

The Lake Pontchartrain Artificial Reef Program

Deployment from 2000 to 2004

(Including Deployment of L1, H1, H3, H4 and N1 sites in Lake Pontchartrain)

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Submitted to:
Lake Pontchartrain Basin Foundation
University of New Orleans – Department of Biological Sciences
LA Department of Wildlife and Fisheries

June 2004 – Final Report

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Executive Summary

Through a cooperative effort of environmental organizations, fishing associations, and government agencies, Lake Pontchartrain now has five artificial reefs. The Lake Pontchartrain Artificial Reef Working Group (LPAWVG), was organized in June 2000, and built its first reef near Lakefront Airport in August 2001. Four additional artificial reef sites were developed from August of 2003 to January 2004. All sites are approximately a 20-minute boat ride of public boat launches. One site was created with limestone rubble in Orleans Parish. Four sites utilizing Reefballs™ are located in Jefferson and St. Tammany Parishes. These Reefballs are the first Reefballs to be deployed in Louisiana.

All five sites have been donated by the Lake Pontchartrain Basin Foundation to the LA Department of Wildlife and Fisheries. Reef sites are about an acre in size and have been marked with yellow, crash-proof buoys. Coordinates are given here or can be found on-line at SAVEOURLAKE.ORG.

3200 yards of crushed limestone were placed at the site in Orleans Parish (L1). Two hundred and fifty 3-foot tall ("pallet balls") and three hundred fifty 2-foot tall ("bay balls") Reefballs™ were placed at three reef sites in Jefferson Parish (H1, H3 and H4). Eighty pallet balls were placed at the north shore site (N1). All of the reefball sites were former drill sites for oil and gas wells. All reefball sites had either in tact or remnant shell pads. Reefballs were placed around the perimeter of the elevated portion of the shell pads in all cases so they would not be higher than the existing shell pad. One shell pad on the south shore was identified but chosen as a reference site for future monitoring. This H site has a full in tact shell pad, which also has a mapped oil and gas platform on NOAA charts, but is in fact clear of any surface structure. Oil and gas records of all sites can be found on the LA DNR's SONRIS website. Information described is from field notes and documents collected by John Lopez who acted as project manager for the development of the artificial reef sites in Lake Pontchartrain.

First year monitoring and maintenance programs have begun. University of New Orleans will be conducting monitoring focusing on physical integrity, creel survey and benthic inventory of the H3 site in Jefferson Parish and to a lesser degree the N1 site in St. Tammany. Biological monitoring has larger implications since Reefballs may not have been used previously in an estuarine system such as Lake Pontchartrain. Maintenance will focus on maintaining buoys on all sites and up-righting Reefballs as needed at the H1, H4, N1 and L1 sites. These programs are funded for three years.

Although monitoring and maintenance programs of the artificial reef sites will more clearly reveal the effects of this artificial reef program, at this point, artificial reef program does appear to a success. The sites are being utilized regularly by fisherman and there are numerous anecdotal reports of fish being caught, particularly at the Jefferson Parish sites. Other indirect effects may be more significant. Monitoring work will engage biologists in Lake Pontchartrain for several years and lead to a broader understanding of the Lake Pontchartrain ecology. As a result of this program the first regional scale acquisition of sidescan sonar occurred in Lake Pontchartrain, which documented the shell pads and many other interesting features e.g. there appears to be residual scars from shell dredging on the lake bottom even though shell dredge operations ceased 13 year previously. The public has been exceptionally receptive to the entire artificial reef program leading to numerous newspaper articles and TV news reports.

A brochure describing the Lake Pontchartrain Artificial Reef Program has been developed and is available to the public. Copies of the brochure or electronic copies of this report may be obtained upon request from the Lake Pontchartrain Basin Foundation at 504 836-2215.

Chronology of Key events of Lake Pontchartrain Artificial Reef Program

May 16, 2000	On a Louisiana Sea Grant recommendation, a meeting is organized to discuss artificial reefs in Lake Pontchartrain. Group is organized and chairs appointed.
July 25, 2000	2 nd meeting held. Locations are discussed including former well sites west of Causeway.
October 30, 2000	Meeting held of working Group
October 2000	FishAmerica Grant FAF – 1080 for \$15,000
December 2000	BP donation of \$50,000 made for reef program
Spring 2001	Reef application made for first reef site by DWF
June 2001	Culverts inspected by Woody Crews and Mark Schexnayder & Photos sent to Executive Committee including Rick Kasprzak
June 2001	EPA grant for \$30,000 available through the LPBF
July 24, 2001 with	L1 reef installed near Lakefront Airport in Orleans Parish crushed limestone.
August 2001	Begin verifying shell pads at oil and gas well locations
October 2001	Jefferson Parish indicates they will contribute \$10,000 to a Jefferson Parish reef site.
Fall 2001	Group agrees to use former shell pads as next reef sites
November 2001	2 nd FishAmerica Grant for \$15,000
February 2002	Letter to Gus Rodemacher describing old well locations proposed for artificial reef sites.
February 2002 awarded	National Fish and Wildlife Foundation Grant for \$30,000
March 2002	Gus Rodemacher gives verbal approval of reef locations.
May 2002	Application made by LA DWF for two reef areas encompassing a total of five former well sites with shell pads to be used as artificial reef sites including use of 550 reef balls and concrete culverts.

June 2002 Applications approved by USCOE and Coast Guard for deployment of reef balls at several sites in Jefferson parish and 1 site in St. Tammany Parish

June 2002 DWF conveys concerns about artificial reef sites and materials

December 2002 LPARWG submits to LDWF detailed plans to develop three reef sites in Jefferson Parish

February 2003 LPARWG holds a public hearing to review final project plans and gather input from LDWF about its pending findings and recommendations

February 2003 As of February 25, 2003 LPARWG had not received any written response to its revised plans submitted in December

March 19, 2003 Meeting held to discuss a monitoring plan

May 5, 2003 LA Department of Wildlife and Fisheries agrees to the deployment plan for the southshore sites including a monitoring plan for approximately \$40,000.

August 27, 2003 Deployment of approximately 180 reefballs on the H1 site in Jefferson Parish

September 2003 to January 2004 Approximately 17 dive inspections were conducted to determine extent of shell aprons, post-deployment inspections and re-deployment of H1, H3, H4 and N1.

September 26, 2003 Deployment of approximately 208 reefballs on the H4 sites in Jefferson Parish

October 3, 2003 Deployment of approximately 212 reefballs on the H3 sites in Jefferson Parish

October 6, 2003 Artificial reef Buoys placed on the H1, H3 and H4 sites.

October 2003 Jefferson Parish contributes \$17,000 to the Lake Pontchartrain Artificial reef program

November 17, 2003 LA DWF approves the N1 site for reefball deployment

January 14, 2004 Deployment of approximately 80 reefballs on the N1 site in St. Tammany Parish

Lake Pontchartrain Artificial Reef Working Group Member's Affiliations

- Jefferson Parish Environmental
- Louisiana Dept. of Wildlife and Fisheries
- Lake Pontchartrain Basin Foundation
- Louisiana Wildlife Federation
- East Ascension Sportsman's League
- LSU AgCenter/Louisiana Sea Grant
- Jefferson Rod and Gun
- Clio Sportsman's League
- Jefferson Parish Port Director
- University of New Orleans – Department of Biological Sciences
- North Shore Hammerhead diving club
- Lake Pontchartrain Commercial Fisherman's Association
- Jefferson Parish Economic Development Commission
- Jefferson Parish Marine Advisory Board
- LSU Ag/Center
- Louisiana Sea Grant
- National Oceanic and Atmospheric Administration

Co-chairs: Dr. John Lopez and Woody Crews

Executive Committee:

Mark Schexnayder, Carlton Dufrechou, John Lopez, and Woody Crews

LA Department of Wildlife and Fisheries Representative:

Rick Kasprzak

Oil and Gas Well Site Information

Oper/well#	DNR/SONRIS #	lat/long	Lambert XY	API #
Site H Traver #5 (orig. oper.) drilled in 1979	Serial # 163239	30 5' 6.472" 90 12' 10.717"	Y= 517579 X= 2357489	17051205030000
Site H1 Humble #1 (orig. oper.) drilled in 1956	Serial # 61199	30 5' 1.679" 90 12' 5.759"	Y=517100 X=2357930	17051000010000
Site H3 Humble #3 (orig. oper.) drilled in 1957	serial # 64629	30 5' 2.039" 90 12' 34.92"	Y=517111 X=2355368	17051000030000
Site H4 Humble #4 (orig. Oper.) drilled in 1958	Serial # 70719	30 5' 16.439" 90 12' 20.159"	Y=518578 X=2356650	17051000040000
Site N1 Union #1	Serial # 157558	Drilled in 1977, no production		

Reefball Serial Numbers

Pallet balls

1- 80

181- 349

601-681

Bay balls

81 - 180

350 - 600

H1

Pallet balls 1-80

Bay Balls 81-180

N1

Pallet Balls 601-681

H3 and H4 deployment was not in separate consecutive series. A list of serial numbers for these sites follows.

Reefballs were ordered and deployed by Coastal Reef builders.

Manager Dale Minick

Coastal Reef Builders Inc.

750 Myrick Street

Pensacola, FL 32505

W 850 469-9935

fax 850 469-9935

cell 850 232-3253

H3

H3 Pallet balls as reported by Coastal Reef Builders

170	197	215	232	265
181	198	216	236	266
182	199	217	239	267
183	200	218	241	268
184	201	219	242	269
185	202	220	244	270
186	203	221	248	272
187	205	222	250	273
188	206	223	253	274
189	207	224	255	304
190	208	225	257	339
191	209	226	258	341
192	210	227	259	343
193	211	228	260	
194	212	229	262	
195	213	230	263	
196	214	231	264	

H3 Bay
balls

396	506	553
397	507	555
398	508	557
403	509	558
413	510	559
454	511	560
454	512	563
455	513	564
456	514	565
456	515	566
457	516	567
458	517	568
459	518	569
460	519	570
461	520	571
461	521	573
462	522	574
462	523	575
463	524	576
464	525	577
465	526	578
467	527	579
468	528	580
469	529	581
470	530	582
471	531	583
472	532	584
473	533	585
474	534	586
475	535	587
476	536	588
477	537	589
478	538	590
479	539	591
480	540	592
492	541	as
496	542	reported
497	543	by Coastal
498	544	Reef
499	545	Builders
500	546	
501	548	
502	549	
503	550	
504	551	
505	552	

H4 Pallet
balls

	278	296	313	331
224	279	297	314	332
234	280	298	316	333
235	282	299	317	334
237	283	300	318	335
238	284	301	319	336
240	285	302	319	337
243	286	303	320	338
245	287	304	321	340
246	288	305	322	342
247	289	305	323	345
249	289	306	324	346
251	290	307	325	347
252	291	308	326	348
256	292	309	327	349
261	293	310	328	
275	294	311	329	
276	295	312	330	
277				

as reported by Coastal Reef Builders

H4 Bay balls

350	375	406	431	481
351	376	407	432	482
352	377	408	433	483
353	378	409	434	484
354	379	410	435	485
355	380	411	436	486
356	381	412	437	487
357	383	414	438	488
358	384	415	439	489
359	385	416	440	490
360	386	417	441	491
361	387	418	442	493
362	388	419	443	494
363	391	420	444	495
364	392	421	445	593
365	393	422	446	594
366	394	423	447	595
368	395	424	448	596
369	399	425	449	597
370	400	426	450	598
371	401	427	451	599
372	402	428	452	600
373	404	429	453	
374	405	430	466	

as reported by Coastal Reef Builders

Post-Deployment – Diver accounting of reefball Serial numbers verified between October 2003 and June 7, 2004 by Rob Kohl and other divers.

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Inspections by other divers are in bold italics.

Tables of reported serial numbers from dive inspections of H1, H3, H4 and N1 sites in which divers visually inspected and recorded individual serial numbers from ID plates. All dive inspections were non-systemic i.e. divers navigated by compass and bottom reference along flanks of shell pads without control by stakes etc. to assure 100% coverage of deployment area. Generally visibility was poor (< 2 feet) and inhibited thorough inspections.

H1 Site:

(East) - 113; 178; 98; 111; 38; 41; 106; 36; 109; 134; 131; 110; 107; 45; No#; 103*; 40; 45; 44; 48; 50;

(South East) - 105; 89; 90; 99; 32; 122; 125; 177; 101*; 100; 126; 140*; 124; 120; 88; 127; 58;

(South) – 97; 91; 87; 104; 102; 70; 68; 56; 108; 130; 135; 146*; 121; No#; 71; 69; 99; 84; 82; 67; 72; 80; 69; 67; 75; 76; 73; 79; 74;

(South West) – 28; 27; 78; 77; 18; 20; 30; 29; 26; 25; 14; 15; 23; 16; 13; 22; 151; 24; 21;

(West) – 159; 156; 158; 7; 155; 161; 9; 10

Work Performed: **8/25/03** - Performed diving tasks to plot the future artificial reef site for depth of mud on top of hard shell. Buoyed off the circumference of the site (1-acre) at 6" & 12" mud depth. Reef balls are to be deployed along the skirt of this shell pad in the shallower mud.

9/01/03 – Performed diving tasks and accounted for 94 out of the 200 reef balls and recorded their numbers. Repositioned 4-reef balls that were on their side.

H3 Site:

189; 191; 497; 498; 500; 499; 501; 492; 503; 502; 181; 179; 504; 505; 183; 182; 546; 549; 467; 480*; 478; 477; 476; 475; 519; 398; 586; 585; 588; 587; 521; 520; 200; 199

Work Performed: **9/17/03** - Performed diving tasks to set buoys at 6" of mud cover on top of hard shell around the skirt of this location.

10/05/03 – Performed diving tasks and accounted for 34- reef balls and repositioned two that were on their side.

Post-Deployment – Diver accounting of reefball Serial numbers verified between October 2003 and June 7, 2004 by Rob Kohl and other divers.
Inspections by other divers are in bold italics .

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H4 Site: 287; 285; 286; 284; 289; 290; 292; 294; 293; 291; 295; 416; 417; 399; 400; 431*; 433; 595; 485; 593; 404; 407; 406

Work Performed: **9/01/03** - Performed diving tasks to set buoys at the 6" of mud cover on top of hard shell around the skirt of this location.
10/05/03 – Performed diving tasks and accounted for 23-reef balls at this location.

Work performed: 10/25/03 Les Dauterive and Tim Bechnel

H4 site: **434, 442, 446, 439, 445, 440, 436, 438, 424, 435, 426, 437, 438, 451, 448, 451, 449, 322, 323, 337, 453, 466, 451, 434, 432, 318, 321, 443, 447, 452, 441, 322, 323, 337, 340, 320, 330, 327, 360, 363, 325, 324, 319, 316, 389, 391, 390, 383, 385, 388, 384, 380, 386, 378, 379, 377, 374, 373, 375, 372, 371, 291, 293, 301, 295, 417, 416, 497, 298, 300, 302, 256, 247, 245, 249, 238, 240, 243, 246, 254, 313, 326, 314, 445, 440**

11/1/03 Kelly Collins & Michael Falgout

426, 425, 326, 313, 310, 494, 465, 293, 591, 494, 593, 595, 596, 489, 554, 556, 198, 197, 562, 561, 536, 534, 316, 223, 216, 232, 557

10/25/03 James Sinclair and Lee Tilton

355, 354, 356, 353, 349, 352, 348, 357, 350, 351, 347, 402, 361, 363, 364, 360, 319, 324, 325, 321, 316,

North Shore Site – N1:

847; 656; 672; 655; 680; 669; 648; 647; 650; 652; 663*; 662; 671; 670; 657; 667; 658; 677; 660; 668; 675*; 659; 661; 664; 633; 635; 643; 630; 632; 642; 627; 625*; 626*; 624; 623; 646; 645; 621; 617*; 643; 612; 607; 614; 608; 622*; 615; 617; 620; 619; 602; 611; 605; 603; 613; 609; 610; 616; 618; 663*; 662; 673; 653; 665*; 676; 629; 631; 634; 636;
(North) – 606; 673; 653; 654; 656; 672; 647; 681

Work Performed: **11/30/03** - Performed diving tasks to plot the future artificial reef site for depth of mud on top of hard shell. Buoyed off the circumference of the site (1-acre) at 6" & 12" mud depth. Reef balls are to be deployed along the skirt of this shell pad in the shallower mud.

01/18/04 - – Performed diving tasks and accounted for 76-reef balls at this location. 7-reef balls located on their side and buoyed for future repositioning. Pre-Deployment & Deployment Field Notes

Kob Kohl

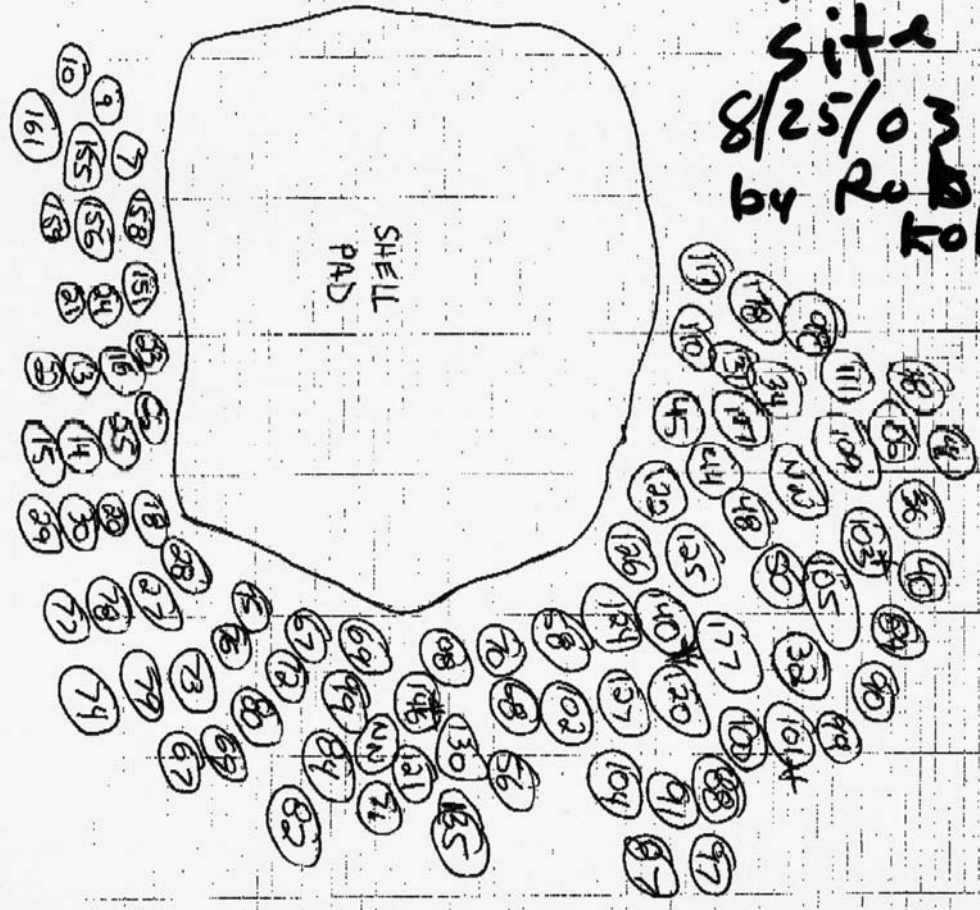
N



H1

H1
Site
8/25/03
by Rob Kohl

W



S

Field Deployment notes

L1

The L1 site was a previously developed artificial reef site composed of *Rangia cunata* shell. The site was developed in 1971 in coordination with LA Department of Wildlife and Fisheries. Inspection of the site in 2000 found that there appeared to be residual shell material but little bottom relief that may have been present when the reef was first developed. The permitted site is the original site coordinates for this reef. The site was chosen because of its proximity to Seabrook bridge, which has a public boat launch and has migratory movement of fish of interest to local fisherman. It was hoped the residual shell from the original artificial reef site would provide some foundation for additional material. The site was surveyed and staked by T. Baker Smith & Son. A magnetometer survey revealed no flowlines.

3200 yards of crushed limestone was placed on the L1 site. Material was deployed via crane by Chet Morrison Contractor's Inc. on July 24, 2001 (pro bono). Material was placed to create a series of mounds. Limestone was purchased from Pontchartrain Materials (\$17.50/ cubic yard) and shipped from Paducah, KY. Limestone rubble was 1" to 3" in diameter. Color was dark grey to black. [Dry weight of the limestone was described as 1.4 tons per cubic yard.](#) Deployment was observed by John Lopez, Carlton Dufrechou, Mark Schexnayder and Woody Crews.

The permitted site is roughly rectangular (~ 274' X 799') with the elongated direction running northwest-southeast. The permitted area is 4.2 acres, however the material was placed over a smaller area estimated to be 1 to 1 ½ acres.

Post-deployment inspection L1

As of February 2004, and several other visits previously, the buoy was still in place and hummocks could still be seen on a boat depth finder.

Pre-deployment H1, H3 and H4 sites

August 20, 2003 fair weather, 1' seas

Carlton Dufrechou, Susan Langenhennig (Times Picayune) and John Lopez visited site in LPBF boat.

Site markers by T. Baker Smith were in place. Pink flags indicated the base of the slope of the shell pad. A yellow buoy the approximate center on the crest of the shell pad. Two lines of red flags indicated inactive and buried pipeline (flowlines). (see engineering survey plat)

Recently received high-res sonar indicated a soft bottom plume in the vicinity of the apron where Reefballs were to be deployed. Previous inspection of the site was with aluminum pole and snorkel dive. The pole revealed shell was present on the apron, but it did not detect the soft layer of mud present in many areas. Several dives indicated a few inches of mud overlying a firm shell layer. The north and northwest side appeared to be nearly all mud. It was decided divers should inspect the apron to determine the extent and thickness of mud.

August 25, 2003 nearby thunderstorm, strong east wind, 1-2' seas 1st Mud Survey

Rob Kohl, Dwight Williams, and Rob Bateman and John Lopez visited the H1 site in Rob Bateman's boat. Dwight and Rob dove on the site for approximately 1 hour. They inspected all four aprons. They used a 14" probe (PVC pipe) with screws at 6" intervals. Stakes with floats were placed along transects away from the mound at 6" and 12" depth of mud overlying the shell layer (see photograph). A sketch of the mud distribution was made by visual estimates of the distances away from the sites to the floats (see map).

Divers reported a 2' pipe on the bottom at the northwest corner on the apron. Also a "car battery" was found at the southwest corner on the apron. Diver placed the battery at a red flag marker to be retrieved later.

Description of the south shore sites:

H site (reference site): This site is a well site drilled in 1979 and is a full intact shell pad approximately 1 acre in size. It has an elevation of four feet above the lake bottom. It is flat-topped with slopes approximately 3-4 : 1. Some remnant work material was identified on the site such as a broken valve wheel and cable. The elevated shell pad had

Deployment H1, H3 and H4

All reef balls were deployed two with each crane lift. In all cases the Reefballs were placed on bottom before releasing straps. The exact placement was by visual monitoring by the crane operator in most cases. On some sites a spotter assisted directing placement to avoid stacking of Reefballs.

On the H1, H3 and H4 site in which bay balls and pallet ball size Reefballs were deployed, Coastal Reef Builders were instructed to place the smaller bay balls toward the inside of the deployment area i.e. toward the center of the pad. The larger pallet balls were deployed toward the outside of the deployment area i.e. furthest away from the shell pad center.

The table below is the official description of the bay ball and pallet ball sized Reefballs taken from Reefball Foundations website. Coastal Ref Builders indicated that the Reefballs they provided were toward the lower end weight as described in the table. Coastal Reef Builders Inc indicated Bay Balls they provided weighed roughly 400 pounds and the pallet balls weighed 1400 pounds.

Pallet Ball	4 feet (1.22m)	2.9 feet (0.9m)	1500-2200 lbs (680-998 kg)	0.33 yard 0.25m ³	75 ft ² 7.0 m ²	17-24
Bay Ball	3 feet (0.9m)	2 feet (0.61m)	375-750 lbs (170-340 kg)	0.10 yard 0.08m ³	30 ft ² 2.8 m ²	11-16

August 27, 2003

Coastal Reef builders arrived on site 1:00 pm and spud on the west flank of the H1 pad approximate 70 feet from the slope (pink flags). Dale Minnick, Gary (captain), Alan (deckhand) and another deckhand were on the barge and tug. The barge contained 80 pallet balls numbered 1-80, and 100 bay balls numbered 81 - 180. All of this marked material was placed at the H 1 site. Two unmarked pallet balls were on the barge.

Deployment began with bay balls at 2:04 p.m. Two Reefballs at a time were deployed for both "bay balls" (2 ' high) and for "pallet balls" (3 ' high). Approximately 50 bay balls

and 40 pallet balls were placed on the west apron of the H1 site. The most of remainder was to be placed on the south flank between the two lines red markers (inactive flowlines).

Four Jefferson Parish sheriff boats arrived approximately 2:30 pm with the media and: Carlton Dufrechou, Woody Crews and Mike Poirrier, Mark Schexnayder, Rob Kohl, Rick Kasprzak, John Burden

John Lopez and Rob Kohl stayed at the H1 Site until 5:30 pm. Dale indicated they would work until all materials were deployed. He estimated they would be done just after dark. On September 3, 2003 Dale reported that they had finished deployment on August 27, 2003. All material was placed on the west and south sides except for approximately eight Reefballs on the east side.

Post-deployment inspection H1 site

On September 3, 2003 Rob Kohl reported they dove on the H1 site and counted around 100 Reefballs and recorded the numbers. (this was not a systematic survey) He reported that the maximum observed sinkage into the mud was about 6". Two Reefballs were found to be lying on their side. They were able to upright using a diving lifting device. They sighted 1 blue crab and 1 sheepshead.

The divers also dove on the H4 site and generally found the mud thick within 10 - 20 ' of the base of slope (pink flags). However they felt in some places the pink markers flags were further out slightly than the actual base of slope.

Pre-deployment Surveys H3 and H4

Volunteer divers conducted mud surveys over both sites. The east flank H4 was found to have the most mud and was avoided in deployment. H3 was found to have a narrow apron of exposed shell all around. Surveys were conducted by Dwight Williams, Rob Kohl and John Lopez.

Deployment of H4 and H3 sites

H4 site was deployed September 26, 2003. Reefballs were placed on the North, west and south side. No material was to be placed on the east side. This was due to the mud layer apparently there from diver mapping and also an inactive pipeline being present.

A mild cold front passed during the week with strong north winds for about 5 days. Coastal Reef builders kept the barge in Madisonville on the Tchefuncte River.

H3 site was deployed October 3, 2003 starting in the afternoon and was completed around 9:00 p.m. Barge left site and returned to Pensacola. Reefballs were placed around the entire perimeter of the H3 site.

Official artificial reef buoys were deployed Oct 6, 2003. We deployed one buoy to each Reefballs site (H1, H3 and H4), and also one buoy on the reference site (site H). This buoy was later removed in January 2004 and re-deployed at the N1 site.

All the buoys were placed near center of elevated shell pad.

The T. Baker Smith temporary anchored flag buoys were removed. The bamboo stakes were not removed. These slowly deteriorated. In February 2004 some poles still remained at all sites deployed in 2003 and 2004.

Friday September 26, 2003 H4

departed West End 7:15 a.m. in LPBF boat

Seas choppy until around 10:00 am , thunderstorm passed through in afternoon

John Lopez and Nathan Arthur coordinated deployment of the H4 site. Extra buoys were placed to delineate the base of the slope of the shell pad. Deployment was direct to be outside the base of slope but within the small floats place by divers where the mud layer exceeded 6".

Coastal reef builders barge arrived on H4 site approximately 9:00 a.m. and spud on the northwest quadrant of the site. Reefballs deployment began approximately at 10:00 am. Reefballs were deployed on the perimeter of the shell pad but inside the area indicated by divers to have less than 6" of mud over shells. Bay balls were placed inside and the pallet balls were placed outside. Reefballs were deployed on the north, south and west flank but not the east flank. The east flank appeared to have mud closer into the shell pad and offered small area for placement. Also an inactive pipeline was identified on the east flank. Barge deckhands recorded individual serial numbers of reef balls as deployed at the site.

Approximate distribution H4:

west Flank: 60 bay balls and 40 pallet balls

north flank: 32 bay balls and 22 pallet balls

south flank: 32 bay balls and 22 pallet balls

TOTAL: 124 Bay 84 pallet

Lopez and Arthur left site around 11:30 am.

I discussed deployment with Dale Minick on September 27. Deployment of H4 was completed September 26 around 9:00 pm. Barge left site and overnighted in Madisonville. Dale reported they would complete deployment of the H3 site on Monday September 29. However bad weather (high winds) delayed this deployment until October 3, 2003.

Deployment H3

H3 site had no flowlines identified and appeared to have an even, but narrow width of shell apron with less than 6" of mud layer. Also the T Baker Smith Survey pole which should have been delineating the base of the slope of the pad appeared to in fact be placed slightly further out than the base of slope. Coastal Reef Builders was direct to placement of Reefballs around the entire perimeter following closely the pink flagged stakes and not placing material more than 30' outboard of these stakes. As in all other reefball sites with pallet and bay balls, the bay balls were placed toward the center of the pad and the pallet balls toward the outside.

Approximate distribution H3:

west Flank: 30 bay balls and 20 pallet balls

north flank: 40 bay balls and 24 pallet balls

south flank: 30 bay balls and 20 pallet balls

east flank: 32 bay balls and 22 pallet balls

TOTAL: 132 Bay 86 pallet

Post-Deployment H3

Subsequent inspection of the H3 site found that the reefballs were evenly spaced and all but a very few were upright. Approximately four were found on their side. These were re-deployed in February 2004 by Coastal Reef Builders.

N1 Deployment and Inspection

Pre-deployment N1

This is an abandoned exploratory drill site -Union #1, State lease #7183, State well Id # 157558.

This was a deep exploratory well drilled in 1977. The lease is inactive. There is no oil or gas production nearby.

The site is a single small mound (roughly 35 foot diameter) 4-5 feet high with a large apron of shell at least 150 diameter. Divers later confirmed that the apron has thick mud more than 30 feet from the raised pad.

T. Baker Smith survey found no pipelines at the N1 site. The site was delineated with nine bamboo pole which were roughly 100 feet from the actual mound of shell.

Deployment N1

80 Pallet balls were deployed on the N1 site in Lake Pontchartrain on January 14, 2004 by Coastal Reef Builders of Pensacola. Seas were calm and there was no wind. Deployment was from 2:30 pm to approximately 6:00 pm.

The Pallet balls were numbered 601- 681.

All Pallet balls were deployed within 100 feet of the center buoy where the divers had delineated little or no mud overlying the shell.

The temporary yellow flag buoy was missing from the site. An official artificial reef buoy was deployed on center of N1 where water depth was 9 – 10 feet..

Post-deployment inspection N1

Four days after we deployed the N1 site volunteer divers (Rob Kohl) dove on the N1 site (1/18/04) to inspect the deployment. They had three foot visibility. They accounted for 76 of the 80 pallet balls deployed and recorded the serial numbers and their approximate position. They found five lying on their side and four stacked. They marked all nine pallet balls. They only found a couple that had any significant subsidence. The maximum subsidence being estimated at 6 inches.

They reported finding a couple wood pilings sticking above the lake bottom. Also steel cable and other scrap iron were on the site. The center mound of shell has a steep north flank.

Divers were Rob Kohl, John Lampo, Bill Scheck and Mike Barron. A bass boat was utilized for transport from Mandeville to the site.

H site – reference site

The H site is located within the permitted area for artificial reef development in Jefferson Parish. It can be identified on sidescan sonar images (see following section). Based on depth reading and dives onto the pad it appears the shell pad is fully in tact. It has 4 to 4 ½ feet relief with abruptly sloping flanks. The pad is composed of entirely *Rangia cuneata* shell (all non-living). A few live oysters and a school of sheepshead were found in August 2001. The shell on top of the pad was exposed with almost no mud layer present. Some other debris was found such as steel cable, metal fragment and rubber tubing. A large shell apron was present around the perimeter of the raised pad with some areas covered with 1 to 2 inches of mud. Site was visited by John Lopez and Mark Schexnayder.

Side Scan Sonar Acquisition by with the assistance of the Mineral Management Services.

On Friday June 18, 2004 I brought Jack Irion and Chris ?? of the MMS to the Jefferson Parish artificial reef sites. Jack and Chris brought MMS sidescan sonar equipment. We were using my boat – Blue Moon.

From 10:00 am to 12:30 pm we acquired imagery and GPS over H1, H4 and H3 reefball sites. We also made one pass over the H site, which is just a shell pad. Numerous Reefballs were imaged. It appeared from just field examination that individual Reefballs may be counted. Also the two different sizes may be detectable. We attempted to get complete coverage over all the Reefballs.

Jack is going to mail the raw data and viewing software to me. They are also going to attempt to mosaic the imagery.

Bottom line is that it appears the sonar may be very useful for tracking of the Reefballs.

All sonar images in this report are from previously acquired, pre-deployment sidescan sonar acquired under contract to the LA Department of Wildlife and Fisheries.

ID plate made of anodized aluminum 2" X 4" with a unique serial number for Lake Pontchartrain. Attached with marine silicone. Sites H1, H4 and H3 had one plate mounted. Site N1 had 2 plates mounted on each reefballs.



Artificial Reef Buoy



Deployment of the L1 site near Lakefront Airport in July 24, 2001.



Mud Survey Equipment for Reefball Sites H1, H3, H4 and N1

Equipment utilized by divers for “mud survey” . Probe (lower) is made of PVC pipe with screws set 6” and 12” from bottom (left). Divers probed through soft mud until resistance with shell. Divers survey away from the bare shell pad and generally marked either the 6” or 12” mud thickness. Stakes were pushed manually into the mud so the stake was completely buried. 15-20’ line with small donut ring. Small float is critical to avoid pulling stake from bottom by wave action. Markers generally survived for several months until removed. A heavier nylon string would probably increase dependability for longer exposure. Reefballs were generally placed where the mud thickness above shells was less than 6”.





H1 deployment

Coastal Reef Builders barge for deployment of H3 and H4 September 2003.



Deployment of H4 September 2003



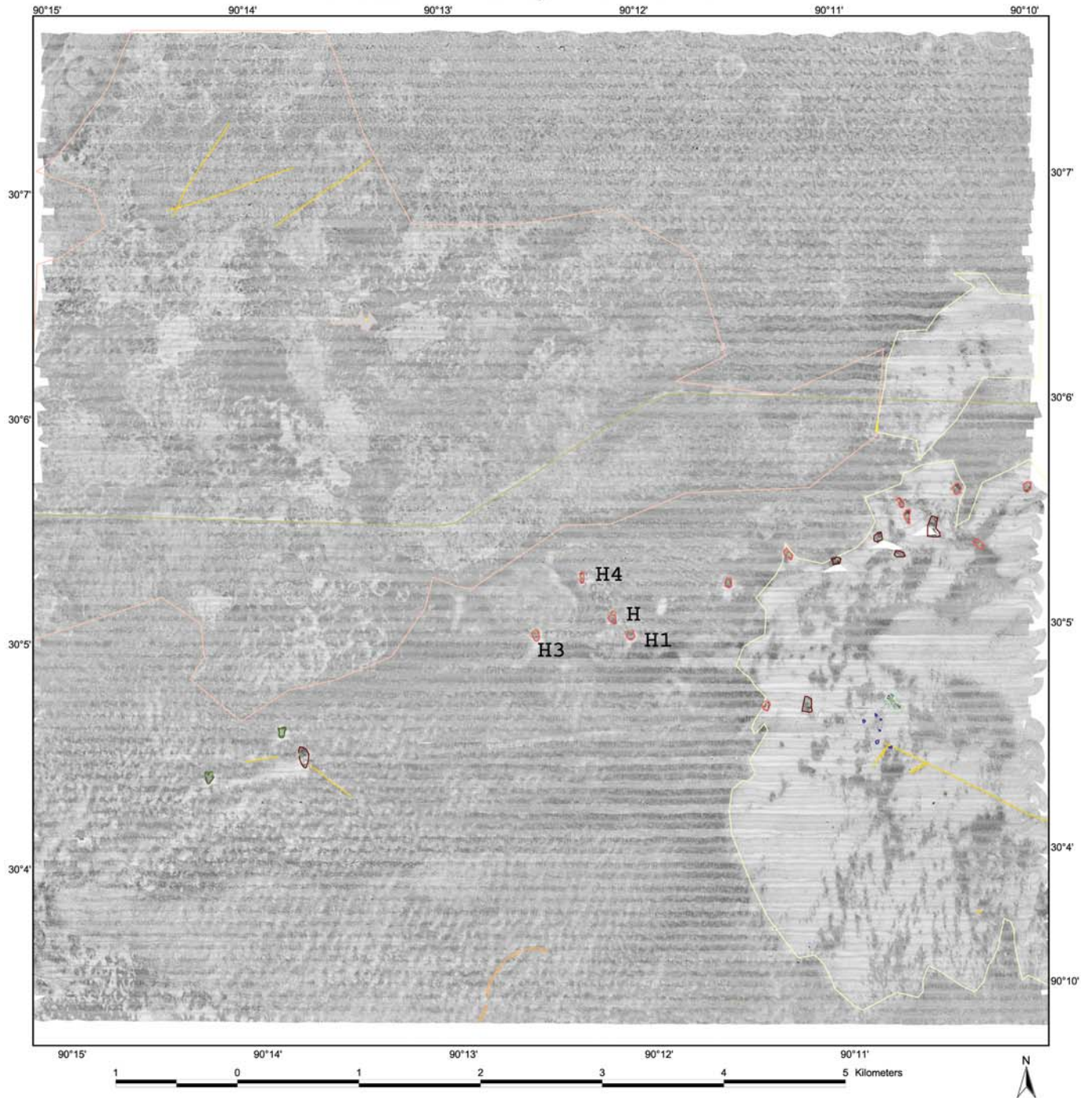


N1 deployment

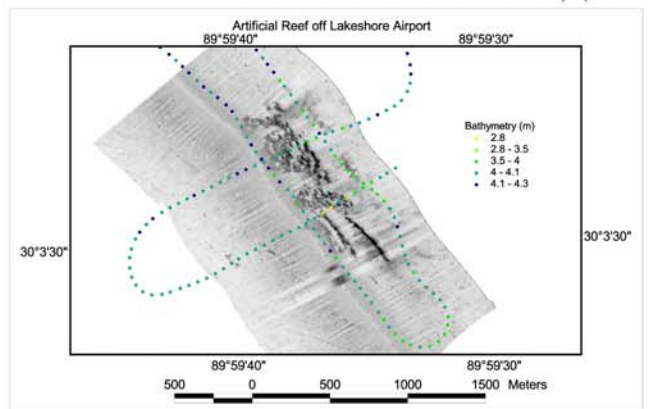
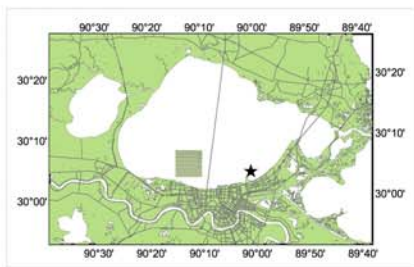


Close-up's of stacked reef balls on Coastal Reef Builder's barge.

Side Scan Sonar Survey - Lake Pontchartrain.



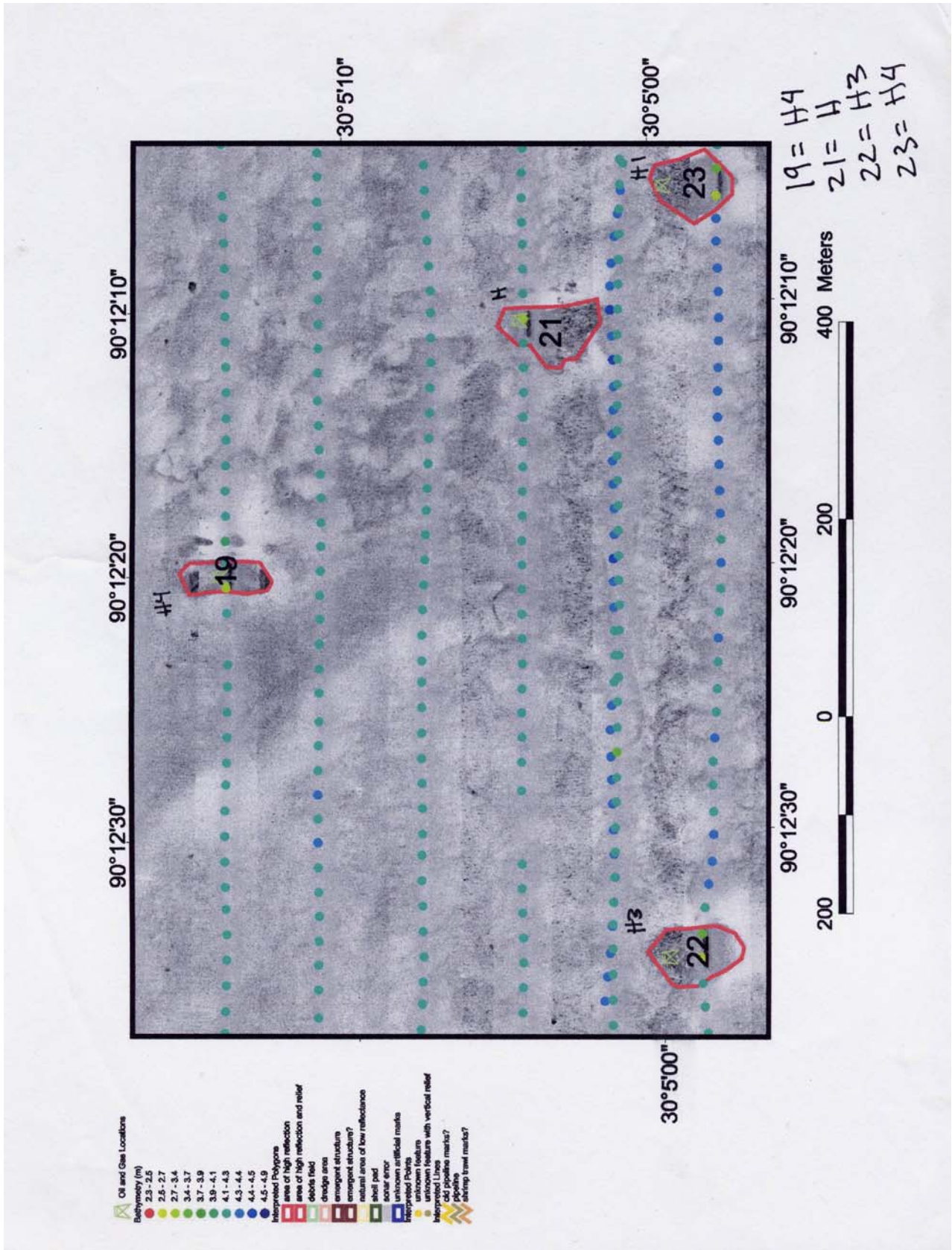
- Oil and Gas Locations
- Interpreted Polygons
 - area of high reflection
 - area of high reflection and relief
 - debris field
 - dredge area
 - emergent structure
 - emergent structure?
 - natural area of low reflectance
 - shell pad
 - sonar error
 - unknown artificial marks
- Interpreted Points
 - unknown feature
 - unknown feature with vertical relief
- Interpreted Lines
 - old pipeline marks?
 - pipeline
 - shrimp trawl marks?



Survey conducted: 14 - 23 Aug 2002
 Range: 65m
 Total swath width: 130m
 Line spacing: 100m
 Frequency: 500 kHz

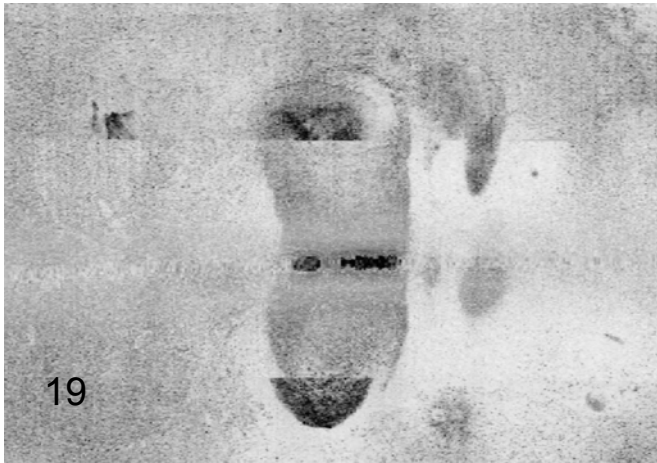
Sonar Interpretation: Yvonne Allen
 LSU Coastal Fisheries Institute
 School of the Coast and Environment

Funding provided by Louisiana Department of Wildlife and Fisheries

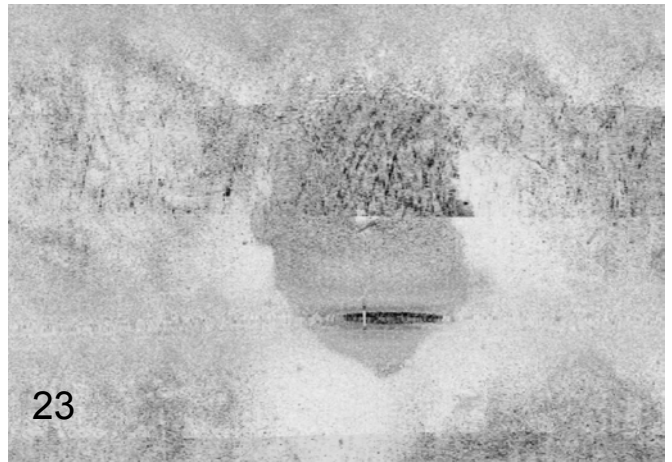
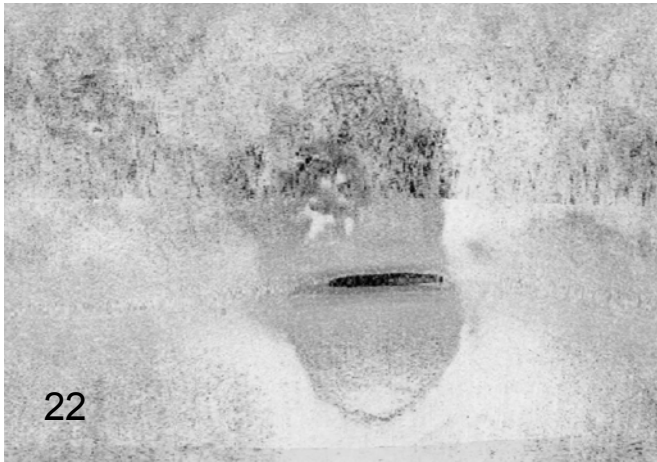
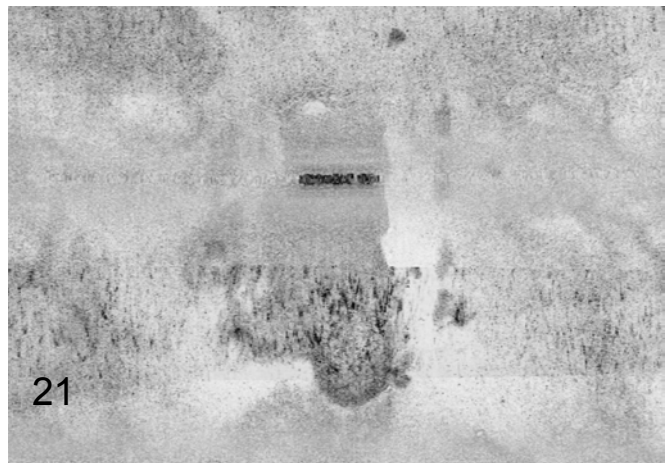


LA DWF sidescan sonar imagery of Jefferson Parish reef sites – very roughly the permitted area for reefball placement. Black indicates hard surface.

H4



H



H3

H1

Sidescan sonar images of shell pads in Jefferson Parish.
Gray scale: Dark is "hard" surfaces, light is "soft". North is toward top of page.

All sonar images in this report were acquired under contract to the LA Department of Wildlife in Fisheries in 2003.

H4

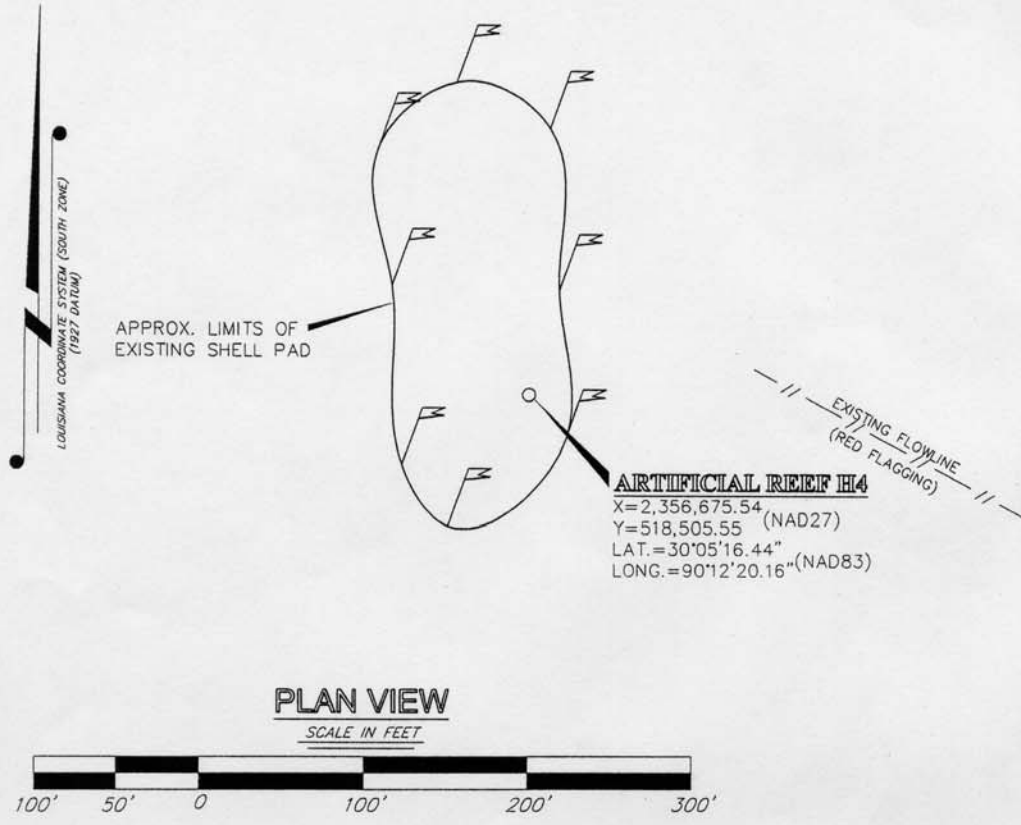
Gray scale: Dark is “hard” surfaces, light is “soft. North is toward top of page.



JEFFERSON PARISH, LOUISIANA
T11S-R10E

H4

LAKE PONTCHARTRAIN



NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

PROPOSED ARTIFICIAL REEF LOCATIONS
LOCATED IN LAKE PONTCHARTRAIN
JEFFERSON PARISH, LOUISIANA



T. Baker Smith & Son, Inc.
Professional Consultants

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DRAWN BY: L.A.D.	SHEET 2 OF 4
APPROVED BY: J.B.P.	ACAD FILE #03601C2.DWG
SCALE: AS SHOWN	JOB #S2003-601
DATE: 08-12-03	MAP NO.

JEFFERSON PARISH, LOUISIANA
T11S-R10E

H4

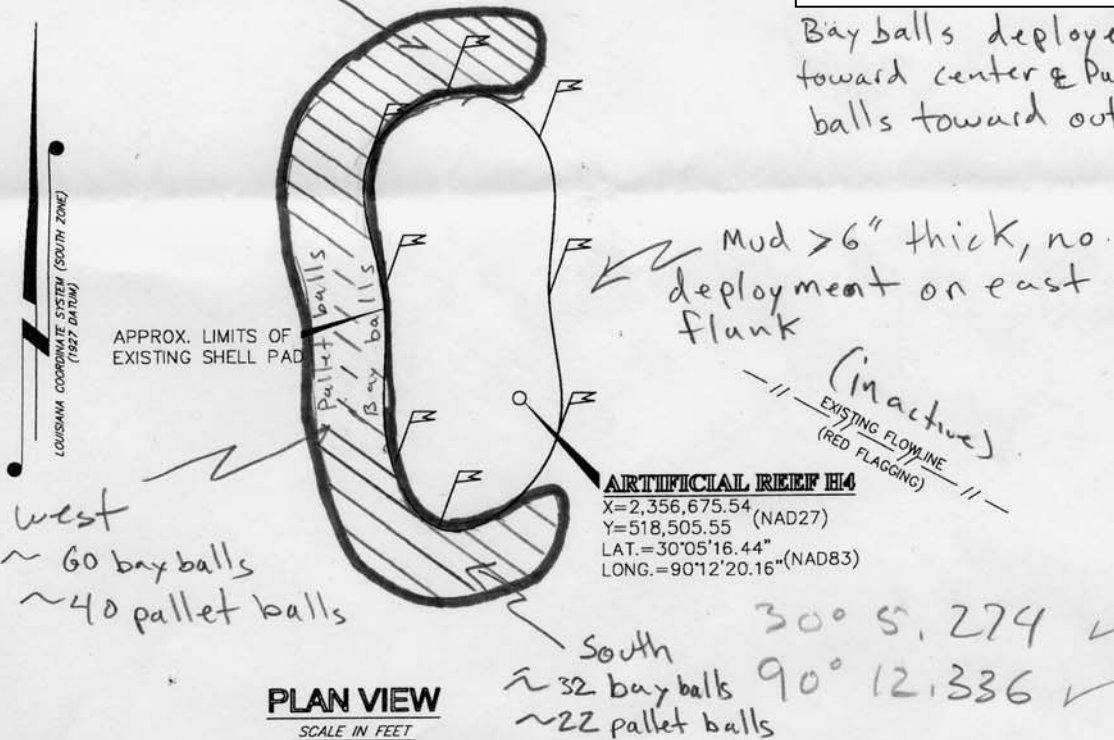
North
~32 bay balls
~22 Pallet balls

/// deployment area

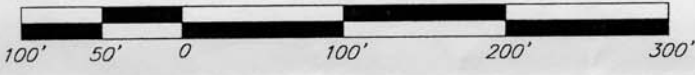
124 Bay Balls
84 Pallet Balls

LAKE PONTCHARTRAIN

Bay balls deployed toward center & Pallet balls toward outside



PLAN VIEW
SCALE IN FEET



NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

PROPOSED ARTIFICIAL REEF LOCATIONS
LOCATED IN LAKE PONTCHARTRAIN
JEFFERSON PARISH, LOUISIANA

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DRAWN BY: L.A.D.	SHEET 2 OF 4
APPROVED BY: J.B.P.	ACAD FILE #03601C2.DWG
SCALE: AS SHOWN	JOB #S2003-601
DATE: 08-12-03	MAP NO.

H (reference site)

Gray scale: Dark is "hard" surfaces, light is "soft. North is toward top of page.



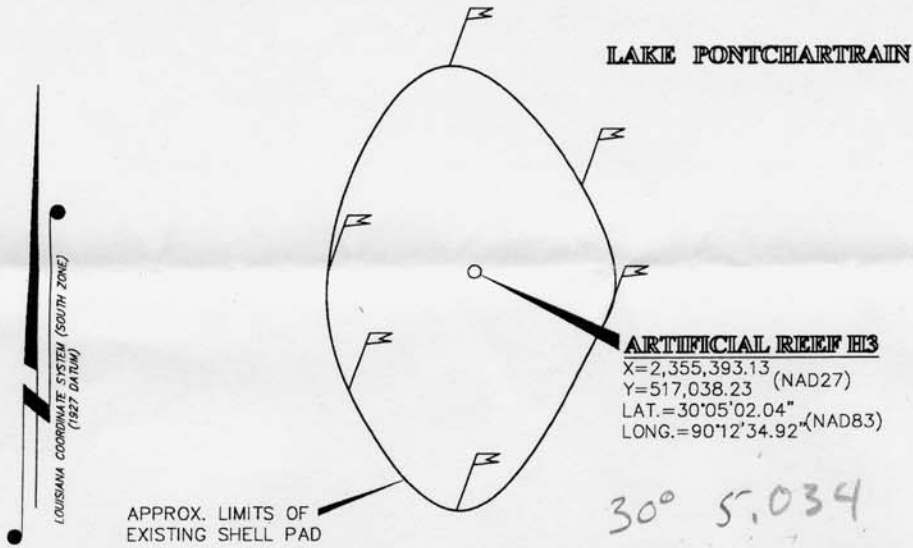
H3

Gray scale: Dark is "hard" surfaces, light is "soft". North is toward top of page.



JEFFERSON PARISH, LOUISIANA
T11S-R10E

H3



30° 5.034
90 12.582

PLAN VIEW

SCALE IN FEET



NO.	DATE	REVISION
LAKE PONTCHARTRAIN BASIN FOUNDATION		

PROPOSED ARTIFICIAL REEF LOCATIONS
LOCATED IN LAKE PONTCHARTRAIN
JEFFERSON PARISH, LOUISIANA



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DRAWN BY: L.A.D.	SHEET 3 OF 4
APPROVED BY: J.B.P.	ACAD FILE #03601C3.DWG
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DATE: 08-12-03	MAP NO.

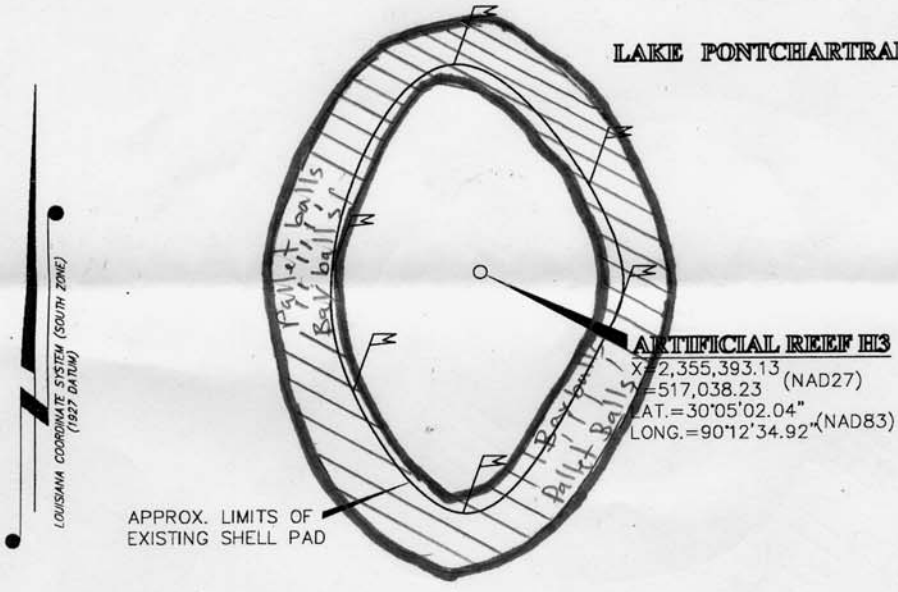
JEFFERSON PARISH, LOUISIANA
T11S-R10E

H3

/// deployment area

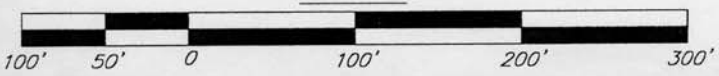
132 Bay Balls
86 Pallet Balls

LAKE PONTCHARTRAIN



PLAN VIEW

SCALE IN FEET



NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

PROPOSED ARTIFICIAL REEF LOCATIONS
LOCATED IN LAKE PONTCHARTRAIN
JEFFERSON PARISH, LOUISIANA



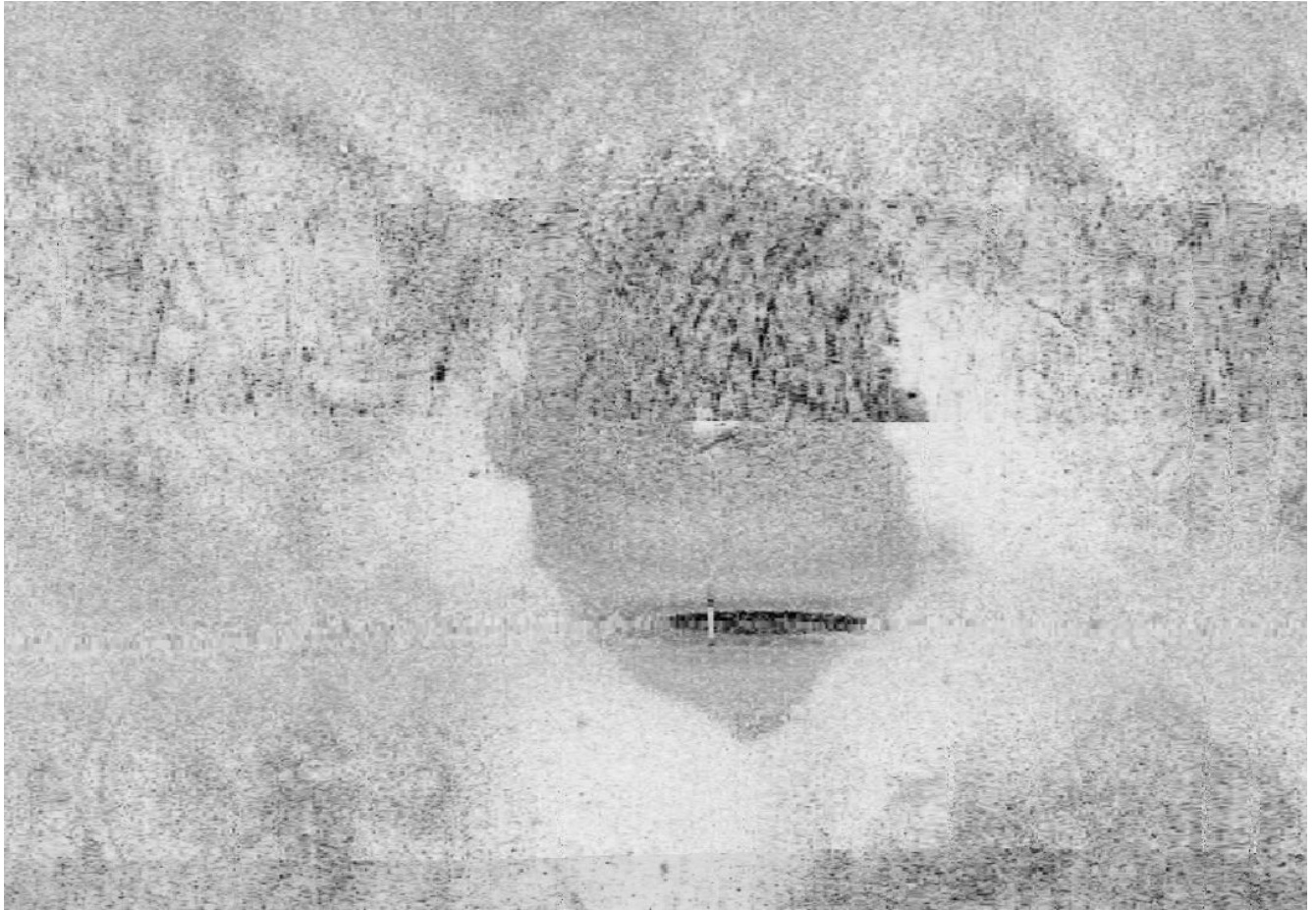
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DRAWN BY: L.A.D.	SHEET 3 OF 4
APPROVED BY: J.B.P.	ACAD FILE #03601C3.DWG
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DATE: 08-12-03	MAP NO.

H1

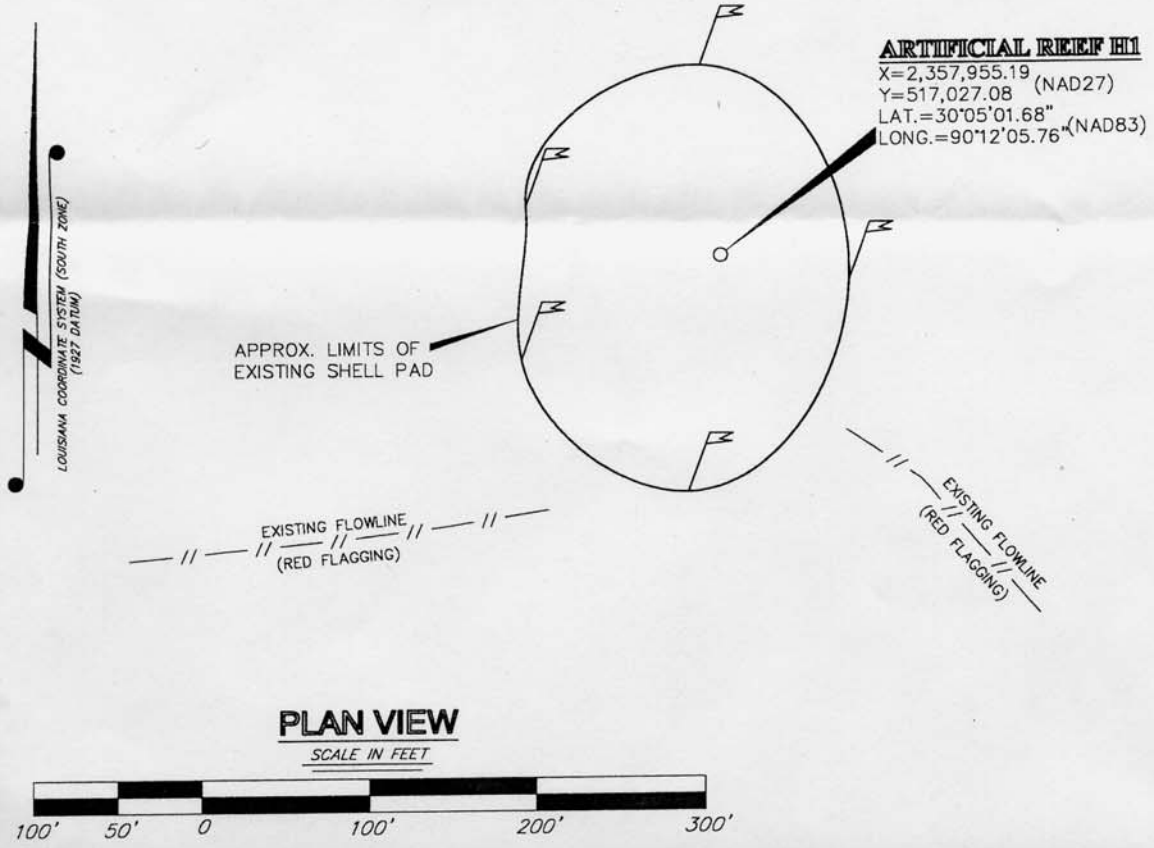
Gray scale: Dark is “hard” surfaces, light is “soft. North is toward top of page.



JEFFERSON PARISH, LOUISIANA
T11S-R10E

#1

LAKE PONTCHARTRAIN



NO.	DATE	REVISION
LAKE PONTCHARTRAIN BASIN FOUNDATION		

**PROPOSED ARTIFICIAL REEF LOCATIONS
LOCATED IN LAKE PONTCHARTRAIN
JEFFERSON PARISH, LOUISIANA**



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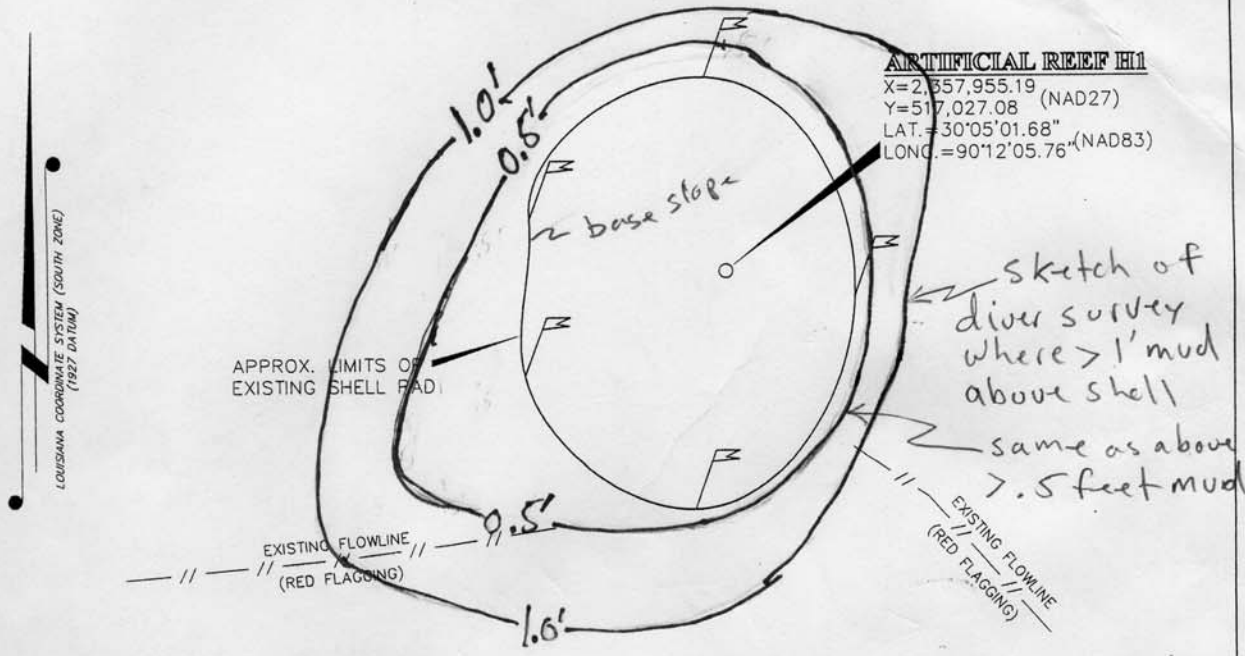
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DRAWN BY: L.A.D.	SHEET 4 OF 4
APPROVED BY: J.B.P.	ACAD FILE #03601C4.DWG
SCALE: AS SHOWN	JOB #S2003-601
DATE: 08-12-03	MAP NO.

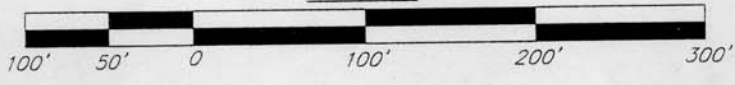
JEFFERSON PARISH, LOUISIANA
T11S-R10E

H 1
with approx.
mud thickness

LAKE PONTCHARTRAIN



PLAN VIEW
SCALE IN FEET



1" = 100'

NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

PROPOSED ARTIFICIAL REEF LOCATIONS
LOCATED IN LAKE PONTCHARTRAIN
JEFFERSON PARISH, LOUISIANA



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DRAWN BY: L.A.D.

SHEET 4 OF 4

APPROVED BY: J.B.P.

ACAD FILE #03601C4.DWG

SCALE: AS SHOWN

JOB #S2003-601

DATE: 08-12-03

MAP NO.

JEFFERSON PARISH, LOUISIANA
T11S-R10E

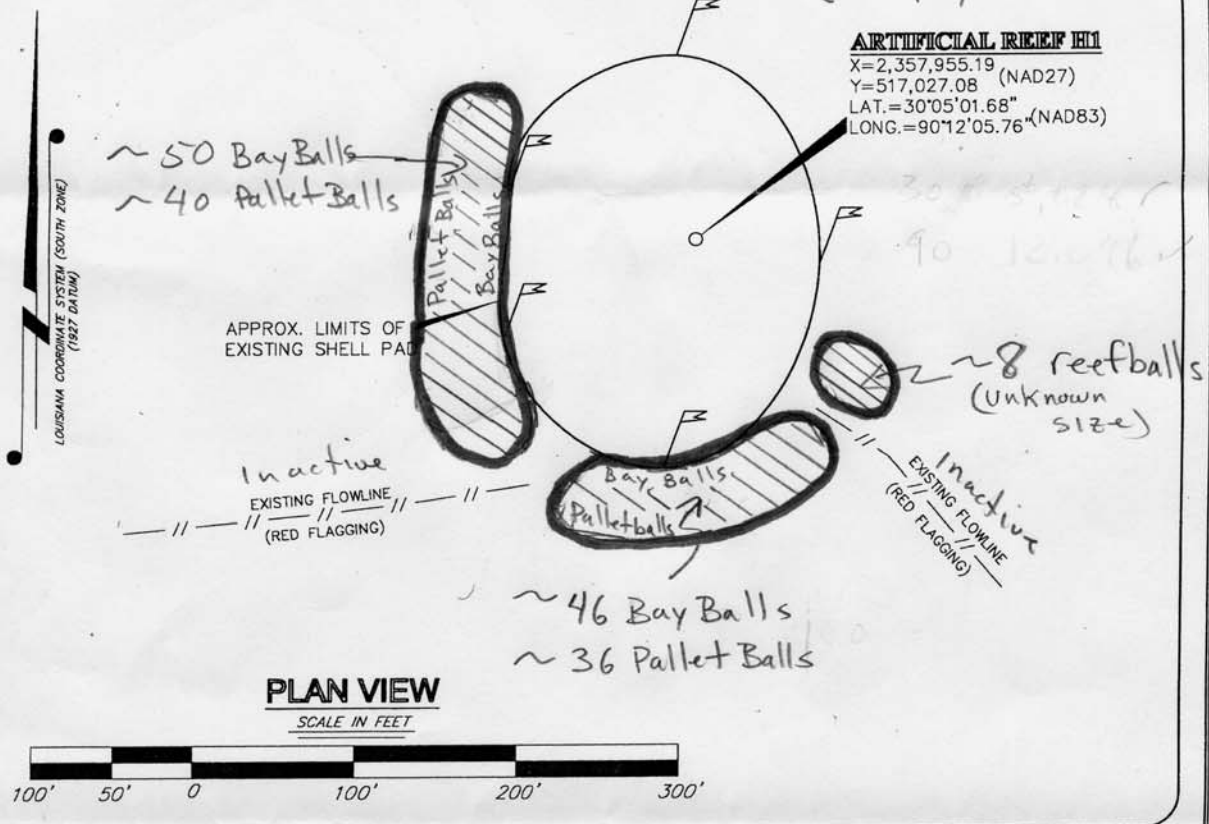
H 1

100 Bay Balls
80 Pallet balls

LAKE PONTCHARTRAIN

/// deployment area

ARTIFICIAL REEF #11
X=2,357,955.19
Y=517,027.08 (NAD27)
LAT.=30°05'01.68"
LONG.=90°12'05.76" (NAD83)



PLAN VIEW
SCALE IN FEET

NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

PROPOSED ARTIFICIAL REEF LOCATIONS
LOCATED IN LAKE PONTCHARTRAIN
JEFFERSON PARISH, LOUISIANA



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Professional Consultants

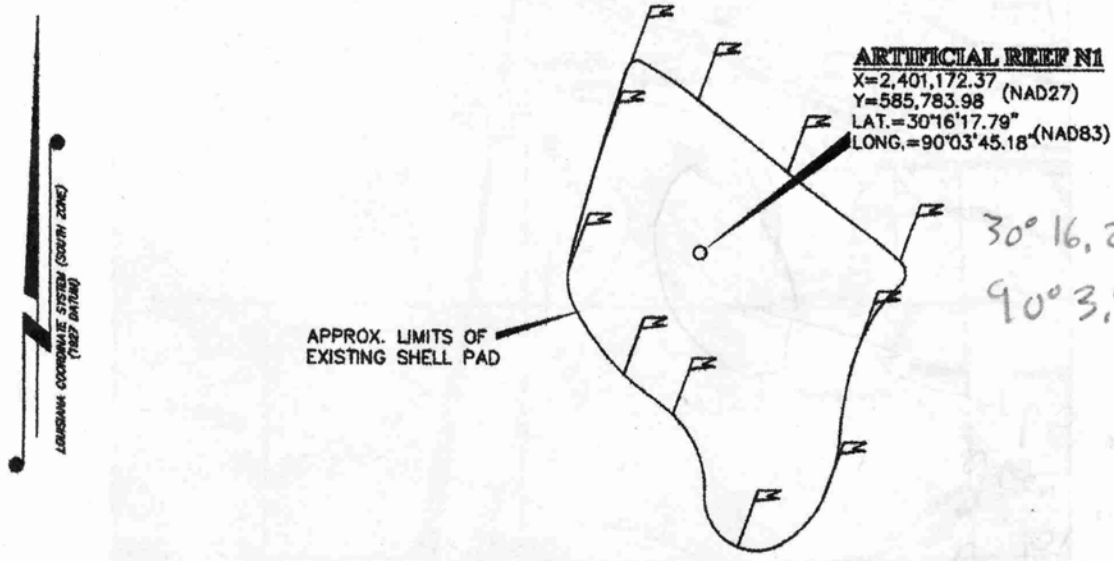
FLASING - DESIGN - CONSTRUCTION MANAGEMENT - OPERATIONS COMPLIANCE
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DRAWN BY: L.A.D.	SHEET 4 OF 4
APPROVED BY: J.B.P.	ACAD FILE #03601C4.DWG
SCALE: AS SHOWN	JOB #S2003-601
DATE: 06-12-03	MAP NO.

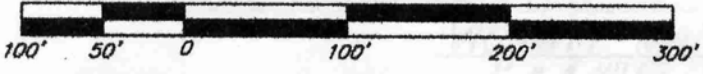
ST. TAMMANY PARISH, LOUISIANA

N1

LAKE PONTCHARTRAIN



PLAN VIEW
 SCALE IN FEET



NO FLOWLINES DETECTED BY MAGNETOMETER SURVEY

NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

PROPOSED ARTIFICIAL REEF LOCATION
 LOCATED IN LAKE PONTCHARTRAIN
 ST. TAMMANY PARISH, LOUISIANA



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DRAWN BY: S.T.G.	SHEET 2 OF 2
APPROVED BY: J.B.P.	ACAD FILE #03794C2.DWG
SCALE: AS SHOWN	JOB #S2003-794
DATE: 12/12/03	MAP NO.

ST. TAMMANY PARISH, LOUISIANA

/// deployment area

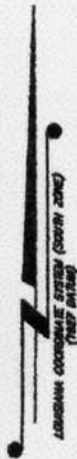
N1

Residual elevated shell pad approx. 20' diameter 3'-5' above bottom

LAKE PONTCHARTRAIN

80 pallet balls deployed

ARTIFICIAL REEF N1
 X=2,401,172.37 (NAD27)
 Y=585,783.98 (NAD27)
 LAT.=30°16'17.79" (NAD83)
 LONG.=90°03'45.18" (NAD83)



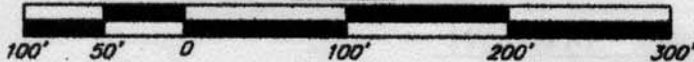
APPROX. LIMITS OF EXISTING SHELL PAD

30°16,296'
 90°03,753'

Divers delineated a narrow shell apron of ~30-40' radius. Area slightly elongated North-south

Flagged stakes were found far outside of exposed shell apron

PLAN VIEW
 SCALE IN FEET



NO FLOWLINES DETECTED BY MAGNETOMETER SURVEY

NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

**PROPOSED ARTIFICIAL REEF LOCATION
 LOCATED IN LAKE PONTCHARTRAIN
 ST. TAMMANY PARISH, LOUISIANA**



T. Baker Smith & Son, Inc.
Professional Consultants

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DRAWN BY: S.T.G.	SHEET 2 OF 2
APPROVED BY: J.B.P.	ACAD FILE #03794C2.DWG
SCALE: AS SHOWN	JOB #B2003-794
DATE: 12/12/03	MAP NO.

1970 State memorandum describing potential artificial shell pad sites in Lake Pontchartrain. This site had *Rangia* shell deployed in 1970. This site was permitted and is the L1 site in which limestone rubble was placed in 2001.

LOUISIANA WILD LIFE AND FISHERIES COMMISSION
WILD LIFE AND FISHERIES BUILDING
400 ROYAL STREET
NEW ORLEANS, LOUISIANA 70130

May 29, 1970

MEMORANDUM

TO: Dr. T. B. Ford; Chief; Division of Oyster, Water Bottoms, and Seafoods
FROM: J. W. Tarver, Biologist II, Project Leader, Study Area I
SUBJECT: Lake Pontchartrain Shell Reef

April 1, 1970, after several attempts at placing buoys on the corners of the shell plant location, two buoys were placed. High winds made working conditions extremely difficult.

April 6, 1970 the Lake Pontchartrain Shell Reef location was restaked because one of the two marking buoys had drifted. Spud barge Ayers 103 began planting clam shell with a crane and bucket. Shortly after the plant started a preliminary bottom sample was made and revealed that the bottom was covered with about three (3) inches of shell. Adjacent unplanted areas contained a small amount of clam shell and a sandy-mud bottom.

April 7, 1970 the operation was inspected. Mr. Pat Page informed me that the operation had proceeded all night. At 9:00 a.m. the last barge was being unloaded and Mr. Page indicated that the plant should be finished by noon.

1970 State memorandum describing potential artificial shell pad sites in Lake Pontchartrain. This site had *Rangia* shell deployed in 1970. This site was permitted and is the L1 site in which limestone rubble was place in 2001.

Mr. T. E. Ford
Page 2
May 29, 1970

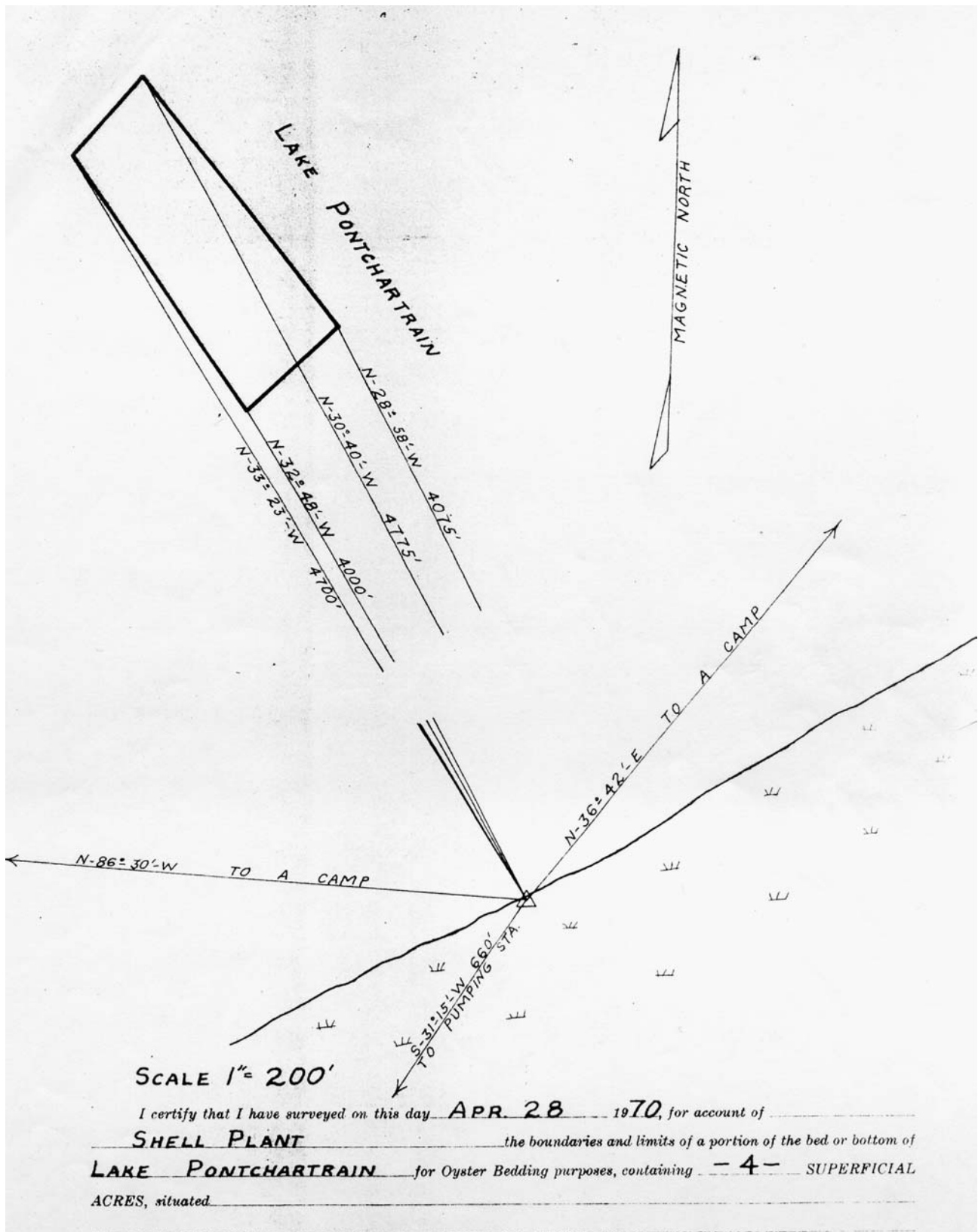
May 8, 1970 the Lake Pontchartrain Shell Reef was inspected by diving. The turbidity was about five feet so that the bottom could be seen for some distance. No evidence of any fish, crabs, or sediment fall out or wash out was noted.

The site will be inspected at monthly intervals.

Johnnie W. Tarver
Johnnie W. Tarver

JWT/lam

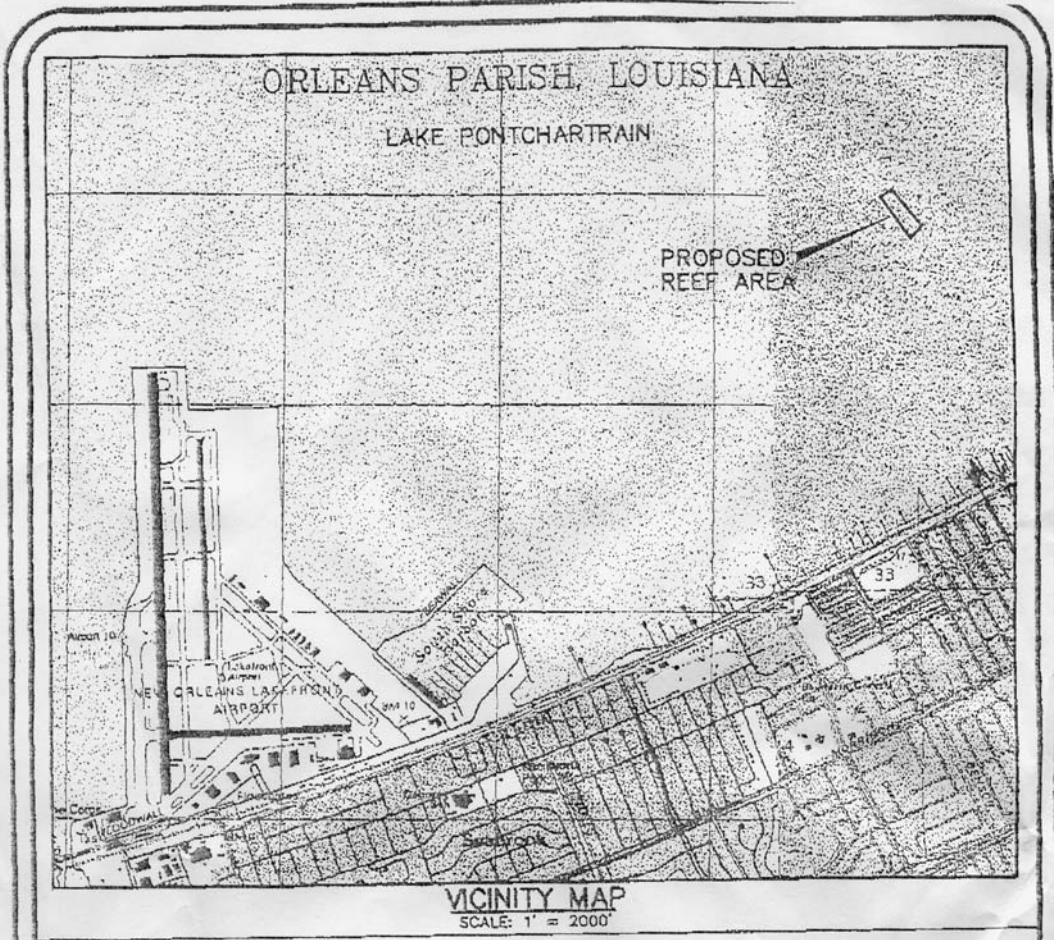
Map from a 1969 State memorandum describing potential artificial shell pad sites in Lake Pontchartrain. This site had *Rangia* shell deployed in 1970. This site was permitted and is the L1 site in which limestone was placed in 2001. Scale indicated is not correct.



L1 - 2001 survey

JUL-20-2001 12:52

P.01/01



NO.	DATE	REVISION

LAKE PONTCHARTRAIN BASIN FOUNDATION

AS-STAKED REEF AREA
 LOCATED IN LAKE PONTCHARTRAIN
 ORLEANS PARISH, LOUISIANA

T. BAKER SMITH & SON, INC
 CIVIL ENGINEERS - SURVEYORS - ENVIRONMENTAL RESOURCES
 P.O. BOX 2266 BOUMA, LOUISIANA 70001

DRAWN BY: J.B.P.	SHEET 1 OF 2
APPROVED BY: D.L.W.	ACAD FILE # 01628T02.DWG
SCALE: 1" = 2000'	CD # S2001-626
DATE: 7/19/01	MAP NO.

TOTAL P.01

FINANCIAL SUMMARY FOR THE LAKE PONTCHARTRAIN ARTIFICIAL REEF PROGRAM

Including 5 sites (S1, H1, H3, H4 and N1)

Cash donations

Source \$	amount	date	match req	non-fed \$
Amoco	\$5,000	1999		\$5,000
BP	\$50,000	2000		\$50,000
Weilbaecher	\$1,000	2000		\$1,000
East Ascension SL	\$350	2000		\$350
EPA/LPBF	\$30,000	2001		
EPA/LPBF	\$13,100	2003		
Jefferson Parish	\$17,000	2003		\$17,000
Fish America	\$15,000	2000		
Fish America	\$15,000	2001	\$15,000	
NFWF	\$30,000	2004	\$60,000	
TOTAL	\$176,450		\$75,000	\$73,350

Donated Materials and Services

			non-fed \$	nature of work
T. Baker Smith	\$2,299	2001	\$2,299	Loc. Stake & Mag Survey
T. Baker Smith	\$6,200	2003	\$6,200	Loc. Stake & Mag Survey
Chet Morrison	\$10,000	2001	\$10,000	Placement of materials
DWF	\$28,000	2003	\$28,000	Sidescan sonar
DWF	\$7,207	2003	\$7,207	personnel
DWF	\$1,804	2002&2003	\$1,804	5 Buoys
John Lopez	\$6,036	2003 & 2004	\$6,036	project manager
Woody Crews	\$5,175	2000 - 2004	\$5,175	Co-chair LPARWG
Vol divers	\$3,486	2003 & 2004	\$3,486	mud surveys
Prof Divers	\$3,948	2003 & 2004	\$3,948	mud surveys, inspections
Blue Moon	\$1,600	2003 & 2004	\$1,600	dive boat
Tulane School PH (est)	\$2,000	2003	\$2,000	consult Mercury sampling
TOTAL	\$77,755		\$77,755	
			TOTAL Non-Fed donations	\$151,105

Cash Expenses

Limestone SI	\$59,000	2001	Purchase
Reefballs H1,H2, H4	\$59,975	2003	Purchase & Deployment CRB Inc
Reefballs N1	\$13,100	2003	Purchase & Deployment CRB Inc
monitoring	\$40,000	2004-2007	UNO contracts start 2004
Analysis	\$1,275	2002	Hg Univ of La Monroe
Analyses (estimated)	\$500	2002	Hg Univ of La Monroe
Misc (estimated)	\$2,500	2000 - 2004	fuel, supplies, printing
TOTAL	\$176,350		
Balance	\$100		
TOTAL COST (Cash Expenses & Donated Services)	\$254,105		

Approved Permit: Jefferson Parish and North shore sites



DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

Operations Division
Eastern Evaluation Section

NOV 3 2000

BASEFILE: EF-20-010-0596

Department of Wildlife and Fisheries
Artificial Reef Program
Post Office Box 98000
Baton Rouge, Louisiana 70808

Gentlemen:

The proposed work, shown on the attached drawings, is authorized under **Category I** of the **Programmatic General Permit** provided that all conditions of the permit are met.

This authorization has a blanket water quality certification from the Louisiana Department of Environmental Quality (DEQ), Office of Water Resources. As such, no additional authorization from DEQ is required.

However, prior to commencing work on your project, you must obtain approvals from state and local agencies as required by law and by terms of this permit. These approvals include, but are not limited to, a permit or waiver from the Coastal Management Division of the Louisiana Department of Natural Resources.

If the work is initiated within two (2) years of the date of this letter, the authorization remains valid for a total of five (5) years from the date of this letter. If the work is not initiated within two (2) years, this authorization becomes null and void.

Should you have any further questions concerning this matter, please contact Ms. Theresita Crockett-Hardy of this office at (504) 862-2075.

Sincerely,

A handwritten signature in black ink, appearing to read "Ronnie W. Ventola", is written over a horizontal line.

for Ronald J. Ventola
Chief, Regulatory Branch

Attachments

PGP SPECIAL CONDITIONS

1. Activities authorized under this general permit shall not be used for piecemeal work and shall be applied to single and complete projects. All components of a single and complete project shall be treated together as constituting one single and complete project. All planned phases of multi-phased projects shall be treated together as constituting one single and complete project. This general permit shall not be used for any activity that is part of an overall project for which an individual permit is required.
2. No activity is authorized under this general permit which may adversely affect cultural resources listed or eligible for listing in the National Register of Historic Places until the requirements for Section 106 of the National Historic Preservation Act are met. Upon discovery of the presence of a previously unknown historic or archaeological site, all work must cease and the permittee must notify the State Historic Preservation Office and the Corps of Engineers. The authorization is suspended until it is determined whether or not the activity will have an adverse effect on the cultural resource. The authorization may be reactivated or modified through specific conditions if necessary, if it is determined that the activity will have no adverse effect on the cultural resource. The NOD-PGP authorization will be revoked if it is determined that the cultural resource would be adversely affected, and an individual permit may be necessary.
3. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein. The permittee will, at his or her expense, install and maintain any safety lights, signals, and signs prescribed by the United States Coast Guard, through regulations or otherwise, on authorized facilities or on equipment used in performing work under the authorization.
4. No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to block or impound water.
5. If the proposed activity involves the installation of aerial transmission lines, submerged cable, or submerged pipelines across navigable waters of the United States the following is applicable:

The National Ocean Service (NOS) has been notified of this authorization. You must notify NOS and this office in writing, at least two weeks before you begin work and upon completion of the activity authorized by this permit. Your notification of completion must include a drawing which certifies the location and configuration of the completed activity (a certified permit drawing may be used). Notification to NOS will be sent to the following address: National Ocean Service, Office of Coast Survey, N/CS261, 1315 East West Highway, Silver Springs, Maryland 20910-3282.

6. For pipelines under an anchorage or a designated fairway in the Gulf of Mexico the following is applicable:

The National Ocean Service has been notified of this authorization. You must notify NOS and this office in writing, at least two weeks before you begin work and upon completion of the activity authorized by this permit. Within 30 days of completion of the pipeline, 'as built' drawings certified by a professional engineer registered in Louisiana or by a registered surveyor shall be furnished to this office, the Commander (m), Eighth Coast Guard District, ATTN: Vessel Traffic Management Branch, 501 Magazine Street, New Orleans, Louisiana 70130-3396, and to the Director, National Ocean Service, Office of Coast Survey, N/CS261, 1315 East West Highway, Silver Springs, Maryland 20910-3282. The plans must include the location, configuration and actual burial depth of the completed pipeline project.

7. If the proposed project, or future maintenance work, involves the use of floating construction equipment (barge mounted cranes, barge mounted pile driving equipment, floating dredge equipment, dredge discharge pipelines, etc.,) in a federally maintained waterway, you are advised to notify the Eighth Coast Guard District so that a Notice to Mariners, if required, may be prepared. Notification with a copy of your permit approval and drawings should be mailed to the Commander (m), Eighth Coast Guard District, ATTN: Vessel Traffic Management Branch, 501 Magazine Street, New Orleans, Louisiana 70130-3396, about 1 month before you plan to start work. Telephone inquiries can be directed to (504) 589-4686.

8. All activities authorized herein shall, if they involve, during their construction or operation, any discharge of pollutants into waters of the United States, be at all times consistent with applicable water quality standards, effluent limitations and standards of performance, prohibitions, pretreatment standards and management practices established pursuant to the Clean Water Act (PL 92-500: 86 Stat 816), or pursuant to applicable state and local laws.

9. Substantive changes to the Louisiana Coastal Resources Program may require immediate suspension and revocation of this permit in accordance with 33 CFR 325.7.

10. Irrespective of whether a project meets the other conditions of this permit, the Corps of Engineers retains discretionary authority to require an individual Department of the Army permit when circumstances of the proposal warrant this requirement.

11. Any individual authorization granted under this permit may be either modified, suspended, or revoked in whole or in part if the Secretary of the Army or his authorized representative determines that there has been a violation of any of the terms or conditions of this permit or that such action would otherwise be in the public interest.

12. The Corps of Engineers may suspend, modify, or revoke this general permit if it is found in the public interest to do so.

13. Activities proposed for authorization under the PGP must comply with all other necessary federal, state, and/or local permits, licenses, or approvals. Failure to do so would result in a violation of the terms and conditions of NOD-PGP.

14. The permittee shall permit the District Engineers or his authorized representative(s) or designee(s) to make periodic inspections of the project site(s) and disposal site(s) if different from the project site(s) at any time deemed necessary in order to assure that the activity being performed under authority of this permit is in accordance with the terms and conditions prescribed herein.

15. This general permit does not convey any property rights, either in real estate or material, or any exclusive privileges; and it does not authorize any injury to property or invasion of rights or any infringement of federal, state, or local laws or regulations nor does it obviate the requirements to obtain state or local assent required by law for the activity authorized herein.

16. In issuing authorizations under this permit, the federal government will rely upon information and data supplied by the applicant. If, subsequent to the issuance of an authorization, such information and data prove to be false, incomplete, or inaccurate, the authorization may be modified, suspended, or revoked, in whole or in part.

17. For activities resulting in sewage generation at the project site, such sewage shall be processed through a municipal sewage treatment system or, in areas where tie-in to a municipal system is not practical, the on-site sewerage system must be approved by the local parish sanitarian before construction.

18. Any modification, suspension, or revocation of this permit or any individual authorization granted under this permit will not be the basis for any claim for damages against the United States.

19. Additional conditions deemed necessary to protect the public interest may be added to the general permit by the District Engineer at any time. If additional conditions are added, the public will be advised by public notice. Individual authorizations under this PGP may include special conditions deemed necessary to ensure minimal impact and compliance with this PGP.

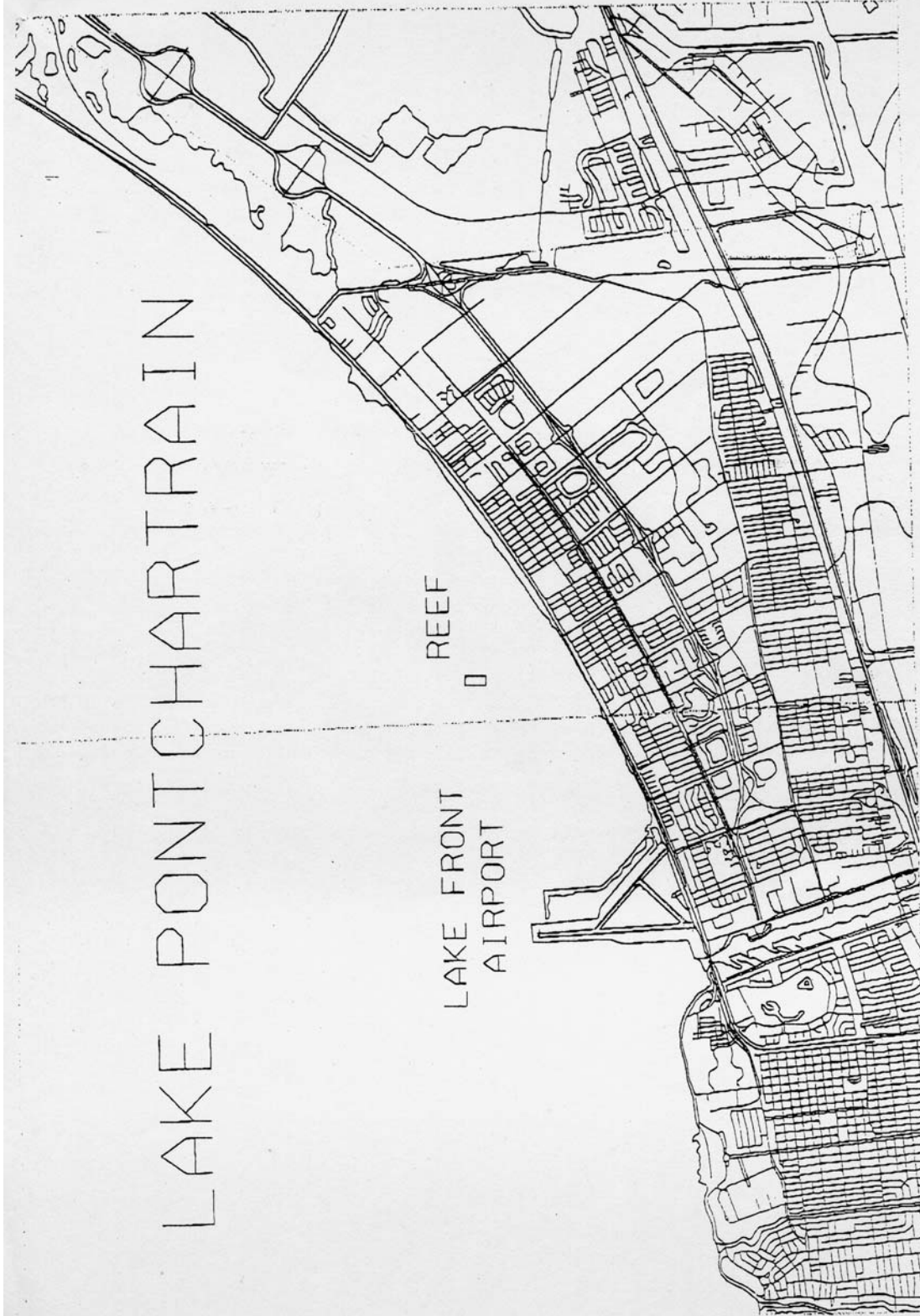
20. A review of cumulative losses under the general permit will be accomplished yearly in or around the month of October. A report of losses will be furnished to the Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Louisiana Department of Wildlife and Fisheries. Comments from reviewing agencies will be considered in determination as to whether modifications to the general permit are needed. Should the District Engineer make a determination not to incorporate a change proposed by a reviewing agency, after normal negotiations between the respective agencies, the District Engineer will explain in writing to the reviewing agency the basis and rationale for his decision.

21. The New Orleans District will periodically review NOD-PGP and its terms, conditions, and processing procedures and will decide to either modify, reissue, or revoke the permit. If the PGP is not modified or reissued within 5 years of its effective date, it automatically expires and becomes null and void. Activities which have commenced or are under contract to commence in reliance upon prior authorization of NOD-PGP will remain authorized provided the activity is completed within 12 months of the date of NOD-PGP expiration, modification, or revocation, unless the Corps of Engineers has determined that the specific activity does not qualify for authorization under NOD-PGP and exercises Corps authority to modify, suspend, or revoke the authorization in accordance with DOA regulations at 33 CFR 325.7.

22. All work authorized by this general permit must be performed in accordance with the applicable standard conditions of ENG Form 1721, Department of the Army Permit. A copy of this form is attached (Attachment I) and is made a part of this permit. All references to "Permittee" in ENG Form 1721 shall, for purposes of this permit, be understood to refer to the person, family, agency, or group to which the individual authorization under the PGP is issued.

23. Activities which qualify as non reporting nationwide permits and which commenced or were under contract to commence prior to June 1, 1998, are valid for a period of two years from the commencement/contract date. Those activities which have received authorization under the nationwide and regional general permit programs expire as indicated on the permit authorization. Requests received on or after June 1, 1998, will be evaluated for compliance under NOD-PGP.

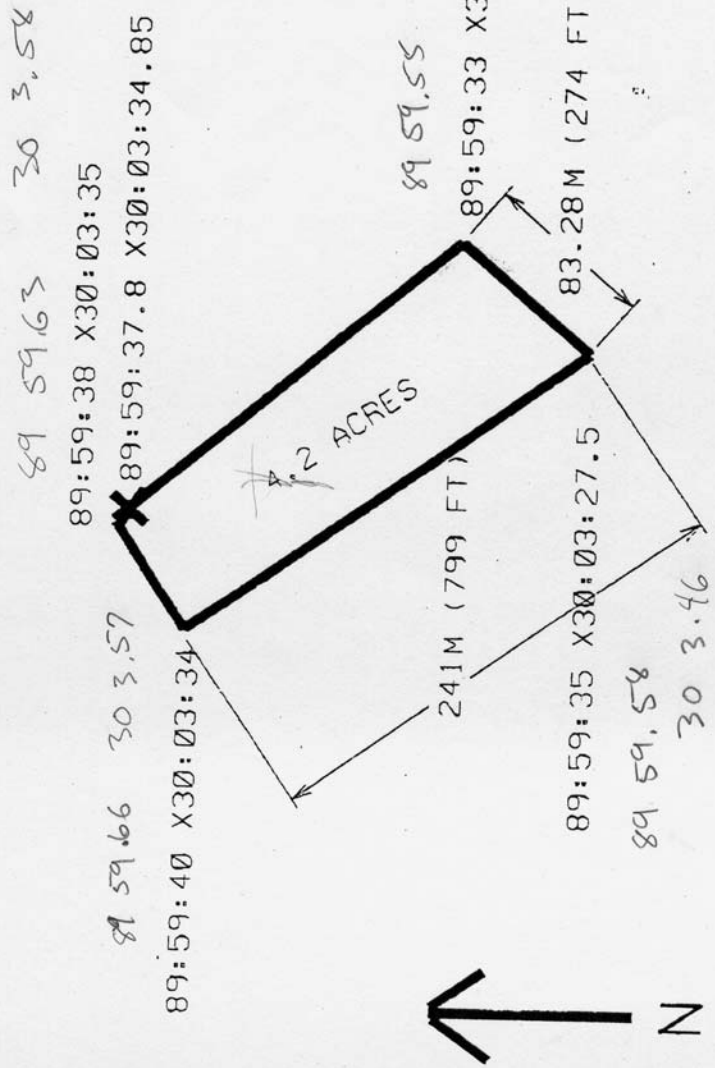
24. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

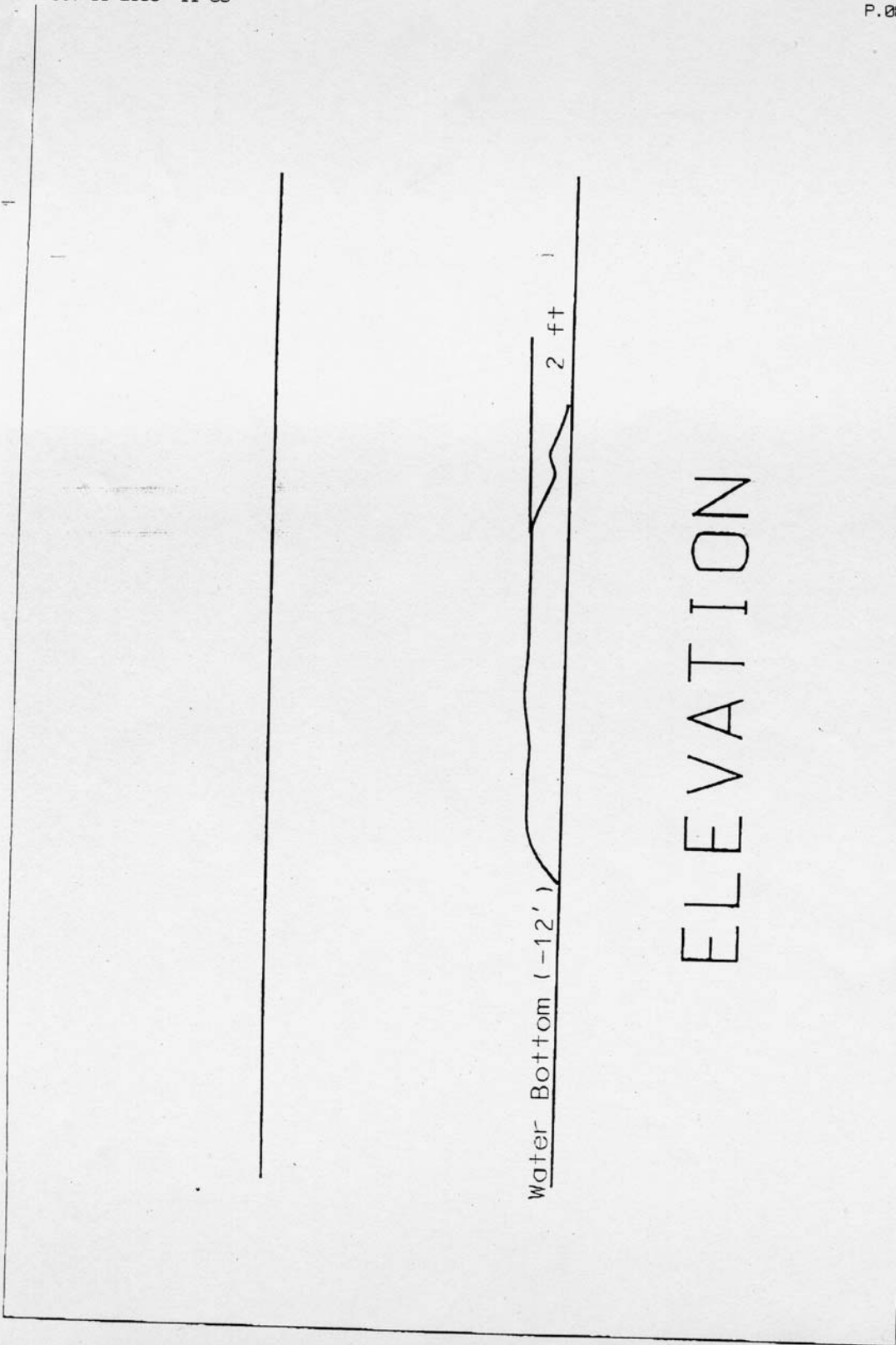


LAKE PONTCHARTRAIN

REEF

LAKE FRONT
AIRPORT





State of Louisiana



M.J. "MIKE" FOSTER, JR.
GOVERNOR

JACK C. CALDWELL
SECRETARY

DEPARTMENT OF NATURAL RESOURCES

October 13, 2000

Rick Kasprzak
Artificial Reef Coordinator
Louisiana Department of Wildlife and Fisheries
P. O. Box 98000
Baton Rouge, Louisiana 70898-9000

RE: **C000505**, Coastal Zone Consistency
Louisiana Department of Wildlife and Fisheries
New Orleans District, Corps of Engineers
Direct Federal Action
Amend and extend General Permit NOD-118 for 5 years to Jan.
1, 2006, and refurbishment of a reef in Lake Pontchartrain,
Orleans Parish, Louisiana

Dear Mr. Kasprzak:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP. If you have any questions concerning this determination please contact Brian Marcks of the Consistency Section at (504)342-7939 or 1-800-267-4019.

Sincerely,

A handwritten signature in cursive script that reads "Terry W. Howey".

Terry W. Howey,
Administrator

TWH/bgm

cc: Ron Ventola, NOD-COE
Harvey Stern, Orleans Parish
Tim Killeen, CMD, FC

COASTAL MANAGEMENT DIVISION P.O. BOX 44487 BATON ROUGE, LOUISIANA 70804-4487
TELEPHONE (225) 342-7591 FAX (225) 342-9439
AN EQUAL OPPORTUNITY EMPLOYER



DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

May 9, 2002

Herman/0001

FILE

REPLY TO
ATTENTION OF:

Operations Division
Eastern Evaluation Section

BASEFILE: EA-20-020-2363

Louisiana Department of Wildlife and Fisheries
ATTN: Artificial Reef Program
Post Office Box 98000
Baton Rouge, Louisiana 70808

Gentlemen:

The proposed work, shown on the attached drawings, is authorized under **Category I** of the **Programmatic General Permit** provided that all conditions of the permit are met.

This authorization has a blanket water quality certification from the Louisiana Department of Environmental Quality (DEQ), Office of Water Resources. As such, no additional authorization from DEQ is required.

However, prior to commencing work on your project, you must obtain approvals from state and local agencies as required by law and by terms of this permit. These approvals include, but are not limited to, a permit or waiver from the Coastal Management Division of the Louisiana Department of Natural Resources.

If the work is initiated within two (2) years of the date of this letter, the authorization remains valid for a total of five (5) years from the date of this letter. If the work is not initiated within two (2) years, this authorization becomes null and void.

Should you have any further questions concerning this matter, please contact Darlene Herman of this office at (504) 862-2287.

Sincerely,

Ronald J. Ventola
Chief, Regulatory Branch

—
Attachments

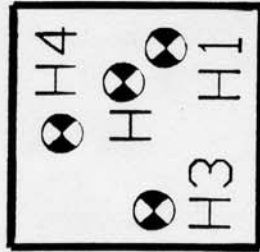
FILE

RJD
DUKE
CEMVN-OD-SE
RJD for VENTOLA
CEMVN-OD-



PERMITTED AREA

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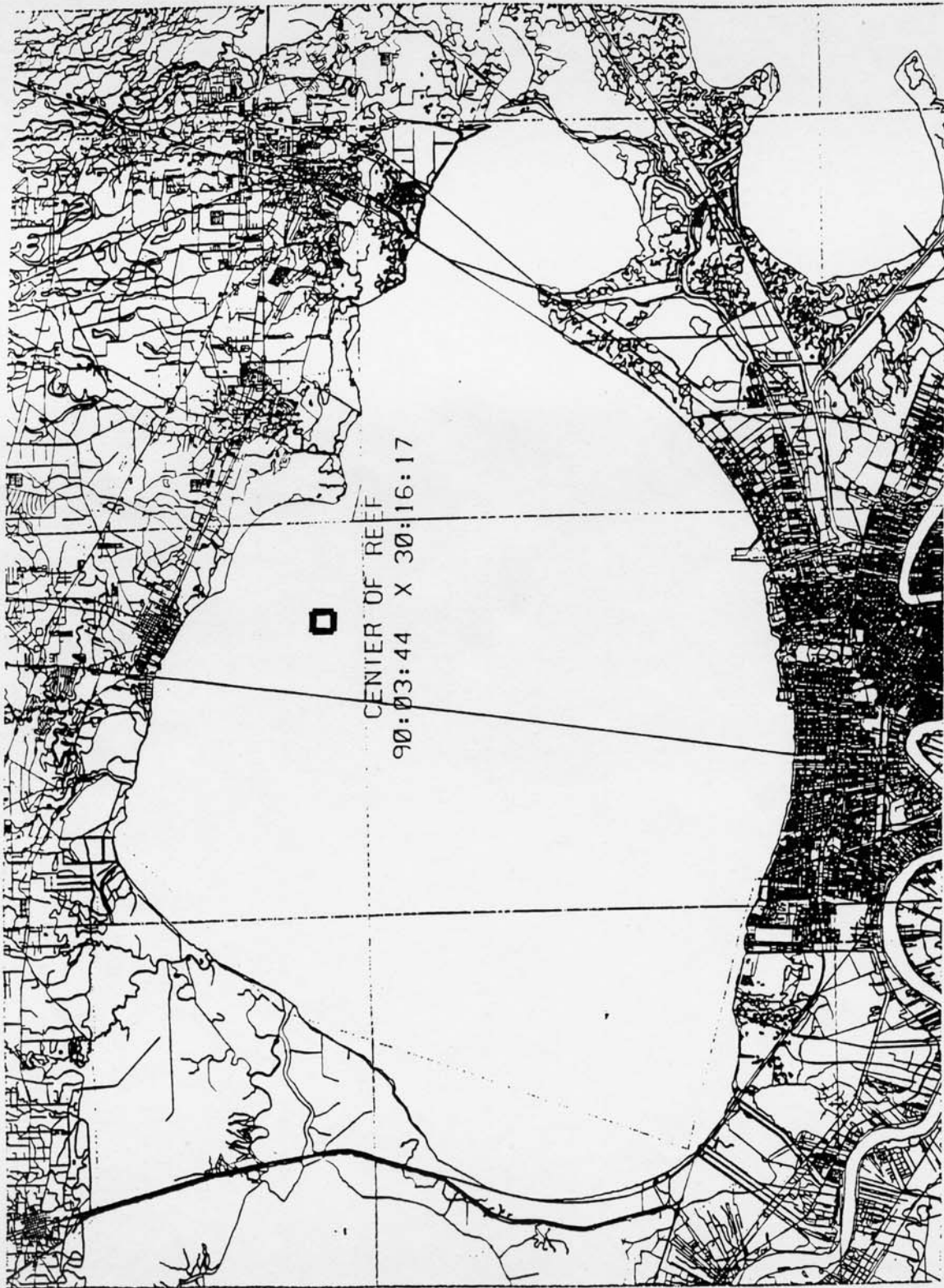
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90:11:56 X 30:04:44

90:12:42 X 30:04:44

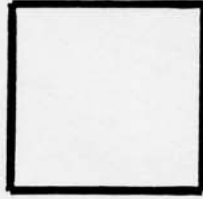
⊗ SHELL PADS (12/16/Ø1)

FIG. 3



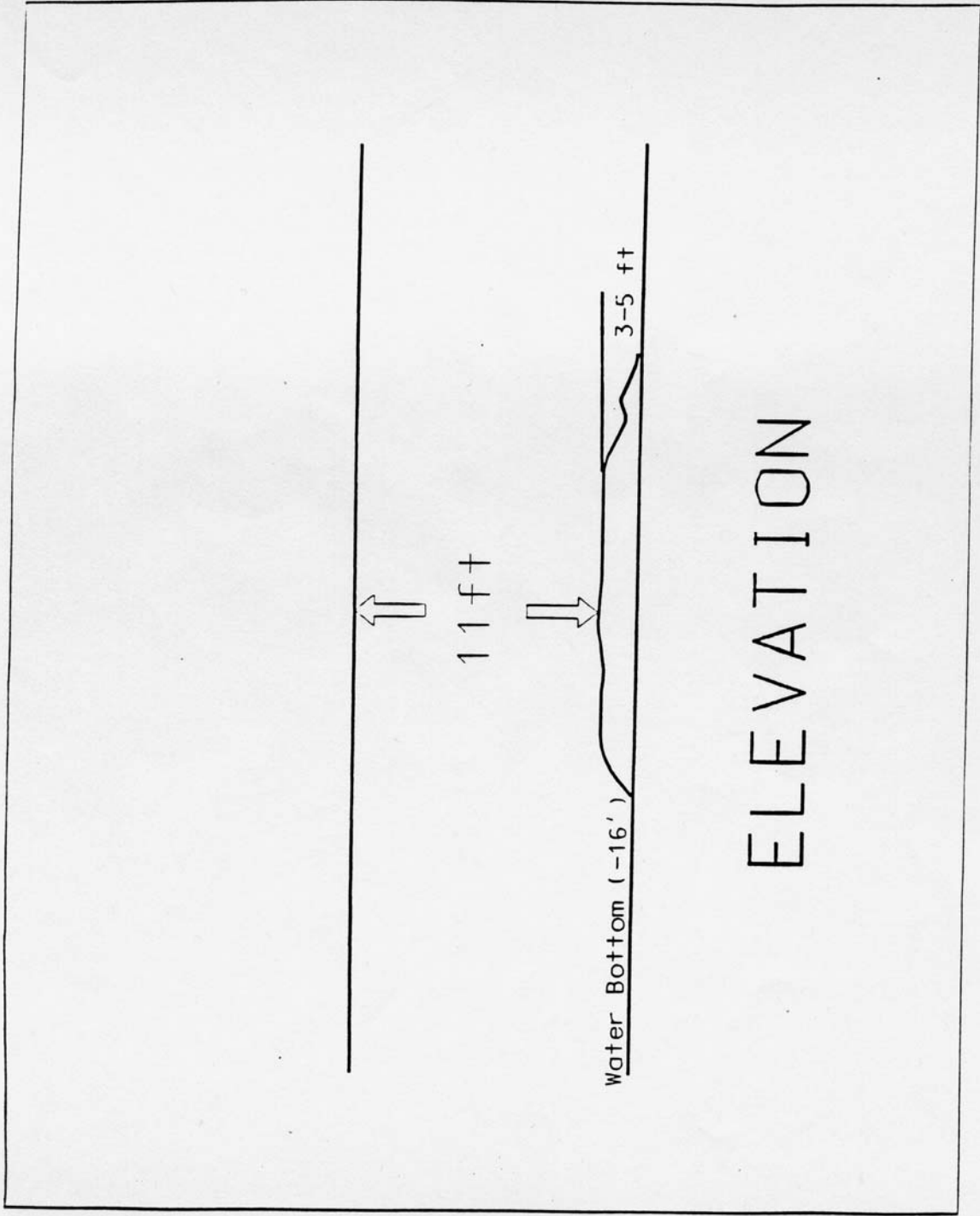
90 3.35
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90 4.13
90:04:08
30:16:38
30 16.63

90 4.13
90:04:08
30:15:58
30 15.96



May 18, 2001

Rick Kasprzak,
Artificial Reef Coordinator
Department of Wildlife & Fisheries
P. O. Box 98000
Baton Rouge, LA 70898-9000

RE: **C20010158**, Coastal Zone Consistency
Department of Wildlife & Fisheries
Corps of Engineers
Federal License or Permit
Five year authorization to develop low-profile artificial
reefs in the Louisiana Coastal Zone, Coastal Louisiana

Dear Mr. Kasprzak:

The above referenced project has been received by this office and has been found to be consistent with the Louisiana Coastal Resource Program as required by Section 307(c)(3)(A) of the Coastal Zone Management Act of 1972, as amended. If you have any questions concerning this determination please contact Brian Marcks of the Consistency Section at (225)342-7939.

Sincerely,

Terry W. Howey,
Administrator

TWH/JDH/bgm

cc: Fred Dunham, LDWF
Ron Ventola, Corps of Engineers
Tim Killeen, CMD/FC
Charles Mestayer, CMD/FC.

**Confirmed Shell Pads and Artificial Reef Sites in Lake Pontchartrain
North Shore**

~5 miles South of Mandeville

30 16.290'

90 3.744'

~½ mile off Goose Point with piling

30 14.087'

89 59.437'

~6 miles south of Goose Point

30 10.070'

90 0.177'

east of Interstate 10, ~¼ mile from north shore

30 12.078

89 47.472

South Shore

Adjacent to Causeway (west side), 4 miles from the south shore (old L site)

30 5.11

90 8.933

west of production platform four miles from south shore (old C site)

30 5.360

90 11.286

Reference shell pad site (site H with ghost platform)

30 5.110

90 12.198

South Shore sites confirmed by Al Werner (see appendix)

West of Causeway 2 miles from south shore

30 5.620

90 10.049

Near St. Charles Jefferson Psh line, 2 miles from southshore

30 4.166

90 19.333

South Shore Artificial reef site east of Causeway

L1 Artificial reef site near Lakefront Airport

30 3.521

90 59.608

South Shore Artificial Reef sites constructed in 2003 - west of Causeway

H1 site, ~4 miles from south shore

30 5.028

90 12.096

H3 site, ~4 miles from south shore

30 5.034

90 12.582

H4, ~4 miles from south shore

30 5.274

90 12.336

Descriptions of other nearby shell pads (Jefferson Parish)

Site C is located about 2 miles from the Causeway and no platform or other oil field facility. It is about 1000 west of the tank battery platform that can easily be seen from the Causeway. Several mounds were found with an area of slightly raised relief approximately 1/2 acre in size. Diving on the site we found solid *Rangia cuneata* shells with a lot of live mussels around the perimeter. Shell beds had a thin mud veneer. Mark observed two sheepshead. A few small live oysters were also found. Measured GPS coordinates over mounds 30° 5.360' 90° 11.286'. (DWF SP#29 30° 5.350' 90° 11.266'). Water depth around the site was 16'. Over the shell pad depths varied from 12 – 15 feet. Top of pad is uneven and was probably re-worked as shell material was removed. Outside of shell pad the lake bottom was very soft. Pad is estimated to be 75 X 100 feet.

Site L is located about 1000 feet from the Causeway and there is we found no platform or any other oil facility. We found a solid continuous flat-topped shell pad wide flanks. Diving on the site we found solid *Rangia cuneata* shell with a 1/2 inch mud cover. Observed mud clouds may have indicated fish. More oyster were present than either sites H or C. Bottom outside of shell pad is very soft. Measured GPS coordinates were 30° 5.132' 90° 8.942'. Generally this pad has lower relief flanks than H. It seems to be spread over a larger area, but the edge is more difficult to identify by its more transitional edge. The pad is estimated to be roughly 150' by 100'. Water depth outside of pad was 16- 17 feet. Water depth on top of pad 14 feet.

Contributors

BP

EPA - Lake Pontchartrain
Basin Foundation
National Fish & Wildlife Foundation
FishAmerica/NOAA
Restoration Center
Jefferson Parish
Dr. Robert Weilbaecher
East Ascension Sportsman's
League

DONATED SERVICES

Lake Pontchartrain Basin
Foundation
Chet Morrison Contractor's Inc.
T. Baker Smith & Son, Inc.
LA Dept. of Wildlife & Fisheries
North Shore Hammerheads
NOAA
Seal Sports - Mandeville
Tulane School of Public Health
Special thanks also to volunteer Nathan
Arthur who manufactured customized survey
reef markers, Sammy Bruiglio for producing
sidescan sonar images, and Rob Kohl & Les
Dauterive who organized volunteer divers.
Special thanks also to Dr.'s Mike Poirrier
and Marty O'Connell of the University of
New Orleans.

Lake Pontchartrain Artificial Reef Working Group Members (LPARWG)

Lake Pontchartrain Basin
Foundation
LSU AgCenter/ Extension
Louisiana Sea Grant
Jefferson Parish Marine Fisheries
Advisory Board
Jefferson Parish Economic
Development Commission (JEDCO)
La. Dept. of Wildlife & Fisheries
Lake Pontchartrain Commercial
Fishermen's Association
University of New Orleans-
Dept. of Biological Science
NOAA
North Shore Hammerhead Divers
Louisiana Wildlife Federation
East Ascension Sportsman's
League
Jefferson Rod and Gun
Clio Sportsman's League
Jefferson Parish Port Director
Jefferson Parish Environmental

Contacts

LPARWG Co-Chairs*:
*Woody Crews (504) 888-7790
*John Lopez (504) 421-7348
Carlton Dufrechou LPBF (504) 836-2215
Rick Kasprzak La. Dept. of Wildlife &
Fisheries (225) 765-2375
Mark Schexnayder LSU AgCenter/Sea
Grant Program (504) 838-1170

Lake Pontchartrain Artificial Reef Program

February 2004



Through a cooperative effort of environmental organizations, fishing associations, and government agencies, Lake Pontchartrain now has five artificial reefs. The Lake Pontchartrain Artificial Reef Working Group (LPARWG), was organized in June 2000, and built its first reef near Lakefront Airport in August 2001. Four additional artificial reef sites were developed from August of 2003 to January 2004.

All sites are within a 20 minute boat ride of public boat launches. One site was created with limestone rubble in Orleans Parish. Four sites utilizing Reefballs™ are located in Jefferson and St. Tammany Parishes.

All five sites have been donated by the Lake Pontchartrain Basin Foundation to the LA Department of Wildlife and Fisheries. Reef sites are about an acre in size and have been marked with yellow, crash-proof buoys. Coordinates are given inside or can be found on-line at

SAVEOURLAKE.ORG.

Site Descriptions

The Jefferson Parish (H1, H3 & H4) reefs are 6.5 miles from the public boat launch from Bonnabel Blvd. and 3.5 miles from the public launch at Williams Blvd. (see map) They are approximately 3.5 miles offshore and about 4.0 miles west of the Causeway Bridge. Three reef sites are all located within 1000 feet of each other to offer multiple fishing opportunities. Each site is roughly a 1 acre shell mound (water depth 7-10 feet) with reef balls around the perimeter in 13-15 feet of water.

The St. Tammany Parish (N1) site is 5.5 miles south of Mandeville. This site has a small shell mound (30 foot diameter) where the water depth is 7-10 feet with Reefballs placed entirely around the perimeter in 13- 15 feet of water.

The Orleans Parish (L1) site is 3.0 miles northeast of the public launch at Seabrook Bridge (boat ride is 4.5 miles). The site is composed of limestone rubble mounds 1-2 feet above the lake bottom in 15-16 feet of water.

Reef Center Coordinates (NAD 83)

Jefferson Parish
"H1" 30° 5.028 90° 12.096
"H3" 30° 5.034 90° 12.582
"H4" 30° 5.274 90° 12.336
St. Tammany Parish
"N1" 30° 16.296 90° 3.753
Orleans Parish
"L1" 30° 3.521 89° 59.608

Reef Construction and Monitoring

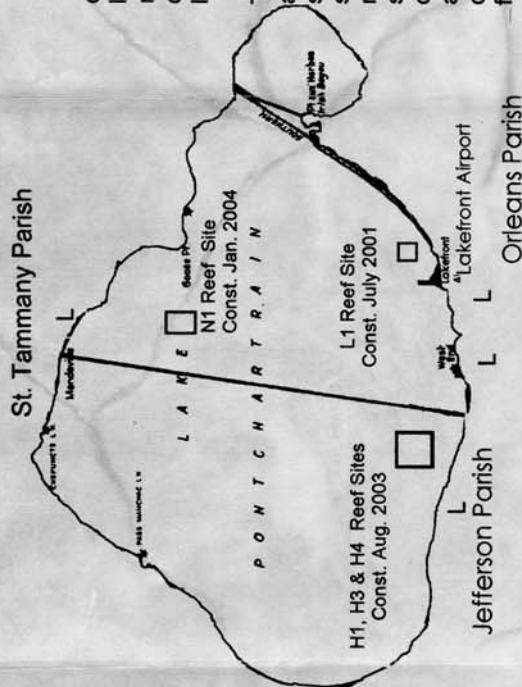
Two styles of reefs have been developed. At Lakefront Airport, limestone rubble was placed in small mounds creating a hummocky relief over 1 acre. Maximum relief over the lake bottom is 1-2 feet.

The sites in Jefferson and St. Tammany Parishes utilized former oil and gas shell pad sites. These 1 acre shell mounds are generally 1 acre in size. The St. Tammany site was roughly 30 feet in diameter. For all the shell pads sites, reefballs were placed on the perimeter of the pads on a shell apron. Reefballs™ are a patented concrete mold specifically designed as fish habitat. They have been successfully used in locations around the world.

The hard surface and physical relief at all the sites should change currents and create cover to attract fish and promote feeding. The reefs are expected seasonally to attract recreational fish such as speckled trout, sheepshead, redfish and white trout.

All reefs are within state waters where public fishing is allowed with a fishing license. The reefs have been donated to the state to be managed by the LA Dept. of Wildlife and Fisheries.

Monitoring of the sites will be conducted by the University of New Orleans. Monitoring will include physical integrity, fishing utilization, and habitat change. The reefballs have identifying plates with a unique serial number for tracking purposes.



IMPORTANT WARNINGS

Trawling over the reef sites is hazardous. It is recommended that trawlers avoid the entire permitted areas by not approaching within ¼ mile of the reef center coordinates.

All sites have reduced draft with a minimum clearance of 7-10 feet. Heavy seas may develop quickly. Small craft should exercise caution.

It is recommended that captains drop anchor upwind off the reef site and allow their boat to drift in close enough for casting over the structure.

Most sites are charted on NOAA charts as either Fish Havens or oil & gas sites. A request has been submitted to have all sites identified as Fish Havens.