



# Evaluation Report

## Repair, Maintenance and Transition Plan

## Cost Analysis and Recommendation Report

For

# US Sugar Corporation

December 19, 2008 Final

Prepared for

# South Florida Water Management District

 **Shaw**® Shaw Environmental, Inc.

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December 19, 2008

Alan Shirkey, PE  
Senior Engineer and Project Manager  
Everglades Restoration Engineering Department  
South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, FL 33406

**Re: Work Order #1 Revision 3 Change Order  
Asset Evaluation for Agri-Business Infrastructure and Facilities  
Contract #460000858 - Full Service Engineering  
Task 1-4 Deliverables –Final Reports for Four Assessment Areas**

Dear Mr. Shirkey:

Shaw Environmental, Inc (Shaw) is pleased to provide the Final submittals for each of the four US Sugar Corporation asset areas under consideration for purchase by SFWMD. These work products were generated pursuant to direction given by you in an e-mail dated November 3, 1:16 PM, and which content is outlined in the above reference. Included in each binder are a global *Executive Summary* and the following reports covering the condition of the infrastructure associated with *Facilities in Crop Areas, Crop Area Lands, Airstrips, and Non-Process Buildings*:

- Evaluation Reports (ER)
- Repair, Maintenance and Transition Plans (RMTP)
- Cost Analysis and Recommendation Report (CARR)

Pursuant to your request for two copies of the submittals with trade secret information redacted, this submittal contains blackening redacted data in the overall Executive Summary, RMTP Executive Summary, RMTP for Non-Process Buildings, and the CARR.

Please do not hesitate to call me if you have questions regarding this submittal.

Sincerely,  
Shaw Environmental, Inc.

A handwritten signature in black ink, appearing to read "Jock Merriam", with a horizontal line extending to the right.

Jock Merriam  
Vice President

cc: C. Lee  
N. Newell  
J. Rubin



Prepared for:  
***South Florida Water Management District***  
3301 Gun Club Road  
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***Evaluation Reports***  
***Repair, Maintenance, and Transition Plans***  
***Cost Analysis and Recommendation***  
***Reports***

Contract #4600000858 Work Order 1

December 19, 2008

Submitted by:  
***Shaw Environmental, Inc.***  
3223 Commerce Place, Suite 100  
West Palm Beach, FL 33407

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Non-Process Buildings

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# **EXECUTIVE SUMMARY**

For

## **ASSET EVALUATION FOR AGRI-BUSINESS INFRASTRUCTURE AND FACILITIES**

**US Sugar Corporation**

December 19, 2008

Prepared for



**South Florida Water Management District**

3301 Gun Club Road

West Palm Beach, FL 33406

Prepared by



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## OVERVIEW

This Executive Summary is designed to provide a high level overview of asset condition assessments of the agricultural lands, infrastructure, and facilities owned and operated by US Sugar Corporation (USSC) and its agri-business concerns. This report summarizes the work performed by Shaw Environmental, Inc. (Shaw) under a General Engineering Services, Full Service contract Work Order with the South Florida Water Management District (SFWMD).

Engineering asset evaluations required numerous site visits, interviews of USSC operations staff and management, extensive document reviews including evaluation of trade-secret protected information as well as open source materials, management practices, safety and operational and/or production information, and USSC financial and community-at-large commitment reviews. Shaw engaged a number of team and specialty sub-consultants in order to conduct these evaluations. All field assessments were conducted prior to the start of harvest season.

Evaluations were conducted of the following specific infrastructure and asset areas beginning in early August and continuing in the field through early October:

- Facilities in Crop Areas
- Crop Area Lands
- Airport/Airstrip Facilities
- Non-Process Buildings

This report is intended for the sole use of Shaw and the SFWMD.

## 1.0 Facilities in Crop Areas



### 1.1 General

Shaw teams looked at all infrastructure located within the agricultural areas and assessments were made of levees, culverts, canals, roads, bridges, and pump stations. Nearly 30 personnel completed the field assessment over a 3-week period beginning late-September. Specialty sub-contractors evaluated pump stations, bridges and other major assets by sampling approximately 10 percent of the infrastructure systems in place.

### 1.2 Key Issues/Findings

#### 1.2.1 Evaluation

Methods used to conduct the assessment were tailored to the class of infrastructure being evaluated: pump stations, roadway and railroad bridges, roads, impoundment levees, culverts, and canals. All procedures employed were compatible with standard engineering inspection practices/methods. Inspections were primarily visual but limited performance testing was done for a sample of small and large pump stations. All evaluations were conducted under the direction of engineers, scientists, and skilled technicians from Shaw and several qualified subcontractors. Standardized inspection forms were utilized, and GIS and AUTO/CADD technologies were used for estimating purposes when needed. No geotechnical investigations were performed as part of this evaluation.

- **Pumping Facilities:** Both large and small pump station facilities were evaluated and were determined to be in poor to fair condition with deficiencies identified for both near-term (7 to 18 months) and immediate (0 to 6 months) term repairs. Of the three large pump stations inspected, both one-time maintenance costs to restore mechanical/electrical systems to operable condition (Yellow) and repairs to correct safety issues (Red) were identified. Some structural elements for the large pump houses were in Yellow condition with one pump house in condition Red. Of the 32 smaller pumping facilities evaluated, 14 (44 percent) were considered condition Red, 9 (28 percent) condition Yellow, and 9 (28 percent) condition Green. This infrastructure group would be considered an asset of primary concern.



- **Bridges:** A total of 11 roadway bridges were evaluated and determined to be in poor to fair condition with deficiencies identified for both near and intermediate term repairs. Of the 11 bridges inspected, 3 (27 percent) were considered condition Red, 6 (55 percent) condition Yellow, and 2 (18 percent) condition Green. This infrastructure group would be considered an asset of primary concern.
- **Levees:** The impoundment levees visually evaluated were determined to be in mostly fair to good condition with some apparent near or immediate term repairs needed for those portions described below. Of the 12 major impoundment levees (332 linear miles) evaluated by visual inspection, approximately 8 percent (27 miles) were considered condition Red, 67 percent (222 miles) were considered condition Yellow, and 25 percent (83 miles) were considered condition Green. If these impoundments are to be used by SFWMD for this same purpose, then approximately 27 miles of “spoil pile” impoundments would be recommended for levee reconstruction; otherwise, abandonment of these impoundments would be recommended. This infrastructure group would be considered an asset of primary concern.
- **Canals:** Drainage canal maintenance practices have generally been adequate to prevent many canals from deteriorating to the point that they do not convey water as intended. A total of approximately 1,132 miles of major canals and 3,204 miles of ditches are estimated to lie within the USSC croplands area. The vast majority of major canals could be considered in good condition by visual observation (70 percent or 792 miles), although typical maintenance bench areas are generally not present between canals and roads. Approximately 29 percent (328 miles) of the canals have been determined to be in condition Yellow, requiring generally cleaning and mucking. The remaining 1 percent (11 miles) of canals are considered to be in condition Red requiring dredging. Drainage and irrigation ditches have been determined to be in good condition (89 percent or 2,864 miles) with the remainder in condition Yellow (10 percent or 328 miles) or condition Red (3 percent or 11 miles). This infrastructure group would be considered an asset of secondary concern.
- **Roads:** Roads were determined to be generally in good condition. Of the estimated 1,945 miles of unpaved road surfaces, approximately 2 percent (39 miles) were considered in condition Red, 14 percent (272 miles) in condition Yellow, and 83 percent (1,614 miles) in condition Green. This infrastructure group would be considered an asset of secondary concern.
- **Culverts:** The overall condition of the culvert structures (~1,500 were viewed) throughout the crop land areas is considered fair. Most appeared functional and able to convey water as intended, but 5 to 10 percent showed more serious deficiencies: cut, broken, severely rusted, obstructed, or in various stages of collapse. The recommendation would be to continue the routine replacement of culverts/culvert risers that show signs of deterioration or potential failure.

In summary, the weaknesses include deficiencies affecting performance of the larger pump station facilities, several bridges, and a small percentage of the total mileage of impoundment levees and canals.

### 1.2.2 Maintenance and Repair

Four individual area managers are responsible for the management of Land Areas 1 through 4 which includes identification, budgeting, maintenance, and repairs of the infrastructure. The overall grade or condition of the infrastructure is fair. Maintenance and repairs are conducted on a fix-as-needed or a fix-upon-failure schedule.

The USSC should be required to report preventive maintenance activities on a semi-annual basis except for the pump station facilities. Pumping facilities maintenance should be reported to SFWMD on a monthly basis. Audits should be conducted throughout this asset category on a semi-annual basis to ensure execution of the preventive maintenance program. Annual audits should be performed for the overall facilities inspections to assess the overall condition within the cropland areas. Additional monitoring or spot checks should also be completed periodically to ensure and verify that that current maintenance requirements are not being deferred and equipment being operated is consistent with vendor and manufacturer recommendations. The priority for maintenance and repairs should give preference to

pumping facilities and bridges. Impoundment levees, roads, canals, and culvert maintenance and repairs could be given less precedence as determined by SFWMD.

### 1.2.3 Transition Considerations

Each area manager should complete a maintenance record for each asset category, noting the date, condition, and activity completed. Maintenance is recommended based on a monthly, semi-annual or annual schedule depending on the asset category. Monthly or semi-annual inspection and/or auditing are recommended for more critical and higher valued inventory such as pump station facilities and bridge structures and other assets listed of primary concern.

An annual inventory and/or audit is recommended for roads, canals, impoundment levees, and all other minor cropland facilities; however spot checks or storm event driven inspections are recommended. The following recommendations for transition activities for years 1 through 3 are as outlined below:

#### Year 1

- Repair Red graded items within 0 to 6 months
- Perform annual, semi-annual or monthly inspections and perform yearly maintenance repairs and activities

#### Year 2

- Repair Yellow graded items within 7 to 18 months
- Perform annual, semi-annual or monthly inspections and perform yearly maintenance repairs and activities

#### Year 3 and beyond

- Verify that all Red and Yellow repairs have been made and are operating properly
- Perform annual, semi-annual, or monthly inspections and perform yearly maintenance repairs and activities. Implement a forward-looking preventive maintenance plan for critical assets such as pump stations, bridges, and impoundment levees

## 1.3 Cost Information

Based on our review of trade secret documents, the average annual USSC capital expenditures for these facilities was approximately [REDACTED] over a 4-year period starting in FY 2004. It is likely that the near future operational and maintenance costs would remain constant from the next 5 to 10 years.

While only limited USSC documents relating to this report were made available, cost estimates could be derived for the near term (0 to 6 months) and intermediate term (7 to 18 months) maintenance and repairs.

0 to 6 Months - Estimated total repair costs for this time period are \$6,594,079.

7 to 18 Months - Estimated total repair costs for this time period are \$16,617,574.

0 to 18 Months - Estimated total repair costs for this time period are \$23,211,653.

The total repair costs have been estimated to be approximately \$152 per acre for an agricultural area estimated to be about 152,890 acres.

An annual maintenance cost to operate and maintain the infrastructure, upon completion of near and intermediate repairs, has been estimated to average about \$13.5 million per year or \$88 per acre.

## 2.0 Crop Area Lands



### 2.1 General

Approximately 153,000 acres of USSC physical cropland were evaluated for their operational condition and maintenance costs in comparison to historical and anticipated crop yields. Both sugar cane and citrus area crop lands were assessed. The assessment included the review of farm records for crop yields, Best Management Practice (BMP) implementation, and fertility and pesticide practices, all of which were provided by USSC. Additionally, field visits were conducted in late September 2008 to verify and evaluate the current soil, crop, irrigation, and drainage infrastructure conditions. This assessment was conducted by establishing a representative sampling methodology that would allow for maximum geographical coverage of the USSC cropland, given the time constraint. Supplemental data and information received from USSC were analyzed to determine the operational and maintenance costs for the cropland, potential required infrastructure improvements, and cropland productivity. This analysis indicated that the near future (next 5 years) operational and maintenance costs will remain relatively constant. However, three areas of possible future cropland risks were identified: muck subsidence (soil exhaustion), citrus canker, and citrus greening.

### 2.2 Key Issues/Findings

#### 2.2.1 Evaluation

The USSC cropland assessment included review of farm records of crop yields and BMP, fertility, and pesticide practices. Field visits were made to evaluate the current soil and crop conditions and status of the irrigation and drainage infrastructure. Physical assessments were done by establishing a representative sampling protocol based on the tight time constraints. The field data and farm records were then analyzed for determining the operational and maintenance costs for the cropland, potential future infrastructure improvement, and crop land productivity.

The overall appearance and functionality of each farm observed at the USSC operation was evidence of professional farming operations. The high level of production maintained over broad acreages is further evidence of this characterization.

### 2.2.2 Maintenance and Repair

No significant repair or unexpected maintenance needs were found or indicated by site investigation, data analysis, and record review, except for a large current need for citrus replacement due to canker and greening and additional ditch maintenance work due to soil exhaustion/subsidence in localized areas. The crop yields provided by USSC indicate no major deficiencies in their field units.

### 2.2.3 Transition Considerations

During the transitional period, current levels of cropland operation and maintenance will need to be continued as is currently being done by USSC in order to retain current crop production levels for the majority of the fields and groves. Compliance with BMP and associated BMP permits will be important for the continued productivity and success of the crop.

To maintain economic crop yields, the following activities will have to continue:

- Repair and maintenance of laterals, culverts, and irrigation distribution systems.
- Crop cultural practices such as fertilization, pest management, planting, tillage, and harvesting.

It is important to note that these activities have been and must continue to be done on seasonal cyclical process.

## 2.3 Cost Information

This analysis indicated that the near future (next 18 months) operating and maintenance (O&M) costs associated with cropland production are not expected to increase on a relative basis for the majority of the USSC properties, with the exception of the following three variables: soil exhaustion due to muck soil oxidation/subsidence, citrus greening, and canker diseases.

The O&M costs for citrus are based on industry standards with the exception of the higher costs due to an aggressive effort in preventing/removing citrus canker and greening. The remaining costs have been determined from standard rates published by the University of Florida, Institute of Food and Agriculture Science. During field observations, no significant variations from the standard citrus grove operation other than those noted above were detected. Note that Unit Cost per Acre per Year total is the average of the total cost/yr divided by total acreage.

#### Breakdown of Operational and Maintenance Costs for Citrus

Citrus Item	Unit Cost/Ac/Yr	Acres	Total-Cost/Yr
Greening	\$81	24,242	\$1,952,579
Planting	\$260	24,242	\$6,302,920
Harvest	\$1,179	24,242	\$28,581,31
Soil Test	\$2.50	24,242	\$60,605
Fertilizer	\$416	24,242	\$10,087,096
Herbicide/Pesticide	\$433	24,242	\$10,493,635
Irrigation System	\$264	24,242	\$6,399,888
<b>Total Cost</b>	<b>\$2,635*</b>	<b>24,242*</b>	<b>\$63,878,041</b>

\*Figures are not total of previous full column. See preceding text.

For sugar cane, O&M costs were based on local knowledge and vendor provided costs since specific data were not available from USSC. These costs were developed by breaking down each O&M activity into equipment and personnel requirements and then applying local price rates to come up with total O&M costs.

**Breakdown of Operational and Maintenance Costs for Sugar Cane Grown on Sandy Soils**

Item-Sandy Soil	Unit Cost/Ac/Yr	Acres	Total-Cost/Yr
Planting	\$255	10,806	\$2,750,237
Seed Cane Harvest	\$232	0	\$0
Laser Level	\$100	1,621	\$162,096
Mill Cane Harvest	\$189	32,419	\$6,128,868
Soil Test	\$1.88	37,823	\$71,106
Fertilizer	\$419	21,613	\$9,049,511
Herbicide/Pesticide	\$88	32,419	\$2,852,898
<b>Total</b>	<b>\$556*</b>	<b>37,823*</b>	<b>\$21,014,716</b>

\*Figures are not total of previous full column. See preceding text.

**Breakdown of Operational and Maintenance Costs for Sugar Cane Grown on Muck Soils**

Item-Muck Soil	Unit Cost/Ac/Yr	Acres	Total-Cost/Yr
Planting	\$255	20,183	\$5,136,686
Seed Cane Harvest	\$480	2,573	\$1,235,021
Laser Level	\$100	3,782	\$378,225
Mill Cane Harvest	\$189	75,645	\$14,300,692
Soil Test	\$1.88	90,825	\$170,752
Fertilizer	\$206	55,462	\$11,430,410
Herbicide/Pesticide	\$88	75,645	\$6,656,762
<b>Total</b>	<b>\$433*</b>	<b>90,825*</b>	<b>\$39,308,548</b>

\*Figures are not total of previous full column. See preceding text.

**O&M Cost Summary**

Item	Unit Cost per Acre per Year	Acres	Total Cost per Year
Sugar Cane on Sandy Soil	\$556	37,823	\$21,014,716
Sugar Cane on Muck Soil	\$433	90,825	\$39,308,548
Citrus	\$2,635	24,242	\$63,878,041
<b>Total</b>	<b>\$812*</b>	<b>152,890*</b>	<b>\$124,201,305</b>

\*Figures are not total of previous full column. See preceding text.

The following provides estimated costs for maintaining croplands over the periods shown:

0 to 6 Months - Estimated total costs for this time period are \$60,000,000.

7 to 18 Months - Estimated total costs for this time period are \$120,000,000.

Total Costs 0 to 18 Months - Estimated costs for this time period are \$180,000,000.

These figures do not include citrus replacement costs for lost trees due to canker and greening. Such replacement would add approximately \$32,000,000 of capital expenditures over whatever time it is done. As the result of citrus canker, approximately 20 percent of the groves have had to be destroyed and will need to be replanted in the near future. For the existing eradication lands (~7,100 acres), the cost to plant and reestablish the drainage/irrigation infrastructure is estimated to be \$4,500 per acre, which means that approximately \$32 million of capital improvement money will be needed.

Maintaining the current level of intervention/prevention for citrus greening carries a high economic cost, but should return the cost to the operator in yield per acre due to overall less citrus greening. The 6 percent annual loss would translate into about a \$9.6 million per year capital improvement investment per year.

It is estimated that perhaps 0.5 percent of the muck soils will need significant capital improvements per year over the next 5 years. At a capital investment rate of about \$904 per acre to excavate rock to restore drainage/irrigation, it is estimated that about \$900,000 per year of capital improvement will be needed to address soil exhaustion.

### 3.0 Airport and Airstrip Facilities



#### 3.1 General

There are a total of 14 USSC airstrips that are maintained by the four USSC Area Managers. These are used periodically for crop dusting operations and are not open to public use. Other farm vehicles and heavy equipment also travel over the airstrip roadways as needed. USSC never intended to have high quality airport facilities on site.

Of the 14 airstrips, 1 is paved (asphalt-gravel mix), 12 are unpaved with limerock and gravel, and 1 is grass turf. USSC contracts with local air agricultural applicators that use their small airplanes (AT-502) on the airstrips.

#### 3.2 Key Issues/Findings

##### 3.2.1 Evaluation

The functional evaluation of each airstrip resulted in ratings as follows: Good = 2, Average = 5, Poor = 7, Failed = 0. A safety rating was also completed with results as follows: Good = 1, Fair = 8, Poor = 5. Three of the five airstrips rated "Poor" received low functional and low safety scores due to obstructions (ditches, canals, or railroad tracks) that are located too close to the left, right, or both edges of the airstrip. They do not provide the lateral clearance suggested in the Texas Aviation Board Farm and Ranch Airstrips Manual. The owner should either improve the side clearances or discontinue aircraft use at these airstrips.

Specific deficiencies/findings noted include:

- Landing strips do not provide a crowned roadway limiting drainage capabilities and are contributing to standing water, pothole development and, in some cases, erosion.
- Runway surfaces must be maintained to consistently handle the heavy rainfall and wheel loads from farm vehicles as well as provide the smooth surface needs of aircraft landings and takeoffs.
- Continued use of the airstrips that have a safety rating of poor or unsafe is a major concern. It may be advisable to discontinue flights at some airstrips or possibly re-grade and re-align some of the drainage ditches to provide more lateral clearance from the runway centerline.

- There are no regulatory concerns with the airstrips. Per Florida Statutes, Title XXV - Chapter 330 (330.30.3f), airstrips are “exempt” if they are used for air agricultural flights only and the flight operations at each do not exceed 30 days per year.

### 3.2.2 Maintenance and Repair

It should be noted that USSC repair and maintenance is conducted on an as-needed basis. Historically, the airstrip shoulder areas are mowed six times per year, and gravel airstrips are graded/compacted on an as-needed basis.

There are no repair plans in existence for airstrips nor are there any maintenance plans. The following immediate maintenance and repairs should be considered:

- Airstrip #14 Southern Ranch – Fill depressions with sandy loam, cut grass and vegetation on 4.6 acres
- Airstrip 8, 9, 11 – Possibly discontinue use by aircraft due to narrow shoulders and safety concerns

The following routine airstrip maintenance items should be undertaken:

- Clear debris from roadway and ditches.
- Mow and control vegetation in shoulder areas (6 times per year).
- Replace faded pave markings (biannually).
- Inspect and grade shoulder and ditch washouts (immediate).
- Blade and compact gravel roadway to get a 2 to 4 percent uniform crown (6 times per year), replenish gravel (1 time per year).
- Clean and fill potholes with hot mix on asphalt roads (1 time per year).
- Seal coat asphalt road (1 time per 6 years).

### 3.2.3 Transition Considerations

The owner should either improve the shoulder side clearances and re-grade runway surfaces or discontinue aircraft use at the three airstrips cited. In addition, they should blade, grade, and compact gravel airstrips to get a uniform crown for good drainage.

## 3.3 Cost Information

The financial information and data received from USSC was limited in the details it contained regarding airstrip operational and maintenance costs. Generally, the gravel airstrips are graded and compacted on an as-needed basis. The grass airstrips are mowed about six times per year. No USSC cost data was provided for labor, materials, and equipment hours. It was necessary to calculate and estimate these costs. Cost calculations and estimation are based on experience and RS Means cost information.

It is estimated that for the near term (0 to 6 months), the gravel airstrips will need gravel replenishment to establish a good road crown and will need blading and compaction every 2 months. The asphalt airstrip will need spot pothole repairs, crack sealing, sealcoat, and pavement markings. The cost for 14 airstrips is estimated at \$418,000, or about \$29,800 per airstrip needed initially.

It is estimated that for the long term (7 to 18 months), the gravel airstrips will need much less gravel and require blading and compaction less frequently than every 2 months. The asphalt airstrip will need spot pothole repairs, crack sealing, and pavement markings every 24 months. The annual maintenance cost for 14 airstrips is estimated at \$239,000; or about \$17,000 per airstrip per year.

0 to 6 Months - Estimated total costs for this time period are \$418,000.

7 to 18 Months - Estimated total costs for this time period are \$239,000.

Total Costs 0 to 18 Months - Estimated costs for this time period are \$657,000.



## 4.0 Non-Process Buildings



### 4.1 General

Non-process buildings include office buildings, residences, warehouses, shed structures, and a water treatment plant, all managed by USSC using four area managers (Areas 1-4) and two citrus area managers. These same people manage the land holdings across all 187,000 acres including facilities in the crop areas.

### 4.2 Key Issues/Findings

#### 4.2.1 Evaluation

A total of 45 assets were visited and evaluated. Of the 45 scored, 3 were assigned a grade of Green, 22 were Yellow, and 20 were graded Red.

The 45 assets included 77 buildings of various types: offices, residences, warehouses, shed structures and a water treatment plant. Assets with multiple buildings were office complexes, and house sites such as the Townsite Houses and Sugarland in Clewiston. Scores for multi-building assets were based on the asset as a whole.

Items graded Red require immediate repairs due to exhibiting critical damage or deterioration affecting continued operation, effectiveness, functionality, and/or safety. For these, corrective action should be taken immediately or within a 6-month period. Examples are sunken steps, missing stairs, deteriorating abandoned building, badly damaged, or worn out roofs. Among all the non-process building assets, 25 buildings were judged to be of no value and recommended for demolition. Assets containing those buildings were assigned a grade of Red. Cost to demolish these structures is approximately \$91,000. The following table summarizes the condition class assigned to each non-process building or asset evaluated.

**Summary of Condition Grades of Non-Process Buildings and Assets**

NON-PROCESS ASSET	Total	GRADE		
		Green	Yellow	Red
Building Sites	44	2	22	20
Water Treatment Plants	1	1	0	0
<b>TOTAL</b>	<b>45</b>	<b>3</b>	<b>22</b>	<b>220</b>

**4.2.2 Maintenance and Repair**

There are no maintenance plans and all maintenance, repair and capital expenditures (roofs, HVAC changes, safety items, wind damage, etc) are handled on an as-needed basis with an apparent emphasis on deferred maintenance. Following inspection, each asset was assigned a grade of Red, Yellow, or Green based on the condition of the asset, the time frame during which remedial action is warranted, functionality and severity of deterioration or damage, and life safety considerations. Safety related repairs and demolition of unused and non-functional buildings have been deferred as well as some normal maintenance such as painting. Immediate attention is necessary at assets graded red where demolition or safety related repairs are strongly recommended. These are shown in the following table.

**Immediate Repairs to Assets**

Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
Area 1 Pole Barn	Red	<b>Regulatory/Safety</b> Demolition of one barn, pig manure management <b>Material</b> Repairs to one barn	Demolish Barn 1597. Enforce proper method of manure management at Barn 1747. Replace rusted and missing sheet metal roof and repair broken roof gutters for Barn 1747.
Single House at Doverspike	Red	<b>Regulatory/Safety</b> Demolition of tractor shed	Demolish tractor shed.
Clinic/Union Building	Red	<b>Regulatory/Safety</b> Demolition of northwest shed	Demolish northwest shed.
Sugarland Park	Red	<b>Regulatory/Safety</b> Structure demolition	Demolish all eight houses and four associated garages.
Bunkers Area	Red	<b>Regulatory/Safety</b> Scalehouse demolition <b>Material</b> Bunker repairs	Demolish scalehouse. Remove damaged structure support.
Area 2 Site and Office Buildings	Red	<b>Regulatory/Safety</b> Missing cover plate to electrical panel <b>Material</b> Foundation backfill	Replace cover plate to electrical panel at rear of residence. Backfill foundation piers. Trim tree limbs at warden residence.
Griffin Housing and Tractor Shed	Red	<b>Regulatory/Safety</b> Tractor shed demolition <b>Material</b> Exterior refinishing, HVAC replacement, roof replacement	Demolish tractor shed. Repaint fascia, eave, and end boards. Replace HVAC and 2 exterior doors.
Florida Lettuce Shed	Red	<b>Regulatory/Safety</b> Lettuce shed demolition <b>Material</b> None	Demolish lettuce shed.

Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
South Bay Harvester Complex (AES Shop)	Red	<b>Regulatory/Safety</b> Building demolition, exposed electrical panel <b>Material</b> None	Demolish northern building. Replace electrical panel cover plate in harvester storage building.
Runyon Tractor Shed	Red	<b>Regulatory/Safety</b> Tractor shed demolition	Demolish tractor shed.
House West of Bourne Tractor Shed	Red	<b>Regulatory/Safety</b> Building demolition	Demolish house.
Tractor Shed (East of Citrus Plant)	Red	<b>Regulatory/Safety</b> Hanging ventilation fan	Reattach ventilation fan to side of shed.
Alcoma Office	Red	<b>Regulatory/Safety</b> Missing cover plate, unsecured outlet box <b>Material</b> Missing HVAC pad	Replace missing conduit body cover plate. Reattach electrical outlet box. Provide level pad for HVAC unit.
Alcoma Houses (3)	Red	<b>Regulatory/Safety</b> Loose junction boxes <b>Material</b> Missing HVAC pad	Reattach loose electrical junction boxes. Provide level pad for HVAC units at two residences.
Alcoma Pole Barns (2) & Chemical Room	Red	<b>Regulatory/Safety</b> Pole barn demolition	Demolish pole barn.
Devil's Garden N&S Block Houses (2)	Red	<b>Regulatory/Safety</b> Septic system overflow <b>Material</b> Treatment shed repairs, exterior repairs	Replace septic pump. Replace roof and siding of water treatment sheds. Replace roof of north house. Repair rotted fascia and trim of south house. Replace south house HVAC unit.
Devil's Garden N&S BBQ Camp	Red	<b>Regulatory/Safety</b> Building demolition	Demolish BBQ camp structure.
Southern Division Office	Red	<b>Regulatory/Safety</b> Abandoned trailer disposition	Remove abandoned trailer for disposal.
Southern Division Pole Barn	Red	<b>Regulatory/Safety</b> Structure demolition	Demolish pole barn.
Southern Division Abandoned Office (north of Pond 2)	Red	<b>Regulatory/Safety</b> Structure demolition	Demolish abandoned office.

#### 4.2.3 Transition Considerations

In the transition period, the repair and demolition work listed in the Initial Assessment Report for the Non-Process Buildings for the assets graded Yellow and Red should be planned, scheduled, and undertaken developed and the work initiated in a timely manner. Completion of this work in the transition period will remove material deficiencies from the assets being purchased and remove potential safety hazards and unnecessary liability from the transfer.

### **4.3 Cost Information**

Rough Order of Magnitude costs were developed to address immediate and non-immediate repairs. These estimates do not address the cost impact of the possible presence of asbestos-containing materials on renovation or demolition activities.

0 to 6 Months - Estimated total costs for this time period are \$49,500.

7 to 18 Months - Estimated total costs for this time period are \$321,500.

Total Costs 0 to 18 Months - Estimated costs for this time period are \$371,000.



Prepared for:  
***South Florida Water Management District***  
3301 Gun Club Road  
West Palm Beach, FL 33406

***Evaluation Reports***  
Contract #4600000858 Work Order 1

December 19, 2008

Submitted by:  
***Shaw Environmental, Inc.***  
3223 Commerce Place, Suite 100  
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Non-Process Buildings Report

**Acronym List**

<b>Acronym</b>	<b>Definition</b>
AADF	Annual average daily flow
AASHTO	American Association of State, Highway and Transportation Officials
AC	Air Conditioner
ACM	Asbestos containing material
ADA	Americans with Disabilities Act
AES	Agricultural equipment shop
Ag	Agriculture
ASTM	American Society for Testing and Materials
ATV	All-terrain vehicle
BMP	Best Management Practices
BOM	Bill of Materials
CARR	Cost Analysis and Recommendation Report
CD/DVD	Compact Disk/Digital Video Disk
CDL	Commercial drivers license
CIP	Capital Improvement Plan
CL	Centerline
CMMS	Computerized Maintenance Management System
CMRP	Certified Maintenance and Reliability Professional
CMU	Concrete masonry unit
CSI	Courtesy Service and Inspection
Cu ft	Cubic feet
DAF	Dissolved air flotation
DMS	Docket Management System
DOT	Texas Department of Transportation
EAA	Everglades Agricultural Area
ER	Evaluation Report
EUL	Expected useful life
FAA	Federal Aviation Administration
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FHA	Federal Housing Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
ft <sup>3</sup>	Cubic feet
FTE	Full time equivalent
gen-set	Electricity generator with fuel tank and engine for emergency use
gpd	Gallons per day
GPS	Global Positioning System
GVW	Gross vehicle weight
HID	High intensity discharge

Acronym	Definition
HMA	Hot mix asphalt
hp	Horsepower
HP	Handicapped persons
HUD	Housing and Urban Development
HVAC	Heating ventilation and air conditioning
IAR	Initial Assessment Report
ICUMSA	International Committee for Uniform Methods of Sugar Analysis
IFAS	Institution of Food and Agricultural Services
IP	Intellectual property
IPM	Integrated pest management
KPI	Key performance indicator
kVA	Kilovolts
kW	Kilowatts
LCE	Life Cycle Engineering, Inc.
lf	Linear feet
LP	Liquid propane
MGD	Million gallons per day
MLS	Maintenance Logistic Systems
mm	Millimeter
MMADF	Maximum monthly average daily flow
NG	Natural gas
NTSB	National Transportation Safety Board
OSHA	Occupational Safety and Health Administration
PASER	Pavement Surface and Evaluation and Rating Asphalt Airfield Pavements
PCA	Property condition assessment
PCI	Pavement Condition Index
PdM	Predictive maintenance
PM	Preventive maintenance
PMI	Preventative Maintenance Inspection
POP	Period of performance
PRV	Plant replacement value
PSI	Present Serviceability Index
psig	Pounds per square inch gauge
PSM	Process Safety Management
QA/QC	Quality assurance/quality control
RAP	Reliability Analysis Process
RCA	Root cause analysis
RCNLD	Reproduction cost new less depreciation
RMTTP	Repair, Maintenance and Transportation Plan
RO	Reverse osmosis
ROM	Rough order of magnitude
SAP	Systems, Applications and Products
SCFE	South Central Florida Express, Inc
SFWMD	South Florida Water Management District



Acronym	Definition
SGCG	Southern Gardens Citrus Groves
SGCP	Southern Gardens Citrus Production
Shaw	Shaw Environmental, Inc.
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedures
SOW	Statement of Work
Sq ft	Square feet
Sq yd	Square yard
SWET	Soil and Water Engineering Technology, Inc
tn	Tons
URCI	Unsurfaced Road Condition Index
USACE	United States Army Core of Engineers
USDA	United State Department of Agriculture
USDOT	United States Department of Transportation
USSC	US Sugar Corporation
VFR	Visual flight rules
VHP	Very high pol
WTP	Water treatment plant
WWTF	Wastewater treatment facility
yd <sup>2</sup>	Square yard
yd <sup>3</sup>	Cubic yard

## 1.0 Executive Summary

This Executive Summary draws directly from all of the required Evaluation Reports described in Shaw's Statement of Work for Tasks 1 and 2 of the Agri-Business Infrastructure and Facilities Assessment of US Sugar Corporation. It is pursuant to guidance transmitted by e-mail describing this requirement.

### 1.1 Benchmarking

#### 1.1.1 Facilities in Crop Areas

Methods used to conduct the Facilities in Croplands assessment were tailored to the class of infrastructure being evaluated: bridges, roads, culverts, levees, and pump stations. Procedures employed were compatible with standard engineering inspection practices/methods, primarily visual but with limited performance testing for pump stations (only), and were conducted under the direction of engineers, scientists, and skilled technicians from Shaw and several qualified subcontractors. Standardized inspection forms were developed or adopted and GIS and AUTO/CADD technologies were used. No geotechnical information was taken.

#### 1.1.2 Crop Area Lands

Soil and Water Engineering Technology, Inc. (SWET) assisted Shaw with these services as they relate to the croplands currently under the ownership of the USSC. The USSC cropland assessment included review of farm records of crop yields and Best Management Practices (BMP), fertility, and pesticide practices. It also included field visits to evaluate the current soil conditions and status of the irrigation and drainage infrastructure. The physical assessments were done by establishing a representative sampling protocol based on the tight time constraints. The field data and farm records were then analyzed for determining the operational and maintenance costs for the cropland, potential future infrastructure improvement, and crop land productivity.

#### 1.1.3 Airfields/Airstrips

Shaw assessment services described herein were performed in accordance with generally accepted consulting practices at this time. Our findings and conclusions were based primarily on the visual appearance of the airstrips at the time of our visit. The airfield asphalt pavements were rated based upon the guidance described in the Federal Aviation Administration (FAA) Advisory Circular 150/5320-17, "Pavement Surface and Evaluation and Rating Asphalt Airfield Pavements," PASER Manual dated July 2004.

Our condition assessment covered 14 USSC airstrips. Our assessment did not include the following:

- Collection of soil borings, base course samples, or any compaction tests
- Skid resistance characteristics or abrasion tests
- A computation of pavement strength and deflection tests
- Drainage calculations to check the size/capacity of the longitudinal drainage ditches
- Verification of runway glide slopes
- The siting or permitting issues for each airstrip

#### 1.1.4 Non-Process Buildings

Shaw services described herein were performed and Shaw's findings and recommendations were prepared in accordance with generally accepted consulting practices at this time. A total of 45 non-process building assets were visited and evaluated.

## 1.2 Asset Evaluation

### 1.2.1 Facilities in Crop Areas

The large areal expanse of the crop lands, coupled with the large quantity of features to inspect, necessitated limiting inspections to visual, non-intrusive methods.

A total of approximately 1,132 miles of canals and 3,204 miles of ditches are present in the USSC agricultural areas. Drainage canal and ditch maintenance practices have generally been adequate to prevent many canals and ditches from deteriorating to the point that they do not convey water as intended.

The approximately 332 miles of levees at 12 impoundments evaluated were determined to be in good condition with no apparent immediate or short-term repairs needed. It should be noted that geotechnical analysis has not been performed for these impoundment levees.

Approximately 1,945 miles of unsurfaced roads were identified in crop areas using agricultural area maps and aerial photography. An estimated 39 miles of unsurfaced roads (2 percent) are considered failed and constitute a limited concern for short-term operation.

Overall, pumps and pump station facilities evaluated were determined to be in poor to fair condition with deficiencies identified for both immediate and short-term repairs. At one pump station (PSTA-3), structural deficiencies were identified that require immediate action (Red), since they either pose an evident safety concern or suggest a risk of structural failure of at least one of the structural components of the pump station.

Six of the roadway bridges evaluated exhibited deficiencies compromising safety. These are largely the same issues as those identified as compromising short-term operation, including excessively corroded elements, cracked concrete elements, and damaged wearing surfaces which need maintenance or replacement.

### 1.2.2 Crop Area Lands

The overall good condition and high level of production maintained at each of the sugar cane agriculture areas observed at the USSC operation provides evidence of professional farming operations. The general crop condition for sugar cane during observation was good in 51 percent of cases. This observation was consistent with the preliminary review of USSC yield data. Excellent crop conditions were observed at 19 percent of the sugar crop areas, moderate conditions at 12 percent, and poor conditions at 4 percent. Fourteen percent of the sugar cane land was fallow. The relative yields for the citrus could not be estimated because actual yield data were not available; however, USSC indicated that their yields followed state trends for citrus yields. The relative conditions of the citrus groves were observed to be in good to excellent condition except for the areas identified with canker or greening disease.

Compliance with Best Management Practices (BMP) and associated BMP permits will be important for the continued productivity and success of the crop.

The only observed deficiencies that could compromise the short-term operation of the system are the threat of exhausted muck soils in a limited number of the sugar cane fields and the canker and greening issues in the citrus lands.

### 1.2.3 Airfields and Airstrip Facilities

There are 14 USSC airstrips that are maintained by the four Area Managers. Functional evaluations were performed for each airstrip. A summary of the surface ratings were Good = 2, Average = 5, Poor = 7, Failed = 0. Shaw also completed a safety rating for the 14 airstrips. The summary of the safety ratings was Good = 1, Fair = 8, Poor = 5. Three airstrips received low functional and low safety scores due to obstructions (ditches, canals, or railroad tracks) that are located too close to the left, right, or both edges of the airstrip. Numerous airstrips do not provide the lateral clearance suggested in the Texas Aviation

Board Farm and Ranch Airstrips Manual. The continued use of the airstrips that have a safety rating of poor or unsafe is a major concern. It may be advisable to discontinue flights at some airstrips or possibly re-grade and re-align some of the drainage ditches to provide more lateral clearance from the runway centerline.

There are no regulatory concerns with the airstrips. Per Florida Statutes, all airstrips are “exempt” if they are used for air agricultural flights only, and the flight operations at each do not exceed 30 days per year.

#### **1.2.4 Non-Process Buildings**

A total of 45 assets were evaluated. Of the 45 scored assets, 3 were Green, 22 were Yellow, and 20 were Red.

Certain roofs were not accessible for visual observation, and copies of roof warranties were not provided for Shaw inspection. Estimates of roof estimated useful life (EUL) are based on assumptions of age and condition. Certain structures were not entered because of safety concerns related to dilapidated conditions and/or animal nests or insect infestations. Building drawings were unavailable for many structures. Age of those structures was estimated or inferred.

Yellow assets exhibited non-critical damage or deterioration affecting continued operation, effectiveness, functionality, and safety warranting corrective action within a 6- to 18-month period. The assets display deficiencies that, if not repaired soon, will contribute to life safety issues or material deficiencies. Examples of Yellow assets are failing roofing system, neglected painting systems, HVAC systems at the end of EUL, and settlement around a building that would allow vermin under the building.

Red assets exhibited critical damage or deterioration affecting continued operation, effectiveness, functionality, and/or safety warranting corrective action immediately or within a 6-month period. The assets display life-safety deficiencies and/or material deficiencies that if not immediately repaired will cause unchecked material damage to the building. Examples are sunken steps, missing stair, deteriorating abandoned building, badly damaged or worn out roof. All assets judged to be of no value and recommended for demolition were assigned this grade.

**Evaluation Report**  
For  
**FACILITIES IN CROP AREAS**  
**US Sugar Corporation**  
December 19, 2008

Prepared for



**South Florida Water Management District**  
3301 Gun Club Road  
West Palm Beach, FL 33406

Prepared by



**Shaw**<sup>®</sup> Shaw Environmental, Inc.  
3223 Commerce Place, Suite 100  
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**Evaluation Report  
For  
FACILITIES IN CROP AREAS  
REPORT QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the report subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer’s experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions. In some cases we were able to see limited operations of an asset but only a small sample size of the overall assets in that category.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this report, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This report is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Assessment Lead/Report Author**

Name: Nathan Newell

Date: December 19, 2008

**Peer Review**

Name: Randy Youngman

Date: December 19, 2008

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## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Evaluation Report addresses Task 1.1 by evaluating and establishing an operational grade for major infrastructure as pertains to the repair, maintenance, and transition plan.

The Project teams looked at all infrastructure located within the agricultural areas and made assessment of levees, culverts, canals, roads, bridges, and pump stations. Nearly 30 personnel completed the field assessment over a 3-week period beginning late in September. Specialty subcontractors evaluated pump stations, bridges, and other major assets by sampling approximately 10 percent of the infrastructure systems in place.

### 1.1 Evaluation Overview

This Evaluation Report (ER) documents the on-site inspections, interviews, and reviews of documents and available reports on the operating conditions, functionality, assessments, and evaluations performed on the assets critical to operation for each major infrastructure category including observed, identified, and possible deficiencies for each major infrastructure category categorized as follows:

- Deficiencies that fail to meet regulatory or safety requirements (Red)
- Deficiencies that compromise the short-term operation of the system (Yellow)

**Canals.** Drainage canal maintenance practices have generally been adequate to prevent many canals from deteriorating to the point that they do not convey water as intended. A system such as this is perennially in need of some attention, and a certain level of degradation is not unexpected. Maintaining a drainage system as extensive as USSC's at optimum condition at all times is impractical and cost prohibitive. Although specifically cited elements are in need of repair, the condition of the drainage canals and the system of culverts, flow control structures, and stabilizing headwalls is generally adequate to control water levels and does not constitute a condition severe enough to qualify as an operational deficiency. While the condition assessment indicates needs for improvement, there are currently no deficiencies identified in the ER that would compromise short-term operation or safety of the drainage and irrigation system.

**Roads.** Approximately 1,945 miles of unsurfaced roads were identified in crop areas using agricultural area maps and aerial photography. An estimated 7 miles of unsurfaced roads (2 percent) are considered failed and constitute a limited concern for short-term operation. Because 98 percent of the unsurfaced access roads are estimated to be in serviceable condition, roads are not considered to represent a deficiency that would compromise short-term operation, but rather a longer term maintenance item. Safety issues relating to unmaintained road conditions are addressed by periodic and/or routine maintenance that is considered to be generally adequate.

**Levees.** Levees for impoundments in the C-139 Basin area were evaluated by a subcontractor for Areas 38 and 39. A total of eight larger impoundments in Area 38 and seven larger impoundments in Area 39 cover approximately 580 acres and approximately 2,292 acres respectively. Evaluations were performed on 12 major impoundment levees with an average of three cross sections taken per levee. During field evaluation work, almost all unpaved levee crests were accessible to vehicular traffic with a top width that normally exceeded 14 feet. The impoundment levees evaluated were determined to be in fair to good condition with approximately 27 miles of levees in condition Red and 222 miles in condition Yellow. It should be noted that geotechnical analysis has not been performed for these impoundment levees.

**Pumping Facilities.** Pumps and pump station facilities were initially inventoried in the Initial Assessment Report (IAR). Three larger pump station facilities were thoroughly assessed during this evaluation study.

A comprehensive pump facilities evaluation was performed for 32 smaller pump stations. Additionally, structural visual inspections and evaluations were performed for three larger pump stations. Overall, pumps and pump station facilities that were evaluated were determined to be in poor to fair condition with deficiencies identified for both immediate and short-term repairs. At one pump station (PSTA 3), structural deficiencies were identified that require immediate action (Red), since they either pose an evident safety concern or suggest a risk of structural failure of at least one of the structural components of the pump station.

**Bridges.** A total of 11 roadway bridges were evaluated and determined to be in poor to fair condition with deficiencies identified for both near and intermediate-term repairs. Of the 11 bridges, 3 (27 percent) were considered condition Red, 6 (55 percent) condition Yellow, and 2 (18 percent) were condition Green. Six of the roadway bridges evaluated exhibited deficiencies compromising safety. These are largely the same issues as those identified as compromising short-term operation, including excessively corroded elements, cracked concrete elements, and damaged wearing surfaces that need maintenance or replacement.

## 1.2 Limiting Factors

Due to a compressed schedule, our observations included mostly above-ground and above-water inspections for facilities, particularly those portions that were readily accessible to the evaluators without opening or dismantling any secured components, without performing any specific non-destructive or destructive testing, and without performing structural or geotechnical analysis of existing road, levees, canals, bridge structures, or pump house structures.

The scope did not require invasive investigations, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems using engineering computer aided design or analysis, engineering calculations, and/or review of existing design assumptions.

## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged the Project team to conduct an initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Evaluation Report (ER) for Facilities in Crop Areas addresses Task 1.1 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### 2.1 Purpose and Scope of Services

The objective of the ER is to provide the SFWMD a baseline of the condition of all related infrastructure prior to start of production for the 2008-09 crop season. This ER documents the on-site inspections, interviews, and reviews of documents and available reports on the operating conditions, functionality, assessments, and evaluations performed on the assets critical to operation for each major infrastructure category including observed, identified, and possible deficiencies for each major infrastructure category categorized as follows:

- Deficiencies that fail to meet regulatory or safety requirements.
- Deficiencies that compromise the short-term operation of the system.

Information and assessments made in the Initial Assessment Reports were used in the ERs, with further evaluations made as necessary. An operational grade was established according to accepted industry standards and applied similar to the processes utilized by the US Sugar Corporation.

### 2.2 Description of Infrastructure

This ER includes an initial physical property inventory including infrastructure within the USSC croplands (approximately 187,000 acres) described below. Appendix A contains representative photos taken in the field.

**Canals and Ditches** – The irrigation and drainage system components consist of interconnected main and perimeter canals facilitating water level management to support crop production and storm water conveyance. The canal system generally consists of main canals approximately greater than or equal to 50 feet wide and a grid system of interconnected lateral ditches generally from 25 to 50 feet wide. The canal system is generally controlled by a combination of steel and reinforced concrete culverts, flow control gates, steel risers, flap valves, and pump stations and/or facilities. Tertiary canals (field ditches less than 15 feet wide) connect to the lateral network through culvert structures and/or risers and are generally gravity fed without active pumping facilities. The maintenance program for canals and ditches primarily involves annual herbicide sprays on larger canals and applications on the smaller canals and ditches on an as-needed basis.

**Culverts and Flow Control Structures** – Flow control structures consist of corrugated steel risers equipped with either a flashboard-type or screw-operated water level control. Manually operated screw-gates, board risers, and winch risers are used for adjusting the level of water prior to release to a drainage

culvert structure designed to either retain or release water according to irrigation and drainage requirements for crop support. It was observed during the initial assessment phase that failed screw-gates are generally being replaced with board culverts because of the high cost of screw-gates.

**Drainage and Irrigation Culverts** – Corrugated aluminum galvanized steel pipe or reinforced concrete pipe of varying diameters is installed below ground at main canal intersections with secondary lateral canals, road crossings, or canal ends to facilitate water movement as required to support agricultural operations. Lateral and main canals are generally connected with one or more culverts at least 40 feet in length and 36 to 60 inches in diameter. Field canals are connected to laterals and main canals generally with a culvert 40 feet long and 18 inches in diameter. Culvert structures are most often used to facilitate road crossings across canals in lieu of bridge structures.

**Canal Banks** – The excavated side slopes of the canals are generally composed of unconsolidated soil and/or limestone bedrock. Canal banks are typically reinforced with bagged concrete, timber, or stacked limestone walls at culvert locations and control structures to retard cross and/or bank erosion. Most canal banks do not have a maintenance bench located between the canal and levee or impoundment structure as is required by normal standards for engineering design.

**Roads** – Large networks of unsurfaced roads and trails are found throughout the cane fields and orange groves to facilitate the maintenance of the land along with the harvest of crops. Some roads also serve a secondary purpose as landing strips for the crop duster aircraft.

**Pump Stations and Facilities** – Diesel-engine and electric-motor powered pump stations or facilities are located throughout the property. These pump stations and facilities connect the secondary canal systems to the primary canal systems affording better water flow control for both irrigation and drainage purposes. For the purposes of this report, the pump stations have been categorized into two basic groups: large pump station facilities and small pumping facilities.

**Bridge Structures** – All bridge facilities in the crop areas are either wooden, concrete, and/or structural steel structures that are used to allow movement into and out of fields as well as movement within the fields for people and vehicles to facilitate the planting, harvest, and maintenance of the land and crops.

**Levees and Impoundments** – Levee and seepage collection canal impoundment systems (with return pumps) are used to collect and store irrigation water primarily for citrus crops. Existing levees are typically no more than 10 feet in height, and impoundment staging and permitting requirements normally would not apply since they would not meet the criteria for dam classification.

### 3.0 Methodology

Locations of the facilities in crop areas were recorded in the field using the global positioning system (GPS). Field observations were recorded on standardized field data sheets and conditions were documented with digital photographs, identified numerically, and correspond with numbered geographic waypoint coordinates. The Project team field staff recorded digital photos, geographic position, and noted the condition of the following assets listed below.

- Canals and Ditches
- Culverts and Flow Control Structures
- Roads
- Pumps and Pump Stations
- Bridges
- Levees and Impoundments

For the purposes of the ER, and subsequently the Repair Maintenance and Transition Plan (RMTP), culverts and control structures are grouped together for evaluation. An additional visual assessment of bank stabilization headwalls above water is included in this report. Stabilization headwalls are integrated with the culvert and control structures, where present, and so form a single operating unit on which to base condition, functionality, and repair and maintenance costs.

For this report, additional data collection, measurements, detailed inspections, document reviews, and some performance testing for pump station facilities were done.

#### 3.1 On-Site Inspections, Interviews, Documents Review

The following sections describe the methods used to evaluate the listed assets for the purposes of the ER.

##### 3.1.1 Canals and Ditches

The approximate total number and length of canals within areas was determined using current cultivation maps, aerial maps, geographic information systems (GIS), and AutoCADD technologies. Additional on-site inspections, interviews, and document reviews were also conducted. Procedures were established for measuring total length of main, lateral, and sub-lateral canals and tallying total lengths per map unit. Total canal lengths, by type, were calculated for the entire agricultural area.

A condition frequency distribution was applied to forecast the number of condition Yellow and Red canals requiring repair throughout the agricultural areas. All deficiencies in practice and procedures were reviewed.

##### 3.1.2 Culverts and Flow Control Structures

Data was collected during on-site field inspections using visual observations of above-ground and above-water features. The frequency distribution of condition classes was calculated and subsequently evaluated to forecast the number of condition Yellow and Red culverts requiring repair throughout the agricultural areas.

##### 3.1.3 Roads

Data and observations were collected on major roads to evaluate improved and semi-improved road conditions. Roads within cropland areas were evaluated using the approach detailed in the US Army Corps of Engineers (USACE) *Unsurfaced Road Maintenance Management Technical Manual*, TM5-626.

Procedures were established for measuring total length of primary roads and tallying total lengths per map unit. The approximate total number and length of roads within cropland areas were calculated to be

approximately 1,945 miles estimated from current agricultural area drawings, aerial photography, geographic information systems (GIS), and AutoCADD technologies.

Additional on-site inspections, interviews, and reviews of documents including reports on the operating conditions, functionality, assessments, and evaluations were performed. Condition evaluations were based on procedures specified in USACE TM5-626 to determine road condition index. Elements of the technical manual diagnostic condition analysis for establishing a road condition index consists of the following elements:

- Network identification - The process of dividing installed unsurfaced road networks into manageable segments for conducting surface inspection and determining maintenance and repair requirements and priorities
- Surface condition inspection - The process of inspecting unsurfaced roads to determine existing distresses and their severity and to compute the Unsurfaced Road Condition Index (URCI), a rating system that measures the surface integrity and operational condition
- Maintenance and repair determination - The process of establishing maintenance and repair requirements and priorities based on inspection data, URCI, and other relevant information, such as traffic, loading, and structural composition

Field data and observations were collected at 120 locations throughout the project area. Aerial photography and agricultural area maps were used to measure the total unsurfaced road length present in the cropland areas. Networks were determined based on the agricultural map unit in which they occur as to road type, use patterns, and materials and are essentially the same between units, unless otherwise described. GPS coordinates were recorded at every location evaluated so that it can be precisely located for re-inspections.

The distress types for unsurfaced roads below served as the evaluation criteria for road condition within crop areas:

- Improper cross section
- Inadequate roadside drainage
- Corrugations
- Dust
- Potholes
- Ruts
- Loose aggregate

The distress measurements were used to calculate the URCI, based on deduct values. A deduct value is a number from 0 to 100, with 0 meaning that the distress has no impact on the road condition and 100 meaning that the road has completely failed.

The road evaluation was done section by section, since each section represents a unit of the unsurfaced road network that is uniform in structure and subjected to consistent traffic loadings. The URCI of an unsurfaced road section describes the section's overall condition. The overall condition of the section correlates highly with the needed level of maintenance and repair. Evaluations of the maintenance and repair needs for each road section were made.

An important component of the unsurfaced road maintenance management system is the surface condition survey and rating procedures. Data obtained from these procedures are the primary basis for determining maintenance and repair requirements and priorities. Based on the distribution of the URCI at the observed sample locations, calculations were completed to estimate the total number of road miles requiring various levels of maintenance and repair throughout the cropland areas. Discussion of the maintenance and repair requirements for roads in crop areas is provided in the RMTP. It should be noted that some

paved and unpaved roads are shared facilities and access with aircraft landing strips as discussed in the Airport and Airstrip Facilities ER.

### 3.1.4 Pumps and Pump Station Structures

Data and observations were collected to further evaluate the smaller pumps and larger pump station conditions. Additional field assessment and physical testing was performed at a select number of representative locations (see Figure 3.1-1, Appendix B, page B-1) to develop condition assessment for three large pump station buildings. These pump stations were Southline Pump Station, PSTA 3 Pump Station, and Bourne No. 2 Pump Station. Two data collection teams were sent into the field to gather data on the smaller drainage and irrigation pumps in the cane fields. One team located and identified 180 pumps and the other team located and identified 185 pumps, for a total of 365 pumps in the field.

- Evaluation of pump stations was conducted through one site visit/inspection to each selected structure location. At each visit, relevant information on pump station building characteristics and features were gathered and documented using inspection forms along with physical testing.
- Detailed above-ground and above-water visual evaluations of the structural and mechanical elements of the pump station facilities were completed.

The pump and drive systems were evaluated in detail for vibration to identify worn or damaged parts and the current balance of the electric motors to identify general electrical problems. This effort was conducted in great detail on the pumps of three large multi-pump stations, and to a lesser degree on 30 smaller single-pump stations.

Four different methods were used in conducting these more detailed evaluations:

- Pump Rating – This is a visual check of both large and small pump stations. It is intended to reveal the general state of repair of the pumps, the pump electric or diesel motors, the control panels, and the support structures.
- Small Pump Evaluation – This is a more detailed check of just the small pump stations. It evaluates both general repair and operational performance of the small pumps and motors.
- Large Pump Evaluation – This is a detailed check of the large multi-pump stations. It evaluates both general repair and operational performance of the large pumps only.
- Large Pump Diesel Engine Evaluation – This is a detailed check of the diesel engines driving the large multi-pump stations. It checks both general repair and operational performance of the large pump diesel engines only.

The small pump and large pump evaluations were conducted by gathering and examining the information below:

- Pump and motor name plate information
- Pump and motor speed
- Pump vibration
- Engine oil level and quality
- Engine radiator hose integrity
- Vibration
- Drive shaft/belt condition
- Pump water leakage
- Electric motor current balance
- Diesel radiator hose condition
- Diesel alternator belt condition

**3.1.5 Bridges**

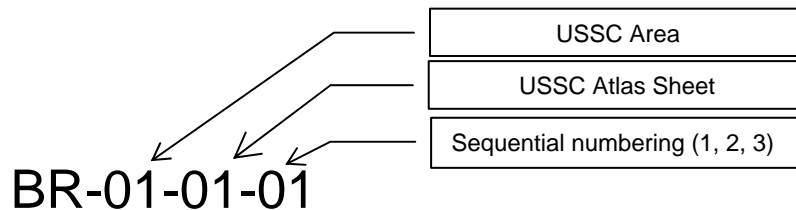
The bridge assessment included an evaluation of 11 roadway bridges at US Sugar Corporation property as part of the overall asset evaluation being performed. Relevant information on bridge characteristics and features was gathered and documented through the use of an inspection form based upon the US Department of Transportation (US DOT), Federal Aviation Administration (FAA) Report No. FHWA-PD-96-001, *Recording and Coding Guide for Structure Inventory and Appraisal of the Nation’s Bridges* (December 1995).

Field observations included only above-ground and above-water areas that were readily accessible, without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions. Field observations consisted of detailed collection of above-ground and above-water visual features and characteristics of each facility. No physical testing of structures and/or materials was performed. Deficiencies were documented with digital photographs identified numerically.

Bridge inspections were completed by a registered professional engineer and condition evaluation was determined assessing the structural component criteria.

**Roadway Bridge Structures:** A total of 26 roadway bridges were evaluated to obtain a cursory idea of bridge characteristics and conditions. Based on that cursory review, a representative sample of 11 roadway bridges were evaluated in detail through one site visit to each selected structure location. Figure 3.1-2 (Appendix B, page B-2) shows the location of the 11 roadway bridges selected for detailed evaluation.

The bridges were identified by the naming convention described below:



**3.1.6 Levees and Impoundments**

Levees and impoundments were evaluated by conducting site investigations as necessary. On-site inspections and interviews were conducted and documents and reports on the operating conditions, functionality, assessments, and evaluations were reviewed. Procedures were established for measuring total length of levees through review of current cultivation and aerial maps to obtain total number of levee systems and approximate levee length. Deficiencies in practice and procedures were identified.

**3.2 Grading System**

The grading scheme is based on a combination of the condition of the assets and the time frame during which remedial action appears warranted, based on functionality and the severity of deterioration or damage. In Section 4, Asset Evaluations, the grading criteria for each asset class’s condition assessment is applied and the resource is scored. Table 3.2-1 shows the type and time horizon for repairs that were applied in the grading system.



**Table 3.2-1. Repair Criteria for Grades**

<b>Condition Identifiers</b>	<b>Definition Description</b>
<b>GREEN</b>	Fully functional assets exhibiting little or no damage or deterioration warranting any corrective action, other than routine (or annual maintenance requirements), within an 18-month period
<b>YELLOW</b>	Assets exhibiting non-critical damage or deterioration affecting continued operation, effectiveness, functionality, and safety warranting corrective action within a 7- to 18-month period
<b>RED</b>	Assets exhibiting critical damage or deterioration affecting continued operation, effectiveness, functionality, and/or safety warranting corrective action immediately or within a 6-month period

## 4.0 Asset Evaluations

### 4.1 Asset Grades

Each asset class has a functionally specific set of evaluation criteria to determine its classification into one of the three condition classification grades: Green, Yellow, and Red. Supplementary information was collected on approximately 10 percent of each asset category in order to score the asset class.

#### 4.1.1 Canals and Ditches

The total length and condition of canals present in the crop areas was determined by on-site field inspections and a combination of aerial photography interpretation and calculations based on the agricultural area maps provided by USSC. The inventory is considered representative of the cropland canals in general considering the large number of data points collected in this assessment. Based on this review, it is reasonable to conclude that approximately one-third of canals throughout the property are persistently in need of some routine maintenance and that historical maintenance practices have generally been adequate to prevent many canals from deteriorating to the point that they do not convey water as intended. Table 4.1.1-1 shows the grading system for canals. The scores that follow indicate the likely requirement for significant repairs or refurbishment within the 0- to 6-month (Red) and 7- to 18-month (Yellow) time frames.

**Table 4.1.1-1. Canals Condition Identifiers Applied**

Asset Class	Condition	Diagnostic Conditions
Canal Banks	RED	Banks unstable, gullies, deposits, and evidence of slope collapse >4 foot width present, culvert, retaining timbers, or rock bags undermined or collapsing, vegetation absent on crest and slope face, gullies extending to road surface.
	YELLOW	Banks at stable angle of repose, gully's, deposits, or evidence of slope collapse <4 foot width present, erosion around culvert, retaining timbers or rock bags, vegetation absent on crest and/or slope face, gullies within 3 feet of road surface.
	GREEN	Banks at stable angle of repose, no gullies, deposits, or evidence of slope collapse, vegetation present on crest and/or slope face, no imminent threat to adjacent roads.

Drainage canal maintenance practices have generally been adequate to prevent many canals from deteriorating to the point that they do not convey water as intended. A total of approximately 1,132 miles of major canals and 3,204 miles of ditches are estimated to lie within the USSC croplands area. The vast majority of major canals could be considered in Green or good condition (70 percent or 792 miles) by visual observation, although typical maintenance bench areas are mostly not present between canals and roads. Approximately 29 percent (328 miles) of the canals have been determined to be in condition Yellow requiring mostly cleaning and mucking. The remaining 1 percent (11 miles) of canals is considered to be in condition Red requiring dredging. Drainage and irrigation ditches have been determined to be mostly in Green condition (89 percent or 2,864 miles) with the remainder in condition Yellow (10 percent or 328 miles) or condition Red (3 percent or 11 miles).

This infrastructure group would be considered an asset of secondary concern.

#### 4.1.2 Culverts and Flow Control Structures

The total number and condition of culverts present in the crop areas was determined by a combination of on-site field inspections and aerial photography interpretation and calculations based on the agricultural area maps provided by USSC.

The overall general condition of the culvert structures throughout the cropland areas is considered fair. Thirty-five percent of culverts were identified as requiring no corrective action within 18 months (Green). Nearly 60 percent were classified as condition Yellow, requiring corrective action within 7 to 18 months and the remaining 5 percent classified as condition Red with repairs to be made within 6 months. Although showing some signs of damage, most of the condition Yellow class culverts appear to convey water as intended but are cut, broken, severely rusted, obstructed, or in various stages of collapse. Table 4.1.2-1 shows the condition identifiers for culverts and flow control structures, The scores that follow indicate the likely requirement for significant repairs or refurbishment within the 0- to 6-month (Red) and 7- to 18-month (Yellow) time frames.

**Table 4.1.2-1. Culverts/Flow Control Structures Condition Identifiers Applied**

Asset Class	Condition	Diagnostic Conditions
Culvert Structures	RED	Non-functional culvert structure, missing, collapsed, plugged, or buried, supporting material, (timber or rock retaining walls) or other bank support failure, emergent aquatic vegetation covering 100 percent of water surface extending >100 feet and/or heavy bank vegetation extending to, or below, culvert invert elevation.
	YELLOW	Functional culvert structure, damaged, partially plugged or buried, supporting material, (timber or rock retaining walls) and other bank support in poor condition, evidence of bank erosion within 25 feet, emergent aquatic vegetation covering 50 percent of water surface extending >100 feet and/or bank vegetation interfering with flow.
	GREEN	Functional culvert structure, with minor or no damage, free of sediment, supporting material, (timber and rock retaining walls) and other bank support in good condition, little or no bank erosion, emergent aquatic vegetation covering <50 percent of water surface extending >100 feet with no obstructions.
Flow Control Structures	RED	Absent or parts missing, parts bent and/or corroded and inoperable, support structure unstable, and access platform absent or unstable.
	YELLOW	All parts present, parts, bent, and/or corroded but operable, structure and access platform stable and in fair condition.
	GREEN	All parts present, and operable, structure and access platform stable and in good condition.

Culvert headwalls are installed to support the canal banks from erosion and protect the culvert and riser assemblies. Information on headwall condition was collected to provide additional detail as it applies to operational and safety deficiencies. A total of 95 additional canal culvert headwall observations were conducted in the course of the ER. Headwall construction is most often comprised of piled concrete bags, stacked and cast in place. The sizes of the headwalls vary by canal width, depth, and culverts size and average approximately 156 bags and 90 square feet each. Approximately 26 percent of culvert headwalls are in Green condition. Sixty-eight percent are in Yellow condition, requiring some corrective action or maintenance within 18 months. Six percent of headwalls are in need of immediate repair (condition Red).

Flow control structures consist of corrugated steel risers equipped with either a flashboard-type or screw-operated water level control. The overall general condition of flow control structures throughout the cropland areas is considered poor. Of the structures sampled, a total of 10 flow control structures (approximately 36 percent) are considered in Green or good condition, and the field inventory was sufficient to conclude that 17 flow control structures (approximately 61 percent) are in Yellow condition and in need of some repair. One flow control structure (approximately 4 percent) is condition Red and was determined non-functional. Many older mechanical screw-operated devices suffer from lost or broken access planks, bent, broken, or rusted operating devices, and some are leaning due to settling and/or weather damage. Some of these type gates have been replaced with riser-mounted wooden

flashboard water level control devices due to easier operation and repair. Continued replacement using flashboard-type gates, as needed, will likely reduce the percentage of units needing repair each year.

Although in need of repair, the condition of the system of culverts, flow control structures, and stabilizing headwalls is generally adequate to control water levels and does not constitute a condition severe enough to qualify as a deficiency.

This infrastructure group would be considered an asset of secondary concern.

**4.1.3 Roads**

Additional data on road condition was collected as part of the ER. The total length and condition of roads present in the crop areas was determined by a combination of on-site field inspection, aerial photography interpretation, and calculations based on the agricultural area maps provided by USSC. A URCI was calculated based on field observations following USACE TM5-626. Table 4.1.3-1 shows the condition identifiers for roads. The scores that follow indicate the likely requirement for significant repairs or refurbishment within the 0- to 6-month (Red) and 7- to 18-month (Yellow) time frames.

**Table 4.1.3-1. Roads Condition Identifiers Applied**

Asset Class	Condition	Diagnostic Conditions
Roads	<b>RED</b>	Obstructed, rutting >12 inches, standing water >6 inches, collapse at canal edges or crossings, vegetation greater than 24 inches over 75 percent of surface.
	<b>YELLOW</b>	Rutting evident, standing water <6 inches, evidence of erosion, vegetation greater than 12 inches over 75 percent of surface, trash, equipment, or other obstruction.
	<b>GREEN</b>	Equipment access unlimited, unobstructed, stable base, no rutting or standing water, no collapse at canal edges or crossings, mown regularly.

A total of 1,945 miles of unsurfaced road are present in the agricultural areas. A total of 120 field observation points were recorded and assigned a condition index representing 298,450 square feet of unsurfaced roads. Average road width was calculated to be 18 feet. The URCI classification based on the technical manual scoring system is described in Table 4.1.3-2.

**Table 4.1.3-2. Unsurfaced Road Condition Index Classifications**

Condition Class		URCI	Percent	Observations	Miles
<b>Green</b>	Excellent	85 - 100	3	3	58
<b>Green</b>	Very Good	70 - 85	37	45	720
<b>Green</b>	Good	55 - 70	43	52	836
<b>Yellow</b>	Fair	40 - 55	14	17	272
<b>Yellow</b>	Poor	25 - 40	0	0	0
<b>Red</b>	Very Poor	25 - Oct	1	1	19
<b>Red</b>	Failed	0 - 10	2	2	39
<b>TOTALS</b>			<b>100%</b>	<b>120</b>	<b>1945</b>

The number of miles estimated for each class was calculated based on the distribution of index values calculated for the 120 sample locations. A total of 1,614 miles (83 percent) of unsurfaced roads in the agricultural area are estimated to be in good to excellent condition. The remaining 330 miles are considered in fair condition, or worse. Up to an estimated 39 miles of unsurfaced roads (2 percent) are considered failed and constitute a safety and vehicle access concern.

This infrastructure group would be considered an asset of secondary concern.

**4.1.4 Pumps and Pump Station Structures**

Additional condition assessments of 3 large and 32 small pumps and pump station facilities were done as part of the ER. For the large stations, a structural and a mechanical/electrical evaluation was conducted. For the small pumps, only a mechanical/electrical evaluation was performed. The overall general condition of pump stations and facilities is provisionally considered to be in poor to fair condition. The evaluation is considered provisional since smaller pumps were not performance-tested and were only visually inspected. Of the smaller pump facilities sampled, 9 (28 percent) were identified as condition Green, 9 (28 percent) were classified as condition Yellow, and 14 (44 percent) were identified as condition Red requiring more immediate repair or replacement. Table 4.1.4-1 shows the condition identifiers for pump stations and facilities. The scores that follow indicate the likely requirement for significant repairs or refurbishment within the 0- to 6-month (Red) and 7- to 18-month (Yellow) time frames.

**Table 4.1.4-1. Pump Stations and Facilities Condition Identifiers Applied**

Asset Class	Condition	Diagnostic Conditions
Pump Stations and Facilities	RED	Personnel safety issues like rusted or missing hand rails or guards, damaged or missing platform deck or supports. Easy to fix repairs like missing belts. Vibration greater than 0.3 inch per second. Electric motor current imbalance greater than 10 percent. Power problems which prevent electric motors from operating.
	YELLOW	Issues which threaten functionality of equipment, such as holes in electric control panels or separated conduit which would admit water. Severe pump leakage. Vibration between 0.2 and 0.3 inch per second. Electric motor current imbalance between 5 and 10 percent. Diesel engines with worn belts, cracked hoses or low oil. Lack of fuel oil tank containment. Platforms with rusted through or missing supports or bracing.
	GREEN	Systems which do not have the issues of the Red or Yellow condition.

Considering the importance of the pumps in the maintenance of croplands, prevention of flooding, and resulting safety concerns, it is considered moderately unfavorable that only two-thirds of the pumps appear to be functional.

**4.1.4.1 Large Pump Station Structural Evaluation**

Structural evaluations were conducted at a total of three pump stations during the course of the Evaluation Report. These structural evaluations include the following larger pump station facilities:

- Southline Pump Station
- PSTA 3 Pump Station
- Bourne No. 2 Pump Station

At the PSTA 3 Pump Station, structural deficiencies were identified requiring immediate action (Red) since they either pose an evident safety concern or imply a risk of structural failure of at least one of the structural components associated with the pump station. Repairs needed include replacement of whaler tie beams, column support, and roof elements, along with cleaning and painting of structural elements.

The other two pump stations (Bourne No. 2 and Southline Pump Station) require some form of corrective action to their structures within the next 18 months (Yellow), with the exception of required hand rails for Southline, which caused this pump to be rated condition Red. Identified corrective actions were associated with excessively corroded and/or loose elements that need maintenance or replacement and that would primarily require cleaning and painting of structural elements, repair of wood plank platforms, repair of area of erosion and sluffing around fuel tanks, and repair of roof.

A more detailed summary of the 0- to 6-month (Red) and 7- to 18-month (Yellow) repairs is itemized as follows:

**Condition Red**

- PSTA 3 Pump Station (Structural Repairs)
  - Replace whaler tie beam
  - Clean and paint steel sheet pile, structural beams, and other elements
  - Replace severely damaged grating sections
  - Replace hand rails
  - Repair bank collapse at discharge side
  - Upstream (east) platform structure unsafe (recommend demolition)
  - Embankment stairs unsafe (recommend replacement)
- Southline Pump Station - Repair or replace hand rails and corroded posts

**Condition Yellow**

- Southline Pump Station
  - Erosion control around wing walls and fuel tanks
  - Replace missing rake bars
  - Clean and paint structural steel pile cap beams
  - Install missing or damaged wood planks
- Bourne No. 2 Pump Station
  - Clean and paint structural steel piling
  - Replace structural steel piling for corroded sections
  - Repair derailed west rake
  - Whaler tie beam replacement
  - Replace damaged metal roofing
  - Repair or replace NE corner column support
  - Repair gaps in grating located at discharge

**4.1.4.2 Large Pump Mechanical-Electrical Evaluation**

The three large multi-pump pump stations that were evaluated represent about 10 percent of the total asset inventory within the project area. A summary of the results for the mechanical/electrical evaluation are listed below.

- PSTA 3 Pump Station (Mechanical/Electrical Repairs)
  - Provide safety guards over torsional dampers
  - Perform bearing inspections for pumps identified with vibration/noise problems and make repairs accordingly
  - Perform additional inspection of pump shafts and make repairs accordingly
  - Perform additional performance testing inspections of Pump C63157 for weak pumping performance and replace or make repairs accordingly
  - Remove vegetation at pump intake
- Southline Pump Station (Mechanical/Electrical Repairs)
  - Install safety guards to belt guard locations and the over the engine to gear driveshafts
  - Perform additional inspections regarding vortexing at suction intake and make repairs accordingly
  - Install engine idler at Pump 64027
  - Perform additional inspection of excessive noise associated with Pumps 64024 and 64025 and make repairs accordingly
  - Perform additional inspection of driveshaft for Pump 64025 and repair for apparent misalignment between gearbox and pump

- Repair potential for breach in the cooling piping for antifreeze leak to irrigation canal
- Repair possible breach in the cooling piping with potential for antifreeze leak to irrigation canal
- Bourne No. 2 Pump Station (Mechanical/Electrical Repairs)
  - Install safety guards to the over the engine to gear drive shafts
  - Perform additional inspections regarding vortexing at suction intake and make repairs accordingly
  - Repair driveshafts currently operating out of balance condition
  - Perform additional inspection of pump shafts and make repairs associated with gearbox vibration
  - Repair upper grease seal for Pump 64105
  - Repair potential for breach in the cooling piping for antifreeze leak to irrigation canal
  - Remove vegetation at pump intake

#### **4.1.4.3 Small Pump Mechanical-Electrical Evaluation**

The smaller pumping facilities evaluated represent about 10 percent of the total asset inventory over the project area. No additional small pumps were evaluated outside of the 32 small pumps listed below due to time constraints. The small pump evaluation looked at the following performance criteria:

- Vibration
- Drive shaft/belt condition
- Pump water leakage
- Electric motor current balance
- Diesel radiator hose condition
- Diesel alternator belt condition

Some pumps were inoperable due to low canal water levels, preventing the pumps from achieving a prime; therefore, no performance evaluation was possible. Condition Red was defined as pump vibration greater than 0.3 inch per second, or an electric motor current imbalance greater than 10 percent. Condition Yellow was defined as pump vibration between 0.2 to 0.3 inch per second, or current imbalance between 5 percent and 10 percent. Water leakage from the pump was a subjective measure. Although there was leakage observed, it is only of real consequence if it occurs on the inlet side of the canal, and only then if rather severe. No examples of severe inlet side leakage were observed. The general conclusion that only two-thirds of the pumps appear to be operable is in agreement with the initial IAR study.

The overall condition of the smaller pumps was scored as follows:

- Condition Green = 9 pumps (32 percent of operating pumps or 28 percent of total pumps)
- Condition Yellow = 9 pumps (32 percent of operating pumps or 28 percent of total pumps)
- Condition Red - Operable = 10 pumps (36 percent of operating pumps or 31.5 percent of total pumps)
- Condition Red - Inoperable = 4 pumps (12.5 percent of total pumps)

This infrastructure group would be considered an asset of primary concern.

#### **4.1.5 Bridges**

During the bridge evaluation work, a total of 11 roadway bridges were evaluated and determined to be in poor to fair condition with deficiencies identified for both near- and intermediate-term repairs. Of the 11 bridges, 3 bridges were considered condition Red; 6 bridges were condition Yellow, and 2 bridges were considered condition Green. Table 4.1.5-1 shows the condition identifiers for bridge structures. The scores that follow indicate the likely requirement for significant repairs or refurbishment within the 0- to 6-month (Red) and 7- to 18-month (Yellow) time frames.

**Table 4.1.5-1. Bridge Structures Condition Identifiers Applied**

Asset Class	Condition	Diagnostic Conditions
Bridge Structures	RED	Bridge structure unsafe for passage which includes but not limited to significant damage to superstructure (bents), superstructure and/or other major structural elements, and damaged or missing pilings.
	YELLOW	Bridge repairs or maintenance required to repair critical items but not related to structural collapse mechanisms.
	GREEN	All bridge structural elements well maintained and with no or only some minor cosmetic repairs or maintenance needed.

Most roadway bridges lacked guard rails and installation of them is recommended to meet current safety codes. Many bridge decks are in need of vegetation removal while some require resurfacing. Most bridges were found to have corrosion and will require cleaning and painting of structural elements including but not limited to support beams, bent beams, curb beams, and structural steel sheet pile.

This infrastructure group would be considered an asset of primary concern.

**4.1.6 Levees and Impoundments**

Twelve levees and/or impoundments were visually evaluated and classified. Three were identified as condition Green, eight as condition Yellow, and one as condition Red requiring more immediate repair or replacement. Table 4.1.6-1 shows the condition identifiers for levees and impoundments. The scores that follow indicate the likely requirement for significant repairs or refurbishment within the 0- to 6-month (Red) and 7- to 18-month (Yellow) time frames.

**Table 4.1.6-1. Levees and Impoundments Condition Identifiers Applied**

Asset Class	Condition	Diagnostic Conditions
Levees and Impoundments	RED	Over 40 percent of levee slopes have erosion issues, 25 percent or more of levee with large vegetative growth including but not limited to trees and large shrubs, or levee shows signs of large amounts of water seepage, or levee has design flaws.
	YELLOW	Levee slopes have up to 40 percent erosion issues, or up to 25 percent of large vegetative growth, or vegetation greater than 18 inches in height over the entire levee.
	GREEN	Slopes are free of erosion, large vegetative growth, and free of design flaws

The impoundment levees evaluated (approximately 332 miles) were determined to be in mostly fair to good condition with no apparent near or immediate term repairs needed for those portions. Of the 12 major impoundment levees evaluated, approximately 8 percent (27 miles) were considered condition Red and appeared to be comprised of mostly unconsolidated spoil piles. The remaining portion of impoundment levees were scored as follows: 67 percent (222 miles) were considered condition Yellow; and 25 percent (83 miles) were considered condition Green. It is recommended for the 27 miles of spoil-pile impoundments that levee reconstruction be performed (with a construction cost estimated at \$175,000 per mile), or these impoundments be abandoned.

This infrastructure group would be considered an asset of primary concern and geotechnical investigations are recommended.



## 4.2 Deficiencies – Compromising Short-Term Operation of System

### 4.2.1 Canals and Ditches

Seventy percent of canals require no corrective action within 18 months. Approximately 29 percent of canals were classified as condition Yellow, attributable largely to excessive aquatic weed growth restricting drainage. Aquatic weed control is considered an operational and maintenance issue, rather than a structural condition affecting system performance. Regular aquatic weed control can be addressed by periodic herbicide application or other control measures and does not reflect an infrastructure condition that constitutes a deficiency compromising short-term operation of the system.

Headwalls providing bank stabilization at culvert locations are rather crudely built but effective at maintaining slope stability and preventing collapse around culverts and risers. Size and condition are quite variable, depending on the ditch and culvert dimensions, but are generally in good condition with only 6 percent of headwalls in need of immediate repair (condition Red).

Historical maintenance practices have generally been adequate to prevent many canals from deteriorating to the point that they do not convey water as intended. Although the condition assessment indicated needs for improvement, there are currently no deficiencies identified that would compromise short-term operation of the drainage and irrigation system.

### 4.2.2 Culverts and Flow Control Structures

Less than 10 percent of culverts were determined to be non-functional. The remaining culverts show some signs of damage (cut, broken, rusted, obstructed, or in various stages of collapse). Most of the condition Yellow class culverts appear to convey water as intended. Culvert condition throughout the crop areas does not appear to comprise a deficiency affecting short-term operation of the drainage and irrigation system.

The field inventory was sufficient to estimate that 40 percent of corrugated steel risers equipped with either a flashboard-type or screw-operated water level control are considered in good condition and approximately 60 percent are in need of some repair. Only a few have completely failed.

Although in need of repair, the condition of the system of culverts, flow control structures, and stabilizing headwalls is generally adequate to control water levels and does not constitute a condition severe enough to qualify as an operational deficiency. Many of the culvert systems have some redundancy, having been constructed with multiple parallel culverts.

### 4.2.3 Roads

Approximately 1,945 miles of unsurfaced roads were identified in crop areas using agricultural area maps and aerial photography. On-site field investigation also enabled direct visual observation of most road features. Only seven locations of minor repairs and possible reconstruction were identified. The repair costs needed would be insignificant in comparison to the annual maintenance costs estimated for the entire roadway system.

### 4.2.4 Pumps and Pump Station Structures

All 365 pumps were reviewed during the IAR, and their evaluation scores fell into one of three categories:

- Service required within 0 to 6 months
- Service required within 7 to 18 months
- Service not required within 18 months (System may not be perfect but is considered adequate for time period and function.)

This portion of the ER report is concerned with those cases where service was identified to be required within 0 to 6 months. The types of issues which would qualify as requiring service within 0 to 6 months

were personnel safety issues or repairs that would be relatively quick and easy to make. These types of deficiencies are defined as follows:

- Severely rusted (significant metal penetration) or missing hand rails
- Damaged or missing platform decking or stairs
- Platform columns or bracing severely rusted (significant metal penetration) or missing
- Broken or missing guards
- Missing drive belts
- Equipment not electrically or mechanically hooked up

Of the 365 pump evaluated, 69 pumps (19 percent) were found to have one or more of these issues.

A somewhat more detailed small pump evaluation was conducted on 32 (9 percent of the 365 total) of the small single-pump stations. Those pumps were evaluated for the following issues:

- Mechanical vibration
- Water leakage from pump housing
- Drive belt or shaft condition
- Electric motor current balance
- Diesel engine radiator hose condition
- Diesel engine fan belt condition
- Diesel engine oil level condition
- Diesel fuel tank containment

The small pump evaluation resulted in a Red, Yellow, or Green overall condition. The definition of these conditions is:

- Red: Service required within 0 to 6 months
- Yellow: Service required within 7 to 18 months
- Green: Service not required within 18 months

This part of the ER report is concerned with those pumps having a Red evaluation. The types of issues which would qualify as having a Red evaluation include:

- Vibration having a velocity of 0.3 inch per second or greater in any direction
- Water leakage greater than 15 percent of total pump capacity (subjective)
- Electric motor current imbalance of 10 percent or greater
- Equipment not electrically or mechanically hooked up
- Electrical power problems that prevent the electric motors from operating

Of the 32 small pumps evaluated, 4 were inoperable due to low water levels in the canal. Of the remaining 28 operable pumps, 10 (36 percent) had one or more of the above Red issues.

A very detailed evaluation was conducted on three representative large multi-pump stations. Table 4.2.4-1 is a summary of the findings.

**Table 4.2.4-1. Pump and Pump Station Asset Deficiency by Condition**

Pump Station Name	Total Pumps	Operational Pumps	Poor Flow Rate	Excess Vibration	Diesel Engine Issues	Oil Contamination
Southline	7	5	0	3	9	5
PSTA 3	6	5	1	2	27	5
Bourne No. 2	4	4	1	2	8	3

Pumps that were down for maintenance were counted as not operational, but not counted as having poor flow rate. Poor flow rate in this case is a subjective measure based on outflow visual observation. Excess vibration is an indication of worn or bent impellers, worn bearings, worn gearboxes, warped drive shafts, or alignment issues. The diesel engines were inspected and evaluated on a 30-point checklist. Each item on the checklist was counted as either satisfactory or unsatisfactory. The Diesel Engine Issues column in Table 4.2.4-1 is the total of the unsatisfactory items for all the pumps at the indicated pump station. Oil samples were taken from each diesel engine crankcase and each pump gearbox and evaluated for metals, dirt, and water contamination. Metals contamination is an indication of mechanical wear; dirt and water are indications of infiltration and leakage. The Oil Contamination value column is the total number of motors and gearboxes that tested positive for some sort of contamination.

Structural evaluations were conducted of the three pump stations. At PSTA 3 Pump Station, structural deficiencies were identified that require immediate action (Red) since they either pose an evident safety concern or imply a risk of structural failure of at least one of the structural components associated with the pump station.

The Southline Pump Station and Bourne No. 2 Pump Station require some form of corrective action to their structures within the next 18 months (Yellow). Identified corrective actions were associated with excessively corroded and/or loose elements that need maintenance or replacement.

#### **4.2.5 Bridges**

Structural evaluations were conducted at a total of 11 roadway bridges. Three of the Roadway Bridges evaluated exhibited deficiencies that require immediate action (Red) since they either pose an evident safety concern or imply a risk of structural failure or collapse. Guard rail deficiencies exist on 10 of the 11 bridges and would be considered a safety concern; however, the remoteness of these facilities does not necessarily warrant condition Red. It is recommended that guard rails be installed at all bridge structures prior to the end of the 18-month period as this is a general bridge code violation and poses a liability.

Many bridge decks need vegetation removal; some also require resurfacing. Six of the roadway bridges evaluated exhibited deficiencies that appeared to require some form of corrective action to various structural elements within the next 18 months (Yellow). Identified corrective actions were associated with excessively corroded elements, cracked concrete elements, and damaged wearing surfaces that need maintenance or replacement. Most bridges evaluated exhibited signs of corrosion requiring cleaning and painting of structural elements including but not limited to support beams, bent beams, curb beams, structural footing piles, and structural steel sheet pile. Two of the roadway bridges evaluated appear to be in good condition (Green), showing minor deficiencies associated with the structure.

#### **4.2.6 Levees and Impoundments**

Approximately 27 miles of spoil piles associated with levee impoundments that were evaluated would either require levee reconstruction or facility abandonment. The condition of the remaining 315 miles of impoundment levees evaluated would fall under general levee maintenance required as routine inspections identified deficiencies/degradation, particularly after larger storm events.

### **4.3 Deficiencies – Failure To Meet Regulatory or Safety Requirements**

#### **4.3.1 Canals and Ditches**

No known regulatory requirements were obtained during the document discovery period that apply to canals and ditches on private agricultural lands. USSC-obtained permits currently in existence should be further investigated as to their transferability from the selling agent to the buying agent, where appropriate. These permits could include agricultural exceptions for canal dredging and exceptions to wetlands regulations of the USACE.

#### 4.3.2 Culverts and Flow Control Structures

While in need of some repair and maintenance, the current condition of culverts and flow control structures does not constitute a safety issue. No regulations are known to apply to drainage and irrigation flow control structures on private agricultural land.

#### 4.3.3 Roads

No known regulatory requirements apply to unsurfaced roads on private agricultural lands.

#### 4.3.4 Pumps and Station Structures

The primary regulatory issues that are present involving the pumps are:

- Safety guarding around belts or rotating parts. Design of safety guarding is regulated by Occupational Safety and Health Administration, 1910.212.
- Spill containment around diesel engine fuel tanks. Operation and maintenance of diesel tanks are regulated by 40 CFR 110 and 112 and FAC 62-762.

All of the pumps are driven by either an electric or diesel motor, and the connection between the pump and motor was either a drive shaft or a V-belt. Both drive shafts and belts require safety guarding as per the above mentioned regulations. All of the pumps were equipped with some sort of safety guarding on both drive shaft and V-belt applications. There were the simple cases where the guarding was damaged or rusted sufficiently to require replacement. However, some of the guard designs did not provide sufficient guarding in that one could reach around the guard and access the rotating parts. The most common example of this type of insufficient guarding was the design used on diesel powered pumps with belt drives. The diesel engines are connected to the pumps by a long V-belt, and in all cases, the belts were still accessible from the bottom. About 39 percent of the 365 pumps fell into this category.

The diesel engines are equipped with diesel fuel tanks. The above mentioned regulations indicate that the tanks be equipped with spill containment provisions for tanks in excess of 55 gallons in size. All of the diesel fuel tanks were 250 gallons or larger and so this regulation applies to them all. The typical spill containment device consists of a concrete bathtub sized for 110 percent of the tank capacity in which the tank is located. Most, not all, of the large multi-pump stations were equipped with spill containment. None of the diesel powered small single pump stations had containment. Overall, about 19 percent of the 365 pumps required spill containment.

#### 4.3.5 Bridges

Six of the roadway bridges evaluated exhibited deficiencies compromising safety. These are largely the same issues as those identified as compromising short-term operation including excessively corroded elements, cracked concrete elements, and damaged wearing surfaces that need maintenance or replacement. Other regulatory requirements such as local building codes that may apply, but are limited to private property rights and conditions, are as follows: missing guard rail, lack of records for roadway bridge inspections, more severe corrosion of main structural elements. It does appear that bridge repairs are performed on a failure mode as needed.

#### 4.3.6 Levees and Impoundments

The impoundment levees would not fall under dam classification nor were they designed to meet SFWMD design criteria memorandum. No known regulatory deficiencies apply to impoundment levees at this time.

## **5.0 Professionals Developing Evaluation Report**

The following personnel performed site visits and developed this report.

Juan C. Prieto, P.E.

Jim Nichols, P.E.

Jose Rovira

Youssef Hachem, P.E.

Maurice Berkel



Nathan Newell, P.E.



**Appendix A**  
**PHOTOGRAPHIC LOG**

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**PHOTOGRAPHIC RECORD**  
**Facilities in Crop Areas**



<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Clewiston, Florida</p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> A canal with a green grade. Canal banks are clean and stable. The surface is clear of vegetation to allow designed movement of water.</p>	
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> <b>A canal with an amber grade. The canal is heavily vegetated with floating plants. Canal still allows water movement below surface.</b></p>	



<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Clewiston, Florida</b></p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> A canal with a red grade. Canal is completely vegetated with rooted plants. Movement of water greatly obstructed.</p>	
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> Embankment conditions were also considered in the canal grade. This embankment is in good (green) condition. Embankment walls are stable displaying little or no wear and no visible signs of erosion. However, the heavy vegetation would result in an amber canal grade.</p>	





<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Clewiston, Florida</b></p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> This embankment is in fair (amber) condition likely requiring repair in the near future. Embankment stability is compromised by erosion around and under embankment wall. Erosion is not currently a threat to road safety.</p>	 <p>A photograph showing a cross-section of an embankment. On the left, there is a body of water covered in a thick layer of bright green algae. A weathered wooden structure, possibly a culvert or part of a road barrier, runs vertically through the center. To the right of the structure, the embankment has eroded, showing exposed soil, roots, and some sparse vegetation. The top of the embankment is covered with green grass and weeds.</p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> This embankment is in poor (red) condition requiring immediate repair. Embankment wall has collapsed and blocked the culvert, limiting water movement.</p>	 <p>A wide-angle photograph of a waterway. The water is dark brown and calm. In the background, a grassy embankment has collapsed, with a large pile of logs and debris blocking the path of a culvert. The sky is overcast with grey clouds.</p>



<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Clewiston, Florida</b></p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> A control gate with a green grade. Control gate is functioning completely as designed.</p>	
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> A control gate with an amber grade. Control gate is still operationally functional; opens and closes. However, walkway has rusted out and is considered a significant safety issue.</p>	


<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Clewiston, Florida</b></p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> A control gate with a red grade. Threads have corroded off shaft preventing gate operation.</p>	
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> A culvert with a green grade. Culvert is solid with little or no corrosion on pipe. In addition, the culvert is free and clear of obstructions.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Clewiston, Florida</b></p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> A culvert with an amber grade. Corrosion is beginning to form at the water line and vegetation is blocking the riser and culvert.</p>	
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> A culvert with a red grade. Riser has corroded completely through, leaving the riser non-functional to the intended design.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Clewiston, Florida</b></p>
<p><b>Photographer</b> Bradley Lynch</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> A pump station with a green grade. Pump appears to be fairly new and in good working order. The equipment has little or no rust. The structure is not corroded or threatened by erosion. Railings are secure.</p>	
<p><b>Photographer</b> Bradley Lynch</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> A pump station with an amber grade. Embankment erosion is undercutting diesel tank and engine pad requiring additional reinforcement. Pad appears unstable.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Clewiston, Florida</b></p>
<p><b>Photographer</b> Bradley Lynch</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> Unk.</p> <p><b>Comments</b> A pump station with a red grade. A non operational pump for either mechanical or safety reasons.</p>	
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> A road with a red grade. Soil above culvert has collapsed and eroded compromising the safety of the road.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Clewiston, Florida</p>
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> A road with a green grade. Road is smooth and stable and does not limit vehicle movement.</p>	
<p><b>Photographer</b> Nicolas Moran</p> <p><b>Date</b> August 6 - August 24, 2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> A road with an amber grade. Road is poorly maintained. Ruts and soft road base are a concern for vehicle safety.</p>	

<b>Site Name: US Sugar Corporation</b>	<b>Site Location: Clewiston, Florida</b>
<b>Photographer</b> T.J. Rew <b>Date</b> August 6 - August 24, 2008 <b>Direction</b> West <b>Comments</b> A bridge with an amber grade. Bridge side railing is corroded and bent from vehicle impact.	



**Appendix B**  
**FIGURES**

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Figure 3.1-1. Pump Stations Visited for Structural Evaluation (Location Map)

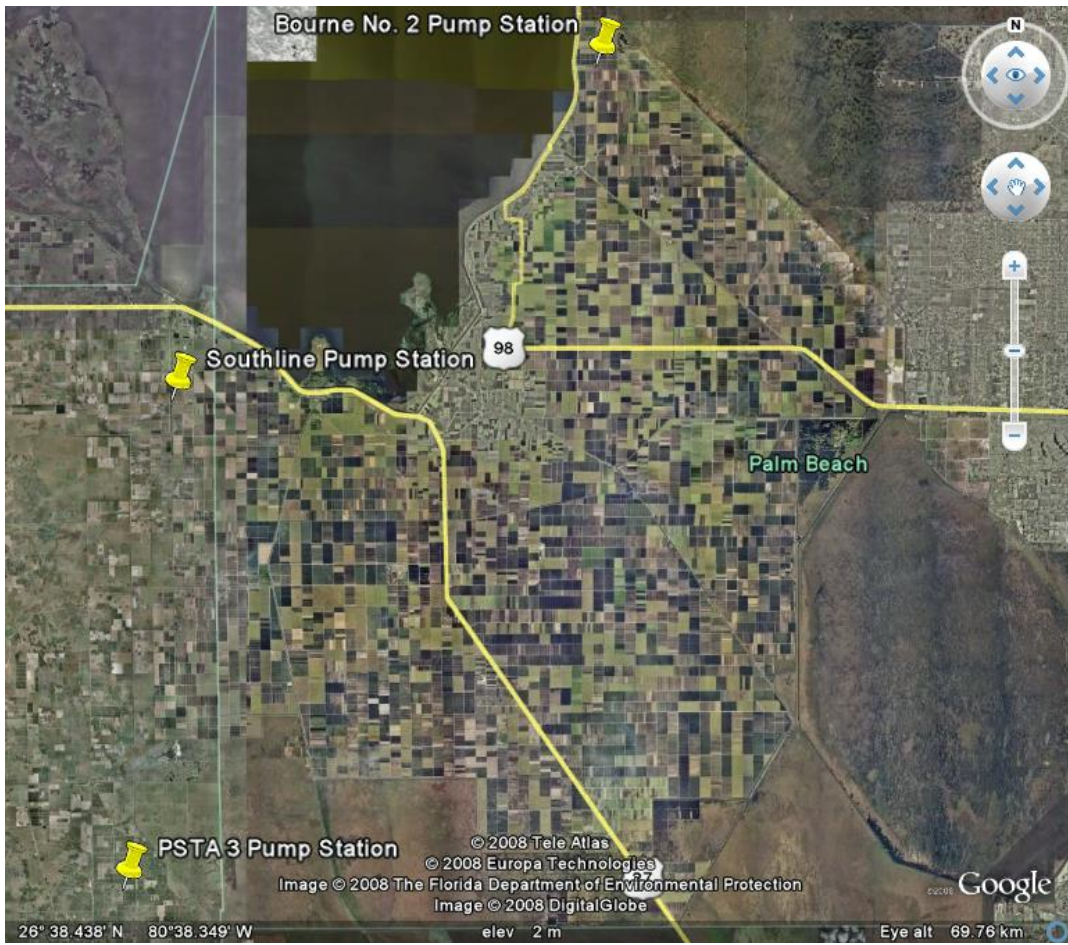
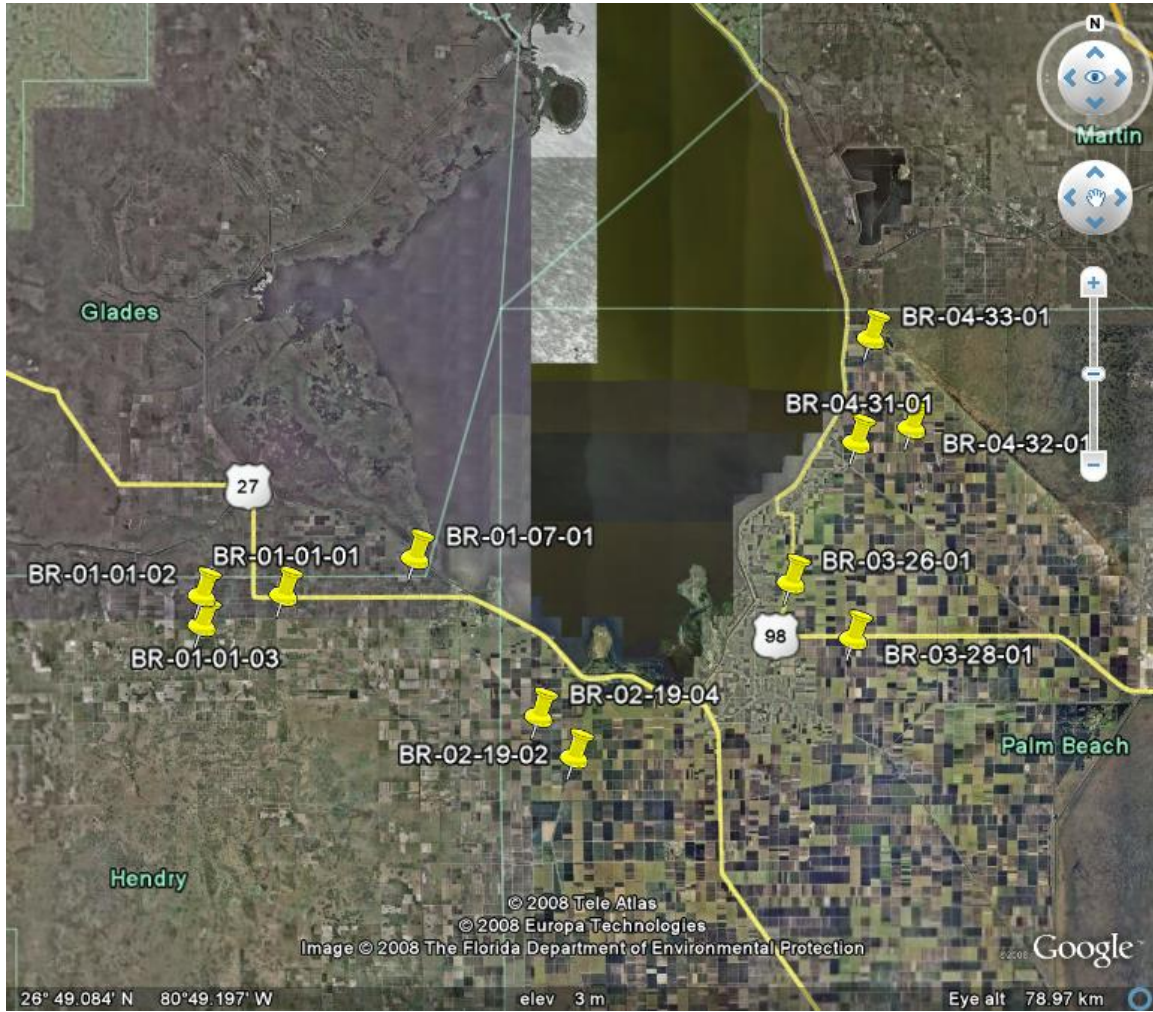


Figure 3.1-2. Roadway Bridges Visited for Structural Evaluation (Location Map)



**Evaluation Report**  
For  
**CROP AREA LANDS**  
**US Sugar Corporation**  
December 19, 2008

Prepared for



**South Florida Water Management District**  
3301 Gun Club Road  
West Palm Beach, FL 33406

Prepared by  
**Soil and Water Engineering Technology, Inc.**  
For



**Shaw**® Shaw Environmental, Inc.  
3223 Commerce Place, Suite 100  
West Palm Beach, FL 33407

**Evaluation Report  
For  
CROP AREA LANDS  
REPORT QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the report subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer’s experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions. In some cases we were able to see limited operations of an asset but only a small sample size of the overall assets in that category.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this report, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This report is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Assessment Lead/Report Author**

Name: Del Bottcher, Ph.D., P.E.

Date: December 19, 2008

**Peer Review**

Name: Randy Youngman

Date: December 19, 2008

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 Figure 3.1-2        Representative Cane Farm Data Collection Points  
 Figure 4-1            Soil Probe Depths

## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Evaluation Report addresses Task 1.1 by evaluating and establishing an operational grade for major infrastructure as pertains to the repair, maintenance, and transition plan.

Approximately 153,000 acres of USSC physical croplands were evaluated for their operational condition and maintenance costs in comparison to historical and anticipated crop yields. Both sugarcane and citrus area croplands were assessed. The assessment included the review of farm records for crop yields, Best Management Practice (BMP) implementation, fertility and pesticide practices, all of which were provided by USSC. Additionally, field visits were conducted in late September 2008 to verify and evaluate the current soil, crop, irrigation, and drainage infrastructure conditions. This assessment was conducted by establishing a representative sampling methodology that would allow for maximum geographical coverage of the USSC cropland, given the time constraint. Supplemental data and information received from USSC were analyzed to determine the operational and maintenance costs for the cropland, potential required infrastructure improvements, and cropland productivity.

This analysis indicated that the near future (next 5 years) operational and maintenance costs will be remain relatively constant. The overall appearance and functionality of each farm observed at the USSC operation was evidence of professional farming operations. The high level of production maintained over broad acreages is further evidence of this characterization. Compliance with BMPs and associated BMP permits will be important for the continued productivity and success of the crop area lands.

Three areas of possible future cropland risks were identified: muck subsidence (soil exhaustion), citrus canker, and citrus greening.

### 1.1 Evaluation Overview

Our analysis indicated that the near future (next 5 years) operational and maintenance costs will be relatively constant, but three areas of possible future cropland risks were identified. These areas included muck subsidence, citrus canker, and citrus greening.

### 1.2 Limiting Factors

Though total crop assessment was not feasible due to time constraints, a reasonable representative sampling was achieved by visiting at least one field in each farm unit. The high number of field visits did allow for a reasonable statistical evaluation where trends could be noted and used on a percentage basis throughout this report.

Being only able to observe conditions at a single time of the year was also a limiting factor. Ideally, observations would be made throughout a full growing season for each crop. However, through farm interviews, historical cropping data, and other documentation provided by USSC, significant insight was provided into the seasonal practices. For example, citrus for this region is generally harvested November through April. Therefore, estimation of harvest practices and yields based on field observance in September is difficult. However, assuming no major crop failures, an estimate can be made based on past records and the general condition of the trees at this time. Therefore, the overall appearance of the citrus grove and trees can be observed and used as a baseline for harvest production.

Sugarcane crop assessment was performed at an optimal time in that it was done just before the 5-month harvest window of October to March for this region. However, the long harvest window does mean that there is a 5-month variation of crop age across the property, which limits the observers' ability to accurately gage yield and overall crop condition without having field-by-field planting and harvest

history. A relative crop quality method not based on crop height was used to adapt to this limiting factor. Also, having the sugarcane at near full growth also limited observation of soil surface conditions associated with soil leveling and associated wet spots.

Observing the condition of field laterals in regard to sediment control BMP was difficult for the majority of field laterals for both citrus and sugarcane. The end of the wet season was occurring during the field visits, resulting in standing water in many laterals. The farm was only starting to lower water levels in a limited number of fields for harvesting operations. Thus, the majority of the sediment trap basins were still under water and not easily visible. This did, however, give the observers an advantage in locating poorer draining areas near field edges in observed areas.

Although the drainage system in the citrus grove was partially visible, the irrigation system was difficult to gage. The irrigation scheduling and timeline only allowed observance of one irrigation event. This walk through of a block during the irrigation event gave an overall impression of what all other irrigation zones would look like, but verification of the other blocks was a limiting factor. Observance of more irrigation events would have allowed for a more representative sample.

Fertility and pesticide practices were provided by USSC. These data are not readily field verified unless an observer is in place at the time of application. Therefore, actual practices were not observed. This limits the reliability of this information. However, USSC yield information will be used to locate any large yield anomalies that might be caused by inadequate fertilizer and pesticide management practices.

Other than some of the sediment BMPs, most of the BMPs, as checked on the BMP permits provided by the USSC, were not able to be observed in the field because they included fertility and water management control practices. However, the annual permit report indicated a general observance of the permit conditions.



## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged the Project team to conduct an initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Evaluation Report (ER) for Crop Area Lands addresses Task 1.1 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### 2.1 Purpose and Scope of Services

The objective of the ER is to provide the SFWMD a baseline of the condition of all related infrastructure prior to start of production for the 2008-09 crop season. This ER documents the on-site inspections, interviews, and reviews of documents, and available reports on the operating conditions, functionality, assessments, and evaluations performed on the assets critical to operation for each major infrastructure category including observed, identified, and possible deficiencies for each major infrastructure category categorized as follows:

- Deficiencies that fail to meet regulatory or safety requirements.
- Deficiencies that compromise the short-term operation of the system.

Information and assessments made in the Initial Assessment Reports were used in the ERs, with further evaluations made as necessary. An operational grade was established according to accepted industry standards and applied similar to the processes utilized by the US Sugar Corporation.

### 2.2 Description of Infrastructure

This ER covers the infrastructure and conditions associated with the cropland on the USSC property, which includes sugarcane and citrus crops. The infrastructure evaluated was limited to the actual field operations for growing and harvesting the crop, the irrigation and drainage facilities within the field including field laterals, lateral end culverts, infield irrigation delivery equipment, and soil conditions. This evaluation does not include farm canals or structures within them, farm pump stations, irrigation supply equipment, or any other facilities or activities not directly associated with the crop. Note that the lateral-end culverts were evaluated during the crop assessments field inspections because its teams were better positioned and trained for conducting these evaluations. However, the collected culvert information was provided to the facilities team which included the results in the Facilities in Crop Areas report.

Asset categories evaluated for the cropland areas consist of the following:

- Crop condition
- Lateral end culvert condition (results presented in Facilities in Crop Areas report)
- Lateral ditch condition
- Sediment depth in laterals
- Depth to rock from culvert bottom
- Ditch depth, relative to natural ground
- Observed BMPs and condition

### 3.0 Methodology

A systematic approach was adopted to visit as much of the diversity of crops, soils, and farm units as possible.

#### 3.1 On-Site Inspections, Interviews, Documents Review

The following methods were adopted for the work elements performed for the crop area lands asset category.

A representative sampling of conditions was completed, although seasonal dependent factors could not be observed. A reasonable representative sampling was achieved by visiting at least one field in each farm unit. The high number of field visits allowed for a reasonable statistical evaluation where trends could be noted and used on a percentage basis throughout this report.

Through farm interviews, historical cropping data, and other documentation provided by USSC, significant insight was provided into the seasonal practices for both citrus and sugarcane. For example, estimations of harvest practices and yields were made based on records and the general condition of the citrus trees and sugarcane at this time. Therefore, the overall appearance of the crops was observed and used as a baseline for harvest production.

Observations were made on the condition of field laterals in regard to sediment control BMPs. However, fertility and pesticide practices had to be evaluated based on information provided by USSC personnel.

Upon entry into the work area in Clewiston, Florida, the team met with USSC personnel. Information available was discussed and it was concluded that for sugarcane fields BMP permits, crop yields, fertility, soil test, and limited pesticide use information was available, ultimately provided by USSC.

The total area covered during the field visits of both citrus and sugarcane is shown in Figure 3.1-1 in Appendix B, page B-1.

The following bullet points summarize the team's methodology:

- A review was conducted of existing BMP permits and associated crop and field operational and maintenance records and plans.
- Meetings were conducted with US Sugar Cooperation staff to review BMP and associated cropland operational and maintenance practices and to obtain available plans and records.
- Site visits were conducted to representative farms with key farm staff, if available, to assess current farming practices, implemented BMPs, and infield facilities associated with the crop area lands. This includes reviewing fertility and water management operational practices as well as observing conditions of infield structures and crop conditions.
- Photographs and global positioning system (GPS) readings were used to support document findings. Two teams of two individuals were used to perform the site visits.

Based on USSC information provided and interviews with USSC and SGCG staff, a systematic approach for the field inspection program for covering the large area was determined. The approach was to use a statistically representative sampling so as to cover as much area as possible. The two teams were moved throughout the USSC property by farm unit, then by field. As the teams moved throughout the fields, an inspection location was entered into the GIS database. This point was determined from following the Cultivation Map and verifying position through GPS readings in decimal degrees and WGS84 format. At each inspection location, the appropriate data were entered from a set of drop-down menus and numerical fields. The data entered at each inspection point varied by the type of location.

The three main types of data collected were soil probe location, crop condition location, and lateral condition location. A soil probe location included the depth of muck soil and a crop condition. The crop condition locations include the crop condition grade and any field notes about crop conditions. A lateral

condition location would include lateral condition, lateral-end culvert size and condition, sediment depth, lateral depth to ground surface, and depth from culvert to lateral bottom. These conditions were the most efficient way to gage irrigation and drainage effectiveness as well as the current crop condition.

All locations included photographs when a unique feature was noted. Photographs were systematically taken every 7 to 10 points regardless of features or lack thereof. The equipment used in this investigation included: light duty pickup trucks, laptop computers, GPS units (WAAS enabled), ArcMap software, soil penetrometer, and digital cameras.

Three initial farm visits were done to refine the field inspection procedures. While traveling to each inspection point from the farm entry points, a stair-cased drive path around fields was taken so that windshield observations of crop and field conditions could be made. This generally allowed the observer to view at least two sides of a field or grove.

Collected field data were entered directly into a geo-database that was later linked through attribute tables and hyperlinks within an ArcGIS (mxd) file for direct assess, which includes crops, soils, farm unit maps, yields, soil depths, observed conditions, and photos. An example of these data for one field is shown in Figure 3.1-2 in Appendix B, page B-2.

Through this systematic approach, a representative data set was created. This dataset was readily available in digital format to be reviewed before leaving the farm area. This ensured a representative coverage was completed.

### 3.2 Asset Grading System

#### 3.2.1 Grading Process and Applicability

A relative grading system was developed for comparative purposes to meet the specific requirements of this work order. The grading system was established solely to assist in the asset evaluation of the crop areas in the purchase area and serves as a snapshot of crop field conditions during production at one point in time.

The grading system and resulting condition ranking were done on a relative basis within the USSC citrus and sugarcane operations and within the soil categories of muck and sandy soils. Table 3.2-1 summarizes the grading system identifiers. These relative grading results are considered to be consistent across the Everglades Agriculture Area (EAA) based on personal experiences and background with citrus and sugarcane. Information on fertilizer applications, yields, and other information related to soil tests were provided by USSC in electronic form. Electronic information was compared to field observations when applicable.

**Table 3.2-1. Condition Grade Identifiers**

Grade	Crop Condition	Lateral End Culvert Condition	Lateral Condition
<b>GREEN</b>	Excellent – Possible high yield in crop relative to soil type, i.e., sand or muck Good – Medium yield in crop relative to soil type	Excellent – Basically new Good – Structure is operable	Clear – Clear of all debris, sediment, or vegetation
<b>YELLOW</b>	Moderate – Medium to low yield relative to soil type	Moderate – Operable but will need replacing (1 to 3 years)	Vegetated – Ditch more than 50 percent covered in vegetation, possible flow obstruction

Grade	Crop Condition	Lateral End Culvert Condition	Lateral Condition
RED	Poor – Low yield relative to soil type	Poor – Needs to be replaced	Sediment – Ditch filled in with extra soil that will obstruct flow

In addition to condition evaluations, depths were measured as follows:

- Sediment Depth – Depth of soil in field lateral to rock layer
- Rock Depth – Depth to rock layer as measured/estimated from bottom of field culvert
- Ditch Depth – Depth of ditch bottom relative to natural ground

BMPs identified in the BMP permit with the SFWMD were compared to observed presence in the fields for those that could be physically observed.

**3.2.2 Grading System Comparison with USSC**

Cropping and management records were obtained from USSC to compare their evaluation protocols to the ones developed by Soil and Water Engineering Technology, Inc. (SWET). In general, USSC relied on actual yield data and historical farm staff knowledge of maintenance needs so they did not have a similar grading system. However, their quantitative data for yields, fertilizer and pesticides usage, and soil test data proved invaluable for determining overall crop and soil conditions and related costs.

## 4.0 Asset Evaluations

A total of 1,374 points were viewed during field visits to the United States Sugar Corporation sugarcane and citrus operations. These points included inspection of field laterals, soil probes, and crop conditions. Approximately 34 percent of the 2,730 fields were observed. The overall appearance and functionality of each farm observed at the USSC operation and the high level of production maintained over broad acreages is evidence of a professional farming operation.

### 4.1 Sugarcane Asset Evaluations

The general crop condition for sugarcane during observation was Good (Green) 51 percent of the time. This observation was consistent with the preliminary review of USSC yield data. Excellent crop (Green) conditions were observed 19 percent of the time, Moderate (Yellow) at 12 percent, Poor (Red) at 4 percent, and 14 percent of the sugarcane land was fallow. Representative photographs of the above conditions are shown in Appendix A, pages A-1 through A-14.

The amount of Excellent sugarcane was consistent with the preliminary review of USSC yield data, especially when considering the margin of error based on the representative sample area. In perspective, the overall estimated yield averages, not including fallow years, was approximately 39.6 tons per acre. This calculated average from provided data follows the average of observed conditions in the field.

Muck depths as probed using a penetrometer probe were found to range from 0.75 foot to over 4.5 feet (length of probe). (See Figure 4-1, Appendix B, page B-3.) Note that only the sugarcane land was probed for muck depth because the citrus lands are located on sandy soils. A representative photograph of soil probe insertion is included in Appendix A, page A-7.

The level of BMP implementation was primarily determined by the BMP permits provided by USSC. These permits indicated fertility, sediment control (traps, vegetative filters, and laser leveling), soil testing, and stormwater retention/detention BMPs were being implemented on most farms. The BMPs that could be physically observed were sediment control practices. Only 4 percent of the laterals were found not to have vegetative filter strips (Yellow). Sediment traps were observed only in about 3 percent of the laterals (Red), but high water and vegetation limited the observation in about 90 percent of the laterals. USSC staff indicated that routine laser leveling was done on an as-needed basis, but could not be verified in the field. Fields records indicate consistent soil testing and appropriate fertilization rates were performed. Representative photographs of vegetated filter strips and sediment traps are included in Appendix A, pages A-5 and A-9, respectively.

### 4.2 Citrus Asset Evaluations

The relative yields for the citrus could not be estimated because actual yield data were not available. However, USSC indicated that their yields followed state trends for citrus yields. The relative conditions of the citrus groves were observed to be in Good to Excellent condition except for the areas identified with canker or greening disease. Citrus canker areas are identified on variety maps. Citrus greening has not been mapped but was estimated by SGCP field personnel to affect 6 percent lost crops. The actual effect of these diseases on the grove would require an in-depth investigation. Published data from Institute of Food and Agricultural Services (IFAS) shows an increase of approximately \$508.00 per acre in production costs for groves managing for citrus canker and greening. After viewing the program implemented by Southern Gardens Citrus Production, the costs are estimated to easily reach this average cost.

### 4.3 Deficiencies – Compromise Short-Term Operation of System

The only observed deficiencies that could compromise the short-term operation of the system are the threat of exhausted muck soils in a limited number of the sugarcane fields and the canker and greening

issues in the citrus lands. Only a few percent of the sugarcane land were observed to have muck depths of less than 1.5 feet that could limit crop production over the next few years. While Southern Garden Citrus Groves have operations in place to remove and deter the canker and greening disease threats, the possibility of it compromising the grove operations in the short term remains a concern.

#### **4.4 Deficiencies – Failure to Meet Regulatory or Safety Requirements**

Regulatory requirements include following the BMP Permits. Minimal amounts (3 percent) of the laterals observed were found to not follow the 5-foot vegetated filter strip requirement. The fertilizer and soil testing records provided by USSC indicate that these BMPs were being followed. The field personnel's inability to observe the condition of many of the sediment traps due to high water depths and accessibility prevented an assessment for the compliance of this BMP. These are the only regulatory deficiencies observed during the field portion of the crop assessment. No safety deficiencies were observed.

## **5.0 Professionals Developing Evaluation Report**

This assessment and subsequent report development was completed by Soil and Water Engineering Technology, Inc., including the following individuals:

Del Bottcher, Ph.D., P.E.

Tyler Fields, EI

Drew Jackson, EI

Leslie Lewis



Bret Whiteley







**Appendix A**  
**PHOTOGRAPHIC LOG**



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<b>Site Name:</b> US Sugar Corporation	<b>Site Location:</b> US Sugar Corporation Sugar Cane Cropland
<b>Photographer</b> B. Whiteley <b>Date</b> 9/25/2008 <b>Direction</b> West <b>Comments</b> Poor Cane on Sand. Ground-level.	 A man wearing a light-colored button-down shirt, blue jeans, a white cap, and sunglasses stands in a field of tall, green sugar cane stalks. The stalks are dense and reach above his head. The ground is sandy and has some low-lying green weeds.
<b>Photographer</b> B. Whiteley <b>Date</b> 9/25/2008 <b>Direction</b> West <b>Comments</b> Poor Cane on Sand. Overview.	 An overview view of a large sugar cane field. The field is filled with rows of tall, green sugar cane stalks stretching towards the horizon. The sky is blue with scattered white clouds. The ground appears sandy and somewhat sparse with weeds.

<b>Site Name:</b> US Sugar Corporation	<b>Site Location:</b> US Sugar Corporation Sugar Cane Cropland
<b>Photographer</b> B. Whiteley  <b>Date</b> 9/25/2008  <b>Direction</b> South  <b>Comments</b> Excellent Cane on Sand. Ground-level.	
<b>Photographer</b> B. Whiteley  <b>Date</b> 9/25/2008  <b>Direction</b> South East  <b>Comments</b> Excellent Cane on Sand. Overview.	

<b>Site Name:</b> US Sugar Corporation	<b>Site Location: US Sugar Corporation Sugar Cane Cropland</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/25/2008 <b>Direction</b> North West <b>Comments</b> Poor Cane on Muck. Ground-level.	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/25/2008 <b>Direction</b> North West <b>Comments</b> Poor Cane on Muck. Overview.	



<b>Site Name:</b> US Sugar Corporation	<b>Site Location: US Sugar Corporation Sugar Cane Cropland</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/25/2008 <b>Direction</b> North <b>Comments</b> Excellent Cane on Muck. Ground-level.	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/25/2008 <b>Direction</b> North East <b>Comments</b> Excellent Cane on Muck. Overview.	



<b>Site Name:</b> US Sugar Corporation	<b>Site Location:</b> US Sugar Corporation Sugar Cane Cropland
<b>Photographer</b> B. Whiteley <b>Date</b> 9/29/2009 <b>Direction</b> North <b>Comments</b> Moderate Cane. Vegetated Lateral.	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/28/2008 <b>Direction</b> South <b>Comments</b> Moderate Cane. Clear Lateral.	



<b>Site Name:</b> US Sugar Corporation	<b>Site Location:</b> US Sugar Corporation Sugar Cane Cropland
<b>Photographer</b> B. Whiteley <b>Date</b> 9/30/2008 <b>Direction</b> South <b>Comments</b> Good Cane. Vegetated Lateral.	
<b>Photographer</b> B. Whiteley <b>Date</b> 10/01/2008 <b>Direction</b> West <b>Comments</b> Ponding Visible on Fallow Field.	



<b>Site Name:</b> US Sugar Corporation	<b>Site Location:</b> US Sugar Corporation Sugar Cane Cropland
<b>Photographer</b> B. Whiteley <b>Date</b> 10/01/2008 <b>Direction</b> South <b>Comments</b> Young Cane. Penetro- meter Test.	 A man wearing a pink long-sleeved shirt, blue jeans, and dark boots is standing in a young sugarcane field. He is using a penetrometer to test the soil. The field is filled with rows of young green sugarcane plants. In the background, a long, low structure, possibly a train or a canal, stretches across the horizon under a clear sky.
<b>Photographer</b> B. Whiteley <b>Date</b> 10/01/2008 <b>Direction</b> West <b>Comments</b> Poor Cane. Ponded Field.	 A sugarcane field with a large pond of water. The water is dark blue and reflects the sky. The sugarcane plants are green and appear to be growing in a wet, ponded area. The foreground shows a mix of green grass and sandy soil.






<b>Site Name:</b> US Sugar Corporation	<b>Site Location: US Sugar Corporation Sugar Cane Cropland</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/30/2008 <b>Direction</b> North <b>Comments</b> Fallow Field. Ditch Washout.	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/29/2008 <b>Direction</b> South <b>Comments</b> Excellent Cane. Ditch Blocked.	



<b>Site Name:</b> US Sugar Corporation	<b>Site Location: US Sugar Corporation Sugar Cane Cropland</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/29/2008 <b>Direction</b> North <b>Comments</b> Excellent Cane. No Vegetated Filter Strip	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/28/2008 <b>Direction</b> West <b>Comments</b> Good Cane. Lateral Vegetated. Sediment Sump.	

<b>Site Name:</b> US Sugar Corporation	<b>Site Location:</b> US Sugar Corporation Sugar Cane Cropland
<b>Photographer</b> B. Whiteley <b>Date</b> 9/26/2008 <b>Direction</b> West <b>Comments</b> Dead Cane (reason not established)	
<b>Photographer</b> L. Lewis <b>Date</b> 10/01/2008 <b>Direction</b> West <b>Comments</b> Fallow Field. Shallow Lateral. Rock Exposed.	

<b>Site Name:</b> US Sugar Corporation	<b>Site Location: Southern Garden Citrus Groves</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/24/2008 <b>Direction</b> North East <b>Comments</b> Citrus, Micro-jet Irrigation, Maxi-jet Tornado Emitter (10 Foot Diameter)	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/24/2008 <b>Direction</b> North <b>Comments</b> Typical Drainage Lateral.	

<b>Site Name: US Sugar Corporation</b>	<b>Site Location: Southern Garden Citrus Groves</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/24/2008 <b>Direction</b> South <b>Comments</b> Example Excellent Pruned Hamlin Variety. Southern Grove.	
<b>Photographer</b> R. Jackson <b>Date</b> 9/24/2008 <b>Direction</b> South West <b>Comments</b> Greening Identified by Scout Crew, Lead Scout Verified.	

<b>Site Name: US Sugar Corporation</b>	<b>Site Location: Southern Garden Citrus Groves</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/24/2008 <b>Direction</b> North <b>Comments</b> Greening Trees Removed. Stumps Remain.	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/24/2008 <b>Direction</b> South East <b>Comments</b> Citrus, Canker Trees Replanted (Various Ages)	

<b>Site Name: US Sugar Corporation</b>	<b>Site Location: Southern Garden Citrus Groves</b>
<b>Photographer</b> B. Whiteley <b>Date</b> 9/24/2008 <b>Direction</b> South <b>Comments</b> Grove Cleared due to Citrus Canker.	
<b>Photographer</b> B. Whiteley <b>Date</b> 9/24/2008 <b>Direction</b> South East <b>Comments</b> Guava Trees planted in Cleared Citrus Canker Infested Grove.	

**Appendix B**  
**FIGURES**

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Figure 3.1-1. Data Collection Points

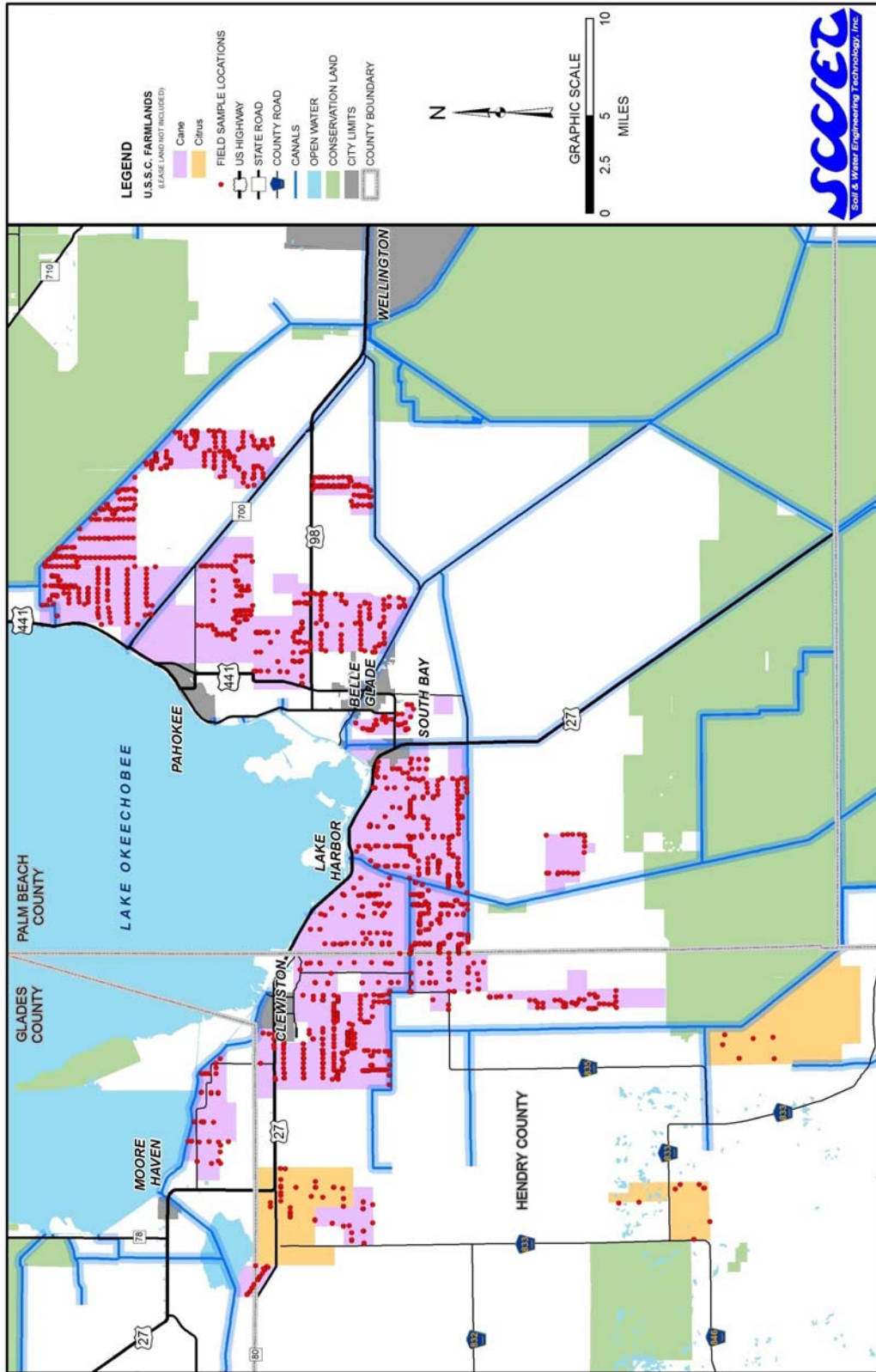
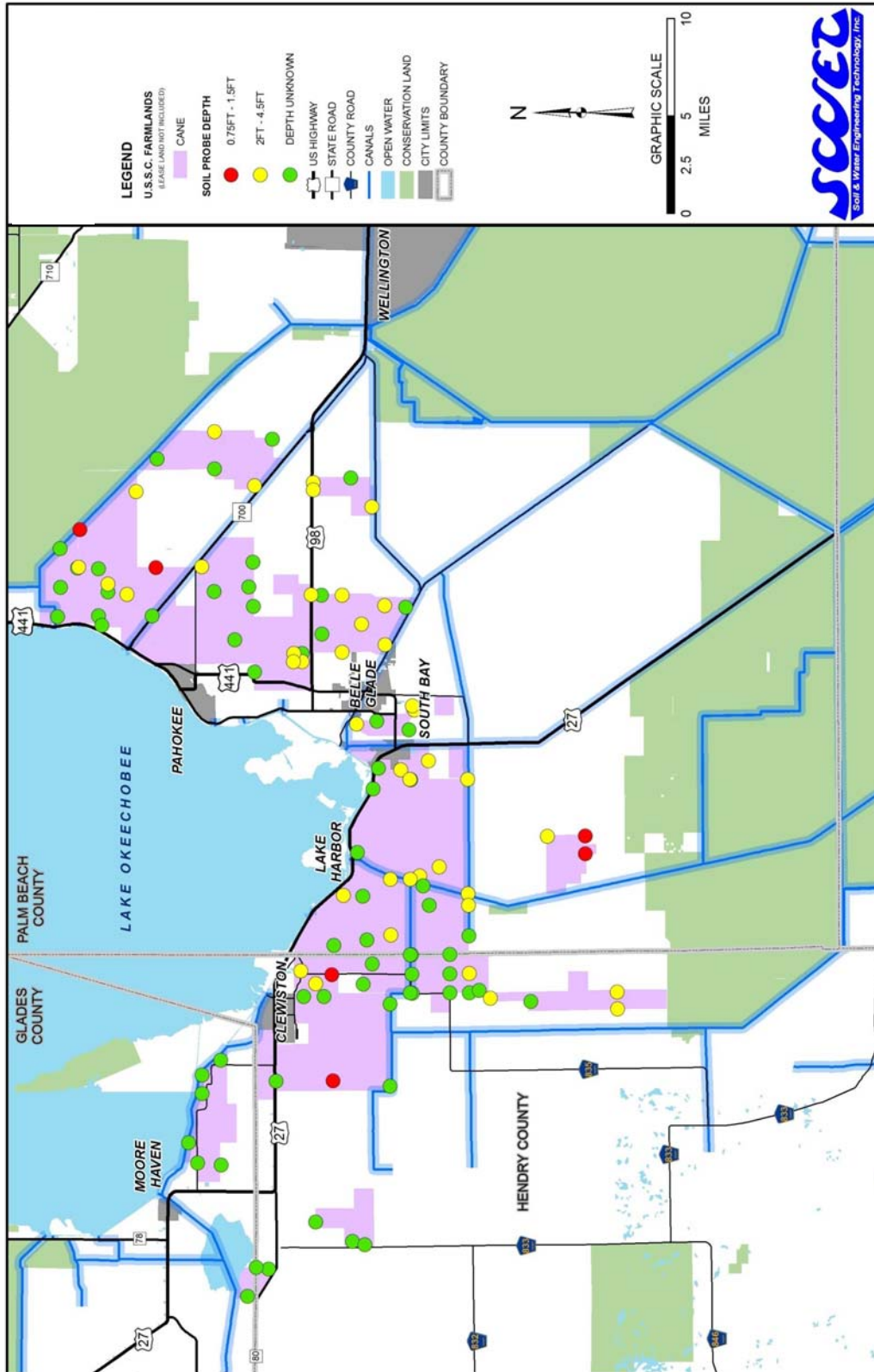


Figure 3.1-2. Representative Cane Farm Data Collection Points



Figure 4-1. Soil Probe Depths



**Evaluation Report**  
For  
**AIRPORT AND AIRSTRIP FACILITIES**  
**US Sugar Corporation**  
December 19, 2008

Prepared for



**South Florida Water Management District**  
3301 Gun Club Road  
West Palm Beach, FL 33406

Prepared by



**Shaw**<sup>®</sup> Shaw Environmental, Inc.  
3223 Commerce Place, Suite 100  
West Palm Beach, FL 33407

**Evaluation Report  
For  
AIRPORT AND AIRSTRIP FACILITIES  
REPORT QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the report subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer’s experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions. In some cases we were able to see limited operations of an asset but only a small sample size of the overall assets in that category.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this report, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This report is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Assessment Lead/Report Author**

Name: James Barrack

Date: December 19, 2008

**Peer Review**

Name: Paul Smith

Date: December 19, 2008

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**Appendix C      NTSB Aviation Accident Database**

## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Evaluation Report addresses Task 1.1 by evaluating and establishing an operational grade for major infrastructure as pertains to the repair, maintenance, and transition plan.

There are a total of 14 USSC airstrips that are maintained by the four USSC Area Managers. These are used periodically for crop dusting operations and are not open to public use. Other farm vehicles and heavy equipment also travel over the airstrip roadways as needed. USSC never intended to have high quality airport facilities on site.

Of the 14 airstrips, 1 is paved (asphalt-gravel mix), 12 are unpaved with limerock and gravel, and 1 is grass turf. USSC contracts with local air agricultural applicators that use their small airplanes (AT-502) on the airstrips.

### 1.1 Evaluation Overview

The functional evaluation of each airstrip resulted in ratings as follows: Good = 2, Average = 5, Poor = 7, Failed = 0. A safety rating was also completed with results as follows: Good = 1, Fair = 8, Poor = 5.

The functional, safety, and regulatory evaluation of 14 USSC airstrips is complete. A summary of the evaluations is provided in Table 1-1.

**Table 1-1. Evaluation Summary**

Asset Airstrip No.	Location	Functional Grade	Deficiency - Safety
1	Area 1 – Map Page 10, North South Center Lane	4 (good)	S = OK
2	Area 1 – Map Page 3, Section 3234 Dunwoody	2 (poor)	S = OK
3	Area 1 – Map Page 1, Section 3209	2 (poor)	S = OK
4	Area 1 – Map Page 5, Section 2321	3 (fair)	S = OK
5	Area 2 – Map Page 17, Ritta Main Canal	3 (fair)	S = OK
6	Area 2 – Map Page 19, Section 30 at Main Canal	2 (poor)	S = OK
7	Area 2 – Map Page 22, Section 4622	4 (good)	S = OK
8	Area 3 - Map Page 13, Section 33	2 (poor)	S = Poor
9	Area 3 – Map Page 29, Martinez	2 (poor)	S = Poor
10	Area 3 – Map Page 26, Section 3710 Main Canal	3 (fair)	S = OK
11	Area 3 – Map Page 28, Section 3725	2 (poor)	S = Poor
12	Area 4 – Map Page 34, Section 19	3 (fair)	S = OK
13	Area 4 – Map Page 35, Boy Airstrip	2 (poor)	S = OK
14	Citrus – Map Page 39, Section 24 Southern Ranch	3 (fair)	S = OK

Functional Grade: 5 = excellent, 1 = failed

Regulatory evaluation shows that the Florida statutes exempt all airports (airstrips) used exclusively for *aerial application* or spraying of crops on a seasonal basis if the period of operation does not exceed 30 days per calendar year. This exclusion does not include any licensed airport where permanent crop *aerial application* or spraying facilities are installed. USSC reports that their airstrips are “exempt” from regulation.



## 1.2 Limiting Factors

Shaw assessment services described herein were performed in accordance with generally accepted consulting practices. Findings and conclusions were based primarily on the visual appearance of the property at the time of our site visits on August 13, August 14, and October 1, 2008.

Fourteen USSC airstrips were assessed and evaluated. Evaluation did not include the following:

- Collection of soil borings, base course samples, nor were any compaction tests completed
- Skid resistance characteristics or abrasion tests
- Computation of pavement strength and deflection tests
- Drainage calculations to check the size/capacity of the longitudinal drainage ditches
- Verification of runway glide slopes, nor the siting or permitting issues for each airstrip

Our cost estimates represent a preliminary, rough order of magnitude opinion of costs. These estimates do not address the cost impact of the possible presence and cleanup of fuel, pesticides, or other contamination.

Shaw contacted representatives of USSC and Aerial Crop Protection Inc. (pilots) to discuss airstrip conditions and operations. Phone discussions with representatives of the Florida Agricultural Aviation Association and the Florida Department of Transportation (FDOT) Aviation Board were general in nature as they related to overall designs and permits for “any farm airstrip” located within Florida.

## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged the Project team to conduct an initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Evaluation Report (ER) for Airport and Airstrip Facilities addresses Task 1.1 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### 2.1 Purpose and Scope of Services

The objective of the Evaluation Report (ER) is to provide the SFWMD a baseline of the condition of all related infrastructure prior to start of production for the 2008-09 crop season. It will serve as a baseline of all related infrastructure conditions prior to production start-up.

This ER documents the on-site inspections, interviews, and reviews of documents, and available reports on the operating conditions, functionality, assessments, and evaluations performed on the assets critical to operation for each major infrastructure category including observed, identified, and possible deficiencies for each major infrastructure category categorized as follows:

- Deficiencies that fail to meet regulatory or safety requirements.
- Deficiencies that compromise the short-term operation of the system.

Information and assessments made in the Initial Assessment Report were used in the ER, with further evaluations made as necessary. An operational grade was established according to accepted industry standards and applied similar to the processes utilized by the US Sugar Corporation.

### 2.2 Description of Infrastructure

There are 14 airstrips located in USSC Areas 1 through 4 and at lands owned and operated by Southern Gardens Citrus. Twelve airstrips are unpaved gravel (limerock) roads; one airstrip is a paved road; and one is a grass turf runway. The airstrips range from 2,600 feet to 6,000 feet long. The width of gravel base is generally 26 to 34 feet wide. Many airstrips have ditches, canals, or railroad tracks that follow one or both side shoulders.

The USSC roadways and airstrips identified in Table 2.2-1 are being used by the two contractors to apply aerial crop protection. The contractors are Glades Agricultural Services and Aerial Crop Protection, Inc. The home base for both firms is Belle Glade Municipal Airport. The Contractors' facilities, planes, and the Belle Glade Municipal Airport are not owned by USSC, and were not evaluated. The 14 airstrips assessed are listed in Table 2.2-1.

Table 2.2-1. Airstrip Summary

Location	Description of Airstrip	Length/Width (feet)	Material
Home	Belle Glade State Municipal Airport	3750 / 50	Paved
1	Area 1 – Map Page 10, North South Center Lane	2800 / 34	Gravel
2	Area 1 – Map Page 3, Section 3234 Dunwoody	5200 / 26	Paved
3	Area 1 – Map Page 1, Section 3209	5200 / 28	Gravel
4	Area 1 – Map Page 5, Section 2321	5200 / 28	Gravel
5	Area 2 – Map Page 17, Ritta Main Canal	6000 / 32	Gravel
6	Area 2 – Map Page 19, Section 30 at Main Canal	5300 / 28	Gravel
7	Area 2 – Map Page 22, Section 4622	5200 / 28	Gravel
8	Area 3 – Map Page 13, Section 33	2600 / 26	Gravel
9	Area 3 – Map Page 29, Martinez	2600 / 26	Gravel
10	Area 3 – Map Page 26, Section 3710 Main Canal	5200 / 32	Gravel
11	Area 3 – Map Page 28, Section 3725	2600 / 28	Gravel
12	Area 4 – Map Page 34, Section 19	5200 / 28	Gravel
13	Area 4 – Map Page 35, Boy Airstrip	5200 / 32	Gravel
14	Citrus – Map Page 39, Section 24 Southern Ranch	4000 / 50	Grass

The majority of the airstrips wearing course is gravel/limerock.

### 3.0 Methodology

The methodology used to evaluate the USSC airstrips included a functional evaluation, a safety evaluation, and a regulatory evaluation. Each site visit recorded the landing strip length, width, orientation, overall distress of the surface, drainage system, location of ditches and canals, and the proximity of railroad tracks and other obstructions for the 14 airstrips.

#### 3.1 On-Site Inspection, Interviews, and Document Review

Site visits to 11 of the operational landing strips located on the USSC property were conducted on August 13 and August 14, 2008. Site visits to three operational landing strips were conducted on October 1, 2008. As part of each site visit, information including the location, orientation, and physical condition of roadbed and drainage for the landing strips was recorded. Data collected during site visits include the landing strip length, width, orientation, overall distress of the surface, drainage system, location of ditches and canals, and the proximity of railroad tracks and other obstructions.

In addition, the following personnel were contacted to gain a better understanding of the agricultural aircraft being used, to visit the landing strip locations, and to observe landing strip operations.

Ken McDuffie, USSC Manager  
Jason Langdale, USSC Area 1 Manager  
Steve Stiles, USSC Area 2 Manager  
Bob Lawson, USSC Area 3 Manager  
Jeff Davis, USSC Area 4 Manager  
William Lee, Aerial Crop Protection Inc. (owner and pilot)  
Linda Minton, Florida Agricultural Aviation Association, Executive Director

##### 3.1.1 Functional Evaluation

Standard flexible (asphalt) and rigid (concrete) pavements are evaluated using a non-destructive, physical survey. Physical surveys most commonly used include American Association of State Highway and Transportation Officials (AASHTO) Present Serviceability Index (PSI) for asphalt pavements and the Pavement Condition Index (PCI) for concrete pavements. The airfield asphalt pavement was rated based upon the guidance described in the Federal Aviation Administration (FAA) Advisory Circular 150/5320-17, "Pavement Surface and Evaluation and Rating Asphalt Airfield Pavements," PASER Manual dated July 2004. To our knowledge there is no standard index for rating and evaluating gravel airstrips or gravel roadways use for airstrips in Florida.

There is physical evidence for each type of pavement failure. These items of distress may be broadly classified as cracking, distortion, disintegration, skid resistance, and drainage.

- **Cracks** in flexible pavement sections may be load-induced fatigue, reflective (from cracks in the base), shrinkage, or caused by a poor mix design. Each type of crack shows up in a particular location. For instance, load-induced cracks typically start as longitudinal cracks and follow tire paths. These can progress to larger patches of alligator cracking. Reflective cracks typically follow the joint pattern of the base material.
- **Distortion** of pavement sections is defined as a change in the surface plane of the pavement resulting from post-construction compaction or consolidation, settlement, heave, shoving, rutting, or raveling. Distortions affect the ride quality of a pavement. Severe ruts and potholes can cause drivers to wander (swerve) to avoid tire damage.
- **Disintegration** of the component materials can occur in rigid, flexible, and composite pavement sections for a variety of reasons. Most disintegration problems are traceable to materials or poor construction methods. Deficiencies in the mix proportions of the asphalt can lead to disintegration in the form of de-lamination, raveling, and spalling.

- **Loss of Skid Resistance** may be caused by poor quality aggregate or aggregate that does not have adequate strength, angularity, or becomes polished. Surface contaminants can also reduce skid resistance.
- **Poor Drainage** may cause base materials to become weak under load and create a variety of problems including potholes, depressions, washouts, and edge pumping and cracking.

The criteria above were used to establish the functional rating system for airstrip pavement and gravel roads. Safety evaluations (see Section 4.2) were based on runway length and distance to side obstructions. A review of accident data available from the National Transportation Safety Board (NTSB) was performed.

### 3.1.2 Safety Evaluation

#### 3.1.2.1 Design

Although the airstrips are private, unregulated, and used by only the agricultural crop dusting pilots (exempted from Florida statutes as shown below in Section 3.1.3), some guidelines for runways do pertain. The FAA Advisory Circular 150/5300 “Runway Design” was applied. A second document, the Texas Aviation Board Farm and Ranch Airstrips Manual was also applied.

Several key design criteria including runway length, runway width, runway shoulders, and runway safety area were evaluated and scored. The adequacy of each design criteria was reported.

#### 3.1.2.2 Accidents

As part of the evaluation, FAA and NTSB accident data and reports were reviewed. Accident (incident) data for the agricultural applicator flights originating at the Belle Glade Municipal Airport (BGMA) were included in this search. The accidents (incidents) over a 10-year period were reviewed and the primary and secondary causes of each accident (pilot error, fuel exhausted, equipment malfunction, etc.) reported.

### 3.1.3 Regulatory Evaluation

According to Micki Liddell, Private Airport Registration Manager, FDOT Aviation Office in Tallahassee, changes to Florida law passed by the legislature in 2003 exempts private airports from licensing or inspection. Private airports have to be registered with FDOT. The airstrip at Southern Citrus Airstrip 14 Southern Ranch has a registration that was issued on November 15, 2003, and will expire on February 6, 2009.

According to information provided by Linda Minton, Florida Agricultural Aviation Association, Executive Director, in 1998 the Florida Statutes have exempted air agriculture pilots and their landing strips from many of the airport site approval rules and requirements. As described in the Florida Statutes, Title XXV - Chapter 330 (330.30 3f) states the following exemption:

*“EXEMPTIONS--The provisions of this section do not apply to:*

*An airport which meets the criteria of s. 330.27(11) used exclusively for aerial application or spraying of crops on a seasonal basis, not to include any licensed airport where permanent crop aerial application or spraying facilities are installed, if the period of operation does not exceed 30 days per calendar year. Such proposed airports, which will be located within 3 miles of existing airports or approved airport sites, shall work out safe air-traffic patterns with such existing airports or approved airport sites, by memorandums of understanding, or by letters of agreement between the parties representing the airports or sites.”*

Information showing “permit approval” for operating on Airstrips 1 to 13 USSC was requested from USSC. This information noted that USSC is exempt from permit approvals for their crop dusting airstrips. No further investigation of the regulatory permit issue has been made.

### 3.2 Asset Grading System

The airfield asphalt pavements were rated based upon the guidance described in the FAA Advisory Circular 150/5320-17, “Pavement Surface and Evaluation and Rating Asphalt Airfield Pavements,” PASER Manual dated July 2004. (See Appendix B for PASER Manual grading illustrations.)

The rating system is based upon a visual inspection of the distress in the pavement surface. The rating scale ranges from 5 (Excellent) condition to 1 (Failed) condition. The functional rating system for asphalt pavement and for gravel roads are summarized in Table 3.2-1.

**Table 3.2-1. Functional Rating System for Asphalt Pavement and Gravel Roads**

Grading or Rating	Description of Visible Distress	General Condition/Treatment
<b>ASPHALT PAVEMENT</b>		
5 Excellent	None, or initial thermal cracks, all narrow (less than 1/8 inch)	New pavement less than 5 years old. No maintenance or crack sealing required.
4 Good	Additional thermal cracking. Cracks generally spaced more than 50 feet apart. Less than 10 percent of cracks and joints need sealing. Minimal or slight raveling. No distortion. Patches in good condition.	Recent seal coat or pavement over 5 years old. Seal open cracks or joints and replace sealant where needed.
3 Fair	Moderate raveling. Thermal cracks and joints generally spaced less than 50 feet apart. Crack sealing or repair of sealant needed on 10 to 25 percent of cracks. Edge cracks along 10 percent or less of pavement edges. Block crack pattern with cracks 6 to 10 feet apart. Isolated alligator cracking and poor patches. Minor distortion and settlement less than 1 inch.	Seal open cracks and joints. Replace failed sealant. Apply new surface treatment or thin overlay. Minor patching and joint repair.
2 Poor	Frequent thermal cracks. Wide cracks and joints with raveling in cracks. Deterioration along more than 25 percent of cracks. Edge cracks on up to 25 percent of pavement edges. Block cracks spaced 5 feet apart or less. Alligator cracking or poor patches cover up to 20% of area. Distortion or settlement 1 to 2 inches.	Needs significant crack sealing plus patching and repair on up to 25% of pavement surface. Overlay entire area with a structural overlay of 1.5-inch hot mix asphalt. Patch potholes.
1 Failed	Widespread and severe cracking with raveling and deterioration. Alligator cracking and potholes over 20% of the area. Distortion over 2 inches.	Condition may be limiting service. Needs reconstruction.
<b>GRAVEL ROADS</b>		
5 Excellent	No distress. Road width is 30 feet or more. Good, clean, well graded gravel or crushed stone surface. Road is center crowned at generally 2% slope. No weeds, no vegetation in gravel. No ruts and no potholes. Excellent drainage. Good travel speed.	New roadbed less than 1 year old. Light traffic. No maintenance.
4 Good	Good gravel coverage. Road is center crowned at 1-percent slope. Slight intrusion of weeds. Shallow potholes generally spaced more than 50 feet apart. Less than 10% of area has potholes. Minimal or slight rutting. Good drainage.	Recent roadbed with minor repairs needed. Fill deeper potholes. Place and compact 3-inch thick limerock over 5% to 10 percent of the roadway.
3 Fair	Fair gravel coverage and some sand evident. Road width is 26 to 28 feet. Road may be level or side sloped. Weeds and vegetation have narrowed the roadway. Potholes spaced 30 to 50 feet apart. About 10 to 25 percent of area has potholes. Rut depth is about 1 inch. Fair drainage with some small puddles that do not drain. Speeds are affected.	Older roadbed with moderate repair needed. Fill potholes, and grade out ruts. Place and compact approximately 3-inch thick limerock borrow over 10% to 30% of the roadway. Blade to re-establish center crown.

Grading or Rating	Description of Visible Distress	General Condition/Treatment
2 Poor	Poor gravel coverage and excess sand evident. Road crown has been lost, may be level or center draining. Weeds and vegetation now prevalent. Potholes spaced 10 to 30 feet apart. About 20 to 40 percent of area has potholes. Rut depth is 1 to 3 inches. Poor drainage with many areas that do not drain. Soft base course material. Speeds are limited.	Older roadbed with major repair needed. Cut or apply weed control. Fill potholes, and grade out ruts. Place and compact approximately 3-inch thick limerock borrow over 30 percent to 70 percent of roadway. Blade to re-establish center crown. Clean some side ditches.
1 Failed	Insufficient gravel coverage. Road width is 24 feet or less. Road crown has been lost, may be level or center draining. Heavy weeds and vegetation. Potholes spaced 5 to 10 feet. Over 50 percent of area has potholes. Rut depth is over 3 inches. Poor drainage with many large areas that do not drain. Soft base course material. Slow travel speeds.	Failed roadbed. Condition is limiting service. Needs full reconstruction. Place and compact approximately 4 to 6-inch thick limerock borrow over entire roadway. Blade to re-establish center crown. Clean all side ditches.

The landing strips that are currently in operation are not open to the public. They are intended for private use only by qualified aerial crop dusting pilots. The Texas Department of Transportation (DOT) Aviation Board has published “Farm and Ranch Airstrips,” a manual that provides some guidance on these types of facilities.

Table 3.2-2 shows the lateral clearance from the runway centerline (CL) to an obstruction should be at least 50 feet. We have developed a safety scoring matrix for each of the landing strips, using the dimensional data shown in the Texas DOT manual. Scores range from 5 (excellent) to 1 (unsafe) condition.

**Table 3.2-2. Rating System for Airstrip Safety**

Grading or Rating	Description of Issue	General Condition/Treatment
5 Excellent	Runway length exceeds 4,000 feet Distance from CL to side obstruction > 50 feet	Excellent, no repairs
4 Good	Runway length is 3,500 to 4,000 feet Distance from CL to side obstruction is 40 to 50 feet	Good, no repairs
3 Fair	Runway length is 3,000 to 3,500 feet Distance from CL to side obstruction is 30 to 40 feet	Fair, no repairs
2 Poor	Runway length is 2,600 to 3,000 feet Distance from CL to side obstruction is 16 to 30 feet	Extend runway, or improve side clearances (realign ditches)
1 Unsafe	Runway length is below 2,600 feet Distance from CL to side obstruction <16 feet	Extend runway, increase side safety area Consider runway closure

Shaw has also collected NTSB accident data for the past 20 years for the Agricultural Operator flights that originated at Belle Glade Municipal Airport. The full NTSB data (docket) for each accident is shown in Appendix C. The summary of each accident is shown below in Table 3.2-3.

**Table 3.2-3. NTSB Accident Summary 1998-2008**

Date of Accident	Location	Severity	Primary Cause/Secondary Cause
11/26/90	Private airstrip	1 Injury	Pilot failed to maintain airspeed, stalled plane, uncontrolled descent, and collided with terrain.
9/30/91	Other	1 Uninjured	Inadequate preflight inspection, fuel expended, emergency landing. Aircraft went into ditch before stopping.
12/6/2000	Other	1 Uninjured	Pilot failed to maintain visual lookout and collided with utility wires, then returned to BGMA.

Date of Accident	Location	Severity	Primary Cause/Secondary Cause
7/01/2003	Private airstrip/road	1 Uninjured	During takeoff from rock road, right tire blew. Pilot rolled into soft terrain. Pilot delay in reducing power after tire blew.
7/29/2004	BGMA	1 Fatal 1 Uninjured	Two air tractors collided on runway resulting in a fire. Both pilots failed to use radios to advise of takeoff and landing intentions. Poor visibility due to sun glare. Pilot 2 intentionally landed downwind.
9/15/2004	Other	1 Uninjured	Pilot performed inadequate pre-flight inspection and loss of power due to water in fuel tank. Plane collided with dirt berm and spun into ditch.

(BGMA = Belle Glade Municipal Airport)

As shown in the NTSB table above, there have been six accidents involving Air Tractor planes that originated at BGMA. Only one accident occurred at the airport and five occurred in flight or on private airstrips (dirt roads). Two of the accidents include the planes landing or colliding with a berm or ditch alongside the landing strip. This is a strong indication that the close proximity of ditches and canals adjacent to the USSC airstrips may be a factor and contributing to the property damage.

### 3.2.1 Grading Process and Applicability

The functional grading (rating) process follows the practical advice given in the PASER manual. The process includes an inspection of the entire system and a written summary of conditions. The PASER manual recommends the following:

- **Pavement features:** Divide the airport pavements into different segments (i.e., runway, apron, taxiway) and by features (asphalt, concrete). Since we have only 14 individual airstrips, each airstrip was its own feature.
- **Average and compare:** No pavement feature is entirely consistent. Surfaces may have multiple distress in one area, but show none in other areas. The objective is to rate the condition that represents the majority of the pavement feature. Small, isolated conditions should not influence the overall rating. One or two spot repairs should not drop the rating for a generally good surface. The overall purpose of condition rating is to be able to compare each feature (each runway), relative to all of the other features. The PASER manual provides photos that fully illustrate the five rating levels. These photos are shown in Appendix B, pages B-3 through B-10.
- **Assess drainage conditions:** Moisture and poor pavement drainage are significant factors in pavement deterioration. Consider both the pavement surface drainage and the lateral drainage (ditches or sewers). Pavement should be able to adequately shed water off the surface. The crown should be approximately 1.5 to 2 percent and be able to permit sheet flow without any ponding. The ditches should be wide and deep enough and pitched at proper slopes to convey water away from the sub-base. Ditches and drains should be inspected and cleaned regularly. A pavement’s ability to carry heavy repeated traffic loads depend on the pavement materials, the strength of the sub-base, and subgrade soils. Most soils lose strength when they become saturated. Therefore, it is important to provide drainage away from the top of the subgrade that supports the pavement. Wide sloping shoulders should be located between the pavement edge and any ditches that carry (hold) water. Water standing in a ditch will permeate back under the pavement.

### 3.2.2 Grading System Comparison with US Sugar Systems

We have requested that USSC provide us a copy of their pavement rating (or pavement inventory) for each airstrip. USSC has no grading or rating system for their airstrips.



## 4.0 Asset Evaluations

### 4.1 Landing Strips Functional Evaluation

None of the runways have painted runway numbers at either end; therefore runway degrees are not used.

#### 4.1.1 Landing Strip No. 1

##### Area 1 – Map Page 10, North South Center Lane

This gravel landing strip is approximately 2,800 feet long and 34 feet wide. The landing strip is oriented north-south. At the north end of the strip there is the railroad spur (called Flaghole Line) that is perpendicular to the airstrip. Along the entire western edge of the strip is the Center Lane irrigation canal, and cane fields are beyond. Along the eastern edge of the landing strip are grass fields. The landing strip is constructed of a gravel (marl) and sandy roadbed. Some locations have sandy muck interspersed with the gravel roadbed. There were some shallow depressions in the roadbed. Some small weeds are evident. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 4.

#### 4.1.2 Landing Strip No. 2

##### Area 1 – Map Page 3, Section 3234 Dunwoody

This paved landing strip is approximately 5,200 feet long and 26 feet wide. The landing strip is oriented east-west. Along the north edge of the strip are the cane fields. Along the southern edge of the strip are cane fields and power lines at the southwest corner. The landing strip is constructed of asphalt and gravel. The surface has been topped with mostly sandy gravel, using a marl-sand mixture to fill depressions and potholes. Approximately 50 potholes and cracks should be repaired with hot mix asphalt. The roadbed is center crowned at approximately 2 percent. A small ditch is on the south side. On a scale of 1 to 5 (worst to best), this location received a paved roadbed score of 2.

#### 4.1.3 Landing Strip No. 3

##### Area 1 – Map Page 1, Section 3209

This gravel landing strip is approximately 5,200 feet long and 28 feet wide. The landing strip is oriented east-west. Along the north edge of the strip are the cane fields with a lateral clearance of 25 to 30 feet. Along the southern edge of the strip is a ditch located 16 feet from centerline. The landing strip is constructed of gravel-sand mixture. The surface has been topped with mostly sandy gravel, using a marl-sand mixture to fill depressions and potholes. The roadbed is side crowned at approximately 2 percent. The roadbed is in need of blading and compaction. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 2.

#### 4.1.4 Landing Strip No. 4

##### Area 1 – Map Page 5, Section 2321

This gravel landing strip is approximately 5,200 feet long and 28 feet wide. The landing strip is oriented east-west. Along the north edge of the strip is a ditch with a lateral clearance of 25 feet. Along the southern edge of the strip is a canal located only 15 feet from centerline. The landing strip is constructed of gravel-sand mixture. The surface has been topped with mostly sandy gravel, using a marl-sand mixture to fill depressions and potholes. The roadbed is side crowned at approximately 2 percent. Some weeds and grass follows the southern edge of the airstrip. The south edge has a 6-inch high earth berm to direct water north across the roadbed. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 3.

#### **4.1.5 Landing Strip No. 5**

##### **Area 2 – Map Page 17, Ritta Main Canal**

This gravel landing strip is approximately 6,000 feet long and 32 feet wide. The landing strip is oriented east-west. Along the north edge of the strip is a deep canal with a lateral clearance of 24 feet from the runway centerline. Along the southern edge of the strip is sugar cane located 35 feet from centerline. The landing strip is constructed of gravel-sand mixture. The surface has been topped with mostly sandy gravel, using a marl-sand mixture to fill depressions and potholes. The roadbed is side crowned at approximately 2 percent. Weeds and grass follows the northern edge of the airstrip. The zone for plane refueling and fertilizers loading is located at the midpoint. The north edge has a 6-inch high earth berm to direct water south across the roadbed. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 3.

#### **4.1.6 Landing Strip No. 6**

##### **Area 2 – Map Page 19, Section 30 at Main Canal**

This gravel landing strip is approximately 5,300 feet long and 26 to 28 feet wide. The landing strip is oriented north-south. Along the east edge of the airstrip is a ditch with a lateral clearance of 26 feet. Along the west edge of the airstrip is a canal located 18 feet from centerline. The landing strip is constructed of gravel-sand mixture. The surface has been topped with mostly sandy gravel, using a marl-sand mixture to fill depressions and potholes. Some of the base course has larger (6 to 12 inch) marl stones and these stones create high, hard spots that are impossible to grade and compact. The larger stones should be removed from the base course. The roadbed is center crowned at approximately 1 percent. Weeds and grass follows the northern edge of the airstrip. The loading zone is located at the midpoint. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 2.

#### **4.1.7 Landing Strip No. 7**

##### **Area 2 – Map Page 22, Section 4622**

This gravel landing strip is approximately 5,200 feet long and 28 feet wide. The landing strip is oriented east-west. Along the north edge of the airstrip is a small ditch with a lateral clearance of 30 feet. Along the south edge of the airstrip is a canal located 26 feet from centerline. The landing strip is constructed of gravel-sand mixture. The surface has been topped with mostly sandy gravel, using a marl-sand mixture to fill depressions and potholes. The roadbed has a good gravel mixture of  $\frac{3}{4}$  inch minus gravel and stone. The roadbed has a good center crown at approximately 2 percent and was very dry. Weeds and grass are under control. The loading zone is located at the west end. High voltage power lines are located west of the west end. All planes land/takeoff to the east. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 4.

#### **4.1.8 Landing Strip No. 8**

##### **Area 3 - Map Page 13, Section 33**

This gravel landing strip is approximately 2,600 feet long and 24 to 26 feet wide. The landing strip is oriented north-south. Along the west edge of the airstrip is a ditch located 18 feet from centerline. Along the east edge of the airstrip is a ditch and cane located 26 feet from centerline. The landing strip is constructed of gravel-sand mixture. The surface has been topped with mostly sandy gravel, using a marl-sand mixture to fill potholes. The narrow roadbed has a center crown at approximately 1 percent and was dry. Weeds and grass follow both shoulders. The loading zone is located at the north end. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 2.

#### **4.1.9 Landing Strip No. 9**

##### **Area 3 – Map Page 29, Martinez**

This gravel landing strip is approximately 2,600 feet long and 26 feet wide. The landing strip is oriented east-west. Along the south edge of the airstrip is an equipment yard (open area) and the cane is 40 feet

from centerline. Along the north edge of the airstrip is a railroad spur located 18 feet from centerline. The railroad ballast is about 18 inches higher than the airstrip. Wingtips pass very close to the top of the steel rail. Planes do not operate on this airstrip when railcars are present. The airstrip is constructed of gravel-sand mixture. The roadbed has a side crown at approximately 1 percent and was dry. Weeds and grass follow both shoulders. Any widening performed must extend the gravel away from the railroad tracks. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 2.

#### **4.1.10 Landing Strip No. 10**

##### **Area 3 – Map Page 26, Section 3710 Main Canal**

This gravel landing strip is approximately 5,200 feet long and 30 to 32 feet wide. The landing strip is oriented east-west. Along the south edge of the airstrip is the East Shore main canal and a wood bridge located is 16 feet from centerline. Along the north edge of the airstrip is cane fields located 35 feet from centerline. The airstrip is constructed of dense gravel-sand mixture. The roadbed has a center crown at approximately 2 percent and was very dry. Weeds and grass follow both shoulders. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 3.

#### **4.1.11 Landing Strip No. 11**

##### **Area 3 – Map Page 28, Section 3725**

This gravel landing strip is approximately 2,600 feet long and 28 feet wide. The landing strip is oriented north-south. Along the west edge of the airstrip is a ditch and cane fields located 18 feet from centerline. Along the east edge of the airstrip is a canal located 18 feet from centerline. Further east is a line of utility poles that parallels the canal. The landing strip is constructed of gravel-sand mixture. The roadbed has no crown and was dry. The shoulders are very narrow and steep. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 2.

#### **4.1.12 Landing Strip No. 12**

##### **Area 4 – Map Page 34, Section 19**

This gravel airstrip is approximately 5200 feet long and 28 feet wide. The landing strip is oriented north-south. Along the west edge of the airstrip is cane field located 24 feet from centerline. Along the east edge of the airstrip is the Bourne 5 pump canal located 18 feet from centerline. At the southeast approach is an old house. At the north end is an east-west railroad spur. The landing strip is constructed of gravel-sand mixture. The roadbed has a slight crown and was dry. The airstrip needs some weed and grass control. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 3.

#### **4.1.13 Landing Strip No. 13**

##### **Area 4 – Map Page 35, Boy Airstrip**

This gravel airstrip is approximately 5200 feet long and 32 feet wide. The landing strip is oriented north-south. Along the west edge of the airstrip is a railroad spur located 24 feet from centerline. Along the east edge of the airstrip is a ditch located 22 feet from centerline. The landing strip is constructed of a gravel-sand mixture. The roadbed has no crown and was saturated. The roadbed does not shed water since there is rail ballast following the west edge and a small earth berm along the east edge. Three large puddles (10 feet by 30 feet each) were located at the south end of the airstrip. One small washout was located on the east edge of the airstrip. On a scale of 1 to 5 (worst to best), this location received a gravel roadbed score of 2.

#### **4.1.14 Landing Strip No. 14**

##### **Citrus – Map Page 39, Section 24 Southern Ranch**

This grass airstrip is approximately 4000 feet long and 50+ feet wide. The landing strip is oriented northwest-southeast. This airstrip has the widest safety shoulders of all the 14 airstrips that were surveyed. The landing strip material is natural grass and turf. The roadbed has a good 2 to 4 percent

crown and was dry. The grass height was tall (12 to 18 inches), and mowing was underway in the citrus groves. Mowing the tall grass must occur prior to any use by airplanes. On a scale of 1 to 5 (worst to best), this location received a roadbed score of 3.

### 4.2 Airstrips Safety Evaluation

Using the runway dimensions measured in the field, the table below shows that some airstrips received low safety scores due to obstructions (ditches, canals, or railroad tracks) that are located too close to the left, right, or both edges of the airstrip. Numerous airstrips do not provide the lateral clearance suggested in the Farm and Ranch Airstrips Manual. The continued use of the airstrips that have a safety rating of poor or unsafe is a major concern. It may be advisable to discontinue flights at some airstrips or possibly re-grade and re-align some of the drainage ditches to provide more lateral clearance from the runway centerline.

**Table 4.2-1. Safety Scoring Matrix**

Grade/Score	Runway Length	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	4,000 feet+		5	5	5	5	5	5			5		5	5	5
4	3,500 feet +														
3	3,000 feet +														
2	2,600 feet +	2													
1	2,600 feet								1	1		1			
Grade/Score	Distance from CL to Left Obstruction	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	50 feet +														
4	40 to 50 feet	4													
3	30 to 40 feet							3		3					3
2	16 to 30 feet		2		2	2	2		2		2	2	2	2	
1	<16 feet			1											
Grade/Score	Distance from CL to Right Obstruction	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	50 feet +														
4	40 to 50 feet														
3	30 to 40 feet		3	3		3					3				3
2	16 to 30 feet	2					2	2	2	2		2	2	2	
1	<16 feet				1										
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
<b>Safety Grade</b>	<b>Average Score =&gt;</b>	2.6	3.3	3.0	2.6	3.3	3.0	3.3	1.7	2.0	3.3	1.7	3.0	3.0	3.6
	<b>Rating=&gt;</b>	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Poor	Poor	Fair	Poor	Fair	Fair	Good

Airstrips 8, 9, and 11 have the lowest safety ratings due to short runways and narrow lateral clearances. More work is needed to improve their safety rating.

### 4.3 Asset Evaluation Summary

Table 4.3-1. Asset Evaluations and Asset Deficiency

Asset Airstrip No.	Funct. Grade	Reason for Grade	Deficiency – Regulatory/ Safety	Deficiency – Short-Term Operation
1	4	Shallow depressions, small weeds	R = OK, S = OK	OK
2	2	Approximately 50 potholes with cracking asphalt	R = OK, S = OK	OK
3	2	Needs reblading and compaction	R = OK, S = OK	OK
4	3	Weeds and grass along south edge	R = OK, S = OK	OK
5	3	Weeds and grass along north edge	R = OK, S = OK	OK
6	2	Some large stones, frequent weed and grass	R = OK, S = OK	OK
7	4	Good mix, good crown	R = OK, S = OK	OK
8	2	Very narrow roadbed, weeds and grass	R = OK, S = Poor	OK
9	2	Very narrow roadbed, weeds and grass	R = OK, S = Poor	OK
10	3	Good gravel mix, good crown	R = OK, S = OK	OK
11	2	Very narrow roadbed, no crown	R = OK, S = Poor	OK
12	3	Slight crown, dry roadbed	R = OK, S = OK	OK
13	2	No crown, saturated roadbed	R = OK, S = OK	OK
14	3	Good crown, dry, turf surface	R = OK, S = OK	OK

Functional Grade: 5 = Excellent, 1 = Failed

### 4.4 Deficiencies – Failure to Meet Regulatory or Safety Requirements

There are no regulatory concerns with the airstrips. The Florida Statutes have exempted air agriculture pilots and their landing strips from many of the airport site approval rules and requirements. As long as the airstrip use is under 30 days per year, the landing strips should remain in the “exempt” status.

We have some safety concerns with three airstrips. The roadbeds are very narrow, and the side clearances to lateral obstructions (i.e., ditch, canal, or railroad spur) are very tight. In our opinion, at airstrips 8, 9, and 11, the owner should either improve the side clearances or discontinue aircraft use at these airstrips.

### 4.5 Deficiencies – Compromise Short Term Operation of System

None reported by USSC.

## **5.0 Professionals Developing Evaluation Report**



James Barrack, P.E. (FL PE No. 66093) performed the evaluation report for the airstrips.

**Appendix A**  
**PHOTOGRAPHIC LOG**



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**PHOTOGRAPHIC RECORD**  
**Airport and Airstrip Facilities**


<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Landing Strip #1                  Area 1, Map Page 10 – North South Center Lane</p>
<p><b>Photographer</b>                  Jim Barrack</p> <p><b>Date</b>                  8/13/2008</p> <p><b>Direction</b>                  View SB</p> <p><b>Comments</b>                  View SB with grass field on east side, and canal and cane fields along west side.</p>	
<p><b>Photographer</b>                  Jim Barrack</p> <p><b>Date</b>                  8/13/2008</p> <p><b>Direction</b>                  View NB</p> <p><b>Comments</b>                  View NB with Air Tractor Model 502 refueling. RR tracks behind turnaround pad.</p>	





<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Landing Strip #1</b> Area 1, Map Page 10 – North South Center Lane</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> View SB</p> <p><b>Comments</b> View SB with canal in recovery area, and small weeds in gravel bed. Good crown, good drainage.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> View NB</p> <p><b>Comments</b> AT 502 plane being refueled.</p>	


<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Landing Strip # 2</b> Area 1, Map Page 3 Dunwoody</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> View WB</p> <p><b>Comments</b> Paved asphalt road, with raveled edge. Potholes filled with sandy-marl gravel base course. Center crown and good drainage. No pave markings. Ditch along south side.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> View EB</p> <p><b>Comments</b> Paved road with loose gravel patches. Power lines at the SW quadrant of the runway. No centerline lane markings, no street lights.</p>	



<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Landing Strip # 3 Area 1, Map 1 Section 3209</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> EB</p> <p><b>Comments</b> Soft gravel and sand base with ruts and ridges.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> EB</p> <p><b>Comments</b> Rut in center of road approx. 2.5 inch depth. Ditch along south side.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Landing Strip # 3</b> Area 1, Map 1 Section 3209</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> WB</p> <p><b>Comments</b> Rut due to truck or farm equipment. Depth of ruts was approximately 2 to 3 inches</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> WB</p> <p><b>Comments</b> Long runway with obstruction (ditch) along south side. No power lines.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Landing Strip # 4 Area 1, Map 5 Section 2321</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> EB</p> <p><b>Comments</b> Gravel roadbed drains from right to left at 2% slope. Left side lateral clearance from CL to ditch is 26 feet.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> EB</p> <p><b>Comments</b> Gravel roadbed with weeds along south side. Distance from CL to ditch is 15 feet.</p>	



<p><b>Site Name:</b> US Sugar Corporation</p>	<p><b>Site Location:</b> Landing Strip # 5 Area 2 – Map Page 17, Ritta Main Canal</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> WB</p> <p><b>Comments</b> Ritta main canal is very close to road edge. Note earth berm.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> EB</p> <p><b>Comments</b> Note potholes and muck in marl conditions. Roadbed poor crown, drains to right.</p>	



<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Landing Strip # 6 Area 2 – Map Page 19, Section 30 at Main Canal</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> SB</p> <p><b>Comments</b> Roadbed has some large marl stones, which are hard to compact. Hard pan marl gravel roadway. Weed intrusion.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> NB</p> <p><b>Comments</b> Main canal along west edge, very close.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Landing Strip # 7 Area 2 – Map Page 22, Section 4622</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> EB</p> <p><b>Comments</b> Gravel bed has 1-inch minus gravel stones and sands. Dry condition with good road crown. Canal at right edge.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/13/2008</p> <p><b>Direction</b> WB</p> <p><b>Comments</b> End of runway (U-turnaround) has high tension lines. No fly zone.</p>	




<p><b>Site Name:</b> US Sugar Corporation</p>	<p><b>Site Location:</b> Landing Strip # 8 Area 3 - Map Page 13, Section 33</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b> NB</p> <p><b>Comments</b> This road is fairly narrow at 24 to 26 feet. Airstrip is 2600 LF. Roadbed has loose gravels with some ruts and weed intrusion. Canal very close.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b> SB</p> <p><b>Comments</b> Roadbed is in need of some grid rolling and widening to right side.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location: Landing Strip # 9</b> Area 3 – Map Page 29, Martinez</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b> WB</p> <p><b>Comments</b> Note RR tracks along airstrip. The rail bed is 12 to 18 inches above roadbed. Obvious safety concern with railcars. Wingtips clearance on rails a concern</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b> WB</p> <p><b>Comments</b> Seems to be more room on left side. Possibly widen, shift runway to the left.</p>	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Landing Strip # 10 Area 3 – Map Page 26, Section 3710 Main Canal</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b> WB</p> <p><b>Comments</b> Good crown on wide roadbed.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b></p> <p><b>Comments</b> Left edge has immediate drop off into canal.</p>	

<b>Site Name: US Sugar Corporation</b>	<b>Site Location:</b> Landing Strip # 10 Area 3 – Map Page 26, Section 3710 Main Canal
<b>Photographer</b> Jim Barrack <b>Date</b> 8/14/2008 <b>Direction</b> EB <b>Comments</b> 1 mile long airstrip, minor ruts and ravel.	
<b>Photographer</b> Jim Barrack <b>Date</b> 8/14/2008 <b>Direction</b> SB <b>Comments</b> 15-ton steel wheeled motor grader compacting the roadbed.	

<p><b>Site Name: US Sugar Corporation</b></p>	<p><b>Site Location:</b> Landing Strip # 11 Area 3 – Map Page 28, Section 3725</p>
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b> SB</p> <p><b>Comments</b> Canal on left side with a 4 foot shoulder. Road has minimal crown.</p>	
<p><b>Photographer</b> Jim Barrack</p> <p><b>Date</b> 8/14/2008</p> <p><b>Direction</b> SB</p> <p><b>Comments</b> Short 2600 LF runway. Power lines along canal on the east side.</p>	

**Appendix B**  
**PASER MANUAL GRADING ILLUSTRATIONS**

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Appendix 1

7/12/04

12 EVALUATION — Patches and Potholes

**PATCHES AND POTHOLES**

*Patches*

Original surface repaired with new asphalt patch material. Indicates a pavement defect or utility excavation which has been repaired. Patches with cracking, settlement or distortions indicate underlying causes remain. Repair or reconstruction are required when extensive patching shows distress.



▲  
Typical repair of utility excavation. Patch in good condition.

▶  
Patched area in poor condition.

▼  
Overlay repair with edge raveling and cracks.



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Appendix 1

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EVALUATION — Patches and Potholes 13



### Potholes

Holes and loss of pavement material are caused by traffic loading, fatigue and inadequate strength. Often combined with poor drainage, this can create dangerous pavement debris. Repair by excavating or rebuilding localized potholes. Reconstruction required for extensive defects.



▲ Shallow pothole.

◀ Large pothole and dangerous loose debris.

Complete pavement failure.





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Appendix 1

7/12/04

14

## Rating pavement surface condition

With an understanding of surface distress, you can evaluate and rate asphalt pavement surfaces. The rating scale ranges from **5–excellent** condition to **1–failed**. Most pavements will deteriorate through the phases listed in the rating scale. The time it takes to go from excellent condition (5) to complete failure (1) depends largely on the quality of original construction, age, and the amount of heavy traffic loading.

Once significant deterioration begins, it is common to see pavement decline rapidly. This is usually due to a combination of loading and the effects of additional moisture. As a pavement ages and additional cracking develops, more moisture can enter the pavement and accelerate the rate of deterioration.

Look at the photographs which follow and become familiar with the descriptions of the individual rating categories. To evaluate an individual pavement segment, first determine its general condition. Is it relatively new, toward the top end of the scale? In very poor condition and at the bottom of the scale? Or somewhere in between? Next, think generally about the appropriate maintenance method. Use the outlined rating categories.

Finally, review the individual pavement distress and select the appropriate surface rating. A given pavement will likely **not** have all of the types of distress listed for any particular rating. It may have only one or two types.

In addition to indicating the surface condition of a pavement, a given rating also includes a recommendation for needed maintenance or repair. This feature of the rating system facilitates its use and enhances its value as a tool in ongoing airfield pavement maintenance.

**Rating 5 – Excellent**  
No maintenance required

**Rating 4 – Good**  
Minor routine maintenance, crack sealing and surface treatment

**Rating 3 – Fair**  
Preservative treatments, crack sealing and surface treatment

**Rating 2 – Poor**  
Structural improvement and leveling (patching then overlay)

**Rating 1 – Failed**  
Reconstruction

### Rating system

Surface rating	Visible distress*	General condition/ treatment measures
<b>5</b> Excellent	None, or initial thermal cracks, all narrow (less than 1/8")	New pavement less than 5 years old. No maintenance or isolated crack sealing required.
<b>4</b> Good	Additional thermal cracking. Cracks generally spaced more than 50' apart. Less than 10% of cracks and joints need sealing. Minimal or slight raveling. No distortion. Patches in good condition.	Recent sealcoat or pavement over 5 years old. Seal open cracks or joints and replace sealant where needed.
<b>3</b> Fair	Moderate raveling. Thermal cracks and joints generally spaced less than 50' apart. Crack sealing or repair of sealant needed on 10%-25% of cracks or joints. Edge cracks along 10% or less of pavement edges. Block crack pattern with cracks 6'-10' apart. Isolated alligator cracking and poor patches. Minor distortion or crack settlement less than 1".	Seal open cracks and joints. Replace failed sealant. Apply new surface treatment or thin overlay. Minor patching and joint repair.
<b>2</b> Poor	Frequent thermal cracks. Wide cracks and joints with raveling in cracks. Deterioration along more than 25% of cracks. Edge cracks on up to 25% of pavement edges. Block cracks spaced 5' apart or less. Alligator cracking or poor patches cover up to 20% of surface area. Distortion or settlement 1"-2".	Needs significant crack sealing plus patching and repair on up to 25% of pavement surface. Overlay entire area with structural overlay.
<b>1</b> Failed	Widespread, severe cracking with raveling and deterioration. Alligator cracking and potholes over 20% of the area. Distortion over 2".	Condition may be limiting service. Needs reconstruction.

\* A given pavement segment may only have one or two types of distress rather than all of the types listed for a particular rating.

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Rating pavement surface condition 15



**RATING 5**

**EXCELLENT —  
No maintenance  
required or isolated  
crack sealing.**

New pavement less than 5 years old. No visible distress or initial thermal cracks, all less than 1/8".

◀  
New pavement.

Recent overlay.  
Sealed joint.  
▼



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16 Rating pavement surface condition

**RATING 4**

**GOOD —  
Seal open cracks or joints.**

Recent sealcoat or pavement over 5 years old. Additional thermal cracking. Cracks spaced 10'-20' apart. Open cracks and joints need sealing on less than 10% of cracks. No distortion and patches in good condition.

▶  
Recent sealcoat.

Cracks sealed.  
No distortion.  
Slight raveling.  
▼



▶  
Pavement more than 5 years old. No patches or distortion. Schedule routing and sealing for isolated open joints.



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Rating pavement surface condition 17



◀ Cracks widely spaced and sealed.

▼ Joints would benefit from sealing.



▲ Old sealant is leaking. Needs replacement at isolated locations.



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18 Rating pavement surface condition

**RATING 3**

**FAIR —**  
**Seal open cracks and joints.**  
**Apply new surface treatment**  
**or thin overlay. Minor patching**  
**and joint repair.**

Moderate raveling. Thermal cracks and joints, generally spaced less than 50' apart. Crack sealing or repair of sealant needed on 10%-25% of cracks or joints. Edge cracks along 10% or less of pavement edges. Block crack pattern with block cracks 6'-10' apart. Isolated alligator cracking and poor patches. Minor distortion or crack settlement less than 1".



▲ Thermal cracks less than 10' apart. Slight raveling.



► Several patches in good condition.

▼ Worn sealcoat needs new surface treatment.

▼ Open cracks need sealing.



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Rating pavement surface condition 19



◀ Moderate raveling.  
Joint needs sealing.



◀ Moderate raveling.  
Needs surface treatment soon.



◀ Pavement settlement at crack less than 1" deep.



◀ Joint sealant needs replacement at several locations. Follow with new surface treatment on apron.



◀ Edge cracking at several locations.

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20 Rating pavement surface condition

**RATING 2**

**POOR —**  
Needs significant crack sealing plus patching and repair on up to 25% of pavement surface. Use structural overlay over entire area.

Frequent thermal cracks. Wide cracks and joints with raveling in cracks. Deterioration along more than 25% of cracks. Edge cracks on up to 25% of pavement edges. Block cracks spaced 5' apart or less. Alligator cracking or poor patches cover up to 20% of surface area. Distortion or settlement 1"-2".



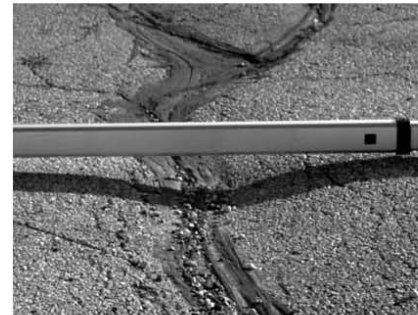
▲ Wide cracks with no sealant.



▶ Severe raveling.

▶ Multiple cracks open and deteriorated

▶ Numerous cracks with settlement over 1".



▲ Block cracking with cracks less than 5' apart.



▶ Patch in poor condition.

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Rating pavement surface condition 21



◀ Needs overlay.



◀ Edge cracking on up to 25% of the pavement.



◀ More than 25% of crack sealant needs replacement. Minor settlement over cracking.

▼ Sealant repair needed on more than 25% of cracks.

▼ Repair broken pavement and apply overlay.





**Appendix C**  
**NTSB AVIATION ACCIDENT DATABASE**

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**NTSB Identification: ATL04CA185.**

The docket is stored in the Docket Management System (DMS). Please contact Records Management Division

14 CFR Part 137: Agricultural

Accident occurred Wednesday, September 15, 2004 in Belle Glade, FL

Probable Cause Approval Date: 12/3/2004

Aircraft: Air Tractor AT-502B, registration: N90375

Injuries: 1 Uninjured.

The airplane was topped off with 31 gallons JP-5 from the operator's above-ground 8,000-gallon supply tank. The pilot stated he did not sump the airplane's fuel tanks prior to departure. The flight departed the airstrip and was at 500 feet above ground level when the airplane lost engine power. The pilot's attempts to restore engine power were unsuccessful, and the pilot executed an emergency landing on a dirt road. The airplane collided with a dirt berm and spun into a ditch. Examination of the airplane revealed approximately two quarts of water was retrieved from each wing tank of the airplane, approximately one pint of water was retrieved from the fuel filter bowl, and the engine fuel filter was found saturated with water. Examination of the fuel supply tank revealed water in the tank and tank filter. The pilot stated the supply tank had not been used to fuel any airplanes since before Hurricane Frances impacted the Belle Glade, Florida, area with heavy rain and high winds on September 5, 2004. The pilot examined the tank and reported the vent lids on the tank could be lifted open, the pick-up tube for the nozzle extended to the bottom of the tank, and the tank was not equipped with a means by which it could be sumped or drained from its lowest point.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The pilot's inadequate preflight inspection and a loss of engine power due to water contamination of the fuel.

NTSB Identification: **MIA03LA138**.

The docket is stored in the Docket Management System (DMS). Please contact Records Management Division

14 CFR Part 137: Agricultural

Accident occurred Tuesday, July 01, 2003 in Belle Glade, FL

Probable Cause Approval Date: 4/28/2004

Aircraft: WSK PZL Mielec M-18A, registration: N82120

Injuries: 1 Uninjured.

The pilot stated that during the takeoff roll from the hard-packed rock road used as a runway, the right main landing gear tire blew. He applied left rudder input and slight left brake, but the airplane veered to the right, off the road onto soft sand/muck, and the airplane then nosed over. He further reported that the tire blew when the airplane was traveling about 70 mph, which was too slow to fly and too fast to stop before nosing over. The right main landing gear tire had been replaced in May 2003, and it had accumulated approximately 84 hours in service.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The inability of the pilot to maintain directional control of the airplane following a blown right main landing gear tire during the takeoff roll, resulting in the airplane rolling into soft terrain and subsequent nose over. A factor in the accident was the pilot's delay in reducing power immediately after the blown tire.

**NTSB Identification: MIA03LA088A**

14 CFR Part 137: Agricultural

Accident occurred Tuesday, April 08, 2003 in Belle Glade, FL

Probable Cause Approval Date: 7/29/2004

Aircraft: Air Tractor 502B, registration: N6037H

Injuries: 1 Fatal, 1 Uninjured.

Two Air Tractor airplanes collided on runway 9/27. One Air Tractor, N6037H was taking off to the east; the second one, N7318K, was landing to the west. The pilot of the first Air Tractor reported that on the day of the accident, there were 8 agricultural airplanes operating from the airport. The weather was good with a light wind from the southeast. Slight early morning haze was present; there was no fog. The east/west oriented runway does not have a parallel taxiway but there is a taxiway that runs north/south which intersects the runway. While taxiing north on the taxiway towards the runway before takeoff, he looked for approaching traffic from the east and west; he did not see any. He taxied onto the runway towards the approach end of runway 9 for his third flight than day. He began his takeoff roll and only observed the other airplane 3-4 seconds before the collision. The two airplanes collided and there was immediate fire. He exited the right side of his airplane and within seconds, could not get to the other airplane as it was engulfed in flames. He reported the airplanes exploded 2 more times as he left the area. He did not report using the business radio; he was not injured. The owner of Glades Ag Services, Inc., verbally reported that the pilot of the second Air Tractor had completed his second aerial application flight of the day and had landed on runway 27, the landing was closer to the approach end of runway 27. A witness who was holding short of the runway in his airplane reported looking to the west and observed a Glades Ag Services, Inc., airplane accelerate to takeoff. He then looked to the east and observed an airplane which had already landed, taxiing on the runway. He observed the collision and immediately heard an explosion. A METAR weather observation taken at the Palm Beach International Airport on the day of the accident at 0753 (8 minutes after the accident) reported the wind was from 130 degrees at 10 knots, the visibility was 10 statute miles, few clouds existed at 2,400 feet, scattered clouds existed at 12,000 feet, a broken ceiling existed at 25,000 feet, the temperature and dew point were 25 and 21 degrees Celsius, respectively, and the altimeter setting was 30.09 in Hg. Sun and Moon calculations indicate that the beginning of civil twilight occurred at 0643, and sunrise occurred at 0706. Neither airplane was equipped with very high frequency (VHF) radio, but each was equipped with a "business radio" that typically were set to a specific frequency. The owner of Glades Ag Services, Inc., reported that the pilots don't typically use them for takeoff or landing; it is used to relay information about a field. There was no record that either pilot used the business radio to transmit takeoff or landing intentions. The Belle Glade State Municipal Airport has one runway designated 09/27, which is 3,750 feet in length by 50 feet wide; there is no parallel taxiway at the airport.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The failure of both pilots to use on-board communication radios to advise takeoff and landing intentions, the reduction of visibility of the pilot-in-command of N6037H due to sun glare during takeoff, and the poor in-flight planning by the pilot-in-command of N7318K, for his intentional landing downwind.

NTSB Identification: **MIA01LA037**.

The docket is stored in the Docket Management System (DMS). Please contact Records Management Division

14 CFR Part 137: Agricultural

Accident occurred Wednesday, December 06, 2000 in BELLE GLADE, FL

Probable Cause Approval Date: 4/6/2001

Aircraft: Air Tractor AT-502B, registration: N50470

Injuries: 1 Uninjured.

The pilot made a swath run to the west, turned east bound and collided with known wires along the swath route. The pilot immediately experienced flight control problems due to damage from the in-flight collision. He returned to the departure airport, landed, and experienced a loss of directional control on landing roll out.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The pilot's failure to maintain a visual lookout during a swath run resulting in an in-flight collision with known wires along the swath run, and a loss of directional control on landing roll due to flight control damage sustained during the in-flight collision.

NTSB Identification: **MIA91LA033** .

The docket is stored on NTSB microfiche number **42745**.

14 CFR Part 137: Agricultural

Accident occurred Monday, November 26, 1990 in BELLE GLADE, FL

Probable Cause Approval Date: 11/9/1992

Aircraft: AIR TRACTOR AT401, Registration: N1005J

Injuries: 1 Minor.

The pilot departed from a private airstrip to conduct an aerial application flight. VFR conditions prevailed and no flight plan was filed. The pilot stated he had completed a spray run to the west. He pulled up 15 degrees nose high and was 150 feet above ground level when he made a right bank followed by a left bank of 40 degrees. During the left turn the pilot was lowering the nose and extending flaps when the airplane stalled which resulted in a uncontrolled descent and collision with the terrain.

The national transportation safety board determines the probable cause(s) of this accident as follows:

The pilot failed to maintain airspeed, and stalled the airplane, resulting in a uncontrolled descent, and collision with the terrain

NTSB Identification: **MIA90LA001** .

The docket is stored on NTSB microfiche number **39669**.

14 CFR Part 137: Agricultural

Accident occurred Monday, October 02, 1989 in BELLE GLADE, FL

Probable Cause Approval Date: 9/30/1991

Aircraft: AIR TRACTOR AT-301, registration: N8842S

Injuries: 1 Uninjured.

Neither the pilot nor the operator checked the aircraft's fuel level before the flight. The pilot reported that about 30 min after takeoff, as he was applying bait to a cane field, the engine lost power. He made a forced landing in the cane, but the aircraft went into a ditch before stopping. An inspection of the fuel system revealed about 1 qt of fuel was remaining.

The national transportation safety board determines the probable cause(s) of this accident as follows:

Inadequate preflight by the pilot, which resulted in fuel exhaustion, due to an inadequate supply of fuel. A factor related to the accident was the terrain condition in the emergency landing area.

**Evaluation Report**  
For  
**NON-PROCESS AND AGRICULTURAL BUILDINGS**  
**US Sugar Corporation**  
December 19, 2008

Prepared for



**South Florida Water Management District**  
3301 Gun Club Road  
West Palm Beach, FL 33406

Prepared by



**Shaw**<sup>®</sup> Shaw Environmental, Inc.  
3223 Commerce Place, Suite 100  
West Palm Beach, FL 33407



**Evaluation Report  
For  
NON-PROCESS AND AGRICULTURAL BUILDINGS  
REPORT QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the report subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices at this time. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer's experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions. In some cases we were able to see limited operations of an asset but only a small sample size of the overall assets in that category.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this report, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This report is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

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## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Evaluation Report addresses Task 1.1 by evaluating and establishing an operational grade for major infrastructure as pertains to the repair, maintenance and transition plan.

### 1.1 Evaluation Overview

This Evaluation Report documents the assessments performed on the Non-Process Buildings including on-site inspections, interviews, and reviews of documents and available reports. It addresses the conditions, functionality and deferred maintenance related to the buildings. The report includes observed, identified, and possible deficiencies for each asset categorized as follows:

- Deficiencies that fail to meet regulatory or safety requirements
- Deficiencies that compromise the short-term operation of the system. The system in this case being a building with related structural, envelope, electrical, plumbing and, often, HVAC system.

The facility inventory consists of an initial asset list that was revised as additional assets and asset information was discovered. There are 44 Non-Process Building assets and 1 water treatment plant identified in this inventory. The 44 Non-Process Building assets include approximately 77 individual buildings. The additional buildings included with some assets are residential and support buildings. Small sheds and incidental buildings are not included in the total building count.

The non-process and agricultural buildings are divided into categories as follows: office buildings; residences; warehouses; shed structures; and a water treatment facility. Three condition grades were defined and a condition grade based on safety, regulatory or code violations, deferred maintenance, capital repairs required, and functionality was assigned to each asset. Assignment of a condition grade is based on a site visit and assessment walk-through by a trained assessor with experience in property condition assessment along with document reviews and interviews with USSC personnel familiar with the asset and the area.

In general, all of the assets and buildings exhibited some deferred maintenance. Safety violations that moved the asset to the immediate need or red category were generally gross settlement and displaced pavements that create a trip and fall hazard, buildings that had fallen into disuse and left to deteriorate, and open buildings damaged by general weathering and hurricanes and not repaired.

Buildings that were no longer used or used for a purpose not related to their original intent and those that had been left to deteriorate below a functional level were recommended for demolition. The existing use of these non-functional buildings was often duplicated by a nearby building better suited to the use. Twenty of the 45 assets are graded as Red based on safety concerns, deterioration, and/or loss of functionality or a combination of conditions resulting in a recommendation for demolition. These assets need immediate attention by USSC or SFWMD.

Table 1-1 displays the most current asset list, condition grades, and deficiencies. It also includes the identification number assigned to each asset for tracking purposes.

Table 1-1. Evaluation Summary

Number	Asset	Condition Grade	Regulatory/Safety Deficiencies
01	Townsite Houses	YELLOW	Septic tank replacement
02	Townsite Building-Houses	YELLOW	None
03	Townsite Building-Garage	YELLOW	None
04	Area 1 Office	YELLOW	None
05	Area 1 Farm Shop	GREEN	None
06	Townsite Old Tractor Shed	YELLOW	None
07	Area 1 Pole Barn	RED	Demolition of one barn, pig manure management
08	Dunwoody Meeting Building	YELLOW	None
09	Single House at Doverspike	RED	Demolition of tractor shed
10	Clinic / Union Building	RED	Demolition of northwest shed
11	Sugarland Park	RED	Structure demolition
12	Bunkers Area	RED	Scalehouse demolition
13	Knight Land New Trailer	GREEN	None
14	Knight Land Tractor Shed	YELLOW	None
15	Area 2 Site and Office Buildings	RED	Missing cover plate to electrical
16	Area 2 Tractor Shed	YELLOW	None
17	Griffin Housing & Tractor Shed	RED	Tractor shed demolition
18	Florida Lettuce Shed	RED	Lettuce shed demolition
19	South Shore Site Plan + Buildings	YELLOW	None
20	South Bay Harvester Complex (AES Shop)	RED	Building demolition, exposed electrical panel
21	South Bay Tractor Shed SR80	YELLOW	None
22	Runyon Tractor Shed	RED	Tractor shed demolition
23	Area 3 Office Complex Prewitt	YELLOW	None
24	Bourne Farm (Tractor Shed)	YELLOW	None
25	House West of Bourne Tractor Shed	RED	Building demolition
26	Boy Tractor Shed	YELLOW	None
27	Benbow Tractor Shed & Chemical Storage	YELLOW	None
28	Tractor Shed (East of Citrus Plant)	RED	Hanging ventilation fan
29	Alcoma Office	RED	Missing cover plate, unsecured outlet box
30	Alcoma Tractor Shed and Pole Barn	YELLOW	None
31	Alcoma Houses (3)	RED	Loose junction boxes
32	Alcoma Pole Barns (2) & Chemical Room	RED	Pole barn demolition
33	Devil's Garden N&S Office	YELLOW	None
34	Devil's Garden N&S Tractor Shed	YELLOW	None
35	Devil's Garden N&S Block Houses (2)	RED	Septic system overflow
36	Devil's Garden N&S BBQ Camp	RED	Building demolition

Number	Asset	Condition Grade	Regulatory/Safety Deficiencies
37	Devil's Garden N&S Irrigation Shed	YELLOW	Electrical service replacement
38	Southern Division Office	RED	Abandoned trailer disposition
39	Southern Division Block Houses @ Entrance (2)	YELLOW	None
40	Southern Division Tractor Sheds (2)	YELLOW	None
41	Southern Division Horse Barn	YELLOW	None
42	Southern Division Pole Barn	RED	Structure demolition
43	Southern Division Abandoned Office (north of Pond 2)	RED	Structure demolition
44	Southern Division Ven-Mar House	YELLOW	Trash cleanup
45	Prewitt Maintenance Shop Water Treatment Plant	GREEN	None

## 1.2 Limiting Factors

Shaw's property observations, findings, and subsequent recommendations are limited by the following factors:

- Certain roofs were not accessible for visual observation, and copies of roof warranties were not provided for Shaw inspection. Estimates of roof expected useful life (EUL) are based on assumptions of age and condition.
- Certain structures were not entered because of safety concerns related to dilapidated conditions and/or animal nests or insect infestations.
- Building drawings were unavailable for many structures. Age of those structures was estimated or inferred.

## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged Shaw to conduct the Initial Assessment of USSC facilities, properties, and infrastructure under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Evaluation Report (ER) for Non-Process Buildings and Agricultural Buildings addresses Task 1.1 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### 2.1 Purpose and Scope of Services

The objective of the ER is to provide the SFWMD a baseline of the condition of infrastructure prior to start of production for the 2008-09 crop season. This ER documents the on-site inspections, interviews, and reviews of documents, and available reports on the operating conditions, functionality, assessments, and evaluations performed on the assets critical to operation for each major infrastructure category including observed, identified, and possible deficiencies for each major infrastructure category categorized as follows:

- Deficiencies that fail to meet regulatory or safety requirements.
- Deficiencies that compromise the short-term operation of the system.

Information and assessments made in the Initial Assessment Reports (IARs) were used in the ERs, with further evaluations made as necessary. An operational grade was established according to accepted industry standards and similar to the processes utilized by the US Sugar Corporation.

### 2.2 Description of Infrastructure

The facility inventory consists of an initial asset list that was revised as additional assets and asset information was discovered. Table 2.2-1 displays the most current asset list and includes an identification number assigned to each asset for tracking purposes.

**Table 2.2-1. Inventory of Assets**

Number	Asset
01	Townsite Houses
02	Townsite Building-Houses
03	Townsite Building-Garage
04	Area 1 Office
05	Area 1 Farm Shop
06	Townsite Old Tractor Shed
07	Area 1 Pole Barn
08	Dunwody Meeting Building
09	Single House at Doverspike
10	Clinic / Union Building
11	Sugarland Park
12	Bunkers Area
13	Knight Land New Trailer
14	Knight Land Tractor Shed
15	Area 2 Site and Office Buildings
16	Area 2 Tractor Shed
17	Griffin Housing & Tractor Shed
18	Florida Lettuce Shed
19	South Shore Site Plan and Buildings
20	South Bay Harvester Complex (AES Shop)
21	South Bay Tractor Shed SR80
22	Runyon Tractor Shed
23	Area 3 Office Complex Prewitt
24	Bourne Farm (Tractor Shed)
25	House West of Bourne Tractor Shed

Number	Asset
26	Boy Tractor Shed
27	Benbow Tractor Shed & Chemical Storage
28	Tractor Shed (East of Citrus Plant)
29	Alcoma Office
30	Alcoma Tractor Shed and Pole Barn
31	Alcoma Houses (3)
32	Alcoma Pole Barns (2) & Chemical Room
33	Devil's Garden N&S Office
34	Devil's Garden N&S Tractor Shed
35	Devil's Garden N&S Block Houses (2)
36	Devil's Garden N&S BBQ Camp
37	Devil's Garden N&S Irrigation Shed
38	Southern Division Office
39	Southern Division Block Houses @ Entrance (2)
40	Southern Division Tractor Sheds (2)
41	Southern Division Horse Barn
42	Southern Division Pole Barn
43	Southern Division Abandoned Office (North of Pond 2)
44	Southern Division Ven-Mar House
45	Prewitt Maintenance Shop Water Treatment Shop



### 3.0 Methodology

Shaw personnel performed evaluations of the non-process and agricultural buildings critical to the operation of USSC processes. Additionally, many buildings assessed in the Initial Assessment activities are deemed non-critical. However, because their condition assessments include grading data required to determine asset deficiencies, that information has been included in this report.

#### 3.1 Asset Categories

Non-process and agricultural buildings were divided into categories as follows: office buildings; residences; warehouses; shed structures; and a water treatment plant.

#### 3.2 Asset Grading System

##### 3.2.1 Grading System Description

The grading system used in the IAR to classify conditions was applied in this evaluation. This grading system provided a basis for identifying deficiencies as defined in SFWMD SOW:

- Deficiencies that fail to meet regulatory or safety requirements
- Deficiencies that compromise the short-term operation of the system

Further evaluation of those assets assigned a grade of Yellow or Red allowed identification of deficiencies. Table 3.2-1 shows the grades and their corresponding descriptions for conditions and deficiencies.

**Table 3.2-1. Condition and Deficiency Identifiers Applied**

Identifiers	Condition Description	Deficiency Description
<b>GREEN</b>	Fully functional assets exhibiting little or no damage or deterioration warranting any corrective action, other than routine maintenance, within an 18-month period. The assets display no material deficiencies that fit into either of the other grades, although they may need painting, repairs or replacement of equipment beyond 18 months or 2 years.	Fully functional assets exhibiting little or no damage or deterioration warranting any corrective action, other than routine maintenance. No safety hazards observed.
<b>YELLOW</b>	Assets exhibiting non-critical damage or deterioration affecting continued operation, effectiveness, functionality, and safety warranting corrective action within a 6- to 18-month period. The assets display deficiencies that, if not repaired soon, will contribute to life safety issues or material deficiencies. Examples are failing roofing system, neglected painting systems, HVAC systems at the end of EUL, and settlement around a building that would allow vermin under the building.	Assets exhibiting non-critical damage or deterioration affecting continued operation, effectiveness, functionality, and safety warranting corrective action within a 6- to 18-month period. The assets display deficiencies that, if not repaired soon, will contribute to life safety issues or material deficiencies. Examples are failing roofing system, neglected painting systems, HVAC systems at the end of EUL, and settlement around a building that would allow vermin under the building.

Identifiers	Condition Description	Deficiency Description
RED	Assets exhibiting critical damage or deterioration affecting continued operation, effectiveness, functionality, and/or safety warranting corrective action immediately or within a 6-month period. The assets display life safety deficiencies and/or material deficiencies that, if not immediately repaired, will cause unchecked material damage to the building. Examples are sunken steps, missing stair, deteriorating abandoned building, badly damaged or worn out roof. All assets judged to be of no value and recommended for demolition were assigned this grade.	Assets deemed not functional or that would likely not function over a 6-month term or assets in which severe safety hazards were observed.

**3.2.2 Grading Process and Applicability**

The condition of the non-process building assets were visually inspected and evaluated according the apparent physical condition. Based on the result of interviews and research into the technical information available, asset condition was assigned based on the likelihood of the necessity of repairs. It is appropriate for SFWMD to be aware of assets in a degraded condition which might greatly depreciate the value of those assets. It is further important for SFWMD to understand the potential costs associated with equipment in a poor state of repair.

**3.2.3 Grading System Comparison with US Sugar Systems**

There is no known USSC grading system applicable to non-process buildings to serve as a basis of comparison for the asset grading system described above, US Sugar contracted with Life Cycle Engineering, Inc (LCE) to assess the maintenance and reliability practices and procedures at the Clewiston Sugar Mill and Refinery. The LCE assessment model is not intended to evaluate the physical condition of the non-process buildings.

## **4.0 Asset Evaluations**

The assets are scattered across a large area of agricultural property, which has been subdivided by USSC into cultivation areas. Many of the assets are known by titles that derive from the cultivation area. Figure 4-1 in Appendix B is an overall location map of the assets evaluated in the report, with the USSC cultivation areas delineated. Figure 4-2 is a location map of the assets in and around the town of Clewiston. Figure 4-3 displays the asset locations in cultivation Area 1. Figure 4-4 is a map of the asset locations in cultivation Area 2. Figures 4-5 and 4-6 display asset locations at the east and west of cultivation Area 3, respectively. Figure 4-7 is a map of the asset locations in cultivation Area 4. Figure 4-8 displays asset locations in the citrus areas known as Devil’s Garden and the Southern Division.

### **4.1 Asset Descriptions**

#### **4.1.1 Townsite Houses**

The Townsite site is located west of Clewiston on the south side of the road at 1454 West Sugarland Highway. The Townsite Houses are closest to the highway and are accessed by asphalt driveways from a north-south farm road. The structures were constructed between 1955 and 1967 using CMU concrete blocks on variously a reinforced-concrete slab on grade or elevated concrete slab over a crawl space. Exterior walls are constructed with CMU concrete blocks that are covered with a stucco plaster and interior walls are constructed with wood studs and wooden frame, which is covered with drywall and plaster. There are four Townsite houses, each approximately 1,100 square feet, located on the Townsite property. The roofs are wood-framed on wooden deck with shingles. The interior floors are a combination of linoleum, hardwood, carpet, terrazzo, and tile. The City of Clewiston provides water for the houses; each has an overhead 150-amp electrical service.

The houses are or will be occupied by tenants and are in fair condition. The houses use septic tanks for disposal of wastewater. One of the septic tanks was observed to be structurally deficient and will need to be replaced. Other exterior deficiencies noted include a wooden fascia board that has holes which appear to be from rotting and step-cracks in one of the house’s chimneys. All houses have worn exteriors and are in need of fresh paint. Air conditioning units and hot water heaters are in various stages of aging; some will need replacement in the near term. Interior deficiencies were minimal and consisted of ceiling patchwork and aging owner-supplied appliances.

#### **4.1.2 Townsite Buildings (Houses)**

The Townsite Buildings (Houses) are located south of the Townsite Houses and are accessed by asphalt driveways from a north-south farm road. They were constructed between 1955 and 1967 as houses, but the present use is varied. Construction is CMU concrete blocks on either a reinforced-concrete slab on grade or elevated concrete slab over a crawl space. Exterior walls are constructed with CMU concrete blocks of which most are covered with a stucco plaster cement. Interior walls are constructed with wood studs and wooden frame, which is covered with drywall and then plaster cement. The Townsite Buildings (Houses) consist of buildings that are approximately 1,100 square feet each on the Townsite property. The roofs are wood-framed on wooden deck with shingles. The interior floors are a combination of linoleum, hardwood, carpet, terrazzo, and tile. The City of Clewiston provides water for the houses. Each has an overhead 150-amp electrical service, and each has a septic system. The buildings are used for storage, training, leased-space, and a security building and are in fair to good condition.

This asset consists of the building at address 2025 that is currently leased by the Florida Sugarcane League, the building at address 2035 which was a former house and is now used for storage, the training center, and the building at address 1897 which is currently used for storage and security.

Repairs to the houses used as commercial buildings are similar to those above, but also include removal of a decrepit hot water heater shed and roof replacement for one of the buildings.

#### **4.1.3 Townsite Buildings (Garage)**

The Townsite garage, located immediately south of the eastern Townsite House and accessed by an asphalt driveway from a north-south farm road, was likely constructed at the same time as the Townsite houses: between 1955 and 1967. The Townsite garage was constructed using CMU concrete blocks on a reinforced-concrete slab on grade and wooden doors. Exterior walls are constructed with CMU concrete blocks of which most are covered with a stucco plaster cement. The Townsite Buildings-Garage consists of a garage area that is currently used for storage and an attached laundry facility. The roofs are wood-framed on wooden deck with shingles. The interior floors are concrete slab on grade. The City of Clewiston provides water. Construction drawings are available for this building.

The main wooden door is missing chucks and the column support that was previously patched needs to be maintained. The exterior is worn and in need of fresh paint.

#### **4.1.4 Area 1 Office**

The Area 1 Office is located east of the Townsite Houses, across the farm road, and is accessible from asphalt driveways from the farm road and from an asphalt road parallel to West Sugarland Highway. The building was constructed in 1973 using CMU concrete block walls on a reinforced-concrete slab on grade. Exterior walls are plastered; interior walls consist of wood structure support covered by either by drywall and a coat of plaster or wood panel-board. The wood and drywall roof is supported by the CMU block walls. The building consists of offices, a break room, kitchen, and storage areas. The ceiling has acoustic drop tiles. The floors are reinforced concrete slab on grade, covered by a combination of vinyl tile and carpet, and are in good condition. An overhead electrical service provides power; the City of Clewiston provides water. A septic system accommodates wastewater. Construction drawings are available for this building.

The building was constructed with CMU concrete blocks with the exception of the entrance which is comprised of concrete, brick, and wood. There are single pane tinted windows on four sides of the building and two entrances with single pane tinted glass in aluminum frame doors. Roof drainage occurs on one side of the building to catch basins located throughout the asphalt parking lot which drains across the service drive into the canal. The parking lot is asphalt and in good structural condition; however the asphalt needs to be resealed. The main entrance is a combination of brick and wood panels, in which some of the wood panels are broken and/or missing. One of the two air conditioning units is aging and will need replacement.

#### **4.1.5 Area 1 Farm Shop**

The Area 1 Farm Shop is located just east of the Area 1 Office along the asphalt road and consists of a greenhouse and laboratory sample processing shed that were constructed in 2007. The greenhouse was constructed using a steel support frame and polycarbonate walls and roof on a reinforced concrete slab on grade. The process shed was constructed using a steel support frame and corrugated steel on a reinforced concrete slab on grade. Exterior and interior walls of the process shed are corrugated steel. Steel overhead roll-up doors are also present throughout the process shed to allow for ingress and egress of a vehicle. An overhead service provides 400-amp, three-phase electricity to the structure. The City of Clewiston provides water, and wastewater is treated with a septic system.

The corrugated steel roof is pitched, and storm water drains via sheet flow. Construction drawings are available for this building.

The operations that occur at the process shed consist of drying collected soil samples for analysis at the laboratory. The process shed functions as storage and provides ovens needed to dry collected soil samples

before laboratory analysis. The greenhouse functions as an area to maintain and cross breed different strains of sugar cane.

#### **4.1.6 Townsite Old Tractor Shed**

The Townsite Old Tractor Shed is located south of all other structures at the Townhouse Site at the location of a demolished structure, and is accessed by an asphalt driveway from a north-south farm road. The building is constructed with steel columns and beams on a reinforced-concrete slab on grade, covers approximately 6,400 square feet, and houses both tractors and tractor repair equipment. The building consists of an enclosed storage area and enclosed break room with corrugated steel walls, as well as a covered storage area with no walls. The pitched roof is also corrugated steel which drains to gutters that run parallel to the steel supports. A 200-amp service provides electricity. The building is in good condition; however, the entrance drive and parking area need to be graded to prevent the potential for puddles to form. Security fencing around the property is damaged along one side and needs to be repaired. Construction drawings are available for this building.

#### **4.1.7 Area 1 Pole Barn**

The Area 1 Pole Barn is located at the east end of the Area 1 Office area, and consists of two separate pole barns (Barn 1597 and Barn 1747) constructed of wooden columns and beams on a reinforced-concrete slab on grade for Barn 1597 and asphalt on grade for Barn 1747. The barns are accessed via a dirt road parallel to West Sugarland Highway. Construction dates are unknown. Each barn area covers approximately 10,125 square feet. There are no walls. The wooden columns and beams support the wooden roof structure, which supports corrugated steel sheeting. The buildings consist of stables, animal pens, and center aisle way. Because the buildings are wooden structures, they should be periodically checked and sprayed for termites. No construction drawings are available for this building.

Barn 1597 is used for storage and housing horses. Much of the steel roof sheeting is rusted and in poor condition; large sections are missing and overgrown by vegetation. The roof gutters are broken and non-functional. This structure is given a Red status because of low value and it is recommended for demolition.

Barn 1747 is used for storage and housing pigs and is in fair condition. There is currently no electrical power connected to this structure. Shaw personnel observed that the pig manure is not being properly managed. The steel sheeting is rusted, in poor condition, and missing in places, and roof gutters are broken and non-functional.

Water for animals is available at the pole barns; electricity is available only at Barn 1597.

#### **4.1.8 Dunwody Meeting Building (Lodge)**

The Dunwody Meeting Building (Lodge) is located approximately 1 mile south of Whidden Corner (intersection of State Road 80 and US Highway 27, about 7.5 miles west of Clewiston), accessible along a crushed gravel drive north of a road that trends west from Flaghole Road. It was constructed around 1984 with a wood frame on a reinforced-concrete slab on grade. A screened-in area encompasses the entrance to the building which opens up to a finished wood room with ceramic tile floor. The Lodge consists of a meeting room, kitchen, and an office. There is also a building adjacent to the Lodge that is used for barbeque events and is constructed with a wood frame on a reinforced concrete slab on grade. The roofs are wood-framed with a wooden deck with corrugated steel sheeting. The roof on the Dunwody Lodge was replaced in 2007. Storm water drains off of the roofs via sheet flow. The air conditioning unit is in a partially enclosed roofed area supported by concrete footings. The Lodge is serviced by a well, a septic tank, and an underground electrical service. Construction drawings are available for this building.

The baseboards of the barbeque structure are damaged and in need of replacement. The Lodge will need exterior staining for the Lodge and the barbeque structure needs fresh paint.

#### **4.1.9 Single House at Doverspike**

The Single House at Doverspike is located in northwest quarter of the northwest quarter of the southwest quarter of Section 3, Range 32 East, Township 44 South, about 4.5 miles south of State Road 80 on the east side of Hendry County Road 833. It was constructed, likely in the 1960s, using CMU concrete blocks on a reinforced-concrete slab on grade. Exterior walls are constructed with CMU concrete blocks that are covered with stucco plaster cement. Interior walls are constructed with wood studs and wooden frame, which are covered with drywall and then plaster. The Single House at Doverspike is approximately 1,200 square feet. The roof is wood-framed on wooden deck with shingles. The interior floors are tiled. The house is occupied by a tenant and is in fairly good condition but needs painting. There is a shed adjacent to the house that is steel-framed with a corrugated steel roof, erected on a reinforced concrete slab on grade. The roof is rusted and will need to be replaced in the future. The house is serviced by a 100-amp electrical service, a well, and a septic system. On the east side of Southland Drive in the northwest quarter of the southwest quarter of the southwest quarter of Section 26, Range 32 East, Township 43 South, approximately 2.5 miles to the north and east is the decrepit Doverspike Tractor Shed. The tractor shed is given a Red status because it has significant structural damage to the steel roof, wooden roof support frame, and the concrete support columns. This presents a safety hazard; the structure should be demolished. No water or electricity is provided at the tractor shed. Construction drawings are not available for this building.

#### **4.1.10 Clinic/Union Building**

The Clinic/Union Building, located at 1213 W C Owen Avenue in Clewiston, Florida, was constructed in the 1930s on wood beams supported by CMU piers for use as a medical clinic for sugar cane workers; a small shed northwest of the structure reportedly was used as a morgue for work-related deaths. The building interior is divided into offices, storage rooms, a meeting room, a kitchen, and a restroom. Drawings that were provided document a somewhat different layout than the current one, but the size and shape of the building have not changed. Exterior walls consist of painted overlapping transite siding; interior walls are painted wood stud and drywall. Floors are covered with vinyl tile and carpet in fair condition. The building is approximately 2,800 square feet in area.

The roof is pitched, with asphalt shingles on tarpaper and roof decking supported by wood trusses. Stormwater drains directly to the adjacent ground surface.

The primary entrance is a wood and glass pane door located on the east center of the building. An additional entrance with a wood and glass pane door is located on the south side of the building, and is served by a handicap-accessible concrete ramp. Single-glazed aluminum-framed single-hung windows are located on all sides of the structure. The building is serviced by a 150-amp, single-phase, 120/240-volt electrical system and connected to Clewiston city water. Cooling is provided by one 5-ton and one 3-ton HVAC unit. Adjacent to the building on the west side, a small CMU shed with an asphalt shingle roof houses a 50-gallon electric water heater.

An asphalt driveway from W C Owen Avenue leads to a small parking lot at the east side of the building.

The Clinic/Union Building functions as a meeting hall and office for the International Association of Machinists and Aerospace Workers and is in generally good condition. Items that need attention include cracked sidewalk and driveway pavement, an old water heater, ceiling repair, and replacement shingles for the water heater shed. The asset is assigned a grade of Red because of the presence of a dilapidated shed structure northwest of the clinic. The doors are hanging loose; the roof is falling in; the frame is rotted. The shed should be demolished as an attractive nuisance.

#### **4.1.11 Sugarland Park**

Sugarland Park is located along the 200 block of Sugarland Park Drive, between West Arroyo Avenue on the north, Sonora Avenue on the south, and South W C Owens Avenue on the west. Four of the

Sugarland Park Houses are located north of Sugarland Park Drive (250 West Arroyo, 252 West Arroyo, 251 Sugarland Park Drive, and 253 Sugarland Park Drive) and four are south (250 Sugarland Park Drive, 252 Sugarland Park Drive, 251 West Sonora, and 253 West Sonora). Another house is located west of the Clinic/Union building at 313 West Arroyo Avenue. The Sugarland Park houses were constructed around 1945 using a wood frame on an elevated concrete slab over a crawl space. Exterior walls are constructed with wood and asbestos shingles and interior walls are constructed with wood studs and wooden frame, which are covered with drywall, wood panel, and/or ceramic tile. The houses have previously been used as housing, but are currently vacant and used for miscellaneous storage. The houses average 1,285 square feet in area. The roofs are wood-framed on wooden deck with shingles. The interior floors are a combination of hardwood, carpet, and tile. Four garages are shared by eight of the houses with two houses per garage. The houses have not been adequately maintained and are in poor condition. The shared garages are in worse condition than the houses.

Driveways are crushed gravel, and each building is served by a 100-amp electrical service, city water, and city sewer.

Demolition is recommended as these buildings are beyond use for their intended function and storage is available elsewhere. These houses are given a Red status because they will not be inhabitable without significant capital investment far exceeding the costs for demolition. Construction drawings for additions and garages are available for these buildings.

#### **4.1.12 Bunkers Area**

The Bunkers are located in the northeast quarter of the northeast quarter of the northeast quarter of Section 32, Range 34 East, Township 43 South, approximately 3 miles south of the Clewiston Mill, accessible by a dirt road and driveway. The bunkers consist of three buildings that were constructed around 1978. They were constructed using reinforced concrete to create the slab on grade and concrete lower half-walls. The roof and upper half walls were constructed using steel columns, beams, and purlins with the columns sitting on top of the concrete half-walls. The roof and exterior walls are corrugated steel sheeting that have significant damage from previous hurricanes and need repair. Each bunker is approximately 16,800 square feet or 50,400 square feet for all three. No power or water is available at the site. Currently the bunkers are used for storage of miscellaneous items. The roofs are slightly pitched in order to drain to gutters; however, some gutters are damaged. One of the structural supports in the middle bunker has failed and needs to be removed.

An abandoned scale house in poor condition located east of the bunkers is severely overgrown by brush, inhabited by various creatures, should be demolished, and triggers the Red status. The bunkers are in fair condition. Construction drawings are available for the bunkers.

#### **4.1.13 Knight Land New Trailer**

The Knight Land New Trailer is located in a clearing in the northwest quarter of the northwest quarter of the northeast quarter of Section 22, Range 34 East, Township 45 South, approximately 12 miles south of Clewiston, Florida. The trailer was reportedly placed within the past year or two to replace the four structures visible on aerial photographs. The trailer, manufactured within the past 2 years by Acton Mobile Industries, Inc., is typical manufactured housing construction, with aluminum siding, roofing, and skirting. Aluminum steps lead to the two entrances on the north side of the trailer. Interior walls are covered with paneling; floors are covered with vinyl sheet. A pole-mounted 120/240 volt, 150-amp electrical service is located south of the trailer. A septic system serves the trailer, with a raised leach field located east of the trailer. A newly constructed small shed located approximately 80 feet southeast of the trailer houses a water treatment system for an adjacent well. The trailer is approximately 500 square feet in area. A compacted dirt/gravel driveway leads from the access road to the north side of the building. The building serves as a field office and/or meeting location, and is in new condition.

#### **4.1.14 Knight Land Tractor Shed**

The Knight Land Tractor Shed, consisting of an open structure and shed, is located in the southeast quarter of the southeast quarter of the southwest quarter of Section 27, Range 34 East, Township 45 South, approximately 14 miles south of Clewiston, Florida. The date of construction is unknown. The open shade/weather protection structure is approximately 60 by 30 feet, constructed of concrete double-T beams supported by concrete beams and concrete columns. The shed is approximately 25 by 20 feet, constructed of concrete tilt-up walls with concrete supporting columns, a reinforced concrete slab, and a roof of concrete double-T beams. The shed roof provides an overhang of approximately 4 feet on the east side. The shed is divided into two rooms, each accessed through a steel plate door on the east side. Daylight is provided through window openings on the east and west sides. Window openings are covered with steel grate on the outside and Plexiglas on the inside. The structure serves as a parts storage and tractor repair location. No electricity, potable water, or restroom facilities are located at the tractor shed. The structure is in fair condition; however, the roof flashing and sealing need attention.

#### **4.1.15 Area 2 Site and Office Buildings**

The Area 2 Site and Office Buildings are four similarly constructed, single story buildings built as structural slabs on foundation piers, CMU walls, and gable roofs, and located approximately 1 mile south of US Highway 27 on the west side of Rita Village Road, near the intersection of Rita Village Road and Saint Catherine Avenue. They are rectangular in shape and vary in floor area from 1,200 to 1,500 square feet. The buildings were constructed in 1968 as private residences for agricultural foremen. The northernmost building was renovated in 2002 and functions as the area office building. The building adjacent to it is a private residence for the wildlife warden. The remaining two buildings are vacant. The office building has an asphalt paved vehicle lot on its east and north sides with two entrances from the road to the east at Rita Village Road. The three remaining buildings are accessible via short asphalt driveways from the building to the road to the east. There are no designated handicapped vehicle parking spaces. Limited construction drawings are available for these buildings.

The roof decks are plywood supported by a wood truss, and covered with asphalt shingles. Windows are single pane, double hung in metal frames. Each building has a carport area. The office area carport has been caged with steel mesh and two ice cube making machines are operating within this area. The building's exterior doors are solid wood with glass inserts. The exterior walls are finished with smooth, painted stucco.

Interior walls are plaster cement and sheetrock. Interior doors are hollow wood core. Floors are terrazzo, carpet, or linoleum depending upon the use of the area. The ceilings are painted sheetrock or plaster cement finished. The buildings' layouts are either offices with storeroom, restroom, and break room or residential with living, kitchen, bathroom, and bedroom areas.

A pad-mounted split HVAC unit exists at the office and at the warden residence. The two other buildings have had the HVAC units removed. The buildings are served by city water and electricity. Septic tanks are buried behind each building.

The exteriors of the Area 2 Site and Office Buildings are in need of power washing. The fascia boards are in need of painting. The metal cage screen around the carport at the office is rusting and in need of painting. The foundation piers of all buildings are exposed; soil should be backfilled to the perimeter of the buildings. Tree limbs that pressing on the roof of the warden residence need to be trimmed back. The asphalt paved areas are in need of sealing and marking.

The Red designation is because of the safety concerns represented by a missing cover plate to the electrical panel at the rear of one of the vacant residences.



#### **4.1.16 Area 2 Tractor Shed**

The Area 2 Tractor Shed site is located about 1/3 mile southwest of the Area 2 Office and consists of two buildings: a tractor shed and a chemical storage building. The tractor shed covers 6,400 square feet and serves as an agricultural equipment repair shop and as a covered area for sheltering agricultural equipment. The building is a steel pole and beam building with a metal roof and grade level concrete pad. It is open on three sides with the east side of the building closed with metal sheathing. Two small rooms (storage area for equipment and parts and an HVAC conditioned break room) are constructed at the east side. Security lighting is present at the four corners of the building. Ceiling-mounted HID lighting illuminates the sheltered area of the building. Potable city water is supplied by underground conduit to several bibs at the perimeter of the building.

The chemical storage building is approximately 1,000 square feet in area with concrete steps, bay doors, and truck loading docks at its east and west ends. The building has a raised concrete foundation with a structural concrete floor, CMU load bearing walls, and a roof of concrete post-tension beams and a bituminous covering. Exterior walls are paint-finished concrete and interior walls are unfinished.

A chain link fence and gravel surface surrounds the site and site buildings.

The chemical storage building needs to be power washed and painted. The roof covering may need repair during this term. While the stairs and loading docks of the chemical storage building show impact damage and dock edge wear, these are not considered severe enough to impact access and loading operations. The window unit air conditioner in the Tractor Shed will likely outlive its estimated useful life in the near term and will need replacement.

#### **4.1.17 Griffin Housing & Tractor Shed**

Griffin Housing and Tractor Shed are located approximately 5.5 miles south and 1 mile west of South Clewiston, on the east side of Evercane Road. The Griffin Tractor Shed is constructed as a steel column and beam shed with a concrete floor, corrugated metal sides, and a salt box metal roof on the building's north side and an attached two-story office/break room at ground level with a mezzanine storage area to the south. Window areas are aluminum frame with single pane, double hung glazing. The building has a foot print area of approximately 5,500 square feet. It is deduced from architectural plans available that the Griffin Tractor Shed was built in 1975. Wood stairs on the exterior provide access to the mezzanine storage area. Water is from a well and pump. Waste water goes to a septic tank.

The exposed areas of the metal structure are heavily rusted. The roof is broken apart on the east end and the remainder of the roof is in poor condition. The stairs to the mezzanine are unsound. The floor tiles in the office area and break room are broken and are presumed to be asbestos containing material (ACM), as is the sheetrock mud. The glazing has multiple broken panes. The exterior doors are in need of replacement. The restroom area has had its fixtures removed. Exterior and interior areas of the structure are in need of repair and painting.

Renovation of the Griffin Tractor Shed would be more costly than the demolition and construction of a new tractor shed. Shaw's observation is that the Griffin Tractor Shed has no value as a building and it should be demolished, triggering the Red status.

The Griffin Housing Complex is three similarly constructed single-story buildings east of the Tractor Shed and built with structural slabs on grade, CMU walls, and gable roofs. They are rectangular in shape and approximately 1,600 square feet in floor area each. The three buildings were constructed in approximately 1975 and function as bunk housing for field employees. The buildings are currently vacant.

A short asphalt paved driveway connects the western and middle buildings to the road. The eastern most building has a semi-circular asphalt paved driveway and a central HVAC system. Potable well water is treated by a system in a shed constructed at the rear of each building. Waste water is directed to a septic

tank to the west of the three buildings. Area landscaping is sod. The buildings are served by city electricity. A public pay phone is present at the entrance to the middle building. A pole-mounted security light exists at the center, south side of the site. Limited construction drawings are available for these buildings.

The roof decks are plywood supported by a wood truss and covered with asphalt shingles. Windows are single pane and double hung in metal frames. The building's exterior doors are solid wood with glass inserts. The exterior walls are finished with smooth, painted stucco.

Interior walls are plaster cement and sheetrock. Interior doors are hollow wood core. Floors are terrazzo or linoleum depending upon the use of the area. The ceilings are painted sheetrock or plaster cement finished. The building's layouts are residential with living, kitchen, bathroom, and bedroom areas. The buildings are fitted with smoke alarms and illuminated exit signs. Multiple bunk beds exist in the bedrooms.

The asphalt paved areas are in need of sealing and marking. Smoke detector alarms and illuminated exit signs need to be checked for proper function. The exteriors of the Griffin Housing Complex are in need of power washing. The fascia boards, eaves, and end boards are in need of painting. The HVAC unit will be beyond its EUL and will need replacement. The asphalt parking areas should be sealed and marked on a 5-year cycle. The shingle roofs appear to be original construction and will outlive their useful life in the near term and require replacement. Two exterior doors will need replacement.

#### **4.1.18 Florida Lettuce Shed**

The Florida Lettuce Shed is located in the northwest quarter of the northwest quarter of the southwest quarter of Section 19, Range 35 East, Township 44 South, and is constructed as a steel column and beam shed with a concrete floor, corrugated metal sides, and a flat salt box metal roof. It is accessed by a dirt driveway from a nearby dirt road to the north. The building has no active electrical service, water, or wastewater connections. No construction drawings are available. The building has a foot-print area of approximately 2,000 square-feet and it is estimated it was constructed about 1975. There is no ongoing maintenance of this structure. It appears to have no operational purpose.

The exposed areas of the metal structure are heavily rusted. The roof is broken apart on the north end and the remainder of the roof is in poor condition. Metal cladding exists on only two of the four sides. Two similar structures existed at this site but were heavily damaged in a 2006 storm event and were subsequently demolished.

Shaw's observation is that the Florida Lettuce Shed has no value as a building and it should be demolished, triggering the Red status.

#### **4.1.19 South Shore Site Plan and Buildings**

The South Shore Site Plan and Buildings are located approximately 2 miles west of South Bay, Florida, along South Shore Village Drive, and consist of one area of an office and residence and another of a tractor shed, chemical storage building, and storage shed with a fuel tank farm. The area office and residence are constructed in an area that was a planned expansion as a field employee village complete with multiple residences, store, and a church. It appears only the asphalt roadways and some foundations were constructed. The area is served by well water, septic systems, and 120/240 volt, three-phase power.

The office and residence structures are two similarly constructed, single-story buildings built as structural slabs on foundation piers, CMU walls, and gable roofs. They are rectangular in shape and have a floor area of about 1,200 square feet each. The buildings were constructed in 1967 as private residences for agricultural foremen. The northern most building was renovated in 2000 and functions as the area office building. The two buildings are separated by an asphalt paved parking lot with approximately 40 vehicle parking spaces. There are no designated handicapped vehicle parking spaces. The buildings are in good

condition with backfilling needed under the structural floor slabs due to surrounding soils settlement. Walkway pavers surrounding the buildings are heaved and broken.

The roof decks are plywood supported by a wood truss and covered with asphalt shingles. Windows are single pane, double hung in metal frames. Each structure has a carport area. The office area carport has been caged in with steel mesh. Two ice cube making machines are operating within this area. The building's exterior doors are solid wood with glass inserts. The exterior walls are finished with smooth, painted stucco.

The tractor shed is approximately 3,000 square feet in area and serves as an agricultural equipment repair shop and as a covered area for sheltering agricultural equipment. The building is a steel pole and beam building with a metal roof and grade level concrete pad. It is enclosed on the west and north sides with metal cladding. An enclosed room on the northwest side serves as an equipment room. Although structural beams are rusted and the floor area is cracked, the shed is in generally good condition.

The chemical storage building is approximately 1,000 square feet in area with concrete steps, bay doors, and truck loading docks at its east and west ends. The building has a raised concrete foundation with a structural concrete floor, CMU load bearing walls, and a roof of concrete post-tension beams and a bituminous covering. Exterior walls are paint finished concrete and interior walls are unfinished. It is in good condition.

The storage shed is a grade level structure, approximately 300 square feet, with a rigid frame and metal cladding. It is in fair condition with approximately one-third of its cladding needing repair.

#### **4.1.20 South Bay Harvester Complex (AES Shop)**

The South Bay Harvester Complex is located on the south side of US Highway 27, about half a mile west of South Bay, and consists of four, single story, fully enclosed warehouse buildings, each constructed on monolithic driven piers with structural floor slabs, rigid metal beam frames, metal cladding, and metal roof. Metal bay entrance doors on each building are approximately 12 feet high by 14 feet in width. The roof heights are approximately 18 feet. There are limited paved asphalt areas; most driveway and parking areas are packed dirt. Pole-mounted security lighting and a chain link fence surround the site. The area is served by well water, septic systems, and three-phase power up to 480 volts.

The northern most building is approximately 3,000 square feet in area. It was abandoned due to storm damage which occurred in 2006, and is to be demolished, triggering the Red status.

The main building is approximately 11,000 square feet in area, has 11 bay doors, and is used to store agricultural equipment tires. The north area of the building is constructed with a lower slab area. It is in good condition with rust at some sill and door areas and some limited impact damage to the cladding. The building is in good condition.

An approximately 10,000 square foot building built in 1988 stores harvesters and is the newest of the buildings. The structure is assigned a Red designation because of an exposed electrical panel which is a significant safety concern. A cover plate should be installed. The building is otherwise in good condition.

An approximately 300 square foot metal shed houses a waste fuel tank. It is in good condition.

#### **4.1.21 South Bay Tractor Shed SR 80**

The South Bay Tractor Shed, located on the north side of State Road 80, 1 mile east of the junction of State Road 80 and US Highway 27 in South Bay, Florida, is an open shade/weather protection structure, approximately 50 by 30 feet, constructed of treated wood posts, wood beams and trusses, and a shed, approximately 15 by 15 feet, constructed of sheet metal siding on wood hangars. The date of construction is unknown. The sheet metal roofing materials are reportedly less than 1 year old. The one-room shed lies under the northwest footprint of the shade structure roof, with one steel door on the south side. The floor

of the shade structure and the shed is packed earth. A chain link fence encompassing approximately 32,000 square feet surrounds the shade structure and shed. The structure serves as a parts storage and tractor repair location and is in good condition. No electricity, potable water, or restroom facilities are located at the tractor shed. The shed requires repainting.

#### **4.1.22 Runyon Tractor Shed**

The Runyon Tractor Shed is located immediately north of the northwest corner of Runyon Village, Florida, approximately 0.5 miles northeast along State Road 441 of the intersection of State Road 80 and State Road 441. The site is accessible by vehicle only from the north, via the agricultural property north of Runyon Village. Two structures, surrounded by chain link fencing encompassing 59,400 square feet, are situated at the Runyon Tractor Shed location. No potable water or restroom facilities are located at the tractor shed site.

The tractor shed, constructed prior to 1970, consists of an open shade/weather protection structure, approximately 60 by 45 feet, constructed of steel columns, I-beams, purlins, and sheet metal roofing, and a shed, approximately 14 by 19 feet, constructed of sheet metal siding on steel purlins. The one-room shed lies beneath the southeast footprint of the shade structure roof. It is accessed through one steel door on the northwest side. The floor of the shade structure and the shed is concrete slab on grade. Another small shed constructed of wood studs and plywood siding is located adjacent to the east side of the shade structure. Electrical service to the structure is disconnected.

The shade structure and metal shed formerly served as a parts storage and tractor repair location. They currently serve no function. The shade structure is deeply weathered; metal roof sheeting is torn; purlins are rusted through; steel beams are rusted; and steel columns are rusted. The doors to the wooden shed adjacent to the structure are hanging open, and one is ripped from its hinges. The structure should be demolished to the slab, triggering the Red status.

A second building, known as the Spray House, is located approximately 50 feet north of the tractor shed structure. The construction date is unknown. The structure, approximately 52 by 26 feet, is constructed with plastered CMU block walls, with poured concrete docks at the east and west ends. The floor and the roof of the structure are concrete double-T beams. The roof overhangs the dock approximately 4 feet. A crawl space beneath the floor is accessible from the south side. It is assumed the roof is sealed with a tar and gravel cover. The structure is internally divided by a CMU block wall into a west room and a smaller east room. Access to the rooms is through a roll-up door at the dock. Electricity to the structure is via an underground line from the disconnected service at the tractor shed.

The west room of the spray house serves as a storage location for pesticides and/or herbicides. It requires repainting.

#### **4.1.23 Area 3 Office Complex Prewitt**

The Area 3 Office Complex is located approximately 5.5 miles northeast of Belle Glade, Florida, in the southwest quarter of Section 19, Township 43 South, Range 38 East. The site is accessible via a dirt road north of Airport Road (named Gator Boulevard in Belle Glade). The complex, which serves as the Area 3 office and a tractor repair facility, consists of one steel building dating from the early 1990s, constructed

on a reinforced concrete slab on grade and roughly centered in a 3.5-acre uncultivated area. The office occupies the eastern third of the structure. The western third is used to house repair parts, and the central third is open to the north and used for tractor repair.

The office is a wood frame and plywood structure in good condition within the steel building that consists of six rooms that serve as offices and meeting rooms, two restrooms, and a small kitchen. The walls are paneled, ceilings are composed of acoustical drop tiles, and floors are covered with vinyl sheet material.

A mezzanine above the office is accessible via steel stairs from the ground level. An unused rollup door to the office area from the central area is blocked by an office wall.

The parts storage room is accessible via roll-up doors on the east and west sides, and contains shelving and parts bins on a bare concrete floor. Its exterior walls are the steel siding of the building. The ceiling is open to the steel beams, purlins, and steel roof. A covered concrete loading dock extends along the northern side of the western third of the building.

Potable water for the building is provided by an on-site water treatment system housed in a portable metal container located at the southwest corner of the building. The restrooms are served by an on-site septic system. The building is served by a single phase, 200-amp electrical system mounted on the east exterior wall. Cooling is provided by two pad-mounted 2-ton HVAC units. Hot water comes from a 30-gallon electric water heater located on the mezzanine level.

The building is in generally good repair, but the sheet metal needs to be repainted soon to retain weatherproofing.

#### **4.1.24 Bourne Farm (Tractor Shed)**

The Bourne Farm Tractor Shed is a pre-engineered, enameled, corrugated steel building located in the southwest quarter of the southeast quarter of the northeast quarter of Section 28, Range 38 East, Township 41 South, about 5.3 miles northeast of the Area 4 Office. It has separate and closed office and storage rooms and an open covered work area with a concrete floor. The office includes a single restroom. The parking areas, driveway, and access road around the tractor shed are gravel. Based upon review of available drawings and local staff recollections, the Tractor Shed is believed to have been constructed in 1976. The building is constructed on a typical pile foundation with a structural slab floor. A concrete and fill exterior stairway leads up to a loading dock at truck bed level at the storage room. One aluminum overhead garage door accesses the storage room. One steel personnel door provides access to the office space. The building has a well and water treatment system, a septic system, and an overhead 100-amp electrical service.

The roof is worn and will require annual attention. It will not require replacement for several years.

The office is one open room with one window and one new window mounted air conditioner.

Exterior paint systems are in fair condition. The building framing, roof purlins, and bracing have not been painted in many years. The primer and rust are showing through. Painting should be performed within the next 2 years. The enamel paint on the corrugated metal siding is in good condition. Interior paint systems are limited in areas and are in fair condition and repainting will not be necessary for several years.

Replacement of settled soil adjacent to the building, as witnessed in other areas of “muck cane fields,” will be required.

#### **4.1.25 House West of Bourne Tractor Shed**

The house about 1.75 miles west of the Bourne Tractor Shed is a one-story, stucco coated block vacant house accessible from a dirt driveway and a dirt road, and presently used for incidental storage by the field workers during harvest. It was constructed in the 1950s based local staff recollections. No water, sewer, or power is available at the site.

The building is constructed on a pile foundation with a structural slab floor. The ground around the house has settled up to 18 inches without replacement. The roof structure is wood framing supporting a wood deck and a leaking and visibly deteriorated built-up asphalt roof of unknown age. The exterior wall paint system has failed; walls are cracked and infested with bees. The interior is uninhabitable. The house is in poor condition, unnecessary to the agricultural operation, and cannot be reasonably restored. Demolition is recommended, triggering the Red status.

#### **4.1.26 Boy Tractor Shed**

The Boy (Farm) Tractor Shed is a pre-engineered, enameled, corrugated steel building located in the southeast quarter of the southeast quarter of the southeast quarter of Section 19, Range 39 East, Township 42 South, approximately 9.5 miles southeast of the Area 4 Office. It has separate and closed office and storage rooms and an open covered work area with a concrete floor. The office includes a single restroom. The parking areas around the tractor shed are gravel. Based upon available drawings and local staff recollections, the Tractor Shed was constructed in 1976. The building is constructed on a typical pile foundation with a structural slab floor. A concrete and fill exterior stairway leads up to a loading dock at truck bed level at the storage room. One aluminum overhead garage door accesses the storage room. One steel personnel door provides access to the office space. The building has a well and water treatment system, a septic system, and an overhead electrical service.

The roof is worn and will require annual attention. It will not require replacement for several years.

The office is one open room with one window and one old, window-mounted air conditioner. The closet door in the office and the entry door have been vandalized and must be replaced. The air conditioner will need replacement within the next 2 years.

Most exterior paint is in fair condition. The building framing, roof purlins, and bracing have not been painted in many years. The primer and rust are showing through. Painting should be performed within the next 2 years. The enamel paint on the corrugated metal siding is in good condition. Maintenance pressure washing of the building exterior will suffice for several years. Interior paint systems are limited in areas and are in fair condition and repainting will not be necessary for several years.

Replacement of the settled soil adjacent to the building, as witnessed in other areas of “muck cane fields,” will be required.

#### **4.1.27 Benbow Tractor Shed & Chemical Storage**

The Benbow Tractor Shed and Chemical Storage Building are two buildings located at the northeast corner of Benbow, Florida, and constructed around 1971 using reinforced-concrete slab on grade and steel columns, beams, and purlins to support the building and roof. The roof and exterior and interior walls are corrugated steel sheeting. The Benbow Tractor Shed is approximately 3,600 square feet in area and is used to store and maintain tractors including all of the ancillary equipment required to do so. The roof is pitched in order to drain storm water via sheet flow. The shed is in good condition, but could use new paint. Construction drawings are available for the Benbow Tractor Shed.

The Chemical Storage Building was constructed using reinforced concrete slab on grade and CMU concrete blocks to support the building and double-T concrete roof. The building is approximately 1,160 square feet and is used to store chemicals, pesticides, and oils. The double-T roof is flat. The Chemical Storage Building is in fairly good condition but requires some patchwork to the concrete loading pad. The exterior is also worn and in need of fresh paint. Construction drawings are available for the Chemical Storage Building.

A chain link fence surrounds the approximately 1 acre packed dirt site. An overhead electrical service provides power to the tractor shed; power to the chemical storage building is fed underground from the tractor shed panel. A septic system serves the facilities.

#### **4.1.28 Tractor Shed (East of Citrus Plant)**

The Tractor Shed is located approximately 1/2 mile east of the Citrus Plant. The building was constructed in 1971 using steel columns and beams on a reinforced-concrete slab on grade. The tractor shed is approximately 3,600 square feet and houses tractor repair equipment. The building consists of an enclosed storage area and enclosed break room with corrugated steel walls, as well as a covered storage area with no walls. The pitched roof is also corrugated steel which drains to gutters that run parallel to the steel

supports. A chain link fence surrounds the approximately 2 acre packed dirt site. Construction drawings are not available for this building.

A well and septic system provide water and wastewater services, and overhead electrical drops provide power.

Although the building is in good condition, a grade of Red is assigned because of a safety concern with lights not working and with a ventilation fan at the side of the shed. It has fallen from the wall of the shed and is supported only by its electrical conduit.

#### **4.1.29 Alcoma Office**

The Alcoma Office is located in the southwest quarter of the southeast quarter of the northwest quarter of Section 30, Range 33 East, Township 43 South, at the northern extent of a crushed gravel entrance road and loop driveway. The office is a single story building built on a structural slab on a raised CMU foundation. It has wood frame walls, vinyl siding, a gable, wood truss, and plywood roof with a metal roof covering. The metal roof covering was installed in 2006. The interior is finished with vinyl and carpet flooring, painted sheetrock walls, hollow core wood doors, and popcorn finished sheetrock ceilings. It is rectangular in shape with a floor area of approximately 1,200 square feet. There is an HP accessible ramp constructed at the front of the building. The building's utilities are city electricity, well water, and a septic tank.

The building was likely constructed in 1971 but no construction drawings are available. The vehicle drives and parking are unpaved. The building is in good condition with some minor needs such as securing electrical junction boxes and a stable platform for the AC condenser.

The Alcoma Office is assigned a grade of Red because of two safety concerns external to the building: a cover plate is missing from an electrical conduit box and an electrical plug receptacle box is not secured to the building. Additionally, the AC condenser is tilted and not placed on a slab foundation. This will shorten its EUL.

#### **4.1.30 Alcoma Tractor Shed**

The Alcoma Tractor Shed site is located approximately 430 feet southeast of the Alcoma Office, and consists of two buildings: a tractor shed and a small pole building. A packed dirt drive provides access to the structures from a gravel road along the south. The tractor shed is approximately 4,000 square feet in area and serves as an agricultural equipment repair shop and as a covered area for sheltering agricultural equipment. The building is a rigid frame and beam building with a metal roof and grade level concrete pad. It is enclosed with plywood and metal cladding on all four sides with two bay doors each on its north and south sides. Small equipment and parts storage areas and an office and break room area are ancillary attached shed areas. Mezzanine areas on the east and west ends of the building are used as parts storage areas. Security lighting is present at the four corners of the building. Ceiling mounted high intensity discharge (HID) lighting illuminates the sheltered area of the building. The building's utilities are city electricity, well water, and a septic tank.

A small pole barn to the north is constructed with wood poles, metal cladding on three sides, and a metal roof.

The building and pole barn are in good condition with limited damage to the roofs and paint finish needs.

#### **4.1.31 Alcoma Houses (3)**

The Alcoma Houses are three separate single-story buildings, each built on a structural slab on a raised CMU foundation. Two are located near the Alcoma Office to the southeast, and the third is located at the north end of a separate crushed gravel driveway approximately 550 feet west of the Alcoma Office driveway. The houses have wood frame walls, vinyl siding, gable wood trusses, and plywood roofs with a

metal roof covering installed in 2006. The interiors are finished with vinyl and carpet flooring, painted sheetrock walls, hollow core wood doors, and popcorn finished sheetrock ceilings. They are rectangular in shape with a floor area of approximately 1,200 square feet each. One of the three has an HP accessible ramp constructed at the front of the building. The residence's utilities are 150 amp electrical services, well water, and septic tanks.

The buildings were likely constructed from 1967 to 1971 but no construction drawings are available. The vehicle drives and parking are not paved. The buildings are in good to fair condition with siding replacement, fence repair, and carport roof supports replacement needed at one of the residences.

The assets are assigned a grade of Red because of safety concerns with loose electrical junction boxes and no platforms for the AC condensers at two residences.

#### **4.1.32 Alcoma Pole Barns (2) and Chemical Room**

The Pole Barn and Chemical Room are located about 375 feet south of the Alcoma Office, accessible from a gravel road via a dirt driveway. The Chemical Room is approximately 500 square feet in area with concrete steps with a hinged bay door and truck loading dock at its east side. The building has a raised CMU block foundation with a structural concrete floor, frame bearing walls, and a metal roof. Exterior walls are wood panel and paint finished. The building is in good condition.

The pole barn shelter is approximately 30 feet by 100 feet, attached to the north side of the chemical storage building, comprised of a wood pole support with a gable wood truss and a metal covered roof. The structure appears unsound with roof truss support poles off vertical, broken trusses, and the metal roof is in poor condition. The pole barn is currently used to stage containers and equipment but is recommended for demolition as an unsafe structure. This triggers a grade of Red.

#### **4.1.33 Devil's Garden North and South Office**

The Devil's Garden North & South Office is located in the northeast quarter of the northeast quarter of the northeast quarter of Section 26, Township 46 South, Range 32 East, on the south side of Hendry County Road 833 approximately 2 miles east of the intersection with Hendry County Road 846. An unpaved driveway of compacted soil leads to the entrance on the north side. The office is a modular building of approximately 1,800 square feet, manufactured in 1990 of wood studs with painted plywood siding, supported by wood beams on CMU piers. The sloped roof is covered with galvanized sheet metal, replaced in 2006. Interior walls are paneled, the floor surface is vinyl tile, and the ceilings are acoustical tile. Single-pane aluminum windows are present on the north and south sides of the building. Wooden doors open to the north and the south sides; at the south entrance is a painted wooden deck with painted wooden stairs to the ground level. Painted wooden stairs and a landing provide access to the north side. An associated 12- by 12-foot shed with wood stud walls, plywood siding, and a pitched galvanized metal roof houses water treatment filtering and softening equipment.

The building is served by a single phase, 100-amp 120/240 volt electrical system. Hot water is provided by a 30-gallon electric water heater; cooling is provided by a 3 ton pad-mounted HVAC unit. Waste water is treated in a septic system. No handicap-accessibility exists in the building.

The Devil's Garden North and South Office houses three offices and a restroom and serves as an office for citrus operations in the Devil's Garden North and South areas. The structure is generally in good condition. The structure requires repainting and replacement of locally rotted wooden trim and skirting.

#### **4.1.34 Devil's Garden North and South Tractor Shed**

The Devil's Garden North and South Tractor Shed is a partially open shade/storage structure of approximately 4,300 square feet constructed in 1990, and located about 380 feet southeast of the Devil's Garden North and South Office, along an unpaved driveway of compacted soil. The tractor shed is



constructed of steel columns, beams, purlins, and siding on a reinforced-concrete slab on grade. The sloped roof is covered with sheet metal, replaced in the mid 1990s. The north and east portions of the shaded area are occupied by a pesticide storage area with a raised loading dock, and a small office, restroom, and parts/oil storage facilities, respectively. All are constructed of wood studs and plywood siding; the office walls are paneled. The office is accessed through an aluminum framed door on the north side and a wooden door via the parts room. The floor surface is bare concrete except in the office, where it is covered with vinyl. The dock side has a steel sliding door and concrete steps to the ground level.

The pesticide storage/dock area is raised approximately 40 inches from grade. The north exterior wall of the raised portion is CMU block, and the dock and storage room floor are concrete. The room has a steel sliding door on the west side and concrete steps to the ground level. The building is served by a single phase, 100-amp 120/240 volt electrical system. Potable water is provided for the restroom and an exterior hose bibb via an underground pipe from the office water treatment shed. The restroom is served by a septic system.

The tractor shed serves as a shade structure, part storage, and field office for tractor repairs during citrus operations in the Devil's Garden North and South areas. It is generally in good condition. The interior north wall requires repainting and the north and east exterior sides require replacement of locally rusted metal siding.

#### **4.1.35 Devil's Garden North and South Block Houses (2)**

The two block houses at Devil's Garden North and South are each approximately 1,950 square feet, constructed of CMU with wood trusses and a sloped asphalt shingle roof on a reinforced slab on grade. The northern house is located approximately 475 feet southwest of the Devil's Garden North and South Office along an unpaved driveway of compacted soil; the southern house is located about 1,400 feet south-southwest of the office, along a different unpaved driveway. Each house contains a utility room, a dining room, a living room, three bedrooms, and two restrooms, and is served by a well, a 200-amp overhead single-phase electrical service, a pad-mounted HVAC unit, and a septic system. Exterior walls and ceilings are painted drywall, and interior walls are paneled. Floor covering is variously vinyl tile and carpet. Doors are wood and hollow core veneer; windows are single-hung, aluminum framed. One corner of each house provides covered parking. Ancillary sheds constructed of wood studs and rafters, plywood siding, and galvanized sheet metal roofing house individual water treatment systems for each house, consisting of a water filter and softener system.

A wood-framed covered and screened porch with a tar and pebble ballast roof has been added to the northeast corner of the southern house. Two ancillary structures in addition to the water treatment shed occur at the southern house: a former cooler constructed of CMU and a wood roof on a reinforced concrete pad, and a pole barn/shed constructed of wood poles and rafters with a galvanized metal roof.

The buildings serve as housing for citrus workers and their families and are generally in good condition. At the north house, the roof flashing is rusted, the asphalt roof shingles are locally curling, the plywood sides of the water treatment shed are rotting, and the roof is rusted through in several places. Additionally, the septic tank was overflowing at the time of the site visit. The juxtaposition of raw sewage and small children triggered the grade selection of Red.

At the south house, rotted wood was observed on the fascia and soffit of the roof overhang, the plywood sides of the water treatment shed are rotting, the HVAC unit is nearing the end of its expected useful life, and the pole barn is missing much of its sheet metal roof.

#### **4.1.36 Devil's Garden North and South BBQ Camp**

The Devil's Garden North and South BBQ Camp is an approximately 1,000 square foot building, constructed of wood studs, wood trusses, and a sloped galvanized sheet metal roof on a reinforced-

concrete slab on grade, and located approximately 1/2 mile west of the Devil's Garden North and South office. The building contains a kitchen, a large open room, and a restroom; a covered and screened porch with a concrete slab floor abuts it to the south; and a small lean-to room on the west exterior wall contains a small restroom. Wooden doors provide access on the north, south, and east sides, Aluminum-framed single-hung windows are located on all walls. Exterior and interior walls are painted. The interior floor is painted concrete. The ceilings are painted drywall. A small storage shed constructed of wood studs and plywood siding is located southeast of the building. No functional electrical service, potable water, or septic system was observed.

The building served as a location for company cookouts for personnel employed by citrus operations in the Devil's Garden North and South areas. It is currently abandoned and in poor condition, with rusted roofing, rotted fascia, soffits, and upright supports, and separation of the lean-to shed because of settling. Repairs would likely cost more than its value and demolition is recommended.

#### **4.1.37 Devil's Garden North and South Irrigation Shed**

The Devil's Garden North and South Irrigation Shed is a partially open shade/storage structure of approximately 3,200 square feet constructed in 1990 of creosote-treated wooden poles, wood rafters, and galvanized corrugated sheet metal roofing on a reinforced-concrete slab on grade. It is located approximately 760 feet south of the Devil's Garden North and South Office along the unpaved driveway that leads to the south block house. Parallel to the north side of the shaded area is a shed constructed of wood studs and plywood siding and ceiling. The shed is accessed through a wooden door on the south side. The floor surface is bare concrete throughout. The structure is surrounded by a 115- by 50-foot chain link fence.

The building serves as a shade structure and storage shed for irrigation supplies during citrus operations in the Devil's Garden North and South areas and is in fair condition.

The building is served by a single phase, 100-amp, 120/240-volt electrical system, which has been disconnected. No water or restroom facilities are available at the structure.

Rotten wood siding occurs on the north side of the shed, particularly at the location of the electrical service. The electrical riser and meter socket are unsupported because of the rotten wood. The shed requires repainting; water stains on the interior ceiling may be the result of leaks from a previous roof.

#### **4.1.38 Southern Division Office**

The Citrus Office is located in the northwest quarter of the northwest quarter of the southeast quarter of Section 17, Range 34 East, Township 47 South, and was constructed using a wooden frame on a reinforced-concrete slab on grade. A packed dirt driveway provides access to a packed dirt parking area. Construction dates were not available. Exterior walls and interior walls are constructed of wood with wood studs and wooden frame. The Citrus Office building is approximately 1,200 square feet. At one time, it served as a residence that has since been converted to office and meeting space. The roofs are wood-framed on wooden deck with shingles and are pitched so that storm water flows off as sheet flow. The interior floors are hardwood, carpet, and tiled. The fascia board on the front of the office is damaged and in need of repair in order to prevent rot and additional degradation from occurring. The exterior wooden panels are worn and in need of fresh paint.

The office has a 150-amp electrical service, a well and drinking water treatment system, and a septic system.

There is also a structure near the office that was reportedly used as a barbeque house and is in fair condition. Construction drawings are not available for these buildings.

The asset is assigned a grade of Red because an adjacent abandoned trailer, crudely connected to the house, is falling apart. This trailer needs to be removed for disposal.

#### **4.1.39 Southern Division Block Houses at Entrance (2)**

The two Southern Division Block Houses are located in the northwest quarter of the northwest quarter of the northwest quarter of Section 6, Range 34 East, Township 47 South, and were constructed in the 1950s or 1960s using CMU concrete blocks on a reinforced-concrete slab on grade. Exterior walls are plastered CMU concrete blocks; interior walls are wood stud and plastered drywall. The Block Houses at Entrance are approximately 1,200 square feet each with two residential houses located on the property. The roofs are wood framed on wooden deck with shingles and reportedly newly replaced. The interior floors are a combination of carpet, concrete slab, and tile. The houses are or will be occupied by tenants and are in fair condition. The structures are accessed by a crushed gravel road from Hendry County Road 835, and have nearby packed dirt parking areas. Construction drawings are not available for these buildings.

Each house has a 150-amp electrical service, a well and drinking water treatment system, and a septic system. The water treatment systems need to be replaced and maintained. The houses are in need of both interior and exterior paint. The air conditioning units are also aging and will need to be replaced in the future.

#### **4.1.40 Southern Division Tractor Sheds (2)**

The two Southern Division Tractor Sheds are located at widely different parts of the Southern Division area. The asset identified by Shaw as Tractor Shed 1 is located approximately three quarters of a mile southeast of the block houses along a crushed gravel road. The asset identified as Tractor Shed 2 is located approximately 6.25 miles south-southeast of Tractor Shed 1, in the northwest quarter of the northwest quarter of Section 9, Range 34 East, Township 48 South. Access is from a crushed gravel road. The tractor sheds were constructed in the 1970s of steel columns and beams on a reinforced-concrete slab on grade. Tractor Shed 1 is approximately 3,600 square feet, and Tractor Shed 2 is approximately 4,800 feet. Both sheds house tractor repair equipment. The buildings consist of an enclosed storage area and enclosed break room with corrugated steel walls, as well as a covered storage area with no walls supported by steel columns and beams. The pitched roofs are also corrugated steel which drains to gutters that run parallel to the steel supports. The buildings are in fair condition. Construction drawings are not available for this building.

Each shed has a 200-amp electrical service, a well and drinking water treatment system, and a septic system.

There is also a small lean-to shed at Tractor Shed 2 that covers an aboveground storage tank. The shed roof is badly rusted and will need to be replaced.

#### **4.1.41 Southern Division Horse Barn**

The Southern Division Horse Barn is located at the southwest quarter of the southwest quarter of the northwest quarter of Section 20, Range 34 East, Township 47 South, and was most likely constructed in the 1970s to serve as housing for horses, and then later converted to a tractor shed. The building is accessed by a crushed gravel road and packed dirt pull offs. This structure was constructed using steel columns and beams on a reinforced-concrete slab on grade. The structure is approximately 3,600 square feet and houses tractor repair equipment. The building consists of an enclosed storage area and enclosed break room with corrugated steel walls, as well as a covered storage area with no walls. The pitched roof is also corrugated steel which drains to gutters that run parallel to the steel supports. The building is in good condition, but could use fresh paint. There is also a wall-mounted air conditioner that is aging. Construction drawings are not available for this building.

The Horse Barn has a 150-amp electrical service, a well and drinking water treatment system, and a septic system.

#### **4.1.42 Southern Division Pole Barn**

The Southern Division Pole Barn is located at the southeast quarter of the southeast quarter of the northeast quarter of Section 20, Range 34 East, Township 47 South, and was constructed using a wood frame on a reinforced concrete slab on grade. The building is accessed by a crushed gravel road and packed dirt pull offs. Construction dates were not available. Currently there are only the wooden exterior support poles remaining due to the Pole Barn being badly damaged during a hurricane. There is not enough structure remaining to even consider this a building, and it should be demolished to the slab, triggering the grade of Red. Construction drawings are not available for this building. No electrical, water, or wastewater service is available at the site.

#### **4.1.43 Southern Division Abandoned Office (North of Pond 2)**

The Southern Division Abandoned Office is located of the southeast quarter of Section 8, Range 34 East, Township 47 South, and was constructed around the 1940s of wood frame on an elevated wooden deck with a crawl space. The building is accessed by a crushed gravel road and a packed dirt driveway. The structure is a former house converted into office space, but it and an associated structure are currently abandoned and falling apart. The roof and ceiling of the house are collapsing, the floor is rotted and covered with holes such that it is unsafe to walk on, and the house is severely infested with bees. This abandoned office presents a major safety hazard for anyone in the vicinity, and is responsible for the grade of Red. Because of the infestation of bees, it will be necessary to professionally remove the bees before demolishing the principal and associated structures. Construction drawings are not available for this building.

The abandoned office has no functional electrical service, well, or septic system.

#### **4.1.44 Southern Division Ven-Mar House (N.W. Corner Pond 2A)**

The Southern Division Ven-Mar House is located in the southwest quarter of the southwest quarter of the southwest quarter of Section 8, Range 34 East, Township 47 South, within an uncultivated area surrounded by a fence. The house was constructed of wood frame on a reinforced-concrete slab on grade, likely in the 1960s. The building is accessed by a crushed gravel road and a packed dirt driveway, and the uncultivated area surrounded by a fence. Exterior and interior walls are constructed with wood studs and wooden frame, which are covered with wooden panels. The Ven-Mar House is approximately 1,300 square feet. The roof is wood-framed on wooden deck with shingles and is pitched to allow storm water runoff via sheet flow. The interior floors are hardwood and tile. The house was originally used as a residence but has been converted into a material storage area that is used as the irrigation supply building and is in fair condition. There is a wood framed lean-to adjacent to the house that has a wooden roof support and corrugated steel sheeting for the roof and an earthen floor. Construction drawings are not available for this building.

The house has a 100-amp electrical service, a well and drinking water treatment system, and a septic system.

There are significant amounts of garbage and debris both inside and outside of the house that need to be removed. The exterior is worn and in need of fresh paint.

Traffic areas around the building are asphalt paved and gravel. The asphalt areas are cracked and moderately damaged. The asphalt will need resealing within the next 2 years.

**4.1.45 Prewitt Maintenance Shop Water Treatment Plant**

The existing Prewitt Water Treatment Plan (WTP) treats water from a well adjacent to the Area 3 office. The RO type WTP has a capacity of 3,000 gallons per day (gpd). The WTP includes a pre-filter, two reverse osmosis (RO) filters, a degastifier stack, an equalization/chlorination contact tank, and pressure tank with feed-pump units.

The Prewitt WTP is less than 3 years old and in excellent condition. The WTP is operated by two licensed operators who separately oversee day-to-day plant operation and perform laboratory analyses and reporting required by the WWTF’s FDEP Operation Permit and SFWMD withdrawal permit. Minor preventative and corrective maintenance is provided by maintenance staff working at the field equipment maintenance shop that the WTP serves.

Existing flow through the WTP’s RO units is 300 gpd or a fraction of their design capacity. RO treated water is provided to shop sinks and toilets. Equipment cleaning water is bypassed around the RO units.

The WTP presently appears well operated and maintained and meeting the requirements of its FDEP Operation Permit and SFWMD withdrawal permit. The low flows through facility provide significant reserve capacity and should extend the useful life of the facility.

No short-term (less than 6 months) or long-term (6 to 18 months) replacements or repairs are needed.

**4.2 Deficiencies Due to Condition, Safety or Regulations**

Table 4.2-1 shows assets that were assigned a grade of Red for deficiencies in regulatory compliance or safety conditions and for assets graded Yellow for deficiencies that would compromise the short-term operation of the system. The photographic log (Appendix A) shows examples of assets graded as deficient.

**Table 4.2-1. Asset Condition Grades and Deficiency by Regulatory/Safety Deficiency and/or Compromising Short-Term System Operation**

Non-Process Building/Asset	Condition Grade	Deficiencies
Townsite Houses	Yellow	<p><b>Regulatory/Safety</b> Septic tank replacement</p> <p><b>Compromise</b> Exterior finish, wood rot, brick pointing, HVAC replacement, repairs</p>
Townsite Building - Houses	Yellow	<p><b>Regulatory/Safety</b> None</p> <p><b>Compromise</b> Exterior finish, wood rot, brick pointing, HVAC replacement, roof replacement, removal of shed, repairs</p>
Townsite Building - Garage	Yellow	<p><b>Regulatory/Safety</b> None</p> <p><b>Compromise</b> Exterior finish, repairs</p>
Area 1 Office	Yellow	<p><b>Regulatory/Safety</b> None</p> <p><b>Compromise</b> Asphalt resealing/restriping, HVAC replacement, repairs</p>

Non-Process Building/Asset	Condition Grade	Deficiencies
Area 1 Farm Shop	Green	<b>Regulatory/Safety</b> None <b>Compromise</b> None
Townsite Old Tractor Shed	Yellow	Regulatory/Safety None Compromise Site grading, fence repair
Area 1 Pole Barn	Red	<b>Regulatory/Safety</b> Demolition of one barn, pig manure management <b>Compromise</b> Repairs to one barn
Dunwoody Meeting Building	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Exterior finish, repairs
Single House at Doverspike	Red	<b>Regulatory/Safety</b> Demolition of tractor shed <b>Compromise</b> Exterior finish, roof replacement
Clinic / Union Building	Red	<b>Regulatory/Safety</b> Demolition of northwest shed <b>Compromise</b> Asphalt repair/stripping, water heater replacement, repairs
Sugarland Park	Red	<b>Regulatory/Safety</b> Structure demolition <b>Compromise</b> None
Bunkers Area	Red	<b>Regulatory/Safety</b> Scalehouse demolition <b>Compromise</b> Bunker repairs
Knight Land New Trailer	Green	<b>Regulatory/Safety</b> None <b>Compromise</b> None
Knight Land Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Roof repairs
Area 2 Site and Office Buildings	Red	<b>Regulatory/Safety</b> Missing cover plate to electrical panel <b>Compromise</b> Exterior finish, foundation backfill, asphalt sealing

Non-Process Building/Asset	Condition Grade	Deficiencies
Area 2 Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Exterior refinishing, HVAC replacement
Griffin Housing and Tractor Shed	Red	<b>Regulatory/Safety</b> Tractor shed demolition <b>Compromise</b> Exterior refinishing, HVAC replacement, roof replacement
Florida Lettuce Shed	Red	<b>Regulatory/Safety</b> Lettuce shed demolition <b>Compromise</b> None
South Shore Site Plan + Buildings	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Settled soil backfill
South Bay Harvester Complex (AES Shop)	Red	<b>Regulatory/Safety</b> Building demolition, exposed electrical panel <b>Compromise</b> None
South Bay Tractor Shed SR80	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Exterior refinishing
Runyon Tractor Shed	Red	<b>Regulatory/Safety</b> Tractor shed demolition <b>Compromise</b> Exterior refinishing
Area 3 Office Complex Prewitt	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Exterior refinishing
Bourne Farm (Tractor Shed)	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Roof repair, frame painting
House West of Bourne Tractor Shed	Red	<b>Regulatory/Safety</b> Building demolition <b>Compromise</b> None
Boy Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Roof repair, frame painting

Non-Process Building/Asset	Condition Grade	Deficiencies
Benbow Tractor Shed & Chemical Storage	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Repair and repaint
Tractor Shed (East of Citrus Plant)	Red	<b>Regulatory/Safety</b> Hanging ventilation fan <b>Compromise</b> None
Alcoma Office	Red	<b>Regulatory/Safety</b> Missing cover plate, unsecured outlet box <b>Compromise</b> Missing HVAC pad
Alcoma Tractor Shed and Pole Barn	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Roof repair, repaint
Alcoma Houses (3)	Red	<b>Regulatory/Safety</b> Loose junction boxes <b>Compromise</b> Missing HVAC pad
Alcoma Pole Barns (2) & Chemical Room	Red	<b>Regulatory/Safety</b> Pole barn demolition <b>Compromise</b> None
Devil's Garden N&S Office	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Exterior repairs and repaint
Devil's Garden N&S Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Siding repairs and repaint
Devil's Garden N&S Block Houses (2)	Red	<b>Regulatory/Safety</b> Septic system overflow <b>Compromise</b> Treatment shed repairs, exterior repairs
Devil's Garden N&S BBQ Camp	Red	<b>Regulatory/Safety</b> Building demolition <b>Compromise</b> None
Devil's Garden N&S Irrigation Shed	Yellow	<b>Regulatory/Safety</b> Electrical service replacement <b>Compromise</b> Exterior repairs and repaint



Non-Process Building/Asset	Condition Grade	Deficiencies
Southern Division Office	Red	<b>Regulatory/Safety</b> Abandoned trailer disposition <b>Compromise</b> Exterior repairs and repaint
Southern Division Block Houses @ Entrance (2)	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Water treatment replacement, exterior and interior refinishing, HVAC replacement
Southern Division Tractor Sheds (2)	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Tractor shed roof replacement
Southern Division Horse Barn	Yellow	<b>Regulatory/Safety</b> None <b>Compromise</b> Exterior repaint, HVAC replacement
Southern Division Pole Barn	Red	<b>Regulatory/Safety</b> Structure demolition <b>Compromise</b> None
Southern Division Abandoned Office (north of Pond 2)	Red	<b>Regulatory/Safety</b> Structure demolition <b>Compromise</b> None
Southern Division Ven-Mar House	Yellow	<b>Regulatory/Safety</b> Trash cleanup <b>Compromise</b> Exterior repaint
Prewitt Maintenance Shop Water Treatment Shop	Green	<b>Regulatory/Safety</b> None <b>Compromise</b> None

## **5.0 Professionals Developing Evaluation Report**

The following personnel performed site visits and developed this report.

Paul Farrington, P.E.

Gary Seavey



Thomas Woodard



Erik Carlson, P.E.



**Appendix A**  
**PHOTOGRAPHIC LOG**



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**PHOTOGRAPHIC RECORD**  
**Non-Process Buildings**

<b>Site Name:</b> US Sugar Corporation	<b>Site Location:</b> Tractor Shed East of Citrus Plant Clewiston, Florida
<b>Photographer</b> Gary Seavey <b>Date</b> 08/01/2008 <b>Direction</b> East <b>Comments</b> <b>(01) Main Office Building.</b>  Major areas of wood trim and molding need repair and refinishing.	
<b>Photographer</b> Gary Seavey <b>Date</b> 08/01/2008 <b>Direction</b> West <b>Comments</b> <b>(01) Main Office and 02 West Wing Buildings.</b>  A number of window panes need replacing and window frames need refinishing.	

<p><b>Photographer</b> Gary Seavey</p> <p><b>Date</b> 08/05/2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> <b>(02) West Wing Building.</b> Sidewalks and landings need replacement.</p>	
<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/01/2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> <b>(07) Townsite Building-Houses.</b> House used as storage with a newer roof. Note the worn exterior, boarded windows and absence of hot water heater.</p>	



<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/05/2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> <b>(09) Area 1 Pole Barn.</b> Barn 1597 has a wooden support structure and steel roof. A large portion of the roof is missing. The remaining steel is severely rusted.</p>	
<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> <b>(14) Single House at Doverspike.</b> Exterior damage to the tractor shed. Note the worn paint, missing safety railing bars and damaged vent and siding to the right.</p>	



<p><b>Photographer</b> Woodard</p> <p><b>Date</b> 08/08/08</p> <p><b>Direction</b> North</p> <p><b>Comments</b> <b>(15) Clinic – Union Building.</b> Shed is dilapidated and an attractive nuisance. Recommend demolition.</p>	
<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> Northeast</p> <p><b>Comments</b> <b>(16) Sugarland Park.</b> Shared garage that has been poorly maintained with numerous asbestos tiles missing. The exposed wood is degrading.</p>	

<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> <b>(16) Sugarland Park.</b> House in Sugarland Park. Note the worn exterior, damaged hot water heater housing, asbestos siding, and broken window.</p>	
<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> <b>(16) Sugarland Park.</b> Damages sidewalk presenting a potential trip hazard.</p>	





<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> Northeast</p> <p><b>Comments</b> <b>(16) Sugarland Park.</b> Shared garage that has been poorly maintained with numerous asbestos tiles missing. The exposed wood is degrading.</p>	 A photograph showing the exterior of a white-sided building, likely a shared garage. The siding is severely damaged, with large sections missing, exposing the underlying wooden structure. A window is visible, and the building is situated on a grassy area.
<p><b>Photographer</b> Gary Seavey</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> <b>(16) Sugarland Park.</b> House in Sugarland Park. Note the worn exterior, damaged hot water heater housing, asbestos siding, and broken window.</p>	 A close-up photograph of a light blue exterior wall. The wall shows signs of wear, including a broken window and damaged hot water heater housing. The date '08/07/2008' is printed in yellow in the bottom right corner of the image.



<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> <b>(17) Bunkers</b> <b>Area.</b> Abandoned Scale House buried in the bushes.</p>	
<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> Southeast</p> <p><b>Comments</b> <b>(17) Bunkers</b> <b>Area.</b> Structural damage to the steel beam and columns of the middle bunker.</p>	

<p><b>Photographer</b> Gary Seavey</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> <b>(20) Area 2 Site and Office Buildings.</b>  Coverplate needed on electrical junction box.</p>	 <p>A photograph showing three electrical components mounted on a light-colored wall. From left to right: a closed white electrical panel, an open white junction box with visible internal wiring, and a white electrical meter with a circular dial. A yellow date stamp '08/07/2008' is visible in the bottom right corner of the image.</p>
<p><b>Photographer</b> Gary Seavey</p> <p><b>Date</b> 08/07/2008</p> <p><b>Direction</b> Northeast</p> <p><b>Comments</b> <b>(20) Area 2 Site Office and Buildings.</b>  Foundations of buildings need backfilling due to soil settlement.</p>	 <p>A photograph showing the base of a white building where it meets the ground. The ground is covered with green weeds and grass. A large, light-colored rock is visible in the foreground. A blue pipe runs horizontally across the ground. The building's foundation appears to be settling, with some concrete blocks visible. A yellow date stamp '08/07/2008' is visible in the bottom right corner of the image.</p>

<p><b>Photographer</b> Woodard</p> <p><b>Date</b> 08/07/08</p> <p><b>Direction</b> Northeast</p> <p><b>Comments</b> <b>(27) Runyon Tractor Shed.</b>  Steel roof of shed is torn and steel beams and purlins are rusted. Recommend demolition.</p>	
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> <b>(29) Area 4 Office</b> steps that have settled. Safety hazard.</p>	



<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 3, 2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> <b>(31) East. AES</b> Complex and Parts Storage – 1976 building</p>	 An aerial photograph showing an industrial site. A large, long building with a rusted brown metal roof is the central focus. To its left is a parking lot with several vehicles and smaller white buildings. A road with a guardrail runs along the bottom edge of the frame. The surrounding area includes green grass and other smaller structures.
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 3, 2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> <b>(31) East. AES</b> <b>Complex and</b> <b>Parts Storage</b> – 1976 building in foreground and gas station to left recommended for demolition. 1930s warehouse with brown roof at rear is aban- doned and recommended for demolition.</p>	 An aerial photograph of an industrial complex. In the foreground, there is a large, light-colored building with a grey roof. To the left, a gas station is visible. In the background, a long, low building with a brown roof is situated near a body of water. The area is surrounded by green fields and some construction equipment.



<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> <b>(31) East. AES Complex and Parts Storage</b> – 1930s warehouse building showing un- repaired hurricane damage. Demolition is recommended.</p>	 A close-up photograph of a building's exterior. The structure is made of heavily rusted, corrugated metal. The roof is partially collapsed, and the internal wooden truss system is exposed. There are several windows, some of which are broken or missing. The overall appearance is one of significant structural decay and damage.
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b></p> <p><b>Comments</b> <b>(31) East. AES Complex and Parts Storage –</b> 1976 building abandoned after 2005 hurricane. Operations moved to West AES. Doors blown in, roof insulation saturated and falling. Demolition recommended.</p>	 A wide-angle photograph of a large industrial building complex. The building has a white and green facade. The roof appears to be damaged, with some sections missing. There are several large doors, some of which are open. A white truck is parked in front of the building. The sky is clear and blue.



<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b></p> <p><b>Comments</b> <b>(31) East. AES Complex and Parts Storage</b> – 2005 hurricane damage to roof and doors blown in, roof insulation saturated and falling. Recommend demo.</p>	
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b></p> <p><b>Comments</b> <b>(31) East. AES Complex and Parts Storage</b> – 1976 building abandoned after 2005 hurricane. Operations moved to West AES. Doors blown in, roof insulation saturated and falling. Demo recommended.</p>	


<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b></p> <p><b>Comments</b> <b>(34) Area 4 Ag. Storage Pole Barn</b> – damaged by 2005 hurricane and not repaired. Trusses rotted and broken. Demolition recommended.</p>	
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b></p> <p><b>Comments</b> <b>(36) Bourne tractor Shed</b> – Typical deficient painting system maintenance on steel framing and purlins.</p>	



<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> <b>(36) Bourne tractor Shed –</b> Typical deficient painting system maintenance on steel framing and purlins.</p>	 A photograph showing the interior of a tractor shed. The focus is on the steel structural elements, including a vertical column and horizontal purlins, which are heavily rusted and have peeling white paint. The roof is made of corrugated metal. In the background, a blue tractor and other equipment are visible under the shed's cover.
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b></p> <p><b>Comments</b> <b>(37) House West of Bourne Tractor Shed.</b> Settlement of yard surface around pile supported building, bee infestation, maintenance neglected. Abandoned and used for incidental local storage and waste storage. Demolition is recommended.</p>	 A photograph of the exterior of a concrete building, identified as a house. The building has two multi-paned windows. The concrete appears weathered and stained. The ground in front of the building is overgrown with tall green weeds and grass. A red plastic tarp is visible on the ground to the right of the building.

<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b> East</p> <p><b>Comments</b> <b>(37) House West of Bourne Tractor Shed.</b> Hole in ceiling due to water in attic from leaking roof. Damaged framing. Demolition is recommended.</p>	
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> <b>(43) Bryant Mill Complex (Demolition Site)</b> Piles of demolition material, metals and concrete pieces in former parking area. Small items may not be picked up by demo contractor. SFWMD needs to inspect with USSC before existing demo contract is completed.</p>	

<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 7, 2008</p> <p><b>Direction</b> Southeast</p> <p><b>Comments</b> <b>(43) Bryant Mill Complex (Demolition Site)</b> Piles of demolition material and growing grass which conceals small piles and metal and concrete pieces. SFWMD needs to inspect with USSC before existing demo contract is completed.</p>	
<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/01/2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> <b>(44) Tractor Shed East of Citrus.</b> Exterior damage to the tractor shed. Note the worn paint, missing safety railing bars and damaged vent and siding to the right.</p>	

<p><b>Photographer</b> Erik J. Carlson</p> <p><b>Date</b> 08/01/2008</p> <p><b>Direction</b> North</p> <p><b>Comments</b> <b>(44) Tractor Shed East of Citrus.</b> Tractor shed east of citrus plant supported by a steel frame on a reinforced concrete slab on grade and steel roof.</p>	
<p><b>Photographer</b> Woodard</p> <p><b>Date</b> 08/11/08</p> <p><b>Direction</b> North</p> <p><b>Comments</b> <b>(52) Devil's Garden North &amp; South BBQ Camp.</b> Screened-in porch is falling down, roof is rusted, lean-to shed is sinking. Recommend demolition.</p>	

**Photographer**  
Erik J. Carlson

**Date**  
08/11/2008

**Direction**  
Southeast

**Comments**  
**(54) Southern  
Division Citrus  
Office.** Abandoned  
deceit trailer  
crudely attached to  
the Citrus Office.





**Photographer**  
Erik J. Carlson



**Date**  
08/11/2008

**Direction**  
South

**Comments**  
**(59) Southern  
Division  
Abandoned  
Office.** This  
building is infested  
with bees, has  
holes in the floor  
and the ceilings are  
caving in.



<p><b>Photographer</b> Woodard</p> <p><b>Date</b> 08/08/08</p> <p><b>Direction</b> West</p> <p><b>Comments</b> <b>(63) Clewiston Plant Purchasing Building</b></p> <p>Rusted steel sash windows at east end of building.</p>	 A photograph showing a close-up of a window on a light-colored concrete building. The window has a dark frame and a rusted steel sash. The building is curved, and there is some greenery visible in the background.
<p><b>Photographer</b> Woodard</p> <p><b>Date</b> 08/08/08</p> <p><b>Direction</b> East</p> <p><b>Comments</b> <b>(65) Clewiston Plant Learning Center.</b></p> <p>Roof sealant is spongy, waterlogged and supporting vegetation.</p>	 A photograph of a flat roof surface. The roof is covered with a dark, spongy material, likely sealant, which is waterlogged and supporting small green plants. In the background, there are palm trees and a building.

<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 14, 2008</p> <p><b>Direction</b> West</p> <p><b>Comments</b> <b>(70) West. AES Maintenance Building</b> – operational for all equipment. Repaired after 2005 hurricanes. Roof sections replaced. Needs painting</p>	
<p><b>Photographer</b> Farrington</p> <p><b>Date</b> Aug. 14, 2008</p> <p><b>Direction</b> South</p> <p><b>Comments</b> <b>(71) West. AES Gas Station</b> – typical roof condition needing repairs, Steel framing needing paint.</p>	

**Photographer**  
Farrington

**Date**  
Aug. 14, 2008

**Direction**  
West

**Comments**  
**(73) West. AES  
Facilities  
Maintenance  
Building.**  
Painting of steel  
building has been  
delayed for  
several years.





**Appendix B**  
**FIGURES**

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Figure 4-1. U.S Sugar Assets Location Map

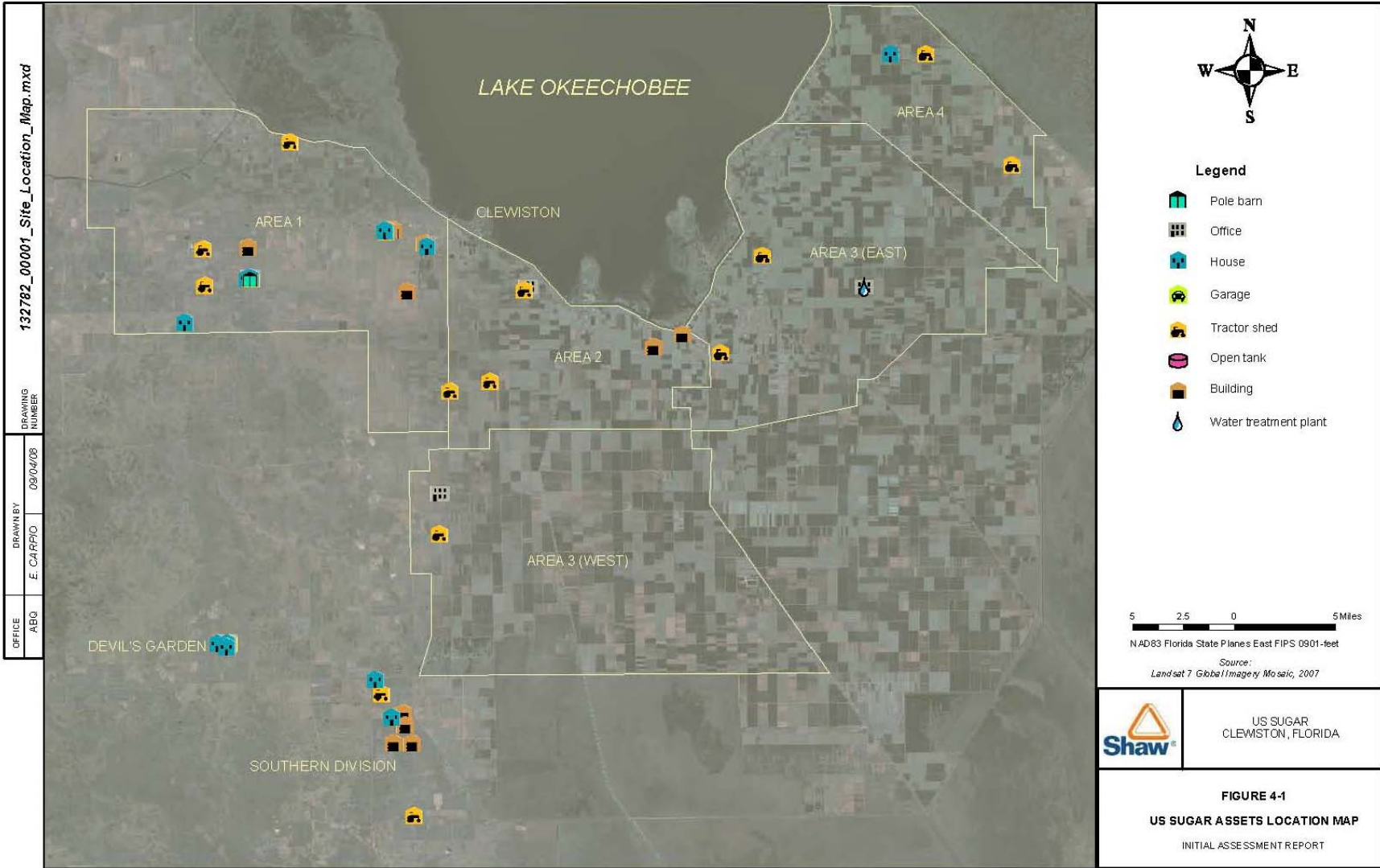


Figure 4-2. Clewiston Area



Figure 4-3. Area 1

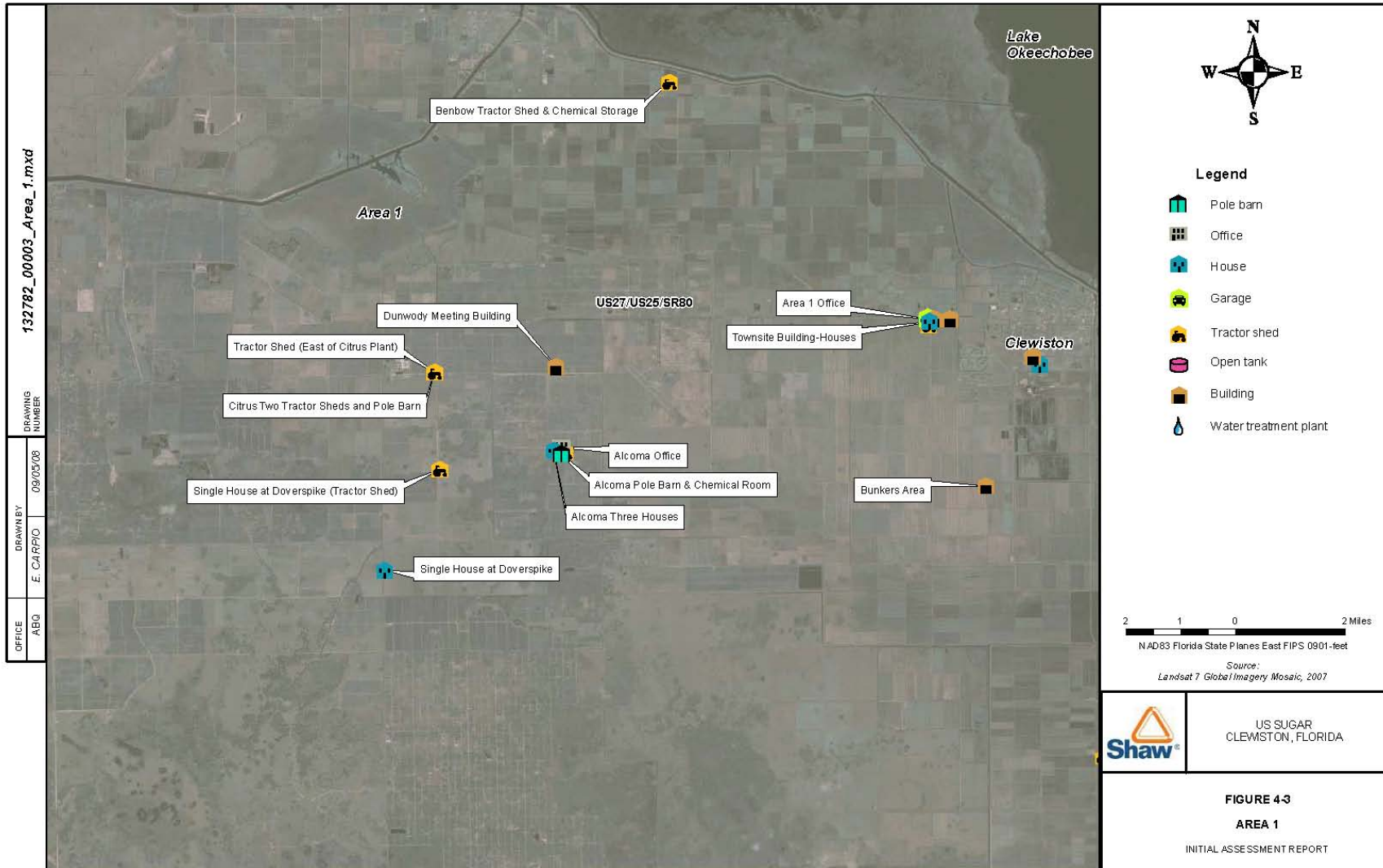


Figure 4-4. Area 2



Figure 4-5. Area 3 (East)

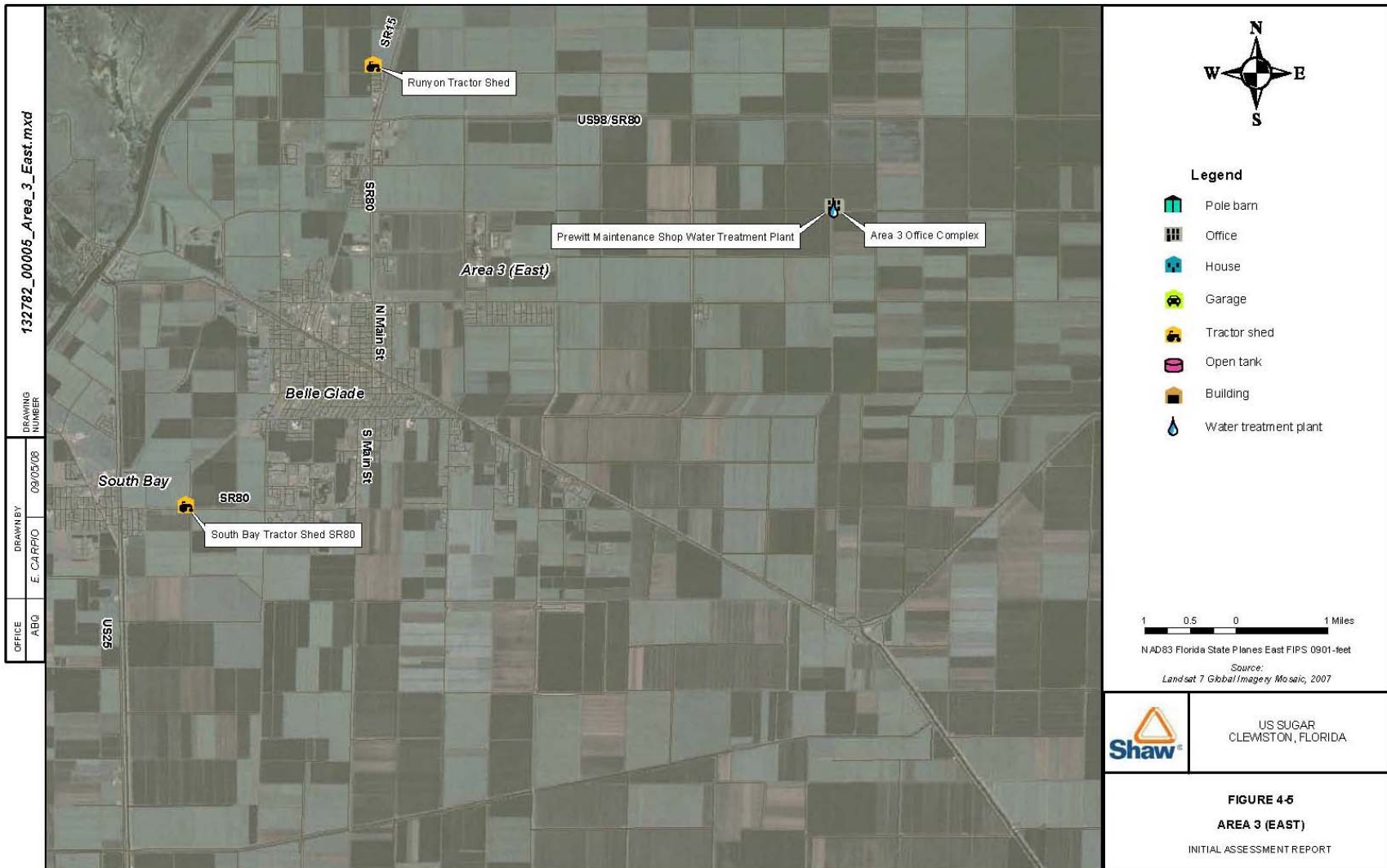


Figure 4-6. Area 3 (West)

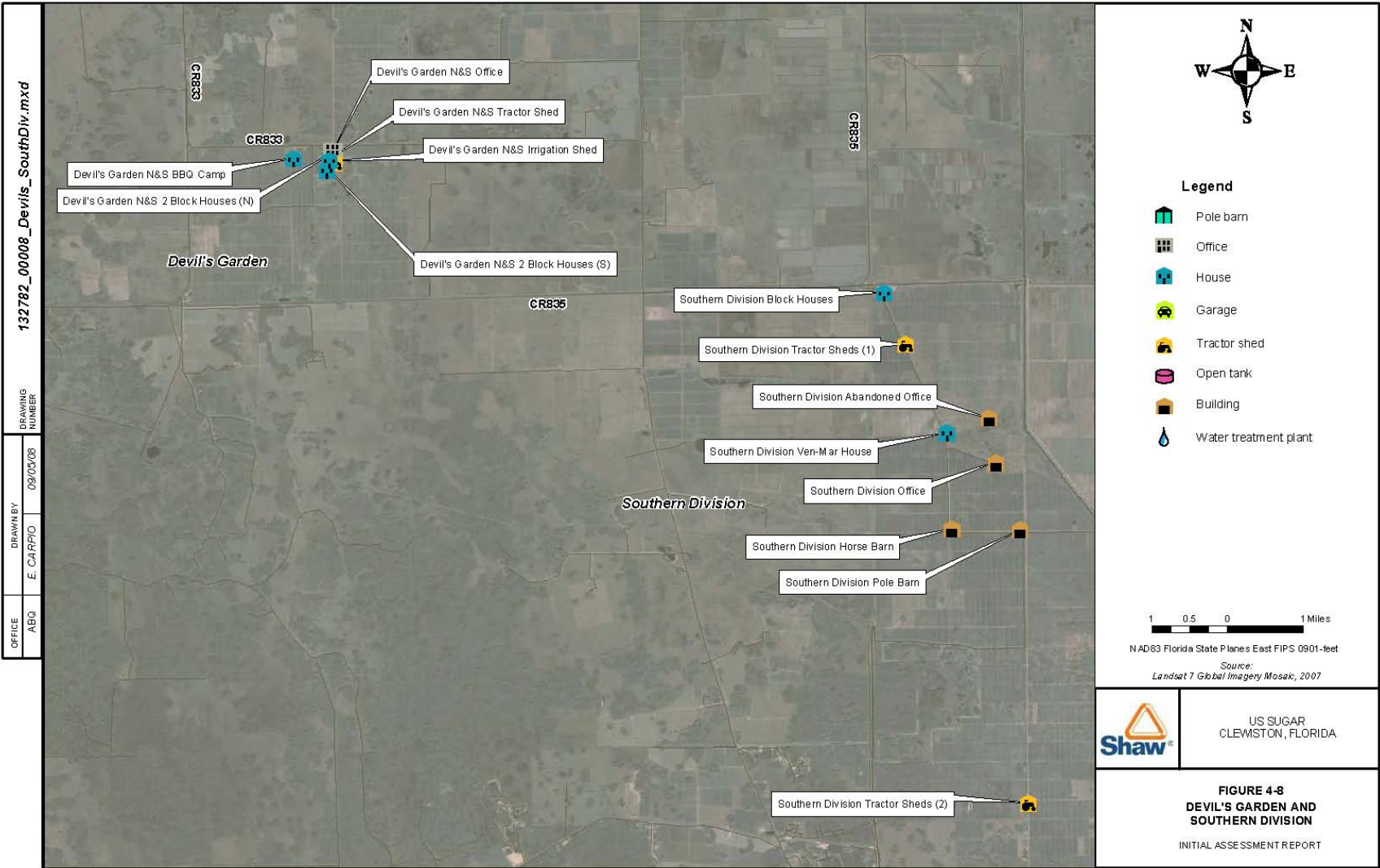


Figure 4-7. Area 4





Figure 4-8. Devil's Garden and Southern Division





Prepared for:  
***South Florida Water Management District***  
3301 Gun Club Road  
West Palm Beach, FL 33406

***Repair, Maintenance, and  
Transition Plans***

Contract #4600000858 Work Order 1

December 19, 2008

Submitted by:  
***Shaw Environmental, Inc.***  
3223 Commerce Place, Suite 100  
West Palm Beach, FL 33407

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**Acronym List**

<b>Acronym</b>	<b>Definition</b>
AADF	Annual average daily flow
AASHTO	American Association of State, Highway and Transportation Officials
AC	Air conditioner
ACM	Asbestos containing material
ADA	Americans with Disabilities Act
AES	Agricultural equipment shop
Ag	Agriculture
ASTM	American Society for Testing and Materials
ATV	All-terrain vehicle
BMP	Best Management Practice
BOM	Bill of Materials
CARR	Cost Analysis and Recommendation Report
CD/DVD	Compact disk/digital video disk
CDL	Commercial drivers license
CIP	Capital Improvement Plan
CL	Centerline
CMMS	Computerized Maintenance Management System
CMRP	Certified Maintenance and Reliability Professional
CMU	Concrete masonry unit
CSI	Courtesy Service and Inspection
Cu ft	Cubic feet
DAF	Dissolved air flotation
DMS	Docket Management System
DOT	Texas Department of Transportation
EAA	Everglades Agricultural Area
ER	Evaluation Report
ERV	Estimated replacement value
EUL	Expected useful life
FAA	Federal Aviation Administration
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FHA	Federal Housing Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
ft <sup>3</sup>	Cubic feet
FTE	Full time equivalent
gen-set	Electricity generator with fuel tank and engine for emergency use
gpd	Gallons per day
GPS	Global Positioning System
GVW	Gross vehicle weight

Acronym	Definition
HID	High intensity discharge
HMA	Hot mix asphalt
hp	Horsepower
HP	Handicapped persons
HUD	Housing and Urban Development
HVAC	Heating ventilation and air conditioning
IAR	Initial Assessment Report
ICUMSA	International Committee for Uniform Methods of Sugar Analysis
IFAS	Institution of Food and Agricultural Services
IP	Intellectual Property
KPI	Key performance indicator
kVA	Kilovolts
kW	Kilowatts
LCE	Life Cycle Engineering, Inc.
lf	Linear feet
LP	Liquid propane
MGD	Million gallons per day
MLS	Maintenance Logistic Systems
mm	Millimeter
MMADF	Maximum monthly average daily flow
NG	Natural gas
NFC	Not from concentrate
NTSB	National Transportation safety Board
OSHA	Occupational Safety and Health Administration
PASER	Pavement Surface and Evaluation and Rating Asphalt Airfield Pavements
PCA	Property condition assessment
PCI	Pavement Condition Index
PdM	Predictive maintenance
PM	Preventive maintenance
PMI	Preventative Maintenance Inspection
POP	Period of performance
PRV	Plant replacement value
PSI	Present Serviceability Index
psig	Pounds per square inch gauge
PSM	Process Safety Management
QA/QC	Quality assurance/quality control
RAP	Reliability Analysis Process
RCA	Root cause analysis
RCNLD	Reproduction cost new less depreciation
RMTTP	Repair, Maintenance, and Transition Plan
RO	Reverse osmosis
ROM	Rough order of magnitude
SAP	Systems, Applications and Products

Acronym	Definition
SCFE	South Central Florida Express, Inc
SFWMD	South Florida Water Management District
SGCG	Southern Gardens Citrus Gardens
SGCP	Southern Gardens Citrus Production
Shaw	Shaw Environmental, Inc.
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedures
SOW	Statement of Work
Sq ft	Square feet
Sq yd	Square yard
SWET	Soil and Water Engineering Technology, Inc.
tn	Tons
USACE	United States Army Core of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USSC	US Sugar Corporation
VFR	Visual flight rules
VHP	Very High Pol
WTP	Water treatment plant
WWTF	Wastewater treatment facility
yd <sup>2</sup>	Square yard
yd <sup>3</sup>	Cubic yard

## 1.0 Executive Summary

This Executive Summary draws directly from all of the required Repair, Maintenance and Transition Plan Reports described in Shaw's Statement of Work for Tasks 1 and 2 of the Agri-Business Infrastructure and Facilities Assessment of US Sugar Corporation.

### 1.1 Deficiencies and Key Issues: Immediate and Near Term

#### 1.1.1 Facilities in Crop Areas

Data for facilities in crop areas for this report is based upon an assessment of approximately 10 percent of the asset inventory.

Three bridges were identified as condition Red and would be scheduled for immediate repairs (within 6 months), six were rated Yellow. Bridges rated Red generally require more immediate repairs due to more severe corrosion of main structural steel elements and section loss, including but not limited to main support beams, bent beams, curb beams, structural footing piles, and steel sheet piling support and retaining elements. Guard rail deficiencies exist on 10 of the 11 bridges inspected and would be considered a safety concern; however, the remoteness of these facilities does not necessarily warrant condition Red.

Major repairs were identified for pump house structures and pumping facilities associated with the pump station facilities. Overall, about 19 percent of the 365 pumps inspected required spill containment. Only two-thirds of the pumps appear to be functional. Both electrical-mechanical and structural repairs are required and include safety related repairs, vibration reduction repairs, bearing and driveshaft repairs, and repair of structural deficiencies including embankment erosion and cleaning and painting of structural components.

Approximately 27 miles of "spoil pile" impoundments were considered condition Red.

Roads were determined to be mostly in good condition. Approximately 39 miles (2 percent) of roads were considered in condition Red and should be repaired within 6 months. Red condition repairs will include possible road reconstruction, drainage improvements, debris and vegetation clearing, grading, and lime surfacing. Approximately 272 miles of roads were considered in condition Yellow and should be repaired within 18 months.

Nearly 60 percent of culverts were classified as condition Yellow, requiring corrective action within 7 to 18 months. Six percent of culvert headwalls are in need of immediate repair (condition Red).

Approximately one-third of canals throughout the property are persistently in need of some routine maintenance and historical maintenance practices have generally been adequate to prevent many canals from deteriorating to the point that they do not convey water as intended.

Based on an assessment of approximately 10 percent of the asset inventory, three bridges were identified as condition Red and would be scheduled for immediate repairs (within 6 months). Six were rated Yellow.

#### 1.1.2 Crop Area Lands

No significant repair needs were found or indicated by site investigation, data analysis, and record review. The crop yields provided by USSC indicate no major deficiencies in their field units.

Majorities of the citrus lands are in good condition and would be similar to sugar cane in that no major deficiencies were found and therefore would only require routine repair and maintenance activities. However, there were significant areas within the citrus land that are in need of repair, or replacement, due to losses from citrus greening and canker.

### 1.1.3 Airport and Airstrip Facilities

There are some safety concerns with three airstrips. The roadbeds are very narrow, and the side clearances to lateral obstructions (i.e., ditch, canal, or railroad spur) are very tight. In our opinion, at Airstrips 8, 9, and 11, the owner should either improve the side clearances or discontinue aircraft use at these airstrips. Several airstrips receive low scores due to obstructions (ditches, canals, or railroad tracks) that are located too close to the left, right, or both edges of the landing strip.

Numerous landing strips do not provide a surface condition that is maintained to consistently handle the load of an aircraft landing.

### 1.1.4 Non-Process Buildings

A total of 45 assets were visited and evaluated. Of the 45 scored assets, 3 were Green, 22 were Yellow, and 20 were Red. Certain roofs were not accessible for visual observation, and copies of roof warranties were not provided for inspection. Estimates of roof expected useful life (EUL) are based on assumptions of age and condition. Certain structures were not entered because of safety concerns related to dilapidated conditions and/or animal nests or insect infestations. Building drawings were unavailable for many structures. Age of those structures was estimated or inferred.

Examples of Red conditions are sunken steps, missing stair, deteriorating abandoned building, badly damaged or worn out roof. All assets judged to be of no value and recommended for demolition were assigned this grade. Examples of Yellow conditions are failing roofing system, neglected painting systems, HVAC systems at the end of EUL, and settlement around a building that would allow vermin under the building.

## 1.2 Repair Plans

### 1.2.1 Facilities in Crop Areas

**Canals:** Dredge approximately 11 miles of major canals considered in condition Red to improve drainage and conveyance requirements within 6 months.

**Pump Stations:** Both large and small pump station facilities were evaluated and were determined to be in poor to fair condition with deficiencies identified for both near-term and immediate-term repairs. Immediate term repairs such activities as:

- Replace whaler tie beam.
- Clean and paint steel sheet pile, structural beams and other elements.
- Replace severely damaged grating sections.
- Replace hand rails.
- Repair bank collapse at discharge side.
- Demolish Upstream (east) Platform (structure unsafe).
- Replace Embankment Staircase (unsafe).

**Bridges:** Three of the 11 bridges inspected in detail were rated Red condition and require immediate repairs. It is recommended that guard rails be installed at all bridge structures prior to the end of the 18-month period as this is a general bridge code violation and poses a liability. Bridges rated in condition Red generally require more immediate repairs due to more severe corrosion of main structural steel elements and section loss, including but not limited to main support beams, bent beams, curb beams, structural footing piles, and steel sheet piling support and retaining elements.

### 1.2.2 Crop Area Lands

No significant repair needs were found for sugar cane crop areas. There were significant areas within citrus land in need of repair or replacement due to losses from citrus greening and canker.



### 1.2.3 Airport and Airstrip Facilities

At Airstrip 14, the grass and vegetation should be cut and ruts and depressions filled with sandy loam prior to runway use. Use of Airstrips 8, 9, and 11 should be discontinued since side clearances are too narrow for safe operations.

### 1.2.4 Non-Process Buildings

Detailed descriptions for repair of each building asset are provided in the RMTP in both chart and narrative form. In each case, repair recommendations tie to the deficiencies specifically cited. Rather than try to summarize such extensive detail for the purposes of this executive summary, suffice it to say that there are specific life-safety and material deficiencies which, if not corrected, will cause material damage to the asset or continue to expose the owner to unnecessary liabilities. Corrective repairs specific to each asset were identified along with a time frame for repair.

## 1.3 Maintenance Plan Revisions/Additions, Leases, CIP

### 1.3.1 Facilities in Crop Areas

USSC has no documented maintenance plans for Facilities in Crop areas. Two FDOT manuals are recommended to be used as guides for routine maintenance procedures affecting bridges, roads, and culverts:

- FDOT *Manual Bridge and Other Structures Inspection and Reporting Manual*, dated May 1996, provides a summary and guideline for bridge maintenance procedures. It also provides guidelines for culvert maintenance inspections
- FDOT *Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways*, dated May 2007, provides a summary (Chapter 10 F.2) of routine road maintenance and could also apply to impoundment levee driving surfaces and other structural elements.

### 1.3.2 Crop Area Lands

To maintain economic crop yields at existing levels, maintenance and repair activities for laterals, culverts, irrigation distribution systems, and crop cultural practices (e.g., fertilization, pest management, planting, tillage, and harvesting) will have to continue. It is important to note that these activities have been and must continue to be done on seasonal cyclical process.

For example, sugar cane cycles start at planting where a plant application of fertilizer is applied. Another split application is applied to the crop while in the growth stage as well as applicable pesticides. After harvest, the ratoon crop is applied with a ratoon fertilizer mix that is similar to the plant mix applied at planting. The measure of these is calculated based on the yield from each field.

In general, citrus has the same maintenance issues as sugar cane, but will have a higher focus on the irrigation distribution system and tree health. Tree health is a major concern for the future and could result in higher than normal maintenance activities for citrus due to citrus canker and greening.

### 1.3.3 Airport and Airstrip Facilities

There are no maintenance plans in existence for airstrips. Since all are also serving as dual purpose roads, USSC should follow the FDOT *Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways*, dated May 2007. Chapter 10 F.2 discusses routine road maintenance which would include operations such as:

- Clear debris from roadway and ditches.
- Mow and control vegetation.
- Fill depressions to provide a smooth runway and recovery area.

- Replace faded pavement markings on a biannual basis.
- Inspect and grade any shoulder dropoffs and washouts.
- Blade and compact roadway to provide a 2 to 4 percent uniform crown. Repeated traffic will erode the crown, and require replenishment of gravel.
- On asphalt roads, clean and fill potholes with hot mix asphalt. Apply crack sealer to inhibit water infiltration and provide asphalt seal coat every 6 years.

#### 1.3.4 Non-Process Buildings

Only one maintenance plan was made available for review and it pertained to the HVAC system at the main office in Clewiston, which has since been removed from the scope of this report. Shaw recommends that all assets rated Red be addressed within 6 months with corrective action.

### 1.4 Transition Plan

#### 1.4.1 Facilities in Crop Areas

Each area manager should complete a maintenance record for each asset category noting the date, condition, and activity completed. In some cases, it may be advantageous to also develop a record-keeping system that includes major sub elements of the category, e.g., for selected bridges, larger pump stations, etc. Maintenance is recommended based on semi-annual or annual auditing depending on the asset category. Semi-annual inspection and/or auditing is recommended for more critical and higher valued inventory such as pump station facilities, bridge structures, control gates, and culvert crossing facilities.

An annual inventory and/or audit is recommended for roads, canals, impoundment levees, and all other minor cropland facilities.

We recommend that the motor grader operators review FHWA *Gravel Roads Maintenance and Design Manual*, Section 1. This document describes the proper use of the motor grader (speed, moldboard angle, moldboard pitch, shaping principles, windrows, crown, and pulling shoulders) to achieve a good gravel road with a minimum 2 percent roadway crown. Most USSC roads and impoundment levee crests have very little crown, and thereby have poor sheet flow drainage. Most roads have uncontrolled drainage inlets to adjacent canals and therefore drainage improvements are also recommended. Adherence to these grading techniques will improve runoff and reduce the prevalence of rutting and potholes.

#### 1.4.2 Crop Area Lands

The Best Management Practices (BMPs) as required in the existing BMP permits will need to be maintained. The level of BMP implementation is determined by the BMP permits provided by USSC. Review of these permits indicated that fertility, sediment control practices (traps, vegetative filters, laser leveling), soil testing, and stormwater retention/detention are needed.

Transition of existing leases for agricultural lands will need to include terms and lease contract negotiation with current or prospective tenants. Currently USSC records indicate that there are 165 agricultural land leases totaling 8,913 acres in effect for the 2008-2009 period.

SFWMD will need to maintain the same level of cropland operation and maintenance as is currently being done by USSC in order to retain current crop production levels for the majority of the fields, exclusive of the aggressive investments currently being taken to counteract citrus canker and greening. If at some point SFWMD will undertake different uses for certain land parcels now under commercial crop production, the following actions should be considered approximately 3 years before crop production is stopped:

- Discontinue the routine replacement of culverts/culvert risers. However, where possible, continue to repair culverts/culvert risers that have failed.

- Taper the phosphorous fertilization rate downward so phosphorous stored in the soil will be taken up by crop
- During the last 2 years, the fields scheduled for being fallow or being replanted should be kept as an additional ratoon crop, especially for the last year because the cost of replanting and lost yield during fallow conditions would not be recouped.
- No citrus trees should be replanted if the grove is to be taken out of production within 7 to 10 years.

Prior to turnover of croplands by USSC to SFWMD, the soil conditions in relation to fertility will need to be assessed. The intended use after the turnover will determine the actions that need to be in place before the turnover.

- On sugar cane land, the recommended action if the land will be cultivated for similar crops is to maintain the current level of soil fertility.
- The recommendations are similar for the citrus operation of SGCG. A tree that is planted today will need approximately 4 years before any return will be received. If the grove is to be used for the same purpose as it is currently, it will need to be replanted by the current owner with no expectation of return unless assured by the potential buyer.

No significant improvements to the sugar cane and citrus operations are recommended, other than the replacement of the canker and greening destroyed citrus trees if the groves are to be maintained in citrus beyond 10 years. The ability to maintain the sugar cane and citrus operations at their current level of production will be a challenge for anyone other than the current operators. Therefore, it is recommended that as many of the existing USSC staff be employed as possible to continue the citrus and sugar cane cropland activities. It is also recommended that more Best Management Practices than required under the current BMP permits be implemented.

#### **1.4.3 Airport and Airstrip Facilities**

Since all repairs to air strips have heretofore been done by USSC only as needed and monies would have to come out of the general account, it is recommended that SFWMD review all corrective actions undertaken by USSC during the transition phase and cover the costs for any such repair deemed still needing to be done via contract negotiations prior to close or develop a reserve fund to cover these costs directly.

In the 6-month transition period, USSC should replenish gravel and reestablish a roadway crown on all gravel airstrips. This will improve sheet flow, runway drainage, and ride quality of the surface. Motor grader operators should review the US Department of Transportation (US DOT) Federal Highway Administration (FHWA) Gravel Roads Maintenance and Design Manual. This document describes the proper use of the motor grader (speed, moldboard angle, moldboard pitch, shaping principles, windrows, crown, and pulling shoulders) to achieve a good gravel road (airstrip) with a 2 to 4 percent roadway crown.

#### **1.4.4 Non-Process Buildings**

USSC considers its lease agreement for office space with [REDACTED] to be a trade secret. The terms of the lease were only available for review by Shaw at the law offices of Gunster Yoakley.

Since all repairs to buildings have heretofore been done by USSC on an as-needed basis and monies would have to come out of the general account, it is recommended that SFWMD review all corrective actions undertaken by USSC during the transition phase and cover the costs for any action needing to be done via contract negotiations prior to close or develop a reserve fund to cover these costs directly.

## 2.0 Recommended Dispute Resolution Process

It is important to note that a tool to be employed early on is to require that the protagonists on both sides adhere to the principle of elevating issues that can not be resolved to next higher levels through their internal chains of command early and continuously when they reach an impasse. Our experience is that this approach has been demonstrated as an effective dispute resolution tool, especially at the project level, since it ties the action close to the point at which the sides disagree (usually on the facts) yet moves above the personalities who can not sort things out for some reason (e.g., they lack the authority or they dislike one another) to another set of people who have the authority, a different perspective, or otherwise can get the issue resolved satisfactorily.

Failing in this approach, another, more formal, process may become necessary. The formal issue resolution process that Shaw recommends for disputes between the Operator and SFWMD is mediation. Mediation offers something outside of the government judicial process (i.e., outside a court of law) and is the next lowest threshold resolution option. The benefit of mediation is that it keeps both parties talking so that the overall transaction can remain on a sound footing while focusing on settling the issue outside of the judicial system. Given that there are personalities and long-standing personal and professional relationships involved on both sides of potential issues between SFWMD and USSC, using a tool that focuses on issue resolution early and using a disinterested third party may prove most effective.

In mediation, there is a neutral or third-party mediator who facilitates the resolution process (and may even suggest a resolution, typically known as a mediator's proposal), but does not impose a resolution on the parties. This individual is an impartial party who serves as a mediator, fact finder, arbitrator, or otherwise assists the parties in resolving the issues in controversy. This person may be a permanent or temporary officer or employee of SFWMD or any other qualified individual who is acceptable to both parties.

Mediation is an effective issue resolution process, especially if a factual interpretation is needed or the parties are polarized into an all-or-nothing position and believe that evaluation by a third party mediator could help resolve the matter or if one party's view of the case is unrealistic, and a realistic appraisal of the situation by a third party may help.

### 2.1 Data on the Parties

The first step in mediation is to gather pertinent information about the parties: the complainant/grievant, and the respondent. Information gathered for each party includes the following:

- Position/title, grade, or rank
- Address
- Phone number
- Facsimile number
- E-mail
- Dates each party is available to mediate an issue/grievance
- Brief description of the issue(s) in controversy

The grievant describes what is at issue in a controversy or dispute and the respondent does the same plus determines who has settlement authority in the matter and who will need to be consulted if an acceptable settlement agreement is crafted.

### 2.2 Mediation Scheduling

When scheduling the mediation, ensure to account for any special needs of the parties and their representatives. Consider whether either party has a disability that may require special needs such as an access ramp for the disabled. Determine also whether either party currently plans to bring a representative (legal or non-legal) to this session (if so, who are they, and what is their expected role). Mediation date,

location, agenda, and time limits must be agreeable to the parties. A formal mediation agreement should be drawn (i.e., mediation agreement form) and sign by the parties to facilitate mediation.

## 2.3 Considerations

Mediation is a voluntary process. Mediation and any resulting settlement agreement depend on the voluntary agreement of the parties. The mediator should arrange for any experts to be available by phone during the mediation session. Sessions last about four hours, so ensure the session location (e.g., conference room) is schedule at least 6 hours.

The following points should be emphasized by the mediator prior to the start of the mediation session.

- Explain why confidentiality and impartiality are keys to the success of mediation.
- Explain what a caucus is and why it makes mediation a powerful dispute resolution process.
- Mediation is not a legal proceeding so normal court rules do not apply.
- Mediators are not judges; they do not determine who is right as a matter of law, nor do they provide legal counsel or advice to either party.
- Parties have a right to bring legal counsel or any other type of representative to the mediation session if they so choose.
- During the mediation session, either party is free to consult lawyers or other experts to ensure terms and conditions of a settlement are legal and that the parties have the authority to agree to them.

The resolution goal must be a clearly written agreement acceptable to both parties. Settlement Agreements that result from mediations are enforceable to the same extent and using the same processes as any other administrative settlement for the type of dispute that gave rise to the complaint/grievance.

## 2.4 Mediation Process

There are five elements to mediation: mediator's opening statement; parties' opening statements; joint discussion; caucus; and closure.

### 2.4.1 Mediator's Opening Statement

The opening statement is the verbal opening of the mediation by the mediator. This is the mediator's first contact in person with the parties together. Aside from setting the ground rules for proceeding, the mediator will set the tone for the mediation as well as have an opportunity to gain or lose credibility as a capable neutral. Of particular importance is the need for the mediator to review the confidentiality of the process.

### 2.4.2 Parties' Opening Statements

Each party has the opportunity to present an opening statement. Usually the moving party, the Complainant, goes first. The mediator should allow the party to fully explain his or her position. This may be the first time that each party hears the other party's view on the issues. Because of this, the mediator should allow both parties to fully explain their position even if they become emotional. Furthermore, venting by the parties can be the first step in putting the dispute behind them and moving toward resolution.

### 2.4.3 Joint Discussion

Joint discussion is the first opportunity for the parties and the mediator to interact. The mediator should start the joint discussion by summarizing the parties' opening statements. Clarifying questions should then be asked of each party so the issues can be properly identified. Moreover, this is an opportunity to begin assisting the parties in focusing less on their positions and more on their interests. Caucus may be the more appropriate forum for more sensitive parties or sensitive interests.

If joint discussion breaks down, or issues arise that are sensitive or which might be confidential, the joint discussion should be suspended and the mediator should move to a caucus.

#### **2.4.4 Caucus**

##### **Caucus with the Parties**

A caucus is a private meeting between the mediator and one party. Caucuses may be called when the parties need to cool off and refocus, when confidential information needs to be discussed in a protected setting, when options for settlement need to be explored in a secure setting, or when a party needs to save face in front of the other party. Virtually everything discussed in caucus that was not previously disclosed either before or during the mediation is confidential. Unless the party explicitly grants the mediator permission to discuss some or all of what is discussed in caucus, the mediator must not reveal the information to the other party either in caucus or joint discussion. When the mediator holds caucuses with a party, the mediator should explain the rules on confidentiality before starting the sessions. To avoid confusion, the mediator should verify, at the end of each private session, what information the party wishes to keep confidential and what information can be disclosed to the other party. A party is free to reveal its own communications offered in caucus.

In caucus a mediator can accomplish a number of things beyond getting additional information that the party may not feel comfortable discussing in open session, such as disclosure of possible compromises. While the mediator cannot disclose this information without the express permission of the party, the information may nevertheless be invaluable in assisting the parties to recognize interests as opposed to positions, thus moving them toward settlement. Before leaving the caucus, the mediator should get a clear understanding from each party as to what can and cannot be disclosed to the other party.

##### **Mediator's Caucus**

Sometimes a caucus is necessary, not because a party needs it, but because the mediator needs it. This is an acceptable reason to call for a caucus. The mediator is responsible for being the calmest, most controlled person in the mediation. If the circumstances of the mediation make meeting this responsibility difficult, the mediator should take a mediator's caucus.

#### **2.4.5 Closure**

At some point, after using joint sessions and caucuses, the mediation process will come to a close. This can occur in one of two ways: without agreement/settlement; or with agreement/settlement, either partial or in full.

When settlement no longer seems possible, because there is no more movement by the parties on any of the issues and the parties and the mediator have seemingly exhausted all available mediation tools, or one or both parties have removed themselves from the mediation, the mediation should end. While the mediation has ended, the mediation process is not necessarily over, and either one or both parties may reconsider their decision to stop. Many times the parties may be more willing to remain in the process or may be more amenable to settlement after a period of time has passed. Appropriate follow-up by the mediator may result in the parties back at the table and an eventual settlement.

In most cases the mediation session will close with at least some of the issues resolved. Once a specific issue has a specific solution proposed and the mediator works through the proposal with the parties to see if it is indeed satisfactory to them, it should be reduced to writing by the mediator, reviewed, and then signed by the parties.

**Repair, Maintenance, and Transition Plan**

**For**

**FACILITIES IN CROP AREAS**

**US Sugar Corporation**

**December 19, 2008**

**Prepared for**



**South Florida Water Management District**

**3301 Gun Club Road**

**West Palm Beach, FL 33406**

**Prepared by**



**Shaw**<sup>®</sup> Shaw Environmental, Inc.

**3223 Commerce Place, Suite 100**

**West Palm Beach, FL 33407**

**Repair, Maintenance, and Transition Plan  
For  
FACILITIES IN CROP AREAS  
QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the plan subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices at this time. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer's experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this plan, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This plan is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Lead/Plan Author**

Name: Nathan Newell

Date: December 19, 2008

**Peer Review**

Name: Randy Youngman

Date: December 19, 2008



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### Appendix A     Asset of Concern Locations

## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Repair, Maintenance, and Transition Plan (RMTP) addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations.

### 1.1 RMTP Overview

It is the goal of the RMTP is to ensure operation of the facilities within croplands at the current levels for the next 6 months and possibly up to the next 2 years. The RMTP includes a reporting scheme for USSC to communicate compliance with the RMTP to SFWMD and a suggested audit protocol for SFWMD to validate USSC compliance. The RMTP includes an analysis of historic capital spending and the existing forward looking capital improvement plan to provide SFWMD with an expectation of resources required to support the facilities. The RMTP provides an initial analysis of leases and maintenance agreements required for ongoing operations. Finally, the RMTP articulates ongoing quality assurance required for the foreseeable future by SFWMD.

The existing Preventive Maintenance Program for each of the facilities within croplands is minimal and generally consists of infrastructure improvements upon failure and would be considered a “reactive” maintenance program. The facilities evaluated include roads, canals, impoundment levees, culverts, pump stations, and roadway bridge structures.

Little or no written maintenance programs were obtained for these facilities during the document discovery process and appear to be non-existent. Area Managers for Agricultural Areas 1 through 4 are responsible for maintaining their respective infrastructure and budgeting for maintenance and repairs.

The Shaw team visited the USSC offices between September 19 and October 10, 2008 to fulfill the task of documenting the maintenance plans and identifying deficiencies. The overall condition of the cropland facilities is fair and is evident of average overall maintenance practices. The decision process for maintenance and repairs calls for a fix-as-needed or a fix-upon-failure approach.

The thoroughness of the preventive maintenance coverage is adequate at best, but would require improvements to align it with industry standards for similar operations. Audits should be conducted throughout this asset category on a semi-annual basis to ensure execution of the preventative maintenance program as is discussed later in this document. Annual audits should be performed to assess the overall condition within the cropland areas. Additional monitoring or spot checks should also be completed periodically to ensure and verify that that current maintenance requirements are not being deferred and equipment being operated is consistent with vendor and manufacturer’s recommendations. The infrastructure areas of priority for maintenance and repairs should give preference to pumping facilities and bridges. Impoundment levees, roads, canals, and culvert maintenance and repairs could be given lesser priority.

The Maintenance Work Backlog approach currently used at the sugar and citrus processing plants could similarly be implemented for the cropland facilities. USSC should be required to report Preventive Maintenance (PM) Compliance and Maintenance Work Backlog monthly to the SFWMD for pump stations and bridges, although semi-annually reporting would be recommended for all other Facility in Crop Areas asset groups. It is recommended that, at a minimum, the cropland facilities be inspected annually for overall condition. The SFWMD, or its representative, should monitor the Maintenance Work Backlog to verify that current maintenance requirements are not being deferred.

## **1.2 Limiting Factors**

The cropland facilities were visited and assessed during August through October 2008. Visual inspection of equipment normally being used and observation of the means and methods for maintenance and repair was not possible due to the timing of this investigation,

Our findings and conclusions were based primarily on the visual appearance of the facilities evaluated with some physical testing of pump stations performed where deemed appropriate. Our observations included mostly above-ground and above-water inspections for facilities, particularly those portions that were readily accessible to the evaluators without opening or dismantling any secured components and without performing any testing or structural or geotechnical analysis. Some of our conclusions in the RMTP were partially based on information provided by others, including representatives of the client, the property owner, and/or the asset manager.

## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged Shaw to conduct the Initial Assessment of USSC facilities, properties, and infrastructure under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Repair, Maintenance, and Transition Plan (RMTP) for Facilities in Crop Areas addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### 2.1 Purpose and Scope of Services

The objective of this RMTP is to identify deficiencies and required corrective improvements, summarize existing operation and maintenance activities and if necessary, recommend new ones, and describe quality assurance requirements for infrastructure to maintain the current level of operations and efficiencies at the time of turnover to SFWMD.

### 2.2 Description of Infrastructure and Asset Listing

The following asset types formed the basis of the IAR and ER, and are the subject of this RMTP:

**Canals and Ditches** – These facilities consist of irrigation and drainage system components comprised of interconnected main and perimeter canals which facilitate water level management to support crop production and storm water conveyance. The canal system generally consists of main canals approximately greater than or equal to 50 feet wide and a grid system of interconnected lateral ditches generally 25 to 50 feet wide, controlled by a combination of culverts, flow control gates, steel risers, flap valves, and pump stations. Tertiary canals (field ditches less than 15 feet wide) connect to the lateral network through culvert structures and/or risers, generally without active pumping facilities. The maintenance program for canals involves annual herbicide sprays on larger canals. Only major canals were included in this RMTP. An approximation of canal mileages was evaluated through the use of GIS and AutoCAD technology.

**Control Gate Structures** – These facilities consist of manually operated screw-gates, board risers, and winch risers for adjusting the level of water prior to release to a drainage culvert structure. They are designed to either retain or release water according to irrigation and drainage requirements for crop production. It was observed during the initial assessment phase that failed screw-gates are generally being replaced with board culverts because of the high cost of screw-gates.

**Drainage and Irrigation Culverts** – These facilities consist of corrugated aluminum galvanized steel pipe or reinforced concrete pipe of varying diameters installed below ground at main canal intersections with secondary lateral canals, road crossings, or canal ends to facilitate water movement as required to support agricultural operations. Lateral and main canals are generally connected with one or more culverts at least 40 feet in length and a diameter of 36 to 60 inches. Field canals are connected to laterals and main canals generally with a culvert 40 feet long and a diameter of 18 inches. Culvert structures are most often used to facilitate road crossings over canals in lieu of bridge structures.

**Roads** – These facilities consist of a large network of unsurfaced roads and trails throughout the cane fields and orange groves to facilitate the maintenance of the land along with the harvest of crops. Some roads also serve a secondary purpose as landing strips for the crop duster aircraft. Only major roads were included in this RMTP. An approximation of unpaved road mileage was evaluated through GIS and AutoCAD technology.

**Pump Stations and Facilities** – Diesel engine and electric motor powered pump stations are located throughout the property to connect the secondary canal systems to the primary canal systems so that USSC can better control the flow of water for both irrigation and drainage purposes. These pumping facilities are used both for irrigation purposes as well as flood control.

**Bridge Structures** – These facilities consist of wooden, concrete, or steel structures that are used to allow movement into and out of fields as well as movement within the fields for people and vehicles to facilitate the planting, harvest and maintenance of the land and crops.

**Levees** – Levee and seepage collection canal impoundment systems are used to collect and store irrigation water primarily for citrus crops. Levees are typically no more than 10 feet in height and do not meet the criteria for dam classification.

## **3.0 Methodology**

### **3.1 Definition of Condition Class - Grading System**

The grading system for cropland facilities was described in the Evaluation Reports (ER).

### **3.2 Repair, Maintenance, and Transition Plan Review**

For the majority of cropland facilities, there is no comprehensive written USSC repair or maintenance plan with the exception of pumping facilities. Review of the few documents confirms that the pump station maintenance is conducted in a reactive mode versus a proactive one.

## **4.0 Repair, Maintenance, and Transition Plan**

The sections that follow describe repair and maintenance tasks required of the infrastructure operator to ensure that the infrastructure is turned over to SFWMD at the end of the 2009/2010 production season in the same operational, functional, and effective condition that it is in today.

Appropriate evaluations of current cropland facilities and associated costs for repair, operations, and maintenance were performed as described in the Section 3.0, Methodology. Since there were no formal plans to review, information collected from managers and operators and professional judgment were used to develop the recommendations outlined below. These are designed to ensure that SFWMD's interests are being protected and that required future replacement and repairs, including their timing, will be provided by the operator prior to turnover to SFWMD.

### **4.1 Repair Plan**

#### **4.1.1 Bridges**

A map showing locations of bridges that were inspected can be found in Appendix A.

During the site visits approximately 10 percent of roadway bridges inventory was assessed for major repair needs. The following three bridges were identified as Red and should be scheduled for near-term repairs (within 6 months):

- BR01-07-01
- BR03-26-01
- BR03-28-01

Bridges rated in condition Red generally require more immediate repairs due to more severe corrosion of main structural steel elements and section loss, including but not limited to main support beams, bent beams, curb beams, structural footing piles, and steel sheet piling support and retaining elements.

The following six bridges were identified as Yellow and should be scheduled for interim-term repairs (within 18 months):

- BR01-01-01
- BR01-01-02
- BR02-19-02
- BR04-31-01
- BR04-32-01
- BR04-33-01

Most bridges evaluated in condition Yellow exhibited signs of some corrosion but not necessarily section loss and required cleaning and painting of structural elements including but not limited to support beams, bent beams, curb beams, structural footing piles, and structural steel sheet pile.

It is important to note that guard rail deficiencies exist on 10 of the 11 bridges inspected and are considered a safety concern. It is recommended that guard rails be installed at all bridge structures prior to the end of the 18-month period since this is a general bridge code violation and poses a liability.

The following two bridges were identified as Green and should be scheduled for longer term and routine maintenance only:

- BR01-01-03
- BR02-19-04

No apparent scheduled maintenance program currently exists for roadway bridge structures and it is apparent that crews are maintaining bridges mostly on a reactive maintenance program and as money is made available for these repairs.

#### **4.1.2 Pump Stations**

During site visits, major repairs were identified for pump stations as Shaw conducted more detailed evaluation and testing on 3 larger pump stations and 32 smaller pumps.

The following large pump assets were identified as condition Red (requiring repair in a 0- to 6-month period) and Yellow (requiring repair in a 7- to 18-month period) and should be scheduled for structural repairs as identified in the ER:

##### **Condition Red (Structural Repairs)**

- PSTA 3 Pump Station
  - Replace whaler tie beam
  - Clean and paint steel sheet pile, structural beams and other elements
  - Replace severely damaged grating sections
  - Replace hand rails
  - Repair bank collapse at discharge side
  - Demolish Upstream (east) Platform (structure unsafe)
  - Replace Embankment Staircase (unsafe)
- Southline Pump Station - Repair or replace hand rails and corroded posts

##### **Condition Yellow (Structural Repairs)**

- Southline Pump Station
  - Install erosion control around wing walls and fuel tanks
  - Replace missing rake bars
  - Clean and paint structural steel pile cap beams
  - Install missing or damaged wood planks
- Bourne No. 2 Pump Station
  - Clean and paint structural steel piling
  - Replace structural steel piling for corroded sections
  - Repair derailed west rake
  - Replace whaler tie beam
  - Replace damaged metal roofing
  - Repair or replace NE corner column support
  - Repair gaps in grating located at discharge



The following pump station assets were identified as condition Red (requiring repair in a 0- to 6-month period) and Yellow (requiring repair in a 7- to 18-month period) and should be scheduled for mechanical/electrical repairs as identified in the ER:

**Condition Red** (Mechanical/Electrical Repairs)

- PSTA-3 Pump Station
  - Provide safety guards over torsional dampers
  - Replace bearings for pumps identified with vibration/noise problems
  - Replace pump shafts and make other related repairs accordingly
  - Replace Pump C63157 (weak pumping performance) and make other related repairs accordingly
- Southline Pump Station
  - Install safety guards to belt guard locations and the over the engine to gear drive shafts
  - Make repairs to correct excessive noise associated with Pumps 64024 and 64025
  - Replace driveshaft for Pump 64025 and perform other related repairs for apparent misalignment between gearbox and pump
  - Make repairs to correct breach in the cooling piping and prevent antifreeze leak to irrigation canal
- Bourne No. 2 Pump Station
  - Install safety guards to the over the engine to gear drive shafts
  - Repair driveshafts currently operating in out-of-balance condition
  - Make repairs associated with gearbox vibration
  - Repair upper grease seal for Pump 64105
  - Repair potential for breach in the cooling piping for antifreeze leak to irrigation canal

**Condition Yellow** (Mechanical/Electrical Repairs)

- PSTA-3 Pump Station
  - Remove vegetation at pump intake
- Southline Pump Station
  - Make repairs to correct vortexing at suction intake
  - Install engine idler at Pump 64027
- Bourne No. 2 Pump Station
  - Make repairs to correct vortexing at suction intake
  - Remove vegetation at pump intake

Thirty-two small pumps were evaluated, and a number of them will require repairs for out of tolerance pumps or electric motor vibration. Repairs needed for the small pump facilities sampled are as follows:

**Condition Red** (Mechanical/Electrical Repairs)

- Repair 10 pumps with pump vibration in excess of 0.3 inch per second and/or electric motor imbalance greater than 10 percent
- Repair four pumps currently inoperable

**Condition Yellow** (Mechanical/Electrical Repairs)

- Repair nine pumps with pump vibration in excess of 0.2 to 0.3 inch per second and/or electric motor imbalance in between 5 and 10 percent

**4.1.3 Levees**

Repair approximately 27 miles of “spoil pile” impoundment sections considered condition Red by constructing new levees to replace these sections. Alternatively, Shaw would recommend abandonment of these impoundments. The repair or abandonment of unconsolidated “spoil-pile” impoundment facilities should be accomplished as a near-term repair within 6 months.

Repair within 18 months approximately 221 miles of impoundment levees considered condition Yellow. These were visually found to be comprised of a compacted, driveable levee crest surface. Locations of the specified levee repairs are found primarily on the east side of Vegetative Area No. 2 and in several other locations in Vegetative Areas No. 3 and No. 4, all located in Map Area 39. This map can be found in Appendix A.

#### **4.1.4 Canals**

Dredge approximately 11 miles of major canals considered in condition Red to improve drainage and conveyance requirements within 6 months. Clean and muck approximately 328 miles of major canals considered in condition Yellow within 18 months to improve channel conveyance. Cropland ditch assessment and repairs was included in the Crop Area Lands RMTP and infrastructure assessment. Locations of the specified canal improvements can be found in a table in Appendix A.

#### **4.1.5 Roads**

Repair (within 6 months) and maintain approximately 39 miles of roads considered in condition Red. Red-condition repairs will include possible road reconstruction, drainage improvements, clearing debris and vegetation, grading, and lime surfacing. Repair and maintain approximately 272 miles of roads considered in condition Yellow within 18 months. Yellow condition repairs include drainage improvements, debris and vegetation clearing, grading, and lime surfacing. An annual projected maintenance budget to maintain this infrastructure has been estimated to be approximately \$1.5 million. Appendix A includes a table showing locations of roads inspected.

#### **4.1.6 Culverts**

Of the 1,506 culverts sampled approximately 65 percent were determined to be in poor to fair condition (requiring condition Red and Yellow repairs) along with the remaining 35 percent determined to be in fair to good condition (requiring mostly normal maintenance). Additional culvert evaluation was performed on a limited basis with a focus on drainage capabilities of laterals.

All other cropland facilities including roads, canals, and impoundment levees were determined to be in fair to good condition requiring only normal maintenance.

### **4.2 Maintenance Plan**

Shaw requested maintenance plans from Ken McDuffie (USSC), and also received information from Danielle DeVito-Hurley (Gunster, Yoakley & Stewart, P.A.). The USSC does not have any documented maintenance plan for the cropland facilities.

The following maintenance plans are recommended for the below listed infrastructure categories.

#### **4.2.1 Roads, Canals, Levees**

The roads, canals, and levees have been combined in this section because they are related infrastructure and share similar maintenance activities. Specifically, road construction or repair in these remote agricultural areas requires borrow material. To obtain borrow material economically (primarily to reduce movement of borrow material over large distances) often requires creation of an adjacent canal. Similarly canal dredging operations can use adjacent levees for spoil disposal. Due to the proximity of these facilities to one another it is likely that the owner would use material from one feature for the construction of another in order to eliminate the haul distances noted above. However, repairing a road may require hauling lime base materials from more remote borrow locations.

Currently, the unpaved roads are maintained with surfacing as needed approximately one time per year, and the roads are graded as necessary. This approach has enabled the overall system to remain functional

but as noted, there are numerous sections where improvements are needed and a more structured approach would benefit the overall operation and remove or prevent safety deficiencies from arising.

The FDOT “Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways,” dated May 2007, provides a summary (Chapter 10 F.2) of routine road maintenance and could also apply to impoundment levee driving surfaces and other structural elements. Routine road, impoundment levee, and canal maintenance would include maintenance operations such as is found in this manual or other sources:

- Clear debris from roadway, impoundment levees and ditches.
- Mow and control vegetation to provide a smooth shoulder and recovery area.
- Inspect and grade any shoulder dropoffs and washouts.
- Blade and compact roadway to provide a 2- to 4-percent uniform crown. Heavy traffic will require replenishment of limerock.
- On asphalt roads, clean and fill potholes with hot mix asphalt. Apply crack sealer to inhibit water infiltration. Replace faded pavement markings on a biannual basis.
- On asphalt roads, provide asphalt seal coat every 6 years.
- Inspect large conveyance canals on a biannual basis and after every major storm event.
- Clean, dredge, and spray for vegetative control all large conveyance canals when needed.

#### **4.2.2 Bridges**

The FDOT *Bridge and Other Structures Inspection and Reporting Manual*, dated May 1996, provides a summary and guideline for bridge maintenance procedures. Routine bridge maintenance should include operations such as is found in this manual:

- Annual inspection of roadway and railroad bridges
- Inspection of bridges after every major storm event
- Identify and document deficiencies and schedule needed maintenance and repairs
- Routine maintenance procedures should include:
  - Clean and paint bridge surfaces
  - Repair spalled concrete
  - Repair corrosion of bridge elements
  - Repair of abutments, bents, super-structure, deck surfacing and pilings as needed
- Repair and maintain bridge approaches as needed

#### **4.2.3 Culverts**

The FDOT *Procedural Guidelines for Bridge and Other Structures Inspection and Reporting*, dated December 2007, provides guidelines for culvert maintenance inspections. Routine culvert maintenance should include operations such as is found in these guidelines:

- Annual inspection of culverts, gates, and approach structures
- Inspection of culverts, gates and approach structures after every major storm event
- Identification and documentation of deficiencies and schedule needed maintenance and repairs
- Routine maintenance procedures should include:
  - Remove culverts obstructions
  - Repair or replace failed culverts
  - Repair or replace culverts approaches and gates as needed
- Repair and maintain roadway culvert crossings as needed

#### 4.2.4 Pumps Station Facilities

Pump station maintenance should require the most rigorous operations and maintenance program of all the cropland facilities infrastructure groups. The maintenance requirements listed below are based on hours of use for these facilities and thus, usage must be recorded, logged, and updated regularly after operations. The two useage time thresholds would be operations governed by 250 hours and 1000 hours of engine run time. A list of routine maintenance requirements are outlined below:

- Perform 250 Hour Pump and Engine Service
  - Run engine to heat and circulate oil
  - Shut engine down and install LOTO tag or lock
  - Pull engine oil sample
  - Change engine oil and engine oil main filter(s)
  - Add engine oil to proper level
  - Check coolant level
  - Check alternator and fan belt tension
  - Check air filter(s): clean or replace if needed
  - Blow out/clean radiator as needed
  - Run engine and check for leaks
  - Top off all fluids as needed
  - Remove LOTO tag or lock
  - Record engine hours on work order and time sheet
  - Turn completed work order and oil sample in as directed by your supervisor
- Perform 1000 Hour Pump and Engine Service. NOTE: After 1,000 hours of operation time has been reached and upon completion of 1,000-hour pump and engine service, the 250-hour maintenance schedule should then be resumed.
  - Run engine to heat and circulate oil
  - Shut engine down and install LOTO tag or lock
  - Pull engine oil sample
  - Change engine oil, engine oil main filter and lubrifiner filter
  - Add engine oil to proper level
  - Change fuel filters
  - Check coolant level
  - Check alternator and fan belt tension
  - Blow out/clean radiator as needed
  - Check air filter(s): clean or replace if needed
  - Run engine and check for leaks
  - Top off all fluids as needed
  - Remove LOTO tag or lock
  - Record engine hours on work order and time sheet
  - Turn completed work order in to your supervisor

#### 4.2.5 Operator Reporting and Documentation

The operators should report all work tasks completed to their area managers. Each of the four area managers should complete a maintenance record for each asset category noting the date and activity completed. Maintenance is recommended based on semi-annual or annual auditing depending on the asset category. Semi-annual inspection and/or auditing is recommended for more critical and higher valued inventory such as pump station facilities, bridge structures, control gates, and culvert crossing facilities. An annual inventory and/or audit is recommended for roads, canals, impoundment levees, and all other minor cropland facilities.

We recommend that the motor grader operators review the FHWA *Gravel Roads Maintenance and Design Manual*, Section 1. This document describes the proper use of the motor grader (speed, moldboard angle, moldboard pitch, shaping principles, windrows, crown, and pulling shoulders) to achieve a good gravel road with a minimum 2 percent roadway crown. Most roads and impoundment levee crests have very little crown, and thereby have poor sheet flow drainage. Most roads have uncontrolled drainage inlets to adjacent canals, and drainage improvements would include but not be limited to providing improved cross section slope, constructing additional drainage ditches along with confinement and containment of drainage features and creating collection and distribution points along unpaved roadways. Adherence to these grading techniques will improve runoff and reduce the prevalence of rutting and potholes.

#### **4.2.6 Lease Recommendations**

No changes are recommended as leasing information was not available at time of review. It is unlikely that significant asset items in the Facilities in Crop Areas category will have or require a lease.

#### **4.2.7 Capital Improvement Plan**

The operational and maintenance costs associated with the facilities in croplands are expected to increase over the next 18 months to make repairs of the infrastructure as previously listed. These repairs represent only 10 percent of the infrastructure in the portfolio and capital investment needs to be projected to cover all assets within the project area. Capital improvements are recommended to be prioritized to address assets of primary concern (pump stations, roadway bridges, and impoundment levees) and subsequently on assets listed of secondary concern (canals, culverts, flow control structures, and roads).

The following is a prioritized list of areas for capital expenditure:

#### **Condition Red (requiring repair in a 0- to 6-month period)**

- **Assets of Primary Concern**
  - Pump Station Structural Safety Issues
  - Pump Station Mechanical/Electrical Safety Issues
  - Roadway Bridge Safety Issues
  - Impoundment Levee Construction
  
- **Assets of Secondary Concern**
  - Repair of Failed Culvert and Flow Control Structures
  - Road Re-construction Improvements
  - Canal Dredging

#### **Condition Yellow (requiring repair in a 7- to 18-month period)**

- **Assets of Primary Concern**
  - One-time Maintenance to Restore Pump Station Structures
  - One-time Maintenance to Restore Pump Operations and Electrical
  - One-time Maintenance for Roadway Bridges
  - One-time Maintenance for Impoundment Levees
  
- **Assets of Secondary Concern**
  - Repair of Culvert Headwalls and Related Flow Control Structure Risers, Inlets and Components
  - Road Re-surfacing and Road Base Improvements
  - Clean and Muck Major Drainage Canals

Other recommended improvements consist of Best Management Practices that should improve infrastructure related to storm drainage and runoff, pro-active maintenance programs, and sequencing of repairs to prepare for the rainy season, all of which would require additional capital expenditures.

### **4.3 Transition Plan**

#### **4.3.1 Recommended Action Prior to Turnover**

SFWMD should ensure that Facilities in Crop Areas assets rated Red and identified as having system-wide impacts, particularly those related to storm water conveyance are addressed during negotiations and a recovery or go-forward plan agreed upon so that the safety and functional liabilities are eliminated. While the overall system has many redundancies, the impact of storm events on water conveyance and storage systems, in light of the observed deficiencies in pumping and water retaining features, should be cause for concern and action. Similarly, the bridges rated Red should be addressed early in the process as they pose life, health, and safety issues that involve some liability.

#### **4.3.2 Recommended Improvements**

Recommended improvements primarily relate to the pump station mechanical, electrical, and structural components as well as the bridge and impoundment levee structures. As a goal, this would be the first asset grouping to bring into a more proactive maintenance program.

No significant improvements would apply to other asset groups other than to repair those deficiencies already identified in Section 4.1 or as defined by the specific evaluation reports for pump stations and bridges. It is recommended that additional qualified staff, from the existing USSC pool, be made available to assist with the maintenance compliance program as well as the transition activities.

#### **4.3.3 Recommended Resolution Process**

It is important to note that a tool to be employed early on is to require that the protagonists on both sides adhere to the principle of elevating issues that can not be resolved to next higher levels through their internal chains of command early and continuously when they reach an impasse. Our experience is that this approach has been demonstrated as an effective dispute resolution tool, especially at the project level, since it ties the action close to the point at which the sides disagree (usually on the facts) yet moves above the personalities who can not sort things out for some reason (e.g., they lack the authority or they dislike one another) to another set of people who have the authority, a different perspective, or otherwise can get the issue resolved satisfactorily.

Failing in this approach, another, more formal, process may become necessary. The formal issue resolution process that Shaw recommends for disputes between the Operator and SFWMD is mediation. Mediation offers something outside of the government judicial process (i.e., outside a court of law) and is the next lowest threshold resolution option. The benefit of mediation is that it keeps both parties talking so that the overall transaction can remain on a sound footing while focusing on settling the issue outside of the judicial system. Given that there are personalities and long-standing personal and professional relationships involved on both sides of potential issues between SFWMD and USSC, using a tool that focuses on issue resolution early and using a disinterested third party may prove most effective.

In mediation, there is a neutral or third-party mediator who facilitates the resolution process (and may even suggest a resolution, typically known as a mediator's proposal), but does not impose a resolution on the parties. This individual is an impartial party who serves as a mediator, fact finder, arbitrator, or otherwise assists the parties in resolving the issues in controversy. This person may be a permanent or temporary officer or employee of SFWMD or any other qualified individual who is acceptable to both parties.

Mediation is an effective issue resolution process, especially if a factual interpretation is needed or the parties are polarized into an all-or-nothing position and believe that evaluation by a third party mediator could help resolve the matter or if one party's view of the case is unrealistic, and a realistic appraisal of the situation by a third party may help.

## 5.0 SFWMD Quality Assurance Oversight

It is expected that quality assurance (QA) oversight of various asset groups would depend on the operations and functionality of that infrastructure. With respect to primary asset groups, mechanical and electrical components related to the pump station facilities would require a higher level of oversight than fixed infrastructure related to conveyance of storm water. The SFWMD will need to implement a QA program that includes the routine review of operational practices related to mechanical or electrical components while other fixed assets such as structural components related to bridges, culverts, roads, canals, and impoundment levees may require less frequent oversight or storm event-driven inspections.

### 5.1 QA Roles and Level

In the QA program, SFWMD should receive and review monthly USSC Area Managers compliance reports for all Facilities in Crop Areas assets. A detailed compliance report should also be submitted after major storm events on infrastructure related particularly to the conveyance and impoundment of storm water. SFWMD should identify a qualified individual to review and audit the information for accuracy and validity. It is recommended that monthly preventive maintenance (PM) compliance reports be submitted to SFWMD for approval for mechanical and electrical components for pump station facilities.

Additionally, qualified individuals familiar with each asset type should be performing and reviewing compliance activities to achieve a thorough understanding of the maintenance activities and how they are being accomplished by USSC. Furthermore, USSC should be required to provide background inspection reports, work order documentation, and other such material as necessary for the qualified individuals to achieve a complete understanding of the maintenance activities.

### 5.2 QA Reporting/Inspection

To ensure the operator is maintaining the current operational condition of the infrastructure, the following activities should be performed:

- The operator should provide PM schedule compliance and corrective maintenance work backlog on a monthly basis.
- SFWMD should review the PM schedule compliance monthly for primary mechanical and electrical components; target performance 80 percent.
- SFWMD should review the corrective maintenance backlog monthly, target performance quarterly. (Maximum backlog at transition date should not exceed 8 weeks.)
- SFWMD should inspect the facilities monthly during the shutdown season or maintenance overhaul period to audit the maintenance procedures and perform walk-around site inspections.
- SFWMD should inspect the facilities quarterly to audit the PM schedule compliance by random review of the completed PM work orders and perform walk-around site inspections.
- SFWMD should conduct semi-annual random site inspections to shadow maintenance technicians during the performance of PM procedures and to ensure it is complete, comprehensive and adaptive in nature.
- SFWMD should review PM routine maintenance reports
- SFWMD should perform semi-annual or annual review of maintenance program to ensure it is complete, comprehensive and adaptive in nature.
- SFWMD should conduct random or spot inspections to perform additional oversight for QA compliance measures.



## **6.0 Professionals Developing Repair, Maintenance, and Transition Plan**

The following professionals developed the Repair, Maintenance, and Transition Plan:

Juan C. Prieto, P.E. - Project Manager

Jim Nichols, P.E. - Lead Engineer

Jose Rovira - Field Inspector

Youssef Hachem, P.E. - Structural Engineer

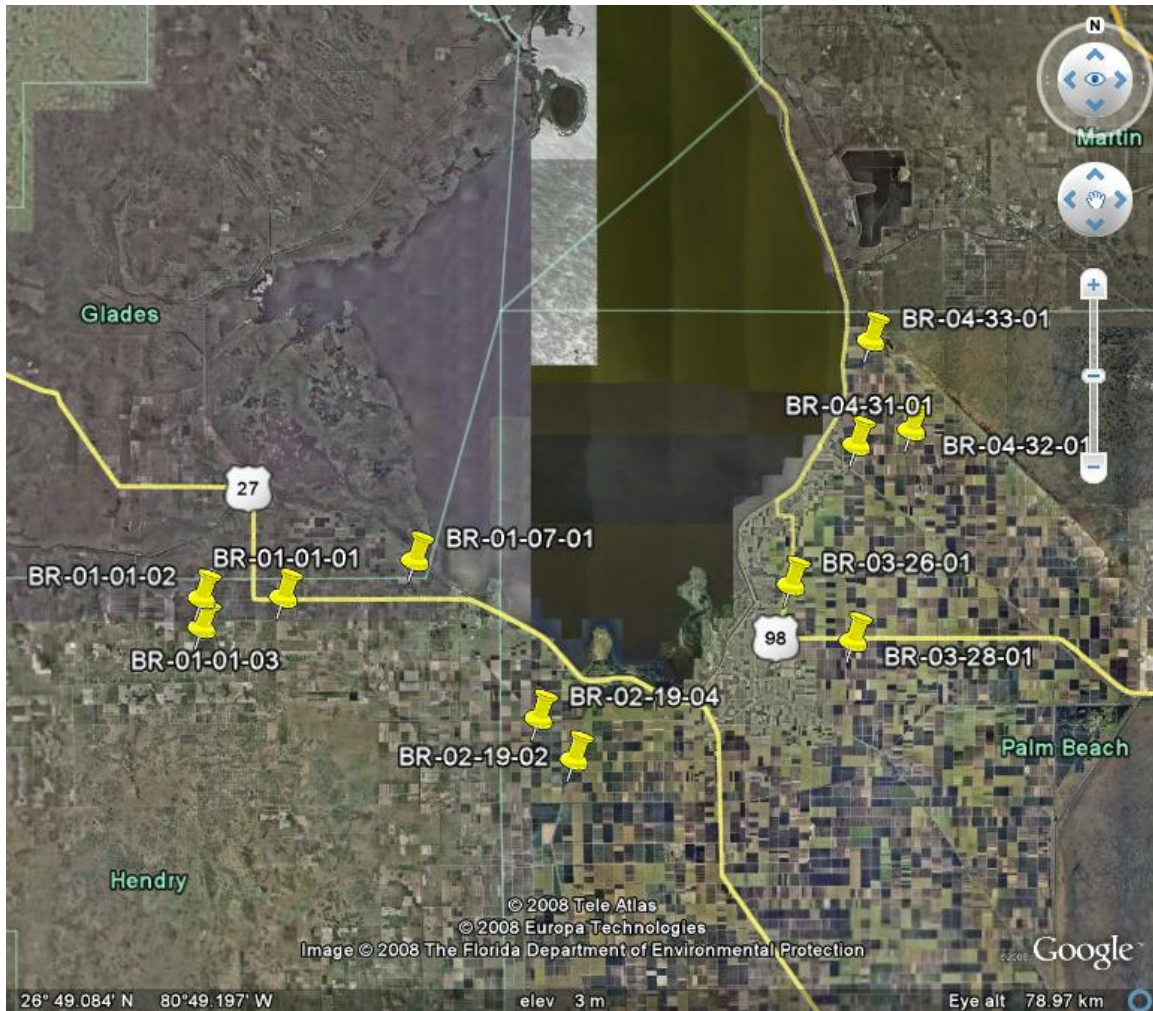
Maurice Berkel - Structural Inspector

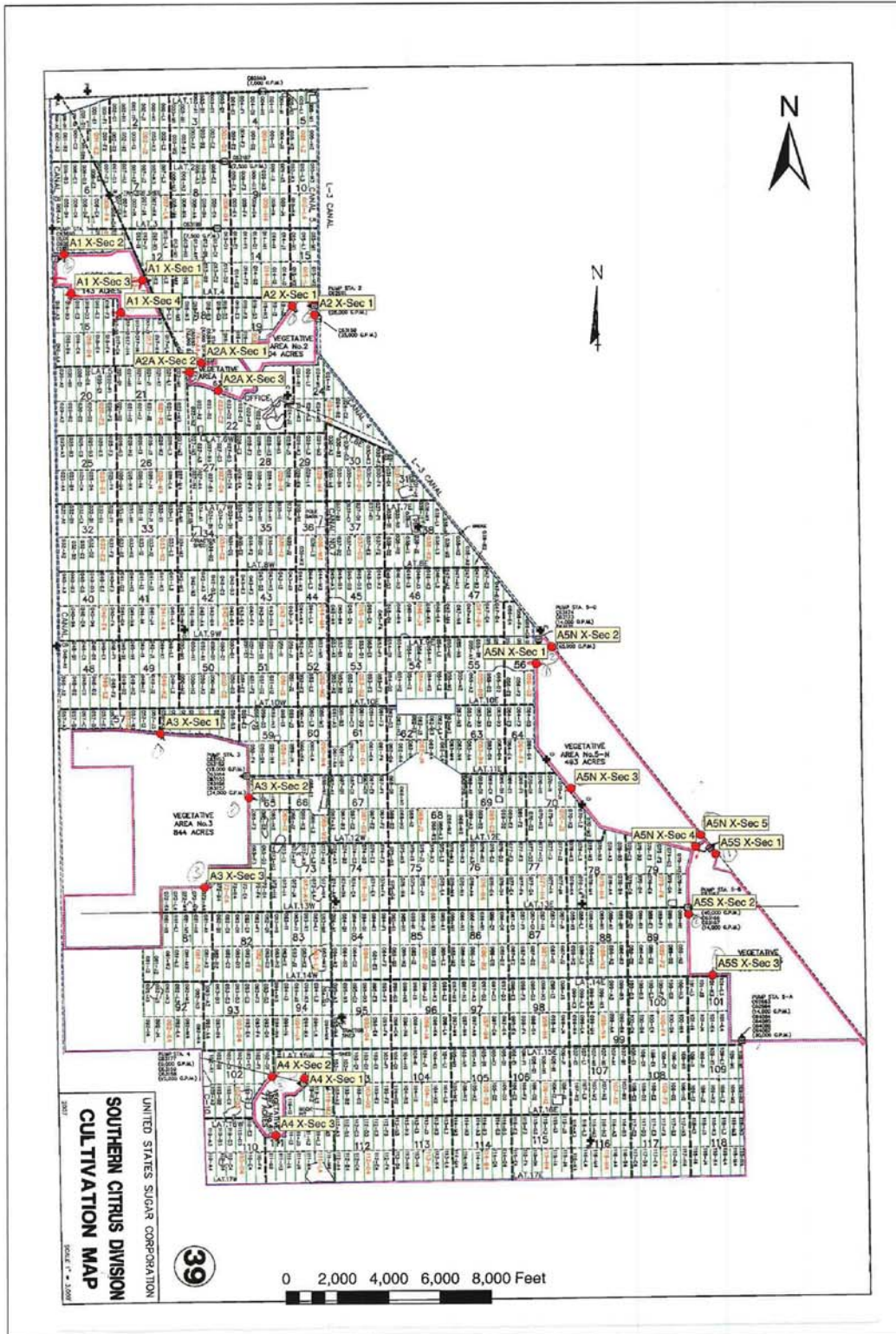
Nathan Newell, P.E.

**Appendix A**  
**ASSET OF CONCERN LOCATIONS**

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Location Map of Roadway Bridges Visited





Section 39 Cross Section Locations

**Repair, Maintenance, and Transition Plan**

**For**

**CROP AREA LANDS**

**US Sugar Corporation**

**December 19, 2008**

**Prepared for**



**South Florida Water Management District**

**3301 Gun Club Road**

**West Palm Beach, FL 33406**

**Prepared by**

**Soil and Water Engineering Technology, Inc.**

**For**



**Shaw**<sup>®</sup> Shaw Environmental, Inc.

**3223 Commerce Place, Suite 100**

**West Palm Beach, FL 33407**

**Repair, Maintenance, and Transition Plan  
For  
CROP AREA LANDS  
QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the plan subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices at this time. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer's experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this plan, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This plan is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Lead/Plan Author**

Name: Del Bottcher, Ph.D., P.E.

Date: December 19, 2008

**Peer Review**

Name: Randy Youngman

Date: December 19, 2008

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## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Repair, Maintenance, and Transition Plan (RMTP) addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations.

### 1.1 RMTP Overview

Soil and Water Engineering Technology, Inc. (SWET) assisted Shaw with services related to the crop area lands currently under the ownership of the USSC. The overall objective for the cropland evaluation was to, as best as possible within the limited time and resources available, provide an assessment of the productivity and operational costs of the cropland and to develop the RMTP.

USSC cropland was evaluated for its operational and maintenance costs in comparison to historical and anticipated crop yields. Both sugar cane and citrus cropland were assessed. The assessment included the review of farm records for crop yields, Best Management Practice (BMP) implementation, fertility and pesticide practices, all of which were provided by USSC. Additionally, field visits were conducted in late September 2008 to verify and evaluate the current soil, crop, irrigation and drainage infrastructure conditions. This assessment was conducted by establishing a representative sampling methodology that would allow for maximum geographical coverage of the USSC cropland, given the limited time constraint. Supplemental data and information received from USSC were analyzed to determine the operational and maintenance costs for the cropland, potential required infrastructure improvements, and cropland productivity. This analysis indicated that the near future (next 5 years) operational and maintenance costs will remain relatively constant. However, three areas of possible future cropland risks were identified: muck subsidence (soil exhaustion), citrus canker, and citrus greening.

### 1.2 Limiting Factors

The primary limiting factor was the short timeframe provided and limited resources to conduct this evaluation. This resulted in only representative sampling of conditions being completed; in addition seasonal variations could not be observed. Though total crop assessment was not feasible with the timeline and manpower available, a reasonable representative sample was achieved. The representative sample was designed to ensure maximum geographical coverage of all the USSC croplands. All but one of the USSC owned farms were visited during the 2-week period in which field work was allocated. Within each of the farms visited, a systematic approach was adopted to ensure that representative conditions of the farm were assessed. This sampling methodology resulted in a high number of actual fields being assessed which allowed for a reasonable statistical evaluation from which trends could be noted and used for analysis.

Being able to only observe conditions at a single time of the year was also a limiting factor. Ideally, observations would be made throughout a full growing season for each crop. However, through farm interviews, review of historical cropping data and other documentation provided USSC, significant insight was obtained into the seasonal practices.

Fertility and pesticide application practices were provided by US Sugar personnel. These data are not readily field verified unless an observer is in place at the time of application. The actual practices were not observed. This limits the reliability of this information. However, yield information was used to identify any large anomalies.



### **1.2.1 Citrus Limiting Factors**

Citrus in the Everglades Agricultural Area (EAA) is generally harvested from November through April. Therefore, estimations of citrus harvest practices and yields based on field observance in September are difficult. However, assuming no major crop failures, an estimate can be made based on past records and the general condition of the trees at this time. Therefore, the overall appearance of the citrus grove and trees can be observed and used as a baseline for harvest production.

Although the drainage system in the citrus grove was partially visible, the irrigation system was difficult to gage. The irrigation scheduling and timeline only allowed observance of one irrigation event. This walk-through of a field during an irrigation event gave an overall impression of what all other irrigation zones would look like, but verification of the other blocks was limited. Observance of more irrigation events would have allowed for a more representative sample and better verification of the irrigation practices used.

### **1.2.2 Sugar Cane Limiting Factors**

Sugar cane crop assessment, while still limited by the single assessment, was at the optimal time for an annual observance due to the 5-month harvest window of October to March for this region. This meant the crop was in its senescence stage. The crop age variance of 5 months does limit the observers' ability to accurately gage yield and overall crop condition. A relative method was used to adapt to this limiting factor. Having the sugarcane at near full growth also limited observation of soil surface conditions associated with soil leveling and associated wet spots.

Observing the condition of field laterals in regard to sediment control BMP was difficult for the majority of field laterals. The end of the wet season was occurring during the field visit, resulting in standing water in most laterals. The farms were only starting to lower water levels in a limited number of fields for harvesting operations. Thus, the majority of the sediment trap basins were still under water and not visible. This did, however, give the observers an advantage in locating poorer draining areas near field edges.

Other than some of the sediment trap BMPs, most of the BMPs listed on the BMP permits provided by the USSC could not be verified in the field because they included fertility and water management control practices. However, the annual permit report, records provided and yield data indicated a general compliance with the permit conditions.

An additional limitation was that no information was available for the management practices of the leased fallow sugarcane land for vegetable production other than what was provided in the terms of the lease agreement.

## **2.0 Introduction**

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged Shaw to conduct the Initial Assessment of USSC facilities, properties, and infrastructure under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Repair, Maintenance, and Transition Plan (RMTP) for Crop Area Lands addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### **2.1 Purpose and Scope of Services**

The objective of this RMTP is to identify deficiencies and prepare a list of corrective improvements including repair, maintenance, capital investment, operation and maintenance and quality assurance activities to ensure that the assets are in the same condition when received by SFWMD as at present.

### **2.2 Description of Infrastructure**

This assessment covers the infrastructure and conditions associated with the crop area lands on the USSC property, which includes both sugarcane and citrus. The infrastructure evaluated was limited to the actual field operations for growing the crop, the irrigation and drainage facilities within the field, and soil conditions. This assessment did not include farm canals or structures within them, farm pump stations, irrigation supply equipment, or any other facilities or activities not directly associated with the crop or maintenance of the cropland.

## 3.0 Methodology

### 3.1 Definition of Condition Class- Grading System

The grading system was described fully in the Evaluation Report.

### 3.2 Data Collected

Specific information necessary for RMTP development was determined through a combination of review of USSC data, interviews with USSC staff, and field visits to verify current conditions including:

- Identifying recent and current crops being grown by USSC
- Review of the crops yields over the past 10 years by field
- Evaluation of the current condition of crops and related field-scale infrastructure, such as field lateral, lateral culverts, and irrigation systems
- Evaluation of existing muck depths
- Review and verification of crop and field operational and maintenance practices, such as planting, harvesting, fertilization, pest management, irrigation and drainage systems, laterals, and culverts
- Determine potential future crop management issues, such as greening and canker in citrus and soil exhaustion in sugarcane
- Comparison of USSC estimated cropland operational and maintenance costs with estimated costs based on observed conditions

Though total crop assessment was not feasible and seasonal variations could not be observed, a reasonable representative sample was achieved. It was designed to ensure maximum geographical coverage of all the USSC croplands. All but one of the USSC owned farms were visited during the 2-week period in which field work was allocated. See Figure 3.1-1, Appendix A, for an illustration of survey coverage.

A systematic approach was adopted to visit as much of the diversity of crops, soils, and farm units as possible. Field observations were entered directly into an ESRI personal geo-database feature class that linked the geographic location of the observation with noted attributes. Geographic location was verified through the use of GPS units. Additionally, at relevant locations a photograph was taken of the observed conditions and linked through this geo-database. The photographs are hyperlinked to the database in the provided ESRI map document (.mxd). Examples of the representative sample coverage and data collected for one farm are shown in Figures 3.1-2 and Figure 3.1-3.

Due to different field management requirements for citrus and sugar cane, only crop condition was recorded during the field visit within the citrus groves. Additional information was provided by Southern Groves Citrus Corporation that illustrated the canker infestation more completely than the time constraints would have allowed the survey team to accurately assess the situation. The maps provided by Southern Groves Citrus Corporation showing canker infestation were verified, and field conditions were photographically recorded.

Within each of the farms visited, a systematic approach was adopted to ensure that representative conditions of the farm were assessed. An example of individual farm coverage is provided in Figures 3.1-2 and Figure 3.1-3. This sampling methodology resulted in a high number of actual fields being assessed which allowed for a reasonable statistical evaluation from which trends could be noted and used for analysis.

Observing the condition of field laterals in regard to sediment control BMP was conducted, to the extent possible, for the majority of field laterals.

The end of the wet season was occurring during the field visit, resulting in standing water in most laterals. The farms were only starting to lower water levels in a limited number of fields for harvesting operations.

## **4.0 Repair, Maintenance, and Transition Plan**

The Repair, Maintenance, and Transition Plan (RMTP) describes repair and maintenance tasks required of the infrastructure operator to ensure that the infrastructure is turned over to SFWMD at the end of the 2009/2010 production season in the same operational, functional, and effective condition that it is in today.

A review was conducted of the existing operation and maintenance plans and procedures to estimate if these plans and procedures appear adequate to maintain current production rates, operations, functions, and efficiencies. Recommended improvements or changes to the plan and processes if needed to ensure that the SFWMD interests are being protected are provided below as well as required future replacement and repair items including the timing those replacements and repairs to be provided by the operator of the infrastructure prior to turnover to the SFWMD.

### **4.1 Repair Plan**

#### **4.1.1 Sugar Cane**

No significant repair needs were found or indicated by site investigation, data analysis, and record review. The crop yields provided by USSC indicate no major deficiencies in their field units. Sugar cane yields were in line with the industry average for both muck and sandy soils in the region.

#### **4.1.2 Citrus**

The majority of the citrus lands are in good condition and no major deficiencies were found. Therefore, citrus lands would only require routine repair and maintenance activities. However, there were significant areas within the citrus land that are in need of repair or replacement due to losses from citrus greening and canker. Since the replanting and associated removal cost are necessary to maintain current production levels in future crops, these activities are currently considered as routine maintenance, not repair, and therefore are addressed in the Maintenance Plan below.

### **4.2 Maintenance Plan**

This maintenance plan pertains only to the cropland and activities related to maintaining its productivity, such as laterals, culverts, irrigation distribution systems maintenance and repair and crop cultural practices including such activities as fertilization, pest management, planting, tillage, and harvesting.

#### **4.2.1 Sugar Cane**

To maintain economic crop yields, laterals, culverts, irrigation distribution systems maintenance and repair and crop cultural practices such as fertilization, pest management, planting, tillage, and harvesting will have to continue at existing levels. It is important to note that these activities have been and must continue to be done as a seasonal, cyclical process. For example, sugar cane cycles start at planting where a plant application of fertilizer is applied. Another split application is applied to the crop while in the growth stage as well as applicable pesticides. After harvest, the ratoon crop is applied with a ratoon fertilizer mix that is similar to the plant mix applied at planting. The measure of these is calculated based on the yield from each field.

The BMPs as are required in the existing BMP permits will need to be maintained. The level of BMP implementation is determined by the BMP permits provided by USSC. These permits indicated that fertility, sediment control practices (traps, vegetative filters, laser leveling), soil testing, and stormwater retention/detention are needed.

No recommendations are made for startup activities as there is no startup period for croplands.

**4.2.1.1 Operator Reporting and Documentation**

The current level of reporting and documentation practiced by USSC personnel should serve as a guide for future reporting. These reports include crop yields, soil tests, and fertilizer and pesticides use by field. Maintenance records of lateral cleaning and culvert repair and replacement must also be maintained.

**4.2.1.2 Capital Improvement Plan**

In general, the operational and maintenance costs associated with cropland production are not expected to increase on a relative basis over the 3 years for the majority of the USSC properties, with the exception of the following three variables: soil exhaustion due to muck soil oxidation/subsidence; citrus greening; and canker diseases. When underlying marl/rock become very shallow, the cost associated with maintaining laterals and culverts increases significantly and is generally considered to cost twice the amount associated with a field not experiencing low muck levels. The higher costs are associated with the difficulty of digging through the rock to maintain adequate lateral ditch depths. Crop yields can also decline due to poorer drainage and irrigation controls. Figure 4-1 indicates the fields where muck depths of less than 18 inches were observed. These fields compromise approximately 5 percent of the sugarcane farmland. The majority of these fields are located in the southern portion of the EAA. However, there are a few low muck levels that were observed in close proximity to the lake and are distributed in a random fashion.

**4.2.1.3 Lease Recommendations**

There are two types of cropland leases currently being used by USSC. The first is when USSC leases their land to third-party farmers, typically vegetable farmers, during the fallow period in their sugar cane rotations. This fallow period is critical for revitalizing the muck soil before replanting, and these leases provide a critical revenue stream. The management practices of the leased fallow sugarcane land for vegetable production are not known other than what was provided in the terms of the lease agreement and the crop type grown by the lessee. The second lease arrangements are where USSC leases land from other farmers. It is anticipated that this practice would cease once SFWMD gained control of the USSC land.

Transition of existing leases for agricultural lands will need to include terms and lease contract negotiation with current or prospective tenants. Currently, USSC records indicate that 165 agricultural land leases totaling 8,913 acres are in effect for the 2008-2009 period. These leases are listed in Table 4.2-1.

**Table 4.2-1 List of Crop Land Leases for Crop Year 2008-2009**

Site Name	Field Number	Acres	Crop Type
Management Area 01	3226AB	43	Beans
Management Area 01	3226D	25.3	Beans
Management Area 01	3226IJ	42.1	Beans
Management Area 01	3235H	22.5	Beans
Management Area 03	4601DH	69.9	Beans
Management Area 03	4601N	11.3	Beans
Management Area 03	4612L	29.2	Beans
Management Area 03	4612mn	65.3	Beans
Management Area 03	4612OP	72.9	Beans
Management Area 03	4613C	33.9	Beans
Management Area 03	4613D	34.3	Beans
Management Area 03	3702CD	78.4	Beans/corn/celery
Management Area 03	3716CD	74.3	Beans/corn/celery

Site Name	Field Number	Acres	Crop Type
Management Area 03	3716GH	72.6	Beans/corn/celery
Management Area 03	3723JN	65.3	Beans/corn/celery
Management Area 04	1725IM	70.9	Beans/corn/celery
Management Area 04	1725JN	71.3	Beans/corn/celery
Management Area 04	1725KO	69.7	Beans/corn/celery
Management Area 04	1725LP	72.8	Beans/corn/celery
Management Area 04	1736CG	73.8	Beans/corn/celery
Management Area 04	1736DH	84.4	Beans/corn/celery
Management Area 04	2701DH	78.6	Beans/corn/celery
Management Area 04	2702D	43.5	Beans/corn/celery
Management Area 04	2920CG	71.8	Beans/corn/celery
Management Area 04	2920DH	70.1	Beans/corn/celery
Management Area 04	2930KO	68.7	Beans/corn/celery
Management Area 04	2930KO	68.7	Beans/corn/celery
Management Area 04	3907CG	39.8	Beans/corn/celery
Management Area 04	3907DH	62	Beans/corn/celery
Management Area 03	3717A	38.7	Corn/Beans
Management Area 03	3717E	21.7	Corn/Beans
Management Area 03	2723EF	74.7	Leafy Vegetables (Lettuce)
Management Area 03	2723IJ	72	Leafy Vegetables (Lettuce)
Management Area 03	2723MNA	31.7	Leafy Vegetables (Lettuce)
Management Area 03	2723MNB	17.2	Leafy Vegetables (Lettuce)
Management Area 03	2723MNC	10.7	Leafy Vegetables (Lettuce)
Management Area 03	2723MNR	1.5	Leafy Vegetables (Lettuce)
Management Area 01	3207AE	11.4	Peanuts
Management Area 01	3207BF	56.8	Peanuts
Management Area 01	3207CG	64.9	Peanuts
Management Area 01	3207DH	44.9	Peanuts
Management Area 01	3208CG	61.7	Peanuts
Management Area 01	3208DH	30	Peanuts
Management Area 01	3226KL	47.6	Peanuts
Management Area 01	3226MN	61.1	Peanuts
Management Area 01	3235AB	58.6	Peanuts
Management Area 01	3235EF	76.4	Peanuts
Management Area 01	3235IJ	47.6	Peanuts
Management Area 01	3235KL	22.7	Peanuts
Management Area 02	4402IJ	59.7	Sweet Corn
Management Area 02	4402KL	57.9	Sweet Corn
Management Area 02	4402MN	65.5	Sweet Corn
Management Area 02	4402OP	67.1	Sweet Corn
Management Area 02	4412CD	72.5	Sweet Corn
Management Area 02	4412GH	73	Sweet Corn
Management Area 02	4412KL	73.4	Sweet Corn

Site Name	Field Number	Acres	Crop Type
Management Area 02	4412OP	63.9	Sweet Corn
Management Area 02	4502OP	36.2	Sweet Corn
Management Area 02	4503B_B	16.3	Sweet Corn
Management Area 02	4503CGA	19.1	Sweet Corn
Management Area 02	4503F_B	15.8	Sweet Corn
Management Area 02	4504CD	70.6	Sweet Corn
Management Area 02	4504GH	67.3	Sweet Corn
Management Area 02	4505EF	71	Sweet Corn
Management Area 02	4519CG	63.3	Sweet Corn
Management Area 02	4519DH	58	Sweet Corn
Management Area 02	4520MN	75	Sweet Corn
Management Area 02	4520MN	75	Sweet Corn
Management Area 02	4521CD	68.4	Sweet Corn
Management Area 02	4521CD	68.4	Sweet Corn
Management Area 02	4521OP	69.5	Sweet Corn
Management Area 02	4521OP	69.5	Sweet Corn
Management Area 02	4527EF	57.1	Sweet Corn
Management Area 02	4528IJB	15.4	Sweet Corn
Management Area 02	4528IJC	34.6	Sweet Corn
Management Area 02	4528MNM	70.4	Sweet Corn
Management Area 02	4532EF	70.1	Sweet Corn
Management Area 02	4532IJ	71.6	Sweet Corn
Management Area 02	4532MNM	66.9	Sweet Corn
Management Area 02	4533GH	72	Sweet Corn
Management Area 02	4533KL	73.5	Sweet Corn
Management Area 02	4533OP	63.5	Sweet Corn
Management Area 02	4534EI	26.3	Sweet Corn
Management Area 02	4615IJ	71.5	Sweet Corn
Management Area 02	4615MNM	68.8	Sweet Corn
Management Area 02	4617IJ	72.2	Sweet Corn
Management Area 02	4617KL	73.4	Sweet Corn
Management Area 02	4617MNM	71.9	Sweet Corn
Management Area 02	4617OP	72.3	Sweet Corn
Management Area 02	4618CD	70.3	Sweet Corn
Management Area 02	4618GH	74.6	Sweet Corn
Management Area 03	2733AB	68	Sweet Corn
Management Area 03	2733MNM	67.9	Sweet Corn
Management Area 03	2735CD	71.5	Sweet Corn
Management Area 03	2735GH	72.9	Sweet Corn
Management Area 03	2735IJ	73.1	Sweet Corn
Management Area 03	2735KL	73.6	Sweet Corn
Management Area 03	2735OP	73.1	Sweet Corn
Management Area 03	2736GH	74.4	Sweet Corn



Site Name	Field Number	Acres	Crop Type
Management Area 03	2736IJ	72.7	Sweet Corn
Management Area 03	2736KL	74.3	Sweet Corn
Management Area 03	2831AB	70	Sweet Corn
Management Area 03	4612GH	59.8	Sweet Corn
Management Area 04	1713CG	69.1	Sweet Corn
Management Area 04	1713DH	69.3	Sweet Corn
Management Area 04	1817OP	53	Sweet Corn
Management Area 04	1818OP	53	Sweet Corn
Management Area 04	1827OP	71.9	Sweet Corn
Management Area 04	1828CD	72.9	Sweet Corn
Management Area 04	1828GH	66	Sweet Corn
Management Area 04	1828MN	73	Sweet Corn
Management Area 04	1829MN	73.7	Sweet Corn
Management Area 04	1833GH	72.6	Sweet Corn
Management Area 04	2701JN	74.1	Sweet Corn
Management Area 04	2703KL	8.1	Sweet Corn
Management Area 01	3209AE	51.9	Watermelons
Management Area 01	3209BF	38.9	Watermelons
Management Area 01	3209CG	50.8	Watermelons
Management Area 01	3209DH	44.8	Watermelons
Management Area 01	3209J	32	Watermelons
Management Area 01	3222AB	53.1	Watermelons
Management Area 01	3222DHR	3.5	Watermelons
Management Area 01	3222EF	44.8	Watermelons
Management Area 01	3222IJ	55.5	Watermelons
Management Area 01	3222MN	55.5	Watermelons
Management Area 01	3336CG	56.9	Watermelons
Management Area 01	3336DH	64.6	Watermelons
Management Area 01	3336KO	61.6	Watermelons
Management Area 01	3336LP	61.7	Watermelons
Management Area 01	4405AEA	6.3	Watermelons
Management Area 01	4405AEB	11.6	Watermelons
Management Area 01	4405AEC	6.1	Watermelons
Management Area 01	4405AED	7.3	Watermelons
Management Area 01	4405AEE	34.5	Watermelons
Management Area 01	4405BF	67.7	Watermelons
Management Area 01	4405CG	68.3	Watermelons
Management Area 01	4405DH	68.6	Watermelons
Management Area 01	3324KO	62.1	Watermelons/Green Beans
Management Area 01	3324LP	69.1	Watermelons/Green Beans
Management Area 01	3325KOA	4.1	Watermelons/Green Beans
Management Area 01	3325KOB	14.7	Watermelons/Green Beans
Management Area 01	3325KOC	19.4	Watermelons/Green Beans

Site Name	Field Number	Acres	Crop Type
Management Area 01	3325KOD	23.2	Watermelons/Green Beans
Management Area 01	3325LP	69.5	Watermelons/Green Beans
Management Area 01	3419AE	67.1	Watermelons/Green Beans
Management Area 01	3419BFA	17.3	Watermelons/Green Beans
Management Area 01	3419BFR	12.9	Watermelons/Green Beans
Management Area 01	3421JN	24.5	Watermelons/Green Beans
Management Area 01	3430AE	67.4	Watermelons/Green Beans
Management Area 01	3430BF	70.3	Watermelons/Green Beans
Management Area 01	3430IM	67.7	Watermelons/Green Beans
Management Area 01	3430JN	64.6	Watermelons/Green Beans
Management Area 01	3430KO	68.9	Watermelons/Green Beans
Management Area 01	3430LP	65.7	Watermelons/Green Beans
Management Area 01	3431IM	65.7	Watermelons/Green Beans
Management Area 01	3431KO	67.3	Watermelons/Green Beans
Management Area 01	3432JN	68	Watermelons/Green Beans
Management Area 01	3432KOA	34.3	Watermelons/Green Beans
Management Area 01	3432KOB	34.3	Watermelons/Green Beans
Management Area 01	3432LPA	32.6	Watermelons/Green Beans
Management Area 01	3432LPB	34.5	Watermelons/Green Beans
Management Area 01	3433CGA	26.5	Watermelons/Green Beans
Management Area 01	3433CGB	32.3	Watermelons/Green Beans
Management Area 01	3433DHA	32.2	Watermelons/Green Beans
Management Area 01	3433DHB	32.1	Watermelons/Green Beans

**4.2.2 Citrus**

In general, citrus has the same maintenance issues as sugar cane, but will have a higher focus on the irrigation distribution system and tree health. Tree health is a major concern for the future and could result in higher than normal maintenance activities for citrus. The Southern Gardens Citrus Groves (SGCG) face dramatically increased maintenance costs due to citrus greening and canker losses. These losses were estimated at 20 percent due to citrus canker and 6 percent due to citrus greening. Although rates of infection for citrus canker have slowed in recent years, canker-free root stock for planting has not been widely available, so little replanting has been possible. However, USSC-Southern Grove Citrus Nursery’s (SGCN) new facility in Trenton, Florida, is now able to produce this root stock. The groves have just started receiving canker-free replants to put back into the ground. This maintenance item will have an inflated cost amount over the next few years until replanting has caught back up to the normal tree turnover rate. The inflated maintenance cost will possibly stay that way due to the unknown conditions posed by citrus greening and persistent canker re-infestation.

The BMPs as currently required in the existing BMP permits will need to be maintained. The level of BMP implementation is determined by the BMP permits provided by USSC. These permits indicated that fertility, sediment control practices (traps, vegetative filters, laser leveling), soil testing, and stormwater retention/detention are needed.

No recommendations are made for startup activities as there is no startup period for croplands.

#### **4.2.3 Operator Reporting and Documentation**

The current level of reporting and documentation practiced by USSC personnel should serve as a guide for future reporting. These reports include crop yields, soil tests, and fertilizer and pesticides use by field. Maintenance records of lateral cleaning and culvert repair and replacement must also be maintained.

#### **4.2.4 Capital Improvement Plan**

The SGCG operation has two large variables to account for. As the result of citrus canker, approximately 20 percent of the groves have had to be destroyed and will need to be replanted in the near future. The destroyed groves translate directly into significant yield losses and additional operation costs to re-establish these groves. The State-controlled canker eradication program is no longer implemented; however, the trees are still being removed through SGCG's own program. The stance toward canker taken by SGCG is aggressive. The integrated pest management program is geared toward resisting citrus canker and citrus greening. Groves with higher rates of citrus canker occurrence receive a regular pesticide treatment. This is in addition to the labor and machine hours required to identify and remove canker infested trees. Southern Garden Citrus personnel feel this aggressive stance will prove profitable by keeping more productive trees in the ground.

Citrus greening is the other variable that will affect the current crop condition through the next few seasons. Citrus greening is a relatively newer disease that is potentially more devastating than citrus canker. The SGCG employ a large operation to continuously check for infected trees and to remove and burn these trees. This aggressive stance should keep the 6 percent average losses from citrus greening on an even keel. Maintaining this level of intervention/prevention carries a high economic cost, but should return the cost to the operator in yield per acre due to overall less citrus greening.

### **4.3 Transition Plan**

Maintaining the current level of cropland operation and maintenance as is currently being done by USSC will retain current crop production levels for the majority of the fields, except as noted above.

#### **4.3.1 Sugar Cane**

##### ***4.3.1.1 Recommended Action Prior to Turnover***

Prior to turnover of croplands by USSC to SFWMD the soil conditions in relation to fertility will need to be assessed. The intended use after the turnover will determine the actions that need to be in place before the turnover.

On sugar cane land, the recommended action if the land will be cultivated for similar crops is to maintain the current level of soil fertility. This will provide the greatest benefit to the party the land is received by as soil fertility is maintained in a state prepared for planting. The party leaving the soil will have invested in the soil fertility and no return will be achievable.

If the use of sugar cane land will not be similar to current practices then certain maintenance practices should ease at the appropriate time period. Repair and replacement of non-essential drainage and irrigation structures should cease as the long-term financial benefit will not be achievable. Also, fertility practices need to be reduced proportionally as the takeover date nears. Soil nutrient uptake will reduce the amount of nutrients left in the soil at the time of takeover. Also, average yield can be expected to decrease as more ratoon crops will be harvested due to the fact that it will not be financially feasible to plant new crops and expect a return.

##### ***4.3.1.2 Recommended Improvements***

No significant improvements to the sugar cane operations are recommended.

### **4.3.2 Citrus**

#### **4.3.2.1 Recommended Action Prior to Turnover**

Prior to turnover of croplands by USSC to SFWMD, the soil conditions in relation to fertility will need to be assessed. The intended use after the turnover will determine the actions that need to be in place before the turnover. The recommended action is to maintain the current level of soil fertility.

A citrus tree that is planted today will need approximately 4 years before any return will be received. If the grove is to be used for the same purpose as it is currently, it will need to be replanted by the current owner with no expectation of return unless assured by the potential buyer. This course of action will ensure the best possibility of a financially feasible grove at the point of sale.

If citrus is to not be the primary use of the SGCG, then all replanting, bed preparation, citrus canker, and citrus greening processes need to be halted. These programs are in place to ensure a long-term financially viable citrus operation. If the operation is not long term, these operations are no longer needed.

#### **4.3.2.2 Recommended Improvements**

No significant improvements to the citrus operations are recommended, other than the replacement of the canker and greening destroyed citrus trees, if the groves are to be maintained in citrus beyond 10 years. The ability to maintain the citrus operations at their current level of production will be a challenge for anyone other than the current operators. Therefore, it is recommended that as many as possible of the existing USSC staff be employed to continue the citrus cropland activities. It is also recommended that more Best Management Practices than required under the current BMP permits be implemented.

### **4.3.3 Recommended Resolution Process**

It is important to note that a tool to be employed early on is to require that the protagonists on both sides adhere to the principle of elevating issues that can not be resolved to next higher levels through their internal chains of command early and continuously when they reach an impasse. Our experience is that this approach has been demonstrated as an effective dispute resolution tool, especially at the project level, since it ties the action close to the point at which the sides disagree (usually on the facts) yet moves above the personalities who can not sort things out for some reason (e.g., they lack the authority or they dislike one another) to another set of people who have the authority, a different perspective, or otherwise can get the issue resolved satisfactorily.

Failing in this approach, another, more formal, process may become necessary. The formal issue resolution process that Shaw recommends for disputes between the Operator and SFWMD is mediation. Mediation offers something outside of the government judicial process (i.e., outside a court of law) and is the next lowest threshold resolution option. The benefit of mediation is that it keeps both parties talking so that the overall transaction can remain on a sound footing while focusing on settling the issue outside of the judicial system. Given that there are personalities and long-standing personal and professional relationships involved on both sides of potential issues between SFWMD and USSC, using a tool that focuses on issue resolution early and using a disinterested third party may prove most effective.

In mediation, there is a neutral or third-party mediator who facilitates the resolution process (and may even suggest a resolution, typically known as a mediator's proposal), but does not impose a resolution on the parties. This individual is an impartial party who serves as a mediator, fact finder, arbitrator, or otherwise assists the parties in resolving the issues in controversy. This person may be a permanent or temporary officer or employee of SFWMD or any other qualified individual who is acceptable to both parties.

Mediation is an effective issue resolution process, especially if a factual interpretation is needed or the parties are polarized into an all-or-nothing position and believe that evaluation by a third party mediator could help resolve the matter or if one party's view of the case is unrealistic, and a realistic appraisal of the situation by a third party may help.

## **5.0 SFWMD Quality Assurance Oversight**

The two critical issues associated with the cropland are the productivity levels and resulting net revenues generated and the maintenance of the water quality of the farm discharges. The SFWMD will need to implement a quality assurance (QA) program that includes the routine review of cropping and BMP practices and their costs.

### **5.1 QA Roles and Level**

SFWMD QA staff will need to be trained to provide oversight of the cropland activities. To be successful, the overall management and recording will need to be continued by existing USSC staff and monitored and audited directly by SFWMD.

### **5.2 QA Requirements**

Quality assurance requirements for SFWMD oversight will require annual reporting of yields, operational and maintenance costs, BMP implementation level, and water quality monitoring results.

### **5.3 QA Reporting/Inspection**

Current records on fertility practices, pesticides application, and canker/greening operations are adequate reporting methods. A field verification of random sites during application and/or management practices will suffice for a quality assurance plan.

## **6.0 Professionals Developing Repair, Maintenance, and Transition Plan**

This assessment and subsequent report development was completed by Soil and Water Engineering Technology, Inc., including the following individuals:

Del Bottcher, Ph.D., P.E.

Tyler Fields, EI

Drew Jackson, EI

Leslie Lewis

Bret Whiteley

## **Appendix A FIGURES**

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Figure 3.1-1. Data Collection Points

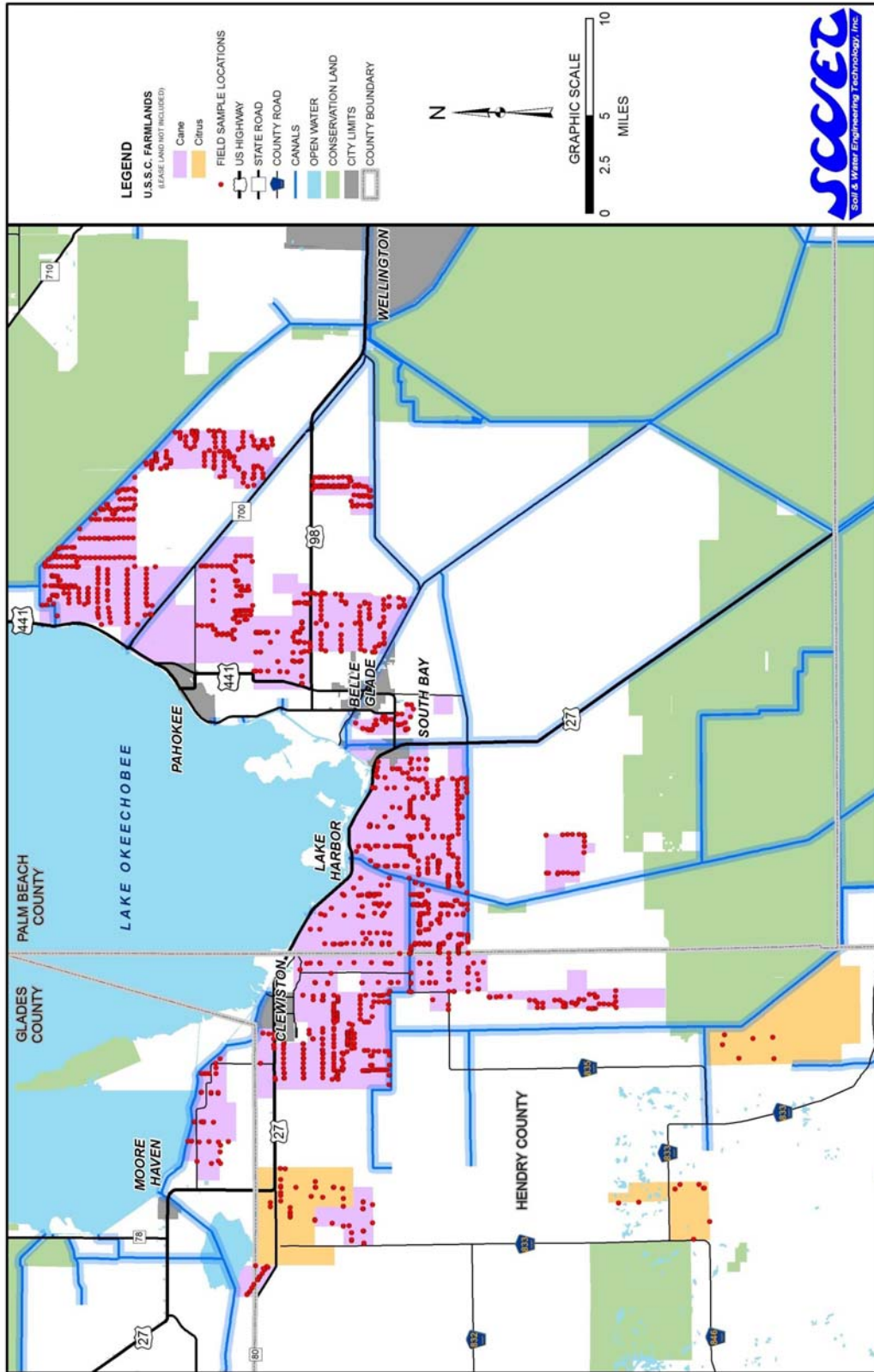


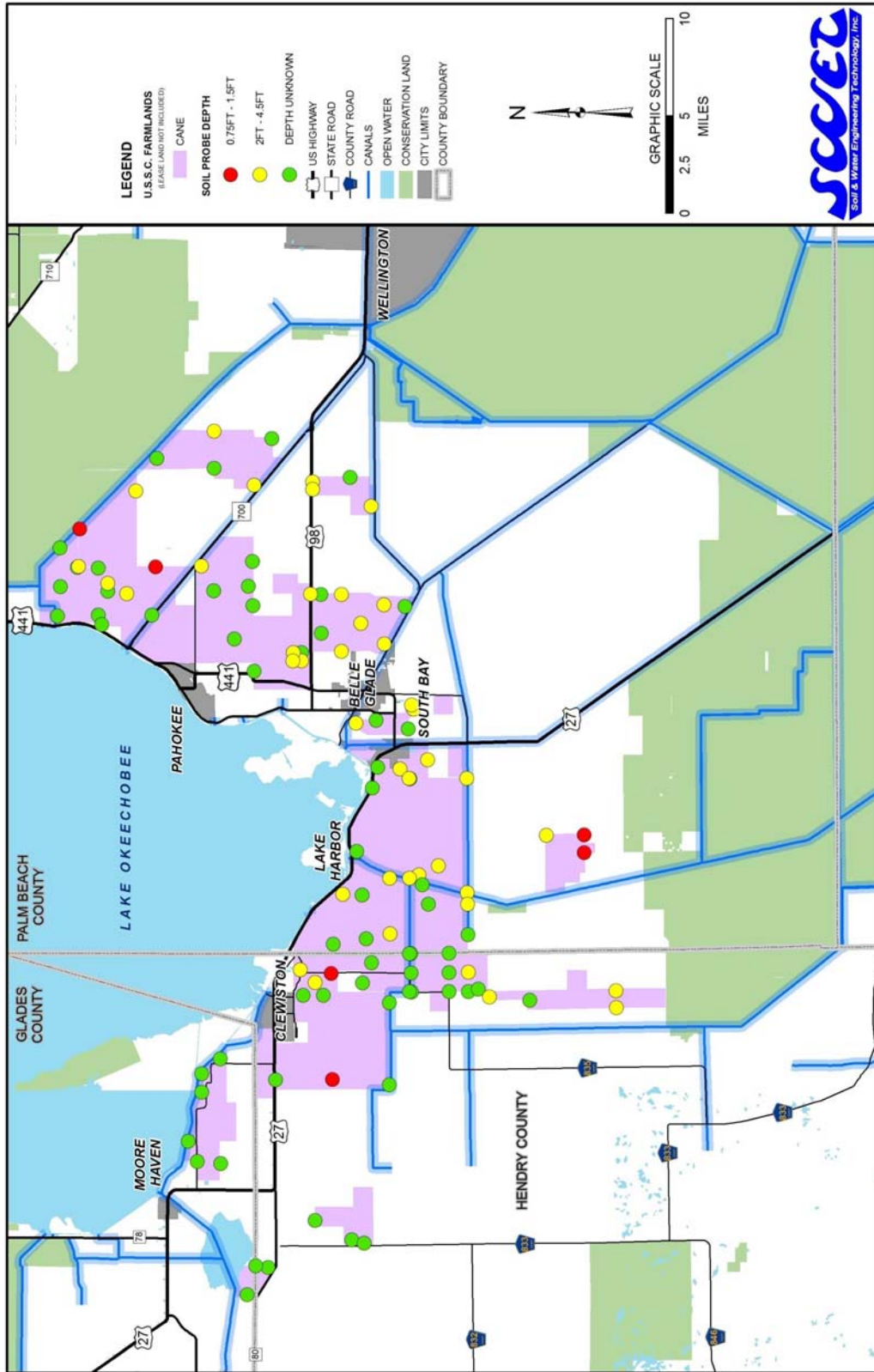
Figure 3.1-2. Crop and Lateral Condition



Figure 3.1-3. Culvert Condition and Soil Depth



Figure 4-1. Soil Probe Depths



**Repair, Maintenance, and Transition Plan**

**For**

**AIRPORT AND AIRSTRIP FACILITIES**

**US Sugar Corporation**

**December 19, 2008**

**Prepared for**



**South Florida Water Management District**

**3301 Gun Club Road**

**West Palm Beach, FL 33406**

**Prepared by**



**Shaw**<sup>®</sup> Shaw Environmental, Inc.

**3223 Commerce Place, Suite 100**

**West Palm Beach, FL 33407**

**Repair, Maintenance, and Transition Plan  
For  
AIRPORT AND AIRSTRIP FACILITIES  
QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the plan subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer's experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this plan, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This plan is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Lead/Plan Author**

Name: Jim Barrack, P.E.

Date: December 19, 2008

**Peer Review**

Name: Paul Smith, P.E.

Date: December 19, 2008

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## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Repair, Maintenance, and Transition Plan (RMTP) addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations.

USSC has no written maintenance program or maintenance plan for the Airstrips. A maintenance plan and schedule are described in Section 4.2.2.

Immediate repairs are needed at Airstrip 14, Southern Ranch. The grass was over 20 inches high; the maintenance crews should cut the grass and vegetation and fill any ruts and depressions with sandy loam prior to runway use. Ruts, soft spots, and potholes on grass airstrips can damage aircraft landing gear, and may cause a plane to flip over. Also, a discussion should be held considering the continued use of Airstrips 8, 9, and 11. These three gravel airstrips have narrow runway and narrow shoulder clearance areas and are a safety concern.

In the 6-month transition period, USSC should replenish gravel and reestablish a roadway crown on all gravel airstrips. This will improve sheet flow, runway drainage, and ride quality of the surface. Motor grader operators should review the US Department of Transportation (US DOT) Federal Highway Administration (FHWA) Gravel Roads Maintenance and Design Manual. This document describes the proper use of the motor grader (speed, moldboard angle, moldboard pitch, shaping principles, windrows, crown, and pulling shoulders) to achieve a good gravel road (airstrip) with a 2 to 4 percent roadway crown.

### 1.1 Existing Plans

Shaw contacted USSC and requested their preventive maintenance program or maintenance plans for the airstrips. The USSC has no written maintenance program or maintenance plan for them. Their procedure for the airstrips consists of mowing the grass six times a year and blading and roller compacting the gravel surface on an as-needed basis.

The overall condition of the airstrips is fair and is evident of average overall maintenance practices. The site visits indicate that the maintenance coverage at the airstrips was being performed. There also was no indication of a work backlog issue.

### 1.2 Plan Overview

It is the goal of the RMTP to ensure operation of the airstrips at the current levels for the next 1 to 2 years. The plan includes a reporting scheme for USSC to communicate compliance to SFWMD and a suggested audit protocol for the SFWMD to validate USSC compliance. The RMTP includes forward looking recommended improvements to provide SFWMD with an expectation of required ongoing resources required to support the airstrips. The RMTP articulates ongoing quality assurance (QA) activities required for the foreseeable future by SFWMD.

The Shaw team visited the USSC offices on October 1, 2008, to fulfill the task of documenting the maintenance plans and identifying deficiencies.

USSC should report Maintenance Plan Compliance and Maintenance Work Backlog monthly to SFWMD. SFWMD should audit the execution of the maintenance program quarterly, spot checking a random sample of scheduled and completed Preventive Maintenance (PM) activities. Semi-annually it is recommended that the airstrips be field inspected for overall condition. The SFWMD should monitor the Maintenance Work Backlog to verify that current maintenance requirements are not being deferred.



### **1.3 Limiting Factors**

The airstrips were reviewed during August and October 2008. A visual inspection of the field maintenance procedures, means and methods, and equipment used was not evident during any of the field visits.

## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged Shaw to conduct the Initial Assessment of USSC facilities, properties, and infrastructure under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Repair, Maintenance, and Transition Plan (RMTP) for Airport and Airstrip Facilities addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### 2.1 Purpose and Scope of Services

It is the goal of the RMTP to ensure operation of the airstrips at the current levels for the next 1 to 2 years. In developing this document, Shaw evaluated data already collected regarding airfield condition and identified deficiencies, corrective improvements, and operations and maintenance activities to accomplish this objective.

### 2.2 Description of Infrastructure

The following 14 USSC airstrips are the assets covered in this report.

**Table 2.2-1. Airstrip Asset Summary**

Location	Description of Airstrip	Length/Width (feet)	Material
Home	Belle Glade State Municipal Airport	3750 / 50	Paved
1	Area 1 – Map Page 10, North South Center Lane	2800 / 34	Gravel
2	Area 1 – Map Page 3, Section 3234 Dunwoody	5200 / 26	Paved
3	Area 1 – Map Page 1, Section 3209	5200 / 28	Gravel
4	Area 1 – Map Page 5, Section 2321	5200 / 28	Gravel
5	Area 2 – Map Page 17, Ritta Main Canal	6000 / 32	Gravel
6	Area 2 – Map Page 19, Section 30 at Main Canal	5300 / 28	Gravel
7	Area 2 – Map Page 22, Section 4622	5200 / 28	Gravel
8	Area 3 - Map Page 13, Section 33	2600 / 26	Gravel
9	Area 3 – Map Page 29, Martinez	2600 / 26	Gravel
10	Area 3 – Map Page 26, Section 3710 Main Canal	5200 / 32	Gravel
11	Area 3 – Map Page 28, Section 3725	2600 / 28	Gravel
12	Area 4 – Map Page 34, Section 19	5200 / 28	Gravel
13	Area 4 – Map Page 35, Boy Airstrip	5200 / 32	Gravel
14	Citrus – Map Page 39, Section 24 Southern Ranch	4000 / 50	Grass

## **3.0 Methodology**

### **3.1 Definition of Condition Class – Grading System**

The airfield condition assessment grading system using asphalt pavements conditions was described in the Evaluation Report. This was based upon the guidance described in the Federal Aviation Administration (FAA) Advisory Circular 150/5320-17, "Pavement Surface and Evaluation and Rating Asphalt Airfield Pavements," PASER Manual dated July 2004.

### **3.2 Data Collection**

The following data was requested in order to determine the existence and adequacy of procedures and maintenance and repair plans.

- Reports on the Airstrip Operating Conditions, Functionality, Assessments, and Evaluations: Shaw requested this information and no USSC reports were provided.
- Existing maintenance and/or repair plans for airstrips: Shaw requested this data, and no USSC maintenance or repair plans were provided.
- Maintenance schedule for airstrips. No maintenance schedule was provided.
- Maintenance and repair work orders for Airstrips: USSC does not maintain any task orders on prior repairs to roads or airstrips.
- Capital Improvement Program: Shaw requested the CIP for airstrips, covering the period from 2008 to the end of the 2009/2010 production season. USSC does not have a CIP plan for their airstrips.

### **3.3 Repair, Maintenance, and Transition Plan Review**

There is no written USSC repair or maintenance plan for the airstrips, hence no review was possible.

## 4.0 Repair, Maintenance, and Transition Plan

The Repair, Maintenance, and Transition Plan describes repair and maintenance tasks required of the infrastructure operator to ensure that the infrastructure is turned over to SFWMD at the end of the 2009/2010 production season in the same operational, functional, and effective condition that it is in today.

Appropriate site visits, data collection, evaluations of current airstrips, maintainability, and associated costs were performed in development of the Evaluation Report. Our recommendations for maintenance, repair, and transition plans needed to ensure that SFWMD interests are being protected are provided below.

### 4.1 Repair Plan

#### 4.1.1 Immediate Repairs

During our October site visit to Airstrip 14, Southern Ranch, the grass was over 20 inches high and any plane operations using it would have been unsafe. Although generally considered a maintenance issue, the tall grass prohibits the use of the airstrip and requires immediate correction. The maintenance crew should cut the grass and vegetation and fill any ruts and depressions with sandy loam prior to runway use. Ruts, soft spots, and potholes on grass airstrips can damage aircraft landing gear and may cause a plane to flip over. This grass airstrip is 4,000 feet long by 50 feet wide.

**Table 4.1-1. Immediate Repairs**

Asset	Company	Notes
Airstrip 14 Southern Ranch	SGC	Fill depressions with sandy loam, cut grass and vegetation on 4.6 acres. Ruts, soft soil and potholes can damage landing gear/cause plane flip-over.
Airstrip 8, 9, 11	USSC	Possibly discontinue use by aircraft. Canals and narrow side clearances.

#### 4.1.2 Non-Immediate Repairs

Consideration should be given to discontinuing the use of Airstrips 8, 9, and 11. The narrow runways and shoulder clearances are a safety concern.

### 4.2 Maintenance Plan

#### 4.2.1 Existing Maintenance Practices and Plans

We requested maintenance plans from Ken McDuffie (USSC), and we also received information from Danielle DeVito-Hurley (Gunster, Yoakley & Stewart, P.A.). The USSC does not have any documented maintenance plan for the airstrips. The grass airstrip is mowed six times per year, and the gravel airstrips are graded and compacted as necessary.

#### 4.2.2 Recommended Maintenance Plan

Since these airstrips are used also as roads, Shaw suggests that guidelines from the FDOT *Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways*, dated May 2007, be used to guide maintenance activities. Chapter 10 F.2 provides a summary of routine road maintenance activities and would include operations such as:

- Clear debris from roadway and ditches.
- Mow and control vegetation, fill depressions to provide a smooth runway and recovery area.
- Replace faded pavement markings on a biannual basis.

- Inspect and grade any shoulder dropoffs and washouts.
- Blade and compact roadway to provide a 2 to 4 percent uniform crown. Repeated traffic will erode the crown, and require replenishment of gravel.
- On asphalt roads, clean and fill potholes with hot mix asphalt. Apply crack sealer to inhibit water infiltration.
- On asphalt roads, provide asphalt seal coat every 6 years.

The following maintenance plan and schedule is recommended for each of the airstrip surface types.

**Table 4.2-1. Maintenance Plan**

Asset	Maintenance Activity	Timeline
Airstrip – Grass	Fill depressions with sandy loam Cut grass and vegetation	Once a year 6 times per year
Airstrips – Gravel	Clear debris from road and side ditches Place limerock gravel, blade, roller compact roadway to provide a 2 to 4 percent crown Routine blade and roller compaction Cut grass and vegetation	Immediate Once a year 6 times per year 6 times per year
Airstrip – Paved	Clean and fill potholes with hot mix asphalt, seal cracks Apply new pavement markings Apply asphalt seal coat Cut grass and vegetation	Once a year Every 2 years Every 6 years 6 times per year

An Airstrips Maintenance Checklist is provided in Table 4.2-2.

**Table 4.2-2. Airstrips Maintenance Checklist**

Asset	Maintenance Activity	Timeline	Dates Completed
General	Distribute and Review FHWA Gravel Roads Maintenance Manual (pp 1-32) with all motor grader operators	Once a year	
Airstrip – Grass Airstrip 14	Fill depressions with sandy loam Cut grass and vegetation	Once a year 6 times/year	1- _____ 2- _____ 3- _____ 4- _____ 5- _____ 6- _____
Airstrips – Gravel Airstrip 1, 3, and 13	Clear debris from road and side ditches Place limerock, blade, compact to provide 2-4% crown Blade, compact, maintain good crown + surface	Immediate Once per year 6 times per year	1- _____ 2- _____ 3- _____ 4- _____ 5- _____ 6- _____
	Routine blade and roller compaction, and cut grass and vegetation along shoulders	6 times per year	1- _____ 2- _____ 3- _____ 4- _____ 5- _____

Asset	Maintenance Activity	Timeline	Dates Completed
			6-_____
Airstrip – Paved Airstrip 2	Clean, fill potholes with hot mix asphalt, seal cracks Apply new pavement markings Apply asphalt seal coat Cut grass and vegetation shoulders	Once a year Every 2 years Every 6 years 6 times per year	1-_____ 2-_____ 3-_____ 4-_____ 5-_____ 6-_____

### 4.2.3 Operator Reporting and Documentation

The operators should report all work tasks completed to their area managers. Each area manager should complete a maintenance record for each airstrip noting the date and activity completed.

We recommend that the motor grader operators review the FHWA, *Gravel Roads Maintenance and Design Manual*, Section 1. This document describes the proper use of the motor grader (speed, moldboard angle, moldboard pitch, shaping principles, windrows, crown, and pulling shoulders) to achieve a good gravel road with a 4 percent roadway crown. Most of the airstrips have very little crown, and thereby have poor sheet flow drainage. Adherence to these grading techniques will improve runoff and reduce the prevalence of rutting and potholes.

### 4.2.4 Lease Recommendations

No changes required.

## 4.3 Transition Plan

### 4.3.1 Recommended Action Prior to Turnover

In the 6-month transition period, USSC should perform the following maintenance activities. Most of these activities for the gravel airstrips are ongoing. We would like to see a general improvement in the formation of a roadway crown on all gravel airstrips.

### 4.3.2 Recommended Improvements

**Table 4.3-1. Transition Plan Improvements (0 to 6 Months)**

Airstrip No.	Location	Place limerock, replenish base Reps = 1	Fine grade, form crown, and roller compaction Reps = 3	Clean potholes, patch with hot mix, compact Reps = 1	Routing and seal cracks in pavement Reps = 1	Mow grass and fill depressions Reps = 3
1	Area 1 – Map Page 10, North South Center Lane	Y	Y			Y
2	Area 1 – Map Page 3, Section 3234 Dunwoody	Y		Y	Y	Y
3	Area 1 – Map Page 1, Section 3209	Y	Y			Y

Airstrip No.	Location	Place limerock, replenish base Reps = 1	Fine grade, form crown, and roller compaction Reps = 3	Clean potholes, patch with hot mix, compact Reps = 1	Routing and seal cracks in pavement Reps = 1	Mow grass and fill depressions Reps = 3
4	Area 1 – Map Page 5, Section 2321	Y	Y			Y
5	Area 2 – Map Page 17, Ritta Main Canal	Y	Y			Y
6	Area 2 – Map Page 19, Section 30 at Main Canal	Y	Y			Y
7	Area 2 – Map Page 22, Section 4622	Y	Y			Y
8	Area 3 - Map Page 13, Section 33	Y	Y			Y
9	Area 3 – Map Page 29, Martinez	Y	Y			Y
10	Area 3 – Map Page 26, Section 3710 Main Canal	Y	Y			Y
11	Area 3 – Map Page 28, Section 3725	Y	Y			Y
12	Area 4 – Map Page 34, Section 19	Y	Y			Y
13	Area 4 – Map Page 35, Boy Airstrip	Y	Y			Y
14	Citrus – Map Page 39, Section 24 Southern Ranch					Y

**4.3.3 Recommended Resolution Process**

It is important to note that a tool to be employed early on is to require that the protagonists on both sides adhere to the principle of elevating issues that can not be resolved to next higher levels through their internal chains of command early and continuously when they reach an impasse. Our experience is that this approach has been demonstrated as an effective dispute resolution tool, especially at the project level, since it ties the action close to the point at which the sides disagree (usually on the facts) yet moves above the personalities who can not sort things out for some reason (e.g., they lack the authority or they dislike one another) to another set of people who have the authority, a different perspective, or otherwise can get the issue resolved satisfactorily.

Failing in this approach, another, more formal, process may become necessary. The formal issue resolution process that Shaw recommends for disputes between the Operator and SFWMD is mediation. Mediation offers something outside of the government judicial process (i.e., outside a court of law) and is the next lowest threshold resolution option. The benefit of mediation is that it keeps both parties talking so that the overall transaction can remain on a sound footing while focusing on settling the issue outside of the judicial system. Given that there are personalities and long-standing personal and professional relationships involved on both sides of potential issues between SFWMD and USSC, using a tool that focuses on issue resolution early and using a disinterested third party may prove most effective.

In mediation, there is a neutral or third-party mediator who facilitates the resolution process (and may even suggest a resolution, typically known as a mediator's proposal), but does not impose a resolution on the parties. This individual is an impartial party who serves as a mediator, fact finder, arbitrator, or otherwise assists the parties in resolving the issues in controversy. This person may be a permanent or temporary officer or employee of SFWMD or any other qualified individual who is acceptable to both parties.

Mediation is an effective issue resolution process, especially if a factual interpretation is needed or the parties are polarized into an all-or-nothing position and believe that evaluation by a third party mediator could help resolve the matter or if one party's view of the case is unrealistic, and a realistic appraisal of the situation by a third party may help.



## **5.0 SFWMD QA Oversight**

### **5.1 QA Roles and Level**

SFWMD should receive and review the Airstrip Maintenance Checklists described in Table 4.2-2. This specifies frequency of maintenance activities for each type of airstrip. A qualified individual should review and audit the information for accuracy and validity and make semi-annual inspection visits to several of the airstrips ensuring that over the next 18 months all are visited at least once.

Furthermore, the maintenance operator should be required to provide work order documentation and other such material as necessary for the qualified individual to achieve a complete understanding of the deficiencies that have been identified and the maintenance activities that have been performed.

### **5.2 QA Requirements**

Requirements include the review of PM records and reports and appropriate periodic audits of the PM Program as required to validate the reliability of the processes established.

### **5.3 QA Reporting/Inspection**

To ensure the Operator is maintaining the current operational condition of the airstrips, the following activities should be performed:

- The Operator should provide PM Schedule Compliance on a monthly basis.
- SFWMD should review the PM Schedule Compliance monthly. Target performance is 80 percent.
- Every 6 months SFWMD should audit the maintenance procedures and PM schedule compliance.
- Every 6 months SFWMD should review the completed PM work orders and perform airstrip site inspections.
- SFWMD should conduct semi-annual random site inspections to shadow maintenance technicians during the performance of PM procedures.

## **6.0 Professionals Developing Repair, Maintenance, and Transition Plan**

James Barrack, P.E. (FL PE #66093) prepared the RMTP report for the airstrips.

**Repair, Maintenance, and Transition Plan**  
**For**  
**NON-PROCESS AND AGRICULTURAL BUILDINGS**

**US Sugar Corporation**

**December 19, 2008**

**Prepared for**



**South Florida Water Management District**

**3301 Gun Club Road**  
**West Palm Beach, FL 33406**

**Prepared by**



**3223 Commerce Place, Suite 100**  
**West Palm Beach, FL 33407**

**Repair, Maintenance, and Transition Plan  
For  
NON-PROCESS AND AGRICULTURAL BUILDINGS  
QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the plan subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices at this time. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer's experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this plan, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This plan is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Lead/Plan Author**

Name: Paul Farrington

Date: December 19, 2008

**Peer Review**

Name: Gary Seavey

Date: December 19, 2008

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**Appendix A      Maintenance Checklist**

## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the initial assessment and subsequent evaluation of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Repair, Maintenance, and Transition Plan addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations.

The objective of this Repair, Maintenance, and Transition Plan (RMTP) is to assist in the asset evaluation of the Agri-Business infrastructure and facilities in the potential purchase area. The major infrastructure category described within this report is representative of the category “Buildings Not Included in the Above” in the scope of work and is also referred to as Non-Process Buildings. This category comprises office buildings, residential buildings, warehouses, tractor sheds, pole barns, and other miscellaneous non-process structures.

### 1.1 RMTP Overview

This RMTP was developed from the findings of the on-site assessments, interviews, document reviews, and review of any available maintenance and capital improvement documents relating to the Non-Process and Agricultural Buildings. The plan addresses observed and identified material deficiencies for each asset, the necessary repairs, and the plan to verify those repairs are made or accounted for during the transition period.

There were 44 Non-Process and Agricultural Building assets and 1 water treatment plant included in this category. The 45 Non-Process and Agricultural Building assets included a total in excess of 77 individual buildings. The additional buildings included with some assets were residential and support buildings associated each migrant housing asset, multiple buildings and houses included with former and existing staff housing assets, and multiple buildings included with agricultural area office site assets. Small sheds and incidental buildings were not included in the total building count.

Following assessment, each asset was assigned a condition grade of Red, Yellow, or Green based on the structural, mechanical, electrical, and plumbing systems, building envelope, land condition, and paving systems. A summary of the evaluations and the necessary repairs is provided in Tables 4.1-1 and 4.1.2.

During the process of turnover of assets from USSC to SFWMD, the SFWMD should conduct additional assessments to ensure that immediate repairs and outstanding deficiencies have been addressed and that the assets have been maintained to the same condition or better than that identified in the Evaluation Report. Concurrently, general maintenance should also be conducted as detailed herein and verified by inspection.

This report was to include a review of USSC repair, maintenance, and transition plans; however there were no such plans available for these assets for us to review.

The repair plan is composed of two major sections consisting of immediate repairs recommended within 6 months and non-immediate repairs recommended from 6 to 18 months. Immediate repairs are repairs to assets exhibiting critical damage or deterioration affecting continued operation, effectiveness, functionality, and/or safety warranting corrective action immediately or within a 6-month period. Non-immediate repairs are repairs to assets exhibiting non-critical damage or deterioration affecting continued operation, effectiveness, functionality, and safety warranting corrective action within a 6- to 18-month period.

There are no existing maintenance plans that for non-process buildings. Shaw created a tabular checklist that details all of the maintenance items that are associated with the non-process buildings. This tabular checklist is intended to be used for general maintenance inspections semi-annually during visual

inspections. Any maintenance deficiencies should be noted in the appropriate area and corrected in a timely manner.

There were no existing capital improvement plans for non-process buildings. On the condition that all repairs that are identified in Section 4.1, Repair Plan, are completed, there will be no further capital improvements that will need to be conducted throughout the term in order to maintain the assets in the condition they were observed to be at the time of the assessment.

The transition plan is comprised of three sections of recommendations: Recommendations Prior to Turnover; Recommended Improvements; and Recommended Resolution Process. Following these recommendations should result in a smooth transition.

The SFWMD will need to provide quality assurance (QA) to ensure that their interests are protected during the transition period. Quality assurance documentation should be provided for any of the specific repairs that have been identified with the Evaluation Reports and Repair, Maintenance, and Transition Plans. Quality assurance requirements, reporting, and inspections have also been identified to ensure the operator is completing all the appropriate inspections and repairs.

## **1.2 Limiting Factors**

This Repair, Maintenance, and Transition Plan pertains only to the buildings detailed in this report that were visited and assessed by Shaw personnel. The site visit is intended to be visual only and non-invasive.



## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District will begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore, and preserve the fabled *River of Grass*.

SFWMD engaged Shaw to conduct the Initial Assessment of USSC facilities, properties, and infrastructure under contract #4600000858, Work Order 01 in accordance with field directives from SFWMD. This Repair, Maintenance, and Transition Plan (RMTP) for Non-Process and Agricultural Buildings addresses Task 1.2 of the Evaluation to Maintain Infrastructure and Transition Operations and was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

### 2.1 Purpose and Scope of Services

The objective of this RMTP is to assist in the Asset Evaluation of the Agri-Business infrastructure and facilities in the potential purchase area. The Asset Evaluation Project scope as set forth in the Statement of Work (SOW) prepared by SFWMD sets forth the following specific activities:

- Project initiation, site visits, and data collection as necessary
- Evaluation of condition and identification of deficiencies, corrective improvements, and costs
- Summary of operation and maintenance activities and required future replacements/repairs
- Identification of repair, maintenance, capital improvement, and quality assurance requirements for infrastructure to maintain current level of operations and efficiencies at turnover to SFWMD
- Development of a recommended resolution process if disagreements arise between the operator and SFWMD during execution of this plan.

The overall purpose of this sub-task is to identify infrastructure assets and their current condition to ensure that the assets are maintained in current condition up to the time of transfer to SFWMD. Specific objectives are to develop an evaluation of assets in categories of infrastructure and prepare a plan to ensure that the assets are in the same condition when received by SFWMD as at present.

### 2.2 Description of Infrastructure

The major infrastructure category described within this report is representative of the category "Buildings Not Included in the Above" in SFWMD's SOW and is also referred to as Non-Process Buildings. The Non-Process Building category comprises structures that are not related to the process operations of the sugar mill or citrus plant. Included in this category are office buildings, residential buildings, warehouses, tractor sheds, pole barns, and other miscellaneous non-process structures.

### 3.0 Methodology

Shaw personnel performed evaluations of the non-process buildings that are part of the operation of the USSC.

#### 3.1 Definition of Condition Class - Grading System

Following inspection, each asset was assigned a condition grade of Red, Yellow, or Green based on the structural, mechanical, electrical, and plumbing systems, building envelope, land condition, and paving systems. Additional grading considerations included functionality of the asset, the severity of any deterioration or damage, and life safety and regulatory compliance considerations.

**Table 3-1. Condition Classification Grades**

Condition	Description
<b>GREEN</b>	Fully functional assets exhibiting little or no damage or deterioration not warranting any corrective action other than routine maintenance. No safety hazards observed. The assets display no material deficiencies although they may need painting, repairs, or replacement of equipment beyond 18 months or 2 years.
<b>YELLOW</b>	Assets exhibiting non-critical damage or deterioration affecting continued operation, effectiveness, functionality warranting corrective action within a 6- to 18-month period. Assets with systems with an estimated remaining useful life of 6- to 18-months. Assets exhibiting a non-critical safety or regulatory deficiency and not requiring immediate corrective action. The assets display deficiencies that, if not repaired soon, will contribute to life safety issues or material deficiencies. Examples are failing roofing system, neglected painting systems, HVAC systems at the end of expected useful life (EUL), and settlement around a building that would allow vermin under the building.
<b>RED</b>	Assets exhibiting critical damage or deterioration affecting continued operation or functionality. Assets exhibiting a safety or regulatory deficiency warranting immediate corrective action. The assets display life safety deficiencies and/or material deficiencies that, if not immediately repaired, will cause unchecked material damage to the building. Examples are sunken steps, missing stair, deteriorating abandoned building, badly damaged or worn out roof. All assets judged to be of no value and recommended for demolition were assigned this grade.

#### 3.2 Site Visits

Shaw personnel conducted sites visits to observe USSC non-process assets. Shaw personnel were typically accompanied by a USSC representative to facilitate asset location and access as well as to provide material information regarding the asset. Five Shaw personnel assessed the non-process buildings and water treatment plant. One assessor dealt with each of the four agricultural subdivided areas. Assets in and related to the citrus groves were divided among four assessors and one assessor visited the citrus nursery facility. The work of assessing the structures adjacent to the Clewiston plant and those not directly associated with an agricultural area were split among the four area assessors. A fifth assessor, working independently, assessed the non-process related water treatment plant.

#### 3.3 Data Collected

During the building assessment site visits, Shaw personnel collected digital photographs and files, interviewed site-knowledgeable USSC representatives, collected background and historical paper documents, and recorded objective observations.

The assessments generally followed the guidance of ASTM 2018-08 Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process.

### **3.4 Description of Asset Categories**

Non-Process Buildings are administrative buildings such as offices, residential and field labor houses, training buildings, materials, chemical equipment storage buildings such as tractor sheds, chemical storage buildings, and field equipment warehouse and repair buildings. A water treatment plant that does not directly support a USSC process is included in the non-process building assets.

The assets are scattered across a large area of agricultural property, which has been subdivided by USSC into cultivation areas. Many of the assets are known by titles that derive from the cultivation area.

### **3.5 Repair, Maintenance, and Transition Plans Review**

While Shaw's scope of work includes the review of USSC repair, maintenance, and transition plans, there were no documents available to review of existing maintenance or repair plans. U.S. Sugar Corporation currently only conducts repair and maintenance to non-process buildings on an as-needed basis.

### **3.6 Transition Planning**

#### **3.6.1 Pre-Production Startup Requirements**

The non-process buildings and water treatment plant are not associated with a process and therefore do not have a pre-production start-up requirement.

#### **3.6.2 Lease Review**

Shaw requested and received from USSC copies of available occupant leases for non-process buildings.

#### **3.6.3 Capital Improvement Plan Recommendations**

U.S. Sugar Corporation currently conducts capital repairs to non-process buildings on an as-needed basis. Ken McDuffie, Agricultural Manager for USSC, confirmed this in an e-mail, dated September 18, 2008, stating, "We do not have any capital budgeted for building repairs. All repairs to buildings would be as needed and monies would come out of the general account."

#### **3.6.4 Strategic Agreements/Commitments**

USSC considers its lease agreement for office space with [REDACTED] to be a trade secret. The terms of the lease were only available for review by Shaw at the law offices of Gunster Yoakley. In this review, we considered the following:

- Agreements with suppliers and vendors
- Selling agreements/commitments
- Special customer agreements
- List of major customers
- List of major suppliers and vendors
- List of strategic partners and alliances
- Local community commitments

#### **3.6.5 Factors Affecting Operational Reliability**

U.S. Sugar Corporation currently conducts maintenance to non-process buildings on an as-needed basis. Ken McDuffie confirmed this in an e-mail, dated September 18, 2008, stating "Maintenance to buildings is performed on an as needed basis therefore we do not have a formal maintenance plan."

Copies of the operating permits for the wastewater and water treatment plants were received from the USSC and reviewed.

Items considered in our review included the following:

- Crop rotation
- Acreage in production
- Weather, pestilence
- NAFTA and world market conditions
- Personnel issues/actions

## 4.0 Repair, Maintenance, and Transition Plan

The Repair, Maintenance, and Transition Plan describes repair and maintenance tasks required of the infrastructure operator to ensure that the infrastructure is turned over to SFWMD at the end of the 2009/2010 production season in the same operational, functional, and effective condition that it is in today.

Appropriate site visits, data collection, audits, warranty reviews, and evaluations of current production rates, operations, functions, efficiencies, maintainability, and associated costs were performed as described in Section 3.0, Methodology. A review was conducted of the existing operation and maintenance plans and procedures to estimate if these plans and procedures appear adequate to maintain current production rates, operations, functions, and efficiencies. Recommended improvements or changes to the plan and processes if needed to ensure that SFWMD's interests are being protected are provided below. Also provided are required future replacement and repair items including the timing those replacements and repairs to be provided by the operator of the infrastructure prior to turnover to SFWMD.

### 4.1 Repair Plan

The repair plan is composed of two major sections consisting of immediate repairs recommended within 6 months and non-immediate repairs recommended from 6 to 18 months. The repairs are broken down below.

#### 4.1.1 Immediate Repairs

Immediate repairs are repairs to assets exhibiting critical damage or deterioration affecting continued operation, effectiveness, functionality, and/or safety warranting corrective action immediately or within a 6-month period. The assets display life safety deficiencies and/or material deficiencies that, if not immediately repaired, will cause unchecked material damage to the building. Examples are sunken steps, missing stairs, deteriorating abandoned building, badly damaged, or worn out roofs. All assets judged to be of no value and recommended for demolition were assigned this grade. The table below identifies the assets determined to be condition grade Red, along with their deficiencies and required repairs.

**Table 4.1-1. Immediate Repairs to Assets**

Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
Area 1 Pole Barn	Red	<b>Regulatory/Safety</b> Demolition of one barn, pig manure management <b>Material</b> Repairs to one barn	Demolish Barn 1597. Enforce proper method of manure management at Barn 1747. Replace rusted and missing sheet metal roof and repair broken roof gutters for Barn 1747.
Single House at Doverspike	Red	<b>Regulatory/Safety</b> Demolition of tractor shed <b>Material</b> Exterior finish, roof replacement	Demolish tractor shed. Repaint house exterior. Replace rusted steel roof of shed.
Clinic/Union Building	Red	<b>Regulatory/Safety</b> Demolition of northwest shed <b>Material</b> Asphalt repair/stripping, water heater replacement, repairs	Demolish northwest shed. Repair cracked sidewalk and interior ceilings. Replace water heater and shingle roof of water heater shed.

Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
Sugarland Park	Red	<b>Regulatory/Safety</b> Structure demolition <b>Material</b> None	Demolish all nine houses and four associated garages.
Bunkers Area	Red	<b>Regulatory/Safety</b> Scalehouse demolition <b>Material</b> Bunker repairs	Demolish scalehouse. Repair damaged gutters. Remove damaged structure support.
Area 2 Site and Office Buildings	Red	<b>Regulatory/Safety</b> Missing cover plate to electrical panel <b>Material</b> Exterior finish, foundation backfill, asphalt sealing	Replace cover plate to electrical panel at rear of residence. Power wash all exterior walls. Repaint fascia boards and metal carport screen at office. Backfill foundation piers. Trim tree limbs at warden residence. Seal and restripe asphalt parking area.
Griffin Housing and Tractor Shed	Red	<b>Regulatory/Safety</b> Tractor shed demolition <b>Material</b> Exterior refinishing, HVAC replacement, roof replacement	Demolish tractor shed. Power wash all exterior walls. Repaint fascia, eave, and end boards. Replace HVAC and two exterior doors. Seal and restripe asphalt parking area.
Florida Lettuce Shed	Red	<b>Regulatory/Safety</b> Lettuce shed demolition <b>Material</b> None	Demolish lettuce shed.
South Bay Harvester Complex (AES Shop)	Red	<b>Regulatory/Safety</b> Building demolition, exposed electrical panel <b>Material</b> None	Demolish northern building. Replace electrical panel cover plate in harvester storage building.
Runyon Tractor Shed	Red	<b>Regulatory/Safety</b> Tractor shed demolition <b>Material</b> Exterior refinishing	Demolish tractor shed. Power wash and repaint Spray House exterior.
House West of Bourne Tractor Shed	Red	<b>Regulatory/Safety</b> Building demolition <b>Material</b> None	Demolish house.
Tractor Shed (East of Citrus Plant)	Red	<b>Regulatory/Safety</b> Hanging ventilation fan <b>Material</b> None	Reattach ventilation fan to side of shed.
Alcoma Office	Red	<b>Regulatory/Safety</b> Missing cover plate, unsecured outlet box <b>Material</b> Missing HVAC pad	Replace missing conduit body cover plate. Reattach electrical outlet box. Provide level pad for HVAC unit.

Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
Alcoma Houses (3)	Red	<b>Regulatory/Safety</b> Loose junction boxes <b>Material</b> Missing HVAC pad	Reattach loose electrical junction boxes. Provide level pad for HVAC units at two residences.
Alcoma Pole Barns (2) and Chemical Room	Red	<b>Regulatory/Safety</b> Pole barn demolition <b>Material</b> None	Demolish pole barn.
Devil's Garden N&S Block Houses (2)	Red	<b>Regulatory/Safety</b> Septic system overflow <b>Material</b> Treatment shed repairs, exterior repairs	Replace septic pump. Replace roof and siding of water treatment sheds. Replace roof of north house. Repair rotted fascia and trim of south house. Replace south house HVAC unit.
Devil's Garden N&S BBQ Camp	Red	<b>Regulatory/Safety</b> Building demolition <b>Material</b> None	Demolish BBQ camp structure.
Southern Division Office	Red	<b>Regulatory/Safety</b> Abandoned trailer disposition <b>Material</b> Exterior repairs and repaint	Remove abandoned trailer for disposal. Repair fascia on office. Power wash and repaint office exterior.
Southern Division Pole Barn	Red	<b>Regulatory/Safety</b> Structure demolition <b>Material</b> None	Demolish pole barn.
Southern Division Abandoned Office (north of Pond 2)	Red	<b>Regulatory/Safety</b> Structure demolition <b>Material</b> None	Demolish abandoned office.

#### 4.1.2 Non-Immediate Repairs

Non-immediate repairs are repairs to assets exhibiting non-critical damage or deterioration affecting continued operation, effectiveness, functionality, and safety warranting corrective action within a 6- to 18-month period. The assets display deficiencies that, if not repaired soon, will contribute to life safety issues or material deficiencies. Examples are failing roofing system, neglected painting systems, HVAC systems at the end of EUL, and settlement around a building that would allow vermin under the building. The table below identifies the assets determined to be condition grade Yellow, along with deficiencies and required repairs.

**Table 4.1-2. Non-Immediate Repairs to Assets**

Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
Townsite Houses	Yellow	<b>Regulatory/Safety</b> Septic tank replacement <b>Material</b> Exterior finish, wood rot, brick pointing, HVAC replacement, repairs	Replace damaged septic tank. Repair wood rot and chimney damage. Pressure wash/repaint exteriors. Replace aged HVAC units.
Townsite Building - Houses	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior finish, wood rot, brick pointing, HVAC replacement, roof replacement, removal of shed, repairs	Remove hot water heater shed. Replace one roof. Pressure wash/repaint exteriors. Replace aged HVAC units.
Townsite Building - Garage	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior finish, repairs	Repair wooden door and column support. Pressure wash/repaint exterior.
Area 1 Office	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Asphalt resealing/restriping, HVAC replacement, repairs	Replace damaged wooden fascia panels. Replace aged HVAC unit. Reseal and restripe asphalt drive and parking lot. Pressure wash/repaint exterior.
Townsite Old Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Site grading, fence repair	Repair damaged security perimeter fence. Grade site entrance and grounds to prevent puddles.
Dunwoody Meeting Building	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior finish, repairs	Repair damaged baseboards on BBQ structure. Pressure wash/repaint and/or re-stain exteriors.
Knight Land Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Roof repairs	Repair damaged roof flashings and ceiling.
Area 2 Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior refinishing, HVAC replacement	Repair damaged roof coverings. Replace aged HVAC unit Pressure wash/repaint exterior.
South Shore Site Plan + Buildings	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Settled soil backfill	Backfill areas under the structural floor slabs due to settlement of surrounding soils. Replace damaged walkway pavers. Replace damaged cladding on storage shed.



Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
South Bay Tractor Shed SR80	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior refinishing	Pressure wash/repaint exterior.
Area 3 Office Complex Prewitt	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior refinishing	Pressure wash/repaint exterior.
Bourne Farm (Tractor Shed)	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Roof repair, frame painting	Conduct roof repairs as necessary. Pressure wash/repaint exterior.
Boy Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Roof repair, frame painting	Conduct roof repairs as necessary. Replaced damaged entry door and closet door. Pressure wash/repaint exterior.
Benbow Tractor Shed & Chemical Storage	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Repair and repaint	Conduct patchwork repair to concrete loading pad. Pressure wash/repaint exteriors.
Alcoma Tractor Shed and Pole Barn	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Roof repair, repaint	Repair damaged roof. Pressure wash/repaint exterior.
Devil's Garden N&S Office	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior repairs and repaint	Repair rotting wooden trim and skirting. Pressure wash/repaint exterior.
Devil's Garden N&S Tractor Shed	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Siding repairs and repaint	Replace rusted exterior metal siding. Repaint interior.
Devil's Garden N&S Irrigation Shed	Yellow	<b>Regulatory/Safety</b> Electrical service replacement <b>Material</b> Exterior repairs and repaint	Reconnect electrical service and replace wooden support pole. Replace rotten wooden siding. Pressure wash/repaint exterior.

Non-Process Building/Asset	Condition/Grade	Deficiencies	Required Repairs
Southern Division Block Houses @ Entrance (2)	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Water treatment replacement, exterior and interior refinishing, HVAC replacement	Replace drinking water treatment system. Replace aged HVAC units. Repaint interiors. Pressure wash/repaint exteriors.
Southern Division Tractor Sheds (2)	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Tractor shed roof replacement	Replace roof on the lean-to that covers the aboveground storage tank.
Southern Division Horse Barn	Yellow	<b>Regulatory/Safety</b> None <b>Material</b> Exterior repaint, HVAC replacement	Replace aged HVAC unit. Pressure wash/repaint exterior.
Southern Division Ven-Mar House	Yellow	<b>Regulatory/Safety</b> Trash cleanup <b>Material</b> Exterior repaint	Remove and dispose of internal and external debris. Pressure wash/repaint exterior.

## 4.2 Maintenance Plan

Shaw made several verbal requests and one e-mail request on September 16, 2008 to USSC personnel for copies of existing maintenance plans that were being implemented at the time of the site visit. In an e-mail response on September 18, 2008, Ken McDuffie stated that “Maintenance to buildings is performed on an as needed basis therefore we do not have a formal maintenance plan.” Mr. McDuffie was able to provide one maintenance agreement.

### 4.2.1 Plan Coverage

USSC currently does not maintain any maintenance plans for the buildings identified within this report.

### 4.2.2 Operator Reporting and Documentation

There are no official maintenance plans that exist for non-process buildings. Shaw created a tabular checklist that details the maintenance items that are associated with the non-process buildings. The checklist has been included in Appendix A. This tabular checklist is intended to be used semi-annually during general visual inspections. General semi-annual inspections should be conducted by a maintenance supervisor or operator using the tabular checklist. Any maintenance deficiencies should be noted in the appropriate area and corrected in a timely manner. The checklist should serve as a document report to USSC in order schedule any required maintenance.

### 4.2.3 Checklist for Start-Up

The non-process buildings are not associated with a process and therefore do not have a checklist for startup development.

Copies of the operating permits for the wastewater and water treatment plants were received from the USSC and reviewed.

**4.2.4 Lease Recommendations**

USSC leases office space and residential buildings to commercial clients as well as residential tenants. Shaw requested copies of all existing leases that USSC had on file. In an e-mail dated September 18, 2008, Ken McDuffie stated that he had included copies of all lease agreements with the exception of [REDACTED]. The lease is considered a trade secret, but it was available for review at Gunster Yoakley. The lease agreements that were provided to Shaw from Mr. McDuffie are identified in Table 4.2-1.

It was noted in the review of the leases that no lease was provided for three of the houses in the Townsite Houses. One of the houses was unoccupied at the time of the site assessment and may not have a lease associated with it. The other two leases have been requested but are reportedly unavailable as indicated above.

**Table 4.2-1. Lease Recommendations**

Existing Lease	Term of Lease	Recommendations
James Fielder	\$10/month; ends 9/30/2004; renews annually	Maintain
Local Lodge 57	\$1/month; ends 3/31/2006; renews for 12 months after initial term	Maintain
Mike Coon	\$10/month; ends 3/31/2007; renews annually	Maintain
Officer David Burnsed	\$10/month; ends 11/26/2008; renews monthly	Maintain
Richard Benjamin	\$10/month; ends 7/31/2009; renews monthly	Maintain
Charles White	\$10/month; ends 1/31/2005; unknown renewal date	Maintain
Officer John Greene	\$10/month; ends 7/31/2009; renews monthly	Maintain
[REDACTED]	Trade Secret – unknown	Maintain

**4.2.5 Capital Improvement Plan**

Shaw made several verbal requests and one e-mail request on September 16, 2008 to USSC personnel for copies of existing capital improvement plans or budgets that were in existence at the time of the site visit. In an e-mail response on September 18, 2008, Mr. McDuffie stated that “We do not have any capital budgeted for building repairs. All repairs to building would be as needed and monies would come out of the general account.” On the condition that all repairs that are identified in Section 4.1, Repair Plan, are completed, there will be no further capital improvements that will need to be conducted throughout the term in order to maintain the assets in the condition they were observed to be at the time of the assessment.

**4.3 Transition Plan**

The sections below detail recommendations that should be observed during the transition period.

**4.3.1 Recommended Action Prior to Turnover**

Prior to the turnover of assets from USSC to SFWMD, the SFWMD should conduct an intermediate assessment to ensure that immediate repairs have been completed within the agreed upon 6-month timeline. The SFWMD should also conduct a final assessment to ensure that outstanding identified deficiencies (non-immediate repairs) have been corrected. The final assessment will also serve to protect

SFWMD's interest by documenting that the assets have been maintained to the same condition or better as identified in the Evaluation Report. Any deficiencies not addressed within the 18-month time period should be noted for immediate repair, or financial adjustment should be made to the contractual agreement.

Concurrently, general semi-annual maintenance should also be conducted as detailed in Section 4.2.2 to discover and document any additional maintenance requirements that may occur as a result of operation.

It was noted in the review of the leases that no lease was provided for three of the houses in the Townsite Houses. One of the houses was unoccupied at the time of the site assessment and may not have a lease associated with it. The other two leases have been requested but are reportedly unavailable as indicated above. All properties occupied as residences and operations that are not part of the USSC operations should have leases in place that allow transfer to SFWMD or another entity.

#### **4.3.2 Recommended Improvements**

Provided that all repair recommendations have been acknowledged and completed, there should be no need for addition improvements. However, because USSC has practiced reactive maintenance as opposed to proactive maintenance, additional improvements may be necessary as assets degrade due to continued aging and/or use.

From a non-asset point, it is imperative that SFWMD maintain or improve communication with USSC or operator regarding all repairs, maintenance, and other relevant information.

#### **4.3.3 Recommended Resolution Process**

It is important to note that a tool to be employed early on is to require that the protagonists on both sides adhere to the principle of elevating issues that can not be resolved to next higher levels through their internal chains of command early and continuously when they reach an impasse. Our experience is that this approach has been demonstrated as an effective dispute resolution tool, especially at the project level, since it ties the action close to the point at which the sides disagree (usually on the facts) yet moves above the personalities who can not sort things out for some reason (e.g., they lack the authority or they dislike one another) to another set of people who have the authority, a different perspective, or otherwise can get the issue resolved satisfactorily.

Failing in this approach, another, more formal, process may become necessary. The formal issue resolution process that Shaw recommends for disputes between the Operator and SFWMD is mediation. Mediation offers something outside of the government judicial process (i.e., outside a court of law) and is the next lowest threshold resolution option. The benefit of mediation is that it keeps both parties talking so that the overall transaction can remain on a sound footing while focusing on settling the issue outside of the judicial system. Given that there are personalities and long-standing personal and professional relationships involved on both sides of potential issues between SFWMD and USSC, using a tool that focuses on issue resolution early and using a disinterested third party may prove most effective.

In mediation, there is a neutral or third-party mediator who facilitates the resolution process (and may even suggest a resolution, typically known as a mediator's proposal), but does not impose a resolution on the parties. This individual is an impartial party who serves as a mediator, fact finder, arbitrator, or otherwise assists the parties in resolving the issues in controversy. This person may be a permanent or temporary officer or employee of SFWMD or any other qualified individual who is acceptable to both parties.

Mediation is an effective issue resolution process, especially if a factual interpretation is needed or the parties are polarized into an all-or-nothing position and believe that evaluation by a third party mediator could help resolve the matter or if one party's view of the case is unrealistic, and a realistic appraisal of the situation by a third party may help.

## **5.0 SFWMD Quality Assurance Oversight**

### **5.1 QA Roles and Level**

The SFWMD will need to provide quality assurance to ensure that their interests are protected during the transition period. Quality assurance documentation should be provided for any of the repairs that have been identified with the Evaluation Reports and Repair, Maintenance, and Transition Plans. The level of quality assurance will vary among the assets and is necessary to ensure that SFWMD's interests continue to be protected. For the non-process buildings, the minimum quality assurance should include the following:

- Repair oversight of identified repairs and confirmation of completion by asset technical representative or a qualified individual
- Preparation of status summary report to Shaw project manager for comparison against transition timeline
- Monthly report to SFWMD project manager of achievements, status, and problems discovered

### **5.2 QA Requirements**

QA requirements include documentation and review of correspondence between operator and SFWMD, including repairs, maintenance, and identification of issues.

SFWMD should also request and maintain an actual cost log of all repair and maintenance activities that are conducted.

### **5.3 QA Reporting/Inspection**

SFWMD will need to ensure that the Operator is maintaining the current operational condition of the infrastructure.

For both immediate and non-immediate repairs that are corrected, a post-correction inspection should be conducted to the asset to confirm proper correction.

General inspections should be conducted at minimum semi-annually to observe the status of the assets and ensure that all operational deficiencies that have occurred due to use or operation have been reported to SFWMD as required.

## **6.0 Professionals Developing Repair, Maintenance, and Transition Plan**

The following professionals developed the Repair, Maintenance, and Transition Plan:

Paul Farrington, P.E.

Gary Seavey

Tom Woodard

Erik Carlson, P.E.

**Appendix A**  
**MAINTENANCE CHECKLIST**

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No.	Asset	BUILDING EXTERIOR INSPECTIONS							BUILDING INTERIOR INSPECTIONS						
		Walls	Windows/Frames	Doors/Frames	Clean Gutters/Downspouts	Roof Covering/Flashing	Eaves	Foundation	Molding/Trim	Stairs	Skylights	Walls	Ceilings	Floors	Light Fixtures
1	Townsite Houses														
2	Townsite Building-Houses														
3	Townsite Building-Garage														
4	Area 1 Office														
5	Area 1 Farm Shop														
6	Townsite Old Tractor Shed														
7	Area 1 Pole Barn														
8	Dunwody Meeting Building														
9	Single House at Doverspike														
10	Clinic / Union Building														
11	Sugarland Park														
12	Bunkers Area														
13	Knight Land New Trailer														
14	Knight Land Tractor Shed														
15	Area 2 Site and Office Buildings														
16	Area 2 Tractor Shed														
17	Griffin Housing & Tractor Shed														



No.	Asset	BUILDING EXTERIOR INSPECTIONS							BUILDING INTERIOR INSPECTIONS						
		Walls	Windows/Frames	Doors/Frames	Clean Gutters/Downspouts	Roof Covering/Flashing	Eaves	Foundation	Molding/Trim	Stairs	Skylights	Walls	Ceilings	Floors	Light Fixtures
18	Florida Lettuce Shed														
19	South Shore Site Plan + Buildings														
20	South Bay Harvester Complex (AES Shop)														
21	South Bay Tractor Shed SR80														
22	Runyan Tractor Shed														
23	Area 3 Office Complex Prewitt														
24	Bourne Farm (Tractor Shed)														
25	House West of Bourne Tractor Shed														
26	Boy Tractor Shed														
27	Benbow Tractor Shed & Chemical Storage														
28	Tractor Shed (East of Citrus Plant)														
29	Alcoma Office														
30	Alcoma Tractor Sheds and Pole Barn														
31	Alcoma Houses														
32	Alcoma Pole Barn & Chemical Room														
33	Devil's Garden N&S Office														

No.	Asset	BUILDING EXTERIOR INSPECTIONS								BUILDING INTERIOR INSPECTIONS					
		Walls	Windows/Frames	Doors/Frames	Clean Gutters/Downspouts	Roof Covering/Flashing	Eaves	Foundation	Molding/Trim	Stairs	Skylights	Walls	Ceilings	Floors	Light Fixtures
34	Devil's Garden N&S Tractor Shed														
35	Devil's Garden N&S Block Houses														
36	Devil's Garden N&S BBQ Camp														
37	Devil's Garden N&S Irrigation Shed														
38	Southern Division Office														
39	Southern Division Block Houses @ Entrance														
40	Southern Division Tractor Sheds														
41	Southern Division Horse Barn														
42	Southern Division Pole Barn														
43	Southern Division Abandoned Office														
44	Southern Division Ven-Mar House														
45	Prewitt Maintenance Shop Water Treatment Plant														

No.	Asset	BUILDING INTERIOR INSPECTIONS					BUILDING SYSTEMS INSPECTIONS									
		Vents	Electrical	Plumbing	Roof Underside	Stairs	Doors	Tenant Equipment	HVAC	Water Heater	Appliances	Plumbing fixtures	Exhaust fans	Emergency Systems	Maintenance Contracts	Change HVAC, Water, and Exhaust Fan Filters
1	Townsite Houses															
2	Townsite Building-Houses															
3	Townsite Building-Garage															
4	Area 1 Office															
5	Area 1 Farm Shop															
6	Townsite Old Tractor Shed															
7	Area 1 Pole Barn															
8	Dunwody Meeting Building															
9	Single House at Doverspike															
10	Clinic / Union Building															
11	Sugarland Park															
12	Bunkers Area															
13	Knight Land New Trailer															
14	Knight Land Tractor Shed															
15	Area 2 Site and Office Buildings															
16	Area 2 Tractor Shed															
17	Griffin Housing & Tractor Shed															

No.	Asset	BUILDING INTERIOR INSPECTIONS					BUILDING SYSTEMS INSPECTIONS									
		Vents	Electrical	Plumbing	Roof Underside	Stairs	Doors	Tenant Equipment	HVAC	Water Heater	Appliances	Plumbing fixtures	Exhaust fans	Emergency Systems	Maintenance Contracts	Change HVAC, Water, and Exhaust Fan Filters
18	Florida Lettuce Shed															
19	South Shore Site Plan + Buildings															
20	South Bay Harvester Complex (AES Shop)															
21	South Bay Tractor Shed SR80															
22	Runyan Tractor Shed															
23	Area 3 Office Complex Prewitt															
24	Bourne Farm (Tractor Shed)															
25	House West of Bourne Tractor Shed															
26	Boy Tractor Shed															
27	Benbow Tractor Shed & Chemical Storage															
28	Tractor Shed (East of Citrus Plant)															
29	Alcoma Office															
30	Alcoma Tractor Sheds and Pole Barn															
31	Alcoma Houses															
32	Alcoma Pole Barn & Chemical Room															
33	Devil's Garden N&S Office															

No.	Asset	BUILDING INTERIOR INSPECTIONS					BUILDING SYSTEMS INSPECTIONS									
		Vents	Electrical	Plumbing	Roof Underside	Stairs	Doors	Tenant Equipment	HVAC	Water Heater	Appliances	Plumbing fixtures	Exhaust fans	Emergency Systems	Maintenance Contracts	Change HVAC, Water, and Exhaust Fan Filters
34	Devil's Garden N&S Tractor Shed															
35	Devil's Garden N&S Block Houses															
36	Devil's Garden N&S BBQ Camp															
37	Devil's Garden N&S Irrigation Shed															
38	Southern Division Office															
39	Southern Division Block Houses @ Entrance															
40	Southern Division Tractor Sheds															
41	Southern Division Horse Barn															
42	Southern Division Pole Barn															
43	Southern Division Abandoned Office															
44	Southern Division Ven-Mar House															
45	Prewitt Maintenance Shop Water Treatment Plant															

No.	Asset	SITE GENERAL INSPECTIONS												Deficiencies Observed and Maintenance Required	
		Compliance-Permits	Water Treatment	Lighting	Paved Areas	Sidewalks	Landscaping	Septic Tanks	Leachfields	Sewage pumping	Storm Drainage	Garbage Disposal	Generators		Sprinklers
1	Townsite Houses														
2	Townsite Building-Houses														
3	Townsite Building-Garage														
4	Area 1 Office														
5	Area 1 Farm Shop														
6	Townsite Old Tractor Shed														
7	Area 1 Pole Barn														
8	Dunwody Meeting Building														
9	Single House at Doverspike														
10	Clinic / Union Building														
11	Sugarland Park														
12	Bunkers Area														
13	Knight Land New Trailer														
14	Knight Land Tractor Shed														
15	Area 2 Site and Office Buildings														
16	Area 2 Tractor Shed														
17	Griffin Housing & Tractor Shed														

No.	Asset	SITE GENERAL INSPECTIONS												Deficiencies Observed and Maintenance Required
		Compliance-Permits	Water Treatment	Lighting	Paved Areas	Sidewalks	Landscaping	Septic Tanks	Leachfields	Sewage pumping	Storm Drainage	Garbage Disposal	Generators	
18	Florida Lettuce Shed													
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Prepared for:  
***South Florida Water Management District***  
3301 Gun Club Road  
West Palm Beach, FL 33406

***Cost Analysis and  
Recommendations Reports***

Contract #4600000858 Work Order 1

December 19, 2008

Submitted by:  
***Shaw Environmental, Inc.***  
3223 Commerce Place, Suite 100  
West Palm Beach, FL 33407

**Costing Analysis and Recommendation Report**  
**REPORT QUALITY ASSURANCE AND RELIANCE**

Shaw Environmental, Inc. has completed preparation of the above referenced deliverable and herein submits it to the South Florida Water Management District in accordance with the requirements of the Work Order, Rev. 3. We verify that this submittal includes all required components of the deliverable. Quality control reviews have been performed by peers with knowledge in the report subject areas.

Shaw Environmental, Inc. services described herein were performed and our findings and recommendations were prepared in accordance with generally accepted consulting practices at this time. This warranty is in lieu of all other warranties, either expressed or implied. While Shaw has made every reasonable effort to properly evaluate the property and/or asset conditions within the contracted scope of services, it should be recognized that this investigation is limited in several important respects including, but not limited to, the following:

Our findings and conclusions were based primarily on the visual appearance of the asset/property at the time of our visit and on comparative judgments with similar reviews in the Shaw observer's experience. Our observations included only areas that were readily accessible to our representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions.

Some of our conclusions were partially based on information provided by others including representatives of the client, the property owner, the asset manager, contractors servicing the asset, and/or local officials. For the purposes of this report, we have assumed this information to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

This report is intended for the sole use of the South Florida Water Management District. The scope-of-services performed in execution of this assessment may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or its findings, conclusions, or recommendations is at the risk of said user.

**Report Author**

Name: Nathan Newell

Date: December 19, 2008

**Peer Review**

Name: Jock Merriam

Date: December 19, 2008

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## Appendix A Facilities in Crop Areas Cost Tables

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## 1.0 Summary

The South Florida Water Management District (SFWMD) engaged Shaw Environmental, Inc. (Shaw) to conduct the Initial Assessment of US Sugar Corporation (USSC) Agri-Business Infrastructure and Facilities in the potential purchase areas under contract #4600000858, Work Order No. 1. This Cost Analysis and Recommendation Report (CARR) address a portion of Task 2 - Assessment of Infrastructure.

### 1.1 CARR Overview

#### 1.1.1 Facilities in Crop Areas

The Facilities in Crop Areas assets include pump station facilities, roadway and railroad bridges, roads, culverts, canals, impoundment levees, and other related infrastructure. Based on our review of trade secret documents, the total capital expenditures for these facilities was approximately [REDACTED] over a 4-year period, starting in fiscal year 2004. Currently there is no formal and documented maintenance and repair program; rather these activities are performed on a reactive basis and usually after some sort of failure. It is likely that the near-term and future operational and maintenance costs will remain similar to past experience without adoption of a forward-looking approach.

Assets in the Facilities in Crop Areas identified with technical deficiencies include those affecting performance of the larger pump stations (mechanical-electrical primarily), several bridges (primarily structural and safety), a small percentage of the total mileage of impoundment levees and canals (primarily structural), and a few small segments of interior roads and culverts.

USSC documents related to costing and this report were limited in availability and applicability. Repair cost estimates were derived for the near term (0 to 6 months) and intermediate term (7 to 18 months) maintenance and repair periods and have been estimated at \$6.6 million and \$16.6 million respectively. The estimated total cost necessary over 18 months for repairs identified in the Evaluation Report (ER) and Repair, Maintenance, and Transition Plan (RMTP) (further developed costs) to bring the crop area facilities into condition Green would be approximately \$23.2 million. Additional annual maintenance expenditures to maintain the facilities in a Green condition would amount to approximately \$13.7 million.

#### 1.1.2 Crop Area Lands

Analysis indicated that for the near future (next 18 months) operational and maintenance costs will remain relatively constant.

The estimates for citrus land costs are based on industry standards. The planting and pesticide costs have increased over the last year due to an aggressive effort in preventing/removing citrus canker and greening. This cost in operations is likely to be higher than the industry average because an estimate for prevention of these threats is necessary to maintain citrus production levels. The remaining costs have been determined from standard rates published by the University of Florida, Institute of Food and Agriculture Science (IFAS). During field observations, no significant variances from the standard citrus grove operation other than those noted above were detected.

**Table 1.1.2-1 Crop Area Lands O&M Cost Summary**

Item	Unit Cost per Acre per Year	Acres	Total Cost per Year
Sandy Soil	\$556	37,823	\$21,014,717
Muck Soil	\$433	90,825	\$39,308,548
Citrus	\$2,635	24,242	\$63,878,041
<b>Total</b>		<b>152,890</b>	<b>\$124,201,306</b>

In general, the operational and maintenance costs associated with cropland production are not expected to increase on a relative basis over the next 3 years for the majority of the USSC properties, with the exception of the following three variables: soil exhaustion due to muck soil oxidation/subsidence, citrus greening, and canker diseases. It is estimated that perhaps 0.5 percent of the muck soils will need significant capital improvements per year over the next 5 years. At a capital investment rate of about \$904 per acre to excavate the rock to restore drainage/irrigation, it is estimated that about \$900,000 per year of capital improvement will be needed to address soil exhaustion.

As the result of citrus canker, approximately 20 percent of the groves have had been destroyed and will need to be replanted in the near future. The destroyed groves translate directly into significant yield losses and additional capital investments to reestablish these groves. For the existing canker and greening eradication lands (~7,100 acres), the cost to plant and reestablish the drainage/irrigation infrastructure is estimated to be \$4,500 per acre, which means that approximately \$32 million of capital improvement money will be needed.

Maintaining the current level of intervention/prevention for citrus greening carries a high economic cost, but should return the cost to the operator in yield per acre due to an overall reduction in crop loss. The 6 percent annual loss would translate into about a \$9.6 million per year capital improvement investment per year.

**1.1.3 Airport and Airstrip Facilities**

The financial information and data received from USSC was limited in the details it contained regarding airstrip operational and maintenance costs. Generally, the gravel airstrips are graded and compacted on an as-needed basis. The grass airstrips are mowed about 6 times per year. No USSC cost data was provided for labor, materials, or equipment hours. It was necessary to calculate and estimate these costs. Cost calculations and estimation are based on experience and cost information taken from *RSM Means Building Construction Cost Data*, which is an industry standard reference for estimating capital and repair costs.

It is estimated that for the near term (0 to 6 months), the gravel airstrips will need gravel replenishment to establish a good road crown, blading, and compaction every 2 months. The asphalt airstrip will need spot pothole repairs, crack sealing, seal coat, and pavement markings. The cost for 14 airstrips is estimated at \$418,000, or about \$29,800 per airstrip needed initially.

It is estimated that for the long term (7 to 18 months), the gravel airstrips will need much less gravel, blading, and compaction every 2 months. The asphalt airstrip will need spot pothole repairs, crack sealing, and pavement markings every 24 months. The annual maintenance cost for 14 airstrips is estimated at \$239,000, or about \$17,000 per airstrip per year.

**1.1.4 Non-Process Buildings**

USSC currently conducts capital repairs to non-process buildings on an as-needed basis. USSC confirmed this in an e-mail, dated September 18, 2008, stating, “We do not have any capital budgeted for building repairs. All repairs to buildings would be as needed and monies would come out of the general account.”

No additional capital cost needs were identified for the next 18 months beyond the recommended immediate and non-immediate repairs base and contingency budget.

USSC fiscal year spending breakdown was reviewed from 2004 through 2008 in an attempt to capture further costs. Further developed costs include semi-annual general inspections by a maintenance supervisor or operator and maintenance costs for the continued operation of the non-process buildings in their current configuration based on comparable properties of similar age. Shaw estimated annual maintenance costs at \$1,000 per asset (45 assets times \$1,000 per building, equaling \$45,000) and estimated 3 man-weeks of labor and other direct costs (3 man-weeks times \$1,000 per day, equaling \$15,000 per year) to conduct semi-annual general inspections.

## **1.2 Limiting Factors**

### **1.2.1 Facilities in Crop Areas**

The financial information, lease agreements, maintenance plans and records, and all other related material to conduct this evaluation was limited. In most cases, standard industry practices were used to develop rough order costs for all major asset types associated with the Facilities in Crop Areas as well as state and federal agency guidelines where appropriate. As it was available, capital expenditure information from attorney-client privileged documents was also used along with direct field observation.

### **1.2.2 Crop Area Lands**

The primary limiting factor was the short timeframe provided and limited resources to conduct this evaluation. This resulted in only representative sampling of conditions being completed. In addition, seasonal variations could not be observed.

The financial information and data received from USSC was limited in the details it contained regarding cropland operational and maintenance costs. It was thus necessary to calculate and estimate these costs. Cost calculations and estimation are based on experience and local knowledge of standard farming operations within the Everglades Agricultural Area (EAA) and regional commercial pricing data.

To develop these costs, it was necessary to estimate the manpower and equipment needed to perform the operation and maintenance tasks. Since these data were also not available from USSC, it was necessary to estimate these activities and associated cost based on sub-contractors completing the tasks, which therefore could be somewhat inflated from the true cost realized through using available internal resources.

The estimates provided for materials purchased are based on local vendor pricing, and the bulk discounts that may have been negotiated by USSC were not able to be taken into account. It is assumed that other bulk discounts would apply for all purchases, but the magnitude of this discount is not known. It can be assumed though that future purchases could be negotiated to similar discounts as currently being obtained.

Due to the limited time allocated for field work, it was not possible to assess the actual amount of fertilizer and pesticide applied to obtain the yield realized by each field. Thus, fertility and pesticide application rates and practices were based on information and data provided by USSC personnel. Under optimal conditions, it would have been ideal to verify the data provided. However, yield information was useful to identify any large anomalies.

### **1.2.3 Airport and Airstrip Facilities**

The limiting factor for the gravel/limerock unit price of \$25 per ton is based on the total cost of material, labor, and equipment to excavate, screen and blend, transport, place, finish grade, and compact the material onto each airstrip. The unit price does not consider any savings that may be available if the gravel/limerock was taken from USSC borrow pits at a lower cost (or lower quality) of material.

The severe escalation since 2007 in the price of fuel also affects the unit prices for transporting gravel and the material cost of asphalt cement. Price volatility for all roadwork pay items should be expected to continue.

#### **1.2.4 Non-Process Buildings**

Findings and conclusions are based primarily on the visual appearance of the property at the time of the property visit and on comparative judgments with similar properties in the Shaw property observer's experience. Property observations included only areas that were readily accessible to the representative without opening or dismantling any secured components or areas. The scope did not include invasive investigation, component sampling, laboratory analysis, an environmental property assessment, or engineering evaluations of structural, mechanical, electrical, or other systems with related calculations and review of design assumptions. These estimates do not address the cost impact of the possible presence of asbestos-containing materials on renovation or demolition activities unless otherwise noted.

Some conclusions were partially based on information provided by others including representatives of the client, the property owner, the property manager, contractors servicing the property, and/or local building code officials. For the purposes of this report, this information is assumed to be complete and correct unless otherwise noted. Shaw assumes no liability for incorrect information provided by others.

## 2.0 Introduction

On June 24, 2008, Governor Charlie Crist announced that the South Florida Water Management District (District) will begin negotiating an agreement to acquire as much as 187,000 acres of primarily agricultural land owned by various Agri-Business concerns in the Everglades Agricultural Area. The tracts of land in the Everglades Agricultural Area would then be used to reestablish a part of the historic connection between Lake Okeechobee and America's Everglades through a managed system of storage and treatment and, at the same time, safeguard the St. Lucie and Caloosahatchee rivers and estuaries.

Acquiring the real estate offers the SFWMD the opportunity and flexibility to store and clean water to protect Florida's coastal estuaries and to better revive, restore and preserve the fabled *River of Grass*.

This CARR was prepared to assist SFWMD in the Asset Evaluation of the Agri-Business infrastructure and facilities to facilitate negotiating an agreement to acquire as the subject property.

The overall purpose of this task is to identify infrastructure assets and their current condition baseline to ensure that the assets are maintained in current condition up to the time of transfer to SFWMD. This CARR includes all of the cost estimates originally provided in the Initial Assessment Report along with a recommendation as to the sufficiency of the available applicable US Sugar Corporation Capital Improvement Plan based on the identified deficiencies and corrective actions required from the reports in Task 1.

The objectives of the CARR are to provide final estimates of costs prepared initially in the IAR (Subtask 2-1):

- Include the final cost estimates identified in the IAR “along with a recommendation as to the sufficiency of the available applicable US Sugar Corporation CIP based on the identified deficiencies and corrective actions required from the reports in Task 1”
- Provide cost estimates by appropriate fiscal years and in present-day dollars
- Provide a “recommendation for an annual reserve/contingency fund if necessary to cover potential unexpected expenses by the District.”

The following work elements were performed

- Project initiation, site visits and data collection
- Evaluation of condition and identification of deficiencies, corrective improvements and costs
- Summary of operation and maintenance activities and required future replacements/repairs
- Repair, maintenance, capital improvement, and quality assurance requirements for infrastructure to maintain current level of operations and efficiencies at turnover to SFWMD
- Assistance to SFWMD as required during negotiations

Two reports have been prepared under Task 1 to achieve these objectives: Evaluation Report and Repair, Maintenance, and Transition Plan. These reports are organized around the various categories and subcategories of infrastructure assets and provide the basis of this cost evaluation.



## 3.0 Methodology

### 3.1 Infrastructure Category Methodologies

#### 3.1.1 Facilities in Crop Areas

This estimate was prepared by making an initial asset evaluation and material take off and then using subsequent evaluation work to develop the costing analysis. Unit costs used for these estimates are based on *RS Means Construction Cost Data*. The cost data is a national average for work as described in the estimates and includes allowances for contractors direct and indirect job costs. In addition to *RSMeans*, the Parametric Cost Engineering System (PACES) was used for unit pricing of structures such as bridges, etc. PACES is used extensively by the Air Force, Army Corps of Engineers, and Navy for planning and budgeting. The PACES costs also include allowances for contractors direct and indirect job costs.

This CARR presents all cost estimates by fiscal years and compares estimates as appropriate to other information obtained relative to USSC expenditures for the same activities when possible. The start of the USSC fiscal year begins on October 1 and ends on September 30.

Costs for the repair and/or replacement costs for Facilities in Crop Areas were also developed using *RSMeans*. Costs used and developed for this costing estimate and were based upon most current values as provided and escalated through fiscal year 2011.

The cost estimates for the Facilities in Crop Areas were also based upon site assessment work. During the IAR, the area was traveled extensively and it can be assumed that most assets were inventoried. During the ER phase, approximately 10 percent of the Facilities in Crop Areas assets were sampled for further evaluation work as a basis for this CARR. RMTP analyses were part of these processes and were also used to develop CARR results.

The pay items for pump station facilities, roadway and railroad bridges, canals, roads, impoundment levees, and other minor assets were analyzed and shown as Appendix A. Additionally, the USSC capital expenditures for 2004 through 2008 were reviewed and can be found in Appendix B.

Rough order costs were developed based only on above-ground and above-water site investigations; no geotechnical investigations were performed. Physical pump testing was done for three larger pump stations; however, no other performance testing or destructive testing was required for evaluation work or CARR costing analyses. Approximately 10 percent of the major asset groups were sampled in the evaluation efforts as a baseline to develop these CARR costs.

#### 3.1.2 Crop Area Lands

The overall approach taken was to estimate the cost of the various cropland operational and maintenance activities and then to verify these levels against the general agriculture costs provided by USSC. The estimates were developed based on experience in this type of farming and considered the requirements as set forth in the statement of work. Actual observations in the field were designed to focus on what costs are required to operate and maintain the sugar cane and citrus cropland. Prices quoted at the time are subject to change. For instance, materials have a very short action window and prices may be significantly different a few days after quotation.

Consulting with construction industry personnel and agricultural enterprises that supply the needed material for these types of agricultural operations provided a baseline as to what the various field operations could cost. The equipment, materials, and labor rates as provided reflect normal rates for this region.

The estimates for sugar cane were developed separately for the two soil types (muck and sandy soil) represented across USSC lands. The inherent difference between soil types is fertilizer management;

however, the other factor that should be considered is the number of ratoons each soil type is capable of economically producing. The number of ratoons for sand is less and, therefore, the gross planting costs are higher as they occur more often. The planting costs on a per acre basis for sugar cane in muck and sand remain the same. The other cost not incurred in these figures is a general overhead or management cost. The standard procedure for estimating these overhead and management costs is to base relative to production rates and market prices at point of sale. The variability involved in this aspect creates a cost that cannot be applied to line items but rather as a cost per acre or equivalent.

The estimates for citrus costs are based on industry standards. The planting and pesticide costs have increased over the last several years due to an aggressive effort in preventing/removing citrus canker and greening. This cost at the Southern Gardens Citrus operations is likely higher than the industry average because of the senior staff's estimate that prevention of these threats is necessary to maintain citrus production levels. The remaining costs have been determined from standard rates published by the University of Florida, Institute of Food and Agriculture Science. During field observations, no significant variance from the standard citrus grove operation other than those noted above was detected.

The following sections break down how the cost data were obtained for both sugar cane and citrus cropland.

### **3.1.2.1 Sugar Cane**

#### **Field Lateral Maintenance**

This cost uses estimated equipment and time from observance of field conditions and work environment. The estimate includes a CASE 210 trackhoe with a clean-out bucket and an operator. The rate is budgeted to clean one lateral every 4 hours. The trackhoe will remove all vegetation and sediment out of the ditch in order for the water to flow without any obstructions.

Material prices were quoted in October 2008. Time was allowed for mobilization, removal, new pipe installation, and demobilization. The total operating time used was 4 hours including two laborers and a trackhoe (with operator).

#### **Planting (Land Prep, Seed Cane, and Planting)**

This cost includes tractor, implement, and man hours of labor used in the facilitation of planting seed cane. Planting costs are provided in dollars per acre. Involved in the planting process is one tractor with an operator that will create the furrows, spread fertilizer and insecticide, and then pull the cane wagon. On the cane wagon is seed cane that has been cut in about 4-foot sections. Four laborers on the wagon will cut the cane to be put in the ground while the other four laborers actually plant the cane.

#### **Herbicide and Pesticide Costs from Crop Maintenance**

Herbicide and pesticide usage rates, timing, and dosages was determined from US Sugar Corporation records and verified to follow industry standards. Prices based on one tractor and operator with sprayer operating about 5 to 6 miles per hour covering about 1 acre per 1/10 hour, materials included.

#### **Soil Testing Costs**

The soil test price included one soil test per 47 acres at a soil test of \$25 based on the use of commercial soil testing laboratory. USSC uses its own soil testing laboratory; however, their cost rates were not available. Therefore, presented costs may not be representative of current USSC costs, but should reasonably reflect the cost associated with soil testing based on industry standards.

### **Fertilizer Purchase and Application Costs**

Fertilizer prices have been increasing sharply over the last few years. Fertilizer costs were obtained from a local fertilizer company. Their costs quotes did include possible additional bulk discounts that could be achieved by further negotiations. Existing USSC purchase prices were not available. Prices in \$/ton were obtained for the primary three mixes used for sugar cane based on the soil type (muck and sand) and plant cane. Fertilizer application costs were based on one tractor with operator and spreader covering about 1 acre every 1/10 hour.

### **Harvest Costs**

The price shown is for one harvesting machine to come to the field, cut the cane off at ground level, convey it to the cane wagons and then transported the cane to the mill. This price also includes the operator. A separate harvest cost was estimated for seed cane where most is hand harvested for quality control at a much higher cost per acre.

### **BMP Implementation**

BMP implementation is a standard operating procedure across the USSC sugar cane lands. The specific BMP costs included are sediment control, field leveling, and nutrient management. Information provided by USSC indicated the fertility/nutrient practices used. Sediment control is included in the field lateral maintenance so were not included here under BMP costs. However, the record keeping and monitoring costs associated with the BMP permits are relatively high costs. These costs are typically included in the overall overhead costs of the farm provided by others and therefore hard to separate. Based on SWET experience, these costs would be in the order of about \$3 per acre per year.

#### **3.1.2.2 Citrus**

### **Drainage and Irrigation Operation and Maintenance Costs**

Drainage costs include a CASE 210 trackhoe with a clean out bucket and an operator budgeted to clean one ditch every 4 hours. The trackhoe will remove all vegetation and sediment out of the ditch in order for the water to flow without any obstructions. Material prices were quoted in October 2008. Allowed time to mobilize, remove, install new pipe, and demobilize is 4 hours including two laborers and a trackhoe with an operator. Irrigation costs are to replace/repair fertigation equipment, irrigation laterals, sub laterals, and staking with mister head at tree. The well, pump, and mainline costs are covered in the Facilities in Crop Areas report.

### **Replant/Replacement Costs**

The pricing is based on buying a tree, digging the hole, and planting the tree. Repair of any irrigation that is disturbed in the removal of the tree is included in that price. The number of trees is based on 10 percent of trees being replanted per acre for citrus canker, citrus greening, and normal tree replacement. This cost is also addressed in the capital improvement cost section for a catastrophic situation involving a total replant.

### **Herbicide and Pesticide Costs from Crop Maintenance**

The cost in this category has increased due to citrus canker prevention. Herbicide and pesticide cost are based on one tractor with operator and sprayer. No data was provided for specific application material and rates, so recommended IFAS rates were used.

### **Soil Testing Costs**

The soil test price is one soil test priced at \$25 per 10 acres of grove, based on the use of a commercial soil testing laboratory. USSC uses its own soil testing laboratory; however, their cost rates were not

available. Therefore, our costs may not be representative of current USSC costs, but should be reasonably close.

### **Fertilizer Purchase and Application Costs**

This cost is based on the industry average, which generally is based on liquid forms of fertilizer for fertigation. Southern Garden Citrus managers indicated that liquid fertilizer prices the previous year had escalated severely and they had begun using a dry mix. This type of practice is normal in agricultural operations. A typical use event had to be determined in this situation and the normal liquid fertilizer for fertigation was used.

### **Harvest Costs**

Harvest costs are based on manual labor of picking the fruit and hauling it to the juice plant based on \$3 per box and on average about 393 boxes harvested per acre per year.

### **Costs To Implement and Maintain BMPs per Permit Requirements**

The specific BMP costs included are sediment control and nutrient management. Information provided by USSC indicated the fertility/nutrient practices used. Sediment control is included in the field lateral maintenance so these costs were not included here. Record keeping and monitoring costs associated with the BMP permits are relatively high costs and are typically included in the overall overhead costs of the farm provided by others and, therefore, hard to separate. Based on experience, these overhead BMP costs would be in the order of about \$3 per acre per year.

#### **3.1.3 Airport and Airstrip Facilities**

The pay items for the 12 gravel airstrips included placement of 3 inches of gravel (limerock); fine grading with the motor grader; and rolling and compaction (assuming three passes) of the surface material.

The pay items for the one paved airstrip included cleaning of each pothole; placing a 6-inch thick layer of gravel base, compaction, spray tack coat; filling with a 6-inch layer of asphalt; and hand tamping compaction of each pothole. Pay items are included for the routing, cleaning, and sealing of individual cracks providing asphalt seal coat over the entire road surface and painting the 6-inch wide double yellow centerline.

The pay items for the one grass airstrip included mowing the grass and weeds down to a 3-inch height approximately six times per year. We also include a pay item to fill the major depressions with a sandy-loam mixture. We assumed 50 cubic yards of sandy loam for Airstrip 14 would suffice. This material will need to be locally spread by hand to ensure proper placement in areas near the center of the runway.

#### **3.1.4 Non-Process Buildings**

This estimate was prepared by: site visits to the properties to assess the general physical condition and maintenance status of each property; review of available construction and maintenance documents, location maps, local building/fire/health code compliance reports; and interviews with various persons knowledgeable of the property.

The assessment was performed in general accordance with American Society of Testing and Materials (ASTM) E 2018-01, Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process.

Estimates were prepared using the *RMeans Construction Cost Data* manuals, which are industry-accepted guides for estimating capital and repair costs.

### 3.2 Initial Assessment Report ROM Costs

Table 3.2-1 presents a summary of the cost identified in the Initial Assessment Report. Crop Area Lands was not a report requirement at the time of the IAR, hence no data is shown for it.

**Table 3.2-1. Summary of Initial Assessment ROM Costs**

	0-6 months	7-18 months	ROM Total	Contingency	ROM+ Contingency
Non-Process Buildings	\$271,341	\$1,149,713	\$1,421,054	30 percent	\$1,705,265
Facilities in Crop Areas	\$763,260	\$6,566,820	\$7,330,080	20 percent	\$8,796,096
Airfields	\$378,000	\$230,000	\$608,000	20 percent	\$729,600

### 3.3 Further Developed Costs

#### 3.3.1 Facilities in Crop Areas

Shaw conducted additional field sampling approximating 10 percent of all assets in the following categories: pump stations and facilities, roadway bridges, canals, roads, and impoundment levees. We developed an estimated cost within each asset type for repairs and also for annual operations and maintenance. This section provides a high-level summary of all costs for these major asset groups. Detailed cost tables developed for each category are found in Appendix A. Table 3.3.1-1 shows results of sampled actual and future projected costs for repair of infrastructure within these asset groups. The annual costs for repair were derived from sampling results and use of *RMeans Construction Cost Data*. These are compared against USSC Capex Trade Secret expenditure information for the time period between 2004 and 2008.

Another cost estimate was developed to illustrate estimated operation and maintenance requirements for immediate (0 to 6 months) and intermediate (7 to 18 months) time periods. These costs were derived from the same 10 percent sample mentioned above and analysis of our IAR assessment data and are projected over the entire asset group over the next few years (see Table 3.3.1-2).

After comparison of the above cost estimates for operations and maintenance against USSC Capex trade secret information, projected operations and maintenance costs were found to be far greater than what was expended by USSC from 2004 through 2008. It is apparent that USSC's existing maintenance program (fix-when-fails approach) requires less investment to maintain the cropland facility infrastructure to a level they deem to be sufficient than would be required to maintain it to engineering standards applicable elsewhere. Implementing a program that proactively used a more traditional approach would result in an infrastructure profile for facilities in croplands with far fewer day to day deficiencies.

The average cost per acre for the above listed proactively induced repairs to be made within 18 months would be approximately \$152 per acre and the annual operations and maintenance expenditures would be at an average cost of about \$88 per acre for a total of \$240 per acre.

**Table 3.3.1-1. Repair Costs of Facilities in Croplands**

Facility Type	Quantity/Unit	Annualized Costs for Repair ( 0 to 6 Months)	Annualized Costs for Repair (7 to 18 Months)	Capex Comparison
Large Pump Station Facilities*	46 each	\$274,670	\$624,063	██████████
Small Pump Station Facilities	222 each	\$6,699	\$52,431	██████████
Roadway Bridges	42 each	\$41,741	\$175,638	██████████
Canals	1132 miles	\$762,493	\$2,321,789	Unknown
Roads	1945 miles	\$156,096	\$891,775	██████████
Impoundment Levees <sup>†</sup>	332 miles	\$4,594,880	\$4,040,623	Unknown
Sub-lateral canals, headwalls and culverts ††	Unknown	Unknown	\$1,620,630	Unknown
Culverts (IAR ROM) ††	976 each	\$757,500	\$6,890,625	██████████
<b>Total</b>	<b>N/A</b>	<b>\$6,594,079</b>	<b>\$16,617,574</b>	<b>N/A</b>
Maximum Annual Capex (2007)				██████████

- \* Fifty percent contingency value only applied to Large Pump Station pump houses and structures
- \*\* Capex (2004 -2008) does not differentiate between small and large pump facilities
- † Impoundment Levee repair costs can be subtracted from total if facilities are abandoned
- ††Culvert ROM costs were developed during IAR. Sub-lateral canals, headwalls and culvert costs were not originally included and have been added to this table since then.
- ‡ Maximum yearly croplands facilities expenditures were reviewed from Trade Secret data (Capex FY 2004-2008). This is the maximum and was for Year 2007. Minimum spent was for Year 2005 - \$274,280. Data is available in Appendix B. This number does not represent a total of numbers above in this column.

**Table 3.3.1-2. Operations and Maintenance Costs for Facilities in Croplands**

Facility Type	Quantity/Unit	Year 1	Year 2	Year 3 (and beyond)*
Large Pump Station Facilities	46 each	\$3,819,242	\$4,010,204	\$4,028,846
Small Pump Station Facilities	222 each	\$56,664	\$59,497	\$62,472
Roadway Bridges	42 each	\$615,941	\$646,738	\$649,745
Canals	1132 miles	\$3,403,600	\$3,573,780	\$3,590,393
Roads	1945 miles	\$1,581,158	\$1,660,216	\$1,667,934
Impoundment Levees	332 miles	\$753,848	\$791,540	\$795,219
Sub-lateral canals, headwalls and culverts	Unk	\$1,562,288	\$1,562,288	\$1,562,288
Culverts	\$8.47/ 152,890 acres	\$1,294,978	\$1,359,727	\$1,427,714
<b>Total</b>	<b>N/A</b>	<b>\$13,087,719</b>	<b>\$13,663,990</b>	<b>\$13,784,611</b>

\*Apply a 5 percent escalation cost for inflation for future years beyond Year 3

### 3.3.2 Crop Area Lands

This section provides a breakdown of the estimated costs for the various operational and maintenance activities to be performed in the cropland on the USSC property. Table 3.3.2-1 provides the estimated costs for these activities for sugar cane growth on sandy soils while Table 3.3.2-2 and 3.3.2-3 provide the same information for sugar cane grown on muck soils and the citrus groves, respectively. Note that for Unit Cost per Acre per Year, the total entry is the average of total costs per year divided by total acreage.

**Table 3.3.2-1. Operational and Maintenance Costs for Sugar Cane Grown on Sandy Soils**

Item-Sandy Soil	Unit Cost/Ac/Yr	Acres	Total-Cost/Yr
Planting	\$255	10,806	\$2,750,237
Seed Cane Harvest	\$232	0	\$0
Laser Level	\$100	1,621	\$162,096
Mill Cane Harvest	\$189	32,419	\$6,128,868
Soil Test	\$1.88	37,823	\$71,106
Fertilizer	\$419	21,613	\$9,049,511
Herbicide/Pesticide	\$88	32,419	\$2,852,898
<b>Total</b>	<b>\$556*</b>	<b>37,823*</b>	<b>\$21,014,716</b>

\*Figures are not total of previous full column. See preceding text.

**Table 3.3.2-2. Operational and Maintenance Costs for Sugar Cane Grown on Muck Soils**

Item-Muck Soil	Unit Cost/Ac/Yr	Acres	Total-Cost/Yr
Planting	\$255	20,183	\$5,136,686
Seed Cane Harvest	\$480	2,573	\$1,235,021
Laser Level	\$100	3,782	\$378,225
Mill Cane Harvest	\$189	75,645	\$14,300,692
Soil Test	\$1.88	90,825	\$170,752
Fertilizer	\$206	55,462	\$11,430,410
Herbicide/Pesticide	\$88	75,645	\$6,656,762
<b>Total</b>	<b>\$433*</b>	<b>90,825*</b>	<b>\$39,308,548</b>

\*Figures are not total of previous full column. See preceding text.

**Table 3.3.2-3. Operational and Maintenance Costs for Citrus**

Citrus Item	Unit Cost/Ac/Yr	Acres	Total-Cost/Yr
Greening	\$81	24,242	\$1,952,579
Planting	\$260	24,242	\$630,292
Harvest	\$1,179	24,242	\$28,581,318
Soil Test	\$2.50	24,242	\$60,605
Fertilizer	\$416	24,242	\$10,087,096
Herbicide/Pesticide	\$433	24,242	\$10,493,635
Irrigation System	\$264	24,242	\$6,399,888
<b>Total Cost</b>	<b>\$2,635*</b>	<b>24,242*</b>	<b>\$63,878,041</b>

\*Figures are not total of previous full column. See preceding text.

### 3.3.3 Airport and Airstrip Facilities

The airstrip costs have been further developed since the IAR to account for additional field visits and data collected for airstrips 12 to 14. Airstrip 14 was added and some data used in generating initial estimates for the original number of airstrips was refined. Both had the effect of increasing our original estimate. USSC did not provide a CIP for the airstrips.

### 3.3.4 Non-Process Buildings

During the Initial Assessment, Rough Order of Magnitude (ROM) costs were developed to address immediate and non-immediate repairs. These costs have been broken down by building and included in the ROM costs in the IAR. Additional detail and cost information data was collected and evaluated in the ER and incorporated in the RMTP. USSC fiscal year spending breakdown from 2004 through 2008 was reviewed in an attempt to capture further costs. Further developed costs include semi-annual general inspections by a maintenance supervisor or operator and maintenance costs for the continued operation of the non-process buildings in their current configuration based on comparable properties of similar age. Shaw estimated annual maintenance costs at \$1,000 per asset (45 assets times \$1,000 per building, equaling \$45,000) and estimated 3 man-weeks of labor and other direct costs (3 man-weeks times \$1,000 per day, equaling \$15,000 per year) to conduct semi-annual general inspections.

Because of the uncertainty related in predicting future costs, a contingency of 30 percent is to be added to the estimated maintenance and general inspection costs.

During the course of writing this report, 34 assets were deleted from the prospective transaction and have been removed from this report. As a result, the ROM costs that were included in the IAR have been reduced significantly. Removing the 34 assets reduces the ROM total cost by \$1.05 million from \$1.42 million to \$0.37 million.

## 3.4 USSC Capital Improvement Plan Sufficiency

There were no existing Capital Improvement Plans disclosed by US Sugar during our investigation for any of the four areas of concern: crop area lands, facilities in croplands, airstrips, or non-process buildings. This costing analysis derives from the information that was developed while preparing the RMTP and includes a recommended CIP covering the period from contract execution to the end of the 2009/2010 production season. This plan includes immediate needs to correct deficiencies (short-term repair) as well as long-term costs (annual O&M) and those needed to meet current and known future regulatory requirements. It also includes costing support for recommended actions by the operator that should take place during the transition period, sale of subject property, and execution of related contracts.

Costing analysis and estimates presented in the CARR may be used as part of a resolution process if disagreements between the owner, operator or the SFWMD occur during execution of this plan.

### 3.4.1 Facilities in Crop Areas

The operational and maintenance expenditures estimated to be necessary for sustained operations for Facilities in Crop Area assets to be rated Green would represent an increased expenditure over existing levels but would also move the maintenance program from a reactive to more of a proactive one. The recommended approach would be to focus on primary asset groups that provide the highest operational benefit, such as the pump station facilities, bridges, and levee impoundments, as they have the most potential for improving system-wide efficiencies. They also hold the greatest liability for risk to life, health, and safety.

To achieve these long-term results, it will require a capital investment of about \$10 million for asset categories listed of primary concern and an additional maximum of about \$11.5 million for all cropland facility asset categories listed of secondary concern. It is expected that approximately \$21.5 million would be needed to complete all repairs for months 1 through 18.

Annual maintenance and operations of the croplands facilities infrastructure is estimated at about \$12.2 million for repairs to maintain the current level of service with a future 5 percent escalation cost for inflation.



**3.4.2 Crop Area Lands**

In general, the operational and maintenance costs associated with cropland production are not expected to increase on a relative basis over the next 3 years for the majority of the USSC properties, with the exception of the following three variables: soil exhaustion due to muck soil oxidation/subsidence, citrus greening, and canker diseases. When underlying marl/rock become very shallow, the cost associated with maintaining laterals and culverts increases significantly over these costs associated with fields not experiencing low muck levels. The higher costs are associated with the difficulty of digging through the rock to maintain adequate lateral ditch depths. Crop yields can also decline due to poorer drainage and irrigation controls.

There were fields where muck depths of less than 18 inches were observed and this situation might be manifesting itself in the next few years. These fields compromise approximately 5 percent of the sugarcane farmland. The majority of these fields are located in the southern portion of the EAA. However, there are a few low muck levels that were observed in close proximity to the lake and are distributed in a random fashion. It is estimated, however, that perhaps 0.5 percent of the muck soils will need significant capital improvements per year over the next 5 years. At a capital investment rate of about \$842 per acre to excavate the rock to restore drainage/irrigation, it is estimated that about \$900,000 per year of capital improvement will be needed to address soil exhaustion.

Though at some point soil exhaustion could render fields unrecoverable for crop production, it is anticipated that this situation will be negligible over the next several years. Table 3.4.2-1 shows CIP costs for addressing soil exhaustion.

**Table 3.4.2-1. Sugar Cane Capital Improvement Costs for Addressing Soil Exhaustion**

Item	Unit Cost per Acre
Head wall	\$24
Lateral clean out	\$24
Blasting	\$794
<b>Total</b>	<b>\$842</b>

The Southern Gardens Citrus Groves (SGCG) operation has two large variables that could involve significant capital improvements. As the result of citrus canker, approximately 20 percent of the groves have had to be destroyed and will need to be replanted in the near future. The destroyed groves translate directly into significant yield losses and additional capital investments to reestablish these groves. For the existing eradication lands (~7,100 acres) the cost to plant and reestablish the drainage/irrigation infrastructure is estimated to be \$4,500 per acre, which means that approximately \$32 million of capital improvement money will be needed. The State controlled canker eradication program is no longer implemented; however, the trees are still being removed through SGCG’s own scouting and eradication program. The stance toward canker taken by SGCG is aggressive. The integrated pest management program is geared toward resisting citrus canker and citrus greening. Groves with higher rates of citrus canker occurrence receive a regular pesticide treatment. This is in addition to the labor and machine hours required to identify and remove canker infested trees. Southern Garden Citrus personnel feel this aggressive stance will prove profitable by keeping more productive trees in the ground. However, depending on the success of these programs, the variability of additional capital improvement funds could be significant.

Citrus greening is the other variable that will affect the crop condition through the next few seasons. Citrus greening is a relatively new disease that is potentially more devastating than citrus canker. The SGCG employs a large operation to continuously check for infected trees and remove and burn them. This aggressive stance should keep the 6 percent average losses from citrus greening on an even keel.

Maintaining this level of intervention/prevention carries a high economic cost, but should return the cost to the operator in yield per acre due to overall less citrus greening. The 6 percent annual loss would translate into about a \$9.6 million per year capital improvement investment per year.

### **3.4.3 Airport and Airstrip Facilities**

USSC did not provide a CIP for the airstrips. USSC currently conducts capital maintenance/repairs to the airstrips on an as-needed basis. No additional capital cost needs were identified for the next 18 months beyond the recommended immediate (0 to 6 month) and non-immediate (7 to 18 month) maintenance/repairs base and contingency budget. The expected cost of future maintenance/repairs of airstrips would be approximately \$200,000 to 240,000 per year for all 14 airstrips. Please refer to section 4.0, Cost Analysis, to view the CIP costs for 0 to 6 months and 7 to 18 months.

### **3.4.4 Non-Process Buildings**

USSC currently conducts capital repairs to non-process buildings on an as-needed basis. No additional capital cost needs were identified for the next 18 months beyond the recommended immediate and non-immediate repairs base and contingency budget.

### 4.0 Cost Analysis

This CARR covers four separate disciplines representing a great deal of diversity: crop area land, facilities in crop areas, airstrips and non-process buildings. Each infrastructure asset area has unique elements that comprise their costs and the USSC personnel who were interviewed have different levels of understanding as to what their budgets represent vis-à-vis capital, repair, and operations and maintenance costs. In addition, in some few cases trade secret information was made available, but in most cases it was not, and we have no way of testing the completeness of that which we reviewed.

Table 4-1 attempts to capture new information available since the IAR rough order of magnitude estimate. In this case the “Further Developed Costs” column presents adjustments (up or down) from the IAR number based on new information and better understanding based on further review of USSC’s operations.

It is important to point out that the IAR numbers were developed to identify total costs SFWMD might face once they became the owner. They were based on the best available data provided at the time or discovered during the initial assessment. There was a concern as to how much these costs might be and if they would be over and above normal operating expenses covered by revenues generated by the business; i.e., that they would represent an additional expense to SFWMD above what the business revenues would cover. Therefore, it needs to be noted that the “CIP” column in Table 4-1 does not represent pure capital. It rolls-up IAR-generated numbers and any costs further developed since then. It thus includes the addition of numbers which contain all elements of costs provided or discovered such as costs for repair, operations, maintenance and capital investment. This partially reflects the sourcing of our data (as noted above, USSC staff unfamiliar with what their budgets reflected) and/or the methods used to prepare our estimates: industry benchmarks, trade-secret data, etc. The information developed was not suitable to be sorted in detail so that each element of cost was discreetly evident.

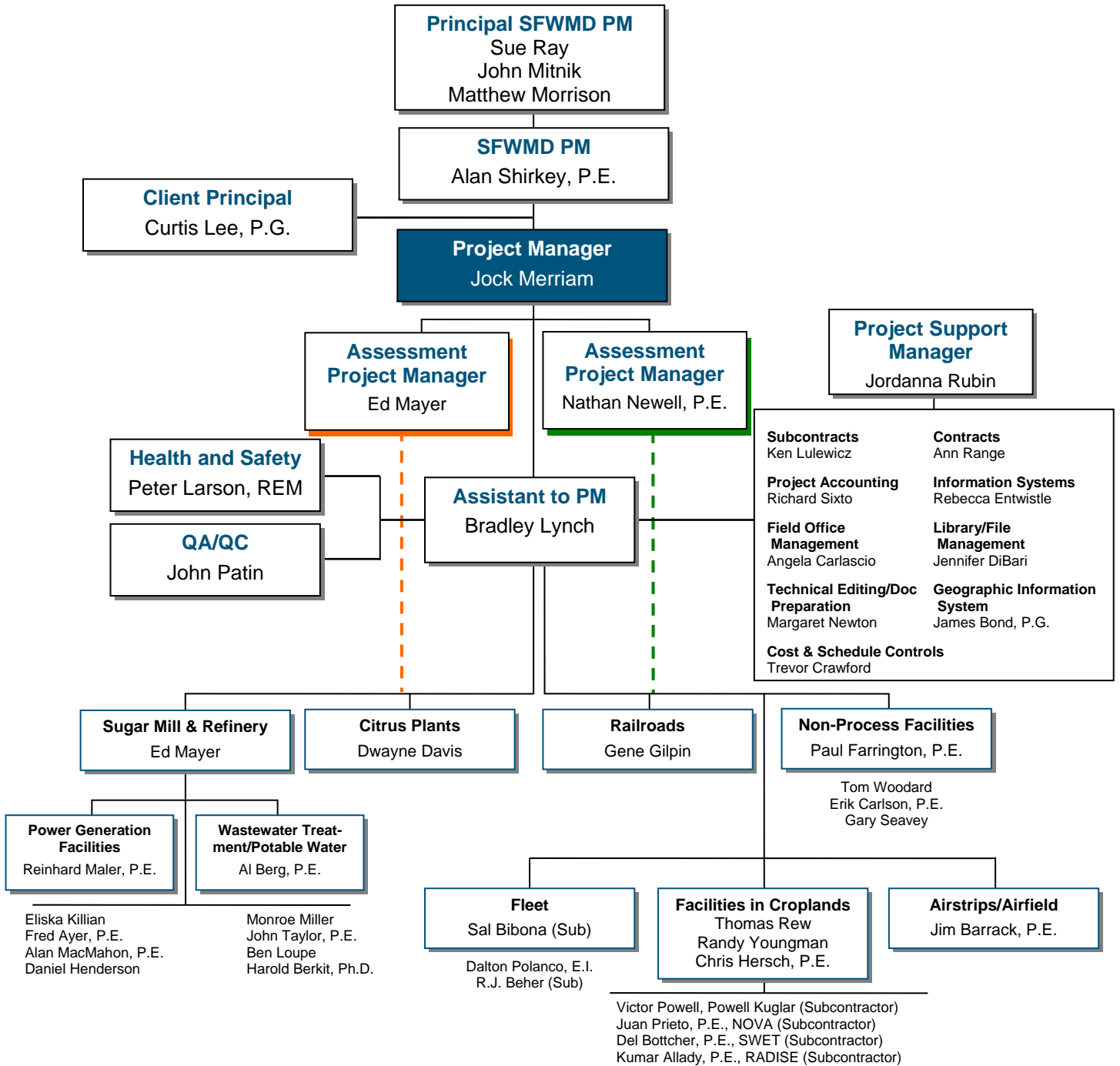
We have taken liberty to also present “Annual O&M” costs, as best we know or estimate them, in order to highlight the backdrop against which these numbers exist. The Crop Area Lands category was not part of the initial scope and hence has no IAR base from which to start.

**Table 4-1. Aggregate Costs for Infrastructure in Agri-Business in Everglades Agricultural Area**

Asset	IAR ROM Total (\$ 000)	Further Developed Costs (\$ 000)	CIP (\$ 000)	Contingency (\$ 000)	Annual O&M (\$ 000/yr)
Facilities in Crop Areas*	\$7,330	\$15,881	\$23,211	20% - \$4,642	\$13,512
Non-Process Buildings**	\$1,421	(\$1,050)	\$371	30% - \$74	\$60
Airstrips†	\$608	\$49	\$657	10% - \$65	\$ 239
Crop Areas††	0	\$0	\$42,500	10% - \$4,250	\$124,201
<b>TOTAL</b>	<b>\$9,359</b>	<b>\$14,880</b>	<b>\$66,739</b>	<b>\$9,031</b>	<b>\$138,012</b>

\* IAR ROM was a provisional estimate based on a very quick-look of an enormous inventory of land and assets.  
 \*\* IAR ROM included 34 assets later removed from negotiation, which accounts for the reduction of \$1,050 million.  
 † Three additional airstrips were visited since the IAR and these additional costs represent repairs to them.  
 †† Did not participate in IAR. Capital Improvement costs address soil exhaustion (\$900,000), citrus canker (\$32 million) and citrus greening (\$9.6 million).

### 5.0 Professionals Developing Report



**Appendix A**  
**PAY ITEMS FOR FACILITIES IN CROP AREAS**

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Further Developed Cost Summary  
Rough Order of Magnitude Estimate

ER/RMTP	Cost by Asset Classification			Cost by Year							
	Green	Yellow	Red	0-6 Mos Red	Month 12	Escalation @ 5% Annually Green	7 - 18 Mos Yellow	Escalation @ 5% Annually Green	Month 24 Green	Month 36 Green	Escalation @ 5% Annually Green
Roads	\$ 1,505,865	\$ 849,310	\$ 156,096	\$ 156,096	\$ 1,505,865	\$ 75,293	\$ 849,310	\$ 42,465	\$ 1,660,216	\$ 1,505,865	\$ 162,069
Major Canals & Ditches	\$ 3,241,524	\$ 2,211,228	\$ 762,493	\$ 762,493	\$ 3,241,524	\$ 162,076	\$ 2,211,228	\$ 110,561	\$ 3,573,780	\$ 3,241,524	\$ 348,869
Levees	\$ 717,950	\$ 3,848,212	\$ 4,594,880	\$ 4,594,880	\$ 717,950	\$ 35,898	\$ 3,848,212	\$ 192,411	\$ 791,540	\$ 717,950	\$ 77,269
Roadway Bridges	\$ 586,611	\$ 167,274	\$ 41,741	\$ 41,741	\$ 586,611	\$ 29,331	\$ 167,274	\$ 8,364	\$ 646,738	\$ 586,611	\$ 63,134
Large Pumps	\$ 3,419,333	\$ 247,552	\$ 82,800	\$ 82,800	\$ 3,419,333	\$ 170,967	\$ 247,552	\$ 12,378	\$ 3,769,815	\$ 3,419,333	\$ 368,006
Large Pump Stations	\$ 218,040	\$ 346,793	\$ 191,870	\$ 191,870	\$ 218,040	\$ 10,902	\$ 346,793	\$ 17,340	\$ 240,389	\$ 218,040	\$ 23,467
Lateral Canals							\$ 3,182,918	\$ 159,146			
Small Pumps	\$ 53,966	\$ 49,934	\$ 6,699	\$ 6,699	\$ 53,966	\$ 2,698	\$ 49,934	\$ 2,497	\$ 59,497	\$ 53,966	\$ 5,808
<b>ER/RMTP Totals</b> (further developed costs)				<b>\$ 5,836,579</b> (Repairs)		<b>\$ 10,230,453</b> (O&M)	<b>\$ 11,448,381</b> (Repairs)		<b>\$ 10,741,976</b> (O&M)		<b>\$ 10,791,910</b> (O&M)

IAR	Cost by Asset Classification			Cost by Year							
	Green	Yellow	Red	0-6 Mos Red	Month 12	Escalation @ 5% Annually Green	7 - 18 Mos Yellow	Escalation @ 5% Annually Green	Month 24 Green	Month 36 Green	Escalation @ 5% Annually Green
Culverts	\$ 1,294,978	\$ 6,562,500	\$ 757,500	\$ 757,500	\$ 1,294,978	\$ 64,749	\$ 6,562,500	\$ 328,125	\$ 1,427,714	\$ 1,294,978	\$ 139,372
<b>IAR Totals</b> (IAR ROM Costs)				<b>\$ 757,500</b> (Repairs)		<b>\$ 1,359,727</b> (O&M)	<b>\$ 6,890,625</b> (Repairs)		<b>\$ 1,427,714</b> (O&M)		<b>\$ 1,434,350</b> (O&M)

<b>Combined IAR &amp; ER/RMTP Costs</b>	<b>Grand Totals</b>	<b>\$ 6,594,079</b> (Repairs)	<b>\$ 11,590,180</b> (O&M)	<b>\$ 18,339,006</b> (Repairs)	<b>\$ 12,169,689</b> (O&M)	<b>\$ 12,226,260</b> (O&M)
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Further Developed Cost Summary By Year  
Rough Order of Magnitude Estimate

ER/RMTP Asset	Cost by Asset Classification			Cost by Year			
	Green	Yellow	Red	Year 1 Red + Green	Year 2 Yellow + Green	Year 3 Green	Year 3 Green
Roads	\$ 1,505,865	\$ 849,310	\$ 156,096	\$ 1,737,254	\$ 2,551,991	\$ 1,667,933	Escalation @ 5% Annually \$ 170,963
Major Canals & Ditches	\$ 3,241,524	\$ 2,211,228	\$ 762,493	\$ 4,166,093	\$ 5,895,570	\$ 3,590,393	\$ 368,015
Levees	\$ 717,950	\$ 3,848,212	\$ 4,594,880	\$ 5,348,728	\$ 4,832,162	\$ 795,219	\$ 81,510
Roadway Bridges	\$ 586,611	\$ 167,274	\$ 41,741	\$ 657,682	\$ 822,376	\$ 649,744	\$ 66,599
Large Pumps	\$ 3,419,333	\$ 247,552	\$ 82,800	\$ 3,673,100	\$ 4,029,744	\$ 3,787,339	\$ 388,202
Large Pump Stations	\$ 218,040	\$ 346,793	\$ 191,870	\$ 420,812	\$ 604,521	\$ 241,507	\$ 24,754
Small Pumps	\$ 53,966	\$ 49,934	\$ 6,699	\$ 63,363	\$ 111,928	\$ 59,774	\$ 6,127
<b>ER/RMTP Totals</b> (further developed costs)				<b>\$ 16,067,032</b> (Repairs+O&M)	<b>\$ 18,848,293</b> (Repairs+O&M)	<b>\$ 10,791,910</b> (O&M)	

IAR Asset	Cost by Asset Classification			Cost by Year			
	Green	Yellow	Red	Year 1 Red + Green	Year 2 Yellow + Green	Year 3 Green	Year 3 Green
Culverts	\$ 1,294,978	\$ 6,562,500	\$ 757,500	\$ 2,117,227	\$ 8,318,339	\$ 1,434,350	Escalation @ 5% Annually \$ 147,021
<b>IAR Totals</b> (IAR ROM Costs)				<b>\$ 2,117,227</b> (Repairs+O&M)	<b>\$ 8,318,339</b> (Repairs+O&M)	<b>\$ 1,434,350</b> (O&M)	

<b>Combined IAR &amp; ER/RMTP Costs</b>				<b>\$ 18,184,259</b> (Repairs+O&M)	<b>\$ 27,166,631</b> (Repairs+O&M)	<b>\$ 13,720,385</b> (O&M)	
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Further Developed Cost Roads  
Rough Order of Magnitude Estimate

Item	Description	Qty	UM	Unit Cost	Opinion on Asset Classification	Extended Total			Assumptions / Basis
						Green	Yellow	Red	
	Unsurfaced Roads - Refurbishment								
	Road Quantity = 1945 miles, assume average width = 24'								
	Surface Area = 1945' x 5280' = 1,141,066 SY	1,141,066	SY						
	Road Conditions								
	Good or Better Condition	83%			Green				
	Fair	14%			Yellow				
	Poor	2%			Red				
1a	Grading	947,085	SY	\$ 0.72	Green	\$ 681,901			RS Means 31.22.16.10 0100
1b	Spread and compact road surface (no new material)	947,085	SY	\$ 0.87	Green	\$ 823,964			RS Means 32.11.23.23 0050
2a	Grading	159,749	SY	\$ 0.72	Yellow	\$ 115,019			RS Means 31.22.16.10 0100
2b	Spread and compact road surface	159,749	SY	\$ 0.87	Yellow	\$ 138,982			RS Means 32.11.23.23 0050
2c	Material cost for 3" gravel (\$25/TN x 1.8TN/CY)	158,749	SY	\$ 3.75	Yellow	\$ 595,309			
2a	Rough grade and file	22,821	SY	\$ 1.50	Red		\$ 34,232		
2b	Grading	22,821	SY	\$ 0.72	Red		\$ 16,431		RS Means 31.22.16.10 0100
2c	Spread and compact road surface	22,821	SY	\$ 0.87	Red		\$ 19,854		RS Means 32.11.23.23 0050
2d	Material cost for 3" gravel (\$25/TN x 1.8TN/CY)	22,821	SY	\$ 3.75	Red		\$ 85,579		

Subtotals

\$ 1,505,865 | \$ 849,310 | \$ 156,096

Total Cost by Asset Classification

\$ 1,505,865 | \$ 849,310 | \$ 156,096

Cost by Year

Year 1 (Red + Green)  
Year 2 (Yellow + Green)  
Year 3 (Green)  
Year 4 and beyond (Green)

\$ 1,661,961  
\$ 2,355,175  
\$ 1,505,865  
\$ 1,505,865



Further Developed Cost Major Canals & Ditches  
Rough Order of Magnitude Estimate

Item	Description	Qty	UM	Unit Cost	Opinion on Asset Classification	Extended Total			Assumptions / Basis
						Green	Yellow	Red	
	Canal - Refurbishment	1132	Miles			Green	Yellow	Red	
	Quantity = 1132 miles (Major Canals)								
	Canal Conditions								
	Good or Better Condition	70%			Green				
	Fair	29%			Yellow				
	Poor	1%			Red				
1a	Clean Canal - Light	792	Miles	\$ 3,367.90	Green	\$ 2,668,724			Assume 5% of Poor / Red Cost
1b	Ditches	2,864	Miles	\$ 200.00	Green	\$ 572,800			Assume Grade-All with Operator and 2 laborers; Average Productivity @ 10 miles per day
2a	Clean Canal - Moderate	328	Miles	\$ 6,735.80	Yellow		\$ 2,211,228		Assume 10% of Poor / Red Cost
					Yellow				
					Yellow				
2a	Dredge Canal	11	Miles	\$ 67,358.00	Red			\$ 762,493	
					Red				
					Red				
					Red				

Subtotals

\$ 3,241,524 | \$ 2,211,228 | \$ 762,493

1132  
792.4  
328.28  
11.32

Total Cost by Asset Classification

\$ 3,241,524 | \$ 2,211,228 | \$ 762,493

**Cost by Year**

Year 1 (Red + Green)	\$ 4,004,017
Year 2 (Yellow + Green)	\$ 5,452,752
Year 3 (Green)	\$ 3,241,524
Year 4 and beyond (Green)	\$ 3,241,524

Further Developed Cost Levees  
Rough Order of Magnitude Estimate

Item	Description	Qty	UM	Unit Cost	Opinion on Asset Classification	Extended Total			Assumptions / Basis
	Levee - Refurbishment					Green	Yellow	Red	
	Quantity = 332 miles	332	Miles						
	Canal Conditions								
	Good or Better Condition	25%			Green				
	Fair	67%			Yellow				
	Poor	8%			Red				
1a	Refurbish Levee	83	Miles	\$ 8,650.00	Green	\$ 717,950			Assume 5% of Poor Cost
1b	Ditches								
2a	Repair Levee	222	Miles	\$ 17,300.00	Yellow		\$ 3,848,212		Assume 10% of Poor Cost
					Yellow				
					Yellow				
2a	Replace Levee	27	Miles	\$ 173,000.00	Red			\$ 4,594,880	Unit Cost based on PACES estimate for earthen berms. Assuming on-site borrow available and reduced regulation requirements
					Red				
					Red				
					Red				

Subtotals

\$ 717,950	\$ 3,848,212	\$ 4,594,880
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Total Cost by Asset Classification

\$ 717,950	\$ 3,848,212	\$ 4,594,880
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Cost by Year

Year 1 (Red + Green)	\$ 5,312,830
Year 2 (Yellow + Green)	\$ 4,566,162
Year 3 (Green)	\$ 717,950
Year 4 and beyond (Green)	\$ 717,950

Further Developed Cost Roadway Bridges  
Rough Order of Magnitude Estimate

Item	Description	Opinion on Asset Classification	Qty	UM	Unit Cost	Extended Total			Assumptions / Basis
						Green	Yellow	Red	
	<b>Roadway Bridge Maintenance Repair / Refurbishment</b>								
1	Bridge BR-01-01-01; primary structural component is concrete	Yellow	967	SF	\$ 29.00		\$ 28,043		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
1a	Allowance for annual maintenance	Green	967	SF	\$ 7.25	\$ 7,011			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
2	Bridge BR-01-01-02; primary structural component is concrete	Yellow	970	SF	\$ 29.00		\$ 28,130		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
2a	Allowance for annual maintenance	Green	970	SF	\$ 7.25	\$ 7,033			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
3	Bridge BR01-01-03; primary structural component is concrete	Green	419	SF	\$ 29.00	\$ 12,151			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
3a	Allowance for annual maintenance	Green	419	SF	\$ 7.25	\$ 3,038			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
4	Bridge BR01-07-01; primary structural component is steel	Red	1238	SF	\$ 62.00		\$ 76,756		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
4a	Allowance for annual maintenance	Green	1238	SF	\$ 15.50	\$ 19,189			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
5	Bridge BR02-19-02; primary structural component is steel	Yellow	1820	SF	\$ 62.00		\$ 112,840		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
5a	Allowance for annual maintenance	Green	1820	SF	\$ 15.50	\$ 28,210			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
6	Bridge BR02-19-04; primary structural component is concrete	Green	1223	SF	\$ 29.00	\$ 35,467			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
6a	Allowance for annual maintenance	Green	1223	SF	\$ 7.25	\$ 8,867			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
7	Bridge BR03-26-01; primary structural component is wood timbers	Red	1213	SF	\$ 24.00		\$ 29,112		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
7a	Allowance for annual maintenance	Green	1213	SF	\$ 6.00	\$ 7,278			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
8	Bridge BR03-28-01; primary structural component is steel	Red	761	SF	\$ 62.00		\$ 47,182		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
8a	Allowance for annual maintenance	Green	761	SF	\$ 15.50	\$ 11,796			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
9	Bridge BR04-31-01; primary structural component is steel	Yellow	2608	SF	\$ 62.00		\$ 161,696		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
9a	Allowance for annual maintenance	Green	2608	SF	\$ 15.50	\$ 40,424			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
10	Bridge BR04-32-01; primary structural component is concrete	Yellow	867	SF	\$ 29.00		\$ 25,143		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
10a	Allowance for annual maintenance	Green	867	SF	\$ 7.25	\$ 6,286			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost
11	Bridge BR04-33-01; primary structural component is concrete	Yellow	419	SF	\$ 29.00		\$ 12,151		Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost
11a	Allowance for annual maintenance	Green	419	SF	\$ 7.25	\$ 3,038			Qty = Total surface area; refer to Bridge & Pump worksheet for basis of unit cost. Estimated as 25% of refurbishment cost

**Subtotals**

<b>\$ 189,786</b>	<b>\$ 368,003</b>	<b>\$ 153,050</b>
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Average Cost per Bridge

\$ 17,253	\$ 33,455	\$ 13,914
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Total Number of Bridges by Asset Classification

34	5	3
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Total Cost of Bridges by Asset Classification

<b>\$ 586,611</b>	<b>\$ 167,274</b>	<b>\$ 41,741</b>
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**Cost by Year**

Year 1 (Red + Green)	\$ 628,351
Year 2 (Yellow + Green)	\$ 753,885
Year 3 (Green)	\$ 586,611
Year 4 and beyond (Green)	\$ 586,611

Further Developed Cost Large Pumps  
Rough Order of Magnitude Estimate

	Description	Opinion on Asset Classification	Qty	UM	Unit Cost	Extended Total			Assumptions / Basis
						Green	Yellow	Red	
	<b>Large Pump Maintenance / Repair / Refurbishment</b>								
1	Bourne No.2 - 4 pump sets								
1a	Annual Maintenance Cost of Pumps	Green	1	Year	\$ 12,240.00	\$ 70,000			Assuming maintenance cost @ 6% of \$3,700 / CFS per pump
1b	One Time Maintenance Cost to Restore to Operable Condition	Yellow	1	LS	\$ 36,280.00		\$ 36,280		Refer to Pro Pump Service report financial analysis, page 31
1c	Correct Pump Safety Issues	Red	1	LS	\$ 8,000.00			\$ 8,000	Refer to Pro Pump Service report financial analysis, page 31
2	PSTA-3 - 6 pump sets								
2a	Annual Maintenance Cost of Pumps	Green	1	Year	\$ 12,800.00	\$ 65,000			Assuming maintenance cost @ 6% of \$3,700 / CFS per pump
2b	One Time Maintenance Cost to Restore to Operable Condition	Yellow	1	LS	\$ 29,444.00		\$ 29,444		Refer to Pro Pump Service report financial analysis, page 31
2c	Correct Pump Safety Issues	Red	1	LS	\$ 6,000.00			\$ 6,000	Refer to Pro Pump Service report financial analysis, page 31
3	Southline - 7 pump sets								
3a	Annual Maintenance Cost of Pumps	Green	1	Year	\$ 28,980.00	\$ 88,000			Assuming maintenance cost @ 6% of \$3,700 / CFS per pump
3b	One Time Maintenance Cost to Restore to Operable Condition	Yellow	1	LS	\$ 19,248.00		\$ 19,248		Refer to Pro Pump Service report financial analysis, page 43
3c	Correct Pump Safety Issues	Red	1	LS	\$ 4,000.00			\$ 4,000	Refer to Pro Pump Service report financial analysis, page 43

**Subtotals**

<b>\$ 223,000</b>	<b>\$ 84,972</b>	<b>\$ 18,000</b>
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Average Cost

\$ 74,333	\$ 28,324	\$ 6,000
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Total Number of Large Pumps by Asset Classification

46	9	14
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The number of pumps for the Yellow and Red asset categories are based on percentages provided in the Pump Rating - Team 5 spreadsheet prepared by Christopher Hersch

**Total Cost of Pumps by Asset Classification**

<b>\$ 3,419,333</b>	<b>\$ 247,552</b>	<b>\$ 82,800</b>
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**Cost by Year**

Year 1 (Red + Green)	\$ 3,502,133
Year 2 (Yellow + Green)	\$ 3,666,885
Year 3 (Green)	\$ 3,419,333
Year 4 and beyond (Green)	\$ 3,419,333

Further Developed Cost Pump Station Structures  
Rough Order of Magnitude Estimate

Item	Description	Opinion on Asset Classification	Qty	UM	Unit Cost	Contingency	Extended Total			Assumptions / Basis	
							Green	Yellow	Red		
<b>Pump Stations and Pump House Structures Maintenance / Repair / Refurbishment</b>							50%				
<b>1 Bourne No 2</b>											
1a	Sandblast /clean / paint SSP	Yellow	1000	SF	\$ 3.26	\$ 1.63			\$ 4,890	Quantity is an allowance only, refer to Misc work sheet for basis of unit cost	
1b	Replace NE SSP	Yellow	1	LS	\$ 6,000.00	\$ 3,000.00			\$ 9,000	Lump sum allowance pending further quantitative information	
1c	Repair Derailed West Rake	Yellow	1	LS	\$ 3,000.00	\$ 1,500.00			\$ 4,500	Lump sum allowance pending further quantitative information	
1d	Replace Whaler Tie Beam	Yellow	1	LS	\$ 6,000.00	\$ 3,000.00			\$ 9,000	Lump sum allowance pending further quantitative information	
1e	Replace metal roofing	Yellow	500	SF	\$ 4.83	\$ 2.42			\$ 3,623	RS Means 07 41 13 20 0400 - corrugated steel, galv'd, 24 ga - Quantity allowance	
1f	Repair N-E corner column-beam	Yellow	1	LS	\$ 600.00	\$ 300.00			\$ 900	Lump sum allowance pending further quantitative information	
1g	Replace missing bolt at building column	Yellow	1	LS	\$ 60.00	\$ 30.00			\$ 90	Lump sum allowance pending further quantitative information	
1h	Repair 3" gap in gratins at discharge access bridge	Yellow	1	LS	\$ 1,800.00	\$ 900.00			\$ 2,700	Lump sum allowance pending further quantitative information	
1i	Allowance for annual maintenance	Green	1	LS	\$ 3,160.00	\$ 1,580.00	\$ 4,740.00	\$ 4,740		Assuming for maintenance trip per year, refer to Bridges & Pumps Unit Costs worksheet for basis of unit cost	
<b>2 PSTA-3</b>											
2a	Replace Whaler Tie Beam	Red	1	LS	\$ 6,000.00	\$ 3,000.00			\$ 9,000	Lump sum allowance pending further quantitative information	
2b	Sandblast /clean / paint SSP	Red	1000	SF	\$ 3.26	\$ 1.63			\$ 4,890	Quantity is an allowance only, refer to Misc work sheet for basis of unit cost	
2c	Replace Grating Sections	Red	500	SF	\$ 21.00	\$ 10.50			\$ 15,750	RS Means 05 53 21 50 0438 - steel, galv'd, 1 3/4" x 3/16" - Quantity allowance	
2d	Replace Handrails	Red	50	LF	\$ 51.50	\$ 25.75			\$ 3,863	RS Means 05 53 13 50 05608 - steel pipe handrail, 2 rail, 1 1/2" galv'd - Quantity allowance	
2e	Repair bank collapse at discharge side	Red	1	LS	\$ 2,500.00	\$ 1,250.00			\$ 3,750	Lump sum allowance pending further quantitative information	
2f	Allowance for annual maintenance	Green	1	LS	\$ 3,160.00	\$ 1,580.00	\$ 4,740.00	\$ 4,740		Assuming for maintenance trip per year, refer to Bridges & Pumps Unit Costs worksheet for basis of unit cost	
<b>3 Southline</b>											
3a	Control / Treat corrosion around wing wall	Yellow	1	LS	\$ 1,200.00	\$ 600.00			\$ 1,800	Lump sum allowance pending further quantitative information	
3b	Control / Treat corrosion under Fuel Tank Containment structure	Yellow	1	LS	\$ 3,000.00	\$ 1,500.00			\$ 4,500	Lump sum allowance pending further quantitative information	
3c	Replace missing rake bars	Yellow	1	LS	\$ 4,000.00	\$ 2,000.00			\$ 6,000	Lump sum allowance pending further quantitative information	
3d	Sandblast / clean / paint SSP cap beams	Yellow	500	SF	\$ 3.26	\$ 1.63			\$ 2,445	Quantity is an allowance only, refer to Misc work sheet for basis of unit cost	
3e	Repair / Replace Handrails	Red	50	LF	\$ 51.50	\$ 25.75			\$ 3,863	RS Means 05 53 13 50 05608 - steel pipe handrail, 2 rail, 1 1/2" galv'd - Quantity allowance	
3f	Replace missing / damages wood planks	Yellow	1	LS	\$ 600.00	\$ 300.00			\$ 900	Lump sum allowance pending further quantitative information	
3g	Sandblast / clean / paint SSP sheet piles	Yellow	1500	SF	\$ 3.26	\$ 1.63			\$ 7,335	Quantity is an allowance only, refer to Misc work sheet for basis of unit cost	
3h	Sandblast / clean / paint steel support beams	Yellow	500	SF	\$ 3.26	\$ 1.63			\$ 2,445	Quantity is an allowance only, refer to Misc work sheet for basis of unit cost	
3i	Repair wood piles (jacket and concrete)	Yellow	1	LS	\$ 12,000.00	\$ 6,000.00			\$ 18,000	Lump sum allowance pending further quantitative information	
3j	Repair fuel tank building (truss connection & 3 roof tiles)	Yellow	1	LS	\$ 3,000.00	\$ 1,500.00			\$ 4,500	Lump sum allowance pending further quantitative information	
3k	Replace Steel Grating	Yellow	500	SF	\$ 21.00	\$ 10.50			\$ 15,750	RS Means 05 53 21 50 0438 - steel, galv'd, 1 3/4" x 3/16" - Quantity allowance	
3j	Replace missing tap-con at wall column connection inside building	Yellow	1	LS	\$ 1,200.00	\$ 600.00			\$ 1,800	Lump sum allowance pending further quantitative information	
3k	Adjust trash rack bridge SSP Cap	Yellow	1	LS	\$ 800.00	\$ 400.00			\$ 1,200	Lump sum allowance pending further quantitative information	
2f	Allowance for annual maintenance	Green	1	LS	\$ 3,160.00	\$ 1,580.00	\$ 4,740.00	\$ 4,740		Assuming for maintenance trip per year, refer to Bridges & Pumps Unit Costs worksheet for basis of unit cost	

Subtotals **\$ 14,220 \$ 115,598 \$ 41,115**

Average Cost \$ 4,740 \$ 38,533 \$ 13,705

Total Number of Bridges by Asset Classification 46 9 14 The number of pumps for the Yellow and Red asset categories are based on percentages provided in the Pump Rating - Team 5 spreadsheet prepared by Christopher Hersch

Total Cost by Asset Classification **\$ 218,040 \$ 346,793 \$ 191,870**

Cost by Year	
Year 1 (Red + Green)	\$ 409,910
Year 2 (Yellow + Green)	\$ 554,833
Year 3 (Green)	\$ 218,040
Year 4 and beyond (Green)	\$ 218,040

Further Developed Cost Lateral Canals & Ditches  
Rough Order of Magnitude Estimate

These are the costs associated with the field laterals that has been taken out of the cropland and should be handled in the Facilities in Cropland section.

**Muck Sugar Cane**

<u>Item-Muck Soil</u>	<u>Unit Cost/Ac/Yr</u>	<u>Acres</u>	<u>Total-Cost/Yr</u>
Culverts	\$8.47	90,825	\$769,038
Head wall	\$3.39	90,825	\$307,558
Lateral clean out	\$9.60	90,825	\$871,925

\$1,948,520

**Sand Land Sugar Cane**

<u>Item-Sandy Soil</u>	<u>Unit Cost/Ac/Yr</u>	<u>Acres</u>	<u>Total-Cost/Yr</u>
Culverts	\$8.47	37,823	\$320,251
Head wall	\$3.39	37,823	\$128,076
Lateral clean out	\$9.60	37,823	\$363,096

\$811,423

**Citrus**

<u>Citrus Item</u>	<u>Unit Cost/Ac/Yr</u>	<u>Acres</u>	<u>Total Cost/Yr</u>
Culverts	\$3.95	24,242	\$95,707
Ditch Clean out	\$14	24,242	\$327,267

\$422,974

repair                    \$1,620,630  
maint.                    \$1,562,288

Further Developed Cost Small Pumps  
 Rough Order of Magnitude Estimate

	Description	Option on Asset Classification	Qty	UM	Unit Cost	Extended Total	Assumptions / Basis
1	Large Pump Maintenance / Repair / Refurbishment						
	Bourne No.2 - 4 pump sets						
1a	Annual Maintenance Cost of Pumps	Green	1	Year	\$ 12,240.00	\$ 12,240	Refer to Pro Pump Service report financial analysis, page 31
1b	Operable Condition	Yellow	1	LS	\$ 36,280.00	\$ 36,280	Refer to Pro Pump Service report financial analysis, page 31
1c	Correct Pump Safety Issues	Red	1	LS	\$ 8,000.00	\$ 8,000	Refer to Pro Pump Service report financial analysis, page 31
2	PSTA-3 - 6 pump sets						
2a	Annual Maintenance Cost of Pumps	Green	1	Year	\$ 12,800.00	\$ 12,800	Refer to Pro Pump Service report financial analysis, page 31
2b	Operable Condition	Yellow	1	LS	\$ 29,444.00	\$ 29,444	Refer to Pro Pump Service report financial analysis, page 31
2c	Correct Pump Safety Issues	Red	1	LS	\$ 6,000.00	\$ 6,000	Refer to Pro Pump Service report financial analysis, page 31
3	Southern - 7 pump sets						
3a	Annual Maintenance Cost of Pumps	Green	1	Year	\$ 28,980.00	\$ 28,980	Refer to Pro Pump Service report financial analysis, page 43
3b	Operable Condition	Yellow	1	LS	\$ 19,248.00	\$ 19,248	Refer to Pro Pump Service report financial analysis, page 43
3c	Correct Pump Safety Issues	Red	1	LS	\$ 4,000.00	\$ 4,000	Refer to Pro Pump Service report financial analysis, page 43

Subtotals

\$ 54,020	\$ 84,972	\$ 18,000
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Average Cost per Pump (17 Pumps)

\$ 3,178	\$ 4,998	\$ 1,059
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Assume Cost of Small Pumps Equal to a Percentage of Large Pump Cost

15%	\$ 477	\$ 750	\$ 159
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Cost Allowance pending further scope definition

Total Number of Pumps by Asset Classification

113	67	42
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The total number of small pumps. Quantity by assets class based on percentages supplied in the Team 5 field data supplied by Christopher Hersch. 19 % in Red and 30% in Yellow

Total Cost of Pumps by Asset Classification

\$ 53,966	\$ 49,934	\$ 6,699
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Cost by Year

Year 1 (Red + Green)  
 Year 2 (Yellow + Green)  
 Year 3 (Green)  
 Year 4 and beyond (Green)

\$ 60,665	\$ 103,900	\$ 53,966	\$ 53,966
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Further Developed Cost Culverts  
Rough Order of Magnitude Estimate

Item	Description	Qty	UM	Unit Cost	Opinion on Asset Classification	Extended Total			Assumptions / Basis
						Green	Yellow	Red	
	Culvert - Refurbishment Estimate = 1747 culverts observed Quantity = 1506 culverts inspected	1506	Each			Green	Yellow	Red	
	Culverts Conditions								
	Good or Better Condition	35%			Green				
	Fair	58%			Yellow				
	Poor	7%			Red				
1a	Operations & Maintenance of Culverts	152,890	acres	\$ 8.47	Green	\$ 1,294,978			Assume \$8.47/acre for O&M costs
1b	Repair Culverts	875	Each	\$ 7,500.00	Yellow		\$ 6,562,500		Assume 58% Yellow Costs Unit Cost based on RMS Means estimate dated (9-5-08)
					Yellow				
					Yellow				
1c	Repair Culverts	101	Each	\$ 7,500.00	Red			\$ 757,500	Assume 7% Red Costs Unit Cost based on RMS Means estimate dated (9-5-08)
					Red				
					Red				
					Red				
<b>Subtotals</b>						<b>\$ 1,294,978</b>	<b>\$ 6,562,500</b>	<b>\$ 757,500</b>	

Total Cost by Asset Classification

<b>\$ 1,294,978</b>	<b>\$ 6,562,500</b>	<b>\$ 757,500</b>
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**Cost by Year**

Year 1 (Red + Green)	\$ 2,052,478
Year 2 (Yellow + Green)	\$ 7,857,478
Year 3 (Green)	\$ 1,294,978
Year 4 and beyond (Green)	\$ 1,294,978



**U. S. Sugar--Civil Work Estimates**  
**SFWMD**  
**Proposal # 132782: 01000000**

<b>Project name</b>	US Sugar-Culverts
<b>Labor rate table</b>	12 LBR CY08 03-07-08
<b>Equipment rate table</b>	24 EQU FY08 02-04-08
<b>Bid date</b>	9/5/2008
<b>Report format</b>	Sorted by 'Bid Item/Task' 'Detail' summary Allocate addons Print item notes Print sort level notes Paginate

Item	Description	Takeoff Qty	Total	
			Unit Cost	Amount

**00001 Civil Site Work**

**0001 Culvert Repairs**

=====  
Assumed the following:

- \*\*60 sites with 40' L x 18" CMP Culverts to be replaced
- \*\*40' x 10' x 4'w = 60cy overburden removal. 1' gravel placed unde pipe for foundation
- \*\*Depth to base < 10'
- \*\*Riser on ea
- \*\*Indiv. mobe/demobe to each for equipment
- \*\*minimal PM/admin to each

Duration of 2 10hr days each.

=====  
9/5/08 revision

assume group of 400 culverts at one time  
assume 1/2 day per repair  
assume 20% price break on materials

E182	Construction Site Manager 2	2,000.00	hour	80.871 /hour	161,741
H153	Equipment Operator 3	1,334.00	hour	39.81 /hour	53,103
H213	Laborer 3 (2ea)	2,668.00	hour	29.214 /hour	77,942
H153	Equipment Operator 3, OT	667.00	hour	59.711 /hour	39,828
H213	Laborer 3, OT	1,334.00	hour	43.821 /hour	58,457
T15	Transport Trailer, 30-35 ton	466.00	cday	85.52 /cday	39,852
V05	Truck, Two Ton Stake	233.00	cday	75.71 /cday	17,639
V13	Pick-Up Truck, 4WD	233.00	cday	42.06 /cday	9,800
A190	Excavator, CAT 320 (M)	233.00	cday	178.97 /cday	41,699
A270	Compactor Attachment - Excavator (M)	233.00	cday	28.80 /cday	6,710
A390	Dozer, CAT D4 (M)	233.00	cday	160.454 /cday	37,386
A125	F.O.G. Excavator, CAT 320	1,701.00	hour	23.04 /hour	39,189
A250	F.O.G. Dozer, CAT D4	1,701.00	hour	19.364 /hour	32,938
A100	Aggregate, 3/4" Crushed Stone - Delivered	4,267.00	ton	28.80 /ton	122,883
J105	18" CMP	20,000.00	lf	20.683 /lf	413,662
J110	Bands	400.00	ea	30.014 /ea	12,006
J110	Trash rack, etc	400.00	ea	1,382.33 /ea	552,931
J125	90 elbow for riser	400.00	LS	1,843.11 /LS	737,242
A120	Cellular Phone Service	243.00	cday	5.76 /cday	1,400
A105	Small Equipment Delivery Over 100 Miles (Hertz)	4.00	ea	250.49 /ea	1,002
B120	Per Diem Lodging - Location, Long Term	934.00	mndy	115.194 /mndy	107,591
B140	Per Diem Meals & Incidentals - Location	934.00	mndy	44.93 /mndy	41,961
B100	Contingency	400.00	LS	575.97 /LS	230,388

**0001 Culvert Repairs**  
**20,000.00 lf**  
9,003.50 Labor hours  
7,456.00 Equipment hours  
**141.87 lf**  
**2,837,349**

Item	Description	Takeoff Qty	Total		
			Unit Cost	Amount	
<b>9999 A&amp;S</b>					
E253	EH&S Specialist 3	64.00	hour	105.10 /hour	6,726
E332	Project Controls Cost Scheduler 2	64.00	hour	69.662 /hour	4,458
E392	Project Manager 2 (50%)	1,000.00	hour	136.983 /hour	136,983
E414	Procurement Specialist 2	128.00	hour	69.16 /hour	8,852
<b>9999 A&amp;S</b>				<b>19,627.46 /mo</b>	<b>157,020</b>
	<b>8.00 mo</b>				
	1,256.00 Labor hours				
<b>00001 Civil Site Work</b>				<b>7,485.922/ea</b>	<b>2,994,369</b>
	<b>400.00 ea</b>				
	10,259.50 Labor hours				
	7,456.00 Equipment hours				

**Estimate Totals**

Description	Amount	Totals	Rate
Labor	548,091		
Material	1,912,251		
Subcontract	1,002		
Equipment	67,290		
Other	465,735		
	<b>2,994,369</b>	<b>2,994,369</b>	
<b>Total</b>		<b>2,994,369</b>	

**Appendix B**

