PUBLIC NOTICE
September 21, 2012

STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL MANAGEMENT
P.O. BOX 44487
BATON ROUGE, LA 70804-4487

Phone: (225) 342-0884

Fax: (225) 342-9439

Email: jay.pecot@la.gov

OCM REVIEWER:
Jay Pecot

CUP NUMBER:
P20110882

NAME: **CITY OF KENNER, LOUISIANA**
c/o HUNTER, RACHAEL
1626 ST. ROSE AVENUE
BATON ROUGE, LA 70808
Attn: Rachael Hunter

LOCATION: **Jefferson Parish, LA;** Lat 30° 0' 26.42" N / Long -90° 16' 44.35" W (Begin Project); Lat 29° 58' 47.84" N / Long -90° 18' 01.43" W (End Project); 1 West 30th Street, City of Kenner.

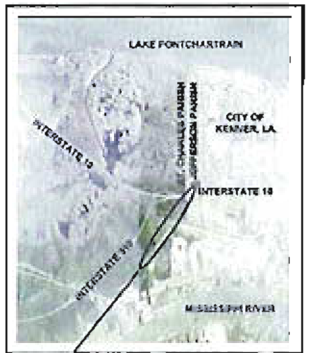
DESCRIPTION: City of Kenner will be discharging secondarily-treated effluent (17 MGD) into the LaBranche wetlands. A approximately 12,700' sewer forced main (SFM) 42"distribution pipe will be installed by open trench and jack/bore excavation/backfilling (approximately 20,406 cubic yards total) from the existing wastewater treatment plant to the LaBranche wetlands. Ten (10) approximately 600' - 4" steel distirbution lines will be routed from the 42" SFM into the wetlands to discharge the treated effulent for marsh nourishment. A 2' wide observation boardwalk will be constructed adjacent to the 42" SFM and 4" distribution lines south of the railroad track crossing. A potential of up to 6.5 acres of wetlands and 0.5 acres of non-wetlands may be temporarily or permanently impacted from this project construction.

NOTICE the Louisiana Department of Natural Resources, Office of Coastal Management (OCM) has received the above application for a Coastal Use Permit (CUP) in accordance with the State and Local Coastal Resources Management Act of 1978, as amended, (Louisiana R.S. 49:214.21-214.41), and the rules and regulations of the Coastal Resources Program. Applications for the proposed work may be inspected at 617 North 3rd Street, Room 1078, Baton Rouge, LA or on the OCM web page at: http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=591. Copies may be obtained upon payment of cost of copying. Written comments, including suggestions for modifications or objections to the proposed work and stating the reasons thereof, are being solicited from the public. Comments must be received within 25 days of the date of publication of this notice. Comments should be uploaded to our electronic record, but may be mailed, faxed or emailed to the designated OCM Reviewer. All comments must contain the appropriate application number and the commenter's full name and contact information.

The public comment period for Coastal Use Permit applications begins on the date of publication of notice in the official journal (The Advocate), in accordance with LAC 43:I. 723(C)(5)(c). OCM will provide this date on request.

Any person may request, in writing, within the comment period specified in this notice, that a State or Federal public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing and must contain the name and contact information of the requester.

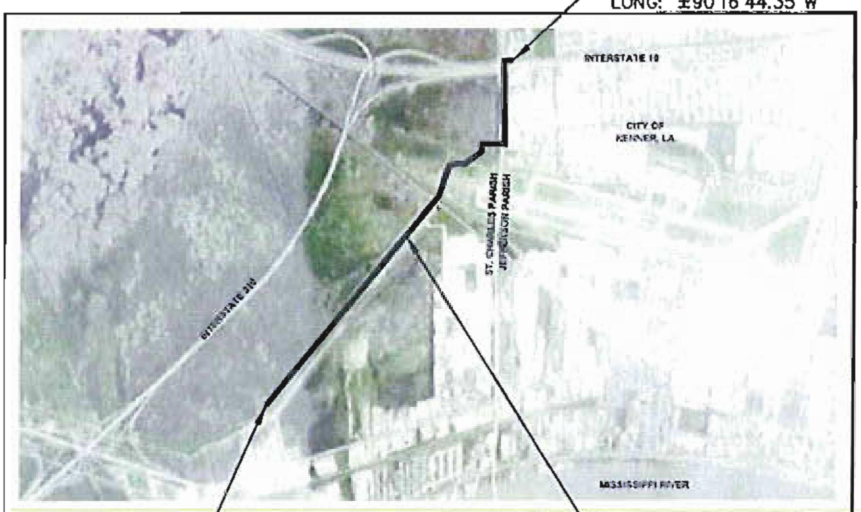
Attached plats: 1) P20110882 Notice Plats 08/22/2012



PROJECT LOCATION

VICINITY MAP

BEGIN PROJECT
LAT: ±30'00'26.42"N
LONG: ±90'16'44.35"W

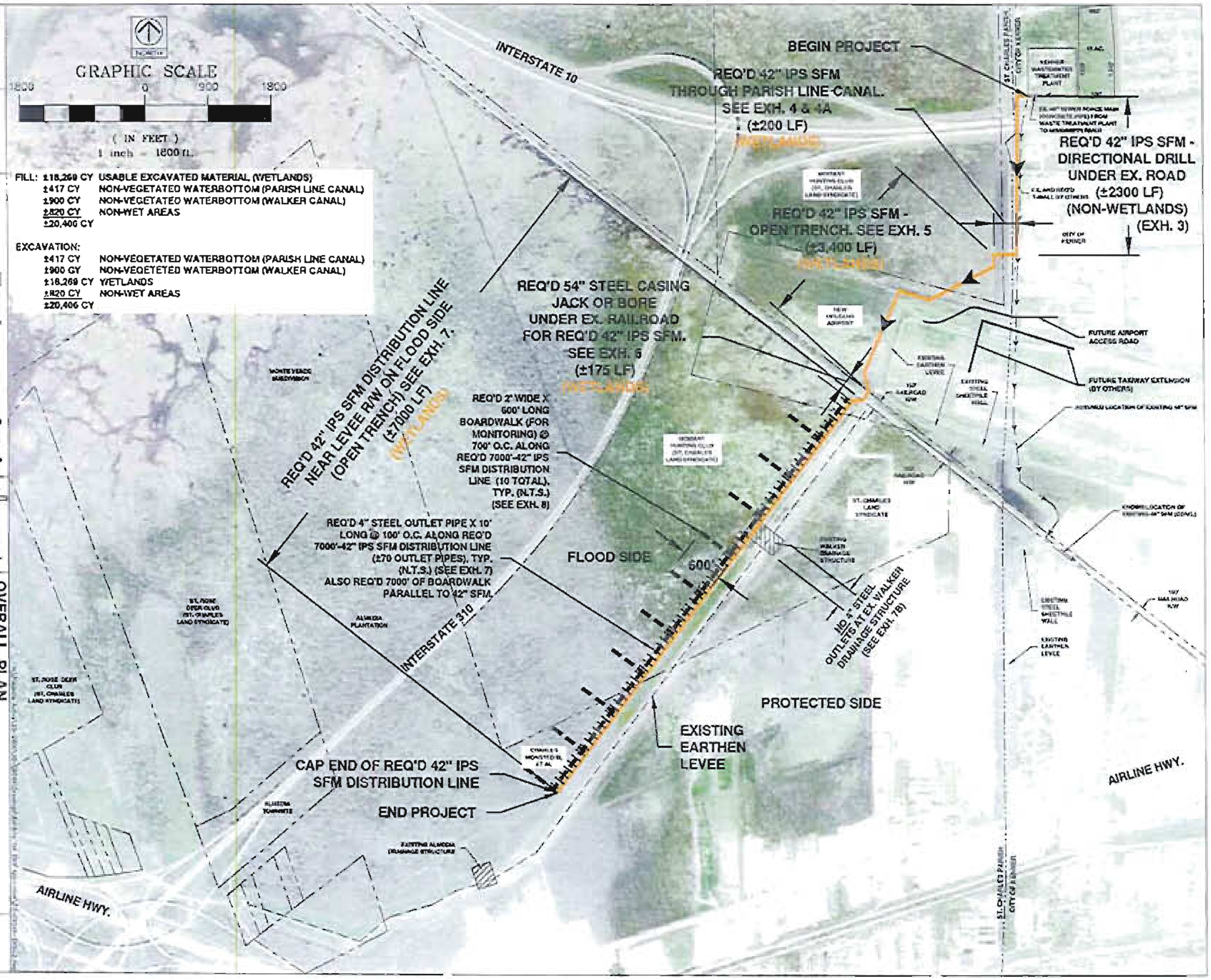


PROJECT LOCATION MAP

APPROX. PROJECT BASELINE AND LOCATION

END PROJECT
LAT: ±29'58'47.84"N
LONG: ±90'18'01.43"W

project no. / drawn / checked / date / revised	**Meyer Engineers, Ltd.** 4937 Hearst Street . Suite 1B . Metairie, Louisiana 70001 2031 Claiborne Street . Mandeville, Louisiana 70448 phone.504.885.9892 . fax.504-887-5056 website.www.meyer-e-l.com	VICINITY AND LOCATION MAP KENNER WASTEWATER WETLAND RESTORATION CITY OF KENNER, OWNER	1 of ___ sheets



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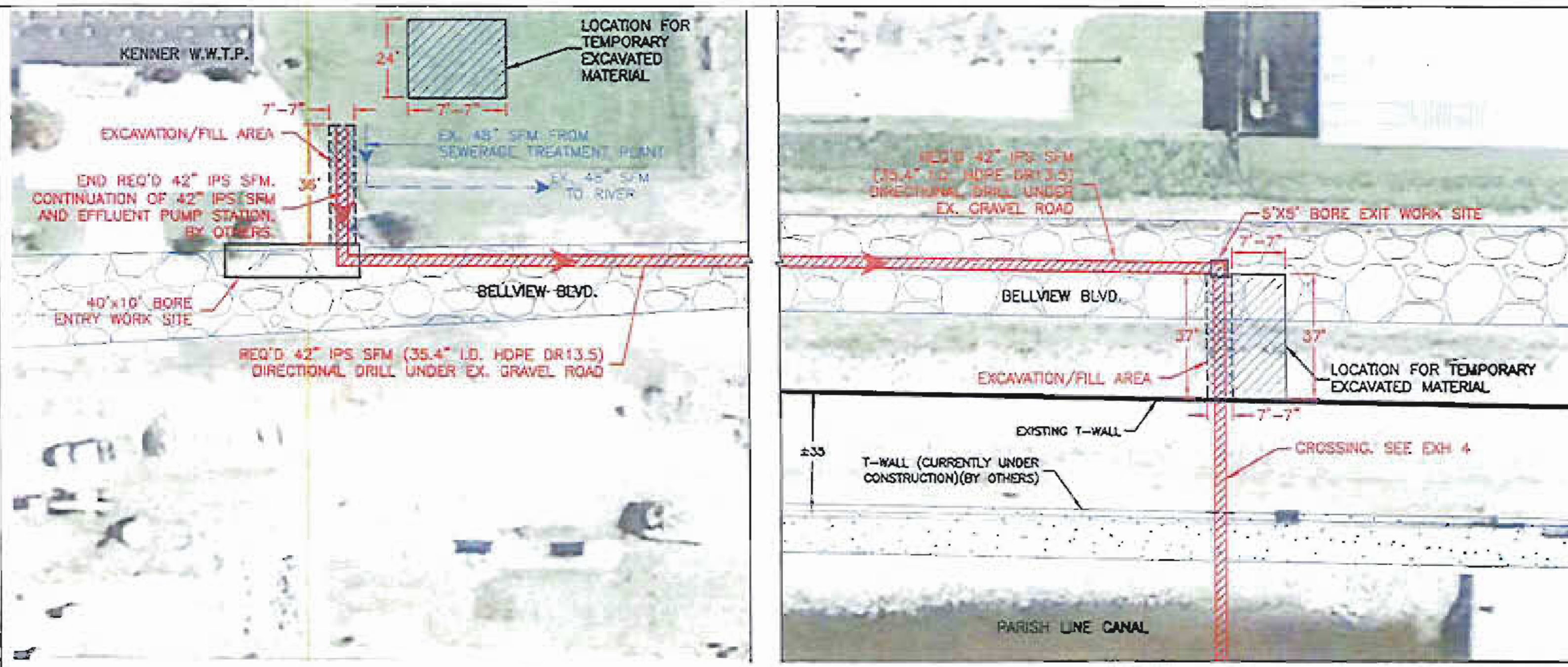
2031 Claiborne Street . Mandeville, Louisiana 70448

OVERALL PLAN
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

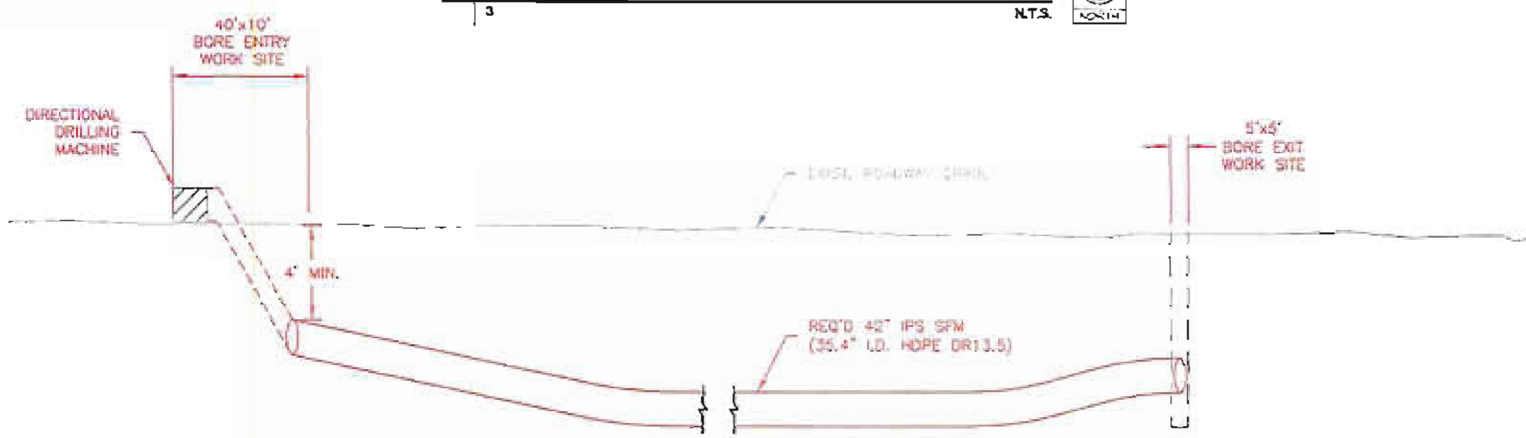
2



1 | 3 — 42" IPS SFM DIRECTION DRILL - PLAN VIEW

N.T.S.

NORTH



2 | 3 — 42" IPS SFM DIRECTION DRILL - SECTION VIEW

N.T.S.

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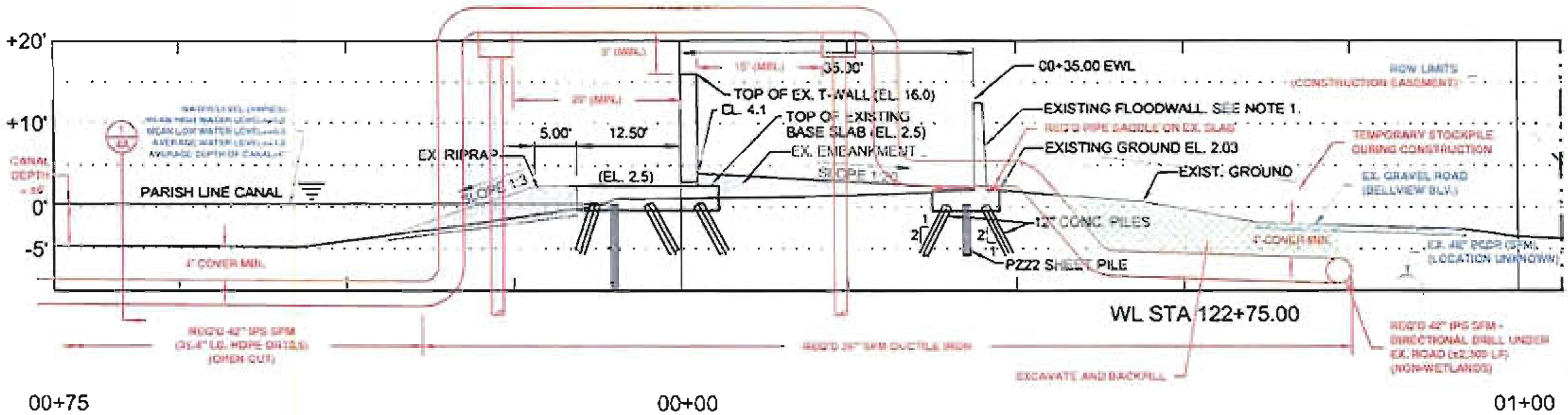
42" IPS SFM DIRECTIONAL DRILL - PLAN AND SECTION

KENNER WASTEWATER WETLAND RESTORATION

CITY OF KENNER, OWNER

3



SEWER FORCE MAIN PROFILE OVER EX. T-WALL AND THROUGH PARISH LINE CANAL (NON-VEGETATED WATERBOTTOM)

1 / 4

SCALE: 1"=20'

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 inch = 20 ft.

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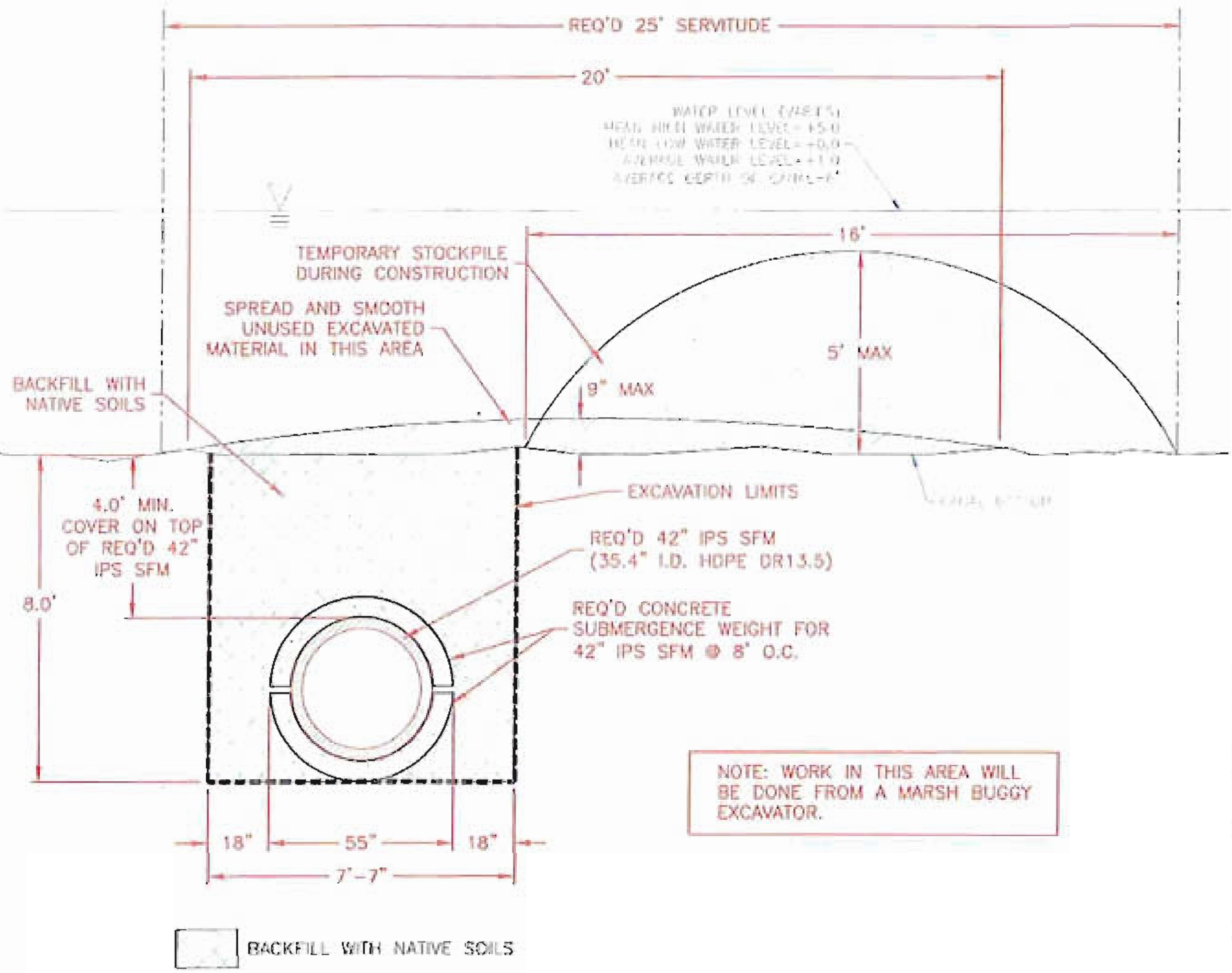
SFM PROFILE THRU PARISH LINE CANAL
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

4



SEWER FORCE MAIN SECTION
THROUGH PARISH LINE CANAL
1 (NON-VEGETATED WATERBOTTOM)
4A

SCALE: 1"=4'

GRAPHIC SCALE

42" IPS SFM THROUGH PARISH LINE CANAL (200 LF)
FILL: ±417 CY NATIVE SOILS (NON-VEGETATED WATERBOTTOM)

EXCAVATION: ±417 CY (NON-VEGETATED WATERBOTTOM)

SPOIL WILL BE PLACED ON CANAL BOTTOM.

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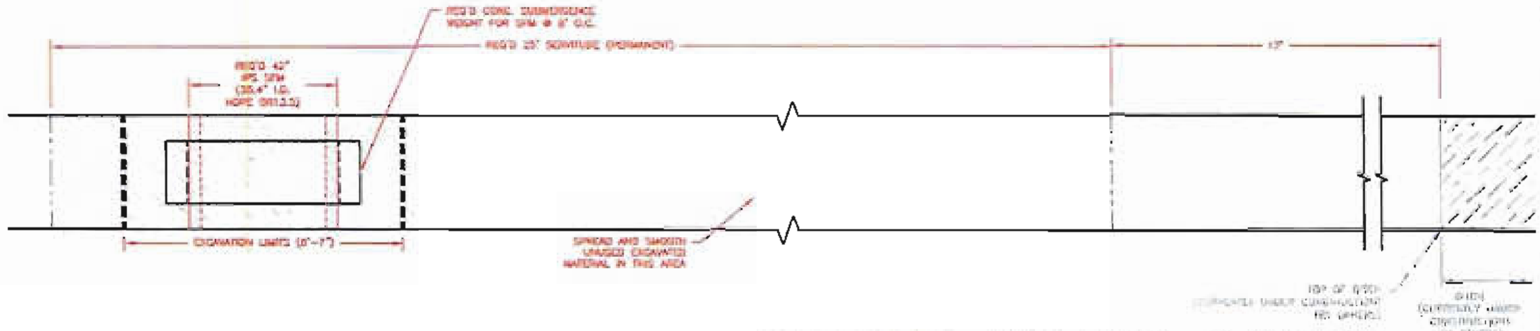
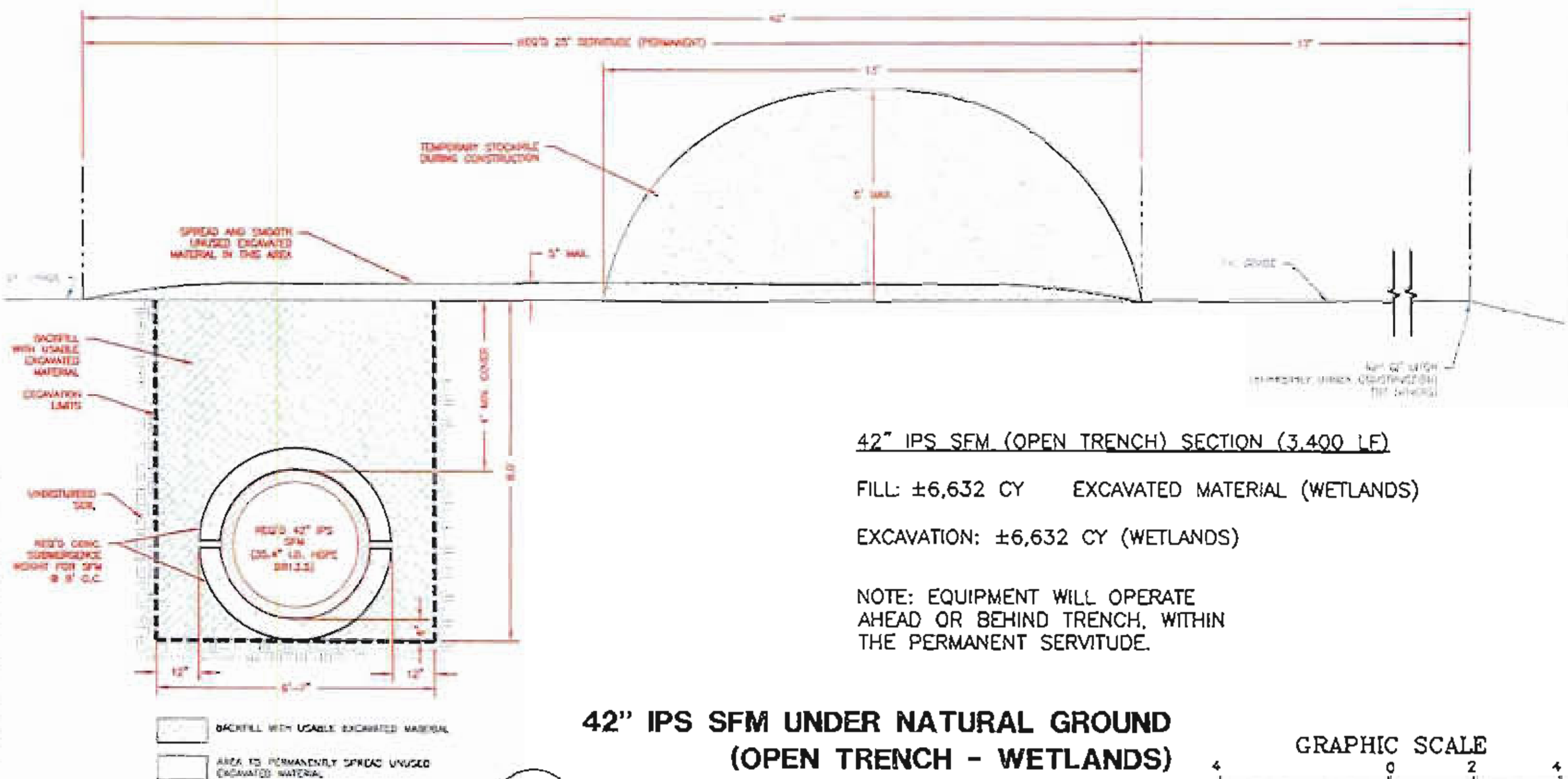
SEWER FORCE MAIN TYPICAL SECTION
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

exhibit 4A



42" IPS SFM UNDER NATURAL GROUND (OPEN TRENCH - WETLANDS) - PLAN VIEW



42" IPS SFM (OPEN TRENCH) SECTION (3,400 LF)

FILL: ±6,632 CY EXCAVATED MATERIAL (WETLANDS)

EXCAVATION: ±6,632 CY (WETLANDS)

NOTE: EQUIPMENT WILL OPERATE AHEAD OR BEHIND TRENCH, WITHIN THE PERMANENT SERVITUDE.

42" IPS SFM UNDER NATURAL GROUND (OPEN TRENCH - WETLANDS) CROSS SECTION

1 / 5

SCALE: 1"=4'

GRAPHIC SCALE

4 0 2 4

(IN FEET)
1 inch = 4 ft.

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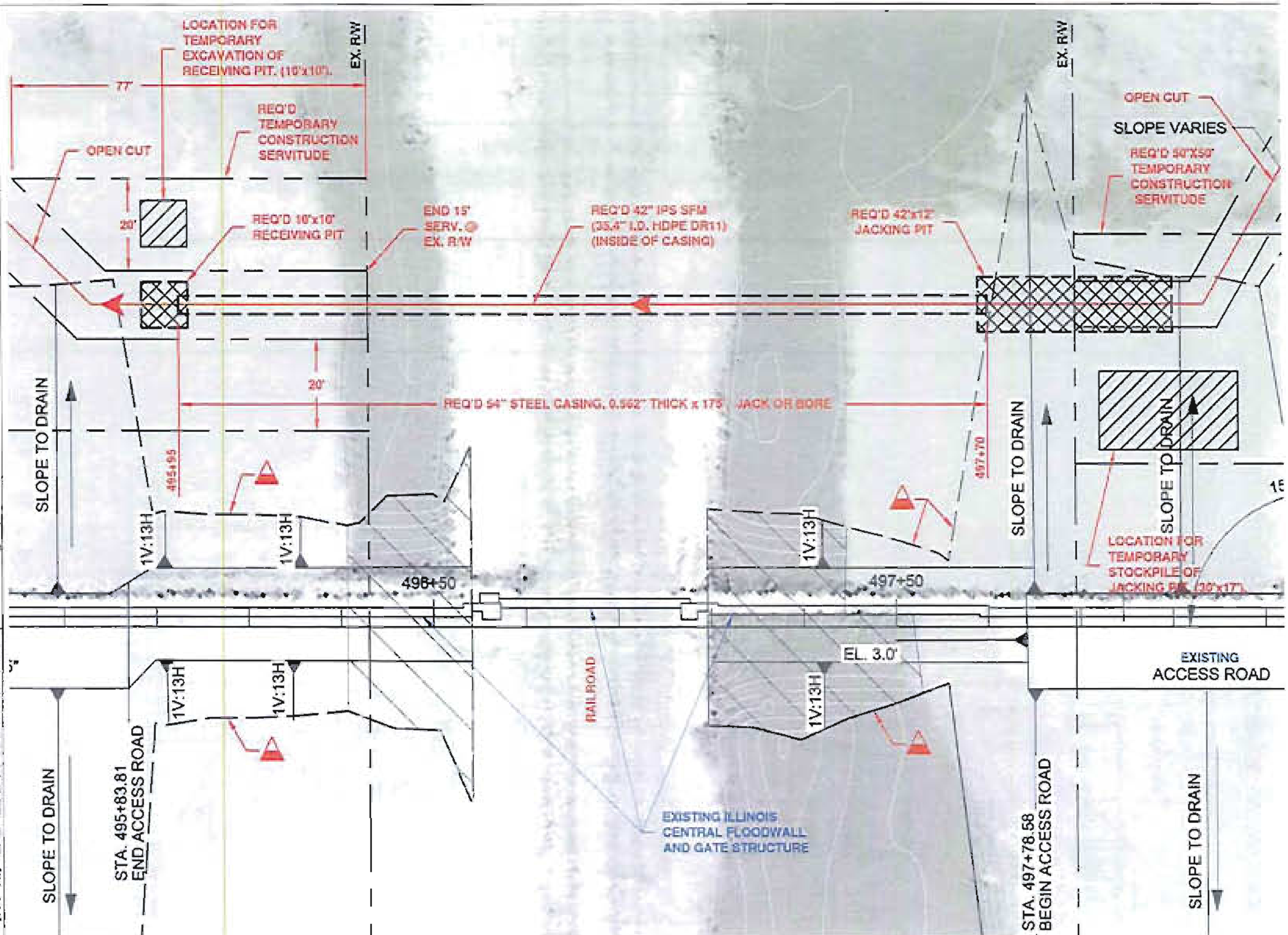
SEWER FORCE MAIN TYPICAL SECTION
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

5



LEGEND:

- EXCAVATION / BACKFILL
- TEMPORARY STOCKPILE
- EXISTING TOE OF BERM

SEWER FORCE MAIN SECTION UNDER RAILROAD (PLAN VIEW)

1
6

SCALE: 1"=30'

NORTH

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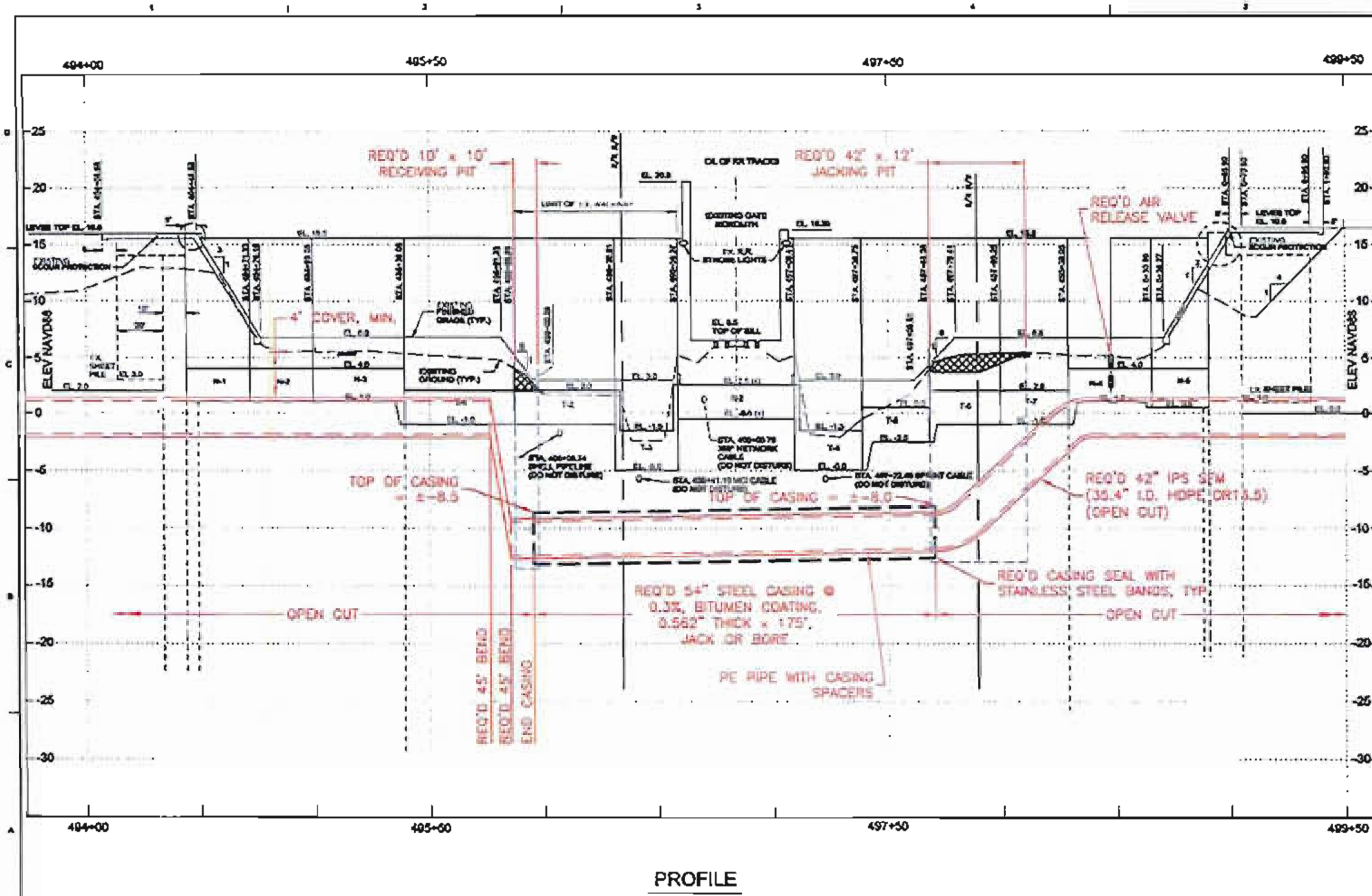
SFM SECTION UNDER R/R (PLAN)
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

sheet 6



SEWER FORCE MAIN SECTION UNDER RAILROAD (PROFILE VIEW)

1 / 6A

SCALE: 1"=70'

LEGEND:

EXCAVATION / BACKFILL FOR PITS

NOTE:
DISREGARD ALL STATION NUMBERS AS THEY DO NOT PERTAIN TO THIS PROJECT.

GRAPHIC SCALE

70 0 35 70

(IN FEET)
1 inch = 70 ft.

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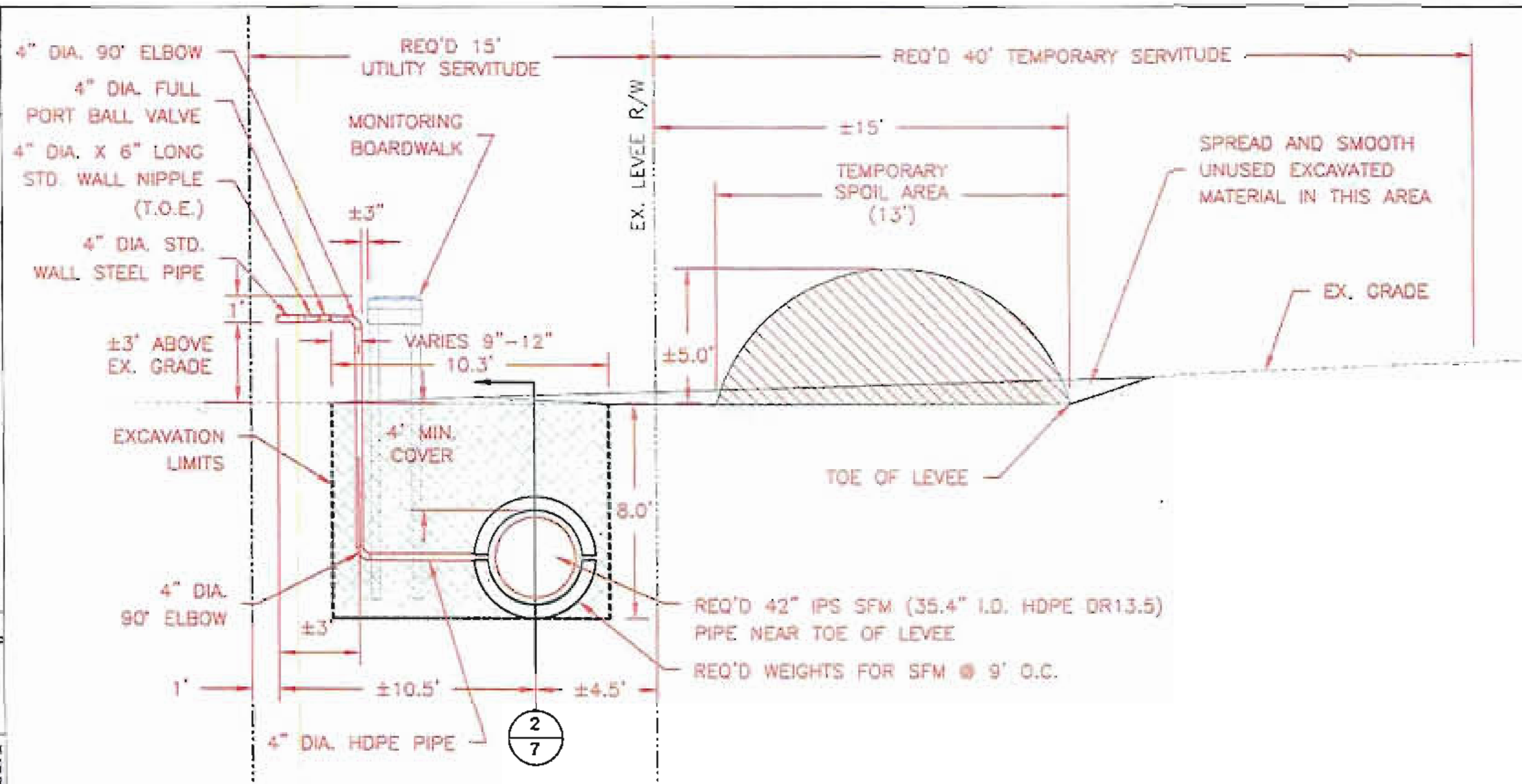
SFM SECTION UNDER R/R (PROFILE)
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

6A



1 | 7 DISTRIBUTION LINE - CROSS SECTION

1"=6'

LEGEND

- BACKFILL WITH USABLE EXCAVATED MATERIAL
- TEMPORARY SPOIL AREA
- EXCAVATION LIMITS

DISTRIBUTION LINE SECTION (7000 LF)

FILL: ±11,637 CY EXCAVATED MATERIAL

EXCAVATION: ±11,637 CY

NOTE: EQUIPMENT WILL OPERATE AHEAD OR BEHIND TRENCH, WITHIN THE PERMANENT SERVITUDE.

GRAPHIC SCALE

6 0 3 6

(IN FEET)
1 inch = 6 ft.

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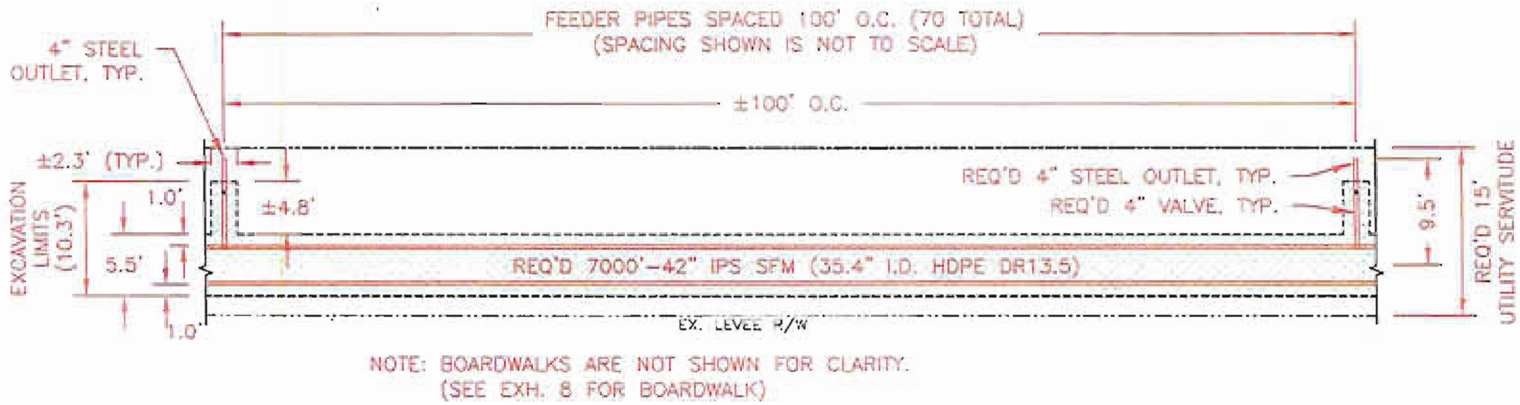
DISTRIBUTION LINE DETAILS

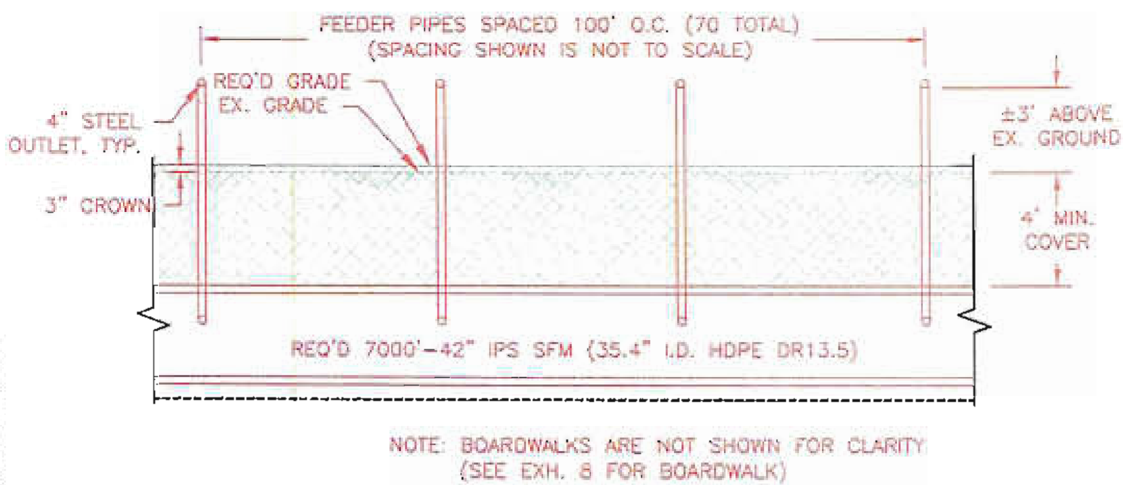
KENNER WASTEWATER WETLAND RESTORATION

CITY OF KENNER, OWNER

sheet 7



1 / 7A — **DISTRIBUTION LINE - PLAN VIEW** — 1"=15'



2 / 7A — **DISTRIBUTION LINE - PROFILE** — 1"=6'

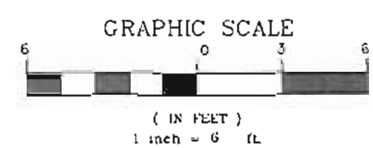
LEGEND

- BACKFILL WITH USABLE EXCAVATED MATERIAL
- EXCAVATION AREA
- ------ EXCAVATION LIMITS

DISTRIBUTION LINE SECTION (7000 LF)

FILL: ±11,637 CY EXCAVATED MATERIAL

EXCAVATION: ±11,637 CY



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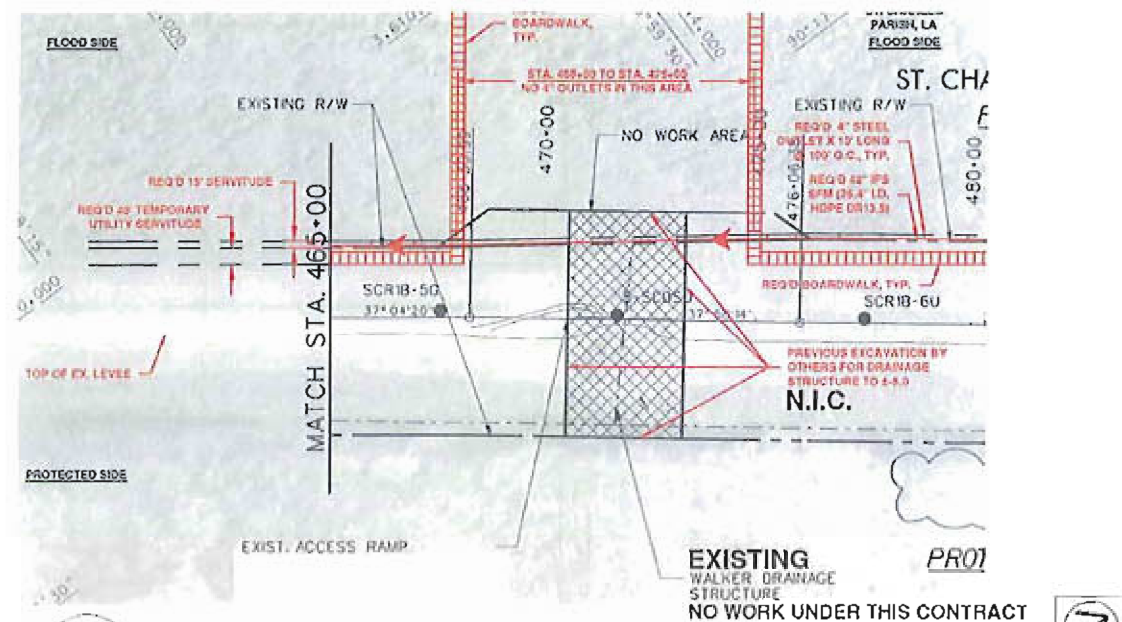
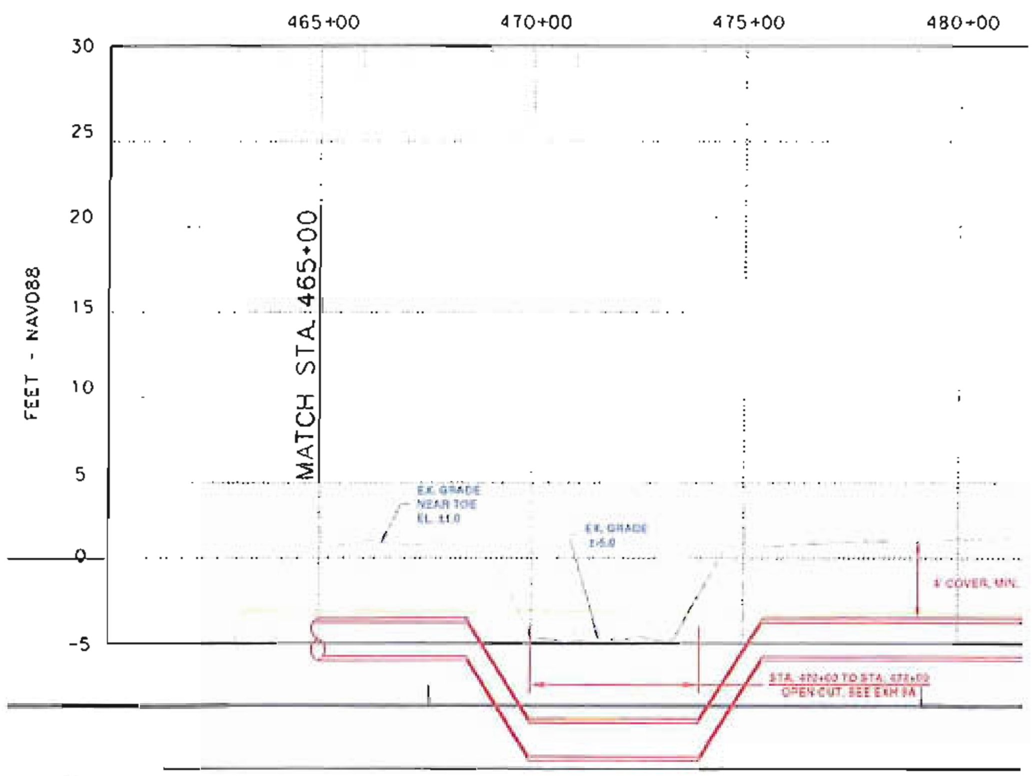
DISTRIBUTION LINE DETAILS
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

7A



1 SFM AT WALKER DRAINAGE STRUCTURE (PLAN VIEW)

7B SCALE: 1"=400'



2 SFM AT WALKER DRAINAGE STRUCTURE (PLAN VIEW)

7B SCALE: H:1"=400', V:1"=10'

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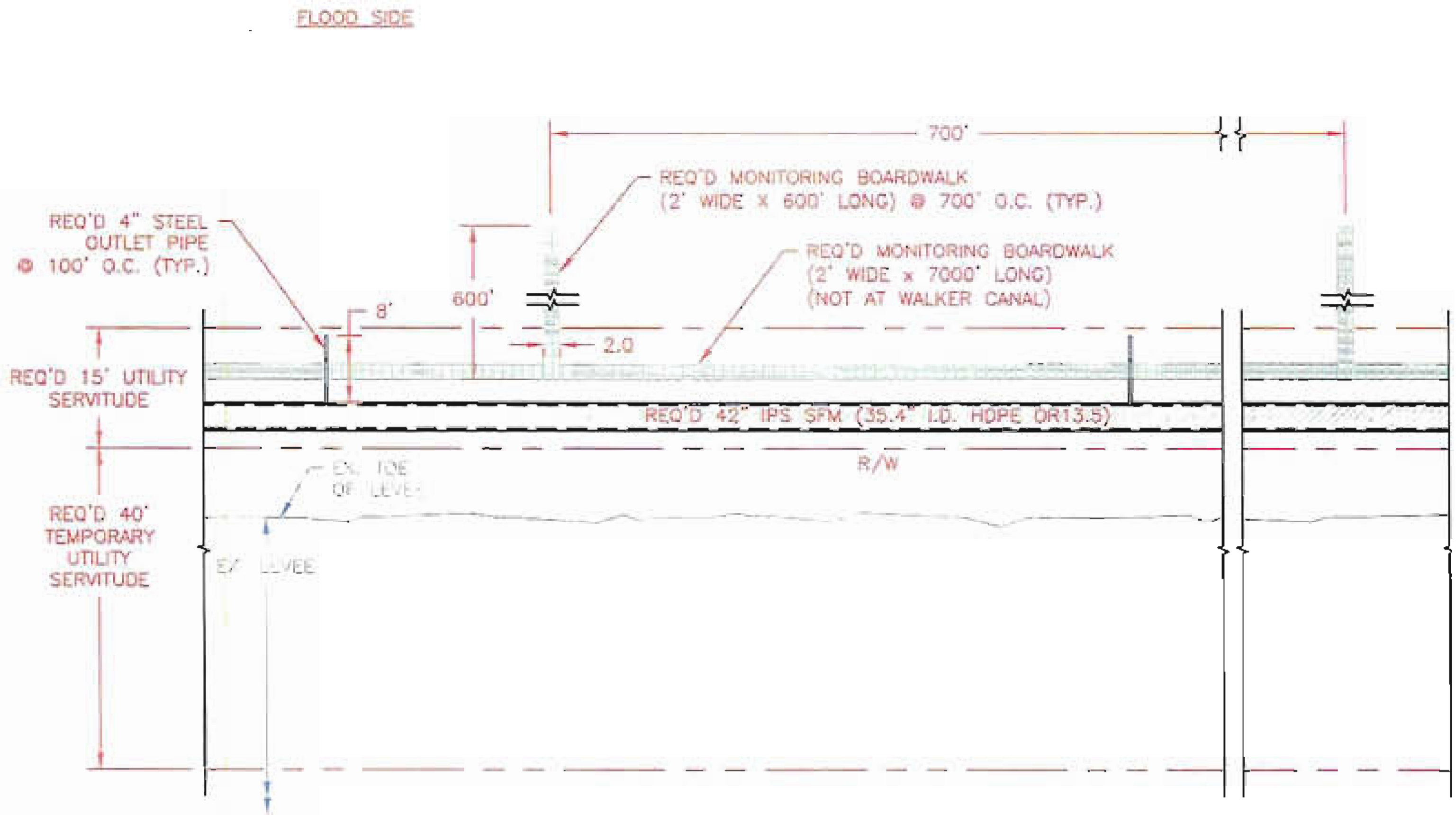
SFM AT WALKER DRAINAGE STRUCTURE
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

7B



NORTH

1 / 8

BOARDWALK AREA - PLAN VIEW

SCALE: 1"=20'

GRAPHIC SCALE

20 0 10

(IN FEET)
1 inch = 20 ft.

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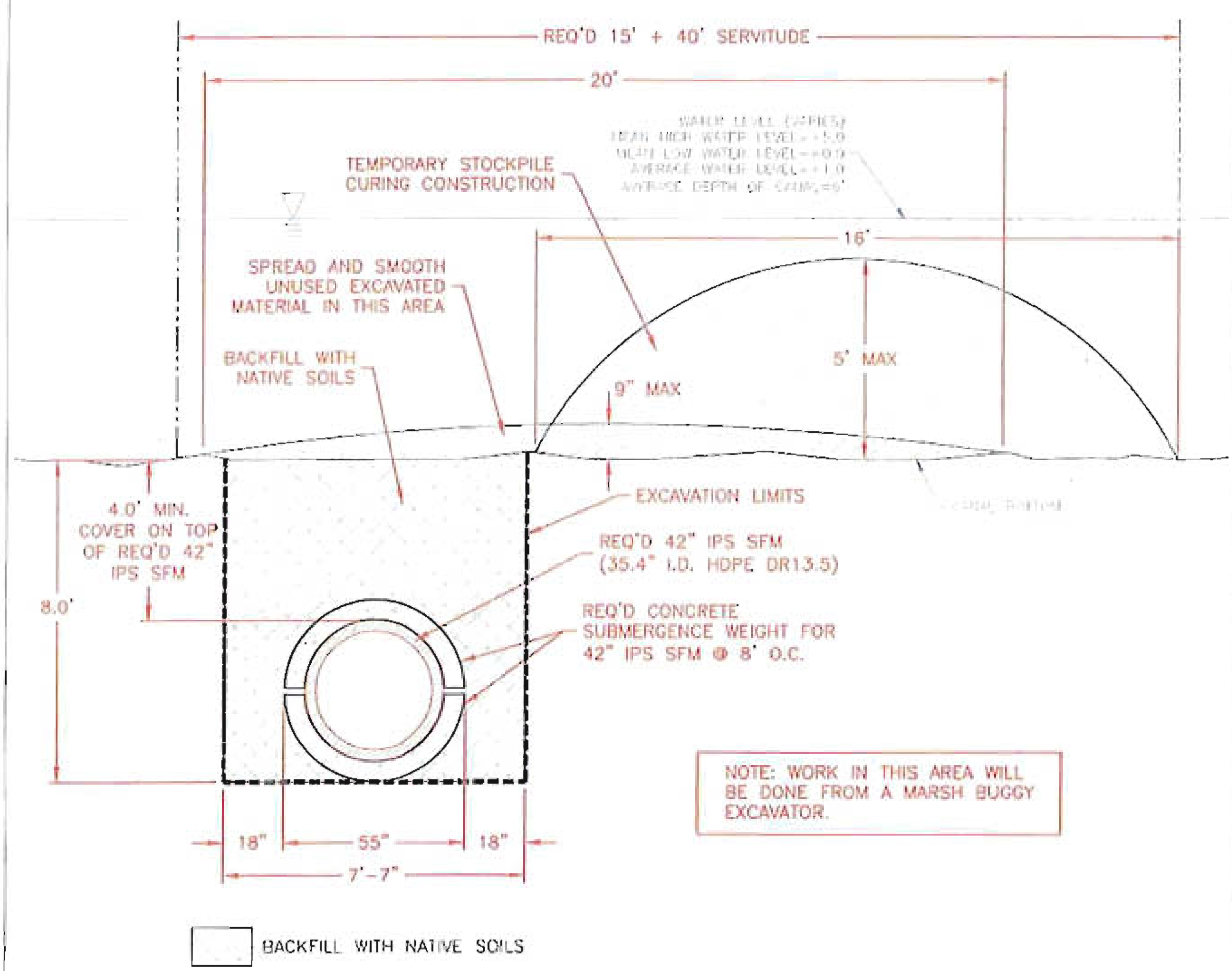
MONITORING BOARDWALK AREA - PLAN VIEW
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

sheet 8



SEWER FORCE MAIN SECTION
THROUGH WALKER CANAL
(NON-VEGETATED WATERBOTTOM)

1 / 3B

SCALE: 1"=4'

GRAPHIC SCALE

42" IPS SFM THROUGH WALKER CANAL (400 LF)

FILL: ±900 CY NATIVE SOILS (NON-VEGETATED WATERBOTTOM)

EXCAVATION: ±900 CY (NON-VEGETATED WATERBOTTOM)

SPOIL WILL BE PLACED ON CANAL BOTTOM.

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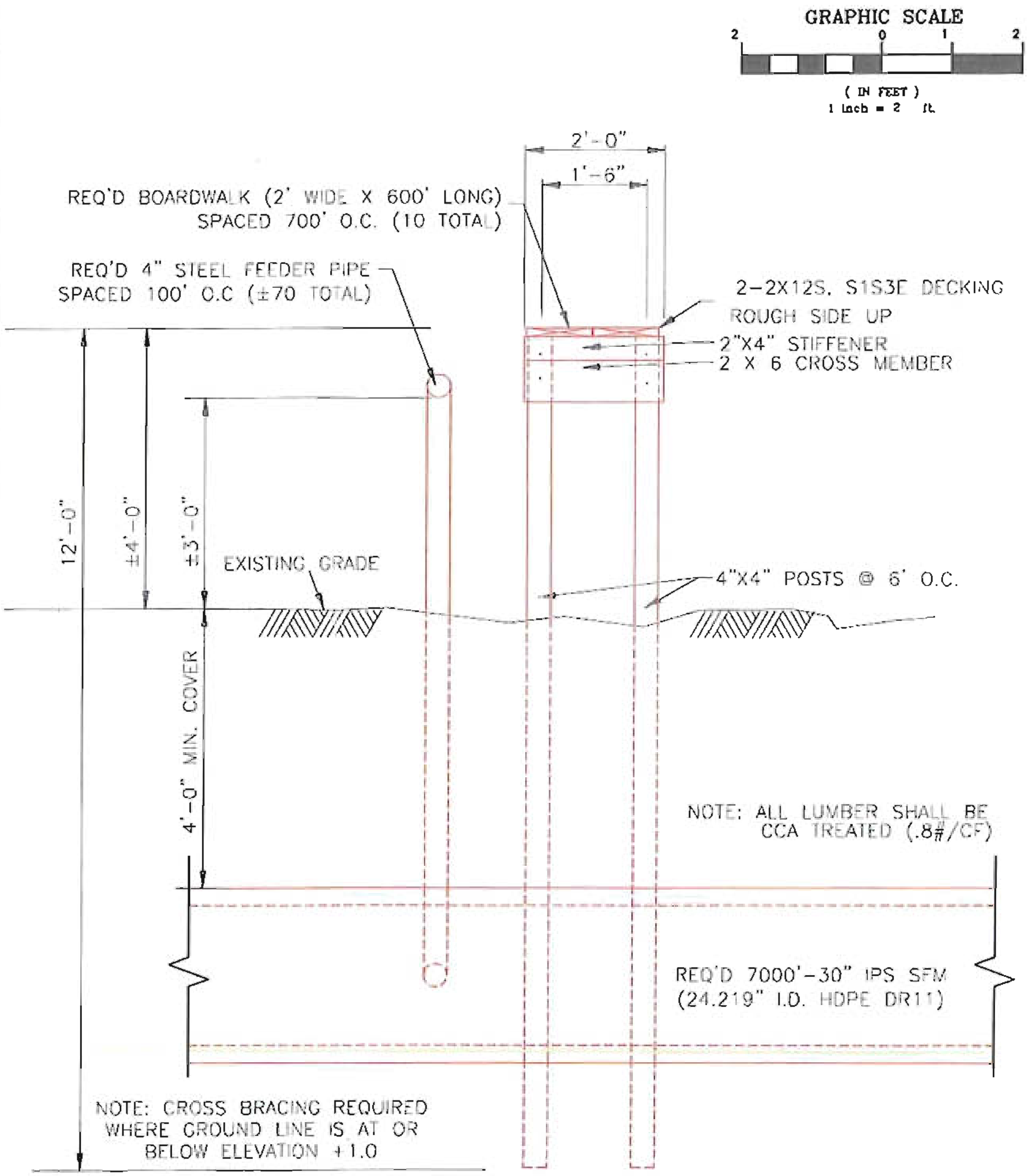
SEWER FORCE MAIN TYPICAL SECTION
KENNER WASTEWATER WETLAND RESTORATION
CITY OF KENNER, OWNER

exhibit 8A



TYPICAL CROSS SECTION OF MONITORING BOARDWALK (FACING FLOOD SIDE)

1 / 9

SCALE: 1"=2'

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MONITORING BOARDWALK CROSS-SECTION
KENNER WASTEWATER WETLAND
RESTORATION
CITY OF KENNER, OWNER

exhibit 9

GULF RESTORATION NETWORK
healthygulf.org
338 Baronne Street, Suite 200 New Orleans, LA 70112
Phone: 504.525.1528 Fax: 504.525.0833

November 15, 2012

Jay Pecot
State of Louisiana Department of Natural Resources
Office of Coastal Management
P.O. Box 44487
Baton Rouge, LA 70804-4487
Jay.pecot@la.gov

RE: City of Kenner Waste Water Treatment Plant, CUP Number P20110882

Dear Mr. Pecot,

The Gulf Restoration Network (GRN), Sierra Club Delta Chapter, Sierra Club New Orleans Group and Louisiana Audubon Council respectfully submit the following comments on the Coastal Use Permit application for the City of Kenner ("Kenner"), CUP Number P20110882, noticed on September 21, 2012. We reserve the right to rely on all public comments submitted, request a written response to our comments, and request written notification when any action is taken on this permit application (issuance, denial, remand, etc.). If the permit is amended or altered in response to comments, we request an opportunity to review and comment on any amended permit.

Background water quality data are lacking.

Information regarding background data for the receiving water body is lacking regarding several parameters including background nitrate, nitrite, ammonia, organic nitrogen, metals, phosphorus, and chlorophyll a. Judging from the information we could locate, the only background data supplied was a LDEQ memo form Ronda Burtch regarding average hardness, TSS, 7Q11, and harmonic mean flow (See Attachment A). Further this information was collected approximately 5.6 miles (9 km) from the nearest discharge point.

Given the purpose of this project is to "assimilate" nitrogen and phosphorus, rigorous background data should be gathered. If this has been done, we formally request these data and associated reports. If these studies are not yet done, we request that this permit not be granted until such reports are completed and reviewed by the agency and the public.

GRN Comments
CUP Number P20110882, City of Kenner, LA
11/16/2012

Total nitrogen estimates are inconsistent.

In response to comments submitted to the applicant by LDWF (See Attachments B and C), the applicant that the TN concentrations coming from the facility are 10 mg/l. However the current LPDES permit application submitted to LDEQ on 06/01/2012 (http://edms.deq.louisiana.gov/app/doc/view.aspx?doc=8421203&ob=yes) states that the maximum monthly average value of NH_3-N (Ammonia) alone is 19 mg/l and the long term average value is 16 mg/l. Since TN = Organic N + NH_3 + NH_4 + NO_3 + NO_2, it stands to reason that the TN could be much higher than predicted, which would require a re-evaluation of the wetlands necessary for the this project. Utilizing just the ammonia nitrogen of 19 mg/l , 1140 ha assimilation area, and 15 MGD discharge, the loading would be approximately 34 $g/m^2/yr$. This is well above the 15 $g/m^2/yr$ recommended in Attachment C, and doesn't even include the other forms of nitrogen that would be present.

Due to this discrepancy, we request that the Coastal Use Permit not be approved until these loading rates are re-evaluated and all permit applications are reconciled.

Hydrology should be modeled.

In Attachment C, the applicant states that the flow in the LaBranche wetlands flows from south to north, however we request more specificity. The wetlands assimilation concept is based on the fact that the effluent flows through the entire length of the "treatment" wetland in a given time, but given that there are several canals in the wetland, this will prevent sheet flow. The interruption of sheet flow would allow for differing levels of nutrient uptake. For example effluent could potentially flow from the discharge points through the Walker Canal, thus short circuiting the wetlands. Further, effluent could travel along the discharge area to the north and then into the canal along the railroad, thus short circuiting the entire wetland.

Given these questions about the hydrology, we request a diagram of the assimilation wetlands, models of predicted water flow, and that dye tests are done to show how water flows during wet and dry weather, focusing on areas where the effluent could short circuit the designated wetlands

Soils, sediment, plants, and water quality should be tested before, during, and after discharge.

We realize that there is a sampling protocol given on page 7 of Attachment C; however there should also be limits on all of these parameters, such as Hg, As, Mg, Pb, Cd, Cr, Zn, Fe, Ni, Ag, and Se. These measurements should also be taken more often than prescribed. Further, the Coastal Use Permit should include more specific requirements for wetland growth. For example, wetland growth should at least be equivalent or greater than the reference area. Further we request that below ground biomass also be measured. It is important to measure the soils and below ground growth as new research has shown, at least for salt marshes, "nutrient levels commonly associated with coastal eutrophication increased above-ground leaf biomass, decreased the dense, below-ground biomass of bank-stabilizing roods, and increased microbial decomposition of organic matter".[1]

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[1] Deegan, L.A., D.S. Johnson, R.S. Warren, B.J. Peterson, J.W. Fleeger, S. Fagherazzi, & W.M. Wollheim. 2012. Coastal eutrophication as a driver of salt marsh loss. Nature 490:388-392.

Regarding sediment testing, we request that the detection level be low enough in order to utilize NOAA's Screening Quick Reference Tables (SQirTs) to identify potential contaminants that may accumulate in the sediment.[2]

Along this line of comments, we also request information as to the location and status of the reference area.

Permanently flooded wetlands with high nitrogen and phosphorus content should be avoided.

We have seen in wetland assimilation areas such as Hammond (Attachment D), where wetlands are permanently flooded, the area has the potential to break apart if there is a continual source of water. We are happy to see that Kenner is planning on alternating the flow into these wetlands. We request details on how they plan to determine when to have the effluent flow into the wetlands and when it will flow into the Mississippi River.

Flow should be pulsed such that there will be periods when assimilation wetlands are allowed to drain completely. According to the NWI Inventory, The immediate outfall area is a Cypress forest that is not permanently flooded, and this project should not change that classification.

According to the State Working Group report on Cypress forests, flooding is responsible for crippling the ability of this region's Cypress forests to regenerate. The same report found that this area drains enough that a small amount of Cypress seedlings are able to grow. Flow should be pulsed in a manner such that the regeneration rate of the Cypress forest is not impeded, that the area drains sufficiently to maintain the measured rate of Cypress seedlings.

Overall, Cypress swamps are a threatened ecosystem within and without the Coastal Zone of Louisiana—there are many threats from development, from oil extraction, from logging, from the invasion of tallow, from subsidence, and even from mitigation banks. Impacts to the remaining regenerating Cypress forests in the Coastal Zone need to be taken seriously and evaluated on a cumulative basis.

Funds should be used to improve the treatment process.

We feel that in order to better ensure success regarding this project, significant treatment upgrades must also be done to the plant itself. Since high levels of nutrients have the potential to degrade wetlands,[3] we suggest that an investment also be made at the Kenner plant to install tertiary treatment processes that would eliminate a percentage of the nitrogen and phosphorus that would be discharged into the wetlands. If the current level of nitrogen and phosphorus proves to be detrimental to the LaBranche wetlands, then the entire project could be jeopardized.

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[2] NOAA. Office of Response and Restoration.
http://response.restoration.noaa.gov/cpr/sediment/squirt/squirt.html

[3] Deegan, et al.; See Attachment D

Impact to Bayou LaBranche and Lake Pontchartrain must be fully analyzed.

In addition to the receiving wetlands, this discharge should be shown to have no impact to Bayou LaBranche and Lake Pontchartrain. These wetlands are part of the LDEQ subsegment for Bayou LaBranche (041201) and also directly discharge into Lake Pontchartrain (041001). The impacts of sewage effluent should be assessed for these receiving waters. Specifically, Bayou LaBranche must be looked at closely as it is designated by LDEQ as an Outstanding Natural Resource Water and by LDWF as a Scenic River. These designations offer Bayou LaBranche special protections. If this discharge has the potential to impact Bayou LaBranche, it cannot be permitted. Also before any impact, the applicant must secure a Scenic River Permit from LDWF.

Before this Coastal Use Permit is granted we request that LDNR secure an Outstanding Natural Resource Water assessment from LDEQ and confirmation from LDWF that a Scenic River Permit has been secured.

The potential for harmful algae blooms must be assessed.

One of the hazards of putting too much nitrogen and/or phosphorus into wetlands that do not have much flow, is the development of harmful algal blooms. Since this area has very low flow (7Q10 of 0.1cfs), there is a large potential for unnatural algae blooms to occur. We request that the applicant demonstrate how they are protecting against algae blooms in the direct receiving wetlands, the associated canals and the ultimate receiving waters (Bayou LaBranche and Lake Pontchartrain).

Long-term nutria control program must be described.

Proponents of wetland assimilation have observed increased levels of nutria herbivory in wetland assimilation sites, such as the Hammond site. Some suggest that nutria feeding is the reason why the Hammond assimilation site is currently not successful. Nobody wants to see this project directly or indirectly cause more wetland loss, so before any permit is granted we request to see a full description of a nutria control program for this project.

Impacts of potential odor should be addressed.

The closest residence to the proposed discharge is approximately 0.7 miles, and this area has a 2011 median household income of $23,265. This community is also positioned adjacent to the airport where they are subjected to noise and air pollution. This discharge should be considered for potential environmental justice issues. One can often smell the sewage treatment plant when driving near the treatment plant along I-10. This is another reason that we request that the City of Kenner also invest in tertiary treatment to better treat the effluent before it is discharged. The applicant should ensure that the nearby community will not suffer additional environmental impacts.

Given the above concerns, we want to make it clear that GRN supports the basic concept of beneficially utilizing properly treated wastewater. However, we do want to make sure that we are not trading one environmental issue for another and that we are anticipating any potential consequences. Thank you for the opportunity to comment on this proposed project. We look forward to your response.

For a healthy Gulf,

Matt Rota
Science and Water Policy Director
Gulf Restoration Network
matt@healthygulf.org

Scott Eustis
Coastal Wetlands Specialist
Gulf Restoration Network
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Haywood Martin
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CC:

Keith Cascio, LDWF
Melissa Ellis, USACE New Orleans District
Tamara Mick, USEPA Region 6
John Ettinger, USEPA Region 6
Lisa Jordan, Tulane Environmental Law Clinic
Ed Bodker
Jamie Phillippe, LDEQ
Todd Franklin, LDEQ
Lake Pontchartrain Basin Foundation
William Fontenot, Sierra Club, Delta Chapter
Darryl Malek-Wiley, Sierra Club
Jill Mastrototaro, Sierra Club

Attached:

A. Memorandum from Ronda Burtch to Todd Franklin, 03/12/2012, RE: Stream Flow Characteristics for various canals leading to Lake Pontchartrain, receiving waters for the City of Kenner WWTP (LA0066800 / AI 19066)
B. Letter from Jimmy L. Anthony (LDWF) to Karl Morgan (LDNR, OCM), 10/12/2012, RE: Application Number P20110882, Applicant City of Kenner, Louisiana, Notice Date September 21, 2012
C. Memorandum from Comite Resources, Inc. to Joseph Jay Pecot (LDNR, OCM), 10/29/2012, RE: Response to Comments, P20110882, Coastal Use Permit Application, City of Kenner, LA
D. Photographs of the Hammond Wetland Assimilation Site

Attachment A

MEMORANDUM

TO: Ronda Burtch

FROM: Todd Franklin

DATE: March 12, 2012

RE: Stream Flow Characteristics for various canals leading to Lake Pontchartrain, receiving waters for the City of Kenner WWTP (LA0066800 / AI 19066)

The discharge from the City of Kenner WWTP flows from a wetlands distribution system pipeline into La Branche Wetlands; thence into various canals leading to Lake Pontchartrain. Ambient data for hardness and TSS was taken from ambient monitoring station #0304 (Bayou La Branche north of Norco at the I-10 bridge, 6.7 miles west of Kenner). The following results were obtained:

Average hardness	=	400 mg/l*
15^{th} percentile TSS	=	13.15 mg/l

* The average hardness of the waterbody at the outfall was determined to be 512.83 mg/l. However, according to the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan, Volume 3, the maximum hardness shall be 400 mg/L used in hardness dependent metal criteria calculations in accordance with 40 CFR 131.36(c)(4)(i).

Although the discharge flows into a natural wetland (La Branche Wetlands), stream flow characteristics are considered for the next downstream waterbody. The water from this area of the La Branche Wetlands flows into a number of canals prior to flowing into Lake Pontchartrain. Based on a review of the area, it is anticipated that the tidal flows would be relatively small; therefore, the default 7Q10 and harmonic mean flow of 0.1 cfs and 1.0 cfs, respectively, should be utilized for water quality based limitation calculations.

If you have additional questions or comments, please contact me at 2-3209.

RECEIVING STREAM INFORMATION

LA#	LA0066800	AI#	19066
Facility Name	City of Kenner / WWTP		
Receiving Stream	LaBranche Wetlands		
Outfalls	001		
Sebsegment	041201		
7Q10	0.1 cfs		
Harmonic Mean	1.0 cfs		
TSS Rec. Stream	13.15 mg/l		
Hardness Rec Stream	512.83 mg/l		
Corresp. Date	March 12, 2012	Contact Person	Ronda Burtch

Comments

The discharge from the City of Kenner WWTP flows from a wetlands distribution system pipeline into La Branche Wetlands; thence into various canals leading to Lake Pontchartrain. Ambient data for hardness and TSS was taken from ambient monitoring station #0304 (Bayou La Branche north of Norco at the I-10 bridge, 6.7 miles west of Kenner). The following results were obtained:

Average hardness = 400 mg/l*
15^{th} percentile TSS = 13.15 mg/l

* The average hardness of the waterbody at the outfall was determined to be 512.83 mg/l. However, according to the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan, Volume 3, the maximum hardness shall be 400 mg/L used in hardness dependent metal criteria calculations in accordance with 40 CFR 131.36(c)(4)(i).

Although the discharge flows into a natural wetland (La Branche Wetlands), stream flow characteristics are considered for the next downstream waterbody. The water from this area of the La Branche Wetlands flows into a number of canals prior to flowing into Lake Pontchartrain. Based on a review of the area, it is anticipated that the tidal flows would be relatively small; therefore, the default 7Q10 and harmonic mean flow of 0.1 cfs and 1.0 cfs, respectively, should be utilized for water quality based limitation calculations.

SITE	SITE_NAME			
304	Bayou La Branche north of Norco, LA			
	COLLECTION_DATE	Parameter	RESULT	UNITS
304	4-Feb-91	HARDNESS (AS CACO3)	56	ppm
	15-Apr-91	HARDNESS (AS CACO3)	280	ppm
	10-Jun-91	HARDNESS (AS CACO3)	194	ppm
	12-Aug-91	HARDNESS (AS CACO3)	111	ppm
	14-Oct-91	HARDNESS (AS CACO3)	358	ppm
	10-Dec-91	HARDNESS (AS CACO3)	554	ppm
	10-Feb-92	HARDNESS (AS CACO3)	101	ppm
	6-Apr-92	HARDNESS (AS CACO3)	128	ppm
	15-Jun-92	HARDNESS (AS CACO3)	125	ppm
	10-Aug-92	HARDNESS (AS CACO3)	324	ppm
	12-Oct-92	HARDNESS (AS CACO3)	365	ppm
	14-Dec-92	HARDNESS (AS CACO3)	416	ppm
	13-Mar-93	HARDNESS (AS CACO3)	129	ppm
	14-Jun-93	HARDNESS (AS CACO3)	243	ppm
	13-Jul-93	HARDNESS (AS CACO3)	2959	ppm
	9-Aug-93	HARDNESS (AS CACO3)	353	ppm
	11-Oct-93	HARDNESS (AS CACO3)	656	ppm
	13-Dec-93	HARDNESS (AS CACO3)	699	ppm
	8-Feb-94	HARDNESS (AS CACO3)	456	ppm
	11-Apr-94	HARDNESS (AS CACO3)	410	ppm
	14-Jun-94	HARDNESS (AS CACO3)	116	ppm
	11-Oct-94	HARDNESS (AS CACO3)	470	ppm
	13-Dec-94	HARDNESS (AS CACO3)	309	ppm
	14-Feb-95	HARDNESS (AS CACO3)	541	ppm
	4-Apr-95	HARDNESS (AS CACO3)	268	ppm
	13-Jun-95	HARDNESS (AS CACO3)	105	ppm
	15-Aug-95	HARDNESS (AS CACO3)	195	ppm
	10-Oct-95	HARDNESS (AS CACO3)	489	ppm
	12-Dec-95	HARDNESS (AS CACO3)	494	ppm
	13-Feb-96	HARDNESS (AS CACO3)	266	ppm
	9-Apr-96	HARDNESS (AS CACO3)	593	ppm
	11-Jun-96	HARDNESS (AS CACO3)	330	ppm
	13-Aug-96	HARDNESS (AS CACO3)	267	ppm
	15-Oct-96	HARDNESS (AS CACO3)	1131	ppm
	10-Dec-96	HARDNESS (AS CACO3)	701	ppm
	18-Feb-97	HARDNESS (AS CACO3)	267	ppm
	15-Apr-97	HARDNESS (AS CACO3)	131	ppm
	10-Jun-97	HARDNESS (AS CACO3)	144	ppm
	12-Aug-97	HARDNESS (AS CACO3)	265	ppm
	14-Oct-97	HARDNESS (AS CACO3)	536	ppm
	9-Dec-97	HARDNESS (AS CACO3)	302	ppm
	9-Feb-98	HARDNESS (AS CACO3)	118	ppm
	14-Apr-98	HARDNESS (AS CACO3)	194	ppm
	3-Jan-01	HARDNESS (AS CACO3)	1142	ppm
	6-Feb-01	HARDNESS (AS CACO3)	1055	ppm
	13-Mar-01	HARDNESS (AS CACO3)	818	ppm
	10-Apr-01	HARDNESS (AS CACO3)	496	ppm
	8-May-01	HARDNESS (AS CACO3)	1272	ppm

	5-Jun-01	HARDNESS (AS CACO3)	1144	ppm
	10-Jul-01	HARDNESS (AS CACO3)	459	ppm
	31-Jul-01	HARDNESS (AS CACO3)	356	ppm
	4-Sep-01	HARDNESS (AS CACO3)	451	ppm
	2-Oct-01	HARDNESS (AS CACO3)	682	ppm
	30-Oct-01	HARDNESS (AS CACO3)	834	ppm
	4-Dec-01	HARDNESS (AS CACO3)	789	ppm
	9-Jul-07	HARDNESS (AS CACO3)	489	mg/L
	8-Feb-93	HARDNESS (AS CACO3)	218.1	ppm
	9-Aug-94	HARDNESS (AS CACO3)	583	ppm
	29-Jan-07	HARDNESS (AS CACO3)	345	mg/L
	2-Feb-10	HARDNESS (AS CACO3)	230	mg/L
	21-May-07	HARDNESS (AS CACO3)	613	mg/L
	9-Apr-07	HARDNESS (AS CACO3)	924	mg/L
	30-Apr-07	HARDNESS (AS CACO3)	922	mg/L
	27-Feb-07	HARDNESS (AS CACO3)	387	mg/L
	19-Mar-07	HARDNESS (AS CACO3)	778	mg/L
	19-Mar-07	HARDNESS (AS CACO3)	778	mg/L
	11-Jun-07	HARDNESS (AS CACO3)	565	mg/L
	17-Sep-07	HARDNESS (AS CACO3)	1116	mg/L
	9-Oct-07	HARDNESS (AS CACO3)	1272	mg/L
	30-Jul-07	HARDNESS (AS CACO3)	416	mg/L
	20-Aug-07	HARDNESS (AS CACO3)	1107	mg/L
	5-Jan-10	HARDNESS (AS CACO3)	162	mg/L
	3-Nov-09	HARDNESS (AS CACO3)	860	mg/L
	6-Oct-09	HARDNESS (AS CACO3)	700	mg/L
	8-Dec-09	HARDNESS (AS CACO3)	590	mg/L
	9-Mar-10	HARDNESS (AS CACO3)	260	mg/L
	8-Jun-10	HARDNESS (AS CACO3)	300	mg/L
	13-Jul-10	HARDNESS (AS CACO3)	300	mg/L
	4-May-10	HARDNESS (AS CACO3)	380	mg/L
	6-Apr-10	HARDNESS (AS CACO3)	380	mg/L
	14-Sep-10	HARDNESS (AS CACO3)	350	mg/L
	10-Aug-10	HARDNESS (AS CACO3)	380	mg/L
		Average Hardness =	**512.83**	**mg/L**

SITE	SITE_NAME			
304	Bayou La Branche north of Norco, LA			
	COLLECTION_DATE	Parameter	RESULT	UNITS
304	14-Jun-93	TOTAL SUSPENDED SOLIDS	24	ppm
	13-Jul-93	TOTAL SUSPENDED SOLIDS	7	ppm
	9-Aug-93	TOTAL SUSPENDED SOLIDS	20	ppm
	11-Oct-93	TOTAL SUSPENDED SOLIDS	11	ppm
	13-Dec-93	TOTAL SUSPENDED SOLIDS	48	ppm
	8-Feb-94	TOTAL SUSPENDED SOLIDS	13	ppm
	11-Apr-94	TOTAL SUSPENDED SOLIDS	40	ppm
	14-Jun-94	TOTAL SUSPENDED SOLIDS	34	ppm
	9-Aug-94	TOTAL SUSPENDED SOLIDS	22	ppm
	11-Oct-94	TOTAL SUSPENDED SOLIDS	15	ppm
	13-Dec-94	TOTAL SUSPENDED SOLIDS	14	ppm
	14-Feb-95	TOTAL SUSPENDED SOLIDS	46	ppm
	4-Apr-95	TOTAL SUSPENDED SOLIDS	52	ppm
	13-Jun-95	TOTAL SUSPENDED SOLIDS	36	ppm
	15-Aug-95	TOTAL SUSPENDED SOLIDS	16	ppm
	10-Oct-95	TOTAL SUSPENDED SOLIDS	24	ppm
	12-Dec-95	TOTAL SUSPENDED SOLIDS	20	ppm
	13-Feb-96	TOTAL SUSPENDED SOLIDS	40	ppm
	9-Apr-96	TOTAL SUSPENDED SOLIDS	58	ppm
	13-Aug-96	TOTAL SUSPENDED SOLIDS	72	ppm
	10-Dec-96	TOTAL SUSPENDED SOLIDS	8	ppm
	18-Feb-97	TOTAL SUSPENDED SOLIDS	46	ppm
	15-Apr-97	TOTAL SUSPENDED SOLIDS	21	ppm
	10-Jun-97	TOTAL SUSPENDED SOLIDS	108	ppm
	12-Aug-97	TOTAL SUSPENDED SOLIDS	4	ppm
	14-Oct-97	TOTAL SUSPENDED SOLIDS	43	ppm
	9-Dec-97	TOTAL SUSPENDED SOLIDS	16	ppm
	9-Feb-98	TOTAL SUSPENDED SOLIDS	36	ppm
	14-Apr-98	TOTAL SUSPENDED SOLIDS	6	ppm
	3-Jan-01	TOTAL SUSPENDED SOLIDS	27	ppm
	6-Feb-01	TOTAL SUSPENDED SOLIDS	25	ppm
	13-Mar-01	TOTAL SUSPENDED SOLIDS	23.9	ppm
	10-Apr-01	TOTAL SUSPENDED SOLIDS	18	ppm
	8-May-01	TOTAL SUSPENDED SOLIDS	21	ppm
	5-Jun-01	TOTAL SUSPENDED SOLIDS	21	ppm
	10-Jul-01	TOTAL SUSPENDED SOLIDS	28	ppm
	31-Jul-01	TOTAL SUSPENDED SOLIDS	246	ppm
	4-Sep-01	TOTAL SUSPENDED SOLIDS	21	ppm
	2-Oct-01	TOTAL SUSPENDED SOLIDS	22.5	ppm
	30-Oct-01	TOTAL SUSPENDED SOLIDS	180	ppm
	4-Dec-01	TOTAL SUSPENDED SOLIDS	15.5	ppm
	4-Feb-91	TOTAL SUSPENDED SOLIDS	18	ppm
	15-Apr-91	TOTAL SUSPENDED SOLIDS	18	ppm
	10-Jun-91	TOTAL SUSPENDED SOLIDS	26	ppm
	14-Oct-91	TOTAL SUSPENDED SOLIDS	9	ppm
	10-Dec-91	TOTAL SUSPENDED SOLIDS	66	ppm
	10-Feb-92	TOTAL SUSPENDED SOLIDS	8	ppm
	6-Apr-92	TOTAL SUSPENDED SOLIDS	216	ppm

	15-Jun-92	TOTAL SUSPENDED SOLIDS	24	ppm
	10-Aug-92	TOTAL SUSPENDED SOLIDS	18	ppm
	12-Oct-92	TOTAL SUSPENDED SOLIDS	11	ppm
	14-Dec-92	TOTAL SUSPENDED SOLIDS	44	ppm
	13-Mar-93	TOTAL SUSPENDED SOLIDS	4	ppm
	9-Jul-07	TOTAL SUSPENDED SOLIDS	35	mg/L
	8-Feb-93	TOTAL SUSPENDED SOLIDS	20	ppm
	15-Oct-96	TOTAL SUSPENDED SOLIDS	8	ppm
	11-Jun-96	TOTAL SUSPENDED SOLIDS	18	ppm
	12-Aug-91	TOTAL SUSPENDED SOLIDS	50	ppm
	29-Jan-07	TOTAL SUSPENDED SOLIDS	18	mg/L
	2-Feb-10	TOTAL SUSPENDED SOLIDS	20.5	mg/L
	21-May-07	TOTAL SUSPENDED SOLIDS	50.5	mg/L
	9-Apr-07	TOTAL SUSPENDED SOLIDS	45	mg/L
	30-Apr-07	TOTAL SUSPENDED SOLIDS	18	mg/L
	27-Feb-07	TOTAL SUSPENDED SOLIDS	16.5	mg/L
	19-Mar-07	TOTAL SUSPENDED SOLIDS	141	mg/L
	19-Mar-07	TOTAL SUSPENDED SOLIDS	18.5	mg/L
	11-Jun-07	TOTAL SUSPENDED SOLIDS	36	mg/L
	17-Sep-07	TOTAL SUSPENDED SOLIDS	83	mg/L
	9-Oct-07	TOTAL SUSPENDED SOLIDS	16	mg/L
	30-Jul-07	TOTAL SUSPENDED SOLIDS	330	mg/L
	20-Aug-07	TOTAL SUSPENDED SOLIDS	20.5	mg/L
	5-Jan-10	TOTAL SUSPENDED SOLIDS	34	mg/L
	3-Nov-09	TOTAL SUSPENDED SOLIDS	20.5	mg/L
	6-Oct-09	TOTAL SUSPENDED SOLIDS	21	mg/L
	8-Dec-09	TOTAL SUSPENDED SOLIDS	59	mg/L
	8-Jun-10	TOTAL SUSPENDED SOLIDS	20.5	mg/L
	9-Mar-10	TOTAL SUSPENDED SOLIDS	6.5	mg/L
	13-Jul-10	TOTAL SUSPENDED SOLIDS	25	mg/L
	4-May-10	TOTAL SUSPENDED SOLIDS	8	mg/L
	6-Apr-10	TOTAL SUSPENDED SOLIDS	18	mg/L
	14-Sep-10	TOTAL SUSPENDED SOLIDS	46	mg/L
	10-Aug-10	TOTAL SUSPENDED SOLIDS	14.5	mg/L
		15 percentile TSS =	**13.15**	**mg/L**

Attachment B

Bobby Jindal
Governor

State of Louisiana

DEPARTMENT OF WILDLIFE & FISHERIES

Robert J. Barham
Secretary

October 12, 2012

Karl Morgan, Administrator
Louisiana Department of Natural Resources
Office of Coastal Management
P.O. Box 44487
Baton Rouge, LA 70804-4487

RE: *Application Number: P20110882*
Applicant: City of Kenner, Louisiana
Notice Date: September 21, 2012

Dear Mr. Morgan:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the notice referenced above for installation of 12,700' of forced sewer mains to discharge secondarily treated effluent (17 million gallons per day) into the Labranche wetlands. The following recommendations have been provided by the appropriate biologist(s):

Ecological Studies:
What other alternatives were evaluated for the treatment of wastewater? Can the existing wastewater treatment facility be upgraded?

The applicant must demonstrate that the receiving wetland can adequately treat and assimilate the proposed discharge volumes without experiencing adverse impacts. For instance, will the receiving wetlands experience longer periods of inundation? Can the effluent drain across the railroad right of way efficiently enough to prevent increased wetland inundation?

Once discharged into the wetland, in what direction will the effluent flow?

Into what waterbody does the receiving wetland discharge?

The applicant should demonstrate that the hydrological gradient of the receiving wetland will assure gravity flow of discharged effluent from the discharge points through the wetland. The hydrological gradient needs to be sufficient to move the anticipated volume of effluent in a direction and at a flow rate that will prevent prolonged wetland inundation.

The applicant must also document current or baseline conditions of the receiving wetland, including a charaeterization of flooding frequency, duration of inundation and water quality.

The permit monitoring protocol shall specifically define what biological or biochemical processes/parameters need to be monitored in order to determine wetland health and insure wetland sustainability should the effluent discharge be authorized. Furthermore, the monitoring protocol should identify acceptable limits for each parameter.

Should the resource agencies determine, by an analysis of monitoring data and on-site conditions, that the receiving wetland is being adversely affected by the effluent, what is the mechanism to initiate and conduct a timely remediation of the impacted wetland? Also, the applicant should provide a contingency plan that outlines alternative treatment methods should it be determined that the assimilation project is not functioning as anticipated. Remediation and contingency plans should be developed and clearly describe the implementation process.

Construction and maintenance of project infrastructure will result in the direct loss of wetland functions. Therefore, the applicant shall provide adequate and appropriate mitigation for impacts to wetland functions. If the assimilation project is intended to be "self-mitigating", the applicant must demonstrate this by quantifying the gain (using a wetland functional assessment) in wetland functions attributable to the project compared to the loss of functions incurred during project construction.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact LDWF Permits Coordinator Dave Butler at 225-763-3595 should you need further assistance.

Sincerely,

Jimmy L. Anthony
Assistant Secretary

ed/im

c: LDEQ, Water Quality Certification Section
EPA Marine & Wetlands Section
USFWS Ecological Services

Attachment C

TO: Joseph Jay Pecot, Coastal Management Division, LDNR, Baton Rouge, LA
FROM: Comite Resources, Inc., 11643 Pride Port Hudson Road, Zachary, LA
RE: Response to Comments, P20110882, Coastal Use Permit Application, City of Kenner, LA
DATE: 10/29/2012

Please provide other alternatives that were evaluated for the treatment of wastewater.

This project is not intended to provide wastewater treatment for the City of Kenner, rather its primary purpose is to enhance the severely degraded LaBranche wetlands through the discharge of secondarily-treated municipal effluent into the wetlands. The effluent is disinfected and tested for toxins before discharge. This water would normally be discharged into the Mississippi River. By putting it into wetlands, nutrients and freshwater in the treated effluent will increase vegetation growth and soil accretion rates and lower saltwater intrusion events by creating a freshwater buffer, in addition to enhancing hurricane protection for Jefferson Parish by creating sustainable wetlands that dissipate storm surges. This project also has the potential to generate revenue through increased carbon sequestration. Currently, the City of Kenner discharges secondarily-treated effluent into the Mississippi River, and with this project the City will retain the ability to alternate discharge between the river and the LaBranche wetlands. Thus, the Louisiana Pollutant Discharge Elimination System (LPDES) permit limits for 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS; 30 mg/L monthly average for both BOD_5 and TSS) will remain the same regardless of whether the City is discharging into the wetlands or the river.

Can the existing wastewater treatment facility be upgraded without any additional impacts to wetlands and/or coastal waters?

In the future, the City of Kenner will be upgrading its facility to increase the design capacity from 11 million gallons per day (MGD) up to 15.2 MGD. The City could continue to discharge this effluent into the Mississippi River, but doing so would be a missed opportunity for wetland restoration through the addition of much-needed freshwater and nutrients to the LaBranche wetlands. And, as indicated above, it is anticipated that discharge will be alternated between the wetland and the river.

Please demonstrate that the receiving wetland can adequately treat and assimilate the proposed discharge volumes without experiencing adverse impacts. For instance, will the receiving wetlands experience longer periods of inundation? Can the effluent drain across the railroad right-of-way efficiently enough to prevent increased wetland inundation?

In order to estimate nutrient removal, total nitrogen (TN) and total phosphorus (TP) concentrations and the area of wetland are needed. In general, nutrient loading rates for wetland assimilation projects in Louisiana have been kept at or below 15 and 4 $g/m^2/yr$ for TN and TP, respectively, in order to maintain high nutrient removal efficiency. Given 10 and 3 mg/L for TN and TP concentrations and an anticipated discharge of 11 million gallons per day (MGD) for the City of Kenner, the area of the LaBranche wetlands needed to maintain the loading criteria (i.e., 15 and 4 $g/m^2/yr$ for TN and TP) would be 1,150 ha (or 2,842 acres; Table 1). Nutrient loading for the 1,150 ha of wetland receiving 11 MGD would be 13.2 and 4.0 $g/m^2/yr$ for TN and TP, respectively. At this loading rate a 50-70% and a 40-60% reduction in TN and TP, respectively, could reasonably be expected.

If greater reductions in TN and TP concentrations are desired, then the loading rate would have to be reduced. Because the average discharge of 11 MGD cannot be changed, the only way to reduce the loading rate is to increase the wetland area. If the area of wetlands were increased to 2,240 ha (or 5,535 acres), removal efficiencies of 70-90% and 60-80% could be expected for TN and TP, respectively (Table 1). The LaBranche wetlands consist of more than 20,000 acres and, thus, this greater area may be accommodated, dependent upon cooperation of landowners.

In the future, increased discharged is anticipated as the population of St. Charles Parish increases and so Table 1 also includes predicted nutrient reduction if 15.2 MGD of treated effluent were discharged into the wetlands. If an area of 2,240 ha of wetlands were used for assimilation, reasonable nutrient reductions are predicted for both TN and TP. Again, because of the size of the LaBranche wetlands, this area may also be increased to improve nutrient reduction, dependent upon cooperation from landowners.

Table 1. Nutrient loading rates and estimated removal efficiencies if 11 and 15.2 MGD were discharged into 1140 ha and 2240 ha of wetlands.

	1,140 ha (2,817 ac)		**2,240 ha (5,535 ac)**	
	TN	**TP**	**TN**	**TP**
Discharge (MGD)	11	11	11	11
Nutrient Conc. (mg/L)	10	3	10	3
Loading Rate ($g/m^2/yr$)	13.2	4.0	6.8	2.0
Predicted Reduction	50-70%	40-60%	70-90%	60-80%
Discharge (MGD)	15.2	15.2	15.2	15.2
Nutrient Conc. (mg/L)	10	3	10	3
Loading Rate ($g/m^2/yr$)	18.4	5.5	9.4	2.8
Predicted Reduction	45-65%	35-55%	65-85%	55-75%

Although we have not conducted any hydrologic modeling to determine the impact of discharging 11 MGD of treated effluent into the wetlands, Josef Hoffman conducted a modeling study to determine the impacts of a diversion from the Bonnet Carre spillway on the water surface elevation (WSE) of the LaBranche wetlands (Hoffman 2011). The two-dimensional finite element code ADH was used to simulate the introduction of freshwater into the LaBranche wetland via a proposed diversion channel from the Bonnet Carre Spillway in the southwestern portion of the wetlands. Model calibration, validation, and sensitivity analyses were performed before actually simulating the proposed diversion scenarios. The diversion scenarios that were selected for simulation represented extreme conditions for spillway and diversion operation. This was done so as to estimate the widest range of effects in implementing this proposed diversion. At a low flow condition in the spillway (10,000 cfs/6,463 MGD), approximately 850 cfs (549 MGD) is captured by the diversion channel used to transport water into the wetlands and at high flow in the spillway (250,000 cfs/161,579 MGD) approximately 17,500 cfs (11,310 MGD) is captured by the diversion channel. As can be seen in Figure 1 (right), at a flow rate of 850 cfs (549 MGD), surface water elevation in the wetlands is raised by about 3 ft in the direct vicinity of the discharge and about 2.5 ft higher north of the railroad. A discharge of 549 MGD is about 50 times higher than what will be discharged into the LaBranche wetlands by the City of Kenner. Thus, we do not expect that the discharge of 11 MGD will cause a significant increase in water levels in the wetland area surrounding the discharge.

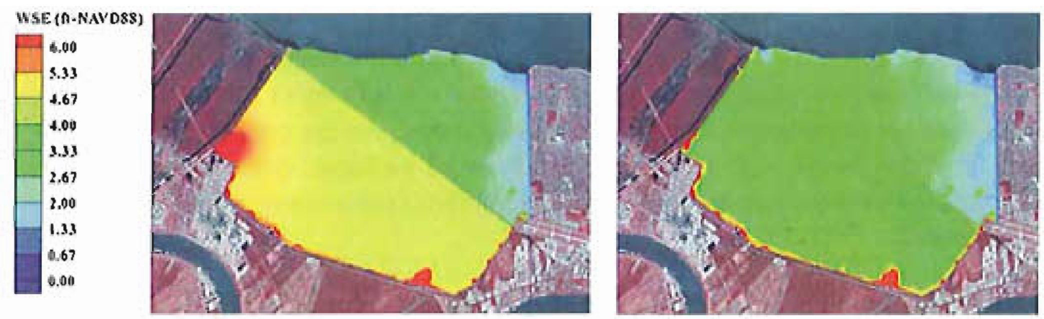

Figure 1. Simulated inundation in the LaBranche wetlands for (left) 250,000 cfs Bonnet Carre diversion simulation and (right) 10,000 cfs Bonnet Carre diversion simulation. WSE is water surface elevation in feet.

There are six primary openings underneath the railroad that crosses the length of the LaBranche wetlands (Figure 2). Two of the canals (Fall Canal and Pipeline Canal) contain variable crest weirs and the other four canals are open to water exchange but they are very shallow. Cross-sectional area for each canal was measured in 2009 by Comite Resources, Inc. and was 57.83, 23.95, 18.01, 23.15, 6.2, and 17.86 m^2 for Bayou LaBranche, Fall Canal, 16-Mile Trestle, Pipeline Canal, Tie Ditch, and Walker Canal, respectively (Day and Shaffer 2009). Using these data, Bayou LaBranche is the largest canal (almost twice as large as the next largest canal) and Tie Ditch is the smallest. As can be seen in Figure 1, at a very high flow in the spillway (250,000 cfs/161,579 MGD) approximately 17,500 cfs (11,310 MGD) is captured by the diversion channel and the openings under the railroad do not appear to be sufficiently large to allow flow of water through these channels. However, this flow is about 1,500 times larger than expected discharge from the City of Kenner.

Hoffman (2011) also simulated how water levels in the openings under the railroad would increase with discharge of 4,000 cfs into the wetlands. With 4,000 cfs (2,585

MGD), water levels in the six openings increased between about 0.5 and 1.5 ft depending upon the Manning's roughness coefficient that was used for overland and submerged areas (Table 2). A discharge of 2,585 MGD is more than 200 times larger than what will be discharged by the City of Kenner and, thus, we do not expect that water levels at these openings will be raised enough that water will be restricted from leaving the wetland.

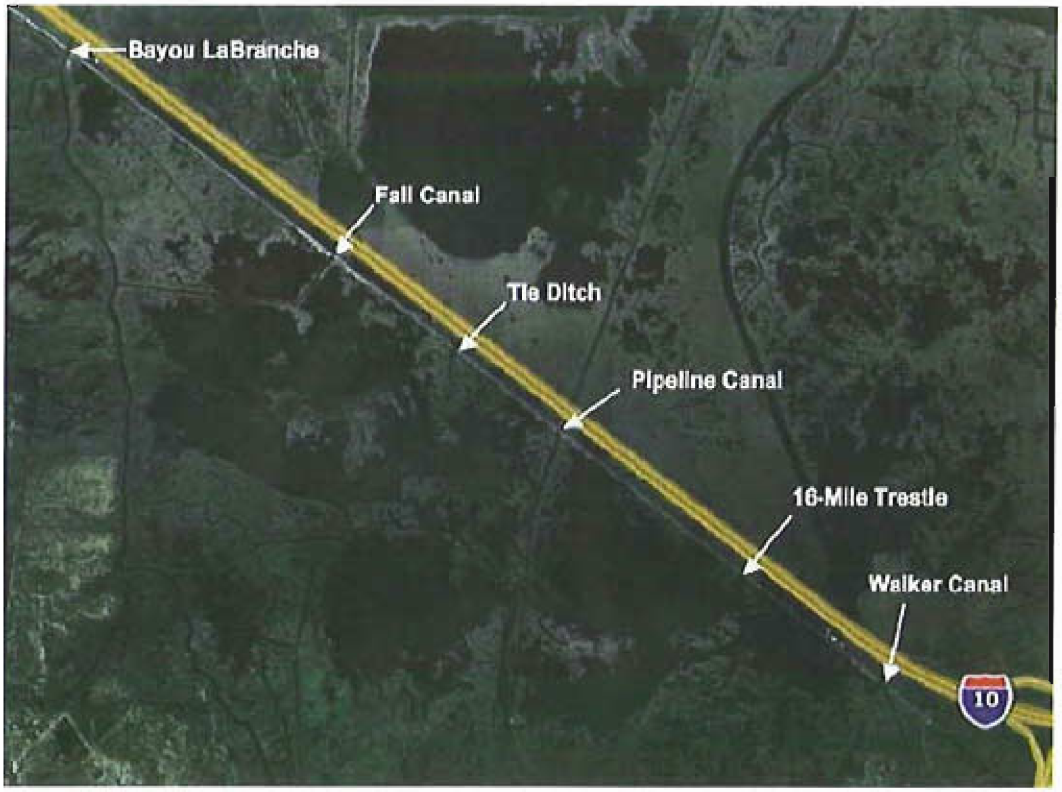

Figure 2. Location of six railroad crossings in the LaBranche wetlands.

Table 2. Stage increase (ft) at the six railroad crossings for wetland sensitivity simulations at 4,000 cfs (2,585 MGD). n_{ov} and n_s denote Manning's roughness values used for overland and submerged areas, respectively.

Channel	Sim #1 n_{OV}=0.060 n_S=0.060	Sim #2 n_{OV}=0.060 n_S=0.010	Sim #3 n_{OV}=0.030 n_S=0.060	Sim #4 n_{OV}=0.030 n_S=0.010
Bayou Labranche	1.58	0.56	1.33	0.55
Fall Canal	1.58	0.73	1.34	0.74
Tie Ditch	1.53	0.70	1.30	0.70
Pipeline Canal	1.42	0.66	1.31	0.69
16-Mile Trestle	1.15	0.55	1.24	0.57
Walker Canal	1.03	0.47	1.25	0.50

Once discharged into the wetland, in what direction will the effluent flow? What water body does the receiving wetland discharge? Please demonstrate that the hydrological gradient of the receiving wetland will assure gravity flow of discharged effluent from the discharge points through the wetland. The hydrological gradient needs to be sufficient to move the anticipated volume of effluent in a direction and at a flow rate that will prevent prolonged wetland inundation.

As can be seen in Figure 3, elevations in the LaBranche wetlands are higher in the southern portion of the wetlands near the Mississippi River. Surface water input into the wetlands, which occurs as a result of precipitation and/or stormwater input from pump stations along Highway 61, flows from the higher elevations near the levee northward to Lake Pontchartrain. Similar patterns of flow are seen in the Bonnet Carre spillway. Treated municipal effluent discharged into the wetlands would take a similar route, flowing northward from the discharge location towards Lake Pontchartrain.

In addition, there is permanent inundation for most of the wetlands in the area. The marsh in the southeastern part of the area is almost all floating and the water depth is 2-3 feet. The cypress swamp is permanently flooded to the extent that no regeneration is taking place (Day et al. 2012). Water tupelo is absent from most of the swamp indicating that the area has been impacted by salinity intrusion throughout most of the LaBranche wetlands. One goal of the project is to create a nursery and to replant part of the baldcypress swamp.

Figure 3. Digital LIDAR elevation map showing elevation (NGVD 1984) in the Bonnet Carre spillway and the LaBranche wetlands displayed using Global Mapper 9.0 (Day et al. 2012).

Please also document current or baseline conditions of the receiving wetland, including a characterization of flooding frequency, duration of inundation and water quality.

Comite Resources, Inc. conducted an Environmental Baseline Study (EBS) as part of the requirements for the LPDES permit (Comite Resources, Inc. 2012). The purpose of the EBS is to document baseline conditions (nutrient and metal concentrations in surface water, sediments, and vegetation; surface water pH, dissolved oxygen, and total suspended solids; vegetation composition, cover, and productivity; sediment accretion rates; and surface water hydrology) prior to discharge of secondarily-treated effluent. This report is available upon request. The EBS, along with another recent study of the area (Day et al. 2012), indicates that the LaBranche wetlands are highly degraded and much of the swamp and marsh south of the railroad will disappear if no action is taken.

Please provide a proposed monitoring protocol that specifically defines what biological or biochemical processes/parameters shall be monitored in order to

determine wetland health and insure wetland sustainability. The monitoring protocol should identify acceptable limits for each parameter. Should the resource agencies determine, by an analysis of monitoring data and on-site conditions, that the receiving wetland is being adversely affected by the effluent, what is the mechanism to initiate and conduct a timely remediation of the impacted wetland?

The parameters measured during the EBS will be re-measured after discharge has begun to determine impacts of the effluent on the wetland (Table 3). Monitoring is required by the LPDES permit. Monitoring continues for the life of the LPDES permit and, thus, for the life of the assimilation wetland project.

Table 3. Vegetation, sediment, and surface water monitoring required by the LPDES permit for assimilation wetlands.

Parameter	Wetland Component		
	Flora	Sediment	Surface Water
Species Classification	P		
Percentage of Whole Cover (for each species)	P		
Growth Studies	A		
Water Stage			M
Metals: Mg, Pb, Cd, Cr, Cu, Zn, Fe, Ni, Ag, Se	P	P	P
Nutrient Analysis I: TKN, TP	P	P	Q
Nutrient Analysis II: NH_3N, NO_2N, NO_3N, PO_4		P	Q
Others: BOD5, TSS, pH, Dissolved Oxygen			P
Accretion Rate		P	

P: Periodically – Sampling must be made once during September through November in the fourth year of the permit period for all three (3) DISCHARGE AREAS and one (1) REFERENCE AREA.
Q: Quarterly – Sampling (one sample collected per area) must be made every three months annually for all three (3) DISCHARGE AREAS and one (1) REFERENCE AREA.
M: Monthly – Samples should be taken at all three (3) DISCHARGE AREAS and one (1) REFERENCE AREA
A: Annually – Sample once per year at all three (3) DISCHARGE AREAS and one (1) REFERENCE AREA.

The LPDES permit for assimilation wetlands does not define acceptable limits for each monitoring parameter but it does clearly outline what to do if "wetland monitoring shows that there is:

- More than a 20% decrease in naturally occurring litterfall or stem growth; or
- Statistical decrease in the dominance index or stem density of bald cypress

Then, within 180 days of a decrease in any of the above required biological criteria, the permittee shall develop a study and test procedures to determine the origination of the cause. A determination shall be made to indicate whether or not the impact to the natural wetland was caused by the effluent. The permittee must demonstrate to the Department what has caused the problem and develop a comprehensive plan for the expeditious elimination and prevention of such cause. The plan shall provide specific corrective actions to be taken to achieve compliance with the above biological criteria within the shortest period of time. In addition, the permittee shall submit the following with the Discharge Monitoring Report in the months of January, April, July, and October:

i. Any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;
ii. Any studies/evaluations and results on the treatability of the facility's effluent toxicity;
iii. Any data which identifies effluent toxicity control mechanisms or measures that could be installed or implemented which would reduce or remove the effluent toxicity; and steps taken or proposed to be taken to prevent such violation(s) from recurring.

In addition, if studies and tests indicate that the impact to the natural wetland was caused by the effluent, then this permit may be reopened to include appropriate limitations and conditions to ensure protection of water quality standards."

In the case of the LaBranche Wetlands, the City of Kenner will maintain the ability to discharge to the river. Thus, if a problem could not be adequately addressed, discharge could be permanently shifted to the river.

Please provide a contingency plan that outlines alternative treatment methods should it be determined that the assimilation project is not functioning as anticipated. Remediation and contingency plans should be developed and clearly describe the implementation process.

The City of Kenner will retain its ability to discharge effluent into the Mississippi River. As stated earlier, the LPDES permit limits for BOD_5 and TSS will remain the same regardless of whether the City is discharging into the wetlands or the river.

Construction and maintenance of project infrastructure may result in the direct loss of wetland functions. If the assimilation project is intended to be "self-mitigating", please quantify the anticipated gain (using a wetland functional assessment) in wetland functions attributable to the project compared to the loss of functions incurred during project construction and anticipated maintenance.

This project is not intended to be self-mitigating. A total of 2.27 acres of wetlands will be excavated and then filled back in to install 10,400 feet of sewer force main. We then will plant baldcypress seedlings in this area, as well as at other areas receiving treated effluent.

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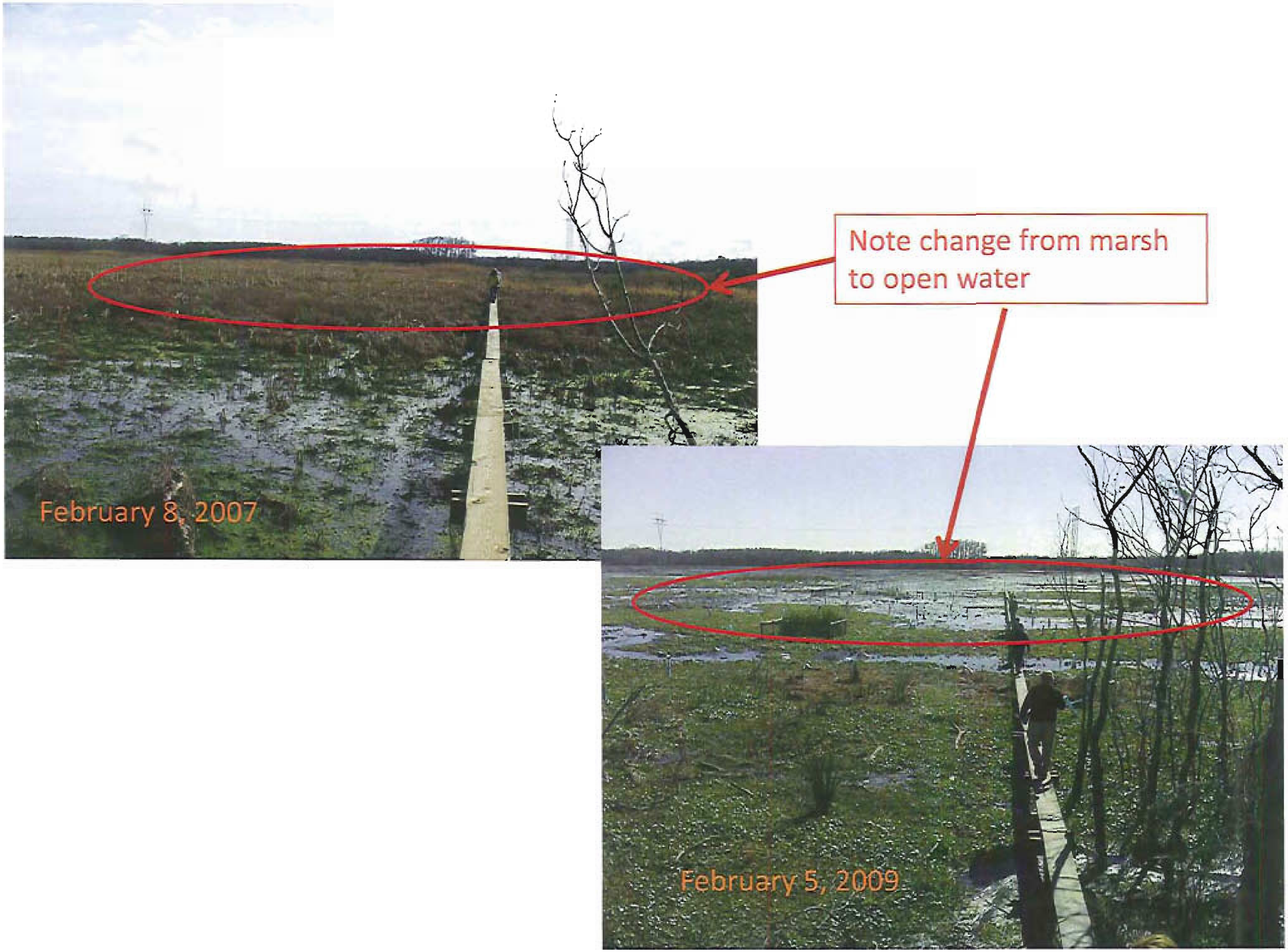
Attachment D

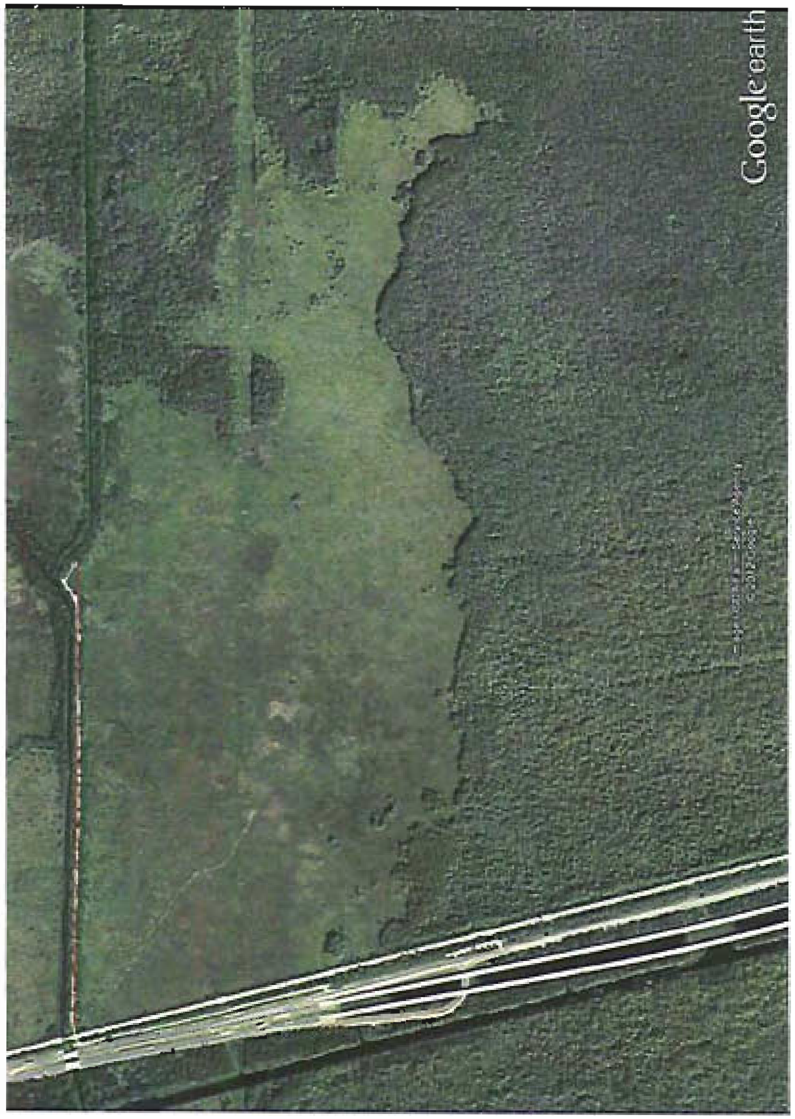

February 8, 2007
February 5, 2009
Note change from marsh to open water

Time Sequence of discharge wetlands for the Hammond Sewage Treatment plant. Highway 55 is on the left. The red line is the discharge pipe. The effluent flows from The discharge pipe to the South. Note conversion to open water and bright green algae Blooms. Effluent discharge into this wetland began Nov 17, 2006

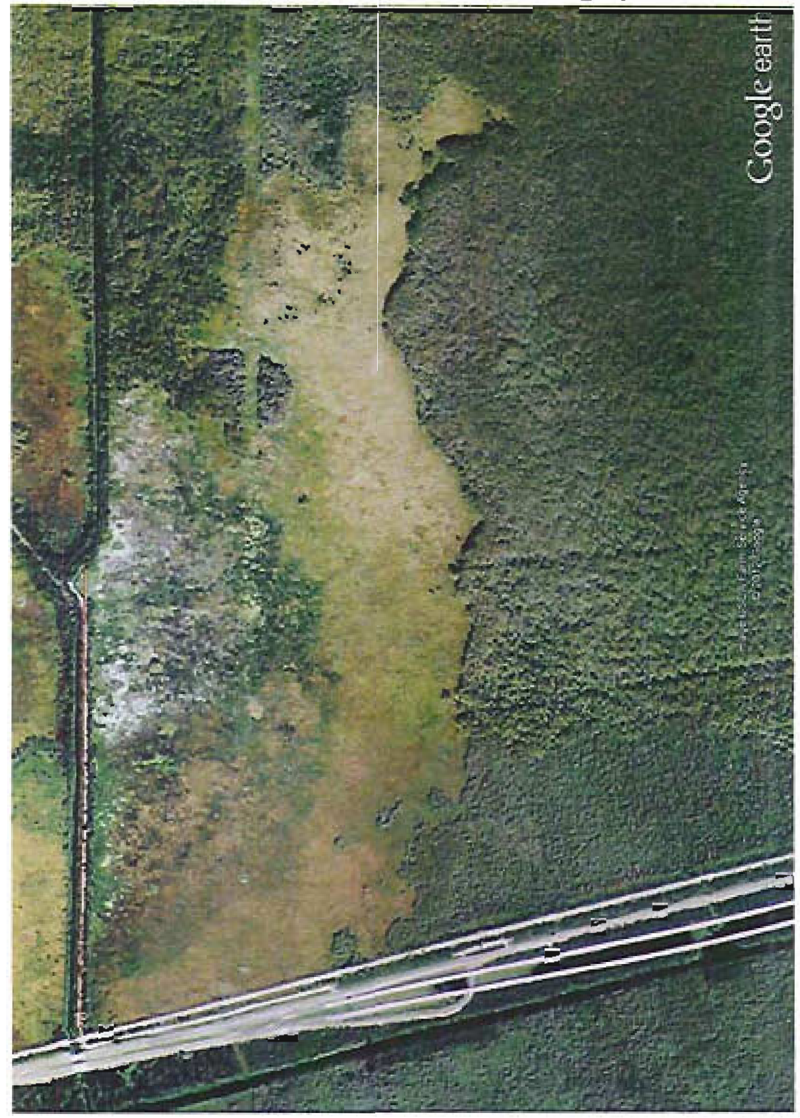
October 26, 2005 (pre discharge)

April 4, 2006 (pre discharge)

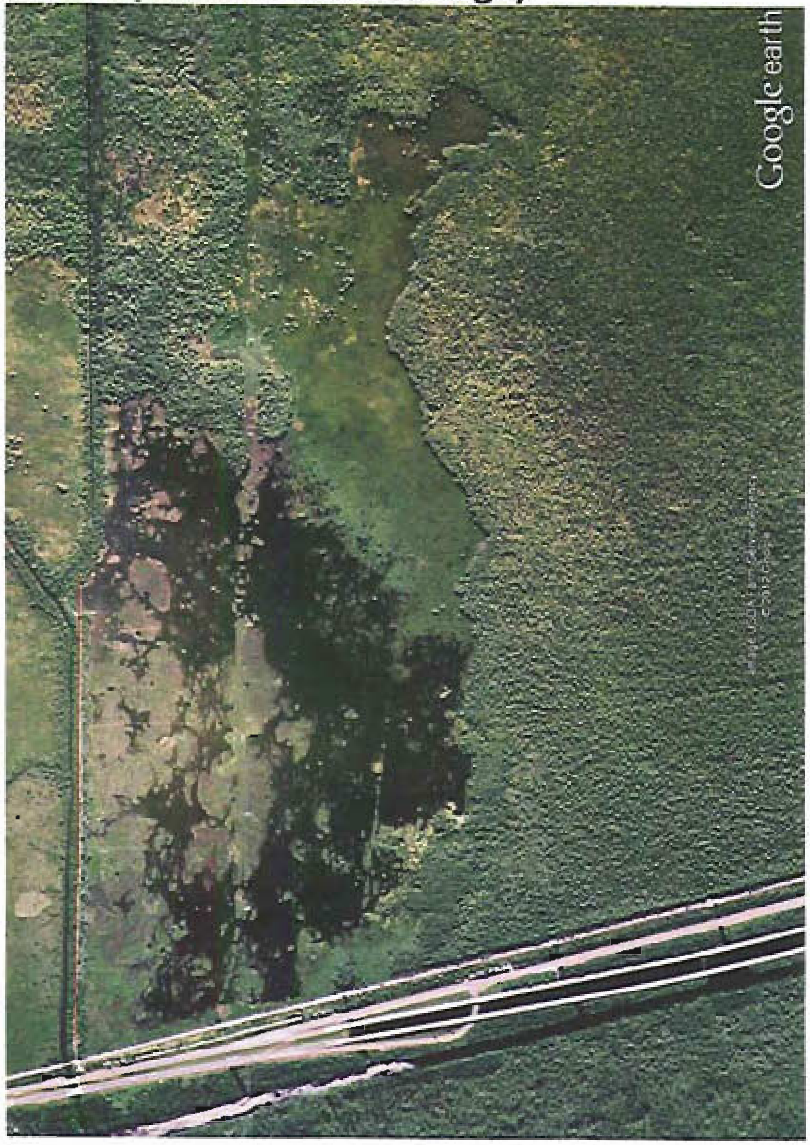
June 25, 2006 (pre discharge)



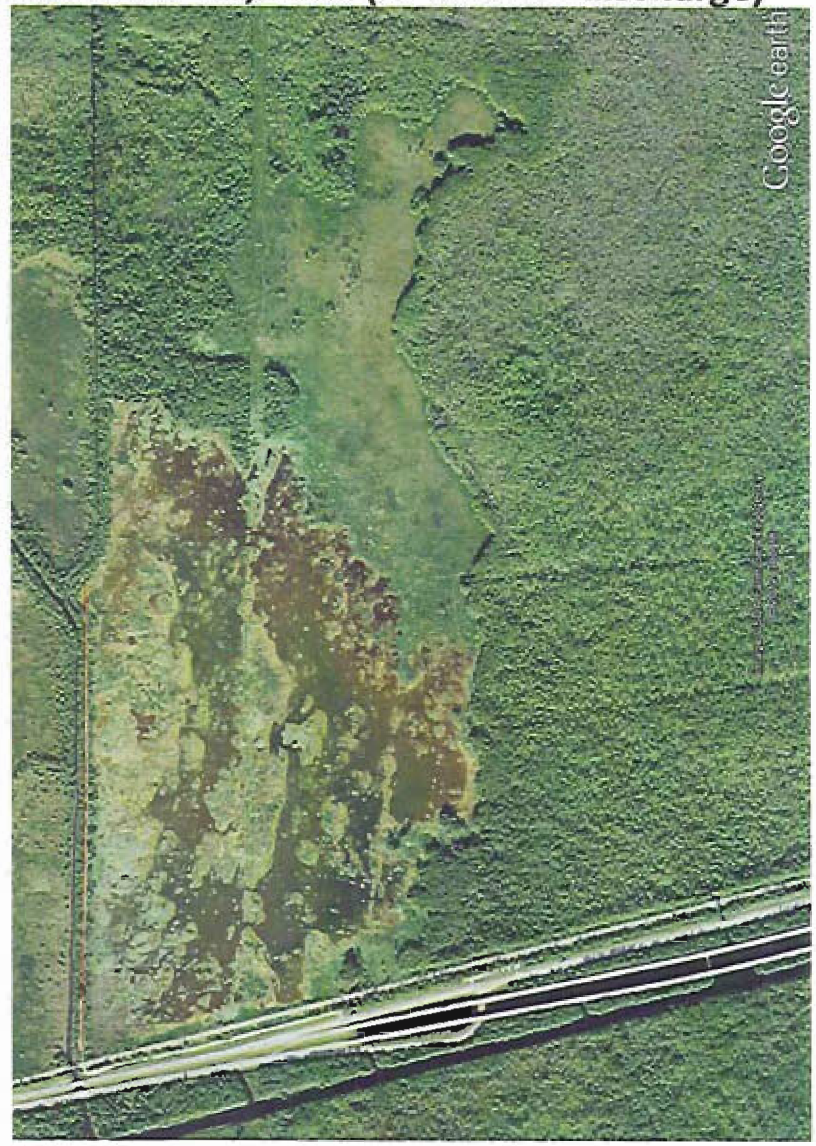
July 22, 2007 (7 months discharge)



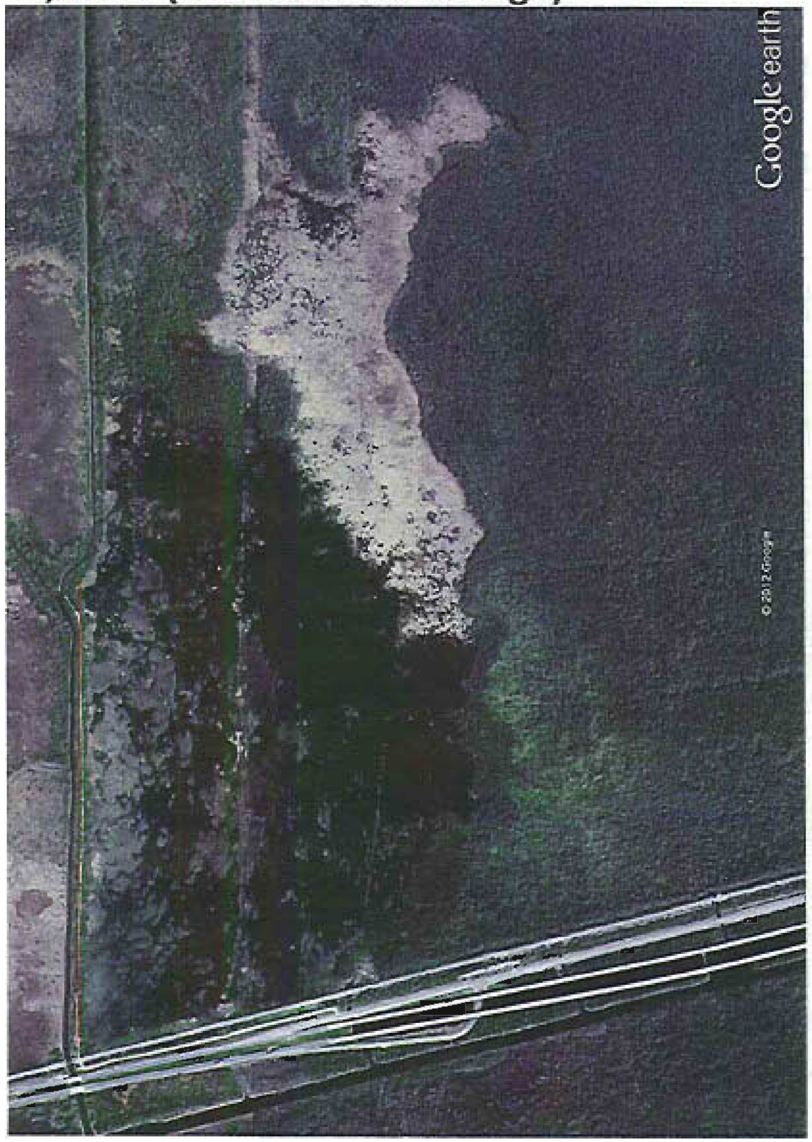
May 17, 2009 (30 months discharge)



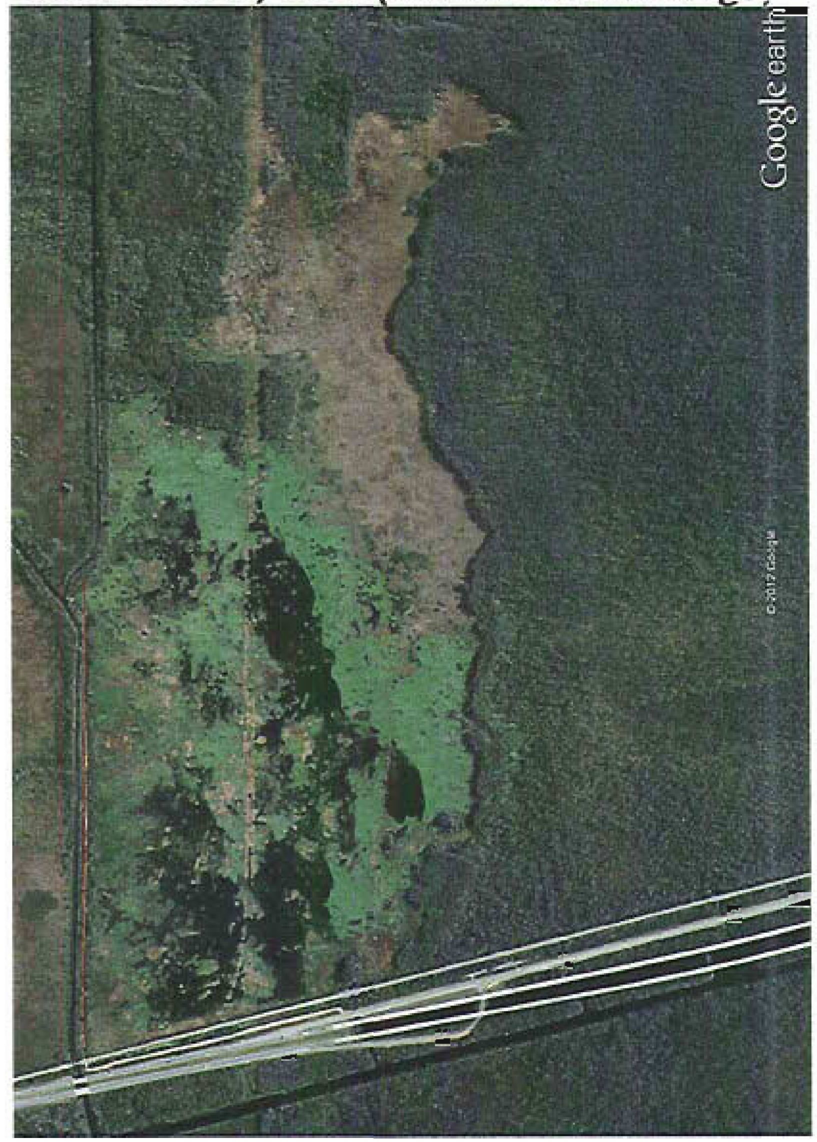
December 31, 2009 (37 months discharge)



March 22, 2010 (40 months discharge)



November 29, 2011 (60 months discharge)



Nov. 16, 2012

Jay Pecot
State of Louisiana Department of Natural Resources
Office of Coastal Management
P.O. Box 44487
Baton Rouge, LA 70804-4487
Jay.pecot@la.gov

Re: City of Kenner Waste Water Treatment Plant, CUP Number P20110882

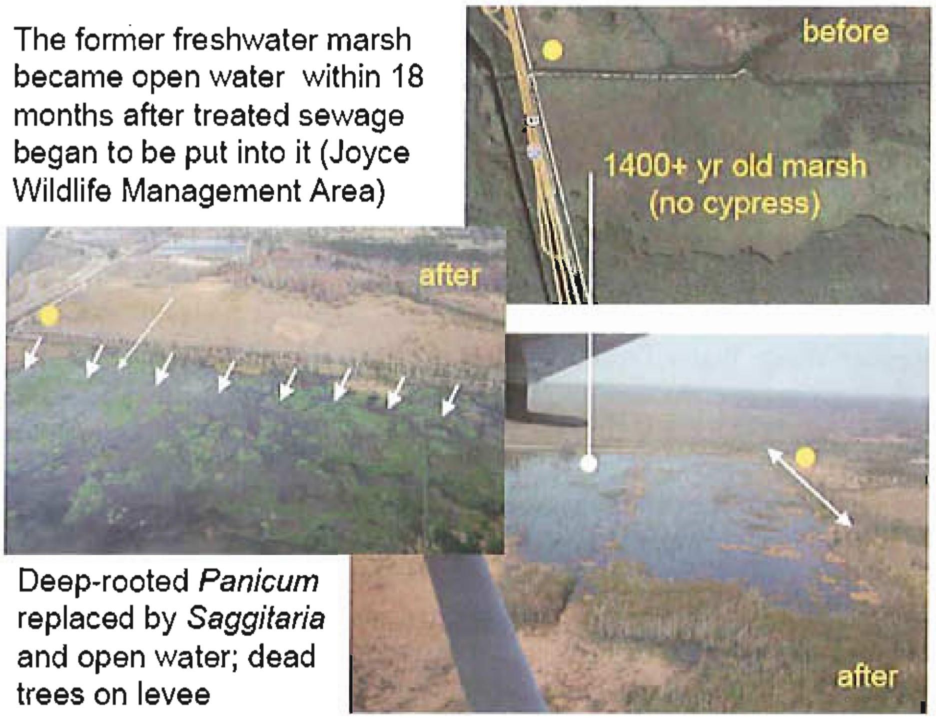
Dear Mr. Pecot:

This value of the project is based on the assumption that adding nutrients to a coastal marsh is beneficial to soil accretion and emergent marsh vegetation. I am writing as a citizen, and my professional opinion is that this conclusion is not supported by the results described in the scientific literature for many geographic locations, and contradicted by the results of treated waste water applied to the Hammond marsh, Joyce Wildlife Management Area, and in the scientific literature. A public hearing should be held to discuss this, or the permit denied/withheld, so that irrevocable changes are made that are contrary to the expected results described in various documents promoting the project, including those prepared by Comite Resources.

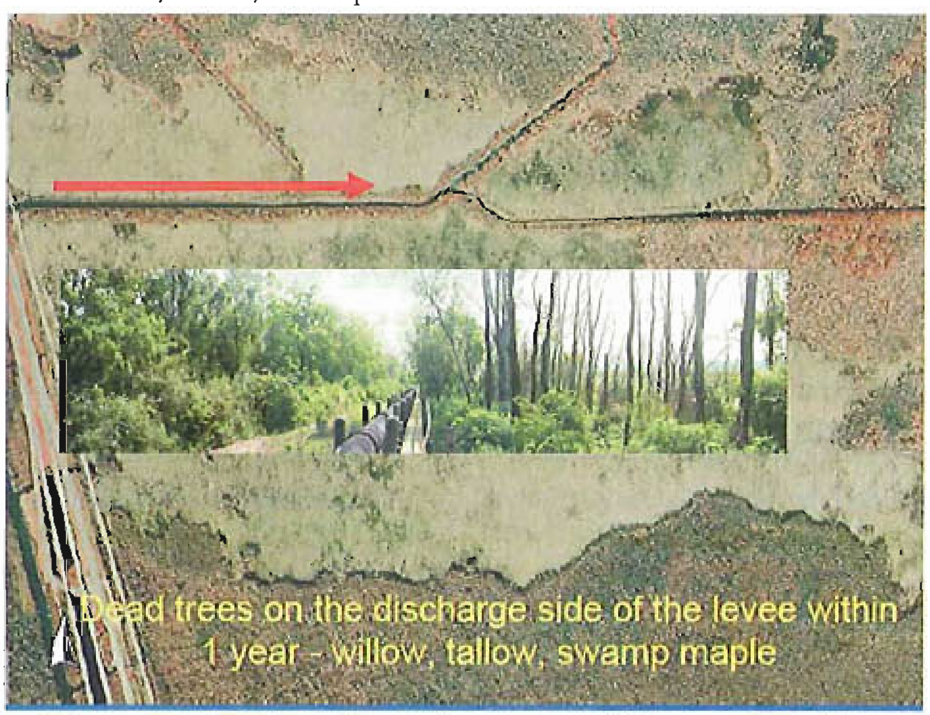
Experience at Hammond, Louisiana

A wetland assimilation project was authorized by the LaDEQ and built by the City of Hammond under the guidance of Comite Resources, and others. This company appears to me to be the same company that performed the UAA for the Spanish Lake project at New Iberia. A 1400 year old coastal fresh marsh began conversion to open water within months after receiving treated sewage water applied as part of a wastewater treatment system. The figures below show some of the results. About *320 acres of marsh are now open water*. Notably, there were hundreds of *dead trees* within the first 2 years of operation. I have examined the soils and conducted experiments to determine the cause-and-effect mechanisms. Rafts of the upper 10 - 30 cm of marsh soil are found throughout the area, as the 1400 year-old wetland soils at the bottom of the former soil profile were re-distributed in the open water forming a soft ooze. The remaining marsh fringes had *weaker soils* at the open water edge. We conclude that the addition of nutrients weakened the soil structure sufficiently for either a storm or rising water levels to tear the marsh apart, thereby releasing the soft partly decomposed older peat, and smothering the remaining marsh. Nutrient enrichment of coastal marshes such as in this permit site will have similar effects on wetland soils, albeit the changes may occur slowly, but with the same effect.

The photo below was taken on 28 April 2010. The open water area, known by some locals as 'Lake Comode' was a marsh for the last 1400 years, until the wetland assimilation project began in late 2007. It started this transformation nearest the pipe discharging the effluent, and spread southward until there were about 320 acres of open water by March 2010. It is an undeniable conclusion, in my opinion, that the sewage effluent was directly responsible for the formation of the open water.

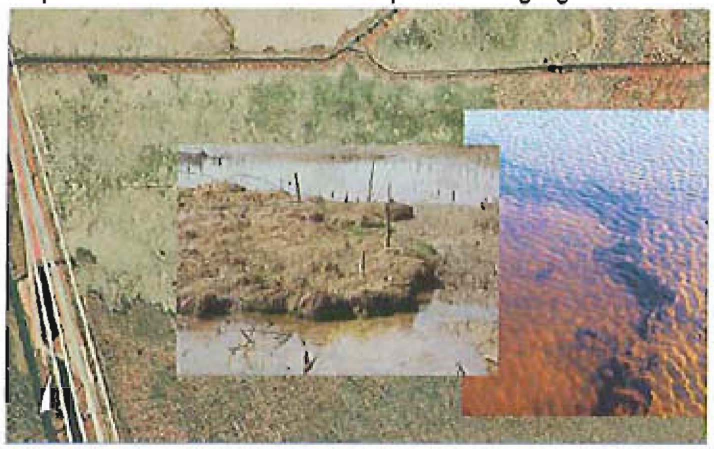


Trees died on the ridge with the discharge pipe immediately after the project began. These included willows, tallow, red maple and others.



The addition of the *nutrients weakened the soil structure* and it fragmented. The upper layer of the soil separated from the layer below during high water, forming 'pop-ups'. This is not unexpected, because these wetlands had very little in the way of nutrients before the partially-treated sewage water was added. The formerly nutrient-poor microbial community then had more nutrients to decompose the organic matter, weakening the soil.

'pop-ups': a mat 30-50 cm thick resting on top of the degraded marsh, with a hole nearby with the same dimensions; the implication is that the marsh was displaced during high water



The sewage wastewater stream contains much more than nitrogen and phosphorus and there are other things to consider than tree leaf production and the 'assimilation' of nutrients. Wading bird rookeries may be compromised through the intermediate parasitic hosts in the fish they eat. The bacterial concentrations at the Hammond discharge site, including of fecal coliform bacteria, have been way above the water quality standards for recreational contact, including for swimming and fishing. The concentration of nitrate in water is much higher than should be occurring if there was a 90% assimilation capacity, and there are sometimes very high levels of ammonium. Methane is produced in dramatically high amounts (bubbling), and sometimes there is a stench of sewage waste, sometimes the smell of chlorine, and usually the smell of organic matter decomposition during the summers.

The Lake Pontchartrain Foundation held a 4 Oct. 2010 workshop to discuss the failure of the Hammond Wastewater Assimilation Project. *The 7-member panel agreed without dissent that there should be a* ***moratorium*** on these kinds of systems. The President of Comite Resources, Inc. was a member of that panel voting for a moratorium.

Other areas

Adding growth-limiting nutrients may seem like a good policy objective if the main determinant of sustainable wetlands is to increase the amount of aboveground biomass. Several studies, however, demonstrate that two different processes are affected when the nutrient load is increased in coastal wetlands: (1) belowground biomass of live tissues declines, and (2) soil decomposition increases. The changes to both process rates will have a negative effect of soil strength. Root and rhizome biomass declines with increased nutrient loading in freshwater, brackish and saltwater coastal wetlands (Darby and Turner 2008a, b; Holm 2006; Langley et al. 2009). This result is consistent with the idea that nutrient foraging is eased as nutrient supply rises. Under these conditions, plants can expend more of their carbon fixation on the accumulation of aboveground biomass (Levin et al. 1989). The organic decomposition rate belowground rises with increased nutrient loading and litter quality, not only for coastal wetlands, but also a variety inland wetlands (Harris et al. 1962; Eggelsmann 1976; Morris and Bradley 1999, Coûeaux et al. 1995; Bragazza et al. 2006; Laursen 2004; Mack et al. 2004;

Franzen 2006, Deegan et al. 2012). Swarzenski et al. (2008) collected data on soil chemistry, stable isotopes, and organic decomposition for a nutrient-rich and nutrient-poor freshwater marsh (*Panicum hemitomon*) and suggested that increased nutrient loading was leading a decline in soil organic content and stability. An analysis of a 30-year nutrient addition experiment in an east coast (US) salt marsh showed that organic soil accumulation did not increase in the fertilized sites, and that soil strength and elevation declined (Turner et al. 2009). Some of this carbon loss is because the added N uses carbon as the terminal electron acceptor to form nitrogen gas (denitrification) under anerobic conditions. Anerobic metabolism may also result in the formation of hydrogen sulfide, nitrous oxides and methane The result of nutrient enrichment may be, therefore, that soil carbon is depleted because less belowground organic matter is produced, and because (with more nutrients) a higher proportion of whatever is produced belowground is metabolized to CO_2 N_x, NO_x, or methane.

Organic soil strength is weakened, and by a large amount, when nutrient loading increases, which is the opposite of what happens aboveground. Morris and Bradley (1999) found that N+P fertilization (ammonium nitrate and phosphate; Huang and Morris 2005) for 12 years increased soil respiration by 36% and decreased soil carbon accumulation in the upper 10 cm by 40 g C m^2 y^{-1}. They describe a rise in surface elevation, however, because of the compensatory accumulation of inorganic material in this relatively mineral-rich marsh – something that is less likely to occur in organic-rich sediments with a relatively small inorganic source for deposition. Other factors besides soil inorganic content will modify the effects of higher nutrient loading on soil organics including tidal range occupied, climate, and flooding cycles. Temperature, for example, has a well-established direct effect on soil organic decomposition and root turnover (Gill and Jackson 2000), and salt marsh plants have some physiological abilities to adapt to flooding and salt stress (Mendelssohn et al. 1981).

One strong implication of these observations is that the widespread increases in nutrient loadings to coastal waters may alter marsh ecosystem functions and perhaps compromise the long-term stability of coastal marshes by increasing belowground organic matter decomposition rates and by reducing root production and, as a consequence, cause a decline in soil strength. Deegan et al. (2012) provide a particular strong example of this for a New England marsh. A chronic degradation of marsh organic matter may not be identified or expressed until a strong storm rips the marsh away from its substrate in a quick transition from marsh to open water.

Even if marshes are not ripped apart in a dramatic event like a hurricane, the long-term effects of these changes on soils are of concern because of the anticipated climate changes resulting in an acceleration of sea level rise. Coastal marshes maintain their vertical position within the upper portion of the local tidal range through the accumulation of both inorganic and organic materials. The long-term health of an organic-rich marsh is dependent on the amount and fate of belowground organic production. In organic-rich salt marshes, soil density is primarily determined by the inorganic content, but the vertical accumulation of organics controls the vertical accretion rate (Turner et al. 2000). Soil elevation may be lowered, and to the detriment of the plant's existence, if either the root production is decreased or the decomposition of accumulated organic matter is accelerated enough so that the net organic accumulation is less than relative sea level rise.

Remediation

As far as I can tell, there is no mitigation plan if wetland area is reduced, not increased. The action response is only to shift the treated sewage water into the Mississippi River. No permit should be approved until: 1) a risk analysis is conducted, 2) a wetland restoration plan for the worst case scenario is developed, and 3) a bond posted sufficiently large to secure a 100% mitigation of lost wetlands.

Thank you for the opportunity to comment on the proposed project. I look forward to your response.

Sincerely,

R. Eugene Turner

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Baton Rouge, LA 70810

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November 15, 2012

Jay Pecot
State of Louisiana Department of Natural Resources
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RE: City of Kenner Waste Water Treatment Plant, CUP Number P20110882

Dear Mr. Pecot,

Below are my comments on the Coastal Use Permit application for the City of Kenner ("Kenner"), CUP Number P20110882, noticed on September 21, 2012.

I was not aware of this pending permit until yesterday and did not read anything about this proposed permit until last night.

Over the last seventy years I have visited the LaBranche wetlands hundreds of times and traveled on the various roadways and railroad tracks which cross this area a few thousand times. I have also traveled over most of the LaBranche wetlands in motorboats and canoes dozens of times.

During the last forty years I have worked extensively with many residents of St. Charles Parish on issues about social Justice, fish and wildlife resources, their habitat, water quality, alterations to the land, air, water, forest and coastal wetlands.

1 – The lower Mississippi River Basin has been dramatically altered and these alterations are very obvious in the parishes of Orleans, Jefferson, St. Charles, and St. John the Baptist on the southern side of lakes Maurepas and Pontchartrain.

My reading of the permit application would not have given me much information about the LaBranche wetlands and those things which have dramatically altered this area. Without a much more clear understanding of the regional geography and history I would not have learned about these alterations which have dramatically changed the waters and wetlands of this coastal wetland area.

Three hundred years ago much of the area was covered by swamps and wetlands which were created by the movement of sediment down the Mississippi River.. The conversion of these wetland to total urban sprawl in the parishes of Orleans and Jefferson have had dramatic impacts and the proposed discharge of partially treated sewerage from Kener will continue these on going alterations.

After the flood of 1927 the U.S. Congress passed the Lower Mississippi River and Tributaries Flood protection Act of 1928. With this clear mandate the U.S. Army Corps of Engineers built the large earthen levees on both sides of the river and the Atchafalaya and Bonnet Carre Spillway to move water from the river to Lake Pontchartrain and the Gulf of Mexico. Both of these features have dramatically altered the LaBranche wetlands and waters.

There are two railroad tracks through the LaBranche wetlands and these tracks have dramatically altered water flows, water quality and habitats for fish and wildlife

Several major roadways cross through or near the wetlands including the River Road, Airline Highway, which is u.S. Highway 61, Interstate 10 and Interstate loop 310.

The New Orleans, Louis Armstrong, International Airport is just east of the LaBranche wetlands and there has been significant pollution of the wetlands from this aircraft facility and related operations.

All of these airport, railroad and highway operations have caused significant pollution of oil, grease, a wide variety of chemicals and heavy metals which have caused extensive pollution of the LaBranche wetlands.

Several major canals were dug through the LaBranche wetlands including what today are called Bayou Trepagnier and Bayou LaBranche. These two waterways were used as discharge canals for waste water from the Pan American Oil Refinery next to Destrehan Plantation and the I-310 Bridge, the Good Hope Oil Refinery, now the Valero Oil Refinery, which discharged waste into the canal on the south side of Airline Highway which led to Bayou LaBranche and Lake Pontchartrain and the Shell Oil Refinery next to the town of NORCO and the Bonnet Carre Spillway which discharged about five million gallons of waste water each day for more than seventy years into Bayou Trepagnier and then into Bayou LaBranche and Lake Pontchartrain..

Today there are many areas in the LaBranche wetlands which are still very polluted from these past oil refinery operations. Bayou Trepagnier has several hundred thousand cubic yards of highly contaminated sediment from Shell oil, the Airline Highway canal is still contaminated with waste from the Good Hope Oil Refinery, Cross Canal which empties into Bayou LaBranche is still seriously contaminated with waste from the Pan American Oil Refinery and the old landfill operated by Browning Ferris Industries where I-310 intersects Airline Highway still contains many barrels of hazardous waste.

There are two salt domes just north of Airline Highway between Bayou LaBranche and the Bonnet Carre Spillway where many wells were drilled for oil and natural gas and extensive pollution from these operations were released into the nearby waters and wetlands.

In the early 1970's Bayou Trepaginer and Bayou LaBranche were added to the Louisiana Natural and Scenic River System to prevent speculative wetland developers from converting the LaBranche wetlands to an expansion of the urban development in Kenner and Metairie. The Scenic Rivers Law prevents the building of Dams in these rivers and thus the Corps of Engineers could not build levees and dams between Bayou LaBranche and Lake Pontchartrain.

In the 1970's several groups won a lawsuit against the U.S. Department of Transportation which prevented the building of the proposed I-410 Loop around the New Orleans Metropolitan Area. A contract had already been issued for the building of the bridge at luling so the bridge and about 10 miles of interstate highway between I-10 and U.S. 90 was eventually built. For the first time the highway engineers used a new technology for this stretch of highway called End On Construction which dramatically reduced the land area needed to build this elevated highway. This construction was very much less destructive of the LaBranche wetlands than I-10 and Airline Highway had been

In 1970 the U.S. Army Corps of Engineers was planning on building a levee along the shore of Lake Pontchartrain in St., Charles Parish but the inclusion of Bayou LaBranche and Bayou Trepagnier into the state Natural and Scenic River system prohibited the building of dams across all rivers in the Scenic River system. If the Corps had built this levee then all of the LaBranche wetlands would have been drained and the 32,000 acres of marsh and swamp in East St. Charles Parish between Lake Pontchartrain and the Mississippi River would have been converted from wetlands to urban sprawl.

The U.S. Department of Transportation had planned to build the 52 mile I-410 loop around New Orleans and the section in St. Charles Parish would have been built through the middle of the LaBranche wetlands about four miles from the bonnet Carre Spillway and the New Orleans Airport in Kenner. I-310 was built very close to Kenner and this highway has been one of the best examples of positive engineering of structures built in coastal Louisiana

In early 2005 the Corps of Engineers completed building a hurricane flood protection levee system in St. Charles Parish more than three miles inland from Lake Pontchartrain so most of the marsh and swamp in the LaBranche wetlands area has not been developed and is still connected with the lake. This much smaller levee than the one planned for the shore of Lake Pontchartrain was completed a few months before Hurricane Katrina struck in August of 2005 and the new smaller hurricane levee withstood the hurricane flooding which devastated the urban development in the former marsh and swamp lands of Orleans and Jefferson Parishes. No similar flooding from Katrina happened in the wetlands of East St. Charles Parish.

2 – There is no discussion in the documents I was able to review about how water from the LaBranche wetlands and the proposed millions of gallons of treated sewerage water might move through the more than 20,000 acres of coastal wetlands and exit the wetlands into Bayou LaBranche and Lake Pontchartrain.

I believe there is only one exit from this wetland area through a small weir water control structure which is on the east bank of Bayou LaBranche about two miles from Lake Pontchartrain. This structure was apparently built by local hunting groups to keep water in the wetlands and to reduce the possibility of salt water coming up the Mississippi

River Gulf Outlet and eventually getting into the last expanse of coastal wetlands on the south shore of Lake Pontchartrain.

Unfortunately this weir water control structured has a very limited water outlet which is less than ten feet wide. This water control outlet is also horizontal in shape rather than vertical so that there is no way for aquatic species like crabs, shrimp and menhaden to be able to move from the lake into the coastal wetlands during normal weather conditions. Many hundreds of thousands of coastal wetlands across Louisiana have been separated from coastal waters and aquatic species have been dramatically reduced because these species cannot access their traditional habitat.

During months of low or no rainfall there will be no movement of water and sewerage from the wetlands into Lake Pontchartrain. Thus the elevated levels of nitrates and other materials in the treated sewerage may have adverse impacts on the wetlands which have not been discussed in the application..

The challenges of this lack of movement of water between the lake and the wetlands is not discussed in the application and may result in additional stresses in this already severely stressed area of coastal wetlands and water resources.

I hope that these comments may be of some assistance to you and the applicants who wants to release significant quantities of partially treated sewerage into an already dramatically stressed and altered coastal wetlands environment.

Sincerely yours,

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Nov. 16, 2012

Jay Pecot
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Re: City of Kenner Waste Water Treatment Plant, CUP Number P20110882

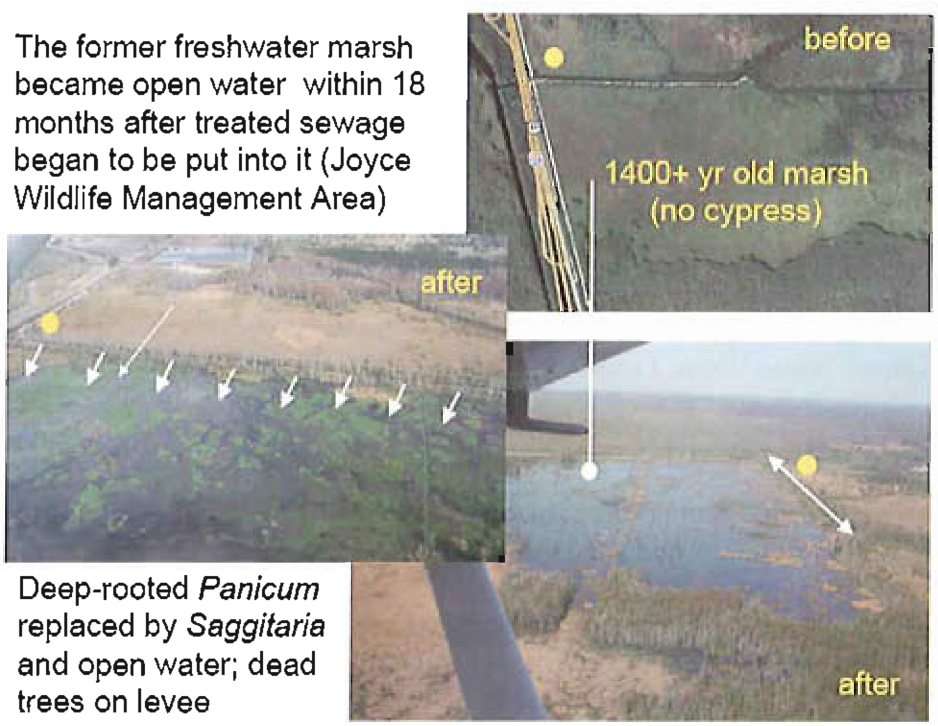
Dear Mr. Pecot:

This value of the project is based on the assumption that adding nutrients to a coastal marsh is beneficial to soil accretion and emergent marsh vegetation. I am writing as a citizen, and my professional opinion is that this conclusion is not supported by the results described in the scientific literature for many geographic locations, and contradicted by the results of treated waste water applied to the Hammond marsh, Joyce Wildlife Management Area, and in the scientific literature. A public hearing should be held to discuss this, or the permit denied/withheld, so that irrevocable changes are made that are contrary to the expected results described in various documents promoting the project, including those prepared by Comite Resources.

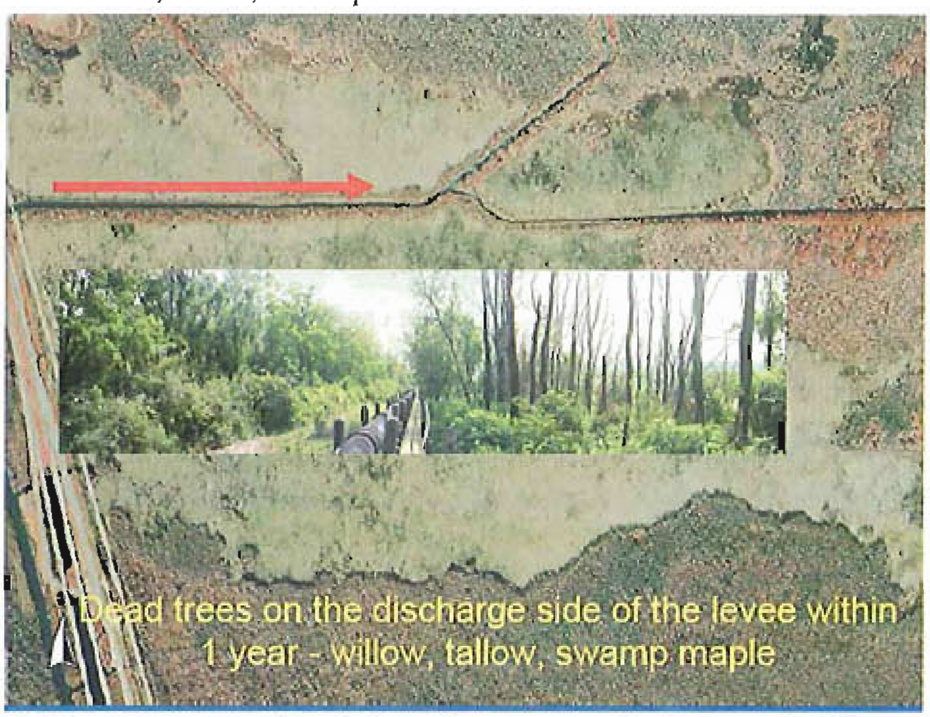
Experience at Hammond, Louisiana

A wetland assimilation project was authorized by the LaDEQ and built by the City of Hammond under the guidance of Comite Resources, and others. This company appears to me to be the same company that performed the UAA for the Spanish Lake project at New Iberia. A 1400 year old coastal fresh marsh began conversion to open water within months after receiving treated sewage water applied as part of a wastewater treatment system. The figures below show some of the results. About *320 acres of marsh are now open water*. Notably, there were hundreds of *dead trees* within the first 2 years of operation. I have examined the soils and conducted experiments to determine the cause-and-effect mechanisms. Rafts of the upper 10 - 30 cm of marsh soil are found throughout the area, as the 1400 year-old wetland soils at the bottom of the former soil profile were re-distributed in the open water forming a soft ooze. The remaining marsh fringes had *weaker soils* at the open water edge. We conclude that the addition of nutrients weakened the soil structure sufficiently for either a storm or rising water levels to tear the marsh apart, thereby releasing the soft partly decomposed older peat, and smothering the remaining marsh. Nutrient enrichment of coastal marshes such as in this permit site will have similar effects on wetland soils, albeit the changes may occur slowly, but with the same effect.

The photo below was taken on 28 April 2010. The open water area, known by some locals as 'Lake Comode' was a marsh for the last 1400 years, until the wetland assimilation project began in late 2007. It started this transformation nearest the pipe discharging the effluent, and spread southward until there were about 320 acres of open water by March 2010. It is an undeniable conclusion, in my opinion, that the sewage effluent was directly responsible for the formation of the open water.

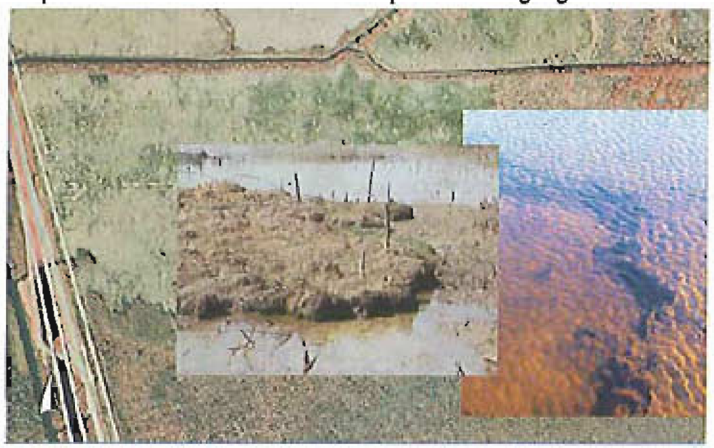


Trees died on the ridge with the discharge pipe immediately after the project began. These included willows, tallow, red maple and others.



The addition of the *nutrients weakened the soil structure* and it fragmented. The upper layer of the soil separated from the layer below during high water, forming 'pop-ups'. This is not unexpected, because these wetlands had very little in the way of nutrients before the partially-treated sewage water was added. The formerly nutrient-poor microbial community then had more nutrients to decompose the organic matter, weakening the soil.

'pop-ups': a mat 30-50 cm thick resting on top of the degraded marsh, with a hole nearby with the same dimensions; the implication is that the marsh was displaced during high water



The sewage wastewater stream contains much more than nitrogen and phosphorus and there are other things to consider than tree leaf production and the 'assimilation' of nutrients. Wading bird rookeries may be compromised through the intermediate parasitic hosts in the fish they eat. The bacterial concentrations at the Hammond discharge site, including of fecal coliform bacteria, have been way above the water quality standards for recreational contact, including for swimming and fishing. The concentration of nitrate in water is much higher than should be occurring if there was a 90% assimilation capacity, and there are sometimes very high levels of ammonium. Methane is produced in dramatically high amounts (bubbling), and sometimes there is a stench of sewage waste, sometimes the smell of chlorine, and usually the smell of organic matter decomposition during the summers.

The Lake Pontchartrain Foundation held a 4 Oct. 2010 workshop to discuss the failure of the Hammond Wastewater Assimilation Project. *The 7-member panel agreed without dissent that there should be a **moratorium*** on these kinds of systems. The President of Comite Resources, Inc. was a member of that panel voting for a moratorium.

Other areas

Adding growth-limiting nutrients may seem like a good policy objective if the main determinant of sustainable wetlands is to increase the amount of aboveground biomass. Several studies, however, demonstrate that two different processes are affected when the nutrient load is increased in coastal wetlands: (1) belowground biomass of live tissues declines, and (2) soil decomposition increases. The changes to both process rates will have a negative effect of soil strength. Root and rhizome biomass declines with increased nutrient loading in freshwater, brackish and saltwater coastal wetlands (Darby and Turner 2008a, b; Holm 2006; Langley et al. 2009). This result is consistent with the idea that nutrient foraging is eased as nutrient supply rises. Under these conditions, plants can expend more of their carbon fixation on the accumulation of aboveground biomass (Levin et al. 1989). The organic decomposition rate belowground rises with increased nutrient loading and litter quality, not only for coastal wetlands, but also a variety inland wetlands (Harris et al. 1962; Eggelsmann 1976; Morris and Bradley 1999, Coûeaux et al. 1995; Bragazza et al. 2006; Laursen 2004; Mack et al. 2004;

Franzen 2006, Deegan et al. 2012). Swarzenski et al. (2008) collected data on soil chemistry, stable isotopes, and organic decomposition for a nutrient-rich and nutrient-poor freshwater marsh (*Panicum hemitomon*) and suggested that increased nutrient loading was leading a decline in soil organic content and stability. An analysis of a 30-year nutrient addition experiment in an east coast (US) salt marsh showed that organic soil accumulation did not increase in the fertilized sites, and that soil strength and elevation declined (Turner et al. 2009). Some of this carbon loss is because the added N uses carbon as the terminal electron acceptor to form nitrogen gas (denitrification) under anerobic conditions. Anerobic metabolism may also result in the formation of hydrogen sulfide, nitrous oxides and methane The result of nutrient enrichment may be, therefore, that soil carbon is depleted because less belowground organic matter is produced, and because (with more nutrients) a higher proportion of whatever is produced belowground is metabolized to CO_2 N_x, NO_x, or methane.

Organic soil strength is weakened, and by a large amount, when nutrient loading increases, which is the opposite of what happens aboveground. Morris and Bradley (1999) found that N+P fertilization (ammonium nitrate and phosphate; Huang and Morris 2005) for 12 years increased soil respiration by 36% and decreased soil carbon accumulation in the upper 10 cm by 40 g C m^2 y^{-1}. They describe a rise in surface elevation, however, because of the compensatory accumulation of inorganic material in this relatively mineral-rich marsh – something that is less likely to occur in organic-rich sediments with a relatively small inorganic source for deposition. Other factors besides soil inorganic content will modify the effects of higher nutrient loading on soil organics including tidal range occupied, climate, and flooding cycles. Temperature, for example, has a well-established direct effect on soil organic decomposition and root turnover (Gill and Jackson 2000), and salt marsh plants have some physiological abilities to adapt to flooding and salt stress (Mendelssohn et al. 1981).

One strong implication of these observations is that the widespread increases in nutrient loadings to coastal waters may alter marsh ecosystem functions and perhaps compromise the long-term stability of coastal marshes by increasing belowground organic matter decomposition rates and by reducing root production and, as a consequence, cause a decline in soil strength. Deegan et al. (2012) provide a particular strong example of this for a New England marsh. A chronic degradation of marsh organic matter may not be identified or expressed until a strong storm rips the marsh away from its substrate in a quick transition from marsh to open water.

Even if marshes are not ripped apart in a dramatic event like a hurricane, the long-term effects of these changes on soils are of concern because of the anticipated climate changes resulting in an acceleration of sea level rise. Coastal marshes maintain their vertical position within the upper portion of the local tidal range through the accumulation of both inorganic and organic materials. The long-term health of an organic-rich marsh is dependent on the amount and fate of belowground organic production. In organic-rich salt marshes, soil density is primarily determined by the inorganic content, but the vertical accumulation of organics controls the vertical accretion rate (Turner et al. 2000). Soil elevation may be lowered, and to the detriment of the plant's existence, if either the root production is decreased or the decomposition of accumulated organic matter is accelerated enough so that the net organic accumulation is less than relative sea level rise.

Remediation

As far as I can tell, there is no mitigation plan if wetland area is reduced, not increased. The action response is only to shift the treated sewage water into the Mississippi River. No permit should be approved until: 1) a risk analysis is conducted, 2) a wetland restoration plan for the worst case scenario is developed, and 3) a bond posted sufficiently large to secure a 100% mitigation of lost wetlands.

Thank you for the opportunity to comment on the proposed project. I look forward to your response.

Sincerely,

R. Eugene Turner

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Mr. Pecot,

Please consider the following comments regarding the City of Kenner's Waste Water Treatment Plant, CUP Number P20110882. A response to this email would be greatly appreciated as an indication of receipt.

General Comment:

Waste Water Assimilation has been touted and promoted in the state of Louisiana as a restoration process that uses sewage to fertilize and stimulate the growth of aquatic vegetation. It is assumed under this best-case scenario, that an increase in vegetative growth will take place, add organic mass to a wetland, and will do so with no significant negative impacts.

It should be noted, however, that when sewage is discharged into a natural wetland there is a broad spectrum of responses which impacts the entire ecosystem receiving such a discharge. Many of these responses have the potential to significantly degrade the environment. The potential of such negative impacts are often related to accelerated decomposition rates, the weakening of soil conditions, a negative shift in populations of plant communities from perennials towards annuals and from attached towards floating species. Additionally, it has been documented in plant pathology research that an excess of nutrients cau affect plant physiology in ways which make them more susceptible to disease. It is also noted in such literature that excess nutrients can inhibit the uptake of essential micro nutrients. These are just some of the potential liabilities which can occur at Waste Water Assimilation sites.

There has been an apparent exaggeration of the benefits and a minimization of the liabilities in regards to the Waste Water Assimilation concept by those who have a vested interest to benefit, in one way or another, through the promotion of this concept. This is understandable given the situation in Louisiana were many well intended conservationists would like to hear a rosy picture and find easy solutions to our declining wetlands. One prominent researcher aud proponent of waste water assimlation publicly stated that the discharge water leaving the marsh at the Hammond waste water assimilation site is "drinkable." Though this claim has been refuted by reputable bacteriologists, there has been little or no concern expressed by the regulatory community. The site has, however, had a documented history of many water quality problems including high ammonia levels and large algal blooms.

The Logic Used to Promote Waste Water Assimilation:

The promotion of Waste Water Assimilation as a concept is most often based on the idea that it's better to assimilate permitted sewage in a natural wetland rather than for it to be assimilated in surface waters, and thus not add to the pollution which already exists in many of our streams. This rational is based on the false assumption that sewage constituents cannot be practically treated to levels sufficient to equal or be lower than ambient levels existing in surface water bodies. Additionally, it is often stated by proponents of Waste Water Assimilation that the concept is a proven success. Such declarations of success are often not critically evaluated by independent research and can be easily confused with the successes of Constructed Wetland treatment systems which are designed to be carefully managed to produce a desirable and predictable result. The Orlando Easterly Wetlands in Orlando Florida is a 1,200 acre constructed wetland system that receives tertiary treated sewage and then polishes it to an even higher treatment level before it enters the natural environment. When it is discharged into the St. John's river constituent levels are so low that the river is actually being cleaned by the introduction of this sewage discharge. This conclusion is documented by years of test results derived from an automated and continuous sampling program. The attitude of the waste water professionals associated with the Orlando treatment facility is very different from those in Louisiana who promote waste water assimilation. The Orlando professionals see and accept the need for treating waste water to more stringent levels so that it enhances water quality in the natural environment and so that it can be reclaimed for certain municipal applications. They refer to their sewage treatment operations as a water reclamation facility. We feel that it is important to recognize that there is an increasing need to treat polluted water more stringently. Our concern is that the promotion and implementation of discharging relaxed levels of secondary treated sewage into natural wetlands as a cost saving measure, will unlikely bring about significant restoration, will more likely add to the degradation of wetlands, and will delay public acceptance for the need to treat waste water to more stringent levels.

The Question of Carbon Sequestration and Waste Water Assimilation Sites:

Wetlands are often considered to be a carbon sink which should be protected as a means of sequestering organic carbon and reducing the release of greenhouse gases (GHG). Wetlands, however, are fragil store houses for sequestered greenhouse gases and under degrading conditions can easily become a source of GHG. It is therefore, very important in regards to considering climate change that we understand the processes which can transform a particular wetland from a sink to a source of GHG. It would be a tragic mistake if we use assimilation wetlands as a precedent to establish criteria for carbon credits without a through understanding of the potential that assimilatrion wetlands have for becoming a source of GHG. One example of how this happens is as follows:

Hydrocotyle is a delicate, floating plant with very small roots that thrives in nutrient rich water. It is a dominant plant found in most assimilation wetlands in Louisiana. This plant grows rapidly in the cool weather of spring, chocking out more desirable plants with a stronger root system, then it dies back in the heat of late summer. Though it becomes abundant in sewage wetlands, it is one of the least desirable plants for building a strong marsh mat. Hydrocotyle dies rapidly in mass on the surface of the water, where it is exposed to aerobic conditions which favor even faster decomposition. Besides the plant itself being predisposed to fast decomposition because of its tender structure, it decomposes exceedingly fast in nutrient rich water that accelerates the activity of aerobic and anerobic bacteria . The speed in which this plant decomposes precludes it from being incorporated gradually into bottom sediments prior the release of gases produced by the decomposition process. Therefore, this species of plant and many others like it that thrive in nutrient rich water, releases GHG prematurely in comparison to plants which grow naturally in less nutrient rich conditions. It has been observed and documented at the Hammond assimilation site where large areas of organic matter decomposes so fast that the water perculates constantly without being disturbed.

There are many factors which have been basically dismissed or ignored in regards to the liabilities associated with the concept of Waste Water Assimilation in natural wetlands. We believe that due dillegence needs to be forth coming through open discussion and independent research to further clarify many of these issues.

We are grateful to have an opportunity to submit these comments and hope they are received with a sincere concern for the environment.

Best Regards,

Ed Bodker,
Secretary, Triangle T Sportsmen's League
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