LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI –B

WATERBODY MANAGEMENT PLAN SERIES

LAKE FIELDS-LAKE LONG COMPLEX

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED EVERY FIVE YEARS

November 2013 – Prepared by
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July 2018 – Updated by
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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational
Recreational fish species are managed to maintain sustainable populations while providing anglers the opportunity to catch or harvest numbers of fish.

Commercial
Commercial fish species are managed to provide sustainable populations.

Species of Special Concern
Species of special concern are managed toward viable, self-sustaining populations.

EXISTING HARVEST REGULATIONS

Recreational
All statewide regulations apply to game fish species, see link below:
http://www.wlf.louisiana.gov/regulations

Commercial
All statewide regulations apply to commercial fish species, see link below:
http://www.wlf.louisiana.gov/regulations

SPECIES EVALUATION

Recreational

Largemouth bass (*Micropterus salmoides*) are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain and because they are highly sought after by anglers. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large fish.

Largemouth Bass

Catch per unit effort, size distribution, and structural indices-
Spring electrofishing results indicated that there had been relatively no change in catch-per-unit-of-effort (CPUE = bass per hour) of largemouth bass (*Micropterus salmoides*) from 2008 through 2016. However, in 2017 and 2018, a sharp increase in CPUE was observed, coinciding with the timing of significant watershed and drainage improvements in the complex, as well as a significant increase in submerged aquatic vegetation. (Figure 1). Figure 1 shows that the linear relationship among all sample years is increasing in recent years. Length frequencies from the 2009 to 2017 fall electrofishing results indicate that in 2009, 2013, and 2014 there

were more substock-sized fish inch groups present than in other years (Figure 2). This increase in substock-size fish was likely the result of recruitment the years following Hurricane Gustav in 2008 and Hurricane Isaac in 2012. Stock densities in both the proportion of preferred-size and stock-sized fish were at their highest in 2013 (Figure 3). Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data. Proportional stock density compares the number of fish of quality-size (greater than 12 inches for largemouth bass) to the number of bass of stock-size (8 inches in length). The PSD is expressed as a percent. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish. For example, Figure 3 below indicates a PSD of 37 for 2009. The number indicates that 37% of the bass stock (fish over 8 inches) in the sample was at least 12 inches or longer.

$$PSD = \frac{\text{Number of bass} > 12 \text{ inches}}{\text{Number of bass} > 8 \text{ inches}} \times 100$$

Relative stock density (RSD) is the proportion of largemouth bass in a stock (fish over 8 inches) that are 15 inches (preferred-size) or longer.

$$RSD = \frac{\text{Number of bass} > 15 \text{ inches}}{\text{Number of bass} > 8 \text{ inches}} \times 100$$

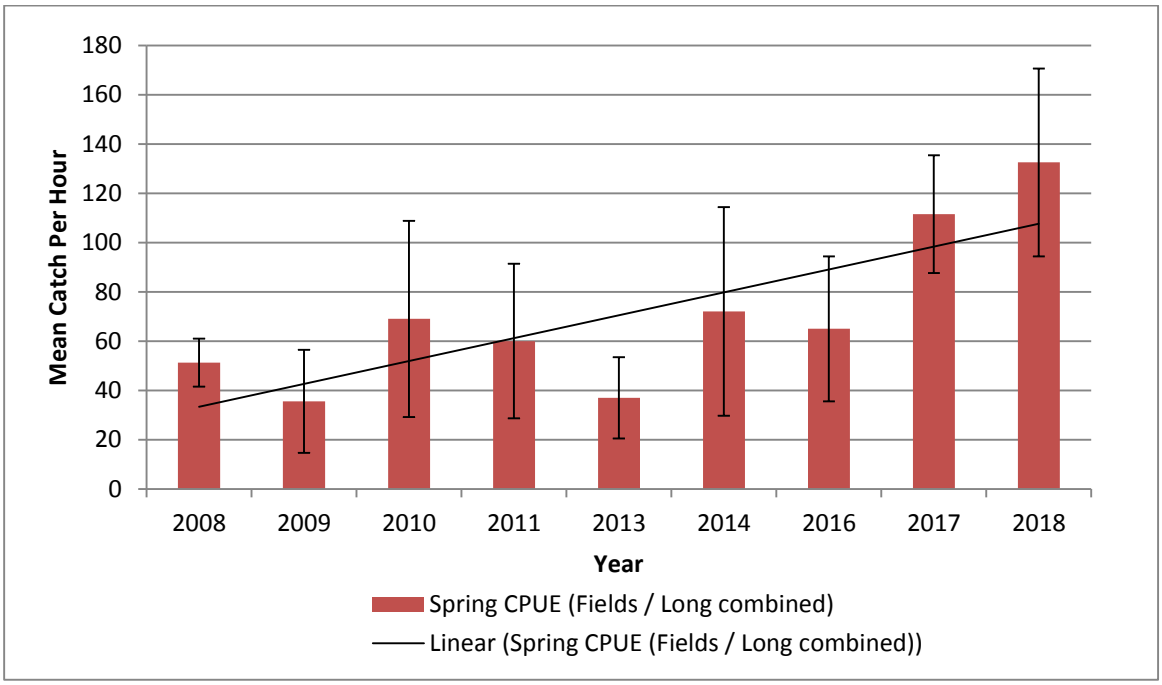


Figure 1. The mean CPUE (± 95% CI) in numbers per hour for largemouth bass from the Lake Fields-Lake Long complex, LA, for spring electrofishing results from 2008 to 2018.

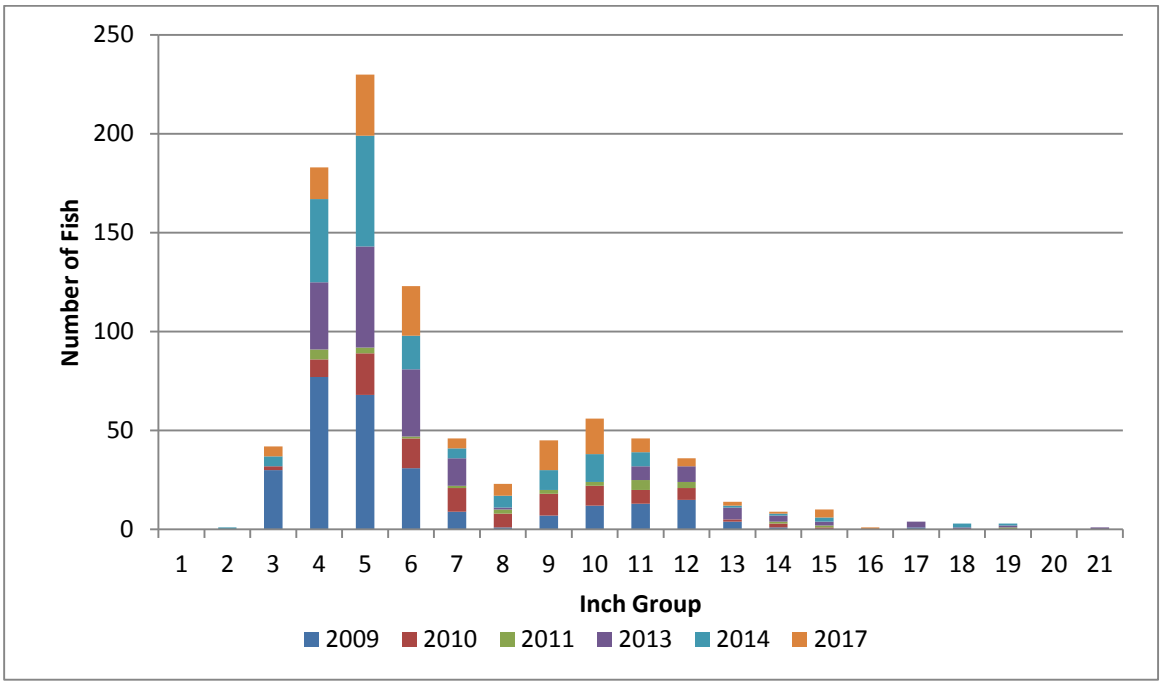


Figure 2. The size distribution (length groups) for largemouth bass from fall electrofishing results in the Lake Fields-Lake Long Complex, LA, from 2009 to 2017. Values for n by year: n=254 (2009), n=106 (2010), n=27 (2011), n=166 (2013), n=169 (2014), n=140 (2017).

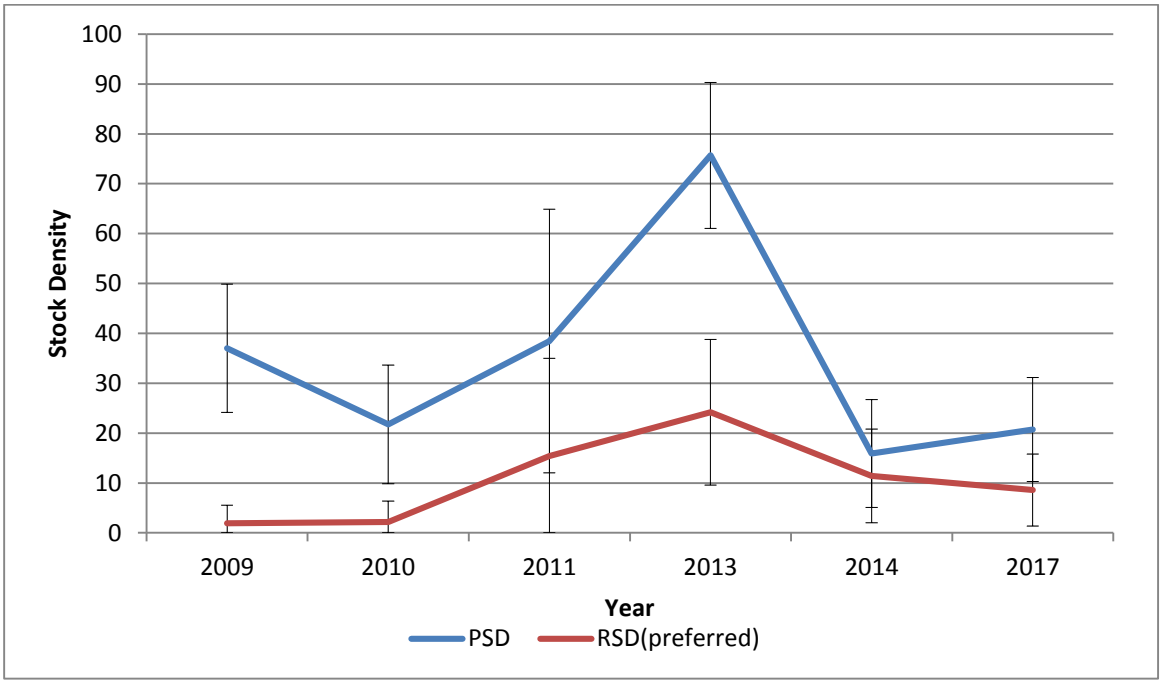


Figure 3. The mean size-structure indices (PSD and RSDp) for largemouth bass from fall electrofishing results from Lake Fields-Lake Long Complex, LA, from 2009 to 2017. Error bars represent 95% confidence limits of the mean size-structure indices.

Genetics

Largemouth bass have not been tested for the Florida allele.

Stockings

In 2013, 4,823 black crappie fingerlings were stocked. In April of 2015, 103,200 Florida strain largemouth bass fry were stocked in the Lake Fields/Lake Long complex. These fish were part of a surplus of FLMB fry from the LDWF Hatchery. In April of 2018, a total of 1,939,500 surplus FLMB fry were again stocked in the complex.

Recreational – Other Species

Crappie, Catfish and Sunfish-

Black and white crappies (*Pomoxis nigromaculatus and P. annularis*) have both been observed but not monitored in the complex, as well as blue, channel, and flathead catfishes (*Ictalurus furcatus, I. punctatus,* and *Pylodictis olivaris*), and bluegill, redear, spotted, warmouth and longear sunfishes (*Lepomis macrochirus*, *L. microlophus*, *L. miniatus, L. gulosus* and *L. megalotis*, respectively).

Forage

Forage availability is typically measured directly through electrofishing and shoreline seine sampling and indirectly through measurement of largemouth bass body condition or relative weight. Relative weight is the ratio of a fish's weight to the weight of a ''standard'' fish of the same length. The index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. Largemouth bass Wr below 80 indicates a potential problem with forage availability. Fall electrofishing sample results indicate that the condition of largemouth bass is in the healthy range with relative weights at 95 and above for substock-, stock- and quality-size fish (Figures 4,5).

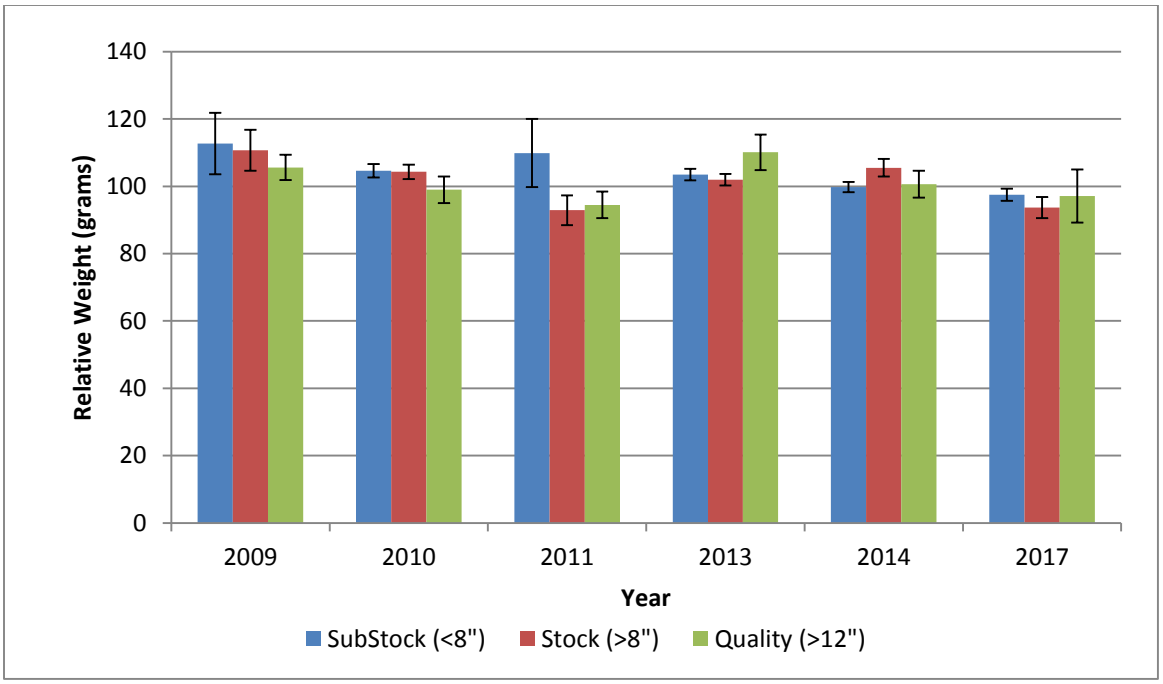


Figure 4. The mean relative weights (± 95% CI) for substock-, stock-, and quality- largemouth bass collected in fall electrofishing samples from Lake Fields-Lake Long Complex, LA, from 2009 to 2017. Error bars represent 95% confidence limits of the mean relative weights.

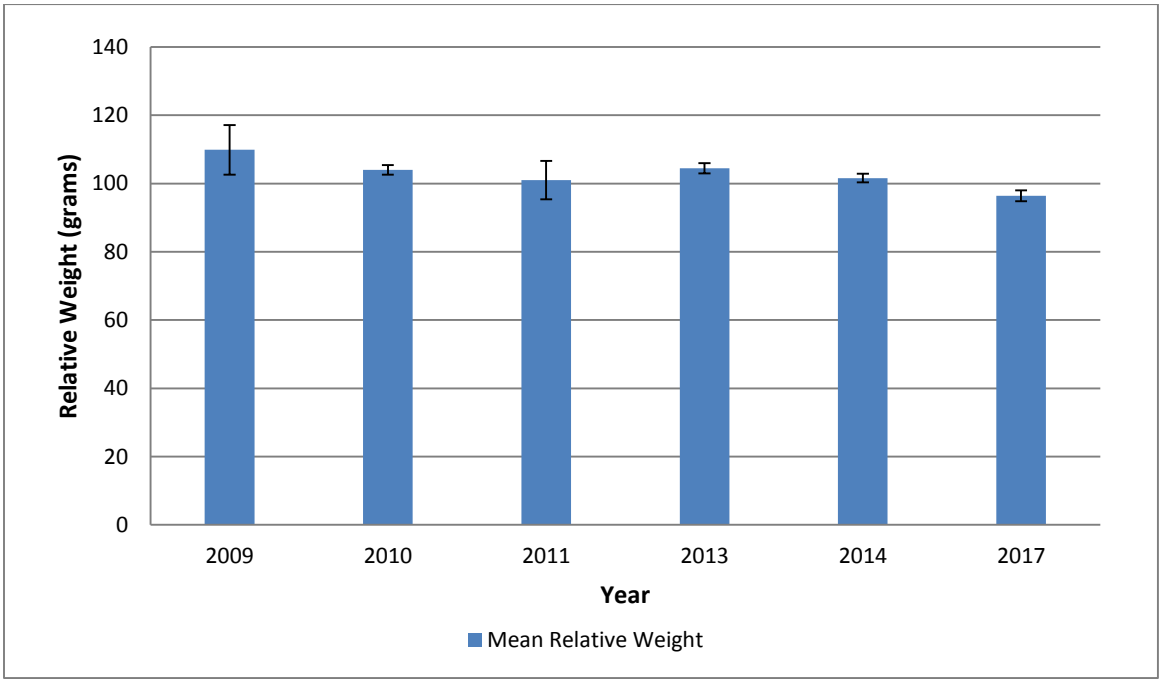


Figure 5. The mean relative weights (± 95% CI) for all largemouth bass collected in fall electrofishing samples from Lake Fields-Lake Long Complex, LA, from 2009 to 2017. Error bars represent 95% confidence limits of the mean relative weights.

Forage composition in catch-per-unit-effort by species collected in fall electrofishing samples in 2017 are presented in Figure 6. Forage is comprised mainly of bluegill sunfish, followed by redear, redspotted, and warmouth sunfishes and striped mullet (*Mugil cephalus*).

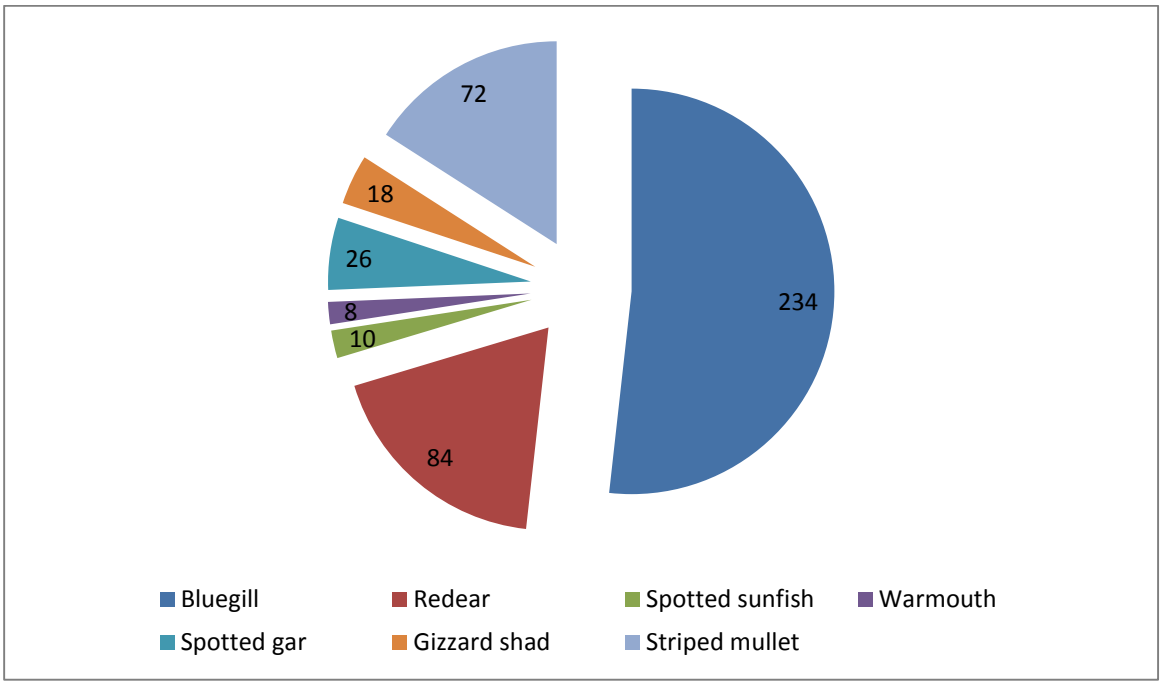


Figure 6. The forage species composition (CPUE = number by species) collected in fall electrofishing results in 2017 from Lake Fields-Lake Long Complex, LA.

Aquatic Invasive Species

Though their populations have not been monitored, common carp (*Cyprinus carpio*), and Asian carp species are present.

The invasive apple snail (*Pomacea maculata*) has been documented across the entirety of this complex.

HABITAT EVALUATION

Aquatic Vegetation

Biological Control

Salvinia weevils (*Cyrtobagous salviniae*) were stocked throughout this area in 2011, March 2012, September 2012, summer 2013, and summer 2016. Weevil damage to plants is evident during follow up field observations. Samples of plant material from this area are routinely

taken, with all samples containing weevils. Continued stocking of giant salvinia weevils is recommended.

Chemical Control

Department personnel and contractors treated a total of 1,411 acres of nuisance aquatic vegetation in 2017 (Table 1). Contractors are frequently utilized in this area to assist in the control of nuisance aquatic vegetation. In summer of 2013, a contract was awarded to treat 465 acres of nuisance aquatic vegetation in the system (SEE APPENDIX I – AQUATIC PLANT CONTROL CONTRACT EVALUATION, AQUATIC PLANT CONTROL CONTRACT MAP – APPENDIX II).

Table 1. Herbicide treatments in Lake Fields/Lake Long, Louisiana 2014-2017.

LAKE FIELDS/LONG HERBICIDE TREATMENTS						
Species	Herbicides*	Application rates	Acres Treated			
			2014	2015	2016	2017
Water hyacinth	2,4-D	0.5 gal/acre	535	1915	961	1411
	Glyphosate	0.75 gal/acre				

*Glyphosate applications included surfactant at a rate of 0.25 gal/acre; 2,4-D included a non-ionic surfactant at a rate of 0.125 gal/acre.

Limitations

Lakes Fields and Lake Long are shallow, natural coastal lakes that, at times, can be difficult to spray. Tidal influence can interfere with herbicide treatments. Floating vegetation (primarily water hyacinth) enters Company Canal via Bayou Lafourche and the Intracoastal Waterway. Due to the resolution prohibiting the use of 2,4-D in Bayou Lafourche between Raceland and Valentine, aquatic vegetation control must be conducted with alternative herbicides at this source of infestation.

Water Quality

According to Louisiana's 2017 Integrated Report, Bayou Folse (subsegment 120302) is fully meeting Secondary Contact Recreation but is not meeting Primary Contact Recreation and Fish and Wildlife Propagation. This impairment is due to dissolved oxygen levels, fecal coliform, nitrates/nitrites, and total phosphorus.

http://deq.louisiana.gov/assets/docs/Water/NPSAnnualReport2017.pdf

Several construction projects have been completed in efforts to improve the overall water quality of the system. Project goals were aimed at reducing inflow of nutrient laden waters and the intrusion of saltwater into the system.

Substrate

Soft sediments and decomposed organic matter overlying clayey back swamp deposits.

CONDITION IMBALANCE / PROBLEM

1. Nutrient laden runoff that can result in low levels of dissolved oxygen.
2. Salt water intrusion via Company Canal if not enough fresh water enters the system due to drought conditions and/or in case of a storm surge.
3. The construction of Mississippi River levees and dam across Bayou Lafourche at the Mississippi River has led to poor water quality and habitat loss in the complex.
4. The system is subject to infestations of nuisance aquatic organisms that are present in the Intracoastal Waterway. Especially Asian carp, common carp, and apple snails. It is not feasible to exclude such infestations.
5. Nuisance aquatic vegetation that impede navigation and degrade habitat.

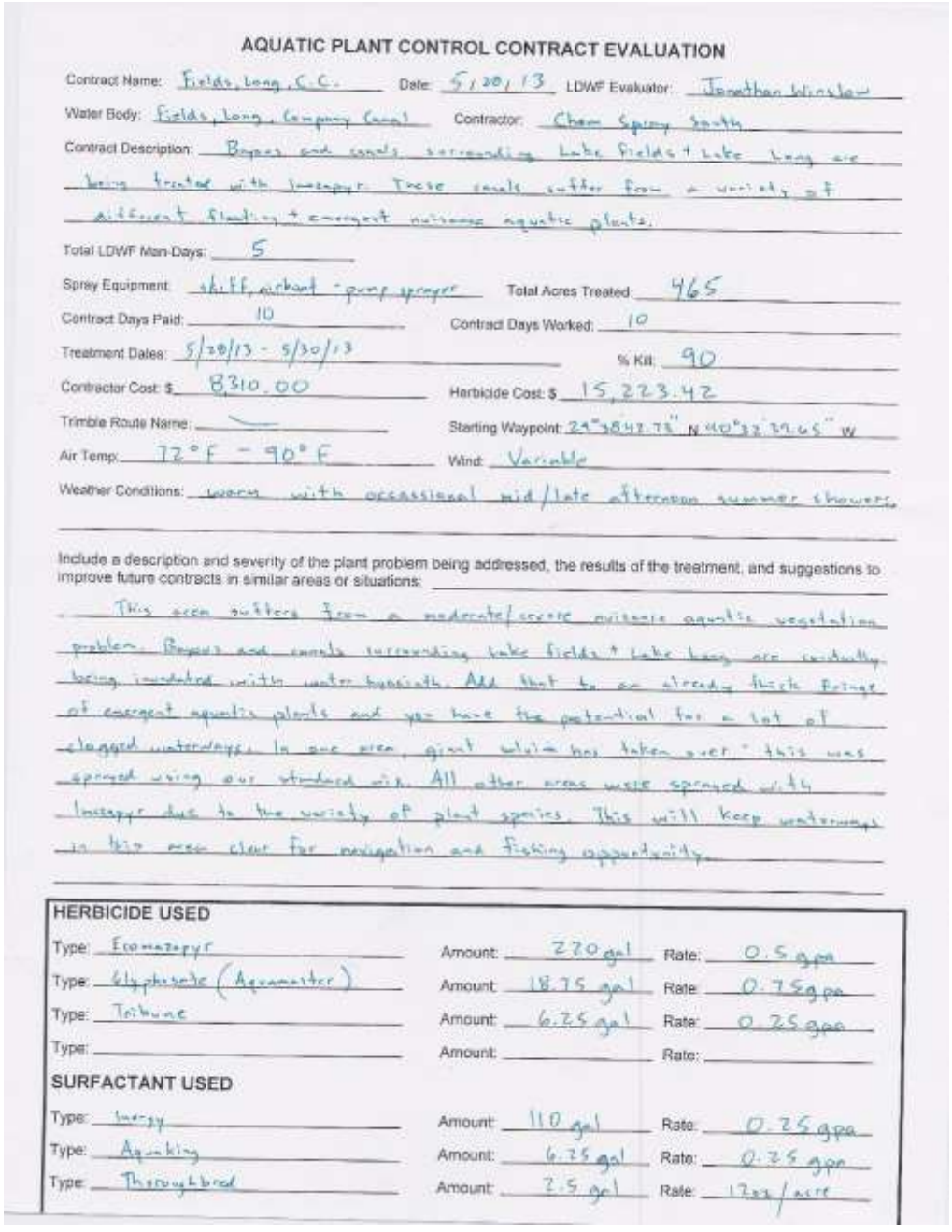
CORRECTIVE ACTION NEEDED

1. Implement BMP's to reduce the amount of nutrient laden runoff entering the system.
2. Implement projects that will continue to restore the hydrology and improve water quality and habitat within the complex.
3. Control Asian carp and common carp populations.
4. Control aquatic vegetation in the system and upstream at its source.

RECOMMENDATIONS/ACTION PLAN

1. Continue standardized sampling of fish populations to evaluate the condition of the stocks.
2. Continue to evaluate the presence of invasive aquatic organisms.
3. Encourage projects to improve water quality by reducing the amount of nutrients and salt water entering the system, and to increase the amount of fresh water.
4. These lakes and the surrounding areas will be assessed monthly during the growing season for nuisance aquatic plant infestations. Public complaints will receive a timely response. Problem areas will be treated as they arise with foliar applications of the appropriate herbicide: Water hyacinth, sedge, and pennywort will be controlled with 2,4-D (0.5 gal/acre) with a 90:10 non-ionic surfactant (1 pint/acre). Due to the resolution prohibiting the use of 2,4-D in Bayou Lafourche between Raceland and Valentine, aquatic vegetation will be controlled in these areas with glyphosate. Salvinia species (common and giant) will be controlled from April 1 – October 31 with a mixture of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Turbulence surfactant (or approved equivalent, 0.25 gal/acre). From November 1 – March 31 salvinia will be controlled with diquat (0.75 gal/acre) and a 90:10 non-ionic surfactant (0.25 gal/acre). Alligator weed will be controlled with imazapyr (0.5 gal/acre) and Turbulence surfactant (or approved equivalent, 0.25 gal/acre). In areas with abundant non-target species or homes/developed shorelines, imazamox (0.5 gal/acre) and Turbulence surfactant (or approved equivalent, 0.25 gal/acre) should be used.

APPENDIX I
AQUATIC PLANT CONTROL CONTRACT EVALUTION



AQUATIC PLANT CONTROL CONTRACT EVALUATION

Contract Name: Fields, Long, C.C. Date: 5/20/13 LDWF Evaluator: Jonathan Winslow

Water Body: Fields, Long, Company Canal Contractor: Chem Spray South

Contract Description: Bayous and canals surrounding Lake Fields + Lake Long are being treated with Imazapyr. These canals suffer from a variety of different floating + emergent nuisance aquatic plants.

Total LDWF Man-Days: 5

Spray Equipment: skiff, airboat - pump sprayer Total Acres Treated: 465

Contract Days Paid: 10 Contract Days Worked: 10

Treatment Dates: 5/20/13 - 5/30/13 % Kill: 90

Contractor Cost: $ 8310.00 Herbicide Cost: $ 15,223.42

Trimble Route Name: — Starting Waypoint: 29°38'42.78" N 90°32'39.65" W

Air Temp: 72°F - 90°F Wind: Variable

Weather Conditions: warm with occassional mid/late afternoon summer showers.

Include a description and severity of the plant problem being addressed, the results of the treatment, and suggestions to improve future contracts in similar areas or situations:

This area suffers from a moderate/severe nuisance aquatic vegetation problem. Bayous and canals surrounding Lake Fields + Lake Long are routinely being inundated with water hyacinth. Add that to an already thick fringe of emergent aquatic plants and you have the potential for a lot of clogged waterways. In one area, giant salvia has taken over. This was sprayed using our standard mix. All other areas were sprayed with Imazapyr due to the variety of plant species. This will keep waterways in this area clear for navigation and fishing opportunity.

HERBICIDE USED

Type: Ecomazapyr	Amount: 220 gal	Rate: 0.5 gpa
Type: Glyphosate (Aquamaster)	Amount: 18.75 gal	Rate: 0.75 gpa
Type: Tribune	Amount: 6.25 gal	Rate: 0.25 gpa
Type:	Amount:	Rate:

SURFACTANT USED

Type: Inergy	Amount: 110 gal	Rate: 0.25 gpa
Type: Aq-King	Amount: 6.25 gal	Rate: 0.25 gpa
Type: Thoroughbred	Amount: 2.5 gal	Rate: 12oz/acre

APPENDIX I

AQUATIC PLANT CONTROL CONTRACT EVALUTION (CONTINUED)

VEGETATION TREATED

Veg 1:	water hyacinth	% of Total Treated:	20
Veg 2:	primrose	% of Total Treated:	20
Veg 3:	alligatorweed	% of Total Treated:	20
Veg 4:	smartweed	% of Total Treated:	20
Veg 5:	pennywort	% of Total Treated:	10
Veg 6:	giant salvinia	% of Total Treated:	10
Veg 7:		% of Total Treated:	
Veg 8:		% of Total Treated:	

RANDOM EVALUATIONS

Date:	5/2/13	Status:	pre-contract assessment
Date:	6/25/13	Status:	post-contract assessment – excellent coverage
Date:		Status:	
Date:		Status:	
Date:		Status:	
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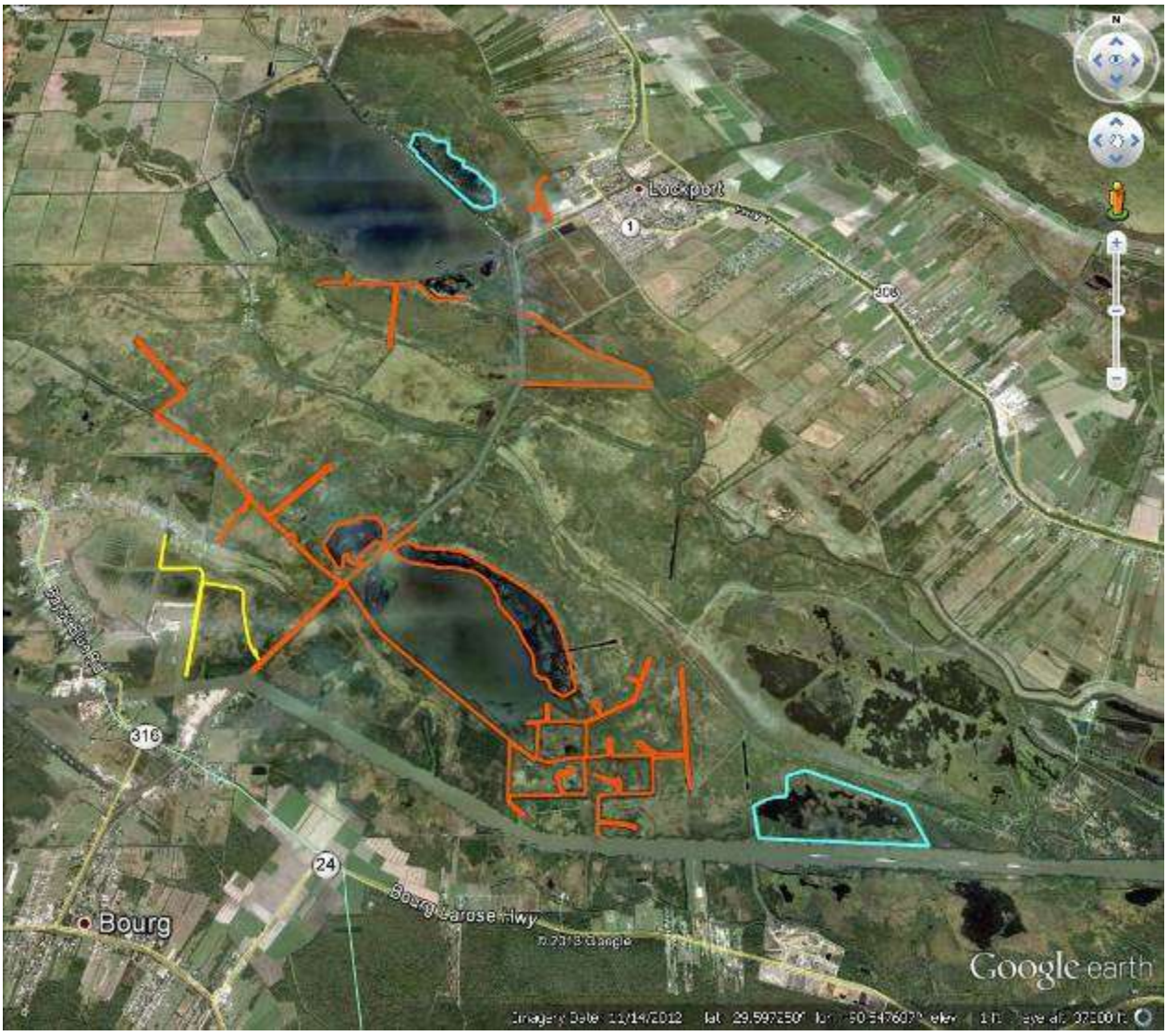
APPENDIX II
AQUATIC PLANT CONTROL CONTRACT MAP OF TREATMENT AREA



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