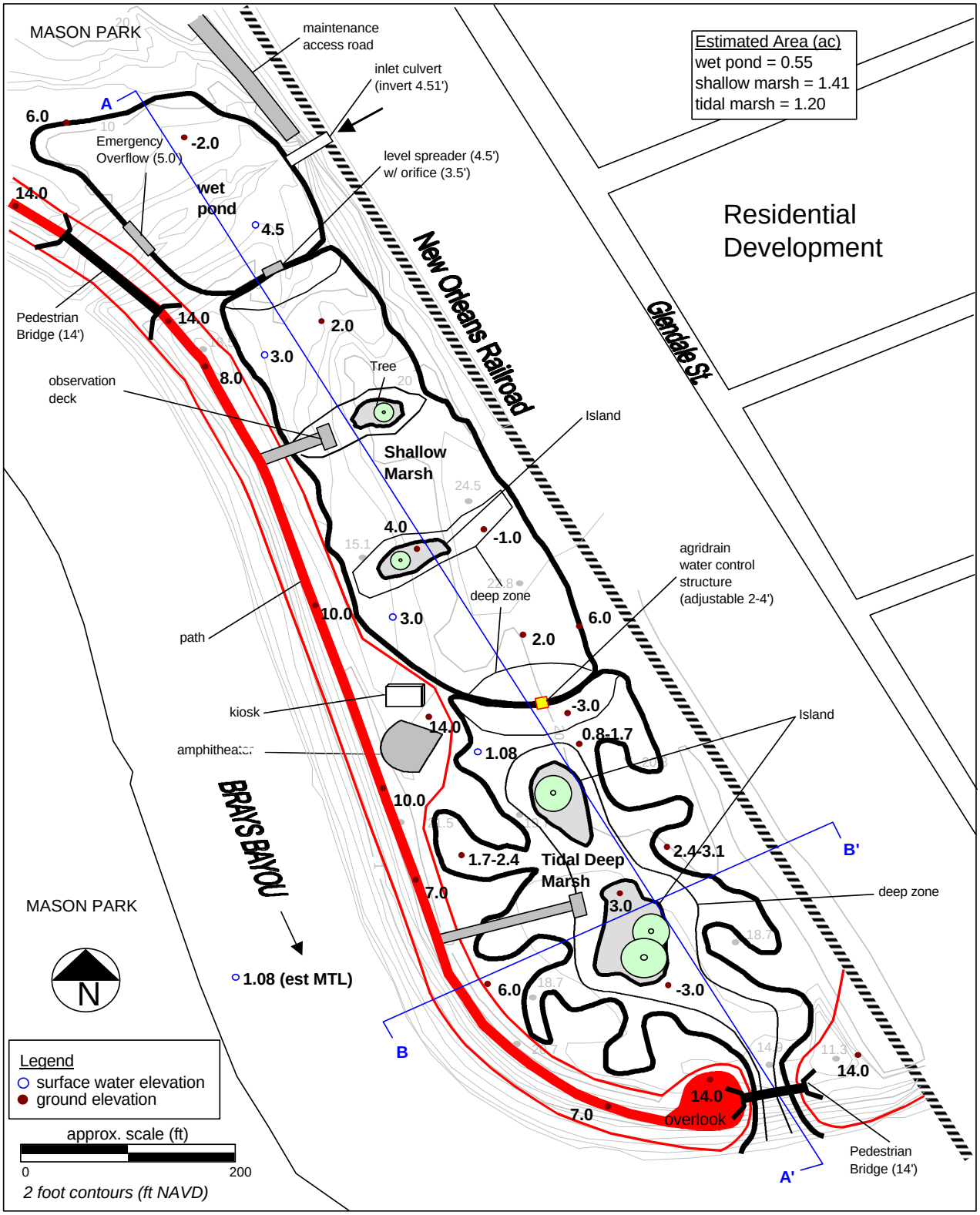


EXHIBIT 13

Conceptual Plan for the Brays Bayou Multi-Purpose Wetland Project

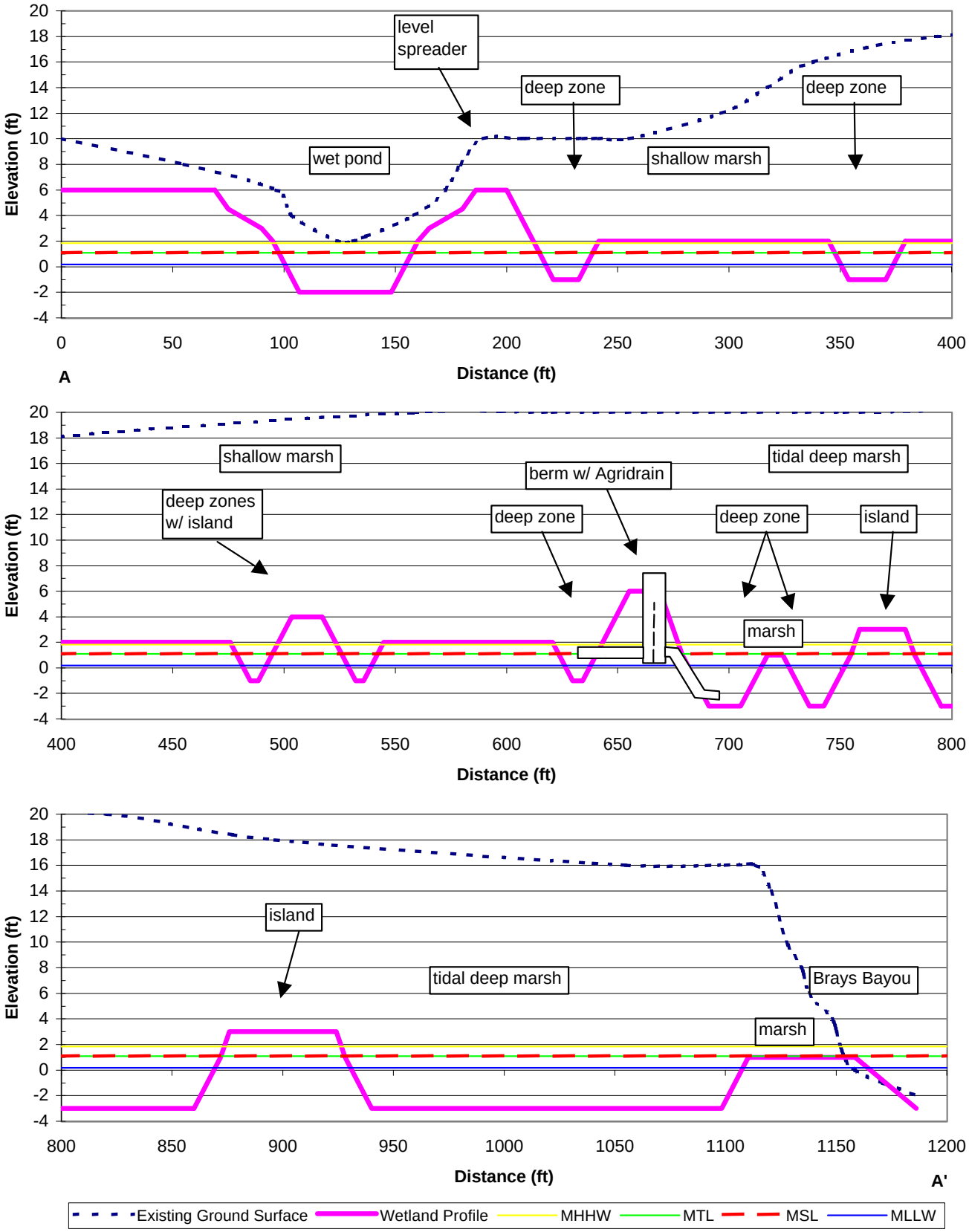


EXHIBIT 14

Profile (A - A') of Brays Bayou Multi-Purpose Wetland Project

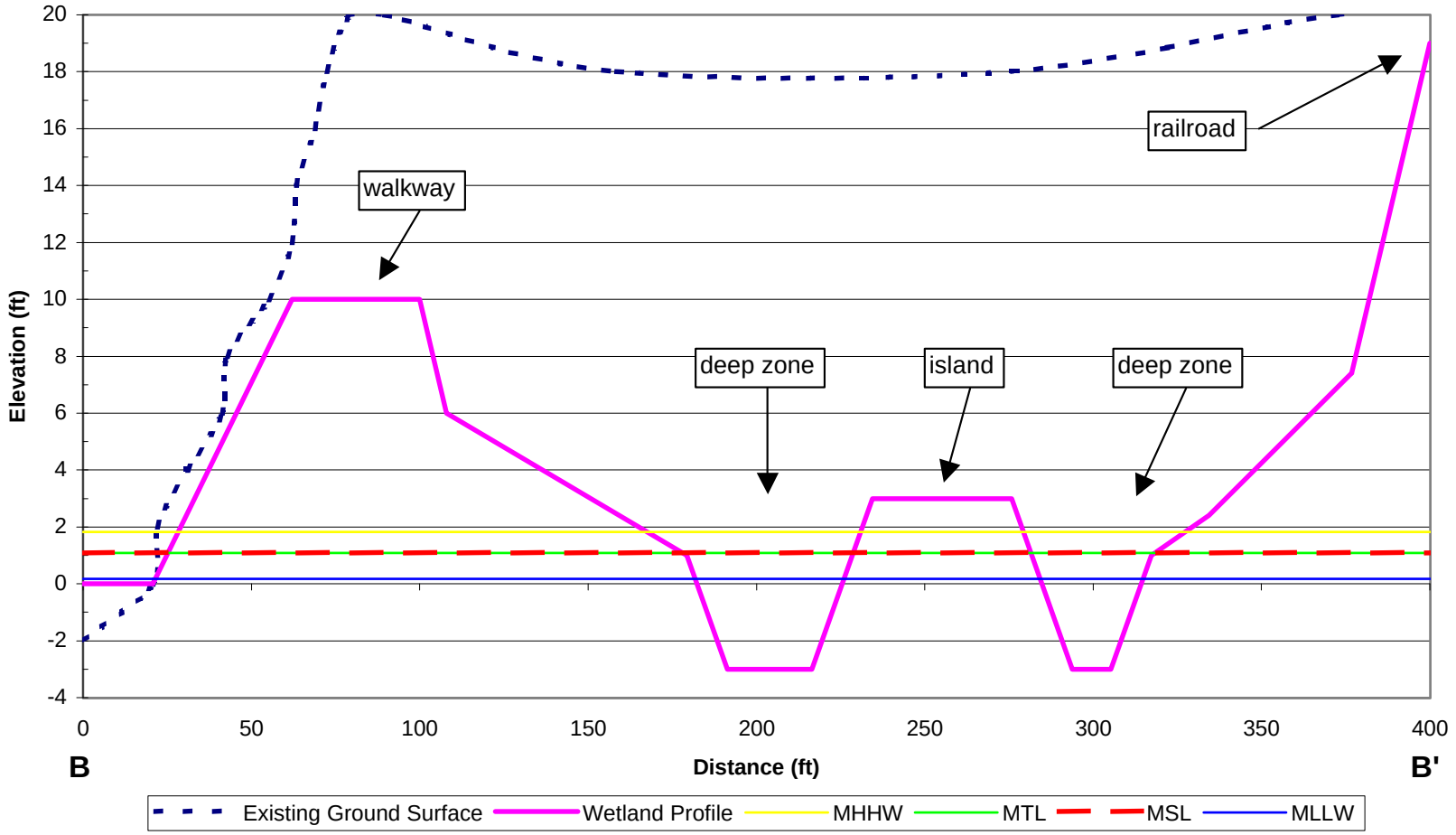


EXHIBIT 15

Profile (B - B') of Brays Bayou Multi-Purpose Wetland Project

Wet Pond

The first compartment in the 'treatment train' is the wet pond or foreba y. This is a deep pond or cell that serves as a location for stormwater runoff storage and removes coarse suspended solids prior to entering the shallow wetland cells.

The conceptual plan identifies a wet pond area of approximately 0.6 acres. The pond is planned to be approximately 6.5 feet deep with slopes ranging from 10:1 to 3:1 (H:V). Gradual side slopes will allow a steady incline on which vegetation can establish and also insure that water levels are not too deep in the event that a park visitor accidentally falls in. Exhibit 16 illustrates the wet pond ground slope detail. The slope will be 4:1 to the water surface, 10:1 to a water depth of 1.5 feet, 5:1 from a water depth of 1.5 to 2.5 feet, and 3:1 for depths greater than 2.5 feet.

An additional survey of the project site was conducted in December 2001 and determined that the invert of the stormwater culvert under the railroad is 4.51 ft NAVD. This elevation was used to limit the wet pond normal high water levels to 4.5 ft NAVD and maximum (worst case) levels to 5.0 ft NAVD. An emergency overflow (fixed at 5 ft NAVD) will be located along the west berm of the wet pond to convey excessive runoff to Brays Bayou, and a 20-foot wide level spreader (fixed at 4.5 ft NAVD) will serve as the inflow structure to the shallow treatment marsh.

The wet pond will provide storage for runoff from the first inch of rainfall and have a bleed down time of about 4 days for this volume. Estimated runoff is 2,313 m^3 based on a 1 inch rainfall to a 30 acre contributing watershed using a runoff coefficient of 75%. Draw down for the 1-inch rainfall volume can be accomplished using a bleed down orifice below the level spreader (orifice invert at 3.5 ft NAVD). The orifice will be sized to draw down the storm volume in approximately 4 days.

Shallow Treatment Marsh

The function of the treatment marsh will be to remove a portion of the remaining suspended solids, dissolved organics, nutrients, metals, and trace organics from the stormwater. The shallow treatment marsh is planned to be approximately 1.4 acres and water levels operated at 1 foot. The treatment marsh will include 4 deep zones; an inlet deep zone, 2 internal deep zones with habitat islands, and 1 outlet deep zone. The treatment marsh will have 3:1 slopes along the berms and within the deep zones. The role of the deep zones is to reduce short-circuiting through the wetland by promoting lateral distribution of flows, and for water storage during non-rainfall events. The deep zones will support fish and other aquatic wildlife during times of drought. An outflow water level control structure will be placed within the south berm to control discharge into the tidal marsh. Exhibit 17 illustrates a schematic of an inline Agridrain control structure. Stoplogs can be added or removed to the Agridrain to control the operational water depth within the treatment marsh.

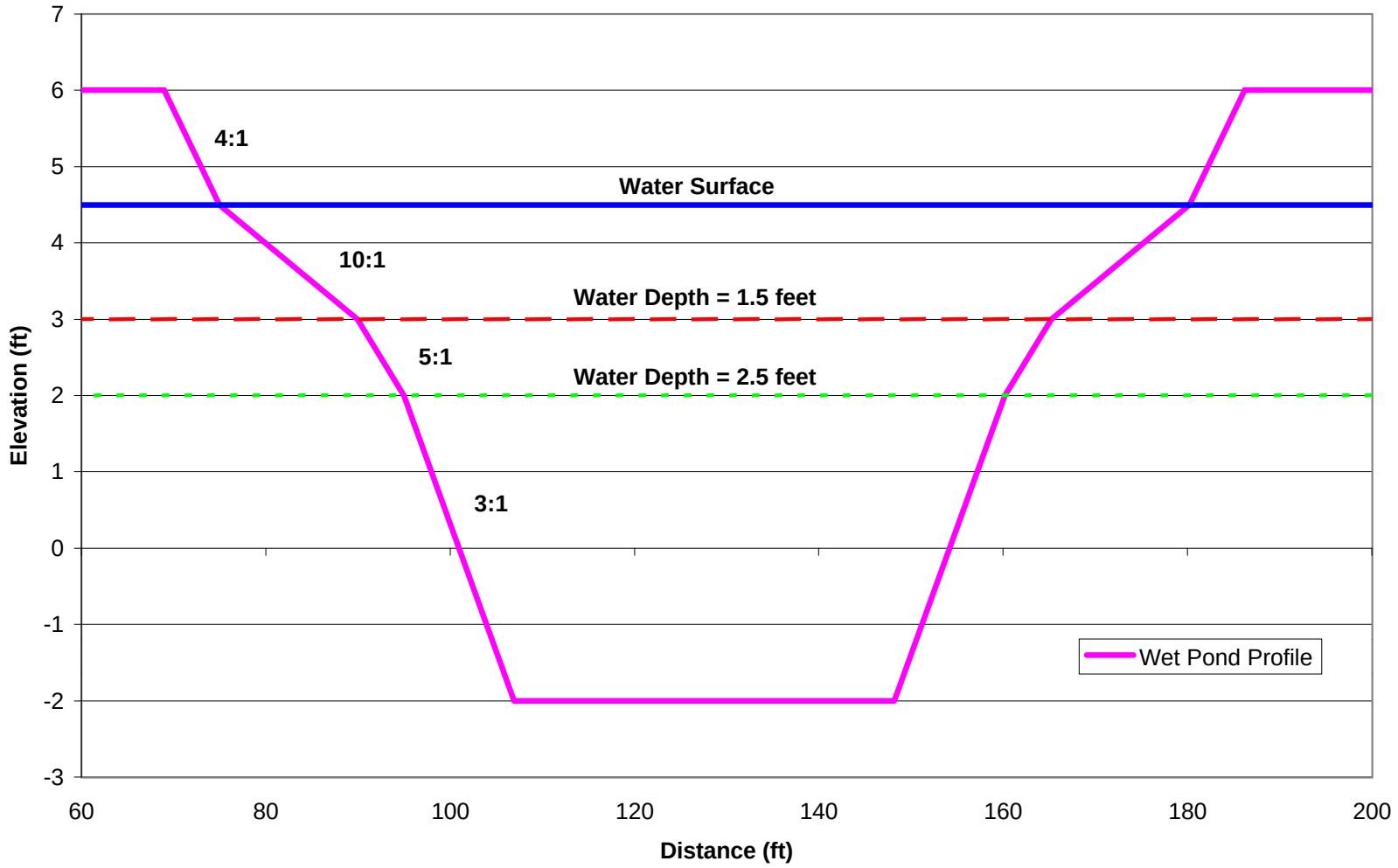


EXHIBIT 16

Wet Pond Ground Slope Detail from the Brays Bayou Multi-Purpose Wetland Project

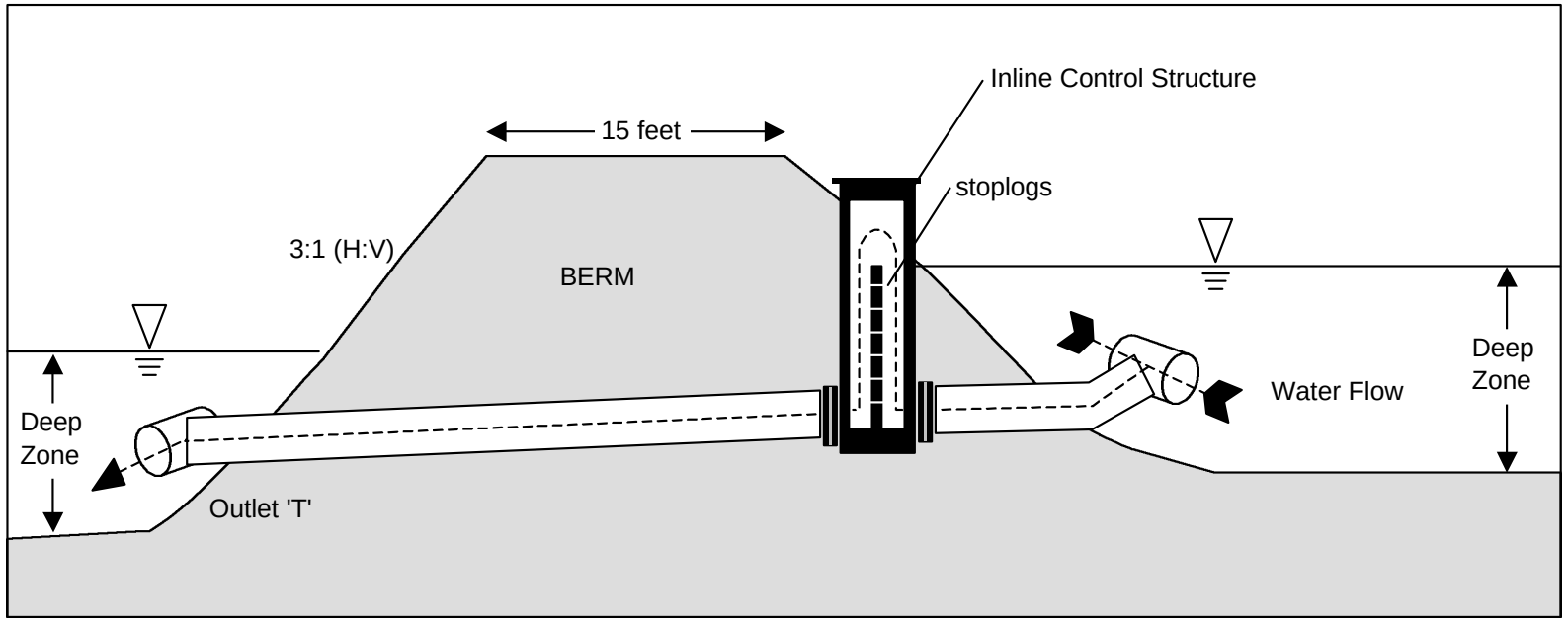


EXHIBIT 17
Schematic of Inline Agridrain Outlet Water Level Control Structure

Tidal Marsh

The tidal marsh component of the 'treatment train' will consist of a tidally influenced wetland plant community created adjacent to Brays Bayou. The functions of this tidal marsh will be to provide a combination of wildlife habitat, aesthetics (public use), and final polishing of stormwater. The tidal marsh is planned to encompass an area of approximately 1.2 acres with 3:1 slopes within the deep zones. Side slopes from the deep zone to the pedestrian walkway and railroad right-of-way will range from 9:1 to 14:1. This will allow a gradual incline on which different plant zones can establish. The tidal marsh will consist of an inlet deep zone and two habitat islands surrounded by an open water area. Water levels in the marsh will be controlled by normal tidal changes in Brays Bayou. The deep zones are expected to be approximately 4 feet below the MTL. Review of historic water levels (Exhibit 7) from the Manchester gauge indicates that water levels should remain at about 2 feet in the deep zones during extreme low tide events.

Public Use

The tidal and treatment marshes will be the main public-use focal points at the project site. The Brays Bayou MPWP is located adjacent to Mason Park. To encourage public use, pedestrian bridges (Exhibit 18) and paths have been added to the project site. An example of the construction detail for a crushed rock pedestrian path is illustrated in Exhibit 19. Public-use features such as a tidal marsh overlook and observation decks within the treatment and tidal marsh have also been added to promote public use. Islands within the deep zones have been added to provide habitat and refuge for birds and to encourage public study. Other features such as a kiosk and amphitheater will also be used to display project information and interpretive signs of plants and wildlife observed onsite. Exhibit 20 illustrates some interpretive sign examples from wetland systems in Florida (Loxahatchee and Wakodahatchee), Texas (DuPont), and Arizona (Sweetwater).

Planting Plan

The majority of the Brays Bayou constructed wetland project will be altered from its current condition and will be re-contoured and planted with wetland and aquatic plant species. A planting plan for the Brays Bayou constructed wetland project is presented in Exhibit 21. This planting plan describes each of the plant communities that will be included on the site with the elevation ranges presented in Exhibit 22. A table summarizing each of the plant species being introduced, planting propagule type, approximate number of plant propagules, and areas are presented in Exhibit 23. All cleared and graded upland areas will be planted with a mixture of upland grass species to provide wildlife cover and erosion control. These areas include all embankments and areas cleared or altered as a result of site construction. Planting of robust-growing plant species will be minimized along the western side of vegetation zones to reduce visual obstruction of the wetland areas to park visitors.

EXHIBIT 18

Brays Bayou Multi-Purpose Wetland Project - Pedestrian Bridge Example (Greenwood Urban Park, Orlando, FL)

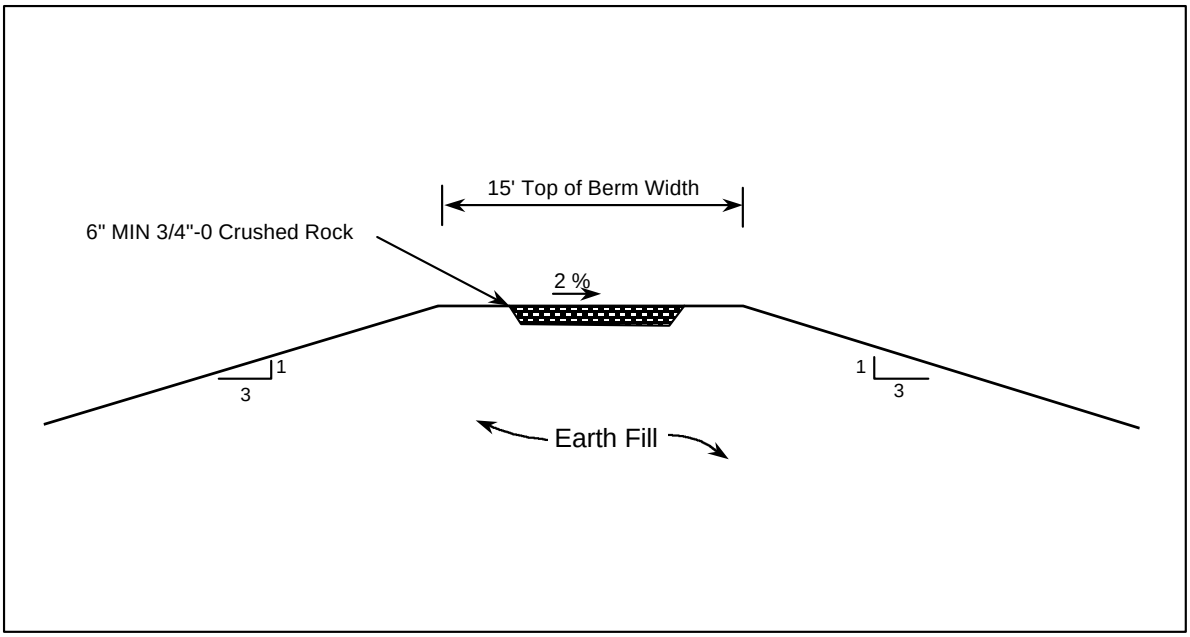


EXHIBIT 19
Brays Bayou Multi-Purpose Wetland Project Pedestrian Path Detail

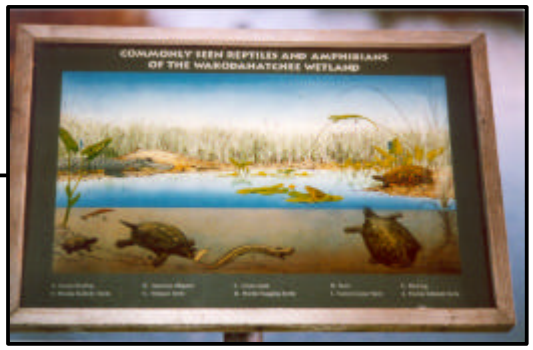


EXHIBIT 20
Interpretive Sign Examples in Wetland Systems

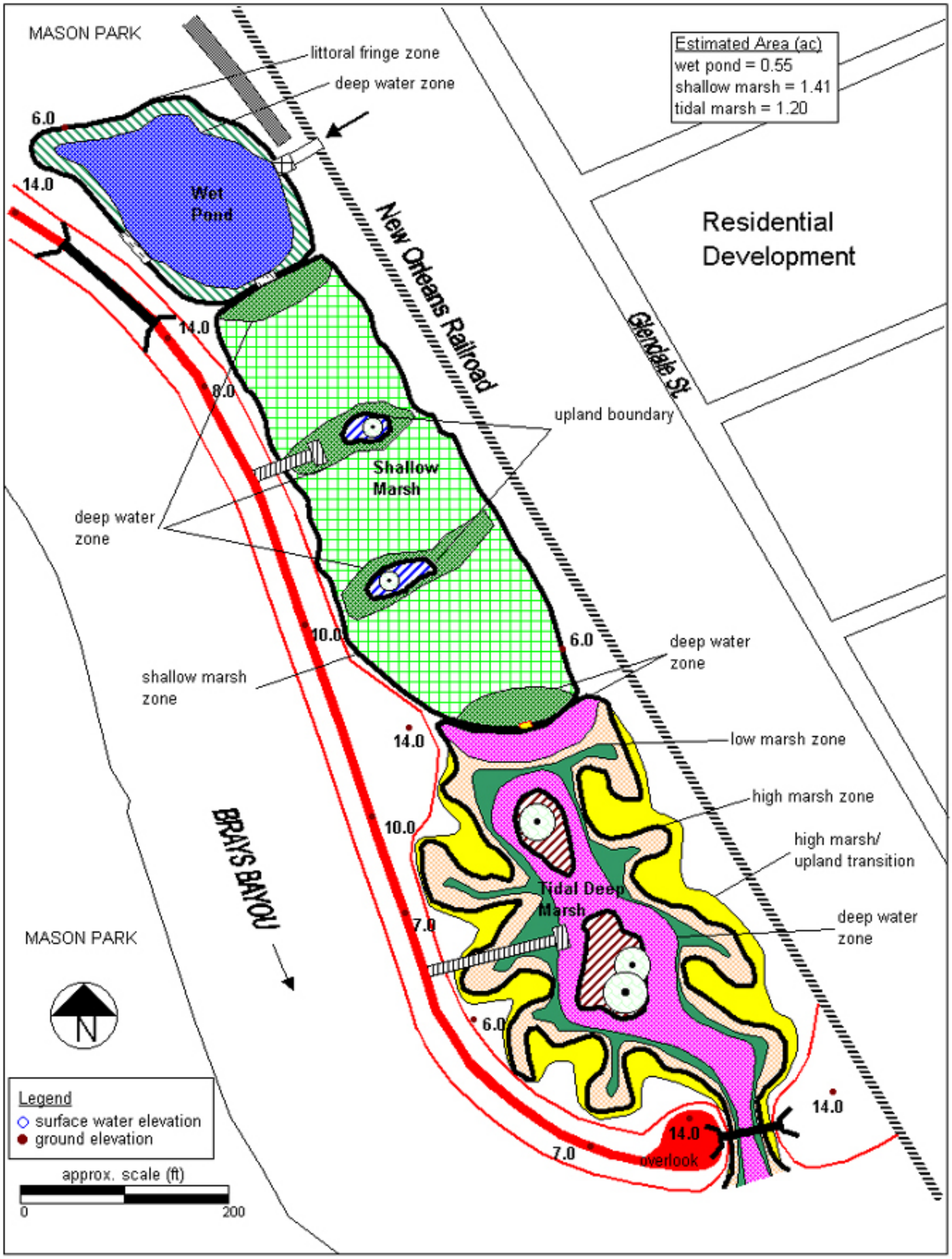


EXHIBIT 21

Planting Plan for the Brays Bayou Multi-Purpose Wetland Project

EXHIBIT 22

Elevation Range for Hydrological Zones at the Brays Bayou MPWP

Location / Zone	Ground Elevation (ft NAVD)		Normal Water Level (ft NAVD)
	Lower	Upper	
WET POND			
Littoral Zone	3.90	5.80	4.50
Deep Water Zone	-2.00	3.90	
TREATMENT MARSH			
Upland Boundary	4.00	> 4.00	3.00
Shallow Marsh Zone	2.00	4.00	
Deep Water Zone	-1.00	2.00	
TIDAL MARSH			
Upland Boundary	3.06	> 3.06	1.08
High Marsh/Upland Transition	2.43	3.06	
High Marsh	1.67	2.43	
Low Marsh	0.83	1.67	
Deep Water Zone	-3.00	0.83	

EXHIBIT 23

Brays Bayou Multi-Purpose Wetland Project Planting Plan Detail

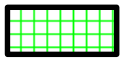
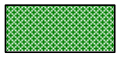
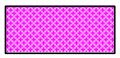
LEGEND	LOCATION / ZONE	BOTANICAL NAME	COMMON NAME	PROPAGULE TYPE	NOTES	APPROX. AREA PLANTED (ac)	APPROX. NO. PLANT PROPAGULES
WET POND							
	Littoral Zone[a]	*Zizaniopsis milacea*	giant cutgrass	seedling/plug	propagate in pots	0.03	150 clumps
		Scirpus spp.	bulrush (California/American)	seedling/plug	direct transplant/propagate in pots	0.02	50 sprigs/50 clumps
		Panicum hemitomon	maidencane	seedling/plug	propagate in pots	0.01	50 pots
		Sagittaria graminea	grassy arrowhead	seedling/plug	propagate in pots	0.01	50 clumps
		Bacopa monnieri	water hyssop	seedling/plug	propagate in pots	0.005	50 pots
		Ludwigia peploides	floating seedbox	seedling/plug	propagate in pots	0.005	10 pots
						0.08	410
	Deep Water Zone	*Ceratophyllum demersum*	coontail	plant fragments-one gal	disperse plant fragments	0.23	5 gallon bucket
		Potamogeton spp.	pondweed	plant fragments-one gal	disperse plant fragments	0.23	5 gallon bucket
						0.46	10
TREATMENT MARSH							
	Upland Boundary[a]	*Taxodium distichum*	bald cypress	tree over 3 ft	obtain from nursery	0.035	15 trees
		Ulmus crassifolia	cedar elm	tree over 3 ft	obtain from nursery	0.035	15 trees
						0.07	30
	Shallow Marsh Zone[a]	*Scirpus spp.*	bulrush	seedling/plug	direct transplant/propagate in pots	0.14	350 sprigs/350 clumps
		Zizaniopsis milacea	giant cutgrass	seedling/plug	propagate in pots	0.1	500 clumps
		Sagittaria graminea	grassy arrowhead	seedling/plug	propagate in pots	0.21	1,000 clumps
		Panicum hemitomon	maidencane	seedling/plug	propagate in pots	0.005	35 pots
		Eleocharis quadrangulata	square-stemmed spikerush	seedling/plug	propagate in pots	0.31	1,500 clumps
		Panicum virgatum	switch grass	seedling/plug	propagate in pots	0.01	50 pots
		Ponterderia cordata	pickerel weed	seedling/plug	propagate in pots	0.07	350 pots
		Thalia dealbata	powdery thalia	seedling/plug	propagate in pots	0.01	50 pots
		Canna spp.	canna	seedling/plug	propagate in pots	0.01	25 pots
		Iris virginica	southern blue iris	seedling/plug	propagate in pots	0.02	100 pots
		Scirpus validus	softstem bulrush	seedling/plug	propagate in pots	0.005	35 pots
		Spartina patens	marsh hay cordgrass	seedling/plug	propagate in pots	0.1	500 pots
						0.99	4,845
	Deep Water Zone	*Ceratophyllum demersum*	coontail	plant fragments-one gal	disperse plant fragments	0.07	5 gallon bucket
		Potamogeton spp.	pondweed	plant fragments-one gal	disperse plant fragments	0.07	5 gallon bucket
		Najas guadalupensis	southern naiad	plant fragments-one gal	mid-late summer fragments	0.07	5 gallon bucket
		Nymphaea odorata	water lily	seedling/rhizome	direct transplant rhizomes	0.07	100 clumps
		Heteranthera dubia	water stargrass	seedling/rhizome	propagate in pots / island edges	0.01	10 pots
		Bacopa monnieri	water hyssop	seedling/rhizome	propagate in pots / island edges	0.06	100 pots
						0.35	225

EXHIBIT 23

Brays Bayou Multi-Purpose Wetland Project Planting Plan Detail

LEGEND	LOCATION / ZONE	BOTANICAL NAME	COMMON NAME	PROPAGULE TYPE	NOTES	APPROX. AREA PLANTED (ac)	APPROX. NO. PLANT PROPAGULES
TIDAL MARSH							
	Upland Boundary[a]	*Taxodium distichum*	bald cypress	tree over 3 ft	obtain from nursery	0.04	17 trees
		Ulmus crassifolia	cedar elm	tree over 3 ft	obtain from nursery	0.02	8 trees
		Schizachyrum scoparium	little bluestem	seedling/plug	obtain from Greens Mit Bank	0.02	100 pots
						0.08	25 trees / 100 pots
	High Marsh/ Upland Transition[a]	*Tripsacum dactyloides*	gama grass	seedling/plug	propagate in pots	0.07	33 pots
		Panicum virgatum	switch grass	seedling/plug	propagate in pots	0.07	33 pots
		Spartina patens	marsh hay cordgrass	seedling/plug	propagate in pots	0.08	33 pots
						0.22	99
	High Marsh[a]	*Scirpus robustus*	saltmarsh bulrush	seedling/plug	direct transplant root masses	0.02	100 root masses
		Spartina patens	marsh hay cordgrass	seedling/plug	propagate in pots	0.06	300 pots
		Carex hyalinolepis	thin-scale sedge	seedling/plug	propagate in pots	0.06	300 clumps
		Juncus roemerianus	black needlerush	seedling/plug	propagate in pots	0.06	300 pots
		Hymenocallis liriosme	spider lily	seedling/plug	propagate in pots	0.01	50 pots
		Spartina cynosuroides	giant cordgrass	seedling/plug	propagate in pots	0.01	50 sprigs
		Scirpus californicus	california bulrush	seedling/plug	direct transplant sprigs	0.03	100 sprigs
		Sagittaria lancifolia	bulltongue	seedling/plug	propagate in pots	0.07	350 pots
		Cladium jamaicense	jamaica sawgrass	seedling/plug	propagate in pots	0.01	50 pots
		Eleocharis spp.	spikerush	seedling/plug	propagate in pots	0.01	20 pots
		Zizaniopsis milliacea	giant cutgrass	seedling/plug	propagate in pots	0.04	150 clumps
						0.38	1,770
	Low Marsh	*Crinum americanum*	swamp lily	seedling/plug	propagate in pots	0.04	200 pots
		Scirpus robustus	saltmarsh bulrush	seedling/plug	direct transplant root masses	0.06	300 root masses
		Scirpus californicus	california bulrush	seedling/plug	direct transplant root masses	0.11	500 sprigs
		Spartina cynosuroides	giant cordgrass	seedling/plug	propagate in pots	0.01	50 sprigs
		Zizaniopsis milliacea	giant cutgrass	seedling/plug	propagate in pots	0.04	150 clumps
		Carex hyalinolepis	thin-scale sedge	seedling/plug	propagate in pots	0.04	200 clumps
		Cladium jamaicense	jamaica sawgrass	seedling/plug	propagate in pots	0.01	50 pots
		Eleocharis spp.	spikerush	seedling/plug	propagate in pots	0.01	20 pots
		Sagittaria lancifolia	bulltongue	seedling/plug	propagate in pots	0.05	250 pots
		Hymenocallis liriosme	spider lily	seedling/plug	propagate in pots	0.01	50 pots
						0.38	1,770
	Deep Water Zone	*Heteranthera dubia*	water stargrass	seedling/plug	propagate in pots / island edges	0.08	10 pots
		Bacopa monnieri	water hyssop	seedling/plug	propagate in pots / island edges	0.12	90 pots
		Nymphaea mexicana	yellow waterlily	seedling/plug	propagate in pots / island edges	0.08	10 pots
		Ruppia martima	widgeongrass	plant fragments-one gal	propagate in pots	0.08	5 gallon bucket
						0.36	1 gal / 110 pots

[a] short-statured plants to be used along one-third of zone facing Bayou to allow unobstructed view of ponded areas

Wet Pond

The wet pond includes two wetland vegetation zones, a littoral edge and deep-water zone.

The littoral edge consists of six emergent herbaceous species, including giant cutgrass (*Zizaniopsis milacea*), bulrush (*Scirpus spp.*), maidencane (*Panicum hemitomon*), grassy arrowhead (*Sagittaria graminea*), water hyssop (*Bacopa monnieri*), and floating seedbox (*Ludwigia peploides*). This zone encompasses the entire edge of the wet pond for a total area of about 0.1 acres. Approximately 0.5 acres of deep-water zones will be constructed within the wet pond. This zone will consist of two submerged aquatic plants, coontail (*Ceratophyllum demersum*) and pondweed (*Potamogeton* spp.).

Shallow Treatment Marsh

The shallow treatment marsh will consist of three wetland vegetation zones: upland boundary, shallow marsh, and deep-water zones.

The upland boundary will consist of two wildlife habitat islands located within each of the internal deep zones. These islands will be approximately 0.1 acres and planted with two-tree species, bald cypress (*Taxodium distichum*) and cedar elm (*Ulmus crassifolia*).

Approximately 1 acre of the shallow treatment marsh will consist of shallow marsh zones. This zone includes twelve emergent herbaceous species, bulrush, giant cutgrass, grassy arrowhead, maidencane, square-stemmed spikerush (*Eleocharis quadrangulata*), switch grass (*Panicum virgatum*), pickerel weed (*Ponterderia cordata*), powdery thalia (*Thalia dealbata*), canna (*Canna* spp.), southern blue iris (*Iris virginica*), softstem bulrush (*Scirpus validus*), and marsh hay cordgrass (*Spartina patens*). The shallow marsh zones are located between each of the deep-water zones.

The treatment marsh will include 4 deep zones, an inlet deep zone, 2 internal deep zones with habitat islands, and 1 outlet deep zone. The deep-water zone consists of the same aquatic species found in the wet pond deep zone with the addition of southern naiad (*Nijas guadalupensis*), water lily (*Nymphea odorata*), water stargrass (*Heteranthera dubia*), and water hyssop (*Bacopa monnieri*). Water stargrass and water hyssop will be planted along the island edges.

Tidal Marsh

The tidal marsh will include 5 vegetation planting zones including upland boundary, high marsh / upland transition, high marsh, low marsh, and deep water zones.

The habitat islands located within the internal deep zone will be planted with 2 upland boundary tree species including bald cypress and cedar elm for an area about 0.1 acres. These trees will be planted along areas in the upper fringe of the high marsh / upland transition zones. Little bluestem (*Schizachyrum scoparium*), a prairie grass, will also be included in the upland boundary zone.

The high marsh/upland transition zone consists of approximately 0.2 acres of the tidal marsh area. This zone includes 3 plant species including gama grass (*Tripsacum dactyloides*), switch grass, marsh hay cordgrass. These plants will be planted in areas with elevations approximately 2.4 to 3.1 ft NAVD (1.4 to 2.0 feet relative to the MTL).

Approximately 0.4 acres of the tidal marsh area will consist of the high marsh planting zone. This zone includes eleven wetland plant species including saltmarsh bulrush (*Scirpus robustus*), marsh hay cordgrass, thin-scale sedge (*Carex hyalinolepis*), black needlerush (*Juncus roemerianus*), spider lily (*Hymenocallis liriosme*), giant cordgrass (*Spartina cynosuroides*), California bulrush (*Scirpus californicus*), bulltongue (*Sagittaria lancifolia*), Jamaica sawgrass (*Cladium jamaicense*), spikerush (*Eleocharis* spp.), and giant cutgrass. These plants will be planted in areas with elevations approximately 1.7 to 2.4 ft NAVD (0.6 to 1.4 feet relative to the MTL).

The low marsh zone will include ten wetland plant species including swamp lily (*Crinum americanum*), saltmarsh bulrush, California bulrush, giant cordgrass, giant cutgrass, thin-scale sedge, Jamaica sawgrass, spikerush, bulltongue, and spider lily for a total area of approximately 0.4 acres. These plants will be planted in areas with elevations approximately 0.8 to 1.7 ft NAVD (–0.3 to 0.6 feet relative to the MTL).

The deep-water zones will include an inlet deep zone and a deep zone surrounding the 2 habitat islands for a total area of approximately 0.4 acres. The deep zones will include 4 wetland species including water stargrass, water hyssop, yellow waterlily (*Nymphaea mexicana*) and widgeongrass (*Ruppia martima*). Water stargrass, water hyssop, and yellow waterlily will be planted along the island edges.

Runoff Quality

One of the goals of the Brays Bayou Wetland project is improvement of stormwater quality being discharged into Brays Bayou. The chemical composition of stormwater runoff is highly variable, both between sites, and at a given location over time. One method to estimate runoff quality is to utilize empirical results from similar watersheds. Driscoll et al (1990) provide tables of typical runoff quality for highway stormwater in Texas urban settings. For this analysis estimated event mean concentrations in urban stormwater runoff for the Brays Bayou project are assumed to be: TSS 150 mg/L, BOD_5 60 mg/L, TN 6 mg/L, NH_4-N 4 mg/L, TKN 6 mg/L, TP 1 mg/L, fecal coliforms 15,000 col/100 ml, cadmium 2 µg/L, lead 50 µg/L, and zinc 75 µg/L.

Runoff from the 30-acre watershed was estimated for a 20-year period of record based on historic rainfall from 1970 to 1991. Long-term average flow from this watershed is estimated as 300 m^3/d based on a 75% runoff and an average rainfall of 47.5 in/yr. Monthly maximum runoff is estimated as 1,257 m^3/d based on a maximum monthly rainfall of 16.3 inches and 75% runoff. Runoff from this watershed was also calculated using a 25-year 24-hour storm event of 9.5 inches and 75% runoff, resulting in an estimated maximum design flow of 21,971 m^3/d.

Expected Performance

Exhibit 24 provides a summary of the expected annual average performance of the MPWP, assuming an effective area of 1.41 acres. This includes only the area for the shallow treatment marsh and therefore results in conservative annual removal efficiencies. Effluent concentrations were calculated using the k-C* model (Kadlec and Knight, 1996) resulting in the following estimated annual average wetland removal efficiencies: BOD_5 74%, TSS 80%, TN 52%, NH_4-N 62%, TKN 52%, TP 45%, fecal coliform 96%, cadmium 65%, lead 75%, and zinc 66%.

For comparison, another method in determining the wetland size is to use a minimum surface area in relation to the contributing watershed. The wetland to watershed area ratio (WWAR) can be calculated from existing stormwater wetlands and compared to pollutant removal efficiencies (Kadlec and Knight, 1996). Strecker et al (1990) conducted a literature review of 13 natural and constructed stormwater wetlands reporting removal efficiencies and wetland to watershed area ratios for each system. The median WWAR for these stormwater systems was 3.6%, with ratios ranging from 0.4% to 13.0%. Median wetland removal efficiencies were as follows: TSS 80.5%, NH_4-N 44.5%, TP 58.0%, lead 83.0%, and zinc 42.0%. The WWAR for the Brays Bayou constructed wetland treatment marsh is 4.7%. If a WWAR of 3.6% were applied to the Brays Bayou contributing drainage basin size (30 acres) this would result in a wetland area of 1.08 acres.

The 1.2 acre tidal marsh is expected to provide additional water quality benefits. Tidal marsh areas have been found to be as effective as other wetlands for water quality enhancement (Mitsch and Gosselink 2000; Kadlec and Knight 1996). Concentrations of BOD_5, TSS, nutrients, and trace metals in the bayou will be reduced by this tidal inundation. Treatment performance of this area is difficult to predict due to the highly dynamic nature of the tidal cycle. However, due to the relatively high ambient pollutant concentrations in Brays Bayou, mass removals may be high.

Actual performance in the Brays Bayou MPWP will vary from estimates summarized in Exhibit 23. These estimates are based on the assumed event mean concentrations noted above for urban stormwater runoff, a 30-acre contributing watershed with 75% runoff, a wetland area of 1.41 acres (treatment marsh), and an annual average rainfall of 47.5 inches. Actual performance may be better or worse than these estimates and should be documented through a program of hydrologic and water quality monitoring. These measured performance rates can in turn be used for providing an additional quantitative basis for future stormwater wetland designs in the Houston area.

EXHIBIT 24

Estimated Annual Average Performance of Brays Bayou Multi-Purpose Wetland Project

Parameter	Inflow	Model Parameters C*	Model Parameters k_{20} (m/yr)	Estimated Effluent	Estimated Removal Eff %
Flow (m^3/d)	301	---	---	301	---
BOD_5 (mg/L)	60	6.7	34	16	74
Total Suspended Solids (mg/L)	150	29.1	100	30	80
Total Nitrogen (mg/L)	6	1.5	22	2.9	52
Ammonium Nitrogen (mg/L)	4	0.0	18	1.51	62
Total Kjeldahl Nitrogen (mg/L)	6	1.5	22	2.9	52
Total Phosphorus (mg/L)	1.0	0.02	12	0.5	45
Fecal Coliforms (col/100 ml)	15,000	300	75	599	96
Cadmium (µg/L)	2	0.20	25	0.7	65
Lead (µg/L)	50	5.0	35	12.3	75
Zinc (µg/L)	75	10.0	28	25.2	66

Design Temperature (^oC):	21	Long Term Annual Average Rainfall (in):	47.5
Wetland Area (ac):	1.41	Long Term Annual Average ET (in):	48.5
Hydraulic Loading Rate (cm/d):	5.3	Contributing Watershed Area (ac):	30
		Runoff Coefficient (%):	75

Driscoll (1990)

k-C* Model Parameters modified from Kadlec and Knight, 1996 or estimated based on best professional judgment

Ce = C*+(C1-C*)exp(-kA/0.0365Q)

Implementation Plan

Implementation of the proposed Brays Bayou MPWP will include the following steps:

- Site-specific studies
- Preliminary design
- Final design and preparation of bid documents
- Construction
- Startup and operation
- Operational monitoring

Site-specific studies need to be conducted to verify the following conditions prior to final design:

- Final surveying
- Geotechnical investigations to document near-surface soil conditions and presence / absence of unsuitable construction materials such as clay or rock
- Detailed mapping of the watershed area to identify the total basin area, the proportion of impervious area in the basin, and to better characterize land use conditions that might affect water quality entering the proposed Brays Bayou MPWP
- Any studies required by local, state, or federal agencies related to protected species, cultural resources, etc.

Preliminary design should be based on the best site-specific information available. Following review of the preliminary design, the final design and bid documents should be prepared for review. An operation and maintenance (O&M) manual should be prepared as part of this design process. All necessary permits (including a Section 404 permit under the federal Clean Water Act) should be acquired during this design process and prior to construction. Project startup and operation will be based on the final O&M plan. Monitoring goals and objectives should be included in the O&M plan.

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APPENDIX A

Surface Water Quality Timeseries Plots

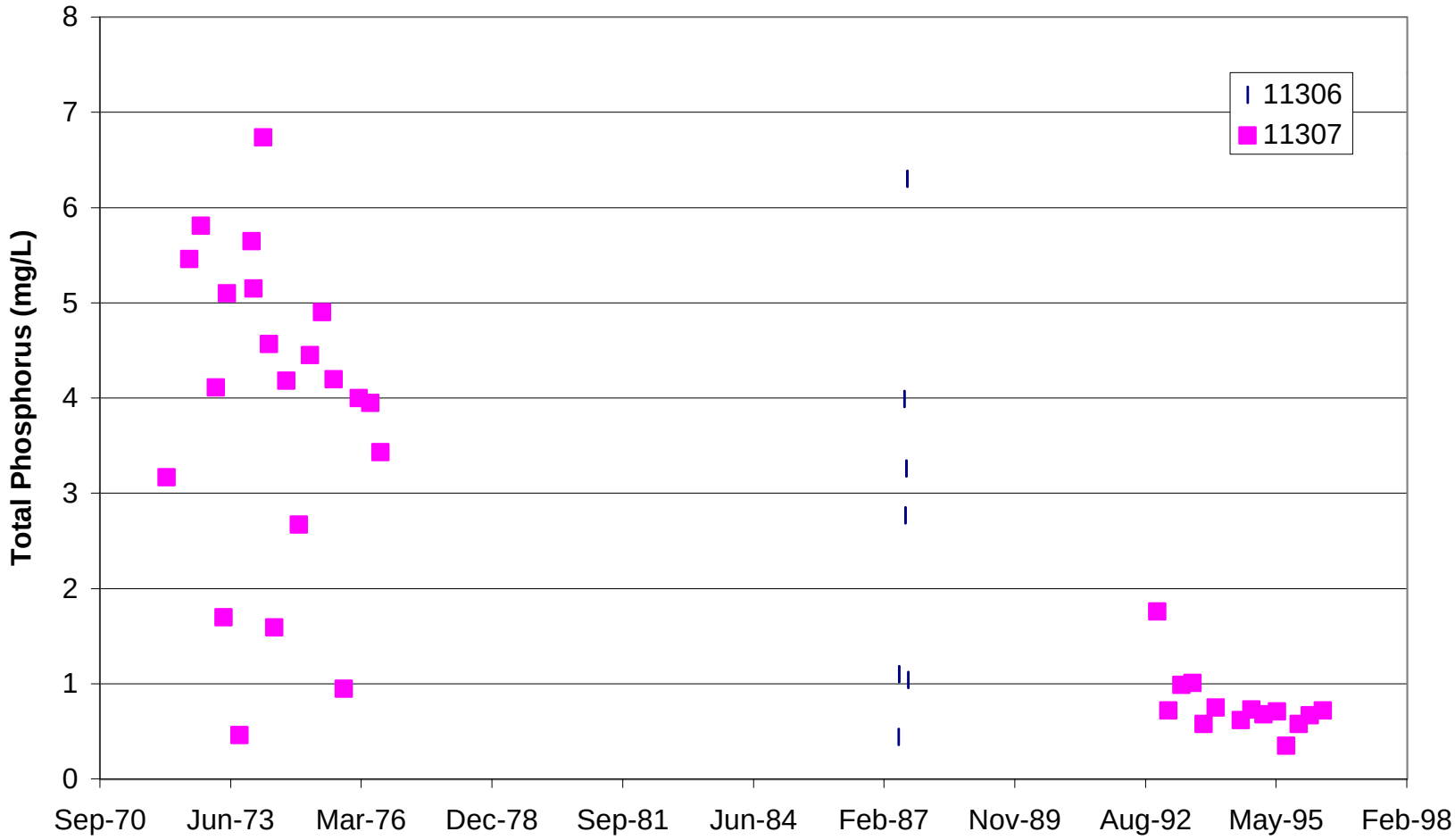

EXHIBIT A-1

Total Phosphorus Surface Water Concentrations from Stations in Brays Bayou

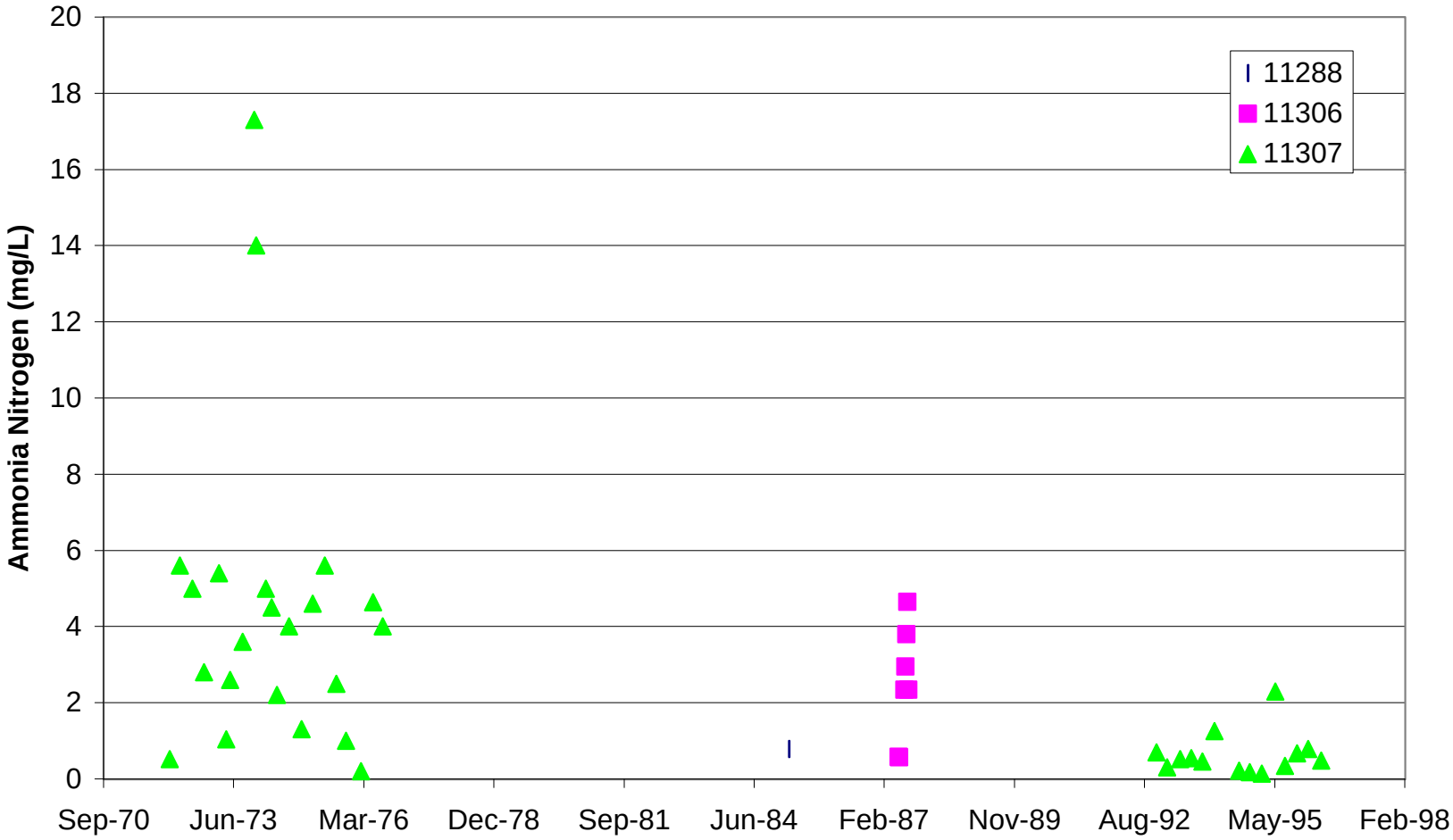

EXHIBIT A-2

Total Ammonia Nitrogen Surface Water Concentrations from Stations in Brays Bayou and Buffalo Bayou

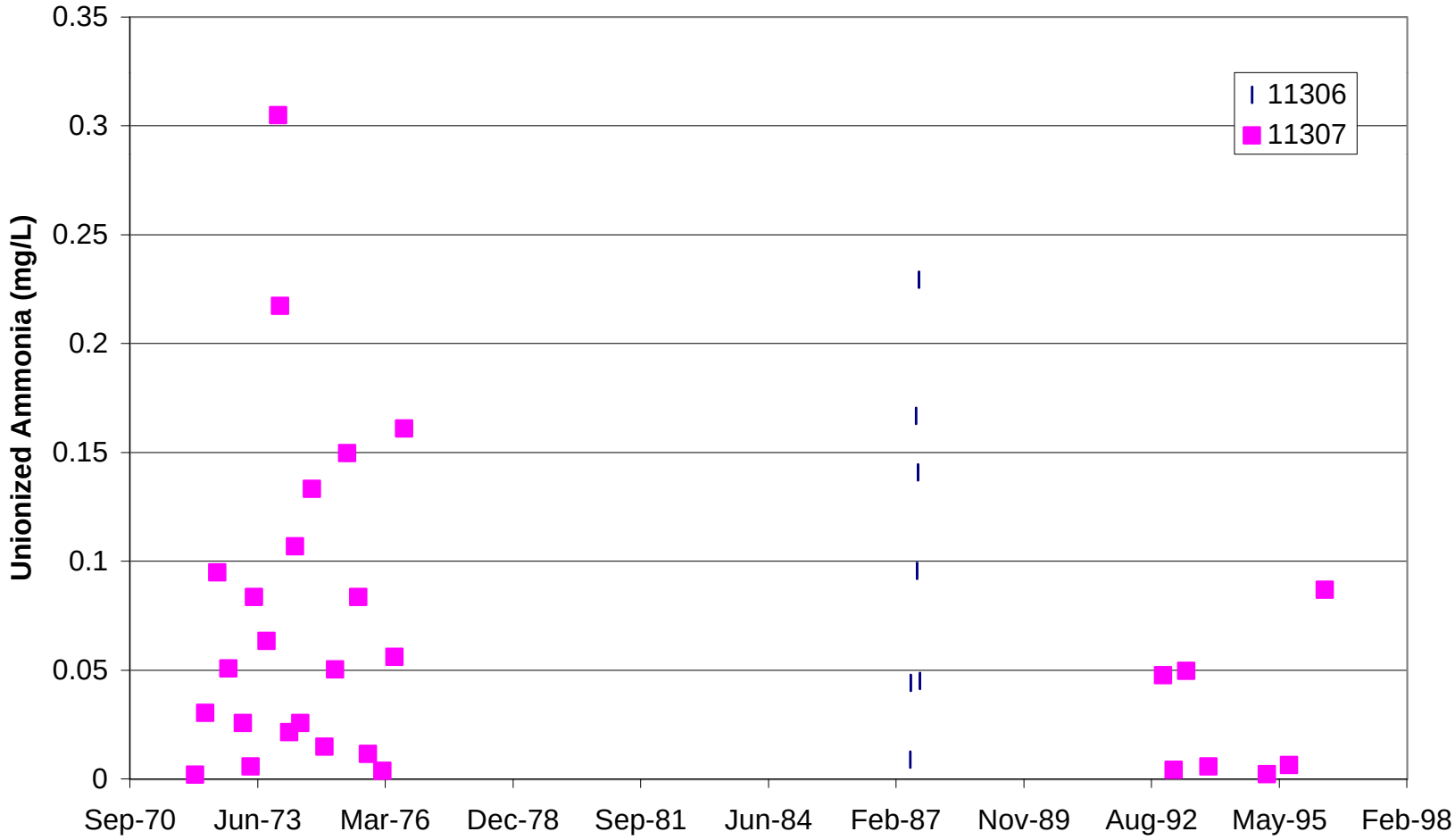

EXHIBIT A-3

Unionized Ammonia Surface Water Concentrations from Stations in Brays Bayou

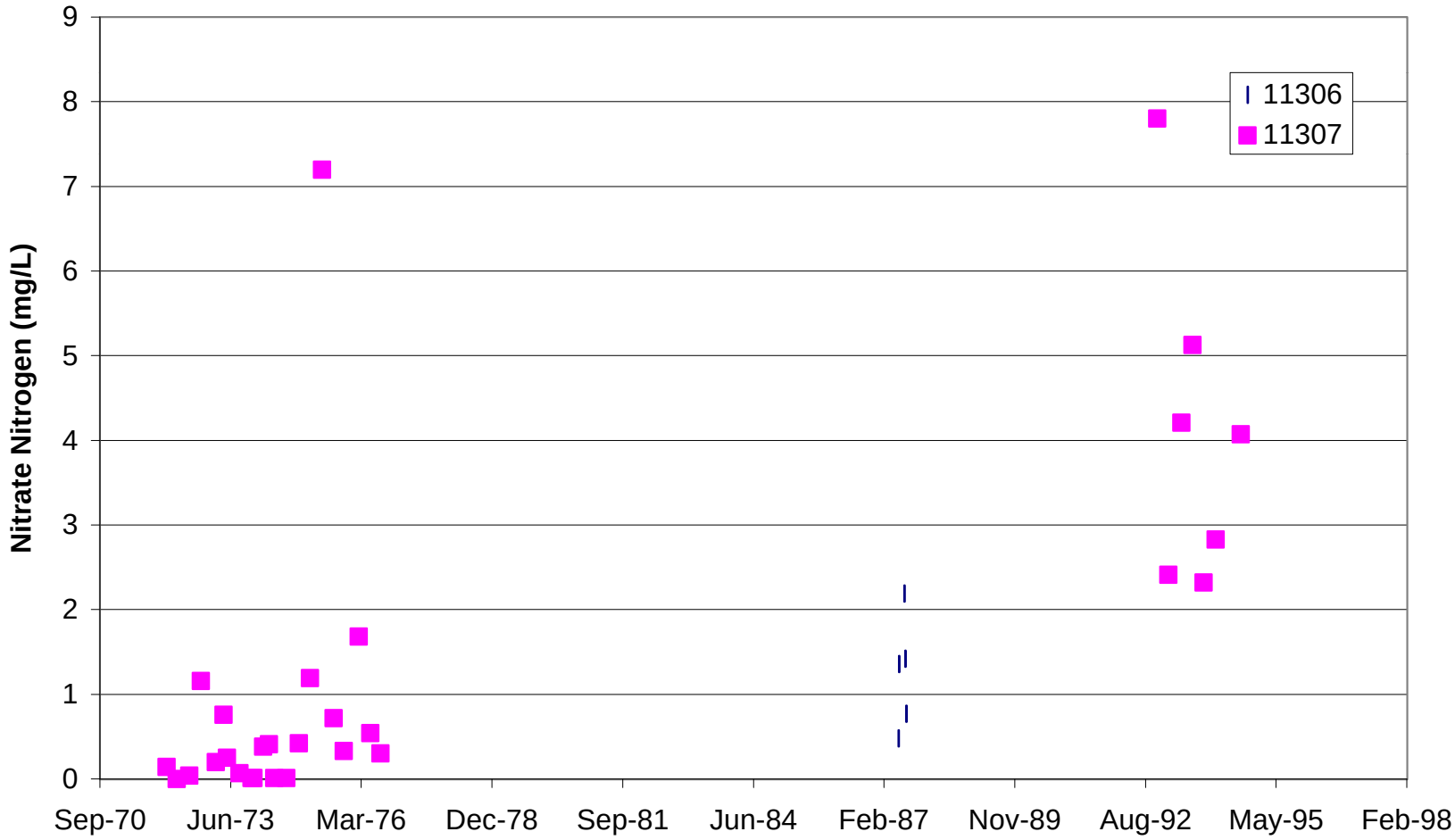

EXHIBIT A-4

Nitrate Nitrogen Surface Water Concentrations from Stations in Brays Bayou

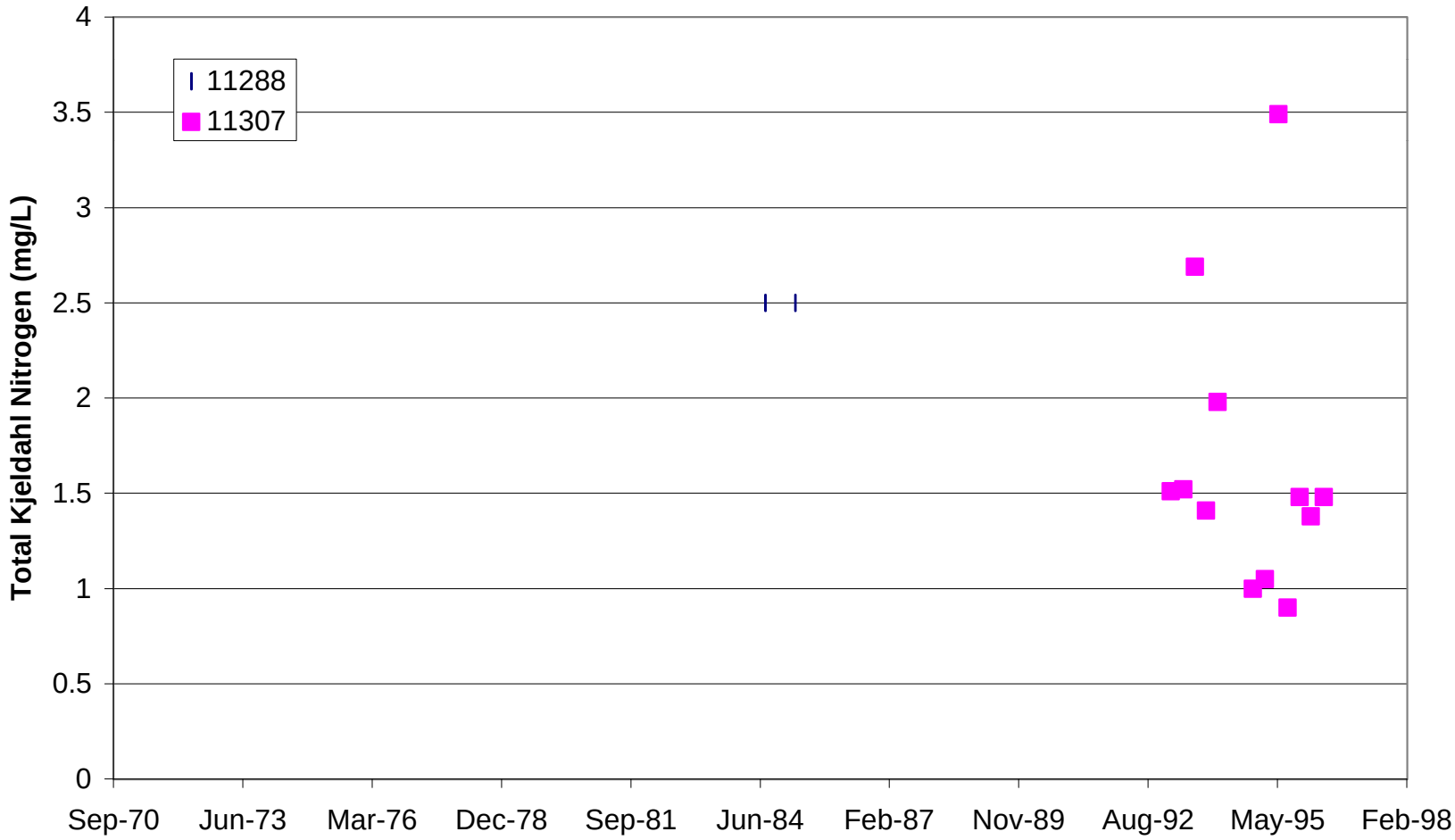

EXHIBIT A-5

Total Kjeldahl Nitrogen Surface Water Concentrations from Stations in Brays Bayou and Buffalo Bayou

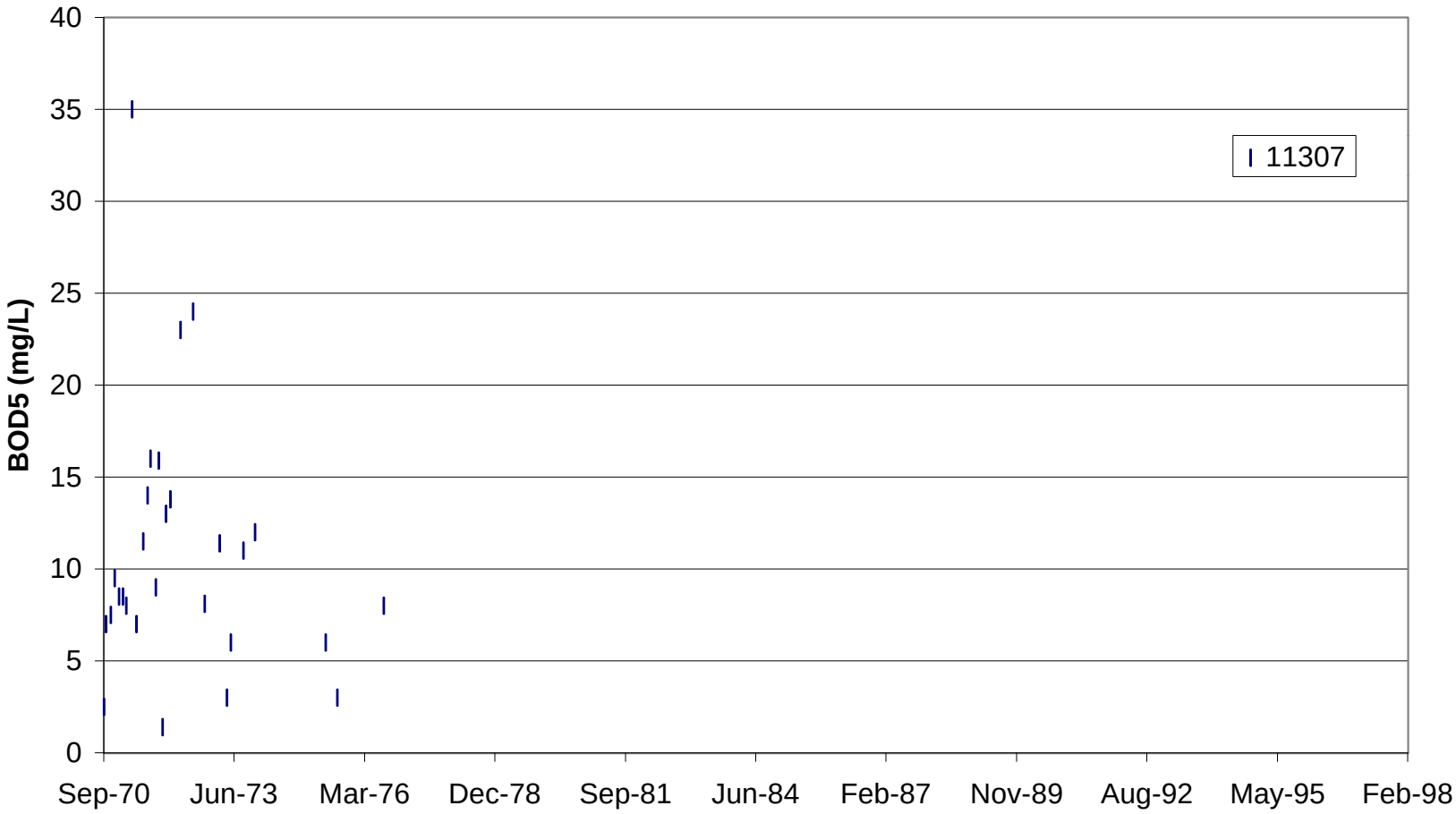

EXHIBIT A-6

5-Day Biological Oxygen Demand Surface Water Concentrations from Stations in Brays Bayou

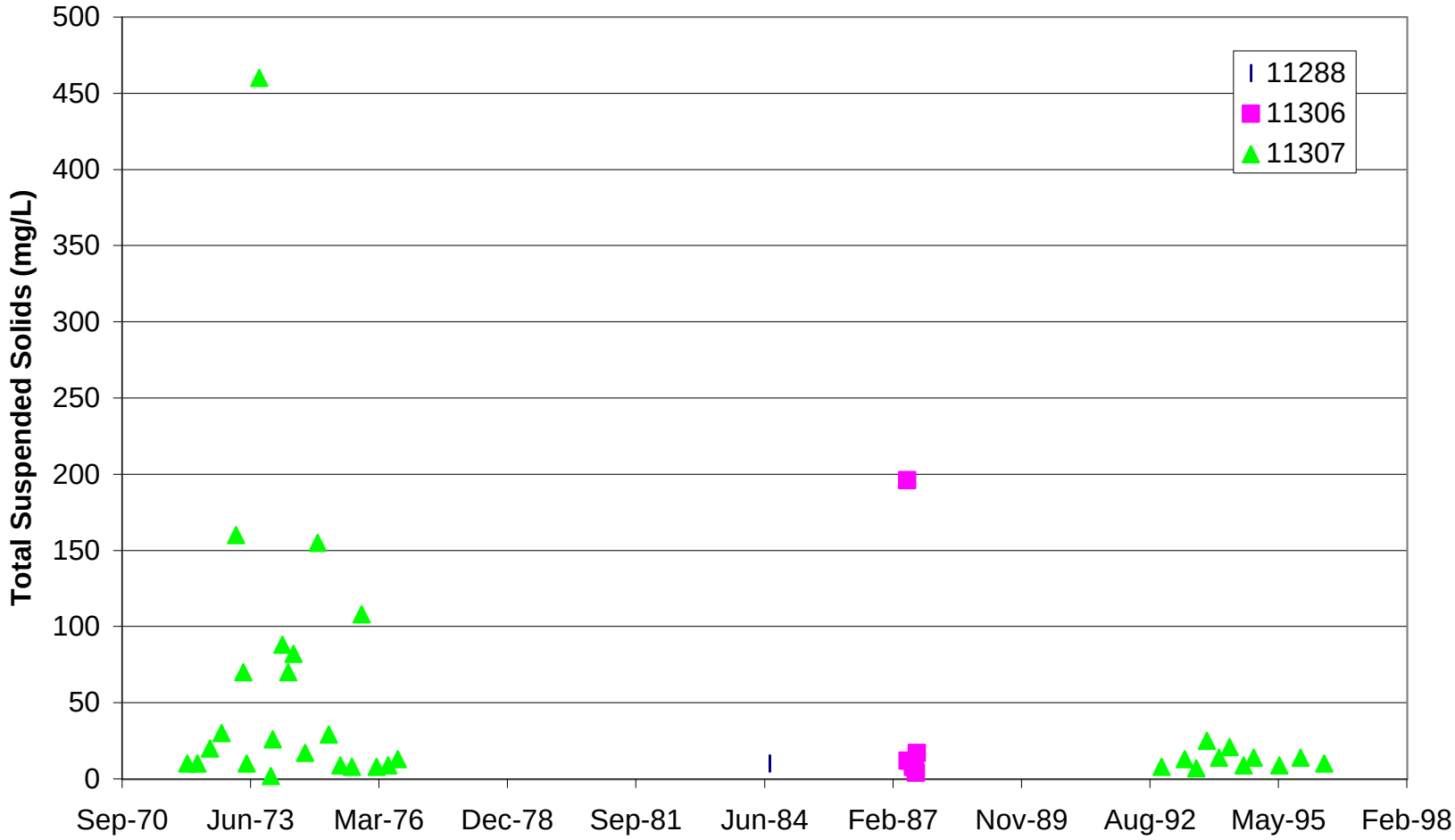

EXHIBIT A-7

Total Suspended Solids Surface Water Concentrations from Stations in Brays Bayou and Buffalo Bayou