

CHAPTER IV

SOURCE CATEGORIES OF COASTAL NONPOINT POLLUTION

for the

LOUISIANA COASTAL NONPOINT POLLUTION CONTROL PROGRAM

**Coastal Management Division
Louisiana Department of Natural Resources**

prepared in cooperation and coordination with

**Office of Water Resources
Louisiana Department of Environmental Quality**

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MANAGEMENT MEASURES FOR AGRICULTURE

Coastal Management Division

Louisiana Department

of

Natural Resources

*Louisiana's Coastal Nonpoint Pollution Control Program***AGRICULTURE****I. INTRODUCTION**

Heavy rainfall in Louisiana rinses a variety of pollutants off the land, sending them into our coastal waters. These pollutants accumulate, threatening organisms ranging from shrimp and oysters, to redfish, brown pelicans and bald eagles. In order to reduce the delivery of polluted runoff water from the land to coastal waters, Louisiana's Coastal Nonpoint Pollution Control Program, coordinated between many agencies and advisors, will ultimately 1) identify Best Management Practices (BMPs) appropriate for all applicable pollutant source categories, and 2) carry out a initiatives of public education, technical assistance, and development of enforcement protocols in order to get BMPs implemented on the land.

Louisiana's Coastal Nonpoint Pollution Control Program will address the **AGRICULTURE SOURCE CATEGORY**, through all SEVEN management measure subcategories recommended by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). Louisiana is not proposing to exclude any management measures recommended by NOAA and EPA for this particular source category. The management measure subcategories that will be addressed in Louisiana's program are as follows:

1. (II.A) Erosion and Sediment Control
2. (II.B.1.) Confined Animal Facility, Small
3. (II.B.2.) Confined Animal Facility, Large
4. (II.C) Nutrient Management
5. (II.D.) Pesticide Management
6. (II.E.) Grazing Management
7. (II.F.) Irrigation Management

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APPLICABILITY of each of the seven management measures must be considered carefully and thoughtfully, with the understanding that some of the measures are only applicable to South Louisiana in a very limited sense. The management measure for **Erosion and Sediment Control** is broadly applicable to Louisiana agriculture, although all BMPs associated with that measure will not apply to all farms. The management measure for **Confined Animal Facility, Small**, is of very limited applicability because of the limited number and limited geographical distribution of any such facilities. The same restriction applies to the management measure for **Confined Animal Facility, Large**. The measure for **Nutrient Management** is broadly applicable to Louisiana agriculture, although all BMPs associated with that measure will not apply to all farms. The management measure for **Pesticide Management** is broadly applicable to Louisiana agriculture, although all BMPs associated with that measure will not apply to all farms. The measure **Grazing Management** must be applied very cautiously, as some of the associated BMPs are only applicable to managed pasture, and are not appropriate for open range or marsh fringe areas. The measure for **Irrigation Management** can only be applied in a limited sense, as a portion of South Louisiana's land is used for the production of leveed and flooded rice, but little other crop land could be considered "irrigated" as the term is understood in other areas of the country.

ADMINISTRATIVE COORDINATION for agriculture is expected to be coordinated between the Louisiana Department of Natural Resources, and the Louisiana Department of Agriculture and Forestry, along with the Louisiana Department of Environmental Quality, and other entities (see section IIIC).

TECHNICAL ASSISTANCE for agriculture will continue to be provided by a team of agencies featuring the Louisiana Cooperative Extension Service, and the Natural Resource Conservation Service, but also including the Louisiana Department of Agriculture and Forestry, the Louisiana Department of Environmental Quality, the Consolidated Farm Services Agency, and others (see section IIIA).

MONITORING for compliance with BMP implementation is expected to be led by the Louisiana Department of Agriculture and Forestry. **MONITORING** of water quality will be led by the Louisiana Department of Environmental Quality, supplemented by the pesticide monitoring network of the Louisiana Department of Agriculture and Forestry, water sampling programs of the United States Geological Survey, and the Louisiana Department of Health and Hospitals (IID).

Best Management Practices (BMPs) for Agriculture for the LA Coastal Nonpoint Pollution Control Program

In Louisiana, **agriculture** is one of several land use categories generating nonpoint source pollution, *some* of which can be expected to reach coastal waters. In recognition of this, a cross-section of Louisiana's agricultural community has invested considerable time and effort in coordinating with governmental agencies to begin to identify effective and appropriate Best Management Practices (BMPs) for Louisiana, and to implement voluntary programs to reduce nonpoint source pollution. This is an ongoing process. Much work has been done thus far under the leadership of the Louisiana State University Agricultural Center toward identifying BMPs by commodity or livestock enterprise. The Best Management Practices Review and Development Program is a multi-agency program created in 1991 to evaluate the use of BMPs as a vehicle for environmental improvement on agricultural and forest lands. The program was conceptualized to be statewide, watershed based, and using site specific approaches for BMP applications. The BMP Review and Development Program was intended to help achieve voluntary producer implementation of economically achievable, effective BMPs, statewide. To date, BMPs associated with production of cotton, dairy, rice, sugarcane, feed grains, poultry production, and soybeans have been evaluated with written reports produced. BMPs pertaining to forestry production have also been evaluated and compiled by the Louisiana Forestry Association (LFA) in association with the Louisiana Office of Forestry (LOF) and the Louisiana Cooperative Extension Service (LCES). However, some words of caution are in order here.

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1. While the BMP review committees have addressed the *major* crop commodities and agricultural enterprises present in South Louisiana, there are reviews of others yet to be completed. Work has continued during the second half of calendar year 1994 and the first half of 1995 on the "second phase" commodities and enterprises such as sweet potatoes, ornamental nurseries, swine production, commercial vegetables, aquaculture, and agricultural and seafood processing. Of these, only the last three are particularly relevant to coastal Louisiana.

2. While the review committees made qualitative judgements evaluating BMPs on pre-existing lists, many other BMPs not examined by this group are in use now, or are emerging as recent innovations, and the evaluators did not want to exclude additional worthy BMPs from consideration. Louisiana's agriculture community members do not want to draw up a list of "endorsed BMPs" that would leave out many other good practices that may be highly effective and imminently practical in many situations.

3. While the statewide review committees utilized BMP lists that included the 6217(g) coastal guidelines, questions have been raised as to what extent these committee members realized that the BMPs they highlighted or ranked for general purposes, could potentially be institutionalized and enforced as state law for specific programs such as the CNPCP. Louisiana wants to foster communication between all involved parties, to increase the understanding of what is needed for the CNPCP program, and to reduce the chances that someone might feel his/her work was misapplied or misrepresented in any way.

4. The review committees were organized by commodity, but the 6217(g) guidance is organized by "management measure" or by problem issue subcategory. It is anticipated that the committees will regroup accordingly and reconvene in the coming months.

Characterizing Agriculture in South Louisiana

To better understand the place of agriculture in the protection of Louisiana's coastal waters, it is essential to grasp an important distinction. Firstly, in the state of Louisiana as a whole, agriculture is of critical importance to our economy and way of life. Agriculture contributed \$8 billion to Louisiana's economy in 1994, with \$3 billion in raw crop and livestock commodities, and another \$5 billion in value added from processing. While cotton plays a pivotal role in providing jobs and supporting the tax base in North Louisiana's East Carroll Parish, sugar cane plays a comparable role in sustaining a viable economy in South Louisiana's Assumption Parish. *A healthy appreciation for the agricultural community influences governmental decision-making across the entire state of Louisiana.*

However, in much of South Louisiana near our coastal waters, there is relatively little land capable of supporting crop cultivation or other intensive forms of agriculture. South Louisiana contains 40% of the coastal marshes of the contiguous United States. Projecting into low-lying wetlands are fingers of higher land, often remnants of natural levees left behind by shifts in the Mississippi River delta locations over thousands of years. High ground is the exception in South Louisiana. Local geography is dominated by flood plain, swamp and marsh. What that means is that well-drained land is not plentiful, and is valued at a premium. Any particular use of this land must pay its own way with substantial returns to investment, or otherwise be bought out by some competing land use. The fact that any agriculture at all remains in the eastern half of South Louisiana attests to the economic clout of the agricultural enterprises there. The major agricultural commodities produced in South Louisiana are **sugar cane, rice, dairy farming, and beef cattle**. Dairying, may be of greater impact than beef production, but dairying is geographically localized to the "Florida Parishes" north of Lake Pontchartrain.

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Sugar cane is one of the highest value agricultural commodities in all of Louisiana. In 1993, the *state of Louisiana* harvested 360,000 acres of sugar cane, which increased to 383,000 in 1994. Although sugar cane is limited by climate to South Louisiana, sugar cane requires well-drained soils, and the majority of its farms are located outside of Louisiana's coastal zone (see map). Sugar is produced on relatively large tracts, with producers in the leading parish, Iberia, averaging 417 acres in cane per farm in 1993. Reports by the Louisiana Dept. of Agriculture and Forestry indicate that many Best Management Practices tend to be used on cane fields, but questions have been raised as to the applicability of putting tracts of this size into cover crops to span fallow periods. The Louisiana Dept. of Environmental Quality and the Barataria-Terrebonne National Estuary Program have set up both research and demonstration projects to promote sugar cane BMP implementation. Some preliminary findings of these projects seem to suggest that banded applications of pesticides can achieve reduced levels of pesticide usage, while maintaining adequate levels of control. A new cane variety was recently released by the experiment station with improved resistance to both insects and disease, and offering the hope of needing significantly less pesticide. Local representatives of the American Sugar Cane League have been among the most active citizens in providing input into the development of the Louisiana's CNPCP thus far.

Rice is the other major crop in South Louisiana. It was the fourth largest crop commodity in all of Louisiana in 1993 by value. The total *statewide* harvested acreage, 530,000, was divided between seven parishes of Southwest Louisiana (327,000 acres in that subregion; Vermilion largest parish with 90,700 acres); and over 20 parishes farther to the northeast, extending to the Arkansas state line. In 1994 LDEQ surveyed rice producers in the Bayou Queue de Tortue area regarding BMPs in use and found that producers intended to continue to utilize BMPs even without cost-sharing money. In addition to LDEQ activities in SW LA, nonregulatory programs in the area include the Operation Quackback Program, jointly sponsored by Louisiana Cooperative Extension Service, the Louisiana Farm Bureau Federation, and the Louisiana Rice Growers Association. This program

promotes the simple practice of holding water on rice fields over the winter months, providing supplementary habitat for migratory waterfowl, with a related increase in consumption of "red rice" weed seeds. Reduction of this weedy pest should translate into less herbicide needed in the spring. Additional conservation benefits of the practice are realized by allowing time for fine sediments to settle out, and protecting the soil surface from the erosive force of hard Louisiana rains with a cover of standing water.

Dairy farms constitute the most significant form of **Confined Animal Facility** in proximity to Louisiana's coastal zone. Dairy operations are found in watersheds tangent to Louisiana's coastal zone in three parishes: Livingston, St. Tammany, and Tangipahoa. While these parishes (along with Washington, and St. Helena Parishes) have almost 80% of all Louisiana's dairy farms, only a few of their dairy farms (three?) are located within the coastal zone. Since 1989, there has been a vigorous, voluntary dairy BMP implementation program in this area, involving multiple agencies and organizations. The effort has resulted in the installation of no-discharge lagoons to handle dairy wastes. The current results of the program indicate that in Tangipahoa Parish alone, where one-half of the area's dairies are located, 120 lagoons have been installed, and 45 lagoons are in the planning stage. When dairy closures are added to these numbers, 73% of the parish's 270 dairies currently have or are planning no-discharge lagoon installation for handling their wastes, or have ceased operation as a dairy farm. The adjoining parishes are also participating in the current BMP implementation program.

Beef cattle are raised all over Louisiana in small cow/calf farm herds, and in Southwest Louisiana in lower density open range conditions. **Concentrated Animal Facilities, in the form of feed lots, are virtually nonexistent in South Louisiana.**¹ The statewide

¹ Louisiana's hot and humid climate is not conducive to stimulating animals' appetites for consuming large amounts of feed, and thus animals kept outdoors do not make the rapid rates of gain needed for economical fattening operations. Further, large shipments of live cattle and bulky feedstuffs are less economical to ship than refined product, so feedlots tend to locate nearer suppliers of feeder steers and cheap feed grain in the west and midwestern states. An exception is the state of North Carolina, with large hog (and turkey) operations.















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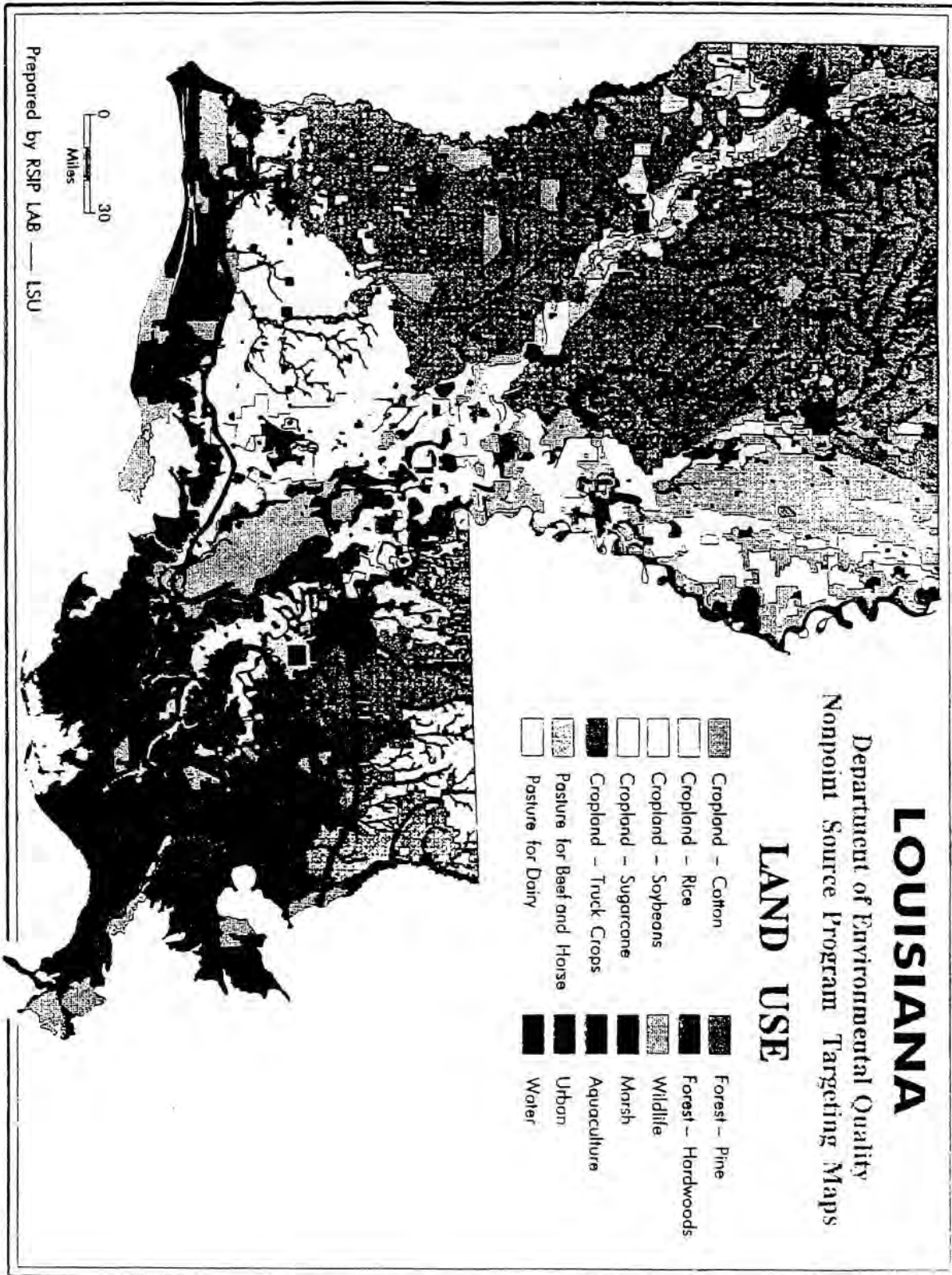
mean beef herd size was only 45 head in 1993. That figure jumps to 85 head in Cameron Parish, the largest parish in the state, by area, where the cow-to-person ratio is almost 4:1, however, those herds are *dispersed* over the corresponding larger areas, giving low densities of animals. This is an important distinction: **grazing management measures** designed for intensively managed pastures of the Eastern United States are of limited applicability to low animal density range conditions. Further, management measures designed for protecting well-defined water courses are not necessarily applicable to regions of high rainfall and flat topography where the borders of streams and wetlands are quite variable. Louisiana may need to break its grazing BMPs, currently under development, into separate subsets for "range" and "pasture." Some livestock raising BMPs are eligible for USDA (CFSA) cost-share money. Earthmoving for construction of cattle walks through the marshes is regulated by Coastal Use Permit from LDNR, and (404/401) permits from USACOE and LDEQ.

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Department of Environmental Quality
Nonpoint Source Program Targeting Maps

LAND USE

- | | | | |
|---|----------------------------|---|--------------------|
|  | Cropland - Cotton |  | Forest - Pine |
|  | Cropland - Rice |  | Forest - Hardwoods |
|  | Cropland - Soybeans |  | Wildlife |
|  | Cropland - Sugarcane |  | Marsh |
|  | Cropland - Truck Crops |  | Aquaculture |
|  | Pasture for Beef and Horse |  | Urban |
|  | Pasture for Dairy |  | Water |



Prepared by RSIP LAB — LSU

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Truck produce (annual fruits and vegetables), and citrus fruit operations are similar to dairies in that a relatively small acreage is dedicated to these land uses for the state as a whole, yet much of what we have is concentrated geographically (Tangipahoa Parish, the southern half, and Plaquemines Parish). The annual fruits and vegetables, mainly **strawberries, peppers, cucumbers, and cabbage**, are raised in some proximity to coastal waters (ten to thirty miles from the brackish lakes Pontchartrain and Maurepas) and the intensity of inputs and polluted runoff potential from this clustering could be significant. However, the positive side of the clustering should be recognized, in terms of efficiencies in public outreach, demonstration, and technical assistance efforts. All of these efforts are supported by the LSU Agricultural Center's Hammond research station, dedicated to truck crops and horticulture. In 1993 all of Tangipahoa Parish had 250 producers of strawberries on 1000 acres, and 50 producers of bell peppers on 900 acres. The largest parish for citrus fruit orchards, Plaquemines, had 150 producers of citrus fruits, with a total area in production of only 510 acres. The Best Management Practice Review committee for commercial fruits and vegetables began a series of meetings in 1994, and a report of their findings is forthcoming.

Soybeans *were* more important in South Louisiana in the mid-and late-eighties than they are now. The \$7.50 per bushel beans of 1988 had fallen to \$5.50 in 1991 and acreages planted tend to correspond with these market trends (from 2.0 million acres statewide, down to 1.0 million acres). In addition, Louisiana soybean production has been subjected to increasing biological pressure by pests such as red crown rot, stem canker, and root knot nematodes. Soybeans have been grown on a variety of soils, which adds up to a menu of alternative land uses available to replace soybeans. Statewide, cotton, corn, and to a lesser extent, hay, have increased at the expense of soybeans. But in South and Central Louisiana, tracts of poorly-drained bottomland cleared for beans in the 1970s were prime sites to let revert back to non-agricultural vegetation when opportunities appeared with the Wetland Reserve Program, the Conservation Reserve Program, and the Forestry Incentive Program. In 1988 Vermilion/Cameron/Calcasieu Parishes combined to harvest 138,500 acres of soybeans for grain. In 1991 the three parish total was down to 7,200 acres. It rebounded somewhat to 52,400 acres in 1993, and fell to 37,000 acres in 1994.

II. EXISTING NPS PROGRAMS IN LOUISIANA: REGULATORY AND NONREGULATORY²

REGULATORY PROGRAMS

The Dept. of Environmental Quality's oversight authority over discharges into surface waters (402 program) is documented in Section 402 of the Clean Water Act. A discharge permit is required for any point source discharge into waters of the state. This includes discharge from dairy lagoons, non-irrigation agricultural lagoons, catfish, crawfish, and alligator farms, and from rice seed soaking operations. All other agricultural activities are exempt from Louisiana state water discharge permits. There is an anti-degradation provision in the regulations to not allow state waters to go below current designated use support levels. This provision can be used to bring violators into compliance. Whether this authority could be extended to irrigation tailwaters remains subject to interpretation.

² Louisiana has at least four programs with broad authority for more stringent regulation than has been

The Louisiana Natural and Scenic Rivers System

The Louisiana Natural and Scenic Rivers System is one of the nation's largest. It encompasses 51 streams or stream segments and is over 1,500 miles in length. There are nine Scenic Rivers within the present boundaries of the Louisiana Coastal Zone. The System was proposed in the late 1960's and was brought into existence in the early 1970's with the passage of the Louisiana Natural and Scenic Rivers Act (La.R.S.56:1840 *et seq.*). The Act established a regulatory program and empowered the Secretary of the Louisiana Department of Wildlife and Fisheries (LDWF) to administer the System through regulation and permits. This regulatory program prohibits the following activities on all designated Scenic Rivers: channelization; channel re-alignment; clearing and snagging; impoundments of any type; and commercial clear-cutting of timber within 100' of the low water mark. Activities which may have a direct, significant or ecological impact on the streams and would thus require a "Class B" permit includes the following: bridge, pipeline and powerline crossings; bulkheads, piers, docks and ramps; waste water discharges; and land development adjacent to the stream. Any other activity that may have a direct, significant, ecological impact on the stream or its tributaries or distributaries is subject to regulation by permit by the Department of Wildlife and Fisheries. Scenic Rivers permits require the evaluation of twelve criteria for issuance. These include the following: cultural associations; historical/archaeological artifacts; economic changes; wilderness/rural qualities; scenic/aesthetic values; recreational opportunities; ecological systems; fish and other aquatic life; wildlife species; botanical elements; geological/hydrological features; and water quality/quantity.

The Scenic Rivers System Permit is issued by the LDWF with a multi-agency review by the LDWF, Office of State Planning and Budget, Louisiana Department of Environmental Quality (LDEQ), and the Louisiana Department of Agriculture and Forestry (LDAF). All permit applications are reviewed on a case-by-case basis, and most involve on-site inspections of the project area. The monitoring and enforcement of the permits will be

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handled by LDWF agents through site investigations and inspections, surveillance and citizen complaints. Enforceable policies and mechanisms for this program include criminal penalties with fines and civil penalties with fines and adjudication. Penalties include: up to \$1,000 fines for each violation; suspension, annulment, withdrawal or revocation of the permit; institution of civil proceedings in district court; and issuance of cease and desist orders, compliance orders, injunctions or other appropriate relief. The program currently issues 15-20 permits per year.

The LDNR is discussing a Memorandum of Agreement with LDWF to oversee implementation of certain provisions of the CNPCP, to monitor and educate staff, contacts, and permittees on the provisions of the program, and to report noncompliance to the LDNR on at least a quarterly basis. The LDWF may incorporate said provisions as special conditions to their Scenic Rivers Permits and other projects until such time as these nonpoint pollution abatement measures become standard permit conditions.

The Louisiana Natural and Scenic Rivers System Permit in conjunction with the Louisiana Scenic Rivers Act provide some enforceable policies for the 6217(g) management measures. It requires scenic stream management plans (MM 2 II.C.); it requires permits for "waste water discharges" (MM 2 II.B., C., and F.) and its permit evaluation process would give strong consideration to most of the BMPs recommended in MM 2 II. A for **Erosion and Sedimentation Control**, and in MM 2 II.D. for **Pesticide Management**.

Louisiana Department of Natural Resources (LDNR) Coastal Use Permit Program

The Coastal Management Division (CMD) of the Louisiana Department of Natural Resources (LDNR) is charged with implementing the Louisiana Coastal Resources Program under authority of the Louisiana State and Local Coastal Resources Management Act of 1978 (Act 361, La.R.S.49:214.21). Under this authority, the Coastal Use Permit Program (CUPP) has been established by the CMD to help ensure the management and

reasonable use of the state's coastal wetlands. The CUP program carries the authority to enforce either legal or administrative procedures, including levying fines, issuing cease and desist orders, and requiring mitigation or restoration. The CMD Enforcement and Monitoring section monitors permitted activities in the coastal zone for compliance with permit conditions, and patrols by air, land, and water the entire coastal zone for unauthorized activities.

The CUP Program has oversight for land use activities in the designated coastal zone that involve dredging, fill, or other earth-moving or drainage impacting activities. Activities that may require a coastal use permit include dredge and fill projects, sewage treatment plant siting, waste-water discharge, drainage projects, pumping facilities, marsh management activities, water level control, levee construction, solid waste dump siting, roads and bridges, park siting, freshwater diversion, and mosquito control. Exempt from the program are silvicultural operations, as well as activities in leveed fastlands, in areas above the 5-foot contour interval, and on lands of federal jurisdiction. **Agricultural activities are excluded from the program where carried out in areas that traditionally have been used for agriculture.** The Louisiana Administrative Code 43 § 723 (B.7 a-b) reads:

Agriculture, forestry, and aquaculture activities on land consistently used in the past for such activities shall not require a coastal use permit provided that: The activity is located on lands or waters which have been used on an ongoing basis for such purposes, consistent with normal practices, prior to the effective date of the Act 361 of 1978; the activity does not require a permit from the U.S. Army Corps of Engineers and meets federal requirements for such exempted activities, and; the activity is not intended to, nor will it result in, changing the agricultural, forestry, or aquacultural use for which the land has been consistently used for in past to another use. The exemption includes but is not limited to normal agricultural, forestry, and aquacultural activities such as plowing; seeding; grazing; cultivating; insect control; fence building and repair; thinning; harvesting for the production of food, fiber, and forest products; maintenance and drainage of existing farm, stock, or fish ponds; digging of small drainage ditches; or maintenance of existing drainage ditches and farm or forest roads carried out in accordance with good management practices.

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Presently subject to regulation by permit are construction of cattledwalks and excavation for new crawfish ponds, but there were no permit applications made for either of these categories during the past year of October 1993 to November 1994. Agriculture would be regulated under the CUP Program when the proposed land uses involve earth-moving in the coastal zone for new developments. The coastal management guidelines used to issue coastal use permits specify that "linear facilities," which includes roads, shall be planned using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow and water quality (La. Admin. Code tit.43:I.705[I]), and thus would be most applicable to the management measure for **Erosion and Sediment Control**, management measure 2 II.A. While the program does not generally exert authority over agriculture in coastal Louisiana, there appears to be room in the wording of the code for a stricter interpretation, and extension of such authority to address other of the 6217 (g) management measures for agriculture.

LDAF Louisiana Pesticide Law and Applicator Certification Program

The Federal Insecticide, Fungicide and Rodenticide Act as amended in 1972 (FIFRA) requires individuals who apply restricted use pesticides to be certified applicators. Likewise, the Louisiana Pesticide Law (La.R.S.3:3201) states that: "No person shall apply or supervise the application of any restricted use pesticide as a private applicator unless that person has the proper certification."

This certification, for both commercial and private pesticide applicators, is necessary in order to buy, use, or supervise the use of restricted pesticides. Certification is issued after the applicant has satisfactorily passed an examination or has satisfactorily demonstrated knowledge of the laws, rules and regulations, and safety practices governing the sale and application of restricted use pesticides.

Examinations are given and certifications are issued by the Louisiana Department of Agriculture and Forestry (LDAF). The Louisiana Cooperative Extension Service (LCES), by cooperative agreement, is responsible for the training necessary to become a certified applicator. Workshops are conducted covering all aspects of pesticide use as delineated in 40CFR171. Applicators must be recertified every three years. The Louisiana Pesticide Applicator Certification Program addresses the 6217 (g) management measure for agriculture, 2 II.D., **Pesticide Management**.

U.S. Army Corps of Engineers 404 Permit Program

The Department of the Army regulatory program is one of the oldest in the federal government. The legislative origins of the program are the Rivers and Harbors Acts of 1890 (superseded) and 1899 (33 U.S.C.401 *et seq.*). Various sections establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States.

In 1972, amendments to the Federal Water Pollution Control Act added what is commonly called Section 404 authority (33 U.S.C.1344) to the program. The Secretary of the Army, acting through the Chief of Engineers, is authorized to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into waters of the United States at specified disposal sites. Selection of such sites must be in accordance with guidelines developed by the Environmental Protection Agency in conjunction with the Secretary of the Army. These guidelines are known as the 404 (b) (1) Guidelines. The Federal Water Pollution Control Act was further amended in 1977 and given the common name of "Clean Water Act."

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Section 10 (33 U.S.C.403) contains the most frequently exercised authority in the Rivers and Harbors Act. Section 10 covers construction, excavation, or deposition of materials in, over, or under navigable waters, or any work which would affect the course, location, condition, or capacity of those waters. Navigable waters in the River and Harbors Act of 1899 are defined (33 CFR 329) as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce."

The Clean Water Act uses the term "navigable waters" which is defined (Section 502 [7]) as "waters of the United States, including the territorial seas." Section 404 jurisdiction then is defined as encompassing Section 10 waters plus their tributaries and adjacent wetlands and isolated waters where the use, degradation or destruction of such waters could affect interstate or foreign commerce.

The discharge of dredged or fill material into waters of the United States requires a Section 404 permit. This includes return water from dredged material disposed on the upland and generally any fill material (e.g., rock, sand, dirt) used to construct fast land for site development, roadways, or erosion protection.

Normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices are exempt under the 404 permitting process [CWA, Sec404 (f) (1)]. However, agricultural activities in designated wetland areas require a federal permit. Nonpoint source agricultural activities related to road construction may involve point source discharges of dredged or fill material and also may require a Section 404 permit{LAC tit.33:IX.301(M)(2)(a)}.

The federal 404 permit requires a 401 Water Quality Certification issued by the Louisiana Department of Environmental Quality (LDEQ). This is a regulatory program

administered by the state of Louisiana. The 401 Water Quality Certification's recommendations are incorporated into the Section 404 permit, and is then monitored through the USACOE's federal program as conditions of the federal permit.

The CWA Section 404 permit also requires that in addition to applying the state's approved Best Management Practices to the permitted activity, fifteen baseline provisions mandated by the USACOE must also be implemented.

USFWS Endangered Species Act/Critical Habitat Identification

The Endangered Species Act was enacted in 1973 to provide a means whereby the ecosystems upon which endangered species and threatened species depend would be conserved and also to provide a program for the conservation of such endangered species and threatened species. The Act is regulatory, nationwide in scope, and provides protective regulations for threatened species; recovery plans for the conservation and survival of endangered and threatened species; and includes penalty and enforcement provisions for violations of the Act. The U.S. Fish and Wildlife Service implements and has oversight for the Endangered Species Act in Louisiana.

Provisions of the Endangered Species Act relates to the following 6217(g) management measures and their components: 2 II.A.u. "wetland and riparian zone protection," and 2 II. D. on pesticides, by providing an enforceable mechanism to provide protection for threatened or endangered aquatic species habitat areas.

Worker Protection Standard for Agricultural Pesticides

The new Worker Protection Standard for Agricultural Pesticides issued by the U.S. Environmental Protection Agency (EPA) consists of revised regulations intended to reduce the risk of pesticide poisonings and injuries among agricultural workers and

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pesticide handlers through appropriate exposure reduction methods. These new regulations expand the requirements for issuing warnings about pesticide application, use of personal protective equipment, and restrictions on entry to treated areas. New requirements were added for decontamination, emergency assistance, maintaining contact with handlers of highly toxic pesticides, and pesticide safety training.

Agricultural workers, including those in forest related cultivation and harvesting tasks, and pesticide handlers are targeted by this new Worker Protection Standard. New WPS provisions are intended to: (1) eliminate exposure to pesticides, (2) mitigate exposures that occur, and (3) inform employees about the hazards of pesticides. The Louisiana Cooperative Extension Service (LCES) is involved in an extensive statewide outreach program to inform agricultural producers of what they must do to be in compliance with this program.

The 6217(g) management measure 2 II.D is addressed by this worker protection standard. It applies to agricultural workers and pesticide handlers who are involved in pesticide applications conducted as a part of normal agricultural activities. As stated, all workers involved in cultivation and harvest of plants in forests or those that handle agricultural pesticides are covered.

NONREGULATORY PROGRAMS

Lake Pontchartrain Basin Foundation

The primary goal of the Lake Pontchartrain Basin Foundation (LPBF) is to develop a comprehensive plan to clean up and restore water quality in the Pontchartrain Basin. This is to be done in cooperation with the U.S Environmental Protection Agency, with a grant for \$500,000. The LPBF is working with the local and state agencies to incorporate any existing legal or regulatory authority into the plan. The LPBF was founded under La

Legislative Act 716, and began operations in 1989. They are currently working with the NRCS and the dairy farmers north of the lake, on a plan to continue installation of no-discharge lagoons to reduce the amount of dairy waste entering the lake. This program started in March of 1993 and a number of farmers have signed up to participate. The LPBF has several ongoing projects for improving the lake's habitat that include constructed wetlands creation, freshwater diversion projects, and upgrading small municipal sewage systems north of the lake.

**Louisiana Cooperative Extension Service (LCES)
Public Education and Outreach Program**

The Louisiana Cooperative Extension Service (LCES) Education and Outreach Program is a voluntary, nonregulatory education and outreach program created by the Smith-Lever Act of 1914. It is administered by the Louisiana State University Agricultural Center through parish outreach offices and is conducted in all parishes in Louisiana. These parish outreach offices are staffed by professional extension agents with expertise in agriculture, forestry, and natural resource conservation and management. Educational programs are developed and implemented in each local parish that address needs and issues deemed most important to the local constituency. This is accomplished in most parish Extension Service offices through the use of constituency based advisory committees.

Many effective educational and outreach techniques are utilized by LCES professionals to provide pertinent educational information to natural resource user groups. Educational services such as public meetings, workshops, seminars, field days, newsletters, publications, circular letters, newspaper articles, radio and television programs, method and result demonstrations, field visits and office contacts are offered at no cost and are available to everyone.

Supporting the LCES field staff are the state office specialists who help coordinate parish outreach activities. These specialists offer expertise in the areas of wetlands and coastal

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resources, wildlife, forestry, water quality, environmental education, solid waste management, marine fisheries, aquaculture, agriculture and natural resources economics, agronomy, crop production, public policy, livestock production, youth education, home economics, and agriculture engineering.

An integral part of the LCES Outreach and Educational Program is the 4-H Youth education program in each parish. Operating through elementary and secondary schools, 80,000 students are exposed to issues and industries important to Louisiana.

Technical resources for the implementation of the LCES program are available through the numerous research stations located throughout the state. The continual agricultural and forestry research conducted on these stations provides the Extension agents with up-to-date research information that can be effectively passed along to producers, resource users and consumers.

The Louisiana Cooperative Extension Service serves as the educational arm of the United States Department of Agriculture (USDA) in Louisiana. The LCES Education and Outreach program utilizes the "teaching by doing" approach. They offer programs, demonstrations, and field visits keyed to the implementation of Best Management Practices to agricultural practices. All 6217 (g) management measures that apply are addressed by these BMPs.

Louisiana Cooperative Extension Service (LCES)/Louisiana Rice Growers Association/Louisiana Farm Bureau Federation Operation Quack Back Program

The Operation Quackback Program, is jointly sponsored by Louisiana Cooperative Extension Service, the Louisiana Farm Bureau Federation, and the Louisiana Rice Growers Association. This program promotes the simple practice of holding water on rice fields over the winter months, providing supplementary habitat for migratory waterfowl, with a related increase in consumption of "red rice" weed seeds. Reduction of

this weedy pest should translate into *less* herbicide (molinate, thiobencarb) needed in the spring. Additional conservation benefits come from standing water protecting the soil surface from the erosive force of hard Louisiana rains; and from holding turbid water, allowing time for the settling out of finer sediments. This small but growing program has most direct relevance to the management measures for **Erosion and Sediment Control**, and **Irrigation**, but also has some bearing on the measures for **Pesticide Management** and **Nutrient Management**.

Louisiana Department of Environmental Quality Nonpoint Source Management Program (319 Program)

Section 319 of the Clean Water Act (PL 100-4, Feb 4, 1987) was enacted to specifically address problems attributed to nonpoint sources of pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (Sec.101, PL 100-4). It introduces the Nonpoint Source Management Program (PL 100-4) which instructs the governor of each state to prepare and submit a Management Program for reduction and control of nonpoint source pollution from nonpoint sources into navigable water within the state by implementation of a four year management plan.

In response to this federal law, the state of Louisiana passed Revised Statute 30:2011, signed by the governor in 1987 as Act 272. This law directed the Louisiana Department of Environmental Quality (LDEQ), designated as the lead agency for the NPS program, to develop and implement a NPS Management Program. The NPS Management Program was developed to facilitate coordination with appropriate state agencies including, but not limited to, the Louisiana Department of Natural Resources (LDNR), the Louisiana Department of Wildlife and Fisheries (LDWF), the Louisiana Department of Agriculture and Forestry (LDAF) and the state Soil and Water Conservation Committee, in those areas pertaining to their respective jurisdictions.

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The purpose of the Nonpoint Source Management Program is to describe the implementation strategy which the State of Louisiana has taken for implementation of the program. The management strategy is based on interagency cooperation and coordination of all state and federal agencies in Louisiana who have nonregulatory or regulatory programs which provide enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects that can be utilized to implement Best Management Practices (BMPs).

Agricultural activities make up one section of the NPS Management Program. Best Management Practices for agricultural enterprises have been developed in coordination with the LSU Agricultural Center (see previous discussion). These BMPs were designed to help prevent erosion of soil and runoff of nutrients and pesticides into surface waters of the state. The LDEQ is working with the LCES, LDAF, NRCS(SCS), and CFSA (ASCS) on a cooperative program directed at increasing implementation of BMPs on agricultural lands. The approach taken combines long-term educational programs and demonstration projects that provide information to the landowners and land managers on the types of water quality problems that result from agricultural activities, and what management practices are recommended for reduction and correction of the identified problems. While the 319 program has statewide responsibilities, conducting projects for the management of agricultural runoff in all parts of the state (e.g., Tensas River Basin in Northeastern LA), a substantial portion of its efforts are concentrated in or near coastal watersheds.

One such project of 1993/94 surveyed rice producers in the Bayou Queue de Tortue area of Southwestern Louisiana to get a better estimate of the extent of BMP implementation. Results indicated that "retention of flood water within a closed levee system after soil-disturbing activities," and "water planting in previous crop residue" projected to be two of the more utilized BMPs.

The LDEQ Nonpoint Source section is presently cooperating with LDAF, USDA/NRCS, LCES, Soil and Water Conservation Districts, the Barataria-Terrebonne National Estuary Program, and the Gulf of Mexico Program to implement a public outreach program, the Sugarcane Nutrient Management Program. It has also commissioned research into ways to more efficiently achieve sugar cane pest control, with reduced levels of chemical pesticides. Early results are promising, and related demonstration projects are underway to promote the dissemination of innovative practices.

LDEQ has been working in close cooperation with many of the above agencies to get dairy wastewater treatment lagoons in place in the largest dairy parish in Louisiana, Tangipahoa.

The BMPs that are being implemented there match up well with the **Confined Animal Facility** wastewater guidelines in the 6217 (g) guidance manual, as NRCS (SCS) descriptions were relied upon in developing both programs.

As stated, the NPS Management Program actively implements BMPs within targeted watersheds through cooperative efforts and interagency agreements. The NPS program is a nonregulatory program and at present does not have enforceable policies. However, within the LDEQ agency is housed substantial enforcement authority for other environmental concerns, and the agency can exercise some discretion as to whether a particular problem is to be handled as a nonpoint source issue, or whether it is subject to regulation as a point source problem, a hazardous waste problem, and/or constitutes a degradation of the state's waters.

The NPS Management Program addresses all of the 6217 (g) guidance management measurements for agriculture. While much work remains to be done, this program can demonstrate tangible achievements in helping further the ultimate goals of the 6217 coastal program, the implementation of BMPs on the land.

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Louisiana Natural Heritage Preservation and Land Acquisition Program (LDWF)

The Louisiana Natural Heritage Preservation and Land Acquisition Program (La.R.S. tit 56:1830) was created in 1987. The legislation states that within the Louisiana Department of Wildlife and Fisheries (LDWF), the Louisiana Natural Heritage Program is created to administer the provisions of law and rules and regulations regarding the Louisiana Natural Areas Registry, the Threatened and Endangered Species Conservation program, and those programs, duties, and functions designated by the secretary in accordance with law.

The Department of Wildlife and Fisheries is authorized to enter into agreements with national, nonprofit membership land conservation organizations to conduct programs, manage, preserve, and conserve land, and to purchase lands. The program is statewide and nonregulatory in nature.

6217(g) agriculture management measures are addressed under this program such as MM 2 II.A.u., "wetland and riparian zone protection."

LSU Agricultural Center Best Management Practices Review and Development Program

The people of Louisiana are presently in the process of identifying Best Management Practices (BMPs) for agriculture, statewide, but which are also applicable to the agriculture source category of the LA Coastal Nonpoint Pollution Control Program. Much work has been done thus far under the leadership of the Louisiana State University Agricultural Center toward identifying BMPs by commodity or livestock enterprise. The Best Management Practices Review and Development Program is a multi-agency program created in 1991 to evaluate the use of BMPs as a vehicle for environmental improvement on agricultural and forest lands. The BMP Review and Development Program was conceptualized to help achieve voluntary producer implementation of economically

achievable, effective BMPs, statewide. The implementation was intended to be watershed based, and using site specific approaches for BMP applications.

To date, reports have been issued after review of BMPs associated with production of cotton, dairy, rice, sugarcane, feed grains, poultry, and soybeans. BMPs pertaining to forestry operations have also been evaluated and compiled by the Louisiana Office of Forestry (LOF) in cooperation with the Louisiana Forestry Association (LFA) and the Louisiana Cooperative Extension Service (LCES). Over the coming months, BMPs covering aquaculture, commercial vegetables and fruits, nurseries and ornamentals, sweet potatoes, swine production, and agricultural and seafood processing will continue to be reviewed and evaluated.

Louisiana's Stewardship Incentive Program (SIP)

The Forest Stewardship Program is a nationwide program designed to encourage and assist nonindustrial private landowners in more actively managing their forest resources, and can be extended to bring agricultural land into forest cover. Under the program, a **Forest Stewardship Management Plan** is prepared, specifically designed to enhance and manage all of the natural resources of the landowner's forestland. An important environmental benefit of this management plan is clean water production.

The Stewardship Incentives Program (SIP) offers financial assistance to landowners participating in the Forest Stewardship Program. SIP provides cost-share assistance to help the landowner establish the practices prescribed in the Forest Stewardship Management Plan. Eligibility for SIP requires nonindustrial landowners to own a minimum of ten forested acres, have the above mentioned management plan, and agree to maintain cost-shared practice for no less than ten years. There is an acreage limit of no

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more than 1,000 acres of nonindustrial private forestland per landowner but a waiver may be approved for this requirement.

Objectives of SIP include **reforestation** of non-stocked, under-stocked and eroding forestland; **habitat improvement for wildlife and fisheries**; promotion of Best Management Practices (BMPs) to maintain, enhance, and protect site productivity; and the protection of threatened and endangered species. In Louisiana the Stewardship Incentive Program is a statewide, nonregulatory program implemented by the Louisiana Office of Forestry (LOF) and the Natural Resource Conservation Service (formerly Soil Conservation Service, SCS). In its first year the SIP program enrolled 19 participants with over 2200 acres located in Louisiana's coastal zone and adjacent parishes.

The Forest Stewardship Management Plan required for participation in the Stewardship Incentives Program is a site specific plan and therefore addresses wholly or in part 6217 (g) management measures particular to the management situation. The plan considers long-term management of:

- 1) forest health,
- 2) fire hazard,
- 3) timber and wood products,
- 4) soil and water quality
- 5) riparian areas and wetlands,
- 6) wildlife and fish habitat,
- 7) outdoor recreation and aesthetics,
- 8) threatened and endangered species, and
- 9) cultural and historic areas.

Cost-sharing is available for certain SIP practices. These practices address specific (g) management measures. SIP Practice 2 is Reforestation and Afforestation. The purpose of this practice is to establish a stand of forest trees for conservation purposes and timber production and maintain newly established trees for a specified number of years. SIP Practice 5 is Soil and Water Protection and Improvement. The purpose of this practice is

to maintain and improve water quality or forestland as well as soil productivity and prevent erosion on forestland. Specifically, these SIP practices address revegetation components of the (g) management measure 2 II.A. (**Erosion and Sediment Control**), and 2.II.C., on developing farm conservation plans. SIP Practice 6 is Riparian and Wetland Protection and Improvement. The purpose of this practice is to protect, restore, and improve wetlands and riparian areas, reduce sedimentation, reduce streambank degradation, improve water quality and restore productivity. This practice is relevant to 6217 (g) management measure/practice 2 II.A.u."wetland and riparian zone protection."

Soil and Water Conservation Districts

Louisiana has established local soil and water conservation districts, the purpose of which is to protect and promote health, safety, and the general welfare of the people that have been endangered by improper land use practices (LA.R.S. Ann. 3: 1201 *et seq.*). The SWCD can enact supplementary local land use regulations as needed to carry out its charge. The SWCD mandate includes:

§1208. Powers of Districts and Supervisors

"(1) To carry out **preventive and control measures** and works of improvement for flood prevention or the conservation, development, utilization, and disposal of water within the district including, but not limited to, **engineering operations, methods of cultivation, the growing of vegetation, changes in use of land**, and the measures listed in R.S. 3:1201 (c), on lands owned or controlled by this state or any of its agencies, with the cooperation of the agency administering and having jurisdiction thereof, and on any other lands within the district upon obtaining the consent of the owner as well as occupants of such lands or the necessary rights or interests in such lands..."

USDA Conservation Compliance Provision of the Food Security Act of 1985

The Conservation Compliance provision of the 1985 "farm bill," the Food Security Act of 1985 (P.L. 99-198), seeks to protect environments particularly vulnerable to further agricultural development. This provision requires farmers with any lands designated as

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Highly Erodible Land, to develop and submit conservation management plans for these lands by January 1995. Inadvertent cultivation of these sensitive lands without benefit of conservation plan incurs monetary penalties, and willful or multiple violations leads to disqualification from participation in most federal commodity support programs.

Similarly, the wetlands conversion corollary of this provision penalizes new conversion of designated wetlands with disqualification from the support programs.

USDA Consolidated Farm Service Agency (CFSA, formerly Agricultural Stabilization and Conservation Service, ASCS) Agricultural Conservation Program

The Agricultural Conservation Program (ACP) is a national program available to all agricultural producers to implement practices designed to protect the soil and reduce the pollution of water, air, and land from agricultural or silvicultural nonpoint sources. Cost-sharing is available for planting trees and shrubs and improving timber stands for protection against wind and water erosion and to provide trees for timber production. In Louisiana, up to 50 percent cost-share may be provided to establish, regenerate, or improve forest stands.

The program is administered by the CFSA [formerly Agricultural Stabilization and Conservation Service (ASCS)], the Natural Resources Conservation Service (NRCS), [formerly Soil Conservation Service (SCS)], and the Louisiana Office of Forestry (LOF). The program was authorized in the Soil Conservation and Domestic Allotment Act, approved February 29, 1936, as amended. It is generally depicted as a nonregulatory program but under certain long-term agreements, producers must agree to maintain conservation practices for a specified number of years. Those who fail to do so are required to refund all or part of the Federal funds provided for installation of the practice. Since 1991, there has been an increase of 63 individual participants in the ACP with nearly

1,000 new acres being taken into the program in the Louisiana Coastal Zone and adjoining parishes.

The Agricultural Conservation Program addresses at least two of the 6217 (g) management measures. These measures include II.A. **Erosion and Sediment Control**, with provisions analogous to the (g) guidance BMPs a., g., k., l., and u.; and the **Nutrient Management Measure (II.C.)** calling for farm plans that include farm and field mapping, and identification of environmental field limitations (highly erodible lands, proximity to surface waters, etc.). Because each conservation plan would be site specific, different elements of the above management measures would be addressed by each plan.

USDA CFSA (formerly ASCS) Conservation Reserve Program (CRP)

The Conservation Reserve Program offers long-term rental payments and cost-share assistance to **establish permanent vegetative cover on cropland that is highly erodible or contributing to a serious water quality problem**. The program is authorized by the Food Security Act of 1985 (PL 99-198) as amended by the Food, Agriculture, Conservation, and Trade Act of 1990 (PL 101-624). A conservation plan must be developed and approved by the local conservation district for accepted acreage. In Louisiana the program is implemented by the Consolidated Farm Service Agency, (formerly Agricultural Stabilization and Conservation Service ASCS), the Natural Resources Conservation Service (NRCS), [formerly Soil Conservation Service (SCS)], and the Louisiana Office of Forestry (LOF). The CRP is generally categorized as a nonregulatory program but certain eligible conservation practices such as tree planting require "useful life easements" in which the landowner receives rental payments but must maintain the conservation practice for the entire easement period.

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As of 1994, over 144,000 acres in Louisiana have been contracted into the Conservation Reserve Program, with 79,000 of these acres being planted in trees. In Louisiana's Coastal Zone and adjacent parishes over 24,000 acres have been accepted into the program.

Conservation plans required by the CRP would address 6217 (g) management measures 2 II.A. **Erosion and Sediment Control**, with provisions analogous to the (g) guidance BMPs a., g., k., l., and u.; and 2 II.C., the **Nutrient Management Measure** calling for farm plans.

USDA CFSA (formerly ASCS) Water Bank Program (WBP)

The Water Bank Program applies to wetlands and is designed to conserve surface water; reduce runoff, soil, and wind erosion; contribute to flood control; improve water quality; and improve subsurface moisture. It was authorized by the Water Bank Act which was passed by Congress December 19, 1970, and amended January 2, 1980. The Water Bank Program is a cost-share, nonregulatory program in which landowners receive annual payments for conserving and protecting wetlands from practices which may destroy the character of the wetland.

Land eligible for the program must be privately owned inland fresh wetlands which are suitable for the nesting, breeding, or feeding of migratory waterfowl. In Louisiana the program is statewide and administered by the CFSA [formerly Agricultural Stabilization and Conservation Service (ASCS)] and the Natural Resources Conservation Service (NRCS), [formerly Soil Conservation Service (SCS)]. As of January 31, 1993, thirty-seven landowners have been admitted to the Water Bank Program in Louisiana's Coastal Zone and adjacent parishes. A total of 15,739 wetland acres, not including an additional 1,458 adjacent acres, have qualified for admission into the program.

The WBP could address all the 6217(g) management measures in that the 10-year agreement entered into by the landowner with the CFSA (ASCS) requires the participating landowner to develop and follow a conservation plan which would prescribe specific forest practices to be conducted on the managed tract.

USDA CFSA (formerly ASCS) Wetland Reserve Program (WRP)

The Food Security Act of 1985 (P.L. 99-198) as amended by the Food, Agriculture, conservation, and Trade Act of 1990 (P.L. 101-624) authorized the Wetlands Reserve Program (WRP). The WRP is a voluntary, cost-share program to aid landowners in restoring and protecting wetlands. **The restoration of wetland hydrology and vegetation** will restore the functions and values of wetlands for migratory birds and other wildlife habitat and improve water quality. To participate in the WRP, landowners must grant a **permanent easement** to the United States Department of Agriculture (USDA) ensuring protection of the wetland in return for a WRP payment.

A Wetland Reserve Plan of Operations (WRPO) will be developed for this easement by the Natural Resources Conservation Service (NRCS), [formerly Soil Conservation Service (SCS)], and the Fish and Wildlife Service (USFWS) which mandates practices to restore the functional values of the wetland. The easement area will be periodically inspected to ensure that it is properly managed and maintained as required in the WRPO. Violations of the easement may result in the owner being required to refund all or part of the payment made, with interest.

Louisiana's statewide program is implemented by the CFSA [formerly Agricultural Stabilization and Conservation Service (ASCS)], Natural Resources Conservation Service (NRCS), [formerly Soil Conservation Service (SCS)], the Fish and Wildlife Service (USFWS), Louisiana Cooperative Extension Service (LCES), Louisiana Office of

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Forestry (LOF), and Soil and Water Conservation Districts. Technical services are provided by the NRCS, USFWS, and LOF.

The first Wetland Reserve Program sign-up held in 1992 resulted in 37 easements being filed from thirteen parishes. This amounted to 11,356 easement acres being included in the program. Of this total, 915 acres was in the Louisiana Coastal Zone and adjacent parishes. Tentative data indicate that the second (1994) sign-up resulted in seven LA parishes enrolling approximately 11,986 acres.

As stated earlier, the Wetlands Reserve Program, as with the other Federal cost-share programs mentioned, **requires a workable land management plan**. Depending on site specific conditions, this program could address all 6217 (g) management measures. Especially pertinent would be management measures 2 II.A. **Erosion and Sediment Control**, and the **Nutrient Management Measure (2 II.C.)** calling for farm plans, as well as all management measures associated with (g) guidance chapter 7, "... Wetlands, Riparian Areas, and Vegetated Treatment Systems."

USDA FARM*A*SYST Program

The USDA FARM*A*SYST Program is a nonregulatory public outreach program sponsored jointly by the USDA Natural Resources Conservation Service (formerly Soil Conservation Service), US Environmental Protection Agency, and administered within the state by the primary outreach agency for agriculture, the Louisiana Cooperative Extension Service. The program is designed to educate and to assess environmental risks on the farmstead and in other rural areas. It has particular relevance to 6217 management measures for responsible pesticide use in the environment (MM 2 II.D.), for livestock waste management (MM 2 II.B.1 and 2), and for "site evaluation - soils and geologic characteristics of the farm" (equates to MM 2 II.C.on farm and nutrient planning).

**USDA Natural Resource Conservation Service (former Soil Conservation Service)
Conservation Operations Program**

The Conservation Operations Program comprises the day to day technical support activities carried out by the NRCS/SCS in assisting individuals and groups to manage soil and water resources of the land they use. The objectives of the NRCS (SCS) Conservation Operations emphasize language such as "understanding soil and water problems and solutions," "sustainable use of soil and water resources," or "improving quality of the environment." This program is not limited to rural areas, but includes an objective to "provide proper land use and treatment of soil, water, and related plant and animal resources for all uses (farming, ranching, forestry, housing, recreation, transportation, public facilities, and multiple uses)." A major part of the program includes assisting land users to formulate **conservation plans** for farms and other land holdings. This guidance is provided by the staff of the fifty-one field offices in Louisiana.

**USDA Natural Resource Conservation Service (former Soil Conservation Service)
Resource, Conservation and Development Program**

The NRCS Resource, Conservation and Development Program (PL-74-46, as amended) targets multi-parish regions that are relatively less developed, and offers economic development incentive grants and technical guidance, linked to natural resource conservation. This linkage is emphasized in the RC&D program, as it is set up to both develop and to conserve resources; and to improve economic activity and standard of living while yet striving to "enhance the environment." A second prominent feature of this program is its long-range nature in providing guidance and support to local people in the RC&D region. In Louisiana there are now five of these designated regions, with the Capital RC&D Area including several parishes that are at least partly in the coastal zone (Assumption, Livingston, Tangipahoa, and St. Tammany), and the Imperial-Calcasieu RC&D area including coastal Cameron Parish, and Calcasieu Parish.

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**USDA Natural Resource Conservation Service (former Soil Conservation Service)
Watershed Protection and Flood Prevention Program**

Congress authorized the SCS (now the NRCS) to provide financial and technical assistance for "planning, designing, and installing works of improvement which are related to flood prevention, drainage, irrigation, sediment control, public water based fish and wildlife recreation, and accelerated land treatment measures." These projects are based on the watershed concept, and are intended for small watersheds of 250,000 acres or less. The projects are supported by the NRCS (formerly SCS), but carried out by local sponsors (drainage districts, levee boards, police juries, or soil and water conservation districts). Thus far 22 projects have been completed in Louisiana under this program. The NRCS watershed planning specifically relates to the **Erosion and Sediment Control** Management Measure II.A. (agriculture Chapter 2, in the 6217 (g) *Guidance Specifying Management Measures*).

III. 6217(g) MANAGEMENT MEASURES FOR AGRICULTURE MATCHED WITH EXISTING FEDERAL AND STATE PROGRAMS

1) (II.A.) Erosion and Sediment Control Management Measure

LDWF Louisiana Natural and Scenic Rivers System
 Soil & Water Conservation Districts
 USDA CFSA (ASCS) Agriculture Conservation Program
 USDA CFSA (ASCS) Conservation Reserve Program
 USDA CFSA (ASCS) Water Bank Program
 USDA CFSA (ASCS) Water Quality Incentive Program
 USDA CFSA (ASCS) Wetlands Reserve Program
 LDEQ Water Quality Certification Program (401)
 LDEQ Nonpoint Source Program (319)
 Louisiana Cooperative Extension Service Public Outreach Programs
 Louisiana Cooperative Extension Service Operation Quackback Program
 LSU AG Center BMP Review Program
 USDA NRCS (SCS) Conservation Operations
 USDA NRCS (SCS) Resource Conservation & Development
 USDA NRCS (SCS) Watershed Programs

2) (II.B.1) Management Measure for Facility Wastewater and Runoff from Confined Animal Facility -- Large Units

LDEQ Permitting of Discharges into Surface Waters (402)
 LDWF Louisiana Natural and Scenic Rivers System
 Soil & Water Conservation Districts
 USDA CFSA (ASCS) Agriculture Conservation Program
 USDA CFSA (ASCS) Conservation Reserve Program
 USDA CFSA (ASCS) Water Bank Program
 USDA CFSA (ASCS) Water Quality Incentive Program
 USDA CFSA (ASCS) Wetlands Reserve Program
 LDEQ Water Quality Certification Program (401)
 LDEQ Nonpoint Source Program (319)
 LDHH Water Sampling Program
 Louisiana Cooperative Extension Service Public Outreach Programs
 LSU AG Center BMP Review Program
 USDA FARM*A*SYST Program
 USDA NRCS (SCS) Conservation Operations
 USDA NRCS (SCS) Resource Conservation & Development
 USDA NRCS (SCS) Watershed Programs

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**3) (II.B.2) Management Measure for Facility Wastewater and Runoff from
Confined Animal Facility -- Small Units**

LDEQ Permitting of Discharges into Surface Waters
LDWF Louisiana Natural and Scenic Rivers System
Soil & Water Conservation Districts
USDA CFSA (ASCS) Agriculture Conservation Program
USDA(CFSA ASCS) Conservation Reserve Program
USDA CFSA (ASCS) Water Bank Program
USDA CFSA (ASCS) Water Quality Incentive Program
USDA CFSA (ASCS) Wetlands Reserve Program
LDEQ Water Quality Certification Program (401)
LDEQ Nonpoint Source Program (319)
LDHH Water Sampling Program
Louisiana Cooperative Extension Service Public Outreach Programs
LSU AG Center BMP Review Program
USDA FARM*A*SYST Program
USDA NRCS (SCS) Conservation Operations
USDA NRCS (SCS) Resource Conservation & Development
USDA NRCS (SCS) Watershed Programs

4) (II.C.) Nutrient Management Measure

LDAF - Fertilizer Law
LDEQ Permitting of Discharges into Surface Waters
LDWF Louisiana Natural and Scenic Rivers System
Soil & Water Conservation Districts
USDA CFSA (ASCS) Agriculture Conservation Program
USDA CFSA (ASCS) Conservation Reserve Program
USDA CFSA (ASCS) Water Bank Program
USDA CFSA (ASCS) Water Quality Incentive Program
USDA CFSA (ASCS) Wetlands Reserve Program
LDEQ Water Quality Certification Program (401)
LDEQ Nonpoint Source Program (319)
Louisiana Cooperative Extension Service Public Outreach Programs
LSU AG Center BMP Review Program
USDA FARM*A*SYST Program
USDA NRCS (SCS) Conservation Operations Program
USDA NRCS (SCS) Resource Conservation & Development
USDA NRCS (SCS) Watershed Programs

5) (II.D.) Pesticide Management Measure

LDAF Pesticide Program - Regulatory & Certification
 LDEQ Permitting of Discharges into Surface Waters
 LDWF Louisiana Natural and Scenic Rivers System
 Soil & Water Conservation Districts
 USDA CFSA (ASCS) Agriculture Conservation Program
 USDA CFSA (ASCS) Conservation Reserve Program
 USDA CFSA (ASCS) Water Bank Program
 USDA CFSA (ASCS) Water Quality Incentive Program
 USDA CFSA (ASCS) Wetlands Reserve Program
 USFWS Endangered Species Act/Critical Habitat mapping
 LDAF Habitat Spray Mapping
 LDEQ Water Quality Certification Program (401)
 LDEQ Wellhead Protection Program
 LDEQ Nonpoint Source Program (319)
 Louisiana Cooperative Extension Service Public Outreach Programs
 LSU AG Center BMP Review Program
 USDA FARM*A*SYST Program
 USDA NRCS (SCS) Conservation Operations
 USDA NRCS (SCS) Resource Conservation & Development
 USDA NRCS (SCS) Watershed Programs

6) (II.E.) Livestock Grazing Management Measure

LDEQ Permitting of Discharges into Surface Waters
 LDWF Louisiana Natural and Scenic Rivers System
 Soil & Water Conservation Districts
 USDA CFSA (ASCS) Agriculture Conservation Program
 USDA CFSA (ASCS) Conservation Reserve Program
 USDA CFSA (ASCS) Water Bank Program
 USDA CFSA (ASCS) Water Quality Incentive Program
 USDA CFSA (ASCS) Wetlands Reserve Program
 LDAF Prescribed Burning Program
 LDEQ Water Quality Certification Program (401)
 LDEQ Nonpoint Source Program (319)
 LDHH Water Sampling
 Louisiana Cooperative Extension Service Public Outreach Programs
 LSU AG Center BMP Review Program
 USDA NRCS (SCS) Conservation Operations
 USDA NRCS (SCS) Resource Conservation & Development
 USDA NRCS (SCS) Watershed Programs

7) (II.F.) Irrigation Management Measure

LDEQ Permitting of Discharges into Surface Waters
LDWF Louisiana Natural and Scenic Rivers System
Soil & Water Conservation Districts
USDA CFSA (ASCS) Agriculture Conservation Program
USDA CFSA (ASCS) Conservation Reserve Program
USDA CFSA (ASCS) Water Bank Program
USDA CFSA (ASCS) Water Quality Incentive Program
USDA CFSA (ASCS) Wetlands Reserve Program
LDEQ Water Quality Certification Program (401)
LDEQ Nonpoint Source Program (319)
Louisiana Cooperative Extension Service Public Outreach Programs
Louisiana Cooperative Extension Service Operation Quackback Program
LSU AG Center BMP Review Program
USDA NRCS (SCS) Conservation Operations
USDA NRCS (SCS) Resource Conservation & Development
USDA NRCS (SCS) Watershed Programs

EP&M SHEETS

§6217 Enforceable Policy and Mechanism (EP&M) Matrix

Agriculture. Erosion and Sediment Control Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Erosion Component of a Conservation Management System (CMS)	Statute sets up a Soil and Water Conservation Committee with authority to promulgate rules and regulations governing land use for the conservation of soil and water LA Rev. Stat. Ann. 3 § 1201, et seq., 1204, 1209.	
Settle solids for a 10-yr, 24-hr storm (8 to 10 in. rain in S LA)		

Agriculture. Management Measure for Facility Wastewater and Runoff from Confined Animal Facility Management (Large Units)

MM Component	EP&M citation	EP&M Applicability citation
facility wastewater stored for 25-yr, 24-hr storm (9 to 12 in. rain in S LA)	1. LCRMA LA Admin Code tit.43 § I.723 (B) (1) (a) (i). 2. LA Water Control Law LA R.S. 30: 2071-8; and LA Admin. Code tit. 33 § IX.301 (C) (3) bs (4), (J), and (K).	
runoff from facility stored for 25-yr, 24-hr storm		
storage structures have proper lining		
include an appropriate waste utilization system		

Agriculture. Management Measure for Facility Wastewater and Runoff from Confined Animal Facility Management (small units)

MM Component	EP&M citation	EP&M Applicability citation
<p>facility wastewater stored for 25-yr, 24-hr storm</p>	<p>1. LCRMA LA Admin. Code tit. 43 § 1.723 (B) (1) (a) (i).</p> <p>2. LA Water Control Law LA R.S. 30: 2071-8; and LA Admin. Code tit. 33 § IX.301 (C) (3) bs (4), (J), and (K).</p>	
<p>runoff from facility stored for 25-yr, 24-hr storm</p>		
<p>include an appropriate waste utilization system</p>		

Agriculture. Nutrient Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Nutrient Management Plan component: farm and field maps		
Nutrient Management Plan component: realistic yield expectations based on production history and university studies		
Nutrient Management Plan component: summary of available nutrient measurement resources		
Nutrient Management Plan component: evaluation of field limitations based on local environmental conditions		
Nutrient Management Plan component: use limiting nutrient concept to establish mix of nutrient sources appropriate for crop at realistic yield level		
Nutrient Management Plan component: identify appropriate methods and timing of nutrient application		
Nutrient Management Plan component: proper calibration and operation of nutrient application equipment		

Agriculture. Pesticide Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Evaluate pest problems, previous pest control measures, and cropping history	LA Pesticide Law L.A.R.S. Ann. 3 § 3201-3376	
Evaluate soil and physical characteristics of site including mixing, loading, and storage areas for potential leaching or runoff of pesticides		
Use Integrated Pest Management (IPM) strategies that a) apply pesticides only when...		
When pesticide applications are necessary and a choice of registered materials exists, consider the persistence, toxicity, runoff potential, and leaching potential of products in making a selection.		
Periodically calibrate pesticide spray equipment		
Use anti-backflow devices on hoses used for filling tank mixtures		

Agriculture. Grazing Management Measure

MM Component	EP&M citation	EP&M Applicability citation
<p>Protect sensitive areas such as streambanks, wetlands, estuaries, ponds, lake shores, and riparian zones by one of the following: exclude livestock, provide stream crossings or hardened drinking water access, alternative drinking water locations, locate salt and shade away from sensitive areas, or use more intensive/improved grazing management</p>	<p>(relative lack of EP&M's here except for invocation of "Soil and Water Conservation Committee with authority to promulgate rules and regulations governing land use for the conservation of soil and water L.A Rev. Stat. Ann. 3 § 1201, et seq., 1204, 1209")</p>	
<p>Implement range and pasture elements of a CMS from the USDA/SCS FOTG, or range and pasture activity plans of the Bureau of Land Mgmt., or US Forest Service</p>		

Agriculture. Irrigation Management Measure

MM Component	EP&M citation	EP&M Applicability citation
<p>Operate the irrigation system so that the timing and amount of irrigation water applied match crop water needs</p>	<p>(relative lack of EP&M's here except for invocation of "Soil and Water Conservation Committee with authority to promulgate rules and regulations governing land use for the conservation of soil and water LA Rev. Stat. Ann. 3 § 1201, et seq., 1204, 1209")</p>	
<p>When chemigation is used, include backflow preventers for wells, minimize the harmful amounts of chemigated waters that discharge, from the edge of the field, and control deep percolation.</p>		

ATTACHMENT # 1

- 1.) Example of a **Restricted Use Pesticide** label which demonstrates that these labels contain site and crop specific information and, indeed, do serve to address 6217 (g) management measures for chemical usage (pesticides, herbicides, etc.) in agriculture and forestry.

Of particular interest are instructions and recommendations on **pages 15, 19, 20, and 21.**

RESTRICTED USE PESTICIDE (GROUND AND SURFACE WATER CONCERNS)

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

THIS PRODUCT IS A RESTRICTED-USE HERBICIDE DUE TO GROUND AND SURFACE WATER CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR ATRAZINE TO REACH GROUND AND SURFACE WATER.

AAtrex[®]

Nine-O[®]

HERBICIDE

For season-long weed control in corn, sorghum, and certain other crops

Active Ingredients: Atrazine: 2-chloro-4-ethylamino-6-isopropylamino-s-triazine 85.5%
Related compounds 4.5%

Inert Ingredients: 10.0%
Total: 100.0%

AAtrex Nine-O is a water dispersible granule.

EPA Reg. No. 100-585

EPA Est. 100-LA-1

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet. CGA 7L101Q 064

ciba™

DIRECTIONS FOR USE AND CONDITIONS OF SALE AND WARRANTY

IMPORTANT: Read the entire Directions for Use and the Conditions of Sale and Warranty before using this product. If terms are not acceptable, return the unopened product container at once.

Conditions of Sale and Warranty

The Directions for Use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application all of which are beyond the control of Ciba-Geigy or the Seller. All such risks shall be assumed by the Buyer.

Ciba-Geigy warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use subject to the inherent risks referred to above. Ciba-Geigy makes no other express or implied warranty of Fitness or Merchantability or any other express or implied warranty. In no case shall Ciba-Geigy or the Seller be liable for consequential, special, or indirect damages resulting from the use or handling of this product. Ciba-Geigy and the Seller offer this product, and the Buyer and user accept it, subject to the foregoing Conditions of Sale and Warranty, which may be varied only by agreement in writing signed by a duly authorized representative of Ciba-Geigy.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours. Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls
- Waterproof gloves
- Chemical-resistant footwear plus socks

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter treated areas without protective clothing until sprays have dried.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

Do not apply this product through any type of irrigation system.

General Information

This herbicide controls many annual broadleaf and grass weeds in corn, sorghum, sugarcane, and certain other crops specified on this label. This product may be applied before or after weeds emerge.

Following many years of continuous use of this product and chemically related products, biotypes of some of the weeds listed on this label have been reported which cannot be effectively controlled by this and related herbicides. Where this is known or suspected, and weeds controlled by this product are expected to be present along with resistant biotypes, we recommend the use of this product in combinations or in sequence with other registered herbicides which are not triazines. If only resistant biotypes are expected to be present, use a registered non-triazine herbicide. Consult with your state Agricultural Extension Service for specific recommendations.

Since this product acts mainly through root absorption, its effectiveness depends on moisture to move it into the root zone. If weeds develop, a shallow cultivation or rotary hoeing will generally result in better weed control.

This product is noncorrosive to equipment and metal surfaces, nonflammable, and has low electrical conductivity.

Avoid using near adjacent desirable plants or in greenhouses, or injury may occur.

To avoid spray drift, do not apply under windy conditions. Avoid spray overlap, as crop injury may result.

Where the use directions give a range of rates, use the lower rate on coarse-textured soil and soil low in organic matter; use the higher rate on fine-textured soil and soil high in organic matter.

Note: Ciba-Geigy does not recommend applications in combination with other herbicides or oils, except as specifically described on the label or in literature published by Ciba-Geigy.

Application Procedures

Ground application: Use conventional ground sprayers equipped with nozzles that provide accurate and uniform application. Be certain that nozzles are uniformly spaced and are the same size. Calibrate sprayer before use and recalibrate at the start of each season and when changing carriers. Unless otherwise specified, use a minimum of 10 gals. of spray mixture per acre for all preplant incorporated, preplant surface, preemergence, and postemergence applications (with or without oil or surfactant) with ground equipment.

CGA 130-540T

Use a pump with capacity to: (1) maintain 35-40 psi at nozzles, (2) provide sufficient agitation in tank to keep mixture in suspension, and (3) to provide a minimum of 20% bypass at all times. Use centrifugal pumps which provide propeller shear action for dispersing and mixing this product. The pump should provide a minimum of 10 gals./minute/100 gal. tank size circulated through a correctly positioned sparger tube or jets.

Use screens to protect the pump and to prevent nozzles from clogging. Screens placed on the suction side of the pump should be 16-mesh or coarser. Do not place a screen in the recirculation line. Use 50-mesh or coarser screens between the pump and boom, and where required, at the nozzles. Check nozzle manufacturer's recommendations.

For band applications, calculate amount to be applied per acre as follows:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{amount needed per acre of field}$$

Aerial application: Use aerial application only where broadcast applications are specified. Apply in a minimum of 1 gal. of water for each 1 lb. of AAtrex Nine-O applied per acre. For postemergence treatments on corn and sorghum, apply recommended rate in a minimum of 2 gals. of water per acre. Avoid applications under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur.

Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin.

Application in water or liquid fertilizer: Nitrogen solution or complete liquid fertilizer may replace all or part of the water as a carrier for preemergence, preplant incorporated, or preplant surface ground application on corn and sorghum. Check the compatibility of this product with liquid fertilizer and/or nitrogen solution as shown below before use. Do not apply in nitrogen solution or complete liquid fertilizer after corn or sorghum emerges, or crop injury may occur.

Compatibility Test: Since liquid fertilizers can vary, even within the same analysis, always check compatibility with herbicide(s) each time before use. Be especially careful when using complete suspension or fluid fertilizers as serious compatibility problems are more likely to occur. Commercial application equipment may improve compatibility in some instances. The following test assumes a spray volume of 25 gals./A. For other spray volumes, make appropriate changes in the ingredients. Check compatibility using this procedure:

1. Add 1 pt. of fertilizer to each of 2 one-qt. jars with tight lids.
2. To one of the jars, add ¼ tsp. or 1.2 milliliters of a compatibility agent approved for this use, such as Compex® or Unite® (¼ tsp. is equivalent to 2 pts. per 100 gals. spray). Shake or stir gently to mix.
3. To both jars, add the appropriate amount of herbicide(s). If more than one herbicide is used, add them separately with dry herbicides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix. The appropriate amount of herbicides for this test follows:

Dry herbicides: For each pound to be applied per acre, add 1.5 level teaspoons to each jar.

Liquid herbicides: For each pint to be applied per acre, add 0.5 teaspoon or 2.5 milliliters to each jar.

4. After adding all ingredients, put lids on and tighten, and invert each jar 10 times to mix. Let the mixtures stand 15 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the 2 jars. If either mixture separates, but can be remixed readily, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: (A) slurry the dry herbicide(s) in water before addition, or (B) add ½ of the compatibility agent to the fertilizer and the other ½ to the emulsifiable concentrate or flowable herbicide before addition to the mixture. If incompatibility is still observed, do not use the mixture.

Application in water plus emulsifiable oil or oil concentrate: Adding emulsifiable oil (petroleum-derived, petroleum-derived oil concentrate, or single or mixed crop-derived oil concentrate) to postemergence water-based sprays in corn and sorghum may improve weed control. However, under certain conditions, the use of either type of oil may seriously injure the crop. To minimize this possibility, observe the following directions:

Use one of the following properly emulsified:

1. A suitable oil concentrate containing at least 1%, but not more than 20% suitable emulsifier or surfactant blend.
2. Petroleum-derived oil containing at least 1% suitable emulsifier.

Note: In the event of a compatibility problem when mixing oil with AAtrex Nine-O and water, a compatibility agent such as Compex or Unite should be used. Any of the above oils contaminated with water or other materials can cause compatibility problems and/or crop injury.

Mixing procedures - All Uses: (1) Be sure sprayer is clean and not contaminated with any other materials, or crop injury or sprayer clogging may result. (2) Fill tank ¼ full with clean water, nitrogen solution, or complete liquid fertilizer. (3) Start agitation. (4) Be certain that the agitation system is working properly and creates a rippling or rolling action on the liquid surface. (5) Pour product directly from bag into tank. (6) Continue filling tank until 90% full. Increase agitation if necessary to maintain surface action. (7) Add emulsifiable oil, oil concentrate, or tank mix herbicide(s) after this product is thoroughly suspended. (8) Finish filling tank. (9) Empty tank as completely as possible before refilling to prevent buildup of oil or emulsifiable concentrate residue. Maintain agitation to avoid separation of materials. (10) If an oil or emulsifiable concentrate film starts to build up in tank, drain it and clean with strong detergent solution or solvent. (11) Clean sprayer thoroughly immediately after use by flushing system with water containing a detergent.

Rotational Crops - All Uses: (1) Do not rotate to any crop except corn or sorghum until the following year, or injury may occur. (2) If applied after June 10, do not rotate with crops other than corn or sorghum the next year, or crop injury may occur. (3) In the High Plains and Intermountain areas of the West where rainfall is sparse and erratic or where irrigation is required, use only when corn or sorghum is to follow corn or sorghum or when a crop of untreated corn or sorghum is to precede other rotational crops. (4) In eastern parts of the Dakotas, KS, western MN, and NE, do not rotate to soybeans if the rate applied to corn or sorghum was more than 2.2 lbs./A or equivalent band application rate, or soybean injury may occur. (5) Injury may occur to soybeans planted the year following application on soils having a calcareous surface layer. (6) Do not plant sugar beets, tobacco, vegetables (including dry beans), spring-seeded small grains, or small-seeded legumes and grasses the year following application, or injury may occur.

AAtrex Nine-O Applied Alone - Corn or Grain Sorghum*

Preplant Surface-Applied, Preplant Incorporated, or Preemergence (or Postemergence at 2.2 lbs./A With Oil)

Broadleaf and Grass Weeds Controlled

barnyardgrass (watergrass)***	cocklebur**	nightshade
giant foxtail**	groundcherry	pigweed
green foxtail***	jimsonweed	purslane
large (hairy) crabgrass**	kochia	ragweed
wild oats	lambsquarters	sicklepod**
witchgrass	annual	velvetleaf
(Panicum capillare)***	morningglory	(button-weed)***
yellow foxtail***	mustards	

Postemergence with Emulsifiable Oil or Oil Concentrate in Water (at 1.3 lbs./A)

Broadleaf Weeds Controlled

annual morningglory	lambsquarters	ragweed	wild buckwheat
cocklebur	mustards	smartweed	velvetleaf**
jimsonweed	pigweed		

*Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or greater setbacks) which are different from the label, the more restrictive/protective requirements must be followed. Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

** Partial control only.

*** Partial control only on medium- and fine-textured soils.

Corn

Preplant Surface-Applied (Broadleaf and grass control): Use on medium- and fine-textured soil with minimum-tillage or no-tillage systems only in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, WI, and WY. Apply the recommended rate of AAtrex Nine-O shown in Table 1 up to 45 days prior to planting. If an unsatisfactory length of weed control results from adverse environmental conditions following early treatment, a follow-up application of an appropriately labeled herbicide may be used. If the follow-up treatment includes atrazine, do not exceed the labeled rate for corn indicated in Table 1. On coarse-textured soils, do not apply more than 2 weeks prior to planting.

If weeds are present at the time of treatment, apply in tank mix combination with a contact herbicide (for example, Gramoxone® Extra or Roundup®). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

Note: To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

Preplant Incorporated (Broadleaf and grass control): Broadcast in spring after plowing at rate in Table 1. Apply to the soil and incorporate before, during, or after final seedbed preparation. Avoid deep incorporation. For best results, apply within 2 weeks prior to planting.

Preemergence or At-Planting (Broadleaf and grass control): Apply during or shortly after planting before weed emergence, at rate in Table 1.

Postemergence (Broadleaf and grass control): Apply before weeds exceed 1.5 inches in height and before corn exceeds 12 inches in height at rate in Table 1.

Table 1: Broadleaf and Grass Weed Control in Corn*

FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE

- On Highly Erodible Soils (as defined by SCS)

If conservation tillage is practiced, leaving at least 30% of the soil covered with plant residues at planting, apply a maximum of 2.2 lbs./A as a broadcast spray.

If the soil coverage with plant residue is less than 30% at planting, a maximum of 1.8 lbs./A may be applied.

- On Soils Not Highly Erodible

Apply 2.2 lbs./A as a broadcast spray.

FOR POSTEMERGENCE APPLICATION

If no atrazine was applied prior to corn emergence, apply a maximum of 2.2 lbs./A broadcast. If a postemergence treatment is required following an earlier herbicide application, the total atrazine applied may not exceed 2.5 lbs. active ingredient (2.8 lbs. of this product) per acre per calendar year.

* **Broadleaf control** (eastern CO, western KS, western NE, NM, OK, Panhandle, west TX, and eastern WY): On sand, loamy sand, sandy loam, mild to strongly alkaline soil, and all recently leveled soil, apply no more than 1.3 lbs./A, either preplant surface, preplant incorporated, or preemergence. On other soils in these areas, apply rate in Table 1 for broadleaf and grass control.

Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or greater setbacks) which are different from the label, the more restrictive/protective requirements must be followed. Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

Postemergence with emulsifiable oil or oil concentrate in water: Add the following volume of one of the type oils indicated for aerial or ground application unless the oil label specifies otherwise:

Type Oil	Ground Application	Aerial Application
Oil Concentrate (Crop or Petroleum-derived)	1 qt./A	1/2 - 1 qt./A
Petroleum-derived oil	1 gal./A	2 qts./A

Note: Crop-derived or petroleum-derived oil concentrates should contain at least 1%, but not more than 20%, suitable emulsifier or surfactant blend. Petroleum-derived oils should contain at least 1% suitable emulsifier.

Broadleaf and grass control: For postemergence control of those weeds listed under **Preplant Incorporated** and **Preemergence**, broadcast 2.2 lbs./A plus emulsifiable oil or oil concentrate after weed emergence, but before weeds reach 1.5 inches in height and before corn exceeds 12 inches in height.

Broadleaf control: For postemergence control of those weeds listed under **Postemergence with emulsifiable oil or oil concentrate in water**, broadcast 1.3 lbs./A plus emulsifiable oil or oil concentrate before pigweed and lambsquarters reach 6 inches in height and before all other weeds reach 4 inches in height. A cultivation may be necessary if all weeds are not controlled or if weeds regrow.

Precautions: For applications with emulsifiable oil or oil concentrate in water: (1) Inbred lines or any breeding stock may be severely injured by applications with emulsifiable oil or oil concentrate. (2) Adding other insecticides, herbicides, liquid fertilizers, or other materials is not recommended, because they may cause compatibility problems or crop injury. (3) Store and handle emulsifiable oil and oil concentrates carefully. Oil contaminated with even a small amount of water may not emulsify properly when added to the tank. To avoid crop injury; (4) Do not apply when crop is under stress from prolonged cold, wet weather, poor fertility, or other factors, or when crop is wet and succulent from recent rainfall. (5) Do not exceed 2.5 lbs. active ingredient (or 2.8 lbs. of this product) per acre per calendar year. (6) Post-emergence applications to corn must be made before corn exceeds 12 inches in height.

Tank Mixtures for Corn

This product may be tank mixed with these herbicides for control of certain broadleaf and grass weeds in corn:

Dual® (metolachlor)	Lasso or Lasso EC + Roundup
Dual + Gramoxone Extra	Lasso or Lasso EC + Gramoxone Extra
Dual + Roundup (glyphosate)	Gramoxone Extra
Dual + Princep®	Gramoxone Extra
Dual + Princep + Gramoxone Extra	Princep
Dual + Princep + Roundup	Princep + Gramoxone Extra
Bexton® or Ramrod® (propachlor)	Princep + Roundup
Lasso® or Lasso EC (alachlor)	Roundup
	Sutan +®

Use tank mix directions appearing on the labels of the above herbicides when tank mixing with this product. Observe all precautions and limitations on labeling of products used in a particular tank mix.

Note: When the labels of the above herbicides refer to atrazine 80W, use equivalent rate of AAtrax Nine-O. One lb. of 80W equals 0.9 lb. of Nine-O. Princep 80W, Princep 4L, or Princep Caliber 90®

In addition to the weeds listed under **AAtrax Nine-O Applied Alone - Corn or Grain Sorghum - Preplant Surface-Applied, Preplant Incorporated, or Preemergence**, this combination also controls crabgrass, fall panicum, and carpetweed.

Broadcast tank mix before planting, at planting, or after planting, but before crop and weeds emerge, at rates in Table 2. Use the 1:1 ratio for control of most weeds. Use the 1:2 ratio for expected heavy infestations of crabgrass and fall panicum. Cultivate shallowly if weeds develop.

Preplant Surface-Applied: Use on medium- and fine-textured soils with minimum-tillage or no-tillage systems only in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, WI, and WY. Apply the recommended rate of AAtrax Nine-O and Princep shown in Table 2 up to 45 days prior to planting. Refer to the AAtrax Nine-O alone section for information if weeds should develop following early treatment. On coarse-textured soils, do not apply more than 2 weeks prior to planting. Refer to the AAtrax Nine-O Applied Alone - Preplant Surface-Applied section of the corn label for additional details.

If weeds are present at time of treatment, apply in a tank mix combination with a contact herbicide (for example, Gramoxone Extra or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

Note: To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

Preplant Incorporated: Apply to the soil and incorporate in the spring before, during, or after final seedbed preparation. Avoid deep incorporation. For best results, apply within 2 weeks prior to planting.

Preemergence: Apply during or shortly after planting, but before crop and weeds emerge.

Refer to Corn sections of this label and to Princep 80W, Princep Caliber 90, or Princep 4L labels for further directions, limitations, and precautions.

Table 2: Tank Mixtures with Princep on Corn

Soil Texture	Broadcast Rate Per Acre			
	1:1 Ratio*		1:2 Ratio**	
	This Product	Princep 80W ¹	This Product	Princep 80W ¹
Sand, loamy sand, sandy loam	1.1 lbs.	1.25 lbs.	0.73 lb.	1.67 lbs.
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with low organic matter	1.3 lbs.	1.5 lbs.	0.88 lb.	2 lbs.
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with medium to high organic matter, and clay (including dark prairie soils of the Corn Belt)	1.6 lbs.	1.8 lbs.	1.07 lbs.	2.4 lbs.

* For control of most weeds.

** For control of expected heavy infestations of crabgrass and fall panicum.

¹ When using Princep Caliber 90 or Princep 4L, use equivalent rates. One lb. of Princep 80W equals 0.9 lb. of Princep Caliber 90 or 1.6 pts. of Princep 4L.

Princep 80W, Princep 4L, or Princep Caliber 90 plus Roundup: Use as tank mixture for preemergence and postemergence control of certain broadleaf and grass weeds where corn will be planted directly into a cover crop, established sod, or in previous crop residues. Refer to Roundup label for all directions, weeds controlled, precautions, and limitations.

Princep 80W, Princep 4L, or Princep Caliber 90 plus Gramoxone Extra: Use as tank mixture with Princep and Gramoxone Extra to kill existing vegetation and for residual weed control where corn will be planted directly into a cover crop, established sod, or in previous crop residues. Add this product and Princep to water in spray tank, agitating until thoroughly mixed. Then add Gramoxone Extra and a nonionic surfactant, such as X-77®. Continue agitation during application. Broadcast 1.1-2.2 lbs. of this product plus 1.25-2.5 lbs. of Princep 80W (or 2-4 pts. of Princep 4L, or 1.1-2.2 lbs. of Princep Caliber 90) plus a suitable amount of Gramoxone Extra in 20-60 gals. of water per sprayed acre. Refer to the Gramoxone Extra label for the appropriate rates to utilize in this tank mixture. Apply before, during, or after planting, but before corn emerges. Add 0.5 pt. of a nonionic surfactant, such as X-77, per 100 gals. of spray mixture. Use the higher rate of Gramoxone Extra specified on the label if existing vegetation is 4-6 inches tall. This mixture will not control weeds taller than 6 inches. Refer to further limitations and precautions on labels for this product, Princep, and Gramoxone Extra.

Precautions: For all applications to corn: (1) To avoid crop injury and illegal residues, do not apply more than 2.8 lbs./A of this product per year. (2) For best control of velvetleaf and cocklebur, the application rate cannot be less than 2 lbs./A active ingredient, either alone or in tank mix combinations. (3) Following harvest, plow (moldboard or disk-plow) and thoroughly till soil in fall or spring to minimize possible injury to spring-seeded rotational crops, regardless of rate used.

Note for all applications to corn: Do not graze or feed forage from treated areas for 21 days following application, or illegal residues may result.

Sorghum and Sorghum-sudan Hybrids (Grain and Forage Types)

Preplant Surface-Applied (Broadleaf and grass control): Use on medium- and fine-textured soil with minimum-tillage or no-tillage systems only in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, WI, and WY. Apply the recommended rate of AAtrax Nine-O shown in Table 3 up to 45 days prior to planting. If an unsatisfactory length of weed control results from adverse environmental conditions following early treatment, a follow-up application of an appropriately labeled herbicide may be used. If the follow-up treatment includes atrazine, do not exceed the labeled rate for corn indicated in Table 1. Under dry conditions, irrigation after application is recommended to move AAtrax Nine-O into the soil.

If weeds are present at time of treatment, apply in a tank mix combination with a contact herbicide (for example, Gramoxone Extra or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

Note: To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

Preplant Incorporated (Broadleaf and grass control): Broadcast in spring after plowing at rate shown in Table 3. Apply before, during, or after final seedbed preparation. If soil is tilled or worked after application, avoid deep incorporation. For best results, apply within 2 weeks prior to planting.

Preemergence or At-Planting (Broadleaf and grass control): Apply during or shortly after planting, but prior to weed or crop emergence at rate shown in Table 3.

Postemergence (Broadleaf and grass control): Apply at rate shown in Table 3 before weeds exceed 1.5 inches in height and before sorghum exceeds 12 inches in height.

Table 3: Broadleaf and Grass Weed Control in Sorghum^{1,2}
FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE

- **On Highly Erodible Soils (as defined by SCS)**
 If conservation tillage is practiced, leaving at least 30% of the soil covered with plant residues at planting, apply a maximum of 2.2 lbs./A as a broadcast spray.
 If the soil coverage with plant residue is less than 30% at planting, a maximum of 1.8 lbs./A may be applied.
- **On Soils Not Highly Erodible**
 Apply 2.2 lbs./A as a broadcast spray.

FOR POSTEMERGENCE APPLICATION
 If no atrazine was applied prior to sorghum emergence, apply a maximum of 2.2 lbs./A broadcast. If a postemergence treatment is required following an earlier herbicide application, the total atrazine applied may not exceed 2.5 lbs. active ingredient (2.8 lbs. of this product) per acre per calendar year.

¹Do not apply preplant surface or preplant incorporated in AL, AR, FL, GA, LA, MS, NC, NM, OK, SC, TN, or TX. Do not apply preemergence in NM, OK, or TX, except in northeast OK and the TX Gulf Coast and Blacklands areas.

²Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or greater setbacks) which are different from the label, the more restrictive/protective requirements must be followed. Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

In case of planting failure, sorghum or corn may be replanted. Do not make a second broadcast application, or injury may occur. If originally applied in a band and sorghum or corn is replanted in untreated row middles, this product may be applied in a band to the second planting provided the maximum application rate of 2.5 lbs. a/A atrazine per calendar year is not exceeded.

Preemergence broadleaf weed control in furrow irrigated bedded sorghum (AZ and CA only): For preemergence control of many broadleaf weeds, broadcast 0.9-1.3 lbs./A after bed preparation, during or after planting, but before sorghum and weeds emerge and before the first furrow irrigation. Follow with several regular irrigations, making sure to thoroughly wet all soil.

Precautions for preemergence application to furrow irrigated bedded sorghum in AZ and CA: To avoid possible sorghum injury, do not use on sand or loamy sand soil or on sorghum planted in furrows. Applications to sorghum growing on alkali soils or where cuts, fills, or erosion have exposed calcareous or alkali subsoils may cause crop injury. In case of crop failure, do not replant sorghum for 8 months following application. Corn may be planted immediately.

Postemergence broadleaf weed control with emulsifiable oil or oil concentrate in water: Broadcast 1.3 lbs./A for control of many broadleaf weeds. Apply before pigweed and lambsquarters reach 6 inches in height and before all other weeds reach 4 inches in height. In CO, western KS, NM, OK, TX, and desert regions of AZ and CA, apply when sorghum is 6-12 inches in height, but before it reaches boot stage. In all other areas, apply after sorghum reaches the 3-leaf stage, but before it exceeds 12 inches in height. Add 1 gal. of emulsifiable oil per acre for ground application and 0.5 gal./A for aerial application, or add 1 qt. of oil concentrate for ground application. A cultivation may be necessary if all weeds are not controlled or if weeds regrow.

For the list of weeds controlled, see AAtrex Nine-O Applied Alone - Corn or Grain Sorghum - Postemergence with Emulsifiable Oil or Oil Concentrate in Water.

Precautions for applications with emulsifiable oil or oil concentrate in water: See "Precautions for applications with emulsifiable oil or oil concentrate in water" in Corn section.

Postemergence broadleaf weed control with surfactant (CO, western KS, NM, OK, TX, and desert regions of AZ and CA only): Broadcast 1.3 lbs./A plus 0.75-1.5 pts. of surfactant after sorghum reaches 6 inches in height, but before weeds exceed 1.5 inches in height. Apply only on sandy loam and finer textured soil.

Precautions: For all applications to sorghum: (1) Heavy rain immediately following application tends to cause excessive concentrations of herbicide in seed furrow, resulting in possible crop injury. Do not apply to furrow-planted sorghum until furrows are leveled (plowed in). Level deep planter marks or seed furrows before application. (2) Application to sorghum growing under stress caused by minor element deficiency or to sorghum growing on highly calcareous soil may result in crop injury. (3) Following harvest, plow (moldboard or disk-plow) and thoroughly till soil in fall or spring to minimize possible injury to spring-seeded rotational crops, regardless of rate used. (4) Injury may occur if both this herbicide, preplant surface, preplant incorporated, or preemergence, and an at-planting systemic insecticide applied in-furrow are used. (5) Do not apply more than 2.5 lbs. active ingredient (2.8 lbs. of this product) per acre per calendar year. (6) For all soil applications prior to crop emergence (except for preemergence use on bedded sorghum in AZ and CA), do not apply to coarse-textured soils, i.e., sand, loamy sand, sandy loam, or to medium- and fine-textured soils having less than 1% organic matter, or injury may occur. (7) For postemergence applications, do not apply to sand or loamy sand, or injury may occur.

Note: Do not graze or feed forage from treated areas for 21 days following application, or illegal residues may result.

Tank Mixtures for Grain Sorghum

Dual 8E: Use as tank mixture with Dual 8E for control of those weeds listed on the Dual 8E label, as well as on this label. Use this tank mixture only on sorghum seed treated with Concep®. Refer to the Dual 8E label for all directions, precautions, and limitations.

Winter Weed Control in Texas

For postemergence control of winter weeds only, such as henbit, seedling dock, and annual thistle on fall bedded land in the Gulf Coast and Blacklands of TX. Apply 0.9-1.1 lbs./A postemergence to the weeds in November or December to land that will be planted to corn, grain sorghum, or forage sorghum the following spring. For best results, add a suitable surfactant, such as X-77, at the rate of 0.5% of the spray volume, an emulsifiable oil at the rate of 1.0% of the spray volume, or an oil concentrate at the rate of 1 qt./A.

Normal weed control programs may be used in the following corn, grain sorghum, or forage sorghum crop.

Note: Do not plant any crops except corn, grain sorghum, or forage sorghum the spring following this treatment, or illegal residues may result.

AAtrex Nine-O Alone - Chemical Fallow

Wheat-Sorghum-Fallow: To control annual broadleaf and grass weeds following wheat harvest and in the following sorghum crop when grown under minimum tillage, broadcast 3.3 lbs./A to wheat stubble immediately following wheat harvest. If weeds are present at application, remove them with a sweep plow or other suitable implement after application, or use an approved contact herbicide before or after the application of AAtrex Nine-O. Plant sorghum into wheat stubble the following spring with minimum soil disturbance. Use a surface planter or a planter leaving a shallow furrow. If weeds are present at planting, remove them with a sweep plow or other suitable implement before planting.

For the list of weeds controlled, see AAtrex Nine-O Applied Alone - Corn or Grain Sorghum - Preplant Surface-Applied, Preplant Incorporated, or Preemergence.

Precautions: (1) Use only on silt loam or fine-textured soil, or crop injury may result. (2) Wheat-sorghum-fallow cropping sequence must be followed. (3) Do not apply following sorghum harvest.

Note: To avoid illegal residues, do not graze or feed forage from treated area to livestock. To avoid illegal residues and crop injury, do not plant any crop other than those on this label within 18 months following treatment.

Wheat-Corn-Fallow (CO, KS, ND, NE, SD, and WY): This product controls cheatgrass (downy brome, chess), Kochia, mustards, pigweed, Russian thistle, wild lettuce, wild sunflower, and volunteer wheat during period after wheat harvest. Weed control may extend into following corn crop grown under minimum tillage.

On soils in ND and SD with a pH greater than 7.5, do not exceed 1.5 lbs. a.i./A of AAtrex Nine-O. For soils with a pH less than 7.5 in ND and SD, apply 1-2 lbs. a.i./A. Use the higher rate on fine-textured soils and where heavy weed infestations are expected, use the lower rate on coarse-textured soils and where light weed infestations are expected. In the event grasses are present the following spring, use a grass herbicide registered for use on corn.

Follow directions for use, notes, and precautions in the Wheat-Sorghum-Fallow section above, substituting corn for references to sorghum.

Wheat-Fallow-Wheat (CO, KS, ND, NE, SD, and WY): For preemergence control of cheatgrass (downy brome, chess), common lambsquarters, field pennycress, Kochia, mustard, Russian thistle, wild lettuce, and suppression of volunteer wheat during fallow period of a wheat-fallow-wheat rotation, broadcast 0.5-1.1 lbs./A on all soils except those listed under Precautions. For control of pigweed and wild sunflower, use the higher rate. Apply to stubble ground. Treat only once during same fallow period.

Tank Mixtures for Chemical Fallow

Wheat-Sorghum-Fallow or Wheat-Corn-Fallow (KS, NE)

Gramoxone Extra: If weeds are present at application, a tank mix with Gramoxone Extra may be used. Broadcast 3.3 lbs. of AAtrex Nine-O plus a suitable amount of Gramoxone Extra in 20-60 gals. of water per acre by ground equipment. Refer to the Gramoxone Extra label for the appropriate rates to utilize in this tank mixture. Add 0.5-1 pt. of a nonionic surfactant, such as X-77, per 100 gals. of spray mixture. Add AAtrex Nine-O to spray tank first and thoroughly mix with water. Then add Gramoxone Extra, followed by surfactant. Use the higher rate of Gramoxone Extra specified on the label if weeds are 4-6 inches tall. This mixture will not control weeds taller than 6 inches. Apply to stubble ground. Treat only once during same fallow period. Refer to Gramoxone Extra label for further directions, precautions, and limitations.

Wheat-Fallow-Wheat (CO, KS, ND, NE, SD, and WY)

Gramoxone Extra: If weeds are present at application, a tank mix with Gramoxone Extra may be used. Broadcast 0.5-1.1 lbs. of AAtrex Nine-O plus a suitable amount of Gramoxone Extra in 20-60 gals. of water per acre by ground equipment. Add 0.5-1 pt. of a nonionic surfactant, such as X-77, per 100 gals. of spray mixture. Add AAtrex Nine-O to spray tank first and thoroughly mix with water. Then add Gramoxone Extra, followed by surfactant. Use the higher rate of Gramoxone Extra specified on the label if weeds are 4-6 inches tall. This mixture will not control weeds taller than 6 inches. Apply to stubble ground. Treat only once during same fallow period. Refer to Gramoxone Extra label for further directions, precautions, and limitations.

If weeds are present at application and this product is used alone, use either an approved contact herbicide before or after treatment, or tillage after treatment.

Use tillage to control weeds which escape during fallow period. Till before planting. For this product applied alone or in tank mixture with Gramoxone Extra, plant at least 2 inches deep and 12 months or more after application.

Precautions: To avoid crop injury, (1) Do not use on sand soil. (2) Do not treat eroded hillsides, caliche and rocky outcroppings, or exposed calcareous subsoil. (3) Do not treat soils of the Rosebud and Canyon Series in western NE and adjoining counties in CO and WY. (4) Do not treat soils with calcareous surface layers. (5) Avoid spray overlap.

Note: Do not graze treated areas within 6 months after application, or illegal residues may result.

Aerial application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft., using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply AAtrex Nine-O alone by aircraft at a minimum upwind distance of 400 ft. from sensitive plants.

Roadsides

To control certain annual weeds in established perennial grasses along roadsides in CO, KS, MT, ND, NE, SD, and WY, including cheatgrass (downy brome, chess), common (annual) broomweed, little barley, medusahead, sagewort, and tumble mustard, broadcast 1.1 lbs./A in a minimum of 10 gals. of water by ground equipment in the fall before ground freezes, or after thawing in the spring, but before the established grasses green-up and before weeds emerge. Examples of desirable established grasses include big bluestem, bluegrama, bromegrass, buffalograss, crested wheatgrass, indiangrass, little bluestem, side-oats grama, switchgrass, and western wheatgrass. Apply only once per year. Temporary discoloration or other form of injury to the desirable perennial grasses may occur following application.

Notes: To avoid illegal residues, (1) Do not cut or feed roadside grass hay. (2) Do not allow livestock to graze treated areas.

Conservation Reserve Program (CRP) (NE, OK, OR, and TX)

For control or suppression of the following weeds: annual ragweeds, barnyardgrass, black nightshade, cheat, cocklebur, downy brome, fall panicum, field pennycress, giant foxtail, yellow foxtail, Japanese brome, Kentucky bluegrass, kochia, lambsquarters, little barley, mare's tail, pigweed, prickly lettuce, smooth brome, and sunflower, refer to the directions, notes, and precautions below:

Pure stands of newly seeded big bluestem, switchgrass, and eastern gamagrass

Use only on loam, silt loam, silty clay loam, clay loam, and silty clay soils with at least 1% organic matter.

Establishment: Broadcast 2.2 lbs./A of AAtrex preplant incorporated or preemergence at time of seeding and prior to emergence of weeds. Prepare a good firm seedbed. Plant 1/2 inch deep with a grassland drill (preferred method) or a conventional drill. If a conventional drill is used on prepared seedbeds, remove all tension from the disk openers. For best results, cultipack or roll after planting.

Renovation of existing stands of big bluestem and switchgrass planted on CRP acres

Broadcast 1.1-2.2 lbs./A to existing stands of big bluestem and switchgrass prior to the emergence of weeds. Use the low rate on soils containing from 1-2% organic matter. Use the high rate on soils with 2% or more organic matter.

Renovation of existing stands of the following perennial range grasses planted on CRP acres

Blue grama, indiangrass, little bluestem, sand lovegrass, sideoats grama, and western wheatgrass.

Broadcast 0.8-1.1 lbs./A in the spring prior to weed emergence, or in the fall before the ground freezes and prior to weed emergence after these species have been established for at least one growing season for control or partial control of the weeds listed above. Use the low rate for weeds controlled or suppressed easily. Use the higher rate on other weeds claimed in an earlier section of this label.

Aerial Application: Make applications at maximum height of 10 ft. above vegetation. Use low drift nozzles at a maximum pressure of 40 psi. Restrict application to periods when wind speed does not exceed 10 mph to control drift. To assure that drift will not adversely affect adjacent sensitive nontarget plants, apply AAtrex Nine-O by aircraft at a minimum upwind distance of 400 ft. from sensitive plants. Use 3-5 gals./A total water volume; use the higher water volume when a dense, heavy ground cover is present.

Notes: (1) Do not cut or feed grass hay to livestock. (2) Do not graze treated areas. (3) Do not use seeds for bird food. (4) Do not dump or spill product or dispose of containers within reach of livestock. (5) Follow all applicable restrictions for the Conservation Reserve Program.

Precautions: To avoid crop injury, make only one application per year. Slight discoloration of desirable grasses may occur following treatment. Injury may be enhanced when used on neutral or alkaline soils.

SEVERE DROUGHT CONDITIONS

Do not graze forage or cut forage for hay. Under severe drought conditions, the Conservation Reserve Program allows grazing and making of hay from CRP acres, as so specified by the local ASCS (Agricultural Stabilization & Conservation Service) office. This label does not allow grazing or making of hay from CRP acres that have been treated with atrazine under any circumstance.

Sugarcane

For control of many broadleaf and grass weeds, including amaranths, crabgrass, fireweed, Flora's paintbrush, foxtails, junglerice, and wiregrass, broadcast 2.2-4.4 lbs./A of AAtrex Nine-O at time of planting or ratooning, but before sugarcane emerges. Broadcast aerially in a minimum of 5 gals. of spray per acre, or broadcast or band by ground equipment in a minimum of 20 gals./A, unless indicated otherwise. One additional application may be made over the sugarcane as it emerges, and 2 additional applications may be made interline after emergence as directed sprays. Repeat treatments, where needed, may be applied broadcast, band, or interline as suggested with the final application being prior to close-in. Do not exceed the rate of herbicide suggested for any one crop of sugarcane.

Note: Where high rates of AAtrex Nine-O are used, apply in a minimum of 1 gal. of water for each 1 lb. of product applied per acre.

Aerial application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft., using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply AAtrex Nine-O alone by aircraft at a minimum upwind distance of 400 ft. from sensitive plants.

Florida

For control of emerged pelitory weed: Apply 0.4-0.6 lbs./A in at least 40 gals. of water as a directed spray by ground equipment prior to close-in. Add 4 qts. of surfactant for each 100 gals. of spray. Thoroughly cover weed foliage.

For control of alexandergrass, large crabgrass, pelitory (artillery) weed, and spiny amaranth, use one of the following methods at planting or ratooning:

1. Apply 4.4 lbs./A preemergence. Follow with 1 or 2 applications, as needed, postemergence to sugarcane and weeds, at 2.2 lbs./A. Treat before weeds exceed 1.5 inches in height.

2. Apply 1-3 times, as needed, at 2.2 lbs./A postemergence to sugarcane and weeds. Treat before weeds exceed 1.5 inches in height.

Louisiana

For control of annual weeds during the summer fallow period, apply 2.2 lbs./A to weed-free beds immediately after bed formation. Follow normal weed control program after planting.

Precautions: To avoid crop injury, (1) Do not apply more than 11 lbs./A to any one crop of sugarcane. (2) If making a 2.2 lbs./A application during summer fallow period, do not exceed 8.8 lbs./A during the remainder of the growing season, or illegal residues may result.

Texas

Use AAtrex Nine-O for control of barnyardgrass, pigweed, purslane, and sunflower, in plant or ratoon sugarcane.

Apply 4.4 lbs./A of AAtrex Nine-O preemergence. Follow with 1 or 2 applications, as needed, at 3.3 lbs./A postemergence to sugarcane and weeds.

For best results when weeds are emerged, add a nonionic surfactant at a concentration of 2 qts./100 gals. to the spray and apply before weeds exceed 1.5 inches in height.

Precautions: (1) Injury to sugarcane may occur when under moisture stress, when soil is of low adsorptive capacity, or when land is first cropped to sugarcane. (2) Do not apply after close-in. (3) Do not apply more than 11 lbs./A to any one crop of sugarcane, or crop injury may result.

Turfgrasses for Sod (Florida only)

St. Augustinegrass, Centipedegrass, and Zoysiagrass

Broadcast 2.2-4.4 lbs./A according to soil texture to control those weeds listed under AAtrex Nine-O Applied Alone - Corn or Grain Sorghum - Preplant Surface-Applied, Preplant Incorporated, or Preemergence.

Muck or peat	4.4 lbs.	Old beds: Within 2 days after lifting sod.
		New beds: 3-4 days after sprigging or plugging.
Sandy soil	2.2 lbs.	Old beds: Within 2 days after lifting sod.
		New beds: 7-10 days after sprigging or plugging.

If weeds regrow, apply an additional 2.2 lbs./A on muck or peat, or 1.1 lbs./A on sandy soil.

Precautions: To avoid crop injury, (1) Do not apply within 30 days prior to cutting or lifting. (2) Do not apply in combination with surfactants or other spray additives. (3) Use only on turfgrass reasonably free of infestations of insects, nematodes, and diseases. (4) On newly sprigged turfgrass, temporary slowing of growth may follow application.

Turfgrass for Fairways, Lawns, Sod Production*, and Similar Areas

* In states other than FL. For use on turfgrass for sod in FL, see **Turfgrasses for Sod (Florida only)** section.

Bermudagrass, Centipedegrass, St. Augustinegrass, and Zoysia-grass

Apply AAtrex Nine-O after October 1 before emergence of winter annual weeds for control of annual bluegrass, burclover, carpet burweed, chickweed, corn speedwell, henbit, hop clover, and spurweed. AAtrex Nine-O will control annual bluegrass even if it is emerged at time of treatment. For control of summer annual weeds listed in the preemergence section of the **AAtrex Nine-O Applied Alone - Corn or Grain Sorghum** section of this label, also apply AAtrex Nine-O in late winter before the weeds emerge. Apply in a minimum of 15 gals. of water per acre or 1 gal. per 1,000 sq. ft.

Where annual bluegrass is the major weed, use 1.1 lbs./A of AAtrex Nine-O (0.4 fl. oz. per 1,000 sq. ft.). Use 2.2 lbs./A (0.8 fl. oz. per 1,000 sq. ft.) for control of the other weeds named above. Do not exceed 1.1 lbs./A per treatment on newly sprigged turfgrass or on hybrid bermudagrass such as Tiflawn, Tifway, and Ormond.

For continued summer annual weed control, apply another 1.1 lbs./A at least 30 days after the previous application, but not after April 15. However, do not make more than 2 applications of this product per year.

Precautions: On newly sprigged turfgrass and hybrid bermudagrass, temporary slowing of growth and yellowing may occur following application. To avoid turf injury, (1) Use only on turfgrass reasonably free of infestations of insects, nematodes, and diseases. (2) Do not use on golf greens. (3) Do not use north of NC (except may be used in VA Coastal Plains) or west of the high rainfall areas of eastern OK and eastern TX. (4) Do not use on muck or alkaline soils. (5) Do not apply over the rooting area of trees or ornamentals not listed on this label. (6) Do not overseed with desirable turfgrass within 4 months before or 6 months after treatment. (7) Do not apply this product to newly seeded bermudagrass until it has overwintered and has a well-developed rhizome system. Do not exceed 2.2 lbs. product per acre within 12 months of seeding bermudagrass.

Note: Do not graze or feed turf clippings to animals, or illegal residues may result.

Macadamia Nuts

For preemergence control of many broadleaf and grass weeds, including crabgrass, foxtail, wiregrass, Flora's paintbrush, spanishneedles, and fireweed, broadcast 2.2-4.4 lbs./A before harvest and before weeds emerge. Repeat as necessary. Do not spray when nuts are on ground during harvest period. Do not apply by air.

Guava

Use only on established plantings which are at least 18 months old. Apply as a directed spray at 2.2-4.4 lbs./A of AAtrex Nine-O in 20-50 gals. of spray mix preemergence or early postemergence to weeds. When applying postemergence, the use of a surfactant and greater spray volume (80-100 gals. of spray mix per acre) may enhance weed control. This product controls many annual broadleaf and grass weeds, including fireweed, purslane, scarlet pimpernel, spanishneedles, and sowthistle.

Notes: To avoid illegal residues, (1) Do not allow spray to contact foliage or fruit. (2) Do not apply more frequently than at 4 month intervals. (3) Do not apply more than 8.8 lbs. of AAtrex Nine-O per year.

Conifers

For control of annual broadleaf and grass weeds prior to transplanting, after transplanting, or in established conifers (including Douglas fir, grand fir, noble fir, white fir, Austrian pine, bishop pine, Jeffrey pine, knobcone pine, loblolly pine, lodgepole pine (shore pine), monterey pine, ponderosa pine, Scotch pine, slash pine, blue spruce, and Sitka spruce): Broadcast 2.2-4.4 lbs. in a minimum of 5 gals. of water per acre by air or 10 gals. by ground before weeds are 1.5 inches tall. Apply to established trees between fall and early spring while trees are dormant. For new transplants, apply during or soon after transplanting. For applications prior to transplanting, allow sufficient precipitation to activate AAtrex Nine-O before transplanting. In areas where spring and summer rainfall is inadequate to activate AAtrex Nine-O, apply during fall prior to spring transplanting.

For the list of weeds controlled, see **AAtrex Nine-O Applied Alone - Corn or Grain Sorghum - Preplant Surface-Applied, Preplant Incorporated, or Preemergence**.

Quackgrass control: Broadcast 4.4 lbs. in a minimum of 5 gals. of water per acre by air or 10 gals. by ground between fall and early spring while trees are dormant and before quackgrass is more than 1.5 inches tall.

Precautions: (1) In areas west of the Rocky Mountains (except the Great Basin), grazing may begin 7 months after a fall application or 3 months after a winter or spring application. (2) To prevent illegal residues, do not graze treated areas of the Great Basin, or areas east of the Rocky Mountains. (3) Temporary injury to trees may occur following use of AAtrex Nine-O on coarse-textured soil. (4) To avoid crop injury, do not apply to seedbeds. (5) Also apply only once per year.

Aerial application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft. above vegetation, using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply AAtrex Nine-O by aircraft at a minimum upwind distance of 400 ft. from sensitive plants.

Storage and Disposal

Pesticide Storage and Disposal

Store in a dry place. Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment. Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

Container Disposal

Completely empty bag into application equipment. Dispose of empty bag in a sanitary landfill, or by incineration, or by open burning, if allowed by state and local authorities. If burned, keep out of smoke.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

Harmful if swallowed, inhaled, or absorbed through skin. Do not breathe dust or spray mist. Avoid contact with eyes, skin, or clothing.

Statement of Practical Treatment

If swallowed: Call a physician or Poison Control Center immediately. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of Ipecac. Do not induce vomiting or give anything by mouth to an unconscious person.

If inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

If on skin: Wash with plenty of soap and water. Get medical attention.

If in eyes: Flush eyes with plenty of water. Call a physician if irritation persists.

Note to Physician: There is no specific antidote for atrazine. If this product is ingested, induce emesis or lavage stomach. The use of an aqueous slurry of activated charcoal may be considered.

Personal Protective Equipment

Applicators and other handlers (other than mixers and loaders) must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks

Mixers and Loaders must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks
- Protective eyewear

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Environmental Hazards

Atrazine can travel (seep or leach) through soil and can enter ground water which may be used as drinking water. Atrazine has been found in ground water. Users are advised not to apply atrazine to sand and loamy sand soils where the water table (ground water) is close to the surface and where these soils are very permeable, i.e., well-drained. Your local agricultural agencies can provide further information on the type of soil in your area and the location of ground water.

This product may not be mixed/loaded, or used within 50 ft. of all wells including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 ft. of any well are prohibited unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spill or equipment leaks, container or equipment rinse or wash-water, and rain-water that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading sites.

States may have in effect additional requirements regarding well-head setbacks and operational area containment.

This product may not be mixed or loaded within 50 ft. of intermittent streams and rivers, natural or impounded lakes and reservoirs. This product may not be applied aerially or by ground within 66 ft. of the points where field surface water runoff enters perennial or intermittent streams and rivers or within 200 ft. around natural or impounded lakes and reservoirs. If this product is applied to highly erodible land, the 66-ft. buffer or setback from runoff entry points must be planted to crop, seeded with grass, or other suitable crop.

This pesticide is toxic to aquatic invertebrates. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from treated areas. Runoff and drift from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash waters.

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Ciba Crop Protection

Ciba-Geigy Corporation

Greensboro, North Carolina 27419

CGA 7L101Q

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IVB. LOUISIANA

FORESTRY

**LETTER OF REQUEST FOR THE EXCLUSION OF FORESTRY
FROM THE CNPCP**

Coastal Management Division

Louisiana Department

of

Natural Resources

Louisiana's Coastal Nonpoint Pollution Control Program

FORESTRY

Louisiana's Request for Exclusion of Forestry from Louisiana's Coastal Nonpoint Pollution Control Program.

As spelled out in the NOAA/EPA Program Development and Approval Guidance (1993) a state may exclude some categories, subcategories or sources from the requirements of the 6217 coastal nonpoint program. An exclusion may occur under either of two scenarios: (1) if a nonpoint source category or subcategory is neither present nor reasonably anticipated in the 6217 management area, or (2) if a state can demonstrate that a category, subcategory or particular source of nonpoint pollution does not and is not reasonably expected to, individually or cumulatively, present **significant adverse** effects to living **coastal** resources or human health.

Comments on the proposed Coastal Nonpoint Program and threshold review meeting dated June 19, 1995 state that "based on the 305(b) data, limited land use data, harvest, and BMP compliance data, it appears to NOAA and EPA that forestry activities exist in Louisiana's coastal areas and may be significant." While forestry activities do indeed exist in Louisiana's coastal areas, it is the state's opinion that because this forest activity is limited and because forestry and silviculture is practiced using an increasingly effective voluntary BMP program, that it does not present **significant adverse** effects to living **coastal** resources or human health. This position is enforced by the failure of NOAA/EPA to provide a definitive answer in their threshold review comments addressing the presence and significance of forestry in Louisiana's coastal areas.

Louisiana respectively submits its request for an exclusion for the category of Forestry. As a basis for this request, the state's position is that *scenario number two* (2), above, is applicable to this category. Rationale for the exclusion request and a brief look at several

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studies supporting the state's contention are as follows:

- (1) Minimal forest presence as a **commercial** land base in the coastal zone/proposed 6217 management area.
- (2) Minimal forestry operations conducted in the coastal zone/proposed 6217 management area.
- (3) Documentation provided by the Louisiana Department of Environmental Quality's 305(b) water quality reports that indicate that forestry is **not a significant** source of nonpoint pollution **adversely** affecting living **coastal** resources or human health.
- (4) The existence of in-place, effective, voluntary programs through which Louisiana's forestry community and associated agencies have successfully sought and achieved **measured improvements** in the reduction of nonpoint source pollution attributed to silvicultural activities.
- (5) Repetitive use of on-the-site compliance checks and audits by state, private, and industry personnel to ensure implementation of best management practices in all phases of silvicultural activity.

Nationwide, considerable research has been accomplished on gauging the impacts of forestry activities on water quality. Generally, this research has found that while silvicultural activities can have some negative effects on surface and subsurface water quality, these effects tend to be **moderate to slight in magnitude, localized, and of relatively short duration** compared to other nonpoint sources. This is primarily due to two factors. First, silvicultural activities, as presently practiced, tend to be much less intensive than other source categories. Secondly, silvicultural activities are spaced at much greater time intervals. For example, occasionally harvest and intensive site preparation operations have been shown to produce significant sediment yields; however, rapid revegetation reduces these rates to near preharvest levels within two or three years. Therefore, the greatest impacts on water quality from silviculture occur only at the **beginning or end** of a stand's rotation in even-aged management. Twenty to 40 or more years may pass between occurrences of these activities on a particular site. Intermediate

operations, such as thinnings, cause much less disturbance and hence have little effect on water quality. Other studies have been conducted and support these premises (Farrish, 1994).

A literature review by Shephard (1993) on the effects of forest management on surface water quality in wetland forests in 5 southeastern states showed that **water quality criteria was rarely exceeded by silvicultural operations, and effects on water quality were transient.** Water quality parameters returned to undisturbed levels within a period ranging from months to several years. Gosselink et al. (1990) noted that timber harvesting in bottomland hardwood wetlands has **minimal impact** on long-term functions when conducted using best management practices.

A study by Farrish et al (1993) pertaining to soil conservation practices on clearcut forestlands in Louisiana showed that the rates of predicted soil loss from such lands were comparable to rates for clean-tilled agricultural land in the region. However, the period of accelerated erosion is shorter in duration on forestland and tapers off as vegetation reoccupies the site. The study indicated that soil erosion rates on harvested and site prepared forestlands in Louisiana are, **on the average, not severe**, and that proper implementation of BMPs on forestland will reduce soil loss and protect water quality in the state.

Research by Askew and Williams (1986) on water quality changes due to minor drainage and conversion from mixed hardwood forest to loblolly pine plantation in coastal South Carolina indicated that overall water quality was not significantly changed by the conversion process. In fact by taking certain precautions such as limiting the percentage of newly drained land as a percentage of the total being converted and directing drainage discharge away from critical aquatic habitats, water quality factors such as dissolved oxygen content and pH **may actually be improved.**

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Boschung and O'Neil (1980) studied the effects of forest clearcutting on the warmwater macroinvertebrates and fishes in the Talladega National Forest, Clay County, Alabama. The study concluded that a small forest clearcut properly conducted according to appropriate guidelines in a southern Appalachian forest has **no discernable effects** on fishes and macroinvertebrates in a small permanent upland stream.

Watershed research study areas in the Ouachita mountains of Oklahoma and Arkansas were established in the late 1970's. These study areas were used to determine the rates of natural erosion and nutrient movement in the undisturbed forest and to measure the effects of forestry practices on soils, nutrients, and waters. Some conclusions reached in these studies indicated that: (1) Erosion from the harvest site, projected over the entire harvest cycle indicated little difference in average annual soil loss between clearcut or selection harvesting and the undisturbed control watersheds. This was because soil loss associated with harvesting was **low and short-lived**. Two of the five factors in the Universal Soil Loss Equation (USLE) are slope steepness and length of slope. Louisiana's coastal area is typified by relatively flat topography. As an example, the forest tract in lower Livingston Parish that was used for demonstration purposes during the February threshold review exhibited a "slope" of only 0.08% or a drop of 1 foot per 1200 feet of distance. Such topography is typical of the coastal areas and serves to drastically reduce erosion effects by reducing runoff from these areas. (2) Forest road erosion occurred on "new" forest roads more readily than "established" roads but **downstream water quality could be protected from degradation** by road erosion by dispersing road ditch water onto the forest floor. Controlling this forest road erosion is a focus of BMPs in forestry. (3) Forest nutrient level increase occurred during the first few years after a harvest but then there follow **a rapid decline back** to pre-harvest levels. It should be noted that when the total amount of nutrients in stormflow rises after harvesting, water quality may not always be affected. This is because the higher stormflow after harvesting often dilutes the additional nutrients.

Specifically, in Louisiana, all or parts of 19 parishes make up the Louisiana coastal zone/proposed 6217 management area. The total size of this area is approximately 5.3 million acres. Of this acreage, only 16.3% or 862,700 acres are supportive of some type of forest cover. This includes cypress forest (328,250 acres or 38%), bottomland forest (318,140 acres or 37%), and upland forest (215,800 acres or 25%).

Timber harvesting occurs most often in the bottomland and upland forest areas of the coastal zone. There is negligible harvest in the second growth cypress belts in this area. Generally cypress harvest is limited to isolated pockets of trees that are located on bottomland and occasionally upland timber tracts. Because timber harvest is confined mainly to these two areas this serves to reduce silvicultural activity in the coastal zone/proposed 6217 management area to an area of approximately 550,000 acres or about 10% of the coastal zone. The periodicity of the timber harvest cycle also serves to limit the acreage of timber harvested per year in the coastal area. This cycle is not a predetermined set period of time but hinges on the final product a company or a landowner wishes his forestland to produce. A landowner may use a longer rotation period because he opts for quality sawlogs as a final timber product. Shorter rotation periods may be desirable for pulpwood harvests or small pole harvests. In many cases a landowner may manage his forest not for a final timber product but rather for more intangible timber assets such as esthetics and wildlife habitat. In cases such as these, the forest can be subject to even longer rotations or the timber may not be harvested at all. With an average harvest rotation of 25 years used by industry for upland pine forest and a rotation of 50-60 years used for bottomland hardwood forests, the forestland that is subject to harvest, per year, in the coastal zone/proposed 6217 management area is reduced even further.

Table 1. is a breakdown by parish showing total land area, forested area, and average timber harvested from each parish for the years 1992 and 1993 in the coastal zone/proposed 6217 management area. Calcasieu, St. Martin, and Assumption Parishes

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have been omitted from the totals because only a small portion of each parish is included in the coastal zone and timber reports show that timber production in these areas is negligible (Attachment # 1).

Table IVB-1.

Parish	Total Acres	Forested Acres	Percent Forested	Sawtimber Cut (Mbf)	Pulpwood Cut (cords)
<u>1000 acres</u>					
Cameron	906.8	0	0	0	0
Iberia	377.0	115.4	31	49.3	5.0
Jefferson*	222.7	0	0	5.3	34.1
Lafourche	730.0	114.1	16	56.2	2859.4
Livingston*	169.2	130.9	77	13,126.7	78,773.1
Orleans*	127.4	0	0	0	7.0
Plaquemines*	662.4	0	0	16.3	24.9
St. Bernard*	311.0	0	0	0	0
St. Charles*	183.2	53.5	29	280.8	23.5
St. James*	158.8	79.1	50	0	1029.9
St. John*	136.3	76.9	56	8.3	58.3
St. Mary	392.1	124.4	32	6.2	0
St. Tammany*	83.9	54.2	65	5,243.4	10,858.7
Tangipahoa*	75.2	46.1	61	5,468.6	15,591.1
Terrebonne	875.1	71.3	8	20.0	23.6
<u>Vermilion</u>	<u>771.3</u>	<u>25.7</u>	<u>3</u>	<u>20.0</u>	<u>5.6</u>
Totals	6,182.4	891.6	14	24,301.1	109,294.2
Statewide	26,265.1	13,782.6	52	1,562,035.9	5,275,877.3

Source: Forest Statistics for Louisiana Parishes--1991.
 Louisiana Timber and Pulpwood Production Reports--1992&93.
 *: denotes only land acreage present in the 361 coastal zone.

The figures included in Table IVB-1. illustrate the insignificance of forestry/silviculture in the coastal zone area by pointing out that only **1.5%** of the sawtimber harvest and only **2.1%** of the pulpwood harvest in Louisiana is conducted in this area. Forest land located within the coastal zone boundary is about 6.2 percent of the state's total forest acreage. The forestland area within the coastal zone boundary is 16.3 percent of the total land area of the coastal zone.

Table 1. also indicates that **ten** parishes in the coastal zone/proposed 6217 management area had **little or no** timber production for the 1992-1993 harvest period. Also reinforcing this position, the 1991 U.S. Forest Survey (US Forest Service) omitted **five** coastal parishes from the survey because there is **little or no commercial forest land** located within their boundaries. These parishes are Cameron, Jefferson, Orleans, Plaquemines, and St. Bernard. (Vissage, 1991).

The preceding data indicates that silvicultural operations make up only a small percentage of the suspected causes of nonpoint source pollution affecting water quality in the coastal waters of the state. Analysis of information included in the Louisiana Department of Environmental Quality's (LDEQ) 305(b) and 319 reports adds support to this idea.

Louisiana has twelve water quality management basins delineated on the basis of the natural drainage patterns of the state's major river basins. Each water quality management basin is subdivided into stream subsegments in which the hydraulic and water quality characteristics are fairly constant. Parts of ten of these management basins are located in the coastal zone/proposed 6217 management area. Table 2. (attached) shows water quality impairment that *may* be attributed to silviculture, harvesting, and reforestation practices in the coastal zone portions of these management basins.

It must be stressed that the great majority of the waters possibly affected by forestry activities in these management basin areas still either **fully or partially support their designated uses**. Fully supporting indicates that all designated uses, i.e., primary contact recreation, secondary contact recreation, and fish and wildlife propagation, assigned to that water body are fully supported. Partially supporting indicates that one or more uses are partially supporting and the remaining uses are fully supported. Ninety-nine (99) percent of river waters possibly impaired by forestry activities still **fully or partially** support their designated activities. Ninety-six (96) percent of these river waters still offer **full** support to these activities. From the table it can be seen that of the management

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basin areas that are reported to have had some water quality impairment by silvicultural activities only a small portion (59 miles or 6.6%) is in the coastal zone/proposed 6217 management area.

LDEQ currently monitors twenty five (25) water parameters under its monthly ambient surface water quality network. Two of the leading nonpoint source pollutants for silviculture and forestry activities, nutrients and sediment, are not monitored. In fact, at the federal level, there are currently **no** nationally recommended criteria for either nutrients or sediment. To demonstrate how this may effect accurate identification of a cause of waterbody impairment, waterbody segment 040501 (the Tickfaw River-from the Mississippi state line to LA Hwy 42), a 68 mile river segment with only approximately 10 miles of its assessed length in the coastal zone, is listed in the 1994 305 (b) report as presently **not** meeting its designated uses. Silviculture is listed as a cause of this nonpoint source impairment as it is included **with twelve (12) other possible sources of impairment**. Many of these sources exhibit the same identifying characteristics as silviculture, namely organic enrichment/low DO, nutrients, and suspended solids. Currently there is no accurate method by which each source listed can be correctly isolated and identified as to point of origin, linked to the cause of impairment, and quantified from random samples taken from the water column. This casts some doubt as to whether silviculture is really a major or even a minor contributing source to the Tickfaw River's water quality impairment.

It is interesting to note that water body segment 040502 (the Tickfaw River-from LA Hwy 42 to Lake Maurepas, or that segment directly below 040501) is listed in the report as being **fully** supportive of its designated uses. Dredging, land development, and waste water are again listed, among others, as sources of impairment but silviculture is not specifically mentioned while only a few miles upstream silviculture is named as a source of nonpoint pollution.

In another example, water quality segments 040701 and 040702 (the Tangipahoa River from the Mississippi state line to I-12 (not in the CZ) and from I-12 to Lake Pontchartrain (in CZ) list Forest Management as a contributing source of nonpoint pollution for these river segments. Again forest management is included with **fourteen (14) other possible sources of pollution**, many of which exhibit the same identifying characteristics as nonpoint pollution attributed to improper forest management.

However, results from water quality assessments in the 1990, 1992, and 1994 305(b) reports show the quality of surface waters adjacent to silvicultural activities to have improved over time. In 1990, of the 8,665 river miles assessed in the state, 1339 miles or 15.5% were found to have some type of impact from silvicultural activities. In 1992 silvicultural impairment of these waters was reported to be 1167 miles, a 13% reduction in impairment from the previous year's figure. In 1994 impairment attributed to silvicultural activities was stated to be 758 miles. This last figure reflects the elimination of the "threatened" classification as a degree of support category. Allowing for this procedural change, the 1994 figures indicate a 9.1% reduction in impairment from the 1992 figures and a 20.8% reduction from the 1990 figures. A graph illustrating this data is included on page 15 of the text. This is a significant reduction in nonpoint source pollution attributed to silviculture in a four year time period. A similar decreasing trend over time for silvicultural impairment holds true for lakes, reservoirs, estuaries, and bays.

Major contributors to this upgrading are Louisiana's successes in implementing its Section 319 programs. Measured improvements in forestry BMP implementation (p.10) were quite remarkable and contributed to the positive impact on overall state water quality improvement. EPA (1992) linked silviculture to approximately 3% of the nation's nonpoint source pollution problem. Based on this figure, even a large reduction in the water quality impairment attributed to silviculture would result in only a correspondingly small increase in overall surface water quality (p.15). The graph pictured illustrates that point. It shows that an increase of 70% in the BMP compliance rate resulted in only a

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3.5% increase in overall water quality (1994). Recalling the same EPA source (EPA, 1992), it can be seen that the **non-silviculture nonpoint pollution sources** have more significant overall nonpoint source roles and equivalent improvements in these categories may be expected to more greatly contribute to Louisiana's overall water quality **improvement** than a greater improvement in the silviculture source.

At first evaluation, the correlation between forestry BMP compliance and overall water quality improvement in Louisiana appears to be statistically significant. However, it must be mentioned that without additional data from all other categories it is difficult to describe the exact statistical response surface between forestry and Louisiana's overall water quality. It should be correct, however, to assume that the relatively large improvements in Forestry BMP compliance will not give correspondingly large improvements in water quality.

Education and outreach programs conducted by state and Federal agencies working together with forest industry have also contributed greatly to the increase in surface water quality in those waters adjacent to silvicultural activities. The Louisiana Department of Environmental Quality (LDEQ), together with the Louisiana Department of Agriculture and Forestry (LDAF), the Louisiana Cooperative Extension Service (LCES), the U.S. Forest Service, the Natural Resources Conservation Service (NRCS), and the Louisiana Forestry Association (LFA) have taken the lead in these efforts to date. In the past these efforts have included a program for conducting BMP training sessions statewide and also the production of two videos promoting the use of best management practices in forestry activities.

The Louisiana Office of Forestry (LOF) regularly conducts standardized forestry BMP compliance surveys. The past several years has seen a significant increase in the use of these best management practices in all phases of silviculture. The BMP compliance or implementation rate during forestry activities has increased from a rate of less than 10 %

in a Soil Conservation Service (now Natural Resources Conservation Service) survey conducted in 1985 to a 51% implementation rate in a survey conducted by the Louisiana Office of Forestry in the fall of 1991. Noteworthy in this survey was the increase in adoption of BMPs on nearly 80% of the sites that included or were adjacent to a waterbody. The 1994 LOF survey results are even more favorable. The survey was expanded to include a total of 400 individual forestry operations (survey sites) statewide. The number of sites sampled per parish was based on the amount of sawtimber harvested in that parish as listed in the 1993 Timber and Pulpwood Production Report. The survey has been completed and shows an 80 % implementation rate for BMPs statewide. St Tammany, Livingston, and Tangipahoa, the three parishes in which the greatest forestry activity in the coastal zone/proposed 6217 management area occurs, show an average BMP implementation rate of 85%.

Unlike the LOF survey, the Louisiana forest community BMP compliance surveys and audits are not periodic occurrences. They are instead, conducted as a routine forest management practice. An informal survey conducted by the Louisiana Forestry Association on behalf of the Louisiana forestry CZARA sub-committee of eight companies involved in forestry related work indicated that all eight companies monitored BMP compliance during and after logging or silviculture activities on their clients or of company land. Nearly 2.5 million acres of managed forest land statewide were covered in this survey. In addition 15 BMP training sessions were conducted by these companies either for their employees or other independent logging or silvicultural contractors.

The forestry community has also trained more than three thousand foresters, landowners, educators, and others in the last four years. In addition, a new initiative has recently been undertaken by the Louisiana Forestry Association, a part of which includes:

- ◆ Developing and measuring environmental progress associated with forestry and silviculture harvesting activities across Louisiana. This will include both industry owned lands as well as non-industrial lands.

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- ◆ A commitment from forest industry to fund and implement eighty-six days of training for loggers including fifty days of BMP training within the next twenty-four months. This will be in addition to established and ongoing training efforts.
- ◆ Training ninety facilitators from the forestry community to ensure a continuous and dependable supply of persons qualified and committed to providing quality training for the forestry community.
- ◆ Completing the scripting and production of a new training video for BMP training. This will be used with a new interactive facilitator's guide to provide continued accessibility to training across the state.
- ◆ A continued dedication funding quality research through the National Council (of the Paper Industry) for Air and Stream Improvement. See attached summaries of current and ongoing research evaluating the impacts of silviculture/forestry on the environment.

In conclusion, Louisiana is respectfully requesting an exclusion for forestry as a category of nonpoint source pollution in the state's coastal waters. A recent technical bulletin from the National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI), concludes that the quality of water draining from forested watersheds is normally the best in the nation, relative to other land uses, whether the forests are left untouched or intensively managed. Nationwide forestry is a relatively small contributor to the nation's overall nonpoint source problem in terms of both quantity and quality of discharge. (NCASI, 1994). Louisiana presently has in place effective, voluntary forestry programs through which this "best water quality" is being achieved and in the long run will be maintained. The Louisiana Department of Environment Quality's 319 and 305 (b) reports show a continuing improvement in water quality for the state's coastal waters adjacent to silvicultural activities while periodic, statewide best management practice compliance audits by the Louisiana Office of Forestry indicate a parallel increase in compliance with recommended BMPs. Education and outreach programs are being expanded and improved upon, and preliminary discussions are now being held for the addition of new BMPs to a revised recommended forestry best management practice

manual for Louisiana.

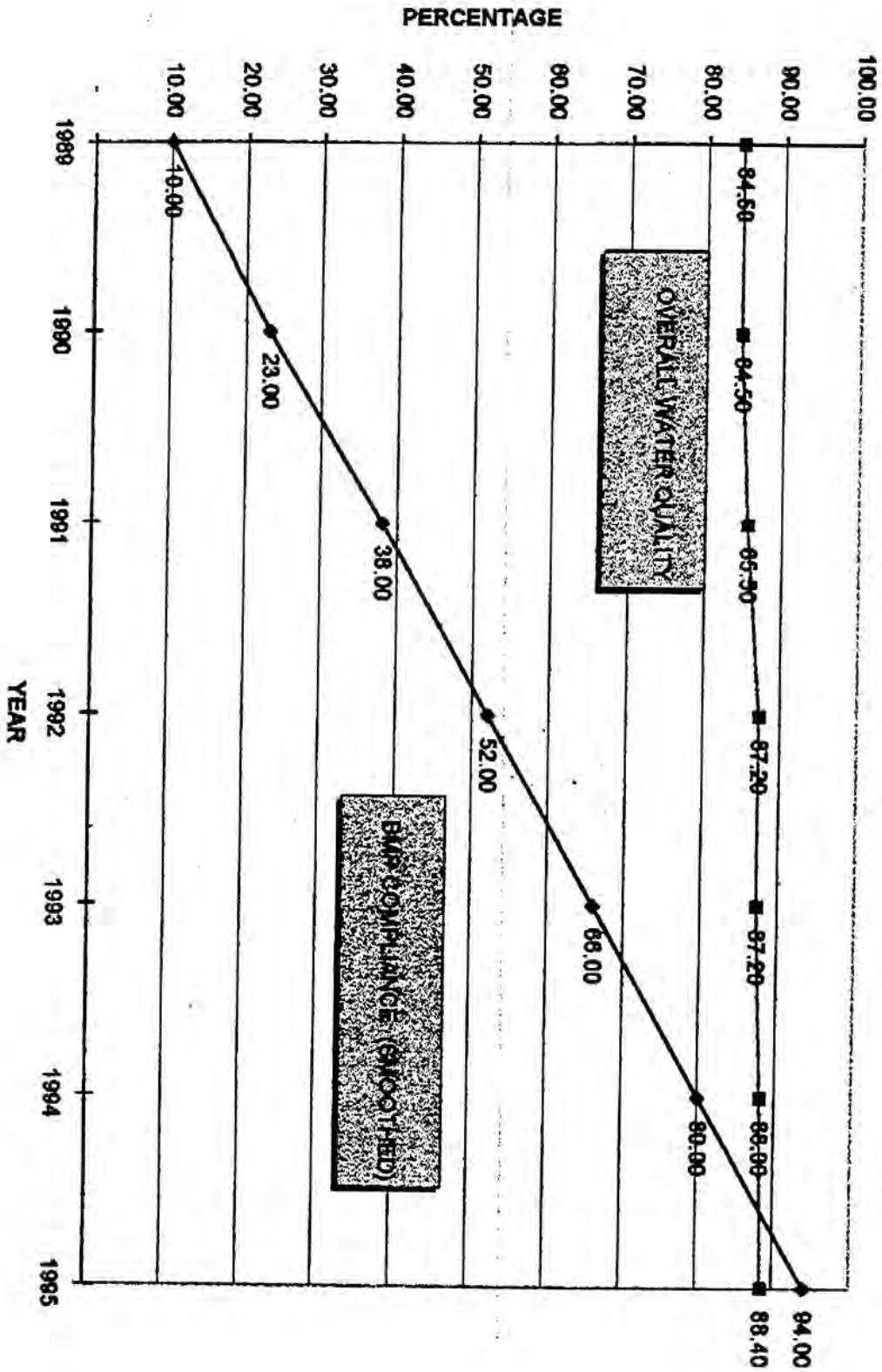
Louisiana believes that it is justified in asking for an exclusion for Forestry as a **significant** category of nonpoint pollution in the state's coastal zone/proposed 6217 management area and requests the same.

Table IVB-2.

Management Basin	Subsegment Code	Type&Size (miles)	Degree of Support	Present in Coastal Zone
Atchafalaya	010101	R 135.0	Full	No
Barataria	None	None	-----	-----
Calcasieu	030101	R 6.0	Full	No
	030102	R 49.0	Full	No
	030104	R 25.0	Full	No
	030201	R 26.0	Full	No
	030503	R 16.0	Full	No
	030508	R 19.0	Full	No
	030701	R 37.0	Full	No
	030801	R 17.0	Partial	No
	030802	R 45.0	Full	No
	030803	R 53.0	Full	No
	030804	R 12.0	Full	No
Lake Pontchartrain				
Tickfaw R-from	040501	R 68.0	Not	Approx 10 mi
Miss state line to	040502	R 26.0	Threatened	Yes
Hwy 42 (Scenic)&	040701	R 56.0	Partial	No
Tangipahoa R- from I-12 to Lake Pontchartrain	040702	R 23.0	Partial	Yes
Mermentau	050101	R 54.0	Partial	No
	050302	R 4.0	Full	No
Vermilion- Teche	060102	L 6099 acre	Full	No
	060201	R 50.0	Full	No
	060203	L 1626 acre	Not	No
Mississippi Pearl River	None	None	-----	-----
	090104	R 10.0	Full	No
	090401	R 24.0	Partial	No
	090501	R 53.0	Not	No
	090502	R 19.0	Full	No
	090503	R 13.0	Full	No
	090504	R 16.0	Full	No
	090506	R 19.0	Full	No
Sabine	110507	R 15.0	Threatened	No
Terrebonne	None	None	-----	-----

Source: Louisiana Department of Environmental Quality, Section 305 (b) report, 1994.

FORESTRY'S BMP COMPLIANCE HAS SMALL IMPACT ON LA'S OVERALL WATER QUALITY IMPROVEMENT



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ATTACHMENT #1

1. Louisiana Timber and Pulpwood Production reports--Years 1992, 93, & 94.

1992

LOUISIANA

TIMBER AND PULPWOOD PRODUCTION

Published by

Louisiana Department of Agriculture & Forestry
Office of Forestry

April 1993

BOB ODOM, COMMISSIONER
PAUL D. FREY, STATE FORESTER

This report consists of total forest products severed and tax receipts by parish (county) and species plus estimated stumpage values. Calculations were based on annual compilations by the Louisiana State Department of Revenue.

Summary

	<u>SAWTIMBER</u> (Bd. Ft.)	<u>PULPWOOD</u> (Cords)	<u>TAX</u>
1992 . . .	1,464,098,392	5,186,676.40	\$10,654,246.88
<hr/>			
1991 . . .	1,380,453,588	5,251,296.02	\$9,472,228.21
1990 . . .	1,526,967,717	5,246,209.71	8,889,126.28
1989 . . .	1,370,751,549	5,524,344.40	7,837,425.84
1988 . . .	1,490,641,653	5,271,589.00	7,384,293.51
1987 . . .	1,426,566,095	5,048,051.58	7,113,589.53

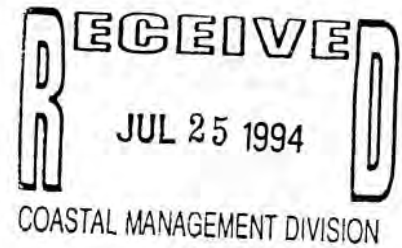
This public document was published at a total cost of \$46.85. One thousand (1,000) copies of this public document were published in this first printing at a cost of \$46.85. Total cost of all printings, including reprints is \$46.85. This document published by the Department of Agriculture & Forestry, Office of Forestry, P.O. Box 1628, Baton Rouge, Louisiana 70821, to inform the public of the stumpage value by species, value of timber severed by species and tax receipts from various species under the authority of R.S. 56:1476. This material was printed in accordance with the standards for printing by state agencies established pursuant to R.S. 43:31.

TIMBER SEVERED BY SPECIES AND PARISH -- 1992

(SAWTIMBER - BOARD FEET, DOYLE SCALE; PULPWOOD - STANDARD CORDS)

PARISH	SAWTIMBER		PULPWOOD	
	PINE	HARDWOOD	PINE	HARDWOOD
ACADIA	10,976,444	137,092	14,658.88	5,190.69
ALLEN	45,244,104	3,703,708	125,850.19	32,651.90
ASCENSION	14,831	248,807	11,236.09	11,614.09
ASSUMPTION	0	56,732	0.00	2,657.62
AVOUELLES	1,090,476	6,039,629	2,196.40	19,363.44
BEAUREGARD	75,652,745	5,386,777	251,241.51	13,012.10
BIENVILLE	72,364,854	7,566,485	228,084.04	71,941.05
BOSSIER	46,102,738	2,395,446	77,825.90	85,206.71
CADDO	26,568,403	981,349	75,436.39	43,278.30
CALCASIEU	20,640,069	2,183,057	49,336.75	6,431.41
CALDWELL	12,611,308	2,012,300	49,449.65	17,070.92
CAMERON	0	0	0.00	0.00
CATAHOULA	2,638,541	2,202,783	23,395.98	7,472.01
CLAIBORNE	48,895,204	4,001,549	122,400.89	57,532.02
CONCORDIA	0	8,281,476	0.00	21,455.99
DESOTO	65,179,928	6,017,950	150,597.60	81,578.48
EAST BATON ROUGE	3,943,651	3,851,097	6,121.15	17,123.06
EAST CARROLL	1	2,639,256	0.00	18,977.56
EAST FELICIANA	29,327,284	3,285,042	39,575.05	27,877.55
EVANGELINE	24,037,761	2,193,993	58,716.84	27,604.87
FRANKLIN	102,851	702,680	2,445.27	7,487.98
GRANT	27,795,695	1,173,969	76,342.57	25,292.59
IBERIA	0	0	0.00	10.04
IBERVILLE	0	5,700,579	250.22	8,469.24
JACKSON	50,178,629	3,333,630	151,169.28	58,172.45
JEFFERSON	0	4,627	0.00	11.47
JEFF DAVIS	3,711,388	199,953	4,097.30	1,530.77
LAFAYETTE	0	197,368	0.00	35.42
LAFOURCHE	0	37,718	0.00	1,799.04
LASALLE	41,779,075	754,499	121,483.85	43,248.21
LINCOLN	26,875,830	1,699,334	100,784.60	61,231.03
LIVINGSTON	27,573,813	5,075,162	166,708.81	29,132.87
MADISON	250	9,886,522	0.00	20,234.07
MOREHOUSE	35,290,150	495,253	23,039.09	55,241.97
NATCHITOCHE	46,405,723	2,335,747	156,765.45	56,749.67
ORLEANS	0	0	0.00	14.35
OUACHITA	15,539,206	4,804,319	51,033.87	34,406.87
PLAQUEMINES	0	0	0.00	0.00
POINT COUPEE	0	6,964,639	0.00	15,156.51
RAPIDES	52,756,780	5,059,645	181,377.49	58,186.63
RED RIVER	17,038,238	1,732,587	49,194.95	25,469.59
RICHLAND	5,930	594,800	353.99	5,259.58
SABINE	82,361,931	11,226,176	216,228.06	55,458.32
ST. BERNARD	0	0	0.00	0.00
ST. CHARLES	0	561,616	0.00	47.02
ST. HELENA	29,473,191	2,886,518	76,599.38	19,286.50
ST. JAMES	0	0	0.00	0.00
ST. JOHN	0	14,429	0.00	106.78
ST. LANDRY	265,963	15,564,245	4,651.20	37,165.04
ST. MARTIN	0	695,376	33.44	21,935.36
ST. MARY	0	12,371	0.00	0.00
ST. TAMMANY	38,198,154	1,199,904	84,804.25	6,657.67
TANGIPAHOA	35,009,645	1,717,790	72,588.40	14,661.20
TENSAS	0	1,380,234	0.00	4,801.74
TERREBONNE	0	39,958	0.00	47.20
UNION	59,807,939	2,627,290	158,771.14	64,782.85
VERMILION	0	0	11.32	0.00
VERNON	71,126,239	5,239,032	350,648.37	37,712.66
WASHINGTON	20,106,839	2,130,288	60,445.96	10,858.22
WEBSTER	38,280,846	3,922,841	63,665.75	41,944.48
WEST BATON ROUGE	18,875	3,562,374	0.00	5,240.37
WEST CARROLL	189,795	349,963	527.58	2,832.53
WEST FELICIANA	11,522,285	5,368,869	20,013.78	36,167.42
WINN	69,202,590	5,755,367	181,311.42	90,320.82
TOTAL SEVERANCE	1,285,906,192	178,192,200	3,661,470.10	1,525,206.30

1993



LOUISIANA

TIMBER AND PULPWOOD PRODUCTION

Published by

Louisiana Department of Agriculture & Forestry
Office of Forestry

June 1994

BOB ODOM, COMMISSIONER
PAUL D. FREY, STATE FORESTER

This report consists of total forest products severed and tax receipts by parish (county) and species plus estimated stumpage values. Calculations were based on annual compilations by the Louisiana State Department of Revenue.

Summary			
	<u>SAWTIMBER</u> <u>(Bd. Ft.)</u>	<u>PULPWOOD</u> <u>(Cords)</u>	<u>TAX</u>
1993 ...	1,659,973,455	5,365,078.20	\$12,280,915.37
1992 ...	1,464,098,392	5,186,676.40	\$10,654,246.88
1991 ...	1,380,453,588	5,251,296.02	\$9,472,228.21
1990 ...	1,526,967,717	5,246,209.71	8,889,126.28
1989 ...	1,370,751,549	5,524,344.40	7,837,425.84
1988 ...	1,490,641,653	5,271,589.00	7,384,293.51

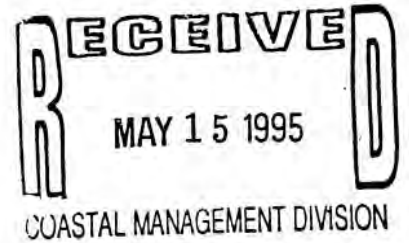
TIMBER SEVERED BY SPECIES AND PARISH - - 1993

(SAWTIMBER - BOARD FEET, DOYLE SCALE; PULPWOOD - STANDARD CORDS)

PARISH	SAWTIMBER		PULPWOOD	
	PINE	HARDWOOD	PINE	HARDWOOD
ACADIA	11,124,736	2,377,260	11,740.67	7,800.58
ALLEN	33,813,384	9,233,161	86,721.76	32,957.37
ASCENSION	428,025	273,895	0.00	6,812.93
ASSUMPTION	0	139,774	0.00	7,451.64
AVOUELLES	1,550,495	9,055,717	1,206.21	17,651.49
BEAUREGARD	104,066,143	5,315,803	255,024.71	20,536.25
BIENVILLE	75,639,478	8,804,509	218,048.81	74,597.03
BOSSIER	42,425,275	5,506,542	100,152.35	96,939.61
CADDO	33,998,216	2,052,621	82,318.49	52,298.14
CALCASIEU	20,259,793	1,360,725	62,305.94	16,032.14
CALDWELL	21,899,046	2,342,979	63,043.29	21,452.38
CAMERON	0	0	0.00	0.00
CATAHOULA	4,514,893	3,189,300	24,468.02	13,414.73
CLAIBORNE	63,503,029	3,829,002	118,866.88	68,003.83
CONCORDIA	0	3,103,070	0.00	15,082.93
DESOTO	59,023,950	7,592,393	155,654.94	85,931.48
EAST BATON ROUGE	5,632,970	2,426,980	10,699.26	11,659.14
EAST CARROLL	0	1,670,387	0.00	14,591.31
EAST FELICIANA	33,012,688	4,410,618	54,782.96	32,630.86
EVANGELINE	18,394,426	5,891,392	44,699.45	42,604.05
FRANKLIN	1,536,294	1,714,314	9,504.66	5,519.75
GRANT	30,347,878	1,380,549	70,909.15	33,866.56
IBERIA	0	98,526	0.00	0.00
IBERVILLE	0	8,959,341	0.00	42,077.69
JACKSON	55,903,589	5,605,948	136,858.42	73,076.00
JEFFERSON	0	5,849	0.00	57.21
JEFF DAVIS	7,540,223	1,076,540	9,324.99	10,334.10
LAFAYETTE	0	0	0.00	0.00
LAFOURCHE	0	74,643	0.00	3,919.76
LASALLE	42,050,893	871,177	91,613.71	46,946.21
LINCOLN	31,667,894	2,150,775	91,150.40	42,916.15
LIVINGSTON	28,736,694	4,246,774	166,777.56	31,245.84
MADISON	0	7,829,718	0.00	11,919.54
MOREHOUSE	35,352,945	3,965,837	29,195.54	62,503.69
NATCHITOCHE	44,969,050	4,646,746	119,799.46	43,889.41
ORLEANS	0	0	0.00	0.00
OUACHITA	23,944,191	4,784,939	45,407.32	52,721.03
PLAQUEMINES	0	32,564	0.00	49.69
POINT COUPEE	0	6,138,258	0.00	7,305.77
RAPIDES	65,815,810	8,033,068	188,105.82	76,621.98
RED RIVER	17,168,489	1,523,429	31,478.93	16,866.19
RICHLAND	796,023	1,022,314	9.41	2,704.00
SABINE	65,031,925	8,768,243	226,973.98	53,739.74
ST. BERNARD	0	0	0.00	0.00
ST. CHARLES	0	0	0.00	0.00
ST. HELENA	37,388,375	4,925,250	99,580.36	28,978.13
ST. JAMES	0	0	0.00	2,059.73
ST. JOHN	0	2,069	0.00	9.68
ST. LANDRY	394,141	11,614,324	325.66	48,399.38
ST. MARTIN	0	303,462	0.00	32,329.72
ST. MARY	0	0	0.00	0.00
ST. TAMMANY	29,967,151	547,081	46,741.42	9,572.82
TANGIPAHOA	33,789,953	2,384,778	104,712.43	15,919.19
TENSAS	0	4,144,607	0.00	14,803.25
TERREBONNE	0	0	0.00	0.00
UNION	70,448,385	4,659,524	172,171.68	72,894.25
VERMILION	0	40,020	0.00	0.00
VERNON	143,200,965	6,890,116	346,441.04	55,275.73
WASHINGTON	26,766,004	3,161,521	105,887.82	19,100.74
WEBSTER	51,524,985	4,629,244	101,024.63	56,074.95
WEST BATON ROUGE	0	5,266,758	53.31	11,118.34
WEST CARROLL	24,300	1,730,661	125.74	3,449.31
WEST FELICIANA	9,113,414	7,000,485	12,001.85	24,383.58
WINN	52,109,278	16,292,479	159,958.07	58,114.10
TOTAL SEVERANCE	1,434,875,396	225,098,059	3,655,867.10	1,709,211.10

1994

LOUISIANA



TIMBER AND PULPWOOD PRODUCTION

Published by

Louisiana Department of Agriculture & Forestry
Office of Forestry

May 1995

BOB ODOM, COMMISSIONER
PAUL D. FREY, STATE FORESTER

This report consists of total forest products severed and tax receipts by parish (county) and species plus estimated stumpage values. Calculations were based on annual compilations by the Louisiana Department of Revenue and Taxation.

Summary			
	SAWTIMBER	PULPWOOD AND CHIP-N-SAW	TAX
	<u>(Bd. Ft.)</u>	<u>(Cords)</u>	
1994 ...	1,514,155,748	6,089,186	\$13,857,716
1993 ...	1,659,973,455	5,365,078	\$12,280,915
1992 ...	1,464,098,392	5,186,676	10,654,247
1991 ...	1,380,453,588	5,251,296	9,472,228
1990 ...	1,526,967,717	5,246,210	8,889,126
1989 ...	1,370,751,549	5,524,344	7,837,426

TIMBER SEVERED BY SPECIES AND PARISH - - 1994

(SAWTIMBER - BOARD FEET, DOYLE SCALE: PULPWOOD AND CHIP-N-SAW - STANDARD CORDS)

PARISH	SAWTIMBER		PULPWOOD		CHIP-N-SAW
	PINE	HARDWOOD	PINE	HARDWOOD	PINE
ACADIA	4,333,647	1,657,122	3,026	4,303	0
ALLEN	45,311,610	2,775,220	106,530	69,289	2,463
ASCENSION	286,494	557,298	2,093	15,350	0
ASSUMPTION	0	0	0	0	0
AVOUELLES	3,434,868	5,088,582	4,942	11,248	1,339
BEAUREGARD	107,398,294	8,072,577	261,435	46,400	20,411
BIENVILLE	71,515,871	7,377,659	206,029	71,009	5,056
BOSSIER	52,754,223	5,889,605	82,153	158,896	159
CADDO	42,088,404	20,539,607	66,309	66,770	197
CALCASIEU	19,344,074	2,530,181	46,635	10,353	1,019
CALDWELL	23,590,813	2,601,998	69,370	22,669	279
CAMERON	0	0	0	0	0
CATAHOULA	4,786,623	2,795,552	10,405	17,389	28
CLAIBORNE	93,180,148	4,664,960	193,789	88,528	3,397
CONCORDIA	0	6,975,928	0	17,366	0
DESOTO	61,367,337	4,469,397	170,900	96,440	1,802
EAST BATON ROUGE	4,567,910	5,055,413	5,867	18,935	0
EAST CARROLL	0	3,086,017	0	26,360	0
EAST FELICIANA	12,543,103	4,072,799	31,911	27,116	23,225
EVANGELINE	21,421,124	5,791,148	46,193	56,586	210
FRANKLIN	1,135,111	1,564,960	3,656	2,200	0
GRANT	24,915,418	1,950,098	59,702	35,869	970
IBERIA	0	0	0	29	0
IBERVILLE	0	4,162,323	0	32,168	0
JACKSON	45,929,348	4,872,649	135,829	80,712	2,212
JEFFERSON	0	3,996	0	44	0
JEFF DAVIS	3,314,229	341,391	7,011	1,354	0
LAFAYETTE	0	0	0	158	0
LAFOURCHE	0	198,994	0	164	0
LASALLE	34,412,432	1,743,915	130,645	62,110	2,744
LINCOLN	38,346,275	2,921,110	103,636	48,546	1,917
LIVINGSTON	13,302,583	2,143,382	206,969	33,699	29,167
MADISON	0	3,633,643	0	14,792	0
MOREHOUSE	36,243,011	2,984,699	16,051	97,275	0
NATCHITOCHE	39,913,902	5,920,689	131,063	56,350	4,807
ORLEANS	0	33,057	0	42	0
OUACHITA	34,205,050	4,301,760	56,458	57,642	1,755
PLAQUEMINES	0	40,334	0	0	0
POINT COUPEE	0	7,833,378	0	13,920	0
RAPIDES	60,226,534	4,436,218	210,176	71,840	26,696
RED RIVER	10,260,668	704,205	25,929	16,426	189
RICHLAND	655,509	1,955,692	2,049	9,438	0
SABINE	50,849,714	5,697,882	211,376	51,502	3,399
ST. BERNARD	0	0	0	0	0
ST. CHARLES	0	0	0	0	0
ST. HELENA	22,233,804	3,099,277	78,148	27,550	18,755
ST. JAMES	0	6,545	0	700	0
ST. JOHN	0	0	0	1,052	0
ST. LANDRY	38,023	7,765,765	7	26,015	34
ST. MARTIN	0	1,219,269	10	4,482	0
ST. MARY	0	0	0	0	0
ST. TAMMANY	23,456,291	886,911	104,533	12,136	59,571
TANGIPAHOA	26,467,416	3,349,543	89,554	26,174	30,359
TENSAS	0	8,367,688	0	19,467	0
TERREBONNE	0	0	0	12	0
UNION	78,500,941	5,662,134	209,263	89,962	773
VERMILION	0	22,402	0	136	0
VERNON	71,333,750	5,439,948	307,128	66,595	22,123
WASHINGTON	16,067,231	3,669,959	79,554	19,394	33,750
WEBSTER	47,287,916	5,099,685	92,525	58,613	577
WEST BATON ROUGE	0	3,160,954	0	2,124	0
WEST CARROLL	0	267,553	0	2,238	0
WEST FELICIANA	6,543,941	6,828,269	9,490	48,209	1,321
WINN	45,220,791	9,079,977	211,150	76,177	6,660
TOTAL SEVERANCE	1,298,784,431	215,371,317	3,789,499	1,992,320	307,363

ATTACHMENT # 2

1. Summaries of current and ongoing research.

**NCASI Forest Wetlands Program
Program Status and Progress on Cooperative Research Projects**

November, 1994

I. Program Status

Background

The NCASI Forest Wetlands Program began in 1989. Its goal is to provide research and technical support to help landowners manage forest wetlands for timber production while protecting other wetland functions such as flood storage, water purification, and food chain/wildlife habitat support.

Funding

The program began in 1989 with \$125,000 in voluntary funding support from approximately 25 NCASI member companies. During 1990 through 1992, the voluntary funding goal was constant at \$400,000 per year, with actual income ranging from 85% to 90% of the goal. Beginning with the 1993 fiscal year, the forest environmental studies program, including the wetlands program, was funded through the NCASI basic dues structure. The budget for the wetlands program in 1993 and 1994 was \$400,000. Most of the program's research projects are not supported solely by NCASI funds. Many benefit by additional monetary and in-kind support from member companies as well as funding from other institutions and agencies.

Projects

During 1994 the Program is supporting 10 cooperative research projects in 11 states. In addition, final reports are being prepared for 6 projects that were funded in the past. These projects are assessing effects of various forestry practices on wetland hydrology, water quality, wildlife, plant communities, and soil chemical and physical properties. Funding from NCASI and other partners in these cooperative projects has supported or is currently supporting 30 M.S. and 6 Ph.D students.

These cooperative studies are publishing results in peer-reviewed journals (13 published, 4 in press, 11 in review) and in other publications such as proceedings or symposia (29 published, 2 in press). Three NCASI Technical Bulletins have been published.

Information about these projects, including key findings and project status is listed on the following pages:

Response of a South Carolina Blackwater Swamp to Clearcutting and Site Disturbance

Principal Investigators: Drs. Robert Kellison and Russell Lea, North Carolina State University

Graduate Research Assistants: Christina Pavel, Donna Perison, and Joseph Phelps

Location: Orangeburg County, South Carolina

Forest Type: Blackwater bottomland hardwood

Research Objectives: To quantify relative impacts of skidder and helicopter timber harvesting on the wetland functions associated with water quality, sediment retention, carbon export, nutrient removal and transformation, surface water storage, vegetation productivity, herpetofaunal and plant species composition and diversity.

Key Findings:

- Water tables in harvested treatments were closer to the surface than in the control due to reduction in evapotranspiration.
- Sedimentation rates were higher in harvested treatments than in the control.
- Organic matter decomposition rates increased with increased disturbance: Skidder > Helicopter > Control.
- Concentrations of ground water NH_4^+ , and total organic carbon, but not NO_3^- , were elevated following harvesting.
- Ground cover vegetation biomass and species richness was greater in harvested treatments than in the control, but did not differ between skidder and helicopter treatments.
- There was no difference in herpetofaunal diversity among treatments, with the exception that the edge had lower diversity than the clearcut and control areas.
- Salamanders were much more abundant in the control treatments whereas reptiles, especially lizards and large snakes were much more frequent in the clearcut treatments.
- Ruts formed by logging provided breeding habitat for frogs.
- The two tree frog species observed during the study differed in habitat preference. Green tree frogs were most commonly observed in clearcuts whereas gray tree frogs were found most often in the control treatment.

Publications:

Perison, D.M. and R. Lea. 1992. The spatial variability of a South Carolina blackwater swamp. IN: Clayton, S. (ed.) Proceedings of the 35th Meeting of the Soil Science Society of North Carolina. Raleigh, NC. 142 p.

Pavel. C.M. 1993. An assessment of timber harvesting on the biomass, species diversity, and stand structure of the vegetation in a South Carolina bottomland hardwood forest. M.S. Thesis, North Carolina State University, Raleigh, NC. 78 p.

Pavel. C.M. and R.C. Kellison. 1993. The impacts of timber harvest and soil disturbance on the vegetation in a blackwater swamp. pp. 147-150 In John C. Brissette (ed.) Proc. Seventh Biennial Southern Silvicultural Research Conference. USDA Forest Service Southern Forest Experiment Station. Gen. Tech. Rep. SO-93.

Perison, D.M. 1993. The spatial variability of environmental gradients in a South Carolina blackwater swamp. M.S. Thesis, North Carolina State University, Raleigh, NC. 46 p.

Perison, D.M., R. Lea, and R.C. Kellison. 1993. The response of soil physical and chemical properties and water quality to timber harvest and soil disturbance: Preliminary results. pp. 143-146 In John C. Brissette (ed.) Proc. Seventh Biennial Southern Silvicultural Research Conference. USDA Forest Service Southern Forest Experiment Station. Gen. Tech. Rep. SO-93.

Phelps, J.P. 1993. The effects of clearcutting on the herpetofauna of a South Carolina blackwater bottomland. M.S. Thesis, North Carolina State University, Raleigh, NC. 66 p.

Phelps, J.P. and R. Lancia. 1993. Effect of timber harvest on the herpetofauna communities of a bottomland hardwood ecosystem: preliminary results. pp. 151-154 In John C. Brissette (ed.) Proc. Seventh Biennial Southern Silvicultural Research Conference. USDA Forest Service Southern Forest Experiment Station. Gen. Tech. Rep. SO-93.

Perison, D.M. 1994. The effects of timber harvest and soil disturbance on soil process and water quality in a South Carolina blackwater swamp. Ph.D. Thesis, North Carolina State University, Raleigh, NC 82 p.

Funding: NCASI contributed a total of \$57,000. The North Carolina State University Hardwood Research Cooperative provided \$118,600. Georgia-Pacific provided \$37,000 in in-kind support. The South Carolina Forestry Commission, and Westvaco Corp. have provided significant in-kind support (logging, laboratory assistance, and housing for researchers).

Status: Final report in preparation.

Alabama Harvest Impact Study

Principal Investigators: Dr. B.G. Lockaby, Dr. Robert Jones, Dr. D.A. Brown, and Ms. R.G. Clawson - Auburn University; and Dr. Frank Thornton - Tennessee Valley Authority.

Graduate Research Assistants: A.J. Griffin and S.M. Lloyd

Location: Conecuh County, Alabama

Forest Type: Bottomland hardwood (braided branch bottom)

Research Objectives: To evaluate the effects of timber harvesting (helicopter vs. skidder log removal) on water quality, hydrology, denitrification, decomposition, nutrient availability, microbial communities, and amphibian populations.

Key Findings:

- Contrary to the typical water table rise, water tables in the harvested areas were deeper than the controls during the first growing season following harvest, likely due to evaporation from these dark organic soils.
- No harvest effects for nitrate or phosphate in surface or ground water were observed during two years after harvesting.
- Harvested areas had numerically (but not statistically) higher total suspended solids than undisturbed controls, but the levels did not approach the standard set by the state water quality agency.
- Within the harvest zone, biological oxygen demand increased numerically, but not statistically during the mid- to latter part of the first growing season after harvesting.
- Harvesting did not significantly affect denitrification rates.
- Amphibian numbers and species richness declined during the first month after harvesting compared to uncut control forests.
- By six months after harvesting, amphibian numbers and species richness had increased to approximately pre-harvest levels.
- Salamanders were absent from the harvested sites for the first 18 months after harvesting, after which they began to invade the harvested areas.
- The eastern narrow-mouthed toad (*Gastrophyne carolinensis*) was only found in harvested plots, not in uncut control forests.

Publications:

Lockaby, B. G., F. C. Thornton, R. H. Jones, and R. G. Clawson. 1994. Ecological responses of an oligotrophic floodplain forest to harvesting. *Journal of Environmental Quality* 23:901-906.

Lockaby, B.G., R.H. Jones, R.G. Clawson, S. Meadows, J. Stanturf, and F.C. Thornton. Influences of harvesting on functions of floodplain forests associated with low-order, blackwater streams. *Forest Ecology and Management* (in review).

Clawson, R.G., B.G. Lockaby, and R.H. Jones. Amphibian responses to helicopter harvesting in forested floodplains of low-order, blackwater streams. *Forest Ecology and Management* (in review).

Funding: NCASI has contributed a total of \$85,000 since 1990. Scott Paper Company provided the study site, significant in-kind support, and \$80,000. Alabama Agricultural Experiment Station provided a total of \$50,000. Alabama Dept. of Environmental Management provided \$25,000. The USDA Forest Service (Stoneville, MS) provided \$20,000.

Status: Final report in preparation

Pennsylvania Wetland Road Crossing Study

Principal Investigators: Drs. David DeWalle, William Sharpe, and Robert Brooks - Pennsylvania State University

Graduate Research Assistants: Robert L. Miller, Jr. and Tamara Tornatore

Location: Phase I: 70 sites across Pennsylvania Phase II: Huntingdon and Fulton Counties, Pennsylvania

Forest Type: Mixed upland hardwood with riparian wetlands

Research Objectives: The objectives of Phase I was to assess the long-term effects of forest road crossings over riparian wetlands. Phase II objectives are to: (1) evaluate short-term water quality impacts of three different stream crossing methods (culverts, bridges, and fords) during construction and logging, and (2) to document the duration of water quality impacts after logging.

Key Findings:

- Natural storm-induced variability in suspended solids and turbidity was evident in pre-installation data.
- The study found that crossings caused significant increases in suspended solids during installation. Installation impacts were brief and were reduced to insignificant levels within 24 hours for bridge installation and 96 hours for culverts.
- Fall and winter high flows since installations have resulted in little increase in suspended solids and turbidity.
- Use of a culvert with shale fill for skid trails resulted in little or no impact.
- The amount of impact during use of bridges during skidding was related to the amount of organic debris and mud accumulated on the bridge deck.
- Impacts associated with use of culverts with log fill for skidding was related to the stability of the approach area and stream bank.
- A survey of 70 road crossings over riparian wetlands in Pennsylvania found little or no long-term impacts on stream morphology and aquatic habitat.

Publications:

Miller, Robert L. Jr. 1993. The long-term environmental impacts and the costs associated with forest road crossings of wetlands in Pennsylvania. M.S. Thesis, Pennsylvania State University,

University Park, PA. 133 p.

Tornatore, T.A., R.L. Miller, D.R. DeWalle, W.E. Sharpe, R.P. Brooks, and J.C. Finley. 1994. Stream and wetland impacts associated with forest road and trail crossings. School of Forest Resources Annual Report, Volume 9. College of Agricultural Sciences, University Park, PA.

Tornatore, T.A., D.R. DeWalle, and W.E. Sharpe. 1994. Short-term stream impacts associated with forest road and skid trail crossings. Proceedings of the Conference on Environmental Issues Affecting the Forestry and Forest Products Industries of the Eastern United States. Virginia Polytechnic Institute and State University, Blacksburg, VA.

Funding: NCASI has provided a total of \$55,000 since 1991. Pennsylvania State University is providing cost sharing by waiving indirect costs, and also in Phase II by providing study sites, and road crossings to fit the study design on their Stone Valley Forest. Glatfelter Pulpwood Company is providing in-kind support by providing study sites and road crossings.

status: Final report in preparation

Texas Wetland Study

Principal Investigators: Drs. Michael Messina, Steve Jack, and Jim Dixon - Texas A & M University; Drs. Stephen Schoenholtz and John Hodges - Mississippi State University; Dr. Jim Dickson - USDA Forest Service, Nacogdoches, TX

Graduate Research Assistants: D.H. Foley III, Andy Londo, and M.W. Lowe, Texas A & M University; Z. Wang and D.K. Gunter, Mississippi State University

Location: Tyler County, Texas

Forest Type: Bottomland Hardwood

Research Objectives: (1) Assess changes chemical and physical properties of stream and ground water in conjunction with timber harvesting, (2) Assess effects of harvesting on ground water hydrology, (3) Assess harvesting effects on nitrogen mineralization, decomposition, and soil carbon dioxide efflux, (3) Compare species woody plant species composition, diversity, and structure before and after harvesting, (4) Assess effects of harvesting on herpetofauna, and (5) Assess effects of timber harvesting on small mammals.

Key Findings:

- Harvesting resulted in elevated water tables when compared with an uncut control.
- There were no significant differences in ground water levels of pH, electrical conductivity, ortho-phosphate, dissolved oxygen and ammonium among treatments.
- Ground water nitrate nitrogen was significantly higher in the clearcut treatments during the first January and February following harvesting in September than in other treatments. Nitrate concentrations were less than 1.4 mg/l and thus substantially below the EPA water quality criteria of 10.0 mg/l.
- There were no significant differences in stream water levels for turbidity, temperature, electrical conductivity, ortho-phosphate, dissolved oxygen, nitrate and ammonium among treatments.
- Stream water pH was significantly higher in the selectively harvested treatments in April 1993. Stream water pH was significantly lower in the uncut control treatments in July 1993. These pH differences did not exceed 0.1 pH units.
- Ground water temperature was significantly higher in clearcut treatments in one month during the first growing season after harvesting, but there were no treatment differences for any other dates.

- During the first year after harvesting 4,817 individuals from 35 herpetofaunal species were captured. Frogs and toads were most abundant (70%), followed by lizards (14%), snakes (9%), salamanders (7%), and turtles (<1%).
- Of the 35 herpetofaunal species captured, only 15 were captured at frequencies that allowed statistical tests for treatment differences. Of these, five species showed statistically significant differences among treatments:
 - One species (the marbled salamander, *Ambystoma opacum*) was captured in significantly greater numbers in the uncut control (67 captures) than in the clearcut (21 captures).
 - Four species (*Scincella lateralis*, *Elaphe obsoleta*, *Eumeces laticeps*, *Ambystoma opacum*, and *Bufo velatus*) were captured in significantly greater numbers in the clearcut treatments than in the uncut control. Rank order for all of these species was clearcut > selective cut > control.
- Without regard to statistics, two herpetofaunal species were most abundant in the uncut control treatments, three species were most abundant in the selectively harvested treatments, and 10 species were most abundant in the clearcut treatments.

Publications:

Wang, Ziyin and Stephen Schoenholtz. 1993. Preliminary results of timber harvesting on surface and ground water quality in bottomland hardwood forest wetlands in east Texas. Poster presented at the Conference on Riparian Ecosystems in the Humid U.S. March 15-18, 1993. Atlanta, GA.

Gunter, D.K., S.H. Schoenholtz, and M.G. Messina. 1994. Physical responses of soil to logging intensity in an east Texas bottomland hardwood wetland. *Agronomy Abstracts*. p. 377.

Messina, M.G., S.H. Schoenholtz, M.W. Lowe, Z. Wang, D.K. Gunter, and A.J. Londo. Initial responses of vegetation, water quality, and soils to harvesting intensity in a Texas bottomland hardwood ecosystem. *Forest Ecology and Management*. (in review).

Funding: NCASI has committed a total of \$91,000 since 1991. EPA provided approximately \$25,000. A study of timber harvest effects on small mammals is being supported by the USDA Forest Service. Temple-Inland is providing the study site, forestry staff support, lodging for investigators, and monetary support of over \$30,000 per year. International Paper Company has provided approximately \$40,000 to fund research on timber harvesting effects on soil physical properties.

Status: Ongoing

Nomini Creek BMP Effectiveness Study

Principal Investigators: Drs. Saied Mostaghimi, Robert Shaffer, Phillip McClellan, and Michael Aust - Virginia Polytechnic Institute and State University

Location: Westmoreland County, Virginia

Forest type: Mixed pine and riparian hardwoods

Research Objectives: Use paired watershed techniques to compare hydrology and water quality among watersheds harvested with and without forestry Best Management Practices, as well as a uncut control.

Key Findings:

- A statistical technique was constructed to relate the duration of pre- and post-harvest monitoring with the degree of detectable change in water quality parameters using the paired watershed technique.
- This technique indicates that a pre-harvest monitoring phase of 2 - 2.5 years is optimum.

Publications:

Cooke, Richard A., Saied Mostaghimi, and Phillip W. McClellan. Application of robust regression to the analysis of BMP effects in paired watersheds. *Trans. ASAE* (in press).

Funding: NCASI has contributed a total of \$40,000 since 1992. The majority of funding for this project is being provided by Clean Water 2000, a consortium of forestry interests coordinated by the Virginia Forestry Association. Contributors include the USDA Soil Conservation Service, the Virginia Dept. of Forestry, Chesapeake Corp., Georgia-Pacific, Glatfelter Pulpwood Co., Stone Container, Union Camp Corp., Virginia Fibre, and Westvaco.

Status: Ongoing

Remeasurement of Mobile/Tensaw Wetland Study

Principal Investigators: Dr. Michael Aust - Virginia Polytechnic Institute and State University; Dr. Stephen Schoenholtz - Mississippi State University; and Dr. Robert Kellison - North Carolina State University Hardwood Research Cooperative.

Graduate Research Assistants: B.A. Szabo, N. Thompson, and T.W. Zaebst

Location: Baldwin County, Alabama

Forest Type: Cypress - tupelo swamp

Research Objectives: This project is a remeasurement of the Mobile/Tensaw investigation that was initiated by Scott Paper Company in the 1980s and conducted initially by investigators from the North Carolina State University Hardwood Research Cooperative. The project will remeasure soil chemical and physical properties, hydrology, water quality, nutrient cycling, and avian communities in tupelo-cypress swamps seven years after clearcutting.

Key Findings:

- Harvesting initially resulted in a significant rise in the water tables of harvested treatments compared with the uncut control. By age seven, there were no significant differences in water table depths among treatments.
- At age seven, the helicopter and skidder treatments were not significantly different in terms of total biomass, average height and diameter growth, and overstory diversity.
- Soil temperature was significantly greater in all harvested treatments compared with uncut control areas during the two years following harvesting. By age seven, soil temperature was not different among helicopter, skidder, and control treatments.
- Soil redox potential was significantly lower in all harvested treatments compared with uncut control areas during the two years following harvesting. By age seven, soil redox potential was not different among helicopter, skidder, and control treatments.

Publications:

Aust, W. M., S. F. Mader, and R. Lea. 1989. Abiotic changes of a tupelo-cypress swamp following helicopter and rubber-tired skidder timber harvest. pp. 545-551 In: Fifth Biennial Southern Silvicultural Research Conference. USDA Forest Service. Southern Forest Experiment Station. Gen. Tech. Rep SO-74.

Mader, S. F. W. M. Aust, and R. Lea. 1989. Changes in net primary

productivity and cellulose decomposition rates in a water tupelo - bald cypress swamp following timber harvesting. pp. 539-543 In: Fifth Biennial Southern Silvicultural Research Conference. USDA Forest Service. Southern Forest Experiment Station. Gen. Tech. Rep SO-74.

Aust, W. M., S. F. Mader, L. J. Mitchell, and R. Lea. 1990. An approach to the inventory of forested wetlands for timber harvesting impact assessment. *Forest Ecology and Management* 33/34:215-227.

Aust, W. M., R. Lea, and J. D. Gregory. 1991. Removal of floodwater sediments by a clear-cut tupelo-cypress wetland. *Water Resources Bulletin* 27(1):111-116.

Aust, W. M. and R. Lea. 1991. Soil temperature and organic matter in a disturbed forested wetland. *Soil Science Society of America J.* 55(6):1741-1746.

Aust, W. M. and R. Lea. 1992. Comparative effects of aerial and ground logging on soil properties in a tupelo-cypress wetland. *Forest Ecology and Management* 50:57-73.

Aust, W.M., S.H. Schoenholtz, T.W. Zaebst, and B. A. Szabo. Recovery status of a baldcypress-tupelo wetland seven years after harvesting. *Forest Ecology and Management* (in review).

Funding: NCASI has contributed \$38,400 to the remeasurement. Scott Paper Company is providing the study site, significant in-kind support, and approximately \$18,000. The North Carolina State University Hardwood Research Cooperative is providing \$35,000 to support the avian assessment portion of the study.

Status: Ongoing

III. Other Forest Wetland Program Publications

Comerford, N.B., D.G. Neary, and R.S. Mansell. 1992. The effectiveness of buffer strips for ameliorating offsite transport of sediment, nutrients, and pesticides from silvicultural operations. NCASI Technical Bulletin No. 631.

Mader, Stephen F. 1991. Forest Wetlands Classification and Mapping: A Literature Review. NCASI Technical Bulletin No. 606.

NCASI. 1992. Proceedings of a forum on ecological characteristics of flatwoods spodosol forests. NCASI Technical Bulletin No. 623.

Shepard, J. P. 1991. Management of forest wetlands. Proc. 1991 Tappi Environmental Conference, pp. 721-725. Tappi Press, Atlanta.

Shepard, James P. 1993. A statistical description of hydric soils of the southeastern United States. pp. 27-33 In: John C. Brissette (ed.). Proceedings of the Seventh Biennial Southern Silvicultural Research Conference. Gen. Tech. Rep. SO-93. USDA Forest Service Southern Forest Experiment Station, New Orleans, LA.

Shepard, James P., Alan A. Lucier, and L. Wayne Haines. 1993. Industry and forest wetlands: Cooperative research initiatives. *Journal of Forestry* 91(5):29-33.

Shepard, James P. 1993. The effects of forest management on water quality in wetland forests. pp. 88-92 In: Mary C. Landin (ed.) Wetlands: Proceedings of the 13th Annual Conference of the Society of Wetland Scientists, New Orleans, LA. South Central Chapter, Society of Wetland Scientists, Utica, MS, USA 39175-9351.

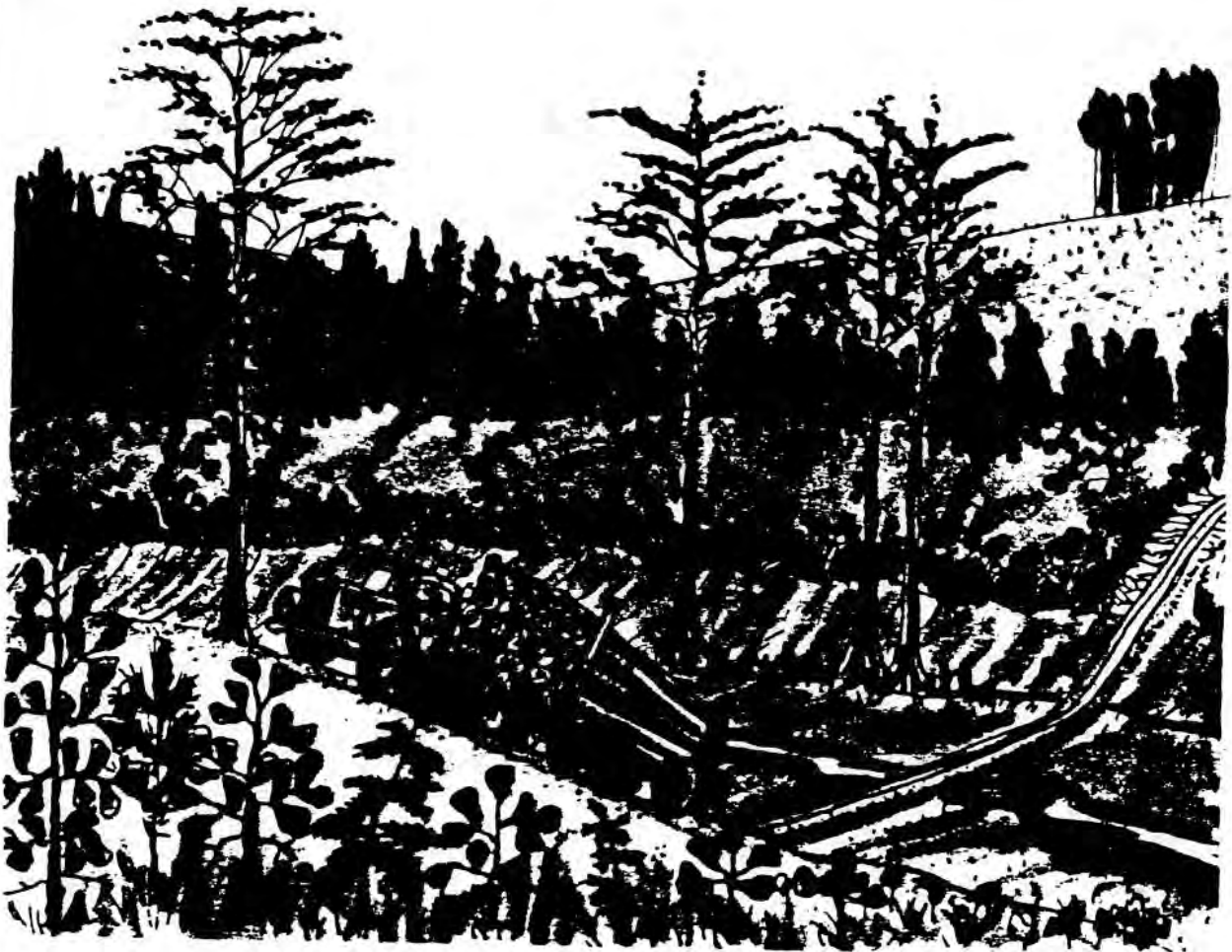
Shepard, James P. 1994. Management of wetland forests. pp. 73-80 In: Jon A. Kusler and Cindy Lassonde (eds.). Altered, artificial, and managed wetlands: Focus: Agriculture and Forestry. Proceedings from a national symposium, September 10-13, 1991. Chicago, IL. Association of State Wetland Managers, Berne, NY.

Shepard, James P. 1994. Effects of forest management on surface water quality in wetland forests. *Wetlands* 14(1):18-26.

Attachment # 3

1. Recommended Forestry Best Management Practices for Louisiana

Recommended Forestry Best Management Practices for Louisiana



This public document was published at a total cost of \$852.98. Two thousand (2000) copies of this public document were published in this third printing at a cost of \$852.98. The total cost of all printings of this document, including reprints is \$3006.50. This document was published for Department of Agriculture and Forestry, Office of Forestry, P.O. Box 1628, Baton Rouge, LA 70821 by the Division of Administration, State Printing Office, to inform the public of the recommended Forestry Best Management Practices for Louisiana under special exception by the Division of Administration. This material was printed in accordance with the standards for printing by state agencies established pursuant to R.S. 43:31.

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FOREWORD

These voluntary Best Management Practices (BMPs) have been developed by the Louisiana Forestry Association. They are intended to inform forest landowners, managers, and timber harvesters of recommended practices concerning silvicultural operations. BMPs do not, nor are they intended to, carry the force of the law. Because of their nature, they will require periodic updates. Landowners needing assistance may contact any of the following:

Louisiana Forestry Association
P. O. Drawer 5067
Alexandria, LA 71301
(318) 443-2558

Louisiana Office of Forestry
P. O. Box 1628
Baton Rouge, LA 70821-1628
(504) 925-4500

The local Soil Conservation Service or
Cooperative Extension Service office.

INTRODUCTION

The Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500 (and as amended by Sec. 319, 1986), require the management of nonpoint sources of water pollution from sources including forest-related activities. Procedures called Forestry Best Management Practices (BMPs) have been developed to guide forest landowners, managers and timber harvesters toward voluntary compliance with this act. Maintenance of water quality to provide "fishable" and "swimmable" waters is central to this law's objectives. The Environmental Protection Agency (EPA) recognizes the use of BMPs as an acceptable method of reducing nonpoint source pollution.

I. STREAMSIDE MANAGEMENT ZONES (SMZs)

SMZs are sensitive areas adjacent to lakes, continuously flowing streams, and intermittent watercourses where extra precautions are necessary to protect water quality. Zone width is a site specific determination based on soil type, slope, vegetative cover, stream character, and worst case storm flows. SMZs protect streams by maintaining water temperatures and reducing sediment deposition through filtration.



1. Establish a zone adequate to protect streambed and streambank integrity.



2. Generally, the larger the stream, the wider the SMZ. Special regulations may apply to legally designated Natural and Scenic Rivers.



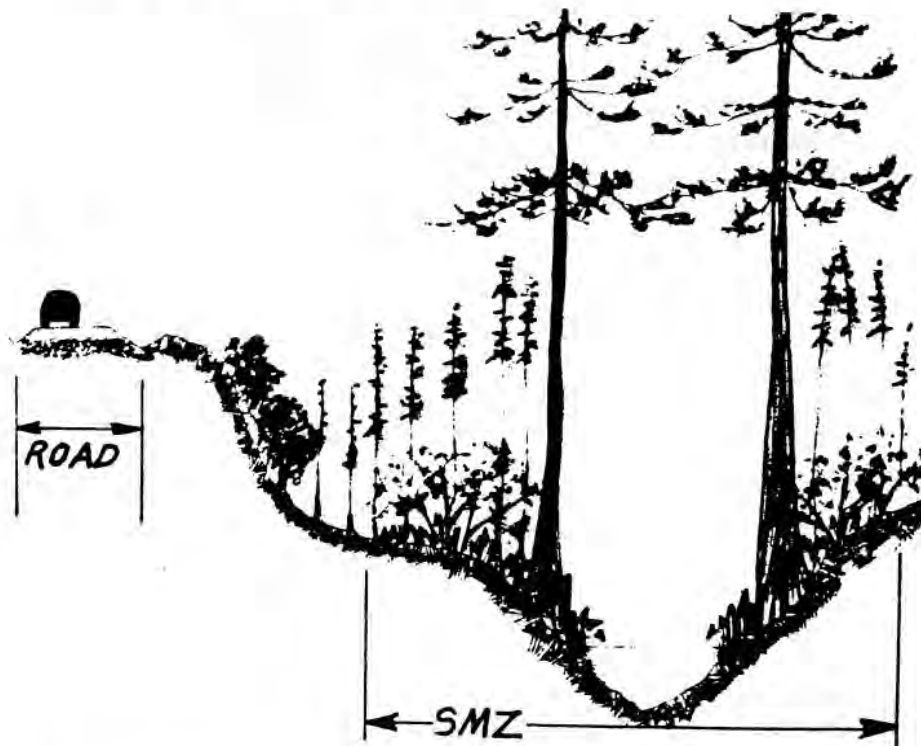
3. Do not leave trees or tops in streams or watercourses.



4. Avoid frequent stream crossings and cross only at right angles.



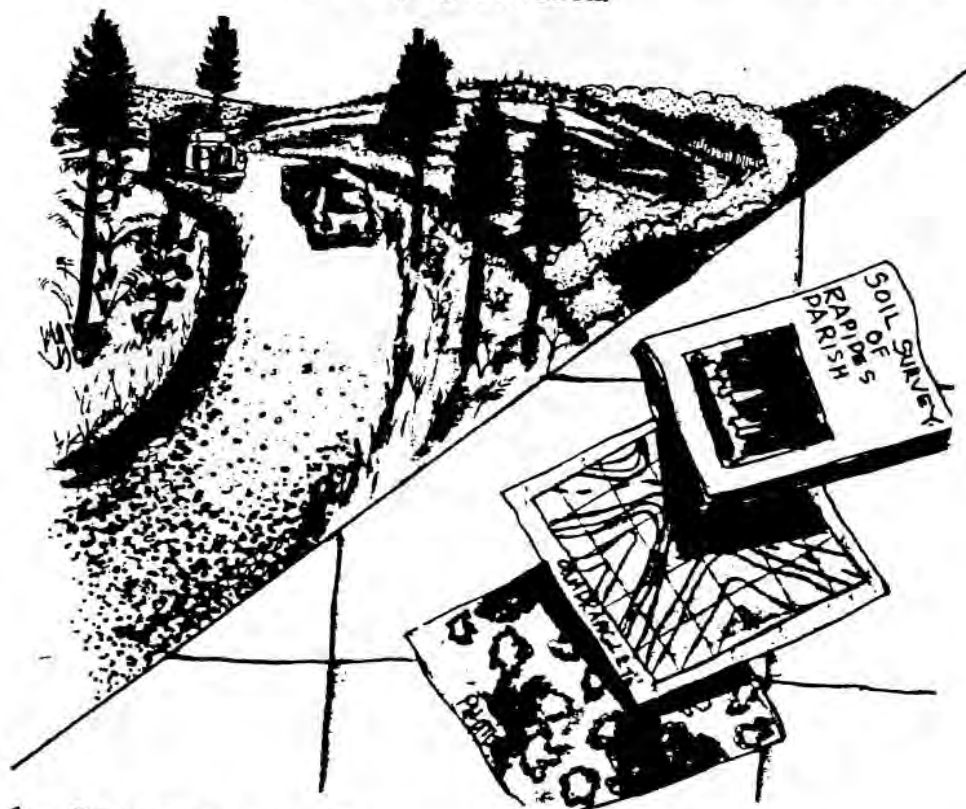
5. When crossing, use culverts, bridges or fords. Do not leave temporary crossing material in streams.



6. Locate roads and log decks outside SMZs, wherever possible.

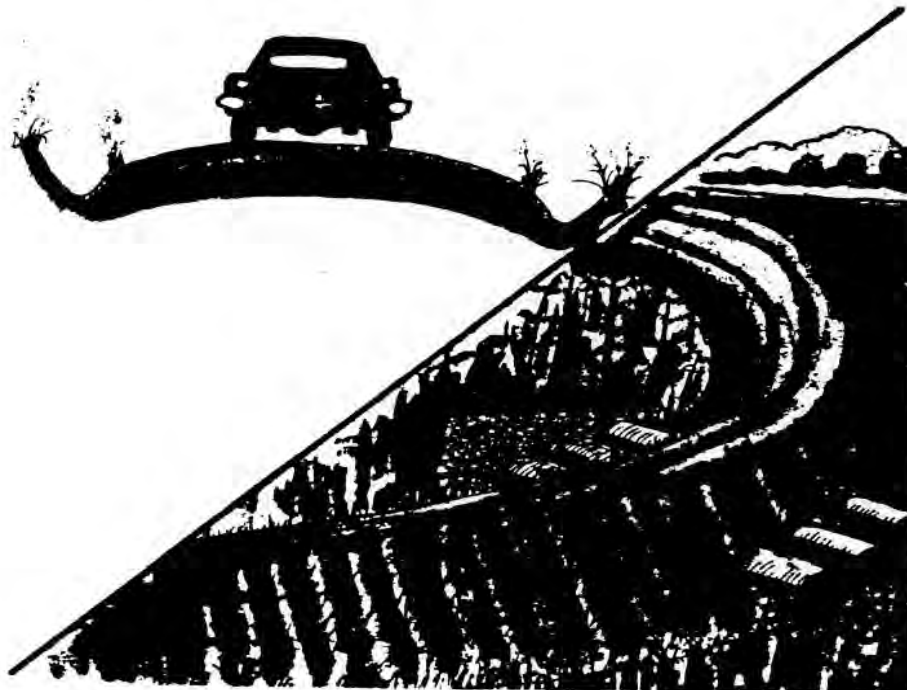
A. PERMANENT ACCESS ROADS AND THEIR CONSTRUCTION

Access roads create more potential for soil movement than any other forest management activity. Road construction planning is necessary to minimize road grade or slope, number of spur roads and to determine their proper location.

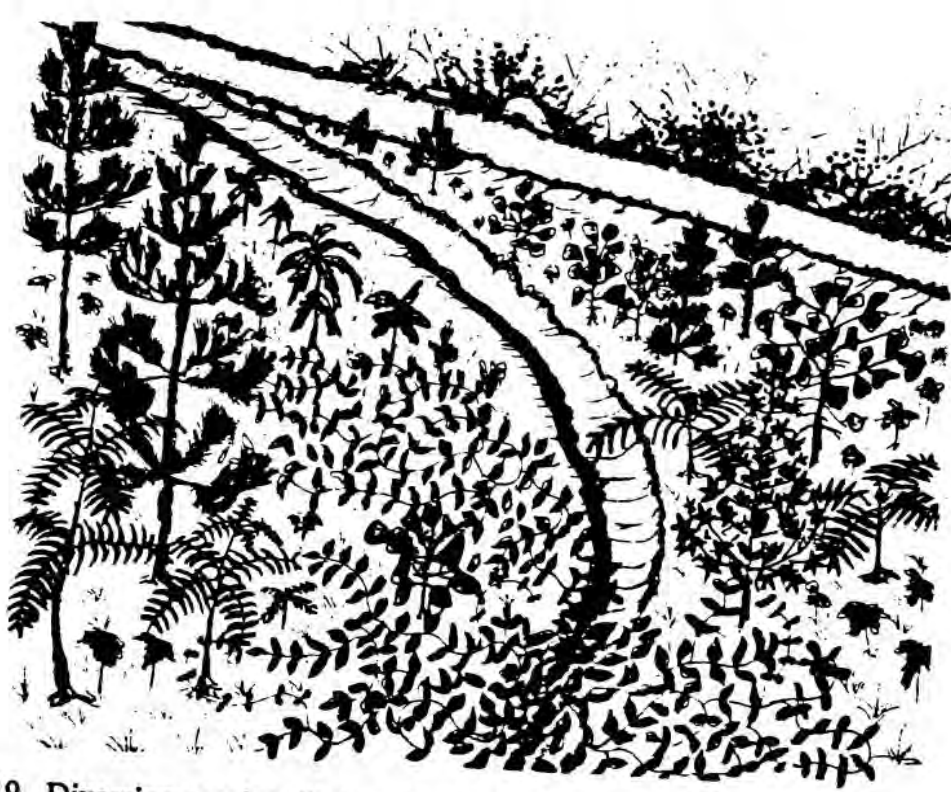


1. Construct a road sufficient to carry the anticipated traffic load with reasonable safety and with minimum environmental impact.
2. In addition to a thorough knowledge of the area, utilize soil surveys, topographic maps, and aerial photographs to achieve the most practical road location.
3. If possible, avoid building roads in narrow canyons, marshes, wet meadows, natural drainage channels, and in streamside management zones.
4. Minimize the number of stream crossings.
5. Cross streams at right angles to the main channel, where practical.
6. Where topography permits, locate roads along the crest of long ridges.
7. Where feasible, locate roads on the contour and at a distance sufficient to minimize the impact to streams.
8. Timber on road rights-of-way should be removed or decked outside the borrow ditches.

9. Roads should be designed no wider than necessary to accommodate the anticipated use.
10. When practical, balance cuts and fills and utilize this excavated material in the roadway to avoid creating unnecessary borrow pits.
11. To minimize erosion, cut and fill slopes should conform to a conservative design appropriate for the particular soil type and topography.
12. Sidecast or fill material should not be placed below the ordinary high water mark of any stream except where necessary at stabilized stream crossings.
13. Seeding and mulching should be performed wherever necessary to prevent excessive erosion.
14. Erosion can best be controlled during construction. To the extent practical, plan and conduct work to minimize the impact from heavy rains.
15. Ditches, culverts, and cross drains should be installed at low points in the road gradient. Wing ditches or laterals should be installed at such frequency, considering road grade and relative soil erodability, to reduce or prevent erosion in the primary road ditches.
16. When maintaining ditches, consideration should be given to herbicides and/or mowing to treat vegetation rather than exposing the soil with motor-grader or dozer.
17. Cross drains, relief culverts, and wing ditches should not discharge onto erosion prone soils or over erodible fill slopes unless outfall protection is provided.



18. Roads should be designed to drain naturally at all times, by crowning, ditching, installing culverts, and/or outsloping.



19. Diversion or wing ditches should discharge in a manner to minimize erosion.
20. Install culverts at the proper level and use a size adequate to carry anticipated water flow. Keep culverts open and clean to permit unrestricted water flow.
21. When fords or crossings are inadequate for the situation, use bridges, culverts or concrete slabs.
22. Stream crossings should cause minimum disturbance to banks and channels. Temporary crossing structures should be promptly removed.
23. Machine activity in the streambed should be minimized.
24. Low water bridges, fills, and earth embankments constructed for use as bridge approaches should be protected from high water erosion.
25. Waste material and woody debris generated during road construction should be cleared from streams and drainage ways and deposited above the ordinary high watermark.
26. Bridges should not constrict clearly defined stream channels and the bridge approach should be constructed to minimize erosion.
27. When possible, cross streams during periods of dry weather when stream flow is low and the threat of erosion is minimized.
28. Endeavor to keep ditches free of blockages in a timely manner.
29. Where natural vegetation is not sufficient to control erosion, revegetate or stabilize exposed soil.
30. Inspect infrequently used roads to monitor their integrity.



31. Crown or out-slope road surfaces and install waterbars, dips or other diversions to dissipate surface runoff and minimize road bed erosion.



32. Restrict traffic during periods of excessive ground moisture if such restriction is practical.

III. TIMBER HARVESTING

Harvesting is an integral part of forest management. Executed properly, it is only a temporary disturbance to the forest environment. Harvesting operations should be planned and conducted to minimize soil compaction, erosion, and sedimentation.

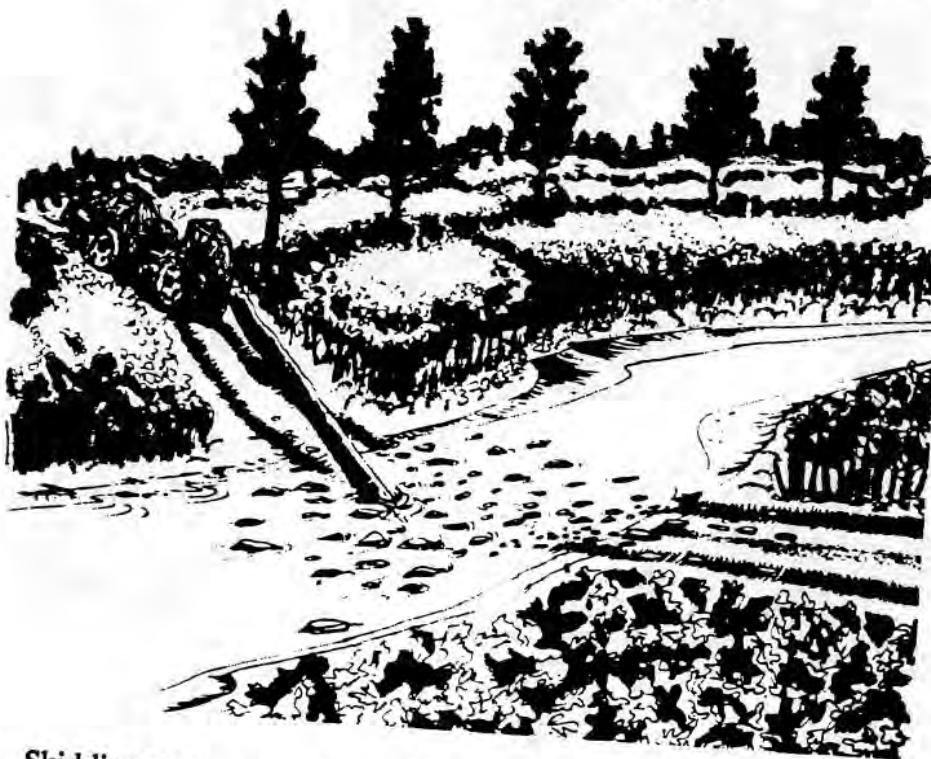
1. Directionally fell trees away from water bodies and remove any debris that gets into water, streams or drainage courses. Leave Streamside Management Zones adequate to protect stream shading and streambank integrity.
2. Skid trails and landings should take advantage of topography to minimize disturbance to natural drainage patterns.
3. Upon completion of the operation, temporary roads, skid trails, and landings should be conditioned to minimize erosion.



4. Skid away from permanent and intermittent streams.



5. Watercourses and streambeds should not be used for skidding or forwarding even when they are temporarily dry.



6. Skidding across streams should be minimized. When unavoidable, crossings should be at right angles and should take advantage of natural fords with firm bottoms, stable banks, and gentle slopes along approaches.



7. Minimize the number of skid trails and traffic on steep slopes.



8. Service equipment away from streams. Oil drained while servicing equipment should be caught in a container and properly disposed.



9. All trash generated during the operation, including maintenance or equipment servicing, should be disposed in an acceptable manner.

IV. REFORESTATION

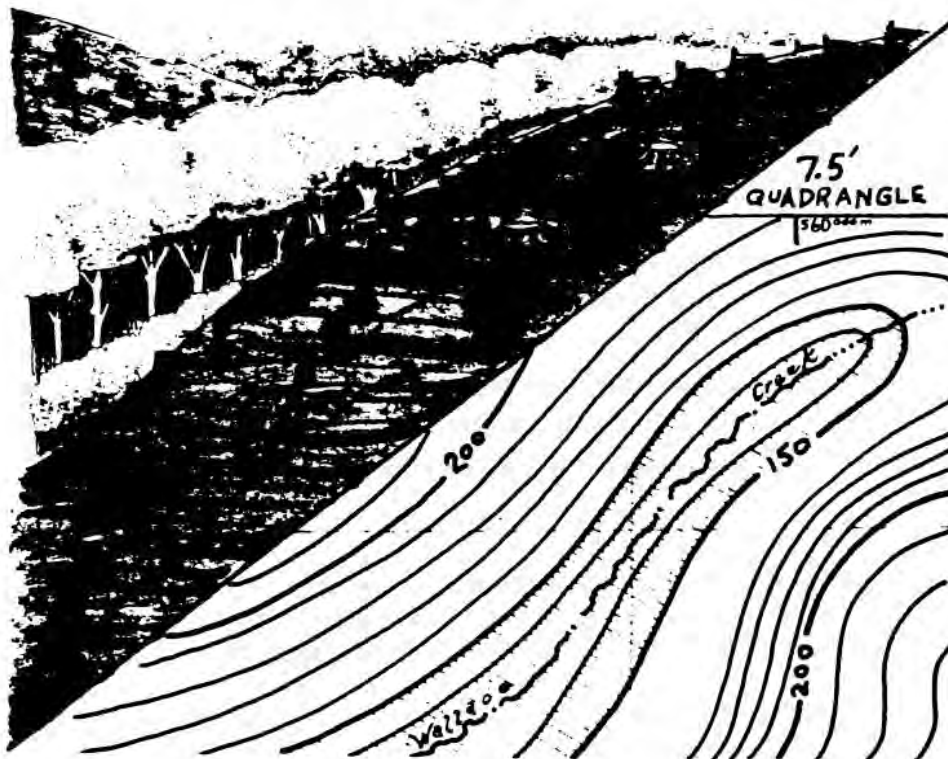
Reforestation refers to those operations undertaken to establish a new forest. Site preparation, for the purpose of forest regeneration, is a basic silvicultural tool where control of competing vegetation and reduction of logging debris are necessary. Common site preparation techniques include manual, mechanical, fire, and herbicides.

Regeneration includes hand and machine planting and direct seeding. Since hand planting and direct seeding pose no water quality problems, BMPs are not necessary. Some mineral soil exposure does occur with machine planting and BMPs are offered.

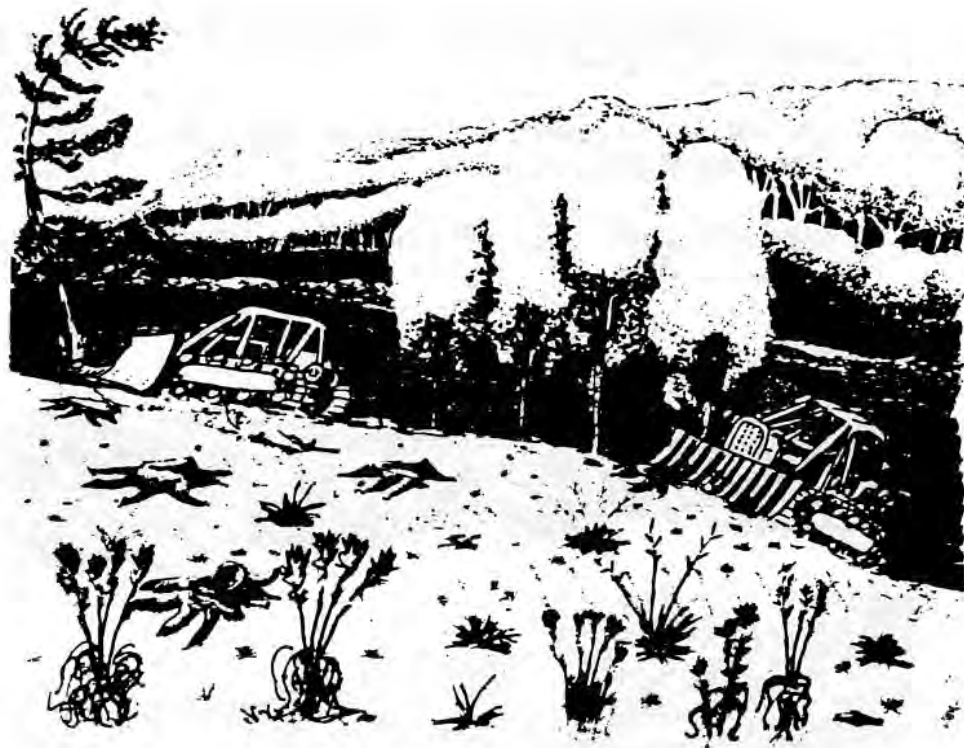
1. Sites should receive the minimum preparation necessary to successfully control competing vegetation and establish a desirable timber stand. In general, the more intensive the treatment, the more concern for water quality.
2. When working on slopes, mechanical operations such as bedding, ripping, shearing, etc. should follow contours. Drum chopping is an exception.
3. Provide water outlets on bedded areas at locations that will minimize soil movement.



4. Soil, topography, competing vegetation, precipitation, and drainage considerations should govern methods and equipment.



5. Analyze and plan the site preparation method with full consideration for SMZ protection.



6. All bulldozing, shearing, K-G blading, and windrowing should be accomplished in a manner that will minimize soil disturbance.



7. Use operations that minimize soil disturbance on highly erodible soils.

8. Windrows should follow contours and windrowing operations should be accomplished to minimize soil displacement.
9. Streams should be crossed by equipment only on bridges or fording sites that minimize stream channel disturbance.
10. Landowners should take maximum advantage of prompt reforestation to reduce erosion and sedimentation.



11. As a rule, machine planting should follow contours.
12. Hand planting, direct seeding or natural regeneration should be used on protected areas adjacent to streams or on slopes too steep to machine plant.

V. FIRE LINE CONSTRUCTION

Safe use of prescribed fire is encouraged to reduce fire hazard, control undesirable plant growth, promote reforestation, improve wildlife habitat, and achieve other desirable objectives.

1. Pre-suppression firebreaks should be located on the contour as often as possible.



2. Firebreaks on erodible steeper grades should contain waterbars or diversions at frequent intervals. Discharge water into undisturbed vegetation outside the burn, when possible.

VI. FOREST CHEMICALS

Chemicals may be used for a number of important functions in forest management, including control of insects, undesirable vegetation, and as repellents for seed. Landowners must observe all State and Federal laws and regulations that cover the purchase, transport, storage, use, and disposal of chemicals. These rules change constantly and can be very complex. The local Cooperative Extension agent should be contacted for the most recent information and details concerning the proper, safe, and legal use of chemicals. Be certain that silvicultural chemicals are applied by trained and certified licensees and that the label instructions are followed. If these chemicals are used properly, their use in silvicultural operations poses no threat to Louisiana's water quality.

VII. GLOSSARY

Bedding	A site preparation method in which special disking equipment is used to concentrate surface soil and forest litter (duff) into a ridge or bed elevated six to ten inches (6" - 10") above the normal floor on which forest seedlings are to be planted.
Best Management Practices - (BMPs)	Implies a practice or combination of practices, that is determined by a state or designated area wide planning agency, after problem assessment, examination of alternative practices and appropriate public participation to be the most effective, practical (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources, thus maintaining a level compatible with water quality goals.
Borrow Pit	That area, usually directly adjacent and parallel to a road from which soil is removed to build up the road bed.
Commercial Forest	Forestland bearing timber of commercial character and which is available now or prospectively for commercial use and which is not otherwise excluded from such use.
Erosion	The process by which soil particles are detached and transported by water and gravity to some downslope or downstream deposition point.
Felling	The process of severing trees from stumps.
Forest Chemicals	Refer to chemical substances or formulations that perform important functions in forest management, and include fertilizers, herbicides, insecticides, repellents, and other chemicals.
Forestland	Land bearing forest growth or land from which the forest has been removed but which shows evidence of past forest occupancy and which is not now in other uses.
Forest Landowner	An individual, combination of individuals, partnership, corporation, public agency, or association of whatever nature that holds an ownership interest in forestland.

Forest Practice	An activity relating to the growing, harvesting or processing of forest tree species on forestland.
Herbicide	Any chemical substance or mixture of substances intended to prevent, destroy, repel or mitigate the growth of any tree, bush, weed or algae, and other aquatic weeds.
Intermittent (Stream)	That part of the drainage network which provides flow continuously during some season of the year but little or no flow during other seasons and having a clearly defined stream channel.
Landing	A place where logs are assembled for temporary storage, loading and subsequent transportation.
Logging	The felling and transportation of wood products from the forest to a delivery location.
Logging Debris (Slash)	The unwanted, unutilized or generally unmarketable accumulation in the forest of woody material such as large limbs, tops, cull logs, and stumps that remain as forest residue after logging.
Low Water Bridge	A stream crossing structure built with the expectation that during periods of high water or floods, the water will flow over the structure.
Nonpoint Sources	Sources of water pollution which are: (1) Induced by natural process, including precipitation, seepage, percolation and runoff; (2) Not traceable to any discrete or identifiable facility; and (3) Better controlled through the utilization of best management practices, including processes and planning techniques. In contrast to these criteria used in identifying nonpoint sources of water pollution, point sources are generally characterized by discrete and confined conveyances from which discharges of pollutants into navigable waters can be controlled by effluent limitations.
Ordinary High Watermark	The mark on the shores of all waters, which will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a distinct character.

Pesticides	Any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest and any substance or combination of substances intended for use as a plant regulator, defoliant, desiccant, or any substance the commissioner determines to be a pesticide.
Shearing	A site preparation method which involves the cutting of brush, trees, and other vegetation at the ground lines using tractors equipped with angles or V-shaped cutting blades.
Sidecast	The material or the act of moving excavated material to the side and depositing such material laterally to the line of movement of the excavating machine.
Silvicultural	All forest management activities, including intermediate cuttings, harvestings, log transport, and forest road construction (EPA interpretation).
Site Preparation	A general term for removing unwanted vegetation and other material when necessary and any soil preparation carried out before reforestation. Common techniques can include manual, mechanical, fire, and herbicides.
Skid Trail	A route over which logs are moved to a landing or road.
Stream	A well-defined natural channel that may or may not have flow, depending on the season of the year.
Streamside Management Zone (SMZ)	Sensitive areas adjacent to lakes, streams, and water courses where extra precautions in carrying out forest practices are necessary to protect water quality, aesthetics, and wildlife values.
Water Pollution	Contamination or other alteration of the physical, chemical or biological properties of any natural waters of the state, or other such discharge of any liquid, gaseous or solid substance into any waters of the state, that will, or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life (EPA definition).
Windrow	Slash, residue, and debris raked together into piles or rows.

ACKNOWLEDGEMENTS

Prepared by the Louisiana Forestry Association in cooperation with the Louisiana Association of Consulting Foresters, Louisiana Cooperative Extension Service, Louisiana Department of Wildlife and Fisheries, Louisiana Office of Forestry, Louisiana Society of American Foresters, Soil Conservation Service, and U.S.D.A. Forest Service.

April 1988

Illustrated by Paul Wallace
Edited by Tom Bourland

IVC. LOUISIANA

MANAGEMENT MEASURES FOR URBAN RUNOFF

Coastal Management Division

Louisiana Department

of

Natural Resources

*Louisiana's Coastal Nonpoint Pollution Control Program***URBAN RUNOFF****I. INTRODUCTION**

Heavy rainfall in Louisiana rinses a variety of pollutants off the land, sending them into our coastal waters. These pollutants accumulate, threatening everything from shrimp and oysters, to redfish and bald eagles. In order to reduce the delivery of polluted runoff water from the land to coastal waters, Louisiana's Coastal Nonpoint Pollution Control Program, coordinated between many agencies and advisors, will ultimately 1) identify Best Management Practices (BMPs) appropriate for all applicable pollutant source categories, and 2) carry out initiatives of public education, technical assistance, and development of enforcement protocols in order to get BMPs implemented on the land.

Louisiana's Coastal Nonpoint Pollution Control Program will address the **URBAN RUNOFF SOURCE CATEGORY**, through all FIFTEEN management measure subcategories recommended by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). Louisiana is not proposing to exclude any management measures recommended by NOAA and EPA for this particular source category. The management measure subcategories that will be addressed in Louisiana's program are as follows:

1. (II.A) Urban Runoff -- New Development
2. (II.B) Urban Runoff -- Watershed Protection
3. (II.C) Urban Runoff -- Site Development
4. (III.A) Construction Erosion/Sediment Control
5. (III.B) Construction Chemical Control
6. (IV.A) Existing Development
7. (V.A) New Onsite Disposal Systems
8. (V.B) Operating Onsite Disposal Systems
9. (VI.A) Pollution Prevention

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10. (VII.A) Roads and Highways: plan/ site/ develop
11. (VII.B) Bridges: Site/Design/Maintain
12. (VII.C) Road, Highway and Bridge Construction Projects
13. (VII.D) Road, Highway and Bridge Construction Site Chemical Control
14. (VII.E) Road, Highway and Bridge Operation and Maintenance
15. (VII.F) Road/Highway/Bridge Runoff Systems

APPLICABILITY. In general terms the management measures for urban runoff appear to be broadly applicable in coastal Louisiana. However, all of the urban runoff management measures are not applicable to all urban resource users, as some of the measures appear to be addressing very specific groups of resource managers -- sometimes construction contractors, sometimes planners and government officials, and sometimes urban resident/consumers. Applicability is further complicated in Louisiana by flat topography, heavy rainfall, and many decades of development struggling with drainage concerns. Much of urban South Louisiana is protected by artificial earthworks -- levees -- and stormwater drainage is further modified by public works pumping.

ADMINISTRATIVE COORDINATION for urban runoff is expected to be facilitated by the Louisiana Department of Natural Resources, the anticipated lead agency, along with the Louisiana Department of Transportation and Development, the Louisiana Department of Health and Hospitals, the Louisiana Department of Environmental Quality, and others (see section IIIC).

TECHNICAL ASSISTANCE for the urban runoff source category will continue to be provided by a team of agencies featuring the Louisiana Department of Environmental Quality, and the Louisiana Cooperative Extension Service, but also including the the Louisiana Department of Health and Hospitals, the Louisiana Department of Transportation and Development, the Natural Resource Conservation Service, and others (see section IIIA).

MONITORING for compliance with BMP implementation will be led by the Louisiana Department of Natural Resources, the Louisiana Department of Transportation and Development, and the Louisiana Department of Health and Hospitals. **MONITORING** of water quality will be led by the Louisiana Department of Environmental Quality, supplemented by the pesticide monitoring network of the Louisiana Department of Agriculture and Forestry, water sampling programs of the United States Geological Survey, and the Louisiana Department of Health and Hospitals (IID).

Polluted Runoff and Urban Population Change

Nonpoint source pollution, while *carried* by rain runoff, is *caused* by people and their daily activities. Educating people on ways to produce less waste and to dispose of it more responsibly is the best strategy for **pollution prevention**, but investing in the education and outreach process is not readily amenable to regulation and enforceable policies.

More people means more aggregate waste -- more sewage, more motor oil poured on the ground, and more roaming pet dogs. **Population increase** is manifested in urban and suburban growth and development in much of the coastal United States. In fact much of coastal USA is experiencing population growth of a greater magnitude than growth in inland areas, with proportionally greater levels of threat toward coastal environments.

The National Oceanic and Atmospheric Administration called attention to this trend with an April 1990 publication, *Fifty Years of Population Change Along the Nation's Coasts: 1960-2010*. The report -- written before availability of 1990 census data -- predicted dramatic population growth for Louisiana as well. From the 1980 population of 4,206,116, our state was projected to grow to 4,548,000, a projected increase of over 8 % for the decade.

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However, Louisiana did not grow as projected between the 1980 and 1990 census counts, increasing to only 4,219,973, an increase for the entire decade of less than 1 % (0.33 %, for an annual mean of .03 % -- not statistically significant). The national economic recession and its disproportionate impacts upon the oil and gas industry contributed to the stunting of Louisiana's population growth during this period. **Of the twenty US cities losing the most population from 1980 to 1990, New Orleans was the only one on a saltwater coast.**

Yet in Louisiana's largest metro areas there has been a churning or shuffling of residents moving to different localities within, or adjacent to, that same metro area. While inner city New Orleans has lost people, many of them have moved out to the nearby fringes, to a growing LaPlace, and to a booming "Northshore" between Slidell and Madisonville. While Baton Rouge is not in the coastal zone, a portion of its former residents have moving out to the suburban frontier to the southeast: Prairieville, and Gonzales in Ascension Parish, and the Tickfaw River south of Springfield in Livingston Parish (see tables).

Less people means less aggregate waste -- less sewage, less motor oil poured on the ground, and less roaming dogs. However, despite population declines and sluggish growth, development continues in virtually every urban and suburban area. Over 240,000 acres, or 6% of the 4 million acres of land area in Louisiana's coastal zone are classified as developed land. Virtually every town has at least one business entrepreneur who gives his occupation as "developer." It is rare to find a public official who does not call for more jobs to come from "economic growth," which includes building more subdivisions and shopping malls (an expansion of impervious surface area), and extending roads, and sewer lines.

The fragmented residential expansion taking place on the rural/urban fringe, sometimes outpaces the extension of utilities such as community sewer line networks. Other lower

income communities may have been settled for quite a long time, developing without ever having had benefit of planned utility networks, and many of these have been identified as inadequately-sewered areas. In an effort to bring more households with individual sewage treatment systems into compliance with best management practices, many of Louisiana's parishes are moving to ordinances requiring sewage treatment system inspections as prerequisites for hook-up of water and electric utilities (see map).

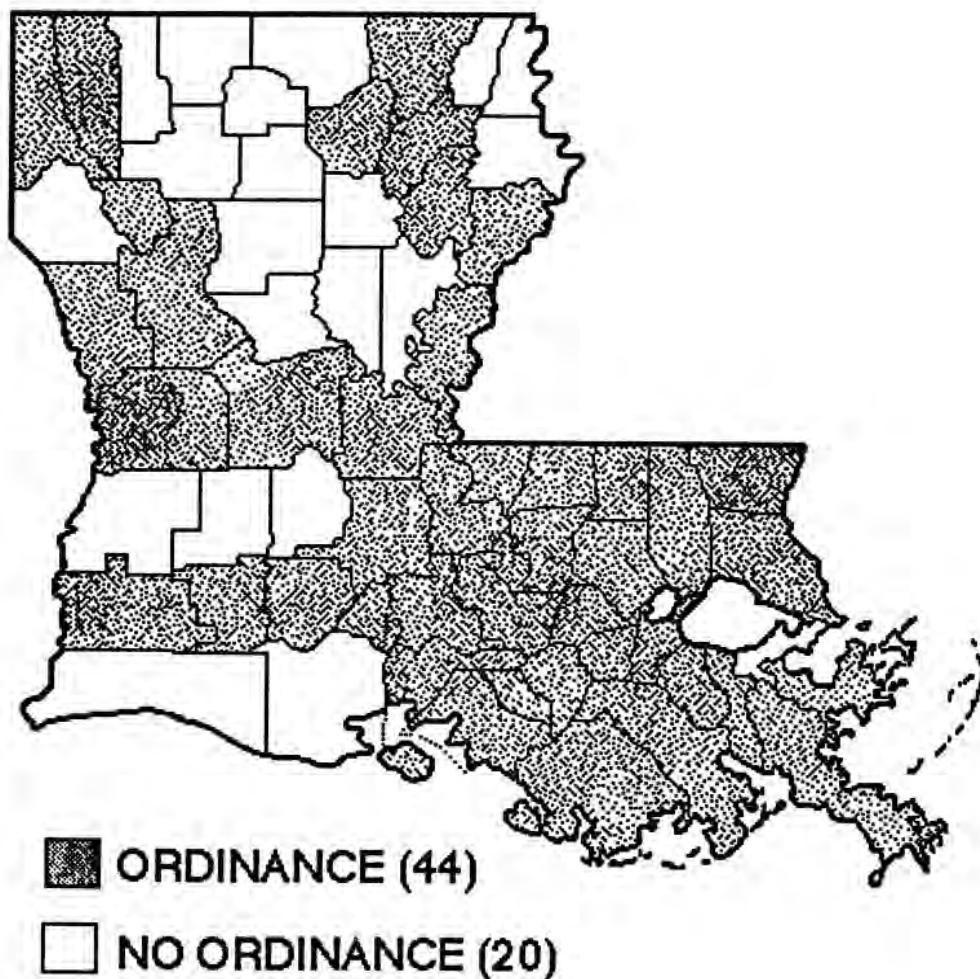
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PARISH	1990 POP	1980 POP	% CHANGE	GAIN OR LOSS
ST. TAMMANY	144500	110554	30.7	GAIN
ST. JOHN	39996	31924	25.3	GAIN
LIVINGSTON	70526	58806	19.9	GAIN
ST. CHARLES	42437	37259	13.9	GAIN
ST. MARTIN	44097	40214	9.4	GAIN
IBERIA	68297	63752	7.1	GAIN
TANGIPAOHA	85709	80698	6.2	GAIN
LAFOURCHE	85860	82483	4.1	GAIN
ST. BERNARD	66631	64097	3.95	GAIN
VERMILION	50055	48458	3.3	GAIN
ASSUMPTION	22753	22082	3.0	GAIN
TERREBONNE	96982	94393	2.7	GAIN
CALCASIEU	168134	167223	0.5	GAIN
ORLEANS	496938	557515	10.9	LOSS
ST. MARY	58086	64395	9.8	LOSS
ST. JAMES	20879	21495	2.9	LOSS
PLAQUEMINES	25575	26049	1.8	LOSS
JEFFERSON	448306	454592	1.4	LOSS
CAMERON	9260	9336	0.8	LOSS
TOTAL COASTAL	2045021	2035325	0.48	GAIN
ASCENSION	58214	50068	16.3	GAIN
LAFAYETTE	164762	150017	9.8	GAIN
E. BAT. ROUGE	380105	366191	3.8	GAIN
BEAUREGARD	30083	29692	1.3	GAIN
ST. HELENA	9874	9827	0.48	GAIN
PTE. COUPEE	22540	24045	6.3	LOSS
AVOYELLES	39159	41393	5.4	LOSS
JEFF. DAVIS	30722	32168	4.5	LOSS
ST. LANDRY	80331	84128	4.5	LOSS
IBERVILLE	31049	32159	3.5	LOSS
RAPIDES	131556	135282	2.8	LOSS
WASHINGTON	43185	44207	2.3	LOSS
ACADIA	55882	56427	1.0	LOSS
TOTAL SUPPLEMENTARY	1077462	1055604	2.1	GAIN

MUNICIPALITY	POP. 1990	POP. 1980
New Orleans	496938	557927
Metairie	149500	164160
Kenner	72033	66382
Marrero	36671	36548
Chalmette	31860	33847
LaPlace	24194	16112
Slidell	24124	26718
Harvey	21222	22709
Gretna	17208	20615
River Ridge	14800	17146
Morgan City	14531	16114
Estelle	14091	12724
Westwego	11218	12663
Harahan	9927	11384
Franklin	9004	9584
Reserve	8847	7288
Violet	8574	11678
Belle Chasse	8512	5412
Destrehan	8031	2382
Covington	7691	7892
Mandeville	7083	6076
Lacombe	6523	5146
Jeanerette	6205	6511
Larose	5772	5234
Ponchatoula	5425	5469
Cut Off	5325	5049
Patterson	4960	
Galliano	4294	
Edgard	2753	
Hahnville	2599	
Grand Isle	2129	
Madisonville	791	
Killian	611	
Springfield	441	
Point A La Hache		
Empire		
Venice		
Lafitte		
Delacroix		
Convent		
Creole		
Cameron		
Hackberry		

LOUISIANA SEWAGE ORDINANCES 05/95

LOUISIANA PARISHES WITH ORDINANCES LINKING SEWAGE SYSTEM INSPECTION TO CONNECTION OF UTILITIES



II. EXISTING NPS PROGRAMS: REGULATORY AND NONREGULATORY

The Dept. of Environmental Quality's (LDEQ) oversight authority over discharges into surface waters (402 program) is documented in Section 402 of the Clean Water Act. In accordance with The Louisiana Water Control Law (LA R.S. 30: 2071-2078), a discharge permit is required for any point source discharge into waters of the state. There is an anti-degradation provision in the regulations intended to prevent state waters from falling below current designated use support levels. This provision can be used to bring violators into compliance. This regulatory authority, along with the Hazardous Waste Control Law (LA R.S. 30: 2171-2207), can be invoked to enforce management measures III.B., and VII.D.

Louisiana Dept. Health and Hospitals -- Office of Public Health

The LDHH/OPH has authority to oversee the state's Sanitary Code and the federal Safe Drinking Water Act. The field staff consists of a network of parish sanitarians, "state health officers," authorized to perform inspections prior to issuance of permits for installation or modification of community or individual sewage treatment systems. This is a regulatory program with enforceable policies which include authority to revoke licenses and permits, prosecute in district courts, issue injunctive orders, and issue fines.

A mechanism to help insure the invocation of sanitarian inspection and enforcement authority is linkage requiring demonstration of a sewage treatment system inspection certificate prior to connection to public electric and water utilities. Of the nineteen parishes that are all or partly in the coastal zone, sixteen have this sewage system/ utility connection ordinance at this time (see map).

Technically, sewage treatment systems for individual residences are exempt from the further development permitting of the Coastal Use Permit program. However, a

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Memorandum Of Understanding between the Louisiana Dept. of Natural Resources/ Coastal Management Division, and LDHH ensures that the latter agency is copied on development permit applications and thus can alert the sanitarian staff to any looming problems.

The authority described above covers 6217 (g) guidance Management Measure Chap. 4 V.A., for **New Onsite Disposal Systems**. Management Measure V.B. for **Operating Onsite Disposal Systems** is less well addressed, as maintenance of systems is not ensured by routine inspections. However, LDHH/OPH enforcement authority is also triggered in response to complaints about pollution of waterbodies which may pose a public health risk. Formerly the waterbodies of concern were limited to "streams and rivers," but a 1993 amendment, Act 147, expanded jurisdiction to "streams, rivers, lakes, bayous, or ditches located in public rights of way."

In addition, Act 681 of 1993, sections 1152, and 1153, gives the Secretary of the Dept. of Health and Hospitals additional powers to establish "standards, guidelines or criteria" deemed necessary to "prohibit, control, or abate the discharge of untreated or improperly treated sewage" into certain waters, including Lake Pontchartrain, the Sabine River, "*and their drainage basins*" (italics, mine). The wording of the Act specifically includes "all estuaries (sic), streams, canals, and water courses which empty into (the previously named) drainage basins." This amendment offers significant additional regulatory authority that can be invoked as needed, for two major drainage basins of coastal Louisiana.

LDNR Coastal Use Permit Program

The Coastal Management Division (CMD) of the Louisiana Department of Natural Resources (LDNR) is charged with implementing the Louisiana Coastal Resources Program under authority of the Louisiana State and Local Coastal Resources Management

Act of 1978 (Act 361, La.R.S.49: 214.21). Under this authority, the Coastal Use Permit Program (CUPP) has been established by the CMD to help ensure the management and reasonable use of the state's coastal lands. The CUP program carries the authority to enforce either legal or administrative procedures, including levying fines, issuing cease and desist orders, and requiring mitigation or restoration. The CMD Enforcement and Monitoring section monitors permitted activities in the Coastal Zone for compliance with permit conditions, and patrols by air, land, and water the entire Coastal Zone for unauthorized activities.

The CUP Program has oversight for land use activities in the designated coastal zone that involve dredging, fill, or other earth-moving or drainage impacting activities. Activities that may require a coastal use permit include dredge and fill projects, sewage treatment plant siting, waste-water discharge, drainage projects, pumping facilities, marsh management activities, water level control, levee construction, solid waste dump siting, roads and bridges, park siting, freshwater diversion, and mosquito control. Exempt from the program are agricultural and silvicultural operations, as well as activities in leveed fastlands, in areas above the five-foot contour interval, and on lands of federal jurisdiction. In the past year from October 1993 to November 1994, seven applications were filed for development projects in the urban categories of "industrial/commercial," "residential," and "highway." There were no applications for the categories of "sewerage/treatment plant," or "aircraft facility/airport."

All construction activities would be regulated under the CUP Program when the proposed land uses involve earth-moving in the coastal zone for new developments. The coastal management guidelines used to issue coastal use permits specify that "linear facilities," which includes roads, shall be planned using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow and water quality (La. Admin. Code 43: I.705 (I)), and thus would be applicable to the management measures for Chapter 4. III.A., III.B., and VII.C.

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LDAF Louisiana Pesticide Law and Applicator Certification Program

The Federal Insecticide, Fungicide and Rodenticide Act as amended in 1972 (FIFRA) requires individuals who apply restricted use pesticides to be certified applicators.

Likewise, the Louisiana Pesticide Law (La.R.S.3:3201) states that: "No person shall apply or supervise the application of any restricted use pesticide as a private applicator unless that person has the proper certification."

This certification, for both commercial and private pesticide applicators, is necessary in order to buy, use, or supervise the use of restricted pesticides. Certification is issued after the applicant has satisfactorily passed an examination or has satisfactorily demonstrated knowledge of the laws, rules and regulations, and safety practices governing the sale and application of restricted use pesticides.

Examinations are given and certifications are issued by the Louisiana Department of Agriculture and Forestry (LDAF). The Louisiana Cooperative Extension Service (LCES), by cooperative agreement, is responsible for the training necessary to become a certified applicator. Workshops are conducted covering all aspects of pesticide use as delineated in 40CFR171. Applicators must be recertified every three years. This law and program has relevance for the following management measures in the federal 6217 (g) guidance manual (in the urban Chapter 4): III.B. for chemical control, VI.A. for pollution prevention, and VII.D. for road/highway/bridge construction chemical handling.

The Louisiana Dept. Wildlife and Fisheries (LDWF) The Louisiana Natural and Scenic Rivers System

The Louisiana Natural and Scenic Rivers System is one of the nation's largest. It encompasses 51 streams or stream segments and is over 1,500 miles in length. There are nine designated Scenic Rivers within the present boundaries of the Louisiana Coastal Zone. The System was proposed in the late 1960's and was brought into existence in the

early 1970's with the passage of the Louisiana Natural and Scenic Rivers Act (La.R.S.56:1840 *et seq.*). The Act established a regulatory program and empowered the Secretary of the Louisiana Department of Wildlife and Fisheries (LDWF) to administer the System through regulation and permits. Several of the streams currently in the system are located in, or are impacted by, **urban areas**, including Bogue Falaya, Bayou Chinchuba, Bayou Cane, Bayou LaBranche, Bayou Lacombe, Bayou St. John, and Bayou Bienvenue.

This regulatory program prohibits the following activities on all designated Scenic Rivers: channelization; channel re-alignment; clearing and snagging; impoundments of any type; and commercial clear-cutting of timber within 100' of the low water mark. Activities which may have a direct, significant or ecological impact on the streams and would thus require a "Class B" permit includes the following: bridge, pipeline and powerline crossings; bulkheads, piers, docks and ramps; waste water discharges; and land development adjacent to the stream. Any other activity that may have a direct, significant, ecological impact on the stream **or its tributaries or distributaries** is subject to regulation by permit by the Department of Wildlife and Fisheries. Scenic Rivers permits require the evaluation of twelve criteria for issuance. These include the following: cultural associations; historical/archaeological artifacts; economic changes; wilderness/rural qualities; scenic/aesthetic values; recreational opportunities; ecological systems; fish and other aquatic life; wildlife species; botanical elements; geological/hydrological features; and water quality/quantity.

The Scenic Rivers System Permit is issued by the LDWF with a multi-agency review by the LDWF, Office of State Planning and Budget, Louisiana Department of Environmental Quality (LDEQ), and the Louisiana Department of Agriculture and Forestry (LDAF). All permit applications are reviewed on a case-by-case basis, and most involve on-site inspections of the project area. The monitoring and enforcement of the permits will be handled by LDWF agents through site investigations and inspections, surveillance and citizen complaints. Enforceable policies and mechanisms for this program include criminal

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penalties with fines and civil penalties with fines and adjudication. Penalties include: up to \$1,000 fines for each violation; suspension, annulment, withdrawal or revocation of the permit; institution of civil proceedings in district court; and issuance of cease and desist orders, compliance orders, injunctions or other appropriate relief. The program currently issues 15-20 permits per year.

The LDNR is discussing a Memorandum of Agreement with LDWF to oversee implementation of certain provisions of the CNPCP, to monitor and educate staff, contacts and permittees on the provisions of the program, and to report noncompliance to the DNR on at least a quarterly basis. The LDWF may incorporate said provisions as special conditions to their Scenic Rivers Permits and other projects until such time as these nonpoint pollution abatement measures become standard permit conditions.

The Louisiana Natural and Scenic Rivers System Permit in conjunction with the Louisiana Scenic Rivers Act provides some enforceable policies for the 6217(g) management measures for urban runoff. It requires scenic stream management plans for "**watershed protection**" (MM 4 II.B.); it requires permits for "waste water discharges" including that from "**new development**" or "**site development**" (MM 4 II.A., and C.) and its permit evaluation process would give strong consideration to most of the BMP's recommended in MM 4 III. A. and VII.C. for **Erosion and Sedimentation Control**.

U.S. Army Corps of Engineers 404 Permit Program

The Department of the Army regulatory program is one of the oldest in the Federal government. The legislative origins of the program are the Rivers and Harbors Acts of 1890 (superseded) and 1899 (33 U.S.C.401 *et seq.*). Various sections establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States.

In 1972, amendments to the Federal Water Pollution Control Act added what is commonly called Section 404 authority (33 U.S.C.1344) to the program. The Secretary of the Army, acting through the Chief of Engineers, is authorized to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into waters of the United States at specified disposal sites. Selection of such sites must be in accordance with guidelines developed by the Environmental Protection Agency in conjunction with the Secretary of the Army. These guidelines are known as the 404 (b) (1) Guidelines. The Federal Water Pollution Control Act was further amended in 1977 and given the common name of "Clean Water Act."

Section 10 (33 U.S.C.403) contains the most frequently exercised authority in the Rivers and Harbors Act. Section 10 covers construction, excavation, or deposition of materials in, over, or under navigable waters, or any work which would affect the course, location, condition, or capacity of those waters. Navigable waters in the River and Harbors Act of 1899 are defined (33 CFR 329) as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." The Clean Water Act uses the term "navigable waters" which is defined (Section 502 (7)) as "waters of the United States, including the territorial seas." Section 404 jurisdiction then is defined as encompassing Section 10 waters plus their tributaries and adjacent wetlands and isolated waters where the use, degradation or destruction of such waters could affect interstate or foreign

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commerce. The discharge of dredged or fill material into waters of the United States requires a Section 404 permit. This includes return water from dredged material disposed on the upland and generally any fill material (e.g., rock, sand, dirt) used to construct fast land for site development, roadways, erosion protection.

Development activities in designated wetland areas require a federal permit. Nonpoint source impacts related to road construction may involve point source discharges of dredged or fill material and also may require a Section 404 permit {LAC 33:IX.301(M) (2) (a)}. The CWA Section 404 permit also requires that in addition to applying the state's approved Best Management Practices to the permitted activity, fifteen baseline provisions mandated by the USACOE must also be implemented.

The federal 404 permit requires a 401 Water Quality Certification issued by the Louisiana Department of Environmental Quality (LDEQ). This is a regulatory program administered by the state of Louisiana. The 401 Water Quality Certification's recommendations are incorporated into the Section 404 permit, and is then monitored through the USACOE's federal program as conditions of the federal permit.

Worker Protection Standard for Agricultural Pesticides

The new Worker Protection Standard for Agricultural Pesticides issued by the U.S. Environmental Protection Agency (EPA) consists of revised regulations intended to reduce the risk of pesticide poisonings and injuries among agricultural workers and other pesticide handlers through appropriate exposure reduction methods. These new regulations expand the requirements for issuing warnings about pesticide application, use of personal protective equipment, and restrictions on entry to treated areas. New requirements were added for decontamination, emergency assistance, maintaining contact with handlers of highly toxic pesticides, and pesticide safety training. Agricultural workers and other pesticide handlers are targeted by this new Worker Protection Standard. New

WPS provisions are intended to: (1) eliminate exposure to pesticides, (2) mitigate exposures that occur, and (3) inform employees about the hazards of pesticides.

In Louisiana the Louisiana Cooperative Extension Service (LCES) is involved in an extensive statewide outreach program to inform applicators of what they must do to be in compliance with this program. This program has relevance for the following management measures in the federal 6217 (g) guidance manual (in the urban Chapter 4): III.B. for chemical control, VI.A. for pollution prevention, and VII.D. for road/highway/bridge construction chemical handling.

Barataria-Terrebonne National Estuary Program

The Barataria-Terrebonne National Estuary Program (BTNEP) encompasses 4 million acres of cypress swamps, timberlands, farms and coastal marshes in south central Louisiana between the Mississippi and Atchafalaya Rivers. The Water Quality Act of 1987 established the National Estuary Program, administered by EPA, and the BTNEP was selected for the Program in 1990.

While the BTNEP plan is not regulatory in nature it does contain some recommended actions. The "Comprehensive Conservation and Management Plan" for the BTNEP recommends priority corrective actions to balance conflicting uses in the estuary while maintaining the natural ecological integrity-thus serving as a blueprint for restoring and maintaining the estuary. While the BTNEP is a voluntary activity it has an extensive public involvement - over 100 volunteer members strong from all over the estuary. The conference committees represent all levels of government, commercial, industrial and recreational users, educational and scientific communities and the general public. These committees have identified seven priority problems in the estuary - hydrological modification, reduction of sediment availability, habitat loss or modification, changes in living resources, eutrophication, pathogen contamination, and toxic substances - and are

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giving them highest priority. The committees and the public thus form a consensus-building framework to solve the estuary's environmental problems.

Louisiana's CNPCP intends to utilize the BTNEP for dissemination of information through its extensive public education/outreach program. The BTNEP, with representatives sitting on several CNPCP subcommittees, has stated its support for the program with educational materials and activities that address specific aspects of nonpoint pollution. The CNPCP will also utilize information and data presently being obtained through projects such as the spatial-ecological modeling of wetlands; a FEMA hydrologic model of the estuary; a fecal coliform monitoring, identification and assessment of the basin; a mapping project of oyster-producing areas within the estuary; a mapping and location study for storm water drainage stations in the estuary; a survey of vegetation damage caused by nutria herbivory in the basin; and action plan demonstration projects involving conversion of abandoned, dead-end canals to marshlands, field demonstration of cover crops and cultural practices of fallow sugarcane land, program information packages, storm drain stenciling projects, and teachers workshops. All ongoing and future projects in the BTNEP will be evaluated for ways in which they might be related to the CNPCP.

Lake Pontchartrain Basin Foundation

The primary goal of the Lake Pontchartrain Basin Foundation (LPBF) is to develop a comprehensive plan to clean up and restore water quality in the Pontchartrain Basin. This is to be done in cooperation with the EPA, with a grant for \$500,000. The LPBF is working with the local and state agencies to incorporate any existing legal or regulatory authority into the plan. The LPBF was founded under La Legislative Act 716, and began operations in 1989. They are currently working with the NRCS and the dairy farmers north of the lake, on a plan to continue installation of no-discharge lagoons to reduce the amount of dairy waste entering the lake. This program started in March of 1993 and a number of farmers have signed up to participate. The LPBF has several ongoing projects

for improving the lake's habitat that include constructed wetlands creation, freshwater diversion projects, and upgrading small municipal sewage systems north of the lake.

Louisiana Cooperative Extension Service (LCES) Public Education and Outreach Program

The Louisiana Cooperative Extension Service (LCES) Education and Outreach Program is a voluntary, nonregulatory education and outreach program created by the Smith-Lever Act of 1914. It is administered by the Louisiana State University Agricultural Center through parish outreach offices and is conducted in all parishes in Louisiana. These parish outreach offices are staffed by professional extension agents with expertise in agriculture, forestry, and natural resource conservation and management. Educational programs are developed and implemented in each local parish that address needs and issues deemed most important to the local constituency. This is accomplished in most parish extension Service offices through the use of constituency based advisory committees.

Many effective educational and outreach techniques are utilized by LCES professionals to provide pertinent educational information to natural resource user groups. Educational services such as public meeting, workshops, seminars, field days, newsletters, publications, circular letters, newspaper articles, radio and television programs, method and result demonstrations, field visits and office contacts are offered at no cost and are available to everyone.

Supporting the LCES field staff are the state office specialists who help coordinate parish outreach activities. These specialists offer expertise in the areas of wetlands and coastal resources, wildlife, forestry, water quality, environmental education, solid waste management, marine fisheries, aquaculture, agriculture and natural resources economics, agronomy, crop production, public policy, livestock production, youth education, home economics, and agriculture engineering.

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An integral part of the LCES Outreach and Educational Program is the 4-H Youth education program in each parish. Operating through elementary and secondary schools, 80,000 youth are exposed to issues and industries important to Louisiana.

Technical resources for the implementation of the LCES program are available through the numerous research stations located throughout the state. The continual agricultural and forestry research conducted on these stations makes available to the extension agents up-to-date research information that can be passed along to the producers, consumers, and resource-using clientele. The LCES Education and Outreach program utilizes the "teaching by doing" approach. Extension programs continue to effectively contribute to the improved quality of life and environmental health worldwide.

The Louisiana Cooperative Extension Service serves as the educational arm of the United States Department of Agriculture (USDA) in Louisiana. In this capacity they offer programs, demonstrations, and outreach keyed to the implementation of Best Management Practices (BMPs) for not only agriculture, but also other resource use activities related to lawn, garden, and urban consumers. The public outreach/education programs of this agency can play a major role in implementing what is arguably the most critical management measure in the entire urban section, V.I.A., "**Pollution Prevention.**"

Louisiana Department of Environmental Quality Nonpoint Source Management Program (319 Program)

Section 319 of the Clean Water Act (PL 100-4, Feb 4, 1987) was enacted to specifically address problems attributed to nonpoint sources of pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (Sec.101, PL 100-4). It introduces the Nonpoint Source Management Program which instructs the governor of each state to prepare and submit a Management Program for reduction and control of nonpoint source pollution from nonpoint sources into navigable water within the state by implementation of a four year management plan.

In response to this federal law, the state of Louisiana passed Revised Statute 30:2011, signed by the governor in 1987 as Act 272. This law directed the Louisiana Department of Environmental Quality (LDEQ), designated as the lead agency for the NPS program, to develop and implement a NPS Management Program. The NPS Management Program was developed to facilitate coordination with appropriate state agencies including, but not limited to, the Louisiana Department of Natural Resources (LDNR), the Louisiana Department of Wildlife and Fisheries (LDWF), the Louisiana Department of Agriculture and Forestry (LDAF) and the state Soil and Water Conservation Committee, in those areas pertaining to their respective jurisdictions.

The purpose of the Nonpoint Source Management Program is to describe the implementation strategy which the State of Louisiana has taken for implementation of the program. The management strategy is based on interagency cooperation and coordination of all state and federal agencies in Louisiana who have nonregulatory or regulatory programs which provide enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects that can be utilized to implement BMPs.

The NPS Program is a nonregulatory program and at present does not have enforceable policies. As stated, the program actively implements BMPs within targeted watersheds through cooperative efforts and interagency agreements. Demonstration projects and public outreach efforts relative to urban runoff issues include golf course BMP and alternative lawn care demonstration projects; production of brochures and other outreach materials on topics of construction erosion and sediment control and on septic tanks/sewage treatment; production of a video on maintenance of OSDS sewage treatment systems; disseminating information on using low-phosphate detergents and alternatives; storm drain stenciling; development of model ordinances, and citizens monitoring programs.

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USDA/EPA Home*A*Syst Program

Along with the other public outreach programs administered by the LA Cooperative Extension Service, and the LDEQ Nonpoint Source Program, the Home*A*Syst program can serve as an effective public education/outreach vehicle for information on pollution prevention for urban consumers. This program is an urban/suburban counterpart to the Farm*A*Syst program which was pitched to farmstead consumers and other rural residents.

LDOTD/AASHTO Sediment Control Guidelines

Louisiana's "Standard Specifications for Roads and Bridges" guideline document is administered statewide by LDOTD. These specifications specifically list what rules and regulations must be adhered to for all contracts, including requirements for labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the plans, project specifications and terms of the contract. It requires coordination and/or permits with the Corps of Engineers and Coast Guard relative to approval of construction plans for bridges, causeways, embankments, dredging, spoil disposal, etc. for work in navigable waters. These specifications also require the contractor to protect the project and adjoining properties from soil erosion and siltation by effective and continuous erosion control methods and must prevent pollution of waters and wetlands from fuels, asphalts, chemicals or other harmful materials.

Activities covered by these specifications include excavation and embankment projects; temporary erosion control projects; projects involving slab sodding, topsoil, vegetative mulch, and seeding; and projects involving fertilizers, landscaping and erosion control systems. Contractors are also required to comply with all federal, state and local laws, ordinances and regulations having any jurisdiction or authority.

For enforcement purposes all contractors are required to post 100% performance or surety bonds. The LDOTD has the right to order alterations in quantities and plans as deemed necessary or desirable in order to complete the work as contemplated. The Department also has the right to order work not provided for in the contract whenever such work is found essential or desirable to satisfactorily complete the contract within its intended scope. Before final acceptance the right-of-way, borrow and local material sources, and areas occupied by the contractor must be cleared of rubbish, excess materials, temporary structures, hard roads and equipment. All parts of the contract work, including property adjacent to the right-of-way, must be left in satisfactory condition.

LDOTD Guidelines Relevant to Urban Runoff:

Legislation:	LA-RS 48:1 et seq, 38:2211 et seq., and 36:501 et seq.
Program document:	"Louisiana Standard Specifications for Roads and Bridges" 1992 Edition
Applicable Sections	102.03, 102.06, 102.09, 103.05, 104.02, 104.04, 105.01-05, 105.09-11, 105.13, 105.15-17, 106.05, 106.07, 106.09, 107.01, 107.06, 107.09, 107.13-15, 201.01-03, 203.01-07, 204.01-02, 204.04-09, 711.01-03, 712.01-03, 714.01-06, 715.01-03, 716.01-06, 718.04, 717.01-06, 718.01-04, 719.01-06, 720.01-04, 721.01-

102.03=Requires contractor to be furnished location and description of work, quantities, kinds and schedules of work.

102.06=Requires contract bidder to examine site of proposed work and all plans and specifications.

102.09=Requires contractor to post performance or surety bond at time of bid.

103.05=Requires contractor to furnish DOTD a payment/performance/retainage bond at time of execution of contract.

104.02=Gives DOTD right to alter plans or quantities to complete work as contracted.

104.04=Requires contractor to clean-up site (right-of-way, borrow areas and areas occupied by contractor) before final acceptance.

105.01-05=Authorize DOTD engineer to decide on quality and acceptability of materials furnished and work performed, including conformance to all plans and specifications.

105.09-11=Gives DOTD project engineer authority for administration of contract, including rejecting defective materials and equipment and suspending work. Also requires DOTD engineer to inspect all materials and each part or detail of the work.

105.13=Authorizes DOTD project engineer to remove unacceptable work and require the work to be acceptably replaced.

105.15-17=Requires contractor to maintain satisfactorily all right-of-way limits until final acceptance under penalty of restitution (includes mowing, removal of debris and remains, patching)

- 106.05**=Requires contractor to provide and maintain an adequate quality control system as well as perform quality control sampling, testing and inspection to ensure that the work conforms to the project specifications.
- 106.07**=Requires contractor to provide a project site laboratory to be used for quality assurance purposes.
- 106.09**=Requires materials to be stored to assure preservation of their quality and fitness for the work.
- 107.01**=Requires contractor to keep informed of and comply with all Federal, state and local laws, ordinances, regulations, and decrees of bodies having any jurisdiction or authority.
- 107.06**=Requires contractor to provide and maintain in a neat and sanitary condition restrooms and other such accommodations as well as maintain the work in a sanitary, safe and non-hazardous condition.
- 107.09**=Requires that all work in, over and adjacent to navigable waters or wetlands be conducted in accordance with rules and regulations of COE and Coast Guard and obtain required permits from these agencies.
- 107.13-15**=Requires contractor to comply with regulations of Forestry Department or other jurisdictional authorities in work within or adjacent to State or National Forests. Also, the contractor must protect the project and adjoining properties from soil erosion and siltation by effective and continuous erosion control methods. Also requires contractor to comply with Federal, state and local laws and regulations controlling pollution to the environment, including air, water and noise.
- 201.01-03**=Requires contractor to clear, grub, remove and dispose of vegetation and debris with the project right-of-ways and easement areas unless designated to remain.
- 203.01-07**=Requires excavation, disposal, placement and compaction of materials within project right-of-way, including drainage excavation, muck excavation and borrow material.
- 204.01-02**=Requires contractor to provide for temporary erosion control on the project and its right-of-ways to prevent pollution of water. Requires stream banks to be kept in their natural state and prohibits unnecessary stripping of vegetation along banks.
- 204.04-09**=Requires a pre-construction conference, indicating sequence of clearing and grubbing, earthwork operations, permanent and temporary erosion control features, proposed methods to prevent pollution of streams and other waterbodies, and outline methods of controlling erosion and preventing pollution on haul roads, borrow pits, and disposal areas.
- 711.01-03**=Delineates specifications for furnishing and placing riprap on slopes, grades, etc.
- 712.01-03**=Requires contractor to furnish and construct revetments for protection of embankment slopes, stream channels and other areas, with construction limited to dry or dewatered areas.
- 714.01-06**=Requires contractor to furnish, haul, plant, roll, water and maintain live grass sod at specified locations.
- 715.01-03**=Requires contractor to furnish and place topsoil on designated areas.
- 716.01-06**=Requires placement of asphalt-tacked mulch on seeded areas, with damage to seeded areas to be repaired and reseeded.
- 717.01-07**=Requires preparing seed beds and furnishing and sowing grass seed on designated areas, including temporary seeding during construction
- 718.01-04**=Requires contractor to furnish and apply commercial fertilizer and lime on areas designated for planting.
- 719.01-06**=Requires furnishing and planting various plant materials at specified locations, including manure, pine bark for bed preparation, backfill soil, topsoil, and top dressing mulch.
- 720.01-04**=Requires contractor to furnish and place erosion control systems as directed on the plans. Slopes must be seeded and rolled prior to application of erosion control systems.
- 721.01-04**=Requires furnishing and placing asphalt mulch for erosion control on seeded areas.
- 738.01-04**=Requires furnishing, hauling, spreading, fertilizing and liming, rolling, watering and maintaining live bermuda grass roots and topsoil at designated locations.
- 1018.16-19**=Requires that fertilizers used be of a commercial type conforming to applicable fertilizer laws, regulated by LDAF. Agricultural lime and seeds shall also conform to requirements of LA law.

1018.24—Requires that straw matting for erosion control consist of a machine produced mat of straw covered by a biodegradable plastic material.

Oversight (including implementation monitoring, enforcement, and technical assistance) of all contracts for state and federally funded projects rests in the hands of the LDOTD engineers. They monitor all phases of construction through routine on-site visits. Failure to comply with the specifications document requires the unacceptable work to be remedied, removed or replaced. Noncompliance may result in forfeiture of all or part of the performance bond. The COE also has oversight authority through its 404 permit process, since many transportation projects require such a permit.

It is anticipated that the LDOTD will coordinate with LDNR through a Memorandum of Agreement, monitoring activities to achieve compliance with CNPCP BMPs. Through this agreement LDOTD is asked to incorporate provisions of the CNPCP into existing and future LDOTD permit requirements as special conditions, until such time as the nonpoint pollution abatement measures become standard permit conditions. They are also asked to conduct inspections of its activities within the 6217 management area. Noncompliance would be reported to LDNR at least quarterly, and LDOTD is asked to continue and/or initiate education programs for its personnel, government contracts and contractors.

USDA Natural Resource Conservation Service (formerly Soil Conservation Service) Conservation Operations Program

The Conservation Operations Program comprises the day to day technical support activities carried out by the NRCS/SCS in assisting individuals and groups to manage soil and water resources of the land they use. The objectives of the NRCS/SCS Conservation Operations emphasize language such as "understanding soil and water problems and solutions," "sustainable use of soil and water resources," or "improving quality of the

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environment." This program is not limited to rural areas, but includes an objective to "provide proper land use and treatment of soil, water, and related plant and animal resources for all uses (farming, ranching, forestry, housing, recreation, transportation, public facilities, and multiple uses)." A major part of the program includes assisting land users to formulate **conservation plans** for farms and other land holdings. This guidance is provided by the staff of the fifty-one field offices in Louisiana.

USDA Natural Resource Conservation Service (Soil Conservation Service) Resource, Conservation and Development Program

The Resource, Conservation and Development Program (PL-74-46, as amended) targets multi-parish regions that are relatively less developed, and offers economic development incentive grants and technical guidance, linked to natural resource conservation. This linkage is emphasized in the RC&D program, as it is set up to both develop and to conserve resources; and to improve economic activity and standard of living while yet striving to "enhance the environment." A second prominent feature of this program is its long-range nature in providing guidance and support to local people in the RC&D region. In Louisiana there are now five of these designated regions, with the Capital RC&D Area including several parishes that are at least partly in the coastal zone (Assumption, Livingston, Tangipahoa, and St. Tammany), and the Imperial-Calcasieu RC&D area including the coastal parishes of Calcasieu and Cameron.

USDA Natural Resource Conservation Service (Soil Conservation Service) Watershed Protection and Flood Prevention Program

Congress authorized the SCS (now the NRCS) to provide financial and technical assistance for "planning, designing, and installing works of improvement which are related to flood prevention, drainage, irrigation, sediment control, public water based fish and wildlife recreation, and accelerated land treatment measures." These projects are based on the watershed concept, and are intended for small watersheds of 250,000 acres or less.

The projects are supported by the NRCS (formerly SCS), but carried out by local sponsors (drainage districts, levee boards, police juries, or soil and water conservation districts). Thus far 22 projects have been completed in Louisiana under this program. NRCS (SCS) Watershed projects near urban areas in South Louisiana include the Middle Tangipahoa, Lake Salvador (southwest of New Orleans), and Bayou Penchant in Terrebonne Parish. The SCS Watershed planning specifically relates to the **Watershed Protection Management Measure, II.B.** (urban Chapter 4), in the 6217 (g) *Guidance Specifying Management Measures*.

**III. 6217 (g) MANAGEMENT MEASURES MATCHED WITH EXISTING
FEDERAL AND STATE PROGRAMS**

1. (II.A) Urban Runoff -- New Development

- LDEQ NPS (319 Program)
- LDHH Ofc. of Public Health Septic Tank Program
- LDNR/CMD CUP Program Guidelines
- LDNR/CMD Mitigation
- LDOTD/AASHTO Sediment Control Guidelines
- LDWF Natural and Scenic Rivers System
- US Army CORPS OF ENGINEERS 404 Program
- USEPA stormwater guidelines

2. (II.B) Urban Runoff -- Watershed Protection

- Barataria-Terrebonne National Estuary Program
- Federal Emergency Management Agency -- National Flood Insurance Program
- Lake Pontchartrain Basin Foundation -- Comprehensive Mgmt. Plan
- LDAF/Ofc. of Forestry Urban Forestry Program
- LDEQ NPS (319 Program)
- LDHH Ofc. of Public Health Septic Tank Program
- LDNR/CMD CUP Program Guidelines
- LDNR/CMD Mitigation
- LDOTD/AASHTO Sediment Control Guidelines
- LDWF Natural and Scenic Rivers System
- National Park Service River Corridor Program
- USA CORPS OF ENGINEERS 404 Program
- USDA NRCS (SCS) -- Watershed Protection and Flood Prevention Programs
- USEPA stormwater guidelines

3. (II.C) Urban Runoff -- Site Development

- LDEQ NPS (319 Program)
- LDEQ Water Quality Certification
- LDEQ Wastewater Discharge Permit
- LDHH Ofc. of Public Health Septic Tank Program
- LDNR/CMD CUP Program Guidelines
- Local (parish level) Coastal Zone Mgmt. programs
- local zoning ordinances
- local building permits (lowest floor above flood elev., link with septic system cert.)

4. (III.A) Construction Erosion/Sediment Control

USA CORPS OF ENGINEERS 404 Program
USEPA NPDES (sites > 5 acres)
(USEPA Stormwater permit requires sediment be confined to site)
LDOTD/AASHTO Sediment Control Guidelines
LDEQ Construction sediment regulations for sites > 5 acres
LDEQ Effluent standards
LDNR/CMD CUP Program Guidelines
Jefferson Parish Construction Plan Runoff Review
Jefferson Parish Small Construction Site (< 5 acres) BMP Checklist
Orleans Parish Levee Board Runoff Monitoring
local drainage ordinances

5. (III.B) Construction Chemical Control

LDAF Pesticide Certification
LDEQ Hazardous Waste Disposal Regulations
LDEQ NPS (319 Program)
LDOTD Chemical Handling Training
LDOTD Material Handling Specifications

6. (IV.A) Existing Development

LDEQ NPS (319 Program)
LDEQ Water Quality Certification
LDEQ Wastewater Discharge Permit
LDNR/CMD CUP Program Guidelines
National Park Service River Corridor Program
USEPA stormwater guidelines
(local parish drainage ordinances regarding water quality)

7. (V.A) New Onsite Disposal Systems

LDEQ NPS (319 Program)
LDHH Ofc. of Public Health Parish Sanitarian Inspections for Sanitary Code
Compliance
LDNR/CMD CUP Program Guidelines

8. (V.B) Operating Onsite Disposal Systems

LDHH Ofc. of Public Health Parish Sanitarian Inspections for Sanitary Code Compliance
LDEQ NPS (319 Program) Public Outreach/Education programs
Barataria-Terrebonne National Estuary Program -- Public Outreach/Education programs

9. (VI.A) Pollution Prevention

Louisiana Cooperative Extension Service -- Public Educ/Outreach Programs
LDEQ NPS (319 Program)
USDA/EPA Home*A*Syst Program

10. (VII.A) Roads and Highways: plan/ site/ develop

LDOTD/AASHTO Sediment Control Guidelines

11. (VII.B) Bridges: Site/Design/Maintain

LDOTD/AASHTO Sediment Control Guidelines

12. (VII.C) Road, Highway and Bridge Construction Projects

LDOTD/AASHTO Sediment Control Guidelines

13. (VII.D) Road, Highway and Bridge Construction Site Chemical Control

LDAF Pesticide Certification
LDEQ Hazardous Waste Disposal Regulations
LDEQ NPS (319 Program)
LDOTD Chemical Handling Training
LDOTD Material Handling Specifications

14. (VII.E) Road, Highway and Bridge Operation and Maintenance

LDOTD/AASHTO Sediment Control Guidelines

15. (VII.F) Road/Highway/Bridge Runoff Systems

LDOTD/AASHTO Sediment Control Guidelines

URBAN RUNOFF: BEST MANAGEMENT PRACTICES PROPOSED FOR LOUISIANA'S COASTAL NONPOINT POLLUTION CONTROL PROGRAM

Part One: Measures for New Development in Urban Areas, Watershed Management Planning, Small Sites, and Urban Consumers

A. URBAN RUNOFF -- NEW DEVELOPMENT MANAGEMENT MEASURE

This management measure is addressed to planners, public officials and land managers of new developments, in an effort to reduce polluted runoff and to make our waters clean for fishing.

1. Develop training and education programs and materials for public officials, contractors, and others involved with the design, installation, operation, inspection, and maintenance of urban runoff facilities.
2. Where site conditions allow, reduce polluted runoff from new development with **vegetative** management practices such as:
 - a. Vegetated filter strips
 - b. Grassed swales
 - c. Constructed wetlands
3. Where site conditions allow, reduce polluted runoff from new development with **structural** management practices such as:
 - a. Infiltration basins
 - b. Infiltration trenches
 - c. Porous pavement and permeable surfaces
 - d. Concrete grid pavement
 - e. Extended detention ponds
 - f. Wet ponds

4. Ensure that all urban runoff facilities are operated and maintained properly.
5. Educate the public about the importance of runoff management facilities.

B. URBAN RUNOFF -- WATERSHED PROTECTION MGMT MEASURE

This management measure is directed at public officials with authority to draft local land use guidelines and planning measures

1. Resource Inventory and Information Analysis: identification and mapping of attributes including watershed bounds, floodplains, wetlands, soil types, vegetative cover, etc.
2. Development of Watershed Management Plan
3. Implementation of Watershed Management Plan through instruments such as zoning, setbacks, development permits, site plans, and environmental impact assessments.
4. **Promote awareness of watersheds by signs** where roads cross streams, bayous, and drainage divides.
5. Avoid converting areas particularly susceptible to erosion or sediment loss to the maximum extent practicable.
6. Preserve areas that provide important water quality benefits and/or are necessary to buffer riparian and aquatic habitats.
7. Require site developments to maintain the natural integrity of waterbodies and natural drainage systems to the maximum extent practicable.

C. URBAN RUNOFF -- SITE DEVELOPMENT MANAGEMENT MEASURE

This management measure is addressed to planners, public officials and land managers of new developments.

1. Require **erosion and sediment control plans** and programs.
2. Encourage **phasing** or staggering of clearing and grading **operations**, limiting areas of soil surface disturbed at a given time.
3. Require timely vegetative stabilization, using native vegetation to the maximum extent practicable.

4. Promote **minimum disturbance/minimum maintenance** perspective in site clearing.
5. Set **performance criteria** for a particular site to preserve special features not covered by zoning.
6. **Preserve natural drainage** features and natural depressional storage areas, to the maximum extent practicable.
7. **Minimize impervious surface area** by encouraging shorter driveways, narrower sidewalks, permeable material for sidewalks, and more open greenspace.
8. **Reduce the hydraulic connectivity of impervious surfaces** by discouraging connection of downspouts and parking lot drainage directly to storm sewers. Try to disperse drainage from impervious surfaces over lawns and other well-vegetated areas.

D. CONSTRUCTION -- EROSION/SEDIMENT CONTROL MANAGEMENT MEASURE

This management measure is addressed to construction site managers, and provides guidelines to minimize soil erosion and sediment from construction sites.

1. Schedule projects so clearing and grading are done during the time of minimum erosion potential, such as the fall months in much of Louisiana.
2. Do not clear off the entire construction site at the beginning of the project. Even "weeds" help hold the soil in place.
3. Locate material piles, borrow areas, access roads, and other pollutant sources away from slopes, banks, canals, other waterbodies, and critical areas.
4. Route construction traffic to avoid existing or newly planted vegetation.
5. Protect natural vegetation with fencing, tree armoring, and retaining walls or tree wells.
6. Stockpile topsoil and reapply to revegetate site.
7. Cover or stabilize topsoil stockpiles with tarps, mulch, or seeding.
8. Use dust reduction controls such as board fences or surface sprinkling..

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9. Look for opportunities to intercept runoff water before it gets to disturbed sites, and convey it to a permanent channel or storm drain.
10. Use retaining walls or bulkheads where appropriate for bank stabilization.
11. Provide linings -- preferably of grass or sod -- for urban runoff conveyance channels.
12. Place temporary check dams across swales or channels, made of straw bales or sand bags.
13. Seed and fertilize at recommended rates, avoiding temptation to exceed recommended fertilizer rates.
14. To the maximum extent practicable, utilize seeding, mulch/mats, sodding, wildflower cover, and other acceptable methods to quickly reestablish vegetation on disturbed areas.
15. To the maximum extent practicable, utilize sediment controls such as sediment basins, sediment traps, filter fabric fences, straw bale barriers, inlet protection, vegetated filter strips, or other acceptable practices to capture sediment on-site.

E. MANAGEMENT MEASURE FOR CONSTRUCTION SITE CHEMICAL CONTROL

This management measure is addressed to construction site managers, and provides guidelines to reduce the chances of chemical pollutants being washed off construction sites into canals and bayous.

1. Properly handle, apply, store, and dispose of pesticides.
2. Persons mixing and applying these chemicals should be qualified applicators and should wear suitable protective clothing, in accordance with the law.
3. Neighboring property owners should be notified prior to spraying; after spraying, warning signs should be placed in areas sprayed or treated.
4. Pesticides and herbicides should be used in conjunction with Integrated Pest Management.
5. When applying herbicides and pesticides, follow all label directions and additional information provided with the product. Take care not to exceed recommended rates of application, and comply with any directions to keep product away from ditches, canals, streams, bayous, and other water bodies and channels.

6. Pesticide storage areas on construction sites should be protected from the elements. Storage practices include:
 - a. setting aside a storage area that is locked, cool, dry, and lined with plastic sheeting
 - b. maintaining a list of products in storage
 - c. tightly closing lids
 - d. checking containers periodically for leaks or deterioration
7. Disposal of excess pesticides and pesticide-related wastes should conform to registered label directions.
8. Pesticides should be disposed of through either a licensed waste management firm or a treatment, storage, and disposal (TSD) facility.
9. Containers should be triple-rinsed before disposal, and rinse waters should be reused as product.
10. Properly store, handle, use, and dispose of petroleum products, following subguidelines such as:
 - a. Line the storage area with a double layer of plastic sheeting or similar material;
 - b. Create an impervious berm around the perimeter with a capacity 110 percent greater than that of the largest container;
 - c. Clearly label all products;
 - d. Keep tanks off the ground; and
 - e. Keep lids securely fastened. Oily wastes such as crankcase oil, cans, rags, and paper dropped into oils and lubricants, should be disposed of in proper receptacles or recycled. Waste oil for recycling should not be mixed with degreasers, solvents, antifreeze, or brake fluid.
11. To the maximum extent practicable, keep fuel and vehicle maintenance stations away from all ditches, canals, and other drainage courses, and design these stations to confine runoff.
12. Provide sanitary facilities for construction workers.
13. Store, cover, and isolate from drainage courses all construction materials, including fill dirt and all chemicals, to keep these materials from washing into the water.

14. A **spill prevention and control plan** should be developed by contractors, governmental departments and commercial entities that store, handle, or transport fuel, oil, or hazardous materials.

Spill control plan components should include measures for: **immediately stopping the source of the spill, containing any liquid, and covering the spill with absorbent** material such as sawdust, kitty litter, or kenaf absorbent (but do not use straw). Properly dispose of the used absorbent and contaminated material..

15. Have persons trained in spill handling on site or on call at all times; post spill procedure information on site; and keep materials for cleaning up spills on site and easily available.
16. Wash, clean, or maintain equipment and machinery in confined areas specifically designed to control runoff.
17. Thinners or solvents should not be discharged into sanitary or storm sewer systems when cleaning machinery.
18. Use alternative methods for cleaning larger equipment parts, such as high-pressure, high-temperature water washes, or steam cleaning.
19. Equipment-washing detergents can be used, and wash water may be discharged into sanitary sewers if solids are removed from the solution first. (This practice should be verified with the local sewer authority.)
20. Small parts can be cleaned with degreasing solvents, which can then be reused or recycled. Do not discharge any solvents into sewers.
21. **Washout from concrete trucks** should be disposed of into a designated area that will later be backfilled; an area where the concrete wash can harden, can be broken up, and then can be placed in a dumpster; or a location not subject to urban runoff and more than 50 feet away from a storm drain, open ditch, or surface water.
22. Provide adequate disposal facilities for solid waste, including excess asphalt, produced during construction.
23. Educate construction workers about proper materials handling and spill response procedures. Distribute or post informational material regarding chemical control.

F. MANAGEMENT MEASURE FOR EXISTING DEVELOPMENT

This management measure is addressed to planners, public officials and land managers of existing developments.

1. Priority nonpoint source pollutants should be targeted, and strategies for mitigating the effects of these pollutants should be developed.
2. Develop policies and plans that ensure that all surface water runoff management facilities are properly operated and maintained. Periodic monitoring and maintenance may be necessary to ensure proper operation and maintenance.
3. Protect remnant pervious areas in already-built areas with enforceable preservation requirements and greenspace ordinances.
4. To the maximum extent feasible, increase pervious area by **reclaiming pavement** and by setting green space goals **promoting the planting of trees** and other vegetation.
5. Modify existing water runoff management structures to enhance water quality, to the maximum extent practicable.
6. Where feasible, add detention ponds, filter strips, or other measures to existing development.

G. MANAGEMENT MEASURE FOR NEW ONSITE DISPOSAL SYSTEMS (OSDS)

This management measure is addressed to planners, public officials and other land managers involved with new developments.

1. Designate and map areas as "SUITABLE" or "UNSUITABLE" for conventional septic systems, and develop guidelines for setbacks from waterways.
2. Require assessments of site suitability prior to issuing permits for ONSITE DISPOSAL SYSTEMS (OSDS).
3. Incorporate into plumbing codes practices that are compatible with ONSITE DISPOSAL SYSTEMS (OSDS) use.
4. Select, the most appropriate type of OSDS for protection of water quality.

H. MANAGEMENT MEASURE FOR OPERATING ONSITE DISPOSAL SYSTEMS

This management measure is addressed to planners, public officials and land managers of existing developments.

1. Perform regular inspections of ONSITE DISPOSAL SYSTEMS (OSDS).
2. Perform regular maintenance of ONSITE DISPOSAL SYSTEMS (OSDS).
3. Provide cost-sharing to retrofit or upgrade malfunctioning systems.
4. Promote use of denitrification systems in watersheds with excessive nitrogen problems.
5. Discourage the use of phosphate in detergents.
6. Discourage the use of garbage disposals.
7. Discourage or ban the use of acid and organic chemical solvent septic system additives.
8. Promote proper operation and maintenance of ONSITE DISPOSAL SYSTEMS (OSDS) through public education and outreach programs.

I. MANAGEMENT MEASURE FOR WATER POLLUTION PREVENTION

This management measure is addressed to public officials, educators, urban residents and other urban land managers.

1. Promote public education programs for proper use and disposal of household chemicals and hazardous materials.
2. Have "Amnesty Day" programs to promote responsible disposal of household chemicals.
3. Establish conveniently located collection centers for recycling used oil, antifreeze, and other chemicals.
4. Encourage best management for lawns and landscaping, including efficient use of pesticides, fertilizers, and irrigation.

5. Encourage onsite recycling of yard trimmings by distributing informational brochures and composting bins, offering waste removal credits, and establishing "Master Composter" programs.
6. Encourage the use of biodegradable cleaners and other alternatives to hazardous chemicals.
7. Manage pet excrement to minimize runoff into surface waters.
8. Promote storm drain stenciling to the maximum extent practicable.
9. Encourage alternative designs and maintenance strategies for impervious parking lots.
10. Control commercial sources of nonpoint source pollutants by **encouraging pollution prevention assessments**, and developing nonpoint pollution reduction plans and training materials for the workplace.
11. Promote water conservation: minimize lawn irrigation and outdoor wash water to reduce the runoff volume likely to carry pollutants.
12. Discourage the use of septic system additives.
13. Encourage litter control by:
 - a. Encouraging businesses to keep the streets in front of their buildings free of litter;
 - b. Developing local ordinances restricting, or otherwise discouraging, food establishments from using disposable food packaging, especially plastics, styrofoam, and other floatables;
 - c. Implementing "bottle bills" and mandatory recycling laws;
 - d. Providing technical and financial assistance for establishing and maintaining community waste collection programs;
 - e. Distributing public education materials on the benefits of recycling; and
 - f. Developing "user-friendly" ways for recycling, such as curbside pick-up, voluntary container buy-back systems, and drop-off recycling centers.
14. Promote programs such as Adopt-a-Stream to assist in keeping waterways free of litter and other debris.

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15. Promote proper operation and maintenance of Onsite Sewage Disposal Systems through public education and outreach programs.

Part Two: Measures for Roads, Highways and Bridges, Addressed to Governmental Highway Departments and Their Contractors

J. MANAGEMENT MEASURE FOR PLANNING, SITING AND DEVELOPING ROADS AND HIGHWAYS

1. During the planning phase of roads, highway, and bridges, consider type and location of permanent erosion and sediment controls (e.g., vegetated filter strips, grassed swales, pond systems, infiltration systems, constructed urban runoff wetlands, etc.).
2. Wetlands that are within the highway corridor and that cannot be avoided should be mitigated.
3. Establish setback distances to protect wetlands, waterbodies, and riparian areas to the maximum extent practicable. Setback distances should be determined on a site-specific basis, weighing variables such as topography, soils, floodplains, cut-and-fill slopes, and design geometry. In level or gently sloping terrain, a **general rule of thumb** is to establish a setback of 50 to 100 feet from the edge of the wetland or riparian area and the right-of-way. Consider right-of-way setbacks from major waterbodies (oceans, lakes, estuaries, rivers) of 100 to 1000 feet.
4. Avoid locations subject to subsidence or highly erodible soils, to the maximum extent practicable.
5. Plan residential roads and streets in accordance with local subdivision regulations, zoning ordinances, and other local site planning requirements.
6. Select the most economic and environmentally sound route location.
7. Use appropriate computer models and methods to determine urban runoff impacts with proposed route corridors, where applicable.
8. Comply with National Environmental Policy Act requirements (FHWA, T6640.8A) and related state and local requirements.

9. Coordinate the design of pollution controls with appropriate state and federal environmental agencies.
10. Use local official mapping to analyze location of proposed highway corridors with regard to nonpoint source pollution impacts and areas which may be particularly sensitive to development.

K. MANAGEMENT MEASURE FOR PLANNING, SITING AND DEVELOPING BRIDGES

1. Coordinate design with FHWA, USCG, USACOE, and other state and federal agencies, as appropriate.
2. Review National Environmental Policy Act requirements to ensure that environmental concerns are met (FHWA, T6640.8A and 23 CFR 771).
3. Avoid highway locations requiring numerous river crossings, to the maximum extent practicable.
4. Consider reducing the use of scupper drains on bridges less than 400 feet in length and on bridges crossing very sensitive ecosystems.
5. Site and design new bridges to avoid sensitive ecosystems whenever possible.

L. MANAGEMENT MEASURE FOR ROADS, HIGHWAYS, AND BRIDGES: CONSTRUCTION

1. Write erosion and sediment control requirements into plans, specifications, and estimates for federal aid construction projects for highways and bridges, and develop erosion control plans for earth-disturbing activities.
2. Coordinate erosion and sediment controls with FHWA, AASHTO, and state guidelines.
3. Install permanent erosion and sediment control structures at the earliest practicable time in the construction phase.
4. Coordinate temporary erosion and sediment control structures with permanent practices.

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5. Wash vehicles prior to leaving the construction site as needed to remove mud and other deposits. Install and maintain mud and silt traps, and silt fences.
6. Mitigate wetland areas destroyed during construction.
7. Minimize the area that is cleared for construction.
8. Construct cut-and-fill slopes in a manner that will minimize erosion.
9. Minimize runoff entering and leaving the site through perimeter and onsite sediment controls, to the maximum extent practicable.
10. Inspect and maintain erosion and sediment control practices (both on-site and perimeter) until disturbed areas are permanently stabilized.
11. After construction, remove temporary control structures and restore the affected area, disposing of sediments in accordance with state and federal regulations.
12. Storm drain inlets that are operable during construction should be protected so that sediment-laden water will not enter the conveyance system without first being filtered to remove the sediment.

M. MANAGEMENT MEASURE FOR ROADS, HIGHWAYS, AND BRIDGES: CONSTRUCTION SITE CHEMICAL CONTROL

(The practices applicable to this management measure parallel those in Section E.)

1. Properly store, handle, apply, and dispose of pesticides
2. Properly store, handle, use, and dispose of petroleum products
3. Locate vehicle staging areas away from watercourses, and minimize stream crossings, to the maximum extent practicable.
4. Provide sanitary facilities for construction workers.
5. Develop and implement a spill prevention and control plan.
6. Clean machinery in designated areas, keeping solvents and concrete rinse out of drains.

7. Take advantage of soil testing, to the maximum extent practicable, to match fertilizer needs to site conditions.
8. Properly dispose of excess asphalt and other solid waste.
9. Educate construction workers about material handling and spill control; post up information, as appropriate.

**N. MANAGEMENT MEASURE FOR ROADS, HIGHWAYS, AND BRIDGES:
OPERATION AND MAINTENANCE**

1. Seed and fertilize, seed and mulch, and/or sod damaged vegetated areas and slopes.
2. Establish pesticide/herbicide use and nutrient management programs.
3. Restrict herbicide and pesticide use in highway rights-of-way to applicators certified according to state regulations, under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) to ensure safe and effective application.
4. Minimize the use of chemicals such as soil stabilizers, dust palliatives, sterilants, and growth inhibitors, and take all feasible measures to keep these chemicals out of surface runoff.
5. Sweep designated streets, roads, and bridges, as appropriate.
6. Collect and remove road debris
7. Use alternative deicing materials, such as sand or salt substitutes, where sensitive ecosystems should be protected.
8. Maintain retaining walls and pavements to minimize cracks.
9. Repair potholes.
10. Encourage litter and debris control management.
11. Encourage regular inspection programs to ensure that general maintenance is performed on urban runoff and nonpoint source pollution control facilities by the appropriate authority. Urban runoff facilities may include, but are not limited to, sediment basins, culverts, check dams, riprap, and silt fences.

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12. Dispose of accumulated sediment collected from urban runoff management and pollution control facilities, and any wastes generated during maintenance operations, in accordance with appropriate local, state, and federal regulations.
13. Use, to the maximum extent practicable, techniques such as suspended tarps or drapes, vacuums, or booms, to reduce the delivery to surface waters of pollutants associated with bridge maintenance (e.g., paint, solvents, scrapings).
14. Develop education programs to promote best management practices for reducing polluted runoff water from roads, highways and bridges.

O . MANAGEMENT MEASURE FOR ROADS, HIGHWAYS, AND BRIDGES: RUNOFF SYSTEMS

1. Locate runoff treatment facilities within existing rights-of-way or in medians and interchange loops, within the limits of safety standards.
2. Maximize the length and width of vegetated filter strips to slow the travel time of sheet flow and increase the infiltration rate of urban runoff.

EP&M SHEETS

§6217 Enforceable Policy and Mechanism (EP&M) Matrix

URBAN, Urban Runoff Management Measures

II.A. Urban, New Development Management Measure

MM Component	EP&M citation	EP&M Applicability citation
After construction completion and site stabilization, reduce average annual TSS by 80% or ...		
... Reduce postdevelopment loadings of TSS so that average annual levels are no greater than predevelopment		
Maintain postdevelopment peak and average runoff volumes near predevelopment levels	Louisiana Administrative Code (L.A.C.) tit. 43 Part I, § 701 (F.4); § 705 (I); § 717 (A); (B)	

II.B. Urban, Watershed Protection Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Avoid conversion of areas that are particularly susceptible to erosion and sediment loss;	Louisiana Administrative Code (L.A.C.) tit. 43 Part I, § 701 (G.19)	
Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and	Louisiana Administrative Code (L.A.C.) tit. 43 Part I, § 701 (G.16); § 711 (D)	
Site development to protect the natural integrity of waterbodies and natural drainage systems	Louisiana Administrative Code (L.A.C.) tit. 43 Part I, § 701 (F.4); (G.12); § 705 (I); § 717 (A); (B)	

II.C. Urban. Site Development Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Plan, design, and develop sites to protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 713 (C)	
Plan, design, and develop sites to limit increases of impervious areas		
Plan, design, and develop sites to limit land disturbance activities such as clearing and grading, and cut and fill, to reduce erosion and sediment loss; and	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 711 (G)	
Plan, design, and develop sites to limit disturbance of natural drainage features and vegetation.	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 701 (F.4); (G.12); § 705 (L); § 717 (A); (B)	

III.A. Urban. Construction Site Erosion and Sediment Control Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Reduce erosion and retain sediment onsite during and after construction	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 711 (F)	
Prior to land disturbance, prepare and implement approved erosion and sediment control plan	Louisiana Administrative Code (L.A.C.) tit. 43 Part I § 713 (A)	

III.B. Urban. Construction Site Chemical Control Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Limit application, generation and migration of toxic substances;	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 711 (M); Louisiana Revised Statutes (L.R.S.) Ann. 30 § 2071, et seq.	
Ensure the proper storage and disposal of toxic materials; and		
Apply fertilizer nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface water.		

IV.A. Urban. Existing Development Management Measure: Develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development

MM Component	EP&M citation	EP&M Applicability citation
Prioritize local and regional watershed pollutant reduction opportunities;		
Develop a schedule for implementing appropriate controls;		
Limit destruction of natural conveyance systems; and	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 701 (F.4); (G.12); § 705 (L.); § 717 (A); (B)	
Where appropriate, preserve, enhance, or establish buffers along surface waterbodies and their tributaries		

V.A. Urban. New Onsite Disposal Systems Management Measure

MM Component	EP&M citation	EP&M Applicability citation
<p>Ensure new Onsite Disposal Systems are located, designed, installed, operated, inspected, and maintained to prevent discharge of pollutants into water.</p>	<p>Louisiana Revised Statutes (L.R.S.) Ann. 30 § 2075; Louisiana Sanitary Code, chap. XII sub-part B, 13:002.</p>	
<p>Direct placements of OSDS away from unsuitable areas (floodplains, shallow water tables, poorly drained), or limit to low densities</p>		
<p>Establish protective setbacks from surface waters, wetlands, and floodplains</p>		
<p>Establish protective vertical separation distances between OSDS system components and groundwater</p>		
<p>Where excessive loadings of nitrogen require OSDS that reduces nitrogen loading</p>		

V.B. Urban. Operating Onsite Disposal Systems Management Measure

MM Component	EP&M citation	EP&M Applicability citation
<p>Implement policies to ensure that OSDS are operated and maintained to prevent discharge of pollutants to the surface of the ground. Encourage use of low-volume plumbing fixtures, reduced use of garbage disposals, and low-phosphate detergents. Implement policies requiring OSDS to be repaired or replaced when failing or otherwise threatening surface waters.</p>	<p>Louisiana Revised Statutes (L.R.S.) Ann. 30 § 2075; Louisiana Sanitary Code, chap. XII sub-part B, 13:002.</p>	
<p>Inspect OSDS at a frequency adequate to ascertain whether OSDS are failing</p>		
<p>Consider replacing or upgrading OSDS to treat influent so that total nitrogen loadings in the effluent are reduced by 50 percent.</p>		

VI.A. Urban. Pollution Prevention Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Implement education programs on use and disposal of household hazardous chemicals including automotive fluids;	(Enforceable policies NOT APPLICABLE to this management measure)	
Implement education programs on lawn and garden waste disposal		
Implement education programs on turf mgmt. for golf courses and parks		
Implement education programs on proper operation and maintenance of OSDS		
Implement education programs on discharge of pollutants into storm drains, including floatables, waste oil and litter		
Implement education programs for parking lots, gas stations, and other commercial entities not covered by NPDES.		
Implement education programs on proper/improper disposal of pet excrement		

VII.A. Urban. Management Measure for Planning, Siting and Developing Roads and Highways

MM Component	EP&M citation	EP&M Applicability citation
Plan, site, and develop roads and highways to protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;		
Plan, site, and develop roads and highways to limit land disturbance activities such as clearing and grading, and cut and fill, to reduce erosion and sediment loss; and		
Plan, site, and develop roads and highways to limit disturbance of natural drainage features and vegetation.	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 701 (F.4); (G.12); § 705 (I.); § 717 (A); (B)	

VII.B. Urban. Management Measure for Bridges (site/design/maintain)

MM Component	EP&M citation	EP&M Applicability citation
Site, design, and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important water quality benefits are protected from adverse effects.	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 711 (H); (I)	

VII.C. Urban. Management Measure for Construction Projects (Road, highway and bridge)

MM Component	EP&M citation	EP&M Applicability citation
Reduce erosion and retain sediment onsite during and after construction	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 711 (F)	
Prior to land disturbance, prepare and implement approved erosion and sediment control plan	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 713 (A)	

VII.D. Urban. Management Measure for Construction Site Chemical Control (road, highway and bridge)

MM Component	EP&M citation	EP&M Applicability citation
Limit application, generation and migration of toxic substances;	Louisiana Administrative Code (L.A.C.) tit. 43 Part I. § 711 (M); Louisiana Revised Statutes (L.R.S.) Ann. 30 § 2071, et seq.	
Ensure the proper storage and disposal of toxic materials; and		
Apply fertilizer nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface water.		

VII.E. Urban. Management Measure for Operation and Maintenance (road, highway and bridge)

MM Component	EP&M citation	EP&M Applicability citation
Incorporate pollution prevention procedures into the operation and maintenance of roads, highways, and bridges to reduce pollutant loadings to surface waters.	(legal contractors found this management measure to be NOT CURRENTLY ENFORCEABLE under existing Louisiana law)	

VII.F. Urban. Management Measure for Road, Highway, and Bridge Runoff Systems

MM Component	EP&M citation	EP&M Applicability citation
Identify and prioritize watershed pollutant reduction opportunities;	(legal contractors found this management measure to be NOT CURRENTLY ENFORCEABLE under existing Louisiana law)	
Establish schedules for implementing appropriate controls.		

IVD. LOUISIANA

**MANAGEMENT MEASURES FOR MARINAS
AND
RECREATIONAL BOATING**

Coastal Management Division

Louisiana Department

of

Natural Resources

Louisiana's Coastal Nonpoint Pollution Control Program

MARINAS AND RECREATIONAL BOATING

I. INTRODUCTION

Louisiana's coastal zone/proposed 6217 management area is composed of all or parts of 19 parishes. These include Assumption, Calcasieu, Cameron, Iberia, Jefferson, Lafourche, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Mary, St. Martin, St. Tammany, Tangipahoa, Terrebonne, and Vermilion.

One hundred and two marinas (102) are in the Louisiana coastal zone/proposed 6217 management area and are located in fourteen of these parishes. These parishes are Cameron, Iberia, Jefferson, Lafourche, Livingston, Orleans, Plaquemines, Tangipahoa, Terrebonne, Vermilion, St. Bernard, St. Martin, and St. Tammany Parishes.

Concentrations of marinas occur along the north and east shores of Lake Pontchartrain in St. Tammany Parish, along the south shore of Lake Pontchartrain in Orleans Parish, and in the western portion of St. Bernard Parish along Bayou la Loutre and Bayou Terre aux Boeufs. Figure 1 shows the number of marinas located in each parish in the Louisiana coastal zone/proposed 6217 management area.

Sizes of these marinas vary from the large municipal operations in Orleans Parish with 400 to 600 wet slips to small local operations having fewer than 10 slips. The average marina in the Louisiana coastal zone has approximately 58 wet slips. See Table 1., page 2 .

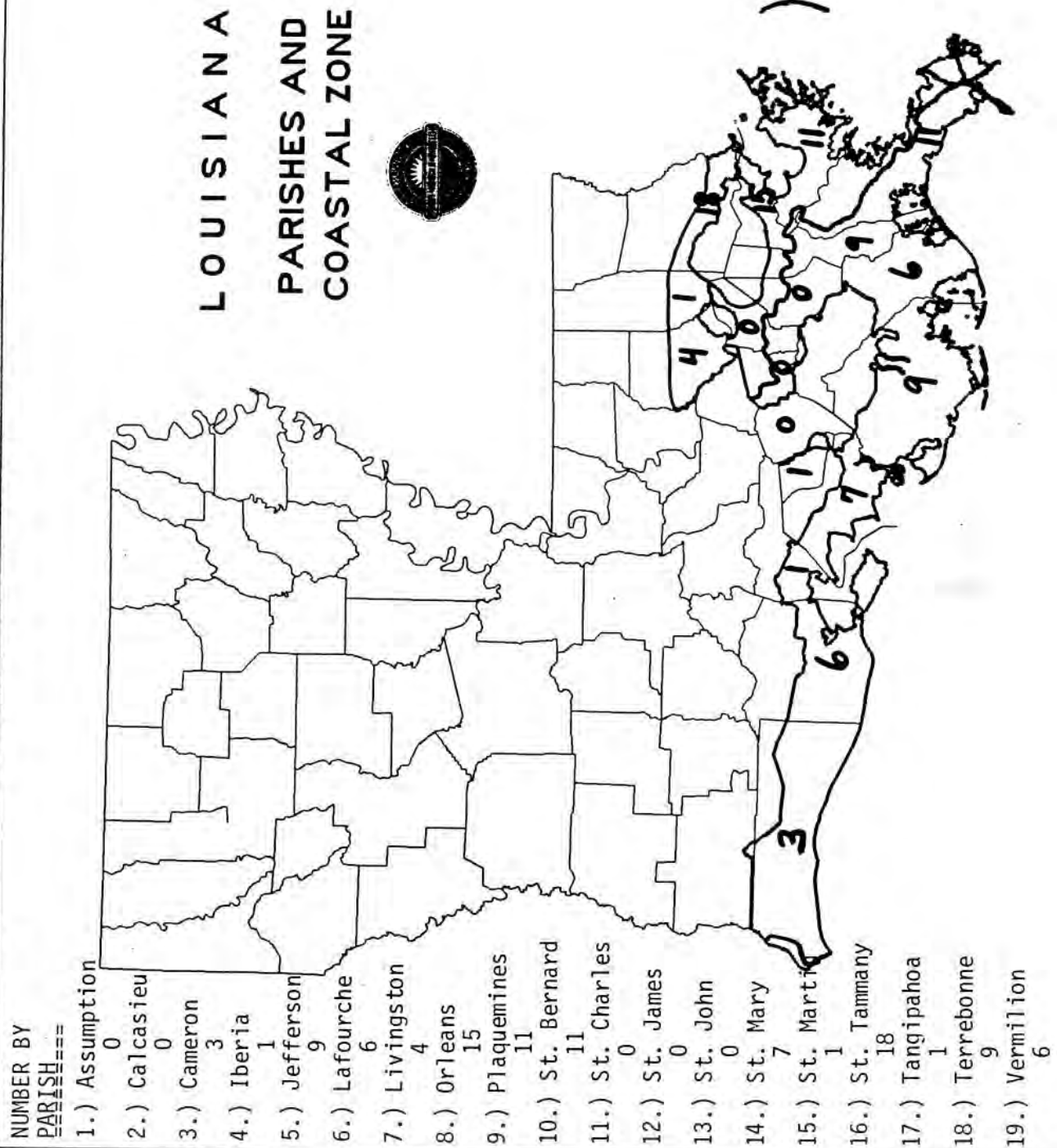
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(Table 1)

MARINA CAPACITY

PARISH	TOTAL # MARINAS	SLIPS AVAILABLE	%OCCUP. (SLIPS)	DRY STORAGE	%OCCUP. (DRY STOR.)
Assumption	0	0	0	0	0
Calcasieu	0	0	0	0	0
Cameron	3	79	85	Unk	Unk
Iberia	1	42	76	0	0
Jefferson	9	783	40	85	Unk
Lafourche	6	73	47	0	0
Livingston	4	193	93	0	0
Orleans	15	1787	89	999	Unk
Plaquemines	11	225	71	473	Unk
St Bernard	11	219	73	337	93
St Charles	0	0	0	0	0
St James	0	0	0	0	0
St John	0	0	0	0	0
St Mary	7	218	6	71	50
St Martin	1	0	0	0	0
St Tammany	18	1699	76	212	48
Tangipahoa	1	20	100	0	0
Terrebonne	9	330	67	58	97
Vermilion	6	217	55	0	0
Totals	102	5885	68	2235	----

(FIGURE 1) MARINAS IN CZ AND THE 6217 MANAGEMENT AREA



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A full range of services are offered at many coastal zone marinas. These services include fuel sales, boat cleaning and repair, wet and dry storage, fish cleaning facilities, and sewage disposal.

In early August, 1994, a short questionnaire was sent out to 90 boatyards and marinas located in the Louisiana coastal zone/6217 management area. The intention of the survey was to gather information about general marina activities such as availability and types of services offered, whether vessel maintenance and repair was conducted at the marina, whether environmentally safe practices and materials were used or encouraged for use in boat cleaning and maintenance, and what, if any, non point pollution prevention methods were being used to implement effective stormwater runoff control from marina parking and hull maintenance areas.

From the results of this survey it was hoped that a picture could be developed of the types of non-point pollution reduction methods being presently implemented by boatyards and marinas. From these the areas that needed to be addressed could be determined in drawing up a set of Best Management Practices (BMPs) to be used at these facilities.

Of the 90 questionnaires sent out, 25 responses were received. These responses covered approximately 39 percent of the total wet slips available to boaters in the coastal zone/6217 management area.

The results indicated that many best management practices were already being used in day-to-day marina activities. Of the respondents selling fuel, 75 percent had developed spill contingency plans and were implementing BMPs such as using automatic shut-off nozzles during fueling operations. 58 percent of the marinas responding were using environmentally safe practices and materials for boat cleaning and 54 percent posted adequate signage directing patrons to marina services.

A marina BMP subcommittee met later in the year and using the 6217 (g) management measures as guidelines, developed a set of best management practices that could be applied specifically to Louisiana boatyard and marina needs and could also be used to satisfy the 6217 (g) management measures. A draft set of proposed BMPs are included as an attachment to this document.

In November, 1994, a meeting was held of all marina and boatyard owners, managers, and operators for the purpose of forming the first marina and boatyard association of Louisiana. The association's purpose would be to provide a means for boatyard and marina owners, managers, and operators to regularly consult with each other over matters pertaining to the marine environment; boat maintenance and repairs; marketing and maintaining supplies, slips, equipment; ordering raw materials; keeping up with new products and designs; and understanding laws and regulations. At the meeting the Marina and Boatyard Association of Louisiana was formed, officers were elected, and a board of directors was appointed. A copy of the proposed best management practices was presented to those attending the meeting. Review and comment of the proposed practices is presently underway.

A separate survey of marinas in Louisiana's coastal zone was also conducted by the Louisiana Department of Wildlife & Fisheries (LWDF) to gather information for the Clean Vessel Act Grant Program (August, 1994). Preliminary results, with 68 or 67% of the 102 marinas responding, indicated that 89.2% of marina customers were recreational boaters. The annual number of recreational boats using coastal marinas was over 182,000 boats and these boats ranged in length from greater than 40 feet (7,787) to less than 16 feet (30,288). The greatest number of boats was in the 16 to 26 foot range (102,619). There were 41,605 recreational boats 26 to 40 feet in length. Over 10,500 of these boats were equipped with some type of marine sanitation device, either holding tanks or a chemical treatment system which allowed direct discharge into coastal waters. Another 20,000 boats made use of portable toilets which require disposal at a facility onshore.

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Fifty-one (51) marinas surveyed were equipped with some type of sewage disposal facility. These facilities included direct attachment to a public sewer system, on-site package plants, or on-site septic systems.

At this time there are 8 marinas with pumpout facilities located in the coastal zone area. Six are located for use around Lake Pontchartrain at marinas in Madisonville, Mandeville, and New Orleans. Two others are located at Bridge Side Marina at Grande Isle, and at Lake End Park in Morgan City. Average monthly use of these eight pumpout stations is 103.

Marina siting, development, and expansion in the Louisiana coastal zone is now being effectively regulated by existing programs and laws. Agencies responsible for permitting of new marinas and expansion of existing marinas include the Louisiana Department of Natural Resources/Coastal Management Division (LDNR/CMD), the Louisiana Department of Environmental Quality (LDEQ), the Department of Health and Hospitals (DHH), and the US Army Corps of Engineers (USACOE). Other agencies with commenting authority on permit applications include the Louisiana Department of Transportation and Development (DOTD), the Louisiana Department of Wildlife & Fisheries (LDWF), the Louisiana Department of Culture, Recreation, and Tourism (DRCT), the National Marine Fisheries Service (NMFS), and the US Fish & Wildlife Service (USFWS).

II. EXISTING NPS PROGRAMS: REGULATORY AND NONREGULATORY

REGULATORY PROGRAMS:

Coastal Use Permit Program

Under the authority of the Louisiana State and Local Coastal Resources Management Act of 1978 (Act 361, LA R.S. 49:214.21), the Coastal Use Permitting Program (CUP) was established to help ensure the management and reasonable use of the state's coastal wetlands. The Coastal Management Division (CMD) of the Louisiana Department of Natural Resources is charged with implementing this program.

The CUP program has oversight for land use activities in the designated coastal zone that involve dredging, fill, or other earth-moving or drainage impacting activities. Activities that may require a coastal use permit include dredge and fill projects, sewage treatment plant siting, waste-water discharge, drainage projects, pumping facilities, marsh management activities, water level control, levee construction, solid waste dump siting, roads and bridges, park siting, freshwater diversion, mosquito control, and **marina siting, construction, and expansion.**

The CUP program carries the authority to enforce either legal or administrative procedures, including levying fines, issuing cease and desist orders, and requiring mitigation or restoration.

The CMD Enforcement and Monitoring section monitors permitted activities in the Coastal Zone for compliance with permit conditions, and patrols by air, land, and water the entire Coastal Zone for unauthorized activities.

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A copy of the coastal use guidelines used in the CUP program is included in the survey of enforceable policies contained in the laws of the State of Louisiana appended to the Executive Summary (Section H., LAC title 43, Chapter 7, Coastal Management).

The Coastal Use Permit will be used to ensure implementation of the necessary marina management measures by requiring that approved best management practices (BMPs) are adhered to as a condition to CUP issuance. Wording in the permit states:

"In accordance with the rules and regulations of the Louisiana Coastal Resources Program and Louisiana R.S. 49, Sections 213.1 to 213.21 (included in Vol. 2.), the State and Local Coastal Resources Management Act of 1978, as amended, the permittee agrees to:

2. Comply with any permit conditions imposed by the Department of Natural Resources, and
9. The following special conditions must also be met in order for the project to meet the guidelines of the coastal resources program."

A copy of the approved Louisiana Marina and Recreational Boating management measures and BMPs will be appended to each applicable coastal use permit application and will be imposed as required permit conditions to ensure that marina owners and operators know what is expected for permit approval and also what is required for the ongoing operation and maintenance of marina facilities. Specific BMPs may also be required as special conditions for permit approval and will be listed as such on the coastal use permit. Should such BMPs be necessary they will be determined by the CMD's Coastal Use Permitting Section, the Consistency Section, and CNPCP personnel after conducting an on-site inspection of the project area. Adherence to permit conditions will be ensured by periodic monitoring of ongoing site activity by CMD field investigation agents and CNPCP staff personnel. Monitoring forms are presently being designed.

Included as an attachment (Attachment 2.) to this document is an completed CUP for construction of a new marina and its accompanying infrastructure in the Louisiana coastal

zone. Included also is the initial field investigation and letters of no objection from state and federal agencies. Please notice the special conditions placed on the CUP and also the additional stipulations and conditions required for permit approval that were made by the other reviewing agencies.

For additional information, an application form, (Attachment 3.), to apply for a coastal use permit for new and expanding marinas together with other pertinent information required for issuance of the permit is attached.

Louisiana Water Control Law

The Louisiana Water Control Law (Act 1979, LA R.S. 30:2071) became effective January 1, 1980. R.S. 30:2072 states that: "To insure the proper protection and maintenance of the state's waters, it is necessary to adopt a system to control and regulate the discharge of waste materials, pollutants, and other substances into the waters of the state."

Under this act, the state can adopt and promulgate rules and regulations consistent with the Water Control Law to prevent water pollution and to also develop permitting procedures and to require and issue permits, licenses, or compliance schedules for all waste water discharges or sources of water pollution within the state of Louisiana {LA R.S. 30:2074(B)(3)(4)}.

In addition to the standard conditions required in all permits, the Office of Water Resources, in the LDEQ, may establish additional requirements as deemed necessary on a case-by-case basis, to provide for and assure compliance with all applicable requirements of the act, regulations, and constitutional and statutory mandates (LAC 33:IX.311).

Any permit noncompliance constitutes a violation of the act and is grounds for:

1. enforcement action under the act;

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2. permit termination, revocation and reissuance, or modification; or
3. denial of a permit renewal {LAC 33:IX311(A)}.

Authorized representatives of DEQ's Office of Water Resources may sample or monitor for the purposes of assuring permit compliance or as otherwise authorized by the act, any substances or parameters at any permitted location {LAC 33:IX311(H)}.

The DNR proposes to have a Memorandum of Agreement (MOA) with DEQ which requires the Office of Water Resources to include provisions of the CNPCP (BMPs) into the 401 Water Quality Certification permits and their comments to other agencies permits.

Louisiana Solid Waste Management and Resource Recovery Law

The Louisiana Solid Waste Management and Resource Recovery Law (Act 1979, LA R.S. 30:2151) also became effective January 1, 1980. R.S. 30:VIII.2152 states: "that the disposal and utilization of solid waste is a matter of vital concern to all citizens of this state, and that the safety and welfare of the people of Louisiana require efficient and reasonable regulation of solid waste disposal practices as well as a coordinated statewide resource recovery and management program." The LDEQ is the state agency designated to implement this law.

Under the act, "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations; and from community activities. It does not include or mean solid or dissolved material in domestic sewage or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to other permits. (LA R.S. 30:2153).

Louisiana Oil Spill Prevention and Response Act

The Louisiana Oil Spill Prevention and Response Act (LA R.S. 30:2451) became effective April 23, 1991. The release of oil into the environment presents a real and substantial threat to the public health and welfare, to the environment, the wildlife and aquatic life, and to the economy of Louisiana. It is the intent of this act to support and complement the Oil Pollution Act of 1990 and other federal law, specifically those provisions relating to the national contingency plan for cleanup of oil spills and discharges, including provisions relating to the responsibilities of state agencies designated as natural resources trustees (LA R.S. 30:2453). The Oil Spill Coordinators Section in the Governor's Office is responsible for implementing this act.

The act requires terminal facilities to take spill prevention measures. Terminal facilities are defined in the act as any waterfront or offshore pipeline, structure, equipment or device used for the purposes of drilling for, pumping, storing, handling, or transferring oil and operating where a discharge from the facility could threaten the waters of the state. {LA R.S. 30:2454(27)}. Such facilities must provide the oil spill coordinator with a discharge prevention and response plan consistent with state and federal plans and regulations for prevention of unauthorized discharges of oil and abatement, and for containment and removal of pollution when such discharges occur {LA R.S. 30:2470(B)(1)(a)}. Oil is defined by the act to include petroleum. {LA R.S. 30:2454(18)}.

Endangered Species Act

The Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544) was enacted in 1973 to provide a means to conserve the ecosystems upon which endangered species and threatened species depend, and to provide a program for the conservation of such endangered species and threatened species. The act is regulatory, nationwide in scope,

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and provides protective regulations for threatened species; recovery plans for the conservation and survival of endangered and threatened species; and includes penalty and enforcement provisions for violations of the act. The USFWS implements and oversees the Endangered Species Act in Louisiana.

Louisiana Natural and Scenic Rivers System Permit

The Louisiana Natural and Scenic Rivers System is one of the Nation's largest. It encompasses 51 streams or stream segments and is over 1,500 miles in length. There are 9 scenic rivers within the present boundaries of the Louisiana Coastal Zone.

The system was proposed in the late 1960's and was brought into existence in the early 1970's with the passage of the Louisiana Natural and Scenic Rivers Act (LA R.S.56:1840 *et seq.*). The act established a regulatory program and empowered the Secretary of the Louisiana Department of Wildlife and Fisheries (LDWF) to administer the system through regulation and permits.

Because the Scenic Rivers System has come under increasing pressure from a variety of interests, the need for improved management and regulation has become critical. Therefore, certain activities in the system have been prohibited by the state of Louisiana. Also, a permitting system has been established to regulate some activities which may occur on the river system.

Prohibited activities include: (1) channelization of the stream, (2) channel realignment, (3) clearing and snagging, (4) impoundments of any type, and (5) commercial clear-cutting of timber within 100 feet of the low water mark.

Any other activity that may have a direct, significant, ecological impact on the stream or **its tributaries or distributaries** must be permitted by the LDWF. These activities

include, but are not limited to: (1) bridge, pipeline, and powerline crossings; (2) bulkheads, piers, docks, and ramps; (3) waste water discharges; and (4) land development adjacent to the stream. Approximately 15-20 Scenic River permits are issued annually for uses such as these. Most permit applications include an on-site inspection prior to issuance of the permit.

The Scenic Rivers System Permit is issued by the LDWF with a multi-agency review by the LDWF, Office of State Planning and Budget, LDEQ, and the Louisiana Department of Agriculture and Forestry (LDAF). This regulatory program is limited only to scenic rivers or their tributaries or distributaries.

Enforcement policies include a permitting system, criminal penalties with fines, and civil penalties with fines and adjudication. Monitoring is done through aerial surveillance, site investigations and inspections, and citizen complaints.

U.S. Army Corps of Engineers 404 Permit Program

The Department of the Army regulatory program is one of the oldest in the federal government. The legislative origins of the program are the Rivers and Harbors Acts of 1890 (superseded) and 1899 (33 U.S.C.401 et seq.). Various sections establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States.

In 1972, amendments to the Federal Water Pollution Control Act added what is commonly called Section 404 authority (33 U.S.C.1344) to the program. The Secretary of the Army, acting through the Chief of Engineers, is authorized to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into waters of the United States at specified disposal sites. Selection of such sites must be in accordance with guidelines developed by the Environmental Protection Agency in conjunction with

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the Secretary of the Army. These guidelines are known as the 404(b)(1) Guidelines. The Federal Water Pollution Control Act was further amended in 1977 and given the common name of "Clean Water Act."

Section 10 (33 U.S.C.403) contains the most frequently exercised authority in the Rivers and Harbors Act. Section 10 covers construction, excavation, or deposition of materials in, over, or under navigable waters, or any work which would affect the course, location, condition, or capacity of those waters. Navigable waters in the River and Harbors Act of 1899 are defined (33 CFR 329) as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce."

The Clean Water Act uses the term "navigable waters" which is defined (Section 502(7)) as "waters of the United States, including the territorial seas." Section 404 jurisdiction then is defined as encompassing Section 10 waters plus their tributaries and adjacent wetlands and isolated waters where the use, degradation, or destruction of such waters could affect interstate or foreign commerce.

The discharge of dredged or fill material into waters of the United States requires a Section 404 permit. This includes return water from dredged material disposed on the upland, and generally, any fill material (e.g., rock, sand, dirt) used to construct fast land for site development, roadways, erosion protection, etc.

The federal 404 permit requires a 401 Water Quality Certification issued by the (LDEQ). This is a regulatory program administered by the state of Louisiana. The 401 Water Quality Certification's recommendations are incorporated into the Section 404 permit, and is then monitored through the USACOE's federal program as conditions of the federal permit.

LDNR proposes to enter into a Memorandum of Agreement (MOA) with all three applicable Corps of Engineer (COE) districts that have jurisdiction in Louisiana's coastal zone and 6217 management area. This MOA requires that the COE districts incorporate provisions of the CNPCP (BMPs) into their permits as special conditions and later as standard conditions. The MOA will be effective on approval of the CNPCP.

Louisiana Department of Environmental Quality Nonpoint Source Management Program

Section 319 of the Clean Water Act (PL 100-4, February 4, 1987) was enacted to specifically address problems attributed to nonpoint sources of pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters (Sec.101; PL 100-4). It introduces the Nonpoint Source Management Program (PL 100-4) which instructs the governor of each state to prepare and submit a management program for reduction and control of nonpoint source pollution from nonpoint sources into navigable water within the state by implementation of a four -year management plan.

In response to this federal law, the state of Louisiana passed Revised Statute 30:2011, signed by the governor in 1987 as Act 272. This law directed the (LDEQ), designated as the lead agency for the NPS program, to develop and implement a NPS Management Program. The NPS Management Program was developed to facilitate coordination with appropriate state agencies including, but not limited to, the (LDNR), the (LDWF), the (LDAF) and the state Soil and Water Conservation Committee, in those areas pertaining to their respective jurisdictions.

The purpose of the Nonpoint Source Management Program is to describe the implementation strategy which the State of Louisiana has taken for implementation of the program.

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The primary objective of the NPS Management Program is to implement those BMPs that reduce the level of nonpoint source pollution in the surface and ground waters of the state. The management strategy is based on interagency cooperation and coordination of all state and federal agencies in Louisiana with nonregulatory or regulatory programs to provide enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects that can be utilized to implement Best Management Practices (BMPs).

In addition to this BMP implementation, educational programs are held at the local level in order to educate people about nonpoint source pollution problems, and the BMPs recommended by state and federal agencies to correct these problems.

Marinas have not been identified as one of the eight categories of nonpoint source pollution that is addressed by the program. However, the Nonpoint Program works in conjunction with LDEQ's 401 Water Quality Certification Program, a regulatory program that addresses marina siting and design activities which may need to be included under the COE 404 permit. Water quality certification recommendations, in coordination with input from LDEQ's Nonpoint Program staff, are incorporated into the COE 404 permit.

LDNR proposes to enter into a MOA with LDEQ to be executed on approval of the CNPCP. In this MOA, the Nonpoint Source Management Program will include provisions of the CNPCP in all contracts, demonstration projects, etc. and will utilize its considerable efforts in public education/outreach programs to inform local governments and the public about the requirements of the CNPCP.

Coastal Wetlands, Conservation, Restoration, and Management Program

Louisiana's Coastal Wetlands, Conservation, Restoration, and Management Program (LA R.S. 49:213 and 214) is administered by the Coastal Restoration Division (CRD) within

LDNR. The program coordinates all state department budget requests for programs and projects pertaining to coastal wetlands conservation and restoration while representing the policy consensus viewpoint of the state at the federal, regional, state, and local level with respect to wetlands conservation and restoration. The main focus of this CRD program is to reduce coastal land loss. The restoration and conservation plan has the following objectives: plan, design and complete projects and programs designed to conserve, enhance, restore and create vegetated wetlands in the short term; plan, evaluate, implement, or cost-share in long range projects designed to provide widespread and continuing long-term benefits to vegetated wetlands; make projects and programs within hydrologic basins mutually compatible; develop policies and procedures through the rule-making process that would provide, at a minimum, for replacement of functional coastal wetland values lost due to future activities; and make operation and implementation of federal water resources projects consistent with the policy of the state to elevate coastal vegetated conservation, enhancement, restoration, and creation to a level of importance equal to flood control, navigation, or other development activities. Although statewide in geographic extent, the vast majority of projects are located and constructed within the existing coastal zone.

Oversight of the CRD program is by the Wetland Conservation and Restoration Task Force consisting of the Secretaries of the LDNR, LDEQ, LDWF, DOTD, the Director to the State Soil and Water Conservation Committee, and the Executive Assistant in the governor's Office of Coastal Activities and Environmental Affairs. The program is regulatory in nature in that contractors for construction projects are required to post performance bonds to ensure compliance of all plans, specifications, and guidelines. Projects are monitored regularly by CRD staff biologists and engineers to ensure compliance. Some water-quality monitoring aspects are incorporated into many of the constructed projects.

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III. 6217 (g) MARINA MANAGEMENT MEASURES ADDRESSED

The 6217(g) management measures for Marinas and Recreational Boating and their accompanying management components are being addressed in the Louisiana coastal zone/proposed 6217 management area by regulatory laws and programs that are presently in place and being enforced in the state of Louisiana. These include the Coastal Use Permitting Program (LA R.S. 49:214.30), the Louisiana Water Control Law (LA R.S. 30:2071), the Louisiana Solid Waste Management and Resource Recovery Law (LA R.S. 30:2151), and the Louisiana Oil Spill Prevention and Response Act (LA R.S.30:2451), the Louisiana Natural and Scenic Rivers Act (LA R.S. 56:1840), and the Corps of Engineers Section 404 and Section 10 permit programs (33 USC 1344). These enforceable regulatory mechanisms provide an excellent framework to successfully control the addition of nonpoint source pollutants into Louisiana's coastal waters by using the best available nonpoint pollution control practices, technologies, siting criteria, and operating methods.

In addition the recently formed Louisiana Marina and Boatyard Association's members are presently considering a draft of proposed Best Management Practices for Louisiana boatyards and marinas to be used as voluntary guidelines for the implementation of 6217 (g) management measures.

SITING AND DESIGN MANAGEMENT MEASURES

Siting and design are among the most significant factors affecting a marina's potential for water quality impacts. A marina's location affects its circulation and flushing characteristics. Circulation and flushing are influenced by the basin configuration and orientation to prevailing winds and, thus, play important roles in the distribution and dilution of potential contaminants. Final marina designs are usually a compromise that will provide the most desirable combination of marina capacity, services and access while

minimizing environmental impacts, dredging requirements, protective structures, and other site development costs.

The objective of the **Marina Siting and Design** Management Measure is to ensure that marinas and ancillary structures do not cause direct or indirect adverse water quality impacts or endanger fish, shellfish, and wildlife habitat both during and following marina construction.

A. Marina Flushing Management Measure

The applicability statement for this management measure states that the management measure is intended to be applied by States to new and expanding marinas to control impacts to water quality and habitat from marina siting, construction, and operation and maintenance.

This management measure and its accompanying management component is addressed by recently drafted Best Management Practices (BMPs) for Louisiana marinas and by effective, in place enforceable policies and mechanisms that are currently being used in Louisiana's coastal zone.

1.) "Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly."

Under Louisiana's State and Local Coastal Resources Management Act, marinas are required to obtain coastal use permits. The coastal use guidelines (CUGs) use a feasibility based approach. Piers, docks, and other harbor structures are required to be designed and built using practical techniques to avoid obstruction of water circulation. (CUG 5.5). Marinas are required to the maximum extent practicable to be located so as not to result in adverse impacts on open productive oyster beds or submersed grass beds. (CUG 5.6).

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The coastal use permitting system provides an enforceable regulatory scheme of design requirements through which proper flushing management can be enhanced.

Other CUGs that augment this enforceable regulatory scheme of design requirements include CUGs 1.6(d.), 1.7(a.), 1.7(c.&d.), 1.7(h.), 1.7(l.&m.), and 1.7(u.). (See LAC 43, Part I., Chapt. 7, Vol. 2.).

Marina permit applications must include existing drainage patterns and water regimes of the surrounding area including flow, circulation, quality, quantity, and salinity, and the impacts on them. They must be planned, sited, designed, constructed, and maintained to avoid reductions in the natural supply of sediment and nutrients to the coastal system by alterations of freshwater flow. Natural concentrations of oxygen in coastal waters must not be altered. Piers, docks, and other harbor structures must be designed and built using best practical techniques to avoid obstruction of water circulation. And all marinas must be planned, sited, designed, constructed, and maintained to avoid reductions or blockage of water flow or natural circulation patterns within or into an estuarine system or a wetland forest.

Under the Louisiana Water Control Law, marinas may be subject to water quality permit requirements. Any construction or activity which would cause increases in the quantity of pollutants discharged or degradation in the quality of the discharge of pollutants into the waters of the state, or which would otherwise alter the physical, chemical, or biological properties of any waters of the state, would require a water quality permit. Marinas that meet these designations would require water quality permits in order to operate {LAC 33:IX.301(B)(3)}.

Newly proposed BMPs for Louisiana boatyards and marinas address this management component with effective nonregulatory management practices. Included under the "Marina Flushing" management measure for Louisiana are BMPs that pertain to water

circulation and flushing action in marina basins, depth of marina basins in relation to adjacent navigable water depths, and location of marina basins in areas suitable for development.

B. Water Quality Assessment Management Measure

This management measure is intended to be applied by States to new and expanding marinas. The management measure component addresses the assessment of water quality as part of marina siting and design.

1.) "Assess water quality as part of marina siting and design."

The Louisiana State and Local Coastal Resources Management Act's regulations require that development in the coastal zone, to the maximum extent practicable, avoid degradation of water quality {LAC I.701(G)}. Requirements that marina developers perform predevelopment and/or postdevelopment monitoring of the marina or ambient waters or numerical, or physical modeling of flushing and water quality characteristics, can be included in coastal use permits. The decision to require water quality assessment is made on a case by case basis. (See attachments 1 & 4).

This management measure is also enforceable under the Louisiana Water Control Law {LAC 33:IX.301(B)(3)}. Any construction or activity which would cause increases in the quantity of pollutants discharged or degradation in the quality of the discharge of pollutants into the waters of the state, or which would otherwise alter the physical, chemical, or biological properties of any waters of the state, would require a water quality permit. Water quality assessment would be required for this determination.

Louisiana's CUGs 1.6(b.), 1.6(d.), 1.7(a.), 1.7(c.), 1.7(d.), 1.7(e.), 1.7(h.), 1.7(k.), 1.7(m.), 5.6, 6.10, 7.5, and 9.1 can be used to provide enforceable policies to ensure

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implementation of this management measure. Specifically, CUG 1.7(d.) states that all marinas must be planned, sited, designed, constructed, and maintained to avoid alterations in the natural concentrations of oxygen in coastal waters. CUG 1.7(m.) maintains that discharges of pathogens or toxic substances into coastal waters must be avoided in the planning, siting, designing, construction, and maintenance of marinas.

Broader protection of water quality is achieved through the use of other CUGs. Marina permit applications must include data on elevation, soil and water conditions, and flood and storm hazard conditions at the planned site. Existing drainage patterns and water regimes must be identified. The siting and construction of marinas must be accomplished to avoid detrimental discharges of inorganic nutrient compounds into coastal waters. The salinity regime of coastal waters must be considered and protected in the planning, siting, designing, construction, and maintenance of marinas. Marinas must not be located so as to result in adverse impacts on open productive oyster beds or submersed grass beds.

In addition to these enforceable mechanisms, specific BMPs have been promulgated to address this management measure. These are included in the management measure "Water Quality Assessment" and are as follows:

- a. Encourage the development and implementation of a water quality monitoring program. Include monitoring during marina pre-construction, construction, and post-construction phases.
- b. Monitoring requirements should be tailored to the marina based on factors such as flushing, existing water quality, number of slips, and presence and proximity of fueling facilities to important habitats.
- c. Periodically review sampling requirements to determine adequacy of parameters.

C. Habitat Assessment Management Measure

Management Measure II.C., **Habitat Assessment**, is intended to be applied to new and expanding marinas where site changes may impact on wetlands, shellfish beds, submerged aquatic vegetation or other important habitats.

1.) "Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or Federal governments."

The Louisiana's State and Local Coastal Resources Management Act's regulations require that marinas and similar commercial and recreational developments shall, to the maximum extent practicable, not be located so as to result in adverse impacts on open productive oyster beds, or submersed grass beds or adverse alteration or destruction of unique or valuable habitats, critical habitat for endangered species, important wildlife or fishery breeding or nursery areas, designated wildlife management or sanctuary areas or forestlands {LAC 43:I.701(F)(12) and (G)(16), 709 (F), and 711(H)}. To ensure compliance extensive habitat assessment is performed by the CMD of the LDNR as part of the marina permitting process.

The state water quality standards establish water use designations for surface waters to be used in setting standards below which degradation will not be allowed (LAC 33:IX.1109). These designations and standards include consideration of aquatic protection (LAC 33:IX.1109B1, 1111C, E, and G, 1113b1, 5, and 10). Habitat assessment would be a necessary preliminary step to establishing the water quality standards.

Other CUGs including 1.6(n.), 1.6(q.); 1.7(e., j., n.; o., q., r., &u.), 4.4, 4.5, 6.9, 7.5, and 7.8 also address this management measure. They include the extent of impacts on special areas (1.6 n.), and on navigation, fishing, public access, and recreational opportunities (1.6 q.).

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CUG 1.7(e.) states that all marinas must be planned, sited, designed, constructed and maintained to avoid destruction or adverse alterations of streams, wetland, tidal passes, inshore waters and water bottoms, beaches, dunes, barrier islands, and other biologically valuable areas or protective coastal features. Wetlands are addressed in CUG 1.7(o.) which states that all marinas must be planned, sited, designed, constructed and maintained to avoid fostering of detrimental secondary impacts in undisturbed or biologically highly productive wetland areas. Guideline 5.6 states that marinas and similar commercial and recreational developments shall, to the maximum extent practicable, not be located so as to result in adverse impacts on open productive oyster beds or submersed grass beds (See Attachment (LAC tit. 43) for complete listing and descriptions.).

Draft BMPs that address this management measure are found in Louisiana's "Habitat Assessment" management measure and are as follows:

- a. Marinas should, to the maximum extent practicable, not be sited close to areas of high natural resource value such as open productive oyster beds, submerged aquatic vegetation, and areas frequented by endangered species.
- b. Plan, site, design, construct, and maintain marinas to avoid reduction in the long term biological productivity of the coastal ecosystem.
- c. When feasible, construction work should be scheduled to avoid the spawning and nesting seasons of the specific species that are present.
- d. Identify important habitat areas and establish buffer zones between marina activities and these areas.
- e. Piers and wharves crossing vegetated wetland and areas of submerged aquatic vegetation should be limited to the minimum necessary for water access.
- f. Develop and maintain marinas to avoid adverse disruptions of coastal wildlife and fishery migratory patterns.
- g. Develop and maintain marinas to avoid fostering of detrimental secondary impacts in undisturbed or biologically highly productive wetland areas.

- h. Marinas should be developed and maintained to avoid adverse effects of cumulative impacts.
- i. Encourage the use of rapid bioassessment techniques to assess impacts to biological resources.

On scenic rivers and streams, the Louisiana Natural and Scenic Rivers System Act (LA R.S. 56:1840 *et seq*) may afford an enforceable mechanism to ensure implementation of best management practices. Uses other than those that are prohibited that have potential to cause direct and significant degradation to a scenic river or their tributaries or distributaries are regulated by a permit process and multi-agency review.

The Endangered Species Act (ESA) (16 U.S.C.A. 1531-1544) provides a means to conserve the ecosystems upon which endangered and threatened species depend. The ESA offers an enforcement mechanism by which threatened or endangered species habitat areas are afforded protection after being identified. The USFWS implements and has oversight for the ESA in Louisiana.

Included as an attachment is a sample field investigation report. (See Attachment 2.) These investigations are routinely conducted before construction is initiated for new and expanding marinas. Direct and indirect effects of the project are considered as well as possible mitigation projects which may be performed to offset possible habitat loss as a result of marina construction in sensitive habitat areas.

D. Shoreline Stabilization Management Measure

Management Measure II.D., **Shoreline Stabilization**, is applicable to new and expanding marinas where site changes may result in shoreline erosion. The management measure component states that where shoreline erosion is a nonpoint source pollution problem, shorelines should be stabilized. Vegetative stabilization is the preferred method unless structural methods are more cost effective, considering the severity of wave and wind

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erosion, offshore bathymetry, and the potential adverse impact on other shorelines and offshore areas.

1) "Stabilize shorelines where shoreline erosion nonpoint source pollution is a problem."

The Louisiana State and Local Coastal Resources Management Act's regulations require that, to the maximum extent practicable, non-structural methods of shoreline stabilization be used and that shoreline modification structures shall be designed and built using best practical techniques to minimize adverse environmental impacts {LAC tit. 43:I.709(A) and (B)}. Shoreline modification structures are also required to be built using the best practical materials and techniques to avoid the introduction of pollutants and toxic substances into coastal waters {LAC 43:I.709(D)}. Jetties, groins, breakwaters, and similar structures are required to be planned, designed and constructed so as to avoid to the maximum extent practicable downstream land loss and erosion {LAC 43:I.709(I)}. These requirements apply to marina developments.

All marinas must be planned, sited, designed, constructed, and maintained to avoid land loss, subsidence, and erosion. Linear facilities shall be planned, designed, and built using the best practical techniques to prevent bank slumping and erosion.

Specific BMPs to address this component of the management measure are included in Louisiana's proposed "Shoreline Stabilization" management measure.

- a. Develop and maintain marinas to avoid land loss, subsidence, and erosion.
- b. Nonstructural methods of shoreline protection should be utilized to the maximum extent practicable.
- c. Design and build shoreline modification structures using the best practical techniques to minimize adverse environmental impacts.
- d. Plan, design, and construct jetties, groins, breakwaters, and similar structures so as to avoid, to the maximum extent practicable, downstream land loss and erosion.

- e. Encourage the use of riprap revetments over vertical bulkheads to provide greater habitat and reduce wave reflections.

2.) "Vegetative methods are strongly preferred unless structural methods are more cost effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines and offshore areas."

The best practical techniques for site restoration and revegetation shall be utilized for all linear facilities. Areas modified by surface alteration activities shall, to the maximum extent practicable, be revegetated, refilled, cleaned and restored to their predevelopment condition upon termination of the use (CUGs 3.15 and 6.6).

Specific BMPs that address this management component have been developed and are as follows:

- a. Utilize the best practical techniques for site restoration and revegetation of linear facilities.
- b. Use natural vegetation for shoreline stabilization and maintain in good condition by promptly repairing and reseeding washouts and other area losses in vegetation.

E. Storm Water Runoff Management Measure

Stormwater Runoff, Management Measure II.E., is applicable to new and expanding marinas, and to existing marinas for at least the hull maintenance areas. It applies to all areas where hull maintenance is conducted. It is not applicable to runoff that enters the marina property from upland sources.

The coastal use permit program does not specifically cover hull maintenance in marinas. However, the regulations generally require that to the maximum extent practicable activities be planned, sited, designed, constructed, operated, and maintained to avoid significant discharges of pathogens or toxic substances into coastal waters. Surface

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alterations should be designed, constructed, and operated using the best practical techniques to prevent the release of pollutants or toxic substances into the environment, and runoff shall be managed to simulate natural water patterns, quantity, quality, and rate of flow (CUGs 1.7(M), 6.13, and 9.2). The CUP program regulates construction of marinas in the coastal zone and could, through permit conditions, require implementation of some of the aspects of the stormwater runoff management measure.

Marinas may also be subject to water quality permit requirements. The degradation of water quality as a result of hull maintenance areas would effect a marina's ability to obtain a water quality permit (LA R.S. 30:2075). If a marina's activities include frequent or concentrated hull maintenance activities, then the marina's water quality permit would address this, and marinas whose water quality falls below the level set in their permit would be in violation. However, individual hull maintenance activities would not be specifically covered by the water quality permit system.

This management measure is addressed by the state's coastal use guidelines and the Louisiana Water Control Law and also by Best Management Practices being drafted to satisfy the management measures components.

1.) "Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of hull maintenance areas."

All marinas must be planned, sited, designed, constructed, and maintained to avoid detrimental discharges of inorganic nutrient compounds into coastal waters. Alterations in the natural concentrations of oxygen in coastal waters must be avoided as well as the effects of cumulative impacts. All marinas must be planned, sited, designed, constructed, and maintained to avoid detrimental discharges of suspended solids into coastal waters, including avoiding discharges of pathogens or toxic substances into these waters.

New BMPs to address storm water runoff have been developed and proposed by the Louisiana Marina and Boatyard Association. They include design of hull maintenance areas, methods to help reduce solid wastes generated by hull maintenance activities, and they encourage the use of proven stormwater pollution reduction methods to reduce contaminate runoff into surface waters.

- a. Design boat hull maintenance areas to minimize contaminated runoff.
- b. Where feasible, outdoor boat maintenance areas should be on impervious surfaces with curbs and storm drainage systems to collect discharges and spillage.
- c. Tarps, sanders with vacuum attachments, and vacuums should be used to collect solid wastes produced by cleaning and repair of boats.
- d. Clean all areas of the marina regularly to prevent oils, paints, dust, sandings, and other materials from being washed into the surface waters, storm drains, ditches, swales, and other water courses.
- e. Inspect visually and clean as necessary all sediment traps and oil/grit separators. Dispose of wastes in an appropriate manner.
- f. Encourage, where feasible, the installation, use, and maintenance of stormwater management measures such as sand filters, wet ponds, constructed wetlands, vegetated filter strips, grassed swales, porous pavement, holding tanks, catch basins, and adsorbents in drain outlets as aids in reducing contaminate runoff into surface waters.

2.) "Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis."

This management component will be satisfied with the implementation of proposed BMPs and conditions appended to coastal use permits and also to state water quality permits.

F. Fueling Station Design Management Measure

The applicability statement for Management Measure 5.II.F., **Fueling Station Design**, states that it is intended to be applied to new and expanding marinas where fueling stations are to be added or moved.

The Louisiana State and Local Coastal Resources Management Act exempts the construction, maintenance, repair, or normal use of service stations, that occur wholly on lands five feet or more above mean sea level or on fastlands except when the secretary (Secretary, LDNR) finds, subject to appeal, that the particular activities would have direct and significant impacts on coastal waters. Thus, filling station design management measures could be included as conditions in permits for marina construction or expansion through authority cited in CUGS 1.7(m.), 6.13, and 9.12. These state that all marinas must be planned, sited, designed, constructed, and maintained to avoid discharges of pathogens or toxic substances into coastal waters {1.7(m.)}. These also require that surface alteration sites and facilities shall be designed, constructed, and operated using the best practical techniques to prevent the release of pollutants or toxic substances into the environment and minimize other adverse impacts(6.13). The CUGs also state that runoff from developed areas shall to the maximum extent practicable be managed to simulate natural water patterns, quantity, quality and rate of flow (9.2).

This management measure is covered more completely under the Louisiana Water Control Law. Under this law, the owner/operator of a facility that deals with oil of any kind including petroleum in any form, such as a fueling station, is required to develop a contingency plan and implementation plan concerning spill prevention and control {LAC 33:IX.901(A)}. These spill contingency plans should contain the identity, amount and location of substances stored at the facility, as well as facility capability, and procedures for taking corrective actions and/or countermeasures when a spill event occurs. The plan should also include a prediction of the direction, rate of flow, and total quantity of

applicable substances which could be spilled at the facility. Appropriate containment and/or diversionary structures or equipment to prevent an applicable spilled substance from reaching waters of the state should be provided (LAC 33:IX.907).

In addition, the Louisiana Oil Spill Prevention and Response Act (LA R.S. 30:2451) requires terminal facilities to take spill prevention measures. Terminal facilities are defined in the act as any waterfront or offshore pipeline, structure, equipment, or device used for the purposes of drilling for, pumping, storing, handling, or transferring oil, and operating where a discharge from the facility could threaten waters of the state. Such facilities must provide the oil spill coordinator with a discharge prevention and response plan consistent with state and federal plans and regulations for prevention of unauthorized discharges of oil and abatement, and for containment and removal of pollution when such discharges occur {LA R.S. 30:2470(B)(1)(a)}. Oil is defined by the Act to include petroleum {LA R.S. 30:2454(18)}. The state act allows state requirements that are in addition to or vary materially from federal requirements if the state interests served are substantial compared to the burdens of the requirements {LA R.S. 30:2460B(2)}.

Unauthorized discharges or spills may require reporting to the LDEQ. The reporting requirements are based on the chemical nature of the pollutant and the amount discharged or spilled. Oil, which includes petroleum fuel oil and crude oil, that is discharged in excess of 42 gallons is subject to reporting requirements (LAC 33:3905,3931).

When opening a new garage or oil business, the owner is required to petition the city council, board of alderman, or police jury of the parish for approval of the location (LA R.S. 32:531). The owner must also submit with the petition the written assent of the majority of the property owners within three hundred feet. Restrictions on location prohibit stations from being within three hundred feet of any bridge over a river on any state highway, when it is determined the station is dangerous to public safety (LA R.S. 32:532).

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Various best management practices have been proposed to address this management measure also. Implementation will be enforced through the adoption of a proposed "bad actor" provision which will allow the DNR to enforce best management practices for nonpoint source pollution control by establishing penalties for failure to implement required management measures and thereby causing nonpoint source pollution.

1.) "Design fueling stations to allow for ease in cleanup of spills."

- a. Locate and design fueling stations so that spills can be contained in a limited area.
- b. Develop and implement a spill contingency plan.
- c. Spill containment equipment and materials should be provided in convenient accessible locations.
- d. Automatic fuel tank and pump leak shut-offs should be provided.
- e. Fueling stations on land should be curbed to contain spills.
- f. Above ground fuel tanks should be placed within secondary containment berms, with containment volumes meeting state, federal, and local codes.

G. Sewage Facility Management Measure

The Management Measure 5.II.G., **Sewage Facility**, is intended to be applied to new and expanding marinas in areas where adequate sewage collection facilities do not exist.

Marinas that do not provide services for vessels that have marine sanitation devices (MSDs) do not need to have pumpouts, although dump stations for portable toilets and restrooms should be available. This measure does not address direct discharges from vessels covered under CWA section 312.

1.) "Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters."

Louisiana's State and Local Coastal Resources Management Act's regulations generally require that shoreline modification structures be designed and built using best practical techniques to minimize adverse environmental impacts, and that activities in the coastal zone be designed, constructed, operated, and maintained to avoid to the maximum extent practicable discharges of pollutants, pathogens, or toxic substances into coastal waters. These issues are addressed by CUGs 1.7(c.) and (m.). Broader regulation of waste disposal is contained in CUGs 8.1 and 8.3-8.5 which cover general waste disposal and waste disposal in wetlands.

The Coastal Management Division (CMD) also has a Memorandum of Understanding with the Department of Health and Hospitals (DHH) regarding sewage treatment systems. The CMD will not issue a coastal use permit unless the applicant has obtained certification (if required) from DHH that the project is in compliance with the State Sanitary Code's applicable sewage treatment systems regulations. While the law and regulations do not address sewage facilities in marinas directly, CUPs for marinas can and have included conditions requiring pumpout stations at marinas. An example is included in the attachments in which the Department of Health and Human Resources (formerly DHH) adds conditions for permit approval which state that the applicant "shall submit appropriate plans and specifications to DHHR which adequately detail necessary **house and boat waste pump out facilities**. Still another example of permit conditioning provides for a commitment to provide "whatever facilities and further information" DHHR "may determine is necessary to insure adequate handling of the sewerage at the marina." (See Attachments 2 & 4).

The State Sanitary Code (Chapt XIII, *Sewage Disposal*) also states that:

"Sewage disposal for vessels shall be determined by the primary function of the vessel. Vessels which are

permanently moored are considered residences, and shall be treated as such. Vessels not permanently moored shall be required to employ appropriate Coast Guard approved Marine Sanitation Devices." (See Vol. 2.)

The U.S. Congress passed the Clean Vessel Act (CVA) in 1992 to reduce water pollution caused by the disposal of human waste by recreational boaters. The CVA provides a cost reimbursement program for up to 75% of approved expenses for **installing, renovating, and maintaining** waste disposal facilities for use by recreational boaters. This includes dump stations and pump out facilities.

The Louisiana Department of Wildlife and Fisheries (LDWF) is an active participant in this program. A needs assessment by water body was recently conducted by the agency. Consideration was given to various parameters and a need was estimated for dump stations and pumpouts for inland and coastal water bodies. Final location planning in the study proposed locations for 16 dump stations and 29 pumpouts for the coastal area. There are presently 8 pumpout stations existing in the coastal zone. Statewide implementation of the planned facilities will be through 1997.

LDWF personnel will oversee the Grant Program. This oversight will include grant approval, project monitoring, and education. Coordination between LDWF and LDNR/CNPCP will be achieved through a proposed memorandum of agreement (MOA) between the two agencies.

Grant participants will receive funds for facility upkeep, but as part of the contract with CVA Program participants, LDWF will require disposal facilities to be operational for at least five years past the installation date. Grant requests are being processed at this time.

Statewide, Louisiana's Water Control Law prohibits the discharge within the state of any sewage or sewage sludge in contravention of any rules or regulations adopted pursuant to the Water Control Law (LA R.S. 30:2076). Sewage facilities require water quality permits under the Water Control Law if they result in discharge into the state waters. The law gives the Secretary of Environmental Quality authority to establish standards and guidelines as deemed necessary to prevent the discharge from water crafts any trash, garbage, and untreated or improperly treated sewage or sewage sludge in an amount which would degrade water quality {LA R.S. 30:2074(B)(7)}. The Water Quality Regulations effluent standards require all vessels with toilet facilities to have a Coast Guard approved sanitation device {LAC 33:IX.709(F)}.

The "Sewage Facility" management measure proposed by the Marina and Boatyard Association also contains BMPs that address the federal management measure.

- a. The siting of new marinas should consider sanitary sewage disposal, with emphasis on the use of municipal treatment facilities rather than on-site disposal facilities.
 - b. Adequate bathroom facilities should be provided at marinas to discourage any overboard discharge of sewage from boats and they should be easily accessible to encourage their use.
 - c. Installation of pump-out systems should be encouraged, they should be easily accessible, and regulations for their use should be clearly posted at marinas. Availability of pump-out services should be advertised.
 - d. The installation and use of dump station facilities at marinas for dumping portable toilet wastes should be encouraged.
- 2.) "Design these facilities to allow ease of access and post signage to promote use by the boating public."**
- a. Installation of pump-out systems should be encouraged, they should be easily accessible, and regulations for their use should be clearly posted at marinas. Availability of pump-out services should be advertised.

MARINA AND BOAT OPERATION AND MAINTENANCE

During normal marina operations, various activities and locations can generate nonpoint pollution. Activities include waste disposal, boat fueling, boat maintenance and cleaning, dredging operations, and fish cleaning. Locations include storage areas for chemicals and materials for these activities as well as hull maintenance areas, fish cleaning areas, and dredge disposal areas.

For new marinas, attention to the environmental concerns of marina operation during the design phase will significantly reduce the potential for generating nonpoint pollution. For existing marinas, minor changes in operations, staff training, and boater education should help protect marina waters from these sources of pollution.

A. Solid Waste Management Measure

Management Measure 5.III.A., **Solid Waste**, is intended to be applied to new and expanding marinas. Marina operators are responsible for determining what types of wastes will be generated at the marina and ensuring proper disposal. Marina operators are thus responsible for the contents of their dumpsters and the management of solid waste on their property.

The State and Local Coastal Resources Management Act's regulations do not specifically address solid waste disposal at marinas. However, the regulations do regulate waste disposal generally and fairly comprehensively in CUGs 1.7(c.) and (m.), 5.4, 6.13, and 8.1-8.9. They require that, to the maximum extent practicable, detrimental discharges of inorganic nutrient compounds into coastal waters {CUG 1.7(c.)} and discharges of pathogens or toxic substances into coastal waters be avoided {CUG1.7(m.)}. Shoreline modification structures are required to be built using best practical materials and techniques to avoid the introduction of pollutants and toxic substances into coastal waters

(CUG5.4). Surface alteration sites and facilities should be designed using the best practicable techniques to prevent the release of pollutants or toxic substances into the environment (CUG6.13). Waste disposal in wetlands is also broadly addressed by other CUGS. Aspects addressed include location, construction, vulnerability to adverse conditions, leaching, marking, identification of waste components, closure of problem facilities, radioactive wastes, and restrictions on waste disposal locations (CUGs 8.1-8.9). These regulations provide adequate enforceable policies by placing **conditions on marina coastal use permits** which address solid waste disposal. The CUP can also be conditioned to include the implementation of appropriate BMPs to address this management measure.

Under Louisiana's Water Control Law, operations that increase the amount of discharge of pollutants into the waters of the state or which would otherwise change the physical, chemical, or biological properties of any waters of the state, require a water quality permit (LA R.S. 30:2076). This should apply to marinas where regular hull maintenance operations are conducted, if those operations contribute significantly to water pollution. Water quality permits may be conditioned to reflect implementation of appropriate BMPs, thus addressing this management measure. An example of an LDEQ 401 Water Quality Certification with conditioning is included as an attachment to this document. (See Attachment 5). LA R.S. 30:2074 also empowers the office of water resources to establish standards, guidelines, or criteria by rule to prevent the discharge from certain water crafts of trash, garbage, and untreated or improperly treated sewage or sewage sludge in an amount, manner, or area which would further degrade the quality of **anchorage waters** or certain immediately adjacent waters within Louisiana.

Recently proposed Louisiana BMPs advocate posting adequate signage for solid waste disposal areas, designation of restricted areas, and good housekeeping practices for these areas to reduce the potential for contamination of surface waters.

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- a. Provide separate covered containers for liquid and solid waste and recyclable materials and label accordingly.
- b. Dumpsters containing solid wastes from repair areas should be covered.
- c. Keep area clear of debris and grit so that runoff and wind will not carry waste into the water.
- d. Use vacuum sanders, tarps, or other means to collect paint and sandings produced from hull maintenance.
- e. Perform abrasive blasting within spray booths, plastic tarps or other means to trap residue.
- f. Waste disposal areas should be conveniently located with respect to repair and maintenance areas and easily accessible to marina patrons.
- g. Clearly designate areas restricted to painting and scraping and waste handling.
- h. Solid waste disposal areas should have signs identifying rules and regulations for waste disposal. Instructions should also be provided regarding recyclable materials.

B. Fish Waste Management Measure

Management Measure 5.III.B., **Fish Waste**, is intended to be applied to marinas where fish waste is determined to be a source of water pollution.

The coastal use permit program does not specifically address fish waste disposal. The same laws applicable to solid waste could be interpreted to apply to fish waste, especially if the activity was concentrated enough to have a direct and significant impact on coastal waters. Marina coastal use permits could include conditions to provide fish cleaning areas or fish waste disposal areas initially or to install such facilities in the event that fish waste was deemed a source of water pollution in the future.

Specifically CUG 1.7(d.) states that all uses and activities at marinas shall be planned, sited, designed, constructed, operated, and maintained to avoid to the maximum extent

practicable significant alterations in the natural concentrations of oxygen in coastal waters, and CUG 1.7(u.) prohibits a reduction in the long term biological productivity of the coastal ecosystem, a situation which may arise with the indiscriminate disposal of fish wastes into surface waters. CUG 8.6 regulates waste disposal sites, stating that all disposal sites should be marked and, to the maximum extent practicable, all components of waste shall be identified. Waste should only be disposed of at approved disposal sites (CUG 8.8).

The definition of "garbage" in the solid waste regulations includes animal and vegetable matter from handling, preparation, cooking, and serving of foods (LAC 33:VII.501). Though an interpretation has not been made concerning fish waste, it is possible that concentrated fish waste disposal would be regulated under the Louisiana Solid Waste Management and Resource Recovery Law.

1.) "Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste."

- a. Provide adequate fish cleaning areas and fish waste disposal receptacles at marinas where needed.
- b. Provide adequate signage directing marina patrons to fish cleaning and fish waste disposal areas and include instructions for proper use.
- c. Implement fish composting where feasible.

C. Liquid Material Management Measure

Management Measure 5.III.C., **Liquid Material**, is intended to be applied to marinas where liquid materials used in the maintenance, repair, or operation of boats are stored. This management measure minimizes entry of potentially harmful liquid materials into marina and surface waters through proper storage and disposal. Marina operators are

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responsible for the proper storage of liquid materials for sale and for final disposal of liquid wastes, such as waste fuel, used oil, spent solvents, and spent antifreeze.

The same regulations described in the Solid Waste management measure above apply to liquid wastes, and therefore, provide enforceable policies to implement this management measure.

Components of the **Liquid Material** management measure are also enforceable under Louisiana's Water Control Law water quality permit program. A permit must be obtained for facilities or activities where discharge of runoff from areas where liquid or solid materials are stored or handled, or where such runoff will create a potential threat of pollution to state waters {LAC 33:IX.301(C)}. These permits may be conditioned to ensure implementation of appropriate BMPs. Also the coastal use permit (CUP) application for new and expanding marinas can be conditioned to ensure compliance with best management practices which address this management measure.

Proposed BMPs to address the management measure and its components are included in the "Liquid Material" management measure.

1.) "Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid materials, such as oil, harmful solvents, antifreeze, and paints."

- a. Provide separate, appropriate receptacles for waste oil, antifreeze, paint and other harmful solvents and encourage the recycling of appropriate liquid materials.
- b. Liquid material disposal areas should have signs identifying rules and regulations for disposal, including acceptable materials.
- c. Toxic or hazardous material receptacles should be clearly marked and waste disposed of in the appropriate manner.
- d. Secondary containment such as curbs, berms or impoundments should be provided for all liquid waste and hazardous material storage areas.
- e. Store materials in areas that are impervious to the type of material stored.

2.) **"Encourage recycling of liquid materials."**

- a. Provide separate, appropriate receptacles for waste oil, antifreeze, paint, and other harmful solvents, and encourage the recycling of appropriate liquid materials.

D. Petroleum Control Management Measure

Management Measure 5.III.D., **Petroleum Control**, is intended to be applied to boats that have inboard fuel tanks to reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters during fueling and bilge pumping operations.

The use of automatic shutoff fueling nozzles, fuel/air separators on air vents or tank stems of inboard fuel tanks, and oil absorbing materials in bilge areas is recommended.

There are no applicable, enforceable policies for this management measure under the Louisiana State and Local Coastal Resources Management Act other than the general regulations described in the **Solid Waste** management measure section. These would also apply to liquid waste. Those provisions would probably not apply to accidental spillage unless the spillage was consistent enough and concentrated enough to have a direct and significant impact on coastal waters.

BMPs that address the management measure and its components are as follows:

1.) **"Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters."**

- a. Promote the use of oil absorbing materials in the bilge areas of all boats with inboard engines. Examine these materials at least once a year and replace as necessary. Dispose of properly.

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- b. Use automatic shut-off nozzles and promote the use of fuel/air separators on air vents or tank stems of inboard fuel tanks.
- c. Fuel tanks should be topped off or emptied and purged as required by the method of storage.

E. Boat Cleaning Management Measure

Management Measure 5.III.E., **Boat Cleaning**, is intended to be applied to marinas where boat topsides are cleaned and marinas where hull scrubbing in the water has been shown to result in water or sediment quality problems. This measure minimizes the use and release of potentially harmful cleaners and bottom paints to marina and surface waters.

The same State and Local Coastal Resources Management Act regulations described in the "Solid Waste" management measure would apply to Management Measure 5.III.E. While it is doubtful that those regulations would apply to individual acts of boat cleaning, if the activity was concentrated in an area such that it had a direct and significant impact on coastal waters, the regulations would appear to provide enforceable policies. These policies could be imposed on coastal use permits for new and expanding marinas. Coastal use permits could also be conditioned using language contained in the management measure component with implementation to be assured through the use of the appropriate marina BMPs mentioned below.

Again, the Louisiana Water Control Law prohibits the discharge of any substance into the waters of Louisiana without a required permit or license. Solvents, cleaners, and paints would qualify as substances requiring permits (LA R.S. 30:2075). A marina which has a large concentrated amount of cleaning activities, thus possibly effecting water quality, could result in the marina having to obtain and comply with a water quality permit. These

permits could be conditioned with wording that would ensure that this management measure is addressed.

Best management practices that satisfy this management measure are found in the "Boat Cleaning" management measure and are as follows:

1.) "For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning."

- a. Encourage washing the boat hull above the waterline by hand or by high pressure water spray only under most circumstances.
- b. If cleaners need to be used, where feasible utilize phosphate-free and biodegradable products.
- c. Discourage in-the-water hull scraping or any process that may remove paint from the boat hull.
- d. Minimize the use of soaps and detergents in the marina environment.

F. Public Education Management Measure

Management Measure 5.III.F., **Public Education**, is intended to be applied to all environmental control authorities in areas where marinas are located. The best method of preventing pollution from marinas and boating activities is to educate the public about the causes and effects of pollution and methods to prevent it. One of the primary reasons for the success of existing programs is the widespread support for these efforts.

Lead agencies in Louisiana's educational effort include the Louisiana Department of Natural Resources/Coastal Management Division (LDNR/CMD), the Louisiana Department of Wildlife and Fisheries (LDWF), the Louisiana Sea Grant College Program, the Louisiana Cooperative Extension Service, and the US Coast Guard.

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The LDNR/CMD distributes informational pamphlets and brochures informing the general and the boating public on possible sources of boating and marina-related nonpoint source pollution. The LDWF conducts periodic training on boating education and safety, while the Louisiana Sea Grant College Program in cooperation with the Louisiana Cooperative Extension Service and participating marinas have developed an educational pilot program covering such topics as marine sanitation devices and recycling "DOs and DON'Ts" for used engine oils. The US Coast Guard's Sea Keepers Campaign is a public education program and uses outreach materials to inform the public of the hazards sewage, oils, and plastics can create in the waterways of our nation if not disposed of properly.

There are also a number of proposed Louisiana marina BMPs that address this issue.

1.) "Public education/outreach/training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material."

- a. Encourage marinas to utilize the resources of universities and other public and private organizations in establishing and maintaining public educational programs concerning nonpoint pollution.
- b. Encourage marinas to set-up and utilize training programs to inform marina patrons on nonpoint pollution issues.
- c. Marina employees should receive specialized training for environmentally sensitive activities, including fuel handling, waste handling, and use of toxic materials.
- d. Disseminate information on nonpoint pollution to marina patrons.
- e. Post instructional and interpretive signage concerning nonpoint pollution problems and solutions.

G. Maintenance of Sewage Facilities Management Measure

Management Measure 5.III.G., **Maintenance of Sewage Facilities**, is intended to be applied to marinas where marina sewage disposal facilities exist. The purpose of this measure is to reduce the release of untreated sewage into marina and surface waters.

The State and Local Coastal Resources Act regulates the construction of waste disposal facilities and has required marinas to install pumpout stations as conditions on coastal use permits (CUG 8.4). The CMD also operates under a Memorandum of Understanding with DHH regarding sanitation in the coastal zone under the State Sanitary Code which applies statewide. A person must obtain a permit directing proper construction; however, maintenance of facilities is not regulated by the coastal use permit program {LAC 43:715(D)}.

Sewage facilities require water quality permits under the Louisiana Water Control Law if they result in the discharge of any substance into the state waters. The permit should specify that the sanitation facility be kept in proper working order. Additionally, the Louisiana State Sanitary Code imposes requirements for sewage systems and plumbing systems that include the authority for ongoing inspections of such systems to ensure compliance (LSSC:Chapt 13&14).

1.) "Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use."

- a. Perform regular inspections to ensure sewage facilities (pumpouts, dump stations, and restrooms) are operating properly.
- b. All sewage and restroom facilities must be kept in a sanitary and working condition.
- c. For government owned facilities, require maintenance of a dedicated fund for repair and maintenance of marina pumpout stations.
- d. Encourage all marinas to adopt "No Discharge" language in their slip leasing agreements.

H. Boat Operation Management Measure

Management Measure III.H., **Boat Operation**, is intended to be applied in non-marina surface waters where evidence indicates that boating activities are impacting shallow-water habitats. The management measure imposes restrictions on boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.

Louisiana prohibits operation of a watercraft within an area which has been clearly marked, in accordance with the laws of the state, by buoys or some other distinguishing device as a restricted area. A violation will result in a misdemeanor and shall be subject to a fine of not less than twenty-five and no more than one hundred and fifty dollars (LA. R.S. 34:851.31).

1.) "Restrict boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat."

- a. As needed, work with state and parish officials to establish and enforce No-Wake Zones.
- b. Identify important shallow-water habitats and inform boaters of the potential negative impacts of boating in these areas.
- c. For identified important habitats, state agencies, in cooperation with Federal and parish officials, should establish zones restricting motorized vessel traffic.

Establishment and enforcement of boating speed limits and No-Wake Zones are generally done by the parish in which the water body is located. Enforcement is by the local sheriff's department. Examples of these laws are included for information in Attachment # 6.

IV. CONCLUSIONS

The 6217 (g) management measures for marinas and recreational boating are presently being adequately addressed in the Louisiana coastal zone/proposed 6217 management area by in place, effective regulatory programs and laws. The Coastal Use Permitting Program, the Louisiana Water Control Law, and others provide an excellent framework from which to work to successfully control the addition of nonpoint pollutants into Louisiana's coastal waters.

In addition, members of the recently formed Louisiana Marina and Boatyard Association are reviewing a draft of proposed Best Management Practices for Louisiana marinas and boatyards that will serve as a voluntary approach for implementation of the mandated 6217(g) management measures. Public education will play a major role in the reduction of nonpoint pollution in coastal waters. Innovative programs such as "Clear Lake Lines", the cooperative effort between the Louisiana Sea Grant College Program and the Louisiana Cooperative Extension Service, serve to make the public aware of best methods that can be used in preventing pollution from marinas and boating activities. Further educational successes will be achieved through Memoranda of Agreement with various other state and Federal agencies in which these agencies will be requested "to monitor and educate" the public on the provisions of the approved Louisiana Coastal Nonpoint Pollution Control Program. Together, these efforts should provide the basis for a sound, effective nonpoint pollution reduction management program for marinas and recreational boating activities and will serve to satisfy the mandates of the Federal 6217 program by the end of the implementation period.

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PROPOSED LOUISIANA 6217 BEST MANAGEMENT PRACTICES FOR MARINAS AND RECREATIONAL BOATING

Part One: Siting and Design

Siting and Design are among the most significant factors affecting a marina's potential for water quality impacts. A marina's location affects its circulation and flushing characteristics. Circulation and flushing are influenced by the basin configuration and orientation to prevailing winds and thus play important roles in the distribution and dilution of potential contaminants. Final marina designs are usually a compromise that will provide the most desirable combination of marina capacity, services and access while minimizing environmental impacts, dredging requirements, protective structures, and other site development costs.

The objective of the Marina Siting and Design Management Measure is to ensure that marinas and ancillary structures do not cause direct or indirect adverse water quality impacts or endanger fish, shellfish and wildlife habitat both during and following marina construction.

A. MARINA FLUSHING MANAGEMENT MEASURE

"Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly."

This management measure applies to **new and expanding marinas**.

- a. Require marina designs to utilize tides and/or currents to aid flushing action and circulation.
- b. When feasible, marina designs should take adjacent navigable water depths into consideration. Dredging marina basins deeper than these adjacent waters should be avoided.
- c. Avoid, to the maximum extent practicable, dead-end or deep canals without adequate circulation or flushing.
- d. Construction of marina docks, piers and other structures should, to the maximum extent practicable, enhance rather than obstruct circulation and flushing.
- e. Marinas should only be located in areas suitable for development, such as areas close to navigable waters, areas at least 1000 feet from molluscan shellfish (i.e., clams, oysters, etc.) harvest areas, and areas that provide for adequate flushing and circulation.

B. WATER QUALITY ASSESSMENT MANAGEMENT MEASURE

"Assess water quality as part of marina siting and design."

This management measure applies to **new and expanding marinas**.

- a. Encourage the development and implementation of a water quality monitoring program. Include monitoring during marina preconstruction, construction, and post construction phases.
- b. Monitoring requirements should be tailored to the marina based on factors such as flushing, existing water quality, number of slips, and presence and proximity of fueling facilities to important habitats.
- c. Periodically review sampling requirements to determine adequacy of parameters.

C. HABITAT ASSESSMENT MANAGEMENT MEASURE

"Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or Federal governments."

This management measure applies to **new and expanding marinas** where site changes may impact wetlands, shellfish beds, submerged aquatic vegetation or other important habitats.

- a. Marinas, should to the maximum extent practicable, not be sited close to areas of high natural resource value such as open productive oyster beds, submerged aquatic vegetation, and areas frequented by endangered species.
- b. Plan, site, design, construct, and maintain marinas to avoid reduction in the long term biological productivity of the coastal ecosystem.
- c. When feasible, construction work should be scheduled to avoid the spawning and nesting seasons of the specific species that are present.
- d. Identify important habitat areas and establish buffer zones between marina activities and these areas.
- e. Piers and wharves crossing vegetated wetland and areas of submerged aquatic vegetation should be limited to the minimum necessary for water access.
- f. Develop and maintain marinas to avoid adverse disruptions of coastal wildlife and fishery migratory patterns.

- g. Develop and maintain marinas to avoid fostering of detrimental secondary impacts in undisturbed or biologically highly productive wetland areas.
- h. Marinas should be developed and maintained to avoid adverse effects of cumulative impacts.
- i. Encourage the use of rapid bioassessment techniques to assess impacts to biological resources.

D. SHORELINE STABILIZATION MANAGEMENT MEASURE

"Where shoreline erosion is a nonpoint source pollution problem, shorelines should be stabilized. Vegetative methods are strongly preferred unless structural methods are more cost effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines and offshore areas."

This management measure applies to **new and expanding marinas** where site changes may result in shoreline erosion.

- a. Develop and maintain marinas to avoid land loss, subsidence, and erosion.
- b. Utilize the best practical techniques for site restoration and revegetation of linear facilities.
- c. Nonstructural methods of shoreline protection should be utilized to the maximum extent practicable.
- d. Use natural vegetation for shoreline stabilization and maintain in good condition by prompt repair and reseeding of washouts and other losses in vegetation.
- e. Design and build shoreline modification structures using the best practical techniques to minimize adverse environmental impacts.
- f. Plan, design, and construct jetties, groins, breakwaters, and similar structures so as to avoid, to the maximum extent practicable, downstream land loss and erosion.
- g. Encourage the use of riprap revetments over vertical bulkheads to provide greater habitat and reduce wave reflections.

E. STORMWATER RUNOFF MANAGEMENT MEASURE

"Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of hull maintenance areas.

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Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis."

This management measure applies to **new and expanding marinas** and to **existing marinas** for the hull maintenance areas.

- a. Design boat hull maintenance areas to minimize contaminated runoff.
- b. Where feasible, outdoor boat maintenance areas should be on impervious surfaces with curbs and storm drainage systems to collect discharges and spillage.
- c. Tarps, sanders with vacuum attachments, and vacuums should be used to collect solid wastes produced by cleaning and repair of boats.
- d. Clean all areas of the marina regularly to prevent oils, paints, dust, sandings, and other materials from being washed into the surface waters, storm drains, ditches, swales, and other water courses.
- e. Inspect visually and clean as necessary all sediment traps and oil/grit separators. Dispose of wastes in an appropriate manner.
- f. Encourage, where feasible, the installation, use, and maintenance of stormwater management measures such as sand filters, wet ponds, constructed wetlands, vegetated filter strips, grassed swales, porous pavement, holding tanks, catch basins, and adsorbents in drain outlets as aids in reducing contaminate runoff into surface waters.

F. FUELING STATION DESIGN MANAGEMENT MEASURE

"Design fueling stations to allow for ease in cleanup of spills."

This management measure applies to **new and expanding marinas** where fueling stations are to be added or moved.

- a. Locate and design fueling stations so that spills can be contained in a limited area.
- b. Develop and implement a spill contingency plan.
- c. Spill containment equipment and materials should be provided in convenient accessible locations.
- d. Automatic fuel tank and pump leak shut-offs should be provided.

- e. Fueling stations on land should be curbed to contain spills.
- f. Above ground fuel tanks should be placed within secondary containment berms, with containment volumes meeting state, federal, and local codes.

G. SEWAGE FACILITY MANAGEMENT MEASURE

"Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public."

This management measure applies to **new and expanding marinas** in areas where adequate marina sewage collection facilities do not exist.

- a. The siting of new marinas should consider sanitary sewage disposal, with emphasis on the use of municipal treatment facilities rather than on-site disposal facilities.
- b. Adequate bathroom facilities should be provided at marinas to discourage any overboard discharge of sewage from boats and they should be easily accessible to encourage their use.
- c. Installation of pump-out systems should be encouraged, they should be easily accessible, and regulations for their use should be clearly posted at marinas. Availability of pump-out services should be advertised.
- d. The installation and use of dump station facilities at marinas for dumping portable toilet wastes should be encouraged.

H. MARINA DREDGING MANAGEMENT MEASURE

"Dredging operations for construction and maintenance should be designed to protect against impacts to shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitats."

This management measure applies to **new and existing marinas** that require periodic maintenance dredging.

- a. Marinas should, to the maximum extent practicable, be designed and located to minimize dredging during and after construction.
- b. Marinas utilizing approved permanent dredge disposal sites should, to the maximum extent practicable, use the uncontaminated spoil material to create marsh.

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- c. Marina spoil disposal areas should, to the maximum extent possible, be located in upland areas and should not adversely impact wetland areas.
- d. Offsite disposal of dredge spoil to approved areas is preferred to onsite disposal sites.
- e. Maintenance dredging should, to the maximum extent practicable, be kept to a minimum to minimize turbidity.
- f. Dredged spoil should be tested for contamination and toxicity by the appropriate water quality testing methods and disposed of in the appropriate manner.

Part Two: Marina and Boat Operation and Maintenance

During normal marina operations various activities and locations can generate nonpoint pollution. Activities include waste disposal, boat fueling, boat maintenance and cleaning, dredging operations, and fish cleaning. Locations include storage areas for chemicals and materials for these activities as well as hull maintenance areas, fish cleaning areas, and dredge disposal areas.

For new marinas, attention to the environmental concerns of marina operation during the design phase will significantly reduce the potential for generating nonpoint pollution. For existing marinas, minor changes in operations, staff training and boater education should help protect marina waters from these sources of pollution.

A. SOLID WASTE MANAGEMENT MEASURE

"Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters."

This management measure applies to **new and expanding marinas**.

- a. Provide separate covered containers for liquid and solid waste and recyclable materials and label accordingly.
- b. Dumpsters containing solid wastes from repair areas should be covered.
- c. Keep area clear of debris and grit so that runoff and wind will not carry waste into the water.
- d. Use vacuum sanders, tarps or other means to collect paint and sandings produced from hull maintenance.

- e. Perform abrasive blasting within spray booths; plastic tarps or other means to trap residue.
- f. Waste disposal areas should be conveniently located with respect to repair and maintenance areas and easily accessible to marina patrons.
- g. Clearly designate areas restricted to painting and scraping and waste handling.
- h. Solid waste disposal areas should have signs identifying rules and regulations for waste disposal. Instructions should also be provided regarding recyclable materials

B. FISH WASTE MANAGEMENT MEASURE

"Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste."

This management measure applies to marinas where fish waste is determined to be a source of water pollution.

- a. Provide adequate fish cleaning areas and fish waste disposal receptacles at marinas where needed.
- b. Provide adequate signage directing marina patrons to fish cleaning and fish waste disposal areas and include instructions for proper use.
- c. Implement fish composting where feasible.

C. LIQUID MATERIAL MANAGEMENT MEASURE

"Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials."

This management measure applies to marinas where liquid materials that are used in the maintenance, repair or operation of boats are stored.

- a. Provide separate, appropriate receptacles for waste oil, antifreeze, paint and other harmful solvents and encourage the recycling of appropriate liquid materials.
- b. Liquid material disposal areas should have signs identifying rules and regulations for disposal, including acceptable materials.

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- c. Toxic or hazardous material receptacles should be clearly marked and waste disposed of in the appropriate manner.
- d. Secondary containment such as curbs, berms or impoundments should be provided for all liquid waste and hazardous material storage areas.
- e. Store materials in areas that are impervious to the type of material stored.

D. PETROLEUM CONTROL MANAGEMENT MEASURE

"Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters."

This management measure applies to marinas with boats that have inboard fuel tanks.

- a. Promote the use of oil absorbing materials in the bilge areas of all boats with inboard engines. Examine these materials at least once a year and replace as necessary. Dispose of properly.
- b. Use automatic shut-off nozzles and promote the use of fuel/air separators on air vents or tank stems of inboard fuel tanks.
- c. Fuel tanks should be topped off or emptied and purged as required by the method of storage.

E. BOAT CLEANING MANAGEMENT MEASURE

"For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning."

This management measure applies to marinas where boat topsides are cleaned and where hull scrubbing in the water results in water or sediment quality problems.

- a. Encourage washing the boat hull above the waterline by hand or by high pressure water spray only under most circumstances.
- b. If cleaners need to be used, where feasible utilize phosphate-free and biodegradable products.
- c. Discourage in-the-water hull scraping or any process that may remove paint from the boat hull.
- d. Minimize the use of soaps and detergents in the marine environment.

F. PUBLIC EDUCATION MANAGEMENT MEASURE

"Public education/outreach/training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material."

This management measure applies to all environmental control authorities in areas where marinas are located.

- a. Encourage marinas to utilize the resources of universities and other public and private organizations in establishing and maintaining public educational programs concerning nonpoint pollution.
- b. Encourage marinas to set-up and utilize training programs to inform marina patrons on nonpoint pollution issues.
- c. Marina employees should receive specialized training for environmentally sensitive activities, including fuel handling, waste handling, and use of toxic materials.
- d. Disseminate information on nonpoint pollution to marina patrons.
- e. Post instructional and interpretive signage concerning nonpoint pollution problems and solutions.

G. MAINTENANCE OF SEWAGE FACILITIES MANAGEMENT MEASURE

"Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use."

This management measure applies to marinas where sewage disposal facilities exist.

- a. Perform regular inspections to ensure sewage facilities(pumpouts, dump stations, and restrooms) are operating properly.
- b. All sewage and restroom facilities must be kept in a sanitary and working condition.
- c. For government owned facilities, require maintenance of a dedicated fund for repair and maintenance of marina pumpout stations.
- d. Encourage all marinas to adopt "No Discharge" language in their slip leasing agreements.

H. BOAT OPERATION MANAGEMENT MEASURE(applies to boating only)

"Restrict boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat."

IVD-58

This management measure applies to areas where boating activities are impacting shallow water habitats.

- a. As needed, work with state and parish officials to establish and enforce No-Wake Zones.
- b. Identify important shallow-water habitats and inform boaters of the potential negative impacts of boating in these areas.
- c. For identified important habitats, state agencies, in cooperation with Federal and parish officials, should establish zones restricting motorized vessel traffic.

MANAGEMENT MEASURES FOR MARINAS AND RECREATIONAL BOATING--LOUISIANA

I. Siting and Design

A. Marina Flushing Management Measure

MM Component	EP&M citation	EP&M Applicability citation
S & D for natural flushing or regular water renewal	CUGs 1.6(d); 1.7(a,c,d,h,l,m,n); 1.7(u); 5.5 & 5.6 LA Water Control Law (LAC 33:IX.301(B)(3))	Marina Flushing MM p. 20 Marina Flushing MM p. 21

B. Water Quality Assessment Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Assess water quality as part of S & D	CUGs 1.6(b.&d.); 1.7(a,c,d,e,h,k,m); 5.6; 6.10; 7.5; &9.1 LA Water Control Law (LAC 33:IX.301(B)(3))	Water Quality MM p. 22 Water Quality MM p.22

MANAGEMENT MEASURES FOR MARINAS AND RECREATIONAL BOATING--LOUISIANA		
I. Siting and Design		
C. Habitat Assessment Management Measure		
MM Component	EP&M citation	EP&M Applicability citation
B & D marinas to protect designated wetlands, shellfish beds, submerged aquatic vegetation, and other important habitats from adverse impacts	CUGs 1.6(i,n,q); 1.7(c,e,j,o-r,u); 4.4; 4.5; 5.6; 6.8; 6.9; 7.5; 7.8 LA Water Control Law including LAC 33:IX.1109; LAC 33:IX.1109(B)(1); LAC 33:IX.1111(C,E,&G) and LAC 33:IX.1113(b)(1,5,&10) LA Natural&Scenic River System Permit (LA R.S. 56:1840 et seq.) Endangered Species Act (16 USCA:1531-1544)	Habitat Assessment MM p. 23-24 Habitat Assessment MM p. 24 Habitat Assessment MM p. 25 Habitat Assessment MM p. 25
D. Shoreline Stabilization Management Measure		
MM Component	EP&M citation	EP&M Applicability citation
Stabilize shorelines where shoreline erosion NPS pollution is a problem	CUGs 1.7(s), 3.10, 3.15, 4.6, 5.9, 6.14	Shoreline Stabilization MM p. 26-27
Vegetative methods preferred unless physical characteristics of shoreline dictate more cost effective structural methods	CUGs 3.15, 5.1, 5.2, 5.8, 6.6	Shoreline Stabilization MM p. 26-27

MANAGEMENT MEASURES FOR MARINAS AND RECREATIONAL BOATING--LOUISIANA

1. Siting and Design

3. Storm Water Runoff Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Implement effective runoff control strategies	CUGS 1.7(c,d,j,k,m, & n) CUGs 3.9,6.13,8.4, & 8.5 LA Water Control Law (LA R.S. 30:2075)	Storm Water Runoff MM p. 28 Storm Water Runoff MM p. 28
Reduce TSS in runoff by 80%	To be achieved through implementation of BMPs	Storm Water Runoff MM p. 30

7. Fueling station design Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Design marinas to facilitate cleanup of spills	CUGs 1.7(m), 6.13, 9.2 LA Water Control Law (LAC 33:IX901(A)), (LAC 33:IX.907), LA Oil Spill Prevention and Response Act (LA R.S. 30:2451) and (LA R.S. 30:2470(B)(1)(a)) LAC 33:1.3905,3931	Fueling Design MM p. 31 Fueling Design MM p. 31 Fueling Design MM p. 31 Fueling Design MM p. 32

MANAGEMENT MEASURES FOR MARINAS AND RECREATIONAL BOATING--LOUISIANA		
I. Siting and Design		
J. Sewage Facility Management Measure		
MM Component	EP&M citation	EP&M Applicability citation
install pumpouts, dumpstations, and restrooms where needed	<p>CUGs 1.7(c.,m.); CUGs 6.13, 8.1,8.4,8.5, & 8.8</p> <p>LA State Sanitary Code (LA R.S. 40:4(A)(6))</p> <p>LA Water Control Law (LA R.S. 30:2076) (LA R.S. 30:2074(B)(7)) (LAC 33:IX.709(F))</p>	<p>Sewage Facility MM p. 33</p> <p>Sewage Facility MM p. 34</p> <p>Sewage Facility MM p. 35</p>
Post adequate signage	Achieved through BMPs and Public Education MM	Public Education MM p. 44

MANAGEMENT MEASURES FOR MARINAS AND RECREATIONAL BOATING--LOUISIANA

II. Marina and Boat Operation and Maintenance

A. Solid Waste Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Proper disposal of solid wastes to limit entry into surface waters	CUGs 1.7(c-.m) CUGs 5.4, 6.13, 8.1 through 8.9 LA Water Control Law LA R.S. 30:2076)	Solid Waste MM p. 37 Solid Waste MM p. 38

3. Fish Waste Management Measure

MM Component	EP&M citation	EP&M Applicability citation
Promote sound fish waste management: (a.) fish-cleaning restrictions (b.) public education (c.) proper disposal of fish wastes	Achieved through use of BMPs Achieved through BMPs and ongoing public education CUGs 1.7(d, u) CUGs 8.6 & 8.8.	Fish Waste MM p. 39 Public Education MM p. 44 Fish Waste MM p. 39

MANAGEMENT MEASURES FOR MARINAS AND RECREATIONAL BOATING--LOUISIANA		
II. Marina and Boat Operation and Maintenance		
E. Maintenance of Sewage Facilities Management Measure		
MM Component	EP&M citation	EP&M Applicability citation
Maintain sewage facilities in operational conditions	CUG 8.4	Maintenance of Sewage Facilities MM p. 45
Encourage their use	LA Water Control Law (LA R.S. 30:2076)	Maintenance of Sewage Facilities MM p. 46
	LA State Sanitary Code (Chapters 13 & 14)	Maintenance of Sewage Facilities MM p. 46
I. Boat Operation Management Measure		
MM Component	EP&M citation	EP&M Applicability citation
Restrict boating activities to decrease turbidity and physical destruction of shallow-water habitat	Various. Usually are Parish specific and enforced by LDWF and local law enforcement agencies.	Boat Operation MM p. 47

ATTACHMENT # 1

1. Coastal Use Permit with conditioning for a water monitoring plan.



**DEPARTMENT OF NATURAL RESOURCES
COASTAL MANAGEMENT DIVISION**

P. O. BOX 44487
BATON ROUGE, LOUISIANA 70804-4487
(504) 342-7591

D8

COASTAL USE PERMIT/CONSISTENCY DETERMINATION

C.U.P. No. P880177
C.O.E. No. LMNOD-SE (Bayou Rigaud) 70

NAME AND ADDRESS: [REDACTED] c/o Marco J. Picciola, Picciola & Assoc.,
Inc., P.O. Box 520, Galliano, La. 70354-0520.

LOCATION: JEFFERSON PARISH, LA: Sec. 32, T21S-R25E, Admiral Craig Drive, Grand
Isle, La.

PROJECT DESCRIPTION: Dredge +91,000 cu.yds. of material to construct +2,230' x 90'
of waterway to provide water access to 43 proposed waterfront lots, 37 new boat
slips and 12 new boat houses. Perimeter of waterway will be bulkheaded. A boat
launch, 56 parking spaces for vehicles and trailers and +3,000' x 40' of roadway
will be constructed. Approx. 30,000 cu.yds. of the dredged material will be used
onsite, remainder will be removed. Approx. 22 acres will be disturbed.

In accordance with the rules and regulations of the Louisiana Coastal Resources Program and Louisiana R.S. 49, Sections 213.1 to 213.21, the State and Local Coastal Resources Management Act of 1978, as amended, the permittee agrees to:

1. Carry out or perform the use in accordance with the plans and specifications approved by Department of Natural Resources.
2. Comply with any permit conditions imposed by the Department of Natural Resources.
3. Adjust, alter, or remove any structure or other physical evidence of the permitted use if, in the opinion of the Department of Natural Resources, it proves to be beyond the scope of the use as approved or is abandoned.
4. Provide, if required by the Department of Natural Resources, an acceptable surety bond in an appropriate amount to ensure adjustment, alteration, or removal should the Department of Natural Resources determine it necessary.
5. Hold and save the State of Louisiana, the local government, the department, and their officers and employees harmless from any damage to persons or property which might result from the work, activity, or structure permitted.
6. Certify that any permitted construction has been completed in an acceptable and satisfactory manner and in accordance with the plans and specifications approved by the Department of Natural Resources. The Department of Natural Resources may, when appropriate, require such certification be given by a registered professional engineer.
7. All terms of the permit shall be subject to all applicable federal and state laws and regulations.
8. This permit, or a copy thereof, shall be available for inspection at the site of work at all times during operations.
9. The applicant will notify the Coastal Management Division of the date on which approved work began on site using the enclosed green commencement card upon initial activity under this permit.
10. Unless specified otherwise elsewhere in this permit, this permit authorizes the initiation of the work described herein for two years from the date of the Department of Natural Resources' authorizing signature; thus, if work is not started in two years, this permit will expire, and it will be necessary that a new permit application be submitted for this coastal use.
11. This Coastal Use Permit authorizes periodic maintenance, but such maintenance activities must be conducted pursuant to the specifications and conditions of this permit.
12. The following special conditions must also be met in order for the project to meet the guidelines of the coastal resources program:

C.U.P. No.

P880177

C.O.E. No.

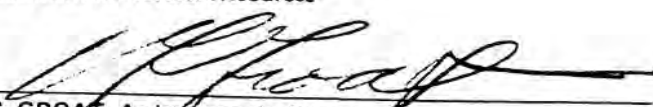
LMNOD-SE (Bayou Rigaud) 77

- a. Nine (9) french drains will be installed as indicated on plans provided Coastal Management Division on March 30 1988.
- b. Two (2) 24" culverts will be placed on the southwestern side of the project to provide water interchange between the dead end arms of the waterway. The first culvert will be installed at an invert elevation of -2.5' MSL and the second culvert will be placed at an invert elevation of -0.6' MSL. These culverts will have only one bend to encourage water circulation.
- c. Canal dredging will begin at -7.0' MSL and slope gradually to the existing private slip area on Bayou Rigaud to no more than -9.0' MSL.
- d. Work shall be conducted in the dry to the maximum extent practicable.
- e. A water monitoring plan with measures to avoid or remedy adverse conditions shall be developed, approved by natural resource agencies and implemented upon completion of the proposed dredging.
- f. All logs and stumps unearthed during dredging will be buried beneath the bottom of the waterway or removed to a disposal site on land.
- g. That the applicant shall insure that all sanitary sewage and/or related domestic wastes generated during the subject project activity and at the site, thereafter, as may become necessary shall receive the equivalent of secondary treatment (30 mg/l BOD₅; 30 mg/l TSS) with disinfection prior to discharge into any of the streams or adjacent waters of the area or, in the case of total containment, shall be disposed of in approved sewerage and sewage treatment facilities, as is required by those comments offered herein shall not be construed to suffice as any more formal approval(s) which may be required of possible sanitary details (i.e. provisions) scheduled to be associated with subject activity. Such shall generally require that appropriate plans and specifications be submitted to DHHR for purpose of review and approval prior to any utilization of such provisions.

By accepting this permit, the applicant agrees to its terms, but reserves the right to appeal permit conditions.

I affix by signature and issue this permit this 9 day of May, 19 88.

Department of Natural Resources


C. G. GROAT, Assistant to the Secretary



This agreement becomes binding when signed by the Assistant to the Secretary of the Department of Natural Resources.

ATTACHMENT # 2

1. Habitat Assessment
2. Coastal Use Permit
3. Letters of No Objection

FIELD INVESTIGATION REPORT

I. Public Notice No. [redacted]

Date: November 8, 1983

Aerial check: NO

Ground check: YES

II. Description of Project Site and/or Area of Project Influence:

A. General

See attached page.

B. Site Data

1. Soil composition thin organic layer with dark grey clay beneath.

2. Water salinity 2.0 ppt

C. Area Impacted and Vegetation Type

1. Vegetated Wetlands*

a. Predominant Emergent Species**

	Dredged	Filled	Other
<u>Aster subulatus</u>	95%	95%	
<u>Baccharis halimifolia</u>	5%	5%	
<u>Phragmites communis</u>	5%	5%	
<u>Scirpus maritimus</u>	5%	5%	
<u>Spartina cynosuroides</u>	5%	5%	
<u>S. patens</u>	70%	70%	
<u>Typha spp.</u>	5%	5%	

b. Predominant Submerged Species**

<u>Eleocharis parvula</u>	50%	50%	
<u>Ruppia maritima</u>	50%	50%	

2. Non-Vegetated Wetlands*

*Percentage of total area

**Percentage of vegetated wetlands

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

ROUTE 4, BOX 78
NEW IBERIA, LOUISIANA 70560

II P831434

A) Field Investigation Findings

Within the proposed project area exists an elevation gradient that ranges from approximately 2 feet above mean sea level along the live oak ridge adjacent to La. Hwy. 319 to near mean sea level in the marsh about 500 feet away.

There also exists a vegetation gradient which conforms closely to the elevation gradient. Nearest the ridge are roseau and baccharis plants which grade into hog cane, coffee weed and some wire grass. Slightly further away from the ridge the vegetation is almost entirely wire grass with occasional aster and leafy three-square plants.

The numerous potholes adjacent to the proposed project area are vegetated by Ruppia maritima and Eleocharis parvula. The salinities within three potholes tested were all 2‰. Numerous baitfish (mosquitofish, killifish, and stripped mullet) were observed feeding and schooling within these potholes. These potholes interconnect through a system of small sloughs that eventually connect in two places with the Quintana Canal.

II. (con.)

D. 1. Predominant fishery and wildlife resources and biological significance of area:

A) Mammals

Marsh rabbits, raccoons, and otter are present in fair numbers in this area. Nutria, mink, opossum and white-tailed deer also occur in this area.

B) Fisheries

The numerous small ponds along the fringe of the project area were teeming with baitfish (mosquitofish, killifish and striped mullet) in February and again in October. Shells of crawfish, blue crabs and other invertebrates were also observed during the investigations. Immediately west of the project area is the heavily used recreational fishing hotspot known as "The Cove." Two small bayous lead from the cove into the marsh near the project area. Menhaden and white shrimp use this area as a nursery ground in the spring and fall months. Large numbers of speckled trout spawn in this area in the spring and also follow the bait into this area during the fall.

C) Waterfowl, Wading Birds and Shore Birds

Puddle ducks and rails can be seen in this area during the fall and winter months, and egrets, herons and ibises can be seen year round in this area.

2. Source of Information: Personal observation, LDWF Fur Biologist.

II. Potential direct and indirect effect of environmental alteration on fishery and wildlife resources, and/or their use (brief summary):

A) Direct Effects:

- (1) Immediate destruction of over 20 acres of brackish marsh that provides benefit to marine fisheries, fur bearers, game mammals and waterfowl.
- (2) Alter the normal drainage patterns of this marsh area by dredging the canal and building a road dump and also by connecting the canal to the adjacent ponds with the oneway flap gate culverts. These culverts will only serve to increase the biological and chemical oxygen demand in these ponds by allowing the marina water containing hydrocarbon wastes and other wastes to enter the ponds.

B) Indirect Effects:

- (1) This project could quite easily pave the way for future development of the productive marsh between this project area and "The Cove" area. Once a long canal and/or road is permitted in a particular area, it is quite difficult to not permit smaller canals and/or roads.
- (2) Where will the boats be able to pump out their sewerage holding tanks and bilges?

IV. Project alternatives that could prevent or reduce impact on fishery and wildlife resources--modifications and recommendations (project design, operation, or location):

- A. Insure no future development of marsh between project site and "The Cove".
- B. Flap gate culverts should not be installed anywhere along the marina canal.
- C. A contingency plan for the implementation of an aeration system at times of low dissolved oxygen should be devised and made operable by the applicant.
- D. Mitigation to offset the damage caused by this project should be required.

Some possible mitigation projects include:

- (1) Build some small artificial reefs along the shore of "The Cove" and other areas of Vermilion Bay.
- (2) Install a weir(s) and/or a floodgate(s) along the southern bank of the Quintana Canal.
- (3) Stabilize the shoreline between Hammock Lake and West Cote Blanche Bay.
- (4) Stabilize the east bank of Quintana Canal to protect the Cypremort Point State Park and its access road.

V. Field Reconnaissance Data:

A. Investigator(s): Charles Mestayer, Louisiana Department of Wildlife and Fisheries

B. Date of Investigation: February 24, 1983 (Pre- Time: 930 Hrs.
Application)
October 31, 1983 1000 Hrs.

Coastal Resource Guidelines
Which May Be Violated
By This Proposed Project
Include:

1.7a	2.1
1.7d	2.3
1.7j	3.2
1.7o	3.9
1.7p	6.10
1.7g	6.13
1.7u	



DEPARTMENT OF NATURAL RESOURCES
DIVISION OF STATE LANDS
COASTAL MANAGEMENT SECTION

COASTAL USE PERMIT/LETTER OF NO OBJECTION

C.U.P. No. [REDACTED]

C.O.E. No. LMNOD-SE (Quintana Canal) 3

NAME AND ADDRESS: [REDACTED]

PROJECT DESCRIPTION: Enlarge an existing slip and dredge approx. 2,300' x 150' canal to construct a marina, with accompanying campsites, parking area, rest area, boat launch, access road, fuel dock and related support facilities. Approx. 93,250 cu.yds. of brackish marsh is proposed to be dredged with excavated material used to create fill areas adjacent to canal for roads, parking and campsites. Approx. 24 acres of marshlands will be affected by combined dredge and fill activities.

196
20
21
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LOCATION: ST. MARY PARISH, LA: Sec. 21, T15S-R06E; at end of Quintana Canal and parallel to Highway 319, near Cypremort Point.

In accordance with the rules and regulations of the Louisiana Coastal Resources Program and Louisiana R.S. 49, Sections 213.1 to 213.21, the State and Local Coastal Resources Management Act of 1978, as amended, the permittee agrees to:

1. Carry out or perform the use in accordance with the plans and specifications approved by Department of Natural Resources.
2. Comply with any permit conditions imposed by the Department of Natural Resources.
3. Adjust, alter, or remove any structure or other physical evidence of the permitted use if, in the opinion of the Department of Natural Resources, it proves to be beyond the scope of the use as approved or is abandoned.
4. Provide, if required by the Department of Natural Resources, an acceptable surety bond in an appropriate amount to ensure adjustment, alteration, or removal should the Department of Natural Resources determine it necessary.
5. Hold and save the State of Louisiana, the local government, the department, and their officers and employees harmless from any damage to persons or property which might result from the work, activity, or structure permitted.
6. Certify that any permitted construction has been completed in an acceptable and satisfactory manner and in accordance with the plans and specifications approved by the Department of Natural Resources. The Department of Natural Resources may, when appropriate, require such certification be given by a registered professional engineer.
7. All terms of the permit shall be subject to all applicable federal and state laws and regulations.
8. This permit, or a copy thereof, shall be available for inspection at the site of work at all times during operations.
9. The following special conditions must also be met in order for the project to meet the guidelines of the coastal resources program:

- a. Applicant shall make use of non-structural methods of shoreline stabilization to the maximum extent practicable.
- b. Marina canal shall be dredged and maintained such that a slope exists on the canal bottom with decreasing depth proceeding towards the end of the canal farthest from the existing Quintana Canal.
- c. Maximum depth of marina canal shall not exceed that of the existing Quintana Canal.
- d. Development of marina site shall preserve, to the maximum extent practicable, existing natural levee vegetation.
- e. In order to provide enhanced water circulation to marina canal and existing adjacent marsh ponds, applicant shall install and maintain no fewer than two 12 inch or larger diameter culverts with automatic floodgates to allow marina canal water to flow into adjacent marsh. Should any significant spill of pollutants occur in the marina, applicant shall insure that these floodgates are locked in the closed position until appropriate clean-up is accomplished.
- f. Should presently proposed methods of maintaining acceptable water quality standards be insufficient, or result in any degradation of marsh near the proposed water control structures, applicant shall propose alternative methods of water quality control to be installed by marina owners.
- g. That prior to any project related construction, the applicant shall submit appropriate plans and specifications to DNR which adequately detail necessary "house and boat waste pump out facilities" in addition to alternate general sanitary waste (i.e. sewage, etc.) disposal systems required to service the project site, including any pre-existing structures or other sources of sanitary wastes associated with the overall marina development. Further, as is required by the State Sanitary Code, approval of these plans and specifications by DNR shall also be prerequisite to any further construction at the referenced project (marina) site.
- h. All logs and stumps unearthed during dredging will be buried beneath the bottom of the waterway or removed to a disposal site on land.
- i. The applicant will notify the Coastal Management Section of the date on which approved work began on site using the enclosed green commencement card upon initial activity under this permit.





FRANK P. SIMONEAUX
SECRETARY
B. JIM PORTER
ASSISTANT SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF ENVIRONMENTAL AFFAIRS
WATER POLLUTION CONTROL DIVISION
October 29, 1983

J. DALE GIVENS
ADMINISTRATOR

DNR 831005-06

[REDACTED]

Attention: Mr. R.W. Auerbach

Gentlemen:

RE: Proposal for a proposed marina with accompanying campsites, parking, rest area, boat launch. Approx. 93,250 cy to be dredged. Located in NE $\frac{1}{4}$ of Section 21, T15S-R6E, St Mary Parish, La.

This is to acknowledge receipt of "Proof of Publication" of public notice, above reference, forwarded to you with our letter dated October 7, 1983 and to advise that no complaints relative to this project have been received by this agency within the ten day period stipulated in the notice.

It is our opinion that your proposed project will not violate water quality standards of the State of Louisiana, therefore, we offer no objection to this project provided your application is consistent with existing State and Federal laws, rules and regulations regarding wetlands. Provided also approval is obtained from Louisiana Dept. of Health and Human Resources regarding the disposal of domestic waste, if any, at the site.

In accordance with statutory authority contained in the Louisiana Revised Statutes of 1950, Title 30, Chapter 11, Part IV, Section 1094 A(3) and provisions of Section 401 of the Clean Water Act (P.L. 95-217), the Office of Environmental Affairs certifies that it is reasonable to expect that water quality standards of Louisiana provided for under Section 303 of P.L. 95-217 will not be violated.

Very truly yours,

A handwritten signature in cursive script that reads "J. Dale Givens".

J. Dale Givens
Administrator

JDG/LW/mp

cc: Corps of Engineers
New Orleans District

Coastal Zone Management
P.O. Box 44396



United States Department of the Interior
FISH AND WILDLIFE SERVICE

POST OFFICE BOX 4305
103 EAST CYPRESS STREET
LAFAYETTE, LOUISIANA 70502
October 27, 1983

District Engineer
U.S. Army Corps of Engineers
ATTN: Regulatory Functions Branch
P.O. Box 60267
New Orleans, Louisiana 70160

Dear Sir:

The Fish and Wildlife Service (FWS) has reviewed public notice LMNOD-SP(Quintana Canal)3, dated October 17, 1983. [REDACTED] has applied for a Department of the Army permit to enlarge an existing slip and to dredge a canal to construct a marina, campsite, and related support facilities near Cypremort Point, St. Mary Parish, Louisiana.

Approximately 24 acres of moderate to low quality brackish marsh will be affected by the dredge and fill activities associated with marina construction. However, the applicant has met with FWS biologists on several occasions during the preapplication phase of the permitting process and has significantly reduced the scope of the originally proposed action to minimize adverse fish and wildlife impacts. To further mitigate those impacts, the applicant has agreed to install water control structures to allow circulation of water between adjacent higher-quality marsh and the marina's internal canal system.

Based on the above considerations, the FWS has no objection to permit issuance.

Sincerely yours,

David W. Fruge
Field Supervisor

cc: La. Dept. of Wildlife and Fisheries, Baton Rouge, LA
La. Dept. of Natural Resources (CMS), Baton Rouge, LA
EPA, Dallas, TX
NMFS, Galveston, TX
FWS, Atlanta, GA (AHP/ES)

POLICE JURY

PARISH OF ST. MARY

FIFTH FLOOR - COURTHOUSE

FRANKLIN, LOUISIANA 70538

HAROLD G. CLAUSEN, SR.
PRESIDENT

LAWRENCE MICHEL, JR.
VICE-PRESIDENT

CONNIE M. FOURNET
SECRETARY - TREASURER

F. K. CLAUSEN
PARISH ENGINEER

October 12, 1983

District 1

DISTRICT I

HON. JOSEPH M. DAVIS, JR.
Rt. 2 Box 105 A

Jeanerette, Louisiana 70544

HON. BERLIN J. HEBERT

P. O. Box 133
Charenton, Louisiana 70523

DISTRICT II

HON. HAROLD G. CLAUSEN, SR.
Star Rt. A Box 67B
Franklin, Louisiana 70538

HON. ALBERT FOULCARD
700 Magnolia Street
Franklin, Louisiana 70538

HON. EVERETTE A. FOUQUIER
305 Sanders Street
Franklin, Louisiana 70538

HON. H. A. LOUVIERE
Rt. 1, Box 1888B
Franklin, Louisiana 70538

DISTRICT III

HON. MATILDA ALOISIO
P. O. Box 265
Patterson, Louisiana 70392

HON. EMORY JENNINGS
P. O. Box 249
Patterson, Louisiana 70392

DISTRICT IV

HON. LIGE ROBISON
710 Gудry Street
Berwick, Louisiana 70342

HON. J. PAUL RUSSO
P. O. Box 265
Berwick, Louisiana 70342

DISTRICT V

HON. BILLY R. BUTLER
P. O. Box 2461
Morgan City, Louisiana 70381

HON. LOYLIS DUHON
P. O. Box 116
Amelia, Louisiana 70340

HON. WILSON T. GAUTREAU
1609 Maple Street
Morgan City, Louisiana 70380

HON. ROBERT C. MCHUGH
P. O. Box 2287
Morgan City, Louisiana 70381

HON. LAWRENCE MICHEL, JR.
900 Wytchwood Drive
Morgan City, Louisiana 70380

TO WHOM IT MAY CONCERN:

The St. Mary Parish Police Jury has no objection to [REDACTED] Star Rt. B., Box 428Y, Franklin, Louisiana 70538 Proposed Marina with accompanying campsites, parking, rest area, boat launch, etc., located near Cypremort Point, St. Mary Parish, Louisiana.

Provided same meets with the approval of the District Engineer, Corps of Engineers, New Orleans District, New Orleans, Louisiana.

Provided further, that should changes in the location or section of the existing channel, or in the generally prevailing conditions in the vicinity, be required in the future, in the public interest, the applicant shall make such changes in the project concerned, or in the arrangement thereof, as may be necessary to satisfactorily meet the situation and shall bear the cost thereof.

RESPECTFULLY SUBMITTED,


HAROLD G. CLAUSEN, SR., PRESIDENT
ST. MARY PARISH POLICE JURY


F. K. CLAUSEN
PARISH ENGINEER

The Regular Monthly
Meetings Second Wednesday
And Fourth Wednesday
Of Each Month At
4:30 p. m.



EDWIN W. EDWARDS
GOVERNOR

STATE OF LOUISIANA
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF PREVENTIVE AND PUBLIC HEALTH SERVICES
P. O. BOX 60630 - PHONE - 504/568-5050
NEW ORLEANS, LOUISIANA 70160

Phone: (504) 568-5137
June 27, 1985

SANDRA L. ROBINSON, M.D., M.P.H.
SECRETARY
STATE HEALTH OFFICER
504/562-6711

825
P8-3020
Jerry

RECEIVED

C & A Properties
Star Rt. B, Box 428Y
Franklin, LA 70538

DEPT. OF NATURAL RESOURCES
COASTAL MANAGEMENT DIVISION
RE: [REDACTED]
129 Camps and Sanitation Station
Four 75 GPM 4 Inch Water Wells
Two 60,000 GPD Aerated Lagoons
La. Hwy. 319
Cypremort Point, Louisiana
St. Mary Parish

Gentlemen:

Plans and specifications of the above named project have been reviewed and found to be in substantial conformity with applicable provisions of the State Sanitary Code. The design is, therefore, approved.

This approval refers to sanitary features of the design only, and is not to be taken as an approval of structural details, except insofar as they may affect sanitation.

This approval is given with the following stipulations:

1. The [REDACTED] will own, operate, and maintain the drinking water and sewerage facilities (sanitation station excluded).
2. The C & A Properties, Inc. will own, operate, and maintain the Sanitation Station. The Sanitation Station shall discharge into the sewerage facilities owned by the Quintana Marina Camp and Canal Owners Association, Inc.

In the event that it is determined at some point in the future that a design error escaped our detection during our review of these plans and specifications, that oversight shall not relieve you, the applicant, from the responsibility of complete compliance with the requirements of the State Sanitary Code, specifically including correcting the violations inadvertently overlooked.

The plans and specifications are being sent to the St. Mary Parish Health Unit.

RE: Quintana Marin
Water & Sewerage
Cypremort, La.
Page 2
June 27, 1985

This approval is with the understanding that the quality of water from the finished well shall be similar to that of other wells in the area and shall not preclude the necessity of appropriate treatment should the water not be of acceptable quality.

Please be advised that State Law now requires that all public and private water wells be registered with the Louisiana Department of Transportation and Development - Office of Public Works. By copy of this letter we are advising that Agency of our action relative to your (proposed) well.

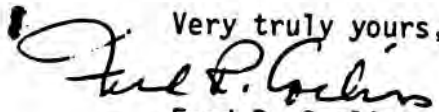
This approval is automatically cancelled if construction of the project has not been started within two (2) years after the date of this letter.

The approval of these plans takes into consideration only the health aspects of the design. It does not take into account the requirements of any other regulatory agency. Please note that the Louisiana Department of Environmental Quality may require further treatment to protect water quality.

After completion of this project the person or organization responsible for the design of the project shall send to this office a statement certifying that construction was done in accordance with the plans approved by this office.

Act 538 of the 1972 Louisiana Legislature requires that the operators of water supply systems and sewerage systems, serving 500 or more persons, be certified by the State Health Officer. Please see to it that whoever is to operate your plant applies to this office for certification.

Very truly yours,


Fred R. Corliss, P.E.
Administrator
Plans Review Unit

FRC/mj

cc: Simon J. Freyou & Associates
Mr. Joroy Hamilton, Reg. Engr.
St. Mary Parish Health Unit
Mr. James Cosgrove
Mr. Larry Fox
Mr. George Robichaux
DEQ-Water Pollution Control
Public Service Commission
✓ Office of public Works
✓ Dr. Charles Groat, DNR/CMD

ATTACHMENT # 3

1. Sample Coastal Use Permit and other material

State of Louisiana



EDWIN W. EDWARDS
GOVERNOR

JACK McCLANAHAN
SECRETARY

DEPARTMENT OF NATURAL RESOURCES

APPLYING FOR A COASTAL USE PERMIT (CUP)

The Coastal Use Permit (CUP) process is part of the Louisiana Coastal Resources Program (LCRP), which is an effort among Louisiana citizens, as well as state, federal and local advisory and regulatory agencies to preserve, restore, and enhance Louisiana's valuable coastal resources. The purpose of the Coastal Use Permit process is to make certain that any activity affecting the Coastal Zone, such as a project that involves either dredging or filling, is performed in accordance with guidelines established in the LCRP. The guidelines are designed so that development in the Coastal Zone can be accomplished with the greatest benefit and the least amount of damage. We are, therefore, providing the following information concerning the steps involved in applying for a CUP. Submitting an application for a CUP does not imply that a CUP will be required; application is simply one step in following the Rules and Procedures for CUP's so that the Coastal Zone will be protected.

Applying for a Coastal Use Permit, and doing it correctly, is not difficult, but it does require attention to detail. Be as thorough as possible, and submit all the required information with the original application. If the information and/or drawings provided are inadequate, the permitting process will be delayed. The importance of properly submitted applications cannot be overemphasized. We have provided, in this document, a checklist as well as a sample application form for your use in determining whether the required information has been included in the application package you will be sending.

Listed here are the steps necessary to ensure a correctly completed application:

Step 1: The Application Form: Obtain a U.S. Army Corps of Engineers ENG Form 4345 permit application form and fill it out completely. If a copy of ENG Form 4345 is not attached, you can obtain one by contacting the Coastal Management Division at 1-800-267-4019. You can also write to them at P.O. Box 44487, Baton Rouge, LA, 70804-4487 for this information. Continue on additional sheets of paper if the form does not contain enough room for complete answers.

1. **Application Number:** Leave this blank. An application number will be assigned by CMD staff.

2. **Name and Address of Applicant:** Complete name and complete address of the person(s) proposing to do the work, or for whom the work will be done.

3. **Name, Address, and Title of Authorized Agent:** You may wish to have an agent or contractor represent you on the application.

If you choose to use an agent or contractor, please be sure to fill out the statement of authorization, sign, and date it. If you do not do this, CMD staff will not know for certain whether this agent is actually authorized by you. As a result, processing of your permit application will be delayed until CMD is able to verify this.

4. (a) **Activity:** A detailed description of the proposed project is essential. Please describe what structures, if any, currently exist in the vicinity, in addition to the activity that is being proposed. Include dimensions/sizes of all structures that are now there as well as any that you want to construct.

(b) **Purpose:** You need to specify the goals and objectives of your proposed project. In other words, state the purpose of the proposed project. Please indicate whether the project is for private, recreational or commercial use. Describe your anticipated benefits.

(c) **Discharge of Dredged or Fill Material:** A description of the volume, in cubic yards, of the type of fill to be used or material to be dredged, the source of the fill or dredged material, and how it will be deposited, is necessary. For example, is the fill from an upland site or will it be dredged from areas adjacent to the project?

If the following certification is not printed on the form, either write it in or include it on an additional sheet of paper:

"To the best of my knowledge the proposed activity described in my permit application complies with

Louisiana's approved coastal management program and will be conducted in a manner consistent with the Louisiana Coastal Resources Program."

5. **Names and addresses of adjoining property owners, lessees, etc., whose property adjoins, the waterbody proposed to be affected:** This should include full name, street, route or P.O. Box, municipality, state, and zip code. A name only will not be enough.
6. **Name and location of waterbody where activity exists or is proposed:** If your project is on a waterbody, give the name of the waterbody and, as appropriate, indicate where the project will be located along the baseline.
7. **Location of land where activity exists or is proposed:** You can use a street address, but you should also include a description by Section, Township, and Range. Latitude and Longitude must be included for large commercial projects, but they are not a required for non-commercial activities. Please be advised that in order for CMD to process your application, it must contain either Section, Township and Range or Latitude and Longitude.
8. **Present status of proposed project.** Is any portion of the activity for which you are now seeking authorization complete? If this work was authorized by CMD under another Coastal Use Permit, please provide the CUP number. Remember to clearly indicate on any maps, plats, or other drawings, what work was performed under the previous authorization. This work should be clearly marked so that CMD can distinguish between what has already been performed and what is being proposed.

9. **List all approvals, certifications, denials, etc.** that you have received for this proposed activity from other federal state, or local agencies. A listing of these certifications is required for all structures, discharges, or other activities that are a part of your proposed project.

10. Please check the application form for accuracy, sign and date it, and, if an agent was used in the preparation of the application, have the agent sign and date the form .

In addition to the application form, the following information should also be submitted:

Step 2: Vicinity Map: It is necessary to include a vicinity map showing the location of your project relative to the surrounding area. A copy of part of a United States Geological Survey quadrangle map with your project location clearly delineated is best, but any other map of a reasonable scale (e.g. 1:24,000) clearly depicting the project site is acceptable.

Step 3: Drawings: Good drawings are absolutely necessary for the processing of your application. Your drawings are used to publish a public notice and are one of the primary tools used by the CMD in evaluating your proposed activity. **Inadequate or poor drawings are the primary cause of delays in acquiring a permit.** It is very important that you take the time to prepare, or get someone to prepare for you, a good set of drawings. These drawings need to be accurate, reproducible, and should be drawn to scale. If you cannot provide drawings to scale, you can submit drawings that are not to scale with the dimensions of the proposed and existing features of the work area shown. Since these drawings must be reproduced for inclusion in public notices, they must be on letter-size paper (8-1/2" x 11") and must be in black and white. **Drawings on larger sized paper or that use colors to show different features are not acceptable.** These drawings show the **minimum** information needed to process a permit application. A drawing depicting the overall plan, as well as a drawing showing a cross-section of the proposed project, are both required. It is absolutely necessary to include **both types**

of drawings in order to obtain a Coastal Use Permit. Please be sure that you include a north arrow and all dimensions for any proposed activities as well as for those features that presently exist (clearly differentiated, but without using different colors). You need to also include mean low and mean high water shorelines referenced to mean sea level or mean gulf datums. The elevation of mean high and low water can usually be obtained from land surveyors, local engineers, or the Corps of Engineers. You may also estimate mean high and low water using your knowledge of how high and low the water usually gets in relation to the project site.

Step 4: **Landowner Notification Affidavit:** Act 970 of the 1993 Regular Session of the Louisiana Legislature requires applicants for Coastal Use Permits to notify the owner of the property where a proposed activity is to occur. Prior to a Coastal Use Permit application being considered complete, the applicant must provide the Coastal Management Division with an affidavit attesting that the landowner has been notified.

Step 5: **Before submitting the application:** Time and effort may be saved by first determining if the proposed project is in the Louisiana Coastal Zone. Projects which are not in the Coastal Zone generally do not require a Coastal Use Permit. Maps delineating the Coastal Zone are available from the Coastal Management Division, P.O. Box 44487, Baton Rouge, LA 70804-4487. If you have any questions about whether or not your project is within the Coastal Zone, you should apply to the address above for an official determination.

Step 6: **Where do you send the completed application?** If your activity is located in a parish without an approved local program, you must send your application to the state for processing. If your activity is located in a parish with an approved local Coastal Management Program you can send your application to either the parish coastal zone management administrator or to the state. The state and/or local government will determine whether a proposed project is a use of state or local concern.

To submit your application to the state, send eight (8) copies of your completed application, as well as the \$20.00 application fee, to the Coastal Management Division, P.O. Box 44487, Baton Rouge, LA 70804-4487. The CMD will later bill you for an additional fee for processing the application, on the basis of \$0.04 per cubic

yard if your activity will involve dredging or filling of wetlands. If your proposed project is determined to be a use of local concern your \$20.00 application fee will be sent back to you and your application will be forwarded to the appropriate local coastal program administrator.

To submit your application to the parish local coastal program administrator in a parish with an approved Coastal Management Program, please check with your parish CZM Coordinator for instructions. A list of those parishes with approved local coastal programs and the contact person(s) is attached.

In either case, copies of your application will be forwarded to the U.S. Army Corps of Engineers and other agencies.

Step 7: Permit Section staff are available to discuss proposed projects: Should you have any questions, or need assistance, please contact the CMD Permit Section at 1-800-267-4019 to discuss your project. If you desire, a pre-application conference to discuss your proposed project, possible alternatives, information required, application completeness, drawing adequacy, etc, can be scheduled. Note, however, that CMD staff are not allowed to fill out or alter any portion of your application.

CUP APPLICATION CHECKLIST

1. _____ Is your project within the Louisiana Coastal Zone?
2. _____ Does the scope of your project warrant a pre-application conference?
3. _____ Obtain and complete ENG Form 4345.
4. _____ Have you included a vicinity map?
5. _____ Have you included drawings of your project?
6. _____ Attach additional information (alternate routes, photographs, environmental reports, etc.).
7. _____ Have you identified whether you need a WQC from the Louisiana Department of Environmental Quality? If so, send a copy of your complete application to the following address:

DEQ, Office of Water Resources
P.O. Box 82215
Baton Rouge, LA 70884-2215
8. _____ Have you identified whether your project is of local or state concern? If the project is of state concern, send eight (8) copies of your completed application, along with the \$20.00 application fee to:

Coastal Management Division
P.O. Box 44487
Baton Rouge, LA 70804-4487
9. _____ If the project is of local concern, send the completed application to the proper local authority as it instructs.
10. _____ Have you attached a landowner notification affidavit?
11. _____ Have you signed the application form?

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
--------------------	----------------------	------------------	-------------------------------

ITEMS BELOW TO BE FILLED BY APPLICANT

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE <i>(an agent is not required)</i>
6. APPLICANT'S ADDRESS	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NOS. W/AREA CODE a. Residence b. Business	10. AGENT'S PHONE NOS. W/AREA CODE a. Residence b. Business

11. STATEMENT OF AUTHORIZATION

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE	DATE
-----------------------	------

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE <i>(see instructions)</i>	
13. NAME OF WATERBODY, IF KNOWN <i>(if applicable)</i>	14. PROJECT STREET ADDRESS <i>(if applicable)</i>
15. LOCATION OF PROJECT _____ COUNTY _____ STATE	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN, <i>(see instructions)</i>	
17. DIRECTIONS TO THE SITE	

APPLICATION CHECKLIST

- ___ **COMPLETED** ENG FORM 4345
- ___ **SIGNED AND DATED** APPLICATION FORM (APPLICANT AND/OR AGENT FOR).
- ___ CLEAR DESCRIPTION OF ACTIVITY/PURPOSE.
- ___ CUBIC YARDS OF DREDGE/FILL MATERIAL INCLUDE SOURCE(S) OF FILL MATERIAL.
- ___ **ALL** ADJACENT PROPERTY OWNERS, LEASEES AND LANDOWNERS WHERE PROJECT TAKES PLACE. **COMPLETE ADDRESSES** (NOT JUST NAMES).
- ___ GIVE SECTION, TOWNSHIP, AND RANGE IF POSSIBLE.
- ___ NEED LATITUDE AND LONGITUDE.
- ___ NEED SCALE AND DIMENSIONS ON **ALL** DRAWINGS.
- ___ NEED DISTANCE TO CENTERLINE OR OPPOSITE BANK OF STREAM OR WATERWAY FROM STRUCTURE OR WORK SHOWN ON DRAWINGS.
- ___ NEED DRAWINGS WHICH CLEARLY DEPICT THE PROPOSED AND EXISTING WORK AND HIGH AND LOW WATER SHORELINES. ___ VICINITY MAP ___ PLAN VIEW ___ CROSS SECTION.
- ___ SHOW CUBIC YARDS OF DREDGE OR FILL MATERIAL ON DRAWING(S).
- ___ SHOW LENGTH AND SIZE OF PIPELINE(S) ON DRAWINGS.
- ___ PLAN VIEW AND CROSS SECTION DRAWINGS MUST BE CONSISTENT.
- ___ IF USING OLD DRAWINGS TO SHOW NEW OR PROPOSED WORK FOR PERMIT, SHOW WORK COMPLETED AS **EXISTING** AND BE SURE TO REMOVE THE DESIGNATION OF "PROPOSED" WHICH WAS A CARRYOVER FOR THE ORIGINAL PERMIT.
- ___ INFORMATION IN COVER LETTER NEEDS TO BE CONSISTENT WITH THE APPLICATION FORM AND DRAWINGS.
- ___ **CLEARLY** DEFINE AND LABEL THE **LIMITS** OF DREDGING ON THE DRAWINGS.
- ___ **CLEARLY** DEFINE AND LABEL **PLACEMENT** OF DREDGED OR FILL MATERIAL ON DRAWINGS.
- ___ INCLUDE MEAN HIGH WATER AND MEAN LOW WATER REFERENCES AS TO ELEVATIONS ON THE DRAWINGS.
- ___ NEED 8.5" X 11" DRAWINGS FOR PUBLIC NOTICE. NO LEGAL SIZED OR OTHER OVER SIZED DRAWINGS.
- ___ DRAWINGS MUST BE REPRODUCEABLE. LIGHT PENCIL WILL NOT COPY WELL ENOUGH. COLORING TO SHOW DETAILS OF PROPOSED WORK IS NOT ACCEPTABLE BECAUSE IT RARELY COPIES.
- ___ \$20.00 APPLICATION FEE (CHECK OR MONEY ORDER MADE OUT TO COASTAL MANAGEMENT - **CASH IS NOT ACCEPTABLE.**
- ___ CONSISTENCY STATEMENT -- ON APPLICATION FORM OR IN LETTER THAT CAN BE ATTACHED TO THE APPLICATION. (SEE FOLLOWING PAGE)
- ___ LANDOWNER NOTIFICATION AFFIDAVIT

* PLEASE NOTE THAT **ADDITIONAL INFORMATION** MAY BE REQUIRED AS PROCESSING CONTINUES.

The following statement is the consistency statement which must appear on your application for a Coastal Use Permit or be contained in a letter attached to the application:

"To the best of my knowledge the proposed activity described in my permit application complies with and will be conducted in a manner that is consistent with the Louisiana Coastal Management Program."

**Louisiana Department of Natural Resources
Coastal Management Division**

SPECIAL PUBLIC NOTICE

Landowner Notification

Act 970 of the 1993 Regular Session of the Louisiana Legislature requires applicants for Coastal Use Permits to notify the owner of the property where the proposed activity is to occur, of the proposal. Prior to a Coastal Use Permit application being considered complete, the applicant must provide the Coastal Management Division with an affidavit attesting that the landowner has been notified.

A copy of a CMD approved Landowner affidavit is attached to this Public Notice and CMD recommends that this form be used. However, equivalent forms, containing the same information, will be accepted.

Please direct any questions regarding this matter to Rocky Hinds, Permit and Mitigation Manager, at 1-800-267-4019.

AFFIDAVIT OF NOTIFICATION TO OWNER OF PROPERTY

STATE OF LOUISIANA

PARISH OF _____

I, _____, am applying to the Coastal Management Division of the Louisiana Department of Natural Resources for a Coastal Use Permit for the purpose of:

This activity is to occur on the following described property:

Further, with regard to ownership of the above described property (check appropriate block):

_____ I am the owner of the property on which the above described activity is to occur.

OR

_____ I have made every reasonable effort to determine the identity and current address of the owner(s) of the land on which the above described use is to occur, which included, if necessary, a search of the public records of the parish. The owner(s) and their address(es) are as follows (use additional sheets of paper as required):

A copy of the application has been distributed to the above listed owner(s).

Signed this _____ day of _____, 19 ____.

BY:

APPLICANT

ATTACHMENT # 4

1. CUP with conditioning for water quality monitoring



DEPARTMENT OF NATURAL RESOURCES
DIVISION OF STATE LANDS
COASTAL MANAGEMENT SECTION

COASTAL USE PERMIT/LETTER OF NO OBJECTION

C.U.P. No. P820126 (Revision)

C.O.E. No. L1000-SP (West Cote Blanche Bay) 123

NAME AND ADDRESS:

[REDACTED]
324 South Philo
Lafayette, LA 70506

PROJECT DESCRIPTION:

Construct a marina and access channels, which includes the dredging of: a portion of Cypremort Bayou (10,912 cu.yds.), 8500 ft. of an existing canal (43,385 cu.yds.), a 3500 ft. channel in W. Cote Blanche Bay (27,250 cu.yds.), excavation (100,595 cu.yds.) and fill (10,945 cu.yds.) of a 10.0 acre upland area, and the installation of six flap-gated 36" culverts to connect the marina slips with Cypremort Bayou. Other parts of the project include: the dredging of a 1000 ft. x 70 ft. x 7.0 ft. channel (10,370 cu.yds.) in W. Cote Blanche Bay; the installation of two weirs (one in Horse Bayou and the other in an unnamed

LOCATION: CONTINUED ON ATTACHED SHEET

ST. MARY PARISH, LA: Sec. 14, T15S-R06E, approx. 3.5 miles NE from Cypremort Pt., West Cote Blanche Bay.

In accordance with the rules and regulations of the Louisiana Coastal Resources Program and Louisiana R.S. 49, Sections 213.1 to 213.21, the State and Local Coastal Resources Management Act of 1978, as amended, the permittee agrees to:

1. Carry out or perform the use in accordance with the plans and specifications approved by Department of Natural Resources.
2. Comply with any permit conditions imposed by the Department of Natural Resources.
3. Adjust, alter, or remove any structure or other physical evidence of the permitted use if, in the opinion of the Department of Natural Resources, it proves to be beyond the scope of the use as approved or is abandoned.
4. Provide, if required by the Department of Natural Resources, an acceptable surety bond in an appropriate amount to ensure adjustment, alteration, or removal should the Department of Natural Resources determine it necessary.
5. Hold and save the State of Louisiana, the local government, the department, and their officers and employees harmless from any damage to persons or property which might result from the work, activity, or structure permitted.
6. Certify that any permitted construction has been completed in an acceptable and satisfactory manner and in accordance with the plans and specifications approved by the Department of Natural Resources. The Department of Natural Resources may, when appropriate, require such certification be given by a registered professional engineer.
7. All terms of the permit shall be subject to all applicable federal and state laws and regulations.
8. This permit, or a copy thereof, shall be available for inspection at the site of work at all times during operations.
9. The following special conditions must also be met in order for the project to meet the guidelines of the coastal resources program:

- a. The following conditions recommended by the Department of Health and Human Resources shall be complied with:
1. That, as has been assured by the applicant's representative, "Marina Improvements does intend to have a central dump pit at the Marina for pump out of sewerage from boats using the marina".
 2. That [REDACTED] is committed to providing "whatever facilities and further information" DHR "may determine is necessary to insure adequate handling of the sewerage at the marina". Such commitment must, of necessity, include the submittal of sufficiently detailed plans and specifications to DHR for purposes of review and approval prior to any related construction at the site.
 3. That [REDACTED] will agree to comply with any local health unit (e.g. St. Mary Parish Health Unit) requirements which may relate to local sanitation considerations determined as necessary for the marina development.
 4. That plans for water system provisions at the development will be submitted to DHR for purposes of review and approval prior to any related installation of same at the site. Such should, as is the case for sewerage provisions, be performed in a manner consistent with applicable State Sanitary Code requirements.
- b. Two (2) weirs and two (2) earthen plugs shall be installed in the tidal creeks and bayous to the west of the existing canal as shown on Sheet 2 of 8 of the revised plats of June 11, 1982 (see attached). This work shall be completed within sixty (60) days of commencement of the dredging work.
- c. As much as practicable, spoil from dredging of the northernmost 500' of the proposed 1000' x 70' x -7' msl channel in West Cote Blanche Bay will be placed along the existing shoreline no higher than +2 MSL for purposes of shoreline stabilization. The remaining spoil in this segment will be stacked along the east side of the proposed channel to serve as a breakwater to reduce siltation in the channel in this shallow water zone (less than 4.5'). Spoil from the southernmost 500' of the proposed channel shall be spread so as not to decrease the bottom elevation by more than 0.5' as illustrated on Sheets 1, 2, and 7 of the plans.
- d. The applicant shall monitor the salinity and dissolved oxygen (D.O.) in the marina basin at least 4 times each month during the months of June through September and once each month during the remainder of the first year of marina operation. A report of the monitoring program shall be submitted to CMS.



C.U.P. No. P820126 (Revision)

C.O.E. No. LHM00-SP (West Cote Blanche Bay) 123

- e. A contingency plan shall be immediately implemented should the bottom water dissolved oxygen (DO) equal 2.0 ppm or lower at any one time, or falls below 3.0 ppm for more than 24 hours. This contingency plan was outlined in the applicant's letter of June 7, 1982.
- f. The six flap-gated culverts which connect the marina basin to Bayou Cypremort shall be locked in the closed position if; (i) flooding to the residents living adjacent to the bayou would occur during a storm surge; or (ii) the salinity at any time in the marina basin should equal or exceed three times (3X) that of the bayou.
- g. The applicant will notify the Coastal Management Section of the date on which approved work began on site using the enclosed green commencement card upon initial activity under this permit.
- h. That should changes in the location or the section of the existing waterways, or in the generally prevailing conditions in the vicinity be required in the future, in the public interest, the applicant shall make such changes in the project concerned or in the arrangement thereof as may be necessary to satisfactorily meet the situation and shall bear the cost thereof.
- i. The expiration date of this permit is two years from the date of the Secretary's signature.

() As the applicant I agree to the terms of this permit but reserve the right to appeal the conditions of the permit.

[Handwritten Signature] _____ 7/7/82
 Signature of Applicant Date

The applicant by signing this form agrees to the terms permit; therefore I affix by signature and issue this permit this 7 day of July, 19 82.

Department of Natural Resources

[Handwritten Signature]
 SECRETARY FRANK P. SIMONEAUX



This agreement becomes binding when signed by all parties indicated above.

ATTACHMENT # 5

1. LDEQ 401 Water Quality Certification with conditions



State of Louisiana
Department of Environmental Quality



Edwin W. Edwards
 Governor

JUL 21 1993

Kai David Midboe
 Secretary

Adams and Reese
 4500 One Shell Square
 New Orleans, LA 70139

RECEIVED
 JUL 23 1993
 COASTAL DIVISION

WQC 930408-10

930340

Attention: Mr. Robert A. Vosbein, Agent for [REDACTED]

Gentlemen:

RE: Proposal for the [REDACTED] to install and maintain a dock for the operation of a 1,500 passenger casino/entertainment paddle-wheel boat; construct a breakwater and boat terminal; improve access to existing and new facilities; and construct support facilities on raised pile structures over the lake, Lake Pontchartrain, Jefferson Parish.

This is to acknowledge that you have completed the requirements for Water Quality Certification for the above referenced proposal.

It is our opinion that your proposed project will not violate water quality standards of the State of Louisiana, therefore, we offer no objection to this project provided: 1) that turbidity during dredging in waters of the state is kept to a practicable minimum; 2) that all practicable means are utilized to minimize any discharge of water pollutants that can result from the proposed project; and 3) that the facility utilizes a centralized sewage system. However, if a centralized system is not available, a state approved individual sewage treatment system may be installed.

In accordance with statutory authority contained in the Louisiana Revised Statutes of 1950, Title 30, Chapter 11, Part IV, Section 2074 A(3) and provisions of Section 401 of the Clean Water Act (P.L. 95-217), the Office of Water Resources certifies that it is reasonable to expect that water quality standards of Louisiana provided for under Section 303 of P.L. 95-217 will not be violated.

Sincerely,

J. Dale Givens, Assistant Secretary
 Office of Water Resources

JDG:JWL

c: Corps of Engineers, New Orleans
 Coastal Management Division



recycled paper

OFFICE OF WATER RESOURCES P.O. BOX 82215 BATON ROUGE, LOUISIANA 70884-2215

AN EQUAL OPPORTUNITY EMPLOYER



ATTACHMENT # 6

1. Parish Regulations (No Wake Zones, Speed Limits):
 - a.) St. Bernard Parish
 - b.) St. Tammany Parish
 - c.) Terrebonne Parish
 - d.) Vermilion Parish

(d) *Erection of stop signs on streets intersecting through street.* Whenever any ordinance of the parish designates and describes a through street, it shall be the duty of the parish traffic engineer to place and maintain a stop sign on each and every street intersecting such through street or intersecting that portion thereof described and designated as such by any ordinance of the parish.

(Ord. No. 30-83, §§ 408—411, 10-26-83)

Secs. 20-39—20-45. Reserved.

DIVISION 2. WATERWAYS AND WATERBODIES*

Sec. 20-46. No wake zones designated; enforcement.

(a) The following described waters are hereby designated as no wake zones within which watercraft shall not exceed the speed of five (5) miles per hour:

- (1) Hopedale from Mrgo up Bayou La Laloutre to Yscloskey to Shell Beach encompassing the communities of Hopedale, Yscloskey, and Shell Beach.
- (2) Delacroix Island in Bayou Terre Aux Boeuf/Bayou La Mu encompassing the community of Delacroix Island.
- (3) The Violet Canal at Bayou Dupre and the area that encompasses that part of the canal between the Violet Bridge and St. Bernard Highway.
- (4) That part of Bayou Bienvenue in all those areas where there are boatsheds and businesses.

(b) Appropriate signs shall be erected and maintained along such waterways, and any vessels traveling thereon shall respect the signs so erected and maintained. All such signs shall include the ordinance number [OPC-8-88].

(c) The St. Bernard Sheriff's Office and the Louisiana Department of Wildlife and Fisheries and all other peace officers of the State of Louisiana are hereby directed and authorized to assist in the enforcement of the provisions of this section.

(d) Any person who violates this section shall, upon conviction thereof, be punished by imprisonment in the parish jail for no more than thirty (30) days or by a fine of not more than five hundred dollars (\$500.00), or by both such imprisonment and fine, at the discretion of the court.

(Ord. No. OPC-8-88, 8-2-88)

Sec. 20-47. Waterway identification and information signs; navigational aids.

(a) No person shall destroy, molest, damage, change or alter any sign or navigational aid placed along or in any waterbody within St. Bernard Parish.

*Cross reference—Speed limits for vessels on the Mississippi River Gulf Outlet, § 20-78.

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herein established shall shift to said commercial or other hauler. (Ord. No. 118, Bk. 2, P. 271; Ord. No. 325, Bk. 5, P. 239; Ord. No. 397, Bk. 6, P. 5; Ord. No. 81-275, adopted 10/15/81)

(e) Any violation of this Section may be tried in the 22nd Judicial District Court or any appropriate Justice of the Peace Court in and for St. Tammany Parish in accordance with Acts 250 and 296 of the 1989 Legislature. (Ord. No. 89-1148, adopted 09/21/89)

(f) All fines collected by the Justice of the Peace Courts for litter violations pursuant to La. R.S. 25:1101 et seq. shall be paid to St. Tammany Parish pursuant to La. R.S. 25:1112. St. Tammany Parish shall reimburse the Justice of the Peace Court which handles the litter violation(s) for the time spent and expenses incurred pursuant to La. R.S. 13:2589(B). This reimbursement shall consist of FIFTY PERCENT (50%) of the fines collected by St. Tammany Parish from the Justice of the Peace Courts. (Ord. No. 89-1148, adopted 09/21/89)

CROSS REFERENCE NOTE: See Section 9-019.00 of the Code of Ordinances, and Division 3 entitled "Permit and Fee System for Solid Waste Disposal" of Chapter 9 beginning at Section 9-030.11 through Section 9-030.14 therein.

SEC 15-002.00 Obstruction Of Ditches Or Waterways

It shall be unlawful for any person to obstruct any ditch or waterway with any trees, logs, earth or other substance. (Ord. adopted 07/10/1900; Ord. adopted 11/17/15)

SEC 15-002.01 Obstruction Of Waterways And Shoreline; Lake Road Boat Launch

(a) It shall be unlawful for any person to obstruct the waterways and shoreline within one thousand (1,000) feet of the Lake Road Boat Launch by docking any vessel(s), the placement of any structure(s), permanent or temporary, or any other obstruction possibly impeding the access or safe use of the launch area.

(b) Enforcement of this Section is authorized, directed and empowered to the Sheriff's Department and the Parish Department of Public Works.

(c) Any person(s) found to be in violation of the provision of this Section shall be subject to the penalty provisions of Section 1-008.0 of the Code of Ordinances. (Ord. No. 84-294, adopted 12/20/84)

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SEC 15-003.00 Fortune-Tellers, Mind Readers, Etc., Prohibited

It shall be unlawful for fortune-tellers, mind readers, faith healers, palm readers, Indian advisors or others engaged in similar activities, to operate within the Parish. (Ord. No. 303, Bk. 5, P. 84)

SEC. 15-004.00 Killing Or Interference With Police Dogs

It shall be unlawful for any person to willfully or maliciously torture, torment, beat, kick, strike, mutilate, injure, disable, or kill any dog used by the Sheriff's Department in the performance of the functions or duties of such Department, or to interfere with or meddle with any such dog while being used by said Department or any officer or member thereof in the performance of any of the duties or functions of said Department or of such officer or member. (Ord. No. 314, Bk. 5, P. 165)

SEC 15-005.00 Spraying Of Herbicides

The spraying with herbicides in accordance with the rules and regulations of herbicides registered with the Environmental Protection Agency and the Department of Agriculture, State of Louisiana, be and is hereby permitted. (Ord. No. 853, adopted 07/20/78)

**ARTICLE II
WATERCRAFT SPEED LIMITS IMPOSED**

SEC 15-006.00 Speed Limit In Salt Bayou

It shall be unlawful for any person to operate any watercraft in excess of ten (10) miles per hour in Salt Bayou from the Interstate Bridge to Lake Pontchartrain and the East Diversion Canal. (Ord. No. 739, adopted 07/21/77)

SEC 15.006.01 Operation Of Watercraft On Tchefuncta and Bogue Falaya Rivers, Lake Emfred, And Flower and Horse Shoe Bayou

(a) **Unlawful Operation:** It shall be unlawful for any watercraft to create a wake in the following described no-wake zone listed below:

- (1) **Lake Emfred:** The entirety of Lake Emfred.

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- (2) **Little Tchefuncte River:** Where it intersects with the Bogue Falaya River just north of the Interstate 12 Bridge to a point one-half mile west of the Highway 21 Bridge on the Little Tchefuncte River.
- (3) **Flower and Horse Shoe Bayou.**

(b) **Enforcement:** Enforcement of this Section is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.

(c) **Signs:** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the river(s) to notify watercraft operators of the no-wake zone provided herein.

(d) **Exemptions:** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.

(e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up to thirty (30) days or both. (Ord. No. 82-345, adopted 04/15/82; Ord. No. 83-615, adopted 07/21/83; Ord. No. 87-836, adopted 07/16/87)

SEC 15-006.02 Reserved

SEC 15-006.03 Operation Of Watercraft On The Canals Of Eden Isles Subdivision

(a) **Unlawful operation.** It shall be unlawful for any watercraft operating on the canals of Eden Isles Subdivision to exceed a speed of five (5) miles per hour. Skiing is prohibited on such canals.

(b) **Enforcement.** Enforcement of this Section is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.

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(c) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the canals of Eden Isles Subdivision to notify watercraft operators of the speed limit provided herein.

(d) **Exemptions.** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.

(e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up to thirty (30) days or both. (Ord. No. 83-683, adopted 09/15/83)

SEC 15-006.04 Speed Limit Of Watercraft On Bayou La Sang From Bayou Vincent To Palm Lake Of Slidell

(a) **Unlawful operation.** It shall be unlawful for any watercraft operating on Bayou La Sang from Bayou Vincent to Palm Lake of Slidell to exceed a speed of five (5) miles per hour.

(b) **Enforcement.** Enforcement of this Section is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.

(c) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on Bayou La Sang from Bayou Vincent to Palm Lake of Slidell to notify watercraft operators of the speed limit provided herein.

(d) **Exemptions.** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.

(e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up to thirty (30) days or both. (Ord. No. 83-695, adopted 10/27/83)

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SEC 15-006.05 Speed Of Watercraft On Bayou Castine

(a) **Unlawful operation.** It shall be unlawful for any watercraft operating on Bayou Castine from Lake Pontchartrain to the point of beginning of Mandeville to exceed a speed of five (5) miles per hour.

(b) **Enforcement.** Enforcement of this Section is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.

(c) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on Bayou Castine from Lake Pontchartrain to the point of beginning of Mandeville to notify watercraft operators of the speed limit provided herein.

(d) **Exemptions.** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.

(e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up to thirty (30) days or both. (Ord. No. 83-722, adopted 11/17/83)

SEC 15-006.06 Operation Of Watercraft On the West Pearl River

(a) **Unlawful operation.** It shall be unlawful for any watercraft operating on the West Pearl River in the vicinity of the U.S. Highway 90 bridge crossing to exceed a speed of five (5) miles per hour.

(b) **Enforcement.** Enforcement of this Section is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.

(c) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the West Pearl

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River in the vicinity of the U.S. Highway 90 bridge crossing to notify watercraft operators of the speed limits provided herein.

(d) **Exemptions.** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.

(e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up to thirty (30) days or both. (Ord. No. 84-211, adopted 09/20/84)

SEC 15-006.07 Maximum Speed Limit For Watercraft Operated On The Tchefuncta River

(a) **Area South of I-12 Bridge:**

- (1) **Maximum speed limit:** Unless otherwise posted, a speed limit is hereby established for all watercraft at a maximum of forty-five (45) miles per hour operated on the Tchefuncta River in the area extending south of the I-12 bridge to the Madisonville bridge unless otherwise posted as hereinafter provided.
- (2) **Enforcement.** Enforcement of this Sub-Section is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, law enforcement officers in the City of Covington Police Department, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries. Any of the foregoing has the right to make arrests for purposes of enforcement of this subsection.
- (3) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works to post and maintain appropriate and visible signs at strategic places to notify watercraft operators and skiers of the speed limit herein contained. The Department of Public Works is further authorized, directed and empowered to post signs as to lesser speed limits in the area covered hereby because of the width or curvature of the Tchefuncta River using its judgment

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under the "State of the Art" pertaining and appropriate; and when so posted, same shall reduce the speed limits herein generally imposed to those so established and posted.

- (4) **Violation; Penalty:** A violation hereof shall be punishable as a misdemeanor, and the violator shall be fined a sum by of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisoned in the Parish Jail for up to thirty (30) days or both.

(b) From the Highway 22 Bridge 700 Yards South Towards Lake Pontchartrain:

- (1) **Maximum speed limit:** The speed of any watercraft from the Highway 22 bridge seven hundred (700) yards south towards Lake Pontchartrain shall be fixed at a maximum of no wake.
- (2) **Enforcement.** Enforcement of this Sub-Section is authorized, directed and empowered to the Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.
- (3) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the Tchefuncta River for a distance of seven hundred (700) yards south of Highway 22 bridge towards Lake Pontchartrain to notify watercraft operators of the no-wake zone provided in this subsection.
- (4) **Exemptions.** Exempt from the provisions of this Subsection shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission, water skiing and authorized boat races.
- (5) **Violation; Penalty:** A violation of the provisions of this Subsection by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up

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to thirty (30) days or both.

(c) Portion of Tchefuncte River:

- (1) **Unlawful operation:** It shall be unlawful for any watercraft to create a wake in the following-described no-wake zone:

On the Tchefuncte River from one and one-half (1 1/2) miles on the Tchefuncte River to a point two and three fourths (2 3/4) miles on the aforementioned river or just south of marina Del Ray to just north of Classic Marine (Wards 1 and 4, P.J. Districts 1 and 4).

- (2) **Enforcement.** Enforcement of this Subsection is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.

- (3) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the river to notify watercraft operators of the no-wake zone provided herein.

- (4) **Exemptions.** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.

- (5) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up to thirty (30) days or both. (Ord. No. 82-436, adopted 08/19/82; Ord. No. 84-279, adopted 12/20/84; Ord. No. 87-835, adopted 07/16/87)

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SEC 15-006.08 Maximum Speed Limit For Water Craft Operated On the Canals Along Carr Drive And Northshore Subdivision Area

- (a) **Maximum speed limit.** The speed of any watercraft operated on the canals along Carr Drive and the Northshore Subdivision area shall be fixed at a maximum of no-wake.
- (b) **Enforcement.** Enforcement of this Subsection is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.
- (c) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the canals along Carr Drive and Northshore Subdivision area to notify watercraft operators of the no-wake zone provided in this Section.
- (d) **Exemptions.** Exempt from the provisions of this Section shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.
- (e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than Three Hundred Dollars (\$300.00) nor more than Five Hundred Dollars (\$500.00) or imprisonment in the Parish Jail for up to thirty (30) days or both. (Ord. No. 85-457, adopted 08/15/85)

SEC 15-006.09 Ski Area, No-Wake Areas, Bayou Lacombe

- (a) **Established.** The Police Jury does hereby accept and dictate the ski area and no-wake areas in Bayou Lacombe, Ward 7, per map attached to P.J.S. Ord. No. 85-515.
- (b) **Enforcement.** Enforcement of this Subsection is authorized, directed and empowered to the following: The Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.
- (c) **Exemptions.** Exempt from the provisions of this Section

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shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.

- (d) **Violation; Penalty:** A violation by other than those exempted, shall constitute a misdemeanor punishable as is contained in Section 1-008.0 of this Code. (Ord. No. 85-515, adopted 10/17/85)

SEC 15-006.10 Dead Slow, No-Wake Area, Pirates Harbor Canal

- (a) **Established.** It shall be unlawful for any watercraft operating on Pirates Harbor Canal on the west side of Highway 433 from the mouth of the Canal to the dead end to exceed a speed of dead slow, no-wake area.
- (b) **Enforcement.** Enforcement shall be directed and empowered the Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.
- (c) **Exemptions.** Exempt from the provisions of this Section shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.
- (d) **Violation; Penalty:** A violation by other than those exempted, shall constitute a misdemeanor punishable as is contained in Section 1-008.0 of this Code. (Ord. No. 85-537, adopted 12/19/85)

SEC 15-006.11 Dead Slow, No-Wake Zone - Geoghegan Canal

- (a) **Established.** It shall be unlawful for any watercraft to create a wake in the following described "NO WAKE ZONE": Geoghegan Canal - located off the Rigolets - for the entire length of the canal.
- (b) **Enforcement.** Enforcement shall be directed and empowered to the following: the Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.
- (c) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the river to notify watercraft operators of the

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"NO WAKE ZONE" provided herein.

- (d) **Exemptions.** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.
- (e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than \$300.00 nor more than \$500.00 or imprisonment in the Parish Jail for up to 30 days, or both. (Ord. No. 89-1137, adopted 08/17/89)

SEC 15-006.12 Dead Slow, No-Wake Zone - Lacombe Harbor, Crutch Bay, Perch Bay, Finger Bay, Pine Bay, Cypress Bay, Cypress Bayou

- (a) **Established.** It shall be unlawful for any watercraft to create a wake in the following described "NO WAKE ZONE":
 - 1. Lacombe Harbor - for the entire area of the harbor
 - 2. Crutch Bay - for the entire area of the bay
 - 3. Perch Bay - for the entire area of the bay
 - 4. Finger Bay - for the entire area of the bay
 - 5. Pine Bay - for the entire area of the bay
 - 6. Cypress Bay - for the entire area of the bay
 - 7. Cypress Bayou - for the entire area of the bayou
- (b) **Enforcement.** Enforcement of this section is authorized, directed and empowered to the following: the Sheriff's Department of St. Tammany Parish, the Louisiana State Police, and by duly commissioned agents and officers of Louisiana Wildlife and Fisheries.
- (c) **Signs.** It shall be the duty and obligation of the Parish Department of Public Works or its designees to post and maintain appropriate and visible signs at strategic places on the river to notify watercraft operators of the "NO WAKE ZONE" provided herein.
- (d) **Exemptions.** Exempt herefrom shall be any enforcement watercraft or any watercraft bound on a bona fide life-saving mission.
- (e) **Violation; Penalty:** A violation hereof by any operator of watercraft, other than those exempted, shall be punishable by a fine of not less than \$300.00 nor more

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than \$500.00 or imprisonment in the Parish Jail for up to 30 days, or both. (Ord. No. 89-1138; adopted 08/17/89)

ARTICLE III
FIREARMS

SEC 15-007.00 Discharge Of Firearms Near Single-Family
Residentially Zoned Subdivision And Multifamily
Residentially Zoned Developments

(a) **Prohibited:** It shall be unlawful for any person to discharge a firearm within a one-thousand-foot perimeter zone of any single family residentially zoned subdivision or multifamily residentially zoned development measured as is hereinafter provided.

(b) **Definitions:**

- (1) **Firearms:** Any handgun or rifle of any calibre, shotgun, machine gun or any other gun by which a bullet or projectile is launched by means of igniting gunpowder.
- (2) **Single-family Residentially Zoned Subdivisions:** Those portions or parcels of ground located in the unincorporated area of the Parish bearing the following zoning designations as identified on the Official Zoning Map of the Parish as follows:

- A-1 Suburban
- A-2 Suburban
- A-3 Suburban
- A-4 Single-Family Residential
- A-1-A Residential Zoning District
- A-2-A Residential Zoning District
- A-3-A Residential Zoning District
- A-4-A Residential Zoning District
- A-5 Two-Family Residential District
- A-6 Three and Four-Family Residential District
- A-7 General Multiple-Family Residential District
- A-8 Planned Multiple-Family Residential District

§ 22-227

TERREBONNE PARISH CODE

Sec. 22-227. No wake (5 m.p.h.) zones.

(a) The following described waters are hereby designated as no-wake zones within which watercraft shall not exceed the speed of five (5) miles per hour:

Bayou Black from its intersection with St. Charles Street to its intersection with Barrow Street Extension

Bayou Black from the Bayou Delight Restaurant to Minor's Canal

Bayou Decade from one thousand two hundred fifty (1,250) feet from its intersection with Raccourci Bay for a distance of approximately one hundred (100) feet to approximately two hundred fifty (250) feet from its intersection with Turtle Bayou

Bayou Dularge beginning at the Falgout Canal Bridge going south for a distance of one thousand (1,000) feet

Bayou Dularge beginning three (3) miles south of the Falgout Canal to the last oyster boat landing, for a total distance of approximately six (6) miles

Bayou Dularge for a distance of four hundred (400) feet in front of Bayou Dularge Shipyard

Bayou Dularge, extending the no wake zone at the end of Bayou Dularge six hundred (600) feet south

Bayou Four Point, from its intersections with the Houma Navigation Canal to the Four Point Landing, including the access canal to Bayou Four Point, and northerly beyond the Four Point Landing for a distance of six-tenths ($\frac{6}{10}$) mile

Bayou Four Point, a distance of one thousand (1,000) feet to the south along the navigation canal and a distance of five hundred (500) feet to the north along the navigation canal

Bayou Grand Caillou, such portions thereof as designated by the appropriate signs, including:

Between milepost 43.26 and 43.40

A five-hundred-foot portion located behind the first Texaco Service Station from the Buquet Bridge

From one-quarter mile below the Buquet Bridge to even with the United States Coast Guard Station

Bayou Jean Charles, that portion south of Isle de Jean Charles from Bayou Livaudais north for a distance of six hundred (600) feet (in the vicinity of six (6) campsites)

Bayou LaCarpe from the Van Avenue Bridge to the Ship Channel

Bayou Little Caillou from its intersection with Boudreaux Canal going north for approximately one-quarter mile

Bayou Little Caillou between the Duplantis Bridge and Sarah Bridge

Bayou Little Caillou between Eulin Trahan Seafood and Coco Village Subdivision

- Bayou Little Caillou from the Lapeyrouse Canal in Chauvin to just above Reggio's Landing
- Bayou Little Caillou between St. Joseph Street and Roosevelt Street
- Bayou Little Caillou from the St. Louis Canal Bridge to the Duplantis Bridge
- Bayou Little Caillou from the Chauvin Bridge to the Toussaint-Foret Bridge
- Bayou Little Caillou from Timbalier Drive to the Presque Isle Bridge
- Bayou Little Caillou, from two hundred (200) feet south of its intersection with Little Cocodrie Bayou and going north two hundred (200) feet past Houston Foret's Shrimp Factory
- Bayou Petit Caillou from the Duplantis Bridge to the Sarah Bridge
- Bayou Pointe au Chenes, the lower portion thereof, from the Lower Pointe au Chenes Road Bridge to the Cutoff Canal
- Bayou Raccourci, between Lake Mechant and Raccourci Bay
- Bayou Terrebonne from the Intracoastal Canal to the Presque Isle Bridge
- Bayou Terrebonne from the St. Anne Bridge to the intersection with the Company Canal
- Bayou Terrebonne between the Montegut Baptist Church and the Montegut School
- Bayou Terrebonne from the Dugas Cemetery in lower Montegut to below the Crochetville Community
- Bayou Terrebonne, between Zip's Grocery Store and the Big Star grocery store
- Bayou Terrebonne between the Big Star grocery store and one hundred (100) feet south of the Klondyke Bridge
- Bayou Terrebonne from Boudreaux Street south to the Montegut Bridge
- Bayou Terrebonne from just below the Crochetville Community to Box 1679 Highway 55 in Montegut
- Bayou Terrebonne, that portion beginning one and three-tenths (1.3) miles south of the Klondyke Bridge for a distance of three hundred (300) feet on both sides of the bayou to Box 371 Highway 55
- Bayou Terrebonne, that portion on two hundred fifty (250) feet of each side of the Madison Canal Boat Landing
- Big Bayou Black from the Cannon Boat Landing to the Voclair Boat Landing
- Big Bayou Black from the Gibson Bridge to Geraldine Road/Old Spanish Trail
- Big Bayou Black, that thirty-two-hundred-foot portion between 250 Spanish Trail and 140 Old Spanish Trail
- Bush Canal from Bayou Terrebonne to Bayou Little Caillou

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TERREBONNE PARISH CODE

- Deadwood Canal, that portion from the intersection of the Highway 20 Bridge to the intersection of Bayou Black
- Falgout Canal in front of the marina beginning at the Falgout Canal Bridge going west for six hundred (600) feet
- Falgout Canal Slip near Dularge
- Gilbert's (or Hanson's) Canal for a distance of one thousand (1,000) feet running north from its intersection with Bayou Black
- Hanson's Canal, that portion from the Highway 90 side of the Bayou continuing for a distance of five hundred (500) feet
- Houma Canal from its intersection with the Intracoastal Canal to the first dam
- Houma Navigation Canal (Ship Channel), that portion beginning one and one-half (1½) miles below the pontoon bridge and going south for a distance of one thousand (1,000) feet (in front of Hope Industries)
- Humble Canal beginning at the intersection of Highway 55 and going in an easterly direction for a distance of five hundred (500) feet
- Intracoastal Canal from the G.I.W.W. 54.5 milepost going toward the City of Houma for a distance of one and one-half (1½) miles
- Intracoastal Canal from the end of the existing no-wake zone to the East Park Bridge
- Intracoastal Canal, from the East Park Bridge to the Houma Navigational Canal
- Little Cocodrie Bayou, from five hundred (500) feet westward of its intersection with Bayou Little Caillou to Bayou Little Caillou
- Madison Canal, that portion from its intersection with Bayou Terrebonne going six hundred (600) feet in an easterly direction
- Marmande Canal between the intersection with Bayou Dularge to the Drainage Canal
- Minor's Canal, that portion one hundred (100) feet from the flood control structure to its intersection with Bayou Black
- North Bayou Black, that portion between the Gibson Bridge and Moss Street
- Price Bayou, for a distance of two hundred fifty (250) feet on both sides of the Main Coco Marina Slip
- Robinson Canal, that portion beginning at the Robinson Canal Bridge and continuing westward for one thousand (1,000) feet
- St. Louis Canal from the Hollywood Road to the St. Louis Canal Road
- Six Foot Ditch, that portion from the Williams Street Bridge to the Hollywood Road Bridge

Appropriate signs shall be erected and maintained along such waterways, and any vessel traveling thereon shall respect the signs so erected and maintained.

(b) The following described waters are hereby designated as no-wake zones within which watercraft having a gross weight of three (3) tons or above shall not exceed the speed limit of five (5) miles per hour:

Intracoastal Canal, a twenty-three-hundred-foot section beginning at a point one thousand (1,000) feet east of Sandy Beach Subdivision and ending one thousand three hundred (1,300) feet west of such subdivision

Appropriate signs shall be erected and shall be maintained along such waterways to create and maintain such vessel control. Any vessel traveling thereon shall respect the signs so erected and maintained.

(Parish Code 1979, §§ 6-2, 6-4; Ord. No. 4080, § I, 10-28-87; Ord. No. 4104, § I, 1-6-88; Ord. No. 4134, § I, 3-9-88; Ord. No. 4135, § I, 3-9-88; Ord. No. 4178, § I, 5-25-88; Ord. No. 4164, § I, 5-11-88; Ord. No. 4209, § I, 7-27-88; Ord. No. 4222, § I, 8-10-88; Ord. No. 4234, § I, 9-28-88; Ord. No. 4312, § I, 3-22-89; Ord. No. 4322, § I, 5-10-89; Ord. No. 4343, § I, 6-14-89; Ord. No. 4372, § I, 8-23-89; Ord. No. 4410, § I, 10-25-89; Ord. No. 4414, § I, 11-8-89; Ord. No. 4488, § I, 5-9-90; Ord. No. 4489, § I, 5-9-90; Ord. No. 4504, § I, 6-13-90; Ord. No. 4509, § I, 6-27-90; Ord. No. 4514, § I, 7-11-90; Ord. No. 4539, § I, 8-22-90; Ord. No. 4563, 10-10-90; Ord. No. 4575, § I, 11-14-90; Ord. No. 4583, § I, 11-28-90; Ord. No. 4584, § I, 11-28-90; Ord. No. 4629, § I, 3-13-91; Ord. No. 4630, § I, 3-27-91; Ord. No. 4634, § I, 3-27-91; Ord. No. 4667, § I, 6-12-91; Ord. No. 4688, § I, 8-14-91; Ord. No. 4732, § I, 11-6-91; Ord. No. 4784, § I, 2-26-92; Ord. No. 4802, § I, 3-25-92; Ord. No. 4840, § I, 5-27-92; Ord. No. 4869, § I, 6-24-92; Ord. No. 4884, § I, 7-15-92; Ord. No. 4962, § I, 12-2-92; Ord. No. 5033, § I, 5-12-93; Ord. No. 5054, § I, 6-23-93; Ord. No. 5055, § I, 6-23-93; Ord. No. 5056, § I, 6-23-93; Ord. No. 5092, § I, 8-11-93; Ord. No. 5124, § I, 9-22-93; Ord. No. 5172, § I, 1-12-94; Ord. No. 5191, § I, 2-9-94)

State law reference—Authority of parish to establish and post speed limits on waterways, R.S. 34:851.27.

Sec. 22-228. Waterway identification signs and navigational aids.

(a) No person shall destroy, molest, damage, change or alter any signs or navigational aids placed along or in any waterbody within the parish.

(b) Any person violating the provisions of this section shall, upon conviction, be guilty of a misdemeanor and subject to a fine of not more than five hundred dollars (\$500.00), imprisonment for up to thirty (30) days in the parish jail, or both, at the discretion of the court.

(c) As used in this section, "signs" placed along a waterbody are those identifying the name, location, or speed limit or those providing other information relative to a waterway or waterbody. "Navigational aids" includes, but is not limited to, beacons, buoys and flashing lights placed in or along waterways and waterbodies.

(Parish Code 1979, § 6-3)

State law reference—Definitions relating to motorboats and vessels, R.S. 34:851.2.

ORDINANCE

92-0-11

AN ORDINANCE PROVIDING FOR THE ESTABLISHMENT OF "NO WAKE ZONE" IN DESIGNATED WATERS; TO PROVIDE FOR THE INSTALLATION OF SIGNS DESIGNATING THESE ZONES; AND TO PROVIDE FOR OTHER MATTERS RELATIVE THERETO.

BE IT ORDAINED, by the Police Jury of Vermilion Parish, Louisiana, in regular session duly assembled and proceeding under its police power and further pursuant to the laws of the State of Louisiana.

SECTION 1: NO WAKE ZONES (5 M.P.H.)

The following described waterways are hereby designated as no wake zones within which watercraft shall not throw any type of wake or when such a wake is occurring that such watercraft shall not exceed the speed of five (5) miles per hour:

INTRACOASTAL CANAL

- A. That portion of the Intracoastal Canal one-quarter mile ($\frac{1}{4}$) either side of the intersection of the Oaks Canal and the Intracoastal Canal in the area of milepost 149.

Appropriate signs shall be erected and maintained along such waterways, and any vessel traveling thereon shall respect the signs so erected and maintained.

SECTION 2: WATERWAY IDENTIFICATION SIGNS AND NAVIGATIONAL AIDS

No person shall destroy, molest, damage, change or alter any sign or navigational aid placed along or in any waterbody within Vermilion Parish.

SECTION 3: PENALTY

Any person violating any of the provisions aforesated shall upon conviction be fined not less then one hundred dollars (\$100.00) nor more than three hundred dollars (\$300.00) or imprisoned for not more than thirty (30) days or both.

SECTION 4: DECLARATION

If any word, clause, phrase, section or other portion of this ordinance shall be declared null, void, invalid, illegal or unconstitutional, the remainder of said ordinance shall remain in full force and effect.

SECTION 5: IMPLEMENTATION

This ordinance shall become effective upon adoption by the Police Jury.

On motion of Mr. Edval J. Simon, Jr., duly seconded by Mr. Minos Broussard, the above ordinance was presented for adoption and the vote was as follows;

YEAS: Aubrey Blanchet, John Harry Broussard, Johnny Gaudet, Louis Joe Hardy, Purvis Abshire, Pervis "Pee Wee" Meaux, T. J. Prejean, Jr., Orile Ryder, Donald Sagrera, Edval J. Simon, Jr., Ritter Trahan, Minos Broussard, James Dale Landry and Harris Vallo.

NAYS: None.

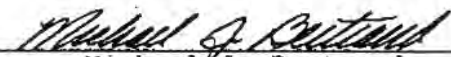
ABSENT AND NOT VOTING: None

WHEREUPON, the President declared the Ordinance adopted this 2nd day of November, 1992.

* * * * *

I, Michael J. Bertrand, Secretary-Treasurer, of the Vermilion Parish Police Jury, do hereby certify that the above is a true and exact copy of an ordinance adopted by the Police Jury in regular session on November 2, 1992 at which meeting a quorum was present and acting.

GIVEN UNDER MY OFFICIAL SIGNATURE AND SEAL OF OFFICE
THIS 2ND DAY OF NOVEMBER, 1992.



Michael J. Bertrand
Secretary-Treasurer
Vermilion Parish Police Jury

ORDINANCE

93-0-10

AN ORDINANCE PROVIDING FOR THE ESTABLISHMENT OF "NO WAKE ZONE" IN DESIGNATED WATERS: TO PROVIDE FOR THE INSTALLATION OF SIGNS DESIGNATING THESE ZONES: AND TO PROVIDE FOR OTHER MATTERS RELATIVE THERETO.

BE IT ORDAINED, by the Police Jury of Vermilion Parish, Louisiana, in regular session duly assembled and proceeding under its police power and further pursuant to the laws of the State of Louisiana.

SECTION 1: NO WAKE ZONES (5 M.P.H.)

The following described waterways are hereby designated as no wake zones within which watercraft shall not throw any type of wake or when such a wake is occurring that such watercraft shall not exceed the speed of five (5) miles per hour:

VERMILION RIVER

- A. That portion of the Vermilion River which is not in the corporate limits of the City of Abbeville from the bridge on La. Hwy. 14 - By-Pass (W. Summers Drive) south to the southern property line of George Leonard.

Appropriate signs shall be erected and maintained along such waterways, and any vessel traveling thereon shall respect the signs so erected and maintained.

SECTION 2: WATERWAY IDENTIFICATION SIGNS AND NAVIGATIONAL AIDS

No person shall destroy, molest, damage, change or alter any sign or navigational aid placed along or in any waterbody within Vermilion Parish.

SECTION 3: PENALTY

Any person violating any of the provisions aforesated shall upon conviction be fined not less than one hundred dollars (\$100.00) nor more than three hundred dollars (\$300.00) or imprisoned for not more than thirty (30) days or both.

SECTION 4: DECLARATION

If any word, clause, phrase, section or other portion of this ordinance shall be declared null, void, invalid, illegal or unconstitutional, the remainder of said ordinance shall remain in full force and effect.

SECTION 5: IMPLEMENTATION

This ordinance shall become effective upon adoption by the Police Jury.

On motion of Mr. Edval J. Simon, Jr., duly seconded by Mr. John Harry Broussard, and unanimously carried, the above ordinance was adopted as presented.

* * * * *

I, Michael J. Bertrand, Secretary-Treasurer, of the Vermilion Parish Police Jury, do hereby certify that the above is a true and exact copy of an ordinance adopted by the Vermilion Parish Police Jury, at the regular meeting of

ORDINANCE

94-0-3

AN ORDINANCE PROVIDING FOR THE ESTABLISHMENT OF "NO WAKE ZONE" IN DESIGNATED WATERS; TO PROVIDE FOR THE INSTALLATION OF SIGNS DESIGNATING THESE ZONES; AND TO PROVIDE FOR OTHER MATTERS RELATIVE THERETO.

BE IT ORDAINED, by the Police Jury of Vermilion Parish, Louisiana, in regular session duly assembled and proceeding under its police power and further pursuant to the laws of the State of Louisiana.

SECTION 1: NO WAKE ZONES (5 M.P.H.)

The following described waterways are hereby designated as no wake zones within which watercraft shall not throw any type of wake or when such a wake is occurring that such watercraft shall not exceed the speed of five (5) miles per hour:

BOSTON CANAL

- A. That portion of the Boston Canal from the Gulf Intracoastal Waterway to the Vermilion Bay.

Appropriate signs shall be erected and maintained along such waterways, and any vessel traveling thereon shall respect the signs so erected and maintained.

SECTION 2: WATERWAY IDENTIFICATION SIGNS AND NAVIGATIONAL AIDS

No person shall destroy, molest, damage, change or alter any sign or navigational aid placed along or in any waterbody within Vermilion Parish.

SECTION 3: PENALTY

Any person violating any of the provisions aforesaid shall upon conviction be fined not less than one hundred dollars (\$100.00) nor more than three hundred dollars (\$300.00) or imprisoned for not more than thirty (30) days or both.

SECTION 4: DECLARATION

If any word, clause, phrase, section or other portion of this ordinance shall be declared null, void, invalid, illegal or unconstitutional, the remainder of said ordinance shall remain in full force and effect.

SECTION 5: IMPLEMENTATION

This ordinance shall become effective upon adoption by the Police Jury.

On motion of Mr. Edval J. Simon, Jr., duly seconded by Mr. T. J. Prejean, Jr., and unanimously carried, the above ordinance was adopted as presented.

* * * * *

I, Michael J. Bertrand, Secretary-Treasurer, of the Vermilion Parish Police Jury, do hereby certify that the above is a true and exact copy of an ordinance adopted by the Vermilion Parish Police Jury, at the regular meeting of May 2, 1994, at which a quorum was present and acting.

M J Bertrand

IVE. LOUISIANA

MANAGEMENT MEASURES FOR HYDROMODIFICATION

Coastal Management Division

Louisiana Department

of

Natural Resources

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ATTACHMENTS

1. Management Measure Worksheets for all applicable programs

Abbreviations Utilized

BMP -	Best management practices
BTNEP -	Barataria-Terrebonne National Estuary Program
CNPCP -	Coastal Nonpoint Pollution Control Program
CMD -	Coastal Management Division in Dept. of Natural Resources
COE -	U. S. Army Corps of Engineers
CRD -	Coastal Restoration Division in Dept. of Natural Resources
CUP -	Coastal Use Permit issued by Coastal Management Division
DAF -	Department of Agriculture and Forestry
DEQ -	Department of Environmental Quality
DNR -	Department of Natural Resources
DOTD -	Department of Transportation and Development
DWF -	Department of Wildlife and Fisheries
NMFS -	National Marine Fisheries Service
USFWS -	U. S. Fish and Wildlife Service
DOA -	Department of the Army

*Louisiana's Coastal Nonpoint Pollution Control Program***HYDROMODIFICATION****I. INTRODUCTION**

This subchapter of the Coastal Nonpoint Pollution Control Program (CNPCP) document addresses three subcategories of sources of nonpoint pollution from activities that significantly **modify** natural **hydrology**, and that may affect *coastal waters*:

- 1.) Channelization and channel modification
- 2.) Dams
- 3.) Streambank and shoreline erosion

Each subcategory and the management measures associated with it will be addressed separately. Best Management Practices (BMPs) currently being utilized in Louisiana will accompany each management measure. These BMPs are site specific, economically achievable methods of performing hydromodification activities within the designated 6217 management area.

Channelization projects are undertaken in Louisiana for the purposes of flood control and drainage improvement, navigation, and channel/bank stabilization. Navigable channels in the Mississippi River, Mississippi River Gulf Outlet, Gulf Intracoastal Waterway, Houma Navigation Canal, Mermentau River, and the Calcasieu River require frequent dredging to maintain adequate depths and widths for shipping. Oil and gas exploration canals need periodic maintenance dredging to ensure proper depths for access. Local drainage ditches, bayous and streams often need to be cleared or snagged to more rapidly dissipate flood waters. Borrow pits are dug to obtain fill material to build highways and roads, including board roads used in oil and gas exploration. Spoil banks from dredging and levees raised for flood control and hurricane

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protection are prominent features in southern Louisiana. All of these construction activities are particularly abundant in the designated coastal zone.

Dams are defined by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA) as constructed impoundments that are either 25 feet or more in height and greater than 15 acre-feet in capacity, or 6 feet or more in height and greater than 50 acre-feet in capacity. Within the coastal zone there are only five structures meeting these specifications. The median height of these structures is 6 feet, while the median volume behind the structures is 150 acre-feet. Since the structures are small; are associated with ponds used for sewage treatment, fish farming, livestock watering and irrigation; and some are not even situated across permanent stream channels, but are merely hardened spillways over above-ground levees; Louisiana intends to request an exemption for this category.

The third subcategory in the hydromodification section involves the abatement of streambank and shoreline erosion. Streambank erosion is defined in the Section 6217 (g) *Guidance Specifying Management Measures* as loss of land along nontidal streams and rivers, whereas shoreline erosion refers to the loss of beach or land in tidal portions of coastal bays. Louisiana's coastal land loss is well documented, currently averaging nearly 35 square miles per year. The state claims 40% of the nation's coastal marshes and is experiencing 80% of the nation's coastal marsh loss. Between 1956 and 1978 about 560,000 acres of marsh were lost along Louisiana's coast, mostly by conversion to open water. This is an average yearly loss of almost 40 square miles. The major causes of this wetland loss are oil and gas development, canals, saltwater intrusion, storms and hurricanes, barrier island degradation, land use change, subsidence, sea level rise, levee systems, and sediment reduction. Louisiana's response to this threat to its wetlands, in addition to CMD's Coastal Use Permit System, is a multi-agency action plan, presently in development, constituting a Louisiana coastal protection master plan. This strategy would utilize the skills and abilities of the federal, state and local agencies and private interests active in coastal Louisiana and highlights three approaches to effectively reduce coastal wetland loss. First, the State is planning to preserve coastal wetlands by restoring and maintaining the

barrier shores and islands. Second, Louisiana is creating marsh by diverting sediment-laden waters through outlets crossing river levees. Finally, the state is utilizing wetland land use regulation to control development in coastal wetlands through the Louisiana Coastal Resources Program (Coastal Use Permits in CMD and restoration projects through the Coastal Restoration Division [CRD]), the U.S. Army Corps of Engineers (USACOE) regulatory program, and the Environmental Protection Agency guidelines for wetland regulation. These programs meet the most immediate threats to wetlands while the agencies involved continue to develop a long-term comprehensive coastal plan.

A discussion of the existing nonpoint pollution programs follows in the next section. This discussion explains how these programs will address the hydromodification management measures. BMPs that reduce coastal nonpoint source pollution may be recommended as special conditions on permits reviewed by the CNPCP staff or other LDNR/CMD staff. Projects exempt from the referenced LDNR Coastal Use Permit (CUP) process may be regulated under the Corps of Engineers' 404 permit or the 401 Water Quality Certification as articulated in MOAs expected to be negotiated with LDEQ and the USACOE.

II. EXISTING NPS PROGRAMS: REGULATORY AND NONREGULATORY

To guide hydromodification activities Louisiana is proposing to utilize both regulatory and nonregulatory policies contained within various federal, state and local programs. These programs and policies were identified in hydromodification subcommittee meetings which began in March of 1994. The hydromodification subcommittee consisted of federal (USACOE, USFWS, Barataria-Terrebonne National Estuary Program), state (LDNR, LDOTD, LDWF, LDAF, LCES, LDEQ), and local agencies (Bayou Lafourche Freshwater District, Lafourche Parish CZM program), as well as large landowners in coastal Louisiana (Louisiana Land and Exploration, Vermilion Corporation, Continental Land and Fur, and Miami Corporation). Management measure worksheets were completed for all applicable programs.

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A survey of enforceable policies contained in the laws of the State of Louisiana, as applicable to EPA and NOAA specified management measures, was also conducted through contract with the LSU Sea Grant Legal Division. The following programs (included in their entirety as part of a volume supplementary to this program document) are identified in this contract: Louisiana's State and Local Coastal Resources Management Act (Act 361-LDNR); Louisiana's Water Control Law (LA-RS:331X.301A administered by DEQ through its 401 Water Quality Certification); U.S. Army Corps of Engineers 404 permit process; Louisiana Natural and Scenic Rivers System (LA-RS30:2074(3) administered by LDWF); Department of Public Works (LA-RS 38:2 administered by LDOTD); and the Louisiana Wetlands Conservation and Restoration Authority (LA-RS 49:2144 administered by CRD in LDNR). Nonregulatory programs slated for inclusion in the program include: Louisiana's Nonpoint Source Management Program (Act 272 of 1987 Legislature as administered by LDEQ), Louisiana's Standard Specifications for Roads and Bridges (LA-RS48:1, LA-RS38:2211, LA-RS36:501 as administered by LDOTD); and the Barataria-Terrebonne National Estuary Program (Water Quality Act of 1987). A summary of each of these programs is given below.

U.S. Corps of Engineers Section 404 Permitting Program

The **U.S. Army Corps of Engineers Section 404 Permitting program** will be one of the more powerful regulatory authorities for hydromodifications within the 6217 management area. The 404 program is statewide in geographic extent and requires that the Secretary of the Army issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill materials into the navigable waters of Louisiana. The USACOE also requires (under Section 401 (a)(1) of the Clean Water Act) all permit applicants to obtain a 401 Water Quality Certification from LDEQ before issuing the 404 permit. It is proposed that each USACOE district -- New Orleans, Vicksburg, and Galveston -- will coordinate with LDNR through a memorandum of agreement that will spell out responsibilities in carrying out the CNPCP, within the constraints of the agency's mandate. It is envisioned that responsibilities could extend to the inclusion of BMP consideration in their permit process as well as in their internal operations guidelines,

monitoring and enforcement of appropriate BMPs, and reporting noncompliances to LDNR on a regular basis. The enforceable policies and mechanisms available to the USACOE includes criminal and civil penalties including fines. Continued noncompliance could result in involvement of LDNR's proposed administrative fine system for the CNPCP. The USACOE monitoring and enforcement staff regularly check many of the permitted projects through flights and on-site inspections as well as by responding to citizen complaints. This program is rated as very effective within the state for regulating development activities in and near the State's wetlands.

The CNPCP envisions utilizing the USACOE permit review procedure to address many actions that affect the coastal zone and that are not covered by CUP regulations. The requested MOAs with the USACOE districts would include the addition of special conditions as needed on these permits, within the constraints of the USACOE mandate. Such special conditions would also be applied to address operation and maintenance considerations.

Coastal Use Permit and Consistency

For projects within Louisiana's approved coastal zone LDNR's **Coastal Use Permit and Consistency** processes will be utilized. Louisiana's coastal zone, as previously explained in this document, encompasses 5.3 million acres in 19 coastal parishes. Hydromodification activities requiring a coastal use permit include levees, linear facilities, projects involving dredged spoil deposition, projects involving shoreline modifications or surface alterations, projects involving hydrologic and sediment transport modifications, projects dealing with waste disposal, and projects for oil, gas and other minerals. Permit conditions requiring BMPs will be incorporated into all appropriate permits. Monitoring and enforcement will be performed by CMD staff (permit analysts, CNPCP analysts, enforcement analysts and field investigators) utilizing aerial overflights (as needed, but envisioned to be at least monthly), on-site investigations, follow-up investigations, and responses to citizen complaints. Regularly scheduled performance reports will detail monitoring, surveillance and enforcement activities. All violations require mitigation

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and/or restoration, civil penalties or fines. Activities exempt from coastal use permitting (fastlands-lands surrounded by publicly owned, maintained or existing levees or natural formations preventing activities with the surrounded area from having direct and significant impacts on coastal waters) may be handled through the USACOE 404 permit program, as well as those activities occurring on lands above the 5 foot elevation contour.

All federal projects requiring a consistency determination will require the appropriate BMPs within agency authority be utilized in all applicable hydromodification activities. The LDNR/CMD Consistency Section staff will be given a list of BMPs for inclusion in their review and subsequent comment letter. The CMD staff will monitor and enforce all violations within their jurisdiction.

Louisiana Department of Transportation and Development (LDOTD) "Standard Specifications for Roads and Bridges"

Louisiana's "**Standard Specifications for Roads and Bridges**" guidance is applied statewide by LDOTD. These specifications spell out what rules and conditions must be adhered to for all contracts, including requirements for labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the plans, project specifications and terms of the contract. The guidance requires coordination and/or permits with the USACOE and the U.S. Coast Guard relative to approval of construction plans for bridges, causeways, embankments, dredging, spoil disposal, etc. for work in navigable waters and wetlands. These specifications also require the contractor to protect the project and adjoining properties from soil erosion and siltation by effective and continuous erosion control methods and must prevent pollution of waters and wetlands from fuels, asphalts, chemicals or other harmful materials. Specific hydromodification activities covered by these specifications include excavation and embankment projects; temporary erosion control projects; projects involving slab sodding, topsoil, vegetative mulch, and seeding; and projects involving fertilizers, landscaping and erosion control systems. Contractors are also required to comply with all federal, state and local laws, ordinances and regulations having any jurisdiction or authority.

All contractors are required to post 100% performance or surety bonds. The LDOTD has the right to order alterations in quantities and plans as deemed necessary or desirable in order to complete the work as contemplated. The Department also has the right to order work not provided for in the contract whenever such work is found essential or desirable to satisfactorily complete the contract within its intended scope. Before final acceptance, the right-of-way, borrow and local material sources, and areas occupied by the contractor must be cleared of rubbish, excess materials, temporary structures, haul roads and equipment. All parts of the contract work, including property adjacent to the right-of-way, must be left in satisfactory condition.

Primary oversight (including implementation, monitoring, enforcement, and technical assistance) of all contracts for state and federally funded projects rests in the hands of the LDOTD engineers. They monitor all phases of construction through routine on-site visits. Failure to comply with the specifications document requires the unacceptable work to be remedied, or removed and replaced. Noncompliance may result in forfeiture of all or part of the performance bond. The USACOE also has some oversight authority through its 404 permit process, which touches many transportation projects, and LDNR/CMD shares regulatory authority in this area, with Consistency review of any transportation projects involving federal money, and CUPs required for all state highway projects in the coastal zone.

A memorandum of agreement has been proposed from LDNR/CMD to LDOTD to work out interagency responsibilities for implementation of CNPCP Best Management Practices, with relevance to urban and hydromodification parts of the program. It is envisioned that in this arrangement, LDOTD would incorporate provisions of the CNPCP into existing and future LDOTD permit requirements as special conditions. They would conduct inspections of relevant development activities within the 6217 management area. Noncompliance would be reported to LDNR on a regular schedule, and LDOTD would initiate new, or modify existing programs for education of its personnel and contractors.

Louisiana Natural and Scenic Rivers System Permit

The **Louisiana Natural and Scenic Rivers System** (LA-RS 56:1840) is administered by the LDWF. There are over a dozen Scenic Rivers in the existing coastal zone, and that number doubles if adjacent parishes are included. This regulatory program prohibits the following activities on all Scenic Rivers, *their tributaries, and distributaries*: channelization; channel realignment; clearing and snagging; impoundments of any type; and commercial clear-cutting of timber within 100 feet of the low water mark. Activities which may have a direct, significant or ecological impact on the streams and would thus require a "Scenic Rivers" permit include the following: bridge, pipeline and powerline crossings; bulkheads, piers, docks and ramps; waste water discharges; and land development adjacent to the stream. Scenic Rivers permits require the evaluation of twelve criteria for issuance. These include the following: cultural associations; historical/archaeological artifacts; economic changes; wilderness/rural qualities; scenic/aesthetic values; recreational opportunities; ecological systems; fish and other aquatic life; wildlife species; botanical elements; geological/hydrological features; and water quality/quantity.

All permit applications are reviewed on a case-by-case basis, and most involve on-site inspections of the project area. The monitoring and enforcement of the permits will be handled by LDWF agents through site investigations and inspections, surveillance and citizen complaints. Enforceable policies and mechanisms for this program include criminal penalties with fines and civil penalties with fines and adjudication. Penalties include: up to \$1,000 fines for each violation; suspension, annulment, withdrawal or revocation of the permit; institution of civil proceedings in district court; and issuance of cease and desist orders, compliance orders, injunctions or other appropriate relief. The program currently issues 15-20 permits per year.

The LDNR has proposed to enter into a memorandum of agreement with LDWF for oversight of implementation of provisions of the CNPCP, to monitor and educate staff, contacts and permittees on the provisions of the program, and to report noncompliance to the LDNR on a regular schedule. It is envisioned that the LDWF would incorporate additional CNPCP

conservation provisions as special conditions to their Scenic Rivers permits and other projects. The CMD staff would review the Scenic River permits for consistency.

Barataria-Terrebonne National Estuary Program (BTNEP)

The **Barataria-Terrebonne National Estuary Program (BTNEP)** encompasses 4 million acres of cypress swamps, timberlands, farms and coastal marshes in south central Louisiana between the Mississippi and Atchafalaya Rivers. The Water Quality Act of 1987 established the National Estuary Program, administered by EPA, and the BTNEP was selected for the program in 1990.

While the BTNEP plan is not enforceable it does contain some recommended actions. The "Comprehensive Conservation and Management Plan" for the BTNEP recommends priority corrective actions to balance conflicting uses in the estuary while maintaining the natural ecological integrity-thus serving as a blueprint for restoring and maintaining the estuary. While the BTNEP is a voluntary activity it has an extensive public involvement - over 100 volunteer members strong from all over the estuary. The conference committees represent all levels of government, commercial, industrial and recreational users, educational and scientific communities and the general public. These committees have identified seven priority problems in the estuary - hydrological modification, reduction of sediment availability, habitat loss or modification, changes in living resources, eutrophication, pathogen contamination, and toxic substances - and are giving them highest priority. The committees and the public thus form a consensus-building framework to solve the estuary's environmental problems.

Louisiana's CNPCP staff envision coordinating more closely with the BTNEP for dissemination of information through its extensive public education/outreach program. BTNEP representatives, sitting on several CNPCP subcommittees, have registered support for the CNPCP program, noting educational materials and activities that address specific aspects of non-point pollution. The CNPCP could also make greater use of information and data shared from BTNEP projects such as the spatial-ecological modeling of wetlands; a FEMA hydrologic model of the estuary; a

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fecal coliform monitoring, identification and assessment of the basin; a mapping project of oyster-producing areas within the estuary; a mapping and location study for storm water drainage stations in the estuary; a survey of vegetation damage caused by nutria herbivory in the basin; and action plan demonstration projects involving conversion of abandoned, dead-end canals to marshlands, field demonstration of cover crops and cultural practices of fallow sugarcane land, program information packages, storm drain stenciling projects, and teachers workshops.

Coastal Wetlands, Conservation, Restoration and Management Program

Louisiana's **Coastal Wetlands, Conservation, Restoration and Management Program** (LA-RS 49:213 and 214 and administered by the Coastal Restoration Division (CRD) in LDNR, reviews state department budget requests for programs and projects pertaining to coastal wetlands conservation and restoration while representing the policy consensus viewpoint of the state at the federal, regional, state and local levels with respect to wetlands conservation and restoration. The main focus of this CRD program is to reduce coastal land loss. The restoration and conservation plan has the following objectives: plan, design and complete projects and programs designed to conserve, enhance, restore and create vegetated wetlands in the short term; plan, evaluate, implement or cost-share in long range projects designed to provide widespread and continuing long-term benefits to vegetated wetlands; make projects and programs within hydrologic basins mutually compatible; develop policies and procedures through the rule-making process that would provide, at a minimum, for replacement of functional coastal wetland values lost due to future activities; and make operation and implementation of federal water resources projects consistent with the policy of the state to elevate coastal vegetated conservation, enhancement, restoration and creation to a level of importance equal to flood control, navigation or other development activities. Although statewide in geographic extent, the vast majority of projects are located and constructed within the existing coastal zone.

Oversight of the CRD program is by the Wetland Conservation and Restoration Task Force, consisting of the Secretaries of LDNR, LDEQ, LDWF, LDOTD, the Director to the State Soil

and Water Conservation Committee, and the Executive Assistant in the Governor's Office of Coastal Activities and Environmental Affairs. The program bears a regulatory or enforceable component, in that contractors for construction projects are required to post performance bonds to ensure compliance of all plans, specifications and guidelines. Projects are monitored regularly by CRD staff biologists and engineers to ensure compliance. Some water-quality monitoring aspects are incorporated into many of the constructed projects.

Hydromodification activities which are applicable to this program include all BMP's dealing with streambank and shoreline erosion. The CMD envisions working internally with CRD to incorporate CNPCP BMPs into their construction projects and to monitor compliance.

Compliance reports would be submitted to CMD on a regular schedule. It is envisioned that CRD projects would be reviewed by CMD staff to discuss inclusion of appropriate BMPs.

Louisiana Department of Environmental Quality Nonpoint Source Management Program

The LDEQ has two programs applicable to hydromodification activities - the **Nonpoint Source Management Program** and the **401 Water Quality Certification Program**. Both programs have statewide authority. The nonpoint program is nonregulatory while the 401 water quality certification is a regulatory program. Each of these programs is discussed in detail below.

Louisiana's Nonpoint Source Management Program (Act 272 of 1987 and LA-R.S. 30:2011 has identified hydromodification as one of its eight categories of nonpoint source pollution that is addressed in the program. Hydromodification BMP categories include: channel clearing; filter strip; grade stabilization structures; channel excavation; spoil disposal; vegetation; and 401 certification guidelines. The LDEQ implements these BMPs through demonstration projects in coordination with the Natural Resource Conservation Service and local drainage districts. These projects are designed to illustrate which BMPs should be more widely utilized in channel modification projects.

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Oversight of the Nonpoint Source Management Program projects is by LDEQ nonpoint staff. Evaluative monitoring is often provided for the demonstration projects through a contractor or through the statewide water quality monitoring network. The water quality monitoring network provides monthly sampling of water bodies throughout the state. This sampling data documents effectiveness of projects that have been implemented. Nonpoint staff conduct site visits and surveillance staff within the LDEQ regional offices often conduct inspections of demonstration projects. Since the NPS program is non-regulatory, no enforcement procedures are being implemented unless there is a complaint. The Nonpoint Source Management Program has worked with the 401 Water Quality Certification Program to strengthen the recommendations for inclusion of BMPs into the USACOE 404 permit.

The 401 Water Quality Certification Program is a regulatory program which addresses hydromodification activities that are related to the USACOE 404 permit. Water quality certification recommendations, in coordination with input from the Nonpoint Program staff, are incorporated into the USACOE 404 permit. Monitoring and enforcement of the special conditions are the responsibility of the LDEQ. The 1993 Nonpoint Source Annual Report documented that 125 water quality certifications included recommendations for nonpoint source BMPs for hydromodification projects. The proposed memorandum of agreement to be negotiated between LDNR/CMD and LDEQ will spell out mutual responsibilities to be coordinated to advance common objectives in the abatement of nonpoint source pollution.

National Marine Fisheries Service

The **National Marine Fisheries Service (NMFS)** has **review and comment authority** on USACOE 404 and Section 10 permits and has often commented on CMD Coastal Use Permits. The guidance entitled "Guidelines for Proposed Wetland Alteration In the Southeastern United States" provides a point of reference for NMFS field biologists and contractors reviewing permit applications and federal water development projects. The document identifies general environmental concerns and highlights particular considerations for NMFS reviewers.

Hydromodification activity categories to be evaluated include: navigation channels and boat access canals, impoundments and other water-level controls, drainage canals and ditches, and mineral mining/extraction. Navigation channels and boat access canal projects are evaluated using criteria such as recommendations for utilizing natural and existing channels to minimize dredging, use of alignments to avoid sensitive fish and shellfish habitats, designing boat canals to ensure adequate flushing and uniform depths, utilizing construction techniques that minimize turbidity and dispersal of dredged materials, avoidance of altering tidal circulation patterns, or salinity regimes, and avoiding modification of channels known to contain high levels of sediment contamination. Criteria for impoundments and other water-level controls include designing impoundments to accommodate normal access and wetland use by marine fish and invertebrates, designing impoundments to accommodate the continuation of other biological interaction such as nutrient exchange or other important physical and chemical interactions, and discouraging development of projects which propose impounding rivers, bayous and tributaries. Some of the guidelines for drainage canals and ditches include recommending that canals that dewater or cause other adverse wetland impacts not be built, not allowing canals and ditches from upland development to extend or discharge directly into wetlands, encouraging construction of upland retention ponds and other water management features such as sheet-flow diffusers, and requiring that excavated materials resulting from canal dredging and maintenance be placed in uplands or used to restore wetlands. Mineral mining and production (including oil and gas, sand, gravel, shell) has guidelines such as using temporary roadbeds for access instead of canals, working in unvegetated and disturbed wetlands when wetland use is unavoidable, utilizing bridges or culverts for water crossings to prevent alteration of natural drainage patterns, requiring culverts or similar structures be installed and maintained at sufficient intervals to prevent blockage of surface drainage or tidal flow, and requiring mining of mineral resources be located at least 1500 feet from shell reefs, vegetated wetlands or shorelines.

The LDNR/CMD envisions closer coordination with the NMFS regarding review functions and incorporation of CNPCP provisions in their comments. NMFS will be requested to recommend additional special conditions on project reviews, as appropriate. These special conditions would

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reflect the CNPCP's BMPs for hydromodification activities and could be utilized until such time as the nonpoint pollution abatement measures become standard program conditions. It is also envisioned that NMFS, as part of their day to day activities, would watch for opportunities to educate individuals, businesses and corporations, and other contacts within the 6217 management area, on the provisions of the CNPCP, and to report to LDNR/CMD observed noncompliance or developing coastal nonpoint source pollution problems.

U.S. Fish and Wildlife Service

The **U.S. Fish and Wildlife Service (USFWS)** has **review authority** over USACOE 404 permits and Section 10 permits, and is extended a commenting prerogative in the CUP review process. The agency has published a document entitled "Stream Channel Alteration Guidelines" for use by biologists and planners engaged in the evaluation of projects involving stream alterations including channelization, channel reconfiguration, clearing and snagging. Through a proposed memorandum of agreement, the USFWS will be requested to incorporate into their review process, provisions of the approved CNPCP, within the constraints of their existing mandate. It is envisioned that they could play a role in the overall scheme of monitoring and in the education of individuals, businesses, and corporations within the 6217 management area that come into contact with the USFWS in hydromodification projects. They are requested to internally incorporate into existing and future program requirements special conditions reflecting consideration of the CNPCP BMPs, until such time as these pollution abatement measures formally become standard program conditions.

III. MANAGEMENT MEASURES AND BEST MANAGEMENT PRACTICES

Management measures, as defined in section 6217 of the 1990 CZARA, are economically achievable measures to control the addition of pollutants to our coastal waters. These measures reflect the greatest degree of pollutant reduction achievable through the application of the best

available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. All federally-recommended management measures must be addressed in the CNPCP document. **Best Management Practices (BMPs)** are those site-specific, economically feasible methods of implementing the required management measures within agency policy and authority. Louisiana's BMPs were identified after numerous meetings of the CNPCP hydromodification subcommittee. These practices, proposed as most appropriate for Louisiana condition, will be subject to ongoing review by agency contacts, consultants, and the general public.

During the development of the CNPCP, the hydromodification subcommittee was expected to play an integral role in determining the practices most applicable to Louisiana's geography, economy, and environment. This subcommittee was composed of 21 members of various federal, state and local agencies as well as local landowners and land managers. These committee members represent Louisiana "experts" in the field of hydromodification activities. Federal agencies represented include the U.S. Army Corps of Engineers, National Marine Fisheries Service and the Barataria-Terrebonne National Estuary Program. State agencies represented included LDNR (Coastal Management Division and Office of Conservation), LDEQ (Nonpoint Source Pollution Management Program), LDWF, LDOTD and LCES. Parish personnel included a representative of Lafourche Parish's CZM program and a member from the Bayou Lafourche Freshwater District. Large landowners in coastal Louisiana were represented by personnel from Louisiana Land and Exploration, Vermilion Corporation and Continental Land and Fur. Subcommittee members met monthly beginning in March of 1994.

Hydromodification activities include three categories of sources of nonpoint pollution that affect coastal waters: channelization and channel modification, dams, and streambank and shoreline erosion. Each of these activities is discussed in detail below.

Channelization and channel modification describe river and stream channel engineering undertaken for the purpose of flood control, navigation, drainage improvement, and reduction of

channel migration potential. Activities such as straightening, widening, deepening, or relocating existing stream channels, and clearing or snagging operations fall into this category. These terms also refer to the excavation of borrow pits, canals, underwater mining or other practices that change the depth, width, or location of waterways or embayments in coastal areas.

A great majority of the hydromodification activities involving channelization and channel modification consist of maintenance dredging of existing waterways for navigation purposes. Most of this maintenance dredging involves U.S. Army Corps of Engineers projects. The main rivers and bayous annually dredged by the USACOE are as follows: Atchafalaya River, Barataria Bay Waterway, Calcasieu River and Pass, Freshwater Bayou, Gulf Intracoastal Waterway, Houma Navigation Canal, Mermentau River, Mississippi River, and bayous Chene, Boeuf and Black. A total of approximately 64,000,000 cubic yards of material are dredged from these channels annually. Included as an attachment is a total of dredging amounts by waterway performed on an annual basis by USACOE projects. All of these USACOE projects require a consistency determination from CMD before start of construction and thus CMD is included in the planning phase of all such activities.

Oil and gas exploration canals, of which Louisiana has several thousand miles, also require periodic maintenance dredging to allow for oil field site access. There are also numerous local canals in the coastal zone that are maintained for flood control and mosquito control. Louisiana's CMD requires a Coastal Use Permit (and the USACOE a Section 404 Permit) for maintenance dredging of all such canals. In a one year period during 1993 and 1994 the CMD issued a total of 93 permits involving dredge and fill activities for canal and board road maintenance for oil and gas exploration and development. These projects involved over one 189,000,000 cubic yards of dredged material.

Levees are constructed along streams and rivers in coastal Louisiana for purposes of flood control and/or hurricane protection. Since much of Louisiana's coastal zone lies at an elevation of five feet or less, mean sea level, levees are a rather prominent landscape feature in coastal

Louisiana. Construction and maintenance of levees requires some form of authorization from the LDNR/CMD -- either a CUP or Consistency review -- as well as a 404 permit from the USACOE. Levee maintenance requires constant upkeep due to natural and man-made forces causing erosion, scouring, and subsidence. Between November 1, 1993 and October 31, 1994, CMD issued 25 permits for levee projects considered to be "major" and/ or a significant water block. Another 52 permits were issued for ring levees associated with oil and gas production.

The second category of hydromodification activities required to be addressed in the program document is dams. Dams are defined as constructed impoundments that are either 25 feet or more in height and greater than 15 acre-feet in capacity, or 6 feet in height and greater than 50 acre-feet in capacity.

In Louisiana's designated coastal zone and the State's proposed 6217 management area there are five structures meeting the size requirements. These five structures have a median height of 6 feet and the mean height is 6.8 feet. The median volume of the impoundments is 150 acre-feet and the mean volume of the impoundments is 325 acre-feet, ranging between 75 and 800 acre-feet, with that largest volume for a nontypical above-ground oxidation pond of 108 square feet surface area, and not located on any natural drainage channel. These "dams" are low structures, with small hydraulic heads, limited storage area, and no active manipulation of water release, and are often not even situated across a well-defined drainage channel, but are merely concreted spillways over ring levees raised around an oxidation or catfish production pond. **Louisiana intends to seek an exclusion for the dam management measure.** Justification for this exclusion is summarized later in the management measure section, and in the final section of this subchapter.

The final management measure to be included under hydromodification refers to projects associated with streambank and shoreline erosion. By definition streambank erosion refers to the loss of land along nontidal streams and rivers, while shoreline erosion consists of the loss of beach or land in tidal portions of coastal bays or estuaries. Erosion and land loss are well-

documented problems in coastal Louisiana. **Forty percent (40%) of America's coastal marshes are found in Louisiana; yet eighty percent (80%) of the nation's annual coastal land loss occurs here.** Between 1956 and 1978 about 560,000 acres of marsh were lost along Louisiana's coast averaging nearly 40 square miles per year. Today's land loss rates have been calculated at between 25 and 35 square miles per year. This, then, represents a major manifestation of degradation of Louisiana's coastal environments, with so many of our biological resources depending on the coastal wetlands for their very existence.

The factors of wetland loss in coastal Louisiana include both natural phenomena and human activities. Natural causes include wind and wave action of storms and hurricanes, subsidence, and sea level rise. Man-made causes involve land use and hydrology changes: canal and levee system construction, as well as other aspects of oil and gas field development. Intermediate impacts include saltwater intrusion, disruption of natural sediment delivery, and barrier island degradation. Virtually all of these causes and effects are mutually compounding. The USACOE has estimated that between now and the year 2040 nearly 1 million acres (1,000,000) of wetlands will be lost or converted. If the rate of marsh loss is not reduced, the Gulf of Mexico shoreline will advance inland as much as 33 miles in some areas by 2040. Municipal and industrial water supplies will be jeopardized. Coastal communities will be more vulnerable to hurricane tidal surges and flooding. Fish and wildlife and recreational resources will be lost. The land loss problem, then, is real and critical.

A. Channelization and Channel Modification

1. Management Measure for Physical and Chemical Characteristics of Surface Waters

This management measure is intended to be applied by states to public and private channelization and channel modification activities in order to prevent the degradation of physical and chemical characteristics of surface waters from such activities. It applies to any proposed channelization or channel modification projects to evaluate potential changes in surface water characteristics, as

well as to existing modified channels that can be targeted for opportunities to improve the surface water characteristics necessary to support desired fish and wildlife, within the limitations of existing agency authority, policies and funding.

The following programs identified by the CNPCP hydromodification subcommittee directly relate to this management measure: LDNR (CMD Coastal Use Permit), LDEQ (401 Water Quality Certification Program and 319 Nonpoint Source Program), USACOE (404 Permit Program), LDWF (Natural and Scenic Rivers System), and BTNEP (Comprehensive Conservation Management Plan and the FEMA hydrologic modeling of the estuary). The roles that each of these programs will play in the implementation of the CNPCP is explained below.

Coastal use permits (CUPs) issued by CMD are regulated by numerous guidelines dealing with surface water impacts. Guidelines 1.6, 1.7, 3.11, 3.12, 4.1, 5.4, 6.5, 7.1-7.9, 9.1-9.3 and 10.10 impose special conditions on permit applicants on projects affecting surface waters. The CNPCP staff will work with the permit analysts to ensure that all projects affecting the physical and chemical characteristics of surface waters incorporate the appropriate BMPs.

Both the 401 Water Quality Program and the 319 Nonpoint Source Management Program of LDEQ will relate to this management measure. It is envisioned that through a Memorandum of agreement, LDEQ and LDNR/CMD would better coordinate permit review protocols, giving consideration to provisions of the CNPCP, and incorporating additional BMPs into permit requirements as special conditions, when appropriate. It is envisioned that LDEQ's water quality monitoring system may be expanded subject to the availability of additional dedicated resources, or otherwise coordinated with the needs of the CNPCP.

The USACOE 404 permit program regulations also relate to this management measure. Through Memoranda of agreement with all three applicable USACOE districts, the USACOE is requested to internally incorporate provisions of the CNPCP into existing and future USACOE permit requirements as special conditions, until such time as the abatement measures become standard

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permit conditions. This would apply to all projects within the existing coastal zone boundary or state-proposed 6217 management area. It is expected that the USACOE programs, permits, grants and construction activities such as levee building and maintenance dredging within the state-proposed 6217 management area will be consistent with the provisions of the CNPCP.

Louisiana's Natural and Scenic Rivers Program includes several stream segments in the coastal zone and numerous other protected waterbodies immediately inland. Water quality/quantity is one of the criteria applied in evaluating a "Scenic Rivers" permit application. Through a memorandum of agreement, LDWF is requested to coordinate implementation of provisions of the CNPCP along Scenic Rivers, at gravel operations monitored by LDWF, at mining operations on state-owned waterbottoms, and when reviewing and commenting on Coastal Use Permits. They are also requested to incorporate these provisions through special conditions on existing and future permits until such time as these nonpoint pollution abatement measures become standard conditions.

It is envisioned that the Barataria-Terrebonne National Estuary Program would coordinate with the LDNR/CMD through a proposed memorandum of agreement, assisting in the implementing of educational provisions of the CNPCP program. They will also be requested to incorporate provisions of the CNPCP into funding programs as special conditions until such time as these nonpoint pollution abatement measures become standard BTNEP conditions.

Many projects exempt from the referenced LDNR Coastal Use Permit (CUP) will be administered under the Corps of Engineer's 404 permit or the 401 Water Quality Certification. The CNPCP BMPs are expected to be incorporated into permits, and the CNPCP staff will likely have greater input in permit review.

1a. Best Management Practices to be Implemented

1. Evaluate effects of proposed channel modification projects. When appropriate, consider using economically and technically feasible modeling.

2. Consider and evaluate, to the maximum extent practicable under existing agency authority, surface water management practices to ensure streambank protection, levee protection, channel stabilization and flow restrictors, check dam systems, grade control structures, vegetative streambank cover, instream sediment load control, noneroding roadways, and setback levees and floodwalls.

2. Instream and Riparian Habitat Restoration Management Measure

This management measure pertains to surface waters where channelization and channel modification have altered or have the potential to alter instream and riparian habitat such that historically present fish or wildlife are adversely affected. It is intended to be applied to any proposed channelization or channel modification project to determine changes in instream and riparian habitat and to existing modified channels to evaluate possible improvements to instream and riparian habitat.

Programs which will correspond with this measure include the following: LDNR/CMD's Coastal Use Permit, USACOE 404 Permit Program, LDWF Scenic Rivers and permit review process, LDOTD's Standard Specifications for Roads and Bridges guidelines, the National Marine Fisheries Service (NMFS) permit review criteria from the "Guidelines for Proposed Wetland Alteration In the Southeastern United States", the USFWS review document entitled "Stream Channel Alteration Guidelines" and the BTNEP. The CUP, 404 permit, LDWF programs and the BTNEP have already been previously discussed. The guideline review document for NMFS lists the following criteria for their review of permit applications and federal water-development projects affecting instream and riparian habitat restoration: navigation channels and boat access canals should be located to avoid sensitive habitats such as shellfish beds, finfish and invertebrate nurseries, submerged aquatic vegetation, and emergent wetlands; permanent dredged material disposal sites should be located in non-wetland areas; require that construction techniques minimize turbidity and impacts to submerged grasses and shellfish beds; recommend that dredged spoil be utilized for marsh creation; require excavated materials for drainage canals

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and ditches be utilized to restore wetlands; require oil and gas projects be restored to preproject conditions by restoring elevations and planting indigenous vegetation whenever practicable; prohibit mining of mineral resources from within 1500 feet of shell reefs or vegetated wetlands; and require mitigation for the unavoidable loss of wetland habitats as necessary.

The USFWS has permit review commenting prerogatives regarding LDNR/CMD CUPs, and deeper review authority over 404 and Section 10 permits issued by the USACOE. Their field biologists perform many on-site investigations and inspections for both agency permit applications. The guideline document entitled "Stream Channel Alteration Guidelines" published by the Service includes policy and guidelines for the planning and review of a wide variety of stream alteration projects. This guideline document recommends review criteria for the following types of projects: clearing of riverine wildlife habitat; elimination of aquatic life niches in number and diversity for desirable species; filling of valuable wildlife habitat areas with spoil; drainage of wetland wildlife and aquatic habitats; loss of seasonal overflow to wetlands; increased flooding and erosion downstream; and other such projects.

Many projects exempt from the LDNR Coastal Use Permit (CUP) will be administered under the Corps of Engineer's 404 permit or the 401 Water Quality Certification. The CNPCP BMPs are expected to be incorporated into permits, and the CNPCP staff will likely assume a greater role in permit review.

2a. Best Management Practices to be Implemented

1. Use biological methods/models to assess the biological impacts of new channelization projects. Assessments such as Habitat Evaluation Procedures (HEPs), Rapid Bioassessment Protocols (RBPs), Rosgen Stream Classification System, Wetland Value Assessment or other similar assessment methods should be utilized to the maximum extent practicable to evaluate both physical and biological attributes of the stream system.

2. Evaluate BMPs during the planning phase of a project to the maximum extent practicable.
3. Design and implement an operation and maintenance program to prevent future adverse impacts instream or to riparian habitat. Where appropriate, one or more of the following should be included in the program: streambed protection, levee protection, channel stabilization and flow restrictions; check dams, vegetative cover, instream sediment load control, noneroding roadways, and setback levees and flood walls.

B. Dams

Dams are defined as constructed impoundments that are either 25 feet or more in height and greater than 15 acre-feet in capacity, or 6 feet in height and greater than 50 acre-feet in capacity. In the national context, reasons for siting and constructing dams include flood control, power generation, irrigation, livestock watering, navigation, and municipal water supply. In the national context, a variety of impacts can result from the siting, construction and operation of these facilities.

Louisiana is requesting an exemption for the dams management measures. The reasoning behind this request has been sketched earlier in this Section IV. In summary, Louisiana's "dam-like structures" near coastal waters are **few in number**, with just five in the existing coastal zone; the structures tend to be **small**, most just barely qualifying over the size threshold; the structures tend to be **nontypical in terms of configuration**, sometimes consisting of a hardened spillway over a levee around a catfish pond or oxidation pond; the structures tend to be **nontypical in terms of topographical situations** not necessarily dependent upon nor significantly impacting the hydrology and ecology of permanent streams; the few structures are passive earth movings, **not actively manipulated for variable water releases**; and there is **no flurry of dam**

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construction known to be taking place, nor anticipated in relatively flat South Louisiana. Should a large scale and/or potentially ecologically damaging dam be proposed for siting and construction, Louisiana can and will ensure that management measures for erosion and sediment control, chemical and pollutant control, and surface water quality and instream and riparian habitat will be enacted through CMD's CUP process, its Consistency determination process, or in comments to the USACOE on the 404 permit application. Additional comment opportunities may be coordinated with partner agencies such as the LDOTD or the NRCS, through proposed memoranda of agreement, still under discussion at this time.

C. Streambank and Shoreline Erosion

1. Management Measure for Eroding Streambanks and Shorelines

This management measure is intended to be applied to eroding shorelines in coastal bays and to eroding streambanks in coastal rivers and creeks. The measure states that where streambank or shoreline erosion is a nonpoint source pollution problem, streambanks and shorelines should be stabilized. Vegetative methods are preferred unless more cost effective structural methods can be employed. Streambank and shoreline features must be protected by means incorporating nonpoint source pollution BMPs.

Virtually all of the programs previously listed have relevance for implementation of streambank and shoreline erosion BMPs. For the existing coastal zone, LDNR/CMD's CUP guidelines require that permits, if approved, be conditioned to avoid the following impacts: destruction or adverse alterations of streams, wetlands, tidal passes, inshore waters and waterbottoms, beaches, dunes, barrier islands, and other natural biologically valuable areas or protective coastal features; adverse alteration or destruction of unique or valuable habitats; adverse alteration or destruction of shoreline access points, designated recreation areas, or other areas of public use and concern; land loss, erosion and subsidence; designing, planning and building linear facilities to prevent

bank slumping and erosion; requiring best practical techniques for site restoration and revegetation for linear facilities; requiring spoil disposal areas be designed and constructed to retain the spoil at the site and reduce shoreline erosion; require non-structural methods of shoreline protection be used to the maximum extent practicable; requiring areas modified by surface alteration activities be revegetated and restored to preproject conditions; prohibiting surface alterations on barrier islands, beaches, cheniers or levees; encourage use of sediment deposition systems, water control structures and freshwater diversions to restore wetland areas; and require oil, gas and other mineral activities be designed, constructed and maintained to avoid erosion.

It is envisioned that commenting agencies like the NMFS, USFWS, LDWF and LDEQ should, by memoranda of agreement, agree to incorporate provisions of the CNPCP into their existing and future program requirements as special conditions until such time as the BMPs become standard program conditions. The LDOTD specifications document requires contractors to adhere to the following guidelines: require all work in, over or adjacent to navigable waters or wetlands be conducted in accordance with rules and regulations of USACOE and Coast Guard; require the protection of the project and adjoining properties from soil erosion by effective and continuous erosion control methods; require compliance with all federal, state and local laws and regulations controlling pollution of the environment; require strict limits for clearing and grubbing operations; require temporary erosion control on the project and in areas outside the right-of-way where work is accomplished in conjunction with the project; require placement of slab sodding, topsoil, vegetative mulch, seeding, fiberglass roving, curled wood matting, erosion control covering, and other erosion control systems to reduce environmental impacts. Finally, the memorandum of agreement to be worked out between LDNR/CMD and the BTNEP proposes that they incorporate provisions of the CNPCP into grant proposals and programs as special conditions, until the applicable BMPs become standard conditions. In fact, hydromodification activities and habitat loss or modification are two of the priority problems identified in the BTNEP plan.

1a. Best Management Practices to be Implemented

1. Restore damaged habitat, to the maximum extent practicable, along shorelines and streambanks utilizing soil bioengineering and other vegetative techniques. Examples of bioengineering practices include livestaking, live fascines, brushlayering, brush mattressing, branch packing, joint planting, and live cribwalls.
2. Use structural engineering practices for areas where marsh creation and bioengineering techniques are ineffective or unfeasible. Best practical techniques utilizing sound engineering practices will be required.
3. For existing structures being flanked or in danger of failing, utilize erosion control methods such as return walls, toe protection, or other appropriate best practical techniques and ensure that such structures are properly designed and constructed.
4. Design and construct all structural methods so that they do not transfer erosion energy to surrounding shorelines.
5. Where applicable, establish and enforce no-wake zones to reduce erosion potential from boat wakes utilizing existing authorities and/or agencies.
6. Establish setbacks to minimize land disturbance to streambanks and shorelines.
7. Upslope drainage from development should, to the maximum extent practicable, be directed away from banks and slopes to avoid accelerating bank erosion.

IV. EXEMPTIONS REQUESTED

The only exemption Louisiana is requesting in the Hydromodification Section of the CNPCP, is for the subcategory of dams, and a discussion for this request follows.

Figure No. IVE-1 on the following page lists the "dams" located in the coastal zone. There are five structures within this area having an average height of approximately 6.8 feet and an average capacity volume of 325 acre-feet. They are associated with private lakes and ponds and are primarily used for fish farming, irrigation purposes, livestock watering, and even sewage oxidation treatment.

The structures listed can be characterized as low dams with small hydraulic heads, limited storage area, and no active manipulation of lake levels. The amount of water passively released from the structures depends on the amount of water entering the impoundment from upstream sources.

According to LDEQ's Water Quality Inventory Plan of 1994 none of the lakes or ponds, nor their nearest stream segments, have been identified as not fully supporting their designated uses. Within the coastal zone there are no dams reported as contributing to the impairment of surface waters according to the LDEQ 1994 Water Quality Inventory Plan. None of the "dams" were constructed solely for either flood control or power generation. The siting of these dams did not result in the inundation of wetlands, riparian areas, and fastlands in upstream areas of any waterway. Neither have they resulted in any known significant disruption of fresh inflow into any downstream wetlands or riparian areas. None of them impede or block migration routes of any fish. Releases from the dams do not substantially change the timing and quantity of freshwater inputs into coastal waters, nor do they lead to reduced downstream flushing. Outflows from dams do not result in sediment deposition in the downstream channel, nor do they result in increased erosion of the streambed and scouring of a channel below the dam. Finally, reservoir releases are not known to significantly alter the water temperature or lower the dissolved oxygen levels in downstream portions of the waterway.

Figure No. IVE-1

Dams Located in State-Recommended 6217 Management Area

<u>Parish</u>	<u>Dam Name</u>	<u>Hydraulic Height(ft.)</u>	<u>Max. Storage(acre ft.)</u>
Livingston	Lobell Farms	6	150
Livingston	Oxidation Pond No. 2	6	800
Orleans	La No Name 94	9	500
St. Tammany	Huey P. Long Fish Hatchery	7	75
Tangipahoa	Hoovers Pond	6	100

Design, construction, operation and maintenance of dams is, by law (LA-RS 38:21-28) under the jurisdiction of the Chief Engineer of the LDOTD, Office of Public Works. The USACOE also has authority to regulate dams in intrastate waters in its Section 9 of the Rivers and Harbors Act. *No person, partnership, association, corporation, agency or political subdivision may construct a dam or make, construct or permit to be made any change in a dam without first obtaining the written consent or permit of the chief engineer.*

As required in the Act, the chief engineer has established standards for the construction, modification, operation and maintenance of dams and to administer and enforce its provisions. These guidelines are entitled "Louisiana Dam Safety Program" and were adopted in July 1994. They require the applicant to receive a permit from LDOTD prior to constructing any new impoundment or commencing structural modifications to existing structures. Once permitted, the designs of an approved professional civil engineer will be approved by the LDOTD chief engineer. The completed design must conform to nationally recognized standards and must state the intended design life of the structure and the operations and maintenance procedures necessary to ensure that the structure will function as designed for its stated design life. These designs include both hydrology/hydraulics as well as structural and geotechnical. During construction periodic inspections are made by representatives of LDOTD. After construction the dam owner is responsible for certifying, through properly documented records, to LDOTD that the required periodic inspections are being performed. The guidelines also require an Emergency Preparedness Plan for all dams. The LDOTD then periodically inspects all dams to assure compliance. If an inspection by LDOTD reveals that a dam is unsafe or in danger of becoming unsafe the owner is required to take whatever action is necessary to restore the dam to its design condition. All dams constructed prior to establishment of the guidelines will be reviewed and required to eventually meet program standards, including needed repairs or modifications. The enforcement section in the Act states that whoever violates any of the provisions is guilty of a misdemeanor and will be fined not more than \$500 or be imprisoned for not more than six months, or both.

Construction of a dam may require a permit from the USACOE (statewide) and LDNR/CMD (in the coastal zone). In the existing coastal zone the dam will be conditioned in the Coastal Use Permit to incorporate nonpoint pollution control provisions. Through the proposed MOAs requested of the USACOE districts, it is proposed that permits be conditioned to include nonpoint source provisions, as appropriate and feasible within the constraints of the USACOE mandate. Through the MOA proposed to the LDOTD, it is requested that they condition their permits to incorporate CNPCP considerations. Thus for any future dams to be constructed substantial safeguards are in place to regulate and enforce the design, siting, construction, operation and maintenance of such structures should they threaten coastal waters with increasing nonpoint pollution.

V. ENFORCEABLE MECHANISMS

As previously discussed in Section B, hydromodification activities are enforced through several regulatory programs. Coastal use permits and Section 404 and Section 10 permits by the USACOE will be the main regulatory tools utilized to enforce management measures for hydromodification activities. Hydromodification activities requiring a coastal use permit include levees, linear facilities, projects involving dredged spoil deposition, shoreline modifications, surface alterations, projects involving hydrologic and sediment transport modifications, waste disposal projects, and projects for oil, gas and other minerals. The CMD Permit staff will be given copies of all hydromodification BMPs and will begin incorporating them as special conditions on CUPs once the program is approved. Monitoring for compliance for BMPs will be enforced through follow-up investigations performed by CMD staff, principally by field investigators and CNPCP staff. Noncompliance would be handled by the CMD Enforcement Section. The Coastal Nonpoint Pollution Control Program strongly endorses the concept of disbursing incentives in order to get the BMPs on the ground, and the CNPCP staff is expected to be involved in the identification of alternative funding sources and helping to match resources with recipients.

The USACOE Section 404 and Section 10 permits are required for most activities involving disposal of dredged or fill material into navigable waters. Permits are required for bridges, dams, dikes, or causeways over or in any port, roadstead, haven, harbor, canal, navigable river, or other navigable water of the U.S. It also requires a permit for wharves, piers, dolphins, booms, weirs, breakwaters, bulkheads, and jetties. Monitoring for compliance for permit conditions is regulated through periodic inspections (flights and on-site investigations) by enforcement staff. The MOA proposed to be entered into with the USACOE would require special conditions for hydromodification BMPs to be included in the permit and would require monitoring and compliance reporting, to the extent that resources are made available to enable this increase in effort. The USACOE permits are enforced by criminal and civil penalties including fines. The CMD works closely with USACOE personnel on permitting matters and will continue to do so in the future for all hydromodification BMPs.

The LDOTD guideline document specifically lists rules and regulations for contracts involving bridges, roadways, embankments, dredging, spoil disposal, and other work in Louisiana. Both the project site and adjoining properties must be protected from soil erosion and siltation, and waters and wetlands must be protected from pollution. A 100% surety or performance bond requirement ensures that all contract specifications will be met. Monitoring and enforcement are routinely performed throughout all phases of construction for compliance checks. The proposed MOA to be negotiated between LDNR and LDOTD would require the stated BMPs be included in project specifications, as appropriate, and compliance monitored and reported, within the constraints of available resources.

Hydromodification activities along LDWF Scenic Rivers are regulated by "Scenic Rivers" permits. Prohibited activities on these streams include channelization, channel realignment, clearing and snagging, impoundments, and clear-cutting of timber within 100 feet of the low water mark of the stream. Permit applications are reviewed individually, and most involve on-site inspections. Enforceable mechanisms include fines, revocation of permit, civil proceedings in court, and

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injunctions or other relief. The proposed MOA to be worked out between LDNR and LDWF would require the addition of special conditions for BMPs for "Scenic Rivers" permits.

The CRD in LDNR designs and constructs projects in coastal Louisiana for enhancing, restoring, conserving and/or creating vegetated wetlands. Contractors for these projects are required to post performance bonds to ensure compliance with all plan specifications. All projects are monitored and inspected regularly by CRD biologists and engineers. An internal arrangement between CRD and CMD within LDNR is expected to ensure that BMP provisions will be incorporated into all future projects once the program is implemented.

Entities including LDEQ's Water Quality Certification section, NMFS, and USFWS have review and comment responsibilities on CUP's and USACOE 404 and Section 10 permits. The LDNR/CMD expects to ultimately have some form of MOA worked out with each of these agencies calling for the incorporation of appropriate BMPs as special conditions within their review comments. All of these agencies routinely inspect projects for permit condition compliance as well as overall outcomes, and it is envisioned that each could relay reports of noncompliance to LDNR, within the constraints of available resources.

It is reasonable to expect that within the limits of available resources, nonregulatory programs such as the BTNEP and LDEQ's Nonpoint Source Pollution Management Program would strive to inform their personnel, contractors, and contacts of the provisions of the CNPCP, in order to advance the common water quality goals shared by the three programs. There appears to be substantial opportunity for the three programs to effectively coordinate their respective public education and outreach efforts.

IVF. LOUISIANA

**MANAGEMENT MEASURES FOR WETLANDS, RIPARIAN AREAS,
AND
VEGETATED TREATMENT SYSTEMS**

Coastal Management Division

Louisiana Department

of

Natural Resources

Louisiana's Coastal Nonpoint Pollution Control Program

**WETLANDS, RIPARIAN AREAS, AND VEGETATED TREATMENT
SYSTEMS**

I. EXISTING NPS PROGRAMS: REGULATORY AND NONREGULATORY

Louisiana has a number of existing nonpoint source programs in place to minimize the effects that nonpoint source pollution has on the state's coastal waters. These active NPS programs can be divided into regulatory programs (i.e., those programs with policies that can be implemented using enforceable policies and mechanisms) and nonregulatory programs (i.e., those programs that are voluntary in nature and have other types of mechanisms for enforcement and implementation).

The following will be a brief look at both types of programs that have been identified as being integral to the success of nonpoint source pollution program implementation in Louisiana.

REGULATORY PROGRAMS:

Coastal Use Permit Program

The Coastal Management Division (CMD) of the Louisiana Department of Natural Resources (LDNR) is charged with implementing the Louisiana Coastal Resources Program under authority of the Louisiana State and Local Coastal Resources Management Act of 1978 (Act 361, LA R.S. 49:214.21).

Under this authority, the Coastal Use Permit Program (CUPP) has been established by the CMD to help ensure the management and reasonable use of the state's coastal wetlands.

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The CUP Program has oversight for land use activities in the designated coastal zone that involve dredging, fill or other earth-moving or drainage impacting activities. Excluded are traditional agricultural and silvicultural operations, as well as activities in leveed fastlands, in areas above the 5-foot contour interval, and on lands of federal jurisdiction.

Activities that may require a coastal use permit include dredge and fill projects, sewage treatment plant siting, waste-water discharge, drainage projects, pumping facilities, marsh management activities, water level control, levee construction, solid waste dump siting, roads and bridges, park siting, freshwater diversion, and mosquito control.

The CUP program carries the authority to enforce either legal or administrative procedures, including levying fines, issuing cease and desist orders, and requiring mitigation or restoration.

The CMD Enforcement and Monitoring section monitors permitted activities in the Coastal Zone for compliance with permit conditions, and patrols by air, land, and water the entire Coastal Zone for unauthorized activities.

Louisiana Natural and Scenic Rivers System Permit

The Louisiana Natural and Scenic Rivers System is one of the Nation's largest. It encompasses 51 streams or stream segments and is over 1,500 miles in length. There are 9 Scenic rivers within the present boundaries of the Louisiana Coastal Zone.

The System was proposed in the late 1960's and was brought into existence in the early 1970's with the passage of the Louisiana Natural and Scenic Rivers Act (La.Rev.Stat. 56:1840 et seq.). The Act established a regulatory program and empowered the Secretary of the Louisiana Department of Wildlife and Fisheries (LDWF) to administer the System through regulation and permits.

Because the Scenic Rivers System has come under increasing pressure from a variety of interests, the need for improved management and regulation has become critical.

Therefore, certain activities in the system have been prohibited by the state of Louisiana.

Also, a permitting system has been established to regulate other activities which may occur on the river system.

Prohibited activities include: (1) channelization of the stream, (2) channel realignment, (3) clearing and snagging, (4) impoundments of any type, and (5) commercial clear-cutting of timber within 100 feet of the low water mark.

Any other activity that may have a direct, significant, ecological impact on the stream or its tributaries or distributaries must be permitted by the Department of Wildlife and Fisheries. These activities include, but are not limited to: (1) bridge, pipeline, and powerline crossings; (2) bulkheads, piers, docks, and ramps; (3) waste water discharges; and (4) land development adjacent to the stream.

The Scenic Rivers System Permit is issued by the LDWF with a multi-agency review by the LDWF, Office of State Planning and Budget, Louisiana Department of Environmental Quality (LDEQ), and the Louisiana Department of Agriculture and Forestry (LDAF).

This is a regulatory program but is limited only to **Scenic Rivers or their tributaries or distributaries.**

Enforcement policies include a permitting system, criminal penalties with fines and civil penalties with fines and adjudication. Monitoring is done through surveillance, site investigations and inspections, and citizen complaints.

The Louisiana Department of Natural Resources proposes to enter into a Memorandum of Agreement (MOA) with the LDWF to oversee implementation of provisions of the CNPCP, to monitor and educate staff, contacts and permittees on the provisions of the

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program, and to report noncompliance to the LDNR on at least a quarterly basis. The LDWF will agree to incorporate these provisions as special conditions to their Scenic Rivers Permits and other projects until such time as these nonpoint pollution abatement measures become standard permit conditions.

U.S. Army Corps of Engineers 404 Permit Program

The Department of the Army regulatory program is one of the oldest in the Federal government. The legislative origins of the program are the Rivers and Harbors Acts of 1890 (superseded) and 1899 (33 U.S.C.401 et seq.). Various sections establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States.

In 1972, amendments to the Federal Water Pollution Control Act added what is commonly called Section 404 authority (33 U.S.C.1344) to the program. The Secretary of the Army, acting through the Chief of Engineers, is authorized to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into waters of the United States at specified disposal sites. Selection of such sites must be in accordance with guidelines developed by the Environmental Protection Agency in conjunction with the Secretary of the Army. These guidelines are known as the 404(b)(1) Guidelines. The Federal Water Pollution Control Act was further amended in 1977 and given the common name of "Clean Water Act."

Section 10 (33 U.S.C.403) contains the most frequently exercised authority in the Rivers and Harbors Act. Section 10 covers construction, excavation, or deposition of materials in, over, or under navigable waters, or any work which would affect the course, location, condition, or capacity of those waters. Navigable waters in the River and Harbors Act of 1899 are defined (33 CFR 329) as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to

use to transport interstate or foreign commerce."

The Clean Water Act uses the term "navigable waters" which is defined (Section 502(7)) as "waters of the United States, including the territorial seas." Section 404 jurisdiction then is defined as encompassing Section 10 waters plus their tributaries and adjacent wetlands and isolated waters where the use, degradation or destruction of such waters could affect interstate or foreign commerce.

The discharge of dredged or fill material into waters of the United States requires a Section 404 permit. This includes return water from dredged material disposed on the upland and generally any fill material (e.g., rock, sand, dirt) used to construct fast land for site development, roadways, erosion protection, etc.

Normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices are exempt under the 404 permitting process {CWA, Sec404(f)(1)}. However, forestry activities in designated wetland areas may require a federal permit. Nonpoint source silvicultural activities related to road construction may involve point source discharges of dredged or fill material and also may require a Section 404 permit {LAC 33:IX.301(M)(2)(a)}.

The federal 404 permit requires a 401 Water Quality Certification issued by the Louisiana Department of Environmental Quality (LDEQ). This is a regulatory program administered by the state of Louisiana. The 401 Water Quality Certification's recommendations are incorporated into the Section 404 permit, and is then monitored through the USACOE's federal program as conditions of the federal permit.

A proposed Memorandum of Agreement (MOA) should be entered into with the Corps districts (New Orleans, Galveston, and Vicksburg) in which the Corps will agree to

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include BMPs into their regulatory process, monitor and enforce the required BMPs and submit noncompliances to LDNR on a quarterly basis.

NONREGULATORY PROGRAMS:

Agricultural Conservation Program

The Agricultural Conservation Program (ACP) is a national program available to all agricultural producers to implement practices designed to protect the soil and reduce the pollution of water, air, and land from agricultural or silvicultural nonpoint sources. Cost-sharing is available for planting trees and shrubs and improving timber stands for protection against wind and water erosion and to provide trees for timber production. In Louisiana, up to 50 percent cost-share may be provided to establish, regenerate, or improve forest stands.

The program was authorized in the Soil Conservation and Domestic Allotment Act, approved February 29, 1936, as amended. It is administered by the Consolidated Farm Services Agency (CFSA, formerly the ASCS), the Natural Resources Conservation Service (NRCS), and the Louisiana Office of Forestry (LOF). It is a nonregulatory program but under certain long-term agreements, producers must agree to maintain conservation practices for a specified number of years. Those who fail to do so are required to refund all or part of the Federal funds provided for installation of the practice.

Since 1991, there has been an increase of 63 individual participants in the ACP with nearly 1,000 new acres being taken into the program in the Louisiana Coastal Zone and adjoining parishes.

A proposed Memorandum of Agreement (MOA) is expected to be entered into between the Louisiana Department of Natural Resources and the CFSA in which the CFSA will

agree to coordinate implementation of provisions of the approved Louisiana Coastal Nonpoint Pollution Control Program, to monitor and educate the individuals, businesses, and corporations requiring CFSA cooperation within the CNPCP management area on the provisions of the approved CNPCP, and to report noncompliance to the LDNR at least quarterly.

Conservation Reserve Program (CRP)

The Conservation Reserve Program offers long-term rental payments and cost-share assistance to establish permanent vegetative cover on cropland that is highly erodible or contributing to a serious water quality problem. The program is authorized by the Food Security Act of 1985 (PL 99-198) as amended by the Food, Agriculture, Conservation, and Trade Act of 1990 (PL 101-624). A conservation plan must be developed and approved by the local conservation district for accepted acreage. In Louisiana the program is implemented by the Consolidated Farm Services Agency (CFSA), the Natural Resources Conservation Service (NRCS), and the Louisiana Office of Forestry (LOF). The CRP is a nonregulatory program but certain eligible conservation practices such as tree planting require "useful life easements" in which the landowner receives rental payments but must maintain the conservation practice for the entire easement period.

As of 1994, over 144,000 acres in Louisiana have been contracted into the Conservation Reserve Program with 79,000 of these acres being planted in trees. In Louisiana's Coastal Zone and adjacent parishes over 24,000 acres have been accepted into the program.

Louisiana Department of Environmental Quality Nonpoint Source Management Program

Section 319 of the Clean Water Act (PL 100-4, February 4, 1987) was enacted to specifically address problems attributed to nonpoint sources of pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the Nation's

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waters (Sec.101; PL 100-4). It introduces the Nonpoint Source Management Program (PL 100-4) which instructs the Governor of each state to prepare and submit a Management Program for reduction and control of nonpoint source pollution from nonpoint sources into navigable water within the State by implementation of a four year management plan.

In response to this federal law, the state of Louisiana passed Revised Statute 30:2011, signed by the governor in 1987 as Act 272. This law directed the Louisiana Department of Environmental Quality (LDEQ), designated as the lead agency for the NPS program, to develop and implement a NPS Management Program. The NPS Management Program was developed to facilitate coordination with appropriate state agencies including, but not limited to, the Louisiana Department of Natural Resources (LDNR), the Louisiana Department of Wildlife and Fisheries (LDWF), the Louisiana Department of Agriculture and Forestry (LDAF) and the state Soil and Water Conservation Committee, in those areas pertaining to their respective jurisdictions.

The purpose of the Nonpoint Source Management Program is to describe the implementation strategy which the State of Louisiana has taken for implementation of the program. The management strategy is based on interagency cooperation and coordination of all State and Federal agencies in Louisiana who have nonregulatory or regulatory programs which provide enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects that can be utilized to implement Best Management Practices (BMPs).

The primary objective of the NPS Management Program is to implement those BMPs that reduce the level of nonpoint source pollution in the surface and ground waters of the State. In addition to this BMP implementation, educational programs are held at the local level in order to educate people about nonpoint source pollution problems, and what BMPs are recommended by state and federal agencies to correct these problems.

Louisiana's Stewardship Incentive Program (SIP)

The Forest Stewardship Program is a nationwide program designed to encourage and assist non-industrial private landowners in more actively managing their forest resources. Under the program, a Forest Stewardship Management Plan is prepared, specifically designed to enhance and manage all of the natural resources of the landowner's forestland. An important environmental benefit of this management plan is clean water production.

The Stewardship Incentives Program (SIP) offers financial assistance to landowners participating in the Forest Stewardship Program. SIP provides cost-share assistance to help the landowner establish the practices prescribed in the Forest Stewardship Management Plan.

Eligibility for SIP requires non-industrial landowners to own a minimum of 10 forested acres, have the above mentioned management plan, and agree to maintain cost-shared practice for no less than 10 years. There is an acreage limit of no more than 1,000 acres of nonindustrial private forestland per landowner but a waiver may be approved for this requirement.

Objectives of SIP include reforestation of non-stocked, under-stocked and eroding forestland; habitat improvement for wildlife and fisheries; active use of Best Management Practices (BMPs) to maintain, enhance, and protect site productivity; and the protection of threatened and endangered species.

In Louisiana the Stewardship Incentive Program is a statewide, nonregulatory program implemented by the Louisiana Office of Forestry (LOF) and the Natural Resources Conservation Service (NRCS). It presently has a limited participation but with 100% compliance where management practices are installed. The Forest Stewardship

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Management Plan required for participation in the Stewardship Incentives Program is a site specific plan and therefore addresses wholly or in part 6217 (g) management measures particular to the management situation. The plan considers long-term management of:

- 1) forest health,
- 2) fire hazard,
- 3) timber and wood products,
- 4) soil and water quality
- 5) **riparian and wetlands,**
- 6) wildlife and fish habitat,
- 7) outdoor recreation and aesthetics,
- 8) threatened and endangered species, and
- 9) cultural and historic areas.

Reference to Best Management Practices must be made for all silvicultural practices.

Cost-sharing is available for certain SIP practices. These practices address specific (g) management measures. SIP Practice 6 is Riparian and Wetland Protection and Improvement. The purpose of this practice is to protect, restore, and improve **wetlands and riparian areas**, reduce sedimentation, reduce streambank degradation, improve **water quality** and restore productivity. This practice addresses components of the 6217 (g) management measures for protection and restoration of wetlands and riparian areas that provide a significant NPS abatement function.

Recommended Forestry Best Management Practices

The Recommended Forestry Best Management Practices for Louisiana prepared by the Louisiana Forestry Association (LFA) in cooperation with the Louisiana Association of Consulting Foresters, Louisiana Cooperative Extension Service, Louisiana Department of Wildlife and Fisheries, Louisiana Office of Forestry, Louisiana Society of American Foresters, Soil Conservation Service, and the U.S.D.A. Forest Service are nonregulatory practices intended to inform forest landowners, managers, and timber harvesters of

recommended practices concerning silvicultural operations. Many of these Best Management Practices (BMPs) are applicable to the protection of wetlands and riparian areas that provide a significant NPS abatement function.

A copy of the *Louisiana Recommended Forestry Best Management Practices* are included as an attachment to the Forestry section of the 6217 document.

Water Bank Program (WBP)

The Water Bank Program applies to **wetlands** and is designed to conserve surface water; reduce runoff, soil, and wind erosion; contribute to flood control; improve water quality; and improve subsurface moisture. It was authorized by the Water Bank Act which was passed by Congress December 19, 1970, and amended January 2, 1980. The Water Bank Program is a cost-share, nonregulatory program in which landowners receive annual payments for conserving and protecting wetlands from practices which may destroy the character of the wetland.

Land eligible for the program must be privately owned inland fresh wetlands which are suitable for the nesting, breeding, or feeding of migratory waterfowl. In Louisiana the program is statewide and administered by the Consolidated Farm Services Agency (CFSA) and the Natural Resources Conservation Service (NRCS).

As of January 31, 1993, thirty-seven landowners have been admitted to the Water Bank Program in Louisiana's Coastal Zone and adjacent parishes. A total of 15,739 wetland acres, not including an additional 1,458 adjacent acres, have qualified for admission into the program.

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Wetland Reserve Program (WRP)

The Food Security Act of 1985 (P.L. 99-198) as amended by the Food, Agriculture, Conservation, and Trade Act of 1990 (P.L. 101-624) authorized the Wetlands Reserve Program (WRP). The WRP is a voluntary, cost-share program to aid landowners in **restoring and protecting wetlands**. The restoration of wetland hydrology and vegetation will restore the functions and values of wetlands for migratory birds and other wildlife habitat and improve water quality. To participate in the WRP, landowners must grant a permanent easement to the United States Department of Agriculture (USDA) ensuring protection of the wetland in return for a WRP payment.

A Wetland Reserve Plan of Operations (WRPO) is developed for this easement by the Natural Resources Conservation Service (NRCS) and the Fish and Wildlife Service (FWS) which mandates practices to restore the functional values of the wetland. The easement area is to be periodically inspected to ensure that it is properly managed and maintained as required in the WRPO. Violations of the easement may result in the owner being required to refund all or part of the payment made with interest.

Louisiana's statewide program is implemented by the Consolidated Farm Services Agency (CFSA), NRCS, FWS, LA Cooperative Extension Service (CES), Louisiana Office of Forestry (LOF), and Soil and Water Conservation districts. Technical services are provided by the NRCS, FWS, and LOF.

The first Wetland Reserve Program signup held in 1993 resulted in 37 easements being filed from thirteen parishes. This amounted to 11,356 easement acres being included in the program. Of this total, 915 acres was in the Louisiana Coastal Zone and adjacent parishes.

The second signup includes 23 Louisiana parishes with 320 intentions on file amounting to

80,587 intention acres. Of these 80,000 plus acres, 5,900 acres are in Louisiana's Coastal Zone and adjacent parishes.

II. WETLANDS, RIPARIAN AREAS, AND VEGETATED TREATMENT SYSTEMS MANAGEMENT MEASURES

A. Management Measure for Protection of Wetlands and Riparian Areas.

The applicability statement for this management measure states that it is intended to be applied by States to protect wetlands and riparian areas from adverse nonpoint source pollution impacts. The purpose of the management measure is to protect the existing water quality improvement functions of wetlands and riparian areas by establishing a set of practices that maintain the function of these areas and prevents adverse impacts to areas serving a nonpoint source abatement function.

Louisiana addresses Management Measure (A.) and its accompanying management component by the use of various voluntary best management practices and by effective enforceable policies and mechanisms that are in place and being actively enforced in the state's coastal zone/proposed 6217 management area.

- 1.) "Protect from adverse effects wetlands and riparian areas that are serving a significant NPS abatement function and maintain this function while protecting the other existing functions of these wetlands and riparian areas as measured by characteristics such as vegetative composition and cover, hydrology of surface water and ground water, geochemistry of the substrate, and species composition."**

ENFORCEABLE POLICIES:

The Louisiana State and Local Coastal Restoration Management Act (LA R.S. 49:214.21-214.41) is the state's main regulatory authority for the protection of wetlands and riparian areas in the coastal zone. Under the SCLRMA land use activities in the designated coastal zone that involve dredging, fill, or other earth-moving or drainage impacting activities require a coastal use permit (CUP). Guidelines incorporated into the permit require that all uses and activities in the coastal zone, in order to avoid adverse impacts, shall be planned, sited, designed, constructed, operated and maintained to avoid to the maximum extent practicable, significant destruction or adverse alteration of streams, **wetland**, tidal passes, inshore waters and water bottoms, beaches, dunes, barrier islands, and **other natural biologically valuable areas or protective coastal features** (LAC 43:I.701, CUG 1.7e.). Guideline (6.8) further states that any surface alterations occurring in the coastal zone, shall, to the maximum extent practicable, be located away from critical wildlife areas and **vegetation areas**. The CUP program is a regulatory program and carries the authority to enforce either legal or administrative procedures, including levying fines, issuing cease and desist orders, and requiring mitigation or restorations. The CUP itself can be conditioned with best management practices to ensure their use in coastal activities and it will serve as an enforceable mechanism to ensure implementation of this management measure.

The Louisiana Coastal Wetlands Conservation and Restoration Act (LA R.S. 49:214.1-214.5) was created to be used to implement a program for coastal wetlands conservation and restoration in order to reduce if not eliminate the catastrophic rate of coastal land loss in Louisiana. The main focus of the program is to reduce coastal land loss through the planning, design, and completion of projects and programs designed to **conserve, enhance, restore and create vegetated wetlands**. The program is regulatory in nature in that contractors for construction projects are required to post performance bonds to

ensure compliance of all plans, specifications, and guidelines.

Statewide, including the coastal zone, the Natural and Scenic Rivers Act (La. Rev. Stat. 56:1840 *et seq*) protects riparian areas along rivers designated as natural and scenic rivers. This regulatory program prohibits the following activities on all scenic streams: channelization; channel re-alignment; clearing and snagging; impoundments of any type; and commercial clearcutting of timber within 100' of the low water mark. Any other activity that may have a direct, significant, ecological impact on the stream **or its tributaries or distributaries** is subject to regulation by permit by the Department of Wildlife and Fisheries.

The U.S. Corps of Engineers Section 404 permit and the LDEQ 401 Water Quality Certification may also afford protection to wetlands and riparian areas under certain situations. These are discussed more fully under the next section.

VOLUNTARY BEST MANAGEMENT PRACTICES:

The protection of wetlands and riparian areas is also addressed by voluntary best management practices presently either in use or being proposed to satisfy management measures in several of the other nonpoint source categories. Louisiana's forestry industry makes extensive use of BMPs to protect wetlands and riparian areas which may be present on or adjacent to areas with ongoing silvicultural or forestry activity. Of special importance is the establishment of streamside management zones. These are sensitive areas adjacent to lakes, continuously flowing streams, and intermittent watercourses where extra precautions are necessary to protect water quality. Zone width is a site specific determination based on soil type, slope, vegetative cover, stream character, and worst case storm flows. SMZs protect streams by maintaining water temperatures and reducing sediment deposition through filtration.

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Examples of BMPs from the Recommended Forestry BMPs for Louisiana that offer protection for wetlands and riparian areas include:

- a.) Establish a zone adequate to protect streambed and streambank integrity.
- b.) Generally, the larger the stream, the wider the SMZ. Special regulations may to legally designated Natural and Scenic Rivers.
- c.) If possible, avoid building roads in narrow canyons, marshes, wet meadows, natural drainage channels, and in streamside management zones.
- d.) During the timber harvest, leave SMZs adequate to protect stream shading and streambank integrity.

Normal silvicultural activities conducted as a part of "established, on-going" silvicultural operations are exempt from Section 404 Corps of Engineers permit requirements as long as appropriate measures are implemented. However, a degree of wetland protection is provided by requiring that all roads and stream crossings that are constructed in wetlands and other waters of the U.S. must follow the Corps of Engineers 15 mandatory baseline best management practices in order to retain exemption status for the road operation (40 CFR Part 233.22). Failure to do this would require a Section 404 permit be issued by the Corps. This in turn would require the issuance of a 401 Water Quality Certification by Louisiana Department of Environmental Quality (LDEQ) which could be conditioned to require protection for wetlands and riparian areas (LAC 33:IX.1501).

A copy of the forestry BMP manual and other pertinent information is attached as an appendix to the Forestry section of the 6217 document.

Urban nonpoint pollution is the result of precipitation washing the surfaces of urbanized areas. As precipitation falls on urban areas, it picks up contaminants from the air; dirt and litter from streets and sidewalks; petroleum residues and exhaust products from automobiles; chemicals applied for fertilization, weed, and insect control; and sediments

from construction sites. Wetlands, both natural and constructed, along with riparian areas serve an important role in the reduction of this NPS pollution before it enters into surface waters. To achieve this reduction over the long term and to avoid degradation of these sensitive areas proper protection is necessary. Voluntary BMPs recommended for implementing management measures for urban runoff provide some of this protection.

From Part I: Measures for New Development in Urban Areas:

- a.) Preserve areas that provide important water quality benefits and/or are necessary to buffer riparian and aquatic habitats.
- b.) Protect remnant pervious areas in already-built areas with enforceable preservation requirements and greenspace ordinances.

From Part II: Measures for Roads, Highways and Bridges:

- a.) Establish setback distances to protect **wetlands**, waterbodies, and **riparian areas** to the maximum extent practicable. Setback distances should be determined on a site-specific basis, weighing variables such as topography, soils, floodplains, cut-and-fill slopes, and design geometry. In level or gently sloping terrain, a general rule of thumb is to establish a setback of 50 to 100 feet from the edge of the wetland or riparian area and the right-of-way. Consider right-of-way setbacks from major waterbodies (oceans, lakes, estuaries, rivers) of 100 to 1000 feet.

A complete list of proposed best management practices for urban runoff is included in the Urban section of the 6217 document.

Hydrologic modifications are defined as those activities which are designed to effect natural streamflow. These types of modifications include bank stabilization, channel alignments, high-flow cut-off devices, instream construction, dredging, locks and dams, levees, spillways, and impoundments.

These activities can introduce pollutants into the water column through runoff from disturbed areas, resuspension and redissolution of particulate matter, or leaching. These

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pollutants include sediment, nutrients, pesticides, heavy metals, and organic materials. Other problems which can result from hydromodification include long-term detrimental increases in the ambient water temperature, intrusions of salt water into fresh water areas, the loss of land and wildlife habitat, conversion of wetland to other uses, and alteration of the existing populations of flora and fauna. Wetlands and riparian areas play a significant role in reducing or eliminating the introduction of pollutants into surface waters as well as preventing the possible degradation of sensitive ecological environments.

Hydromodification BMPs included in the Hydromodification section of the 6217 document that afford protection to wetlands and riparian areas include:

- a.) Consider and evaluate, to the maximum extent practicable, surface water management practices to ensure streambank protection, levee protection, channel stabilization and flow restrictors, check dam systems, grade control structures, **vegetative streambank cover**, instream sediment load control, noneroding roadways, and setback levees and floodwalls.
- b.) Design and implement an operation and maintenance program to prevent future impacts to instreams or **riparian habitat**.
- c.) Establish setbacks to minimize land disturbance to streambanks and shorelines.

A complete listing of proposed BMPs for hydromodification is included in the Hydromodification section of the 6217 document.

The LDEQ has also included protection for **wetlands and riparian areas** in its publication of guidelines and voluntary BMPs for hydromodification activities (LDEQ, 1991). When herbicides must be applied to stumps and brush during channel clearing activities, it is recommended that site-specific (as opposed to area-wide) and species-specific application methods be employed. The ecology of the watershed should be protected to the greatest extent possible and **riparian vegetation** should be maintained where feasible. Instream habitat for the aquatic community, including steep banks,

vegetated margins, and woody debris, should be maintained where practicable.

Channel excavations should be conducted in such a manner that results in the least disturbance to the existing quality of the water in or near the channel and downstream of construction and to **wooded riparian habitat**. Guideline 1. in this section states that:

"Careful consideration shall be given in the location, design, and construction of the channel in order to minimize water pollution and damage to fish and wildlife habitat, and in order to protect forest or other natural resources and the quality of the landscape."

Guideline 3. states: "Whenever the channel design allows, construction on the bank of an existing channel on the side opposite of construction should be minimized and any vegetation on the side slope which does not restrict flow in the designed channel should be retained." A copy of this publication is appended to this document.

B. Management Measure for Restoration of Wetland and Riparian Areas.

This management measure is intended to be applied by States to restore the full range of wetlands and riparian functions in areas where the systems have been degraded and destroyed and where they can serve a significant NPS abatement function. Restoration of wetlands and riparian areas refers to the recovery of a range of functions that existed previously by reestablishing the hydrology, vegetation, and structure characteristics.

- 1.) **"Promote the restoration of the preexisting functions in damaged and destroyed wetlands and riparian systems in areas where the systems will serve a significant NPS pollution abatement function."**

ENFORCEABLE POLICIES:

While enforceable policies and mechanisms are not required for implementation of this management measure it may be enforced under the Louisiana State and Local Coastal Restoration Management Act (La. Rev. Stat. 49:214.21-214.41) and the Louisiana

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Coastal Wetlands Conservation and Restoration Act (LA R.S. 49:214.1-214.5). The state regulates activities which affect wetlands under SCLRMA and regulates and coordinates plans for conservation and restoration of coastal wetlands under the Conservation and Restoration Act. The Coastal Restoration Management Act also provides the state the authority to require mitigation for wetland losses (LA R.S. 49:241.41). Additional enforcement to implement this management measure is provided by the Natural and Scenic River Act (LA R.S. 56:1840 *et seq*) which protects riparian areas along rivers designated as natural and scenic rivers. Implementation of this management measure in the field will be done through conditioning of coastal use permits with appropriate coastal use guidelines and best management practices and through the mitigation process under the Coastal Restoration Management Act.

Specific coastal use guidelines which address this management measure include CUG 3.15 which states that the best practical techniques for **site restoration and revegetation** shall be utilized for all linear facilities. Examples of linear facilities include pipelines, roads, canals, channels, and powerlines. Guideline 6.6 requires that areas modified by surface alteration activities shall, to the maximum extent practicable, **be revegetated**, refilled, cleaned and **restored** to their predevelopment condition upon termination of the use. And CUG 7.2 allows sediment deposition systems to be used to offset land loss, to **create or restore wetland areas** or enhance building characteristics of a development site. Such systems shall only be utilized as part of an approved plan.

C. Management Measure for Vegetated Treatment Systems

This management measure is intended to be applied by States in cases where engineered systems of wetlands or vegetated treatment systems can treat NPS pollution. Vegetated treatment systems will include vegetated filter strips and constructed wetlands.

- 1.) **"Promote the use of engineered vegetated treatment systems such as constructed wetlands or vegetated filter strips where these systems will serve a significant NPS pollution abatement function."**

VOLUNTARY BEST MANAGEMENT PRACTICES:

No specific BMPs have been selected to implement this management measure. Instead as with Management Measures A., it is addressed by voluntary BMPs in use or being proposed for other nonpoint source categories. The management measure will be implemented through the use of voluntary BMPs, public education and outreach programs through such agencies as the Louisiana Department of Environmental Quality (LDEQ) and the Louisiana Cooperative Extension Service (LCES) and by the conditioning of permits that are required for activities occurring in the coastal zone. Examples of coastal use permit conditioning are included in the appendix in the Marina section of the document.

Proposed BMPs relating to vegetated filter strips and constructed wetlands included in the Urban category are:

- a.) Where site conditions allow, reduce polluted runoff from new development with vegetative management practices such as:
 - a. **Vegetated filter strips**
 - b. Grassed swales
 - c. **Constructed wetlands.**
- b.) To the maximum extent practicable, utilize sediment controls such as sediment basins, sediment traps, filter fabric fences, straw bale barriers, inlet protection, **vegetated filter strips**, or other acceptable practices to capture sediment on-site.
- c.) Where feasible, add detention ponds, **filter strips**, or other measures to existing development.
- d.) Maximize the length and width of **vegetated filter strips** to slow the travel time

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of sheet flow and increase the infiltration rate of urban runoff.

A complete listing of proposed Urban BMPs are included in the Urban section of the 6217 document.

Best management practices included in the Hydromodification section that address this management measure include:

- a.) Design and implement an operation and maintenance program to prevent future impacts to instreams or **riparian habitat**. One or more of the following should be included in the program: streambed protection, levee protection, channel stabilization and flow restrictions, check dams, **vegetative cover**, instream sediment load control, noneroding roadways, and setback levees and flood walls.

The LDEQ emphasizes the use of engineered vegetative filter strips in its publication of guidelines and voluntary BMPs for hydromodification activities (LDEQ, 1991). Specific guidelines include:

- a.) **Filter strips** should be shaped uniformly so that water moves into the vegetated strip without being concentrated.
- b.) **Planted filter strips** will always contain a perennial species.
- c.) Seed on a freshly prepared and firmed seedbed.
- d.) **Filter strips** should not be grazed.

A complete list of best management practices recommended by the LDEQ is included as an attachment to this section of the 6217 program.

BIBLIOGRAPHY

- Office of Water Resources. 1991. Best Management Practices for Hydromodification Activities. State Cooperative Agreement # 24033-91-01. Baton Rouge: Louisiana Department of Environmental Quality. 35 p.
- Louisiana Forestry Association, et al. 1988. Recommended Forestry Best Management Practices for Louisiana. 15 p.
- Wilczynski, E. and J. Wilkins. 1994. Survey of Enforceable Policies Contained in the Laws of the State of Louisiana Applicable to EPA Specified Management Measures for Sources of Nonpoint Pollution. Louisiana Sea Grant Legal Program. Baton Rouge: Louisiana State University. 61 p.

EP & M SHEETS

MANAGEMENT MEASURES FOR WETLANDS, RIPARIAN AREAS, AND VEGETATED TREATMENT SYSTEMS		
MM Component	EP&M citation	EP&M Applicability citation
A. Protection of Wetlands and Riparian Areas		
Protect from adverse effects wetlands and riparian areas that are serving a significant NPS abatement function and maintain this function while protecting other existing functions.	Coastal Use Guidelines-- LAC tit. 43:1.701(1.7e.), (6.8), etc. La. Rev. Stat. 49:214.21-214.41 LA Rev. Stat. 49:214.1-214.5	Protection MM, p. 14. Protection MM, p. 14. Protection MM, p. 14.
B. Restoration of Wetland and Riparian Areas		
MM Component	EP&M citation	EP&M Applicability citation
Promote the restoration of the preexisting functions in damaged and destroyed wetlands and riparian systems where the systems will serve a significant NPS pollution abatement function.		
C. Vegetated Treatment Systems		
MM Component	EP&M citation	&M Applicability citation
Promote the use of engineered vegetated treatment systems.		

ATTACHMENT # 1

1. LDEQ BMPs for Hydromodification Activities



BEST
MANAGEMENT
PRACTICES

FOR HYDROMODIFICATION ACTIVITIES

This document has been developed by the Louisiana Department of Environmental Quality (LDEQ) Nonpoint Source Pollution Program and the U. S. Soil Conservation Service (SCS) under state cooperative agreement number 24033-91-01. Technical review was provided by the U.S. Army Corps of Engineers and LDEQ's Certification Program. Photographs found throughout this document were taken at the Bayou Queue de Tortue streambank stabilization project in the Mermentau River Basin near Crowley, Louisiana. The project is coordinated by the Louisiana Department of Environmental Quality Nonpoint Source Program with contractual support from the Soil Conservation Service.

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Best Management Practices for Hydromodification Activities, Louisiana Department of Environmental Quality, Office of Water Resources, Nonpoint Source Pollution Program, Baton Rouge, Louisiana

CHANNEL CLEARING

Definition: Removing snags, drifts, or other obstructions from a channel.

Purpose: To restore the flow capacity of an existing channel by removing trees, brush, logs, sediment bars, debris, etc. which are restricting the capability of the channel to carry water or are causing flooding, erosion, or other environmental problems in such a manner that results in the least disturbance to the existing quality of the water in or near the channel and to the quality of the water downstream of construction.

Guidelines

1. All trees, stumps, and brush which are restricting the designed flow should be cut as close to the ground as the cutting tools permit. The work should be performed with hand operated or other suitable equipment in such a manner that will minimize water, soil, and other resource disturbance. Trees shall be felled in such a manner as to avoid damage to other trees, property, and objects outside the clearing limits. The materials removed from the channel should be stacked, burned, buried, or removed in a manner which will prevent it from floating away or reentering the channel. All burning will be conducted in accordance with state regulations. Before any burning activities are begun, the appropriate regional office of the Louisiana Department of Environmental Quality will be notified and the qualification for and conditions of an exemption determined. State and regional offices of the Louisiana Department of Environmental Quality are listed at the end of this publication. Residue from burning and noncombustible material shall be buried outside the channel or placed in designated disposal areas.

2. If it is deemed necessary to use herbicides on stumps or brush, only those appropriately labeled for the use considering an aquatic environment will be selected. All herbicides will be applied according to label directions by or under the direction of trained and certified applicators. All safety, application, and disposal precautions listed on the label shall be followed. All provisions of the Louisiana Pesticide Act and rules and regulations, including record keeping, shall be complied with by the herbicide applicator. Additionally, the ecology of the watershed shall be protected to the greatest extent possible. Riparian vegetation shall be maintained where feasible. The riparian vegetation provides a natural filtering system for runoff, prevents erosion, and helps stabilize the temperature regime within the water body. Instream habitat for the aquatic community, including steep banks, vegetated margins and woody debris, shall be maintained where practicable. Therefore, it is recommended that, if herbicide application is necessary, site-specific (as opposed to area-wide) and species-specific application methods be employed.

3. The use of explosives shall be limited to that which is absolutely necessary and then only in strict compliance with applicable state statutes and regulations.
4. Excavation of silt bars and other construction activities which result in the removal or disturbance of soil will follow the guidelines for Channel Excavation on page 19.
5. Perennial vegetation shall be established through planned plantings on all disturbed areas including channel slopes, berms, and spoil. Information on establishing vegetation can be found on page 26.
6. Inspect the completed improvements periodically so that needed maintenance can be completed in a timely manner. Proper maintenance reduces the need for future extensive reworking which may adversely effect water quality. It prevents the continued growth of undesirable vegetation in the channel and on the side slopes and berm. It identifies areas where siltation may be reducing the channel capacity. Maintenance may include, but need not be limited to, mowing, spraying, fertilization, the removal of silt bars, debris, and obstructions, the reseeding of bare or eroding areas, and the need for and installation of grade stabilization structures. Where herbicides are used, all precautions outlined in item 2 of this BMP will be followed.

References:

Soil Conservation Service, Field Office Technical Guide, Standards and Specifications for Clearing and Snagging.

FILTER STRIP

Definition: A strip or area of vegetation for removing sediment, organic matter, and other pollutants from runoff and waste water.

Purpose: To remove sediment and other pollutants from runoff or waste water by filtration, deposition, infiltration, absorption, adsorption, decomposition, and volatilization before it enters natural watercourses or man-made channels so that water quality is not degraded.

Guidelines

1. This practice applies to areas where runoff from land adjacent to the channel contributes significant amounts of sediment, organic materials or related pollutants to the water in the channel. It applies only where water flows in or across broad, flat areas prior to entering the channel and which are suitable for plant growth of the type and under the conditions described in the following sections.
2. The minimum widths for effective filter strips are listed in Table 1.

Table 1. Minimum widths (in feet) for effective filter strips considering various soil textures, slope gradients and slope lengths.

Texture of Soil Surface	% Slope	Slope Length Draining Across Filter (feet)				
		0-50	51-75	76-100	101-150	151+
(1)	0-8	10	12	15	18	20
(1)	8.1-12	12	15	18	20	20
(2)	0-3	10	12	15	18	20
(2)	3.1-8	12	12	18	20	20
(2)	8.1-12	12	15	20	20	20

(1) Fine sandy loam, loam, loamy sand, sand, sandy loam.

(2) clay, silt loam, silty clay, silty clay loam, very fine sandy loam.

3. Filter strips should be shaped uniformly so that water moves into the vegetated strip without being concentrated.

4. A complete fertilizer will be applied except in the fertile alluvial soils along the Red and Mississippi Rivers where nitrogen only will be applied during the establishment period. The complete fertilizer should be in a 1:1:1 (N:P:K) ratio and applied at a rate of 60 to 100 pounds of actual fertilizer per acre. Nitrogen fertilizer on the Red and Mississippi River alluvial soils will be applied at a rate of 60 pounds of actual nitrogen per acre. It is desirable to apply lime if the soil pH is below 5.5. Lime must be applied if the pH is below 4.5. On most Louisiana soils, two tons of agricultural ground limestone per acre will raise the pH about one unit. Apply enough agricultural ground limestone to achieve a pH of at least 5.5. The lime and complete fertilizer should be broadcast on the soil surface and incorporated immediately into the soil except for nitrogen only fertilization which may be applied as a top dressing after plants have emerged and have begun to grow. Incorporation will be done with a disk harrow, spring tooth harrow or similar implement which can mix the fertilizer and lime to a depth of 2 to 3 inches.

5. Planted filter strips will always contain a perennial species. Species that may be used are listed in Table 2. Bahiagrass will persist at a lower fertility level than Bermudagrass. Small grains, oats, rye, and wheat give a quicker cover than Ryegrass if planted during the desirable seeding time. Cereal rye is less competitive to warm season perennials than Ryegrass or the other small grains. For November - February planting, Ryegrass is better than the small grains. Browntop millet is a lower-growing plant than Pearl millet and Sorghum-Sudan hybrids.

6. Seed on a freshly prepared and firmed seedbed. Seed will be uniformly distributed using a drill, broadcast seeder, or hand seeded and covered. Hulled Bermudagrass seed should not be covered deep (no greater than ¼ inch). When multiple species are seeded, seed hulled Bermudagrass on the surface after larger seed have been covered then roll or pack, or, if the filter strip is to be mulched after planting, leave the hulled Bermudagrass seed on the soil surface and let rain firm the seed into the seedbed.

7. During the establishment period, it is often necessary to repair small gullies or rills. On some areas, filling the rill or gully, fertilizing, seeding, and mulching are adequate. Fill slightly higher than normal ground level so that run-off water is diverted to stable areas. In areas where run-off water cannot be diverted, burlap bags filled half full of soil with bermuda sprigs or soil-seed mixture can be placed in small gullies to control erosion.

8. Where mulching is needed, follow the guidelines described in item 4 of Vegetation on page 29.

9. Filter strips should not be grazed. Fertilize to maintain an adequate, healthy stand. Maintain fescue at least 6 inches high and Bermudagrass and Bahiagrass at least 3 inches high.

FILTER STRIP

Table 2. Plant species that may be used for filter strips and the associated seeding and treatment conditions.

Treatment Period	Species	Seeding Rate (lbs./acre)	Minimum Pure Live Seed (PLS) %
Jan.-Feb.	1. Common Bermudagrass (unhulled) and Ryegrass	10-12	80
	or	40-50	82
	2. Pensacola Bahiagrass and Ryegrass	40-50	81
	or	40-50	82
Mar.-Aug.	1. Common Bermudagrass (hulled) or	5-7	83
	2. Pensacola Bahiagrass or	40-50	81
	3. Bermuda stolons	12"-18" apart or broadcast and disk	--
	4. Browntop millet (1) or	35-45	72
	Pearl millet (1) or	35-45	72
	Sorghum-Sudan hybrids (1)	35-45	80
	(1) Can be planted with Number 1 or Number 2.		
	Sept.-Dec.	1. Tall fescue or	30-40
2. Pensacola Bahiagrass and Rye		40-50	81
or		60-70	76
Oats or		100-110	79
Wheat or		75-85	79
Ryegrass		35-45	82

10. Existing native vegetation can be utilized as a filter strip provided that water moving into the filter strip is spread out enough for adequate filtration. Ground cover from native vegetation should be at least 6 inches high.

11. Provide the needed maintenance to assure that the filter strip will remain functional. This may include mowing, spraying, rill repair, silt removal, fertilization, etc. Control the growth and spread of undesirable plants including woody vegetation which compete with and reduce the filtration effect of the established cover. Mow introduced species high enough to control the undesirable plants but leaving sufficient cover as a filter strip. Where native vegetation is used as a filter strip, mowing should generally be accomplished in July or August and should leave at least 12 inches of standing vegetation. All herbicides will be appropriately labeled and will be applied according to label directions by or under the direction of trained and certified applicators. All safety, application, and disposal precautions listed on the label shall be followed. All provisions of the Louisiana Pesticide Act and rules and regulations, including record keeping, shall be complied with by the herbicide applicator. The ecological integrity of the watershed shall be considered and maintained where feasible (see item 2 under Channel Clearing on page 4).

References:

Soil Conservation Service, Field Office Technical Guide, Standards and Specifications for Filter Strip.

VEGETATION

Definition: Establishing and maintaining adequate plants on channel banks, berms, spoil, and associated areas which have been disturbed.

Purpose: To stabilize areas disturbed during construction so that the effects to water quality are minimized, erosion and sedimentation are reduced, and fish and wildlife habitat and the quality of the environment including visual aspects are maintained or enhanced.



Figure 5. Geotextile cloth is stapled to the bank to protect seed and prevent erosion (pictured are personnel from the Soil Conservation Service's Plant Material Program).

Guidelines

1. Perennial vegetation will be established through planned plantings on all areas disturbed as a part of construction or maintenance related to hydromodification activities. This includes

channel slopes, channel bottoms, berms, permanently stacked spoil, spread spoil on land other than cropland, access routes, fill material over grade stabilization structures, etc., except channel slopes and bottoms which are covered with perennial ponded water. Annual vegetation may be required as a part of the planting plan in order to establish a quick temporary cover before the perennial vegetation becomes established. Temporary cover, usually annuals, will be established on spoil to be spread, shaped, or hauled if the disposal will be delayed 90 days or longer and on disturbed areas where construction activities are not anticipated for 90 days.

2. A complete fertilizer will be applied on all disturbed areas except in the fertile alluvial soils along the Red and Mississippi Rivers where nitrogen fertilization only is desirable. The complete fertilizer should be in a 1:1:1 (N:P:K) ratio and applied at a rate of 60 to 100 pounds of actual fertilizer per acre. The same equivalent is desirable for actual nitrogen in the Red and Mississippi River alluvial soils. It is desirable to apply lime if the soil pH is below 5.5. Lime must be applied if the pH is below 4.5. On most Louisiana soils, two tons of agricultural ground limestone per acre will raise the pH about one unit. Apply enough limestone to achieve a pH of at least 5.5. The lime and fertilizer should be broadcast on the soil surface and incorporated immediately into the soil except for nitrogen only fertilization which may be applied as a top dressing after plants have emerged and have begun to grow. Incorporation will be done with a disk harrow, spring tooth harrow or similar implement which can mix the fertilizer and lime to a depth of 2 to 3 inches. Lime should not be applied on slopes too steep for seedbed preparation.

3. Vegetation to be established can include annual and perennial grasses, legumes, shrubs, and trees. A perennial grass or legume must always be established. Grass and legume species that may be used are listed Table 10. Bahiagrass will persist at a lower fertility level than Bermudagrass. Wheat, oats, and rye will give a quicker cover than ryegrass if planted during the desirable seeding time. Cereal rye is less competitive to warm season perennials than ryegrass or the other small grains. Tall fescue provides quicker perennial cover than seeding a summer perennial and a winter annual from September through February. For November through February planting, Ryegrass would be better than the small grains. Browntop millet is a lower-growing plant than Pearl millet and Sorghum-Sudan hybrids.

Trees, shrubs, and vines growing along channels are desirable for their positive benefits to the water quality in the channel and for wildlife in the area. Where possible, trees, shrubs, and vines immediately adjacent but not restricting flow in the designed channel should be retained during the construction phase. The planting of trees, shrubs and vines on areas disturbed during construction is highly desirable. They should not be planted on channel bottoms or below the designed water surface of the channel. Trees, shrubs, and vines should be planted on channel slopes and berms only where the soil will physically support their long-term growth and stability while allowing access for maintenance. Tree, shrub and vine species that may be used are listed in Table 11.

VEGETATION

Table 10. Grass and legume species that may be used when establishing vegetation in disturbed areas.

Species	Seeding Rate (1) # PLS/Ac	Minimum Pure Live Seed (PLS) %	Seeding Period	Remarks
Perennials:				
Bermuda stolons	12"-18" apart or broadcast and disk	--	2/1-12/31	(2)
Common Bermudagrass (unhulled)	15	80	9/15-3/1	(2)(3)
Common Bermudagrass (hulled)	10	83	3/1-9/15	(3)(4)
Pensacola Bahiagrass	35	81	1/1-12/31	(2)(3)
Tall fescue	25	80	9/1-3/1	(3)
Sericea lespedeza (unscarified)	45	68	9/1-3/1	(2)(3)
Sericea lespedeza (scarified)	60	80	3/1-9/1	(3)
Annuals:				
Browntop millet	25	72	3/15-9/1	(3)
Oats	80	79	9/1-1/1	(5)
Rye	50	76	9/1-1/1	(5)
Pearl millet	25	72	3/15-9/1	(5)
Ryegrass	25	82	9/1-1/1	(3)
Sorghum-Sudan hybrids	25	72	3/15-9/1	(5)
Sudangrass	25	78	3/15-9/1	(3)
Wheat	60	79	9/1-1/1	(5)

- (1) Seeding rates are for broadcast seeding. These rates can be decreased by 33 percent for drill seeding.
- (2) In addition, mulch or seed a winter annual from September 1 to March 1.
- (3) No seedbed preparation will be required if seeding is done the day areas are worked. If seeding is not done the day areas are worked, a seedbed will be prepared by scarifying the soil surface with a spike-tooth harrow or similar implement.
- (4) Hulled bermudagrass seed should not be covered deep (not greater than ¼ inch). When multiple species are seeded, seed hulled bermudagrass on the surface after larger seed have been covered then roll or pack, or, if the channel is to be mulched after planting, leave the hulled bermudagrass seed on the soil surface and let rain firm the seed into the seedbed.
- (5) Requires that a seedbed be prepared.

Table 11. *Tree, shrub and vine species that may be used when establishing vegetation in disturbed areas.*

Species	Maximum Spacing	Planting Period	Wildlife Ranking (1)	Remarks
Trees:				
Water oak	12'x12'	11/1-3/1	1	
Willow oak	12'x12'	11/1-3/1	2	
Sweet pecan	12'x12'	11/1-3/1	3	
Nuttall oak	12'x12'	11/1-3/1	4	
Sawtooth oak	12'x12'	11/1-3/1	5	
Shrubs:				
Hawthorn	12'x12'	11/1-3/1	1	
Autumn olive	12'x12'	11/1-3/1	2	
Amur honeysuckle	12'x12'	11/1-3/1	3	
Crabapple	12'x12'	11/1-3/1	4	
Russian olive	12'x12'	11/1-3/1	5	
Vines:				
Honeysuckle	3'x3"	11/1-3/15		(2)

(1) A lower number indicates a higher rating.

(2) Honeysuckle is adapted on damp sites and requires fertilization on infertile sites.

4. Mulching may be needed in order to establish vegetation on steep slopes, in highly erodible soils, and on areas where soil has been filled such as over grade stabilization structures. Mulch materials used for establishing vegetation include:

Hay or Straw - Apply at the rate of 1½ to 2 tons per acre or 70 to 90 pounds per 1000 square feet. Of the various kinds of hay and straw, grain straw is preferable because it spreads easier by hand and does not contain weed seed. Straw or hay should be applied uniformly over the area, leaving about 25 percent of the soil surface exposed. They can be spread by hand or with a mulch blower. In areas of concentrated water flow, the hay or straw mulch may need to be tied down with commercial netting or poultry wire which is secured with wood stakes or heavy duty staples or sprayed with an asphalt tacking material. Asphalt tacking material sprayed uniformly on the mulch as it is ejected from the blower is more effective than asphalt tacking material applied as a separate operation. Use 175 gallons of material per ton of mulch.

VEGETATION

Sawdust - Wood Chips - Apply at the rate of 4 to 6 tons per acre or 185 to 275 pounds per 1000 square feet. They should not be used on slopes steeper than 3:1 because of movement during intense rainfall.

Shredded residues (leaves and crop residue) - Apply at the rate of 1½ to 2½ tons per acre or 70 to 115 pounds per 1000 square feet. They should not be used on slopes steeper than 3:1 because of movement during intense rainfall.

Wood Cellulose Fiber (hydromulching) - Apply at the rate of ½ to ¾ tons per acre or 24 to 34 pounds per 1000 square feet. It is applied with hydraulic seeding equipment. Fertilizer, seed and wood fiber will be mixed with water to form a homogeneous slurry and applied within one hour after mixing. Use the same rates of seed and fertilizer as in conventional methods. The slurry should be sprayed so as to get a uniform coverage on the soil surface.

Commercial Mulch Materials - Follow the manufacturer's instructions for use of commercial mulch materials such as fiberglass, jute, textile, and excelsior soil retention blankets.

Areas mulched with hay, straw, wood chips or shredded plant residues should receive 20 to 25 pounds per acre of actual nitrogen in addition to the amount required for plant growth to offset the tie-up of nitrogen by decomposition of carbonaceous materials.

5. Maintenance is often needed to insure that adequate vegetative growth is obtained and that rill and gully erosion is repaired. Maintenance fertilization is a must on many sites, particularly on excavated areas. It takes at least three years of fertilization to get enough plant nutrients in the nutrient cycle to support vegetation on some subsoils. For at least two years after establishment on these sites, apply at least 36:36:36 annually, with an additional 33 pounds of nitrogen if a legume is not present. Actively eroding rills and gullies should be filled, fertilized, seeded and mulched. The fill should be slightly higher than normal ground level so that run-off water is diverted to stable areas. In areas where run-off water cannot be diverted, burlap bags filled half full of soil with Bermuda sprigs or soil-seed mixture can be placed in small gullies to control erosion.

References:

Soil Conservation Service, Field Office Technical Guide, Standards and Specifications for Channel Vegetation.

Soil Conservation Service, Field Office Technical Guide, Standards and Specifications for Critical Area Planting.

Soil Conservation Service, Field Office Technical Guide, Standards and Specifications for Mulching.