Draft Environmental Assessment

MEMORIAL HERMANN HOSPITAL FLOOD PROTECTION PROJECT HOUSTON, TEXAS

Prepared for:
FEMA Region VI
Federal Regional Center
800 North Loop 288
Denton, TX 76209

Turner Collie & Braden Inc.

Environmental Planning

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FIGURES

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LIST OF ACRONYMS

CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	carbon monoxide
CFR	Code of Federal Regulations
CWA	Clean Water Act
dB	decibels
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Map
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
gpm	gallons per minute
MEP	Mechanical, Electrical and Plumbing
mg/l	milligrams per liter
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PM_{10}	particulate matter less than or equal to 10 microns
RCRA	Resource Conservation and Recovery Act
SO_2	sulfur dioxide
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TPDES	Texas Pollutant Discharge Elimination System
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
THC	Texas Historical Commission
TMC	Texas Medical Center
USACE	U.S. Army Corp of Engineers
USGS	U.S. Geologic Survey
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank

1.0 INTRODUCTION

1.1 Project Authority

As a result of heavy rain and flooding in southeast Texas on June 8 and 9, 2001 related to Tropical Storm Allison, President Bush declared a major disaster for 27 counties in Texas (three more counties were added later). The disaster was designated as FEMA-1379-DR-TX. One of the hardest hit areas was in southeast Houston in Harris County where up to 15 inches of rain fell on already saturated soils flooding large urbanized areas including the Texas Medical Center Complex (FEMA 2002).

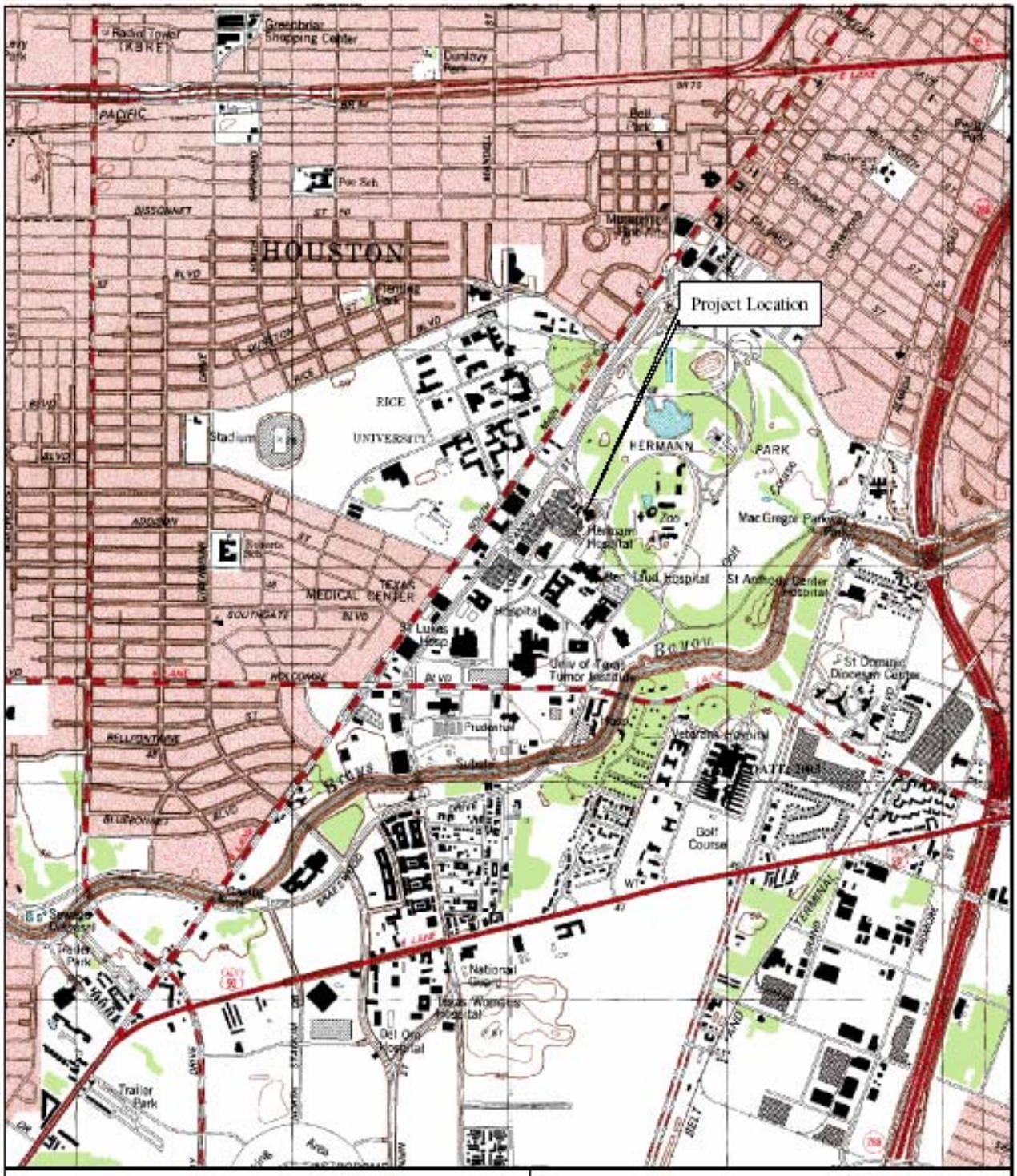
As a result of damage sustained during the flooding, the Memorial Herman Hospital System has applied for funding under the Public Assistance Program administered by the Federal Emergency Management Agency (FEMA). In accordance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 93-288, as amended, FEMA is required to review the environmental effects of the proposed action prior to making a funding decision. In accordance with 44 Code of Federal Regulations (CFR) Part 10, FEMA has prepared this environmental assessment to meet the requirements of the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's implementing regulations at 40 CFR Parts 1500-1508. The purpose of this environmental assessment is to analyze and assess the potential environmental impacts associated with the proposed action.

1.2 Project Location

The proposed project is located in the Texas Medical Center Complex, approximately three miles south of downtown Houston (*Figure 1*). The Texas Medical Center Complex is a highly developed area covering more than 700 acres and comprising over 100 buildings (FEMA 2002). The project location is within the Memorial Hermann Hospital complex of the Texas Medical Center. The Memorial Hermann Hospital complex is located at the intersection of Fannin Street and North MacGregor Drive. The physical address is 6411 Fannin Street. The following buildings make up the Memorial Hermann Hospital complex:

- Administration
- Administrative Annex
- Cullen Pavilion
- Hermann Pavilion
- Dunn Interfaith Chapel
- Memorial Hermann Children's Hospital
- Memorial Hermann Professional Building and Parking Garage
- Jones Pavilion
- Robertson Pavilion

The Administrative Annex (also known as the Shriner's Building and the Arabia Temple Crippled Children's Clinic Building) is currently located on the project site. This building will be demolished and the site cleared prior to undertaking the proposed action described in this environmental assessment. The demolition of the Administrative Annex has been approved separately as an Alternate Project and met the requirements for a Categorical Exclusion under FEMA's environmental review procedures.



SCALE

0 500 1,000 2,000 3,000 4,000 Feet

N W E S

FIGURE 1
SITE LOCATION MAP
MEMORIAL HERMANN HOSPITAL FLOOD PROTECTION PROJECT
HOUSTON, HARRIS COUNTY, TEXAS

TCB TurnerCollie & Braden Inc.

PROJECT NO. 0523014000001 | DATE: JANUARY 2004

Note: Turner Collie & Braden does not warrant the accuracy of this map, either to scale, accuracy or completeness. Source: USGS 7.5 Minute Quadrangle Map of Houston, Texas dated 1982.

1.3 Project Description

The proposed project involves the construction of a new building to house critical mechanical, electrical, and plumbing (MEP) equipment that serves the Hermann and Robertson Pavilions. The new building will be an addition to the Robertson Pavilion along North MacGregor Drive (*Figure 2*) and is proposed to be 30,517 square-feet in size. The project also includes the construction of a new mezzanine within the existing Mechanical Room of the Robertson Pavilion.

2.0 PURPOSE AND NEED

The purpose of the proposed project is to protect critical MEP facilities from damage and destruction due to floodwaters. In turn, the protection of these facilities would safeguard the hospital operations that depend on these facilities.

The Memorial Hermann Hospital was severely flooded as a result of Tropical Storm Allison on June 8-9, 2001. The basement of the Hermann Professional Building (22,219 square feet) and the lower level of the contiguous garage (126,000 square feet) were completely inundated. Flooding at the Hermann Pavilion inundated the 70,825 square-foot basement level and 72,154 square-foot ground floor level.

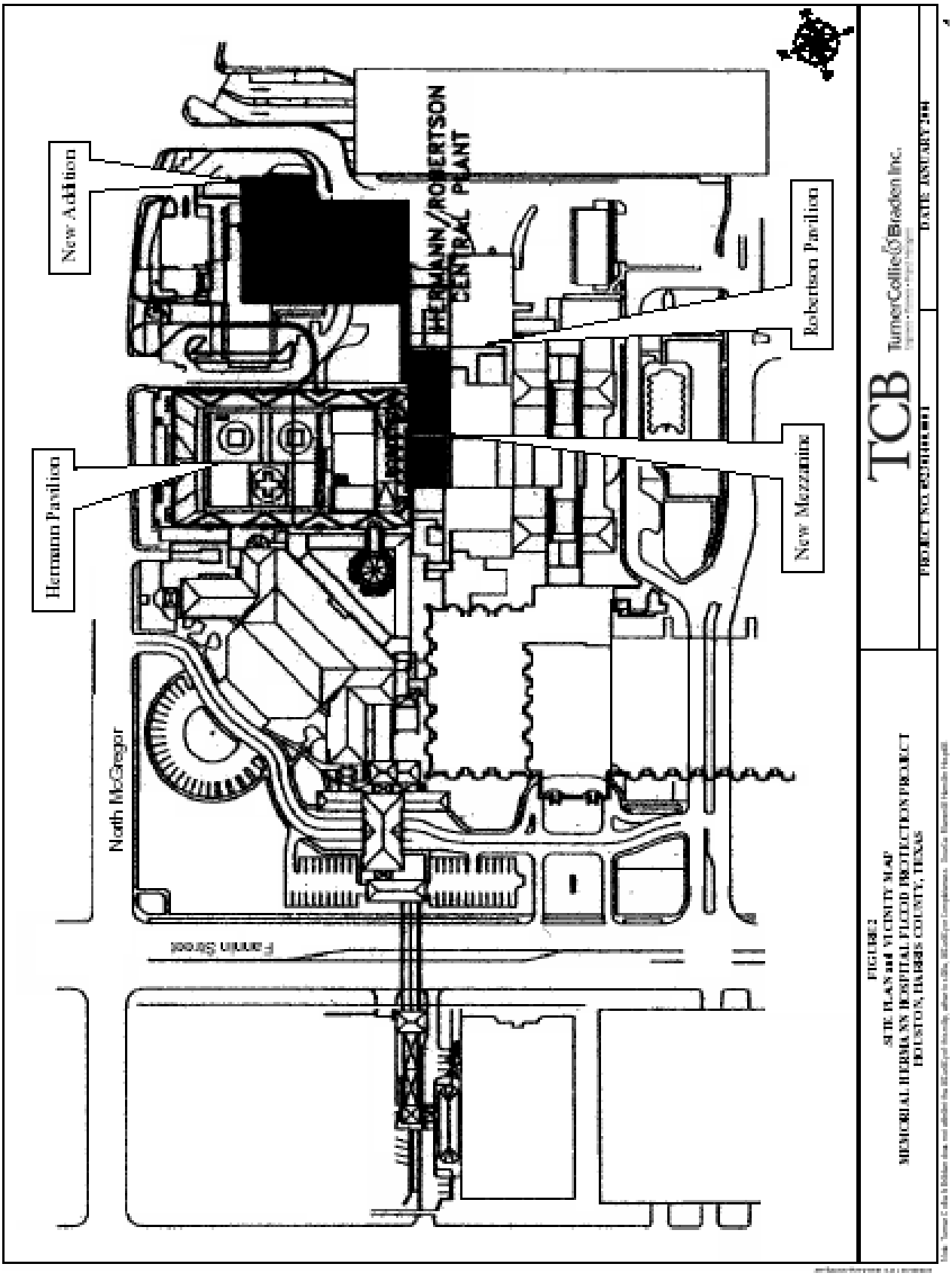
Flooding at the Robertson Pavilion inundated the 86,367 square-foot ground floor area. Damaged facilities included pedestrian and utility tunnels, mechanical equipment areas, central processing and delivery area, housekeeping and storage area, catheterization labs, conference center, food court, dining area, main elevator bank, kitchen area, dietary and housekeeping offices, gamma knife area, morgue, and computer/telephone room. Following the flooding, the Memorial Hermann Hospital was without utility power for more than 30 days.

The proposed project is needed to protect MEP facilities from flood damage and to maintain hospital operations during flood events. The proposal being evaluated in this environmental assessment would involve protecting the MEP equipment that serves the Hermann and Robertson Pavilions by relocating these facilities in a new building to be constructed above the 500-year floodplain.

3.0 ALTERNATIVES

3.1 No Action

The No Action alternative would not relocate and elevate the critical MEP facilities outside their existing location and above the 500-year floodplain. Under this scenario, the MEP equipment that serves the Hermann and Robertson Pavilions would remain in place, within the basements of these two buildings. Flood proofing of these basements is being undertaken regardless of the relocation of the MEP facilities. Flood proofing measures, such as levees and watertight doors, will decrease the risk of future flood damage but not to the extent of elevating these critical facilities out of the 500-year floodplain.


New Addition
Hermann Pavilion
North McGregor
Fannin Street
HERMANN/ROBERTSON CENTRAL PLANT
Robertson Pavilion
New Mezzanine
TCB
TurnerCollie&Braden Inc.
PROJECT NO. 6200.00
DATE 10/30/03
FIG 1B-2
SITE PLAN and VICINITY MAP
MEMORIAL HERMANN HOSPITAL FLOOD PROTECTION PROJECT
HOUSTON, HARRIS COUNTY, TEXAS

3.2 Proposed Action

The Memorial Hermann Hospital is proposing to relocate critical MEP equipment to guard against future flood risk to these facilities and the hospital operations they serve. The MEP facilities being proposed for relocation and addressed by this environmental assessment serve the Hermann and Robertson Pavilions of the Memorial Hermann Hospital located in the Texas Medical Center Complex in Houston, Texas.

The relocated MEP facilities will be housed in a new, one-story, 30,517 square-foot (est.) facility. The new facility will be located adjacent to and just northeast of the Robertson Pavilion at an elevation above the 500-year floodplain.

The construction would occur within the approximately 0.5-acre site. The work would consist of site preparation (minor grading and/or excavation) and construction of the building.

4.0 AFFECTED ENVIRONMENT AND IMPACTS

4.1 Geology, Seismicity and Prime Farmlands

The Memorial Hermann Hospital Flood Protection Project is located approximately one-half mile from Brays Bayou in southern Harris County. The general area consists of flat terrain and is urban in nature. The proposed site is located inside the city limits of the City of Houston.

Harris County is located in the Coast Prairie and East Texas Timberlands Land Resource Areas. Average annual precipitation in Harris County is about 46 inches. Climate for Harris County is mainly marine with prevailing winds mostly from the southeast and south. The larger amounts of rainfall in the county tend to occur between May and September (USDA 1976). Elevations in the project area range from 45 feet to 55 feet above mean sea level (USGS 1982).

Because the proposed project involves the construction of a new building, Executive Order 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction, applies to the proposed project. According to the Executive Order, the construction of the proposed project must use appropriate seismic design and construction standards and practices. The 1997 Uniform Building Code (UBC) and American Society of Civil Engineers (ASCE) Standard 7-95 are the only model codes that are substantially equivalent to Federal recommendations for new building seismic design and construction. According to the National Seismic Hazard Mapping Project, there is currently a low probability of seismic activity within the project area (USGS 2003).

The *Soil Survey of Harris County* indicates that the project site occurs within an Urban soil association. In general, these soils consist of extensively built-up areas mostly covered by buildings. Therefore, the soils making up Urban land are not able to be classified (USDA 1976).

The Farmland Protection Policy Act was enacted in 1981 (P.L. 98-98) to minimize the unnecessary conversion of farmland to nonagricultural uses as a result of federal actions. In addition, the Act seeks to assure that federal programs are administered in a manner that will be compatible with state and local policies and programs that have been developed to protect farmland. The policy of

the Natural Resources Conservation Service is to protect significant agricultural lands from conversions that are irreversible and result in the loss of an essential food and environmental resource. The Service has developed criteria for assessing the effects of federal actions on converting farmland to other uses, including a Farmland conversion Impact Rating form AD-1066 that documents a site-scoring evaluation process to assess its potential agricultural value.

Alternative A – No Action: The No Action alternative would have no impacts on the soils or geology of the area.

Alternative B – Relocate MEP Facilities: Because the site has already been developed, construction of a new building and relocation of the MEP facilities would not cause significant disturbance of geology and soils as part of the site preparation work. The site is relatively flat, therefore, grading needed at the site would be minor. Exposed soils would be subject to erosion, therefore, silt fence and/or other storm water quality best management practices would be utilized during construction (see *Section 4.2*). In general, effects to geology and soils would be minor and temporary in nature. Because the site is within the city limits of Houston and is urban land, the soils do not meet the definition of prime or unique farmland soil and the Farmland Protection Policy Act is not applicable.

4.2 Water Resources

4.2.1 Surface Water

There are no rivers, creeks or other defined drainages on the project site. Storm water falling on the site drains to Brays Bayou approximately 2,000 feet away. This section of Brays Bayou is listed as Stream Segment 1007 of the San Jacinto River Basin in the Texas Commission on Environmental Quality's (TCEQ) *State of Texas Water Quality Inventory*. Brays Bayou flows into Buffalo Bayou (Houston Ship Channel), which flows into Galveston Bay.

The TCEQ is required, under Section 303(d) of the Clean Water Act, to identify water bodies for which effluent limitations are not stringent enough to implement water quality standards. The TCEQ also develops a schedule identifying Total Maximum Daily Loads (TMDLs) that will be initiated for priority-impaired waters. Based on the TCEQ's Section 303 (d) list, the section of Brays Bayou near the project area is listed as an impaired waterway segment. The parameters of concern are dioxin in blue crab and catfish, as well as toxicity in ambient sediment (TCEQ 2002).

Alternative A – No Action: The No Action alternative would have no impacts on the surface water quality of the area.

Alternative B – Relocate MEP Facilities: Potential impacts to surface waters associated with the construction of the proposed project include the potential for minor erosion and sedimentation during construction. During this period, storm water runoff could carry sediment offsite into receiving waters. A Storm Water Pollution Prevention Plan would be prepared and erosion and sedimentation control measures would be implemented to minimize any detrimental effects to water quality during construction. The project will not disturb more than one acre, therefore it does not require authorization under the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit.

Any adverse effects to water quality associated with the construction of the new building to house MEP facilities would be short term and be minimized by the mitigation measures described above. No long-term effects to water quality are expected as a result of the proposed project.

4.2.2 Waters of the U.S. including Wetlands

The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to Section 404 of the Clean Water Act. Wetlands are identified as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. In addition, Executive Order 11990 (Protection of Wetlands) directs federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands on federal property. A site visit was performed to identify any potential waters of the U.S., including wetlands, on or adjacent to the proposed project site.

Alternative A – No Action: The No Action alternative would have no effect on wetlands or other waters of the U.S. and would not require a Section 404 permit.

Alternative B – Relocate MEP Facilities: An onsite review of the project location did not find any potential areas meeting the definition of waters of the U.S. Waters of the U.S. in the vicinity of the project include Brays Bayou approximately 2,000 feet to the southeast. These adjacent areas would not be affected by the proposed project. The proposed project would not impact waters of the U.S. and would not require a Section 404 permit. There are no navigable waters in the area; therefore, Section 10 of the Rivers and Harbors Act of 1899 does not apply.

4.2.3 Floodplains

Floodplains generally refer to 100-year floodplains as set by FEMA and are shown on Flood Insurance Rate Maps (FIRM) or Flood Hazard Boundary Maps for all communities that are members of the National Flood Insurance Program (NFIP). The City of Houston and Harris County are participants in the NFIP.

Executive Order 11988 (Floodplain Management) requires federal agencies to avoid or minimize development in the floodplain except when there are no practicable alternatives. According to the NFIP Flood Insurance Rate Map for Houston (Community-Panel Number 480296-0860-K), the project site is not located within the 100-year floodplain (*Appendix E*). No construction would occur within the 100-year floodplain; therefore, Executive Order 11988 is not applicable to the proposed project.

Alternative A – No Action: The No Action alternative would not result in impacts to the 100-year floodplain.

Alternative B – Relocate MEP Facilities: No adverse effects to the floodplain are expected as a result of the proposed project. Coordination with the City of Houston floodplain manager has been initiated. The floodplain manager indicated his desire to see the plans for the project once they were ready for review by the City's development review department (City of Houston 2003).

4.2.4 Groundwater

Area groundwater use and depths were determined through a review of information about water wells in the vicinity. The Texas Water Development Board (TWDB) data show several water wells located in the area of the proposed project. According to available records these wells produce water from the Evangeline Aquifer at depths of at least 370 feet and greater and from the Lower Chicot Aquifer at depths of at least 200 feet and greater (TWDB 2003). A Storm Water Pollution Prevention Plan would be prepared and erosion and sedimentation control measures would be implemented to minimize any detrimental effects to water quality during construction.
Alternative A – No Action: The No Action alternative would have no effect on groundwater nor would it affect any water wells in the area.

Alternative B – Relocate MEP Facilities: Relocation of the MEP facilities would not have any substantial effect on the groundwater in the area.

4.3 Biological Resources

4.3.1 Flora and Fauna

The project site occurs within an Urban region as described by the Texas Parks and Wildlife Department in *The Vegetation Types of Texas* (TPWD 1984). The project area is located in downtown Houston, which has been extensively developed.

The vegetation on the project site consists primarily of regularly mowed St. Augustine grass (*Stenotaphrum secundatum*) and bermudagrass (*Cynodon dactylon*). Tree species on the project site include crape myrtle (*Lagerstroemia* sp.), Texas palm (*Sabal texana*), and other landscaped trees and shrubs. Photos showing vegetation on the project site are included in *Appendix A*.

The Fish and Wildlife Coordination Act was enacted to protect fish and wildlife when federal actions result in control or modification of a natural stream or body of water. No streams or other water bodies are located on the project site, therefore, the Fish and Wildlife Coordination Act is not applicable to the proposed action.

Alternative A – No Action: The No Action alternative would have no effect on flora or fauna in the project area.

Alternative B – Relocate MEP Facilities: The construction of the proposed project would result in minimal clearing of vegetation. Because of the urban nature of the project area, affects to wildlife and habitat would be minimal.

4.3.2 Threatened and Endangered Species

The U.S. Fish and Wildlife Service (USFWS) lists one species in Harris County as being endangered—the Texas prairie dawn (*Hymenoxys texana*). In addition, the bald eagle (*Haliaeetus leucocephalus*) is listed as threatened in Harris County (USFWS 2003).

The Endangered Species Act (ESA) of 1973 provides for the protection of all listed threatened and endangered species from take defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap,

capture, or collect or attempt to engage in any such conduct." Harm is further defined by USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by USFWS as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering.

The Texas prairie dawn grows in sparsely vegetated areas on slightly saline soils and is known to occur on the outskirts of the City of Houston mainly within the Addicks and Barker Reservoirs in western Harris County. The bald eagle occurs along coastal areas, rivers or lakeshores with large, tall trees (TPWD 2003). The location of the proposed project has been previously developed and consists mainly of landscaped grasses and ornamental trees, paved parking areas, and buildings. As such, the vegetative community on, and adjacent to, the project site is not characteristic of these habitats.

Table 1

Federally Listed Threatened and Endangered Species in Harris County

Common Name	Status	Comments
Prairie Dawn	Endangered	Western outskirts of Houston
Bald Eagle	Threatened	Migratory/Transient species

Alternative A – No Action: The No Action alternative would have no effect on threatened or endangered species.

Alternative B – Relocate MEP Facilities: Coordination with the USFWS was initiated following the declaration of the Tropical Storm Allison disaster. This consultation resulted in a letter outlining the conditions related to Federally-listed Endangered Species and project-specific coordination. According to the letter and maps provided by the USFWS, the project site does not contain habitat for any of the listed species described above; therefore, the proposed project would not affect any threatened or endangered species or modify habitat. Correspondence related to this coordination is included in *Appendix B*.

4.4 Air Quality

The Clean Air Act requires that states adopt ambient air quality standards. The standards have been established in order to protect the public from potentially harmful amounts of pollutants. The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six air pollutants. These pollutants include sulfur dioxide (SO_2), particulate matter with a diameter less than or equal to 10 micrometers (PM_{10}), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead.

The EPA has designated specific areas as NAAQS attainment or non-attainment areas. Attainment areas are any areas that meet ambient air quality standards. Non-attainment areas are any areas that do not meet (or that contribute to ambient air quality in a nearby area that does not meet) the quality

standard for a pollutant. According to the EPA, Harris County is currently designated as "non-attainment" for the air quality standard set for ozone (EPA 2003).

Alternative A – No Action: The No Action alternative would have no effect on air quality.

Alternative B – Relocate MEP Facilities: Pollutant emissions from construction equipment may result in minor effects to air quality in the area immediately surrounding the construction activity. Vehicular exhaust emissions would be produced by the operation of diesel engines and other construction equipment. These effects would be localized and of short duration. The contractor would be required to keep all equipment in good working order to minimize air pollution.

4.5 Transportation

The proposed project is located along North MacGregor Drive in the Texas Medical Center Complex, approximately three miles south of downtown Houston (*Figure 1*). North MacGregor Drive is a four-lane, urban arterial roadway with a center left-turn lane. Major freeways in the area include State Highway 288 to the east, Loop 610 to the south, and US 59 to the north.

Alternative A – No Action: The No Action alternative would have no effect on transportation in the area.

Alternative B – Relocate MEP Facilities: Although construction traffic may affect access to the immediate project area temporarily, the proposed action is not expected to have an affect on transportation along North MacGregor Drive or other local roadways.

4.6 Noise

Noise is generally defined as unwanted sound. The closest noise receptors are the Hermann and Robertson Pavilions of the Memorial Hermann Hospital adjacent to the project site. Noise levels within and adjacent to the project area would increase during the proposed construction activities as a result of construction equipment. The noise levels generated would be limited to workday daylight hours for the duration of the work. City of Houston noise ordinances (Ord. No. 01-945, § 2, 10-17-01) indicate that allowable noise levels are 68 decibels at all times for non-residential properties (COH 2001).

Alternative A – No Action: The No Action alternative would not result in impacts to noise receptors in the area.

Alternative B – Relocate MEP Facilities: The proposed action would result in a slight increase in noise during the construction of the facility. The increase in noise is expected to be minor and short term and is expected to comply with the City's noise ordinance.

4.7 Cultural Resources

In addition to review under NEPA, consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act, as amended, (NHPA) as implemented by 36 CFR Part 800. Requirements include the need to identify significant historic properties that may be impacted by the proposed action or alternatives within the project's area of potential effect. Historic

properties are defined as archaeological sites, standing structures, or other historic resources listed in or determined eligible for listing in the National Register of Historic Places. If adverse effects on historic, archaeological, or cultural properties are identified, then agencies must consider effects of their activities and attempt to avoid, minimize, or mitigate the impacts to these resources.

The Memorial Hermann Hospital Administrative Annex (also known as the Shriner's Building) currently sits on the site proposed for the new building to house the Memorial Hermann Hospital Flood Protection Project. The building is proposed to be demolished under a separate project authorization. The Administrative Annex was determined to be eligible for listing in the National Register of Historic Places and coordination with the State Historic Preservation Office resulted in a Memorandum of Agreement (MOA) stipulating mitigation measures be taken prior to its demolition. Documents (including photographs) resulting from the MOA stipulations will be made available at the Rice University Fondren Library.

Alternative A – No Action: The No Action alternative would have no effect on cultural resources in the area.

Alternative B – Relocate MEP Facilities: Coordination with the Texas Historical Commission has been initiated regarding the existing building on the project site. That coordination is being conducted separately from the project discussed in this environmental assessment. The proposed relocation of the MEP facilities would not affect any known archeological or historic resources in the area. If artifacts or other potential historic materials are discovered during construction, work would be suspended and FEMA and the State Historic Preservation Officer would be contacted.

4.8 Socioeconomic

The City of Houston, population 2,009,834, is the county seat of Harris County. According to the U.S. Census Bureau, Harris County has a population of 3,557,055 and a per capita income of $21,435 (USCB 2003). The primary industries in Harris County are petroleum refining, manufacturing, energy, space, and medical research, and international business (DMN 1997).

The Texas Medical Center is the largest employer in Houston with an estimated 61,000 employees (FEMA 2002). The estimated economic impact of Texas Medical Center on the Houston economy in 2001 was $11.5 billion (FEMA 2002).

Alternative A – No Action: The No Action alternative could possibly have an adverse impact on the Memorial Hermann Hospital System, and consequently the Texas Medical Center, given that the increased risk of leaving the MEP facilities in place is more likely to interrupt hospital operations in the future and result in additional costs for future repairs or replacement.

Alternative B – Relocate MEP Facilities: Construction of the proposed project would facilitate and support the economic growth of the Memorial Hermann Hospital System, and consequently the Texas Medical Center, by improving and safeguarding the MEP operations that support the Hermann and Robertson Pavilions of the Memorial Hermann Hospital. In addition, the construction of the new facility would be expected to create new jobs in the short term.

4.9 Environmental Justice

On February 11, 1994, President Clinton signed Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" directing federal agencies to focus attention on human health and environmental conditions in minority and/or low-income communities. The Executive Order's goals are to achieve environmental justice, fostering non-discrimination in federal programs that substantially affect human health or the environment, and to give minority or low-income communities greater opportunities for public participation in and access to public information on matters relating to human health and the environment. It also requires that agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

The 2000 Census lists 58.7 % of Harris County's residents as white; of these, 42.1 % were white persons not of Hispanic/Latino origin. Residents of Hispanic/Latino origin comprise 32.9 % of the county's population. African Americans comprised 18.5 % of the county's population. American Indian, Alaska Native persons, Pacific Island persons, and Asian persons comprised 5.6 % of the total population in this county. Median household income was $42,598 (USCB 2003).

Alternative A – No Action: The No Action alternative would not have disproportionate impacts on minority or low-income populations in the City of Houston or in Harris County.

Alternative B – Relocate MEP Facilities: Construction of the proposed project would not have an adverse or disproportionate impact on minority or low-income populations. The benefits of relocating and elevating the MEP facilities are expected to be the same for all segments of the City's population.

4.10 Safety

Safety and security issues that were considered in this environmental assessment include the health and safety of area residents, the public at-large, and the protection of personnel involved in activities related to the implementation of the proposed project.

Alternative A – No Action: The No Action alternative would not affect the health and safety of residents in the area.

Alternative B – Relocate MEP Facilities: Relocating and elevating the MEP facilities would protect critical MEP facilities from damage and destruction due to floodwaters. In turn, the protection of these facilities would safeguard the hospital operations that depend on these facilities. The effects to the health and safety of residents, hospital employees, patients and others associated with the Memorial Hermann Hospital System are expected to be positive.

4.11 Hazardous Materials

Hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), are defined as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating

reversible illness or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of or otherwise managed." Hazardous materials and wastes are regulated in Texas by a combination of federal laws and state laws. Federal regulations governing the assessment and disposal of hazardous wastes include RCRA, the RCRA Hazardous and Solid Waste Amendments, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and Toxic Substances Control Act.

Visual observation of the project area did not reveal obvious existing or potentially hazardous materials, substances, or conditions. No drums or other sources of potentially hazardous materials were observed in the project area. No indications of pipelines crossing the project area were noted on the USGS topographic map reviewed for this project (USGS 1982). Based on information from the geographic information system located at Central Records of the Railroad Commission of Texas, no petroleum pipelines or wells are located within one mile of the proposed project (RCT 2004). Additionally, a review of regulatory environmental databases from federal and state agencies was conducted. The following is a list of the federal and state databases reviewed for this project: Texas State Superfund, National Priorities List, Delisted National Priorities List, Compensation and Liability Information System (CERCLIS), No Further Remedial Action Planned, Resource Conservation and Recovery Information System (RCRIS), TCEQ Leaking Petroleum Storage Tank (LPST), TCEQ Petroleum Storage Tank (PST), Emergency Response Notification System (ERNS), TCEQ Spills (SPILLS), Municipal Solid Wastes Landfill Sites, Closed and Abandoned Landfill Inventory, and Voluntary Cleanup Program. A summary of the database results is presented in *Appendix D*.

The Memorial Hermann Hospital facility has a RCRIS Small Quantity Generator permit from the Environmental Protection Agency (EPA) and generates between 100 kg and 1,000 kg of hazardous waste per month. A violation associated with the permit occurred in 1991 and was enforced with an informal administrative action. Because a release associated with Hermann Hospital's RCRIS permit was not reported and because the only permit violation was enforced with informal action, the Small Quantity Generator permit represents a low environmental concern to the proposed project.

The Memorial Hermann Hospital facility is registered with the TCEQ as having three underground storage tanks (UST) designated to hold diesel fuel. The USTs were not reported to be leaking. On the basis of the regulatory status and the site reconnaissance conducted on the subject property, the registration of the Memorial Hermann Hospital facility on the PST database is a low environmental concern to the subject project. Additionally, it is important to note that the absence from the LPST list does not preclude the possibility of releases from PST systems that may have gone undetected or unreported.

All other sites listed in the regulatory environmental databases are located beyond the area affected by the proposed project. Based upon the distance from the subject project, the potential for these sites to impact the subject project is low.

<u>Alternative A – No Action</u>: The No Action alternative would not disturb any hazardous materials or create any potential hazard to human health.

<u>Alternative B – Relocate MEP Facilities</u>: The proposed construction would not disturb any known hazardous materials, including the USTs, and is not expected to create a potential hazard to human

health. If hazardous constituents are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation and management of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area.

5.0 PUBLIC INVOLVMENT

The public has been invited to comment on the proposed action. A legal notice has been posted in a local newspaper, *The Houston Chronicle*, and on the FEMA website. Additionally, the Draft Environmental Assessment is being made available for review for a period of 30 days at the Houston Central Public Library. A copy of the public notice is attached in *Appendix C*.

6.0 AGENCY COORDINATION AND PERMITS

As part of the development of early interagency coordination related to the response and recovery efforts at the Texas Medical Center, state and federal resource protection agencies were contacted. These agencies included the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), TCEQ, Texas Parks and Wildlife Department (TPWD), and Texas Historical Commission. In addition, the Floodplain Manager for the City of Houston was contacted specifically about the project described in this environmental assessment.

Other than utility permits and/or local building permits, it is not anticipated that other permits or approvals would be needed from any other regulatory agencies.

7.0 CONDITIONS AND MITIGATION MEASURES

General mitigation measures and conditions are expected to be required of the applicant prior to authorization of federal funding. These conditions are expected to include, but not be limited to:

- Implement appropriate best management practices (BMPs) for storm water management during construction.
- Use conventional site preparation techniques prior to and during construction.
- Ensure that construction activities would observe the appropriate ordinances regarding traffic control, occupational safety regulations, and appropriate noise control measures.
- If artifacts or other potential historic materials are discovered during construction, work would be suspended and FEMA and the State Historic Preservation Officer would be contacted.

8.0 CONCLUSION

The findings of this Environmental Assessment conclude that the proposed relocation of critical mechanical, electrical and plumbing equipment for the Memorial Hermann Hospital would result in no significant environmental impacts to the human or natural environment; therefore, the proposed

action meets the requirements of a Finding of No Significant Impacts (FONSI) under NEPA and the preparation of an Environmental Impact Statement (EIS) will not be required.

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10.0 LIST OF PREPARERS

Project Manager and Principal Investigator:
Carlos Swonke
Sr. Project Manager
Turner Collie & Braden Inc.
Austin, Texas

GIS, Hazardous Materials, Biology
Scott Ford
Environmental Specialist
Turner Collie & Braden Inc.
Austin, Texas

Appendices

Appendix A
Site Photos

(not available in PDF format)

Appendix B
Agency Correspondence
(not available in PDF format)

Appendix C
Public Notice

Federal Emergency Management Agency
PUBLIC NOTICE

Notice of Availability of the Draft Environmental Assessment
for the Memorial Hermann Hospital Flood Protection Project
Houston, Texas
FEMA-1379-DR-TX.

The Memorial Herman Hospital System has applied to the Federal Emergency Management Agency (FEMA) for assistance with the construction of a building to house critical mechanical, electrical, and plumbing (MEP) equipment to guard against future flood risk to these facilities and the hospital operations they serve. In accordance with the National Environmental Policy Act of 1969, the Council for Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500-1508), the National Historic Preservation Act, and the implementing regulations of FEMA (44 CFR Part 9 and 10), an Environmental Assessment (EA) is being prepared to assess the potential impacts of the proposed action on the human and natural environment.

The EA evaluates alternatives that provide for compliance with applicable environmental laws. The alternatives to be evaluated include (1) No Action and (2) The Proposed Action, the construction of a building to house MEP equipment out of the 500-year floodplain.

The draft Environmental Assessment is available for review between January 20, 2004 and February 18, 2004, at the Houston Central Public Library located at 500 McKinney Street, Houston, Texas. The draft Environmental Assessment is also available for review online at the FEMA website http://www.fema.gov/ehp/docs.

Written comments regarding this proposed project can be mailed to Carlos Swonke, Turner Collie & Braden Inc., 400 West 15th Street, Suite 500, Austin, TX 78701. Comments should be received no later than 5:00 p.m. on February 18th.

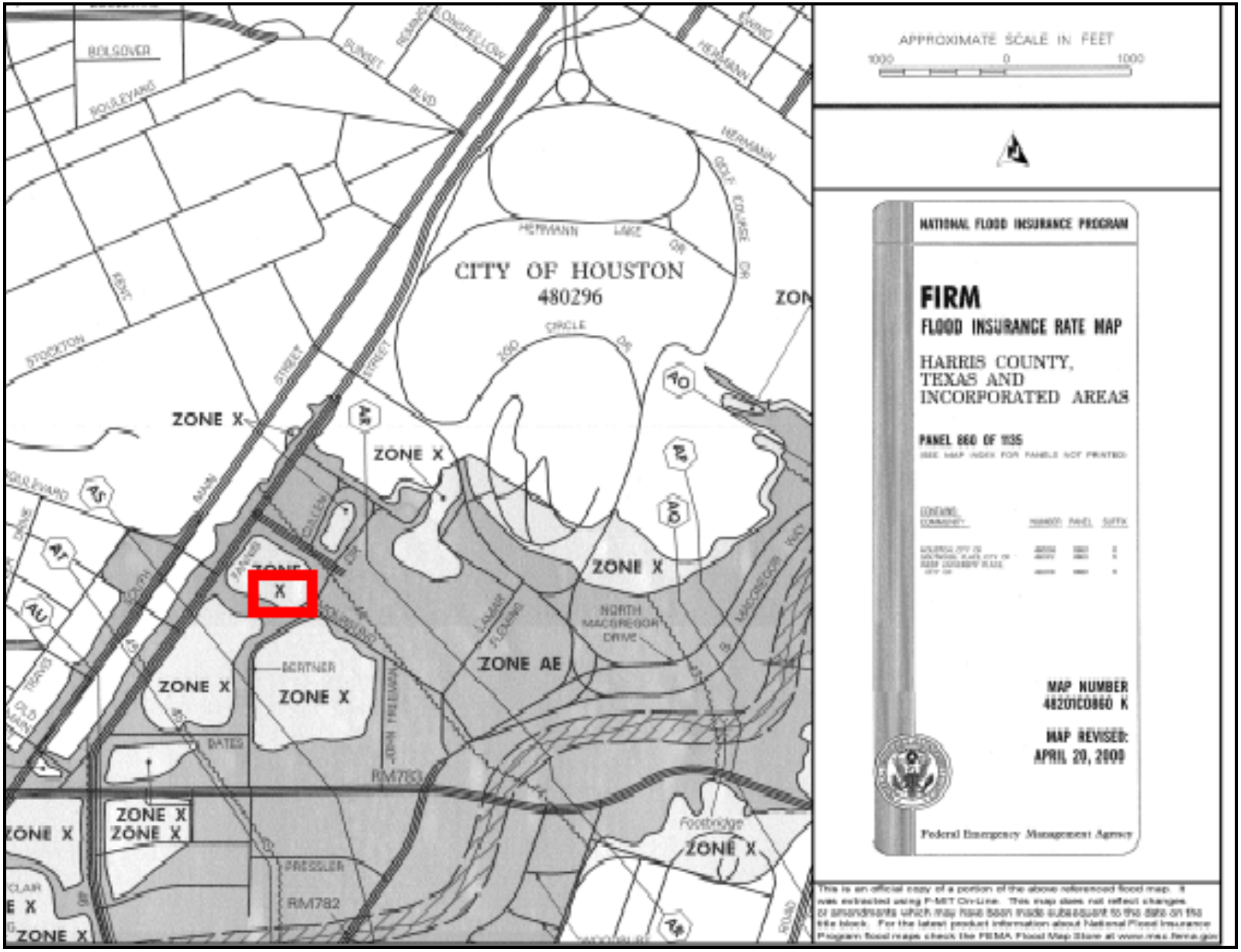
Appendix D
Hazardous Material Database Search Results

Summary of Regulated Hazardous Material Sites within One-Half Mile of the Subject Project

SITE NAME	SITE ADDRESS	DATABASE	STATUS/COMMENTS
Hermann Hospital	1203 Ross Sterling Ave.	RCRISG; PST	Small quantity generator; violation in 1991; informal enforcement. 3 USTs in use; installed from 1968 to 1974; storage capacities of 1,800 to 6,000 gallons; diesel.
Harris County Hospital	1502 Taub Loop	LPST; PST	No groundwater impacted; no apparent threats or impacts; requiring site assessment. 4 USTs removed or filled in place.
Ben Taub General Hospital	1504 Taub Loop	RCRISG; PST	Conditionally exempt small quantity generator; no violations. 3 USTs in use; installed in 1989; storage capacity of 12,000 gallons; diesel and gasoline. 1 UST removed.
UT Houston Medical School	6431 Fannin St.	RCRISG; LPST; PST	Small quantity generator; no violations; final concurrence issued, case closed. 1 AST in use; installed in 1990; storage capacity of 6,000 gallons; diesel. 1 UST filled in place.
Baylor College of Medicine	1200 Moursund Ave.	RCRISG; PST	Large quantity generator; no violations. 1 UST in use; installed in 1996; storage capacity of 4,000 gallons; diesel. 2 USTs removed or filled in place.
Hermann Park Train	1600 Zoo Circle	PST	1 UST in use; installed in 1959; storage capacity of 1,000 gallons; gasoline.
Diagnostic Center Hospital	6447 S. Main St.	LPST; PST	Groundwater impacted; final concurrence issued, case closed. 1 UST in use; installed in 1982; storage capacity of 5,000 gallons; diesel. 1 UST filled in place.
Texas Medical Center Garage	6519 Fannin St.	LPST	Groundwater impacted; final concurrence issued, case closed.
Methodist Hospital	6565 Fannin St.	SPILLS; RCRISG; LPST; PST	200 gallon spill of diesel oil in 1988. 5 gallon spill of diesel oil in 1994. Large quantity generator; no violations. Soil contamination only; final concurrence issued, case closed. 6 USTs in use; installed from 1961 to 1986; storage capacities of 2,000 to 15,000 gallons; diesel. 1 UST removed.
Rice University	6100 S. Main	LPST; RCRISG	Minor soil contamination; final concurrence issued, case closed. Small quantity generator; no violations.
UT MD Anderson Cancer Center/ Science Research Center	1515 Holcombe Blvd.	PST	11 USTs in use; installed 1984 to 2001; storage capacities of 4,500 to 25,000 gallons; diesel. 2 ASTs in use; installed 2001; storage capacity of 21,000 gallons; diesel. 2 ASTs out of service; 1 UST removed; 1 UST with incomplete information.
UT Systems Center	6723 Bertner Dr.	RCRISG	Large quantity generator; violation in 1984.
University of Houston Pharmacy	1441 Moursund Ave.	RCRISG	Small quantity generator; no violations.
Mental Science Institute	1300 Moursund Ave.	PST	1 AST in use; installed 1986; storage capacity of 2,000 gallons; diesel.
Health Dept. Braeswood Lab	1115 S. Braeswood Blvd.	PST	1 UST in use; installed 1994; storage capacity of 6,000 gallons; diesel. 1 UST removed; 1 UST with incomplete information.
Houston Marriott Hotel	6580 Fannin St.	PST	2 USTs in use; installed 1998; storage capacity of 2,000 gallons; diesel. 1 UST removed; 1 UST with inadequate information.
Shamrock X-Ray	6560 Fannin St.	RCRISG	Small quantity generator; no violations.
Hermann Park Golf Course	6110 Golf Course	SPILLS; ERNS; PST	Spill of unknown amount of petroleum oil in 1993. Release of unknown amount of waste oil in 1993. 2 USTs in use; installed 1983; storage capacity of 4,000 gallons; diesel and gasoline.

Notes: Table is summary of information provided by GeoSearch on October 3, 2003.
UST – Underground Storage Tank
AST – Aboveground Storage Tank

Appendix E
Flood Insurance Rate Map


APPROXIMATE SCALE IN FEET
1000
0
1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
HARRIS COUNTY,
TEXAS AND
INCORPORATED AREAS
PANEL 860 OF 1035
MAP NUMBER
48201C0860 K
MAP REVISED:
APRIL 20, 2000
Federal Emergency Management Agency
CITY OF HOUSTON
480296
ZONE X
ZONE AE
BOLSOVER
BOULEVARD
SUNSET
BLVD
HERMANN
HERMANN LAKE
GOLF COURSE DR
ZOO CIRCLE
STUDTON
STREET
NORTH MACGREGOR DRIVE
MACGREGOR WAY
LAMAR FLOWING
BERTNER
BATES
PRESSLER
RM782
Footbridge
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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