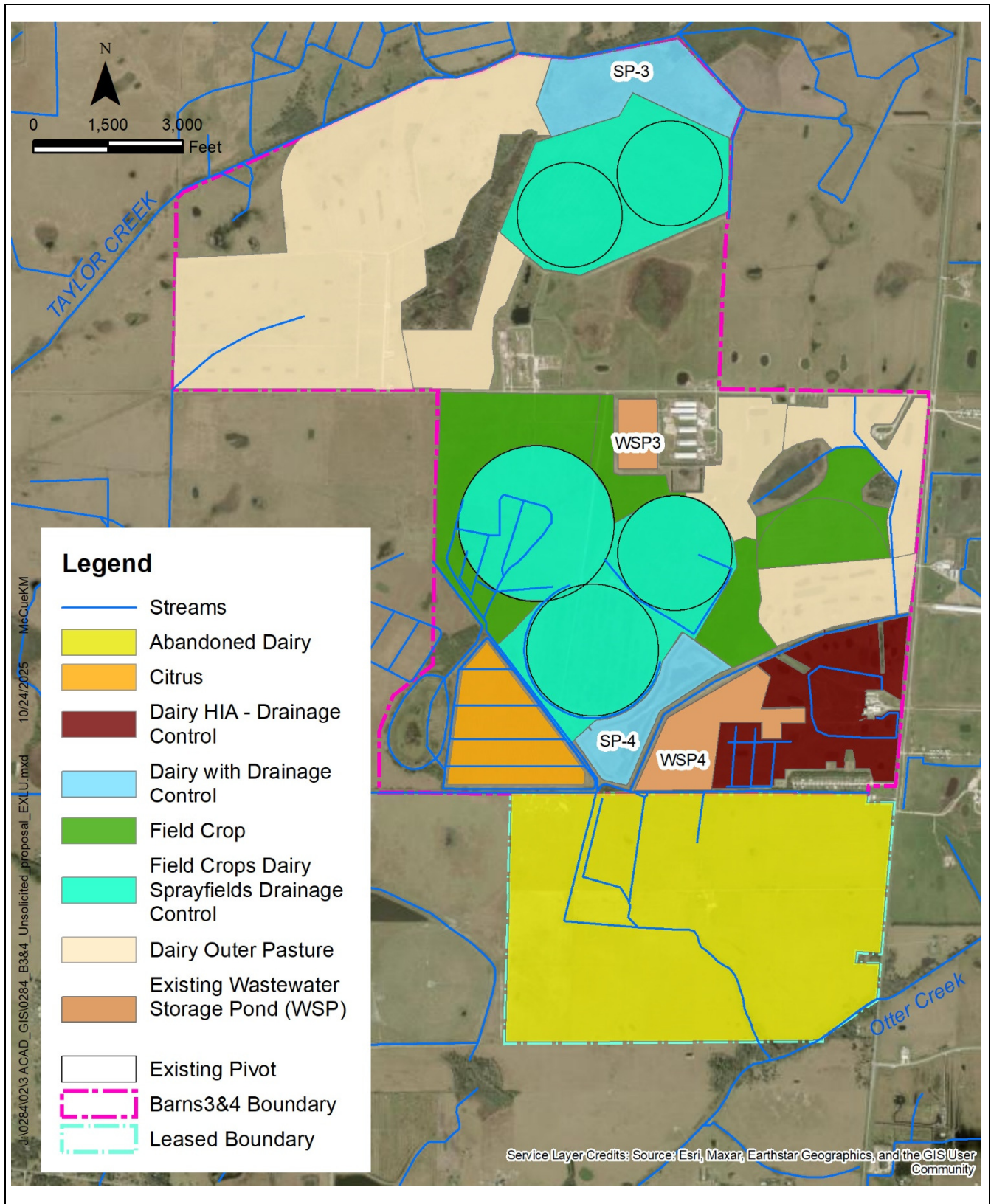


Figure 3 Existing Farm Operation

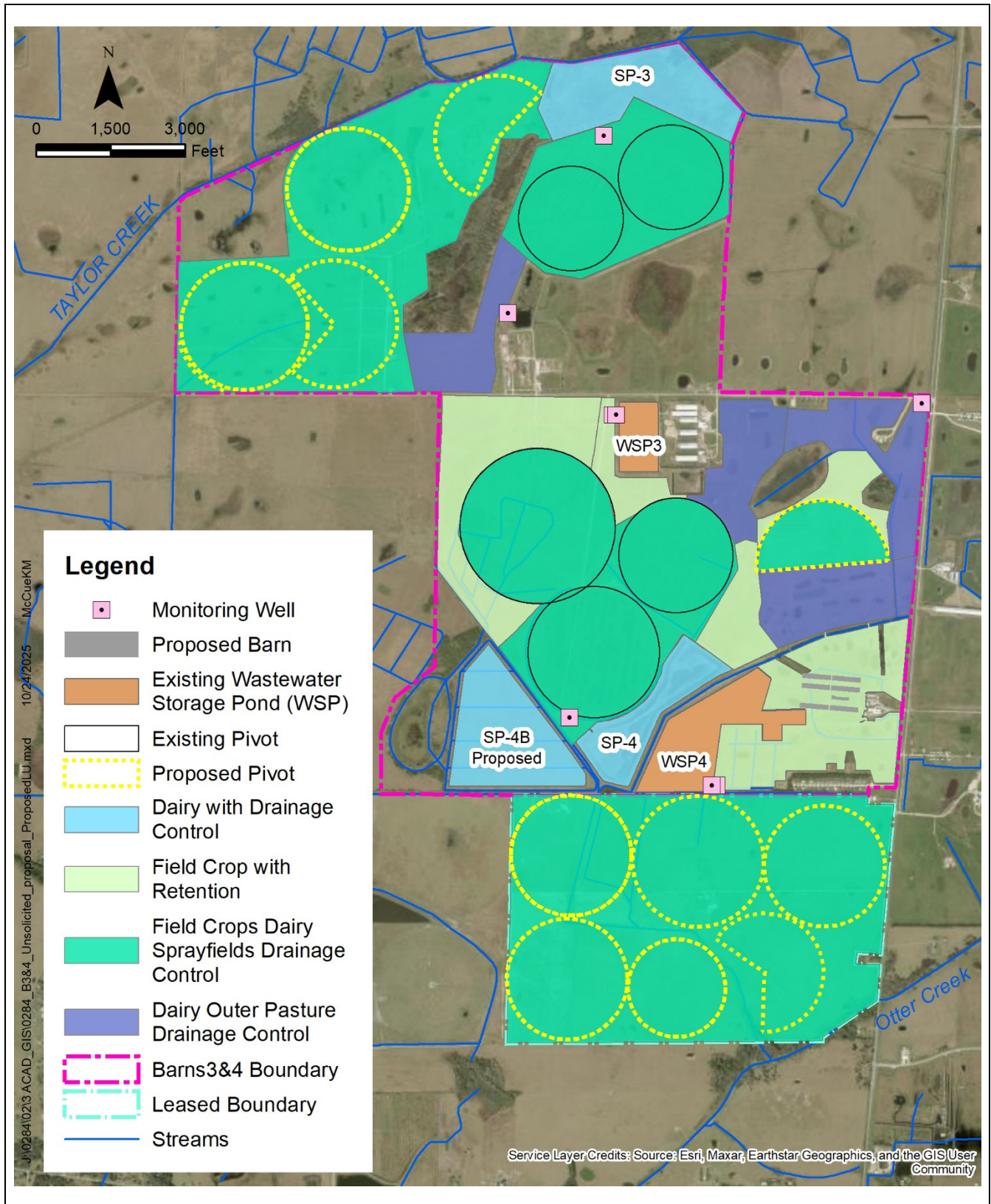


Figure 4 Proposed Farm Operation



## **2.1 Stormwater Management Enhancements**

Modifications to SP-3 and SP-4 are proposed to increase storage capacity at each stormwater pond, enhancing treatment of site drainage and enabling captured stormwater to be utilized as an additional source of irrigation reuse water for the operation. SP-3 will be expanded by converting the system from gravity to pumped and raising existing berms to provide more storage.

SP-4 and an additional pond (SP-4B) will be constructed at the location of a historic citrus grove. In addition, the roughly 1,100 acres of existing HUA and outer pastures will be converted to field crops for mining of nutrients, with the installation of 493 acres of new pivots on this portion of the dairy. Drainage from these areas will be routed to the expanded stormwater ponds.

This project also includes the incorporation of the 847 acres of abandoned dairy land located immediately south of Barn 4. These fields are being leased and 645 acres of pivots are being installed to facilitate mining of nutrients. Drainage from these fields will be routed back to SP-4B.

## **2.2 Conversion to Full Confinement and Nutrient Management Improvements**

This proposal includes transitioning all remaining lactating and dry cows from the HUA pastures into full confinement through construction of three 924-cow freestall barns. Approximately 2,772 dairy cows will be relocated from existing HUAs and outer pastures into new freestall barns equipped with dedicated waste management systems. This conversion will prevent direct deposition of manure and organic material onto open fields, instead capturing and conveying all waste through a contained system designed for treatment via engineered biological and physical processes prior to reuse or land application. The treated material will then be distributed through an expanded irrigation system and applied at agronomic rates. Once animal traffic is removed, the HUA pastures will be converted to hayfields and managed for phosphorus mining to restore soil nutrient balance.

## **2.3 Overall Environmental Benefits**

Collectively, these improvements will significantly reduce nutrient loading to the Taylor Creek Basin and, ultimately, the LOW. The combination of full confinement, enhanced storage, expanded stormwater management, and cross-facility reuse provides a robust, integrated system that:

- Minimizes offsite discharges of nitrogen and phosphorus.
- Promotes natural attenuation of nutrients within storage and reuse systems.
- Improves irrigation efficiency and nutrient uptake by crops.
- Reduces groundwater withdrawals and conserves freshwater resources.
- Enhances long-term sustainability and compliance with regional nutrient reduction goals.

These actions demonstrate SFD's commitment to implementing best available management practices and supporting watershed-scale improvements in water quality and resource conservation.

## **Section 3 Project Overview**

The proposed improvements at SFD are designed to enhance water quality protection, increase wastewater reuse, and transition the operation toward full confinement and controlled nutrient management. The combined projects include the expansion of SP-3, SP-4, and construction of the new SP-4B in addition to the construction of three new freestall barns and associated infrastructure. Together, these efforts will substantially reduce offsite discharges to Taylor Creek and support regional nutrient reduction goals for the LOW.



### 3.1 Design Components

The proposed environmental improvement projects include the following modernization measures:

- *Barn 3 (Stormwater Pond 3 Expansion & Reuse System):*
  - Installing two 24” axial flow drainage pumps to manage field runoff.
  - Constructing two irrigation reuse pump stations to recycle pond water for irrigation.
  - Repairs and upgrades to Stormwater Pond 3 berm to allow 4 feet of storage depth.
  - Installing four new center pivot irrigation systems.
  - Adding five water control structures for overflow and water level control
- *Barn 4 (Stormwater Pond 4 Expansion & Reuse System):*
  - Expanding SP-4 by converting a former citrus field into SP-4B (122 acres), creating a combined 181-acre pond with ~645 ac-ft storage.
  - Raise berms around SP-4 to increase capacity.
  - Construction of two 24” diesel-powered drainage pump station to route flows into ponds instead of discharging offsite.
  - Installation of a Field Overflow riser to detain water on-site.
  - Addition of three diesel-powered irrigation pumps to reuse stormwater for irrigation.
  - Monitoring system with staff gauges, flow meters, and data loggers.

*Barn 4 (Freestall Barn Expansion):*

- Moving 2,772 cows from HIA pastures through the construction of three 924-cow freestall barns removes the remaining lactating and dry cow herds from high-use pastures.
- Constructing two wastewater irrigation and three irrigation reuse pump stations to recycle pond water for irrigation.
- Expanded wastewater sprayfields with 6 new center pivots, powered by dedicated pump stations and electrical service upgrades Supporting infrastructure includes flush tanks, flush mains, fresh water wells, sand separator with drying area, and access improvements

Conceptual plans providing the existing site layout and detailing the proposed improvements are included in **Appendix A**.

### 3.2 Environmental Benefits

Together, these improvements provide a comprehensive, integrated system that:

- Reduces nutrient movement offsite by capturing and reusing stormwater and wastewater within the facility.
- Improves water-quality treatment through sedimentation, nutrient attenuation, and managed reuse.
- Enhances storage and hydraulic control, minimizing discharge frequency and volume to Taylor Creek.



- Supports groundwater conservation by increasing the use of reclaimed water for irrigation.
- Centralizes manure and wastewater handling in a controlled confinement environment, reducing runoff and leaching risks.

## Section 4 Nutrient Load Reduction

The report, *Evaluation of Effectiveness of Abatement Strategies Compared Against Pre-Drainage and Existing Conditions in the Lake Okeechobee Watershed*, authored by Soil and Water Engineering Technology, Inc. (SWET), and published on May 28, 2019, evaluated the effectiveness of nutrient abatement strategies in the LOW using the Watershed Assessment Model (WAM), a GIS-based tool that simulated hydrology and water quality. These efforts, conducted to support the Lake Okeechobee Basin Management Action Plan, provided guidance for the SFWMD, the Florida Department of Environmental Protection (FDEP), and the Florida Department of Agriculture and Consumer Services (FDACS). The study compared current and historical conditions to identify cost-effective BMPs and projects for improving water quality across the watershed. The SWET report provides estimates of the nutrient load (Nitrogen and Phosphorus) for various land uses in pounds per acre per year (lbs/ac/yr). Nutrient load rates are provided for a base condition, and reduced rates are provided assuming fertility and drainage BMP implementation. The data from this report was used to identify how the proposed changes in the land uses and fertility and water management BMPs implementation reduce nutrient loads.

The potential nutrient loading reduction to the watershed is provided primarily through the stormwater retention and reuse on the farm. These improvements provide a nutrient reduction and reuse benefit through the attenuation of water and the abatement of nutrient loading to Lake Okeechobee. Calculation details are provided in **Table 1** on the following page for both existing and proposed loading rates to Lake Okeechobee. As indicated, the project anticipates a total reduction in TP and TN of 10,971 and 14,834 lbs/year, respectively.

## Section 5 Permitting Plan

SFD has an existing Water Use Permit (WUP) through SFWMD Permit Number 47-00082-W. This permit includes irrigation via wastewater and stormwater reuse. As SFD will not be requesting additional water as part of this project, no modification to the SFWMD WUP is anticipated.

SFD Barns 3 & 4 operate under FDEP CAFO Permit No. FLA139211. A modification of this permit will be requested based on a revised Nutrient Management Plan (NMP), which will recalculate the volumetric nutrient balance and water quality resulting from the proposed confinement barns and expanded stormwater ponds. The revised NMP will also include a wetland delineation, Threatened and Endangered (T&E) Species Survey, and how any mitigation requirements for T&E or wetlands will be accomplished. For this project, no wetland or T&E mitigation is anticipated.



Table 1 Existing and Proposed Conditions Nutrient Load Calculations (TP)

Land Use	Acres	TN <sup>1</sup> (lbs/ac/yr)	TP <sup>1</sup> (lbs/ac/yr)	TN (lbs/yr)	TP (lbs/yr)
<b>Existing Conditions</b>					
Dairy Outer Pasture	606.7	37.8	13.99	22,935	8,488
Dairy Outer Pasture	70.4	37.8	13.99	2,660	984
Dairy Outer Pasture	70.3	37.8	13.99	2,658	984
Dairy Outer Pasture	82.7	37.8	13.99	3,126	1,157
Dairy Outer Pasture	88.1	37.8	13.99	3,330	1,233
Field Crops Dairy Sprayfields Drainage Control	457.2	17.7	1.96	8,092	896
Field Crops Dairy Sprayfields Drainage Control	252.5	17.7	1.96	4,469	495
Field Crop	149.0	15.4	1.23	2,294	183
Field Crop	33.6	15.4	1.23	517	41
Field Crop	48.1	15.4	1.23	740	59
Field Crop	63.1	15.4	1.23	972	78
Field Crop	33.7	15.4	1.23	519	41
SP-4 Dairy with Drainage Control	65.5	12.1	1.35	792	88
SP-3 Dairy with Drainage Control	113.1	12.1	1.35	1,368	153
Dairy HIA - Drainage Control	183.6	28.5	9.98	5,233	1,832
Citrus	108.2	24.7	1.96	2,673	212
Abandoned Dairy	847.1	10.9	1.96	9,233	1,660
<i>Total Nutrient Loading Existing</i>				<b>71,611</b>	<b>18,585</b>
<b>Proposed Conditions</b>					
Field Crops Dairy Sprayfields Drainage Control	606.7	17.7	1.96	10,739	1,189
Dairy Outer Pasture Drainage Control	70.4	22.9	7.48	1,611	526
Dairy Outer Pasture Drainage Control	70.3	22.9	7.48	1,610	526
Dairy Outer Pasture Drainage Control	82.7	22.9	7.48	1,894	619
Dairy Outer Pasture Drainage Control	88.1	22.9	7.48	2,017	659
Field Crops Dairy Sprayfields Drainage Control	457.2	17.7	1.96	8,092	896
Field Crops Dairy Sprayfields Drainage Control	252.5	17.7	1.96	4,469	495
Field Crop - Retention	149.0	15.1	1.19	2,250	177
Field Crop - Retention	33.6	15.1	1.19	507	40
Field Crop - Retention	48.1	15.1	1.19	726	57
Field Crop - Retention	33.7	15.1	1.19	508	40
Field Crops Dairy Sprayfields Drainage Control	63.1	17.7	1.96	1,117	124
Dairy with Drainage Control	65.5	12.1	1.35	792	88
Dairy with Drainage Control	113.1	12.1	1.35	1,368	153
Field Crop - Retention	183.6	15.1	1.19	2,772	218
SP-4B Dairy with Drainage Control	108.2	12.1	1.35	1,310	146
Field Crops Dairy Sprayfields Drainage Control	847.1	17.7	1.96	14,993	1,660
<i>Total Nutrient Loading Proposed</i>				<b>56,777</b>	<b>7,614</b>
<b>Nutrient Load Reduction</b>				<b>14,834</b>	<b>10,971</b>
<b>% Reduction</b>				<b>21%</b>	<b>59%</b>

1. Evaluation of Effectiveness of Abatement Strategies Compared Against Pre-Drainage and Existing Conditions in the Lake Okeechobee Watershed, Soil & Water Engineering Technology, Inc., 2019



## Section 6 Monitoring & Reporting Plan

A map of the wells and pump stations used in the water quality monitoring and water use and level monitoring protocols are shown in Figure 4. The monitoring plan will consist of the following:

- Water quality monitoring – Quarterly
  - Existing monitoring wells
  - WSP
  - SP-3, SP-4, and SP-4B
  - Two offsite discharge locations
- Pumpage record – Monthly
  - Flow meters will be installed on both the drainage pumps and irrigation pumps
  - Flow totals will be recorded monthly
- Water level
  - Staff gauge and solar powered data logger in SP-3 and SP-4B – Daily
  - Staff gauge in pump sump – Weekly

### 6.1 Water Quality Monitoring

In accordance with the NMP for Barns 3 and 4, the groundwater monitoring wells are tested on a quarterly basis and analyzed by a laboratory approved by the Florida Department of Health and Rehabilitation Services. At a minimum, water samples are analyzed for the following parameters:

- |                           |                        |
|---------------------------|------------------------|
| • Total Nitrogen (as N)   | • Water Level          |
| • Nitrate Nitrogen (as N) | • Specific Conductance |
| • Total Phosphorus (as P) | • Fecal Coliform       |
| • Ortho Phosphorus (as P) | • Temperature          |
| • pH                      |                        |

This information is submitted quarterly to the FDEP and can be shared with the SFWMD as part of this project. During these quarterly events, water quality will also be collected from SP-3, SP-4, SB-4B and the offsite discharge locations.

### 6.2 Water Use and Level Monitoring

As a requirement of SFD’s WUP, pumpage and water level monitoring are already conducted on onsite wells, and WSP-3 and 4. Monthly meter readings are taken and the total monthly flow (in million gallons) is submitted quarterly.

For this project, additional meter readings will be collected from SP-3 and SP-4/4B drainage and irrigation pumps. In addition, water level monitoring via a solar powered data logger will be conducted on a daily basis from SP-3 and SP-4B.



### 6.3 Final Report

At the conclusion of the five-year monitoring period, a comprehensive final water quality report will be submitted, summarizing the results, evaluating the effectiveness of implemented practices, and providing recommendations for ongoing management.

### Section 7 Operations Plan

SFD proposes to construct a stormwater improvement project for their Barns 3 and 4 site. The existing system will be upgraded by the following work:

- Expand the stormwater pond to increase storage capacity.
- Add a four, new 24” diesel engine powered drainage pumps.
- Provide five diesel engine-powered irrigation pumps for stormwater reuse.
- Install a “Field Overflow” riser to detain water on-site, allowing the drainage pumps to deliver it into the stormwater ponds rather than allowing it to flow off-site.

### Section 8 Project Funding Plan

As discussed in Section 3, the stormwater reuse system expansion components and full confinement transition was estimated to provide a nutrient reduction to the LOW of 14,834 and 10,971 lbs/yr, of TN and TP, respectively.

**Table 2** summarize the project funding plan for Barns 3 & 4 retrofit of existing stormwater ponds for irrigation reuse, stormwater reuse and tailwater recovery project for the abandoned dairy land, and the transition of Barn 4 from pasture to confinement-based dairy. Detailed cost estimates of the modifications to the existing stormwater ponds SP-3 and SP-4 expansion and full confinement transition are provided in **Appendix B**.

**Table 2 Project Funding Plan**

Component	Cost
Barns 3 & 4 Retrofit of Existing Stormwater Ponds for Irrigation Reuse	\$ 5,301,269.73
Stormwater Reuse and Tailwater Recovery Project for Abandoned Dairy Land	\$ 6,191,032.87
Transition Barn 4 from Pasture to Confinement Based Dairy	\$ 18,907,825.12
<b>Total Cost</b>	<b>\$ 30,400,127.71</b>

**Table 3** on the following page calculates the relative cost of nutrient reduction per pound of nitrogen and phosphorus for the proposed modifications. Average operation and maintenance costs were estimated at \$100,000 per year.



Table 3 Cost Effectiveness Totals

Component	Total Project
Present Cost	\$30,400,128
Future Cost (F/P, 4.5%, 20 yrs)	\$73,312,909
Annual Operation and Maintenance Costs (\$/yr) <sup>1</sup>	\$100,000
Total Annual Average Costs (F/P, 4.5%, 20 yrs) / 20 + O&M	\$3,765,645
TP Cost Effectiveness (\$/lb/yr) <sup>2</sup>	\$343
TN Cost Effectiveness (\$/lb/yr) <sup>2</sup>	\$253

1. Future O&M not including startup

2. Cost effectiveness = Total Annual average cost / Nutrient Reduction

### Section 9 Implementation Schedule

Table 4 summarizes the implementation schedule for the proposed project.

Table 4 Implementation Schedule

Task No.	Task Title	Task Start Date	Task End Date
1	Site Assessment and Permitting	2025	2026
2	Engineering and Design	2025	2026
3	Infrastructure Construction	2026	2028
4	Monitoring and Reporting	2026	2031
5	Reporting and Compliance	2026	2031

### Section 10 References

DBHYDRO (Environmental Data), 2025. South Florida Water Management District. South Florida Water Management District, <https://www.sfwmd.gov/science-data/dbhydro>.

FDEP, 2021. McArthur Farms Dairy – Barns 3 & 4/Concentrated Animal Feeding Operations (CAFO) Wastewater Management Facility Permit No. FLA139211.

Royal Consulting Services, Inc, 2015. McArthur Farms, Inc. Attachment A3 Water Demand Computation, December 2015. Submitted in support of SFWMD Water Use Permit application no. 141208-1.

Soil and Water Engineering Technology, Inc., 2008. Final Report Tasks 1, 2 and 3 Nutrient Loading Rates, Reduction Factors and Implementation Costs Associated with BMPs and Technologies. Prepared for South Florida Water Management District, July 14, 2008.

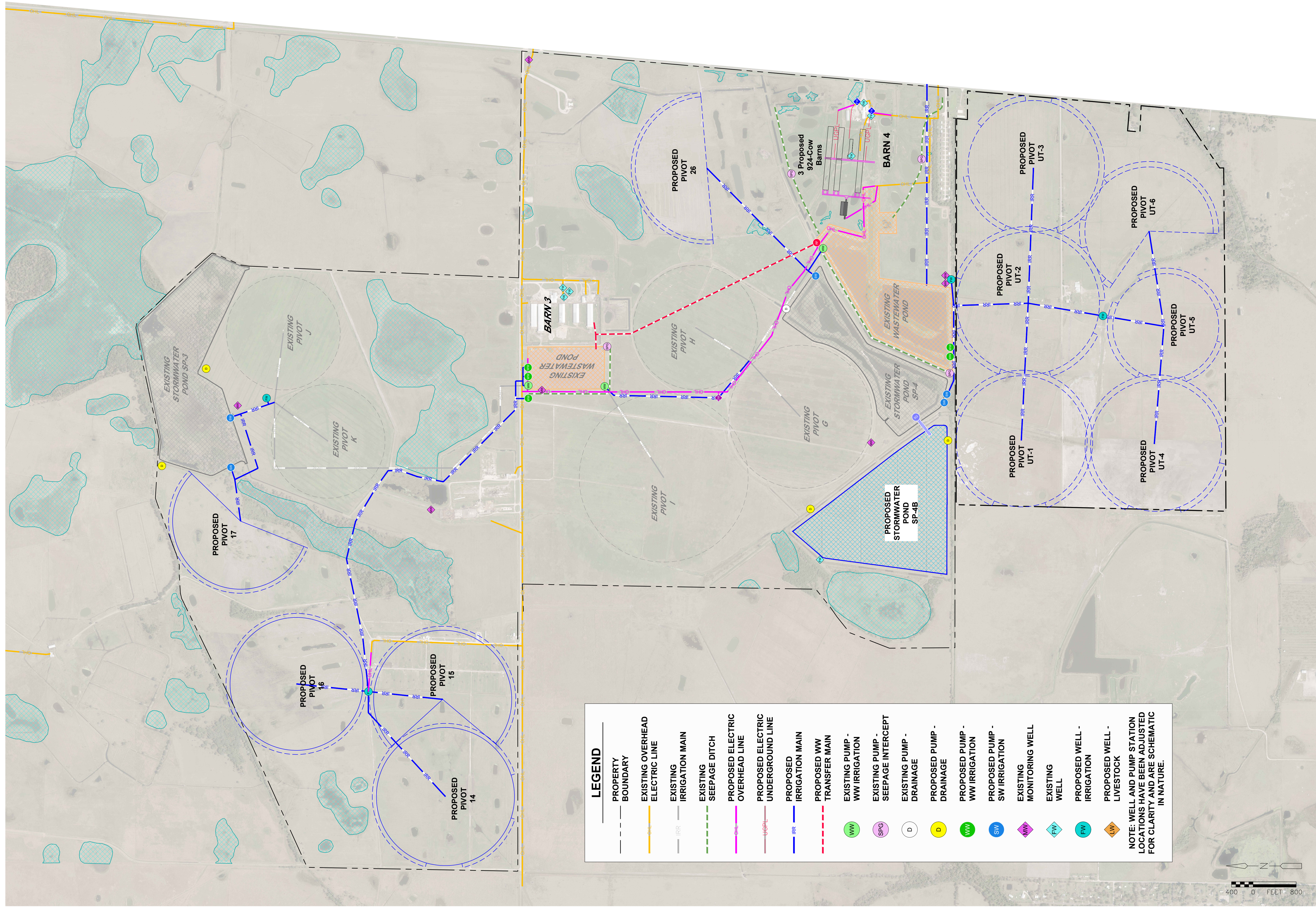
Soil and Water Engineering Technology, Inc., 2019. Evaluation of Effectiveness of Abatement Strategies Compared Against Pre-Drainage and Existing Conditions in the Lake Okeechobee Watershed. Prepared for South Florida Water Management District, May 28, 2019.

Soil and Water Engineering Technology, Inc., 2023. Proposed Stormwater Reuse and Phosphorus Mitigation Project for McArthur Dairy.



## **Appendix A**

### **Conceptual Plans**



**LEGEND**

- PROPERTY BOUNDARY
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING IRRIGATION MAIN
- EXISTING SEEPAGE DITCH
- PROPOSED ELECTRIC OVERHEAD LINE
- PROPOSED ELECTRIC UNDERGROUND LINE
- PROPOSED IRRIGATION MAIN
- PROPOSED WW TRANSFER MAIN
- EXISTING PUMP - WW IRRIGATION
- EXISTING PUMP - SEEPAGE INTERCEPT
- EXISTING PUMP - DRAINAGE
- PROPOSED PUMP - DRAINAGE
- PROPOSED PUMP - WW IRRIGATION
- PROPOSED PUMP - SW IRRIGATION
- ◆ EXISTING MONITORING WELL
- ◆ EXISTING WELL
- PROPOSED WELL - IRRIGATION
- ◆ PROPOSED WELL - LIVESTOCK

NOTE: WELL AND PUMP STATION LOCATIONS HAVE BEEN ADJUSTED FOR CLARITY AND ARE SCHEMATIC IN NATURE.



<b>SHEET</b>	<b>G-1</b>	<b>SOUTH FLORIDA DAIRIES, LLC</b>	<b>MASTER PLANNING</b>	<b>CONCEPTUAL PLAN BARN 3 &amp; 4</b>
<b>DRAFT For review purposes only</b>		Richard A. Jones FL P.E. No. 31118		
<b>811</b> Know what's below. Call before you dig.		Design: R.A.J. Drawn: J.J.D. Checked: Approved: Job No. 0284-02-ES Date: 10-20-2025 County: OKEECHOBEE State: FLORIDA Projection: N/A Scale: AS SHOWN		
		Royal Consulting Services, Inc. 211 West Warren Avenue (407) 831-3095 phone www.royalconsulting.com Registry License No. 7290		
		These drawings have not been signed or sealed, and are considered <b>DRAFT - FOR REVIEW PURPOSES ONLY</b> Printed or digital copies of this document are NOT considered signed and sealed for the purposes of construction or bidding.		



## **Appendix B Cost Estimates**

**Job No.:** 0284-02-ES  
**Project:** South Florida Dairies  
**Detail:** Engineer's Cost Estimate  
**Date:** 10/28/2025  
**By:** RAJ



**Barns 3 & 4 Retrofit of Existing Stormwater Ponds for Irrigation Reuse**

<b>A North Fields Drainage Pumps (SP-3)</b>	<b>Units</b>	<b>Qty.</b>	<b>**\$/Unit</b>	<b>Total</b>
24" Axial Flow Drainage Pump, Gear Drive, PTO Shaft,				
1 80' of 24" Discharge Pipe and Flap Gate	(ea)	2	\$ 57,500.00	\$ 115,000.00
2 Pump Mounting Structure	(ls)	2	\$ 41,400.00	\$ 82,800.00
3 Labor & Machinery Costs	(ls)	2	\$ 17,500.00	\$ 35,000.00
4 Rip Rap for Stabilization, Placed	(yd <sup>3</sup> )	240	\$ 90.00	\$ 21,600.00
5 Concrete Slab & Roof Over Pump	(ls)	2	\$ 5,520.00	\$ 11,040.00
6 Tier 4 Diesel Power Unit w/ PTO	(ea)	2	\$ 54,280.00	\$ 108,560.00
7 500 Gal Double Wall Fuel Tank	(ea)	2	\$ 3,450.00	\$ 6,900.00
			<b>Total</b>	<b>\$ 380,900.00</b>

<b>B North Fields Stormwater Irrigation Pumps (SP-3)</b>	<b>Units</b>	<b>Qty.</b>	<b>**\$/Unit</b>	<b>Total</b>
1 1,200 GPM Diesel Centrifugal Pump Unit (Tier 4)	(ea)	2	\$ 55,890.00	\$ 111,780.00
2 Concrete Pump Station Slab & Roof	(ls)	2	\$ 5,520.00	\$ 11,040.00
3 Suction & Discharge Appurtenances	(ea)	2	\$ 7,906.25	\$ 15,812.50
4 500 Gal Double Wall Fuel Tank(s)	(ea)	2	\$ 3,450.00	\$ 6,900.00
5 Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
6 Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 15,450.00	\$ 30,900.00
7 Pump Installation Labor	(days)	8	\$ 1,700.00	\$ 13,600.00
			<b>Total</b>	<b>\$ 196,032.50</b>

<b>C North Fields Fresh Water Irrigation Pumps/Wells</b>	<b>Units</b>	<b>Qty.</b>	<b>**\$/Unit</b>	<b>Total</b>
1 12" Floridan Well	(ea)	2	\$ 85,000.00	\$ 170,000.00
2 Vertical Turbine Well Pump, Installed	(ls)	2	\$ 40,000.00	\$ 80,000.00
3 Right Angle Drive and PTO Shaft	(ea)	2	\$ 7,500.00	\$ 15,000.00
4 Tier 4 Diesel Power Unit w/ PTO	(ea)	2	\$ 54,280.00	\$ 108,560.00
5 500 Gal Double Wall Fuel Tank(s)	(ea)	2	\$ 3,450.00	\$ 6,900.00
6 Concrete Pump Station Slab & Roof	(ls)	2	\$ 5,520.00	\$ 11,040.00
7 Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
8 Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 30,475.00	\$ 60,950.00
9 Pump Installation Labor	(days)	8	\$ 1,700.00	\$ 13,600.00
			<b>Total</b>	<b>\$ 472,050.00</b>

<b>D North Fields Wastewater Irrigation Pumps (WSP-3)</b>	<b>Units</b>	<b>Qty.</b>	<b>**\$/Unit</b>	<b>Total</b>
1 1,200 GPM Diesel Centrifugal Pump Unit (Tier 4)	(ea)	2	\$ 55,890.00	\$ 111,780.00
2 Concrete Pump Station Slab & Roof	(ls)	2	\$ 5,520.00	\$ 11,040.00
3 Suction & Discharge Appurtenances	(ea)	2	\$ 7,906.25	\$ 15,812.50
4 500 Gal Double Wall Fuel Tank(s)	(ea)	2	\$ 3,450.00	\$ 6,900.00
5 Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
6 Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 15,450.00	\$ 30,900.00
7 Pump Installation Labor	(days)	8	\$ 1,700.00	\$ 13,600.00
			<b>Total</b>	<b>\$ 196,032.50</b>

<b>E North Fields PVC Mains and Control Valves</b>	<b>Units</b>	<b>Qty.</b>	<b>**\$/Unit</b>	<b>Total</b>
1 16" SDR 41 PVC Pipe, Installed	(ft)	8,800	\$ 61.25	\$ 539,000.00
2 10" SDR 41 PVC Pipe, Installed	(ft)	7,942	\$ 24.50	\$ 194,579.00
3 PVC Fittings, Budget	(ls)	1	\$ 36,678.95	\$ 36,678.95
4 Water Source Control Valves	(ea)	15	\$ 841.00	\$ 12,615.00
			<b>Total</b>	<b>\$ 782,872.95</b>

**Job No.:** 0284-02-ES  
**Project:** South Florida Dairies  
**Detail:** Engineer's Cost Estimate  
**Date:** 10/28/2025  
**By:** RAJ



F	North Fields Center Pivot Irrigation Systems	Units	Qty.	**\$/Unit	Total
1	Center Pivot 14, 1281' Long, 127 Acres	(ea)	1	\$ 140,910.00	\$ 140,910.00
2	Center Pivot 15, 1281' Long, 100 Acres	(ea)	1	\$ 140,910.00	\$ 140,910.00
3	Center Pivot 16, 1233' Long, 123 Acres	(ea)	1	\$ 135,630.00	\$ 135,630.00
4	Center Pivot 17, 1262' Long, 72 Acres	(ea)	1	\$ 138,820.00	\$ 138,820.00
5	Diesel Generator Unit, Slab, Roof, Fuel Tank	(ea)	4	\$ 17,250.00	\$ 69,000.00
6	Pipe Connection & Valves at Center Pivot	(ls)	4	\$ 2,750.00	\$ 11,000.00
<b>Total</b>					<b>\$ 636,270.00</b>

G	North Fields SWP-3 Pond Berm Improvements	Units	Qty.	**\$/Unit	Total
1	Clear and grub existing berm	(yd <sup>3</sup> )	8,585	\$ 1.60	\$ 13,736.00
2	Raise berm to provide 4' of storage	(yd <sup>3</sup> )	54,804	\$ 3.50	\$ 191,815.40
3	Sod top of berm	(ft <sup>2</sup> )	227,850	\$ 0.35	\$ 79,747.50
4	Seed & mulch disturbed areas	(ft <sup>2</sup> )	542,500	\$ 0.06	\$ 32,550.00
5	Construction survey	(ls)	1	\$ 14,500.00	\$ 14,500.00
6	Geotechnical Testing	(ls)	1	\$ 18,000.00	\$ 18,000.00
7	Erosion & Turbidity Control	(ls)	1	\$ 13,320.00	\$ 13,320.00
<b>Total</b>					<b>\$ 363,668.90</b>

H	North Fields SWP-3 Water Control Structures	Units	Qty.	**\$/Unit	Total
1	72" x 6' FBR, 42" x 60' CMP	(ea)	2	\$ 9,450.00	\$ 18,900.00
2	72" Full Round, 42" x 60' CMP	(ea)	3	\$ 7,890.00	\$ 23,670.00
3	Excavation, Installation Labor	(ea)	5	\$ 6,800.00	\$ 34,000.00
4	Rip Rap, Placed	(ea)	90	\$ 75.00	\$ 6,750.00
5	Sod	(ft <sup>2</sup> )	6,250	\$ 0.35	\$ 2,187.50
<b>Total</b>					<b>\$ 85,507.50</b>

I	South Fields Drainage Pumps (SP-4)	Units	Qty.	**\$/Unit	Total
1	24" Axial Flow Drainage Pump, Gear Drive, PTO Shaft,	(ea)	1	\$ 57,500.00	\$ 57,500.00
2	Pump Mounting Structure	(ls)	1	\$ 41,400.00	\$ 41,400.00
3	Labor & Machinery Costs	(ls)	1	\$ 17,500.00	\$ 17,500.00
4	Rip Rap for Stabilization, Placed	(yd <sup>3</sup> )	120	\$ 90.00	\$ 10,800.00
5	Concrete Slab & Roof Over Pump	(ls)	1	\$ 5,520.00	\$ 5,520.00
6	Tier 4 Diesel Power Unit w/ PTO	(ea)	1	\$ 54,280.00	\$ 54,280.00
7	500 Gal Double Wall Fuel Tank	(ea)	1	\$ 3,450.00	\$ 3,450.00
<b>Total</b>					<b>\$ 190,450.00</b>

J	South Fields Stormwater Irrigation Pumps (SP-4)	Units	Qty.	**\$/Unit	Total
1	1,200 GPM Diesel Centrifugal Pump Unit (Tier 4)	(ea)	1	\$ 55,890.00	\$ 55,890.00
2	Concrete Pump Station Slab & Roof	(ls)	1	\$ 5,520.00	\$ 5,520.00
3	Suction & Discharge Appurtenances	(ea)	1	\$ 7,906.25	\$ 7,906.25
4	500 Gal Double Wall Fuel Tank(s)	(ea)	1	\$ 3,450.00	\$ 3,450.00
5	Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
6	Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 15,450.00	\$ 30,900.00
7	Pump Installation Labor	(days)	4	\$ 1,700.00	\$ 6,800.00
<b>Total</b>					<b>\$ 116,466.25</b>

**Job No.:** 0284-02-ES  
**Project:** South Florida Dairies  
**Detail:** Engineer's Cost Estimate  
**Date:** 10/28/2025  
**By:** RAJ



K	South Fields Fresh Water Irrigation Pumps/Wells	Units	Qty.	**\$/Unit	Total
1	12" Floridan Well	(ea)	1	\$ 85,000.00	\$ 85,000.00
2	Vertical Turbine Well Pump, Installed	(ls)	1	\$ 40,000.00	\$ 40,000.00
3	Right Angle Drive and PTO Shaft	(ea)	1	\$ 7,500.00	\$ 7,500.00
4	Tier 4 Diesel Power Unit w/ PTO	(ea)	1	\$ 54,280.00	\$ 54,280.00
5	500 Gal Double Wall Fuel Tank(s)	(ea)	1	\$ 3,450.00	\$ 3,450.00
6	Concrete Pump Station Slab & Roof	(ls)	2	\$ 5,520.00	\$ 11,040.00
7	Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
8	Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 30,475.00	\$ 60,950.00
9	Pump Installation Labor	(days)	4	\$ 1,700.00	\$ 6,800.00
<b>Total</b>					<b>\$ 275,020.00</b>

L	South Fields PVC Mains and Control Valves	Units	Qty.	**\$/Unit	Total
1	10" SDR 41 PVC Pipe, Installed	(ft)	5,745	\$ 24.50	\$ 140,752.50
2	PVC Fittings, Budget	(ls)	1	\$ 7,037.63	\$ 7,037.63
3	Water Source Control Valves	(ea)	15	\$ 841.00	\$ 12,615.00
<b>Total</b>					<b>\$ 160,405.13</b>

M	South Fields Center Pivot Irrigation System	Units	Qty.	**\$/Unit	Total
1	Center Pivot 26, 1330' Long, 71 Acres	(ea)	1	\$ 146,300.00	\$ 146,300.00
2	Diesel Generator Unit, Slab, Roof, Fuel Tank	(ea)	1	\$ 17,250.00	\$ 17,250.00
3	Pipe Connection & Valves at Center Pivot	(ls)	1	\$ 2,750.00	\$ 2,750.00
<b>Total</b>					<b>\$ 166,300.00</b>

I	Monitoring and Data Reporting	Units	Qty.	**\$/Unit	Total
1	Staff Gauge in Ponds & Pump Sumps	(ea)	4	\$ 2,500.00	\$ 10,000.00
2	Irrigation Pumps Flow Meters	(ea)	5	\$ 2,500.00	\$ 12,500.00
3	Drainage Pump Hour Meter & Calibration	(ea)	2	\$ 4,600.00	\$ 9,200.00
4	Pond Stage Data Logger w/ Solar Charger	(ls)	2	\$ 4,812.50	\$ 9,625.00
<b>Total</b>					<b>\$ 41,325.00</b>

N	General Requirements - Irrigation Reuse	Units	Qty.	**\$/Unit	Total
1	Administration				\$ 72,900.00
2	Engineering (design update, certification and inspection)				\$ 121,899.02
3	Construction Management				\$ 229,500.00
4	Mobilization				\$ 25,000.00
5	Start up costs				\$ 18,400.00
<b>Total</b>					<b>\$ 467,699.02</b>

PROJECT TOTAL - IRRIGATION REUSE	\$ 4,530,999.75
SALES TAX - 7%	\$ 317,169.98
PROJECT CONTINGENCY - 10%	\$ 453,100.00
<b>TOTAL INCLUDING CONTINGENCY</b>	<b>\$ 5,301,269.73</b>

**Stormwater Reuse and Tailwater Recovery Project – Adjacent Lease Lands**

O	Drainage Pump (SP-4B)	Units	Qty.	**\$/Unit	Total
24" Axial Flow Drainage Pump, Gear Drive, PTO Shaft,					
1	80' of 24" Discharge Pipe and Flap Gate	(ea)	2	\$ 57,500.00	\$ 115,000.00
2	Pump Mounting Structure	(ls)	2	\$ 41,400.00	\$ 82,800.00
3	Labor & Machinery Costs	(ls)	2	\$ 17,500.00	\$ 35,000.00
4	Rip Rap for Stabilization, Placed	(yd <sup>3</sup> )	240	\$ 90.00	\$ 21,600.00
5	Concrete Slab & Roof Over Pump	(ls)	2	\$ 5,520.00	\$ 11,040.00
6	Tier 4 Diesel Power Unit w/ PTO	(ea)	2	\$ 54,280.00	\$ 108,560.00
7	500 Gal Double Wall Fuel Tank	(ea)	2	\$ 3,450.00	\$ 6,900.00
<b>Total</b>					<b>\$ 380,900.00</b>

**Job No.:** 0284-02-ES  
**Project:** South Florida Dairies  
**Detail:** Engineer's Cost Estimate  
**Date:** 10/28/2025  
**By:** RAJ



**Stormwater Irrigation Pumps (SP-4 to Lease Property)**

P	Pivots)	Units	Qty.	**\$/Unit	Total
1	1,200 GPM Diesel Centrifugal Pump Unit (Tier 4)	(ea)	2	\$ 55,890.00	\$ 111,780.00
2	Concrete Pump Station Slab & Roof	(ls)	2	\$ 5,520.00	\$ 11,040.00
3	Suction & Discharge Appurtenances	(ea)	2	\$ 7,906.25	\$ 15,812.50
4	500 Gal Double Wall Fuel Tank(s)	(ea)	2	\$ 3,450.00	\$ 6,900.00
5	Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
6	Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 15,450.00	\$ 30,900.00
7	Pump Installation Labor	(days)	8	\$ 1,700.00	\$ 13,600.00
<b>Total</b>					<b>\$ 196,032.50</b>

Q	Leased Fields Fresh Water Irrigation Pumps/Wells	Units	Qty.	**\$/Unit	Total
1	12" Floridan Well	(ea)	2	\$ 85,000.00	\$ 170,000.00
2	Vertical Turbine Well Pump, Installed	(ls)	2	\$ 40,000.00	\$ 80,000.00
3	Right Angle Drive and PTO Shaft	(ea)	2	\$ 7,500.00	\$ 15,000.00
4	Tier 4 Diesel Power Unit w/ PTO	(ea)	2	\$ 54,280.00	\$ 108,560.00
5	500 Gal Double Wall Fuel Tank(s)	(ea)	2	\$ 3,450.00	\$ 6,900.00
6	Concrete Pump Station Slab & Roof	(ls)	2	\$ 5,520.00	\$ 11,040.00
7	Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
8	Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 30,475.00	\$ 60,950.00
9	Pump Installation Labor	(days)	8	\$ 1,700.00	\$ 13,600.00
<b>Total</b>					<b>\$ 472,050.00</b>

R	Leased Fields Wastewater Irrigation Pumps (WSP-4)	Units	Qty.	**\$/Unit	Total
1	1,200 GPM Diesel Centrifugal Pump Unit (Tier 4)	(ea)	2	\$ 55,890.00	\$ 111,780.00
2	Concrete Pump Station Slab & Roof	(ls)	2	\$ 5,520.00	\$ 11,040.00
3	Suction & Discharge Appurtenances	(ea)	2	\$ 7,906.25	\$ 15,812.50
4	500 Gal Double Wall Fuel Tank(s)	(ea)	2	\$ 3,450.00	\$ 6,900.00
5	Connection to underground PVC mains	(ft)	2	\$ 3,000.00	\$ 6,000.00
6	Control Valves, Backflow Valves, Fittings	(ls)	2	\$ 15,450.00	\$ 30,900.00
7	Pump Installation Labor	(days)	8	\$ 1,700.00	\$ 13,600.00
<b>Total</b>					<b>\$ 196,032.50</b>

S	Leased Fields PVC Mains and Control Valves	Units	Qty.	**\$/Unit	Total
1	16" SDR 41 PVC Pipe, Installed	(ft)	5,540	\$ 61.25	\$ 339,325.00
2	10" SDR 41 PVC Pipe, Installed	(ft)	9,200	\$ 24.50	\$ 225,400.00
3	PVC Fittings, Budget	(ls)	1	\$ 28,236.25	\$ 28,236.25
4	Water Source Control Valves	(ea)	9	\$ 841.00	\$ 7,569.00
<b>Total</b>					<b>\$ 600,530.25</b>

T	Leased Fields Center Pivot Irrigation Systems	Units	Qty.	**\$/Unit	Total
1	Center Pivot UT-1, 1216' Long, 114 Acres	(ea)	1	\$ 133,760.00	\$ 133,760.00
2	Center Pivot UT-2, 1322' Long, 140 Acres	(ea)	1	\$ 145,420.00	\$ 145,420.00
3	Center Pivot UT-3, 1216' Long, 115 Acres	(ea)	1	\$ 133,760.00	\$ 133,760.00
4	Center Pivot UT-4, 1216' Long, 120 Acres	(ea)	1	\$ 133,760.00	\$ 133,760.00
5	Center Pivot UT-5, 983' Long, 80 Acres	(ea)	1	\$ 108,130.00	\$ 108,130.00
6	Center Pivot UT-6, 1191' Long, 76 Acres	(ea)	1	\$ 131,010.00	\$ 131,010.00
7	Diesel Generator Unit, Slab, Roof, Fuel Tank	(ea)	6	\$ 17,250.00	\$ 103,500.00
8	Pipe Connection & Valves at Center Pivot	(ls)	6	\$ 2,750.00	\$ 16,500.00
9	Subsurface Drintile System	(ac)	645	\$ 1,500.00	\$ 967,500.00
10	Drainage Ditch Constuction	(ft)	16,500	\$ 5.25	\$ 86,625.00
<b>Total</b>					<b>\$ 1,959,965.00</b>

**Job No.:** 0284-02-ES  
**Project:** South Florida Dairies  
**Detail:** Engineer's Cost Estimate  
**Date:** 10/28/2025  
**By:** RAJ



**SP-4B Pond Berm Construction - 6.5' H x 9325' Long**

U	Above Ground Impoundment	Units	Qty.	**\$/Unit	Total
1	Strip Existing Berm	(yd <sup>3</sup> )	18,620	\$ 1.00	\$ 18,620.00
2	Excavate Internal Borrow Ditch, Stockpile Fill for Berm	(yd <sup>3</sup> )	127,345	\$ 1.75	\$ 222,853.75
3	Place and Compact Fill in Berm	(yd <sup>3</sup> )	127,345	\$ 3.50	\$ 445,707.50
4	Finish Grade Berm	(ft)	9,325	\$ 0.95	\$ 8,858.75
5	Place Stripping on Berm for Stabilization	(yd <sup>3</sup> )	9,325	\$ 1.50	\$ 13,987.50
6	Sod top of berm	(ft <sup>2</sup> )	186,500	\$ 0.35	\$ 65,275.00
7	Seed & mulch disturbed areas	(ft <sup>2</sup> )	279,750	\$ 0.06	\$ 16,785.00
8	Construction survey	(ls)	1	\$ 14,500.00	\$ 14,500.00
9	Geotechnical Testing	(ls)	1	\$ 18,000.00	\$ 18,000.00
10	Erosion & Turbidity Control	(ls)	1	\$ 13,320.00	\$ 13,320.00
<b>Total</b>					<b>\$ 837,907.50</b>

V	SP-4B Pond Structures	Units	Qty.	**\$/Unit	Total
48" Flash Board Riser, 36" x 60' CMP (Field EOF					
1	Structure)	(ea)	1	\$ 9,200.00	\$ 9,200.00
2	24" Manual Sluice Gate with Stub	(ea)	1	\$ 17,500.00	\$ 17,500.00
3	24" HDPE Culvert (SP-4 to SP-4A)	(ea)	240	\$ 60.00	\$ 14,400.00
4	36" HDPE Culvert (Ditch Crossing)	(ea)	120	\$ 105.00	\$ 12,600.00
5	EOF Weir From Pond 4A, Hardened with Fleximat	(ft)	100	\$ 985.00	\$ 98,500.00
6	Structures Excavation & Installation Labor	(ea)	2	\$ 9,500.00	\$ 19,000.00
7	Rip Rap Placed	(yd <sup>3</sup> )	200	\$ 90.00	\$ 18,000.00
8	Sod Critical Areas	(ft <sup>2</sup> )	2,500	\$ 0.35	\$ 875.00
<b>Total</b>					<b>\$ 190,075.00</b>

W	Monitoring and Data Reporting	Units	Qty.	**\$/Unit	Total
1	Staff Gauge in Ponds & Pump Sumps	(ea)	5	\$ 2,500.00	\$ 12,500.00
2	Irrigation Pumps Flow Meters	(ea)	6	\$ 2,500.00	\$ 15,000.00
3	Drainage Pump Hour Meter & Calibration	(ea)	1	\$ 4,600.00	\$ 4,600.00
4	Pond Stage Data Logger w/ Solar Charger	(ls)	1	\$ 4,812.50	\$ 4,812.50
<b>Total</b>					<b>\$ 36,912.50</b>

X	General Requirements - Reuse and Recovery	Units	Qty.	**\$/Unit	Total
1	Administration				\$ 64,800.00
2	Engineering (design update, certification and inspection)				\$ 108,775.00
3	Construction Management				\$ 204,000.00
4	Mobilization				\$ 25,000.00
5	Start up costs				\$ 18,500.00
<b>Total</b>					<b>\$ 421,075.00</b>

PROJECT TOTAL - REUSE AND RECOVERY	\$ 5,291,480.25
SALES TAX - 7%	\$ 370,403.62
PROJECT CONTINGENCY - 10%	\$ 529,149.00
<b>TOTAL INCLUDING CONTINGENCY</b>	<b>\$ 6,191,032.87</b>

**Job No.:** 0284-02-ES  
**Project:** South Florida Dairies  
**Detail:** Engineer's Cost Estimate  
**Date:** 10/28/2025  
**By:** RAJ



**Barns for 2,772 Lactating and Dry Cows, Assume five 915-cow 6-row barns**

Y	Three x 924 Cow Barns	Units	Qty.	**\$/Unit	Total
1	Mobilization/Demobilization	LS	1	\$ 105,000.00	\$ 105,000.00
2	Freestall Barns including:	Cow	2,772	\$ 3,000.00	\$ 8,316,000.00
	Barn Structure				
	Barn Erection Labor				
	Concrete Work				
	Reuse Pipe Work & Flush Valves				
	Stalls				
	Fences and Gates				
	Water Troughs & Water Pipe				
	Electric Materials and Labor				
	Sand Bedding				
	Misc. expenses such as freight & supplies				
3	48" Cow Comfort Fans	Ea.	288	\$ 975.20	\$ 280,857.60
4	New 25,000 Gallon Flush Tanks & Slabs	Ea.	3	\$ 24,517.59	\$ 73,552.78
5	12" PVC Flush Main	Ft	360	\$ 148.75	\$ 53,550.48
6	6" PVC Flush Tank Supply Main	Ft	600	\$ 14.72	\$ 8,829.90
7	6" PVC Fresh Water Supply Main	Ft	1,500	\$ 14.72	\$ 22,074.75
8	Fresh Water Well, Pump & Pressure Tank	LS	2	\$ 172,500.00	\$ 345,000.00
9	Outside Concrete Work Including:	LS	1	\$ 561,204.00	\$ 561,204.00
	Main Steet Walk Lane				
	Concrete Apron & Turn Around West End of Barns				
	Concrete Apron East End of Barns				
	Outside Fences and Gates				
10	Earthwork for Barn Pad (Includes 15% compaction)				
	Grub site (Assumed 6" deep)	CY	15,564	\$ 1.50	\$ 23,345.83
	Excavate fill from borrow, load trucks	CY	303,915	\$ 1.50	\$ 455,872.46
	Haul fill to barn pad	CY	303,915	\$ 1.00	\$ 303,914.97
	Place fill in barn pad	CY	303,915	\$ 1.00	\$ 303,914.97
	Compact barn pad fill	CY	303,915	\$ 0.50	\$ 151,957.49
	Misc. Earthwork Requirements	Percent	1	\$ 0.15	\$ 0.15
11	Sod - 12' wide around each barn	SF	67,752	\$ 0.35	\$ 23,713.20
12	Construct Shell Rock Access Roads	LS	1	\$ 647,153.44	\$ 647,153.44
13	Extend Existing OHPL (FPL)	Ft	1,018	\$ 20.00	\$ 20,352.00
14	UGPL to Barn	Ft	150	\$ 40.00	\$ 6,000.00
	<b>Total</b>			<b>\$</b>	<b>\$ 11,702,294.02</b>

Z	Milking Parlor	Units	Qty.	**\$/Unit	Total
1	2 X 50 Parallel Milking Parlor including:	LS	1	\$ 3,000,000.00	\$ 3,000,000.00
	Building erected				
	Flush valves, flush controls, flush pipework				
	Milking equipment and ancillary equipment				
	Refrigeration				
	1200 Amp service, power distribution, control panels				
	Lights, fans, office AC and infrastructure				
2	Fresh Water Well, Pump & Pressure Tank	Ea.	1	\$ 85,000.00	\$ 85,000.00
3	New 25,000 Gallon Flush Tanks & Slabs	Ea.	1	\$ 49,035.19	\$ 49,035.19
4	Earthwork for Building Pad	LS	1	\$ 94,206.24	\$ 94,206.24
5	Access Road & Parking	LS	1	\$ 119,818.67	\$ 119,818.67
6	Area Lighting	LS	1	\$ 20,000.00	\$ 20,000.00
	<b>Total</b>			<b>\$</b>	<b>\$ 3,368,060.09</b>

**Job No.:** 0284-02-ES  
**Project:** South Florida Dairies  
**Detail:** Engineer's Cost Estimate  
**Date:** 10/28/2025  
**By:** RAJ



AA Sand Separator	Units	Qty.	**\$/Unit	Total
1 Concrete Work for 20' x 250' Long Sand Separator with	LS	1	\$ 417,443.33	\$ 417,443.33
2 Earthwork for Sand Separator	CY	1,491	\$ 4.33	\$ 6,449.07
3 Sod - 10' wide around Separator	SF	5,000	\$ 0.35	\$ 1,750.00
			<b>Total</b>	<b>\$ 425,642.41</b>

BB Waste Water Spray Fields	Units	Qty.	**\$/Unit	Total
1 Center Pivot Irrigation System, Erected. Includes freight,	LS	10	varies	\$ 1,345,394.30
2 12 KW Lima Generator with disconnect, concrete slab and	Ea.	10	\$ 15,000.00	\$ 150,000.00
3 Waste Water Pump Station (at WSP)	Ea.	3	\$ 42,612.00	\$ 127,836.00
4 Storm Water Pump Station (at SWP)	Ea.	4	\$ 42,612.00	\$ 170,448.00
5 Motor Controls and Electrician Expenses	Ft	7	\$ 12,500.00	\$ 87,500.00
6 Electric Service Pump Station	Ft	8,830	\$ 20.00	\$ 176,600.00
7 Underground PVC Main (from Pond Pumps to Pivots)	LS	1	\$ 1,101,667.84	\$ 1,101,667.84
			<b>Total</b>	<b>\$ 3,159,446.13</b>

CC General Construction Services - Barns	Units	Qty.	**\$/Unit	Total
1 Engineering	Ea.	3	\$ 124,369.62	\$ 373,108.85
2 Geotech/Survey/T&E/Permits	Ea.	3	\$ 93,277.21	\$ 279,831.64
3 Construction Oversight	Months	25	\$ 7,500.00	\$ 187,500.00
4 Certification, Inspections, As Builts	LS	1	\$ 75,000.00	\$ 75,000.00
			<b>Total</b>	<b>\$ 915,440.49</b>

PROJECT TOTAL - BARNS* Does not include Milking Parlor	\$ 16,202,823.05
SALES TAX - 7%	\$ 1,084,719.76
PROJECT CONTINGENCY - 10%	\$ 1,620,282.31
TOTAL INCLUDING CONTINGENCY	\$ 18,907,825.12

SUMMARY	Cost
Irrigation Reuse	\$ 5,301,269.73
Reuse & Recovery	\$ 6,191,032.87
5 Freestall Barns	\$ 18,907,825.12
<b>Total</b>	<b>\$ 30,400,127.71</b>