5.0 Table of Contents

A Introduction

The emergency preparedness program at the South Texas Project Electric Generating Station (called the Station) is designed in accordance with Code of Federal Regulations, Title 10, Part 50.47 and the guidelines of the U.S. Nuclear Regulatory Commission as established in NUREG-0654/FEMA-REP-1, Rev. 1. The Station is operated and managed by the STP Nuclear Operating Company, acting as Project Manager on behalf of NINA, The City Public Service Board of San Antonio (CPS), and the City of Austin Texas (COA) under the South Texas Project Operations Agreement. The emergency preparedness program at the Station is concerned with hypothetical accidents that may occur at the Station that could potentially have an impact on the health and safety of the general public, Station employees, vendors, and visitors and/or protection of the environment.

A.1 Overall Objective

The overall objective of the emergency preparedness program is to provide planned actions and training which will mitigate consequences of a wide variety of accidents. Wide ranges of possible accident scenarios are used for a training basis following the guidelines established by the Nuclear Regulatory Commission.

Emergency Preparedness Planning has been developed to ensure an adequate level of preparedness for, and effective responses to, emergencies associated with the Station. The Emergency Plan (called the Plan) applies to emergency situations at the Station which involve actual or potential concerns for the safety of the general public or Station personnel.

The Emergency Plan and Emergency Plan Implementing and Administrative Procedures are designed to:

- *Establish and define an Emergency Response Organization for dealing with the impact of the emergency;*
- *Provide for the protection of the health and safety of the general public and site personnel,*
- *Provide a means of quickly identifying an accident condition and declaring the required emergency classification;*
- *Describe the necessary notification of Station personnel, local and State officials, the Emergency Planning Zone population, the media, and the Federal authorities and others as appropriate;*
- *Provide guidance on protective action recommendations to be made to the local and State governments;*
- *Provide guidance for onsite and offsite radiological surveys, dose assessments; and,*
- *Describe the techniques required for handling contaminated injured personnel.*

A.2 Interfacing Plans, Procedures & Letters of Agreement

The emergency response planning and preparedness program supporting the Station is contained in three separate, but interrelated plans. These plans are the State of Texas Emergency Management Plan, the Emergency Management Plan for Matagorda County, Bay City and the City of Palacios, and the South Texas Project Electric Generating Station Emergency Plan. These Plans contain coordinated emergency response planning and preparedness instructions for events which may result in a release of radioactive material into the environs around the Station which could result in radiological exposures to the general public that exceed the Environmental Protection Agency Protective Action Guidelines. Each Plan has been prepared by the respective user and is coordinated as appropriate with the other Plans. In addition to radiological emergency planning, the Plans for the State of Texas and Matagorda County address supplemental planning programs for emergency response. The State of Texas Emergency Management Plan and Matagorda County Emergency Management Plan are in controlled file status at the Station's Operations Document Control Center.

The Station Emergency Plan contains the emergency response planning and preparedness activities for those functions that are the responsibility of the Station. These responsibilities include making emergency notifications and providing station status information to Federal, State, and local authorities and establishing supplemental support through Letters of Agreement with support organizations. Refer to Sections B.4 and B.5 for Federal, State, local, and private sector organizations that will provide supplemental support to the Station in accordance with Letters of Agreement or contract. Current signature copies of all letters of agreement are maintained in the Emergency Response Division's correspondence file.

The Station Emergency Plan outlines the policies, activities, and responsibilities of Station personnel and offsite support organizations to be used in the event of an emergency at the Station. The Plan is further supplemented by the Station Emergency Response administrative and implementing procedures. The administrative procedures address the maintenance and surveillance of the Emergency Response Program. The implementing procedures implement the Emergency Plan by describing:

- *Detailed actions to be taken by individuals responding to emergency conditions.*

AND

- *The details addressing Emergency Action Levels, protective action recommendations emergency classification, the notification process, dose calculation methodology, activation/staffing of the Emergency Response Facilities, and site personnel accountability.*

Attachment 2 provides a listing of the Emergency Plan cross referenced to the Implementing Procedures.

In addition to the Emergency Plan implementing and administrative Procedures, additional Station procedures will be utilized and implemented during response to a declared emergency. These procedures are:

- *Emergency Operating Procedures - These procedures provide instructions to Control Room personnel for coping with abnormal and emergency conditions;*
- *Chemistry, Radiochemistry and Station Radiation Protection Procedures - These procedures provide instructions for instrument operation, performing surveys, analyzing samples and providing guidance for the monitoring and decontamination of personnel. These procedures also define administrative controls and procedures for the use of radiological monitoring devices, protective clothing and equipment, and prescribed radiological control limits and procedures; and*
- Security Procedures - These procedures *provide instructions for security, station personnel and vehicle control.*

A.3 Station Emergency Plan format:

- *Section A Introduction*
- *Section B Assignment of Responsibility*
- *Section C Organizational Control of Emergencies*
- *Section D Emergency Classification System*
- *Section E Notification Methods and Procedures*
- *Section F Emergency Actions and Measures*
- *Section G Emergency Response Facilities*
- *Section H Accident Assessment*
- *Section I Protective Response*
- *Section J Radiological Exposure Control*
- *Section K Media Relations*
- *Section L Recovery and Reentry*
- *Section M Emergency Preparedness Training*
- *Section N Drills and Exercises*
- *Section O Emergency Preparedness*

The sections of the Plan are narrative in style, and contain pertinent information such as maps, tables, figures, and details of the reference subject. A Table of Contents listing the sections of the Plan and the Attachments has been provided.

A.4 Day-To-Day Operation

The South Texas Project recognizes the importance of proper day-to-day operation of the Station. To accomplish this, the Station considered human factors and engineering in the Control Room design, established symptomatic Emergency Operating Procedures, established a systematic approach to training, and provided an effective Emergency Response Organization composed of qualified personnel.

A.5 Station Description

The Station consists of two 1250 megawatt Westinghouse Pressurized Water Reactor Nuclear Steam Supply electrical generating unit and two 1340 megawatt General Electric Advanced Boiling Water Reactors (ABWR) All four Units are essentially independent with separate Control Rooms. The site sits on a land area of approximately 12,000 acres, with a cooling reservoir utilizing 7000 acres of site property. The Unit 1 and 2 Station facilities occupy approximately 65 acres. Units 3 and 4 Station facilities occupy approximately 53 acres of the property. Figure A-1 identifies the location of the Station within Matagorda County. Figures G-1 and G-4 illustrate the site layout.

A.6 Station Location

The Station is located entirely in south-central Matagorda County, west of the Colorado River, approximately 89 air miles southwest of Houston, Texas, 12 air miles north-northeast of Palacios, and approximately 14 air miles north of the Gulf of Mexico. Matagorda County is located on a coastal plain rising from sea level to approximately 70 feet above mean sea level. The County seat, Bay City, is one of two incorporated cites within the County. The County's economy is primarily based on ranching and farm land with the major industries being agriculture, chemical production, oil and gas production, electrical generation, and commercial fishing and fisheries.

A.7 Station Population Areas

The area surrounding the Station is sparsely populated. Table A-1 contains the population distribution data within a ten (10) mile radius of the Station divided by sectors. The estimated population, based on a 2000 census, within the two (2) mile radius of the Station is 0, and within the five (5) mile radius is 391. The largest population concentration is approximately 12 miles north-northeast of the Station in Bay City, which is outside the 10-mile Emergency Planning Zone. The estimated 2002 residential population within the ten-mile radius is 2,875. Table A-2 provides a distribution of population density by zones.

A.8 Owner Control Area Public Access

Members of the public have access to the Owner Controlled Area (OCA) to farm, hunt, bird watch, and allow property owners access to property adjacent to or leased by the Station.

A.9 Matagorda County Airport Facilities

Matagorda County has a limited number of airfield and airport facilities. The nearest airport with an associated control zone is at Palacios, 13 air miles to the west-southwest. Palacios Airport supports no commercial passenger operations and has no other passenger facilities (i.e., rental cars, buses, etc.). The runway at Palacios can accommodate larger service aircraft. The Bay City Airport is a small aircraft field located approximately 20 air miles to the northeast. The nearest full service airport providing commercial passenger services is Houston Hobby Airport located approximately 65 air miles from the Station.

Table A-1 Permanent Resident Population Distribution by Sector
Page 1 of 1

Sectors	Distance in Mlles										
	1	2	3	4	5	6	7	8	9	10	Total
N	0	0	0	5	0	6	9	9	9	10	48
A											
NNE	0	0	0	0	0	4	10	11	23	72	120
B											
NE	0	0	0	0	4	11	12	42	15	27	111
C											
ENE	0	0	0	0	10	20	109	264	22	18	443
D											
E	0	0	0	0	3	13	12	6	8	4	46
E											
ESE	0	0	0	133	87	21	34	19	1	6	301
F											
SE	0	0	0	8	60	16	15	28	339	15	481
G											
SSE	0	0	0	0	0	0	0	0	58	44	102
H											
S	0	0	0	0	0	0	0	0	0	0	0
J											
SSW	0	0	0	0	0	0	3	0	0	0	3
K											
SW	0	0	0	0	11	30	8	7	3	6	65
L											
WSW	0	0	1	0	9	4	9	13	40	95	171
M											
W	0	0	1	0	9	9	19	19	46	29	132
N											
WNW	0	0	0	0	17	251	150	30	15	59	522
P											
NW	0	0	0	0	24	39	33	39	66	66	267
Q											
NNW	0	0	9	0	0	8	13	8	5	20	63
R											
[1]Total Population	0	0	11	146	234	432	436	495	650	471	2,875

[1] Population source: 2000 U.S. Census Bureau / Texas State Data Center, Texas A&M University.

Table A-2 Permanent Resident Population Distribution by Emergency Planning Zone
Page 1 of 1

Zone	1	2	3	4	5	6	7	8	9	10	11	Total
[1]Population	0	40	402	56	82	650	518	0	237	692	198	2,875

[1] Population source: 2000 U.S. Census Bureau / Texas State Data Center, Texas A&M University.

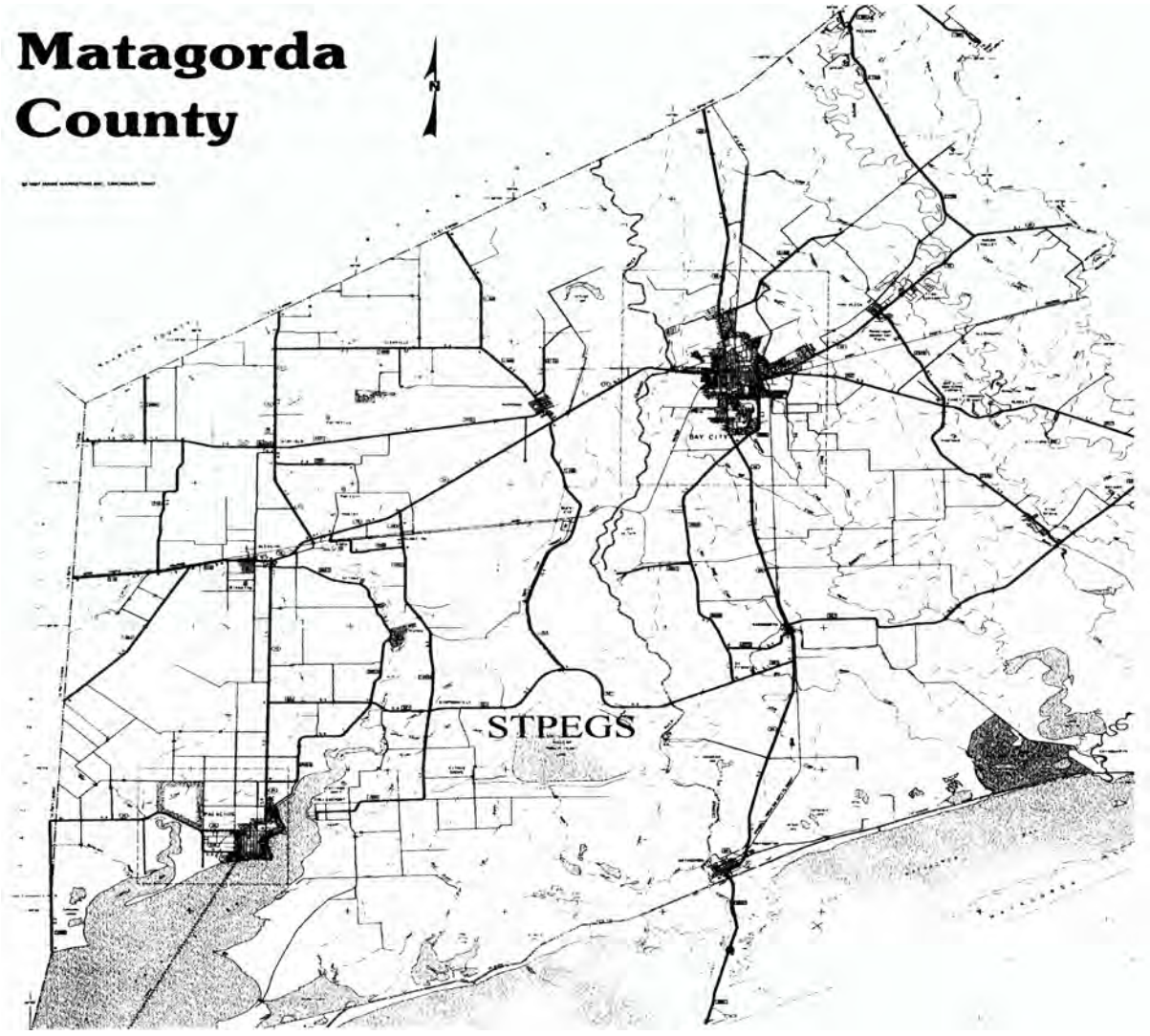


Figure A-1 STPEGS Location Within Matagorda County
Page 1 of 1

B Assignment of Responsibility

In case of an emergency at the Station that requires activation of the Station Emergency Response Organization, various State, local, Federal and private sector organizations will contribute to the emergency response effort. This section describes the responsibilities of those organizations. Table B-1 lists the responsible primary organizations and the title of the individual in charge.

B.1 Overall Responsibility

The Station has the responsibility for developing and maintaining an effective Emergency Plan. This is accomplished through the establishment of formal Emergency Plan implementing procedures, providing adequate training for the Emergency Response Organization per Section M of this Plan, establishing and maintaining emergency response facilities and equipment, and the establishment of appropriate partnerships with Federal, State, local government agencies and private organizations as identified in this section. The following tasks are part of the Station's responsibility:

- *Recognize and declare the existence of an emergency condition.*
- *Classify the event in accordance with the methodology described in Section D of this Plan.*
- *Notify the appropriate Station personnel and offsite authorities.*
- *Request additional support as deemed necessary.*
- *Establish and maintain effective communications within the Station and with offsite response groups as described in Section E of this Plan.*
- *Continuously assess the status of the accident and periodically communicate the status information to the appropriate response groups and Federal authorities. This includes the collection and evaluation of onsite and offsite radiological monitoring data.*
- *Take protective measures onsite and recommend protective actions to offsite authorities.*
- *Monitor and control radiation exposures of personnel responding to the emergency and under the direction of the Station.*
- *Provide emergency information to the public through periodic press briefings in conjunction with State and local officials.*
- *Keep the Station Owners informed of the situation at the site.*

B.2 State of Texas Responsibility

State of Texas has developed a Radiological Emergency Management Plan as an integral part of the State of Texas Emergency Management Plan. The State of Texas Emergency Management Plan outlines the State organization for emergency activities. The Governor's Division of Emergency Management (DEM) is tasked with administering a program of Comprehensive Emergency Management. Designed to reduce the vulnerability of the citizens and communities of this State to damage, injury, and to loss of life and property by providing a system for the mitigation of, preparedness for, response to and recovery from natural or man-made disasters including fixed nuclear facilities. Established in the Office of the Governor by the Texas Disaster Act of 1975 (Government Code, Chapter 418) and direction of the Director of the Texas Office of Homeland Security (OHS). Office of Homeland Security Director appoints the State Coordinator to manage State Governor's Division of Emergency Management on a daily basis, and the Coordinator reports to the Director of the Office of Homeland Security. The Texas Disaster Act of 1975, as amended, authorizes the creation of local organizations for emergency management, provides the Governor and executive heads of governing bodies of the State certain emergency powers, and provides the rendering of mutual aid among the political subdivisions of the State, with other states, and with the Federal Government. The Chairperson of the Texas Emergency Management Council is responsible for establishing an emergency organization capable of operation over a protracted period. The duties and responsibilities of the principal and support agencies of the State of Texas are summarized below. A detailed discussion of the State's response is contained in the Texas Emergency Management Plan.

B.2.1 Department of State Health Services (DSHS)

The Department of State Health Services, is the Lead State agency responsible for responding to all peacetime radiological emergencies throughout Texas. Under the procedure established by the Texas Emergency Management Plan and as reaffirmed in a Letter of Agreement, the Department of State Health Services responds to all types of radiological emergencies throughout the State. The Governor's Division of Emergency Management, upon notification by the Station of a Site Area Emergency or General Emergency, will notify key member agencies of the Emergency Management Council. The State Operations Center (SOC) is operational 24 hours a day, seven days a week. During radiological emergencies, the Department of State Health Services will be the Lead State agency for the assessment of radiological impact and damage to the environment. Once notified of a Site Area Emergency or General Emergency (or an Alert or Unusual Event which is likely to involve an offsite release), the Department of State Health Services will establish a communication link (telephone) from their office in Austin, Texas with Station dose assessment personnel. The Department of State Health Services estimates that it will take about one hour to activate their office after notification. The Department of State Health Services is able to make dose projections in their Austin, Texas office from data provided by the Station. If the situation warrants, the Department of State Health Services will dispatch Radiological Emergency Response Teams to the Station. The Department of State Health Services has estimated the onsite response time to emergencies at the Station

to be approximately 4 hours, and the full Emergency Response Team response time to field locations around the Station to be approximately 8 hours.

B.2.2 Governor's Division of Emergency Management

The Governor's Division of Emergency Management has broad legal authority, in case of a radiological emergency, to take actions deemed necessary to protect the health and safety of Texas citizens. This authority includes, but is not limited to, control of public and private transportation corridors, and utilization of all public facilities in support of efforts to protect life and property. The Governor's Division of Emergency Management manages the State Operations Center (SOC), which is located at the Department of Public Safety Headquarters in Austin, Texas. The Department of Public Safety Sub District Office (Pierce, Texas), located approximately 45 miles from the Station, is the headquarters of the Disaster District serving the area around the Station.

The Texas Department of Public Safety provides the State with law enforcement services in emergency conditions. This includes but is not limited to disaster reconnaissance, emergency traffic control, and execution of evacuation control. These activities are conducted in support of local government, in accordance with the State of Texas basic Emergency Management Plan, and Annex E, Evacuation, and Annex G, Law Enforcement. The Department of Public Safety Commanding Officer in Sub-District 2C Pierce, Texas serves as Chairperson of the Disaster District Committee. The Department of Public Safety provides statewide communications service for direction of disaster operations. Requests for assistance from the County Emergency Operations Center are forwarded to the Disaster District Sub 2C in Pierce. Requests that exceed the District's ability to respond will be forwarded to the State Operations Center (SOC) in Austin.

Response time for Department of Public Safety personnel from the Disaster District Office in Pierce to the Station is approximately 2 hours.

B.3 Matagorda County Responsibility

Matagorda County, Texas, has developed an Emergency Management Plan to provide for emergency operations within Matagorda County, Texas, including Bay City, Palacios, and the unincorporated towns within the County proper. The Matagorda County and city governments are responsible to their respective citizens to do everything possible to save lives, minimize damage, alleviate suffering and to help restore and rehabilitate property and society in the event of a natural disaster, man-made incident, or national emergency, including nuclear attack or threat thereof. Existing forms of local government are utilized in the formulation and implementation of this Plan. The organization and operational concepts set forth in this Plan are promulgated under the Texas Disaster Act of 1975, as amended, the Matagorda County Commissioner Court order of 1983 (reissued 1994), and other laws and ordinances detailed in the Matagorda County Emergency Management Plan. The Matagorda County Emergency Management Plan is a stand-alone document that supports the State of Texas Emergency Management Plan and the Station Emergency Plan. Under the Matagorda County Emergency Management Plan, the County Judge, the Commissioners and Mayors, as chief elected officials are responsible for all

emergency measures within their respective jurisdictions, including recommending shelter and or evacuation of members of the public.

Existing agencies of government in Matagorda County, Bay City, and Palacios will perform emergency activities related to those performed in normal operations. The basic functions of County/City officials are to coordinate activities for efficiency and effectiveness and to assure that any skills not normally available in existing County/City governments are obtained from other resources. The County is the lead governmental entity in an emergency. Should the need arise for State assistance, the County Emergency Management Director has the authority to request assistance from State Disaster District Sub 2C in Pierce, Texas. This responsibility is assigned to the County Emergency Management Director and is not a delegable authority. The Emergency Management Coordinator is appointed by the County Judge. The primary responsibility of the Emergency Management Coordinator is to coordinate emergency response within the county and serve as communications liaison with the Governor's Division of Emergency Management and the Disaster District Committee for day-to-day operations and through the Disaster District during emergencies. A detailed assignment of emergency response actions and responsibilities are defined in the Matagorda County Emergency Management Plan. Figure B-1 indicates the interface of State of Texas and local and civil authorities' Emergency Management Organizations.

B.4 Other Local, State, and Federal Agencies

Additional local, State, and Federal agencies and departments and their responsibilities that provide outside support to the Station in the event of a declared emergency are:

B.4.1 Bay City Police Department

The Bay City Police Department, by Letter of Agreement, will provide law enforcement support to the Station to assist in traffic control, personnel evacuation, or other response requiring law enforcement as needed during an emergency or drill/exercise situation. The Bay City Police Department will be under the control and coordination of the Matagorda County Sheriff's Office. Bay City Police Department and the Matagorda County Sheriff's Office personnel are headquartered approximately 17 road miles northeast of the Station and can respond to the Station in approximately one hour. This service is available 24 hours per day.

B.4.2 City of Palacios Police Department

The City of Palacios Police Department, by Letter of Agreement, will provide law enforcement support to the Station to assist in traffic control, personnel evacuation, or other response requiring law enforcement as needed during an emergency or drill/exercise situation. The City of Palacios Police Department will be under the direction and control of the Matagorda County Sheriff's Office. The City of Palacios Police Department is headquartered approximately 18 road miles southwest of the Station and can respond to the Station in approximately thirty minutes. This service is available 24 hours per day.

B.4.3 City of Palacios Volunteer Fire Department

The City of Palacios Volunteer Fire Department, by Letter of Agreement, will provide fire-fighting support, and rescue services to the Station in case of an emergency or drill/exercise situation at the Station. The City of Palacios Volunteer Fire Department is located approximately 18 road miles from the Station and has a response time of thirty minutes when responding to requests for assistance from the Station. This service is available 24 hours per day.

B.4.4 The Bay City Volunteer Fire Department

The Bay City Volunteer Fire Department, by Letter of Agreement, will provide fire fighting support services to the Station in case of an emergency or drill/exercise situation at the Station. The Bay City Volunteer Fire Department is located approximately 17 road miles from the Station and can respond to emergencies at the Station in approximately one-hour. This service is available 24 hours per day.

B.4.5 The Matagorda County Hospital District

The Matagorda County Hospital District, by Letter of Agreement, will provide medical care for both conventional and radiological injuries that occur in emergency or drill/exercise situations at the Station. The Matagorda County Hospital District provides services via two hospitals in the district, Matagorda General Hospital, located approximately 21 road miles from the Station in Bay City, and Palacios Community Medical Center located approximately 16 road miles from the Station in Palacios. The Matagorda General Hospital maintains a fully staffed Emergency Room that is equipped with a decontamination facility within the emergency room area to handle emergencies arising at the Station. Matagorda General Hospital in Bay City shall serve as the primary response organization with secondary support provided by Palacios Community Medical Center. These services and facilities are available 24 hours per day.

B.4.6 Emergency Alert System Stations

- *Emergency Alert System Station KMKS FM, 102.5 Radio, by Letter of Agreement, shall serve as the primary Matagorda County Emergency Alert System Station serving the Station by having the capability of providing 24 hour per day Emergency Alert Service, including activation of the alert radios.*

- *Emergency Alert System Station KZRC FM, 92.5 Radio, by Letter of Agreement shall serve as the alternate Matagorda County Emergency Alert System Station.*

B.4.7 Matagorda County Sheriff's Office

The Matagorda County Sheriff's Office by letter of agreement will assist the Station in responding to an emergency. The Emergency Management Plan for Matagorda County identifies the responsibilities for the Sheriff's Office as law enforcement, evacuation/traffic control, communications, warning/notifications and maintenance of the Matagorda County Emergency Operations Center. The Matagorda County Sheriff's Office will respond to requests to provide assistance during emergency or drill/exercise situations that develop at the Station. The Matagorda County Sheriff's

Office has the capability to respond to a request for assistance from the Station on a 24 hours a day basis.

B.4.8 United States Coast Guard (Corpus Christi)

The United States Coast Guard, by Letter of Agreement will provide vessel traffic control on the Colorado River and other navigable waters in the vicinity of the Station by the use of marine warnings during emergency situations that may develop at the Station. The Coast Guard responds to requests, from the Matagorda County Sheriff's Office, for assistance from Corpus Christi District. Estimated time of response for the Coast Guard is within approximately four hours, on a 24 hours a day basis.

B.4.9 United States Coast Guard (Galveston)

The United States Coast Guard, by Letter of Agreement will provide assistance during emergency situations that may develop at the Station. The Coast Guard responds to requests, from the Matagorda County Sheriff's Office, for assistance from Galveston District. The Coast Guard is available on a 24 hours a day basis.

B.4.10 Resources of Other Federal Agencies

The resources of Federal agencies appropriate to the emergency condition will be made available in accordance with the National Response Framework. The Station Emergency Director is specifically authorized to request Federal assistance on behalf of the Station under the provisions of the National Response Framework. The Station Emergency Director requests Federal assistance by contacting the NRC. In addition to the NRC, agencies other than those with a Letter of Agreement with the Station that may become involved are the Department of Energy, the DHS-Federal Emergency Management Agency, and the Environmental Protection Agency. These Agencies have the capability of responding to a declared emergency at the Station in approximately twelve hours, on a 24 hours a day basis.

B.4.11 Department of Homeland Security-Federal Emergency Management Agency

The Federal Emergency Management Agency, Region VI, is responsible for overall coordination of the offsite Federal response effort. The senior Federal Emergency Management Agency official from Region VI will carry out the functions and responsibilities outlined in NUREG-0981.

The Region VI Emergency Response Team will, in addition to the region office response, provide support to State and County authorities in the area of resource coordination, logistics, and telecommunications. The senior Federal Emergency Management Agency official, or designee, will notify the appropriate Federal agency capable of meeting a Specific State or County government need. The Federal Emergency Management Agency can respond to a declared accident at the Station in approximately ten hours.

B.4.12 Nuclear Regulatory Commission (NRC)

The NRC is notified of an incident via the Emergency Notification System telephone line, the initial NRC response is to ascertain the status of the plant and monitor Station

activities. The NRC will assess offsite radiological effects and will develop projection of onsite and offsite effects for use by other Federal, State, and local agencies, as appropriate.

To ensure reports can be made, NRC Headquarters Operations Center maintains a 24-hour emergency telephone and duty officer. The NRC Region IV Response Team, located in Arlington, Texas, has the capability of responding in approximately five hours. The leader of this response team will normally be the Region IV Regional Administrator, assuming the role as NRC Director of Site Operations, when so directed by the NRC Chairperson.

B.5 Private Sector Organizations

Private Sector and Contract Organizations include various groups that will provide support and services to the Station as follows:

B.5.1 Westinghouse Electric Company

Westinghouse Electric Company has established a contract with the Station to provide general services related to nuclear steam supply operation during and following an accident situation. Westinghouse provides a capability to respond on a 24 hour a day basis.

B.5.2 Toshiba

Toshiba International Corporation has established a contract with the Station to provide general services related to nuclear steam supply operation during and following an accident situation. Toshiba provides a capability to respond on a 24 hours per day basis.

B.5.3 Memorial Hermann Hospital System

Memorial Hermann Hospital System- by Letter of Agreement, serves as a referral source for long-term care of radiological injuries. Memorial Hermann Hospital System is available 24 hours per day for consultation or treatment of personnel who have been internally contaminated or may have received an acute dose of radiation. Memorial Hermann Hospital System located in Houston, Texas is approximately 70 air miles from the Station.

B.5.4 Lyondell Chemicals, LP and OXEA Chemicals

Lyondell Chemicals, LP (Matagorda Operations) and OXEA Chemicals (Bay City Plant) - by separate Letters of Agreement, will notify the Station of emergencies occurring at their plants which could involve offsite chemical releases, on a 24 hours a day basis.

B.5.5 Best Western Matagorda Hotel and Conference Center

Best Western Matagorda Hotel and Conference Center by Letter of Agreement and contract with the Station will place the facility at the disposal of the Utility during a declared emergency at the Station, on a 24-hour a day basis. This includes the use of a meeting room/ball room for conversion to the Joint Information Center. The Best

Western Matagorda Hotel and Conference Center is located approximately 15 road miles from the Station.

B.5.6 American Red Cross Rio Colorado Chapter

American Red Cross Matagorda Rio Colorado Chapter - by Letter of Agreement, will provide assistance at the Reception Center for registration of residents and site employees evacuated because of a nuclear power plant event, and will provide for emergency needs by organizing congregate care facilities providing services necessary to support the evacuated population. The American Red Cross will participate in training, drills and exercises on request. These and other responsibilities of this agency are identified in the Emergency Management Plan for Matagorda County, Bay City and Palacios. The American Red Cross supports that Plan and the Emergency Preparedness Program at the Station. The Matagorda County Office of the American Red Cross is located in Bay City approximately 17 road miles from the Station and their service is available 24 hours per day.

B.5.7 Matagorda County EMS

Matagorda County EMS by Letter of Agreement; will provide 24 hour per day ambulance service to the Station in case of an emergency or drill/exercise situation. Matagorda County EMS response time to the station is approximately thirty minutes.

B.5.8 Institute of Nuclear Power Operations (INPO)

Institute of Nuclear Power Operations by Letter of Agreement will provide assistance in acquiring the help of other organizations in the industry on a 24 hours a day basis. In addition, INPO will provide assistance, utilizing its own resources, as requested and as appropriate.

B.5.9 American Nuclear Insurers

The Station maintains a policy with American Nuclear Insurers. American Nuclear Insurers has agreed to assume responsibility, except where excluded by the policy, for promptly assisting members of the public whom may be adversely affected by an incident at the Station.

B.5.10 TXU Power (Comanche Peak Steam Electric Station)

TXU Power by Letter of Agreement will in case of an emergency at the South Texas Project and loss of onsite analysis capabilities, support the Station by performing selected post accident analysis.

B.5.11 Areva NP Inc.

Areva NP Inc.: by Letter of Agreement will provide assistance in the radioanalyses of environmental samples.

B.5.12 Bay City Independent School District

Bay City Independent School District by Letter of Agreement will provide evacuation services (busses, drivers, reception centers and congregate care facilities) to Matagorda County or the Station in case of an accident at the Station.

B.5.13 Matagorda Independent School District

Matagorda Independent School District by Letter of Agreement will perform early dismissal of students at the Alert classification, and evacuation of students to the Linnie Roberts Elementary School at the Site Area or General Emergency classification.

B.5.14 Palacios Independent School District

Palacios Independent School District by Letter of Agreement will provide evacuation services (busses, drivers, reception centers and congregate care facilities) to Matagorda County or the Station in case of an accident at the Station.

B.5.15 Tidehaven Independent School District

Tidehaven Independent School District by Letter of Agreement will perform early dismissal of students at the Alert classification, and evacuation of students to the appropriate Reception Center at the Site Area Emergency classification.

B.5.16 Van Vleck Independent School District

Van Vleck Independent School District by Letter of Agreement will provide evacuation services (busses, drivers) to Matagorda County or the Station in case of an accident at the Station.

B.5.17 Matagorda County Environmental Health

Matagorda County Environmental Health by Letter of Agreement, will assist the Station on a 24 hours per day basis, or as needed, during an emergency situation at the Station by assisting the American Red Cross in opening and operating a Reception Center(s) and a monitoring and decontamination facility or facilities when the need arises. Matagorda County Environmental Health will provide radiological supplies, equipment, monitoring and decontamination for the offsite response organization. Matagorda County Environmental Health will maintain the necessary inventory of supplies to accommodate such an operation, based on STP staff and financial assistance.

B.5.18 City of Bay City

City of Bay City - by Letter of Agreement, will make the Bay City Service Center available in case of the in-operability of the Station Emergency Operations Facility.

B.5.19 South Texas Project Operating Agreement

South Texas Project Operating Agreement is an agreement among Co-Owners for South Texas Project operations.

B.6 Emergency Organization

The Emergency Preparedness program for the Station requires the coordinated response of several organizations. The Emergency Director is the key individual in the Station Emergency Response Organization. The Station Emergency Response Organization is described fully in Section C of this Plan.

B.6.1 Station Emergency Director

The Station Emergency Director initiates the activation of the offsite Emergency Response Organizations by contacting the Governor's Division of Emergency Management via the Department of Public Safety Offices in Pierce, Texas, the Matagorda County Sheriff's Office, and the Nuclear Regulatory Commission. All these organizations are staffed 24 hours per day to provide communications links for receiving notification of a radiological emergency. The Federal agencies which may be requested by the Station to provide assistance can be notified by contacting the Nuclear Regulatory Commission on a dedicated communication link, the Emergency Notification System line.

B.6.2 State of Texas and Matagorda County

The State of Texas and Matagorda County response is conducted in accordance with the following framework as presented in the State of Texas Emergency Management Plan and the Matagorda County Emergency Management Plan.

- *The Governor's Division of Emergency Management is responsible for coordinating state-level response and recovery activities during emergencies and disasters regardless of cause. The Department of State Health Services, has been designated as the primary agency for radiological emergencies. The Matagorda County Judge and the Mayors of Bay City and Palacios exercise overall authority for offsite protective actions and measures for the safety and protection of local personnel and property. Overall, direction and control of state response activities will be exercised by the Sub 2C Disaster District Committee Chairperson (Department of Public Safety highway patrol lieutenant) operating from the Emergency Operations Center located in Pierce. The Chairperson will be kept informed of conditions in a timely manner in order to facilitate state response and assistance. The Matagorda County Emergency Operations Center is the direction and control point for county and city response activities for an emergency at the Station.*

- *Upon declaration of a classified emergency, by the Station's Unit-specific Emergency Director, the State is notified of an emergency at the Station by the Station's Emergency Director via a call to the Department of Public Safety Communication Center located at Disaster District Sub 2C, Pierce, Texas, on the dedicated ringdown telephone. The Communications Center at the Department of Public Safety, Pierce, will notify the Governor's Division of Emergency Management of any emergency notification from the Station. The Governor and Chairperson of the Emergency Management Council are notified by the State Coordinator or the Governor's Division of Emergency Management Duty Officer, depending on the severity of the situation. Notification of a station emergency is*

from the Governor's Division of Emergency Management to the Texas Department of Health and in turn to the Department of State Health Services. The decision to activate the Radiological Response Team is based on the severity of the incident. The Governor, by executive order or proclamation, may declare a state of disaster. The presiding officer of the governing body of a political subdivision may also declare a local state of disaster. A state of disaster condition activates disaster response, recovery, and rehabilitation aspects of the State Emergency Plan. The Matagorda County Sheriff's Office also has access to the dedicated ringdown telephone, and will be notified of an emergency classification at the Station when the Department of Public Safety Disaster District Sub 2C office is notified.

- *When requested to assist in response and recovery efforts to radiation emergencies, personnel from other State of Texas Agencies will perform functions and activities as described in the State of Texas Emergency Management Plan.*

- *Local officials shall provide notification to the various personnel in the Matagorda County Emergency Management Organization in accordance with County Procedures. The Matagorda County Sheriff is responsible to verify that notifications are made in accordance with details provided in the Matagorda County Emergency Management Plan.*

Table B-1 Responsible Primary Organizations
Page 1 of 1

Organizations	Individual in Charge
South Texas Project Electric Generating Station	Station Emergency Director
State of Texas	Governor
State of Texas Emergency Management Council	Chairperson, Emergency Management Council
Governor's Division of Emergency Management	State Coordinator
Department of State Health Services	Radiation Program Officer
Matagorda County Emergency Management Organization	Emergency Management Director (County Judge or Mayor(s) and County Commissioners)
Bay City Emergency Management Organization	Mayor
City of Palacios Emergency Management Organization	Mayor
Matagorda County Sheriff's Office	Sheriff

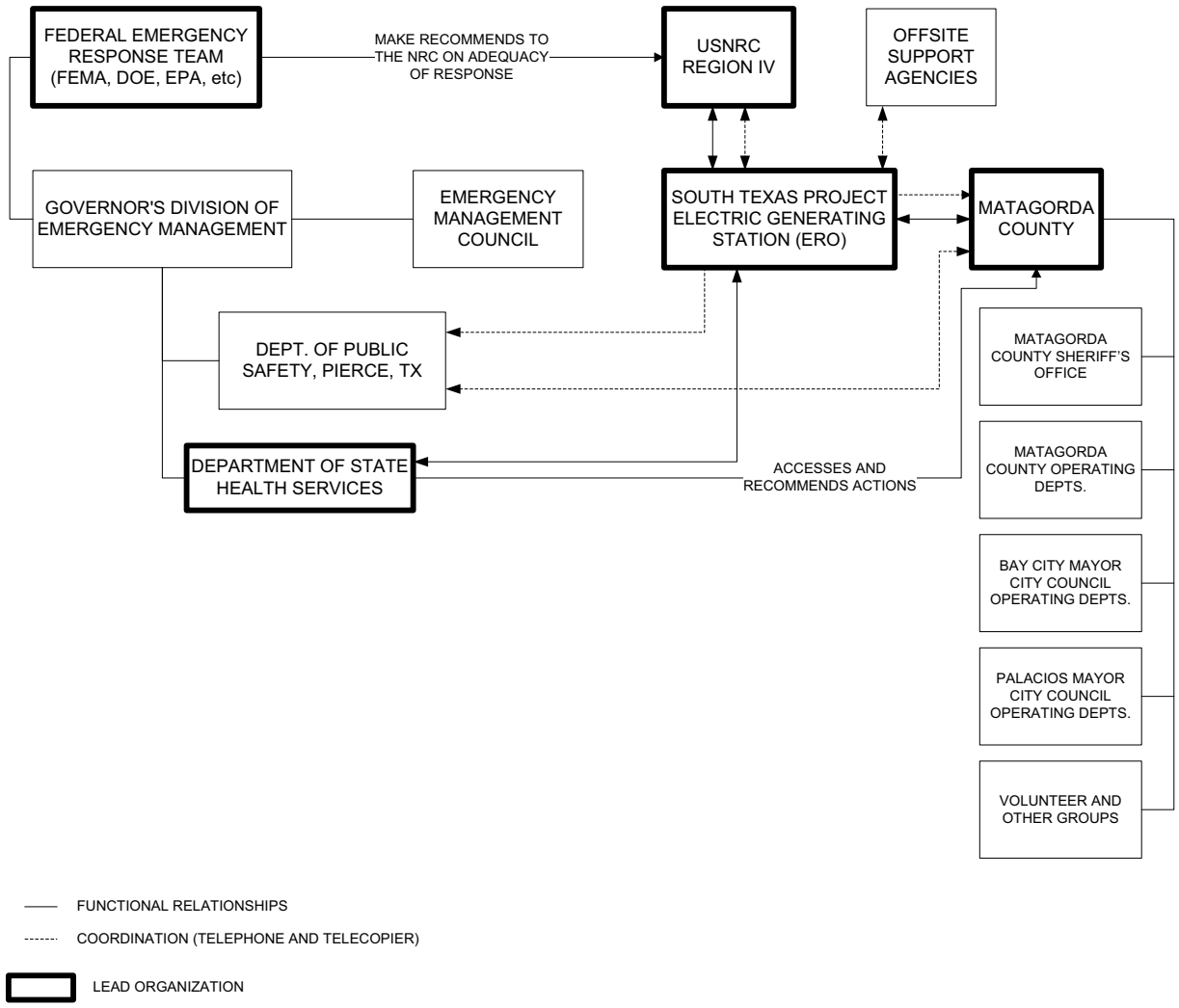


Figure B-1 Interrelationship of Emergency Response Organizations

C Organizational Control of Emergencies

This section of the Plan describes the organizations required by the Station during a declared emergency, as well as the organizations required for daily operation.

The Onshift Emergency Response Organization and the designated Emergency Response Organization are activated in case of an emergency. The Onshift Emergency Response Organization is augmented by Emergency Response Organization personnel.

The Onshift Emergency Response Organization has the initial responsibility for declaring the emergency classification, providing timely notification to Federal, State, and County authorities, developing and providing protective action recommendations to the State and County authorities. The emergency duties of the Onshift Response Organization are transferred to the Emergency Response Organization as the emergency response facilities are activated.

The Emergency Response Organization is provided with an adequate roster of available personnel to allow for relief and turnover on a shift basis, if required. Personnel relieving Emergency Response Organization positions will follow guidance contained in their position based procedure.

Figure C-6, describes the Station Emergency Response communications interface with State, County, & Federal Agencies.

C.1 Normal Station Operating Organization

The daily Station operating organization is described in Section 13.1.2 of the Station Final Safety Analysis Reports for Units 1 & 2 and Units 3 & 4. The Plant General Managers report to the Group Vice President for Units 1/2 and 3/4 respectively and, they are responsible for the operation and maintenance of their respective Units. In the absence of the Plant General Manager, responsibility for operation and maintenance is specified in approved Station administrative procedures.

The Emergency Director is responsible for the activation and direction of the Station Emergency Response Organization. He is also responsible for ensuring resources are available to support operation over a protracted period.

C.2 Non-delegable/Delegable Emergency Director Responsibilities:

The non-delegable Emergency Director responsibilities and authorities are:

- *Declaration of emergency classifications;*
- *Approval of offsite protective action recommendations issued to State and County authorities;*
- *Approval of required notifications to State and County;*
- *Approval of planned exposures in excess of Code of Federal Regulations, Title 10, Part 20 limits;*

- *Authorizing the use of Potassium Iodide;*
- *Approval of departures from license conditions per Code of Federal Regulations, Title 10, Part 50.54(x) for emergency response activities NOT related to Control Room Operation actions.*
- *Declaring entry into the Severe Accident Management Guidelines.*

The delegable Emergency Director responsibilities and authorities are:

- *Requesting of Federal assistance through the NRC;*
- *Approval of press releases prior to issuance;*
- *Approval of required notifications to the NRC;*
- *Approval of commitments to the NRC.*

These responsibilities and authorities shall be transferred from the Shift Supervisor, who may initially assume the role of Emergency Director at the onset of the emergency, to the Technical Support Center Manager or the Emergency Operations Facility Director as each assumes responsibilities and authorities of the Emergency Director.

C.3 On-shift Emergency Response Organization

Should an emergency be declared, the Shift Supervisor (Emergency Director) activates the Onshift Emergency Response Organization from the normal operating staff. The individuals constituting the Onshift Emergency Response Organization will assume their respective titles and the responsibilities for their position until relieved as necessary.

The Onshift Emergency Response Organization is composed of members of the Plant Operations staff, the Shift Technical Advisor, Health Physics, Chemistry, Maintenance, Plant Protection, and Emergency Response Teams. The Onshift Emergency Response Organization may be supplemented as needed by the Emergency Director as required by the situation. The onshift complement provides for the capability of 24 hours per day emergency response. Positions for the Onshift Emergency Response Organization are depicted in Figure C-1. The Onshift Emergency Response Organization meets the personnel requirements of NUREG-0654/FEMA-REP-1, Rev. 1, Section B, Table B-1. The duties of the onshift complement, as an initial Emergency Response Organization, are similar to their normal duties, except as described below.

C.3.1 Shift Supervisor

The Shift Supervisor initially assumes the position of Emergency Director until relieved by the Technical Support Center Manager or the Emergency Operations Facility Director. The key responsibilities of the Emergency Director are:

- *Recognize, classify, and declare the emergency condition;*
- *Completing notifications and making protective action recommendations to offsite agencies;*
- *Directing onsite emergency response activities, monitoring plant conditions for changes in Emergency Action Levels and emergency classifications, and directing Control Room response to mitigate the emergency condition.*
- *Once the Emergency Director responsibilities and authorities are assumed by the Technical Support Center Manager or Emergency Operations Facility Director, the Shift Supervisor remains in the Control Room, but reports to the Operations Manager.*

C.3.2 Acting Radiological Manager

An onshift senior radiological protection technician shall assume the position of Acting Radiological Manager until relieved by the Radiological Manager in the Technical Support Center. The Acting Radiological Manager reports via telephone to the Emergency Director in the Control Room at an Unusual Event and assists with the activation of the Operations Support Center at an Alert or higher emergency classification. The key responsibilities of the Acting Radiological Manager are:

- *Assessing Station radiological and environmental conditions;*
- *Responding to radiological problems;*
- *Identifying special radiological protective measures;*
- *Determining special Radiation Work Permit requirements;*
- *Verifying emergency classification if based on radiological Emergency Action Levels;*
- *Reviewing and recommending emergency exposures to emergency response personnel in excess of Code of Federal Regulations, Title 10, Part 20 limits;*
- *Ensuring adequate inventories of radiological supplies, equipment, and Radiation Protection personnel are available.*
- *Providing prompt dose projection when requested.*

During an Alert or higher emergency classification, the Acting Radiological Manager, after being relieved of responsibility and authority by the Radiological Manager in the Technical Support Center, assumes the responsibilities of the Assistant Radiological Coordinator in the Operations Support Center.

C.3.3 Acting Security Manager

The onshift Security Force Supervisor assumes the position of Acting Security Manager until relieved by the Security Manager in the Technical Support Center. The

Acting Security Manager reports via telephone to the Emergency Director in the Control Room at an Unusual Event or higher emergency classification. The key responsibilities of the Acting Security Manager are:

- *Directing the implementation of Security emergency response activities as specified in the Station Safeguards Security Plan;*
- *Activating the Emergency Notification and Response System;*
- *Implementing assembly and accountability efforts;*
- *Establishing special access controls;*
- *Providing for the expedient entry and exit of emergency vehicles;*
- *Directing changes to security operations based on radiological conditions.*

During an Alert or higher emergency classification, the onshift Security Force Supervisor, after being relieved of Acting Security Manager responsibility and authority by the Security Manager in the Technical Support Center, returns to the responsibilities of the Security Force Supervisor.

C.3.4 Acting Operations Support Center Coordinator

The onshift Duty Maintenance Supervisor assumes the position of Acting Operations Support Center Coordinator (0ERP01-ZV-SHO4) until relieved by the Operations Support Center Coordinator. The Acting Operations Support Center Coordinator reports via telephone to the Emergency Director in the Control Room at an Unusual Event. The key responsibilities of the Acting Operations Support Center Coordinator are:

- *Providing ongoing maintenance support to activities assigned by the Emergency Director;*
- *Ensuring that emergency team activities are performed in accordance with approved procedures and policy;*
- *Ensuring that deviations from Station procedures and NRC regulations are approved by the Emergency Director;*
- *Establishing and staffing the Operations Support Center with onshift personnel to support plant emergency response activities, if requested by the Emergency Director;*
- *Ensuring that emergency teams formed and dispatched are properly briefed and status monitored;*
- *May fulfill Radiological Protection (double asterisk) functions from Table C-1, (Access Control, Dosimetry Issue, Personnel Monitoring, and Search & Rescue).*

Alert or higher emergency classification, the onshift Duty Maintenance Supervisor, after being relieved of Acting Operations Support Center Coordinator responsibility, supports the Operations Support Center, as required.

C.3.5 Shift Technical Advisor

The Shift Technical Advisor (one per Reactor Type) *has the primary responsibility to assist the Emergency Director in the mitigation of accident consequences. The Shift Technical Advisor is available to Control Room personnel 24 hours per day when either* of the four *units is above cold shutdown and is capable of being in the Control Room within ten (10) minutes or less after being notified.*

C.3.6 ENS Communicator

The onsite ENS Communicator reports to the Control Room at an Unusual Event or higher emergency classification and initiates communications with the Nuclear Regulatory Commission.

Duties may be performed by the following:

- *Personnel currently or previously licensed by NRC,*
- *SRO Management Certified Personnel.*

C.3.7 Plant Operators

The onshift Plant Operations personnel (Licensed and Non-Licensed) are responsible for:

- *Operations of all reactor-related equipment;*
- *Coordination of activities affecting Station structures, systems and components;*
- *Equipment clearances;*
- *Activation of fire brigade and emergency* medical *teams;*
- *Identification of emergency classifications;*
- *Initiating notification of the Emergency Response Organization.*

A Plant Operator is assigned to report to the affected unit's control room upon any declaration of the Emergency Plan to act as the State/County Communicator. The State/County Communicator is not required to perform plant operator duties while filling this position. The Staffing identified in Table C-1 is provided to support Emergency Plan and plant operation response requirements. Those Plant Operators not assigned onshift duties in the operation of the units by the Emergency Director report to the Operations Support Center at an Alert or higher emergency classification. The Emergency Director can utilize the Plant Operators via the Acting Operations Support Center Coordinator.

C.3.8 Onshift Chemistry Technician

Onshift Chemistry Technicians are responsible for post accident sampling and analysis. Chemistry personnel report to the Operations Support Center at an Alert or higher emergency classification unless otherwise directed.

- *May fulfill Radiological Protection (double asterisk) functions from Table C-1, (RP Coverage for Corrective Actions).*

C.3.9 Onshift Maintenance

The onshift Maintenance personnel report to the Operations Support Center at an Alert or higher emergency classification or at an Unusual Event if the Acting Operations Support Center Coordinator begins activating the Operations Support Center.

C.3.10 Plant Protection

Onshift Plant Protection personnel remain at their duty stations in accordance with the Security Plan, unless otherwise directed. Onshift Plant Protection personnel initiate notification of the Emergency Response Organization.

- *Plant Protection or other suitably qualified individuals will function as the On-site Communicator in the Control Room.*

C.3.11 Emergency Response Teams

Emergency Response Teams typically consist of personnel who have been trained in the procedures and practices that describe the performance of their duties as Emergency Team members or leaders. As required by the emergency conditions, the Operations Support Center Coordinator may temporarily assign other plant personnel to the Emergency Teams to assist the regular team members during an emergency.

C.4 Emergency Response Organization

Those members of the Emergency Response Organization who are not on site at the time of the emergency shall be able to augment the Onshift Response Organization within 60 and 75 minutes of being notified as specified in Table C-1 to provide manning levels recommended in NUREG-0654.

The Technical Support Center and Operations Support Center Station Emergency Response Organization are activated at an Alert emergency classification or earlier if directed by the Emergency Director. Positions for these facilities are depicted in Figure C-2 & Figure C-3. The Emergency Operations Facility and Joint Information Center are staffed at the Alert and may be activated at the discretion of the Emergency Director. Positions for these facilities are depicted in Figure C-4 & Figure C-5. The Emergency Operations Facility and Joint Information Center shall be activated at a Site Area Emergency. The Emergency Operations Facility dose projection capability is activated at an Alert classification. If during an Unusual Event the trending of plant conditions indicates the need for additional support, the Emergency Director can activate all or part of the Station Emergency Response Organization to report to the Technical Support Center, Emergency Operations Facility, Joint Information Center or

Operations Support Center. The process to maintain a fully staffed Emergency Response Organization is described in 0PGP05-ZV-0003, Emergency Response Organization.

Modifications to the Emergency Response Organization may be made by the Emergency Director as required by the complexity of the emergency.

The following key Emergency Response Organization positions report to the Technical Support Center, the Operations Support Center, and the Emergency Operations Facility, and are added to the Onshift Response Organization during the declaration and mitigation of an Alert, Site Area Emergency or General Emergency. These positions can be activated by the Emergency Director at an Unusual Event emergency classification.

C.4.1 Technical Support Center Manager

The Technical Support Center Manager reports to the Technical Support Center at an Alert or higher and provides guidance and advice to the Control Room on plant design and coordinating engineering activities in the areas of analysis, design modifications, system response, and offsite protective action recommendations. The Technical Support Center Manager may assume the position of Emergency Director from the Shift Supervisor.

C.4.2 Operations Manager

The Operations Manager reports to the affected Unit's Control Room and directs the implementation of Control Room emergency response activities.

C.4.3 Radiological Manager

The Radiological Manager reports to the Technical Support Center and is responsible for assessing Station radiological and environmental conditions and implementing special radiological protective measures.

C.4.4 Maintenance Manager

The Maintenance Manager reports to the Technical Support Center and is responsible for functioning as the Technical Support Center interface for all repair team activities requested of the Operations Support Center. The Maintenance Manager ensures that supplies, equipment and manpower to support repair efforts are available and coordinates with the other Technical Support Center Managers to establish repair team priorities.

C.4.5 Technical Manager

The Technical Manager reports to the Technical Support Center and is responsible for monitoring the status of plant systems including the three fission product barriers (Fuel Cladding, Reactor Coolant System, and Containment) and identifying potential failures of key systems.

C.4.6 Security Manager

The Security Manager reports to the Technical Support Center and is responsible for directing implementation of onsite security response activities, performing assembly and accountability, and assisting with Protected Area and Owner Controlled Area evacuation.

C.4.7 Administrative Manager

The Administrative Manager reports to the Technical Support Center and is responsible for ensuring necessary documents are available, maintaining an overall file of records generated during the emergency, and ensuring adequate supplies are available in the Technical Support Center.

C.4.8 Operations Support Center Coordinator

The Operations Support Center Coordinator reports to the Operations Support Center at an Alert or higher and assumes responsibility for Operations Support Center activities and ensures accountability of the Operations Support Center is maintained. The Operations Support Center Coordinator ensures that emergency teams formed and dispatched are properly briefed and their status monitored, resources and personnel to perform Operations Support Center activities are adequate, and adequate communications and information flow is maintained with the Technical Support Center. The Operations Support Center Coordinator ensures that deviations from Station procedures and NRC regulations are approved by the Emergency Director.

C.4.9 Emergency Operations Facility Director

The Emergency Operations Facility Director reports to the Emergency Operations Facility at an Alert. At the discretion of the Emergency Director, the Emergency Operations Facility Director may activate the Emergency Operations Facility at the Alert classification. Following activation, at the discretion of the Emergency Director, the Emergency Operations Facility Director may assume Emergency Director authority and responsibilities from either the Technical Support Center Manager or Shift Supervisor, as appropriate. The Emergency Operations Facility Director is responsible for ensuring that an ongoing effective interface is maintained with County, State, and Federal response agencies, functioning as the primary interface with the Station Owners, and functioning as the primary interface with the Executive Officers of the Owners. The Emergency Operations Facility Director ensures a timely response to inquiries and requests for information from financial, legislative and congressional organizations, and approves major expenditures of funds. The Emergency Operations Facility Director may participate in press briefings at the Joint Information Center, if necessary.

C.4.10 Radiological Director

The Radiological Director reports to the Emergency Operations Facility at an Alert and is responsible for assessing offsite radiological and environmental conditions that may impact the public. The Radiological Director directs offsite dose projection activities and advises the Emergency Director on offsite protective action recommendations for

the public. The Radiological Director directs Offsite Field Team activities and environmental sampling support. The Radiological Director coordinates with the Technical Director to determine offsite protective action recommendations based on the status of the fission product barriers and the potential for a radiological release, and monitors radiological parameters which relate to Emergency Action Levels to determine if conditions warrant a change in emergency classification. The Radiological Director reviews and recommends approval of emergency exposures to Emergency Response Organization personnel in excess of Code of Federal Regulations, Title 10, Part 20 limits, determines Emergency Operations Facility radiological habitability, and recommends to the Emergency Director the issuance of Potassium Iodide. The Radiological Director functions as the primary interface with the Department of State Health Services personnel assigned to the Emergency Operations Facility, and manages radioactive waste and radiological control aspects of the Recovery operations.

C.4.11 Technical Director

The Technical Director reports to the Emergency Operations Facility at an Alert and is responsible for coordinating evaluation of plant safety systems and the condition of the primary fission product barriers, and advising the Emergency Operations Facility Director on engineering issues. The Technical Director also monitors the Emergency Action Levels to determine when changes in the emergency classification may be necessary, and coordinates with the Radiological Director to determine offsite protective action recommendations based on plant status and the potential for a radiological release. The Technical Director obtains engineering information requested by Emergency Operations Facility personnel, provides technical assistance to the Technical Support Center, and independently evaluates Technical Support Center engineering activities to determine if the correct engineering priorities are established. The Technical Director assists in coordinating arrangements for obtaining contract-engineering support.

C.4.12 Support Organization Director

The Support Organization Director reports to the Emergency Operations Facility at an Alert and is responsible for coordinating the interaction with offsite agencies and support organizations, ensuring communications systems are maintained operable and additional communications are provided as necessary, and arranges for special assistance to South Texas Project Electric Generating Station employees and their families with special needs during an emergency. The Support Organization Director ensures adequate and timely information is provided to offsite agencies, and ensures arrangements are in place to process support personnel to meet training, security, and radiological requirements. The Support Organization Director coordinates and maintains a status of South Texas Project Electric Generating Station support requested by County, State, and Federal agencies.

C.4.13 Licensing Director

The Licensing Director reports to the Emergency Operations Facility at an Alert and monitors the open line between the Control Room and NRC and provides information to the NRC regarding Emergency Operations Facility activities. The Licensing Director

functions as the primary liaison with NRC personnel responding to the emergency, and ensures administrative and logistics support is provided to the NRC.

C.4.14 Joint Information Center Director

The Joint Information Center Director reports to the Joint Information Center at an Alert and is responsible for overall JIC management of activation and operation. Provides information to the public of onsite status and conditions. Provides rumor control and public inquiry information. Ensures timely and accurate information is disseminated to the media. Coordinates media tours of emergency facilities.

Discuss plant status with offsite agency Public Information Officers (PIO) located at the JIC as well as the Governor's Division of Emergency Management PIO in Austin when possible. Schedules interviews with the media as needed. Corrects misinformation/ rumors during press briefings and ensures updated news release transmittals.

C.4.15 Company Spokesperson

The Company Spokesperson reports to the Joint Information Center at an Alert and is responsible for providing South Texas Project information to the news media. Also approves press releases and maintains contact with the Site Public Affairs Coordinator. Meets with offsite agency Public Information Officers (PIO) prior to news briefings. Designates personnel to make public comment on the emergency. Schedules frequent news conferences in order to apprise media of current information.

C.4.16 Media Relations Manager

The Media Relations Manager reports to the Joint Information Center at an Alert and is responsible for the timely accurate flow of information to the media, coordinates schedules and announces the press briefings and conferences, responds to media inquiries for information, arranges interviews, responds to media telephone inquiries, coordinates tours to other emergency response facilities as directed.

C.4.17 Public Inquiry Manager

The Public Inquiry Manager reports to the Joint Information Center at an Alert and is responsible for monitoring media outlets and public inquiries and reports and rectifies erroneous information, coordinates activities of media inquiry telephone responders, ensures monitoring of news outlets, coordinates correction of rumors/media misinformation, provides public inquiry staff with press releases and corrected rumor information.

Table C-1 MINIMUM STAFFING REQUIREMENTS (STPEGS)
(Including Capability for Additional Staffing)

MAJOR FUNCTIONAL AREA	POSITION TITLE	UNIT 1/2 ONSHIFT*	UNIT 3/4 ONSHIFT*	ONSITE ONSHIFT	AVAILABLE 60 MINUTES	AVAILABLE 75 MINUTES
Plant Operations and Assessment of Operational Aspects	Shift Supervisor	-	-	2	-	-
	Unit Supervisor	1	1	-	-	-
	Reactor Operators	2	2	-	-	-
	Plant Operators	2	2	-	-	-
	Shift Technical Advisor	-	-	1**	-	-
	Plant Operations Discipline Lead	-	-	-	-	1##
Emergency Direction and Control *** (Emergency Director)	Shift Supervisor	1**	1**	-	-	-
Notification/ Communications	-	-	-	2	-	2
Radiological Accident Assessment and Support of Operational Accident Assessment	Emergency Director	-	-	-	-	1
	Senior Health Physics Expertise (Dose Assessment)	-	-	1	-	-
	RP Technicians (onsite/offsite surveys)	-	-	2	3	4
	Chemistry Technician	-	-	1	-	1

Table C-1 MINIMUM STAFFING REQUIREMENTS (STPEGS) (Including Capability for Additional Staffing) (Continued)

MAJOR FUNCTIONAL AREA	POSITION TITLE	UNIT 1/2 ONSHIFT*	UNIT 3/4 ONSHIFT*	ONSITE ONSHIFT	AVAILABLE 60 MINUTES	AVAILABLE 75 MINUTES
Plant System Engineering	Shift Technical Advisor	-	-	1**	-	-
	Nuclear Engineer	-	-	-	1	-
	Electrical Engineer	-	-	-	-	1
	Mechanical Engineer	-	-	-	-	1
Repair and Corrective Actions	Radwaste Operator	1**	1**			
	Mechanical Maintenance	`	-	1**	-	1
	Electrical Maintenance	-	-	1** AND 1	-	1
	I&C Technician	-	-	1	-	-
Protective Actions	RP Technicians (Access Control/RP Coverage for corrective actions, search and rescue, first aid, and fire-fighting/ Personnel Monitoring/ Dosimetry)	-	-	2**	4	-
Fire Suppression	Plant Operations personnel	-	-	Fire Brigade per Technical Specific-ations	Local Support	Local Support

Table C-1 MINIMUM STAFFING REQUIREMENTS (STPEGS)
(Including Capability for Additional Staffing) (Continued)

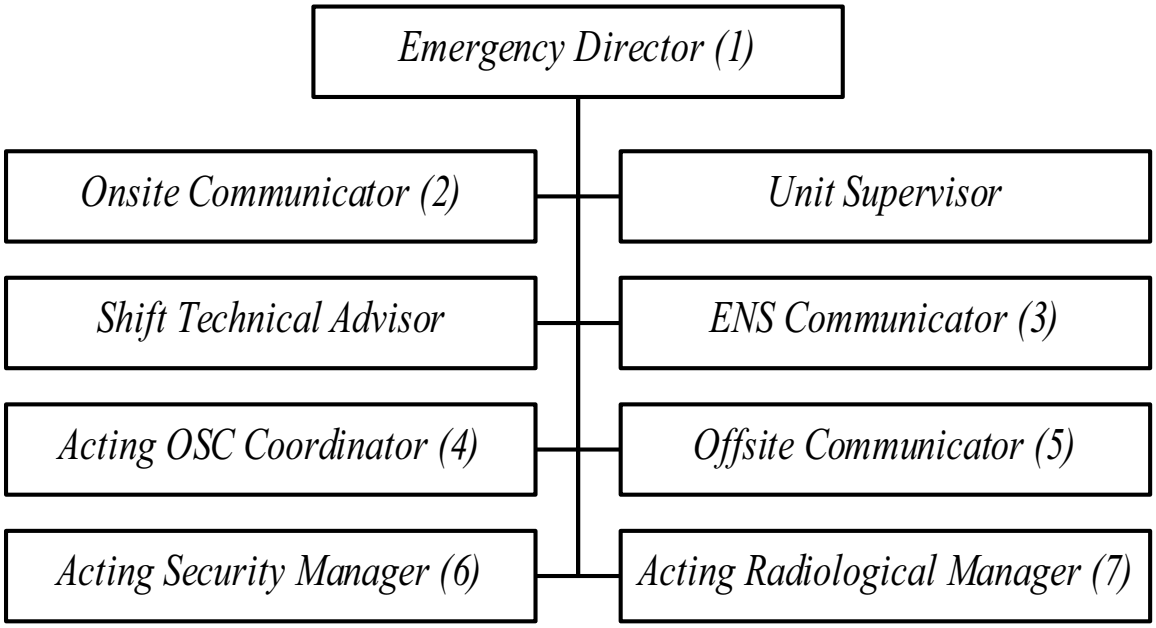
MAJOR FUNCTIONAL AREA	POSITION TITLE	UNIT 1/2 ONSHIFT*	UNIT 3/4 ONSHIFT*	ONSITE ONSHIFT	AVAILABLE 60 MINUTES	AVAILABLE 75 MINUTES
Rescue Operations and First Aid	Plant Protection Personnel	-	-	2**	Local Support	Local Support
Site Access Control and Personnel Accountability	Plant Protection Personnel (Security/ Communications/ Personnel Accountability)	-	-	All per Security Plan	-	-
	TOTAL	**5**	**5**	**15**	**8**	**13**

Notes: * For each unaffected unit in operation, maintain at least one Unit Supervisor, two Reactor Operators, and two Plant Operators. In accordance with Section 6.0 of the Technical Specifications for each unit, the shift crew composition may be less than the minimum number of operators (licensed or non-licensed) shown above for a period of time not to exceed two (2) hours in order to accommodate unexpected absences of on-duty shift crew members, provided immediate actions are taken to restore the crew composition. The minimum staff for a unit in cold shutdown will be one Senior Reactor Operator, one Reactor Operator, and one Plant Operator for that unit.

** These positions may be covered by onshift personnel assigned other functions.

*** Overall, direction of emergency response to be assumed by the Emergency Director at the Emergency Operations Facility when all centers are fully manned. Direction of minute-to-minute facility operation remains with senior manager in the Technical Support Center or Control Room.

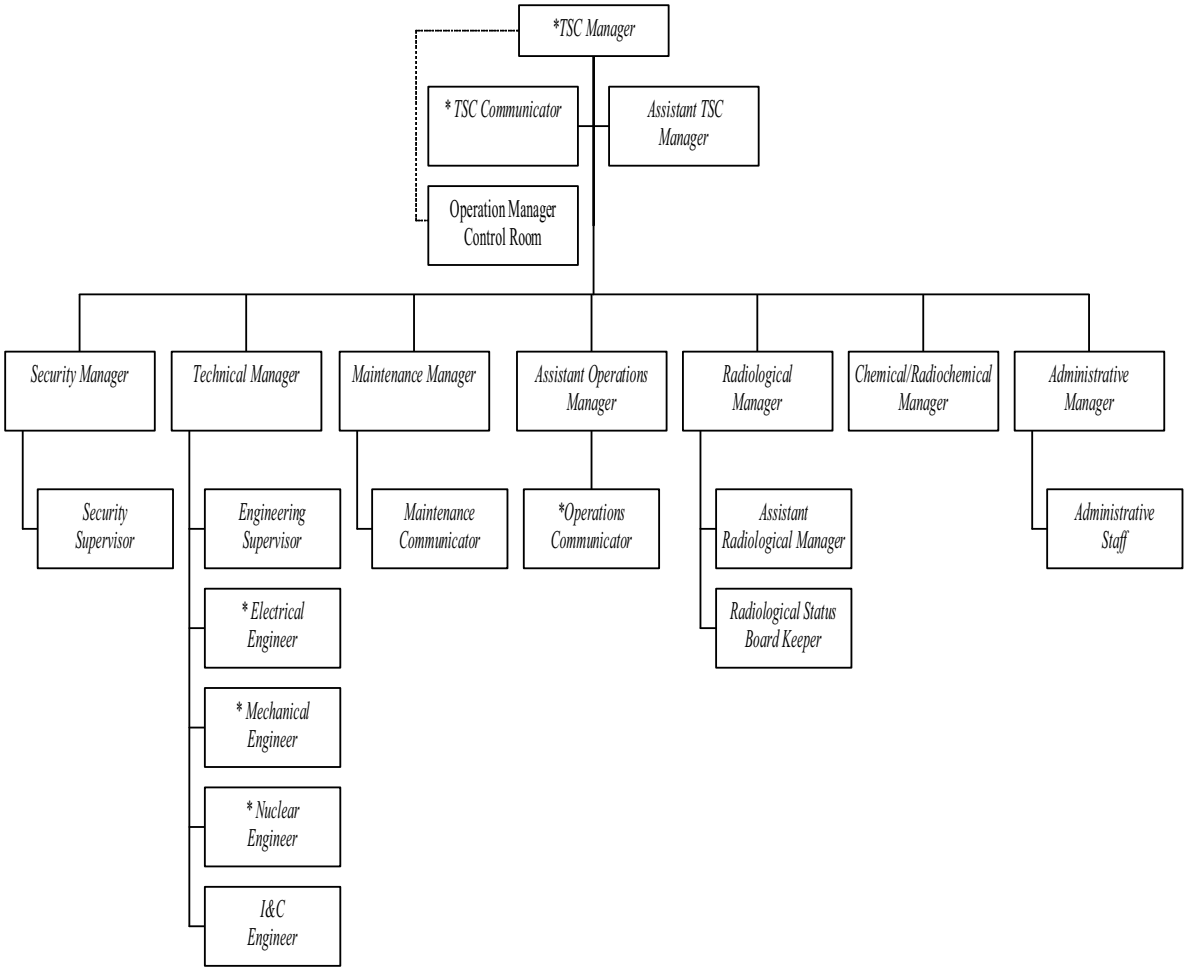
This position is filled by personnel with plant operations experience



( )- Identifies onshift personnel position titles

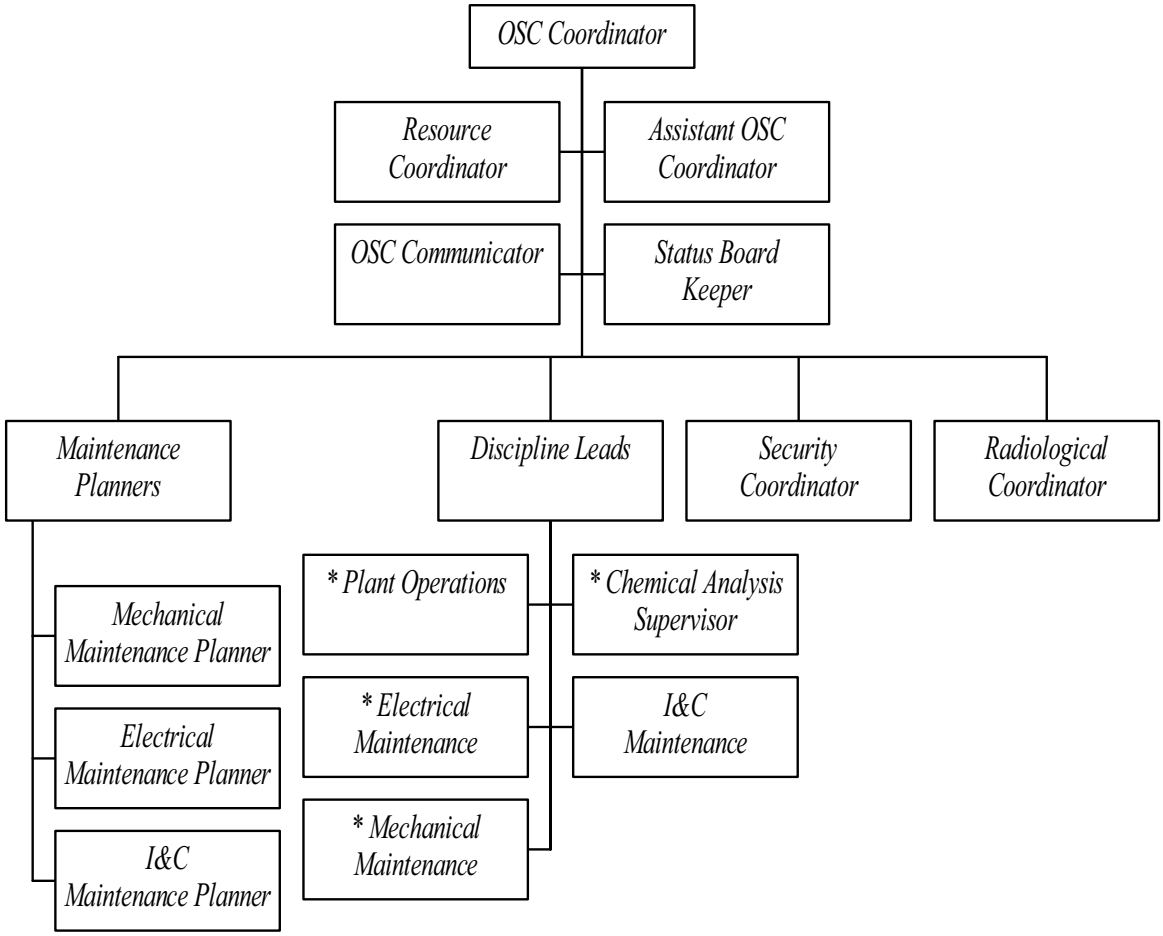
(1) Shift Supervisor;
(2) Plant Protection
(3) Reactor Operator, currently or previously licensed by NRC, or SRO Management Certified Personnel
(4) Duty Maintenance Supervisor
(5) Plant Operator
(6) Security Force Supervisor
(7) Senior Radiation Protection Technician.

Figure C-1 Onshift Emergency Response Organization



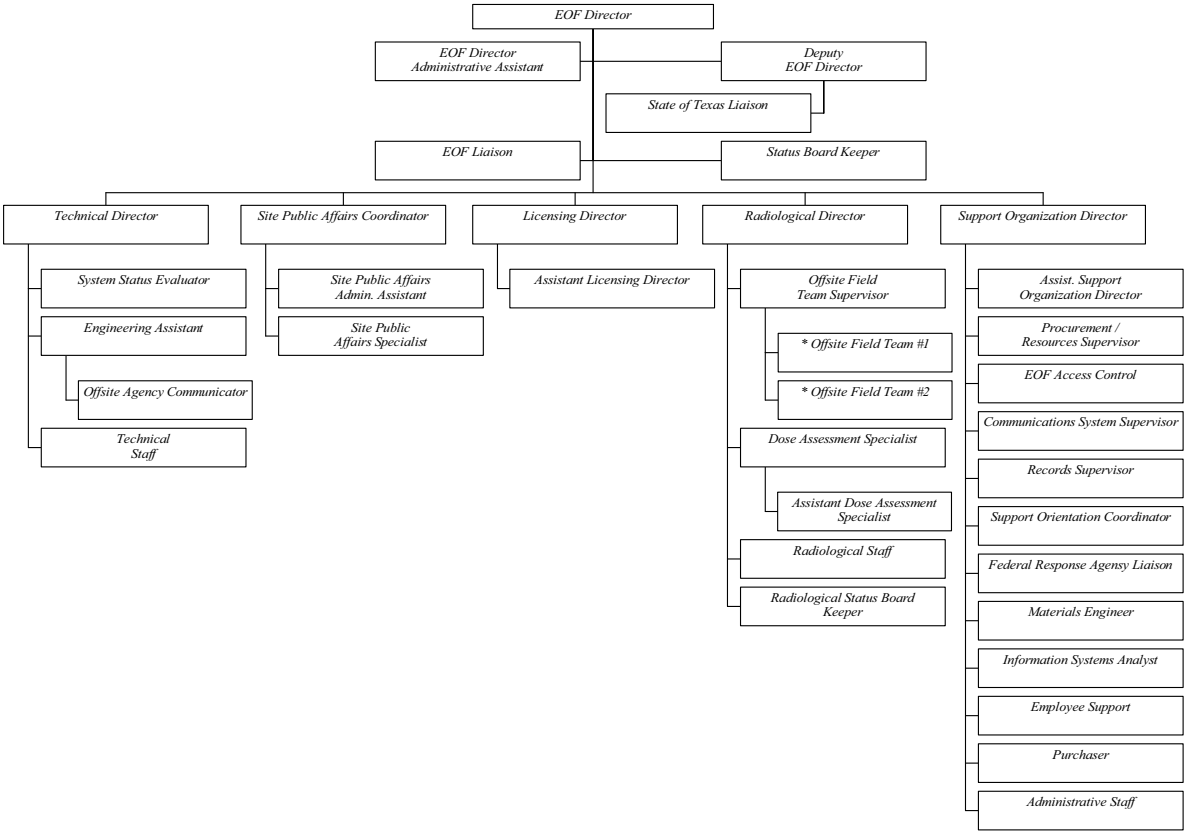
**Required Minimum Staffing.*
The Assistant TSC Manager may fill the TSC Manager position in his absence.

Figure C-2 Technical Support Center (TSC) Staffing



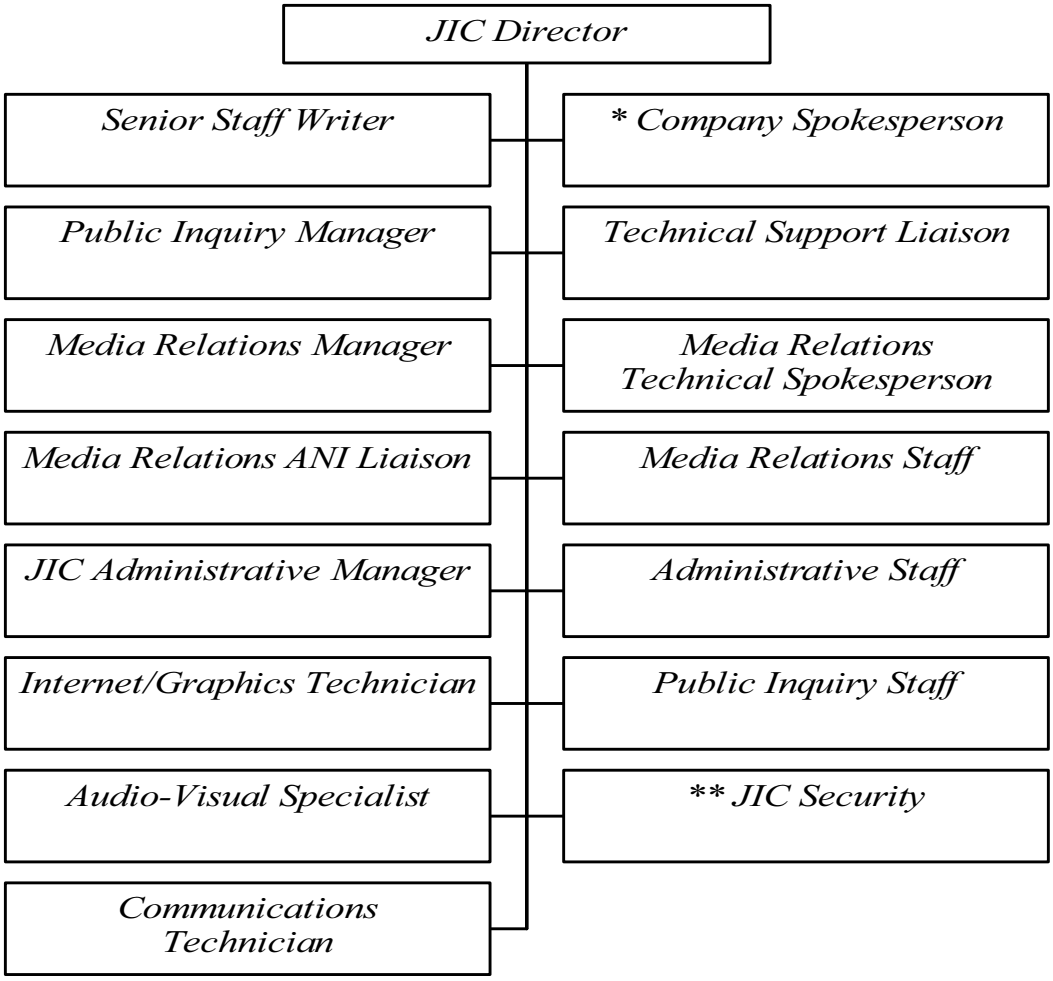
Required Minimum Staffing: Mechanic, Electricians (2), I&C Technician, Chemistry Technician, and Radiation Protection Technicians (7)

Figure C-3 Operations Support Center (OSC) Staffing



**Required Minimum Staffing*

Figure C-4 Emergency Operations Facility (EOF) Staffing



** Required Minimum Staffing*

*** Supplied by Local Law Enforcement*

Figure C-5 Joint Information Center (JIC) Staffing

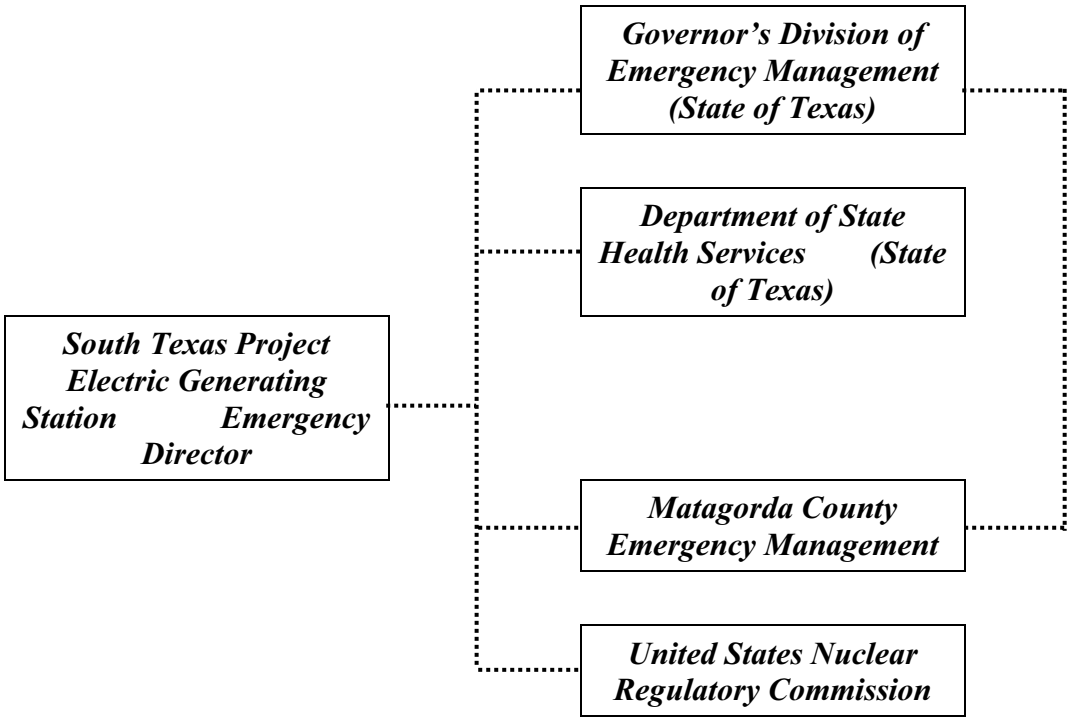


Figure C-6 Station Emergency Response Organization and Offsite Interfaces

D Emergency Classification System

This section of the Plan describes the emergency classification system utilized to categorize an event occurring at the Station into one of four emergency classification levels.

D.1 Event Classifications

The spectrum of possible emergency events at the Station is categorized into the following four (4) emergency classifications, based on the recommendations of NUMARC/NESP-007, Methodology for Development of Emergency Action Levels, January, 1992, Rev. 2 and NEI-99-01 Rev. 5:

- *Unusual Event*
- *Alert*
- *Site Area Emergency*
- *General Emergency*

The technique for evaluation and classification of emergencies at the Station, based on specific observable data or Control Room instrumentation, is delineated in Emergency Response Procedure 0ERP01-ZV-IN01, Emergency Classification. Review and approval of this procedure shall be controlled in accordance with 10 CFR 50.54(q).

The severity of the emergency classification increases in the order they are listed above from an Unusual Event to a General Emergency. Since the severity of the emergency may change with time, an emergency may be upgraded from one classification level to another. Incidents will typically be classified in a lower emergency classification at first and then escalated to a higher classification if the situation deteriorates. Each of the four emergency classifications has characteristic Emergency Action Levels for various parameters. These levels consist of specific values of various Station parameters such as instrument indications and system status that are used to classify the emergency and to initiate notification and activation of the appropriate members of the Station Emergency Response Organization. After the initial declaration of an emergency classification, the individual serving the lead function (i.e., Emergency Director) will perform a continuing assessment of the situation to determine whether the emergency classification must be upgraded.

The rationale for the Unusual Event and Alert classifications is to provide early and prompt notification of minor events which could lead to more serious consequences given operator error or equipment failure or which might be indicative of more serious conditions which are not yet fully realized. The Site Area Emergency classification reflects conditions where some significant releases are likely or are occurring, but where major core damage is not indicated based on current information. The General Emergency classification involves actual or imminent substantial core degradation or melting with the potential for loss of containment integrity.

The philosophy taken for classification will always be to immediately declare the highest classification for which a set of limits have been attained (Emergency Action Levels). For example, a Site Area Emergency would be declared directly if the Emergency Action Level of that classification had been attained, even if the lower, Alert classification had not been previously declared. In utilizing the Emergency Action Level criteria as the basis for initiating emergency response activity, there may be instances when the Station Operations staff cannot determine quickly which of two action levels is appropriate for a particular occurrence. In those cases, the occurrence is treated as the higher level of classification and the appropriate response for that level is initiated.

Initial assessment of plant conditions and emergency classification are performed by shift operating personnel under the direction of the Shift Supervisor. The Shift Supervisor/Emergency Director shall declare the emergency class within 15 minutes from the time that information, which exceeds an EAL, is available.

D.2 Safety Features

The Units are designed with structures, systems, and components to prevent or mitigate the consequences of postulated events that may result in the release of radioactive material into the environment that could produce doses in excess of established values. The Units are also designed with process, radiation monitoring, and analytical instrumentation to measure radioactivity in the Units system fluids, building atmospheres, and liquid and gaseous effluents. These structures, systems, and components are also described in the Final Safety Analysis Report(s).

The initiating conditions and events that determine the emergency classification are based on the actual or potential failure, malfunction, or improper operation of these structures, systems, and components. Some of the initiating conditions and events are directly identifiable by their existence, such as operation of a safety system or a fire, while others require observation of process and radiation monitoring instrumentation and/or radiochemical analysis.

Emergency Response Procedures 0ERP01-ZV-IN01, Emergency Classification, and Tables D-1 and D-2 provide initiating conditions that lead to Emergency Action Levels and associated emergency classification. Emergency Response Procedure 0ERP01-ZV-IN01, Emergency Classification, contains process parameter instrumentation and corresponding values, equipment status, and non-process conditions and events for identifying the initiating conditions and events that constitute the Emergency Action Level for each classification. The initiating conditions found under the various classifications are intended as general guidelines and represent the types of conditions that may be evaluated to confirm or modify, at any time, the emergency classification and action level response initiated by the Operations staff. The actual situation, however, from Unusual Event to General Emergency, involves many variables in going from plant instrumentation readouts of a pre-accident situation to significant radiological exposures to the public. Such readings may usefully serve as conservative criteria for determining when to mobilize various emergency organizations, but final decisions to notify and alert the public utilizing the Prompt Notification System are the decisions of the local and State governmental officials.

Station process emergency conditions and events are confirmed and mitigated by use of Emergency Operating Procedures. These procedures are based on guidelines developed by the Westinghouse and General Electric Owners Groups and require the monitoring of critical safety functions and a diagnostic evaluation to classify the emergency.

Non-process emergency conditions and events are confirmed as required by the use of specific Station procedures or physical confirmation.

Station procedures contain the specific instrumentation, equipment status, and non-process conditions and events that are used to establish the emergency classification.

D.3 Emergency Classifications

The following subsections describe each emergency classification. The descriptions contained in these subsections are not intended to be totally descriptive nor all-inclusive. The Emergency Director will declare an appropriate emergency classification when, in his judgment, the Station status warrants.

D.3.1 Unusual Event Classification

Unusual Event is the least severe of the four classes of emergency, in that events are in process or have occurred which indicate a potential degradation of the level of safety of the station or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

This classification includes those situations which, unless complicated by other factors, pose no harm to the public but for which it is prudent to notify Station personnel, State, local, and Federal officials to provide them with current information on unusual events which are occurring or have occurred at the Station

Events in this classification will initiate activation of the Emergency Notification and Response System (ENRS) to notify Emergency Response Organization (ERO) Personnel. This is an information only notification and does not require activation of Emergency Facilities.

D.3.2 Alert Classification

The Alert classification includes events that are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the station or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline exposure levels. This emergency classification includes those situations for which it is prudent to notify Station personnel, and State, Local, and Federal officials in order to assure that emergency personnel are available to respond should the situation become more serious. These situations, unless upgraded to a more severe emergency classification, pose no threat to the public but confirmatory

radiological monitoring by the State may be appropriate in order to verify that no harm to the public has occurred.

Events in this classification will initiate activation of the Technical Support Center and Operations Support Center. The Emergency Operations Facility and the Joint Information Center shall be staffed as a precautionary action and may be activated at the discretion of the Emergency Director. The personnel in the Emergency Operations Facility act in a support function to the Technical Support Center. The Emergency Operations Facility Dose Projection capability is activated at an Alert. Any Emergency Response Facility may be activated at the discretion of the Emergency Director.

D.3.3 Site Area Emergency Classification

The Site Area Emergency classification includes events that are in process or have occurred which involve an actual or likely major failures of station functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed Environmental Protection Agency (EPA) Protective Action Guideline exposure levels beyond the site boundary. This emergency classification includes those situations for which it is prudent to notify Station personnel, State, County, and Federal officials to allow emergency response facilities to be staffed and personnel required for evacuation of near site areas to prepare and stage should the situation become more serious.

Situations classified under the Site Area Emergency classification are those for which it may be prudent to provide early warning to the general public within the ten (10) mile Emergency Planning Zone to provide an increased state of readiness should the situation become more serious.

Although Protective Action Recommendation are not required, declaration of a Site Area Emergency will require initiation of emergency response actions by the Station personnel and the State and County authorities.

D.3.4 General Emergency Classification

The General Emergency is the most severe emergency classification defined in this Plan. The General Emergency classification includes events that are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed Environmental Protection Agency (EPA) Protective Action Guideline exposure levels offsite for more than the immediate site area. This emergency classification includes those situations for which it is prudent to notify Station personnel, State, County, and Federal officials to allow the cognizant organizations to take predetermined protective actions, such as shelter or evacuation of the public, in order to minimize the potential for radiological exposure of the public. For these situations, it is prudent to provide early warning to the population within the

ten (10) mile Emergency Planning Zone to allow the public to take any necessary protective actions.

Table D-1 (Units 1 and 2)
Initiating Conditions For Emergency Classification
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NOTE
The following GENERALIZED initiating conditions describe entry into the four emergency classifications for each category. Refer to Emergency Plan Implementing Procedures for, Emergency Classification for the SPECIFIC initiating conditions, plant parameter values and Emergency Action Levels.

CATEGORIES	UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Fission product barriers	Any loss or any potential loss of containment --- Fuel clad degradation --- Reactor coolant system leakage	Any loss or any potential loss of clad or reactor coolant system	Loss of both fuel clad and reactor coolant system or potential loss of both fuel clad and reactor coolant system or Potential loss of either fuel clad or reactor coolant system and loss of any additional barrier	Loss of any two barriers and potential loss or loss of third barrier
Electrical	Unplanned loss of class 1E direct current power during cold shutdown or refueling --- Loss of offsite power to engineered safety feature busses	AC power to 3 engineered safety feature busses is reduced to a single power source such that any single failure would result in loss of all AC power --- Loss of offsite and onsite power to all 3 engineered safety feature busses during cold shutdown or refueling	Loss of all class 1E direct current power --- Loss of offsite and onsite power to all 3 engineered safety feature busses	Prolonged loss of offsite and onsite power to all 3 engineered safety feature busses

Table D-1 (Units 1 and 2)
Initiating Conditions for Emergency Classification
Page 2 of 4

CATEGORIES	UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Reactor protection / Technical Specification	Inability to reach required shutdown within required Technical Specification limits	Failure of reactor protection system to complete or initiate an automatic reactor trip and manual trip was successful	Failure of reactor protection system to complete or initiate an automatic reactor trip and manual trip was not successful	Failure of the reactor protection system to complete an automatic reactor trip and manual trip was not successful and indication of extreme challenge to ability to cool the core
Communications / Alarms Assessment	Unplanned loss of all onsite or offsite communications capabilities ---------- Unplanned loss of most control room safety system annunciation or indication	Unplanned loss of most Control Room safety system annunciation or indication with either (1) a significant transient in progress, or (2) compensatory indicators are unavailable	Inability to monitor a significant transient in progress	
Shutdown Maintenance	Unplanned loss of class 1E direct current power during cold shutdown or refueling	Inability to maintain plant in cold shutdown ---------- Loss of offsite and onsite power to all 3 engineered safety feature busses during cold shutdown or refueling	Complete loss of any function needed to achieve or maintain hot shutdown ---------- Loss of water level in the reactor vessel that has or will uncover fuel in the reactor vessel	

Table D-1 (Units 1 and 2)
Initiating Conditions for Emergency Classification
Page 3 of 4

CATEGORIES	UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Radiological release	Unplanned release above limits for 60 minutes	Unplanned release significantly above limits	Radiological release which may approach environmental protection agency protective action guidelines	Radiological release which would result in doses at or above environmental protection agency protective action guidelines
Radiation levels	Unexpected increase in plant radiation levels or airborne concentrations	Release of radioactive material or increase in radiation levels that impedes operation of systems required to maintain safe operation or to establish or maintain cold shutdown --- Major damage to irradiated fuel or loss of water level that has or will result in uncovering of irradiated fuel outside of the reactor vessel	Unexpected increases in containment radiation levels (100 rem/hour)	Unexpected increase in containment radiation levels (1000 rem/hour)
Fire/explosion	Fire or explosion in the protected area or switchyard which affects normal operation	Fire or explosion in a vital area potentially affecting safe shutdown or decay heat removal		

Table D-1 (Units 1 and 2)
Initiating Conditions for Emergency Classification
Page 4 of 4

CATEGORIES	UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Security	Confirmed security event which indicates a potential degradation in the level of safety of the plant	Security event in the protected area --- Notification of an airborne attack threat --- Notification of hostile action within the owner controlled area	Security event in the Vital Area --- Site attack	Security event resulting in loss of physical control of the facility
Toxic /Flammable gas	Toxic/Flammable gases affecting plant operation	Toxic /Flammable gases potentially affecting safe operation		
Natural or destructive phenomena affecting plant vital area	Natural or destructive phenomena affecting plant operations	Natural or destructive phenomena potentially affecting safe plant operation		
Control Room evacuation		Control Room evacuation	Control Room evacuation	Control Room evacuation and plant control cannot be established
Miscellaneous events	Miscellaneous events affecting plant operations	Miscellaneous events potentially affecting safe plant operations	Miscellaneous events affect the ability to shutdown the plant or maintain it in a safe shutdown condition	Miscellaneous events which may potentially result in a hazard to the public

Table D-2 (Units 3 and 4)
Initiating Conditions for Emergency Classification
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NOTE
The following GENERALIZED initiating conditions describe entry into the four emergency classifications for each category. Refer to Emergency Plan Implementing Procedures for Emergency Classification for the SPECIFIC initiating conditions, plant parameter values and Emergency Action Levels.

Recognition Category C - Cold Shutdown/Refueling System Malfunctions (cont.)

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
CU1 - RCS leakage.	**CA1 -** Loss of RCS/RPV inventory with irradiated fuel in the RPV.	**CS1 -** Loss of RPV inventory affecting core decay heat removal capability.	**CG1 -** Loss of RPV inventory affecting fuel clad integrity with containment challenged with irradiated fuel in the RPV.
CU2 - Unplanned loss of RCS inventory with irradiated fuel in the RPV.			
CU3 - Loss of all off-site AC Power to emergency busses for greater than 15 minutes.	**CA3 -** Loss of all off-site and all on-site AC power to emergency busses.		
CU4 - Unplanned loss of decay heat removal capability with irradiated fuel in the RPV.	**CA4 -** Inability to maintain plant in cold shutdown with irradiated fuel in the RPV.		
CU6 - Unplanned loss of all on-site or off-site communications capabilities.			
CU7 - Unplanned loss of required DC power for greater than 15 minutes.			
CU8 - Inadvertent criticality.			

Table D-2 (Units 3 and 4)
Initiating Conditions for Emergency Classification
Page 2 of 4

Recognition Category F - Fission Product Barriers

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
FU1- Any loss or any potential loss of containment.	**FA1-** Any loss or any potential loss of either fuel clad or RCS.	**FS1-** Loss or potential loss of any two barriers.	**FG1-** Loss of any two barriers and loss or potential loss of third barrier.

Recognition Category H - Hazards and Other Conditions Affecting Plant Safety

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
HU1- Natural or destructive phenomena affecting the Protected Area.	**HA1-** Natural or destructive phenomena affecting a plant Vital Area.		
HU2- Fire within Protected Area boundary not extinguished in less than 15 minutes of detection or explosion within the Protected Area Boundary.	**HA2-** Fire or explosion affecting the operability of plant safety systems required to establish or maintain safe shutdown.		
HU3- Release of toxic, corrosive, asphyxiant, or flammable gases deemed detrimental to normal plant operations.	**HA3-** Access to a Vital Area is prohibited due to release of toxic, corrosive, asphyxiant or flammable gases which jeopardizes operation of systems required to maintain safe operations or safely shutdown the reactor.		
HU4- Confirmed security condition or threat which indicates a potential degradation in the level of safety of the plant.	**HA4-** Hostile action within the Owner Controlled Area or airborne attack threat.	**HS4-** Hostile action within the Protected Area.	**HG1-** Hostile action resulting in loss of physical control of the facility.

Table D-2 (Units 3 and 4)
Initiating Conditions for Emergency Classification
Page 3 of 4

Recognition Category H - Hazards and Other Conditions Affecting Plant Safety (Continued)

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
HU5- Other conditions existing which in the judgment of the Emergency Director warrant declaration of a NOUE.	**HA6-** Other conditions existing which in the judgment of the Emergency Director warrant declaration of an Alert.	**HS3-** Other conditions existing which in the judgment of the Emergency Director warrant declaration of Site Area Emergency.	**HG2-** Other conditions existing which in the judgment of the Emergency Director warrant declaration of General Emergency.
	HA5- Control Room Evacuation Has Been Initiated.	**HS2-** Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.	

Recognition Category R - Abnormal Radiation Levels/Radiological Effluents

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
RU1 - Any unplanned release of gaseous or liquid radio-activity to the environment that exceeds two times the radiological effluent Technical Specifications/ODCM for 60 minutes or longer.	**RA1 -** Any unplanned release of gaseous or liquid radioactivity to the environment that exceeds 200 times the Radiological Effluent Technical Specifications/ODCM for 15 minutes or longer.	**RS1 -** Off-site dose resulting from an actual or imminent release of gaseous radioactivity exceeds 100 mrem TEDE or 500 mrem thyroid CDE for the actual or projected duration of the release.	**RG1 -** Off-site dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mrem TEDE or 5000 mrem Thyroid CDE for the actual or projected duration of the release using actual meteorology.
RU2 - Unexpected rise in plant radiation.	**RA3 -** Release of radioactive material or rise in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown.		
	RA2 - Damage to irradiated fuel or loss of water level that has resulted or will result in the uncovering of irradiated fuel outside the reactor vessel.		

Table D-2 (Units 3 and 4) Initiating Conditions for Emergency Classification
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Recognition Category S - System Malfunctions

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
SU1- Loss of all off-site AC Power to emergency busses for greater than 15 minutes.	**SA5-** AC power capability to emergency busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout.	**SS1-** Loss of all off-site and all on-site AC power to emergency busses.	**SG1-** Prolonged loss of all off-site I on-site AC power to emergency busses.
SU2- Inability to reach required shutdown within Technical Specification limits.	**SA2-** Automatic scram fails to shutdown the reactor and the manual actions taken from the Reactor Control Console are successful in shutting down the reactor.	**SS2-** Automatic scram fails to shutdown the Reactor and manual actions taken From the Reactor Control Console are not successful in shutting down the Reactor.	**SG2-** Automatic scram and all manual actions fail to shutdown the Reactor and indication of an extreme challenge to the ability to cool the core exists.
	SA4- Unplanned loss of indicating, monitoring and control functions.	**SS6-** Inability to monitor a significant transient in progress.	
SU4- Fuel clad degradation.		**SS3-** Loss of all vital DC Power.	
SU5- RCS Leakage.			
SU6- Unplanned loss of all on-site or off-site communications capabilities.			
SU8- Inadvertent Criticality.			

E Notification Methods and Procedures

This section of the Plan describes the methods and procedures that are established for notification by the Station, to Federal, State and County response organizations and for activation of the Station Emergency Response Organization.

E.1 Offsite Agency Notifications

The content of initial and follow-up messages to offsite response organizations is coordinated with State and County by Station Representatives. The forms for messages sent from the Station to offsite agencies are contained in the Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies, the State of Texas Emergency Management Plan, and the Matagorda County Emergency Management Plan. More information on notification procedures is provided in Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies. Plant Operations Procedure 0POP04-ZO-0004, Personnel Emergencies defines the communication links with offsite medical facilities.

E.2 Communication Links and Notifications

The Station has established communication links among the Station emergency response facilities and the Federal, State, and County emergency response organizations. The notification of response organizations is based on the response criteria developed for each emergency classification as discussed in Section D. The process for contacting Station Emergency Response Organization personnel contacted for each emergency classification is provided in Emergency Response Procedure 0ERP01-ZV-IN03, Emergency Response Organization Notification. Addendum E-1 shows the various communication links and the redundant communication equipment available to assure that communication channels are maintained. Emergency Response Facility telephone numbers are maintained in the Emergency Communications Directory. A description of the communications equipment is provided in Addendum E-1.

Initial notification is made simultaneously to the State and County via the Department of Public Safety Disaster District Office in Pierce, Texas and the Matagorda County Sheriff's Office within fifteen minutes of the declaration of the emergency classification by the Emergency Director. This notification is made via dedicated automatic ringdown lines that connect to the Matagorda County Sheriff's Office and Department of Public Safety in Pierce, Texas. The Nuclear Regulatory Commission is notified as soon as possible following notification of State and County agencies of the declared event, not to exceed one hour. The affected Unit shall activate the Emergency Response Data System for any condition that requires the declaration of an Alert, Site Area Emergency, or General Emergency at the time the NRC Operations Center is notified of the emergency classification.

If a declared event is based on a fire, security, or radiological initiating condition, then appropriate Station emergency responders, and appropriate local support services will be notified. Local support services include those organizations listed in Section B of this Plan. These local services will activate other services in their individual areas if additional support is required.

E.2.1 Unusual Event

For an Unusual Event, emergency classification, the Shift Supervisor serving as Emergency Director, will initiate notifications in accordance with Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies, and 0ERP01-ZV-IN03, Emergency Response Organization Notification. These procedures are prepared to meet the requirements of Code of Federal Regulations, Title 10, Part 20.2202 or 50.72.

E.2.2 Alert

For an Alert emergency classification, the Emergency Director will initiate notifications in accordance with Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies, and augment the onshift duty complement using 0ERP01-ZV-IN03, Emergency Response Organization Notification. The Station Emergency Response Organization will be notified and requested to report to their respective Emergency Response Facilities. The Operations Support Center and the Technical Support Center will be activated. The Emergency Operations Facility and Joint Information Center are staffed as a precautionary action, and may be activated at the discretion of the Emergency Director. Dose projection capability is provided in the Emergency Operations Facility at an Alert. Personnel in the Emergency Operations Facility act in a support role to the Technical Support Center. The purpose of this emergency classification is to provide early and prompt notification of minor events which could lead to more serious consequences given operator error or equipment failure, or which may be indicative of more serious conditions that are not yet fully realized.

E.2.3 Site Area Emergency

For a Site Area Emergency classification, the Emergency Director will initiate notifications in accordance with Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies, and augment the activated ERO staff utilizing 0ERP01-ZV-IN03, Emergency Response Organization Notification. Members of the Station Emergency Response Organization are notified and requested to report to their respective emergency response facilities which are activated at the Site Area Emergency. The emergency classification reflects conditions where full mobilization of emergency personnel is indicated, as well as, the dispatch of Offsite Field Teams with associated communications.

The Department of State Health Services, shall establish communications with the Matagorda County Emergency Management Organization, the Texas Department of Public Safety, the Governor's Division of Emergency Management, and the Station.

The Department of State Health Services, may activate its Radiological Response Organization and dispatch Radiological Response Teams to the site environs to perform radiological monitoring and environmental impact assessment. The Emergency Management Council is activated upon notification of the declared event by the Station. The Department of State Health Services may dispatch a mobile environmental analysis and sampling vehicle to the Staging Area at the Bay City Civic Center to assist the Radiological Response Teams.

E.2.4 General Emergency

For a General Emergency classification, the Emergency Director will initiate notifications in accordance with Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies, and notify Emergency Response Organization personnel utilizing 0ERP01-ZV-IN03, Emergency Response Organization Notification. The entire Station Emergency Response Organization is notified and directed to report to their respective emergency response facilities. The emergency classification reflects conditions requiring immediate implementation of appropriate predetermined protective actions.

The Department of State Health Services, shall establish communications with the Matagorda County Emergency Management Organization, the Texas Department of Public Safety, the Governor's Division of Emergency Management, and the Station.

The Department of State Health Services, may activate its Radiological Response Organization and dispatch Radiological Response Teams to the site environs to perform radiological monitoring and environmental impact assessment. The Department of Public Safety may provide escort for the Department of State Health Services, Radiological Response Team personnel. The Emergency Management Council is activated upon notification of the declared event by the Station. The Department of State Health Services will dispatch a mobile environmental analysis and sampling vehicle to the Staging Area at the Bay City Civic Center to assist the Radiological Response Teams.

E.3 Notification of the General Public

The general public (resident and transient population) will be notified of an Unusual Event through press releases, radio broadcasts, and other news media. The general public will be notified of Alert or higher declarations through news advisories and/or Emergency Alert System messages prepared by Matagorda County Emergency Management officials. During emergencies that may require the implementation of protective actions, the general public will be alerted by the Prompt Notification System, which consists of alert radios, warning sirens, and news advisories and/or Emergency Alert System messages. This system is designed to enable the County authorities to notify essentially all of the population within the Emergency Planning Zone within about fifteen minutes.

Sirens are utilized to alert the more densely populated areas identified on Figure E-1. This system was designed considering the Federal Emergency Management Agency's Outdoor Warning System Guide (CPG-17), Federal Emergency Management Agency - Report-10, and the Nuclear Regulatory Commission's guidance presented in NUREG-0654/FEMA-REP-1, Rev. 1. All sirens have a single tone, two signal capability with a required signal duration of at least three minutes. The siren system is activated from the Matagorda County Sheriff's Office, or from the Station Emergency Operations Facility; individual sirens can be activated singularly at the individual siren location. The Station is responsible for the maintenance and routine testing of the siren system in accordance with NUREG 0654/Federal Emergency Management Agency Report-1 and the siren manufacturer's technical manual.

Deficiencies that are identified in the routine testing of the siren subsystem shall be corrected in an expedient manner not to exceed four months [10CFR50.54(s)(2)]. During this period of time, alternate notification methods shall be provided for residents within the siren's coverage, if the deficiency renders a siren out-of-service. This service is described in Matagorda County Emergency Management Plan Procedures.

The warning sirens and alert radios are activated by radio signal. The primary activation point is the Matagorda County Sheriff's Office. The sirens are activated by radio directly from the Sheriff's Office. The alert radios are activated by an Emergency Alert System signal from KMKS FM Radio Station in Bay City based on direction from Matagorda County Emergency Management officials. This service to the general public is provided 24 hours per day to accommodate day or night activation's. The secondary control point for the siren system is the Station Emergency Operations Facility. The siren system will be activated at the secondary control point only as directed by the Matagorda County Emergency Management officials and as approved by the Emergency Director.

Reasonable efforts shall be made to provide alert radios to residences within the ten mile emergency planning zone that are outside the effective coverage area of the siren system, as well as to major businesses, recreational areas and schools within the ten mile emergency planning zone. The alert radios are tested on a regular basis with activation of the test signal for the Emergency Alert System. Radios have a battery backup provision in the event of power failure. Instructions for use accompany the radio package. Maintenance and documentation is the responsibility of the Station.

The public receives instructions periodically that they are to tune to their local Emergency Alert System radio station, KMKS FM Radio, for emergency instructions whenever the sirens or alert radios are activated. The Emergency Alert Messages originate from Matagorda County officials.

E.4 Matagorda County Instructions to the Public

Matagorda County Emergency Management officials may use preformatted messages which give instructions to the public regarding specific protective actions to be taken by occupants of affected areas, if protective actions become necessary. Typical text for the messages are provided in the Matagorda County Emergency Management Plan Procedures. The Station has established notification methods and will provide information to Matagorda County that will allow officials of Matagorda County to make decisions on the appropriate public warning messages to be broadcast via the Emergency Alert System.

Addendum E-1 Emergency Response Facilities Communications
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1.0 Function

The communications systems are designed to provide rapid and efficient communications required for operation and administration of the plant under all operating and emergency conditions. The diverse subsystems provided assure that adequate onsite and offsite communications are available to support orderly plant operation, shutdown, firefighting, and evacuation. In addition, attention is given to maintaining contact with the Matagorda County Sheriff's Office, the Department of Public Safety Disaster District in Pierce, Texas, and the Nuclear Regulatory Commission.

2.0 Design Bases

The communications systems are not safety related and have no safety design bases. Failure of these systems shall not compromise any safety-related system nor require a plant shutdown.

The communications systems are designed to provide effective onsite and offsite communications. It allows operation and administration of the plant during all modes of operation.

3.0 Description

3.1 The following typical subsystems are provided:

- *Telephone System*
- *Public Address (paging/alarm system)*
- *Maintenance Jack System*
- *Two-way Radio System*
- *Radio Paging System (beeper)*
- *Communications Console*
- *Satellite Telephone*
- *Emergency Notification & Response System (ENRS)*

3.1.1 Onsite Communications Systems

3.1.1.1 Telephone System

The telephone system is a Public Branch Exchange system that provides dial access to General Telephone Company of the Southwest in the Palacios central office, and microwave circuits to Bay City and Houston. The system has an independent, automatic starting and switching, backup power source. Additionally, dial

Addendum E-1 Emergency Response Facilities Communications
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access to the plant voice paging system, the radio paging system (beeper) and telecopiers is provided.

3.1.1.2 Public Address (Paging/Alarm System)

The voice paging and alarm system is provided to transmit routine messages, and emergency signals, such as fire, plant evacuation, and radiation emergency alarms. Flashing lights are provided in high noise areas inside plant buildings.

3.1.1.3 Maintenance Jack System

Telephone jack stations are provided throughout the plant for operating convenience during repair, operation, and maintenance of equipment required for safe shutdown.

Two-Way Radio System Radio repeater base stations provide communication between control base stations, mobile units and hand-held portable radios within the plant area. Self-contained batteries power hand-held portables.

3.1.1.4 Radio Paging System (Beeper)

The radio paging system includes a fixed transmitter and receives only portable units. The pager system is a tone system that may be activated from plant telephones or from offsite touch-tone telephones.

3.1.1.5 Communications Consoles

The communications consoles provide plant operators with access to the telephone system, two-way radio channels, radio paging systems, and the public address systems. Plant emergency and fire alarm signals are activated from designated communications consoles.

3.1.1.6 Emergency Notification & Response System (ENRS)

ENRS is an offsite automated computer operated system used for ERO pager activation and AutoDial Telephone notification of declared emergencies. This system maintains a redundant system in case of a primary system failure. A backup to the offsite automated computer system consists of activation of all STPNOC ERO pagers.

3.1.2 Offsite Communications Systems

Access to the nationwide dial telephone network is through the local telephone exchange at Palacios, Texas. The exchange is owned and operated by General Telephone Company of the Southwest. The Center Point Energy microwave system also provides communication circuits into Houston. Offsite communication with the commercial telephone network is established via these circuits and can be accessed from both the Control Rooms, both Technical Support Centers, and the Emergency Operations Facility.

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Dedicated automatic ringdown lines allow immediate and direct contact with the Matagorda County Sheriff's Office and the Texas Department of Public Safety, Disaster District Sub 2C in Pierce.

The Federal Telephone System (FTS) 2001 is a dedicated telephone system for establishing contact with the Nuclear Regulatory Commission Operations Center in Rockville, Maryland. This telephone circuit is also known as the Emergency Notification System.

The Health Physics Network, another Federal Telephone System (FTS) 2001 dedicated telephone system, is designed to provide communications with the NRC Health Physics Section and/or other nuclear power plants during a declared emergency or drill/exercise.

Special telephone service circuits allow immediate and direct contact with the STP Coordinator.

A satellite telephone is maintained in the Control Rooms. This telephone can be operated on Alternating Current or Direct Current power and provides worldwide access via satellite in case of a total loss of all telephone capability to the Station and/or surrounding area.

3.2 Operation

The communications systems are designed to allow contact among plant personnel, and plant-to-offsite communications during normal and emergency conditions.Station procedure 0PGP05-ZV-0011, Emergency Communications, provides guidance regarding the operation of the Emergency Communication systems when responding to an emergency or drill/exercise. Station procedures 0PGP05-ZV-0002, Emergency Response Activities Schedule, and 0PGP07-ZA-0011, Communication Systems, provide details on the maintenance and testing requirements for the communication systems.

3.3 Systems Interface

The telephone system provides interface between incoming telephone lines, the microwave system, plant voice paging system, radio-paging system, communications consoles and other associated equipment. The communications consoles interface with the telephone system, the radio system, and the plant voice paging system. Radio and telephone equipment used in the Technical Support Centers and Emergency Operations Facility are powered from separate non-Class 1E diesel generator-backed busses. Refer to Figure E-2, Typical Emergency Response Facilities Communications Pathway.

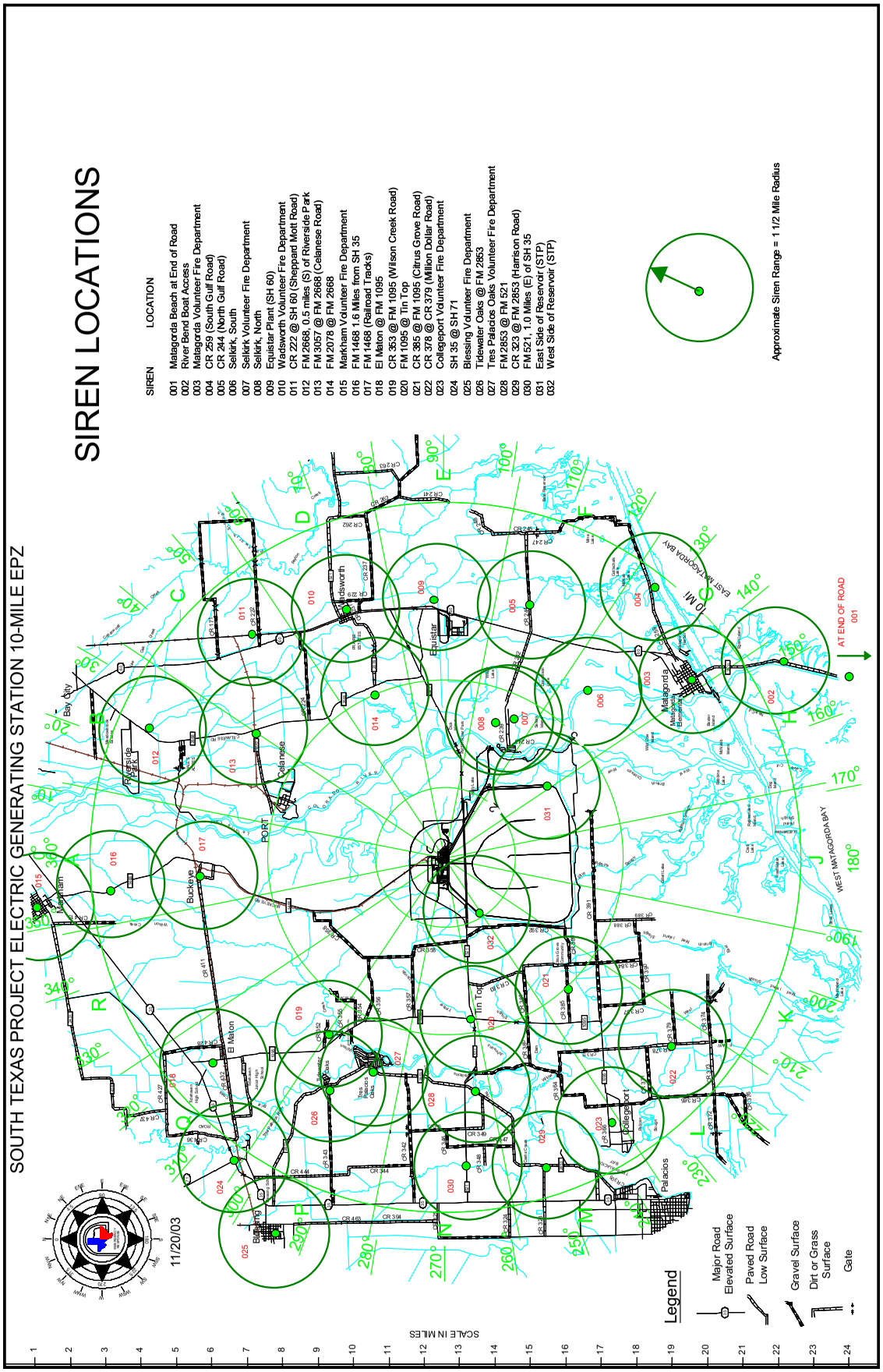

Figure E-1 Siren Locations

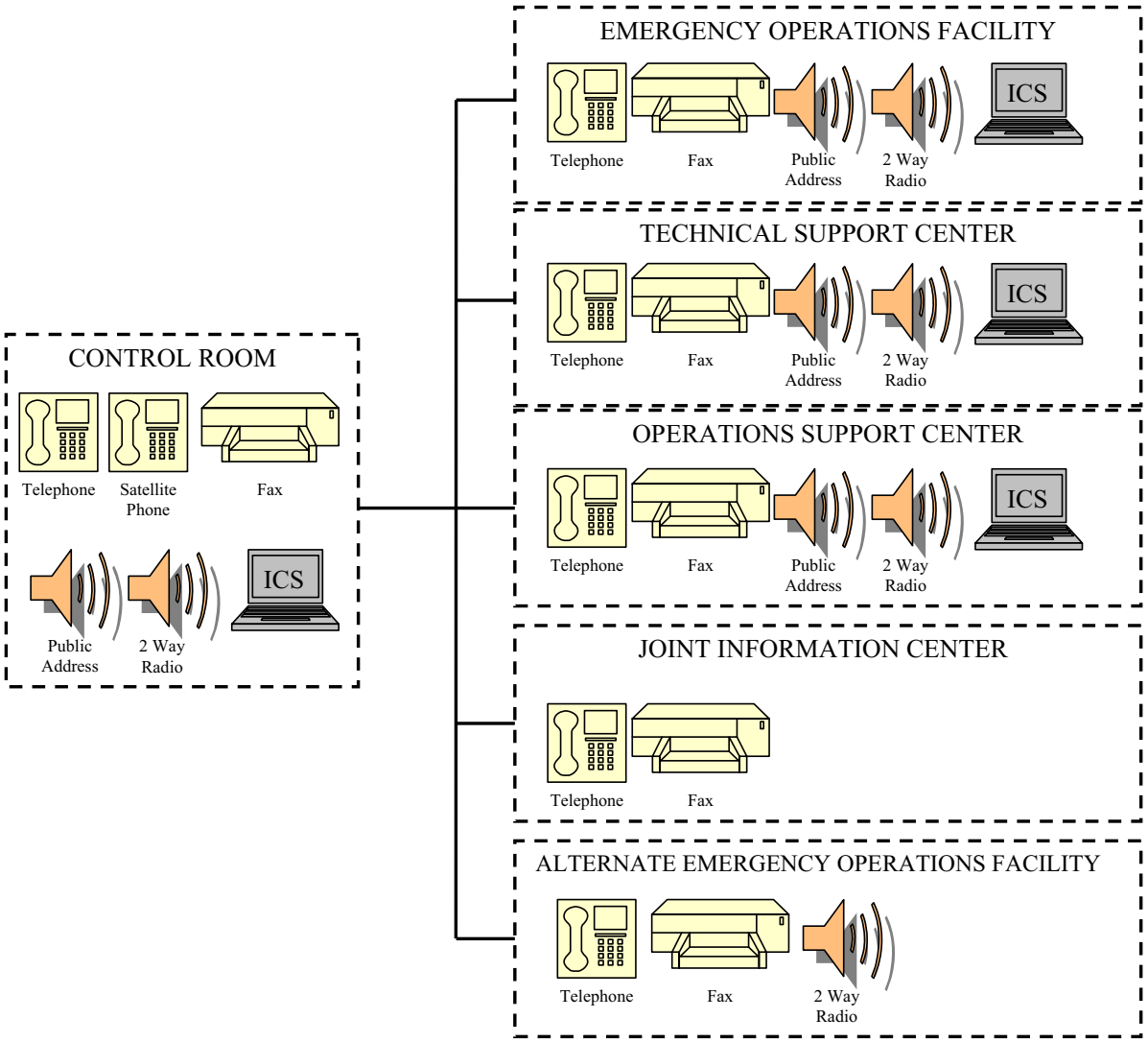

Figure E-2 Typical Emergency Response Facilities Communications Pathway

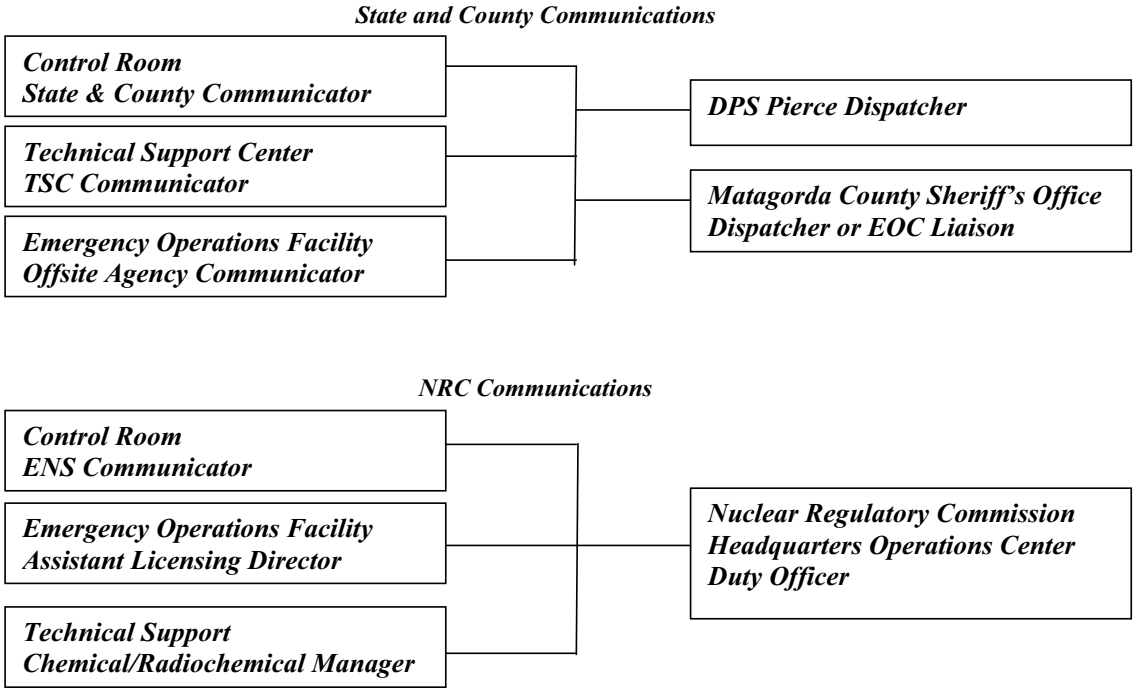

Figure E-3 Emergency Communications Links

F Emergency Actions and Measures

This section of the Plan describes the actions to be taken and the organization required to mitigate the emergency commensurate with each classification.

The planning, training, and communications for Station and offsite personnel, including the general public, are established for each classification of emergency. The personnel, the organizations, and the expertise required to manage each classification of emergency are different. The resources established for the most severe classification are available for the other three classified events. Personnel required for the composition of the Emergency Response Organization will come primarily from Station personnel who are specifically trained for the positions that they are to fill. The persons requested to staff the Emergency Response Facilities will normally assume emergency responsibilities that are directly related to their normal Station duties. Assignment to the Emergency Response Organization is described in Station Procedure 0PGP05-ZV-0003, Emergency Response Organization. The relief and turnover of Emergency Response Organization position responsibilities will be accomplished in accordance with Emergency Response Procedures. Relief staff will possess the required qualifications and training, personnel may be appointed or assigned a position or duties by the Emergency Director to meet unforeseen circumstances. The Shift Supervisor will maintain the position of Emergency Director until relieved by the Technical Support Center Manager or Emergency Operations Facility Director. Responding Emergency Response Organization personnel will assume positions from the onshift emergency workers after turnover briefings. A description of the Station Emergency Response Organization is contained in Section C of this Plan.

F.1 Initiating Actions

In an emergency, immediate response actions are directed toward mitigating the consequences of the event in a manner that will afford protection to Station personnel and the general public. Once corrective actions have restored the Station to a safe, stable condition, recovery actions may be initiated. Recovery actions are fully discussed in Section L of this Plan. The Station is responsible for performing recovery measures to restore the Station to normal operating conditions.

In the beginning minutes of a declared emergency, many actions are initiated. The Plant Operations staff begins immediate steps to restore the Station to a stable condition in accordance with approved Station Emergency Operating Procedures. Offsite protective action recommendations are issued at a General Emergency Declaration. Radiological surveys are started as needed. The Onshift Emergency Response Organization assumes the Station emergency positions as required.

F.2 Offsite Agency Notifications

Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies, describes the initial and follow-up messages to the State and County authorities, Nuclear Regulatory Commission, and others of the classification, escalation, de-escalation or termination of the declared Station emergency. In accordance with this

emergency response procedure, the following information is provided to State and local governments. This information includes but is not limited to:

- *Station status,*
- *Release status and dose projections,*
- *meteorological conditions,*
- *results of Offsite Field Team monitoring, and*
- *protective action recommendations.*

F.3 Assembly and Accountability

The assembly and accountability of Protected Area personnel will be accomplished in accordance with Emergency Response Procedure 0ERP01-ZV-IN04, Assembly and Accountability. Personnel in the Protected Area will be monitored for contamination. The Emergency Director initiates the Assembly and Accountability process by directing the sounding of the Assembly Alarm and providing assembly instructions over the plant public address system. Personnel shall assemble in predetermined assembly areas identified in 0ERP01-ZV-IN04, Assembly and Accountability.

Personnel assembling in the Protected Area of the Station are accounted for by the security computer system. Backup methods are provided in the event the security computer fails. The Emergency Response Procedure 0ERP01-ZV-IN04, Assembly and Accountability, is designed to achieve this emergency action within 30 minutes. A list of missing personnel compiled by the Security Force Supervisor will be provided to the Security Manager for dissemination to the Emergency Director. A Search and Rescue team will be dispatched to locate and, if necessary, rescue missing Station personnel.

Evacuated personnel will be monitored at an offsite Reception Center, if required by radiological conditions.

F.4 Access Control to Site Areas

Access control to site areas is the overall responsibility of the Security Manager. During an Alert, Site Area Emergency, or General Emergency, individuals entering or leaving the site may be directed to one gatehouse or the Emergency Operations Facility which may serve as the alternate facility for access control operations.

F.5 Site Evacuation

Site evacuation may be implemented at any time under the authority of the Emergency Director and shall be implemented after personnel accountability for a Site Area Emergency or General Emergency. The Emergency Director orders the evacuation of Station personnel after careful consideration of the benefits and risks involved. The detailed responsibilities and functions of the Station personnel during an evacuation are contained in Emergency Response Procedure 0ERP01-ZV-IN05, Site Evacuation.

When site evacuation is ordered and contamination monitoring cannot be performed onsite due to a radiological release, personnel from the affected area(s) will report to designated Offsite Reception Center(s), activated by the Matagorda County Emergency Management Director, for radiological monitoring and decontamination, if required.

A site evacuation is considered when the conditions that require an area evacuation are not confined to a Station building or when general area radiation levels outside the Radiologically Controlled Area exceed Emergency Plan limits as stated in Section J of this Plan. In addition, a site evacuation could be initiated following an area evacuation if a hazard continues to increase in severity or spreads to other areas, or the Emergency Director deems it necessary that nonessential personnel be evacuated from the Station. Emergency Response Procedure 0ERP01-ZV-IN05, Site Evacuation takes into consideration evacuation routes and alternatives for inclement weather and radiological conditions. A site evacuation may be delayed by the Emergency Director if any of the following conditions exist:

- *Severe weather conditions which would threaten safe transport;*
- *A significant radiological hazard which would be encountered;*
- *A security threat occurring which would have an adverse impact on personnel leaving the site*
- *A condition similar to these in magnitude which, in the opinion of the Emergency Director would adversely affect site personnel.*

F.6 Onsite Shelter

Shelter may be implemented under the authority of the Emergency Director at any time. All hazards are monitored by the Emergency Response Organization (ERO) and appropriate protective actions given to emergency workers. The Emergency Director orders onsite shelter of station nonessential personnel after careful consideration of the benefits and risks involved. The responsibilities and functions of the station nonessential personnel during onsite shelter are contained in Emergency Response Procedure 0ERP01-ZV-IN05, Site Evacuation.

F.7 Medical Assistance

Medical assistance for offsite treatment of radiologically contaminated personnel is described in Station Procedure 0PGP03-ZA-0106, Emergency Medical Response Plan and 0POP04-ZO-0004, Personnel Emergencies, and in Section J of this Plan.

F.8 Emergency Classification Actions

The following subsections describe the emergency actions to be taken during any of the four declared emergency classifications. The resources described are what is normally expected to be used for a particular classification, but are available to any emergency classification.

F.8.1 Unusual Event

Typical actions for an Unusual Event emergency classification are as follows:

- *Improve station conditions;*
- *Alert the onshift personnel;*
- *Notify the State, County and Nuclear Regulatory Commission agencies;*
- *Terminate or mitigate the consequences of the event.*

The Control Room is the primary control center for emergency response, notifications, Station control, and monitoring of process parameters for this class of emergency. A functional diagram of communication links for an Unusual Event is depicted in Figure F-1.

Actions for an Unusual Event are normally handled by the onshift Emergency Response Organization personnel complement and usually require no outside assistance. Additional Emergency Response Organization personnel are available through Emergency Response Procedure 0ERP01-ZV-IN03, Emergency Response Organization Notification.

State and County authorities will not be required to take any action unless requested by their respective Emergency Directors or the Station Emergency Director.

Information concerning the Unusual Event will be provided to Public Affairs for dissemination to the general public. The Unusual Event emergency classification will be maintained until an escalation or termination occurs.

There are normally no Recovery actions for an Unusual Event emergency classification. Termination will usually be declared for an Unusual Event emergency classification.

F.8.2 Alert

Typical actions for Alert classification are as follows:

- *Alert the onshift personnel of the emergency classification;*
- *Terminate or mitigate the consequences of the event;*
- *Augment the onshift complement by activating the Technical Support Center and Operations Support Center Emergency Response Facilities;*
- *The Emergency Operations Facility will be fully staffed and may be activated at the discretion of the Emergency Director or Facility Director;*
- *Provide dose estimates and projections and meteorological assessments to State and County authorities if radioactive material is being released or may be released;*

- *Provide Station status to State and County authorities;*
- *Make specified immediate and follow-up notifications to State and County authorities and the Nuclear Regulatory Commission; and,*
- *Staff the Joint Information Center*

The initial recognition of an emergency condition, the classification of the emergency, and the immediate and follow-up actions by the Onshift Emergency Response Organization are performed in accordance with Emergency Response Procedures. The Control Room is the primary control center for accident mitigation supplemented by the Technical Support Center for emergency management and monitoring of process parameters. Notifications, Station status updates, meteorological assessments, dose estimates and projections, and offsite protective action recommendations are normally provided offsite from the Technical Support Center or the Emergency Operations Facility. A functional diagram of communication links for an Alert is depicted in Figure F-2. The Technical Support Center is used to monitor selected Station parameters for assessment of Station conditions. The Technical Support Center also functions to provide the Control Room Shift Supervisor prompt relief as the Emergency Director so that he can place his primary focus on returning the plant to a stable condition. The Operations Support Center is used as a staging area for Emergency Response Teams and backup personnel. The Technical Support Center will be organized and coordinated by the Technical Support Center Manager and the Operations Support Center will be organized and coordinated by the Operations Support Center Coordinator. The Operations Support Center's priorities are established by the Technical Support Center Manager. The Maintenance Manager functions as the Technical Support Center interface for all repairs requested of the Operations Support Center. Further staffing will be dependent on the duration of the emergency. Emergency Response Organization personnel other than the onshift complement are available to staff the Technical Support Center, Operations Support Center and the Emergency Operations Facility. The Technical Support Center Manager is the Station authority for emergency management and has Emergency Director responsibility and authority. Data links between the Technical Support Center, Operations Support Center, Control Room, and the Emergency Operations Facility will provide process data, radiological data, Emergency Response Team status, and Station status to the Technical Support Center. An exception to the above facility staffing occurs when an Alert is declared due to a hurricane. In this case, the Emergency Operations Facility personnel can be dismissed at the discretion of the Technical Support Center Manager.

Onsite radiological exposure control is described in Emergency Response Procedure 0ERP01-ZV-IN06, Radiological Exposure Guidelines, and Section J of this Plan.

The Alert will be maintained until escalated, downgraded or terminated by the Emergency Director.

Offsite dose calculations will be performed in accordance with Emergency Response Procedure 0ERP01-ZV-TP01, Offsite Dose Calculations if radioactive releases occur. Offsite protective action recommendations are not required at an Alert.

F.8.3 Site Area Emergency

Typical actions for the Site Area Emergency classification are as follows:

- *Alert the onshift personnel of the emergency classification;*
- *Terminate or mitigate the consequences of the event;*
- *Augment the onshift complement by activating all Emergency Response Facilities;*
- *Provide dose estimates and projections and meteorological assessments to State and County authorities if radioactive material is being released or may be released;*
- *Provide Station status to State and County authorities;*
- *Conduct assembly and accountability of Protected Area*
- *Evacuate the site as required;*
- *Make specified immediate and follow up notifications to State and County authorities and the Nuclear Regulatory Commission; and,*
- *Monitor the environs of the Station to determine doses.*

The initial recognition of an emergency condition, the classification of a Site Area Emergency, and the immediate and follow up actions by the onshift Emergency Response Organization are performed in accordance with Emergency Response Procedures. The Technical Support Center is the primary control center for direction of the Emergency with technical expertise, Station control, and monitoring of process parameters. At the Site Area Emergency, activation of the Emergency Operations Facility and the Joint Information Center occurs. A functional diagram of communication links for a Site Area Emergency is depicted in Figure F-2. Further staffing will be dependent on the duration of the emergency.

Personnel from the Station Emergency Response Organization are available to staff the Technical Support Center, the Operations Support Center, and the Emergency Operations Facility. Upon assumption of command and control, the Emergency Operations Facility Director is the Station authority for emergency management and has Emergency Director responsibility and authority. Data links between the Emergency Operations Facility, Technical Support Center, Operations Support Center, and the Control Room will provide process data, radiological data, emergency response team status, and Station status to the Emergency Operations Facility. An exception to the above facility staffing occurs when a Site Area Emergency is declared due to a hurricane. In this case, the Emergency Operations Facility and Joint Information Center activation can be delayed at the discretion of the Technical Support Center Manager.

A Site Area Emergency requires close coordination of activities between the State and County authorities and the Station Emergency Director. Protection of the site personnel will be directed toward assessing the doses and plant conditions and implementing appropriate protective actions. Personnel at the Station are the responsibility of the Emergency Director. State and County authorities will activate emergency centers and place key personnel on emergency position status.

No offsite protective action recommendations are expected for a Site Area Emergency.

The Emergency Operations Facility Director will provide management level interface with the Nuclear Regulatory Commission and the State and County authorities. Provisions are made in the Emergency Operations Facility to accommodate various State, County, and Federal personnel. To ensure the consistency of actions and information, the Emergency Operations Facility Director shall remain the single onsite source for managing the emergency.

The Joint Information Center will be used for briefing the news media. Media relations are described in Section K of this Plan.

The Site Area Emergency will be maintained until escalation, downgrading, recovery or termination occurs.

A Recovery organization will be established commensurate with the cleanup effort required. Recovery actions for a Site Area Emergency are described in Section L of this Plan.

Management of the Site Area Emergency may continue for an extended period and relief of personnel may be required. Due to the possible length of time required to recover or terminate this emergency classification, food, lodging and transportation may be required for emergency personnel. The logistics to support the Site Area Emergency are depicted in Emergency Response Procedures, i.e., 0ERP01-ZV-EF09, Procurement/Resources Supervisor, 0ERP01-ZV-EF28, Assistant Support Organization Director, and 0ERP01-ZV-TS09, Administrative Manager.

F.8.4 General Emergency

Typical actions for the General Emergency classification are as follows:

- *Alert the onshift personnel of the emergency classification;*
- *Terminate or mitigate the consequences of the event;*
- *Augment the onshift complement by activating all Emergency Response Facilities;*
- *Provide dose estimates and projections and meteorological assessments to State and County authorities if radioactive material is being released or may be released;*
- *Provide Station status to State and County authorities;*
- *Evacuate the site as required;*

- *Make specified immediate and follow up notifications to State and County authorities and the Nuclear Regulatory Commission;*
- *Monitor the environs of the Station to determine doses;*
- *Make protective action recommendations to State and County authorities; and*
- *Provide information to the Joint Information Center for press releases.*

The initial recognition of a General Emergency condition, the classification of the emergency, and the immediate and follow-up actions by the onshift Emergency Response Organizations are performed in accordance with Emergency Response Procedures. The Emergency Operations Facility is the primary control center for direction of the emergency. Technical expertise is provided from the Technical Support Center for emergency management, Station control, and monitoring of process parameters. Notifications, Station status updates, and meteorological assessments of dose estimates and projections are provided from the Emergency Operations Facility. A functional diagram of communication links for a General Emergency is depicted in Figure F-2. The Operations Support Center is used as a staging area for Emergency Response Teams and backup personnel. The Technical Support Center actions and personnel are organized and coordinated by the Technical Support Center Manager, and the Operations Support Center personnel and actions are coordinated by the Operations Support Center Coordinator. Further staffing will be dependent on the duration of the emergency. Personnel from the Station Emergency Response Organization are available to staff the Emergency Operations Facility, Technical Support Center, Operations Support Center and the Joint Information Center. The Emergency Operations Facility Director is the Station authority for emergency management. Data links between the Emergency Operations Facility, Technical Support Center, Operations Support Center, and the Control Room will provide process data, radiological data, emergency response team status and Station status to the Emergency Operations Facility. In the unlikely event that the Emergency Operations Facility becomes uninhabitable, an Alternate Emergency Operations Facility has been established in Bay City, Texas, at the Bay City Service Center, 7th and Avenue M. Emergency Response Facilities are further described in Section G of this Plan.

The General Emergency requires close coordination of activities between the State and County authorities and the Station Emergency Director. Protection of site personnel and the public will be directed toward assessing the doses and plant conditions and recommending appropriate protective actions. The alerting, sheltering, and/or evacuation of the public is the responsibility of County authorities. Personnel at the Station are the responsibility of the Emergency Director. State and County authorities will activate emergency centers and place key personnel on emergency position status. The State may provide confirmatory offsite radiation monitoring.

Section I provides additional details on offsite protective action recommendations. State and County authorities have formulated plans to alert, shelter and/or evacuate

persons who may be subject to an exposure in excess of Environmental Protection Agency Protective Action Guidelines.

Onsite radiological exposure control is described in Emergency Response Procedure 0ERP01-ZV-IN06, Radiological Exposure Guidelines, and Section J of this Plan.

The Emergency Operations Facility Director will interface with the Nuclear Regulatory Commission and the State and County authorities. Provisions are made in the Emergency Operations Facility to accommodate various State, County, and Federal personnel. To ensure the consistency of actions and information, the Emergency Operations Facility Director shall remain the single onsite source for managing the emergency.

The Joint Information Center will be used for briefing the news media. Media relations are described in Section K of this Plan.

The General Emergency will be maintained until de-escalation, recovery, or termination occurs.

Recovery actions for a General Emergency are described in 0ERP01-ZV-RE01, Recovery Operations and Section L of this Plan.

An estimate of the exposure to the public near the Station because of an emergency condition will be performed in accordance with procedure 0ERP01-ZV-TP01, Offsite Dose Calculations.

Management of the General Emergency may continue for an extended period and relief of personnel will be required. Due to the possible length of time required to terminate this emergency classification, food, lodging, and transportation may be required for emergency personnel. These items are planned for in the General Emergency as depicted in Section C of this Plan and appropriate Emergency Response Procedures.

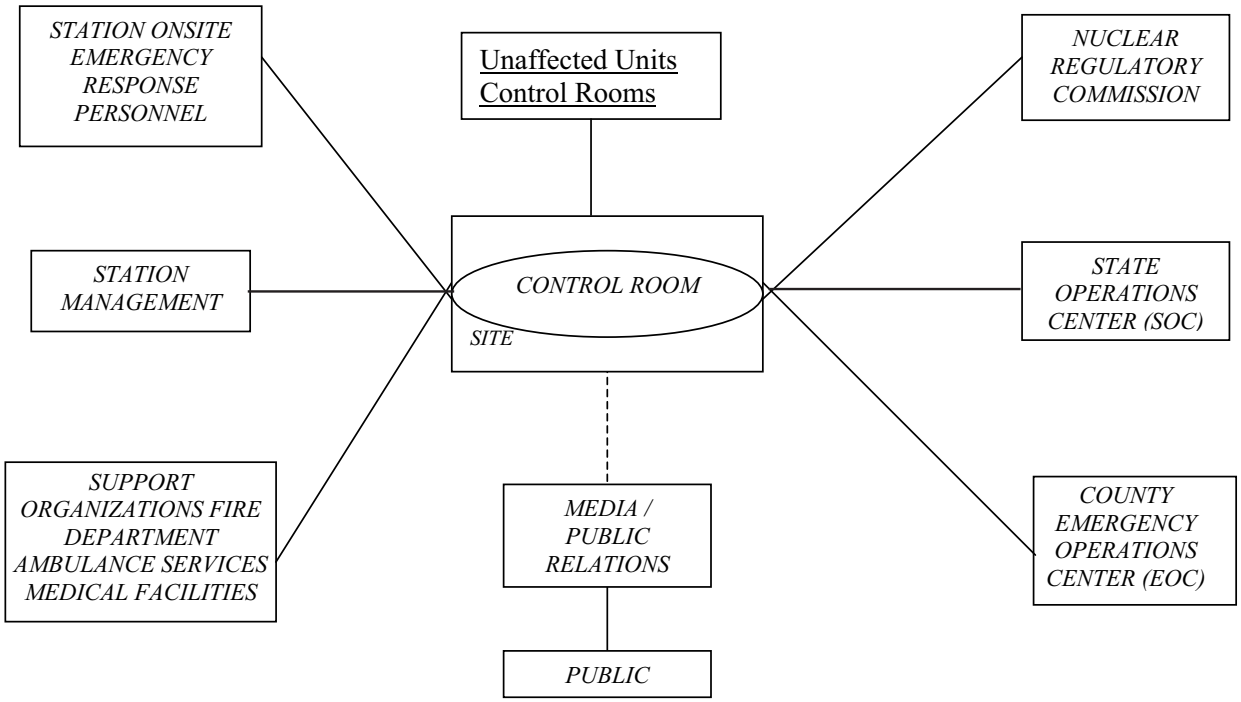

Figure F-1 Emergency Response Facilities Communications Pathway Typical Functional Diagram Unusual Event

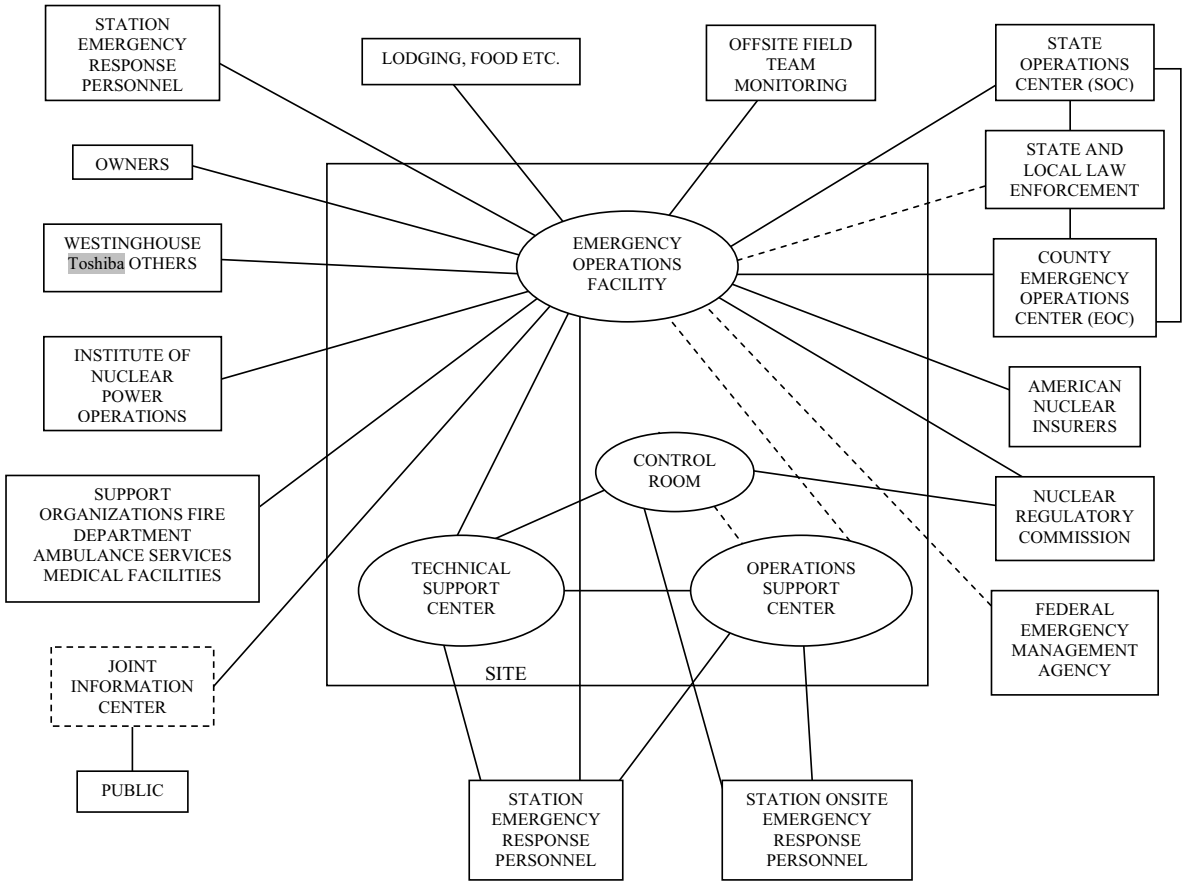

Figure F-2 Emergency Response Facilities Communications Pathway Typical Functional Diagram Alert, Site Area, and General Emergencies

G Emergency Response Facilities

This section of the Plan describes the location of equipment and facilities maintained by the Station for use in the event of an emergency at the Station. The design of the Station's Emergency Response Facilities meets the intent of Supplement 1 to NUREG-0737, Clarification of Three Mile Island Action Plan Requirements, and NUREG-0696, Functional Criteria for Emergency Response Facilities. The locations of the Emergency Response Facilities are indicated on Figures G-1, G-4 and G-8. A typical listing of emergency supplies and equipment maintained by the Station is given in Table G-1. Plant records necessary to perform the functions of each onsite facility are available in and/or at each onsite facility listed in Table G-2. A detailed list of Control Room equipment and instrumentation is provided in Chapter 7 of the Final Safety Analysis Reports. The equipment and facilities comprising the Operations Support Center, Technical Support Center, and Emergency Operations Facility do not perform any safety-related functions. Their design assures that any fault or malfunction does not compromise any safety-related equipment, components or structures.

G.1 Control Room

The Station Operations staff will function from the Control Room for each level of emergency at the Station. The Control Room is radiologically hardened and seismically designed to withstand all credible events that could occur at the Station.

The Control Room is the primary facility at the Station in which Station conditions are monitored and controlled and where corrective actions are initiated to mitigate any abnormal occurrence. In the event the Control Room must be evacuated, a remote Auxiliary Shutdown Panel has been provided for safe shutdown of the Station. Control Room habitability and radiation monitoring capabilities, as well as Auxiliary Shutdown capability, are discussed in detail in the Final Safety Analysis Reports.

G.2 Operations Support Center

The Operations Support Center is the onsite emergency response staging area, separate from the Control Room and the Technical Support Center. The Operations Support Center is used for assembling the plant emergency response teams and other Station personnel. A typical layout for each Unit 1 and 2 Operations Support Center is provided in Figure G-2, a typical layout of each Unit 3 and 4 Operations Support Center is provided in Figure G-6. If the Operations Support Center must be evacuated, the personnel from the Operations Support Center will relocate to the Operations Support Center of the similar Reactor Type unaffected unit. Communications are provided between the Operations Support Center, Technical Support Center, Control Room and the Emergency Operations Facility. Personnel are assigned duties in support of emergency response operations by the Operations Support Center Coordinator, located in the Operations Support Center. An emergency Assembly Area is located in the Work Control Center of the Maintenance Operations Facility. This emergency Assembly Area is utilized for the accountability of Station personnel, other than non-essentials, without Emergency Response Organization assignments during the assembly and accountability process.

The Operations Support Center is designed to be activated within approximately 75 minutes after declaration *of an Alert, in conjunction with the Technical Support Center. Radiation levels in and around the Operations Support Center are assessed during radiological events.*

G.3 Technical Support Center

The Technical Support Center is the onsite technical support facility for emergency response. The Station provides one Technical Support Center for each unit. Unit 1 and 2 facility is located on the 72-foot elevation of the respective unit's Electrical Auxiliary Building, Unit 3 and 4 facility is located in the respective unit's Service Building and are within a two minute walking distance from the units' Control Room as described in the Final Safety Analysis Reports. In the event of a non-unit specific emergency, the Unit 1 Technical Support Center will be activated. Otherwise, the Technical Support Center in the affected unit will be activated. These facilities are equipped to enable response personnel to monitor the course of an accident and plan corrective and recovery actions. Personnel access to the activated Technical Support Center is controlled. During periods of activation, the affected Technical Support Center is staffed continuously to provide plant management and technical support to plant operations personnel and to relieve the reactor operators of peripheral duties and communications not directly related to reactor system manipulations. The typical layout of each Unit 1 and 2 Technical Support Center is provided in Figure G-3. The typical layout of each Unit 3 and 4 Technical Support Center is provided in Figure G-7.

Each Technical Support Center is provided sufficient radiological protection and monitoring equipment to assure that radiation exposure to any person working in the activated Technical Support Center will not exceed five (5) rem TEDE or twenty-five (25) rem thyroid CDE during the duration of a declared accident. Should the affected unit's Technical Support Center become uninhabitable, the Emergency Response personnel within the Technical Support Center can relocate to other emergency response facilities and resume their assigned functions.

The Heating, Ventilation and Air Conditioning (HVAC) for each Technical Support Center is designed to provide a suitable environment during normal and post-accident operation, including protection from post-accident radiological releases. The Technical Support Center HVAC System will be verified when positioned in the recirculation mode. Each respective Technical Support Center HVAC system is normally powered from a non-class 1E Motor Control Center. Each respective Technical Support Center emergency non-class 1E diesel generator can provide full load capability should power be lost. Each respective Technical Support Center diesel generator has the capability of continuous operation for a minimum of seven days.

Radiation monitoring and smoke detection capability, alarms and indications are provided in each respective Technical Support Center. Detection of high airborne levels of radioactive materials causes each respective Technical Support Center HVAC to automatically switch over to activated charcoal filtration. Detection of smoke levels above tolerance causes the system to automatically isolate.

Each Technical Support Center is designed to be activated within approximately 75 minutes after declaration of an Alert, in conjunction with activation of the Operations Support Center. The Technical Support Center may activate simultaneously with activation of the Operations Support Center.

G.4 Emergency Operations Facility

The Emergency Operations Facility is located in Bay City, Texas at 4000 Avenue F, approximately 12.5 air miles north-northeast of the Station. Figure G-4 depicts the location compared to the site. The floor plan of the Emergency Operations Facility is depicted on Figure G-5. When activated, the Emergency Operations Facility serves as the primary location for the following typical functions:

- *Coordination between Station and non-station organizations, such as the Department of State Health Services;*
- *A coordination center for the preparation and approval of news releases and bulletins for release of information to the media and notifications to offsite agencies;*
- *A central point for coordinating all Station offsite dose projection and radiological monitoring activities at the time of the emergency; and*
- *The primary location for coordinating both technical and non-technical support activities of personnel brought in to assist Station personnel.*

The Emergency Operations Facility provides for management of overall Station emergency response, coordination of radiological and environmental assessment, determination of recommended offsite protective actions, and coordination of emergency response activities with Federal, State, and County authorities. The Emergency Operations Facility can be activated within approximately 75 minutes of declaration of Site Area Emergency or higher. When activated, the Emergency Operations Facility will be staffed by Emergency Response personnel.

A qualified Emergency Operations Facility Director will manage activities in the Emergency Operations Facility.

Resources are provided in the Emergency Operations Facility for the acquisition, display, and evaluation of radiological and meteorological data and containment conditions necessary to perform accident assessment and determine protective measures. This equipment and instrumentation is described in Section H of this Plan.

The Emergency Operations Facility provides for occupancy by Nuclear Regulatory Commission, Federal Emergency Management Agency, State, County, American Nuclear Insurers, and Station Emergency Response Organization personnel.

The Emergency Operations Facility provides sufficient radiological protection and monitoring equipment to assure that radiation exposure to any person working in the Emergency Operations Facility will not exceed five (5) rem TEDE or twenty-five (25) rem thyroid CDE during the duration of a declared emergency. The Emergency

Operations Facility has the capability for decontaminating personnel and providing protective clothing.

G.5 Alternate TSC/OSC

For emergencies where the site is under threat of, or experiencing, hostile actions, Emergency Response Organization (ERO) members may not be able to safely access the on-site Technical Support Center (TSC) or Operations Support Center (OSC). Under these conditions, ERO members are directed to a staging area at an Alternative Facility located in the Emergency Operations Facility / Joint Information Center (EOF/JIC), which is located in Bay City, Texas at 4000 Avenue F, approximately 12.5 air miles north-northeast of the Station. Alternative Facility and Alternate TSC/OSC may be used interchangeably in this document or its implementing procedures. Use of the Alternative Facility by TSC and OSC ERO members will minimize delays in overall site response and allow for a swift, coordinated augmentation response when the site is deemed accessible. The EOF/JIC and Alternate TSC/OSC have equipment for communicating with the control room, and plant security. The EOF is capable of performing offsite notifications of a plant emergency. TSC and OSC personnel at the Alternate TSC/OSC have the capability to perform engineering assessment activities, including damage control team planning and preparation prior to returning to the site.

G.6 Joint Information Center

The Joint Information Center is where South Texas Project Nuclear Operating Company and Co-Owners, State, County and Federal Public Information personnel will coordinate information, issue news bulletins and participate jointly in news briefings. The Joint Information Center is located in Bay City, Texas at 4000 Avenue F, approximately 12.5 air miles north-northeast of the Station. The Joint Information Center shall function as a single authoritative source for disseminating information to the news media and the public. Once activated, the Joint Information Center will be capable of operating 24 hours per day for the duration of the declared emergency.

The Joint Information Center encompasses a working space of approximately 8000 square feet which accommodates approximately 250 people, including Station spokespersons and support staff, designated State, County and Federal Public Information personnel, communications equipment, and 120 news media representatives. In addition to the large work areas of the Joint Information Center, other smaller rooms will be made available for non-utility agencies to have private, separate working spaces. Figure K-1 provides a layout of the Joint Information Center. Procedure 0ERP01-ZV-OF02, Joint Information Center Activation, Operation and Deactivation describes the Joint Information Center layout and operation in detail.

G.7 State Operations Center and County Emergency Operations Centers

The State Operations Center and County Emergency Operations Center are activated by the respective authority to support State and County operations during a declared emergency. At the request of the appropriate State or County authorities, the State of Texas Liaison and Matagorda County EOC Liaison both of whom are familiar with Station operations and the Station Emergency Plan may be dispatched to the State Operations Center or County Emergency Operations Center. The Governor's Division

of Emergency Management State Operations Center, which serves as a communication hub for the Division and other elements of the Department of Public Safety, is staffed 24 hours a day. In the event of an emergency, including an incident at a nuclear generating plant, the State Operations Center can be partially or fully activated in a short time to coordinate the State's response to the incident. The State Operations Center is located in Austin, Texas, in the Department of Public Safety Headquarters building. The Matagorda County Emergency Operations Center is located in the Matagorda County Sheriff's Office. The liaisons function as advisor to the Emergency Operations Center Managers and could act as liaisons between those Managers and the Station Emergency Response Organization. These representatives will not act as spokespersons for the Station.

G.8 Nuclear Regulatory Commission Emergency Operations Center

The Nuclear Regulatory Commission will activate its Emergency Operations Center in Rockville, Maryland, and in Arlington, Texas in the event of a declared emergency classification of a Site Area Emergency or higher classification at the Station. Nuclear Regulatory Commission personnel can also be expected to arrive at the Station. Designated co-locations for Nuclear Regulatory Commission personnel have been established in the Operations Support Center, Technical Support Center and the Emergency Operations Facility. Space has been provided and allocated in the Station Emergency Operations Facility for use as the Nuclear Regulatory Commission Emergency Operations Center onsite. Basic roles provided by the NRC are as follows:

- *Monitor the Licensee to assure appropriate Protective Action is being taken with respect to offsite recommendations.*
- *Support the Licensee (Technical Analysis and Logistic Support)*
- *Support offsite authorities, including confirming the Licensee's recommendation to offsite authorities.*
- *Keep other Federal Agencies and Entities informed of the status of the incident.*
- *Keep the Media informed of the NRC's knowledge of the status of the incident, including coordination with other Public Affairs Groups.*
- *Intervene in a limited fashion to direct the licensee's on-site response in some unusual and very rare situations.*

G.9 Laboratory Facilities

The Station has radiological and radiochemistry laboratories located in each unit. The facilities are designed to provide quick and efficient analyses of samples from the Station process systems, Reactor Coolant System, and secondary systems. The specific instruments that are incorporated in the systems utilized for core damage assessment are certified to perform their intended functions in an accident environment with abnormal chemistry and radiation parameters. Environmental monitoring sample analysis can also be performed in either unit's facilities. The physical separation of the units will allow the facilities in the unaffected unit to be used

as a backup. The Station radiological and radiochemical laboratory facilities may be supplemented by the use of the following:

- *A mobile radiological laboratory set up at the staging area at the Bay City Civic Center and operated by the Department of State Health Services;*
- *The laboratory facilities of neighboring nuclear facilities as coordinated by the Institute of Nuclear Power Operations;*
- *Gel Laboratories LLC.; and*
- *Luminant (Letter of Agreement).*

G.10 Personnel Decontamination Facilities

Personnel decontamination facilities are located near the Station Radiologically Controlled Area egress point and in the Emergency Operations Facility. Personnel decontamination is performed at the Station using normal Radiation Protection Procedures

G.11 First Aid

A first aid station is located on the first floor of the Nuclear Support Center (NSC) Building and has provisions for treatment of minor injuries.

G.12 Maintenance/Damage Control

The Station is equipped to maintain and repair mechanical, structural, electrical and control instrumentation and equipment in the Station. Additional equipment may be requested from other utility facilities or contractors.

G.13 Emergency Response Facilities Data Acquisition and Display System (Units 1 and 2 only)

The Emergency Response Facilities Data Acquisition and Display System is an integrated system that performs the following functions:

- *Implementation of the Safety Parameter Display System as described in NUREG-0696 and NUREG-0737, Supplement 1;*
- *Data acquisition and signal processing for the Engineered Safety Features Status Monitoring System; and,*
- *Data acquisition and signal processing for other normal plant monitoring systems including the plant annnunciators and the plant computer.*

The Emergency Response Facilities Data Acquisition and Display System (called the System) functions are performed by several subsystems. The System is described in Table G-3. All displays provided for each facility are identical. The "Safety Parameter Display System" described in NUREG-0696 is implemented via the System. The design of the System is integrated with the implementation of Regulatory Guide 1.97 and the Control Room Design Review.

G.14 Plant Information & Control System- PICS (Units 3 and 4 only)

The information needed to support the Emergency Response Facilities will be provided through the Plant Information & Control System (PICS). PICS is the primary integration point for most plant control and monitoring systems and serves as the primary interface for the control room operator. The system provides the functions of the Safety Parameter Display System in accordance with NUREG-0696 and NUREG-0737, Supplement 1 through displays on the main control panels and various video display units in the main control room, TSC and EOF. The system also makes the full complement of plant status information available to all users. This includes the status of the reactor protection and ESF systems and the various process, area and environmental release point radiation monitors.

Table G-1 Emergency Supplies and Equipment
Typical Category Listing
Page 1 of 6

Emergency equipment used at the Station will be inspected, operationally checked, and inventoried in accordance with Emergency Plan Administrative Procedure 0PGP05-ZV-0009, Emergency Facility Inventories and Inspections. Sufficient reserves of instruments and equipment will be maintained to replace those removed for calibration or repair.

The Technical Support Center Emergency Equipment and Supplies shall include but not be limited to the following:

ITEM

- *Portable Radiological Survey Meters (Ion Chamber and Geiger Mueller) including friskers*
- *Portable Air Samplers with silver zeolite or activated charcoal filter canisters and particulate filters*
- *Radiation Monitoring System terminal*
- *Protective Clothing*
- *Check Source*

Table G-1 Emergency Supplies and Equipment
Typical Category Listing
Page 2 of 6

The Operations Support Center Emergency Equipment and Supplies should include but not be limited to the following:

ITEM

- *Auxiliary Lighting*
- *Radios (two way radio transceivers)*
- *First Aid Equipment*
- *Respiratory Protection Devices*
- *Portable Radiological Survey Meters (Ion Chamber and Geiger Mueller) including friskers*
- *Personnel Monitoring Devices including thermoluminescent dosimeters and pocket self reading dosimeters.*
- *Office Supplies*
- *Protective Clothing*
- *Portable air samplers with silver zeolite or activated charcoal filter canisters and particulate filters.*
- *Check Source*
- *Self Contained Breathing Apparatus*

Table G-1 Emergency Supplies and Equipment
Typical Category Listing
Page 3 of 6

The Emergency Operations Facility Emergency Equipment and Supplies should include but not be limited to the following:

ITEM

- *First Aid Kit and decontamination supplies.*
- *Site Boundary Map, 10 mile and 50 mile Emergency Planning Zone Maps*
- *Status boards*
- *Office Supplies*
- *Portable Radiological Survey Meters (Ion Chamber and Geiger Mueller)*

- *Portable Air Sampler with silver zeolite or activated charcoal filter canisters and particulate filters.*
- *Personnel Monitoring Devices including thermoluminescent dosimeters and pocket self reading dosimeters (including high range self reading dosimeters)*
- *Check Source*
- *Protective clothing*
- *Dose calculation manual and associated tables.*

Table G-1 Emergency Supplies and Equipment
Typical Category Listing
Page 4 of 6

The Control Room Envelope Emergency Equipment and Supplies should include but not be limited to:

ITEM

- ****Portable Air Sampler with silver zeolite or activated charcoal filter canisters and particulate filters*
- *Respiratory Protection Devices*
- *Protective Clothing*
- *Self-Contained Breathing Apparatus*
- *Radiation Monitoring System Terminal and Dose Assessment Computer*

****This equipment is available at the Unit 1 and 2 41' Access Control Point at the Operations Support Center Unit 1 and 2.*

This equipment is available in the Service Buildings for Unit 3 and 4.

Table G-1 Emergency Supplies and Equipment
Typical Category Listing
Page 5 of 6

Matagorda Regional Medical Center and Palacios Community Medical Center Emergency Rooms

ITEM

Decontamination Supplies

- *Cotton Applicators*
- *Abrasive Soap*
- *Decon Soap*
- *Hand Brush*

Radiation Survey Equipment and Supplies

- *Portable Geiger Mueller. Survey Meter*
- *Radiation Warning Signs and Tape*

Clothing and Miscellaneous

- *Gowns*
- *Caps*
- *Shoe Covers*
- *Gloves*

Documents and Procedures

- *Matagorda County Hospital District Radiological Emergency Preparedness Plan*

Table G-1 Emergency Supplies and Equipment
Typical Category Listing
Page 6 of 6

The Field Monitoring Equipment and Supplies should include but not be limited to the following:

ITEM

- *Portable Radiological Survey Meters (Ion chamber and Geiger Mueller).*
- *Portable Air Sampler (12 Volt) with silver zeolite or activated charcoal filter canisters and particulate filters.*
- *Radios (two way radio transceivers)*
- *Personnel Monitoring Devices including thermoluminescent dosimeters, self-reading pocket chambers and lapel-type air sampler (s).*
- *Check Source*
- *First Aid Kit*
- *Area Map with pre-selected monitoring/reference points*
- *Gloves and Shoe Covers*
- *Sampling Supplies (labels, smears, bags, pens, etc.)*
- *Respiratory Protection Devices*

Table G-2 Typical Emergency Response Facility Records
Plant Records Storage
Page 1 of 1

Plant records necessary to perform the functions of the onsite Emergency Response Facilities will be available in and/or at the facilities. The records include:

RECORDS DESCRIPTION	*CONTROL ROOM*	*TECHNICAL SUPPORT CENTER*	*OPERATIONS SUPPORT CENTER*	*EMERGENCY OPERATIONS FACILITY*
Plant design documents such as Piping & Instrumentation, Control Logic, and Electrical Elementary Diagrams	✓	✓	✓	✓
Radiation Zone Drawings	✓	✓	✓	✓
Updated Final Safety Analysis Report	✓	✓	✓	✓
Emergency Operating Procedures	✓	✓	✓	✓
Emergency Plan and Procedures	✓	✓	✓	✓
Demographic Information	✓	✓		✓
Maps of the Emergency Planning Zone	✓	✓		✓
Plant Technical Specifications	✓	✓		✓
Plant Operating Procedure and Records	✓	✓		✓
Plant Curves Manual	✓	✓		✓

Table G-3 Emergency Response Facilities Data Acquisition and Display System Units 1/2

Integrated Computer System (ICS) - ERFDADS Subsystem - The ERFDADS functions are performed by several subsystems. Data acquisition is provided by the ICS through distributed processing units and through high speed datalinks from Qualified Display Processing System (QDPS), the Meteorological System (MET), and the Radiation Monitoring System (RMS). ERFDADS performs the required data processing for offsite datalinks to the NRC ERDS. ICS work stations (i.e. CRT, CPU, & keyboard) are provided in the Control Room (CR), Technical Support Center (TSC), Auxiliary Shutdown Panel (ASP), and Emergency Operations Facility (EOF).

The ERFDADS is a distributed subsystem of ICS that performs the following functions:

- *Implementation of the Safety Parameter Display System (SPDS) as described in NUREG-0696 and supplement 1 to NUREG-0737.*
- *Data acquisition and signal processing for the normal plant monitoring systems, including portions of the plant annunciator.*
- *Data acquisition and signal processing for the ESF Status Monitoring System.*

Safety Parameter Display – The SPDS, as described in NUREG-0696 and NUREG-0737 Supplement 1, is implemented via the ERFDADS. The design of the ERFDADS is integrated with the implementation of RG 1.97.

- *The ERFDADS provides plant and environmental data to aid operators and management in the CR, TSC, and EOF to respond quickly to abnormal operating conditions and mitigate the consequences of an accident. The ERFDADS functions during normal operations and emergencies to provide the following services:*
- *Provide plant and environmental data required for the reactor operators to quickly assess the safety status of the plant.*
- *Allow technical personnel access to comprehensive plant data, enabling them to assist operators without adding to the number of personnel in the control room.*
- *Provide reliable plant data to the CR, TSC, ASR, and EOF.*
- *Aid the operators in the detection of abnormal operating conditions.*
- *Assist in the identification of the causes leading to any abnormalities.*

Table G-3 Emergency Response Facilities Data Acquisition and Display System Units 1/2
Page 2 of 3

- *Monitor plant response to corrective actions.*
- *Provide grouping of parameters to enhance the operators' ability to assess plant status quickly without surveying all CR displays.*
- *Provide human factors engineered display formats (simple and consistent display patterns and coding).*
- *Provide display information on a real-time basis, along with validation of data and functional comparison capability.*

Provide display information on a real-time basis for monitoring the RG 1.97 variables, these variables are utilized to monitor the critical safety functions of:

- *Subcriticality*
- *Reactor coolant system integrity*
- *Reactor coolant inventory*
- *Reactor core cooling*
- *Heat sink maintenance*
- *Containment environment*

Distributed Processors - The ICS-ERFDADS subsystem consists of non-Class 1E equipment that is utilized to receive field inputs from the RG 1.97 -defined analog and digital variables and other supplementary information directly from the QDPS, MET, and RMS via redundant high speed datalinks.

The ICS performs any data processing required beyond that performed by the remote data acquisition equipment. Redundant distributed processing units are provided with adequate memory capacity to support ICS data acquisition, management, and transmission functions on a real time basis.

Man/Machine Interface - ICS workstations (CRT, CPU & keyboard) are located in the CR, TSC, ASP, and EOF to present ICS information (i.e. ERFDADS and Plant Computer) to operators and management in a concise, easily intelligible format.

Table G-3 Emergency Response Facilities Data Acquisition and Display System Units 1/2

The primary SPDS display page is available on all ICS workstations.

Power Supply - The ERFDADS related equipment, located within the power block including peripherals, is provided with power from a dedicated non-Class 1E uninterruptable power supply (UPS) capable of maintaining system operation for two hours. All ERFDADS equipment normal AC power to the UPS is provided from a non-Class 1E diesel generator-backed bus. The subject equipment is defined and controlled in accordance with plant procedures for the associated design documentation.

ERFDADS equipment located within the EOF and equipment used to support communication with the EOF, is provided with reliable 120 vac power that includes a generator backed source.

System Operational Requirements - The ERFDADS data channels meet the 99-percent-availability requirement defined in NUREG-0696 Section 1.5 under pressure and temperature conditions exceeding cold shutdown conditions. The SPDS system meets an 80-percent-availability requirement during plant cold shutdown conditions.

Data processing through ICS is qualitatively comparable with other Post-Accident Monitoring System, RMS, and QDPS data displayed in the CR with respect to accuracy and response time.

ICS, PICS, and ERFDADS are further described in the Final Safety Analysis Report (FSARs).

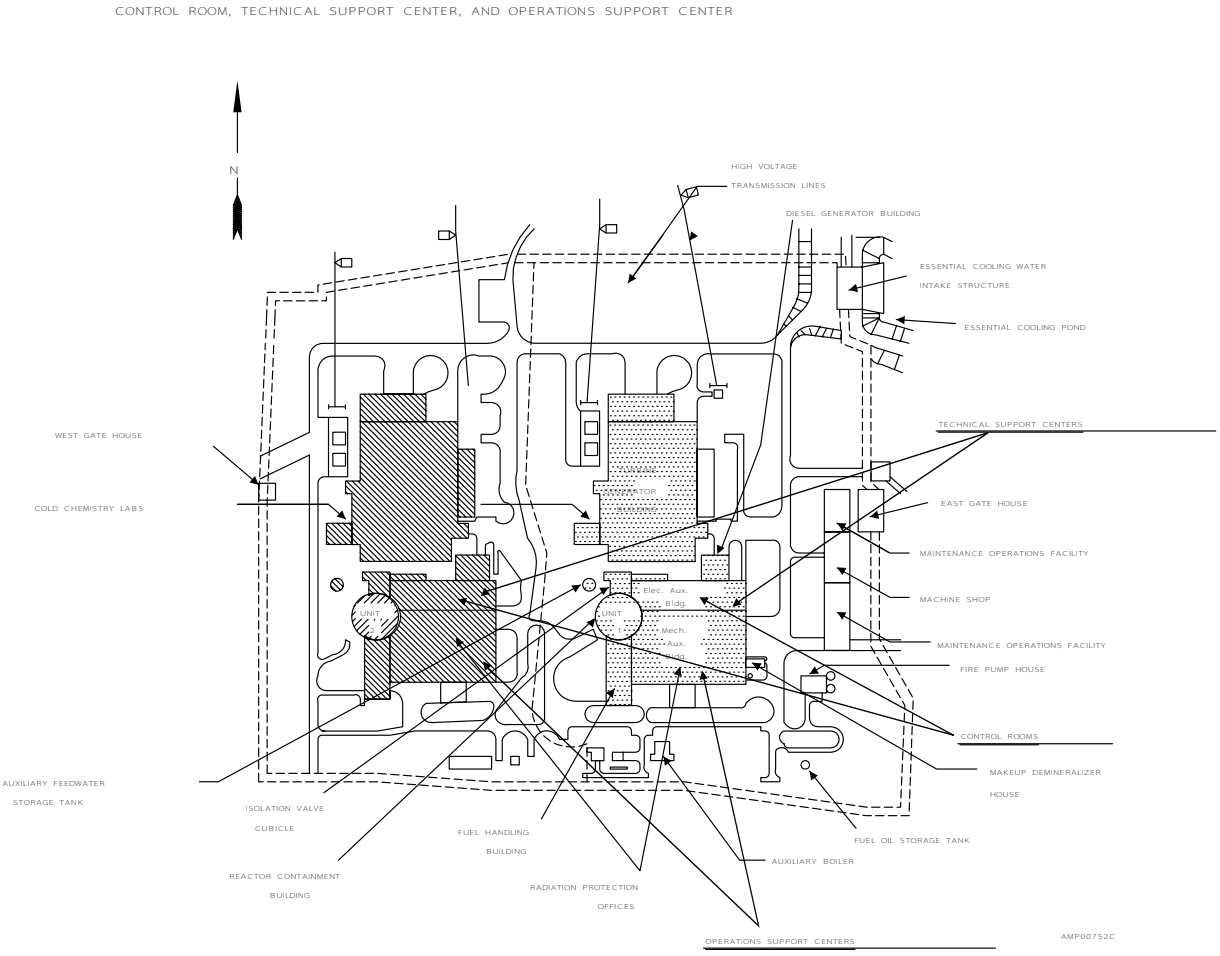

Figure G-1 Control Room, Technical Support Center, and Operations Support Center Locations Units 1 and 2
Page 1 of 1

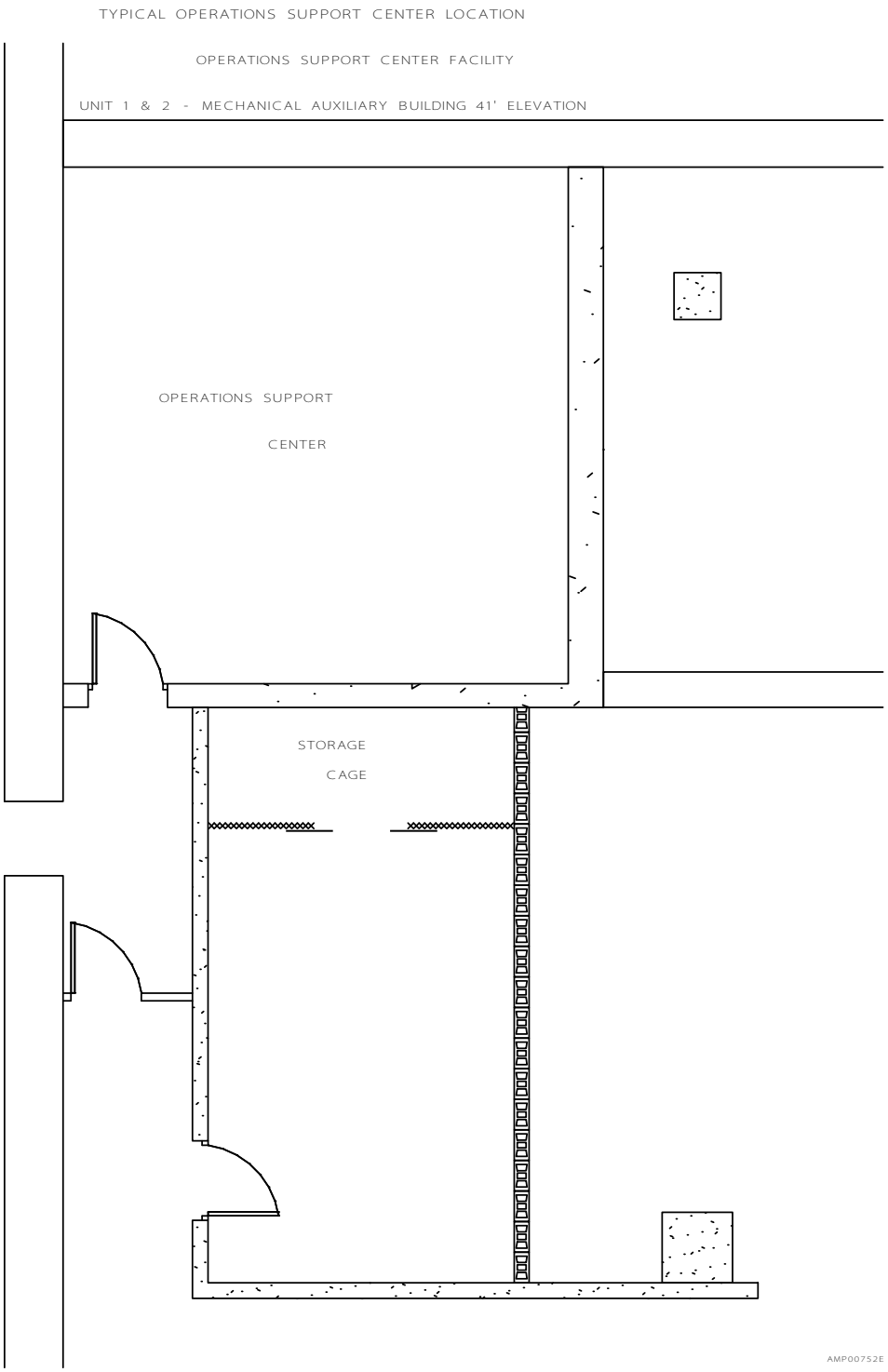

Figure G-2 Typical Operations Support Center*
Page 1 of 1

**This layout applies to Unit 1 and Unit 2 Operations Support Centers*

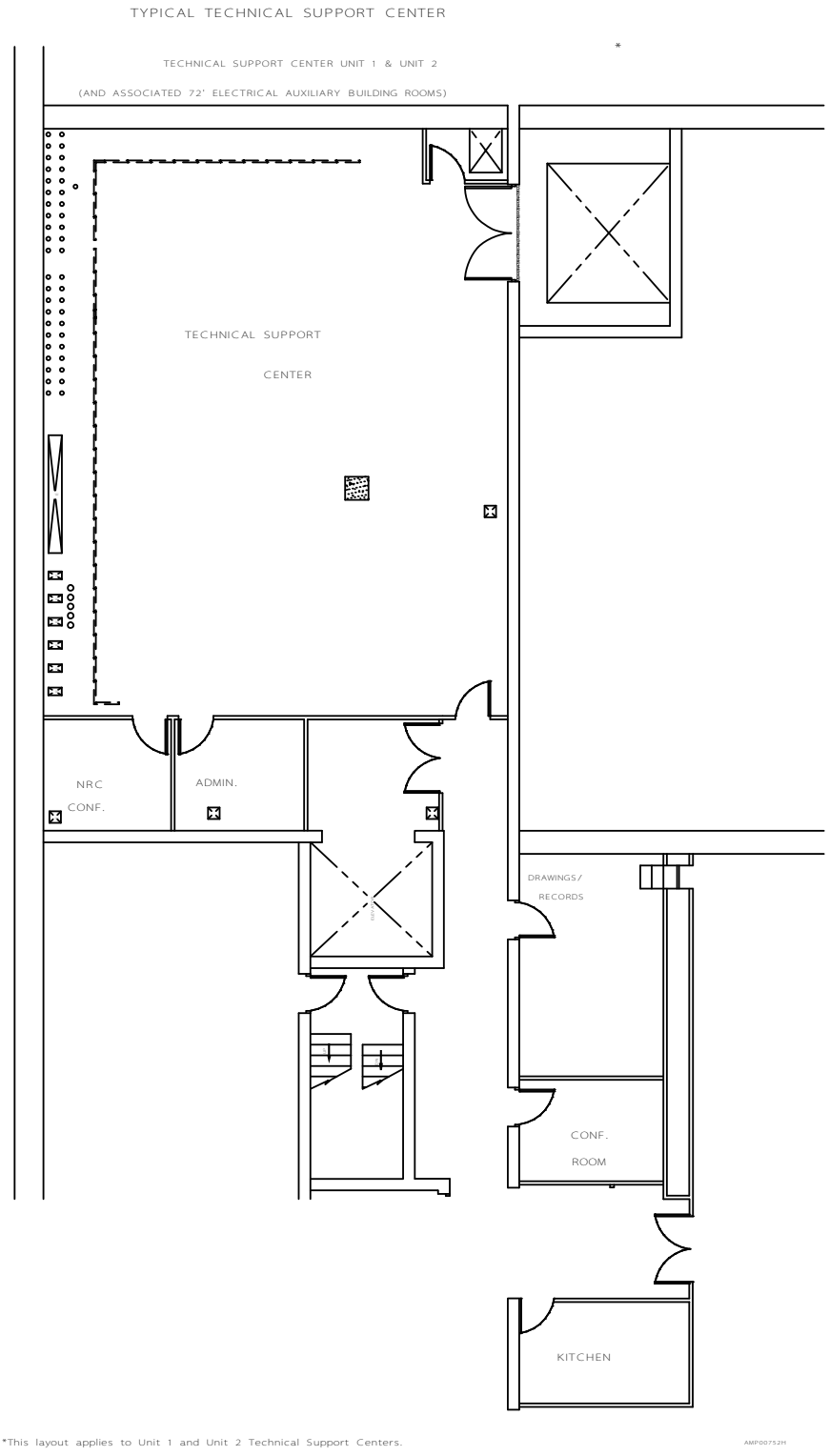

Figure G-3 Typical Technical Support Center*
Page 1 of 1

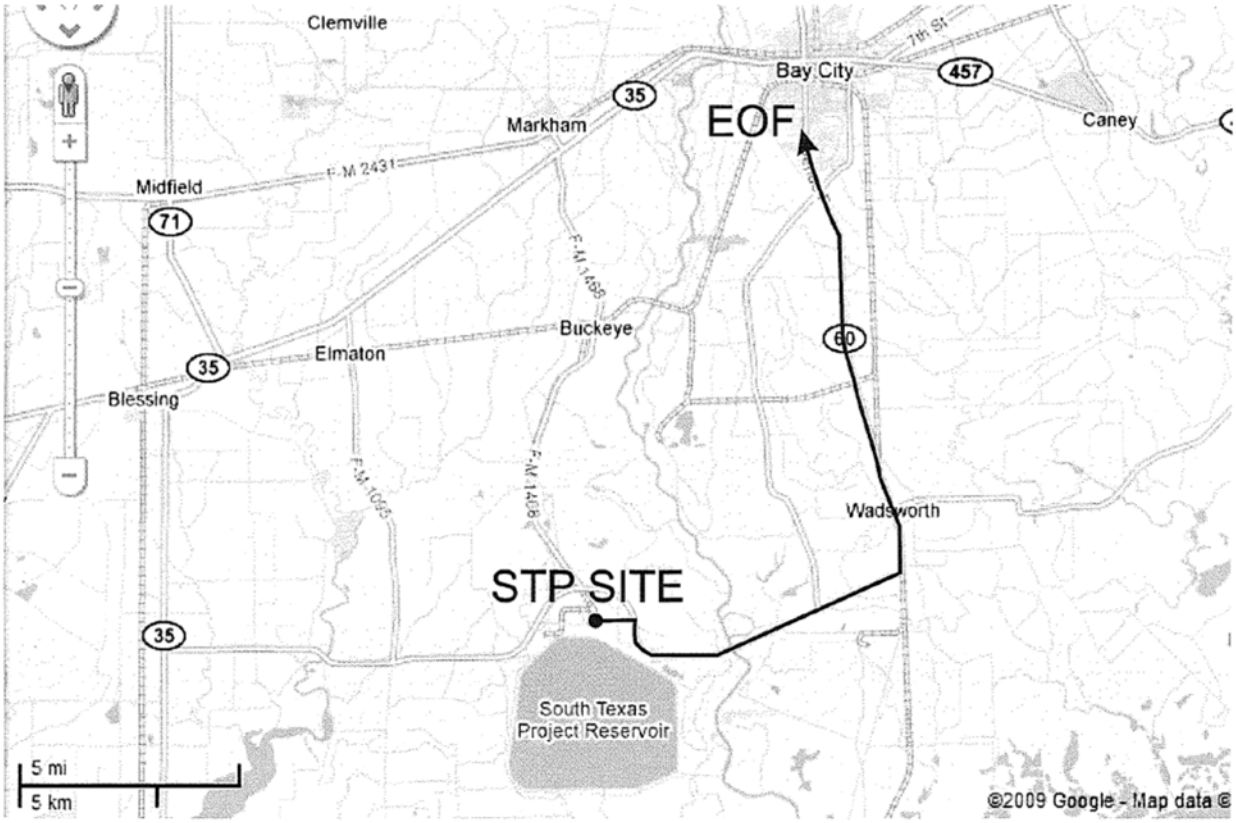

Figure G-4 Location of Emergency Operations Facility Relative to South Texas Project Site
Page 1 of 1

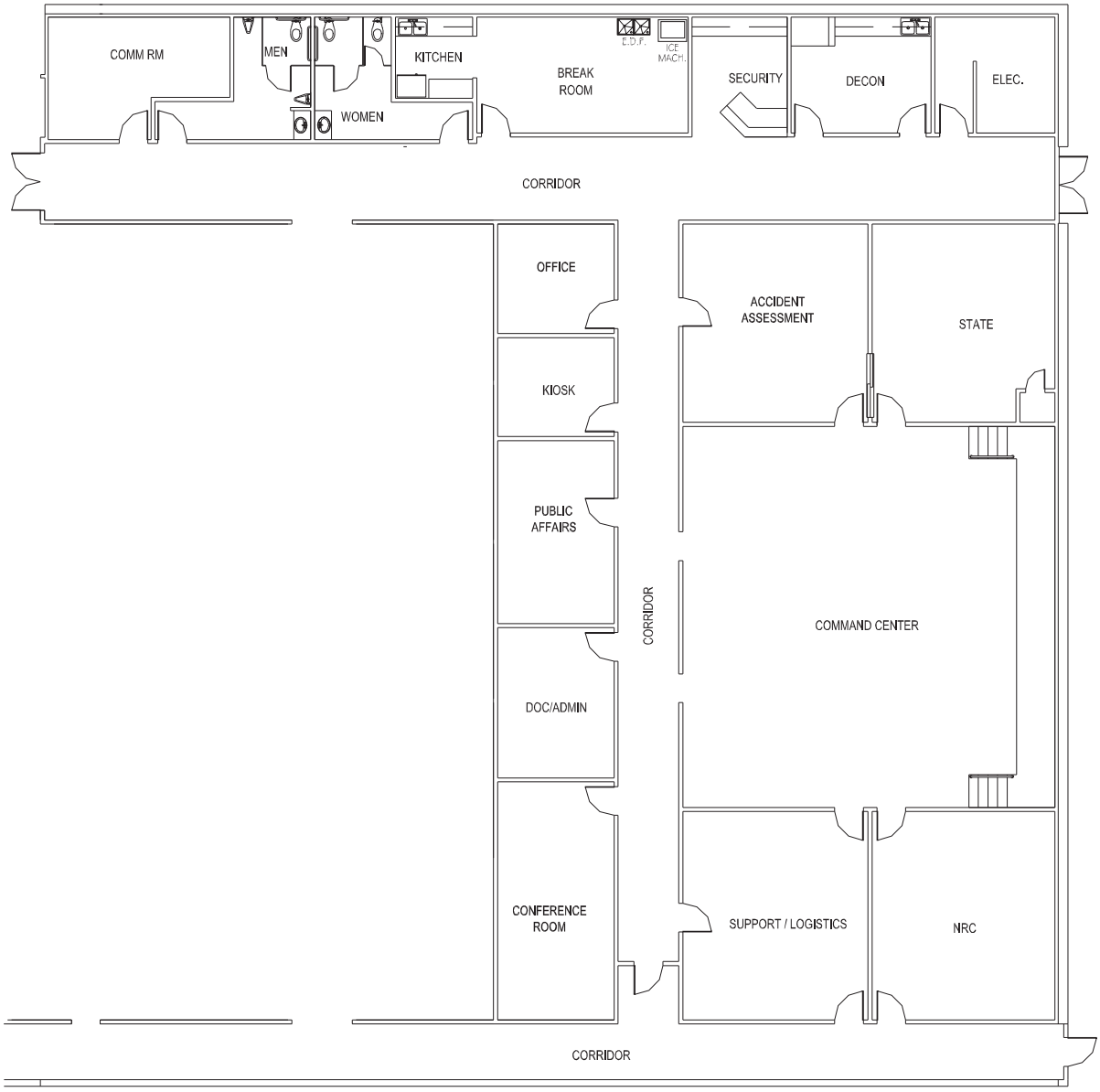

Figure G-5 Typical Emergency Operations Facility
Page 1 of 1

**This layout applies to Unit 3 and Unit 4 Operations Support Centers located in the Service Buildings.*

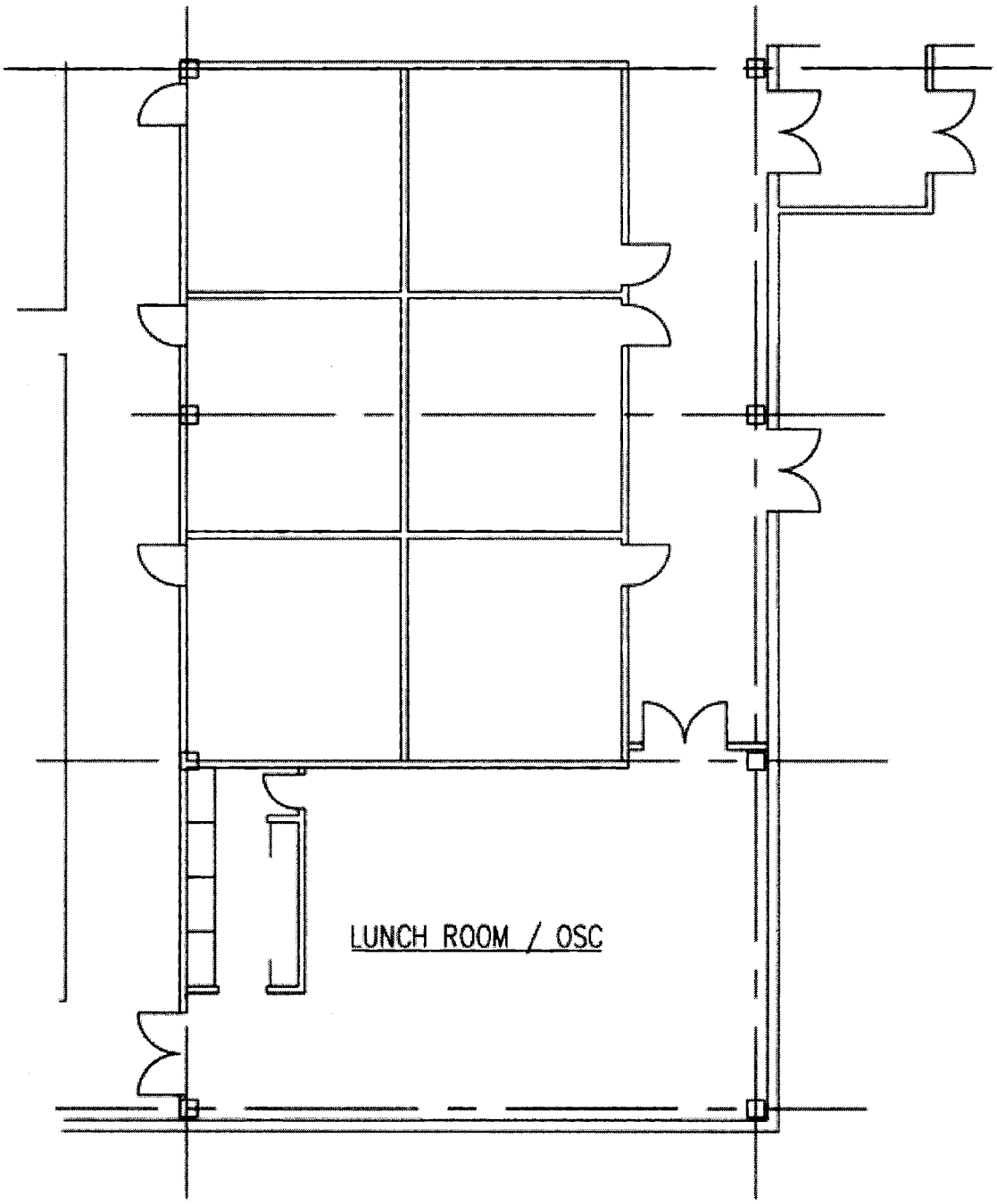

Figure G-6 Typical Operations Support Center*
Page 1 of 1

**This layout applies to Unit 3 and Unit 4 Technical Support Centers located in the Service Buildings.*

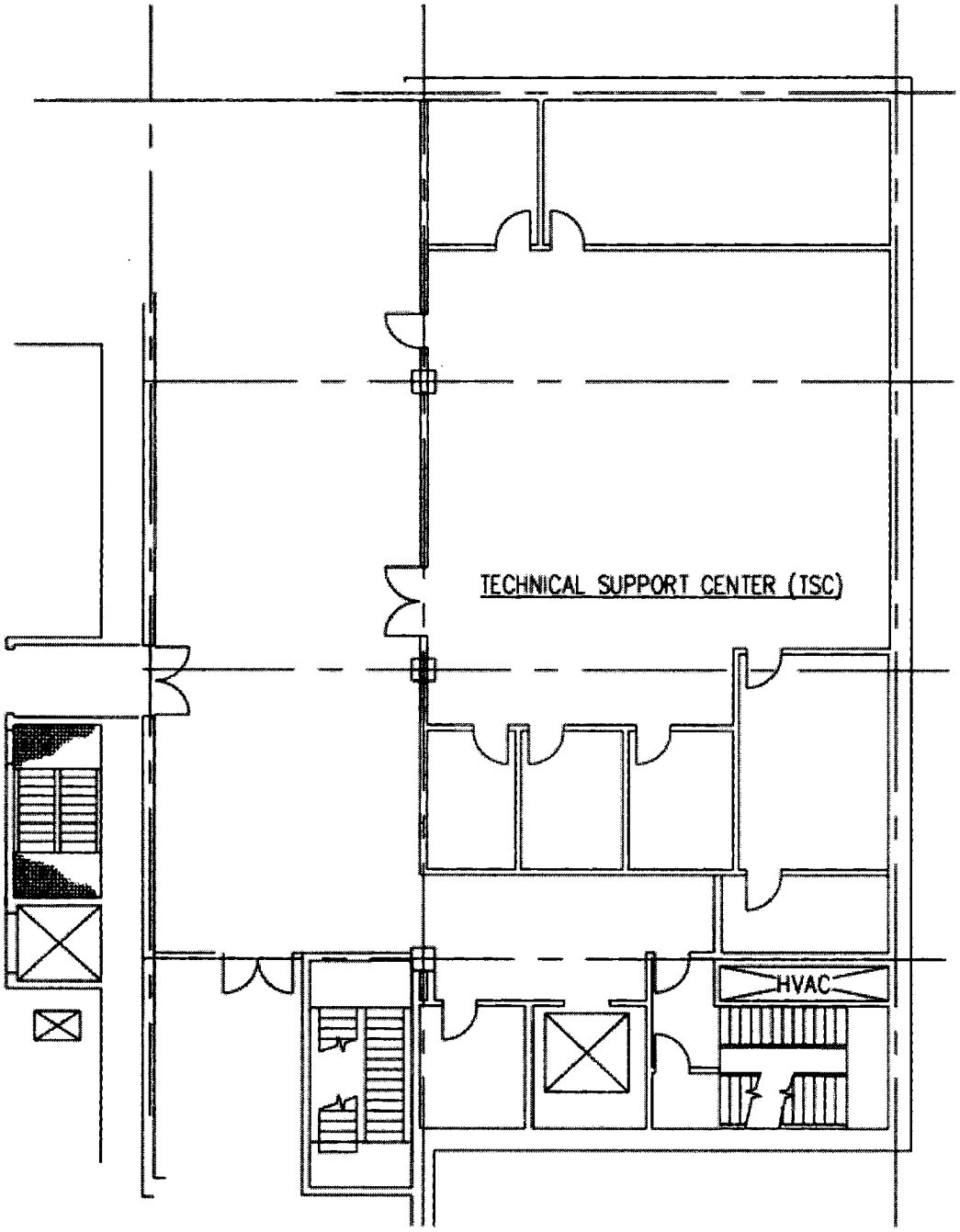

Figure G-7 Typical Technical Support Center*
Page 1 of 1

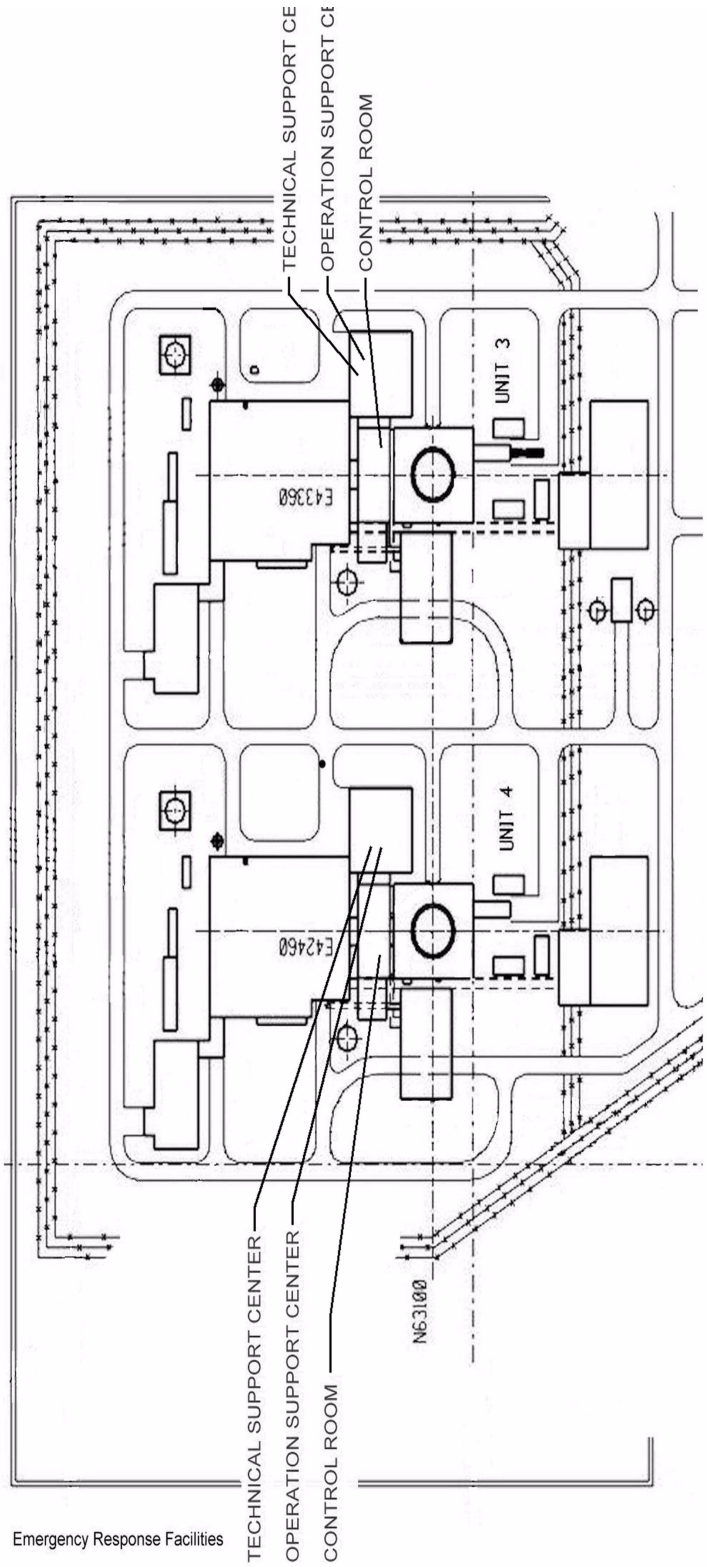

Figure G-8 Control Room, Technical Support Center, and Operations Support Center Locations Units 3 and 4
Page 1 of 1

H Accident Assessment

This section of the Plan describes the techniques, methods and procedures for the initial and long-term assessment of the declared emergency classification at the Station. At the first indication of abnormal conditions, initial assessments are performed. Necessary actions are then taken by the onsite plant staff to classify the emergency, mitigate the conditions, recommend offsite protective actions, and initiate the appropriate emergency response action. When notified that an abnormal condition exists, the Shift Supervisor is responsible for making the immediate assessments, classifying the event, and initiating notifications. Offsite protective action recommendations are included on the notification form in accordance with Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies.

An initial protective action recommendation is included in the Emergency Response Procedure 0ERP01-ZV-SH01, Shift Supervisor, and 0ERP01-ZV-IN07, Offsite Protective Action Recommendations.

If the situation dictates, the Shift Supervisor may activate the Station's Emergency Response Organization. When activated, the Station Emergency Response Organization personnel perform accident assessment activities and the Emergency Director determines appropriate offsite protective action recommendations.

The long-term or continuing accident assessment is performed by the Station Emergency Response Organization. The Station Emergency Response Organization formulates recommended protective actions and implements long-term offsite monitoring (radiological data gathered from the plume exposure pathway is analyzed and communicated to the Station). Monitoring teams systematically monitor the onsite and offsite environs using the functional plant instrumentation and portable instruments, as necessary. Assessment continues for the duration of the event and Recovery. Federal, State, and County emergency organizations will be notified for assistance as required. The radiological assessment procedures used by the Station Emergency Response Organization include 0ERP01-ZV-IN06, Radiological Exposure Guidelines, 0ERP01-ZV-TP01, Offsite Dose Calculations, and 0ERP01-ZV-IN07, Offsite Protective Action Recommendations.

The criteria for Emergency Action Levels used to classify an emergency are incorporated in Emergency response procedures for Emergency Classification to assist the Shift Supervisor in recognizing and declaring the appropriate emergency classification. The instrumentation available to the Shift Supervisor to perform this assessment is described in the Final Safety Analysis Reports for the Station.

H.1 Assessment Resources

The following resources are available for detection/assessment of events:

H.1.1 Fire Detection Systems

The fire detection equipment, alarms, and suppression equipment are described in Section 9.5 and 9.A of the Station Final Safety Analysis Reports and in the Station Fire Hazard Analysis Report. In general, standpipe and hose systems, together with

portable extinguishers, are provided in all buildings throughout the Station, except the demineralizer building for Units 1 and 2. Additionally, the following systems are provided in selected areas to enhance the total fire protection and detection program:

- *Automatic wet pipe sprinkler system*
- *Manual pre-action dry pipe system*
- *Manual pre-action sprinklers*
- *Water spray deluge system*
- *Foam-water sprinklers*
- *Hydrants*
- *Halon system*
- *Carbon Dioxide system*

H.1.2 Seismic Monitoring

The seismic monitoring system is described in Section 3.7 of the Station Final Safety Analysis Reports. The seismic instrumentation is a triaxial time history accelererometer unit with programmable alarm, trigger, memory, recording and data retrieval capabilities and computer interface. The appropriate trigger condition will be selected to start data capture for later analysis. Settings for the instrument's pre-event memory and length of time that data is recorded will be selected so that the significant ground motion associated with the earthquake is recorded. The recorded information can be analyzed and displayed using software supplied with the machine. This software will display the measured response spectrum to be compared with the Operating Basis Earthquake (OBE) and Safe Shutdown Earthquake (SSE) response spectrum. The seismic instrumentation locations are identified in the Station's Final Safety Analysis Reports.

H.1.3 Plant Process Instrumentation

The plant process instrumentation consists of various pressure, temperature, and level indicators of the Reactor Protection System and the Engineered Safety Feature System.

Instruments which provide information to the Plant Operations Staff for monitoring conditions in the reactor, reactor coolant system, and containment, and specific instrumentation designations and ranges are listed in the Unit Technical Specifications. These instruments provide information necessary for the rapid assessment of emergency conditions within the Station.

Additionally, the instrumentation provides data in the Control Room, Technical Support Center and the Emergency Operations Facility via the Emergency Response Facilities Data Acquisition and Display System or Plant Information and Control System.

H.1.4 Liquid Radiation Monitor

A liquid radiation monitor is provided for gross failed fuel detection. The monitor obtains a continuous sample from the reactor coolant system and activates an alarm on the Radiation Monitoring System if a predetermined activity level is reached. The monitor is described in Section 11.0 of the Station Final Safety Analysis Reports.

H.1.5 Radiation Monitoring System

The Station has a system for monitoring radioactivity throughout the Station. This system is called the Radiation Monitoring System and consists of area and process/effluent radiological monitoring instrumentation. More information on the Radiation Monitoring System can be found in Section J of this Plan and is described in detail in Section 12.3 of the Station Final Safety Analysis Reports.

H.1.6 Meteorological System

The Station has two permanent meteorological towers near site for the analysis of current Station area meteorological data. The primary tower is a 60-meter (196.9 feet) tower, instrumentation, and computerized data output. The primary tower instrumentation includes sensors to measure wind direction, wind speed, air temperature, dew point, solar radiation, precipitation, and calculated differential temperatures between elevations. Data from the primary tower is relayed to the Station. This data is displayed by the Integrated Computer System (ICS/ERFDADS/PICS) and the Control Room meteorological instruments Table H-1 provides details on instrumentation and elevations of primary meteorological instrumentation.

The backup system consists of a 10-meter (32.8 feet) tower with similar but fewer instruments to measure air temperature, wind speed, and wind direction.

Data from either tower can be fed by independent digital processors to the Control Rooms, Technical Support Centers, Emergency Operations Facility, the Nuclear Regulatory Commission and State and County offices through direct dial modem communications.

Weather forecasts are available from the National Weather Service by telephone. The Station has the option of using contracted commercial weather service or the National Weather Service.

H.1.7 Plant Liquid Systems

Analyses of plant liquid systems may be performed to help ascertain the nature of problems detected by other instrumentation (prior to an emergency). The samples will be collected and analyzed in accordance with Station Chemistry and Radiochemistry procedures.

H.1.8 Gaseous Effluent Radiation Monitoring System

The Gaseous Effluent Radiation Monitoring System is based on the Radiation Monitoring System multiple channel analysis. Each channel consists of a sampling

mechanism, one, two, or three chambers for particulate, iodine, and/or noble gas collection and detection, associated with auxiliary equipment and a local microprocessor. The system is capable of monitoring particulate activity and iodine and noble gas concentrations, in accident and normal ranges. Location of detectors for the process/effluent Radiation Monitoring System is provided in table form in Section 11.5 of the Station Final Safety Analysis Reports.

H.2 Objectives of Onsite and Offsite Monitoring

The primary objective of the Onsite and Offsite Emergency Response Teams is to rapidly survey areas in order to determine the extent and distribution of radioactive material following an incident. The initial onsite and offsite surveys are important in the decision process since the extent and type(s) of protective actions will be based upon data reported by the survey teams.

Data provided to the Radiological Director from the field monitoring teams shall be compared to information supplied to the dose projection and assessment area by any Department of State Health Services teams that may be dispatched into the area. Data collected before Texas Department of Health teams are in the field shall be provided to the Department of State Health Services by the Radiological Director as soon as possible.

The task of each Offsite Field Team is to collect air samples and survey data so as to transmit information and results to the appropriate response center (i.e., the Control Room, Technical Support Center, and Emergency Operations Facility). 0ERP01-ZV-TP02, Offsite Field Teams provide process and procedural requirements for Offsite Field Teams. Information obtained by the Offsite Field Team is transmitted to the Offsite Field Team Supervisor as appropriate to the phase of the response, via radio contact. After the initial urgency of the post-accident situation has relaxed, subsequent surveys will be performed to obtain more information.

The systems and equipment described in this section and the personnel resources described in Section B and C of this Plan allow for continuous monitoring and assessment of abnormal radiological conditions.

Within minutes of the declaration of an emergency, monitoring of the plant systems is established to assess potential releases or the extent of an actual release and to provide guidance for appropriate protective measures. This includes the capability to deploy an Offsite Field Team. Offsite Field Teams may be deployed after declaration of an Alert or higher emergency classification with an effluent monitor indication of a higher than normal release of radioactive materials or an unmonitored release. Field monitoring data and samples shall be collected and analyzed per normal Station Radiation Protection procedures and Radiological Environmental Monitoring procedures. Data from Federal, State, and County organizations are coordinated with the Station through their representatives at the Station Emergency Operations Facility with the Radiological Director.

The principal early concerns are thyroid dose commitment, due to inhalation of radioactive iodines, and exposure from immersion in a cloud of radioactive noble

gases. Criteria for taking protective actions such as evacuation are expressed in terms of these two variables. Following this, efforts will normally be directed toward the evaluation of possible long-term exposures from ground deposition and various food chain pathways. Monitoring will continue throughout the duration of the emergency classification to allow for offsite protective action recommendation escalation, recovery or termination (with concurrence of County, State, and NRC organizations) as dictated by environmental sampling results.

Offsite Field Teams may be deployed to take dose rate readings and iodine concentrations in accordance with 0ERP01-ZV-TP02, Offsite Field Team. The Radiological Director will provide direct input to the Emergency Director concerning the need to make protective action recommendations to offsite agencies.

Environmental radiological impact analysis is available using computerized dose assessment models or equivalent. This is more adequately detailed in Emergency Response Procedure 0ERP01-ZV-TP01, Offsite Dose Calculations.

Table H-1 Assessment Instrumentation
Page 1 of 4

Typical Onsite Assessment Equipment and Facilities

	INSTRUMENT SYSTEM	DESCRIPTION & LOCATION	FUNCTIONAL APPLICABILITY
1.	Meteorological Monitors		
	Meteorological Wind Speed	Wind speed indicators located on primary (60m) and backup (10m) towers on northeastern portion of the site	Measures wind speed at 10m and 60m above ground level
	Wind Direction	Wind direction indicators located on primary (60m) and backup (10m) towers on northeastern portion of the site	Measures wind direction at 10m and 60m above ground level
	Temperature Differential	Temperature sensors located on primary (60m) tower and backup (10m) towers on northeastern portion of the site	Measures temperature at 10m and 60m above ground level for computation of differential temperature
	Precipitation	Heated gage near ground level at the primary tower	Provides measurement of precipitation levels
	Dewpoint	Sensed via a dewpoint probe dewpoint membrane (vapor window), dewpoint cell and a temperature probe sensor located at 3 meters on the Primary Meteorological Tower	Provides atmospheric dewpoint measurement for the site environs
	Computer	Data acquisition computers at primary and back up towers tied to ICS/ERFDADS/PICS	Provides data link for meteorological information

Table H-1 Assessment Instrumentation
Page 2 of 4

Typical Onsite Assessment Equipment and Facilities

	INSTRUMENT SYSTEM	DESCRIPTION & LOCATION	FUNCTIONAL APPLICABILITY
2.	Seismic Monitor	A triaxial accelerometer unit with programmable alarm, trigger, memory, recording and data retrieval capabilities and computer interface	Record ground and peak orthogonal accelerations with respect to time
3.	Radiation Monitoring System		
	A. Area Radiation Monitoring System		
	B. Process/Effluent Radiation Monitoring System		
4.	Fire Protection System		
	A. Spot Thermal Detector		Detect fixed temperature or rate of temperature rise; activates an alarm
	B.Ionization Detector		Detect nonvisible smoke and combustible gases; activates
	C. Ultraviolet Flame Detector		Detect flame or spark; activates an alarm
	D. Photoelectric Detector		Detect visible smoke; activates an alarm

Table H-1 Assessment Instrumentation
Page 3 of 4

Typical Onsite Assessment Equipment and Facilities

INSTRUMENT SYSTEM	DESCRIPTION & LOCATION	FUNCTIONAL APPLICABILITY
E. Line Type Thermal Detector		*Sufficient heat from source activates an alarm*
F. Fire Protection System Display Unit 1 and 2 Main Control Room		*A Cathode Ray Tube linked to the unit computers provides for appraisal of Fire Protection System incoming alarms and system actuation's in each Control Room*
G. Fire Protection System Display Unit 3 and 4 Main Control Room		A video display Unit linked to the unit computer system provides for appraisal of Fire Protection System incoming alarms and system actuation's in each Control Room
5. Facilities		
A. Radiological Laboratory Equipment and Detectors	*Chemical analysis count room of each unit*	*Equipped for radiological/ chemical analysis*
B. Environmental Surveillance Program	*Thermoluminescent dosimeter monitoring stations*	*Measures radiation dose*
	Fixed air sampling stations outside security fence	*Sample particulate and radioidines*

Table H-1 Assessment Instrumentation
Page 4 of 4

Typical Onsite Assessment Equipment and Facilities

	INSTRUMENT SYSTEM	DESCRIPTION & LOCATION	FUNCTIONAL APPLICABILITY
6.	Seismic Monitoring	National Earthquake Information Center	Detect and quantify horizontal and vertical ground motion
	Meteorological	National Weather Service	Forecasting and routine weather observations
7.	Radiation Monitoring Ambient Levels (Station)	Permanent thermoluminescent dosimeter stations, both on and offsite	Estimation of background and integrated doses
	Airborne Monitoring (Station)	10 fixed air sampling stations located offsite	Monitor particulate and radioiodines in air
	Emergency Response Vehicle (ERF) [Department of State Health Services]	Portable radiation monitoring instruments	Emergency mobile lab with equipment for support of offsite field teams
	Department of State Health Services Mobil Laboratory	Multi-channel analyzer portable air sampler with silver zeolite cartridges in Staging Area	Emergency lab portable equipment for field assessment by field monitoring teams
8.	Radiological Laboratory	Onsite, each unit	Environmental monitoring sample analysis

I Protective Response

This section of the Plan describes the protective response actions for the protection of site and offsite personnel in the plume exposure pathway. This Emergency Plan is applicable to the South Texas Project Electric Generating Station and the Emergency Planning Zone within the 10-mile and 50-mile radius of the Station. Maps depicting the 10 and 50 mile Emergency Planning Zones are included as Figures I-1 and I-2.

I.1 Onsite Personnel Notification

Onsite personnel are notified of an emergency via the Station Public Address Paging System. The Emergency Director, or his designee, will announce the emergency classification and other pertinent data relating to the emergency classification to Station personnel using the Station Public Address Paging System on site. This system is described in Section E of this Plan. Persons within the Protected Area are notified of the emergency classification via the Public Address Paging System. Notification of personnel located onsite but outside the Protected Area is accomplished through emergency sirens, Public Address announcements, pocket pager activation, and by Security Force personnel. To comply with emergency classification and severity, evacuation within the Protected Area will be initiated for non-essential personnel at a Site Area Emergency classification or if not already performed at a General Emergency classification (optional at an Unusual Event or Alert). The sounding of the alarms over the Public Address Paging System occurs for both classifications. Inside plant buildings, where hearing is difficult due to high ambient noise levels, flashing lights are used to supplement the Public Address Paging System.

I.2 Assembly and Accountability

Protected Area assembly and accountability is initiated at the Emergency Director's discretion or when either a Site Area Emergency or a General Emergency has been declared. Protected Area assembly and accountability must be initiated when a Site Area Emergency or General Emergency is involved. Appropriate actions are implemented by 0ERP01-ZV-IN04, Assembly and Accountability and in Section F.3 of this Plan.

I.3 Site Evacuation

Site evacuation will be performed in accordance with 0ERP01-ZV-IN05, Site Evacuation and Section F.5 of this Plan, after assembly and accountability is completed.

I.4 Onsite Shelter

The Emergency Response Organization (ERO) monitors hazards and appropriate protective actions are taken for emergency workers. Station nonessential personnel shelter instructions are contained in Emergency Response Procedure 0ERP01-ZV-IN05, Site Evacuation and Section F.6 of this Plan.

I.5 Protective Action Recommendations

The Station is designed and equipped with a series of safety systems engineered to meet Title 10 Code of Federal Regulations Part 100 criteria for reactor safety. The Station recognizes that in any accident situation, it is prudent and logical to make every effort to reduce and minimize exposure of the public to radioactive materials and radiation. This is accomplished by issuing offsite protective action recommendations when plant conditions indicate a potential for release of radioactive material or if a release is occurring or has occurred. The Protective Action Guidelines for the general public for thyroid dose due to inhalation from a passing plume and exposure to airborne radioactive material, as recommended by the Environmental Protection Agency, are five (5) rem Thyroid Committed Dose Equivalent and one (1) rem Total Effective Dose Equivalent respectively. Additional information is provided in Addendum I-1.

Recommendations for protective actions for the general public will originate from the Control Room, the Technical Support Center, or the Emergency Operations Facility (depending on facility activation and Emergency Director location) based on plant conditions and/or based on data derived from offsite dose assessment or actual field monitoring measurements. Emergency Response Procedures establishing these methodologies are 0ERP01-ZV-TP01, Offsite Dose Calculations and 0ERP01-ZV-IN07 Offsite Protective Action Recommendations. These procedures establish methods for determining projected dose to the public at risk. Recommendations will be made in accordance with agreements made with the Department of State Health Services. Whenever possible, message formats provided in the Emergency Response Procedure 0ERP01-ZV-IN02, Notifications to Offsite Agencies, in accordance with Section E of this Plan will be utilized. The implementing procedures relating to Protective Action Guidelines assure that the recommendations are determined through an approved process. The Emergency Director shall approve Offsite protective action recommendations.

I.6 Public Notification

In the event public notification is required, both transient and resident population within the ten mile Emergency Planning Zone will be initially notified through the Prompt Notification System as referenced and described in Section E of this Plan and by the Matagorda County officials. Additional notification and information will be provided to the transient and resident population as well as the general public outside the ten mile Emergency Planning Zone through the Emergency Alert System. Radio station KMKS FM, Bay City, is the primary Emergency Alert System station for the Station nuclear emergency response and KZRC FM is secondary. Information brochures and other public information documents describing notification, protective actions and general radiological education are provided by mailing and by general distribution to residents and transients within the ten mile Emergency Planning Zone. Matagorda County will issue messages similar to those provided in the Matagorda County Emergency Management Plan describing the incident and recommended public protective actions.

I.6.1 Public Shelter and Evacuation

Shelter and Evacuation recommendations from the Station and/or the Department of State Health Services are considered, and appropriate actions are determined and conducted by Matagorda County officials. Pertinent information from the evacuation time estimate[1] has been incorporated into Matagorda County emergency procedures.

The evacuation time estimate study is maintained by and on file in the Station Emergency Response Division.

The evacuation time estimates will be reviewed annually in accordance with Emergency Preparedness Procedures.

I.6.2 Special Needs Groups

Individuals with special needs will be accommodated as per Matagorda County plans and procedures.

I.7 Environmental Monitoring Points

In the event of an emergency, the permanent air sampling stations may be utilized for long term evaluation concerning airborne releases. Environmental Thermoluminescent Dosimeters located at the background radiation stations provide exposure data. At least one dosimeter shall remain at each station until the end of the event to provide integrated dose data over the duration of the release. Sampling efforts may be combined with Offsite Field Team activities.

1 Evacuation Time Estimates for the South Texas Project Electric Generating Station Plume Exposure Pathway Emergency Planning Zone, KLD Associates, 2007

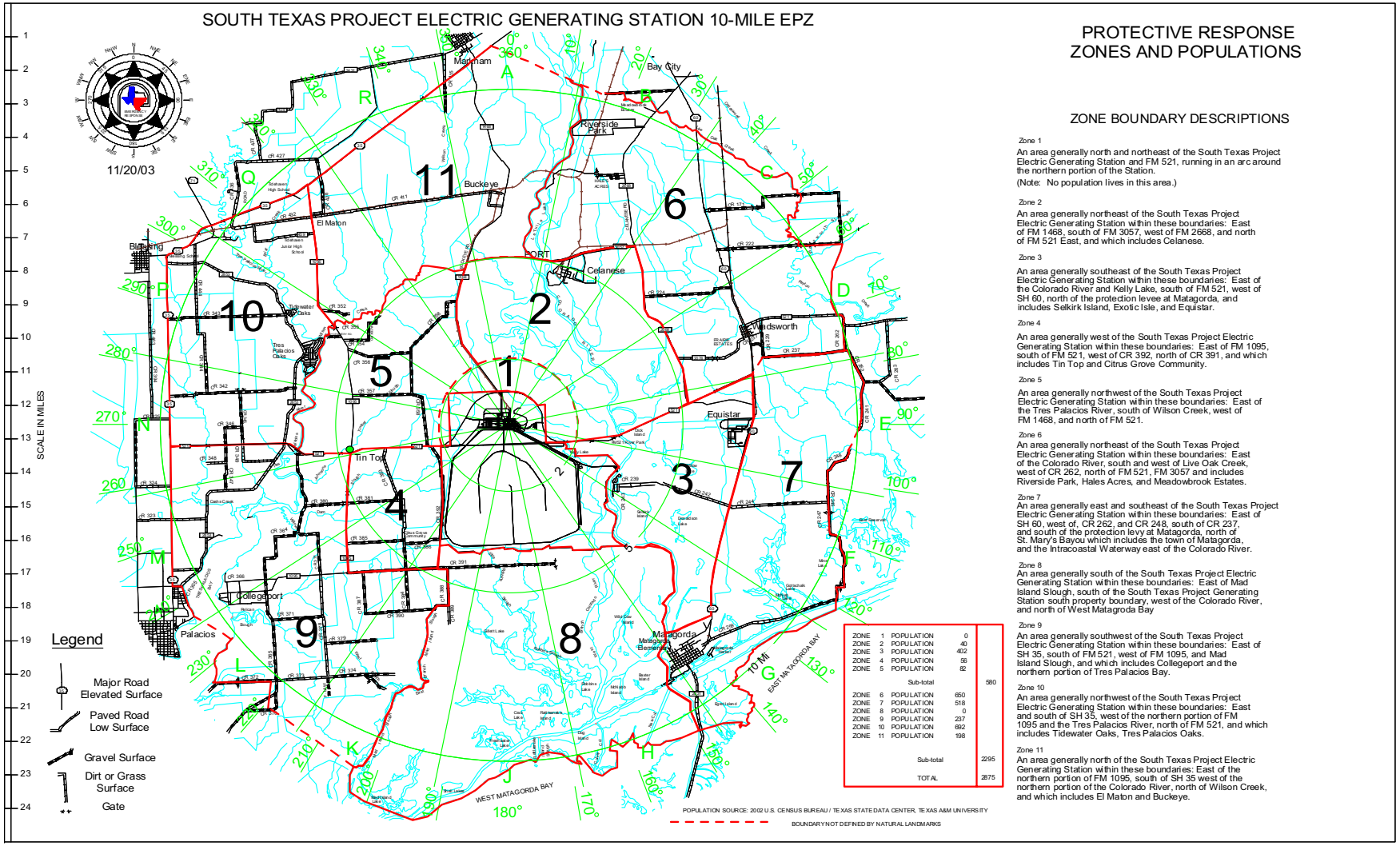

Figure I-1 10 Mile Emergency Planning Zones

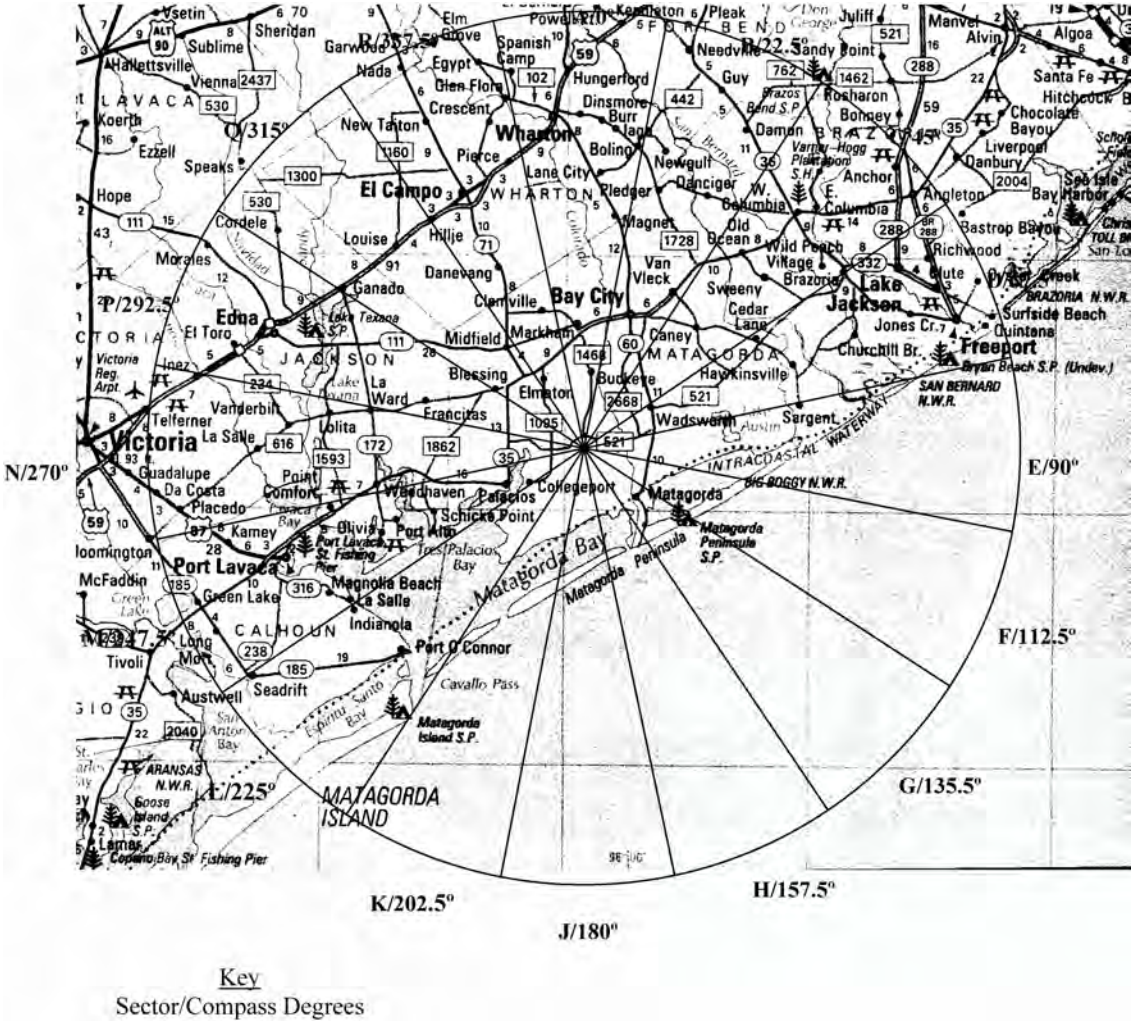

Figure I-2 50 Mile Emergency Planning Zones

Addendum I.1 Recommended Protective Actions for the Public
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1.0 *Recognizing, in an accident situation, that it is prudent and logical to make every effort to reduce and minimize public exposure, the Station will make protective action recommendations to the State and County authorities. These recommendations are to assist the public officials in protecting the public in the Plume Exposure Pathway. It should be noted that the responsibility of final decision to implement offsite protective action recommendations made by the Station rests solely with Matagorda County authorities and respective authorities in other affected counties. Detailed instructions to implement protective actions will also be disseminated by County authorities.*

2.0 *The protective actions for offsite areas are discussed or presented in the State and County Emergency Management Plans. The State and County Plans have adopted the United States Environmental Protection Agency's Protective Action Guides for initiating actions to protect the health and safety of the public in the event of a nuclear power plant accident. These are the same guides used by the Station in developing their protective action recommendation to the State and County authorities. In addition, the Station has developed protective action recommendations based on plant conditions exclusive of actual or projected radiological exposures.*

3.0 *There are various types of actions that can be taken to protect the public. These include shelter, evacuation, access control, controlling distribution of food, water, milk, and livestock, and individual protective actions.*

4.0 *United States Environmental Protection Agency Protective Action Guidelines serve as the basis for offsite protective actions recommendations. The type, amount, and duration of the release source term, and the potential for radiological release based on plant conditions must also be considered when recommending protective actions.*

5.0 *Projected or measured doses that the public may be or is subject to receiving are correlated to protective action guides. Dose projections and measured dose are not prerequisites for issuance of a protective action recommendation.*

6.0 *The Emergency Director has the authority to make protective action recommendations and approve their release to governmental authorities. Protective action recommendations originate from the Control Room, Technical Support Center, Emergency Operations Facility or the Alternate Emergency Operations Facility based upon data derived from or received from assessment of plant conditions, radiological monitoring computer systems, field measurements, or process instrument readings. The Emergency Plan procedures relating to Protective Action Guides assure that recommendations are determined through an approved process. Emergency Plan Procedures, like the Plan, are based on the United States Environmental Protection Agency's Manual of Protective Action Guides and Protective Actions for Nuclear Incidents Environmental Protection Agency 400-R-92-001, revised May, 1992.*

7.0 *The Station agrees with the position of the State of Texas not to use radioiodine blocking drugs such as potassium iodide for the general public. It is the State's responsibility to stockpile and acquire the agent and disseminate it if it is to be distributed to the general public during an accident. The Station is responsible for maintaining and providing to the Department of State Health Services upon request, a quantity of potassium iodide sufficient for State and local emergency workers including any mobility impaired or institutionalized members of the general public whose evacuation could not be readily effected.*

J Radiological Exposure Control

Management commitment for an effective Dose Control Program (As Low As Reasonably Achievable) necessitates that detailed radiation protection measures be established and utilized during emergency situations as well as normal operating periods at the Station. These measures are described in Emergency Response Procedure 0ERP01-ZV-IN06, Radiological Exposure Guidelines. A description of applicable radiation control measures are outlined in this section.

J.1 Personnel Exposure Monitoring

The approved Station Radiation Protection Procedures provide the specific actions undertaken to determine and record individual occupational exposures on a 24 hour per day basis.

The Radiological Director or his designee is responsible to ensure that all personnel entering the Station, including visitors, vendors, contractors, construction personnel, and employees, are properly monitored for exposure to ionizing radiation.

Allowable planned emergency exposures and accident exposures to individuals have been established by the Nuclear Regulatory Commission and the Environmental Protection Agency. In all cases and events, administrative control and restriction of exposure to radiation will be monitored by the radiation protection staff in accordance with 0ERP01-ZV-IN06, Radiological Exposure Guidelines.

J.1.1 Emergency Exposure Guidelines

Environmental Protection Agency-400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, is used to establish additional exposure guidelines for lifesaving actions and protection of property.

J.1.2 Emergency Exposure Limits

All questions of radiation exposure limits for emergency workers above Code of Federal Regulations, Title 10, Part 20 limits will be directed to the Emergency Director. This individual has the nondelegable authority in an emergency to authorize volunteer emergency workers to receive exposures in excess of Code of Federal Regulations, Title 10, Part 20 limits. The methods of documenting the voluntary status of the workers are authorized in Emergency Response Procedure 0ERP01-ZV-IN06, Radiological Exposure Guidelines.

J.2 Measurement of Radiation Worker Exposure

Twenty-four hour per day capabilities have been established for determining the exposure received by workers by utilization of the Radiation Protection staff. Radiation Protection personnel, under the guidance of the Radiological Manager, will issue dosimetry and maintain logs of activities. The Radiological Manager ensures the Emergency Director and Radiological Director are kept informed of the exposure of emergency responders.

J.3 Contamination Control and Preventive Measures

Preventive measures will be taken to minimize direct exposure to or ingestion of radioactive materials. This will include timely processing of all solid, liquid, and gaseous wastes using the Station radioactive waste processing systems in accordance with established plant procedures or other waste processing systems as necessary. Other contamination control measures are described in detail in the Station's Radiation Protection Program, the Emergency Response Procedures, and are summarized as follows:

In order to avoid personnel contamination or the spread of contamination in the Station areas, contaminated areas will be designated and clearly identified. Access to these areas will be controlled and appropriate protective clothing will be specified to minimize personnel contamination and the spread of contamination. Limits for the use of protective clothing are specified in the Station Radiation Protection Procedures. Personnel and equipment leaving the controlled area are monitored to assure that the limits for contamination control are met. If personnel become contaminated, Station Radiation Protection operating procedures will be implemented.

In general, contaminated areas and materials are permitted to return to normal use when areas meet the Station Radiation Protection Program contamination limits. Some areas and equipment may be returned to service prior to achieving these limits. In such cases, special precautions and measures are taken to prevent personnel contamination and to limit the spread of contamination.

J.4 Drinking Water and Food Contamination Control

Drinking water and food supplies are not allowed in contaminated or potentially contaminated areas. If the potential exists for food or water to become contaminated in normally clean areas, Radiation Protection personnel will perform appropriate surveys and sample analysis, respectively.

If contamination is found, appropriate actions will be taken based on the levels of contamination and its location.

J.4.1 Surveys of Emergency Response Facilities

Radiological surveys of the emergency response facilities and the assembly area for habitability will be performed on a frequent basis. These surveys will include radiation levels and contamination and airborne radioactivity concentrations. Drinking, smoking, and eating are prohibited during a radiological incident in areas where the potential for contamination exists.

J.4.2 Airborne Releases

In the event of an airborne release of radioactive materials, samples will be collected by Station personnel, and State and other agencies. These samples are analyzed and the results recorded and reported to the Emergency Director and the Department of State Health Services for appropriate offsite protective action recommendation decisions.

J.4.3 Colorado River & Selected Wells

Selected wells are analyzed for radioactivity as part of the Radiological Environmental Monitoring Program at the Station. Surface water from the Colorado River is sampled at several locations upstream and downstream of the Station's river discharge. These samples are analyzed for gross activity as part of the Radiological Environmental Monitoring Program.

J.5 Radiological Medical Considerations

Responses to personnel injuries are in accordance with guidelines set forth in 0POP04-ZO-0004, Personnel Emergencies and 0PGP03-ZA-0106, Emergency Medical Response Plan. Normally, in the event a personnel injury occurs in a Radiologically Controlled Area and the person requires offsite medical aid, the person will be taken to the Radiologically Controlled Area Access Control Point. The person is monitored for contamination and, if found to be below the levels for personnel contamination, the person is treated as a normal industrial accident and first aid will be supplied by Station medical assistance personnel. If additional treatment is required, the Station shall transport the person to the Matagorda General Hospital or Palacios Community Medical Center for treatment. Transportation will be provided by the site with Station medical staff in attendance or a contractor ambulance service.

J.5.1 Personnel Contamination

In the event, the person is contaminated above the levels for personnel contamination, reasonable efforts will be made to decontaminate the person at the Radiologically Controlled Area Access Control Point. If this can not be done due to the nature of the injury and/or hospitalization is required immediately, medical treatment and transportation to the hospital will take priority. The person will be placed in clean protective clothing or wrapped in a clean blanket time permitting, to minimize the spread of contamination.

J.5.2 Health Physics Supervision

A Radiation Protection Technician will accompany the individual to the hospital. Health Physics Supervision should meet the person at the hospital. The medical facility will be notified when a contaminated patient is being transported for treatment to allow for establishment of the radiological treatment area.

J.5.3 Hospital Procedures

When the victim arrives at the medical facility, the staff of the hospital will follow their procedures to handle this type of injury. Radiation Protection personnel will conduct surveys to ensure that contamination levels are kept to a minimum and will monitor for contamination until cleanup has been satisfactorily completed.

J.5.4 Contaminated Items

Contaminated items will be returned to the Station for decontamination or disposal.

J.5.5 Radiological Surveys

Radiation Protection personnel will perform radiological surveys and assist with establishing radiologically controlled area boundaries in the medical facilities.

J.6 Personnel Evacuation from Station

- *Personnel evacuated from the site due to a site evacuation shall go to an offsite Reception Center or home as determined by the Emergency Director.*
- *Reception centers are activated by the Matagorda County Emergency Management Director.*
- *The Bay City Reception Center is located at the McAllister Middle School.*
- *The Palacios Reception Center is located at the Palacios High School Field House.*
- *At the reception center, Station personnel are monitored for contamination and decontaminated, as necessary, and are registered and given emergency assistance by the reception center staff.*
- *Reception center operations are fully discussed in the Matagorda County Emergency Management Plan and Procedures.*

J.7 Offsite Assessment, Evaluation

For areas beyond the owner-controlled boundary of the Station, the Department of State Health Services, with assistance from the Governor's Division of Emergency Management, is responsible for the assessment and evaluation of protective action recommendations for the at-risk areas. The Matagorda County Emergency Management Director has the authority to accept, authorize, and implement protective actions.

- *The State of Texas radiological monitoring teams will identify contamination and/or radiation levels and assist in controlling access within the affected area.*
- *Other state agencies will take action, as necessary, to assess and control land, water, and air within the affected area for public, commercial, and agricultural use.*

J.8 Tools and Equipment

All tools and items of equipment used in the Radiologically Controlled Areas must be checked for contamination before being taken from the Radiologically Controlled Area.

- *Vehicles leaving the site will be monitored and decontaminated, as necessary.*
- *Emergency vehicles on life saving missions will not be delayed for radiological considerations.*

J.9 Exposure to Airborne Contamination

In the event of a major radiation emergency, exposure to airborne concentration of radioactivity will be limited by the following policy:

- *Whenever practicable, total internal exposure of any individual during an emergency should be maintained As Low As Reasonably Achievable.*
- *Respiratory protection will be used whenever appropriate.*
- *Exposure limits for noble gases are based on beta plus gamma radiation effects to the skin and lens of the eyes.*
- *Potassium Iodide should be issued to all onsite personnel on a voluntary basis at a General Emergency or when dose projections onsite or survey results projected exceed twenty-five (25) rem Committed Dose Equivalent to the thyroid. The issuance shall be determined by the Emergency Director and Radiological Director.*

J.10 Radiation Monitoring System

The Radiation Monitoring System monitors radioactivity in the station. This system, consisting of two subsystems, provides monitoring capability for area radiation and process/effluent stream radiation monitoring. The process/effluent Radiation Monitoring System is comprised of two smaller subsystems, the Liquid Monitoring System, and the Atmosphere Monitoring System. These Subsystems are described in Section H of this Plan and in the Station Final Safety Analysis Reports Section 9.0, 11.0, and 12.0. The Radiation Monitoring System is designed to provide output in normal and emergency operating ranges and is designed to operate in emergency radiation fields.

J.10.1 Model Description

The dose assessment models described in procedure 0ERP01-ZV-TP01, Offsite Dose Calculations, provides site specific estimates and predictions of atmospheric effluent transport and diffusion during and immediately after an airborne release. The diffusion model used meets the criteria of a Class A model as defined in NUREG-0654/FEMA-REP-1, Rev. 1 and additionally can perform X/Q calculations, dose and dose rate projections, and deposition rates for the Plume Exposure Pathway Emergency Planning Zone.

J.10.2 Area and Process/Effluent Systems

The Area and Process/Effluent Radiation Monitoring Systems are used to classify and assess radiological conditions in accordance with the Station Technical Specifications. These parameters have specific relationships to the Emergency Action Level scheme for classifications of an event by the Initiating Conditions scheme of Section D of this Plan.

J.10.3 Liquid Monitoring

The Liquid Monitoring System of the Radiation Monitoring System is designed to measure the concentration of gamma emitting radionuclides in a liquid process stream.

J.10.4 Airborne Monitoring

The Atmospheric Monitoring System of the Radiation Monitoring System is designed to measure the concentrations of particulates, iodines, and noble gases in atmospheres in the containment and within the Protected Area.

J.10.5 Area Monitoring Subsystem

The Area Radiation Monitoring System is a subsystem of the Radiation Monitoring System. It consists of offline monitors, instrumentation, and alarms that serve to prevent Station personnel from unknowingly entering areas with high radiation fields.

J.11 Radiation Survey and Sample Equipment

The Station maintains radiation survey and sample equipment of different types.

J.11.1 Portable & Fixed Survey Instruments

Sufficient quantities of portable radiation survey instruments capable of measuring alpha, beta, gamma and neutron are maintained onsite to allow for calibration, testing, maintenance and repair. Fixed and portable air monitors are used to sample, determine, and record levels of particulate, iodine, or noble gas radioactivity in Station atmospheres.

J.11.2 Offsite Monitoring

Many of these instruments may be used offsite to monitor and sample an offsite radioactive release and to detect iodines as low as 1E-7 microcuries per cubic centimeter by sample analysis outside the release plume boundaries.

J.12 Laboratory Equipment and Instruments

Available laboratory counting equipment may include gas flow proportional counters, scalers, Geiger Mueller counters, and spectroscopy equipment. This equipment is located at the Station. The laboratory equipment can provide low background beta, gamma, and alpha analysis. Laboratories used for counting and spectroscopy are available when needed seven days per week.

K Media Relations

This section of the Plan describes the media relations to be developed and utilized for the education, notification, and alerting of the public for the purposes of emergency preparedness at the Station.

K.1 Public Education

Education/Training of the public on emergency planning and how the public should respond in case of an emergency is primarily the responsibility of the Station in conjunction with local authorities. Annually, the Station will disseminate information to the public within the ten mile Emergency Planning Zone regarding how the public will be alerted in case of an emergency and what actions should be taken.

K.1.1 Information Dissemination

The information to be disseminated to the public will be in the form of printed materials. In addition, meetings may be held with the public in the ten mile Emergency Planning Zone to discuss specific Station emergency preparedness information.

K.1.2 Printed Material

The printed materials for general public information will be provided by methods such as:

- *Dissemination to residents in the ten mile Emergency Planning Zone;*
- *General distribution to areas where the general public visits on a regular basis, to be picked up as needed;*
- *Posters, bulletins and other visible postings in the immediate towns and unincorporated population settlements; and,*
- *Personal distribution.*

K.1.3 Public Information Contents

- *The public information shall include, but is not limited to:*
- *Educational information on radiation;*
- *Respiratory protection;*
- *Sheltering;*
- *Evacuation routes;*
- *Mail-in cards for persons with special needs to ensure extra precautions are taken;*
- *Plume Exposure Pathway Emergency Planning Zone Map to follow while the Emergency Alert System informs the personnel of the area that the plume may be affecting; and,*

- *Contacts and telephone numbers for additional information.*
- *Public information material is available to residents along with a Spanish information number.*

K.1.4 Station Continuing Education/Information Program

The Station promotes a continuing program of public education throughout the Station in regard to nuclear power in general and the Station in particular. Emergency planning is included in these information programs.

K.1.5 Education Responsibility

Education of the public regarding nuclear power and emergency response planning is the responsibility of the Supervisor, Emergency Response.

K.1.6 Distribution of Alert Radios

The Supervisor, Emergency Response or designee will distribute the alert radios and provide the public with an introduction to the emergency notification process.

K.2 Public Information Distribution

The public information is distributed annually by mail to residences, businesses, and public buildings within the ten mile Emergency Planning Zone of the Station.

K.3 Transient Population Distribution

A general distribution to reach the transient population is achieved by posting information in public areas and by placing supplies of prepared written materials in areas where the general populace frequents.

K.4 Education and Information Program Resources

Media advertisements, telephone messages, news releases, and public information seminars may be utilized as necessary to achieve an effective information and education program.

K.4.1 News Media Participation

At least annually, the news media will be invited to participate in a program to acquaint them with the emergency planning effort at the Station. Typical topics covered will be information concerning radiation, and points of contact for release of information to the media in case of an emergency, or for plant specific material sent to the media.

K.4.2 Specific Media Requests

The South Texas Project Communications and Public Affairs Group will respond to specific media requests for information concerning nuclear power emergency planning and the Station.

K.5 Media Information Organization

It is the policy of the Station to provide prompt and accurate information to the public for events that may affect or simply interest the nearby community and the public at large.

K.5.1 Normal Events and Unusual Events Release

News releases during declared Unusual Events will be issued by the South Texas Project Communications and Public Affairs Group.

K.5.2 Early Information Release

During an Alert or Higher event, prior to activation of the Joint Information Center, The Site Public Affairs Coordinator or an individual from the South Texas Project Communications and Public Affairs Group will support the Emergency Director issuing press releases.

K.5.3 Joint Information Center Activation

The Joint Information Center is staffed at the declaration of an Alert and may be activated at the discretion of the Emergency Director. The Joint Information Center shall be activated at a Site Area Emergency or General Emergency. After the activation of the Joint Information Center, all news releases concerning the emergency at the Station shall be issued from the Joint Information Center. These information releases shall be the basis for information provided to the Station and employees, government groups, other utilities, and industry groups, as well as media outlets and the media representatives located at the Joint Information Center. Figure K-1 provides a typical layout of the Joint Information Center.

K.5.4 Media Response/Rumor Control Manager

Media and public inquiries will be handled by the South Texas Project Communications and Public Affairs Personnel and STPNOC Co-Owners while the on-duty emergency response organization is enroute to the Joint Information Center. The Co-Owners will be contacted and provided information to answer media and public inquiries and to direct the media to the Joint Information Center.

K.5.5 Company Spokesperson

The Company Spokesperson is the primary spokesperson for the Station and together with the Joint Information Center Director shall remain responsible for the consistency of the information released. The Joint Information Center Director and/or the Emergency Director may select individuals to address the public on behalf of the Station as their respective expertise is needed.

K.6 News Releases

News releases are issued periodically from the Joint Information Center under the direction of the Company Spokesperson. The Staff Writer will obtain information from the Site Public Affairs Coordinator. Information will be drafted into news releases and coordinated with federal, state and county public information officers for release.

K.7 News Conferences

News conferences will be held periodically at the Joint Information Center when activated during a declared emergency at the Station involving a Site Area Emergency or General Emergency.

- *Federal, State, and County authorities are invited to have representatives and spokespersons present at news conferences.*
- *Prior to each news conference or news release, the representatives of the Station, the Station owners, Federal, State, and local public information officers shall have the information to be released available for review.*
- *Media kits, containing maps, photographs, and Station historical background may be available for distribution at news conferences as needed.*

K.8 Media Requests

Any special media requests for specific interviews, visits to the Station or Control Room simulator, video tapes or films of the Control Room, and other unusual requests will be coordinated by the Media Relations Manager through the Site Public Affairs Coordinator.

- *Appropriate Station personnel can be made available for special background interviews.*
- *Special requests may be refused if they impact the Station security or safety programs or if the Emergency Director believes that media personnel may be placed in a situation of unnecessary hazard.*

K.9 Information Flow

During a declared emergency, the flow of factual information to employees and the public is critical. To ensure that the reports issued and disseminated about the Station are true and factual, the following rumor control program is established when the Joint Information Center is activated or earlier, if deemed necessary by the Joint Information Center Director.

K.9.1 Rumor Control

Under the direction of Media Monitoring/Rumor Control Manager, media monitors in the Joint Information Center shall monitor radio, television, and newspapers for misleading or erroneous information. In addition, under the direction of the Media Monitoring/Rumor Control Manager, Rumor Control Monitors in the Joint Information Center shall answer public telephone inquiries. The Media Monitoring/Rumor Control Manager is located in the Rumor Control Room at the Joint Information Center.

- *The Rumor Control Monitors and Media Monitors shall collect and consolidate rumors/misinformation and inform the applicable position or agency.*

- *Rumor/misinformation shall be interpreted and discussed to coordinate appropriate responses and for immediate knowledge of what information is being released to the public from all parties.*

- *The Co-Owners shall collect and consolidate rumors/misinformation from customer service telephone operators and district offices and provide these rumors to the appropriate individual at the Joint Information Center.*

K.9.2 Misinformation Handling

State and County representatives shall handle misinformation relating to offsite conditions, including recommended protective measures.

The Station shall address misinformation regarding Station/utility rumors. Rumors and incorrect information shall be addressed at news conferences when necessary.

The Station shall also discuss information addressed in the news releases regarding protective action recommendations.

K.10 Joint Information Center

The Joint Information Center shall be operated as a joint information center where the Station, the State, County, and Federal Public Information Officers shall coordinate information, issue news bulletins, and participate in joint news briefings. 0ERP01-ZV-OF02, Joint Information Center Activation, Operation, and Deactivation describes how the Joint Information Center information is disseminated.

The Joint Information Center provides a spokesperson work area for Station, state, county, and federal public information officers. The entire Best Western Matagorda Hotel and Conference Center is available as the Joint Information Center, via a letter of agreement and contract; therefore, if private work areas are needed, space can be made available. Telecommunications facilities shall be available to include, but not be limited to:

- *Telephone links, with long distance capabilities;*

- *Telecopiers with nationwide capability; and,*

- *Radio and television hookups (for viewing) with cable television availability.*

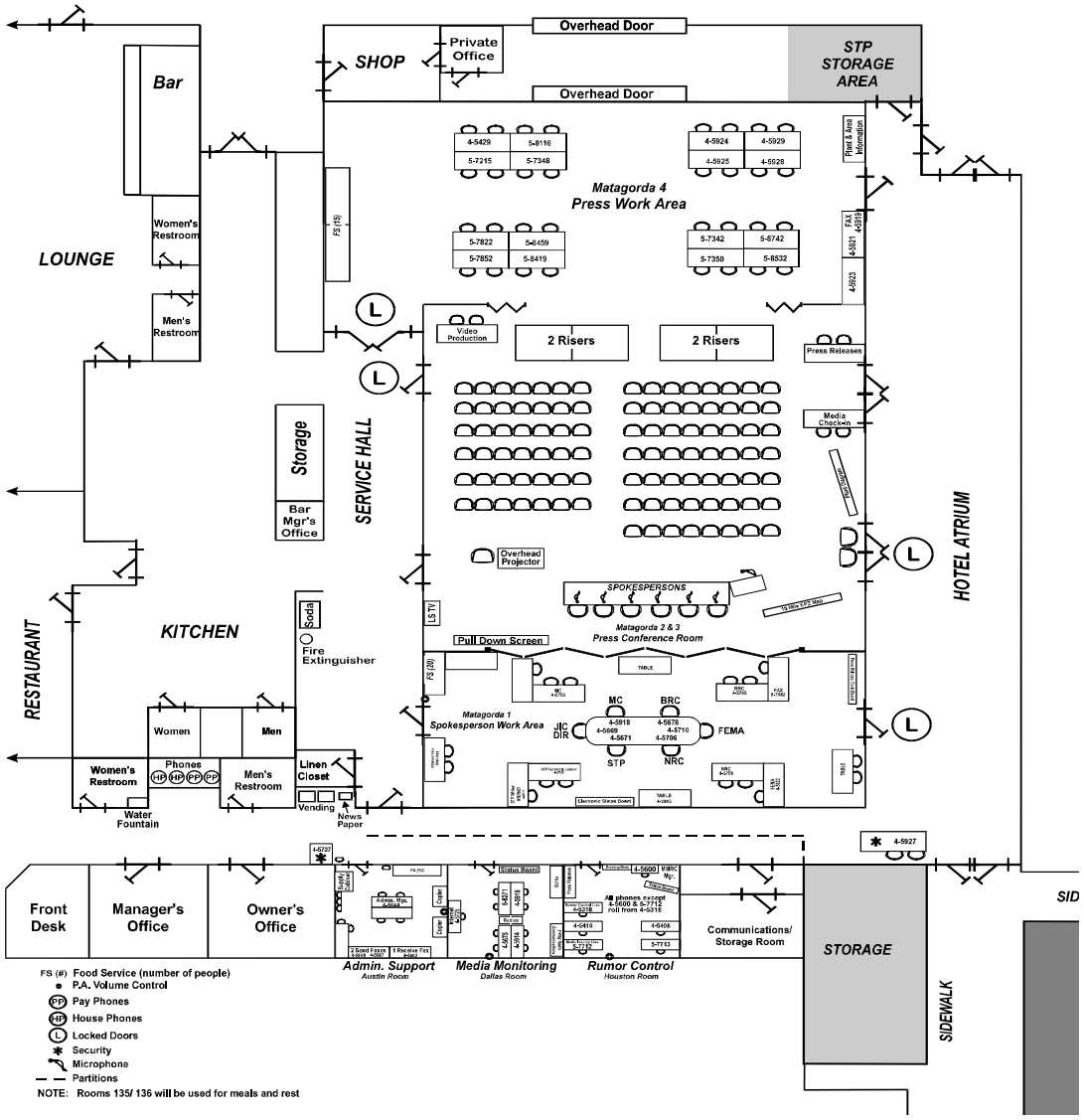


Figure K-1 Typical Joint Information Center Layout

L Recovery and Re-entry

This section of the Plan discusses the requirements for recovery and reentry into evacuated areas of the Station following an emergency condition.

L.1 Recovery Responsibility and Initiating Conditions

The Station Emergency Response Organization is responsible for the overall coordination and management of the recovery effort and for the technical and administrative services, construction, design work, scheduling/planning, quality control/assurance, and vendor support necessary during the initial stages of the recovery phase.

The Emergency Director has full authority to take immediate and decisive steps to mitigate the consequences of any nuclear emergency and for protection of the health and safety of the public. The Station Emergency Response Organization's effort during emergencies is viewed as a long term effort requiring the Station Emergency Response Organization to be present 24 hours per day.

The Station Emergency Response Organization is composed of, or can incorporate as needed, all the necessary technical, administrative, managerial, and support personnel that may be required for recovery. The organization is capable of 24 hour per day sustained operation by providing that each emergency position has the capability of being filled by any of three normal organization personnel.

The Emergency Director shall make the decision to proceed from the emergency phase to the recovery phase (with concurrence of State, County and NRC agencies if a Site Area or General Emergency was declared). The Station Emergency Response Organization's responsibilities extend into the Recovery phase until a decision is made by the Emergency Director (with concurrence from State, County and NRC agencies if a Site Area or General Emergency was declared) that the Station parameters and other pertinent criteria allow termination of the event and return to the normal Station operation.

The Recovery Phase can be entered when all the following conditions are met:

- *The emergency conditions no longer exist and the plant is in a stable, shutdown, and safe condition.*
- *The potential for uncontrolled releases of radioactive material to the environment no longer exists.*
- *Major repairs, if required, have been identified in order to return the plant to operation.*
- *If the event was either a Site Area Emergency or General Emergency, concurrence from the NRC, State, and County has been obtained.*

L.2 Recovery Conduct

Accounting for the particular situation, the Recovery phase will be conducted to restore the Station to normal operating conditions. Some emergency classifications (i.e., Unusual Event, Alert) may require only brief or no recovery actions where more severe classifications (i.e., Site Area Emergency, General Emergency) may necessitate complex recovery actions.

L.3 Recovery Phase

In general, the Recovery phase will consist of:

- *Logical evaluation of the cause and effect of the emergency;*
- *Planning necessary activities to place the Station in a configuration ready for restart;*
- *Analysis of the exposures to Station personnel;*
- *Analysis of effluent, and environmental data to quantify offsite consequences, if any;*
- *Assembly of the Recovery Organization needed to expediently implement recovery; and,*
- *Implementation of radiological controls for reentry into affected areas by posting radiation, contamination, and airborne radioactive material warning signs and entry requirements and stay times based on current surveys.*

L.4 Recovery ALARA Philosophy

During Recovery, actions will be taken to maintain the Station exposures As Low As Reasonably Achievable (ALARA) in keeping with current management philosophy. Access to affected areas will be in accordance with Title 10 Code of Federal Regulations Part 20 and Environmental Protection Agency 400-R-92-001, Manual of Protective Action Guides and Protective Actions For Nuclear Incidents. All emergency worker exposures will be completely documented. Controlled areas will be posted with contamination, radiation and airborne levels based on current surveys. Stay times will be calculated for each unknown or high radiation area. Offsite population dose will be calculated by processing thermoluminescent dosimeters located in the Station 10-mile Emergency Planning Zone and using radiological dose assessment/projection models in accordance with procedure 0ERP01-ZV-TP01, Offsite Dose Calculations.

L.5 Recovery Initiation

Decisions to relax protective actions for the public will be made by the appropriate State authorities. The Emergency Director will notify the State Disaster District Sub-2C in Pierce or the State Operations Center in Austin, Matagorda County Emergency Management, and the Nuclear Regulatory Commission when the Station is returned to a safe condition and request that recovery actions be initiated as necessary.

L.6 Recovery Organization

Once recovery is declared, a Recovery Organization for performing recovery activities will be established as needed. This organization as defined in 0ERP01-ZV-RE01, Recovery Operations, shall consist of as a minimum:

- *Recovery Manager - The Emergency Director, or his designee, will function as the Recovery Manager. The Recovery Manager is responsible for returning the plant to a restart configuration.*
- *Personnel in the Station Emergency Response Organization should be integrated into the Recovery organization.*
- *The NRC, State of Texas, and Matagorda County Emergency Management shall be informed of the formation of the Recovery organization.*

L.7 Recovery Procedures and Documentation

The activation of the Recovery Organization shall be determined by the Emergency Director in accordance with Emergency Response Procedure 0ERP-ZV-RE01, Recovery Operations. Activation of or changes to the Recovery Organization shall be announced to the Station Emergency Response Organization on duty and to all offsite agencies involved in the emergency classification.

All normal plant procedures will be followed unless specifically superseded by Recovery procedures. Recovery procedures are temporary procedures and will be deleted upon completion of the Recovery effort. Documentation of the emergency event shall be documented in accordance with 0ERP01-ZV-RE02, Documentation.

L.8 Recovery Actions for General Public

Offsite Recovery actions for the public are the responsibility of the County authorities.

L.9 Termination

Termination of the event shall be followed by written reports to cognizant authorities. The emergency condition is terminated when any of the following items are met:

- *The emergency condition no longer exists and the plant is ready to return to normal operations.*
- *Repair activities are minor, the reactor is subcritical, and the plant is in a stable shutdown mode (at least Mode 3).*

L.10 Exposure Authority

All questions of radiation exposure for emergency workers above the administrative limits of the Station will be directed to the Emergency Director. The Emergency Director is the only authority for extension of radiation exposures in excess of Title 10 Code of Federal Regulations Part 20 limits.

M Emergency Preparedness Training

The requirement for Emergency Preparedness Training is established in Code of Federal Regulations Title 10, Part 50, Appendix E, Training. This is supported by U.S. Nuclear Regulatory Commission document NUREG-0654/FEMA-REP-1, Rev. 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Section O, Radiological Emergency Response Training.

This section of the Plan describes the Emergency Preparedness Training Program for onsite and offsite emergency response personnel to maintain a state of emergency preparedness at the South Texas Project Electric Generating Station.

M.1 Emergency Plan Training Objectives

The requirement for Emergency Response training at the Station is described in 0PGP03-ZT-0139, Emergency Preparedness Training Program.

M.1.1 Emergency Preparedness Training Program

The Emergency Preparedness Training Program will occur in two phases, plus the Drill and Exercise Program. The two phases are:

- *Emergency Preparedness Initial Training and, when applicable, specialized training*
- *Annual re-training*

M.1.2 Emergency Preparedness Training Program Objectives

This two phase plan will provide Station personnel involved in the Station Emergency Response Organization with the necessary training required for successful completion of their assigned tasks during declared events, drills, and exercises, and provide the members of the Station Emergency Response Organization with the expertise required to maintain a high degree of emergency readiness. Objectives of the Emergency Preparedness Training Program are as follows:

- *Familiarize applicable personnel with the scope, applicability, and implementation of the Plan and the Emergency Plan Procedures.*
- *Describe the general duties and responsibilities assigned to the personnel under this Plan.*
- *Keep personnel informed of any changes in the Plan and/or the Emergency Plan Procedures.*
- *Maintain proficiency of emergency preparedness at all levels.*

M.1.3 Emergency Preparedness Training Program Content

To meet these objectives, the Emergency Preparedness Training Program will include, but is not limited to the following:

- *General content of the Plan and procedures*
- *Location of emergency equipment and supplies*
- *Names, locations, and functions of the emergency response facilities*
- *Use of Station communication systems*
- *Personnel accountability, assembly, and evacuation*

M.2 Overall Responsibility - Emergency Plan Training

The overall responsibility for assignment of Emergency Preparedness Training lies with the Supervisor, Emergency Response as described in approved Plant Procedures.

M.2.1 Emergency Response Facility Managers

Each Emergency Response Facility Manager is responsible to ensure the personnel within their facility receive the training required to attend their duties in the Station Emergency Response Organization. Personnel assigned Station Emergency Response Organization duties are responsible to become familiar with their emergency response duties and responsibilities.

M.2.2 Emergency Response Organization Personnel

All Station Emergency Response Organization personnel are not required to have the in-depth training that is required of those personnel who will be in a management position during a declared event. However, cross-training is allowed.

M.2.3 Annual Retraining

Annually, Station personnel shall re-qualify for their position. The requalification may be accomplished by either classroom instruction or through the drill and exercise program by being a participant, mentor, coach, evaluator, or controller, but not as an observer. Multiple assignees to a given key Emergency Response Organization position may receive credit for the same drill if their participation is a meaningful and thorough opportunity to gain proficiency in the assigned position.

M.2.4 Computer Based Training

Computer Based Training (CBT) is an acceptable equivalent method for classroom refresher training.

M.2.5 New Personnel Training

New personnel assigned to the Station shall attend applicable Emergency Plan Training prior to assuming any Emergency Response Organization position.

M.3 Emergency Plan Training

Emergency Plan Training shall consist of in-depth knowledge in those areas where Emergency Response Organization personnel have specific duties and responsibilities in implementing the Emergency Plan. The training that each member of the Emergency Response Organization is required to have is provided in approved Plant Procedures. As a minimum, all Station Emergency Response Organization personnel shall receive Emergency Preparedness Initial training.

M.3.1 Emergency Plan Training is developed as a joint effort between the Nuclear Training Department and the Emergency Response Division.

M.3.2 Emergency Plan Training Program lesson plans are developed using applicable guidance from the systematic approach to training process.

M.3.3 Formal training shall be subject to verification by examination. Examinations are derived from approved examination questions using the terminal and enabling objectives identified in the lesson plans.

M.4 Specialized Emergency Plan Training Content

M.4.1 Specialized training shall be conducted to cover the following topics:

- *Offsite Dose Calculations*
- *Emergency Communications*
- *ICS/ERFDADS/PICS Operation*
- *Offsite Field Teams*
- *Emergency Medical Care*

M.5 Non-Emergency Response Organization Personnel Emergency Plan Familiarization

Station personnel not assigned Station Emergency Response Organization duties (non-essential personnel) shall be trained to respond to emergency alarms.

M.6 Specialized Training Methods

Training for Station Emergency Response Organization personnel shall include formalized classroom training, examinations, or involvement in the Drill and Exercise Program. It is the intent of this training program to qualify Station Emergency Response Organization personnel in the requirements of the Station Emergency Plan and Procedures. Training is accomplished by two means of instruction.

M.6.1 Classroom instruction including, if applicable, successful completion of a written examination.

M.6.2 Demonstration of practical applications and drill participation with on-the-spot error correction where appropriate.

M.7 Emergency Medical Teams

At least one member of an Emergency Medical Team shall, as a minimum, have training equivalent to Red Cross Standard First Aid techniques.

M.8 Offsite Training

Training for hospital personnel, ambulance/rescue, police and fire departments shall include the procedures for notification, basic radiation protection, and their expected roles. For those local services support organizations who will enter the site, training shall also include site access procedures and the identity (by position and title) of the individual in the onsite emergency organization who will control the organizations support activities. Annual retraining shall be offered and/or conducted, as required, for these agencies.

N Drills and Exercises

This section of the Plan describes the Drill and Exercise Program to be utilized by the South Texas Project Electric Generating Station to maintain emergency preparedness.

N.1 Drill and Exercise Program

The following Drill and Exercise Program shall be conducted at the Station in an effort to follow up on Emergency Plan Training and maintain Station Emergency Response Organization personnel emergency preparedness at a high level of competence.

N.1.1 Periodic Drills and Exercises

Drills and Exercises (called Drills or Combined Functional Drills) will be conducted periodically in accordance with Nuclear Regulatory Commission and Federal Emergency Management Agency criteria to ensure the adequacy of the planning and preparedness effort at the Station and to test the proficiency of the Station Emergency Response Organization personnel. Each exercise and drill shall have specific evaluation criteria that describe how to measure the degree of success or failure attained for each objective. A description of the drills and exercises to be conducted is provided in Addendum N-1. Conduct of drills and exercises is described in 0PGP05-ZV-0001, Emergency Response Exercises and Drills.

N.1.2 Outside Organizations

Some drills conducted at the Station will involve outside support organizations.

N.1.3 Critique Evaluations

Critiques of will be held following each drill to evaluate the overall ability of the Station Emergency Response Organization and support organizations to implement their respective duties and responsibilities. This critique will be held as soon as practical after the drill, and a formal written evaluation report will be generated from the controller/evaluator comments presented at the critique. The Drill Coordinator is responsible for conducting critiques after Drill/Exercises.

The Supervisor, Emergency Response or designee, is responsible for reviewing the comments, deficiencies, and problem areas and generating the written report. The Supervisor, Emergency Response Division, is responsible for assuring the Emergency Preparedness Program is upgraded adequately. Recommendations and comments will be factored into the Emergency Preparedness Program through this method.

N.1.4 Annual Drills

Drills and/or exercises will be conducted at least annually at the Station to demonstrate the effectiveness of the Station Emergency Preparedness effort.

On an annual basis, the County and State Emergency Response Organizations shall be invited to participate in the Station Emergency Preparedness Exercise/Drill. The county emergency response organization shall participate fully in an exercise at the Station every two years. The state emergency response organization shall participate fully in an offsite exercise at least once every two years.

A full participation exercise will include mobilization of the state and county emergency management organizations and their resources in keeping with the accident scenarios. Involvement by the support organizations will be as appropriate to the exercise objectives.

The ingestion exposure pathway measures shall be exercised by the state emergency response organization as a minimum every six (6) years. An off hours and an unannounced drill/exercise shall be performed at least once every six (6) years. Federal Emergency Management Agency objectives for the state and county emergency management organizations shall be exercised as required.

Drills will be held to demonstrate the abilities of the Station Emergency Response Organization to respond in different weather conditions. Drills should therefore be held in good or bad weather providing no life threatening situations occur.

N.2 Scenario Development

Scenarios for drills/exercises will be developed under the direction of the Supervisor, Emergency Response or designee.

N.2.1 Specific Objectives

Input from cognizant Station groups, State, and County authorities are required to define the specific objectives to be met during the drill/exercise.

N.2.2 Scenario Composition

Scenarios should include, but not be limited to:

- *Basic objectives,*
- *Support organization(s) involved,*
- *Chronological flow of initiating data,*
- *Time schedule of real and simulated actions,*
- *Summarizing narrative of appropriate response actions, and*
- *A listing of official evaluators and controllers.*

Scenarios governing the exercise will be varied each year, and confidentiality will be maintained on the scenario. The variation to the scenarios will allow all significant provisions in the Plan to be fully exercised. Provisions exist to allow exercises to be conducted during the off-hours at a minimum of once every eight years.

The scenario preparation should include identifying the Control Room alarms, alarm sequences, and specific instrumentation readings throughout the drill.

Only officials of the Federal, State, and County support authorities involved in scenario development and approved Station controllers and evaluators will share advanced

knowledge of the scenario. Limiting the knowledge of the scenario allows for effective controllers' participation and evaluator judgment without significant compromise of scenario or drill confidentiality. This allows for significant free play during the drills by the participants. A description of the arrangements for the advance materials to be provided to official observers and participation in the evaluation critique is provided in 0PGP05-ZV-0001, Emergency Response Exercises and Drills.

Addendum N-1 Drills and Exercises
Page 1 of 2

1.0 Drills and exercises (called Drills, Combined Functional Drills, Dress Rehearsals, Evaluated or Graded Exercises) will be conducted periodically, in accordance with the criteria of NUREG-0654/FEMA-REP-1, Rev. 1 to ensure the adequacy of planning and preparedness and the proficiency of the Emergency Response Organizations to react to an actual situation in the Station. All drills shall be supervised and evaluated by a Drill Coordinator qualified to Station standards.

2.0 Critiques of drills will be held and recommendations and comments will be factored into the preparedness program. Drills conducted at the Station may involve outside support organizations.

3.0 COMMUNICATION TESTS - Communication tests with State and local governments within the Plume Exposure Pathway Emergency Planning Zone will be conducted monthly. Communications with Federal emergency response organizations and State within the ingestion pathway will be tested on a quarterly basis. Communications between the nuclear facility, State and County emergency response facilities, and field assessment teams shall be tested annually. Communications tests shall also include the aspect of understanding the content of messages.

4.0 FIRE DRILLS - Fire drills shall be conducted in accordance with Station Final Safety Analysis Reports 9.5.1.6 (Unit 1/2), 9A(Unit 3/4) Fire Hazard Analysis Report 4.1 and 4.2 (Units 1 and 2), and Title 10 Code of Federal Regulations Part 50 Appendix R. sec. I.3 to demonstrate fire-fighting readiness of assigned personnel (as applicable).

5.0 MEDICAL EMERGENCY DRILLS - A medical emergency drill involving a simulated contaminated individual that contains provisions for participation by the local support services as indicated in Section B of this Plan shall be conducted annually. The offsite portions of the medical drill may be performed as part of the required annual exercise at the discretion of the Plant General Manager. Emergency medical drills shall test medical personnel and site personnel on handling of radiologically involved victims with respect to radiation monitoring, contamination control and decontamination of the victim.

6.0 RADIOLOGICAL MONITORING DRILLS - Radiological Monitoring Drills shall be conducted at the Station annually. These drills shall provide for the monitoring of plant environs and radiological monitoring on site and offsite. These drills shall include collection and analysis of airborne activity, ground deposition surveys, and provide provisions for communications and record keeping. At least once every year collection and analysis will also include vegetation, soil and water. The State drills may not always be conducted at the Station. These drills will demonstrate the ability to coordinate with and make appropriate recommendations to the Department of State Health Services.

7.0 HEALTH PHYSICS DRILLS

7.1 Health Physics Drills shall be conducted semi-annually which involve response to and analysis of simulated elevated airborne and liquid samples and direct radiation measurements in the environment.

Addendum N-1 Drills and Exercises
Page 2 of 2

7.2 Analysis of inplant liquid samples with simulated elevated radiation levels shall be included in Health Physics drills annually. These drills will include appropriate radiation protection and contamination controls.

8.0 Terrorist-Event-Based Integrated Response Drill and Exercise

8.1 Once every six years the Emergency Response Organization shall integrate with security and demonstrate emergency responses to a range of terrorist events. The elements include activities applicable to security-based scenarios, such as accident detection and assessment, emergency classification, notification of onsite and offsite emergency responders, protective action recommendations, use of security personnel to provide prompt access for emergency equipment and support, evacuation of emergency response facilities and relocation to backup facilities, assembly and accountability, and use of fire control teams, first aid/rescue teams, and medical support personnel.

9.0 In addition to the scheduled drills and exercises, a program of simplified table top drills and training drills called walkthroughs will be conducted. The purpose of these table top drills and walkthroughs is to provide a controlled session of training at the assigned emergency response facility for emergency response personnel in the actions required during a declared emergency or during an exercise period.

10.0 Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event of a radiological emergency. The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

O Emergency Preparedness

This section of the Plan describes the actions required for Plan development and review and for distribution and maintenance of the Station Emergency Plan to maintain a state of emergency preparedness at the South Texas Project Electric Generating Station.

O.1 Maintaining Emergency Preparedness

Maintaining emergency preparedness is the responsibility of the President and Chief Executive Officer. It is important that a current state of emergency preparedness be maintained at all times at the Station. To ensure the state of readiness, the emergency preparedness program has been designed to provide each of the following objectives:

- *Formal designation of management personnel responsible for the emergency preparedness program;*
- *Establishment of an emergency preparedness training program;*
- *Planning and conducting periodic drills and exercises;*
- *Annual audit of the Plan and procedures;*
- *Routine calibration, maintenance, and inventory of emergency equipment and, supplies;*
- *Establishment of a public information and education program;*
- *Training of the individuals responsible for the emergency planning effort in the Emergency Response Division. This training, conducted on an annual basis, will consist of onsite training and/or participation in offsite seminars and training courses, industry workshops, and peer reviews of other emergency response programs.*

Needed changes from audits, recommendations, and review findings shall be incorporated into the Station Emergency Plan and appropriate procedures. Revisions to the Station Emergency Plan will be dated and marked to indicate where changes have been made. Revised material will be distributed to key members of the Station Emergency Response Organization and to other holders of the Emergency Plan in accordance with Station Records Management System Procedures. This will require that all manuals and copies of the Plan and procedures are numbered and the distribution be recorded and maintained. Revisions will be distributed to these holders with instructions stating any removal/replacement actions that are to be accomplished by the document holder.

Letters of Agreement will be reviewed and certified annually and updated as needed.

The telephone listing of the Station Emergency Response Organization and the Emergency Communications Directory will be verified and updated on a quarterly basis as needed.

O.2 State/County Review of Emergency Plan

The Station's emergency action levels used for classification of emergencies, shall be submitted to the state and county authorities on an annual basis for review.

- *Comments from this review shall be discussed between the various organizations and incorporated into the procedure, if applicable.*

O.3 Title 10, Code of Federal Regulations, Part 50.54(t) Independent Review

At the frequency specified in Title 10, Code of Federal Regulations, Part 50.54(t)(1), Emergency Preparedness Program elements are reviewed by persons which have no direct responsibility for the implementation of the Emergency Preparedness Program, in accordance with Title 10, Code of Federal Regulations, Part 50.54(t). The review shall include the elements of the program required by 10CFR50.54(t)(2). The review may be in the form of a Quality Audit.

The Quality Review results, along with recommendations for improvements, are documented and reported to the Supervisor, Emergency Response, the senior management and the President and Chief Executive Officer. All records generated by the review shall be retained as Quality Records for the retention period specified in 10CFR50.54(t)(2). Portions of the review are made available to state and local governments as specified in 10CFR50.54(t)(2).

The Quality Review findings shall be reviewed per the independent review requirements for Quality Audits specified in the station's Operations Quality Assurance Program (OQAP) Chapter 19.0, "Administrative Controls". Records of the independent review activities shall be prepared, approved, and distributed as identified in the OQAP. Records of the independent review shall be retained for at least the minimum period specified in 10CFR50.54(t)(2).

O.4 Emergency Equipment and Supplies

Emergency equipment and supplies shall be inspected, inventoried, and maintained as described in Procedure 0PGP05-ZV-0009, Emergency Facility Inventories and Inspections. Radiological instruments are maintained and calibrated in accordance with Station procedures.

5.2 Emergency Preparedness Program Milestone and Implementation Schedule

(A) COLA Emergency Plan submittal.

(B) Establish construction site Emergency procedures.

(C) Purchase necessary construction Emergency Program materials (radios, vehicles).

(D) Train personnel for construction site evacuation.

(E) Emergency evacuation plan for construction site implemented upon commencement of construction activities.

(F) Base Mat pour commence safety related work.

(G) Develop Emergency preparedness procedural criteria for new Units.

(H) Fuel on site.

(I) Procedures submitted 180 days prior to fuel load.

(J) Full Participation Exercise objectives submitted 180 days prior to Exercise.

(K) Full Participation Exercise.

(L) ITAAC closure.

(M) Fuel Load.

5.3 Emergency Action Levels

South Texas Project

Units 3 and 4

Emergency Action Level

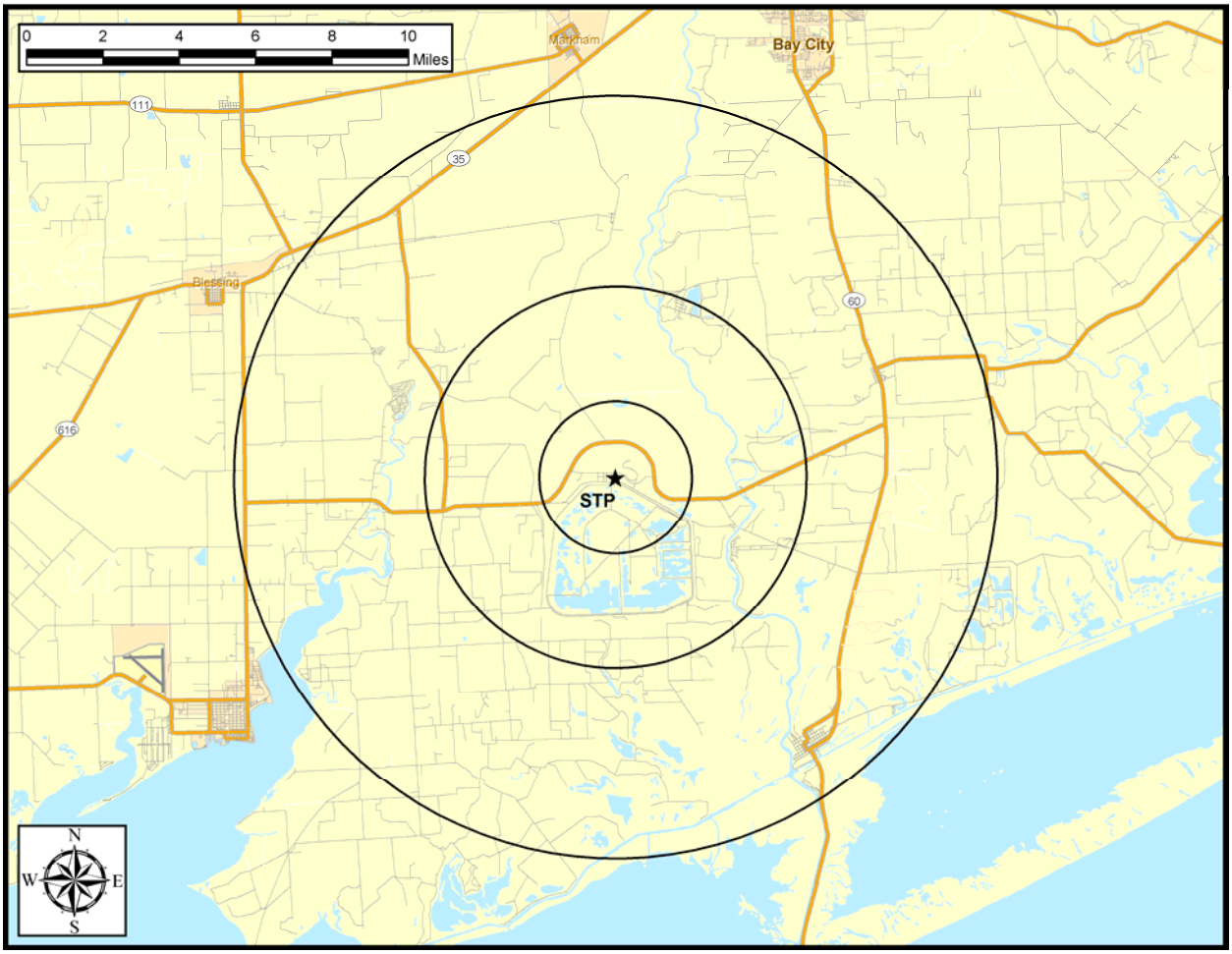
Technical Basis

STP Nuclear Operating Company shall submit a fully developed set of EALs to the NRC in accordance with NEI 99-01 Revision 5 endorsed EAL scheme. These fully developed EALs shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.

KLD ASSOCIATES, INC.

South Texas Project

Development of Evacuation Time Estimates



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EXECUTIVE SUMMARY

This report describes the analyses undertaken and the results obtained by a study to develop Evacuation Time Estimates (ETE) for the South Texas Project (STP) located in Matagorda County, Texas. Evacuation time estimates provide State and local governments with site-specific information needed for Protective Action decision-making.

In the performance of this effort, all available prior documentation relevant to Evacuation Time Estimates was reviewed. Other guidance is provided by documents published by Federal Government agencies. Most important of these are:

- Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG-0654/FEMA-REP-1, Rev. 2, November 1980.
- Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, November 1980.
- Development of Evacuation Time Estimates for Nuclear Power Plants, NUREG/CR-6863, January 2005.

Overview of Project Activities

This project began in January, 2007 and extended over a period of 9 months. The major activities performed are briefly described in chronological sequence:

- Attended “kick-off” meetings with South Texas Project personnel and emergency management personnel representing state and local governments.
- Reviewed prior ETE reports prepared for STP and accessed U.S. Census data files for the year 2000. Studied Geographical Information Systems (GIS) maps of the area in the vicinity of STP, then conducted a field survey of the highway network.
- Synthesized this information to create an analysis network representing the highway system topology and capacities within the EPZ, and extending 15 miles radially from STP.
- Designed and sponsored a telephone survey of residents within the EPZ to gather focused data needs for this ETE study that were not contained within the census database. The survey instrument was reviewed and modified by State and county personnel prior to the survey.

- Data collection forms (provided to Matagorda County at the kickoff meeting) were returned with data pertaining to employment, transients, and special facilities within the county.
- The traffic demand and trip-generation rates of evacuating vehicles were estimated from the gathered data. The trip generation rates reflect the estimated mobilization time (i.e., the time required by evacuees to prepare for the evacuation trip) that was computed using the results of the telephone survey of EPZ residents.
- Following Federal guidelines, the EPZ is subdivided into 11 Zones. The Zones are grouped within circular areas or within "keyhole" configurations (circles plus radial sectors) that define a total of 22 Evacuation Regions.
- The Matagorda Beach area has only one access road - FM 2031, which cuts through the STP EPZ. It is prudent to evacuate both the resident and transient population on the beach in the event of an emergency, since an escalation of the event or a change in wind direction could expose those evacuees on FM 2031 to the plume. Thus, it is assumed that in every scenario and for every region these people will be evacuated, and their vehicles will be included in the network traffic.
- The time-varying external circumstances are represented as Evacuation Scenarios, each described in terms of the following factors: (1) Season (Summer, Winter); (2) Day of Week (Midweek, Weekend); (3) Time of Day (Midday, Evening); and (4) Weather (Good, Rain). Two special scenarios involving a summer beach holiday, and the construction of a new unit at the STP site were considered.
- The Planning Basis for the calculation of ETE is:
  - A rapidly escalating accident at STP that quickly assumes the status of General Emergency such that the Advisory to Evacuate is virtually coincident with the siren alert.
  - While an unlikely accident scenario, this planning basis will yield ETE, measured as the elapsed time from the Advisory to Evacuate until the last vehicle exits the impacted Region, that represent "upper bound" estimates. This conservative Planning Basis is applicable for all initiating events.
- If the emergency occurs while schools are in session, the ETE study assumes that the children will be evacuated by bus directly to specified host schools located outside the EPZ. Parents, relatives, and neighbors are advised to pick up their children at the host school for a Site Area Emergency or higher. The ETE for school children are calculated separately.
- Evacuees who do not have access to a private vehicle will either ride-share with relatives, friends or neighbors, or be evacuated by buses provided as specified in the county evacuation plans. Separate ETE are calculated for the transit-dependent evacuees.

Computation of ETE

A total of 264 ETE were computed for the evacuation of the general public. Each ETE quantifies the aggregate evacuation time estimated for the population within one of the 22 Evacuation Regions to completely evacuate from that Region, under the circumstances defined for one of the 12 Evacuation Scenarios (22 x 12 = 264). Separate ETE are calculated for transit-dependent evacuees, including school children for applicable scenarios.

Except for Region R03, which is the evacuation of the entire EPZ, only a portion of the people within the EPZ would be advised to evacuate. That is, the Advisory to Evacuate would apply only to those people occupying the specified impacted region. It is assumed that 100 percent of the people within the impacted region will evacuate in response to this Advisory. The people occupying the remainder of the EPZ outside the impacted region may be advised to take shelter.

The computation of ETE assumes that a portion of the population within the EPZ but outside the impacted region, will elect to "voluntarily" evacuate. These voluntary evacuees could impede those others who are evacuating from within the impacted region. The impedance that could be caused by voluntary evacuees is considered in the computation of ETE for the impacted region. In addition, impedance caused by voluntary evacuees originating their trips in the "shadow region" outside the EPZ and extending to a radial distance of 15 miles from STP, is likewise considered.

The computational procedure is outlined as follows:

- A link-node representation of the highway network is coded. Each link represents a unidirectional length of highway; each node usually represents an intersection or merge point. The capacity of each link is estimated based on the field survey observations and on established procedures.
- The evacuation trips are generated at locations called "zonal centroids" located within the EPZ. The trip generation rates vary over time reflecting the mobilization process, and from one location (centroid) to another depending on population density and on whether a centroid is within, or outside, the impacted area.
- The computer models compute the routing patterns for evacuating vehicles that are compliant with federal guidelines (outbound relative to the location of STP), then simulate the traffic flow movements over space and time. This simulation process estimates the rate that traffic flow exits the impacted region.
- The ETE statistics provide the elapsed times for 50 percent, 90 percent, 95 percent, and 100 percent, respectively, of the population within the impacted region, to evacuate from within the impacted region. These statistics are presented in tabular and graphical formats.

Traffic Management

This study includes the development of a comprehensive traffic management plan designed to expedite the evacuation of people from within an impacted region. The plan takes the form of detailed schematics specifying: (1) the directions of evacuation travel to be facilitated, and other traffic movements to be discouraged; (2) the equipment needed (cones, barricades) and their deployment; (3) the locations of these "Traffic Control Points" (TCP); and (4) the number of traffic control personnel required.

Selected Results

A compilation of selected information is presented on the following pages in the form of Figures and Tables extracted from the body of the report; these are described below.

- Figure 3-1 displays a map of the STP site showing the layout of the 11 Zones that comprise, in aggregate, the Emergency Planning Zone (EPZ).
- Table 3-1 presents the estimates of permanent resident population in each Zone based on the 2000 Census data for Matagorda County. Census data showed a slight decrease (0.3%) in population numbers between 2000 and 2005. We conservatively estimate no change in population between year 2000 and 2007.
- Table 6-2 defines each of the 22 Evacuation Regions in terms of their respective groups of Zones.
- Table 6-3 lists the 12 Evacuation Scenarios.
- Tables 7-1C and 7-1D are compilations of Evacuation Time Estimates (ETE). These data are the times needed to *clear the indicated regions* of 95 and 100 percent of the population occupying these regions, respectively. These computed ETE include consideration of mobilization time, and of estimated voluntary evacuations from other regions within the EPZ and from the shadow region.
- Table 8-5A presents ETE for the schoolchildren in good weather.
- Table 8-7A presents ETE for the transit-dependent population in good weather.

Conclusion

This report presents the methodological details supporting the results obtained and recommendations for consideration by local emergency responders.

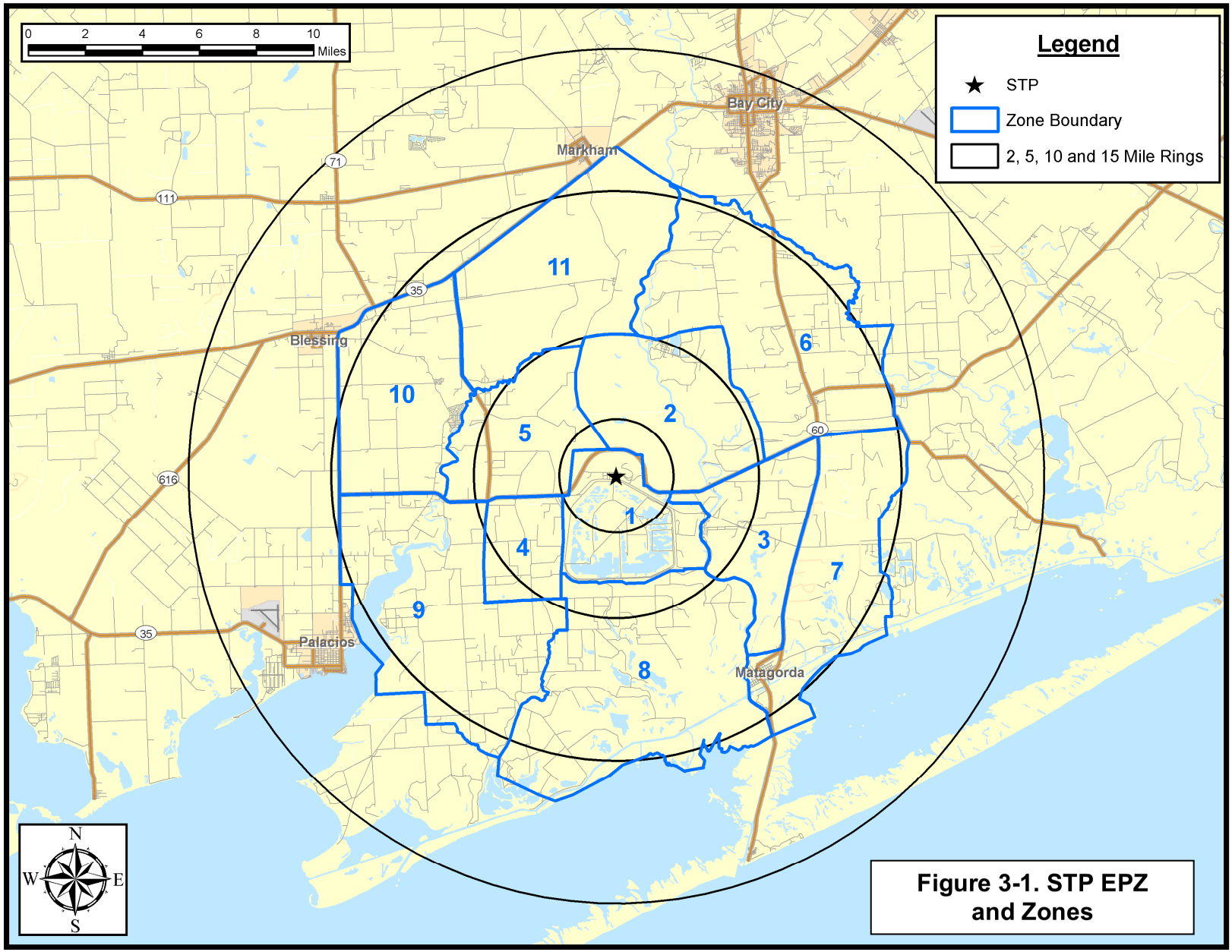


Figure 3-1. STP EPZ and Zones

Table 3-1. EPZ Permanent Resident Population		
Zone	**2000 Population**	**2007 Population**
1	0	0
2	40	40
3	402	402
4	56	56
5	82	82
6	650	650
7	518	518
8	0	0
9	237	237
10	692	692
11	198	198
TOTAL	**2,875**	**2,875**
	Population Growth:	**0%**

	2000 Population	**2007 Population**
Matagorda Beach*	116	116

*The 116 permanent residents in the Matagorda Beach area will be evacuated under all scenarios.

Table 6-2. Description of Evacuation Regions												
		ZONE										
Region	Description	1	2	3	4	5	6	7	8	9	10	11
R01	2 mile ring	■										
R02	5-mile ring	■	■	■	■	■						
R03	Full EPZ	■	■	■	■	■	■	■	■	■	■	■
Evacuate 2 mile ring and 5 miles downwind												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R04	29 - 50	■			■							
R05	51 - 106	■			■	■						
R06	107 - 140	■				■						
R07	141 - 174	■	■			■						
R08	175 - 230	■	■									
R09	231 - 286	■	■	■								
R10	287 - 331	■		■								
R01*	332 - 28	■										
Evacuate 5 mile ring and downwind to EPZ boundary												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R11	355 - 50	■	■	■	■	■			■	■		
R12	51 - 61	■	■	■	■	■			■	■	■	
R13	62 - 95	■	■	■	■	■				■	■	
R14	96 - 129	■	■	■	■	■				■	■	■
R15	130 - 163	■	■	■	■	■					■	■
R16	164 - 174	■	■	■	■	■	■				■	■
R17	175 - 219	■	■	■	■	■	■					■
R18	220 - 230	■	■	■	■	■	■					
R19	231 - 286	■	■	■	■	■	■	■				
R20	287 - 298	■	■	■	■	■		■				
R21	299 - 343	■	■	■	■	■		■	■			
R22	344 - 354	■	■	■	■	■		■	■	■		

Residents and Transients in the Matagorda Beach area are always evacuated.

* Note that evacuating the 2-mile ring and evacuating the 5-mile ring with wind from 332° to 28° both result in the evacuation of Region1. Thus, R01 is shown twice in the table above.

Table 6-3. Evacuation Scenario Definitions					
Scenario	**Season**	**Day of Week**	**Time of Day**	**Weather**	**Special**
1	Summer	Midweek	Midday	Good	None
2	Summer	Midweek	Midday	Rain	None
3	Summer	Weekend	Midday	Good	None
4	Summer	Weekend	Midday	Rain	None
5	Summer	Midweek, Weekend	Evening	Good	None
6	Winter	Midweek	Midday	Good	None
7	Winter	Midweek	Midday	Rain	None
8	Winter	Weekend	Midday	Good	None
9	Winter	Weekend	Midday	Rain	None
10	Winter	Midweek, Weekend	Evening	Good	None
11	Summer	Weekend	Midday	Good	Holiday (Beachgoers)
12	Summer	Midweek	Midday	Good	New Plant Construction

Table 7-1C. Time To Clear The Indicated Area of 95 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:50	1:40
R02 5-mile ring	3:10	3:20	3:00	3:00	3:20	R02 5-mile ring	3:40	3:40	3:50	3:50	4:10	R02 5-mile ring	3:25	2:10
R03 Entire EPZ	4:00	4:00	3:40	3:40	4:00	R03 Entire EPZ	4:20	4:20	4:10	4:20	4:20	R03 Entire EPZ	3:50	3:40
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	1:00	1:00	2:30	2:30	2:50	R04 29° to 50°	1:00	1:00	2:50	2:50	2:50	R04 29° to 50°	2:30	1:40
R05 51° to 106°	1:50	1:50	3:25	3:25	3:30	R05 51° to 106°	1:50	1:50	3:40	3:40	3:40	R05 51° to 106°	3:25	1:40
R06 107° to 140°	1:30	1:30	2:50	2:50	2:40	R06 107° to 140°	1:30	1:30	2:50	2:50	2:50	R06 107° to 140°	2:50	1:40
R07 141° to 174°	1:50	1:50	2:50	2:50	2:40	R07 141° to 174°	1:50	1:50	2:50	2:50	2:50	R07 141° to 174°	2:50	1:50
R08 175° to 230°	1:00	1:00	1:30	1:30	1:30	R08 175° to 230°	1:00	1:00	1:30	1:30	1:30	R08 175° to 230°	1:30	1:40
R09 231° to 286°	3:00	3:00	2:50	2:50	3:00	R09 231° to 286°	3:30	3:30	3:40	3:40	4:00	R09 231° to 286°	3:25	2:00
R10 287° to 331°	3:00	3:00	2:50	2:50	3:00	R10 287° to 331°	3:30	3:30	3:40	3:40	4:00	R10 287° to 331°	3:25	2:00
R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:50	1:40
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	3:50	3:50	3:40	3:40	3:50	R11 355° to 50°	4:10	4:10	4:10	4:20	4:20	R11 355° to 50°	3:25	2:50
R12 51° to 61°	3:40	3:40	3:20	3:30	3:50	R12 51° to 61°	4:10	4:10	4:10	4:10	4:20	R12 51° to 61°	3:25	3:00
R13 62° to 95°	3:40	3:40	3:20	3:30	3:50	R13 62° to 95°	4:10	4:10	4:10	4:10	4:20	R13 62° to 95°	3:25	3:00
R14 96° to 129°	3:50	3:50	3:30	3:30	3:50	R14 96° to 129°	4:10	4:10	4:10	4:10	4:20	R14 96° to 129°	3:25	3:10
R15 130° to 163°	3:30	3:30	3:00	3:00	3:30	R15 130° to 163°	4:00	4:00	4:00	4:00	4:10	R15 130° to 163°	3:25	2:50
R16 164° to 174°	3:50	3:50	3:20	3:30	3:50	R16 164° to 174°	4:10	4:10	4:10	4:10	4:20	R16 164° to 174°	3:30	3:40
R17 175° to 219°	4:00	4:00	3:40	3:40	4:00	R17 175° to 219°	4:10	4:10	4:10	4:20	4:20	R17 175° to 219°	3:35	3:40
R18 220° to 230°	3:50	3:50	3:40	3:40	4:00	R18 220° to 230°	4:10	4:10	4:10	4:20	4:20	R18 220° to 230°	3:35	3:30
R19 231° to 286°	3:50	3:50	3:40	3:40	3:50	R19 231° to 286°	4:10	4:10	4:10	4:20	4:20	R19 231° to 286°	3:50	3:30
R20 287° to 298°	3:20	3:20	3:00	3:00	3:30	R20 287° to 298°	3:50	3:50	4:00	4:00	4:10	R20 287° to 298°	3:40	2:30
R21 299° to 343°	3:20	3:20	3:00	3:00	3:30	R21 299° to 343°	3:50	3:50	4:00	4:00	4:10	R21 299° to 343°	3:40	2:30
R22 344° to 354°	3:50	3:50	3:40	3:40	3:50	R22 344° to 354°	4:10	4:10	4:10	4:20	4:20	R22 344° to 354°	3:40	3:00

Table 7-1D. Time To Clear The Indicated Area of 100 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	1:00	1:00	1:00	1:00	1:00	R01 2-mile ring	1:00	1:00	1:00	1:00	1:00	R01 2-mile ring	1:00	2:00
R02 5-mile ring	6:00	6:10	5:10	5:10	5:10	R02 5-mile ring	6:00	6:00	5:10	5:10	5:10	R02 5-mile ring	5:10	6:00
R03 Entire EPZ	6:10	6:10	5:50	5:50	5:50	R03 Entire EPZ	6:10	6:10	5:50	5:50	5:50	R03 Entire EPZ	5:50	6:10
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	4:50	5:00	4:50	4:50	4:50	R04 29° to 50°	4:50	5:00	4:50	4:50	4:50	R04 29° to 50°	4:50	5:00
R05 51° to 106°	4:50	5:00	5:00	5:00	5:00	R05 51° to 106°	4:50	5:00	5:00	5:00	5:00	R05 51° to 106°	5:00	5:00
R06 107° to 140°	4:50	4:50	5:00	5:00	5:00	R06 107° to 140°	4:50	4:50	5:00	5:00	5:00	R06 107° to 140°	5:00	5:00
R07 141° to 174°	4:50	4:50	5:00	5:00	5:00	R07 141° to 174°	4:50	4:50	5:00	5:00	5:00	R07 141° to 174°	5:00	5:00
R08 175° to 230°	3:50	3:50	2:50	2:50	2:50	R08 175° to 230°	3:50	3:50	2:50	2:50	2:50	R08 175° to 230°	2:50	3:50
R09 231° to 286°	6:00	6:10	5:10	5:10	5:10	R09 231° to 286°	6:00	6:00	5:10	5:10	5:10	R09 231° to 286°	5:10	6:00
R10 287° to 331°	6:00	6:10	5:10	5:10	5:10	R10 287° to 331°	6:00	6:00	5:10	5:10	5:10	R10 287° to 331°	5:10	6:00
R01 332° to 28°	1:00	1:00	1:00	1:00	1:00	R01 332° to 28°	1:00	1:00	1:00	1:00	1:00	R01 332° to 28°	1:00	2:00
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	6:00	6:10	5:50	5:50	5:50	R11 355° to 50°	6:00	6:00	5:50	5:50	5:50	R11 355° to 50°	5:50	6:00
R12 51° to 61°	6:00	6:10	5:50	5:50	5:50	R12 51° to 61°	6:00	6:10	5:50	5:50	5:50	R12 51° to 61°	5:50	6:00
R13 62° to 95°	6:00	6:10	5:50	5:50	5:50	R13 62° to 95°	6:00	6:10	5:50	5:50	5:50	R13 62° to 95°	5:50	6:00
R14 96° to 129°	6:00	6:10	5:50	5:50	5:50	R14 96° to 129°	6:00	6:10	5:50	5:50	5:50	R14 96° to 129°	5:50	6:00
R15 130° to 163°	6:00	6:10	5:10	5:10	5:10	R15 130° to 163°	6:00	6:00	5:10	5:10	5:10	R15 130° to 163°	5:10	6:00
R16 164° to 174°	6:10	6:10	5:20	5:20	5:20	R16 164° to 174°	6:10	6:10	5:20	5:20	5:10	R16 164° to 174°	5:10	6:00
R17 175° to 219°	6:10	6:10	5:20	5:20	5:20	R17 175° to 219°	6:10	6:10	5:20	5:20	5:10	R17 175° to 219°	5:10	6:10
R18 220° to 230°	6:10	6:10	5:20	5:20	5:20	R18 220° to 230°	6:10	6:10	5:20	5:20	5:10	R18 220° to 230°	5:10	6:10
R19 231° to 286°	6:10	6:10	5:20	5:20	5:20	R19 231° to 286°	6:10	6:10	5:20	5:20	5:20	R19 231° to 286°	5:10	6:10
R20 287° to 298°	6:10	6:10	5:10	5:10	5:10	R20 287° to 298°	6:10	6:10	5:10	5:10	5:10	R20 287° to 298°	5:10	6:00
R21 299° to 343°	6:10	6:10	5:10	5:10	5:10	R21 299° to 343°	6:10	6:10	5:10	5:10	5:10	R21 299° to 343°	5:10	6:00
R22 344° to 354°	6:10	6:10	5:50	5:50	5:50	R22 344° to 354°	6:10	6:10	5:50	5:50	5:50	R22 344° to 354°	5:50	6:00

Table 8-5A. School Evacuation Time Estimates - Good Weather

School	Driver Mobilization and Travel Time from Depot(min)	Loading Time (min)	Dist. to EPZ Boundary (mi.) Major Road	Dist. to EPZ Boundary (mi.) Local Road	Average Speed (mph)	Adjusted Speed (mph)	Travel Time to EPZ Bdry (min)	To Bdry ETE (min)	To Bdry ETE (hr:min)	Dist. EPZ Bndry to R.C. Major Road	Dist. EPZ Bndry to R.C. Local Road	Travel Time EPZ Bdry to RC (min)	ETE to R.C. (min)	ETE to R.C. (hr:min)
Matagorda County Schools														
Matagorda Elementary School	30	5	15	1.7	54.0	50.0	20.0	60	**1:00**	1.5	1.4	5	65	**1:05**
Tidehaven Middle School to Markham E.S.	30	5	7.8	0	59.6	50.0	9.4	45	**0:45**	0	1.0	2	50	**0:50**
Tidehaven High School to Markham E.S.	30	5	6.2	0	70.2	50.0	7.4	45	**0:45**	0	1.0	2	45	**0:45**
Tidehaven Middle School to Blessing E.S.	30	5	6.4	0	53.9	50.0	7.7	45	**0:45**	0	0.1	1	45	**0:45**
Tidehaven High School to Blessing E.S.	30	5	4.8	0	62.6	50.0	5.8	45	**0:45**	0	0.1	1	45	**0:45**
ETE rounded up to the nearest 5 minutes			**Maximum for EPZ:**					60	**1:00**	**Maximum:**		3	65	**1:05**
			Average for EPZ:					50	**0:50**	**Average:**		2	50	**0:50**

Table 8-7A. Transit-Dependent Evacuation Time Estimates - GOOD WEATHER

Route Number	Single Wave: Mobilization and Travel Time to EPZ	Route Length (mi.)	Average Speed (mph)	Adjusted Speed (mph)	Run Travel Time	Pickup Time	ETE (min)	ETE (hr:min)	Second Wave (After School Evacuation): Arrive at RC	Unload	Driver Rest	Return to EPZ	Average Speed (mph)	Adjusted Speed (mph)	Run Travel Time	Pickup Time	ETE (min)	ETE (hr:min)
1	150	6.3	63.4	50.0	7.6	15	175	**2:55**	50	5	15	2	63.4	50.0	15.12	15	105	**1:45**
2	150	17.0	50.0	50.0	20.4	15	190	**3:10**	50	5	15	2	50.0	50.0	40.8	15	130	**2:10**
3	150	5.5	53.1	50.0	6.6	15	175	**2:55**	50	5	15	2	53.1	50.0	13.2	15	105	**1:45**
						Maximum for EPZ:	**190**	**3:10**								**Maximum for EPZ:**	**130**	**2:10**
						Average for EPZ:	**180**	**3:00**								**Average for EPZ:**	**115**	**1:55**

1. INTRODUCTION

This report describes the analyses undertaken and the results obtained by a study to update the existing Evacuation Time Estimates (ETE) for the South Texas Project (STP), located in Matagorda County, Texas. Evacuation time estimates provide State and local governments with site-specific information needed for Protective Action decision-making.

In the performance of this effort, all available prior documentation relevant to Evacuation Time Estimates was reviewed.

Other guidance is provided by documents published by Federal Government agencies. Most important of these are:

- Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG-0654/FEMA-REP-1, Rev. 2, November 1980.
- Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, November 1980.
- Development of Evacuation Time Estimates for Nuclear Power Plants, NUREG/CR-6863, January 2005.

We wish to express our appreciation to all the directors and staff members of the Matagorda County emergency management agencies and local and state law enforcement agencies, who provided valued guidance and contributed information contained in this report.

1.1 Overview of the ETE Update Process

The following outline presents a brief description of the work effort in chronological sequence:

1. Information Gathering:
   - Defined the scope of work in discussion with representatives of South Texas Project.
   - Reviewed existing reports describing past evacuation studies.
   - Attended meetings with emergency planners from Matagorda County to identify issues to be addressed and resources available.
   - Conducted a detailed field survey of the Emergency Planning Zone (EPZ) highway system and of area traffic conditions.

- Obtained demographic data from census and state agencies.
- Conducted a random sample telephone survey of EPZ residents.
- Conducted a data collection effort to identify and describe schools, special facilities, major employers, transportation providers, and other important sources of information.

2. Estimated distributions of Trip Generation times representing the time required by various population groups (permanent residents, employees, and transients) to prepare (mobilize) for the evacuation trip. These estimates are primarily based upon the random sample telephone survey.
3. Defined Evacuation Scenarios. These scenarios reflect the variation in demand, trip generation distribution and in highway capacities, associated with different seasons, day of week, time of day and weather conditions.
4. Defined a traffic management strategy. Traffic control is applied at specified Traffic Control Points (TCP) located within the EPZ. Local and state police personnel have reviewed all traffic control plans.
5. Defined Evacuation Areas or Regions. The EPZ is partitioned into Zones which serve as a basis for the ETE analysis presented herein. Evacuation "Regions" are comprised of a group of contiguous Zones for which ETE are calculated. The configuration of these Regions reflects the fact that the wind can take any direction and that the radial extent of the impacted area depends on accident-related circumstances. Each Region, other than those that approximate circular areas, approximates a "key-hole" configuration within the EPZ as recommended by NUREG/CR-6863.
6. Estimated demand for transit services for persons at "Special Facilities" and for transit-dependent persons at home.
7. Prepared the input streams for the IDYNEV system.
   - Estimated the traffic demand, based on the available information derived from Census data, from prior studies, from data provided by local and state agencies and from the telephone survey.
   - Applied the procedures specified in the 2000 Highway Capacity Manual (HCM[1]) to the data acquired during the field survey, to estimate the capacity of all highway segments comprising the evacuation routes.

[1] Highway Capacity Manual (HCM2000), Transportation Research Board, National Research Council, 2000.

- Developed the link-node representation of the evacuation network, which is used as the basis for the computer analysis that calculates the ETE.

- Calculated the evacuating traffic demands for each Region and for each Evacuation Scenario. Considered the effects on demand of "voluntary evacuation" and of the "shadow effect".

- Represented the traffic management strategy.

- Specified the candidate destinations of evacuation travel consistent with outbound movement relative to the location of the STP.

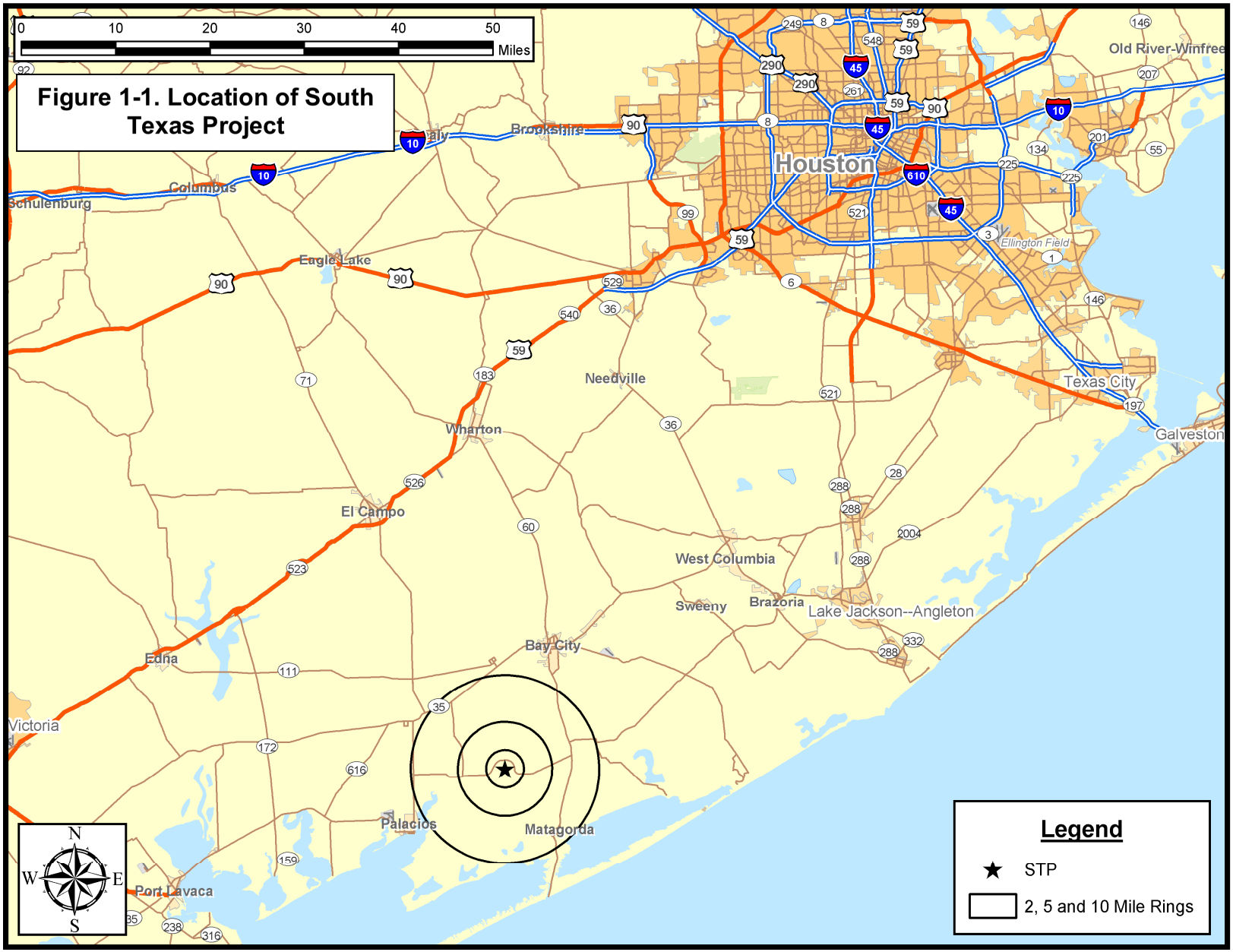
- Prepared the input stream for the IDYNEV System.

8. Executed the IDYNEV models to provide the estimates of evacuation routing and ETE for all residents, transients and employees ("general population") with access to private vehicles. Generated a complete set of ETE for all specified Regions and Evacuation Scenarios.
9. Documented ETE in formats responsive to NUREG-0654.
10. Calculated the ETE for all transit activities including those for schools and for the transit-dependent population.

Steps 7 and 8 are iterated as described in Appendix D.

1.2 The South Texas Project Site Location

The STP is located in Matagorda County, Texas, approximately 13 miles south-southwest of Bay City, and 75 miles south-southwest of Houston. A portion of the EPZ is on the Gulf Coast (E/W Matagorda Bay) and Tres Palacios Bay. The area has many lakes, rivers, creeks, and a barrier island that attracts many transients. The area is sparsely populated; Matagorda is the largest community. Figure 1-1 displays the area surrounding the STP. This map identifies the communities in the area and the major roads.


0 10 20 30 40 50
Miles
Figure 1-1. Location of South Texas Project
Houston
Old River-Winfree
Columbus
Schulenburg
Eagle Lake
Needville
Wharton
El Campo
Texas City
Galveston
West Columbia
Sweeny
Brazoria
Lake Jackson--Angleton
Bay City
Edna
Victoria
Palacios
Matagorda
Port Lavaca
Ellington Field
N
W
E
S
Legend
STP
2, 5 and 10 Mile Rings

1.3 Preliminary Activities

Since this plan constitutes an update of an existing document, it was necessary to review the prior process and findings. These activities are described below.

Literature Review

KLD Associates was provided with copies of documents describing past studies and analyses leading to the development of emergency plans and of the ETE. We also obtained supporting documents from a variety of sources, which contained information needed to form the database used for conducting evacuation analyses.

Field Surveys of the Highway Network

KLD personnel drove the highway system within the EPZ and for some distance outside. The characteristics of each section of highway were recorded. These characteristics include:

• Number of lanes	• Posted speed
• Pavement Width	• Actual free speed
• Shoulder type & width	• Abutting land use
• Intersection configuration	• Control devices
• Lane channelization	• Interchange geometries
• Geometrics: Curves, grades	
• Unusual characteristics: Narrow bridges, sharp curves, poor pavement, flood warning signs, inadequate delineations, etc.	

The data were then transcribed; this information was referenced while preparing the input stream for the IDYNEV System.

Telephone Survey

A telephone survey was undertaken to gather information needed for the evacuation study. Appendix F presents the survey instrument, the procedures used and tabulations of data compiled from the survey returns.

These data were utilized to develop estimates of vehicle occupancy during an evacuation and to estimate elements of the mobilization process. This database was also referenced to estimate the number of transit-dependent residents.

Developing the Evacuation Time Estimates

The ETE overall procedure is outlined in Appendix D. Demographic data were obtained from several sources, as detailed later in this report. These data were analyzed and converted into vehicle demand data.

Highway capacity was estimated for each highway segment based on the field surveys and on the principles specified in the 2000 Highway Capacity Manual (HCM). The link-node representation of the physical highway network was developed using Geographic Information System (GIS) mapping software and the observations obtained from the field survey. This network representation of "links" and "nodes" is shown in Figure 1-2.

Analytical Tools

The IDYNEV System that was employed for this study is comprised of several integrated computer models. One of these is the PC-DYNEV (DYnamic Network EVacuation) macroscopic simulation model that was developed by KLD under contract with the Federal Emergency Management Agency (FEMA).

IDYNEV consists of three submodels:

- A macroscopic traffic simulation model (for details, see Appendix C).
- An intersection capacity model (for details, see Highway Research Record No. 772, Transportation Research Board, 1980, papers by Lieberman and McShane & Lieberman).
- A dynamic, node-centric routing model that adjusts the "base" routing in the event of an imbalance in the levels of congestion on the outbound links.

Another model of the IDYNEV System is the TRAD (TRaffic Assignment and Distribution) model. This model integrates an equilibrium assignment model with a trip distribution algorithm to compute origin-destination volumes and paths of travel designed to minimize travel time. For details, see Appendix B.

Still another software product developed by KLD, named UNITES (UNIfied Transportation Engineering System) was used to expedite data entry.

The procedure for applying the IDYNEV System within the framework of developing an update to an ETE is outlined in Appendix D. Appendix A is a glossary of terms.

For the reader interested in more details of the model than are provided in Appendices

B, C and D, and in Highway Research Record No. 772 (discussed in Section 4 of this report), the following references are suggested:

- NUREG/CR-4873 – Benchmark Study of the I-DYNEV Evacuation Time Estimate Computer Code
- NUREG/CR-4874 – The Sensitivity of Evacuation Time Estimates to Changes in Input Parameter for the I-DYNEV Computer Code

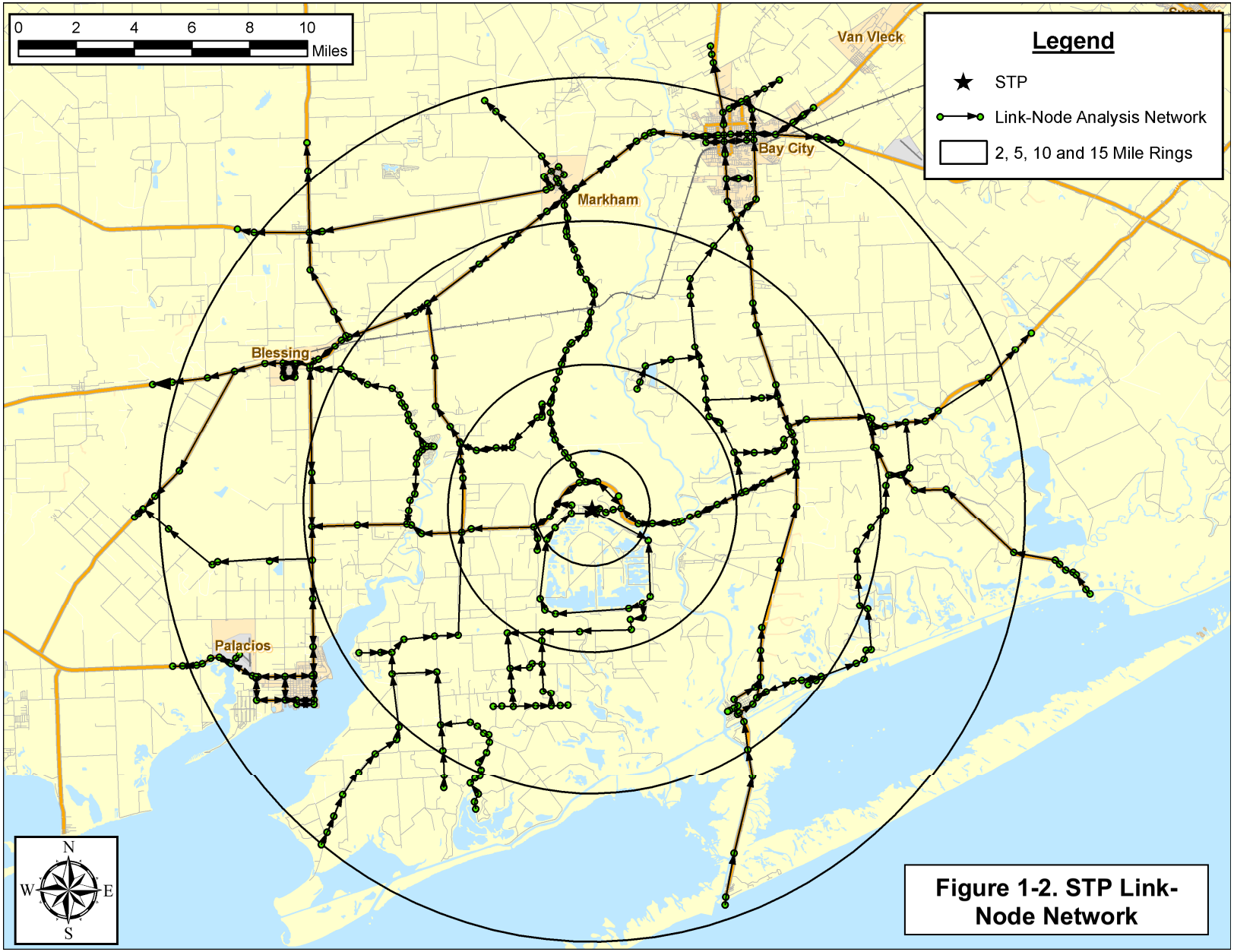


Figure 1-2. STP Link-Node Network

The evacuation analysis procedures are based upon the need to:

- Route traffic along paths of travel that will expedite their travel from their respective points of origin to points outside the EPZ
- Restrict movement toward STP to the extent practicable, and disperse traffic demand so as to avoid focusing demand on a limited number of highways
- Move traffic in directions that are generally outbound, relative to the location of STP.

A set of candidate destination nodes on the periphery of the EPZ is specified for each traffic origin (or centroid) within the EPZ. The TRAD model produces output that identifies the "best" traffic routing, subject to the design conditions outlined above. In addition to this information, rough estimates of travel time are provided, together with turn-movement data required by the PC-DYNEV simulation model.

The simulation model is then executed to provide a detailed description of traffic operations on the evacuation network. This description enables the analyst to identify bottlenecks and to develop countermeasures that are designed to expedite the movement of vehicles. The outputs of this model are the volume of traffic, expressed as vehicles/hour, that exits the Evacuation Region along the various highways (links) that cross the Region boundaries. These outputs are exported into a spreadsheet which contains the ETE. Section 7 presents a further description of this process along with the ETE Tables.

As outlined in Appendix D, this procedure consists of an iterative design-analysis-redesign sequence of activities. When performed properly, this procedure converges to yield an evacuation plan which best services the evacuating public.

1.4 Comparison with Prior ETE Study

Table 1-1 presents a comparison of the present ETE study with the 1994 study. The major factors contributing to the differences between the ETE values obtained in this study and those of the previous study can be summarized as follows:

- Vehicle occupancy rates based on the results of a telephone survey of EPZ residents.
- Voluntary and shadow evacuations are considered.
- Trip Generation times are based on the results of a telephone survey of EPZ residents, which resulted in significantly longer mobilization times than those assumed in the previous study.

Table 1-1. ETE Study Comparisons		
Topic	**Treatment**	
	Previous ETE Study	**Current ETE Study**
Resident Population Basis	1990 US Census block data used. Resident Population = 3,040	ArcGIS Software using 2000 US Census blocks; block centroid method used; population extrapolated to 2007. Population = 2,875
Resident Population Vehicle Occupancy	Average household size of 2.5 used. 1 person/evacuating vehicle.	2.38 persons/household, 1.43 evacuating vehicles/household yielding: 1.66 persons/vehicle
Employee Population	Employees grouped with transient population. 1 employee/vehicle.	Employees treated as separate population group. Employee estimates based on information provided by Matagorda County about major employers in the EPZ. 1.01 employees/vehicle based on phone survey results.
Voluntary evacuation from within EPZ in areas outside region to be evacuated	Not considered	50 percent of population within the circular portion of the region; 35 percent, in annular ring between the circle and the EPZ boundary (See Figure 2-1).
Shadow Evacuation	Not considered.	30% of people outside of the EPZ and within the shadow area (See Figure 7-2).
Network Size	349 links; 58 nodes.	574 Links; 389 Nodes.
Roadway Geometric Data	Field surveys conducted in 1994.	Field surveys conducted in 2007. Road capacities based on 2000 HCM.
School Evacuation	Direct evacuation to designated Reception Center/Host School.	Direct evacuation to designated Reception Center/Host School.

Table 1-1. ETE Study Comparisons		
Topic	**Treatment**	
	Previous ETE Study	**Current ETE Study**
Transit Dependent Population	Not considered.	Defined as households with 0 vehicles + households with 1 vehicle with commuters who do not return home + households with 2 vehicles with commuters who do not return home. Telephone survey results used to estimate transit dependent population.
Ridesharing	Not considered.	50 percent of transit dependent persons will ride out with a neighbor or friend.
Trip Generation for Evacuation	Assumed mobilization times as follows: Permanent and seasonal residents between 30 and 150 minutes. Distribution based on assumptions. Employees and transients leave between 30 and 60 minutes. School buses leave between 30 and 90 minutes. All times measured from the Advisory to Evacuate.	Based on residential telephone survey of specific pre-trip mobilization activities: Residents with commuters returning leave between 45 minutes and 6 hours. Residents without commuters returning leave between 15 minutes and 5 hours. Employees and transients leave between 10 minutes and 2 hours. All times measured from the Advisory to Evacuate.
Traffic and Access Control	Not considered.	Traffic Control used in all scenarios to facilitate the flow of traffic outbound relative to STP.
Weather	Fair, Adverse and flooding.	Normal, or Rain. The capacity and free flow speed of all links in the network are reduced by 10% in the event of rain.

Table 1-1. ETE Study Comparisons		
Topic	**Treatment**	
	Previous ETE Study	**Current ETE Study**
Modeling	NETVAC simulation model, developed by EARTH TECH.	IDYNEV System: TRAD and PC-DYNEV.
Special Events	Peak Holiday.	Peak Holiday and New Plant Construction.
Evacuation Cases	35 Regions (single sector wind direction used) and 8 Scenarios producing 280 cases (some redundancy)	22 Regions (single sector wind direction used) and 12 Scenarios producing 264 unique cases
Evacuation Time Estimates Reporting	One ETE reported for each case. Results presented by Region and Scenario	ETE reported for 50th, 90th, 95th, and 100th percentile population. Results presented by Region and Scenario.
Evacuation Time Estimates for the entire EPZ.	Full EPZ – Summer Weekday: Good weather = 3:00 Full EPZ – Summer Weekend: Good weather = 3:05	For the 100th percentile: Summer Weekday Midday Good weather = 6:10 Summer Weekend Midday Good weather = 5:50 For the 95th percentile (recommended for use in making Protective Action decisions), these ETE are 4:00 and 3:40, respectively.

2. STUDY ESTIMATES AND ASSUMPTIONS

This section presents the estimates and assumptions utilized in the development of the evacuation time estimates.

2.1 Data Estimates

1. Population estimates are based upon 2000 Census data, projected to year 2007. County-specific projections are based upon growth rates estimated by comparing the 2000 census data and 2005 census estimates. Estimates of employees who commute into the EPZ to work are based upon employment data obtained from county emergency management officials.
2. Population estimates at special facilities are based on available data from county emergency management offices.
3. Roadway capacity estimates are based on field surveys and the application of Highway Capacity Manual 2000[1].
4. Population mobilization times are based on a statistical analysis of data acquired from the telephone survey.
5. The relationship between resident population and evacuating vehicles is developed from the telephone survey. Values of 2.38 persons per household and 1.43 evacuating vehicles per household are used.
6. The relationship between persons and vehicles for special facilities is as follows:
   a. Recreational Areas: 1 vehicle per family
   b. Employees: 1.01 employees per vehicle (telephone survey results)
7. Evacuation Time Estimates (ETE) are presented for the evacuation of the 100th percentile of population for each Region and for each Scenario, and for the 2-mile, 5-mile and 10-mile distances. ETE are presented in tabular format and graphically, also showing the values of ETE associated with the 50th, 90th and 95th percentiles of population. A Region is defined as a group of Zones that is issued the Advisory to Evacuate.

[1] Highway Capacity Manual (HCM2000), Transportation Research Board, National Research Council, 2000.

2.2 Study Methodological Assumptions

1. The ETE is defined as the elapsed time from the Advisory to Evacuate issued to a specific Region of the EPZ, and the time that Region is clear of people.
2. The ETE are computed and presented in a format compliant with the guidance in the cited NUREG documentation. The ETE for each evacuation area ("Region" comprised of included Zones) is presented in both statistical and graphical formats.
3. Evacuation movements (paths of travel) are generally outbound relative to the power plant to the extent permitted by the highway network, as computed by the computer models. All available evacuation routes are used in the analysis.
4. Regions are defined by the underlying "keyhole" or circular configurations as specified in NUREG/CR-6863, using the wind directions specified in the STP Offsite Protection Action Recommendations. These Regions, as defined, display irregular boundaries reflecting the geography of the Zones included within these underlying configurations.
5. Voluntary evacuation is considered as indicated in the accompanying Figure 2-1. Within the circle defined by the distance to be evacuated but outside the Evacuation Region, 50 percent of the people not advised to evacuate are assumed to evacuate within the same time-frame. In the annular area between the circle defined by the extent of the Evacuation Region and the EPZ boundary, it is assumed that 35 percent of people will voluntarily evacuate. In the area between the EPZ boundary and a 15-mile annular area centered at the plant (the "shadow region"), it will be assumed that 30 percent of the people will evacuate voluntarily. Sensitivity studies explored the effect on ETE, of increasing the percentage of voluntary evacuees in this area. (Appendix I) The basis for our assumptions on voluntary evacuation is testimony proffered by Dennis Miletti, a professor at Colorado State University, and one of the nations top disaster response experts, at Atomic Safety and Licensing Board (ASLB) hearings, which were deemed acceptable. There are limited data pertaining to nuclear evacuations in the United States. The numbers we use are Professor Miletti's best estimates based on his years of experience in evacuation planning and emergency preparedness.

6. A total of 12 “Scenarios” representing different seasons, time of day, day of week and weather are considered. Two special event scenarios are studied: the construction period of a new nuclear plant and a Holiday weekend with an extra 5,000 people on the beach. These Scenarios are tabulated below:

Scenario	Season	Day of Week	Time of Day	Weather	Special
1	Summer	Midweek	Midday	Good	None
2	Summer	Midweek	Midday	Rain	None
3	Summer	Weekend	Midday	Good	None
4	Summer	Weekend	Midday	Rain	None
5	Summer	Midweek, Weekend	Evening	Good	None
6	Winter	Midweek	Midday	Good	None
7	Winter	Midweek	Midday	Rain	None
8	Winter	Weekend	Midday	Good	None
9	Winter	Weekend	Midday	Rain	None
10	Winter	Midweek, Weekend	Evening	Good	None
11	Summer	Weekend	Midday	Good	Holiday Beachgoers
12	Summer	Midweek	Midday	Good	New Plant Construction

7. The models of the IDYNEV System were recognized as state of the art by Atomic Safety & Licensing Boards (ASLB) in past hearings. (Sources: Atomic Safety & Licensing Board Hearings on Seabrook and Shoreham; Urbanik[2]). The models have continuously been refined and extended since those hearings and have been independently validated by a consultant retained by the NRC.

[2] Urbanik, T., et. al. Benchmark Study of the I-DYNEV Evacuation Time Estimate Computer Code, NUREG/CR-4873, Nuclear Regulatory Commission, June, 1988

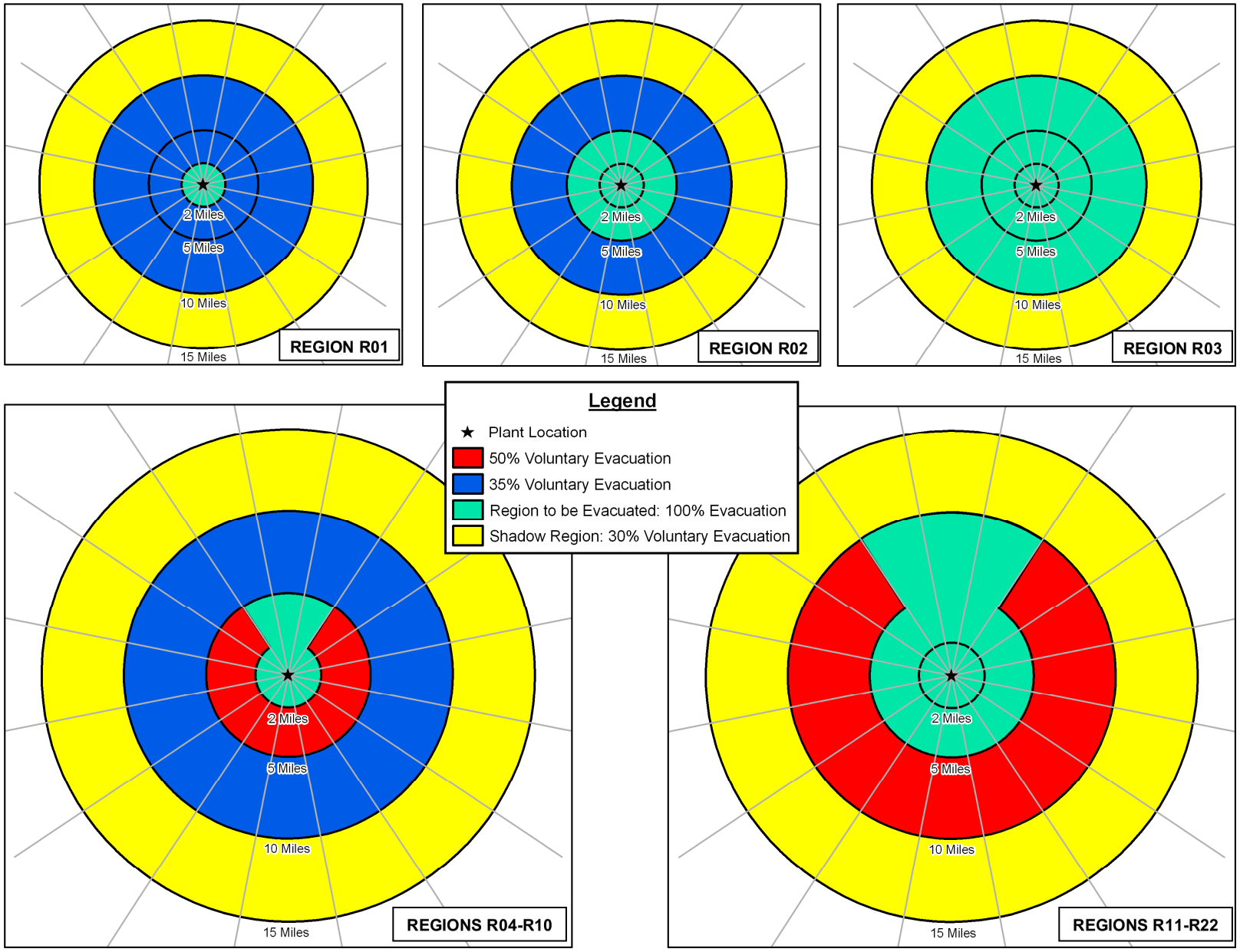


Figure 2-1. Voluntary Evacuation Methodology

2.3 Study Assumptions

1. The Planning Basis Assumption for the calculation of ETE is a rapidly escalating accident that requires evacuation, and includes the following:
    a. Advisory to Evacuate is announced coincident with the siren notification.
    b. Mobilization of the general population will commence within 10 minutes after siren notification.
    c. ETE are measured relative to the Advisory to Evacuate.
2. It is assumed that everyone within the group of Zones forming a Region that is issued an Advisory to Evacuate will, in fact, respond in general accord with the planned routes.
3. It is further assumed that:
    a. Schools will be given the earliest notification possible so they can begin evacuating prior to notification of the general public, if conditions permit. In the case of a rapidly escalating accident, however, this may not be possible.
    b. 70 percent of those households in the EPZ with commuters will await the return of a commuter before beginning their evacuation trip, based on the telephone survey results.
4. A portion of the population outside the evacuated Region will elect to evacuate even though not advised to do so ("voluntary evacuation"). See Figure 2.1.
5. The ETE will also include consideration of "through" (External-External) trips during the time that such traffic is permitted to enter the evacuated Region. "Normal" traffic flow is assumed to be present within the EPZ at the start of the emergency.
6. Traffic Control Points (TCP) within the EPZ will be staffed over time, beginning at the Advisory to Evacuate. Their number and location will depend on the Region to be evacuated and resources available. It is assumed that drivers will act rationally, travel in the directions identified in the plan, and obey all control devices and traffic guides.
7. Traffic Control Points (TCP) outside the EPZ should be established to facilitate evacuation flow to the Reception Centers.
8. Buses will be used to transport those without access to private vehicles:
    a. If schools are in session, transport (buses) will evacuate students before the issuance of an Advisory to Evacuate to the general public, directly to the assigned Reception Centers.
    b. School children, if school is in session, are given priority in assigning transit vehicles.

c. Bus mobilization time is considered in ETE calculations.

d. Analysis of the number of required "waves" of transit vehicles used for evacuation is presented.

9. The transit-dependent portion of the general population will be evacuated to reception centers by bus. It is reasonable to assume that some of these people will ride-share with family, neighbors, and friends, thus reducing the demand for buses. We assume that the percentage of people who rideshare is 50 percent. This assumption is based upon reported experience for other emergencies,[3] which cites previous evacuation experience.

10. Rain may occur for either winter or summer scenarios. In the case of rain, it is assumed that the rain begins at about the same time as the evacuation advisory is issued. No weather-related reduction in the number of transients who may be present in the EPZ is assumed. Adverse weather scenarios affect roadway capacity, free flow highway speeds and the time required to mobilize the general population. The factors assumed for the ETE study are:

Scenario	Highway Capacity*	Free Flow Speed*	Mobilization Time
Rain[4]	90%	90%	No Effect
*Adverse weather capacity and speed values are given as a percentage of good weather conditions. Roads are assumed to be passable.			

11. School buses used to transport students are assumed to transport 70 children per bus for elementary schools, and 50 children per bus for middle and high schools. Transit buses used to transport the transit-dependent general population are assumed to transport an average of 30 people per bus.

[3] Institute for Environmental Studies, University of Toronto, THE MISSISSAUGA EVACUATION FINAL REPORT, June 1981. The report indicates that 6,600 people of a transit-dependent population of 8,600 people shared rides with other residents; a ride share rate of 76% (Page 5-10).

[4] Agarwal, M. et. Al. Impacts of Weather on Urban Freeway Traffic Flow Characteristics and Facility Capacity, Proceedings of the 2005 Mid-Continent Transportation Research Symposium, August, 2005.

3. DEMAND ESTIMATION

The estimates of demand, expressed in terms of people and vehicles, constitute a critical element in developing an evacuation plan. These estimates consist of three components:

1. An estimate of population within the Emergency Planning Zone (EPZ), stratified into groups (resident, employee, transient).

2. An estimate, for each population group, of mean occupancy per evacuating vehicle. This estimate is used to determine the number of evacuating vehicles.

3. An estimate of potential double-counting of vehicles.

Appendix E presents much of the source material for the population estimates. Our primary source of population data, the 2000 Census, however, is not adequate for directly estimating some transient groups.

Throughout the year, vacationers and tourists enter the EPZ. These non-residents may dwell within the EPZ for a short period (e.g. a few days or one or two weeks), or may enter and leave within one day. Estimates of the size of these population components must be obtained, so that the associated number of evacuating vehicles can be ascertained.

The potential for double-counting people and vehicles must be addressed. For example:

- A resident who works and shops within the EPZ could be counted as a resident, again as an employee and once again as a shopper.
- A visitor who stays at a motel, spends time at a beach, then goes shopping could be counted three times.

Furthermore, the number of vehicles at a location depends on time of day. For example, motel parking lots may be full at dawn and empty at noon. Similarly, parking lots at area parks, which are full at noon, may be almost empty at dawn. Estimating counts of vehicles by simply adding up the capacities of different types of parking facilities will tend to overestimate the number of transients and can lead to ETE that are too conservative.

Analysis of the population characteristics of the South Texas Project (STP) EPZ indicates the need to identify three distinct groups:

- Permanent residents - people who are year-round residents of the EPZ.
- Transients - people who reside outside of the EPZ, who enter the area for a specific purpose (e.g., beach or summer home) and then leave the area.
- Employees - people who reside outside the EPZ and commute to businesses within the EPZ on a daily basis.

Estimates of the population and number of evacuating vehicles for each of the population groups are presented for each Zone and by polar coordinate representation (population rose). The STP EPZ has been subdivided into 11 Zones. These Zones are shown in Figure 3-1.

Permanent Residents

The primary source for estimating permanent population is 2000 U.S. Census data. The average household size (2.38 persons/household) and the number of evacuating vehicles per household (1.43 vehicles/household) were adapted from the telephone survey results.

Comparing census estimates available for the year 2005, with those for 2000, the yearly rate of population change was estimated and used to project the year 2000 resident population to a 2007 base year. According to census data, the population of Matagorda County decreased by 0.3 percent from April 1, 2000 to July 1, 2005. We conservatively estimate that the population remains unchanged, as shown in Table 3-1.

Permanent resident population and vehicle estimates for 2007 are presented in Table 3-2. Figures 3-2 and 3-3 present the permanent resident population and permanent resident vehicle estimates by sector and distance from STP.

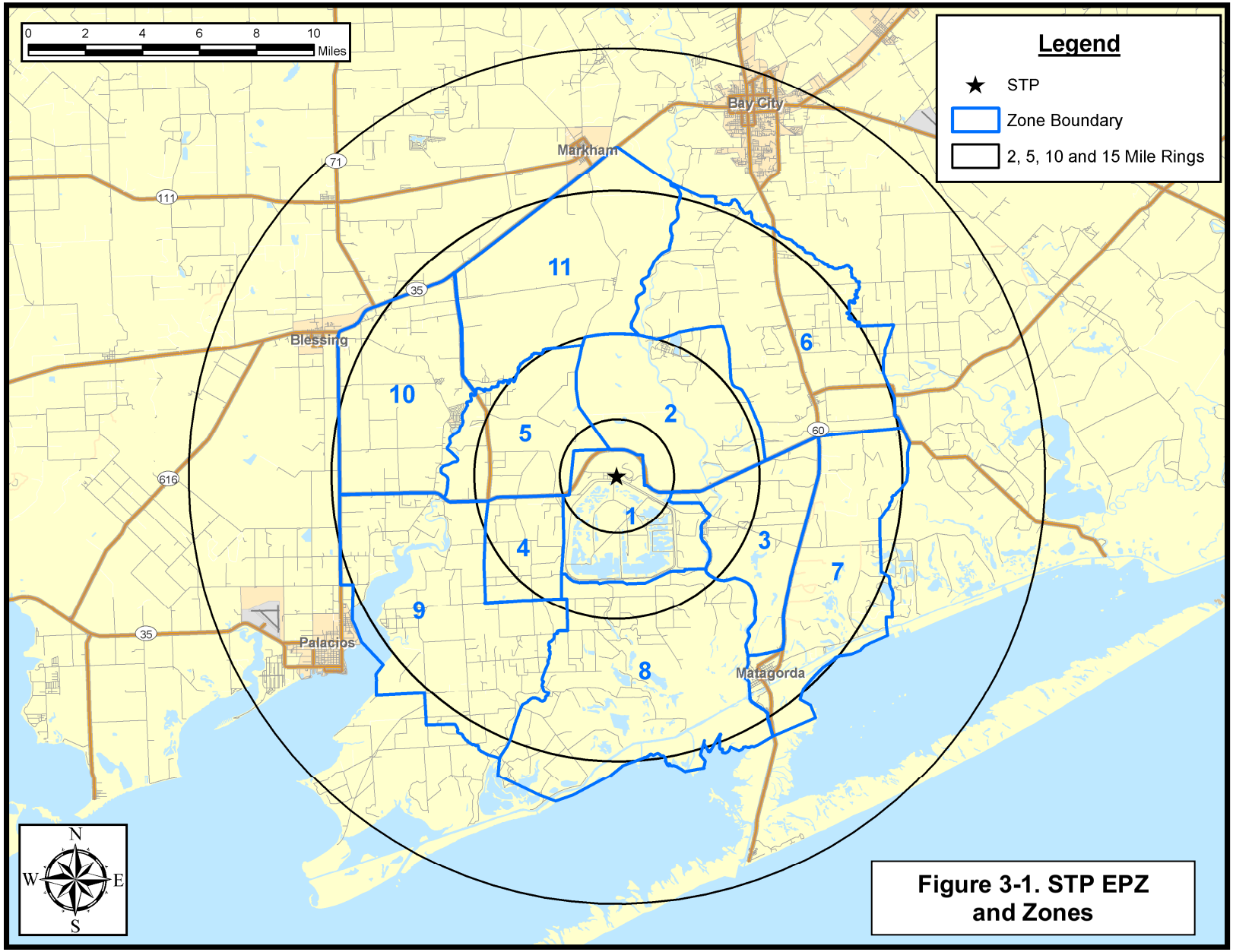


Figure 3-1. STP EPZ and Zones

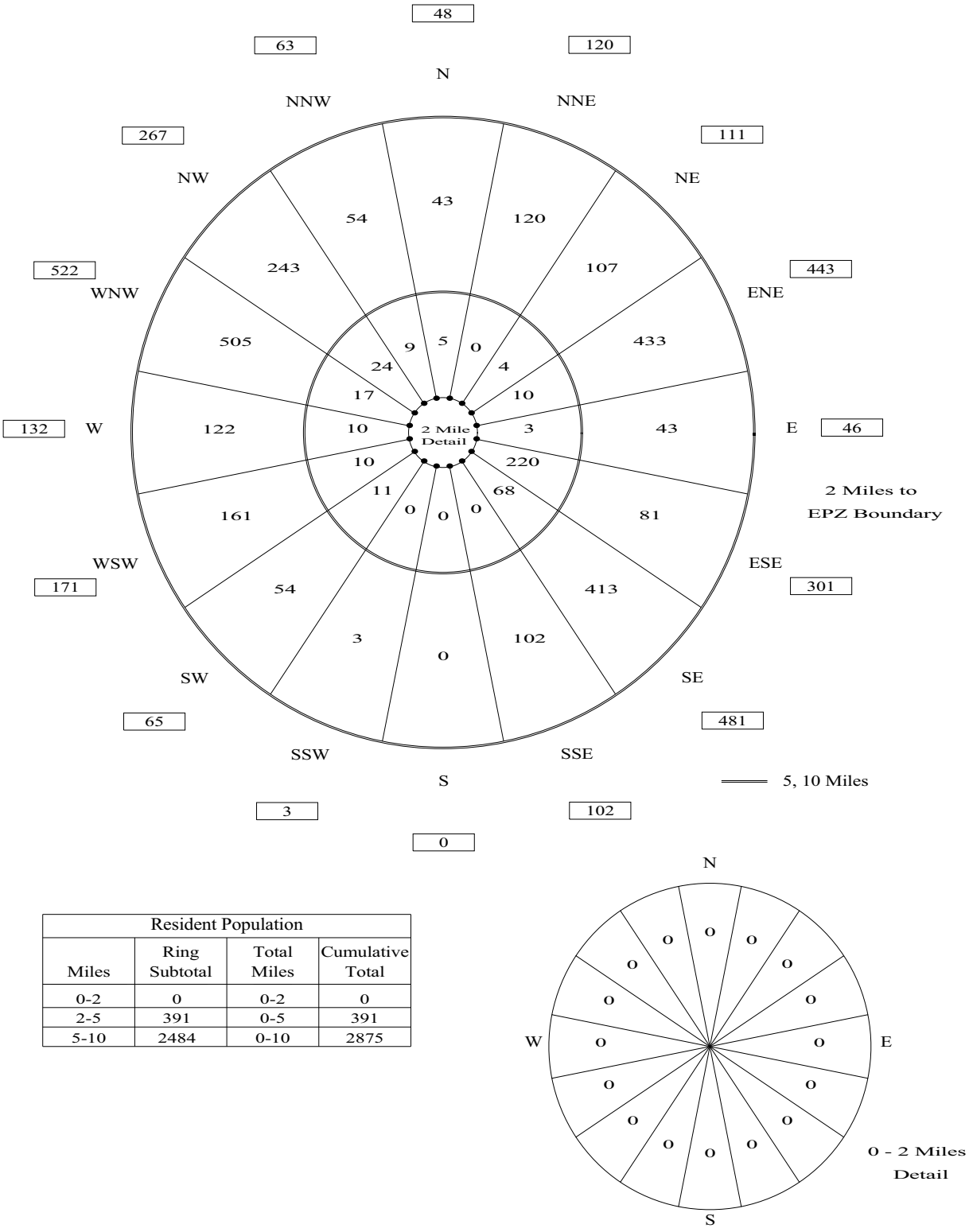
Table 3-1. EPZ Permanent Resident Population		
Zone	**2000 Population**	**2007 Population**
1	0	0
2	40	40
3	402	402
4	56	56
5	82	82
6	650	650
7	518	518
8	0	0
9	237	237
10	692	692
11	198	198
TOTAL	**2,875**	**2,875**
	Population Growth:	**0%**

	2000 Population	**2007 Population**
Matagorda Beach*	116	116

***The Matagorda Beach area has only one access road - FM 2031, which cuts through the STP EPZ. It is prudent to evacuate both the resident and transient population on the beach in the event of an emergency, since an escalation of the event or a change in wind direction could expose those evacuees on FM 2031 to the plume. Thus, it is assumed that in every scenario and for every region these people will be evacuated, and their vehicles will be included in the network traffic.**

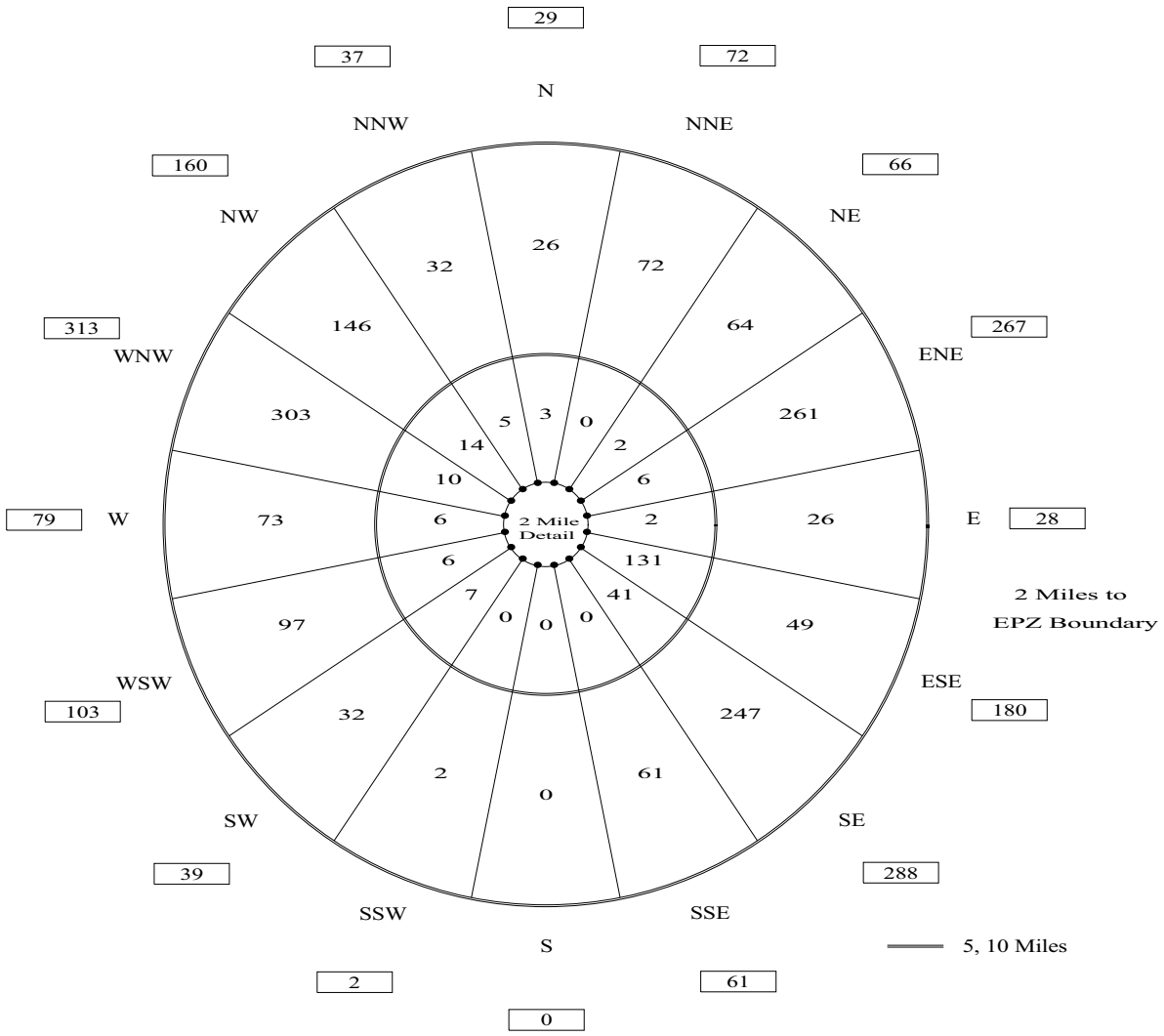
Table 3-2. Permanent Resident Population and Vehicles by Zone		
Zone	**2007 Population**	**2007 Vehicles**
1	0	0
2	40	24
3	402	241
4	56	34
5	82	49
6	650	391
7	518	310
8	0	0
9	237	142
10	692	414
11	198	119
TOTAL	**2,875**	**1,724**

	2007 Population	**2007 Vehicles**
Matagorda Beach	116	70



Resident Population			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-2	0	0-2	0
2-5	391	0-5	391
5-10	2484	0-10	2875

Figure 3-2. Permanent Residents by Sector



Resident Vehicles			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-2	0	0-2	0
2-5	233	0-5	233
5-10	1491	0-10	1724

Figure 3-3. Permanent Resident Vehicles by Sector

Transient Population

Transient population groups are defined as those people who are not permanent residents and who enter the EPZ for a specific purpose (shopping, recreation). Transients may spend less than one day or stay overnight at camping facilities, hotels and motels. The South Texas Project EPZ has a number of areas that attract transients, including:

- Riverside Park and Campgrounds
- Matagorda Harbor
- Lighthouse RV Park

Estimates of the peak attendance at transient facilities were provided by County emergency management offices; the number of evacuating vehicles was also provided. Internet searches were also used to obtain more detailed information about these facilities and supplement the data provided. The transient population estimates are as follows:

Rio Colorado Golf Course

The Rio Colorado Golf Course is located nine miles north-northeast of STP, in Zone 6. This facility is busiest from March to November, when the daily average number of transients is estimated as 120 people, traveling in 60 vehicles.

Matagorda Harbor

Matagorda Harbor is located on the Intracoastal Waterway approximately nine miles southeast of STP, in Zone 7. It provides mooring for approximately 222 boats and has 26 RV spaces available to boat slip patrons. The peak attendance is estimated as 300 persons evacuating in 150 vehicles.

Lighthouse RV Park

The Lighthouse RV Park is located approximately seven miles east-southeast of STP. The number of transients during peak times is estimated to be 50 people, traveling in 25 vehicles.

Riverside Park and Campgrounds

The Riverside Park covers 100 acres on the eastern side of the Colorado River, approximately 10 miles north-northeast of STP. Patrons of the Park may be involved in a number of outdoor activities including fishing, camping, jet-skiing, and bird-watching. There are camp ground facilities and picnic sites. It is estimated that 180 people may be in the Park at peak times. The number of evacuating vehicles is estimated as 60.

Hotels and Motels

There are 3 motels in the EPZ; all of these facilities are located in Zone 7. Appendix E details the hotel data provided. The peak attendance at these motels is estimated as 110 people evacuating in 50 vehicles.

Seasonal Homes

The seasonal resident population data was taken from the previous ETE report (Earth Tech 1994), as updated information on seasonal homes was not available. A total of 2,817 seasonal residents were estimated to be residing within the EPZ. Since most of the seasonal dwellings are summer homes, 100% transient population was assumed for the summer weekend scenario. These homes are located in Zones 7, 9 and 10 and add a total of 1,693 evacuating vehicles to the evacuating traffic.

Matagorda Beach and Jetty Park

The beach, Jetty Park and fishing pier are busiest in the summer months. The weekend average number of visitors was estimated to be 1,000 people, driving 500 vehicles. However, on a Holiday there can be as many as 6,000 people on or near the beach. Although strictly outside of the EPZ, transients in this facility are evacuated under every scenario and are considered in the computation of ETE.

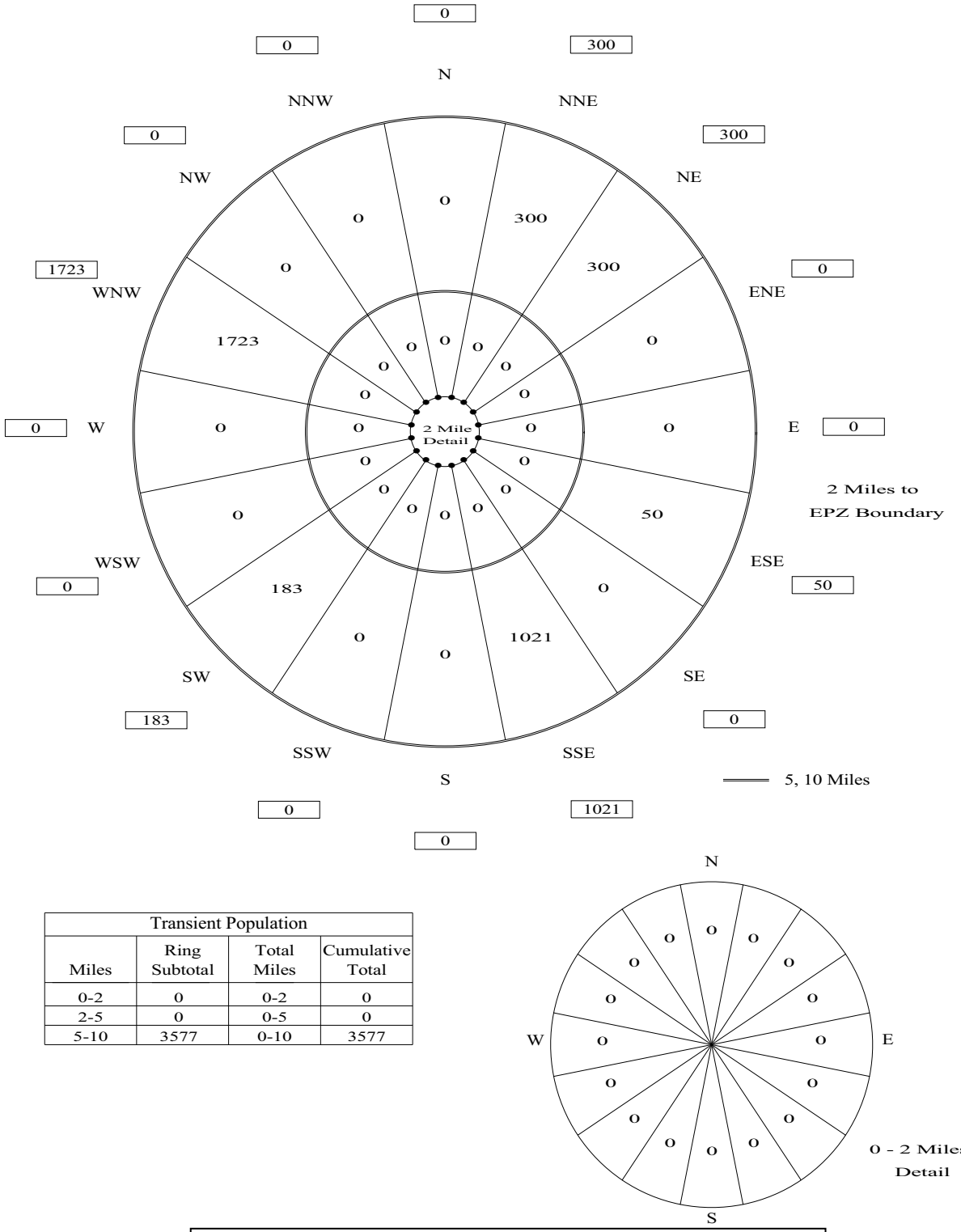
Matagorda Bay Nature Park

Matagorda Bay Nature Park is a 1,600-acre park and preserve at the mouth of the Colorado River. The park borders the Gulf of Mexico for two miles, has two miles of river frontage and hundreds of acres of coastal marshes and dunes. Patrons of the Park may partake in a number of outdoor activities including fishing, camping, and bird-watching. The RV Park can accommodate 70 vehicles. The number of transients during peak times is estimated to be 130 people, traveling in 70 vehicles.

Table 3-3. Summary of Transients by Zone		
Zone	**Transients**	**Transient Vehicles**
1	0	0
2	0	0
3	50	25
4	0	0
5	0	0
6	300	120
7	1,431	813
8	0	0
9	73	44
10	1,723	1,035
11	0	0
TOTAL	**3,577**	**2,037**

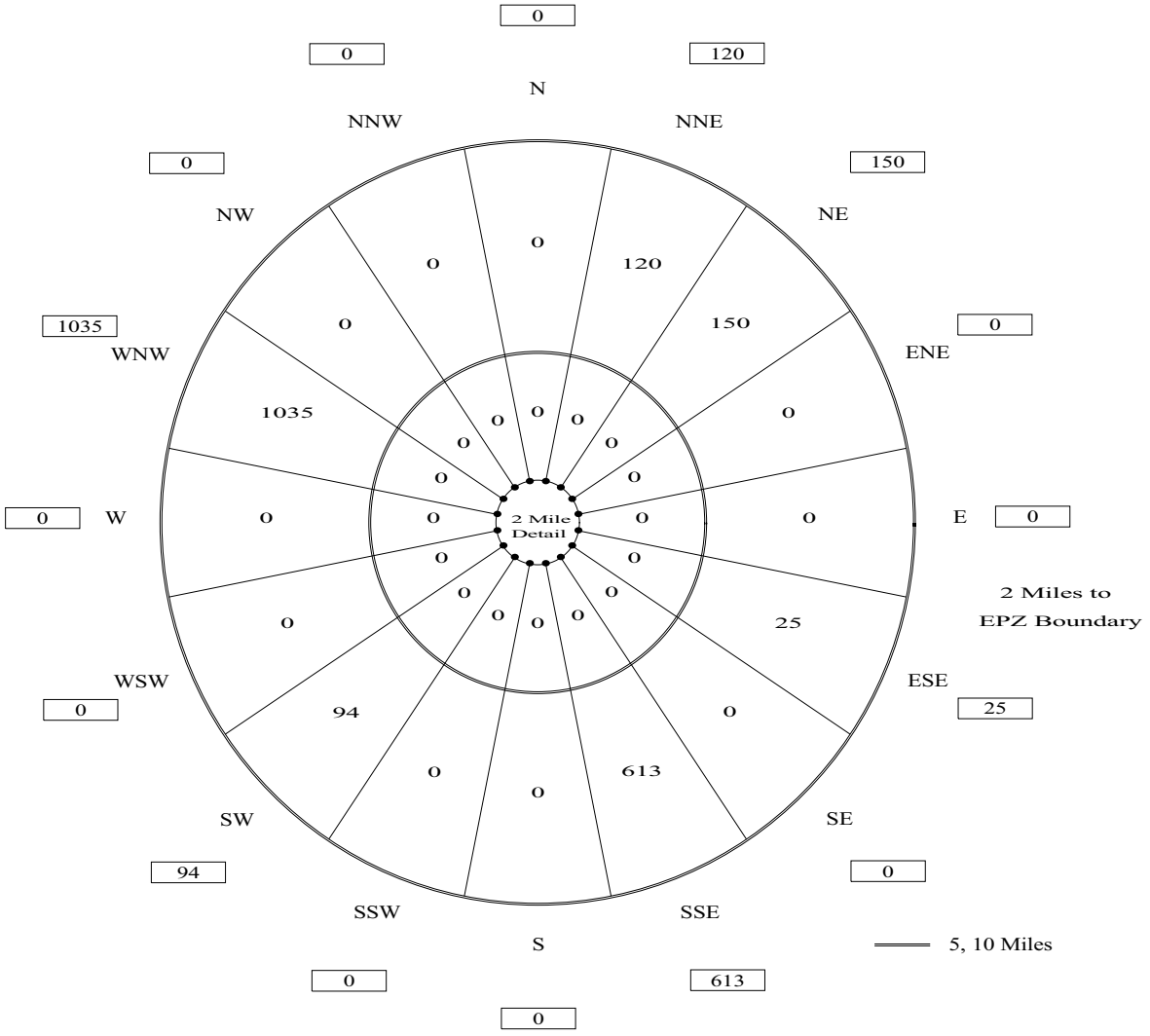
	Transients	**Transient Vehicles**
Matagorda Beach*	1,130	570

***The 1130 transients in the Matagorda Beach area will be evacuated under all scenarios**



Transient Population			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-2	0	0-2	0
2-5	0	0-5	0
5-10	3577	0-10	3577

Figure 3-4. Transient Population by Sector



Transient Vehicles			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-2	0	0-2	0
2-5	0	0-5	0
5-10	2037	0-10	2037

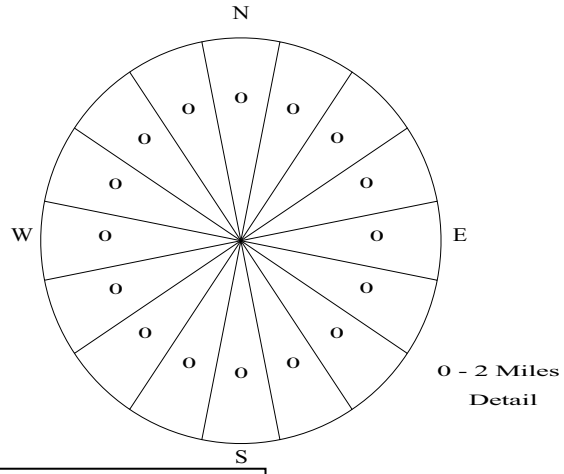


Figure 3-5. Transient Vehicles by Sector

Employees

Employees who work within the EPZ fall into two categories:

- Those who live and work in the EPZ
- Those who live outside of the EPZ and commute to jobs within the EPZ.

Those of the first category are already counted as part of the permanent resident population. To avoid double counting, we focus on those commuting employees who live outside the EPZ and will evacuate along with the permanent resident population.

Data for major employers in the EPZ was provided by the Matagorda County emergency management office. The location of these facilities was mapped using GIS software. The GIS map was overlaid with the evacuation analysis network and employees were loaded onto appropriate links. The map of major employers in the EPZ can be seen in Appendix E.

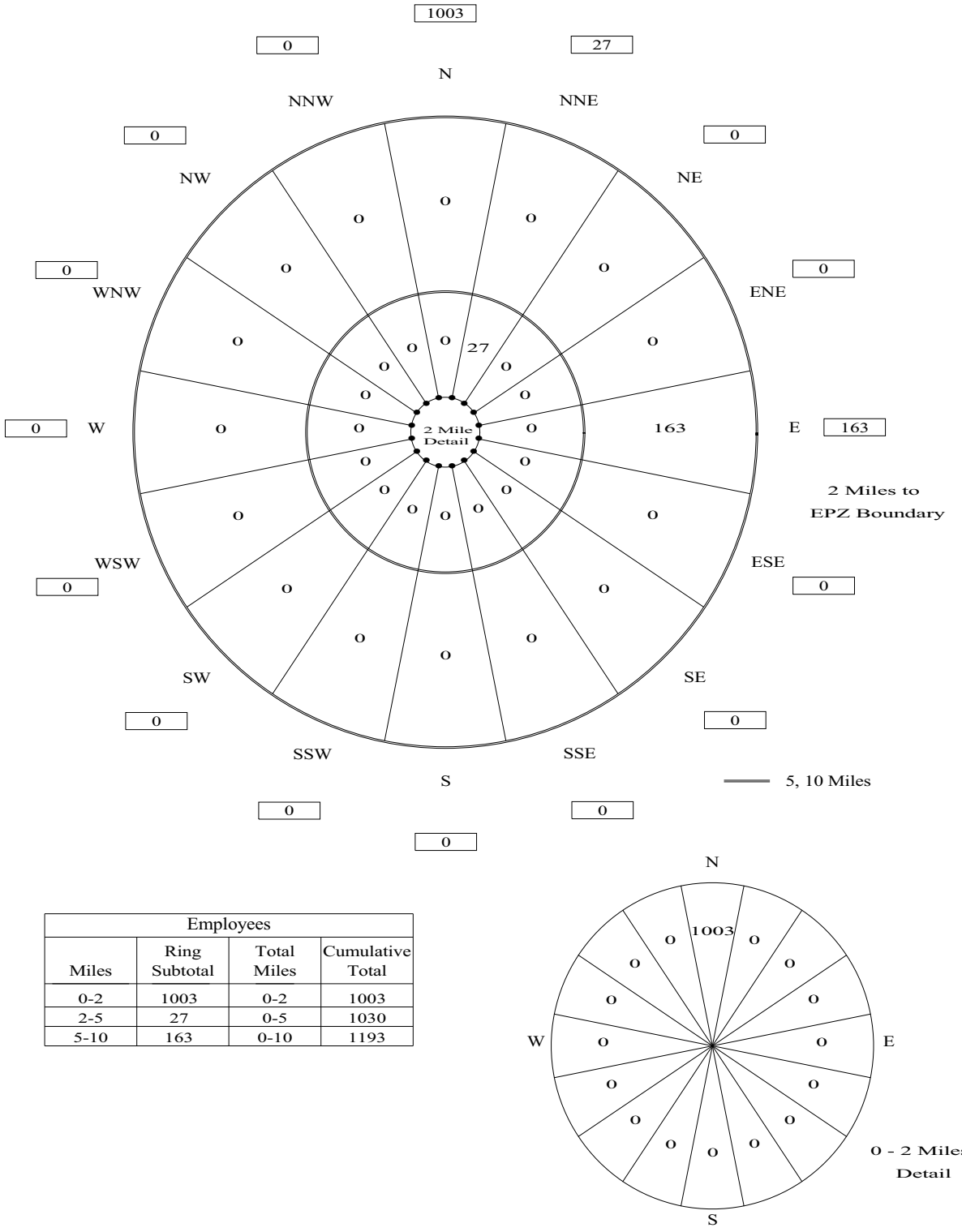
An occupancy of 1.01 persons per employee-vehicle obtained from the telephone survey, was used to determine the number of evacuating employee vehicles.

Table 3-4 presents non-EPZ resident employees and vehicle estimates by Zone. Figures 3-6 and 3-7 present these data by sector.

Pass-Through Demand

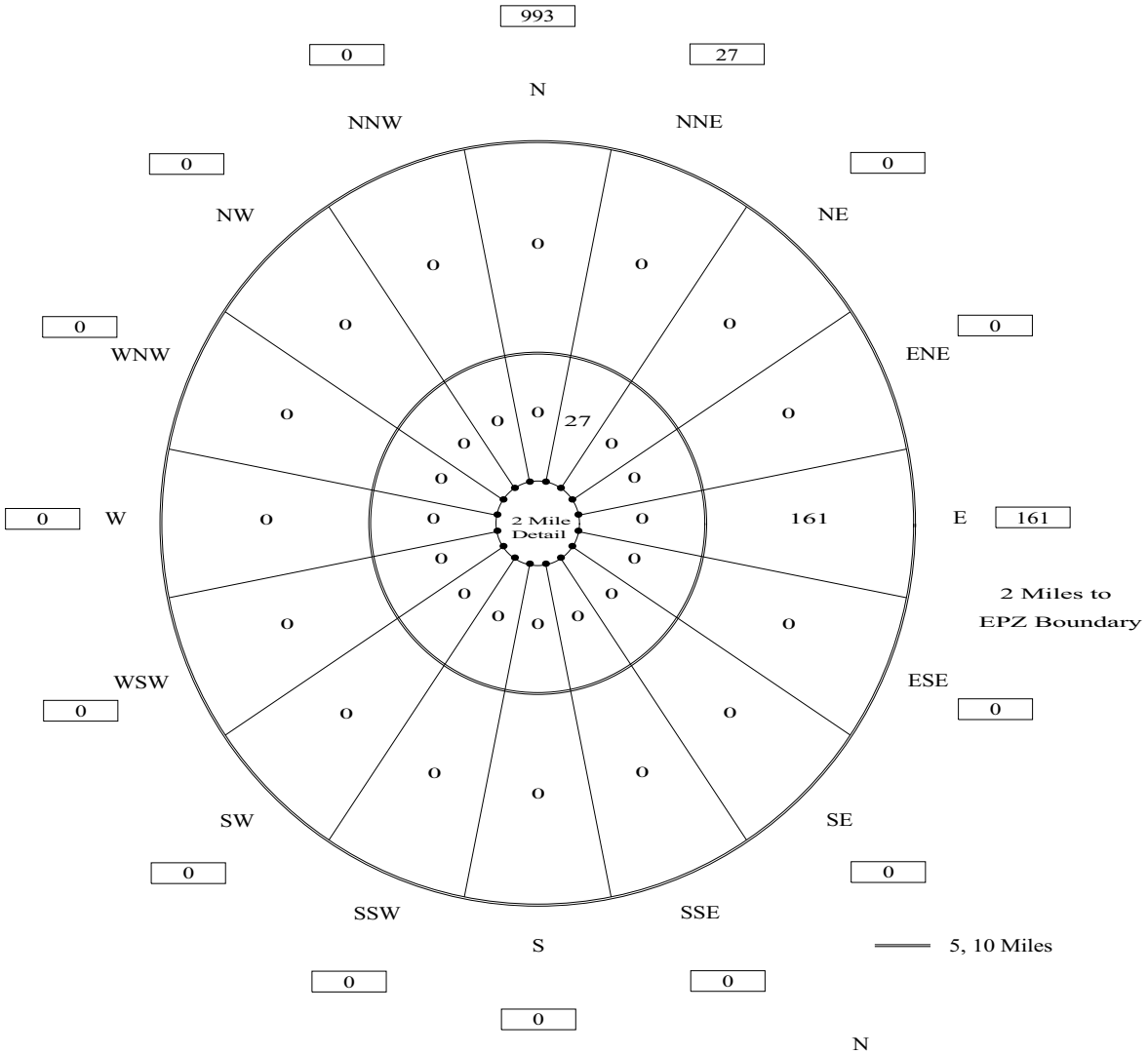
Vehicles will be traveling through the EPZ (external-external trips) at the time of an accident. After the Advisory to Evacuate is announced, these through travelers will also evacuate. These through vehicles are assumed to travel on the major routes through the EPZ (e.g., US Hwy 35). It is assumed that this traffic will continue to enter the EPZ during the first 90 minutes following the Advisory to Evacuate. We estimate approximately 600 vehicles per hour enter the EPZ as external-external trips during this period for a total of 900 vehicles before access control is implemented.

Table 3-4. Summary of Non-EPZ Employees by Zone		
Zone	**Total Non-EPZ Employees**	**Employee Vehicles**
1	1,003	993
2	27	27
3	163	161
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
TOTAL	1,193	1,181



Employees			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-2	1003	0-2	1003
2-5	27	0-5	1030
5-10	163	0-10	1193

Figure 3-6. Non-Resident Employee Population by Sector



Employee Vehicles			
Miles	Ring Subtotal	Total Miles	Cumulative Total
0-2	993	0-2	993
2-5	27	0-5	1020
5-10	161	0-10	1181

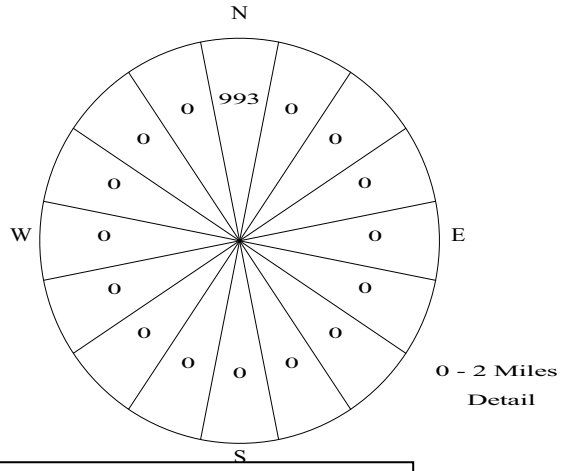


Figure 3-7. Non-Resident Employee Vehicles by Sector

4. ESTIMATION OF HIGHWAY CAPACITY

The ability of the road network to service vehicle demand is a major factor in determining how rapidly an evacuation can be completed. The capacity of a road is defined as the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane of roadway during a given time period under prevailing roadway, traffic and control conditions as stated in the 2000 Highway Capacity Manual (HCM).

In discussing capacity, different operating conditions have been assigned alphabetical designations, A through F, to reflect the range of traffic operational characteristics. These designations have been termed "Levels of Service" (LOS). For example, LOS A connotes free-flow and high-speed operating conditions; LOS F represents a forced flow condition. LOS E describes traffic operating at or near capacity.

Another concept, closely associated with capacity, is “Service Volume” (SV). Service volume is defined as “The maximum hourly rate at which vehicles, bicycles or persons reasonably can be expected to traverse a point or uniform section of a roadway during an hour under specific assumed conditions while maintaining a designated level of service.” This definition is similar to that for capacity. The major distinction is that values of SV vary from one LOS to another, while capacity is the service volume at the upper bound of LOS E, only.

This distinction is illustrated in Exhibit 12-15 of the HCM. As indicated there, the SV varies with Free Flow Speed (FFS), Terrain and LOS. However, the SV at LOS E (which approximates capacity) varies only with Terrain. This Exhibit was referenced when estimating capacity for two-lane rural highways within the EPZ and Shadow Region; such highways are predominant within the analysis network.

Other factors also influence capacity. These include, but are not limited to:

- Lane width
- Shoulder width
- Pavement Condition
- Percent Truck Traffic
- Weather conditions (rain, snow, fog, wind speed, ice)

These factors are considered during the road survey and in the capacity estimation process; some factors have greater influence on capacity than others. For example, lane and shoulder width have only a limited influence on free flow speed (FFS) according to Exhibit 20-5 of the HCM. Consequently, lane and shoulder widths at the narrowest points were observed during the road survey and these observations were recorded, but no detailed measurements of lane or shoulder width were taken. The estimated FFS were measured using the survey vehicle’s speedometer and observing local traffic.

As discussed in Section 2.3, it is necessary to adjust capacity figures to represent the prevailing conditions during inclement weather. Based on limited empirical data, weather conditions such as heavy rain reduce the values of free speed and of highway capacity by approximately 10 percent. Over the last decade new studies have been made on the effects of rain on traffic capacity. These studies indicate a range of effects between 5 and 20 percent depending on wind speed and precipitation rates.

Given the rural character of the EPZ and its sparse population, congestion arising from evacuation is likely to exist only at intersections where evacuation routes merge or cross. Estimates of roadway capacity must be determined with great care. Because of its importance, a brief discussion of the major factors that influence highway capacity is presented in this section.

Capacity Estimations on Approaches to Intersections

At-grade intersections are apt to become the first bottleneck locations under local heavy traffic volume conditions. This characteristic reflects the need to allocate access time to the respective competing traffic streams by exerting some form of control. During evacuation, control at critical intersections will often be provided by traffic control personnel assigned for that purpose, whose directions may supersede traffic control devices. The Traffic Management Plan (Appendix G) identifies these locations (called Traffic Control Points, TCP) and the management procedures applied.

The per-lane capacity of an approach to a signalized intersection can be expressed (simplistically) in the following form:

$$Q_{cap,m} = \left(\frac{3600}{h_m}\right) \bullet \left[\frac{G-L}{C}\right]_m = \left(\frac{3600}{h_m}\right) \bullet P_m$$

where:

Qcap,m	=	Capacity of a single lane of traffic on an approach, which executes movement, *m*, upon entering the intersection; vehicles per hour (vph)
h_m	=	Mean queue discharge headway of vehicles on this lane that are executing movement, *m*; seconds per vehicle
G	=	The mean duration of GREEN time servicing vehicles that are executing movement, *m*, for each signal cycle; seconds
L	=	The mean "lost time" for each signal phase servicing movement, *m*; seconds
C	=	The duration of each signal cycle; seconds
P_m	=	The proportion of GREEN time allocated for vehicles executing movement, *m*, from this lane. This value is specified as part of the control treatment.
m	=	The movement executed by vehicles after they enter the intersection: through, left-turn, right-turn, and diagonal.

The turn-movement-specific mean discharge headway h_m, depends in a complex way upon many factors: roadway geometrics, turn percentages, the extent of conflicting traffic streams, the control treatment, and others. A primary factor is the value of "saturation queue discharge headway", h_{sat}, which applies to through vehicles that are not impeded by other conflicting traffic streams. This value, itself, depends upon many factors including motorist behavior. Formally, we can write,

$$h_m = f_m (h_{sat}, F_1, F_2, ...)$$

where:

h_{sat}	=	Saturation discharge headway for through vehicles; seconds per vehicle
F_1, F_2	=	The various known factors influencing h_m
$f_m (\cdot)$	=	Complex function relating h_m to the known (or estimated) values of $h_{sat}, F_1, F_2, \ldots$

The estimation of h_m for specified values of $h_{sat}, F_1, F_2, ...$ is undertaken within the PC-DYNEV simulation model and within the TRAD model by a mathematical model[1]. The resulting values for h_m always satisfy the condition:

$$h_m \geq h_{sat}$$

That is, the turn-movement-specific discharge headways are always greater than, or equal to the saturation discharge headway for through vehicles. These headways (or its inverse equivalent, “saturation flow rate”), may be determined by observation or using the procedures of the Highway Capacity Manual.

The above discussion is necessarily brief given the scope of this ETE report and the complexity of the subject of intersection capacity. In fact, the two longest chapters in the HCM (16 and 17), each well over 100 pages, address this topic. The factors, F_1, F_2, …, influencing saturation flow rate are indentified in equation (16-4) and Exhibit 16-7 of the HCM; Exhibit 10-12 identifies the required data and Exhibit 10-7 presents representative values of Service Volume.

Capacity Estimation Along Sections of Highway

The capacity of highway sections – as distinct from approaches to intersections – is a function of roadway geometrics, traffic composition (e.g. percent heavy trucks and buses in the traffic stream) and, of course, motorist behavior. There is a fundamental relationship which relates service volume (i.e. the number of vehicles serviced within a uniform highway section in a given time period) to traffic density. Figure 4-1 describes this relationship.

1 Lieberman, E., "Determining Lateral Deployment of Traffic on an Approach to an Intersection", McShane, W. & Lieberman, E., "Service Rates of Mixed Traffic on the far Left Lane of an Approach". Both papers appear in Transportation Research Record 772, 1980.

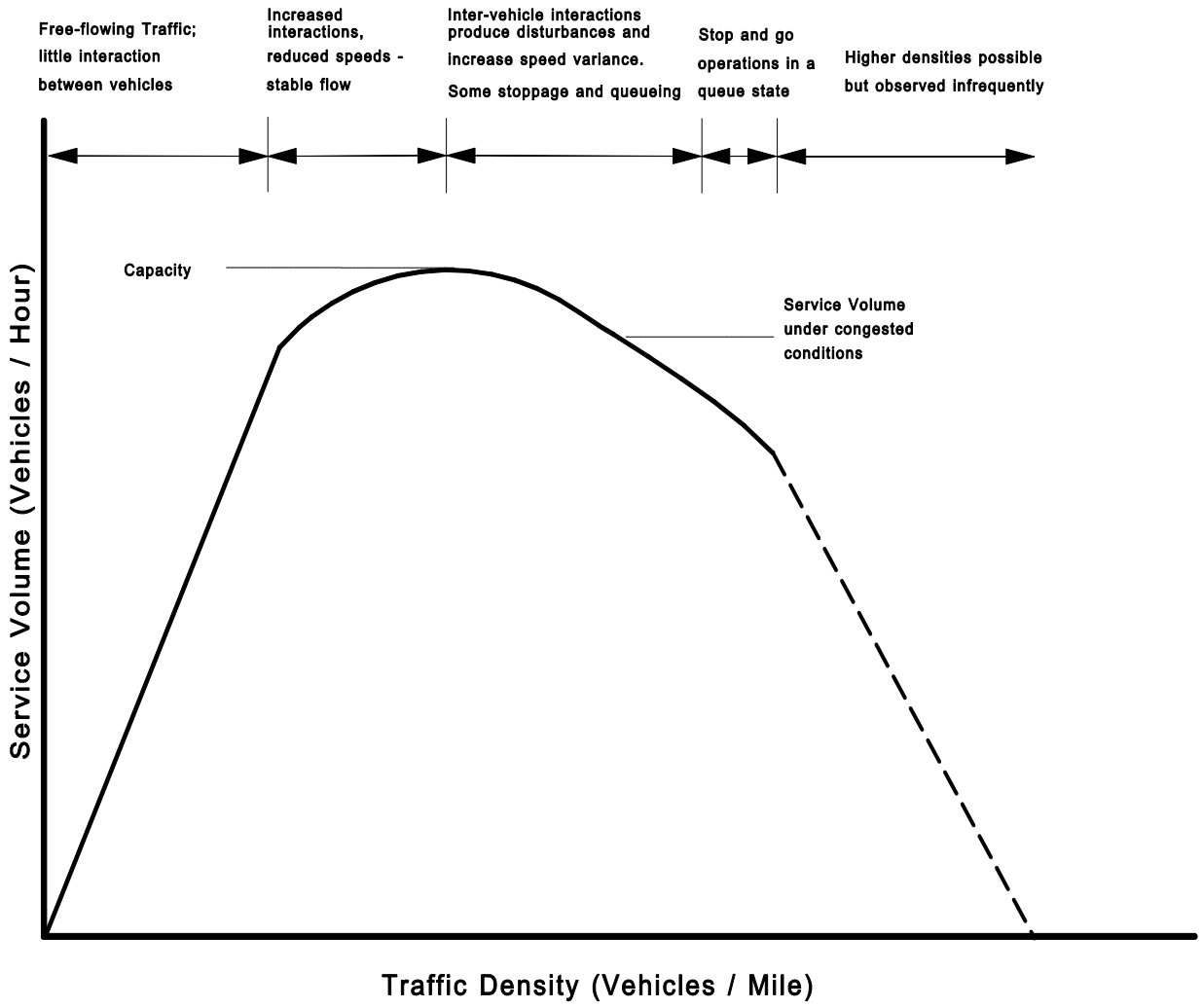


Figure 4-1. Fundamental Relationship Between Volume and Density

As indicated, there are two flow regimes: (1) Free Flow (left side of curve); and (2) Forced Flow (right side). In the Free Flow regime, the traffic demand is fully serviced; this service volume increases as demand volume and density increase, until the service volume attains its maximum value, which is the capacity of the highway section. As traffic demand and the resulting highway density increase beyond this "critical" value, the rate at which traffic can be serviced (i.e. the service volume) can actually decline below capacity. Therefore, in order to realistically represent traffic performance during congested conditions (i.e. when demand exceeds capacity), it is necessary to estimate the service volume, V_F, under congested conditions.

The value of V_F can be expressed as:

$$V_F = R \times \text{Capacity}$$

where R = Reduction factor which is less than unity.

We have employed a value of R=0.85. The advisability of such a reduction factor is based upon empirical studies that identified a fall-off in the service flow rate when congestion occurs at “bottlenecks” or “choke points” on a freeway system. Zhang and Levinson[2] describe a research program that collected data from a computer-based surveillance system (loop detectors) installed on the Interstate Highway System, at 27 active bottlenecks in the twin cities metro area in Minnesota over a 7-week period. When flow breakdown occurs, queues are formed which discharge at lower flow rates than the maximum capacity prior to observed breakdown. These queue discharge flow (QDF) rates vary from one location to the next and also vary by day of week and time of day based upon local circumstances. The cited reference presents a mean QDF of 2,016 passenger cars per hour per lane (pcphpl). This figure compares with the nominal capacity estimate of 2,250 pcphpl estimated for the ETE and indicated in Appendix K for freeway links. The ratio of these two numbers is 0.896 which translates into a reduction factor of 0.90. The data collected in the cited reference indicates that the variation of QDF at a location is generally in the range of +/- 5% about the average QDF. That is, the lower tail of this distribution would be equivalent to a reduction factor of 0.90 - 0.05 = 0.85 which is the figure adopted.

It is seen that a conservative view is taken in estimating the capacity at bottlenecks when congestion develops (this capacity, of course, is the QDF rate discussed above). One could argue that a more representative value for this reduction factor could be 0.90 as discussed above. Given the emergency conditions, a conservative stance is justified. Therefore, a factor of 0.85 is applied only when flow breaks down, as determined by the simulation model.

Rural roads, like freeways, are classified as “uninterrupted flow” facilities. (This is in contrast with urban street systems which have closely spaced signalized intersections and are classified as “interrupted flow” facilities.) As such, traffic flow along rural roads is subject to the same effects as freeways in the event traffic demand exceeds the nominal

[2] Lei Zhang and David Levinson, “Some Properties of Flows at Freeway Bottlenecks,” Transportation Research Record 1883, 2004.

capacity, resulting in queuing and lower QDF rates. As a practical matter, rural roads rarely break down at locations away from intersections. The breakdowns on rural roads which are experienced on this network occur at intersections where other model logic applies. Therefore, the application of a factor of 0.85 is appropriate on rural roads but rarely, if ever, activated.

The estimated value of capacity is based primarily upon the type of facility and on roadway geometrics. Sections of roadway with adverse geometrics are characterized by lower free-flow speeds and lane capacity. Table 12-15 in the Highway Capacity Manual was referenced to estimate saturation flow rates. The impact of narrow lanes and shoulders on free-flow speed and on capacity is not material, particularly when flow is predominantly in one direction.

The procedure used here was to estimate "section" capacity, V_E, based on observations made traveling over each section of the evacuation network, by the posted speed limits and travel behavior of other motorists and by reference to the Highway Capacity Manual 2000. It was then determined for each highway section, represented as a network link, whether its capacity would be limited by the "section-specific" service volume, V_E, or by the intersection-specific capacity. For each link, the model selects the lower value of capacity.

Application to the South Texas Project (STP) EPZ

As part of the development of the STP EPZ traffic network, an estimate of roadway capacity is required. The source material for the capacity estimates presented herein is contained in:

2000 Highway Capacity Manual (HCM)
Transportation Research Board
National Research Council
Washington, D.C.

The highway system in the STP EPZ consists primarily of two categories of roads and, of course, intersections:

- Two-lane roads: Local, State
- Multi-lane State Highways (at-grade)

Each of these classifications will be discussed.

Two-Lane Roads

Ref: HCM Chapters 12 and 20

Two lane roads comprise the majority of highways within the EPZ. The per-lane capacity of a two-lane highway is estimated at 1700 passenger cars per hour (pc/h). This estimate is essentially independent of the directional distribution of traffic volume except that, for extended distances, the two-way capacity will not exceed 3200 pc/h. The HCM procedures then estimate LOS and Average Travel Speed. The evacuation simulation model accepts the specified value of capacity as input and computes average speed based on the time-varying demand:capacity relations.

Based on the field survey and on expected traffic operations associated with evacuation scenarios, most sections of two-lane roads within the EPZ are classified as “Class I”, with "level terrain"; some are “rolling terrain”.

Multi-Lane Highway

Ref: HCM Chapters 12 and 21

Exhibit 21-23 (in the HCM) presents a set of curves that indicates a per-lane capacity of approximately 2100 pc/h, for free-speeds of 55-60 mph. Based on observation, the multi-lane highways outside of urban areas within the EPZ, service traffic with free-speeds in this range. The actual time-varying speeds computed by the simulation model reflect the demand:capacity relationship and the impact of control at intersections.

Chapter 12 presents the basic concepts underlying the procedures in Chapters 20 and 21.

Intersections

Ref: HCM Chapters 10, 16, 17

Procedures for estimating capacity and LOS for approaches to intersections are presented in Chapters 16 (signalized intersections) and 17 (un-signalized intersections). These are the two longest chapters in the HCM 2000, reflecting the complexity of these procedures. The simulation logic is likewise complex, but different; as stated on page 31-21 of the HCM 2000:

> *“Assumptions and complex theories are used in the simulation model to represent the real-world dynamic traffic environment.”*

Simulation and Capacity Estimation

Chapter 31 of the HCM is entitled, "Simulation and other Models." The lead sentence on the subject of Traffic Simulation Models is:

> Traffic simulation models use numerical techniques on a digital computer to create a description of how traffic behaves over extended periods of time for a given transportation facility or system…by stepping through time and across space, tracking events as the system state unfolds. Traffic simulation models focus on the dynamic of traffic flow.

In general terms, this description applies to the PC-DYNEV model, which is further described in Appendix C. It is essential to recognize that simulation models do not replicate the methodology and procedures of the HCM – they *replace* these procedures by describing the complex interactions of traffic flow and computing Measures of Effectiveness (MOE) detailing the operational performance of traffic over time and by location.

All simulation models must be calibrated properly with field observations that quantify the performance parameters applicable to the analysis network. Two of the most important of these are: (1) Free flow speed (FFS); and (2) saturation headway, h_{sat}. The first of these is estimated by direct observation during the road survey; the second is estimated using the concepts of the HCM, as described earlier. These parameters are listed in Appendix K, for each network link.

5. ESTIMATION OF TRIP GENERATION TIME

Federal Government guidelines (see NUREG-0654, Appendix 4) specify that the planner estimate the distributions of elapsed times associated with mobilization activities undertaken by the public to prepare for the evacuation trip. The elapsed time associated with each activity is represented as a statistical distribution reflecting differences between members of the public. The quantification of these activity-based distributions relies largely on the results of the telephone survey. We define the sum of these distributions of elapsed times as the Trip Generation Time Distribution.

Background

In general, an accident at a nuclear power station is characterized by the following Emergency Action Classification Levels (see Appendix 1 of NUREG-0654 for details):

1. Unusual Event
2. Alert
3. Site Area Emergency
4. General Emergency

At each level, the Federal guidelines specify a set of Actions to be undertaken by the Licensee, and by State and Local offsite authorities. As a Planning Basis, we will adopt a conservative posture, in accord with Federal Regulations, that a rapidly escalating accident will be considered in calculating the Trip Generation Time. We will assume:

a. The Advisory to Evacuate will be announced coincident with the emergency notification.

b. Mobilization of the general population will commence up to 10 minutes after the alert notification.

c. Evacuation Time Estimates (ETE) are measured relative to the Advisory to Evacuate.

d. Schools will be evacuated prior to the Advisory to Evacuate, if possible.

We emphasize that the adoption of this planning basis is not a representation that these events will occur at STP within the indicated time frame. Rather, these assumptions are necessary in order to:

- Establish a temporal framework for estimating the Trip Generation distribution in the format recommended in Appendix 4 of NUREG-0654.
- Identify temporal points of reference that uniquely define "Clear Time" and ETE.

It is more likely that a longer time will elapse between the various classes of an emergency at STP.

For example, suppose one hour will elapse from the siren alert to the Advisory to Evacuate. In this case, it is reasonable to expect some degree of spontaneous evacuation and the start of mobilization activities by the public during this one-hour period. As a result, the population within the Emergency Planning Zone (EPZ) will be lower when the Advisory to Evacuate is announced, than at the time of the General Emergency. Thus, the time needed to evacuate the EPZ, after the Advisory to Evacuate will be less than the estimates presented in this report.

The notification process consists of two events:

- Transmitting information (e.g. using sirens, tone alerts, EAS broadcasts, loud speakers).
- Receiving and correctly interpreting the information that is transmitted.

The peak population within the EPZ approximates 6,850 persons (residents, employees, and transients) who are deployed over an area of approximately 314 square miles and engaged in a wide variety of activities. It must be anticipated that some time will elapse between the transmission and receipt of the information advising the public of an accident.

The amount of elapsed time will vary from one individual to the next depending where that person is, what that person is doing, and related factors. Furthermore, some persons who will be directly involved with the evacuation process may be outside the EPZ at the time that the emergency is declared. These people may be commuters, shoppers and other travelers who reside within the EPZ and who will return to join the other household members upon receiving notification of an emergency.

As indicated in NUREG-0654, the estimated elapsed times for the receipt of notification can be expressed as a distribution reflecting the different notification times for different people within, and outside, the EPZ. By using time distributions, it is also possible to distinguish between different population groups and different day-of-week and time-of-day scenarios, so that accurate ETE may be obtained.

For example, people at home or at work within the EPZ will be notified by siren, and/or tone alert and/or radio. Those well outside the EPZ will be notified by telephone, radio, TV and word-of-mouth, with potentially longer time lags. Furthermore, the spatial distribution of the EPZ population will differ with time of day - families will be united in the evenings, but dispersed during the day. In this respect, weekends will differ from weekdays.

Generally, the information required can be obtained from a telephone survey of EPZ residents. Such a survey was conducted. Appendix F presents the survey results. It is important to note that the shape and duration of the evacuation trip mobilization distribution is important at sites where traffic congestion is not expected to cause the evacuation time estimate to extend in time well beyond the trip generation period. The remaining discussion will focus on the application of the trip generation data obtained from the telephone survey, to the development of the STP ETE.

Fundamental Considerations

The environment leading up to the time that people begin their evacuation trips consists of a sequence of events and activities. Each event (other than the first) occurs at an instant in time and is the outcome of an activity.

Activities are undertaken over a period of time. Activities may be in "series" (i.e. to undertake an activity implies the completion of all preceding events) or may be in parallel (two or more activities may take place over the same period of time). Activities conducted in series are functionally dependent on the completion of prior activities; activities conducted in parallel are functionally independent of one-another. The relevant events associated with the public's preparation for evacuation are:

Event Number	Event Description
1	Notification
2	Aware of situation
3	Depart work
4	Arrive home
5	Depart on evacuation trip

Associated with each sequence of events are one or more activities, as outlined below:

Table 5-1. Event Sequence for Evacuation Activities

Event Sequence	Activity	Distribution
1 → 2	Receive notification	1
2 → 3	Prepare to leave work	2
2,3 → 4	Travel home	3
2,4 → 5	Prepare to leave to evacuate	4

These relationships are shown graphically in Figure 5-1.

- An Event is a 'state' that exists at a point in time (e.g., depart work, arrive home)

- An Activity is a 'process' that takes place over some elapsed time (e.g., prepare to leave work, travel home)

As such, an Activity changes the 'state' of an individual (e.g. the activity, 'travel home' changes the state from 'depart work' to 'arrive home'). Therefore, an Activity can be described as an 'Event Sequence'; the elapsed times to perform an event sequence vary from one person to the next and are described as statistical distributions on the following pages.

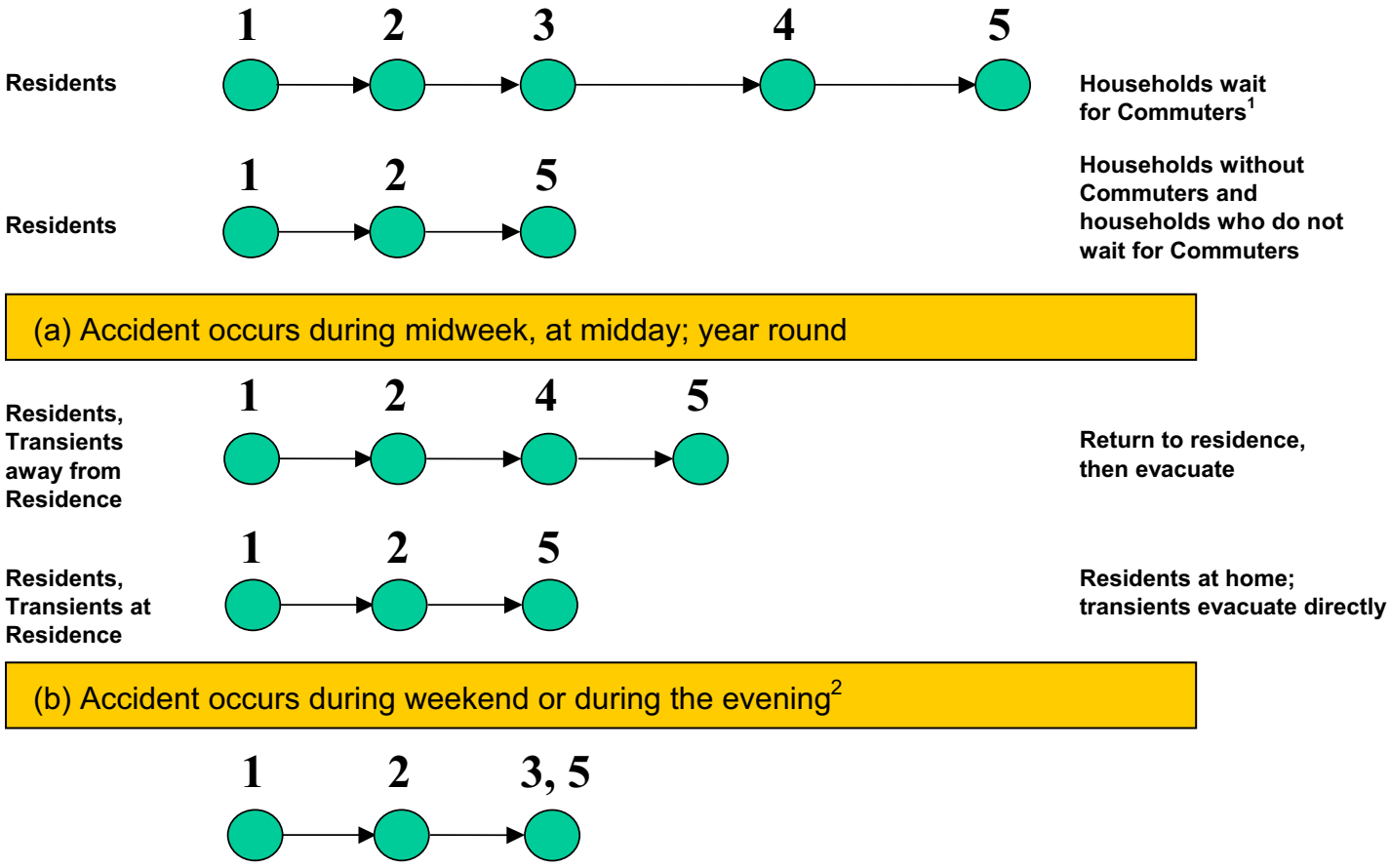
An employee who lives outside the EPZ will follow sequence (c) of Figure 5-1. A household within the EPZ that has one or more commuters at work, and will await their return before beginning the evacuation trip will follow the first sequence of Figure 5-1(a). A household within the EPZ that has no commuters at work, or that will not await the return of any commuters, will follow the second sequence of Figure 5-1(a), regardless of day of week or time of day.

Households with no commuters on weekends or in the evening/night-time, will follow the applicable sequence in Figure 5-1(b). Transients will always follow one of the sequences of Figure 5-1(b). Some transients away from their residence could elect to evacuate immediately without returning to the residence, as indicated in the second sequence.

It is seen from Figure 5-1, that the Trip Generation time (i.e. the total elapsed time from Event 1 to Event 5) depends on the scenario and will vary from one household to the next. Furthermore, Event 5 depends, in a complicated way, on the time distributions of all activities preceding that event. That is, to estimate the time distribution of Event 5, we must obtain estimates of the time distributions of all preceding events.

Estimated Time Distributions of Activities Preceding Event 5

The time distribution of an event is obtained by "summing" the time distributions of all prior contributing activities. (This "summing" process is quite different than an algebraic sum since we are operating on distributions – not scalar numbers).



[1] Applies for evening and weekends also if commuters are at work.
[2] Applies throughout the year for transients.

Figure 5-1. Events and Activities Preceding the Evacuation Trip

Time Distribution No. 1, Becoming Aware of Accident: Activity 1 → 2

It is reasonable to expect that 85 percent of those within the EPZ will be aware of the accident within 30 minutes with the remainder notified within the following 20 minutes. This distribution is given below:

Distribution No. 1, Notification Time: Activity 1 → 2

It is assumed that 85 percent of those within the EPZ will be aware of the accident within 30 minutes with the remainder notified within the following 20 minutes. The notification distribution is given below:

Table 5-2. Time Distribution for Notifying the Public

Elapsed Time (Minutes)	Percent of Population Notified
0	0
5	7
10	13
15	26
20	46
25	65
30	85
35	90
40	95
45	98
50	100

Distribution No. 2, Prepare to Leave Work: Activity 2 → 3

It is reasonable to expect that the business enterprises within the EPZ will elect to shut down following notification and most employees would leave work quickly. Commuters, who work outside the EPZ could, in all probability, also leave quickly since facilities outside the EPZ would remain open and other personnel would remain. Personnel or farmers responsible for equipment would require additional time to secure their facility. The distribution of Activity 2 → 3 reflects data obtained by the telephone survey. This distribution is plotted in Figure 5-2 and listed below.

Table 5-3. Time Distribution for Employees to Prepare to Leave Work	
Elapsed Time (Minutes)	**Cumulative Percent Employees Leaving Work**
0	0
5	0
10	32
15	48
20	57
25	63
30	66
35	77
40	80
45	81
50	84
55	85
60	85
65	91
70	93
75	94
80	96
85	98
90	99
95	100

NOTE: The survey data was normalized to distribute the "Don't know" response. That is, the sample was reduced in size to include only those returns which included responses to this question. The underlying assumption is that the distribution of this activity for the “Don’t know” responders, if the event takes place, would be the same as those responders who provided estimates.

Distribution No. 3, Travel Home: Activity 3 → 4

These data are provided directly by the telephone survey. This distribution is plotted in Figure 5-2 and listed below.

Table 5-4. Time Distribution for Commuters to Travel Home

Elapsed Time (Minutes)	Cumulative Percent Returning Home
0	0
5	0
10	22
15	40
20	54
25	65
30	70
35	83
40	85
45	87
50	91
55	92
60	92
65	95
70	95
75	96
80	96
85	98
90	99
95	100

NOTE: The survey data was normalized to distribute the "Don't know" response

Distribution No. 4, Prepare to Leave Home: Activity 2, 4 $\rightarrow$ 5

These data are provided directly by the telephone survey. This distribution is plotted in Figure 5-2 and listed below.

Table 5-5. Time Distribution for Population to Prepare to Evacuate

Elapsed Time (Minutes)	Cumulative Pct. Ready to Evacuate	Elapsed Time (Minutes)	Cumulative Pct. Ready to Evacuate	Elapsed Time (Minutes)	Cumulative Pct. Ready to Evacuate
0	0	95	70	190	89
5	0	100	71	195	90
10	4	105	71	200	91
15	9	110	71	205	91
20	13	115	73	210	91
25	19	120	74	215	91
30	25	125	76	220	92
35	31	130	78	225	92
40	34	135	81	230	92
45	36	140	84	235	92
50	38	145	84	240	93
55	44	150	84	245	93
60	50	155	85	250	94
65	56	160	85	255	95
70	60	165	85	260	97
75	64	170	85	265	98
80	67	175	86	270	99
85	68	180	87	275	100
90	69	185	88		

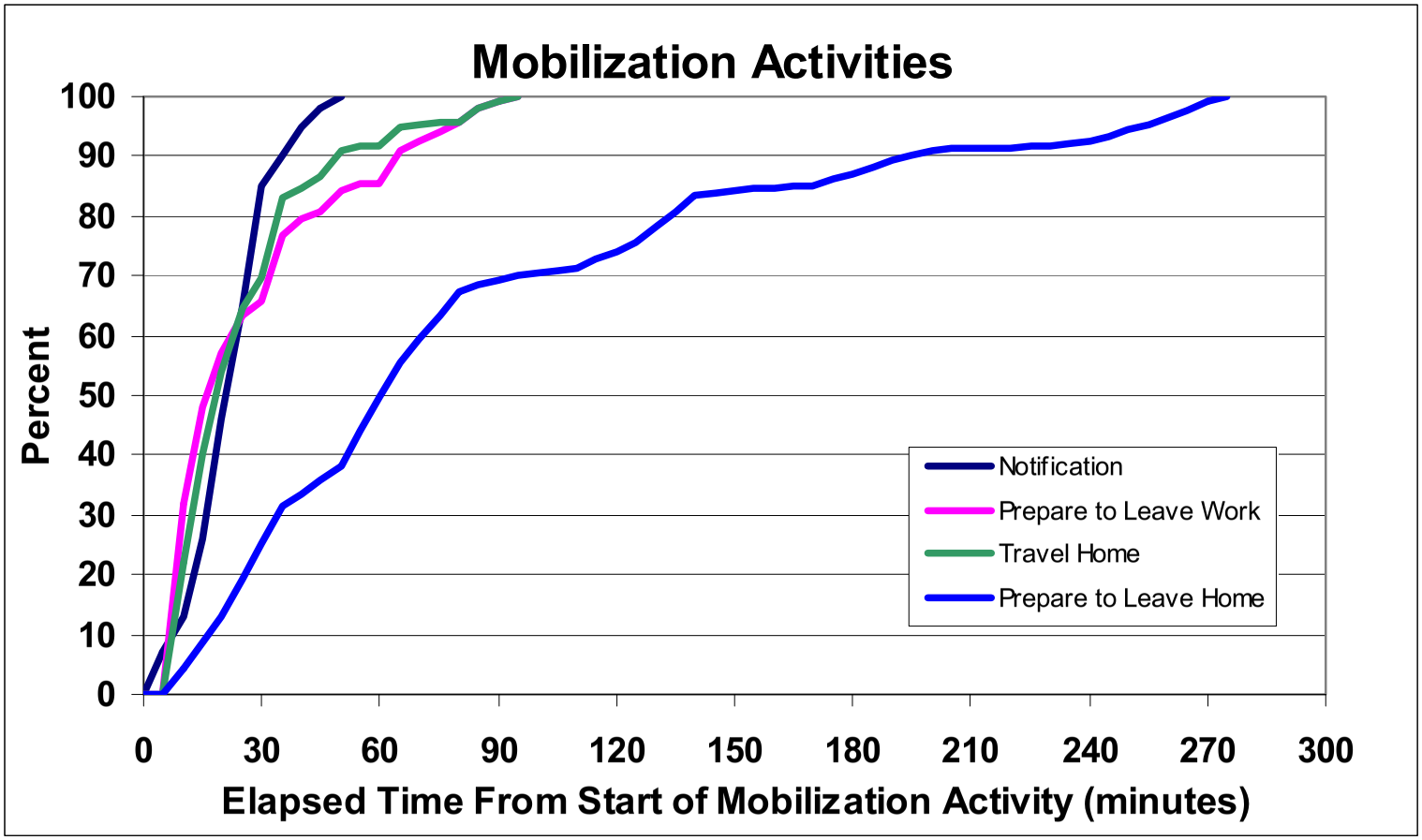


Figure 5-2. Evacuation Mobilization Activities

Calculation of Trip Generation Time Distribution

The time distributions for each of the mobilization activities presented herein must be combined to form the appropriate Trip Generation Distributions. We assume that the stated events take place in sequence such that all preceding events must be completed before the current event can occur. For example, if a household awaits the return of a commuter, the work-to-home trip (Activity 3 $\rightarrow$ 4) must precede Activity 4 $\rightarrow$ 5.

To calculate the time distribution of an event that is dependent on two sequential activities, it is necessary to "sum" the distributions associated with these prior activities. The distribution summing algorithm is applied repeatedly as shown to form the required distribution. As an outcome of this procedure, new time distributions are formed; we assign "letter" designations to these intermediate distributions to describe the procedure.

Table 5-6. Mapping Distributions to Events

Apply "Summing" Algorithm To:	Distribution Obtained	Event Defined
Distributions 1 and 2	Distribution A	Event. 3
Distributions A and 3	Distribution B	Event. 4
Distributions B and 4	Distribution C	Event. 5
Distributions 1 and 4	Distribution D	Event. 5

Distributions A through D are described below; distributions A, C, and D are shown in Figure 5-3:

Table 5-7. Description of the Distributions	
Distribution	Description
A	Time distribution of commuters departing place of work (Event 3). Also applies to employees who work within the EPZ who live outside, and to Transients within the EPZ.
B	Time distribution of commuters arriving home (Event 4).
C	Time distribution of residents with commuters leaving home to begin the evacuation trip (Event 5).
D	Time distribution of residents without commuters returning home to begin the evacuation trip (Event 5).

Figure 5-3 presents the combined trip generation distributions designated A, C, and D. These distributions are presented on the same time scale. The PC-DYNEV simulation model is designed to accept varying rates of vehicle trip generation for each origin centroid, expressed in the form of histograms. These histograms, which represent Distributions A, C, and D, properly displaced with respect to one another, are tabulated in Table 5-8 (Distribution B, Arrive Home, omitted for clarity).

The final time period (12) in Table 5-8 is 900 minutes long. This time period is added to allow the analysis network to clear, in the event congestion persists beyond the trip generation period. Note that there are no trips generated during this final time period.

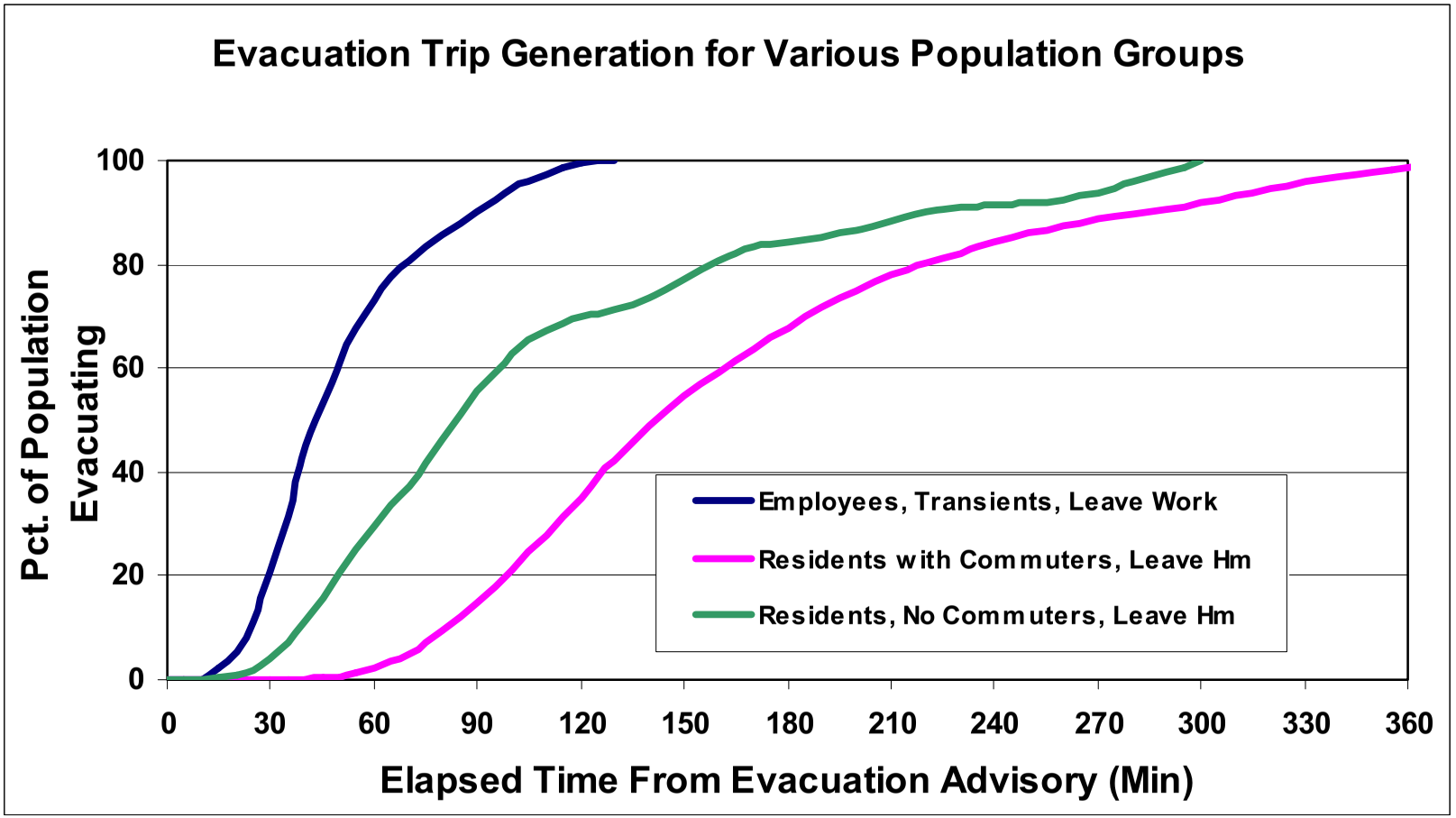


Figure 5-3. Comparison of Trip Generation Distributions

Table 5-8. Trip Generation for the EPZ Population					
Time Period	Duration (Min)	Percent of Total Trips Generated Within Indicated Time Period			
		Residents With Commuters (Distribution C)	Residents Without Commuters (Distribution D)	Employees* (Distribution A)	Transients (Distribution A)
1	15	0	0	2	2
2	15	0	4	23	19
3	15	0	14	65	32
4	15	2	12	10	20
5	30	13	25	0	17
6	30	20	15	0	10
7	30	20	7	0	0
8	30	13	7	0	0
9	60	16	7	0	0
10	60	8	9	0	0
11	60	8	0	0	0
12	900	0	0	0	0

* The distribution from the telephone survey results was modified based on discussions with STP Emergency Planning Personnel. Nearly all of the employment in the EPZ is at STP; the modified distribution shown is based on data from STP emergency drills.

6. DEMAND ESTIMATION FOR EVACUATION SCENARIOS

An evacuation "case" defines a combination of Evacuation Region and Evacuation Scenario. The definitions of "Region" and "Scenario" are as follows:

Region — A grouping of contiguous evacuation Zones, that forms either a "keyhole" sector-based area, or a circular area within the EPZ, that must be evacuated in response to a radiological emergency.

Scenario — A combination of circumstances, including time of day, day of week, season, and weather conditions. Scenarios define the number of people in each of the affected population groups and their respective mobilization time distributions.

The Zones are identified in Figure 6-1. Using the Zone information provided by STP personnel (Table 6-1), a total of 22 distinct Regions were defined, which encompass all the groupings of Zones considered. The regions are detailed in Table 6-2. Each keyhole consists of a circular area centered at the South Texas Project (STP) and an adjoining sector with a central angle of 10 degrees. These sectors extend to a distance of 5 miles from STP (Regions R04 to R10), or to the EPZ boundary (Regions R11 to R22). The wind direction defines the orientation of these Regions. Regions 1, 2 and 3 are circular areas centered at STP with radii of 2, 5 and 10 miles, respectively.

A total of 12 Scenarios were evaluated for all Regions. Thus, there are a total of 12x22=264 evacuation cases. Table 6-3 is a description of all Scenarios.

Each combination of region and scenario implies a specific population to be evacuated. Table 6-4 presents the percentage of each population group assumed to evacuate for each scenario. Table 6-5 presents the vehicle counts for each scenario.

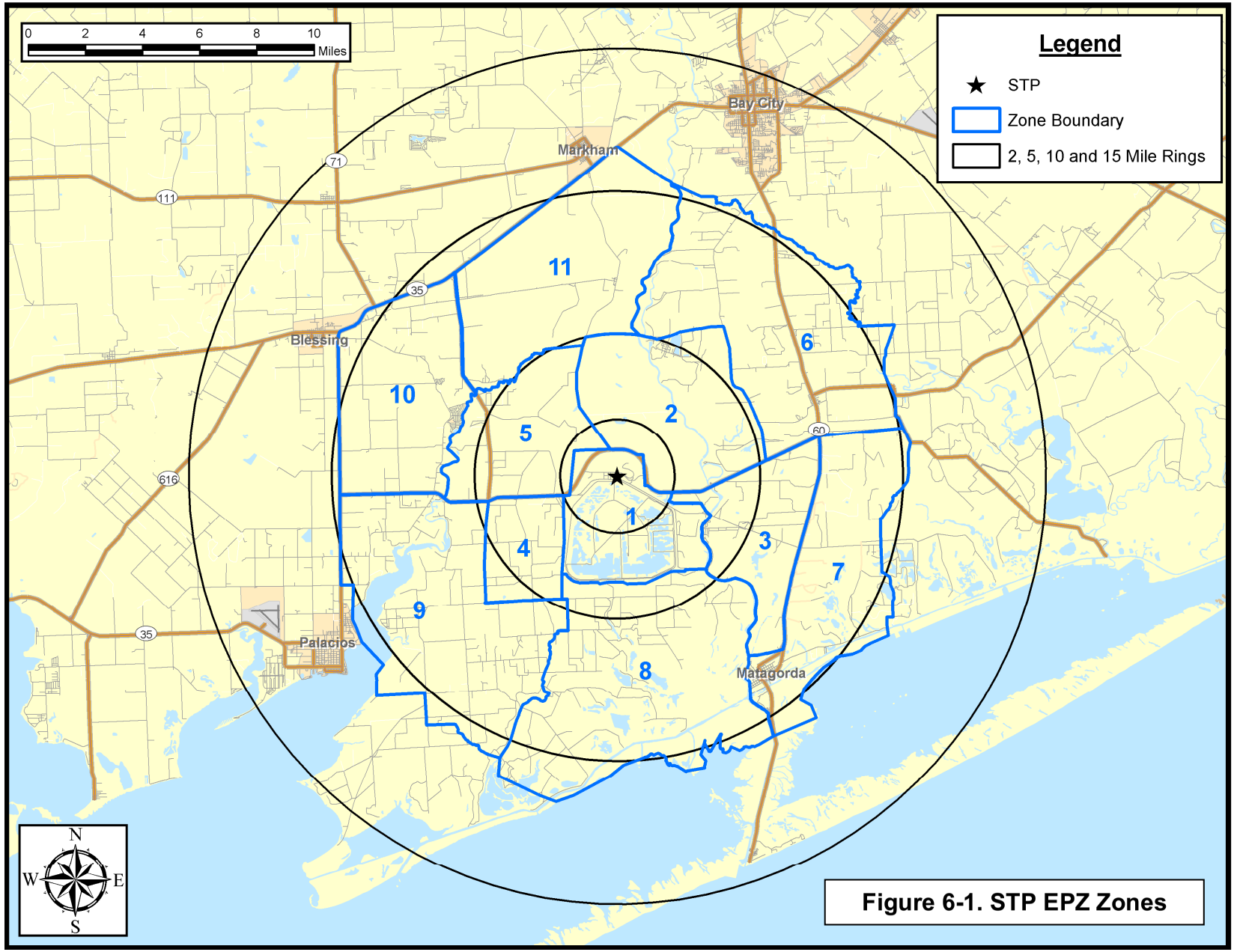


Figure 6-1. STP EPZ Zones

Table 6-1. Definition of Evacuation Regions										
WIND DIRECTION FROM IS BETWEEN	EVACUATE ZONES						EVACUATE KEY HOLE ZONES			
	2 Mile Radius	KLD REGION	5 Mile Radius	KLD REGION	10 Mile Radius	KLD REGION	2 Mile Radius & 5 Miles Downwind	KLD REGION	5 Mile Radius and 10 Miles Downwind	KLD REGION
355º to 5º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1	R1	1, 2, 3, 4, 5, 8, 9	R11
6º to 16º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1	R1	1, 2, 3, 4, 5, 8, 9	R11
17º to 28º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1	R1	1, 2, 3, 4, 5, 8, 9	R11
29º to 39º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 4	R4	1, 2, 3, 4, 5, 8, 9	R11
40º to 50º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 4	R4	1, 2, 3, 4, 5, 8, 9	R11
51º to 61º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 4, 5	R5	1, 2, 3, 4, 5, 8, 9, 10	R12
62º to 73º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 4, 5	R5	1, 2, 3, 4, 5, 9, 10	R13
74º to 84º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 4, 5	R5	1, 2, 3, 4, 5, 9, 10	R13
85º to 95º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 4, 5	R5	1, 2, 3, 4, 5, 9, 10	R13
96º to 106º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 4, 5	R5	1, 2, 3, 4, 5, 9, 10, 11	R14
107º to 118º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 5	R6	1, 2, 3, 4, 5, 9, 10, 11	R14
119º to 129º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 5	R6	1, 2, 3, 4, 5, 9, 10, 11	R14
130º to 140º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 5	R6	1, 2, 3, 4, 5, 10, 11	R15
141º to 151º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 5	R7	1, 2, 3, 4, 5, 10, 11	R15
152º to 163º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 5	R7	1, 2, 3, 4, 5, 10, 11	R15
164º to 174º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 5	R7	1, 2, 3, 4, 5, 6, 10, 11	R16
175º to 185º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2	R8	1, 2, 3, 4, 5, 6, 11	R17
186º to 196º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2	R8	1, 2, 3, 4, 5, 6, 11	R17
197º to 208º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2	R8	1, 2, 3, 4, 5, 6, 11	R17
209º to 219º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2	R8	1, 2, 3, 4, 5, 6, 11	R17
220º to 230º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2	R8	1, 2, 3, 4, 5, 6	R18
231º to 241º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 3	R9	1, 2, 3, 4, 5, 6, 7	R19
242º to 253º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 3	R9	1, 2, 3, 4, 5, 6, 7	R19
254º to 264º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 3	R9	1, 2, 3, 4, 5, 6, 7	R19
265º to 275º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 3	R9	1, 2, 3, 4, 5, 6, 7	R19
276º to 286º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 2, 3	R9	1, 2, 3, 4, 5, 6, 7	R19
287º to 298º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 3	R10	1, 2, 3, 4, 5, 7	R20
299º to 309º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 3	R10	1, 2, 3, 4, 5, 7, 8	R21
310º to 320º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 3	R10	1, 2, 3, 4, 5, 7, 8	R21
321º to 331º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1, 3	R10	1, 2, 3, 4, 5, 7, 8	R21
332º to 343º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1	R1	1, 2, 3, 4, 5, 7, 8	R21
344º to 354º	1	R1	1, 2, 3, 4, 5	R2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	R3	1	R1	1, 2, 3, 4, 5, 7, 8, 9	R22

Table 6-2. Description of Evacuation Regions												
		ZONE										
Region	Description	1	2	3	4	5	6	7	8	9	10	11
R01	2 mile ring	■										
R02	5-mile ring	■	■	■	■	■						
R03	Full EPZ	■	■	■	■	■	■	■	■	■	■	■
Evacuate 2 mile ring and 5 miles downwind												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R04	29 - 50	■			■							
R05	51 - 106	■			■	■						
R06	107 - 140	■				■						
R07	141 - 174	■	■			■						
R08	175 - 230	■	■									
R09	231 - 286	■	■	■								
R10	287 - 331	■		■								
R01*	332 - 28	■										
Evacuate 5 mile ring and downwind to EPZ boundary												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R11	355 - 50	■	■	■	■	■			■	■		
R12	51 - 61	■	■	■	■	■			■	■	■	
R13	62 - 95	■	■	■	■	■				■	■	
R14	96 - 129	■	■	■	■	■				■	■	■
R15	130 - 163	■	■	■	■	■					■	■
R16	164 - 174	■	■	■	■	■	■				■	■
R17	175 - 219	■	■	■	■	■	■					■
R18	220 - 230	■	■	■	■	■	■					
R19	231 - 286	■	■	■	■	■	■	■				
R20	287 - 298	■	■	■	■	■		■				
R21	299 - 343	■	■	■	■	■		■	■			
R22	344 - 354	■	■	■	■	■		■	■	■		

Residents and Transients in the Matagorda Beach area are always evacuated.

* Note that evacuating the 2-mile ring and evacuating the 5-mile ring with wind from 332° to 28° both result in the evacuation of Region1. Thus, R01 is shown twice in the table above.

Table 6-3. Evacuation Scenario Definitions					
Scenario	**Season**	**Day of Week**	**Time of Day**	**Weather**	**Special**
1	Summer	Midweek	Midday	Good	None
2	Summer	Midweek	Midday	Rain	None
3	Summer	Weekend	Midday	Good	None
4	Summer	Weekend	Midday	Rain	None
5	Summer	Midweek, Weekend	Evening	Good	None
6	Winter	Midweek	Midday	Good	None
7	Winter	Midweek	Midday	Rain	None
8	Winter	Weekend	Midday	Good	None
9	Winter	Weekend	Midday	Rain	None
10	Winter	Midweek, Weekend	Evening	Good	None
11	Summer	Weekend	Midday	Good	Holiday (Beachgoers)
12	Summer	Midweek	Midday	Good	New Plant Construction

Table 6-4. Percent of Population Groups Evacuating for Various Scenarios									
Scenarios	Residents With Commuters in Household	Residents With No Commuters in Household	Employees	Transients	Shadow	Special Event	School Buses	Transit Buses	External Through Traffic
1	49%	51%	96%	75%	49%	0%	10%	100%	100%
2	49%	51%	96%	75%	49%	0%	10%	100%	100%
3	10%	90%	15%	100%	33%	0%	0%	100%	100%
4	10%	90%	15%	100%	33%	0%	0%	100%	100%
5	10%	90%	15%	65%	33%	0%	0%	100%	60%
6	49%	51%	100%	15%	50%	0%	100%	100%	100%
7	49%	51%	100%	15%	50%	0%	100%	100%	100%
8	10%	90%	15%	25%	33%	0%	0%	100%	100%
9	10%	90%	15%	25%	33%	0%	0%	100%	100%
10	10%	90%	15%	10%	33%	0%	0%	100%	60%
11	10%	90%	15%	100%	33%	100%	0%	100%	100%
12	49%	51%	96%	75%	49%	100%	10%	100%	100%

Resident Households With Commuters ..... Households of EPZ residents who await the return of commuters prior to beginning the evacuation trip.

Resident Households With No Commuters .... Households of EPZ residents who do not have commuters or will not await the return of commuters prior to beginning the evacuation trip.

Employees ..... EPZ employees who live outside of the EPZ.

Transients ..... People who are in the EPZ at the time of an accident for recreational or other (non-employment) purposes.

Shadow ..... Residents and employees in the shadow region (outside of the EPZ) who will spontaneously decide to relocate during the evacuation. The basis for the values shown is a 30% relocation of shadow residents along with a proportional percentage of shadow employees. The percentage of shadow employees is computed using the scenario-specific ratio of EPZ employees to residents.

Special Events ..... Additional vehicles in the STP area for holiday beach goers for Scenario 11 and for construction workers (building a new unit at STP) for Scenario 12.

School and Transit Buses ..... Vehicle-equivalents present on the road during evacuation servicing schools and transit-dependent people (1 bus is equivalent to 2 passenger vehicles).

External Through Traffic ..... Traffic on local highways and major arterial roads at the start of the evacuation. This traffic is stopped by access control approximately 90 minutes after the evacuation begins.

Table 6-5. Vehicle Estimates By Scenario*

Scenarios	Residents with Commuters**	Residents without Commuters**	Employees	Transients**	Shadow	Special Events	School Buses ***	Transit Buses ***	External Traffic	Total Scenario Vehicles
1	904	890	1,134	1,955	8,134	-	2	6	900	13,912
2	904	890	1,134	1,955	8,134	-	2	6	900	13,912
3	90	1,704	177	2,607	5,469	-	-	6	900	10,950
4	90	1,704	177	2,607	5,469	-	-	6	900	10,950
5	90	1,704	177	1,695	5,469	-	-	6	900	9,678
6	904	890	1,181	391	8,265	-	22	6	900	12,545
7	904	890	1,181	391	8,265	-	22	6	900	12,545
8	90	1,704	177	652	5,469	-	-	6	900	8,995
9	90	1,704	177	652	5,469	-	-	6	900	8,995
10	90	1,704	177	261	5,469	-	-	6	900	8,244
11	90	1,704	177	2,607	5,469	2,500	-	6	900	10,950
12	904	890	1,134	1,955	8,134	2,475	2	6	900	16,387

NOTE:
*The values presented are for an evacuation of the full EPZ (Region R03)
**Residents and transients at Matagorda Beach are included in these totals for the purpose of calculating ETE. Matagorda Beach is not within the EPZ.
*** School Buses and Transit Buses are expressed in vehicle equivalents (1 bus= 2 vehicles). Therefore actual number of buses are 1/2 value shown.

7. GENERAL POPULATION EVACUATION TIME ESTIMATES (ETE)

This section presents the current results of the computer analyses using the IDYNEV System described in Appendices B, C and D. These results cover 22 regions within the STP EPZ and the 12 Evacuation Scenarios discussed in Section 6.

The ETE for all Evacuation Cases are presented in Tables 7-1A through 7-1D. **These tables present the estimated times to clear the indicated population percentages from the Evacuation Regions for all Evacuation Scenarios.** Table 7-2 defines the Evacuation Regions considered. The tabulated values of ETE are obtained by interpolating the PC-DYNEV simulation model outputs which are generated at 10-minute intervals, then rounding these data to the nearest 5 minutes.

7.1 Voluntary Evacuation and Shadow Evacuation

We define “voluntary evacuees” as people who are within the EPZ in Zones for which an Advisory to Evacuate *has not* been issued, yet who nevertheless elect to evacuate. We define “shadow evacuation” as the movement of people from areas *outside* the EPZ for whom no protective action recommendation has been issued. Both voluntary and shadow evacuations are assumed to take place over the same time frame as the evacuation from within the impacted Evacuation Region.

The ETE for STP addresses the issue of voluntary evacuees in the manner shown in Figure 7-1. Within the circle defined by the farthest radial distance of the Evacuation Region, 50 percent of those people located in Zones not advised to evacuate, are assumed to do so. Within the annular ring extending from the furthest distance of the Evacuation Region (if less than 10 miles), to the EPZ boundary, it is assumed that 35 percent of the people located there will elect to evacuate.

Figure 7-2 presents the area identified as the Shadow Evacuation Region. This region extends radially from the boundary of the EPZ to a distance of 15 miles. The population and number of evacuating vehicles in the Shadow Evacuation Region were estimated using the same methodology that was used for permanent residents within the EPZ (see page 3-2). It is estimated that 27,613 people reside in the Shadow Evacuation Region and that they will evacuate in 16,585 vehicles.

Traffic generated within this Shadow Evacuation Region, traveling away from the STP location, has the potential for impeding evacuating vehicles from within the Evacuation Region. We assume that the traffic volumes emitted within the Shadow Evacuation Region correspond to 30 percent of the residents there plus a proportionate number of employees in that region. **All ETE calculations include this shadow traffic movement.**

7.2 Patterns of Traffic Congestion During Evacuation

Figures 7-3 and 7-4 illustrate the patterns of traffic congestion that arise for the case when the entire EPZ (Region R03) is advised to evacuate during the summer, weekend, midday period under good weather conditions (Scenario 3).

Traffic congestion, as the term is used here, is defined as Level of Service (LOS) F. LOS F is defined as follows (2000 HCM):

> Level of Service F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level of Service F is used to describe the operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases operating conditions of vehicles or pedestrians discharged from the queue may be quite good. Nevertheless, it is the point at which arrival flow exceeds discharge flow, which causes the queue to form, and Level of Service F is an appropriate designation for such points.

This definition is general and conceptual in nature, and applies primarily to uninterrupted flow. Levels of Service for interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

All highway "links" which experience LOS F are delineated in these Figures by a red line; all others are lightly indicated. Congestion develops rapidly around concentrations of population and traffic bottlenecks.

Figure 7-3 presents the congestion pattern 45 minutes after the Advisory to Evacuate (ATE). Congestion exists northbound on State Highway 60, primarily the result of those evacuating Matagorda Beach.

Figure 7-4 indicates that at 1 hour and 15 minutes after the ATE, congestion persists northbound on State Highway 60, especially through Wadsworth near the intersection with FM 521. Congestion persists outside of the EPZ, notably at the intersection of State Highway 60 and FM 2668, and to a lesser extent within Bay City. Traffic guides are recommended at the intersection of State Highway 60 and FM 2668 to facilitate the flow of evacuating traffic. All congestion in the shadow area is clear by 1 hour and 45 minutes after the ATE.

7.3 Evacuation Rates

While all routes remain available for evacuees, only a few of these routes will be needed towards the end of the evacuation. Figure 7-5 indicates that evacuation is a continuous, dynamic process. This plot indicates the rate at which traffic flows out of the indicated areas for the case of an evacuation of the entire EPZ (Region R03) under the indicated conditions. Appendix J presents these plots for all Evacuation Scenarios for Region R03.

As indicated in Figure 7-5, there is typically a long "tail" to these distributions. Vehicles evacuate an area slowly at the beginning, as people respond to the Advisory to Evacuate at different rates. Then traffic demand builds rapidly (slopes of curves increase). When the system becomes congested, traffic exits the EPZ at rates somewhat below capacity until some evacuation routes have cleared. As more routes clear, the aggregate rate of egress slows since many vehicles have already left the EPZ. Towards the end of the process, relatively few evacuation routes service the remaining demand. It is reasonable to expect that some evacuees may delay or lengthen their mobilization activities and evacuate at a later time as a result; these ETE estimates do not (and should not) be distorted to account for these few laggards.

This decline in aggregate flow rate, towards the end of the process, is characterized by these curves flattening and gradually becoming horizontal. Ideally, it would be desirable to fully saturate all evacuation routes equally so that all will service traffic near capacity levels and all will clear at the same time. For this ideal situation, all curves would retain the same slope until the end -- thus minimizing evacuation time. In the real world, this ideal is generally unattainable reflecting the variation in population density and in highway capacity over the EPZ.

7.4 Guidance on Using ETE Tables

Tables 7-1A through 7-1D present the ETE values for all 22 Evacuation Regions and all 12 Evacuation Scenarios. They are organized as follows:

Table	Contents
7-1A	ETE represents the elapsed time required for 50 percent of the population within a Region, to evacuate from that Region.
7-1B	ETE represents the elapsed time required for 90 percent of the population within a Region, to evacuate from that Region.
7-1C	ETE represents the elapsed time required for 95 percent of the population within a Region, to evacuate from that Region.
7-1D	ETE represents the elapsed time required for 100 percent of the population within a Region, to evacuate from that Region.

The user first determines the percentile of population for which the ETE is sought. The applicable value of ETE within the chosen Table may then be identified using the following procedure:

1. Identify the applicable **Scenario**:
    - The Season
        - Summer
        - Winter (also Autumn and Spring)
    - The Day of Week
        - Midweek
        - Weekend
    - The Time of Day
        - Midday
        - Evening
    - Weather Condition
        - Good Weather
        - Rain
    - Special Event (if any)
        - Holiday Beach Weekend
        - New Plant Construction

While these Scenarios are designed, in aggregate, to represent conditions throughout the year, some further clarification is warranted:

- The conditions of a summer evening (either midweek or weekend) and rain are not explicitly identified in Tables 7-1A through 7-1D. For these

conditions, Scenario (4) applies.

- The conditions of a winter evening (either midweek or weekend) and rain are not explicitly identified in Tables 7-1A through 7-1D. For these conditions, Scenario (9) applies.
- The seasons are defined as follows:
  - Summer implies that public schools are *not* in session.
  - Winter, Spring and Autumn imply that public schools *are* in session.
- Time of Day: Midday implies the time over which most commuters are at work.

2. With the Scenario identified, now identify the **Evacuation Region**:
   - Determine the projected azimuth direction of the plume, as dictated by the wind direction. The wind direction is expressed in degrees, clockwise from North and represents the direction *from which* the wind originates.
   - Determine the distance that the Evacuation Region will extend from the South Texas Project. The applicable distances and their associated candidate Regions are given below:
     - 2 Miles (Region R01)
     - 5 Miles (Regions R02 and R04 through R10)
     - To EPZ Boundary (Regions R03 and R11 through R22)
   - Enter Table 7-2 and identify the applicable group of candidate Regions based on the distance that the selected Region extends from STP. Select the Evacuation Region identifier in that row from the first column of the Table.

3. Determine the **ETE for the Scenario** identified in Step 1 and the Region identified in Step 2, as follows:
   - The columns of Table 7-1 are labeled with the Scenario numbers. Identify the proper column in the selected Table using the Scenario number determined in Step 1.
   - Identify the row in this table that provides ETE values for the Region identified in Step 2.
   - The unique data cell defined by the column and row so determined contains the desired value of ETE expressed in Hours:Minutes.

Example

It is desired to identify the ETE for the following conditions:

- Sunday, August 10th at 4:00 AM.
- The weather is good.
- Wind direction is from 300^{o}.
- Wind speed is such that the distance to be evacuated is judged to be 10 miles (to EPZ boundary).
- The desired ETE is that value needed to evacuate 95 percent of the population from within the impacted Region.

Table 7-1C is applicable because the 95th-percentile population is desired. Proceed as follows:

1. Identify the Scenario as summer, weekend, evening and good weather. Entering Table 7-1C these descriptors identify this combination of circumstances as being Scenario 5.

2. Enter Table 7-1C and locate the group entitled “Evacuate 5-Mile Ring and Downwind to EPZ Boundary”. Under “Wind Direction”, identify the 299^{o} to 343^{o} azimuth and read REGION R21 in the first column of that row.

3. Enter Table 7-1C to locate the data cell containing the value of ETE for Scenario 5 and Region R21. This data cell is in column (5) and in the row for Region R21; it contains the ETE value of **3:30**.

Table 7-1A. Time To Clear The Indicated Area of 50 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:40	0:40	0:40	0:40	0:40	R01 2-mile ring	0:40	0:40	0:40	0:40	0:40	R01 2-mile ring	0:40	0:50
R02 5-mile ring	0:55	0:55	1:05	1:05	1:05	R02 5-mile ring	0:55	0:55	1:05	1:05	1:10	R02 5-mile ring	1:45	1:00
R03 Entire EPZ	1:10	1:10	1:15	1:20	1:10	R03 Entire EPZ	1:10	1:10	1:15	1:20	1:25	R03 Entire EPZ	1:35	1:15
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	0:40	0:45	0:45	0:45	0:45	R04 29° to 50°	0:40	0:45	0:45	0:45	0:45	R04 29° to 50°	0:45	0:50
R05 51° to 106°	0:45	0:45	0:50	0:50	0:50	R05 51° to 106°	0:45	0:45	0:50	0:50	0:50	R05 51° to 106°	0:50	0:55
R06 107° to 140°	0:45	0:45	0:45	0:50	0:45	R06 107° to 140°	0:45	0:45	0:45	0:50	0:45	R06 107° to 140°	0:45	0:55
R07 141° to 174°	0:50	0:50	0:50	0:50	0:50	R07 141° to 174°	0:50	0:50	0:50	0:50	0:50	R07 141° to 174°	0:50	0:55
R08 175° to 230°	0:45	0:45	0:45	0:45	0:45	R08 175° to 230°	0:45	0:45	0:45	0:45	0:45	R08 175° to 230°	0:45	0:55
R09 231° to 286°	0:50	0:55	1:00	1:05	1:00	R09 231° to 286°	0:50	0:50	1:00	1:05	1:05	R09 231° to 286°	1:45	1:00
R10 287° to 331°	0:50	0:50	1:00	1:05	1:00	R10 287° to 331°	0:50	0:50	1:00	1:05	1:05	R10 287° to 331°	1:45	0:55
R01 332° to 28°	0:40	0:40	0:40	0:40	0:40	R01 332° to 28°	0:40	0:40	0:40	0:40	0:40	R01 332° to 28°	0:40	0:50
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	1:00	1:00	1:05	1:05	1:05	R11 355° to 50°	1:00	1:00	1:10	1:10	1:15	R11 355° to 50°	1:25	1:05
R12 51° to 61°	1:00	1:00	1:05	1:05	1:05	R12 51° to 61°	1:00	1:00	1:10	1:10	1:15	R12 51° to 61°	1:25	1:05
R13 62° to 95°	1:00	1:00	1:05	1:05	1:05	R13 62° to 95°	1:00	1:00	1:10	1:10	1:15	R13 62° to 95°	1:25	1:05
R14 96° to 129°	1:00	1:00	1:05	1:05	1:05	R14 96° to 129°	1:00	1:00	1:10	1:10	1:20	R14 96° to 129°	1:25	1:05
R15 130° to 163°	1:00	1:00	1:05	1:05	1:05	R15 130° to 163°	1:00	1:00	1:05	1:05	1:15	R15 130° to 163°	1:25	1:05
R16 164° to 174°	1:05	1:10	1:10	1:15	1:10	R16 164° to 174°	1:05	1:10	1:15	1:20	1:20	R16 164° to 174°	1:30	1:15
R17 175° to 219°	1:05	1:10	1:10	1:15	1:10	R17 175° to 219°	1:05	1:10	1:15	1:20	1:20	R17 175° to 219°	1:50	1:15
R18 220° to 230°	1:05	1:05	1:10	1:15	1:10	R18 220° to 230°	1:05	1:05	1:15	1:15	1:20	R18 220° to 230°	1:50	1:10
R19 231° to 286°	1:05	1:10	1:15	1:20	1:10	R19 231° to 286°	1:05	1:05	1:15	1:15	1:20	R19 231° to 286°	2:00	1:15
R20 287° to 298°	0:55	0:55	1:05	1:10	1:05	R20 287° to 298°	0:55	0:55	1:05	1:10	1:10	R20 287° to 298°	1:50	1:00
R21 299° to 343°	0:55	0:55	1:05	1:10	1:05	R21 299° to 343°	0:55	0:55	1:05	1:10	1:10	R21 299° to 343°	1:50	1:00
R22 344° to 354°	1:00	1:05	1:10	1:15	1:05	R22 344° to 354°	1:00	1:00	1:15	1:15	1:20	R22 344° to 354°	1:50	1:05

Table 7-1B. Time To Clear The Indicated Area of 90 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:50	1:20
R02 5-mile ring	2:10	2:20	2:10	2:10	2:30	R02 5-mile ring	2:30	2:40	2:50	2:50	3:00	R02 5-mile ring	3:10	1:50
R03 Entire EPZ	3:00	3:00	2:40	2:40	2:50	R03 Entire EPZ	3:30	3:30	3:20	3:20	3:40	R03 Entire EPZ	3:30	3:00
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	0:55	1:00	1:40	1:40	1:40	R04 29° to 50°	1:00	1:00	1:50	1:50	1:50	R04 29° to 50°	1:40	1:25
R05 51° to 106°	1:00	1:00	2:30	2:30	2:30	R05 51° to 106°	1:05	1:05	2:30	2:30	2:30	R05 51° to 106°	2:30	1:30
R06 107° to 140°	1:00	1:00	2:00	2:00	2:00	R06 107° to 140°	1:00	1:00	2:00	2:00	2:00	R06 107° to 140°	2:00	1:30
R07 141° to 174°	1:05	1:05	2:10	2:10	2:10	R07 141° to 174°	1:05	1:05	2:10	2:10	2:10	R07 141° to 174°	2:10	1:30
R08 175° to 230°	0:55	1:00	1:00	1:00	1:00	R08 175° to 230°	1:00	1:00	1:00	1:00	1:00	R08 175° to 230°	1:00	1:30
R09 231° to 286°	2:10	2:10	2:00	2:00	2:10	R09 231° to 286°	2:20	2:20	2:40	2:40	2:50	R09 231° to 286°	3:10	1:40
R10 287° to 331°	2:00	2:10	2:00	2:00	2:10	R10 287° to 331°	2:20	2:20	2:40	2:40	2:50	R10 287° to 331°	3:10	1:40
R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:50	1:20
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	2:50	2:50	2:40	2:40	2:50	R11 355° to 50°	3:10	3:10	3:30	3:30	3:40	R11 355° to 50°	3:15	2:00
R12 51° to 61°	2:40	2:40	2:20	2:20	2:40	R12 51° to 61°	3:10	3:10	3:10	3:10	3:30	R12 51° to 61°	3:10	2:10
R13 62° to 95°	2:40	2:40	2:20	2:20	2:40	R13 62° to 95°	3:10	3:10	3:10	3:10	3:30	R13 62° to 95°	3:10	2:10
R14 96° to 129°	2:50	2:50	2:20	2:20	2:40	R14 96° to 129°	3:20	3:20	3:10	3:10	3:30	R14 96° to 129°	3:10	2:10
R15 130° to 163°	2:30	2:30	2:10	2:10	2:30	R15 130° to 163°	3:00	3:00	2:50	2:50	3:10	R15 130° to 163°	3:10	2:00
R16 164° to 174°	2:50	2:50	2:20	2:20	2:40	R16 164° to 174°	3:20	3:20	3:00	3:10	3:20	R16 164° to 174°	3:10	3:00
R17 175° to 219°	3:00	3:00	2:40	2:40	2:50	R17 175° to 219°	3:20	3:20	3:20	3:20	3:30	R17 175° to 219°	3:20	3:00
R18 220° to 230°	2:50	2:50	2:40	2:40	2:50	R18 220° to 230°	3:10	3:10	3:10	3:20	3:30	R18 220° to 230°	3:20	3:00
R19 231° to 286°	2:50	2:50	2:40	2:40	2:50	R19 231° to 286°	3:10	3:10	3:10	3:20	3:30	R19 231° to 286°	3:30	3:00
R20 287° to 298°	2:20	2:20	2:10	2:10	2:30	R20 287° to 298°	2:50	2:50	2:50	2:50	3:10	R20 287° to 298°	3:25	1:50
R21 299° to 343°	2:20	2:20	2:10	2:10	2:30	R21 299° to 343°	2:50	2:50	2:50	2:50	3:10	R21 299° to 343°	3:25	1:50
R22 344° to 354°	2:40	2:40	2:30	2:30	2:50	R22 344° to 354°	3:10	3:10	3:20	3:20	3:40	R22 344° to 354°	3:25	2:00

Table 7-1C. Time To Clear The Indicated Area of 95 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:50	1:40
R02 5-mile ring	3:10	3:20	3:00	3:00	3:20	R02 5-mile ring	3:40	3:40	3:50	3:50	4:10	R02 5-mile ring	3:25	2:10
R03 Entire EPZ	4:00	4:00	3:40	3:40	4:00	R03 Entire EPZ	4:20	4:20	4:10	4:20	4:20	R03 Entire EPZ	3:50	3:40
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	1:00	1:00	2:30	2:30	2:50	R04 29° to 50°	1:00	1:00	2:50	2:50	2:50	R04 29° to 50°	2:30	1:40
R05 51° to 106°	1:50	1:50	3:25	3:25	3:30	R05 51° to 106°	1:50	1:50	3:40	3:40	3:40	R05 51° to 106°	3:25	1:40
R06 107° to 140°	1:30	1:30	2:50	2:50	2:40	R06 107° to 140°	1:30	1:30	2:50	2:50	2:50	R06 107° to 140°	2:50	1:40
R07 141° to 174°	1:50	1:50	2:50	2:50	2:40	R07 141° to 174°	1:50	1:50	2:50	2:50	2:50	R07 141° to 174°	2:50	1:50
R08 175° to 230°	1:00	1:00	1:30	1:30	1:30	R08 175° to 230°	1:00	1:00	1:30	1:30	1:30	R08 175° to 230°	1:30	1:40
R09 231° to 286°	3:00	3:00	2:50	2:50	3:00	R09 231° to 286°	3:30	3:30	3:40	3:40	4:00	R09 231° to 286°	3:25	2:00
R10 287° to 331°	3:00	3:00	2:50	2:50	3:00	R10 287° to 331°	3:30	3:30	3:40	3:40	4:00	R10 287° to 331°	3:25	2:00
R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:50	1:40
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	3:50	3:50	3:40	3:40	3:50	R11 355° to 50°	4:10	4:10	4:10	4:20	4:20	R11 355° to 50°	3:25	2:50
R12 51° to 61°	3:40	3:40	3:20	3:30	3:50	R12 51° to 61°	4:10	4:10	4:10	4:10	4:20	R12 51° to 61°	3:25	3:00
R13 62° to 95°	3:40	3:40	3:20	3:30	3:50	R13 62° to 95°	4:10	4:10	4:10	4:10	4:20	R13 62° to 95°	3:25	3:00
R14 96° to 129°	3:50	3:50	3:30	3:30	3:50	R14 96° to 129°	4:10	4:10	4:10	4:10	4:20	R14 96° to 129°	3:25	3:10
R15 130° to 163°	3:30	3:30	3:00	3:00	3:30	R15 130° to 163°	4:00	4:00	4:00	4:00	4:10	R15 130° to 163°	3:25	2:50
R16 164° to 174°	3:50	3:50	3:20	3:30	3:50	R16 164° to 174°	4:10	4:10	4:10	4:10	4:20	R16 164° to 174°	3:30	3:40
R17 175° to 219°	4:00	4:00	3:40	3:40	4:00	R17 175° to 219°	4:10	4:10	4:10	4:20	4:20	R17 175° to 219°	3:35	3:40
R18 220° to 230°	3:50	3:50	3:40	3:40	4:00	R18 220° to 230°	4:10	4:10	4:10	4:20	4:20	R18 220° to 230°	3:35	3:30
R19 231° to 286°	3:50	3:50	3:40	3:40	3:50	R19 231° to 286°	4:10	4:10	4:10	4:20	4:20	R19 231° to 286°	3:50	3:30
R20 287° to 298°	3:20	3:20	3:00	3:00	3:30	R20 287° to 298°	3:50	3:50	4:00	4:00	4:10	R20 287° to 298°	3:40	2:30
R21 299° to 343°	3:20	3:20	3:00	3:00	3:30	R21 299° to 343°	3:50	3:50	4:00	4:00	4:10	R21 299° to 343°	3:40	2:30
R22 344° to 354°	3:50	3:50	3:40	3:40	3:50	R22 344° to 354°	4:10	4:10	4:10	4:20	4:20	R22 344° to 354°	3:40	3:00

Table 7-1D. Time To Clear The Indicated Area of 100 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	1:00	1:00	1:00	1:00	1:00	R01 2-mile ring	1:00	1:00	1:00	1:00	1:00	R01 2-mile ring	1:00	2:00
R02 5-mile ring	6:00	6:10	5:10	5:10	5:10	R02 5-mile ring	6:00	6:00	5:10	5:10	5:10	R02 5-mile ring	5:10	6:00
R03 Entire EPZ	6:10	6:10	5:50	5:50	5:50	R03 Entire EPZ	6:10	6:10	5:50	5:50	5:50	R03 Entire EPZ	5:50	6:10
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	4:50	5:00	4:50	4:50	4:50	R04 29° to 50°	4:50	5:00	4:50	4:50	4:50	R04 29° to 50°	4:50	5:00
R05 51° to 106°	4:50	5:00	5:00	5:00	5:00	R05 51° to 106°	4:50	5:00	5:00	5:00	5:00	R05 51° to 106°	5:00	5:00
R06 107° to 140°	4:50	4:50	5:00	5:00	5:00	R06 107° to 140°	4:50	4:50	5:00	5:00	5:00	R06 107° to 140°	5:00	5:00
R07 141° to 174°	4:50	4:50	5:00	5:00	5:00	R07 141° to 174°	4:50	4:50	5:00	5:00	5:00	R07 141° to 174°	5:00	5:00
R08 175° to 230°	3:50	3:50	2:50	2:50	2:50	R08 175° to 230°	3:50	3:50	2:50	2:50	2:50	R08 175° to 230°	2:50	3:50
R09 231° to 286°	6:00	6:10	5:10	5:10	5:10	R09 231° to 286°	6:00	6:00	5:10	5:10	5:10	R09 231° to 286°	5:10	6:00
R10 287° to 331°	6:00	6:10	5:10	5:10	5:10	R10 287° to 331°	6:00	6:00	5:10	5:10	5:10	R10 287° to 331°	5:10	6:00
R01 332° to 28°	1:00	1:00	1:00	1:00	1:00	R01 332° to 28°	1:00	1:00	1:00	1:00	1:00	R01 332° to 28°	1:00	2:00
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	6:00	6:10	5:50	5:50	5:50	R11 355° to 50°	6:00	6:00	5:50	5:50	5:50	R11 355° to 50°	5:50	6:00
R12 51° to 61°	6:00	6:10	5:50	5:50	5:50	R12 51° to 61°	6:00	6:10	5:50	5:50	5:50	R12 51° to 61°	5:50	6:00
R13 62° to 95°	6:00	6:10	5:50	5:50	5:50	R13 62° to 95°	6:00	6:10	5:50	5:50	5:50	R13 62° to 95°	5:50	6:00
R14 96° to 129°	6:00	6:10	5:50	5:50	5:50	R14 96° to 129°	6:00	6:10	5:50	5:50	5:50	R14 96° to 129°	5:50	6:00
R15 130° to 163°	6:00	6:10	5:10	5:10	5:10	R15 130° to 163°	6:00	6:00	5:10	5:10	5:10	R15 130° to 163°	5:10	6:00
R16 164° to 174°	6:10	6:10	5:20	5:20	5:20	R16 164° to 174°	6:10	6:10	5:20	5:20	5:10	R16 164° to 174°	5:10	6:00
R17 175° to 219°	6:10	6:10	5:20	5:20	5:20	R17 175° to 219°	6:10	6:10	5:20	5:20	5:10	R17 175° to 219°	5:10	6:10
R18 220° to 230°	6:10	6:10	5:20	5:20	5:20	R18 220° to 230°	6:10	6:10	5:20	5:20	5:10	R18 220° to 230°	5:10	6:10
R19 231° to 286°	6:10	6:10	5:20	5:20	5:20	R19 231° to 286°	6:10	6:10	5:20	5:20	5:20	R19 231° to 286°	5:10	6:10
R20 287° to 298°	6:10	6:10	5:10	5:10	5:10	R20 287° to 298°	6:10	6:10	5:10	5:10	5:10	R20 287° to 298°	5:10	6:00
R21 299° to 343°	6:10	6:10	5:10	5:10	5:10	R21 299° to 343°	6:10	6:10	5:10	5:10	5:10	R21 299° to 343°	5:10	6:00
R22 344° to 354°	6:10	6:10	5:50	5:50	5:50	R22 344° to 354°	6:10	6:10	5:50	5:50	5:50	R22 344° to 354°	5:50	6:00

Table 7-2. Description of Evacuation Regions												
		ZONE										
Region	Description	1	2	3	4	5	6	7	8	9	10	11
R01	2 mile ring	■										
R02	5-mile ring	■	■	■	■	■						
R03	Full EPZ	■	■	■	■	■	■	■	■	■	■	■
Evacuate 2 mile ring and 5 miles downwind												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R04	29 - 50	■			■							
R05	51 - 106	■			■	■						
R06	107 - 140	■				■						
R07	141 - 174	■	■			■						
R08	175 - 230	■	■									
R09	231 - 286	■	■	■								
R10	287 - 331	■		■								
R01*	332 - 28	■										
Evacuate 5 mile ring and downwind to EPZ boundary												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R11	355 - 50	■	■	■	■	■			■	■		
R12	51 - 61	■	■	■	■	■			■	■	■	
R13	62 - 95	■	■	■	■	■				■	■	
R14	96 - 129	■	■	■	■	■				■	■	■
R15	130 - 163	■	■	■	■	■					■	■
R16	164 - 174	■	■	■	■	■	■				■	■
R17	175 - 219	■	■	■	■	■	■					■
R18	220 - 230	■	■	■	■	■	■					
R19	231 - 286	■	■	■	■	■	■	■				
R20	287 - 298	■	■	■	■	■		■				
R21	299 - 343	■	■	■	■	■		■	■			
R22	344 - 354	■	■	■	■	■		■	■	■		

Residents and Transients in the Matagorda Beach area are always evacuated.

* Note that evacuating the 2-mile ring and evacuating the 5-mile ring with wind from 332° to 28° both result in the evacuation of Region 1. Thus, R01 is shown twice in the table above.

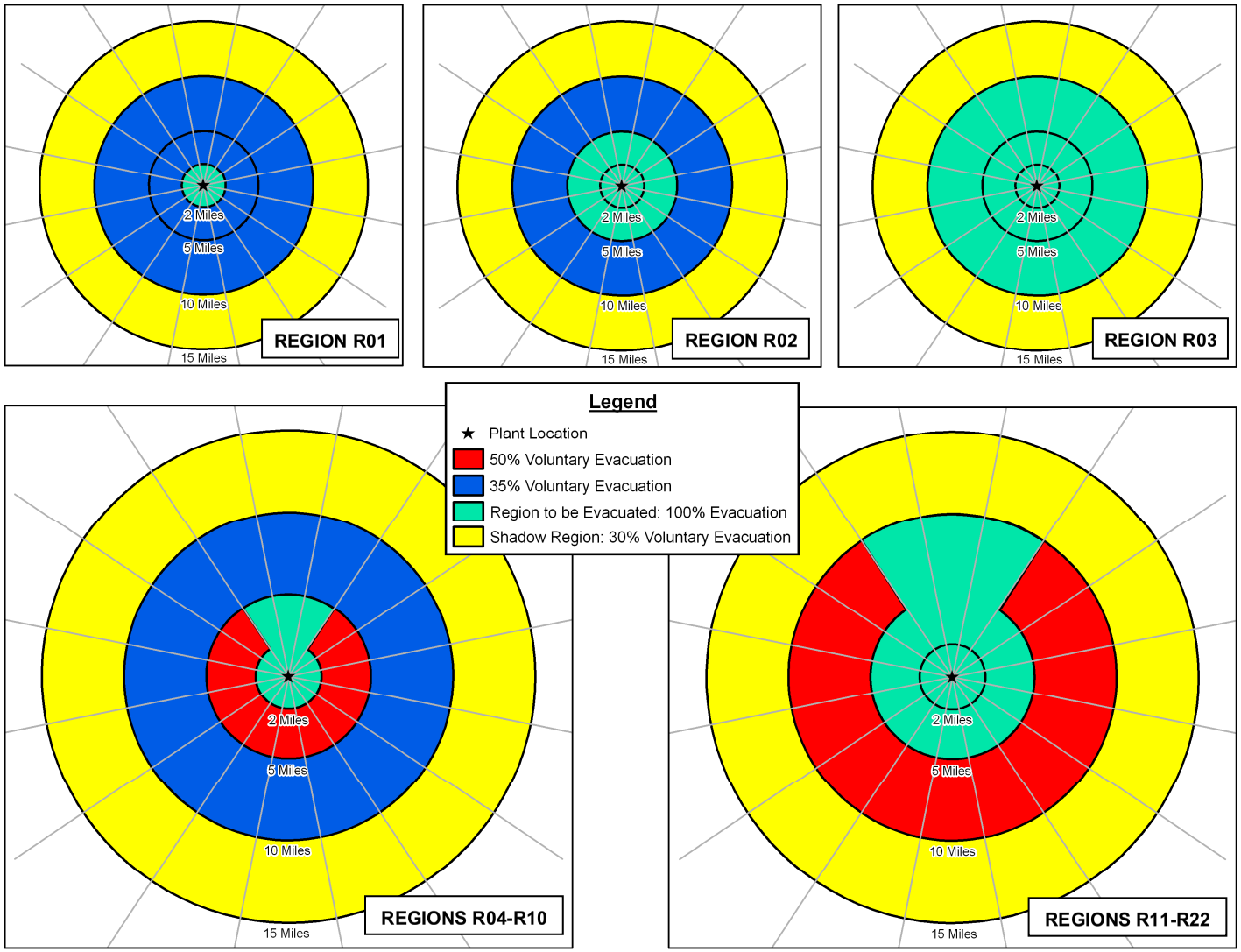


Figure 7-1. Voluntary Evacuation Methodology

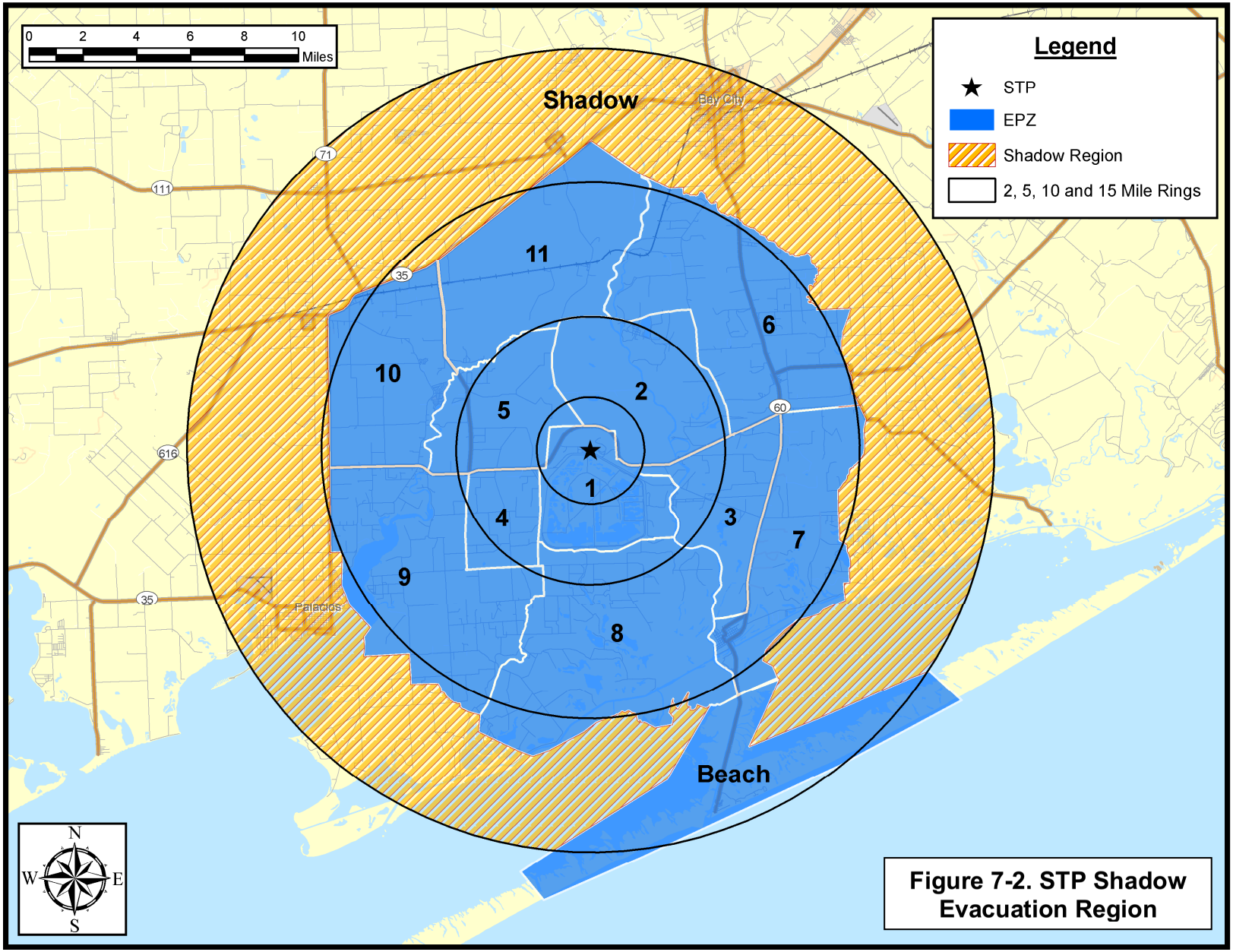


Figure 7-2. STP Shadow Evacuation Region

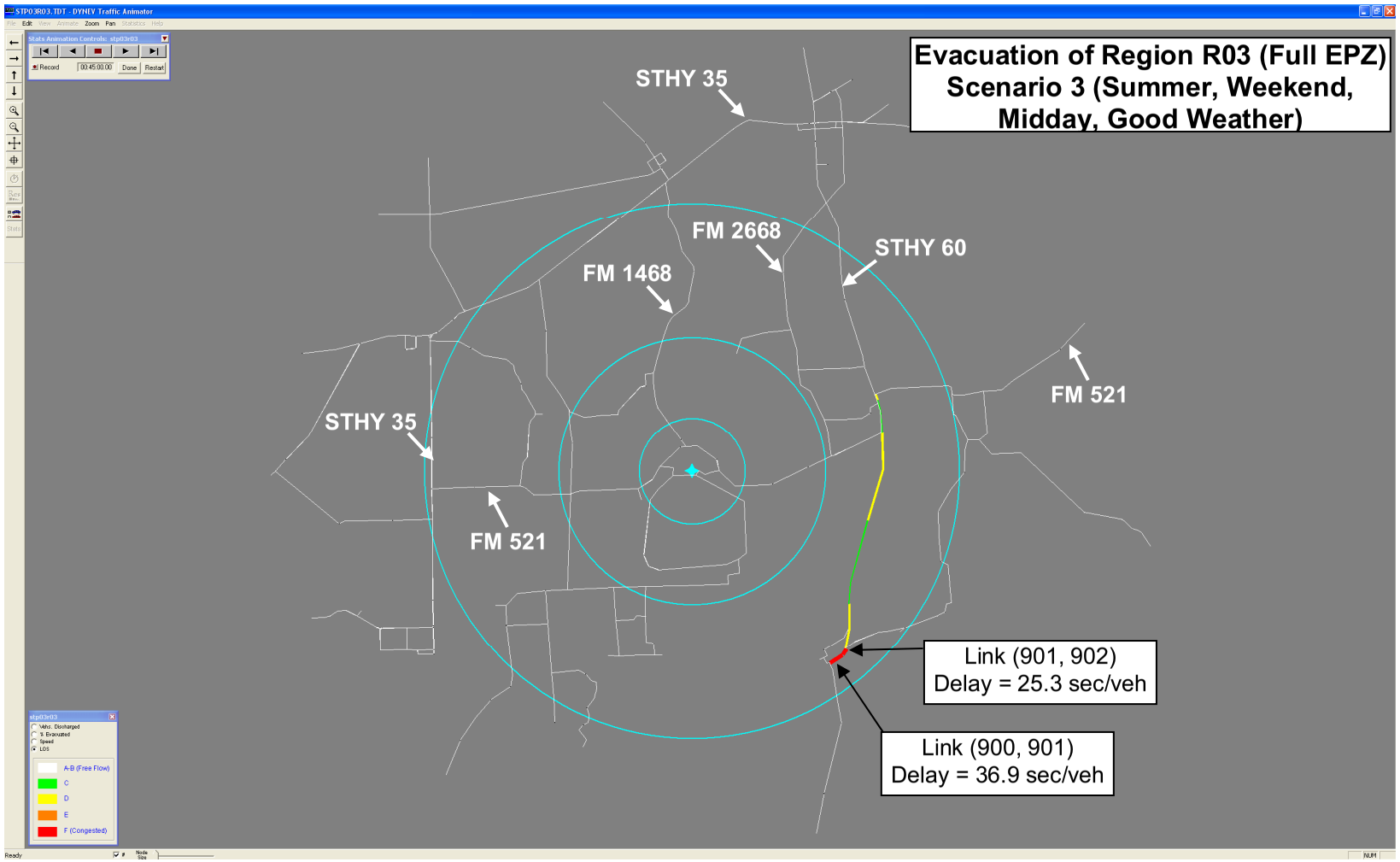


Figure 7-3. Traffic Congestion at 45 Minutes after the Advisory to Evacuate

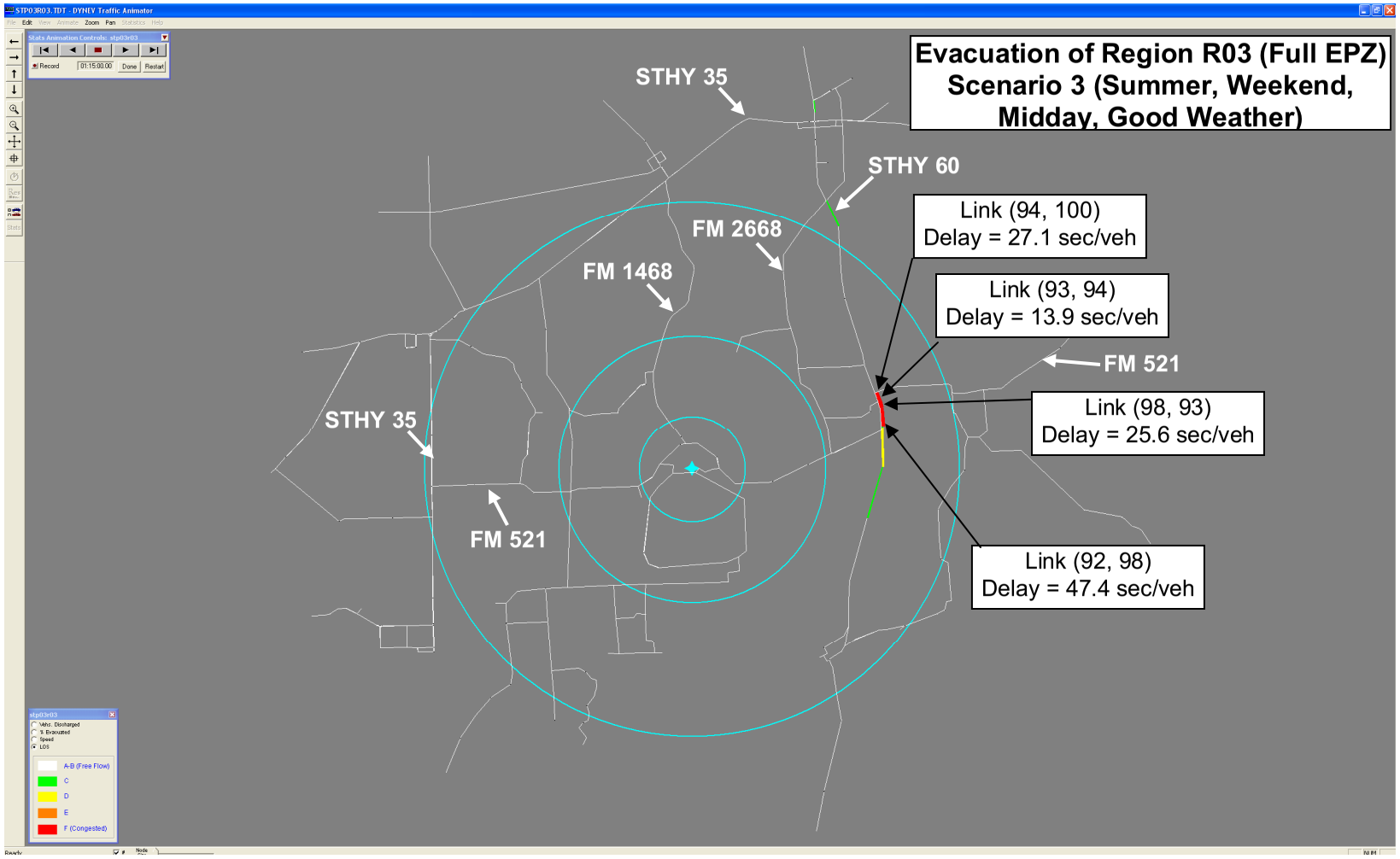


Figure 7-4 Traffic Congestion at 1 Hour and 15 Minutes after the Advisory to Evacuate

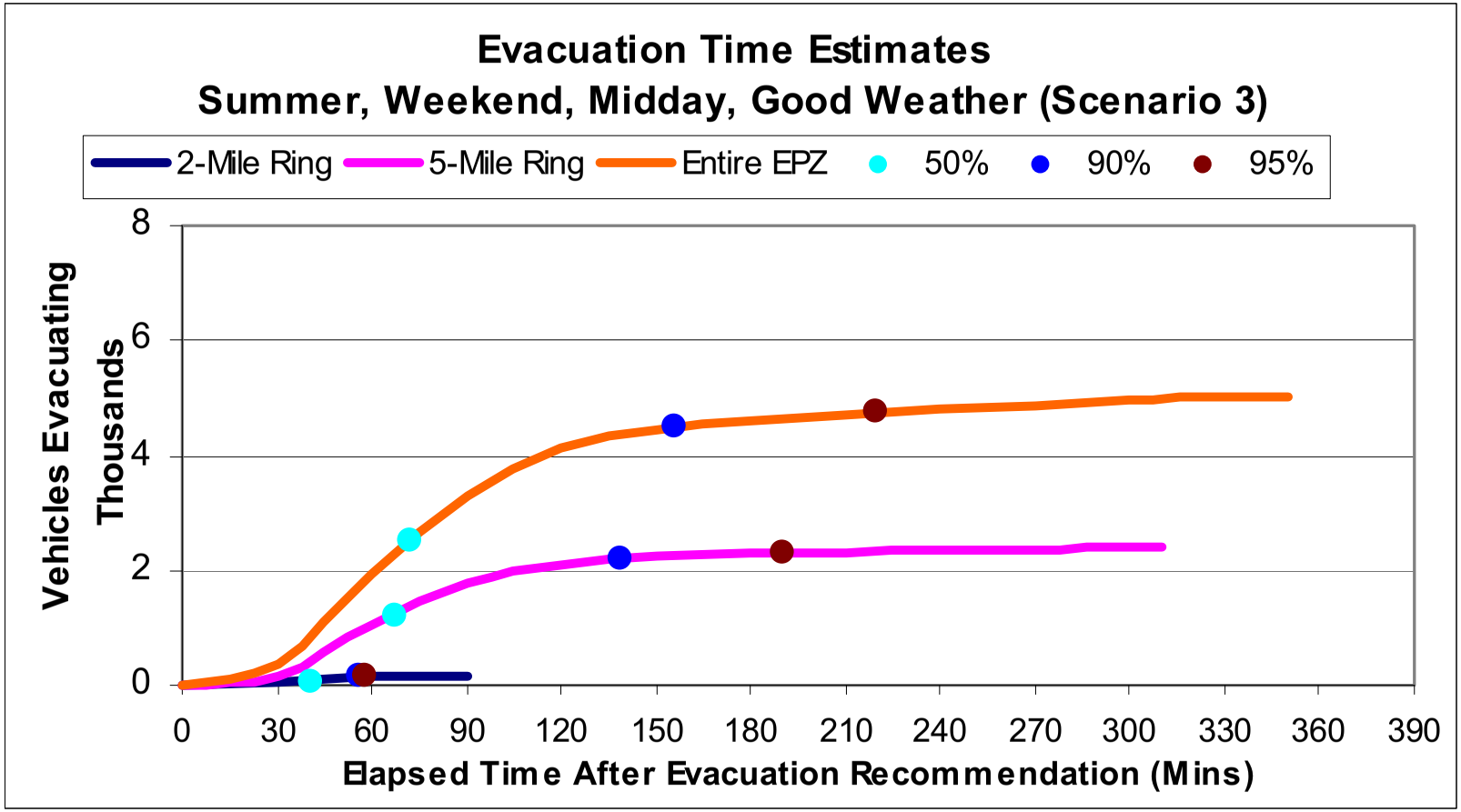


Figure 7-5. Evacuation Time Estimates for STP Summer, Weekend, Midday, Good Weather Evacuation of Region R03 (Entire EPZ)

8. TRANSIT-DEPENDENT AND SPECIAL FACILITY EVACUATION TIME ESTIMATES

This section details the analyses applied and the results obtained in the form of evacuation time estimates for transit vehicles (buses). The demand for transit service reflects the needs of two population groups: (1) residents, employees and transients with no vehicles available; and (2) residents of special facilities such as schools.

These transit vehicles merge into and become a part of the general evacuation traffic environment that is comprised mostly of "passenger cars" (pc's). The presence of each transit vehicle in the evacuating traffic stream is represented within the modeling paradigm described in Appendix D as equivalent to two pc's. This equivalence factor represents the larger size and more sluggish operating characteristics of a transit vehicle relative to those of a pc.

Transit vehicles must be mobilized in preparation for their respective evacuation missions. Specifically:

- Bus drivers must be alerted
- They must travel to the bus depot
- They must be briefed there and assigned to a route or facility

These activities consume time. The schools in Matagorda and Tidehaven have designated drivers and buses available on site (or within 1.5 miles) at each school. As a result, the transit mobilization time for schools is estimated as 30 minutes. The mobilization time for buses transporting the transit dependent population is responsive to the mobilization time of that population.

During this transit mobilization period, other mobilization activities are taking place. One of these is the action taken by parents, neighbors, relatives and friends to pick up children from school prior to the arrival of buses, so that they may join their families. Virtually all studies of evacuations have concluded that this "bonding" process of uniting family units is universally prevalent during emergencies and should be anticipated in the planning process. Many emergency plans, however, call for parents to pick up children at host schools or reception centers to speed the evacuation of the school children in the event that buses need to return to the EPZ to evacuate transit dependents. We provide estimates of buses under the assumption that all children will be evacuated by bus, to present an upper bound estimate of the transit vehicles needed.

The procedure is:

- Estimate demand for transit service
- Estimate time to perform all transit functions
- Estimate route travel times to the EPZ boundary and to the school reception centers

8.1 Transit-Dependent People - Demand Estimate

The telephone survey (see Appendix F) results were used to estimate the portion of the population requiring transit service:

- Those persons in households that do not have a vehicle available.
- Those persons in households that do have vehicle(s) that would not be available at the time the evacuation is ordered.

In the latter group, the vehicle(s) may be inoperable or used by a commuter(s) who does not return (or is not expected to return) home to evacuate the household.

Table 8-1 presents estimates of transit-dependent people. Note:

- Estimates of persons requiring transit vehicles include school children. For those evacuation scenarios where children are at school when an evacuation is ordered, separate transportation is provided for the school children. The actual need for transit vehicles by residents is thereby less than the given estimates. However, we will not reduce our estimates of transit vehicles since it would add to the complexity of the implementation procedures.
- It is reasonable and appropriate to consider that many transit-dependent persons will evacuate by ride-sharing with neighbors, friends or family. For example, nearly 80 percent of those who evacuated from Mississauga, Ontario who did not use their own cars, shared a ride with neighbors or friends. Other documents report that approximately 70 percent of transit-dependent persons were evacuated via ride-sharing. **We will adopt a conservative estimate that 50 percent of transit-dependent persons will ride-share.**

The estimated number of bus trips needed to service transit-dependent persons is based on an estimate of average bus occupancy of 30 persons at the conclusion of the bus run. Transit vehicle seating capacities typically equal or exceed 60 children (equivalent to 40 adults). If transit vehicle evacuees are two-thirds adults and one-third children, then the number of "adult seats" taken by 30 persons is 20 + (2/3 x10) = 27. On this basis, the average load factor anticipated is (27/40) x 100 = 68 percent. Thus, if the actual demand for service exceeds the estimates of Table 8-1 by 50 percent, the demand for service can still be accommodated by the available bus seating capacity.

$$\left(20+\left(\frac{2}{3}\times 10\right)\right)\div 40\times 1.5=1.00$$

Table 8-1 indicates that transportation must be provided for 88 people. Therefore, a total of 3 bus runs are required to transport this population to reception centers.

To illustrate this estimation procedure, we calculate the number of persons, P, requiring public transit or ride-share, and the number of buses, B, required for the STP EPZ:

$$P = 1{,}208 \times (0.053 \times 1.96 + 0.312 \times (1.77 - 1) \times 0.49 \times 0.30 + 0.421 \times (2.51 - 2) \times (0.49 \times 0.3)^2)$$
$$P = 1{,}208 * (0.144) = 175$$
$$B = (0.5 \times P) \div 30 = 3$$

These calculations are explained as follows:

- All members of households (HH) with no vehicles (5.3%) will evacuate by public transit or ride-share. The term 1,208 (total households) x 0.053 x 1.96, accounts for these people.

- The members of HH with 1 vehicle away (31.2%), who are at home, equal (1.77-1). The number of HH where the commuter will not return home is equal to (1,208 x 0.312 x 0.49 x 0.30), where 49% is the percentage of households with at least 1 commuter and 30% is the percentage of households who will not await the return of a commuter before evacuating. The number of persons who will evacuate by public transit or ride-share is equal to the product of these two terms.

- The members of HH with 2 vehicles that are away (42.1%), who are at home, equal (2.51 – 2). The number of HH where neither commuter will return home is equal to 1,208 x 0.421 x $(0.49 \times 0.30)^2$. The number of persons who will evacuate by public transit or ride-share is equal to the product of these two terms. (The last term is squared to represent the probability that neither commuter will return).

- Households with 3 or more vehicles are assumed to have no need for transit vehicles.

- The total number of persons requiring public transit is the sum of such people in HH with no vehicles, or with 1 or 2 vehicles that are away from home.

8.2 School Population – Transit Demand

Table 8-2 presents the school population and transportation requirements for the direct evacuation of all schools within the EPZ. The column in Table 8-2 entitled “Bus Runs Required” specifies the number of buses required for each school under the following set of assumptions and estimates:

- No students will be picked up by their parents prior to the arrival of the buses.

- Bus capacity, expressed in students per bus, is set to 70 for primary schools and 50 for middle and high schools.

- Those staff members who do not accompany the students will evacuate in their private vehicles.

- No allowance is made for student absenteeism that is in the neighborhood of 3 percent, daily.

Table 8-3 presents a list of the relocation schools for each school in the EPZ. Those students not picked up at school by their parents prior to the arrival of the buses, will be transported to these centers where they will be subsequently retrieved by their respective families.

8.3 Evacuation Time Estimates for Transit-Dependent People

In the event that the allocation of buses dispatched from the depots to service the transit-dependents is somewhat "inefficient", or if there is a shortfall of available drivers, then there may be a need for some buses to return to the EPZ from the reception center after completing their first evacuation trip, to complete a "second wave" of providing transport service to evacuees. For this reason, the ETE for the transit dependent population will be calculated for both a one wave transit evacuation and for two waves (Table 8-6). Of course, if the impacted Evacuation Region is other than R03 (the entire EPZ), then there will likely be ample transit resources relative to demand in the impacted Region and this discussion of a second wave would likely not apply.

Transit resources will be assigned to schools as a first priority. When these needs are satisfied, subsequent assignments of buses to service the transit-dependent should be sensitive to their mobilization time. Clearly, the buses should be dispatched after people have completed their mobilization activities and are in a position to board the buses when they arrive at the pick-up points.

Evacuation Time Estimates for Transit Trips were developed using both good weather and adverse weather conditions. Figure 8-1 presents the chronology of events relevant to transit operations. The elapsed time for each activity will now be discussed with reference to Figure 8-1.

Activity: Mobilize Drivers (A→ B→C)

Mobilization is the elapsed time from the Advisory to Evacuate until the time the buses have arrived at the facility to be evacuated. It is assumed based on discussions with representatives of STP that for a rapidly escalating radiological emergency with no observable indication before the fact, drivers would likely require 30 minutes to mobilize for school evacuation because they either remain at or near the school throughout the day. Mobilization time is slightly longer – 35 minutes – when raining.

Activity: Board Passengers (C→D)

Studies have shown that passengers can board a bus at headways of 2-4 seconds (Ref. HCM2000 Page 27-27). Therefore, the total dwell time to service passengers boarding a bus to capacity at a single stop (e.g., at a school) is about 5 minutes. A loading time of 10 minutes will be used for rain scenarios. For multiple stops along a pick-up route we must allow for the additional delay associated with stopping and starting at each pick-up point. This additional delay to service passengers expands this estimate of **aggregated** boarding time to 15 minutes in good weather, and 20 minutes in rain.

The time, t, required for a bus to decelerate at a rate, "a", expressed in ft/sec/sec, from a speed, "v", expressed in ft/sec, to a stop, is t = v/a. Assuming the same acceleration rate and final speed following the stop yields a total time, T, to service boarding passengers:

$$T = t + B + t = B + 2t = B + \frac{2v}{a},$$

Where B = Dwell time to service passengers. The total distance, "s" in feet, travelled during the deceleration and acceleration activities is: $s = v^2/a$. If the bus had not stopped to service passengers, but had continued to travel at speed, v, then its travel time over the distance, s, would be: s/v, or $(v^2/a)/v = v/a$. Then the total delay (i.e. pickup time, P) to service passengers is:

$$P = T - \frac{v}{a} = B + \frac{v}{a}$$

Assigning reasonable estimates:

- B = 40 seconds: a generous value for two passengers, carrying personal items, to board per stop
- v = 50 mph = 74 ft/sec (consistent with speeds discussed below)
- a = 4 ft/sec/sec, a moderate average rate

Then, P ≈ 1 minute per stop. Allowing 15 minutes pick-up time per bus run implies 15 stops per run, for good weather. It is assumed that bus acceleration and speed will be less in rain; loading time is 20 minutes per bus in rain.

Activity: Travel to EPZ Boundary (D→E)

School Evacuation

The distance from a school to the EPZ boundary is measured using Geographical Information Systems (GIS) software along the most likely route out of the EPZ. The measurements are divided between those distances traveled on local roads and those distances traveled on major routes.

The Tidehaven Middle and High Schools both evacuate to the Markham and Blessing Elementary Schools. It is assumed that for both Tidehaven schools, an equal number of buses go to Markham and Blessing.

The UNITES software discussed in Section 1.3 was used to define bus routes along the most likely path from a school being evacuated to the EPZ boundary, traveling toward the appropriate reception center. This is done in UNITES by interactively selecting the series of nodes from the school to the EPZ boundary. The bus route is given an identification number and is written to the I-DYNEV input stream. UNITES computes the route length and DYNEV outputs the average speed for each 10 minute interval for each bus route input. The bus routes input are documented in Table 8-4 (refer to the figures in Appendix K for node locations). Data from 30 to 40 minutes after the advisory to evacuate were used for all schools in the EPZ. The average speed along the path using these data generated by DNYEV was computed as follows:

$$Average\ Speed\left(\frac{mi.}{hr.}\right)=\left(\frac{\sum_{i=1}^{n} length\ of\ link\ i\ (mi)}{\sum_{i=1}^{n} Delay\ on\ link\ i\ (\min.)+\frac{length\ of\ link\ i\ (mi.)}{free\ flow\ speed\ on\ link\ i\left(\frac{mi.}{hr.}\right)}\times\frac{60\ \min.}{1\ hr.}}\right)\times\frac{60\ \min.}{1\ hr.}$$

Tables 8-5A and B show the average speed computed (using this methodology) for the buses servicing each of the schools in the EPZ. The travel time to the EPZ boundary was computed for each school using the computed average speed and the distance to the EPZ boundary along the most likely route out of the EPZ. The travel time from the EPZ boundary to the Reception Center was computed assuming an average speed of 50 mph and 45 mph for good weather and rain respectively.

Texas state law restricts buses from traveling at speeds in excess of 50 mph on roads that are not U.S. or Texas State Routes, and 60 mph otherwise. To be conservative, if the computed speeds exceeded 50 mph, we adjusted speed to 50 mph (45 mph in rain), regardless of which road they are traveling on.

Tables 8-5A (good weather) and 8-5B (rain) present the following evacuation time estimates (rounded up to the nearest 5 minutes) for schools in the EPZ: (1) The elapsed time from the Advisory to Evacuate until the bus exits the EPZ; and (2) The elapsed time until the bus reaches the School Reception Center. The evacuation time out of the EPZ can be computed as the sum of travel times associated with Activities A→B→C, C→D, and D→E (For example: 30 min.+ 5 + 20 = 1:00 [rounded-up] for Matagorda Elementary School, with good weather). The evacuation time to the School Reception Center is determined by adding the time associated with Activity E→F (discussed below), to this EPZ evacuation time.

Evacuation of Transit-Dependent Population

The buses that are dispatched to service the transit-dependent evacuees should be scheduled so that they arrive at their respective routes after their passengers have completed their mobilization. According to telephone survey results, 80% of the population not waiting for commuters to return home would be ready to evacuate 2 hours and 30 minutes after the Advisory to Evacuate. Some residents without commuters have mobilization times up to 5 hours (Chapter 5), therefore efforts to minimize the mobilization time of transit dependent residents through public education or by making telephone contact prior to pick-up, could greatly help the evacuation effort. A detailed transit-dependent evacuation plan should be established by county officials.

Buses servicing the transit-dependent evacuees will first travel along their pick-up routes, then proceed out of the EPZ. Table 8-6 details the proposed bus routes to service the transit dependent people in the STP EPZ, while Figure 8-2 maps the proposed bus pick-up routes. The travel distance along the respective pick-up routes within the EPZ is measured using GIS software. Most of the evacuation traffic will have dissipated when the transit dependent buses begin their routes; however the frequent stops for passenger pickup will slow the buses down. The delay associated with the deceleration and stopping of buses to pick up passengers is factored into the loading time, as discussed above. The associated travel times along the routes are computed using the route length and the average route speeds output by DYNEV, as discussed above.

Assuming that buses arrive at their first pick-up points 2 hours and 30 minutes (2 hours and 45 minutes for rain) after the Advisory to Evacuate, Table 8-7 presents the transit-dependent population evacuation time estimates for each route obtained using the above procedures. For example, the ETE for Route 1 is computed as 150 + 15 + 7.6 = 2:55 hours for good weather. Here, 7.6 minutes is the time to travel 6.3 miles at 50 mph. The ETE for a second wave (discussed below) is presented in the event there is a shortfall of available buses or bus drivers.

Activity: Travel to Reception Centers (E→F)

The distances from the EPZ boundary to the reception centers are also measured using Geographical Information Systems (GIS) software along the most likely route from the EPZ to the reception center. For a one-wave evacuation, this travel time outside the EPZ does not contribute to the ETE. For a two-wave evacuation, the ETE for buses must be considered separately, since it could exceed the ETE for the general public. There are sufficient bus resources to evacuate the schools in a single wave, based on discussions with representatives of STP and Matagorda County; thus, a two-wave evacuation time for schools has not been estimated. Two-wave ETE have been generated for transit-dependent buses, although it is unlikely that a second wave will be required. The bus speeds that are used for this calculation are the resulting average speeds for each transit route output by DYNEV.

Activity: Passengers Leave Bus (F→G)

Passengers can deboard within 5 minutes. The bus driver will take a 15 minute break.

Activity: Bus Returns to Route for Second Wave Evacuation (G→C)

The buses assigned to return to the EPZ to perform a "second wave" evacuation of transit-dependent evacuees will be those that evacuated the school children. These buses are assigned since they will be the first buses to complete their evacuation service and are therefore the first to be available for the second wave. The schoolchildren depart the bus, and the bus then returns to the EPZ, travels to its route and proceeds to pick up transit-dependent evacuees along the route. The travel time back to the EPZ is calculated using distances estimated from GIS and the assumed bus travel speeds.

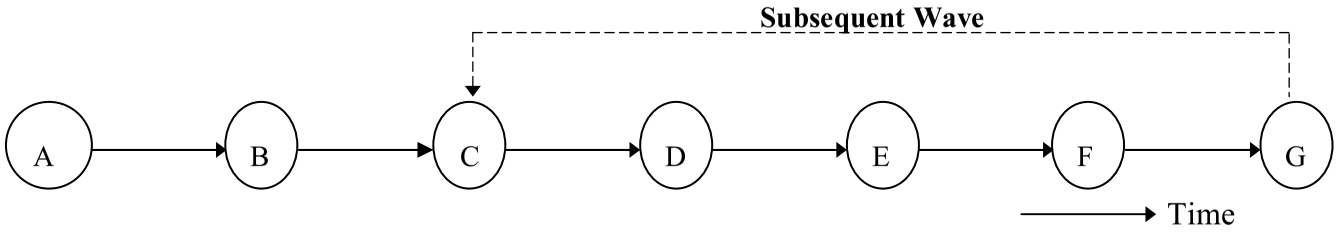
The travel time for Route Number 1 is computed as follows:

- Bus arrives at reception center at 0:50 on average in good weather (Table 8-5A).
- Bus discharges passengers (5 minutes) and driver takes a 15-minute rest: 20 minutes.
- Bus returns to EPZ: 2 minutes on average (Table 8-5A).
- Bus completes pick-ups along route and departs EPZ:
  15 minutes + (6.3 miles @ 50 mph)*2 [trip to pick-up point then back to EPZ boundary] = 30 minutes.
- Bus exits EPZ at time 0:50 + 0:20 + 0:02 + 0:30= 1:45, (rounded up to nearest 5 minutes) after the Advisory to Evacuate.

The ETE for the completion of the second wave for all transit-dependent bus routes are provided in Table 8-7.

Note that the term “second wave” applies to those buses returning to the EPZ to evacuate the transit-dependent population after evacuating the schoolchildren; chronologically, these buses actually travel the route before the buses that are mobilized from the surrounding areas and identified as the “Single Wave.” It is reasonable to expect that some of the transit-dependent evacuees would take less time to prepare for their walk to the bus route since they are limited to take only those belongings they can physically carry during the walk to the bus route and would be ready to board these earlier buses. As indicated in Table 5-8, more than 30% of residents have mobilized by the time the second wave buses (approximately 75 minutes) will arrive at the routes. Thus, the second traversal of buses along these routes (denoted as the “single wave”), which takes place between 2½ and 3 hours after the Advisory to Evacuate, should service all those transit-dependent people who have not been serviced by the earlier buses. Consequently, the total ETE under good weather according to Table 8-7A is 3:10, while that for the rain scenario (Table 8-7B) is 3:45.The county may elect to schedule these two waves so that they service the transit-dependent at different times, thereby providing a broad coverage of service.

The buses that complete the “second wave” will be available for additional assignments at a time roughly 2 hours after the Advisory to Evacuate. These buses can then be deployed as needed to service the homebound people who have no private vehicles, nor the ability to walk to the pickup routes. Over the period of 2 hours following the Advisory to Evacuate, it is reasonable to assume that the homebound transit-dependent will have made their needs known through telephone communication; this would allow responder agencies to compile a schedule of pickups as needed. These buses can then be dispatched after their second wave is completed to pick up the remaining people within the EPZ. The estimated ETE of 3:10 shown in Table 8-7A will therefore account for this pickup of homebound transit-dependent, as well, since this third sweep should not take materially longer than 1 hour. The implementation details are the responsibility of the emergency response agencies and are not considered explicitly in the ETE.



Event

A	Advisory to Evacuate
B	Bus Dispatched from Depot
C	Bus Arrives at Facility/Pick-up Route
D	Bus Departs for Reception Center
E	Bus Exits Region
F	Bus Arrives at School Reception Center
G	Bus Available for "Second Wave" Evacuation Service

Activity

A→B	Driver Mobilization
B→C	Travel to Facility or to Pick-up Route
C→D	Passengers Board the Bus
D→E	Bus Travels Towards Region Boundary
E→F	Bus Travels Towards School Reception Center Outside the EPZ.
F→G	Passengers Leave Bus; Driver Takes a Break

Figure 8-1. Chronology of Transit Evacuation Operations

Table 8-1. Transit Dependent Population Estimates

Facility Name	2007 EPZ Population	Survey Average Household Size With Indicated No. of Vehicles			Estimated Number of Households	Survey Percent Households With			Survey Percent Households With Commuters	Survey Percent Households With Non-Returning Commuters	Total People Requiring Transport	Estimated Ridesharing Percentage	People Requiring Public Transit	Percent of Population Requiring Public Transit
		0	1	2		0 Veh-icle	1 Veh-icle	2 Veh-icle						
South Texas Project	2,875	1.96	1.77	2.51	1,208	5.3%	31.2%	42.1%	49%	30%	175	50%	88	3.1%

Table 8-2. School Population Demand Estimates							
Zone	**Distance (miles)**	**Direction**	**School Name**	**Municipality**	**Enroll-ment**	**Staff**	**Bus Runs Required**
Matagorda County Schools within EPZ							
7	8.5	SE	Matagorda Elementary School	Matagorda	70	20	1 (or 2)
10	8.2	NW	Tidehaven Middle School	El Maton	178	25	4
10	9.1	NW	Tidehaven High School	El Maton	271	42	6
				Totals:	**519**	**87**	**11 (or 12)**

Table 8-3. School Relocation Schools		
Facility	**Zone**	**Relocation School**
High Schools		
Tidehaven High School	10	Markham and Blessing Elementary Schools
Middle Schools		
Tidehaven Middle School	10	Markham and Blessing Elementary Schools
Elementary Schools		
Matagorda Elementary School	7	McAllister Middle School

Table 8-4. Bus Route Descriptions		
Bus Route Number	**Description**	**Nodes Traversed from Route Start to EPZ Boundary**
1	Transit Route 1	98, 93, 94, 100, 1228, 1221, 221, 1178, 220
2	Transit Route 2	900, 901, 902, 850, 851, 1179, 1238, 852, 90, 91, 92, 98, 93, 94, 100, 1228, 1221, 221, 1178, 220
3	Transit Route 3	1200, 1204, 1201, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 661, 1269, 1267, 1268
4	Tidehaven Middle School to Markham Elementary School	1220, 640, 1168, 1167, 1166, 1262, 1263
5	Tidehaven High School to Markham Elementary School	1216, 640, 1168, 1167, 1166, 1262, 1263
6	Matagorda Elementary School	880, 870, 860, 861, 850, 851, 1179, 1238, 852, 90, 91, 92, 98, 93, 94, 100, 1228, 1221, 221, 1178, 220
7	Tidehaven Middle School to Blessing Elementary School	1220, 640, 1216, 1217, 650, 651, 652, 653, 660, 1267, 1268
8	Tidehaven High School to Blessing Elementary School	640, 1216, 1217, 650, 651, 652, 653, 660, 1267, 1268

Table 8-5A. School Evacuation Time Estimates - Good Weather														
School	Driver Mobilization and Travel Time from Depot(min)	Loading Time (min)	Dist. to EPZ Boundary (mi.) Major Road	Dist. to EPZ Boundary (mi.) Local Road	Average Speed (mph)	Adjusted Speed (mph)	Travel Time to EPZ Bdry (min)	To Bdry ETE (min)	To Bdry ETE (hr:min)	Dist. EPZ Bndry to R.C. Major Road	Dist. EPZ Bndry to R.C. Local Road	Travel Time EPZ Bdry to RC (min)	ETE to R.C. (min)	ETE to R.C. (hr:min)
Matagorda County Schools														
Matagorda Elementary School	30	5	15	1.7	54.0	50.0	20.0	60	**1:00**	1.5	1.4	5	65	**1:05**
Tidehaven Middle School to Markham E.S.	30	5	7.8	0	59.6	50.0	9.4	45	**0:45**	0	1.0	2	50	**0:50**
Tidehaven High School to Markham E.S.	30	5	6.2	0	70.2	50.0	7.4	45	**0:45**	0	1.0	2	45	**0:45**
Tidehaven Middle School to Blessing E.S.	30	5	6.4	0	53.9	50.0	7.7	45	**0:45**	0	0.1	1	45	**0:45**
Tidehaven High School to Blessing E.S.	30	5	4.8	0	62.6	50.0	5.8	45	**0:45**	0	0.1	1	45	**0:45**
ETE rounded up to the nearest 5 minutes			**Maximum for EPZ:**					60	**1:00**	**Maximum:**		3	65	**1:05**
			Average for EPZ:					50	**0:50**	**Average:**		2	50	**0:50**

Table 8-5B. School Evacuation Time Estimates - Rain														
School	Driver Mobilization and Travel Time from Depot(min)	Loading Time (min)	Dist. to EPZ Boundary (mi.) Major Road	Dist. to EPZ Boundary (mi.) Local Road	Average Speed (mph)	Adjusted Speed (mph)	Travel Time to EPZ Bdry (min)	To Bdry ETE (min)	To Bdry ETE (hr:min)	Dist. EPZ Bndry to R.C. Major Road	Dist. EPZ Bndry to R.C. Local Road	Travel Time EPZ Bdry to RC (min)	ETE to R.C. (min)	ETE to R.C. (hr:min)
Matagorda County Schools														
Matagorda Elementary School	30	10	15	1.7	48.9	45.0	22.3	65	**1:05**	1.5	1.4	6	70	**1:10**
Tidehaven Middle School to Markham E.S.	30	10	7.8	0	53.3	45.0	10.4	55	**0:55**	0	1.0	3	55	**0:55**
Tidehaven High School to Markham E.S.	30	10	6.2	0	62.7	45.0	8.3	50	**0:50**	0	1.0	3	55	**0:55**
Tidehaven Middle School to Blessing E.S.	30	10	6.4	0	48.7	45.0	8.5	50	**0:50**	0	0.1	1	50	**0:50**
Tidehaven High School to Blessing E.S.	30	10	4.8	0	56.8	45.0	6.4	50	**0:50**	0	0.1	1	50	**0:50**
ETE rounded up to the nearest 5 minutes			**Maximum for EPZ:**					65	**1:05**	**Maximum:**		3	70	**1:10**
			Average for EPZ:					54	**0:54**	**Average:**		3	60	**1:00**

Table 8-6. Summary of Transit Dependent Bus Routes			
Route Number	**Number of Buses**	**Route Description**	**Length (Miles to EPZ Boundary)**
1	1	State Hwy 60 northbound from Wadsworth, out of the EPZ toward Bay City.	6.3
2	1	State Hwy 60 from Fisher St, Matagorda, north out of the EPZ toward Bay City.	17.0
3	1	FM 2853 northbound from Ashby out of EPZ toward Blessing.	5.5

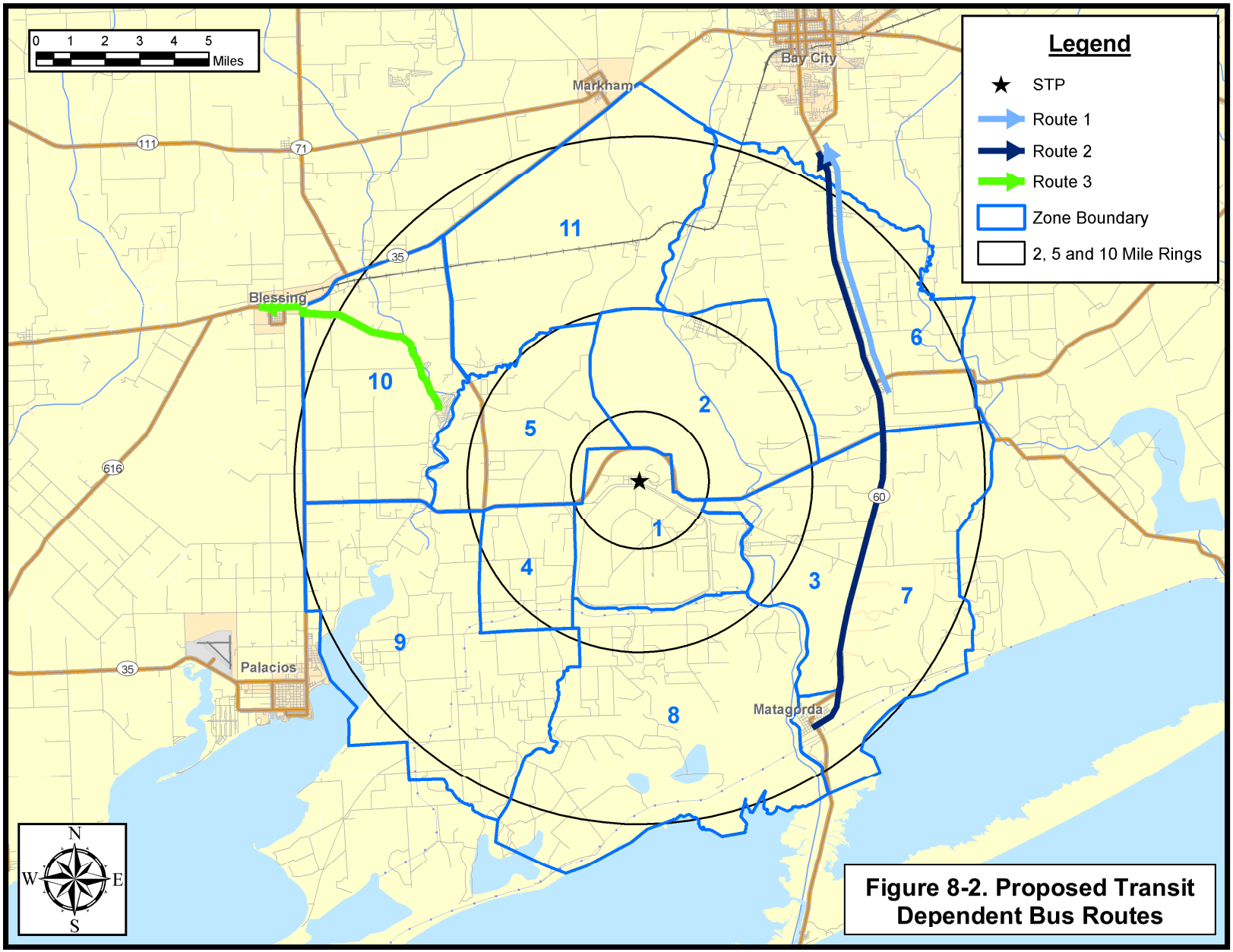


Figure 8-2. Proposed Transit Dependent Bus Routes

Table 8-7A. Transit-Dependent Evacuation Time Estimates - GOOD WEATHER																		
	Single Wave								Second Wave (After School Evacuation)									
Route Number	Mobilization and Travel Time to EPZ	Route Length (mi.)	Average Speed (mph)	Adjusted Speed (mph)	Run Travel Time	Pickup Time	ETE (min)	ETE (hr:min)	Arrive at RC	Unload	Driver Rest	Return to EPZ	Average Speed (mph)	Adjusted Speed (mph)	Run Travel Time	Pickup Time	ETE (min)	ETE (hr:min)
1	150	6.3	63.4	50.0	7.6	15	175	**2:55**	50	5	15	2	63.4	50.0	15.12	15	105	**1:45**
2	150	17.0	50.0	50.0	20.4	15	190	**3:10**	50	5	15	2	50.0	50.0	40.8	15	130	**2:10**
3	150	5.5	53.1	50.0	6.6	15	175	**2:55**	50	5	15	2	53.1	50.0	13.2	15	105	**1:45**
Maximum for EPZ:							**190**	**3:10**	**Maximum for EPZ:**								**130**	**2:10**
Average for EPZ:							**180**	**3:00**	**Average for EPZ:**								**115**	**1:55**

Table 8-7B. Transit-Dependent Evacuation Time Estimates - RAIN																		
	Single Wave								Second Wave (After School Evacuation)									
Route Number	Mobilization and Travel Time to EPZ	Route Length (mi.)	Average Speed (mph)	Adjusted Speed (mph)	Run Travel Time	Pickup Time	ETE (min)	ETE (hr:min)	Arrive at RC	Unload	Driver Rest	Return to EPZ	Average Speed (mph)	Adjusted Speed (mph)	Run Travel Time	Pickup Time	ETE (min)	ETE (hr:min)
1	165	6.3	56.9	45.0	14	20	200	**3:20**	56	10	15	3	56.9	45	28	20	135	**2:15**
2	165	17.0	45.5	45.0	38	20	225	**3:45**	56	10	15	3	45.47	45	76	20	180	**3:00**
3	165	5.5	48.0	45.0	12	20	200	**3:20**	56	10	15	3	48.04	45	24	20	130	**2:10**
Maximum for EPZ:							**225**	**3:45**	**Maximum for EPZ:**								**180**	**3:00**
Average for EPZ:							**210**	**3:30**	**Average for EPZ:**								**150**	**2:30**

9. TRAFFIC MANAGEMENT STRATEGY

This section presents the current traffic control and management strategy that is designed to expedite the movement of evacuating traffic. The resources required to implement this strategy include:

- Personnel with the capabilities of performing the planned control functions of traffic guides.
- Equipment to assist these personnel in the performance of their tasks:
  - Traffic Barriers
  - Traffic Cones
  - Signs
- A plan that defines all necessary details and is documented in a format that is readily understood.

The functions to be performed in the field are:

1. Facilitate evacuating traffic movements that serve to expedite travel out of the EPZ along routes that the analysis has found to be most effective.
2. Discourage traffic movements that permit evacuating vehicles to travel in a direction which takes them significantly closer to the power station, or which interferes with the efficient flow of other evacuees.

We employ the terms "facilitate" and "discourage" rather than "enforce" and "prohibit" to indicate the need for flexibility in performing the traffic control function. There are always legitimate reasons for a driver to prefer a direction other than that indicated. For example:

- A driver may be traveling home from work or from another location, to join other family members prior to evacuating.
- An evacuating driver may be taking a detour from the evacuation route in order to pick up a relative.
- The driver may be an emergency worker en route to perform an important activity.

The implementation of a plan must also be flexible enough for the application of sound judgment by the traffic guide.

The traffic management strategy is the outcome of the following process:

1. A field survey of these critical locations.
   The schematics of Appendix G are based on data collected during field surveys, upon large-scale maps, and on overhead imagery.
2. Consultation with emergency management and enforcement personnel.
   Trained personnel who are experienced in controlling traffic and who are

familiar with the likely traffic patterns should review these control tactics.

3. Prioritization of TCPs.

   Application of traffic control at some TCPs will have a more pronounced influence on expediting traffic movements. Thus, during the mobilization of personnel to respond to the emergency situation, those TCPs, which are assigned a higher priority, will be manned earlier. This setting of priorities should be undertaken with the concurrence of emergency management and law enforcement personnel. These priorities should be compatible with the availability of local manpower resources.

In each schematic that appears in Appendix G, the control tactic at each TCP is presented.

The use of Intelligent Transportation Systems (ITS) technologies will benefit the evacuation process. Dynamic Message Signs (DMS) can be placed within the EPZ to provide information to travelers regarding traffic conditions, route selection, and reception center information. DMS can also be placed outside of the EPZ to warn motorists to avoid using routes that may conflict with the flow of evacuees away from the South Texas Project electric generating station. Highway Advisory Radio (HAR) can be used to broadcast information to evacuees enroute through their vehicle stereo systems. Automated Traveler Information Systems (ATIS) can also be used to provide evacuees with information. Internet websites can provide traffic and evacuation route information before the evacuee begins his trip, while on board navigation systems (GPS units), cell phones, and pagers can be used to provide information enroute. These are only several examples of how ITS technologies can benefit the evacuation process.

10. EVACUATION ROUTES

Evacuation routes are composed of two distinct components:

- Routing from a Zone being evacuated to the boundary of the Evacuation Region and then out of the Emergency Planning Zone (EPZ).

- Routing of evacuees from the EPZ boundary to the reception centers.

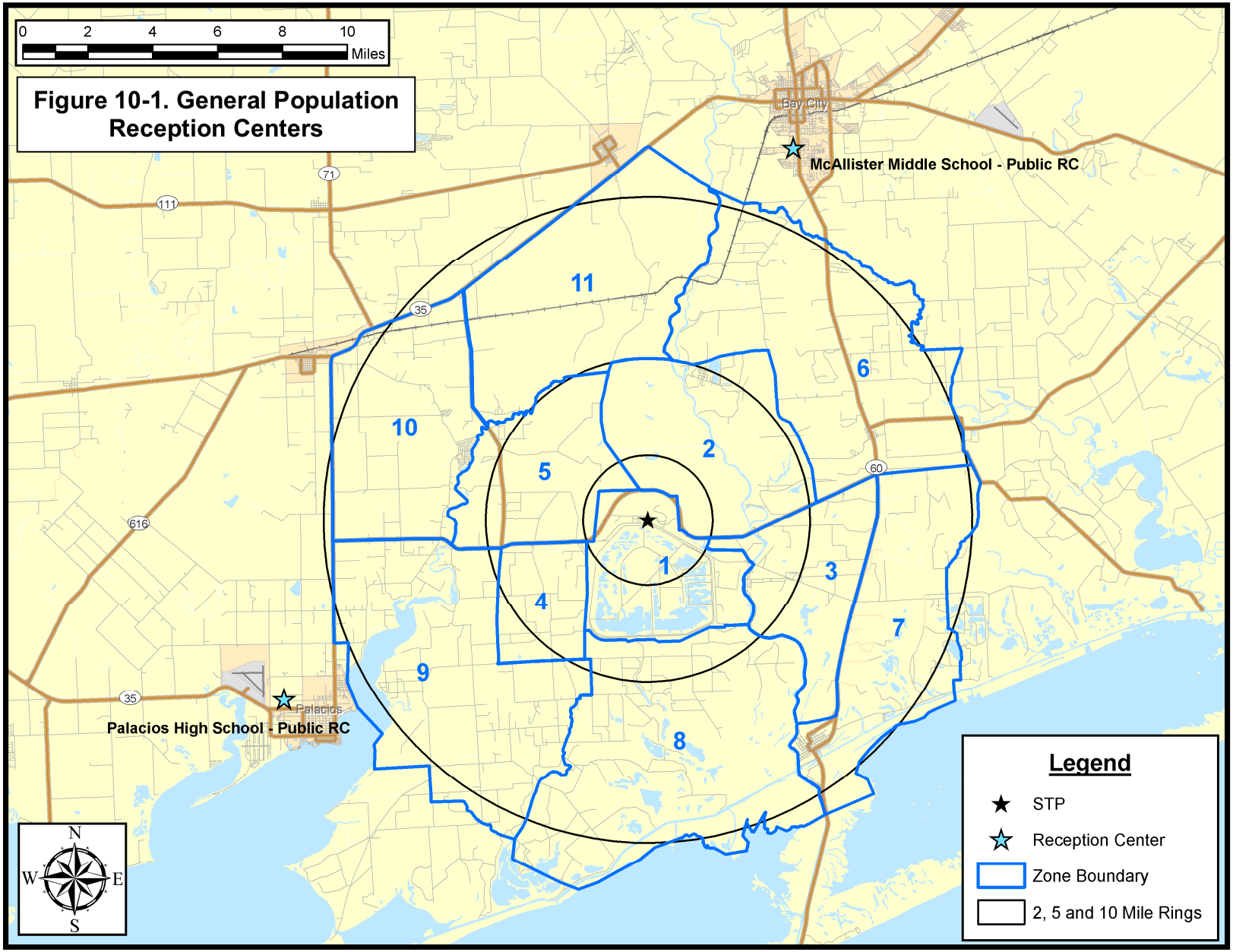
Evacuees should be routed within the EPZ in such a way as to *minimize their exposure to risk*. This primary requirement is met by routing traffic to move away from the location of the South Texas Project (STP), to the extent practicable, and by delineating evacuation routes that expedite the movement of evacuating vehicles. This latter objective is addressed by developing evacuation routes to achieve a balancing of traffic demand relative to the available highway capacity to the extent possible, subject to satisfying the primary requirement noted above. This is achieved by carefully specifying candidate destinations for all origin centroids where evacuation trips are generated, and applying the TRAD model effectively. See Appendices A-D for further discussion.

The routing of evacuees from the EPZ boundary to the reception centers should be responsive to several considerations:

- Minimize the amount of travel outside the EPZ, from the points where these routes cross the EPZ boundary, to the reception centers.

- Relate the anticipated volume of traffic destined to the reception center, to the capacity of the reception center facility.

Figure 10-1 presents a map showing the general population reception centers. The major evacuation routes are presented in Figure 10-2.


0 2 4 6 8 10
Miles
Figure 10-1. General Population Reception Centers
Bay City
McAllister Middle School - Public RC
Palacios
Palacios High School - Public RC
11
6
10
2
5
1
3
4
7
9
8
71
111
35
60
616
N
W
E
S
Legend
STP
Reception Center
Zone Boundary
2, 5 and 10 Mile Rings

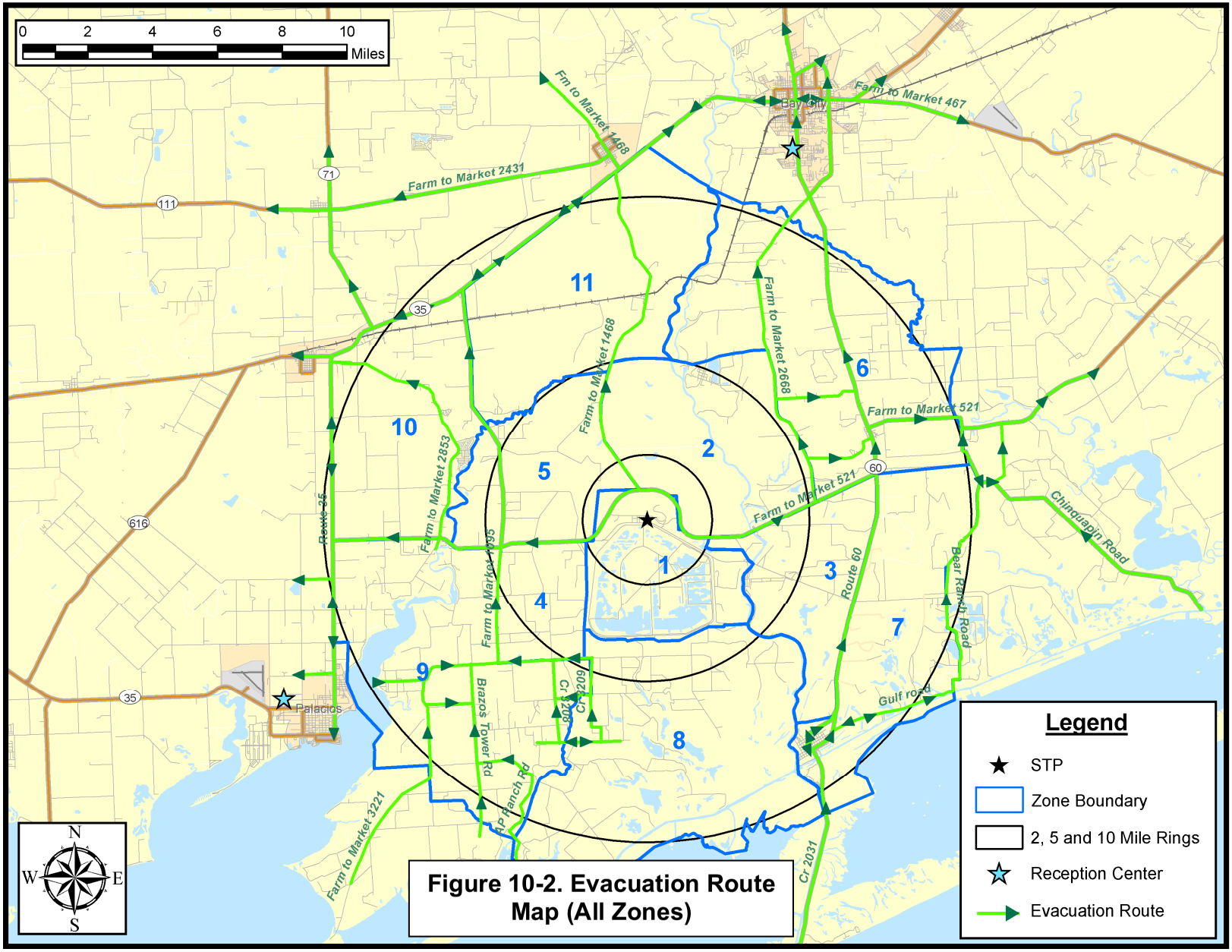


Figure 10-2. Evacuation Route Map (All Zones)

11. SURVEILLANCE OF EVACUATION OPERATIONS

There is a need for surveillance of traffic operations during the evacuation. There is also a need to clear any blockage of roadways arising from accidents or vehicle disablement. Surveillance can take several forms.

1. Traffic control personnel, located at Traffic Control Points, provide fixed-point surveillance.
2. Ground patrols may be undertaken along well-defined paths to ensure coverage of those highways that serve as major evacuation routes.
3. Aerial surveillance of evacuation operations may also be conducted using helicopter or fixed-wing aircraft.
4. Cellular phone calls from motorists, if service is available, may also provide direct field reports of road blockages.

These concurrent surveillance procedures are designed to provide coverage of the entire EPZ as well as the area around its periphery. It is the responsibility of Matagorda County to support a communication system that can receive messages from the field and be in a position to respond to any reported problems in a timely manner. This coverage should quickly identify, and expedite the response to any blockage caused by a disabled vehicle.

In a low-speed traffic environment, any vehicle disablement is likely to arise due to a low-speed collision, mechanical failure or the exhaustion of its fuel supply. In any case, the disabled vehicle can be pushed onto the shoulder, thereby restoring traffic flow. Past experience in other emergencies indicates that evacuees who are leaving an area often perform activities such as pushing a disabled vehicle to the side of the road without prompting.

Tow Vehicles

While the need for tow vehicles is expected to be low under the circumstances described above, it is still prudent to be prepared for such a need. Tow trucks may be deployed at strategic locations within, or just outside, the EPZ. These locations should be selected so that:

- They permit access to key, heavily loaded, evacuation routes.
- Responding tow trucks would most likely travel counter-flow relative to evacuating traffic.

12. CONFIRMATION TIME

It is necessary to confirm that the evacuation process is effective in the sense that the public is complying with the Advisory to Evacuate. Although Matagorda County may use its own procedures for confirmation, we suggest an alternative or complementary approach.

The procedure we suggest employs a stratified random sample and a telephone survey. The size of the sample is dependent on the expected number of households that do not comply with the Advisory to Evacuate. We believe it is reasonable to assume, for the purpose of estimating sample size that at least 80 percent of the population within the EPZ will comply with the Advisory to Evacuate. On this basis, an analysis could be undertaken (see Table 12-1) to yield an estimated sample size of approximately 250.

The confirmation process should start at about 150 minutes after the Advisory to Evacuate, which is after the mobilization activities are completed for the majority of residents (see Table 5-1). At this time, virtually all evacuees will have departed on their respective trips and the local telephone system will be largely free of traffic.

As indicated in Table 12-1, approximately 7 person hours are needed to complete the telephone survey. If six people are assigned to this task, each dialing a different set of telephone exchanges (e.g., each person can be assigned a different set of Zones), then the confirmation process will extend over a time frame of about 70 minutes. Thus, the confirmation should be completed well before the evacuated area is cleared. Of course, fewer people would be needed for this survey if the Evacuation Region were only a portion of the EPZ. Use of modern automated computer controlled dialing equipment can significantly reduce the manpower requirements and the time required to undertake this type of confirmation survey.

Should the number of telephone responses (i.e., people still at home) exceed 20 percent, then the telephone survey should be repeated after an hour's interval until the confirmation process is completed.

TABLE 12-1
ESTIMATED NUMBER OF TELEPHONE CALLS REQUIRED
FOR CONFIRMATION OF EVACUATION

Problem Definition

Estimate number of phone calls, n, needed to ascertain the proportion, F of households that have not evacuated.

Reference: Burstein, H., Attribute Sampling, McGraw Hill, 1971

Given:

No. of households plus other facilities, N, within the EPZ (est.) = 1,210
Est. proportion, F of households that will not evacuate = 0.20
Allowable error margin, e: 0.05
Confidence level, α: 0.95 (implies A = 1.96)

Applying Table 10 of cited reference,

$$p = F + e = 0.25;\ q = 1 - p = 0.75$$

$$n = \frac{A^2 pq + e}{e^2} = 308$$

Finite population correction:

$$n_F = \frac{nN}{n + N - 1} = 246$$

Thus, some 246 telephone calls will confirm that approximately 20 percent of the population has not evacuated. If only 10 percent of the population does not comply with the Advisory to Evacuate, then the required sample size, n_F = 184.

Est. Person Hours to complete 250 telephone calls

Assume: Time to dial using touch-tone (random selection of listed numbers): 30 seconds
Time for 8 rings (no answer): 48 seconds
Time for 4 rings plus short conversation: 60 sec.
Interval between calls: 20 sec.

Person Hours: 250[30+20+0.8(48)+0.2(60)]/3600 = 7.0

13. RECOMMENDATIONS AND CONCLUSIONS

The following recommendations are offered:

1. The traffic management plan has been reviewed by state and county emergency planners with local and state police (See Section 9 and Appendix G). Specifically…
   - The number and locations of Traffic Control Points (TCP) have been reviewed in detail.
   - The indicated resource requirements (personnel, cones, barriers, etc.) have been reconciled with current assets.
2. Intelligent Transportation Systems (ITS) such as Dynamic Message Signs (DMS), Highway Advisory Radio (HAR), Automated Traveler Information Systems (ATIS), etc. should be used to facilitate the evacuation process (See Section 9). The placement of additional signage should consider evacuation needs.
3. Matagorda County should implement procedures whereby schools are contacted prior to the dispatch of buses from the depots to get an accurate count of students needing transportation and the number of buses required (See Section 8).
4. Matagorda County should establish strategic locations to position tow trucks in the event of a disabled vehicle during the evacuation process (See Section 11) and should encourage gas stations to remain open during the evacuation.
5. Matagorda County should establish a system to confirm that the Advisory to Evacuate is being adhered to (see the approach suggested by KLD in Section 12).
6. Examination of the ETE in Appendix J shows that the ETE for 100 percent of the population is 2-3 hours longer than for 95 percent of the population. Specifically, the additional time needed for the last 5 percent of the population to evacuate can be as much as 50 percent more than the time needed to evacuate 95 percent of the population. This non-linearity reflects the fact that these relatively few stragglers require significantly more time to mobilize (i.e. prepare for the evacuation trip) than their neighbors. This leads to two recommendations:
   - The public outreach (information) program should emphasize the need for evacuees to minimize the time needed to prepare to evacuate (secure the home, assemble needed clothes, medicines, etc.).
   - **The decision makers should reference Table J-1C which lists the time needed to evacuate 95 percent of the population, when preparing recommended protective actions.**

APPENDIX A

Glossary of Traffic Engineering Terms

APPENDIX A: GLOSSARY OF TRAFFIC ENGINEERING TERMS

Term	Definition
Link	A network link represents a specific, one-directional section of roadway. A link has both physical (length, number of lanes, topology, etc.) and operational (turn movement percentages, service rate, free-flow speed) characteristics.
Measures of Effectiveness	Statistics describing traffic operations on a roadway network
Node	A network node generally represents an intersection of network links. A node has control characteristics, i.e., the allocation of service time to each approach link.
Origin	A location attached to a network link, within the EPZ or shadow area, where trips are generated at a specified rate in vehicles per hour (vph). These trips enter the roadway system to travel to their respective destinations.
Network	A graphical representation of the geometric topology of a physical roadway system, which is comprised of directional links and nodes.
Prevailing roadway and traffic conditions	Relates to the physical features of the roadway, the nature (e.g., composition) of traffic on the roadway and the ambient conditions (weather, visibility, pavement conditions, etc.)
Service Rate	Maximum rate at which vehicles, executing a specific turn maneuver, can be discharged from a section of roadway at the prevailing conditions, expressed in vehicles per second (vps) or vehicles per hour (vph).
Service Volume	Maximum number of vehicles which can pass over a section of roadway in one direction during a specified time period with operating conditions at a specified Level of Service (The Service Volume at the upper bound of Level of Service, E, equals Capacity). Service Volume is usually expressed as vehicles per hour (vph).
Signal Cycle Length	The total elapsed time to display all signal indications, in sequence. The cycle length is expressed in seconds.
Signal Interval	A single combination of signal indications. The interval duration is expressed in seconds. A signal phase is comprised of a sequence of signal intervals.
Signal Phase	A set of signal indications (and intervals) which services a particular combination of traffic movements on selected approaches to the intersection. The phase duration is expressed in seconds.

Term	Definition
Traffic (Trip) Assignment	A process of assigning traffic to paths of travel in such a way as to satisfy all trip objectives (i.e., the desire of each vehicle to travel from a specified origin in the network to a specified destination) and to optimize some stated objective or combination of objectives. In general, the objective is stated in terms of minimizing a generalized "cost". For example, "cost" may be expressed in terms of travel time.
Traffic Density	The number of vehicles that occupy one lane of a roadway section of specified length at a point in time, expressed as vehicles per mile (vpm).
Traffic (Trip) Distribution	A process for determining the destinations of all traffic generated at the origins. The result often takes the form of a Trip Table, which is a matrix of origin-destination traffic volumes.
Traffic Simulation	A computer model designed to replicate the real-world operation of vehicles on a roadway network, so as to provide statistics describing traffic performance. These statistics are called Measures of Effectiveness.
Traffic Volume	The number of vehicles that pass over a section of roadway in one direction, expressed in vehicles per hour (vph). Where applicable, traffic volume may be stratified by turn movement.
Travel Mode	Distinguishes between private auto, bus, rail, pedestrian and air travel modes.
Trip Table or Origin-Destination Matrix	A rectangular matrix or table, whose entries contain the number of trips generated at each specified origin, during a specified time period, that are attracted to (and travel toward) each of its specified destinations. These values are expressed in vehicles per hour (vph) or in vehicles.
Turning Capacity	The capacity associated with that component of the traffic stream which executes a specified turn maneuver from an approach at an intersection.

APPENDIX B

Traffic Assignment Model

APPENDIX B: TRAFFIC ASSIGNMENT MODEL

This section describes the integrated trip assignment and distribution model named TRAD that is expressly designed for use in analyzing evacuation scenarios. This model employs equilibrium traffic assignment principles and is one of the models of the IDYNEV System.

To apply TRAD, the analyst must specify the highway network, link capacity information, the volume of traffic generated at all origin centroids, a set of accessible candidate destination nodes on the periphery of the EPZ for each origin, and the capacity (i.e., "attraction") of each destination node. TRAD calculates the optimal trip distribution and the optimal trip assignment (i.e., routing) of the traffic generated at each origin node, traveling to the associated set of candidate destination nodes, so as to minimize evacuee travel times.

Overview of Integrated Distribution and Assignment Model

The underlying premise is that the selection of destinations and routes is intrinsically coupled in an evacuation scenario. That is, people in vehicles seek to travel out of an area of potential risk as rapidly as possible by selecting the "best" route. The model is designed to identify these "best" routes in a manner that distributes vehicles from origins to destinations and routes them over the highway network, in a consistent and optimal manner.

The approach we adopt is to extend the basic equilibrium assignment methodology to embrace the distribution process, as well. That is, the selection of destination nodes by travelers from each origin node, and the selection of the connecting paths of travel, are both determined by the integrated model. This determination is subject to specified capacity constraints, so as to satisfy the stated objective function. This objective function is the statement of the User Optimization Principle by Wardrop[1].

To accomplish this integration, we leave the equilibrium assignment model intact, changing only the form of the objective function. It will also be necessary to create a "fictional" augmentation of the highway network. This augmentation will consist of Pseudo-Links and Pseudo-Nodes, so configured as to embed an equilibrium Distribution Model within the fabric of the Assignment Model.

[1] Wardrop, J.G., 1952. Some Theoretical Aspects of Road Traffic Research, *Proceedings, Institute of Civil Engineers*, Part II, Vol. 1, pp. 325-378.

Specification of TRAD Model Inputs

The user must specify, for each origin node, the average hourly traffic volume generated, as well as a set of candidate accessible destinations. A destination is "accessible" to traffic originating at an origin node if there is at least one path connecting the origin to the destination node. There must be at least one destination node specified for each origin centroid. The number of trips generated at the origin node, which are distributed to each specified, accessible destination node within this set, is determined by the model in a way as to satisfy the network-wide objective function (Wardrop's Principle).

The user must also specify the total number of trips which can be accommodated by each destination node. This value reflects the capacities of the road(s) immediately servicing the destination node. We call this number of trips, the "attraction" of the destination node, consistent with conventional practice. Clearly, we require that the total number of trips traveling to a destination, j, from all origin nodes, i, cannot exceed the attraction of destination node, j. By summing over all destination nodes, this constraint also states that the total trips generated at all origin nodes must not exceed the total capacity to accommodate these trips at all of the specified destinations.

In summary, the user must specify the total trips generated at each of the origin nodes, the maximum number of trips that can be accommodated by each of the specified destination nodes and the highway network attributes which include the traffic control tactics. The TRAD model includes a function which expresses travel time on each network link in terms of traffic volume and link capacity. This function drives the underlying trip distribution and trip assignment decision-making process. Thus, the TRAD model satisfies the objectives of evacuees to select destination nodes and travel paths to minimize evacuation travel time. As such, this integrated model is classified as a behavioral model.

At the outset, it may appear that we have an intractable problem:

- If TRAD retains the basic assignment algorithm, it must be provided a Trip Table as input.
- On the other hand, if the distribution model is embedded within the assignment model, rather than preceding it, a Trip Table is not available as input.

The resolution of this problem is as follows:

1. We construct an "augmentation" network that allows the user to specify only the volume for each origin node. The allocation of trips from the origin node to each candidate destination node, is not specified and will be determined internally by the model.
2. We construct pseudo-links which enforce the specified values of attraction, A_j, for all destination nodes, j, by suitably calibrating the relationship of the travel time vs. volume and capacity.

This augmented network is comprised of three sub-networks:

1. The highway sub-network, which consists of "Class I" Links and Nodes.
2. A sub-network of "Class II" Pseudo-Links which acts as an interface between the highway sub-network and the network augmentation.
3. The sub-network of "Class III" Pseudo-Links and Nodes which comprises the network augmentation described above.

The need for these Class II links will become clear later. The classifications are described below:

Class I Links and Nodes

These links and nodes represent the physical highway network: sections of highway and intersections. Trips generated at each Origin [Centroid] Node are assigned to a specified Class I link via a "connector" link. These connector links are transparent to the user and offer no impedance to the traveler; they represent the aggregation of local streets which service the centroidal generated trips and feed them onto the highway network. The real-world destination nodes are part of this network. The immediate approaches to these destination nodes are Class I links.

Class II Links

These pseudo-links are constructed so as to connect each specified destination node with its Class III Pseudo-Node (P-N) counterpart on a one-to-one basis. The capacities of these Class II links are set equal to the capacities at their respective destination nodes.

Class III Links and Nodes

Class III links and nodes form the augmentation to the basic network. These Pseudo-Links provide paths from the Class II links servicing traffic traveling from the specified [real] destination nodes, to the Super-Nodes which represent the user-specified set of destination nodes associated with each origin node.
Each Class of links provides a different function:

- Class I links represent the physical highway network. As such, each link has a finite capacity, a finite length and an estimated travel time for free-flowing vehicles. The nodes generally represent intersections, interchanges and, possibly, changes in link geometry. The topology of the Class I network represents that of the physical highway system.
- The Class II links represent the interface between the real highway sub-network and the augmentation sub-network. These pseudo-links are needed to represent the specified "attractions" of each destination node, i.e., the

maximum number of vehicles that can be accommodated by each destination node. Instead of explicitly assigning a capacity limitation to the destination nodes, we assign this capacity limitation of the Class II Pseudo-Links. This approach is much more suitable, computationally.

- The topology of the network augmentation (i.e., Class III Links and Nodes) is designed so that all traffic from an origin node can only travel to the single "Super-Node" by flowing through its set of real destination nodes, thence along the links of the augmented network.

The Class II Pseudo-Links and the network augmentation of Class III Pseudo-Nodes and Links represent logical constructs of fictitious links created internally by the model, that allows the user to specify the identity of all destination nodes in each origin-based set, without specifying the distribution of traffic volumes from the origin to each destination node in that set.

Calculation of Capacities and Impedances

Each class of links exhibits different properties. Specifically, the relationship between travel impedance (which is expressed in terms of travel time) and both volume and capacity will differ:

- For Class I links, the capacity represents the physical limitation of the highway sections. Travel impedance is functionally expressed by relating travel time with respect to the traffic volume-link capacity relationship.
- For Class II links, link capacity represents the maximum number of vehicles that can be accommodated at the [real] destination nodes that form the upstream nodes of each Class II link. Since Class II links are Pseudo-Links, there should be virtually no difference in impedance to traffic along Class II links when the assigned traffic volume on these links is below their respective capacities. That is, the assignment of traffic should not be influenced by differences in travel impedance on those Class II links where the assigned volumes do not exceed their respective capacities.
- For Class III links, both capacity and impedance have no meaning. Since the Class II links limit the number of vehicles entering the Class III sub-network at all entry points (i.e., at the Class II Pseudo-Nodes) and since all these links are Pseudo-Links, it follows that the Class III network is, by definition, an uncapacitated network.

Specification of the Objective Function

It is computationally convenient to be able to specify a single impedance (or "cost") function relating the travel time on a link, to its capacity and assigned traffic volume, for all classes of links. To achieve this, we will adopt the following form based on the original "BPR Formula[2]":

$$T = T_o\{\alpha[1+a_1(\frac{v}{c})^{b_1}]+\beta[1+a_2(\frac{v}{c})^{b_2}]\}+I$$

Where, as for the present traffic assignment model in TRAD,

T	=	Link travel time, sec.
T_o	=	Unimpeded link travel time, sec.
V	=	Traffic volume on the link, veh/hr
C	=	Link capacity, veh/hr
a_i, b_i	=	Calibration parameters
α, ß	=	Coefficients defined below
I	=	Impedance term, expressed in seconds, which could represent turning penalties or any other factor which is justified in the user's opinion

The assignment of coefficients varies according to the Class in which a link belongs:

Class	α	ß	T_o
I	1	0	L/U_f
II	0	1	W
III	0	0	1

Here, L is a highway link length and U_f is the free-flow speed of traffic on a highway link. The values of a_1 and b_1, which are applicable only for Class I links, are based on experimental data:

$a_1 = 0.8$ $b_1 = 5.0$

The values of a_2 and b_2, which are applicable for each Class II link, are based upon the absolute requirement that the upstream destination node can service no more traffic than the user-specified value of the maximum "attraction". In addition, these parameters must be chosen so that these Pseudo-Links all offer the same impedance to traffic when their assigned volumes are less than their respective specified maximum attractions.

The weighting factor, W, is computed internally by the software.

[2] Bureau of Public Roads (1964). Traffic Assignment Manual. U.S. Dept. of Commerce, Urban Planning Division, Washington D.C.

Of course, it is still possible for the assignment algorithm within TRAD to distribute more traffic to a destination node than that node can accommodate. For emergency planning purposes, this is a desirable model feature. Such a result will be flagged by the model to alert the user to the fact that some factor is strongly motivating travelers to move to that destination node, despite its capacity limitations. This factor can take many forms: inadequate highway capacity to other destinations, improper specification of candidate destinations for some of the origins, or some other design inadequacy. The planner can respond by modifying the control tactics, changing the origin-destination distribution pattern, providing more capacity at the overloaded destinations, etc.

APPENDIX C

Traffic Simulation Model: PC-DYNEV

APPENDIX C: TRAFFIC SIMULATION MODEL: PC-DYNEV

A model, named PC-DYNEV, is an adaptation of the TRAFLO Level II simulation model, developed by KLD for the Federal Highway Administration (FHWA). Extensions in scope were introduced to expand the model's domain of application to include all types of highway facilities, to represent the evacuation traffic environment and to increase its computational efficiency. This model produces the extensive set of output Measures of Effectiveness (MOE) shown in Table C-1.

The traffic stream is described internally in the form of statistical flow profiles. These profiles, expressed internally as statistical histograms, describe the platoon structure of the traffic stream on each network link. The simulation logic identifies five types of histograms:

- The ENTRY histogram which describes the platoon flow at the upstream end of the subject link. This histogram is simply an aggregation of the appropriate OUTPUT turn-movement-specific histograms of all feeder links.
- The INPUT histograms which describe the platoon flow pattern arriving at the stop line. These are obtained by first disaggregating the ENTRY histogram into turn-movement-specific component ENTRY histograms. Each such component is modified to account for the platoon dispersion which results as traffic traverses the link. The resulting INPUT histograms reflect the specified turn percentages for the subject link.
- The SERVICE histogram which describes the service rates for each turn movement. These service rates reflect the type of control device servicing traffic on this approach; if it is a signal, then this histogram reflects the specified movement-specific signal phasing. A separate model estimates service rates for each turn movement, given that the control is GO.

These data are provided for each network link and are also aggregated over the entire network.

- The QUEUE histograms that describe the time-varying ebb and growth of the queue formation at the stop line. These histograms are derived from the interaction of the respective IN histograms with the SERVICE histograms.
- The OUT histograms that describe the pattern of traffic discharging from the subject link. Each of the IN histograms is transformed into an OUT histogram by the control applied to the subject link. Each of these OUT histograms is added into the (aggregate) ENTRY histogram of its receiving link. This approach provides the model with the ability to identify the characteristics of each turn-movement-specific component of the traffic stream. Each component is serviced at a different saturation flow rate as is the case in the real world. The logic recognizes when one component of the traffic flow encounters saturation conditions even if the others do not.

Algorithms provide estimates of delay and stops, reflecting the interaction of the IN histograms with the SERVICE histograms. The logic also provides for properly treating spillback conditions reflecting queues extending from its host link, into its upstream feeder links.

A valuable feature is the ability to internally generate functions that relate mean speed to density on each link, given user-specified estimates of free-flow speed and saturation service rates for each link. Such relationships are essential in order to simulate traffic operations on freeways and rural roads, where signal control does not exist or where its effect is not the dominant factor in impeding traffic flow.

All traffic simulation models are data-intensive. Table C-2 outlines the input data elements. This input describes:

- Topology of the roadway system
- Geometrics of each roadway component
- Channelization of traffic on each roadway component
- Motorist behavior that, in aggregate, determines the operational performance of vehicles in the system
- Specification of the traffic control devices and their operational characteristics
- Traffic volumes entering and leaving the roadway system
- Traffic composition.

To provide an efficient framework for defining these specifications, the physical environment is represented as a network. The unidirectional links of the network generally represent roadway components: either urban streets or freeway segments. The nodes of the network generally represent urban intersections or points along the freeway where a geometric property changes (e.g. a lane drop, change in grade or ramp).

Figure C-1 is an example of a small network representation. The freeway is defined by the sequence of links, (20,21), (21,22), and (22,23). Links (8001, 19) and (3, 8011) are Entry and Exit links, respectively. An arterial extends from node 3 to node 19 and is partially subsumed within a grid network. Note that links (21,22) and (17,19) are grade-separated.

Table C-1. Measures of Effectiveness Output by PC-DYNEV	
Measure	**Units**
Travel	Vehicle-Miles and Vehicle-Trips
Moving Time	Vehicle-Minutes
Delay Time	Vehicle-Minutes
Total Travel Time	Vehicle-Minutes
Efficiency: Moving Time/Total Travel Time	Percent
Mean Travel Time per Vehicle	Seconds
Mean Delay per Vehicle	Seconds
Mean Delay per Vehicle-Mile	Seconds/Mile
Mean Speed	Miles/Hour
Mean Occupancy	Vehicles
Mean Saturation	Percent
Vehicle Stops	Percent

Table C-2. Input Requirements for the PC-DYNEV Model

GEOMETRICS

- Links defined by upstream downstream node numbers
- Link lengths
- Number of lanes (up to 6)
- Turn pockets
- Grade
- Network topology defined in terms of target nodes for each receiving link

TRAFFIC VOLUMES

- On all entry links and sink/source nodes stratified by vehicle type: auto, car pool, bus, truck
- Link-specific turn movements

TRAFFIC CONTROL SPECIFICATIONS

- Traffic signals: link-specific, turn movement specific
- Signal control treated as fixed time
- Stop and Yield signs
- Right-turn-on-red (RTOR)
- Route diversion specifications
- Turn restrictions
- Lane control (e.g. lane closure, movement-specific)

DRIVER'S AND OPERATIONAL CHARACTERISTICS

- Drivers (vehicle-specific) response mechanisms: free-flow speed, aggressiveness, discharge headway
- Link-specific mean speed for free-flowing (unimpeded) traffic
- Vehicle-type operational characteristics: acceleration, deceleration
- Such factors as bus route designation, bus station location, dwell time, headway, etc.

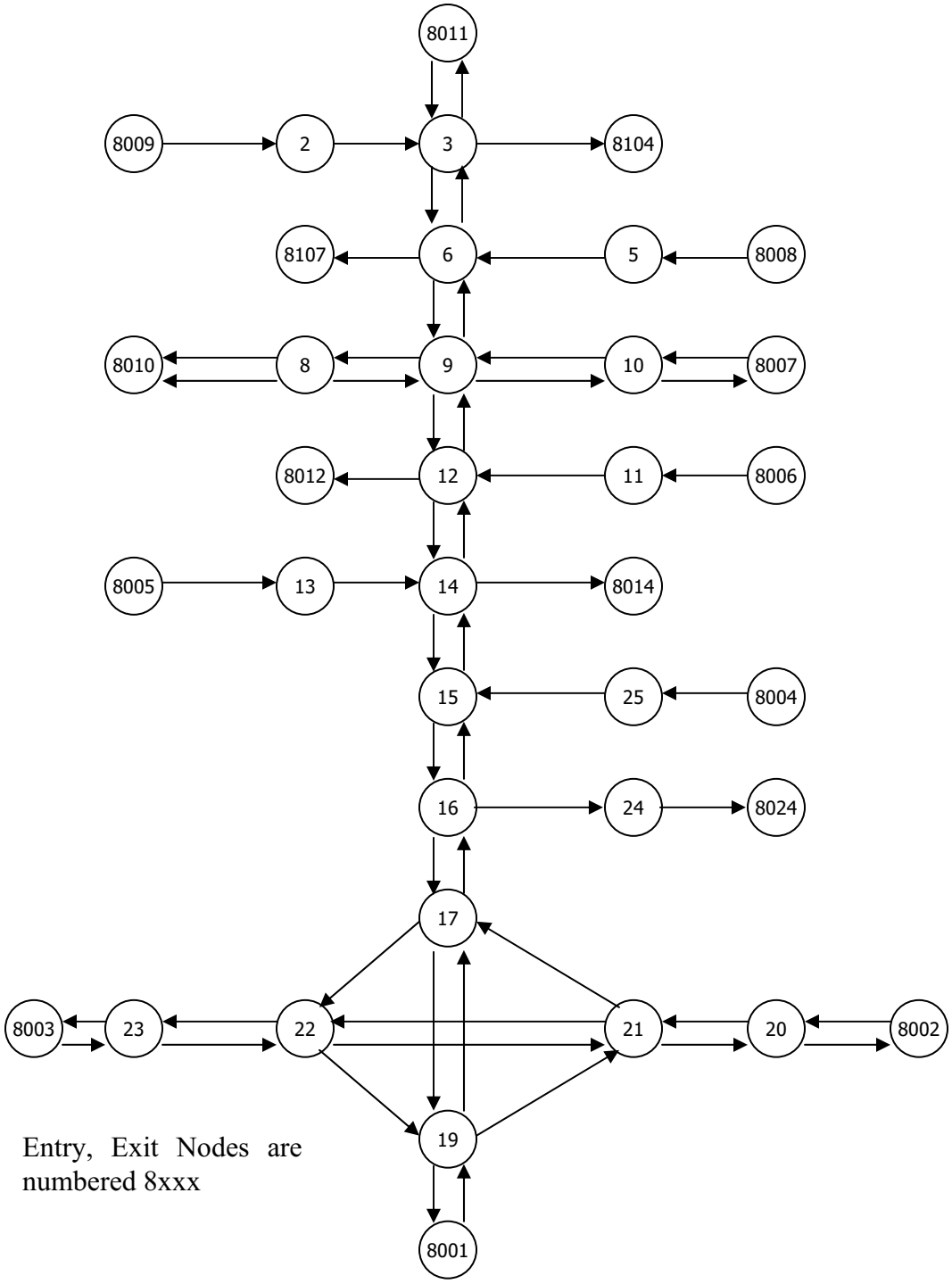


Figure C-1: Representative Analysis Network

APPENDIX D

Detailed Description of Study Procedure

APPENDIX D: DETAILED DESCRIPTION OF STUDY PROCEDURE

This appendix describes the activities that were performed to compute accurate Evacuation Time Estimates (ETE). The individual steps of this effort are represented as a flow diagram in Figure D-1. Each numbered step in the description that follows corresponds to the numbered element in this flow diagram.

Step 1.
The first activity is to obtain data defining the spatial distribution and demographic characteristics of the population within the Emergency Planning Zone (EPZ). These data were obtained from U.S. Census files and from the results of a telephone survey conducted within the EPZ. Employee and Transient populations were estimated from data provided by STP and Matagorda County.

Step 2.
The next activity is to examine large-scale maps of the EPZ in both hard-copy form and using Geographical Information System (GIS) software. These maps were used to identify the analysis highway network and the access roads from each residential development to the adjoining elements of this network. This information is used to plan a field survey of the highway system and later, to assign generated evacuation trips to the correct links of the network.

Step 3.
The next step is to conduct a physical survey of the roadway system. The purpose of this survey is to determine the geometric properties of the highway elements, the channelization of lanes on each section of roadway, whether there are any turn restrictions or special treatment of traffic at intersections, the type and functioning of traffic control devices and to make the necessary observations needed to estimate realistic values of roadway capacity.

Step 4.
With this information, develop the evacuation network representation of the physical roadway system.

Step 5.
With the network drawn, proceed to estimate the capacities of each link and to locate the origin centroids where trips would be generated during the evacuation process.

Step 6.
With this information at hand, the data were entered into the computer to create the input stream for the TRaffic Assignment and Distribution (TRAD) model. This model was designed to be compatible with the PC-DYNEV traffic simulation model used later in the project; the input stream required for one model is entirely compatible with the input stream required by the other. Using a software system developed by KLD named UNITES, the data entry activity is performed interactively directly on the computer.

Step 7.
The TRAD model contains software that performs diagnostic testing of the input stream. These assist the user in identifying and correcting errors in the input stream.

Step 8.
After creating the input stream, execute the TRAD model to compute evacuating traffic routing patterns consistent with the guidelines of NUREG-0654, Appendix 4. The TRAD model also provides estimates of traffic loading on each highway link as well as rough estimates of operational performance.

Step 9.
Critically examine the statistics produced by the TRAD model. This is a labor-intensive activity, requiring the direct participation of skilled engineers who possess the necessary practical experience to interpret the results and to determine the causes of any problems reflected in the results.

Essentially, the approach is to identify those "hot spots" in the network that represent locations where congested conditions are pronounced and to identify the cause of this congestion. This cause can take many forms, either as excess demand due to improper routing, as a shortfall of capacity, or as a quantitative error in the way the physical system was represented in the input stream. This examination leads to one of two conclusions:

- The results are as satisfactory as could be expected at this stage of the analysis process; or
- The input stream must be modified accordingly.

This decision requires, of course, the application of the user's judgment based upon the results obtained in previous applications of the TRAD model and a comparison of the results of this last case with the previous ones. If the results are satisfactory in the opinion of the user, then the process continues with Step 12. Otherwise, proceed to Step 10.

Step 10.
There are many "treatments" available to the user in resolving such problems. These treatments range from decisions to reroute the traffic by imposing turn restrictions where they can produce significant improvements in capacity, changing the control treatment at critical intersections so as to provide improved service for one or more movements, or in prescribing specific treatments for channelizing the flow so as to expedite the movement of traffic along major roadway systems or changing the trip table. Such "treatments" take the form of modifications to the original input stream.

Step 11.
As noted above, the changes to the input stream must be implemented to reflect the modifications undertaken in Step 10. At the completion of this activity, the process returns to Step 8 where the TRAD model is again executed.

Step 12.
The output of the TRAD model includes the computed turn movements for each link. These data are required – and – accessed by the PC-DYNEV simulation model. This step completes the specification of the PC-DYNEV input stream.

Step 13.
After the PC-DYNEV input stream has been debugged, the simulation model is executed to provide detailed estimates, expressed as statistical Measures of Effectiveness (MOE), which describe the detailed performance of traffic operations on each link of the network.

Step 14.
In this step, the detailed output of the simulation model is examined to identify whether problems exist on the network. The results of the simulation model are extremely detailed and far more accurately describe traffic operations than those provided by the TRAD model. Thus, it is possible to identify the cause of any problems by carefully studying the output.

Again, one can implement corrective treatments designed to expedite the flow of traffic on the network in the event that the results are considered to be less efficient than is possible to achieve. If input changes are needed, the analysis process proceeds to Step 15. On the other hand, if the results are satisfactory, then one can decide whether to return to Step 8 to again execute the TRAD model and repeat the whole process, or to accept the simulation results. If there were no changes indicated by the activities of Step 14, because the results were satisfactory, we can then proceed to document them in Step 17. Otherwise, return to Step 8 to determine the effects of the changes implemented in Step 14 on the optimal routing patterns over the network. This determination can be ascertained by executing the TRAD model.

Step 15.
This activity implements the changes in control treatments or in the assignment of destinations associated with one or more origins in order to improve the representation of traffic flow over the network. These treatments can also include the consideration of adding roadway segments to the existing analysis network to improve the representation of the physical system.

Step 16.
Once the treatments have been identified, it is necessary to modify the simulation model input stream accordingly. At the completion of this effort, the procedure returns to Step 13 to execute the simulation model again.

Step 17.
The simulation results are analyzed, tabulated and graphed. The results are then documented, as required.

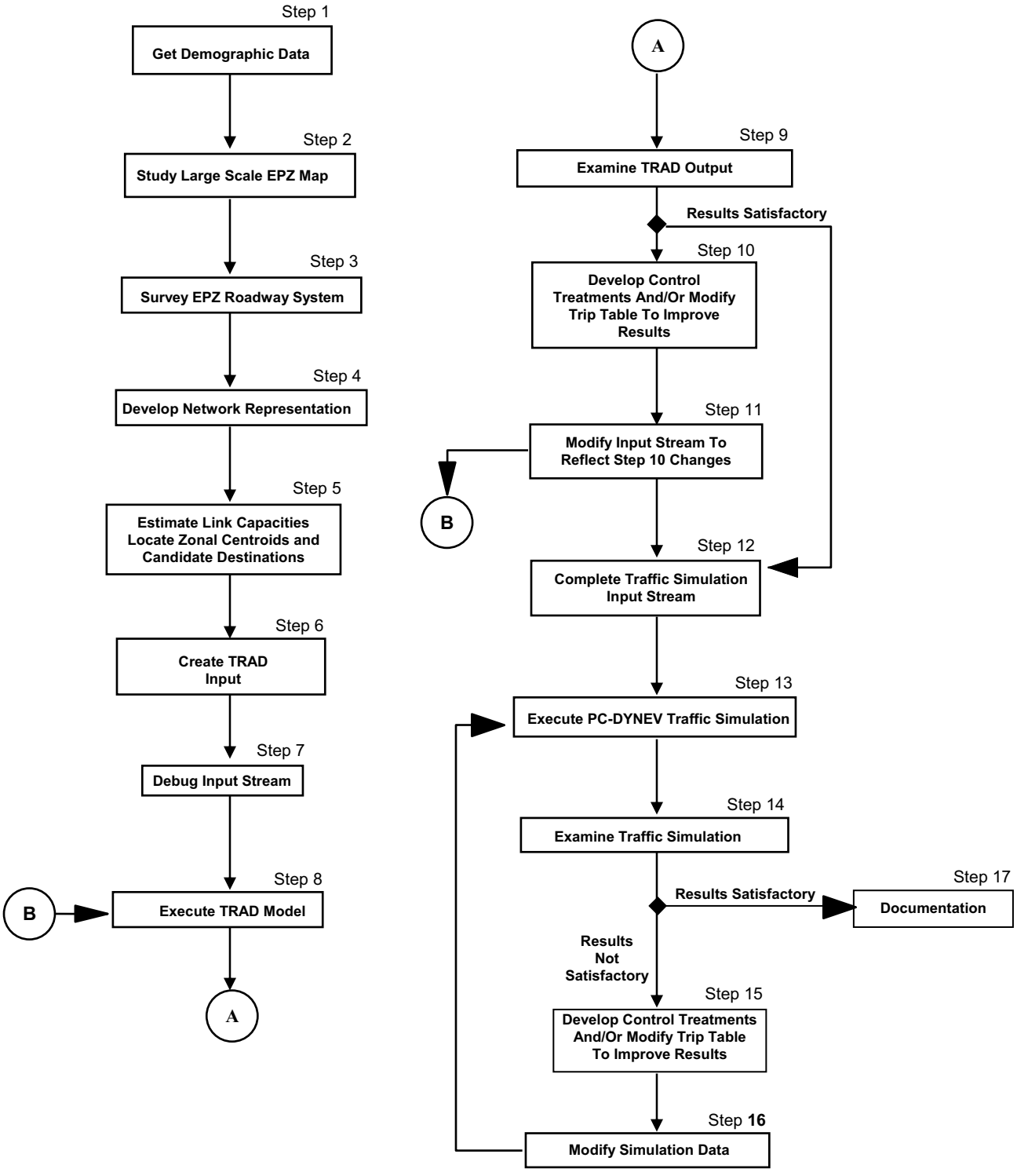


Figure D-1. Flow Diagram of Activities

APPENDIX E

Special Facility Data

APPENDIX E: SPECIAL FACILITY DATA

The following tables list population information, as of March 2007, for special facilities that are located within the South Texas Project (STP) EPZ. Special facilities are defined as schools, major employers, lodging facilities and recreational areas. No day care centers, medical care facilities, or correctional institutions were identified within the EPZ. Transient population data is included in the tables for recreational areas and lodging facilities. The location of the facility is defined by its straight-line distance (miles) and direction (magnetic bearing) from the STP.

Table E-1. Schools within the STP EPZ (As of March 2007)								
ZONE	Distance (miles)	Direction	School Name	Street Address	Municipality	Phone	Enrollment	Staff
MATAGORDA COUNTY								
7	8.5	SE	Matagorda Elementary School	717 Wightman St	Matagorda	(979) 863-7693	70	20
10	8.2	NW	Tidehaven Middle School	2469 FM 459	El Maton	(361) 588-6600	178	25
10	9.1	NW	Tidehaven High School	144 FM 1095	El Maton	(361) 588-6810	271	42
						Total	**519**	**87**

Table E-2. Major Employers within the STP EPZ (As of March 2007)							
ZONE	Distance (miles)	Direction	Facility Name	Street Address	Municipality	Phone	Employees
MATAGORDA COUNTY							
1	0.0		STP	FM 521	Bay City	(361) 972-3611	1,003
2	4.8	NNE	Celanese Chemicals	P.O. Box 509, 2001 FM 3057	Bay City	(979) 241-4300	27
3	6.7	E	Lyondell Chemicals	U.S. 60, 13 miles south of Bay City	Bay City	(979) 244-7137	163
						Total	**1,193**

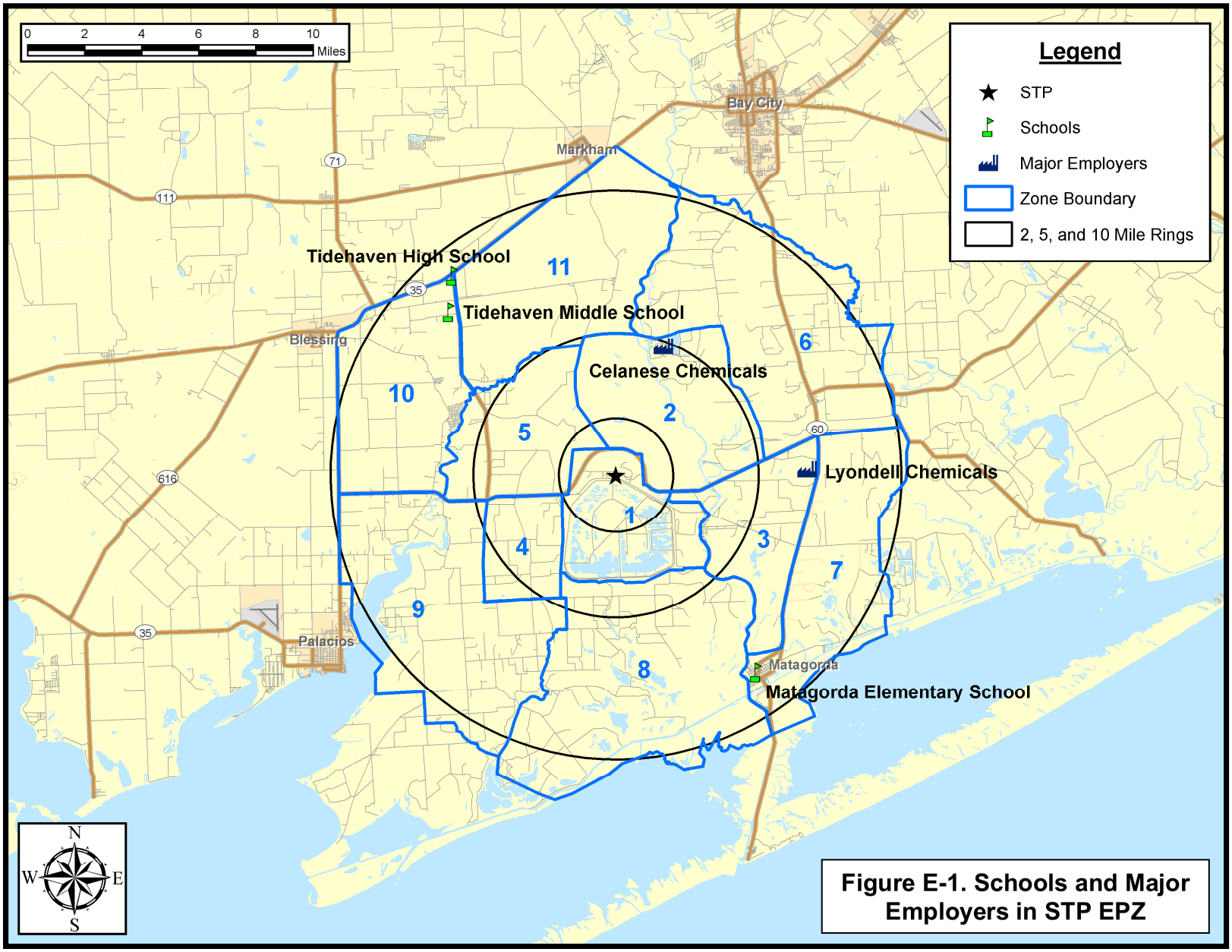


Figure E-1. Schools and Major Employers in STP EPZ

Table E-3. Recreational Areas within the STP EPZ (As of March 2007)								
ZONE	Distance (miles)	Dir-ection	Facility Name	Street Address	Municipality	Phone	Per-sons	Total Vehicles
MATAGORDA COUNTY								
3	6.9	ESE	Lighthouse RV Park	18411 Hwy 60	Bay City	(979) 863-7773	50	25
6	9.2	NNE	Rio Colorado Golf Course	FM-2668 Riverside Pk	Bay City	(979) 244-2955	120	60
6	10.1	NNE	Riverside Campgrounds	7330 FM 2668	Bay City	(979) 245-0340	180	60
7	8.9	NE	Matagorda Harbor	Hwy 60, Matagorda	Matagorda	(979) 863-2103	300	150
*	14.3	SSE	Matagorda Bay Nature Park	End of FM 2031	Matagorda	(979) 557-6261	130	70
*	14.3	SSE	Matagorda Beach and Jetty Park	End of FM 2031	Matagorda	(979) 863-7861	1,000	500
						Total	**1,780**	**865**

***The Matagorda Beach area has only one access road - FM 2031, which cuts through the STP EPZ. It is prudent to evacuate both the resident and transient population on the beach in the event of an emergency, since an escalation of the event or a change in wind direction could expose those evacuees on FM 2031 to the plume. Thus, it is assumed that in every scenario and for every region these people will be evacuated, and their vehicles will be included in the network traffic.**

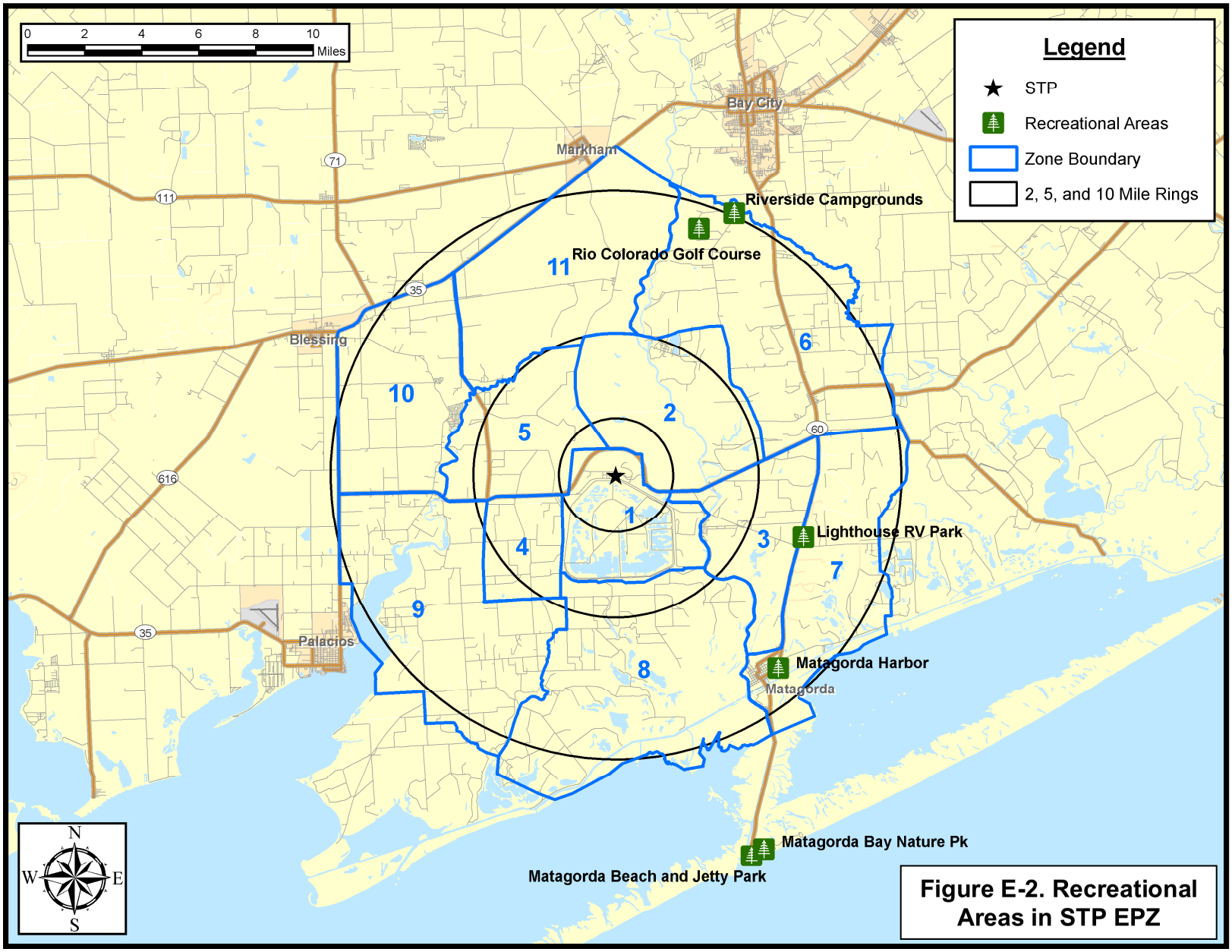


Figure E-2. Recreational Areas in STP EPZ

Table E-4. Lodging Facilities within the STP EPZ (As of March 2007)								
ZONE	Distance (miles)	Dir-ection	Facility Name	Street Address	Municipality	Phone	Per-sons	Veh-icles
MATAGORDA COUNTY								
7	8.7	SE	Fisherman's Motel	40 Fisher St	Matagorda	(979) 863-0000	56	14
7	8.8	SE	Shell Motel 1	778 Market St	Matagorda	(979) 863-2520	36	24
7	8.8	SE	Shell Motel 2	1200 Fisher St	Matagorda	(979) 863-2520	18	12
						Total	**110**	**50**

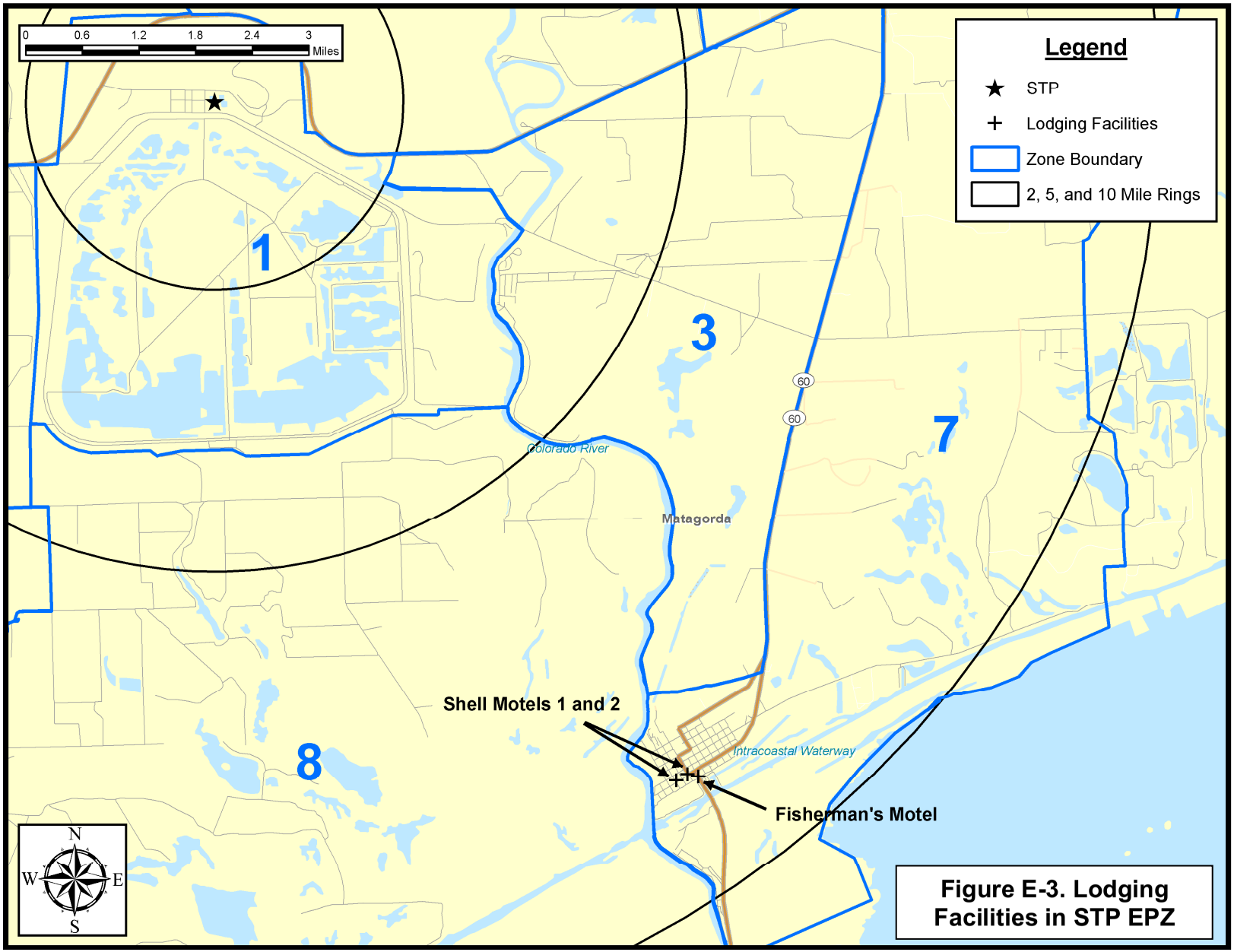


Figure E-3. Lodging Facilities in STP EPZ

APPENDIX F

Telephone Survey

APPENDIX F: TELEPHONE SURVEY

1. INTRODUCTION

The development of Evacuation Time Estimates (ETE) for the Emergency Planning Zone (EPZ) of the South Texas Project requires the identification of travel patterns, car ownership and household size of the population within the EPZ. Demographic information is obtained from Census data. The use of this data has several limitations when applied to emergency planning. First, the census data do not encompass the range of information needed to identify the time required for preliminary activities that must be undertaken prior to evacuating the area. Secondly, the census data do not contain attitudinal responses needed from the population of the EPZ and consequently may not accurately represent the anticipated behavioral characteristics of the evacuating populace.

These concerns are addressed by a telephone survey. The survey is designed to elicit information from the public concerning family demographics and estimates of response times to well defined events. The design of the survey includes a limited number of questions of the form “What would you do if …?” and other questions regarding activities with which the respondent is familiar (“How long does it take you to …?”)

2. SURVEY INSTRUMENT AND SAMPLING PLAN

Attachment A presents the final survey instrument. A draft of the instrument was submitted for comment. Comments were received and the survey instrument was modified accordingly.

Following the completion of the instrument, a sampling plan was developed. A sample size of approximately 500 completed survey forms yields results with an acceptable sampling error. The sample must be drawn from the EPZ population. Consequently, a list of EPZ zip codes was developed. This list is shown in Table F-1. Along with each zip code, an estimate of the population in each area was determined. The proportional number of the desired completed survey interviews for each area was identified, as shown in Table F-1. The completed survey adhered to the sampling plan.

Table F-1. STP Telephone Survey Sampling Plan

Zip Code	Zip Population (2000)	EPZ Population in Zip Code (2000)	Zip Code Households	Households in EPZ	Required Sample	Over Sampling in Zip Code due to Sparse Population
77414	23,596	844	9,042	282	106	338
77419	1,440	844	552	282	106	21
77440	498	463	191	190	72	8
77456	1,999	285	766	108	41	29
77457	913	695	350	335	126	14
77465	6,181	361	2,369	141	53	90
	34,627	3,492	13,270	1,338	500	500
Average Household Size			**2.61**			
Total Sample Required			**500**			

Due to the sparse population of the zip codes within the EPZ, the area which was sampled was expanded (within the zip codes identified) so that an appropriate sample could be gathered. The over-sampling was computed in proportion to the entire zip code population. The approach is justified on the basis that the area outside of the EPZ has similar land-use and housing characteristics as does the EPZ. We were careful to avoid sampling multi-family dwellings in the over-sample area since the EPZ does not contain these dwellings. The completed survey adhered to the over-sampling plan.

3. SURVEY RESULTS

The results of the survey fall into two categories. First, the household demographics of the area can be identified. Demographic information includes such factors as household size, automobile ownership, and automobile availability. The distributions of the time to perform certain pre-evacuation activities are the second category of survey results. These data are processed to develop the trip generation distributions used in the evacuation modeling effort.

A review of the survey instrument reveals that several questions have a "don't know" (DK) entry for a response. It is accepted practice in conducting surveys of this type to accept the answers of a respondent who offers a DK response for a few questions or who refuses to answer a few questions. To address the issue of occasional DK/refused responses from a large sample, the practice is to assume that the distribution of these responses is the same as the underlying distribution of the positive responses. In effect, the DK/refused responses are ignored and the distributions are based upon the positive data that is acquired.

Household Demographic Results

Household Size

Figure F-1 presents the distribution of household size within the EPZ. The average household contains 2.38 people. The estimated household size (2.61 persons) used to determine the survey sample (Table F-1) was drawn from Census data. The average household size obtained from survey results is within 10% of the census value and is an indication of the reliability of the survey.

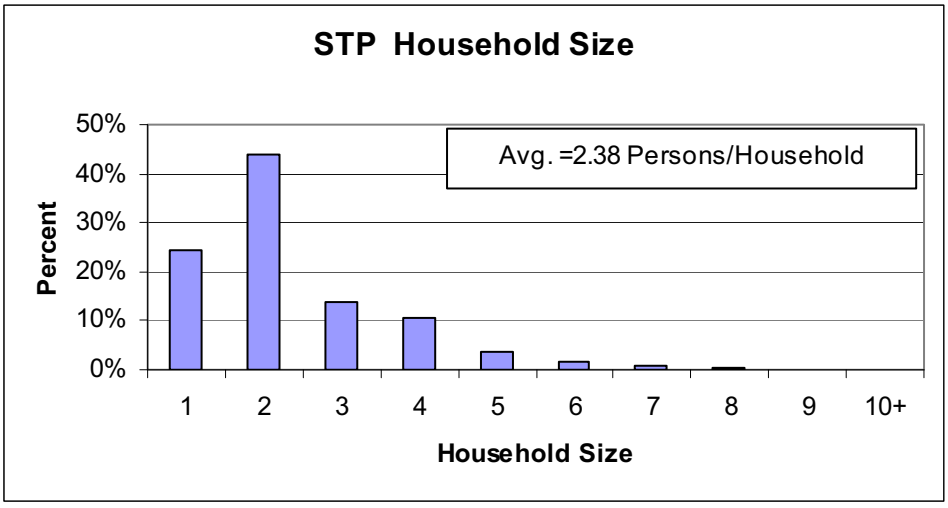


Figure F-1. Household Size in the EPZ

Automobile Ownership

The average number of automobiles per household in the EPZ is 1.86. The distribution of automobile ownership is presented in Figure F-2. Figures F-3 and F-4 present the automobile availability by household size. It should be noted that approximately 5.3 percent of households do not have access to an automobile; 74 percent of households have access to one or two automobiles. Note that the majority of households without access to a car are single person households.

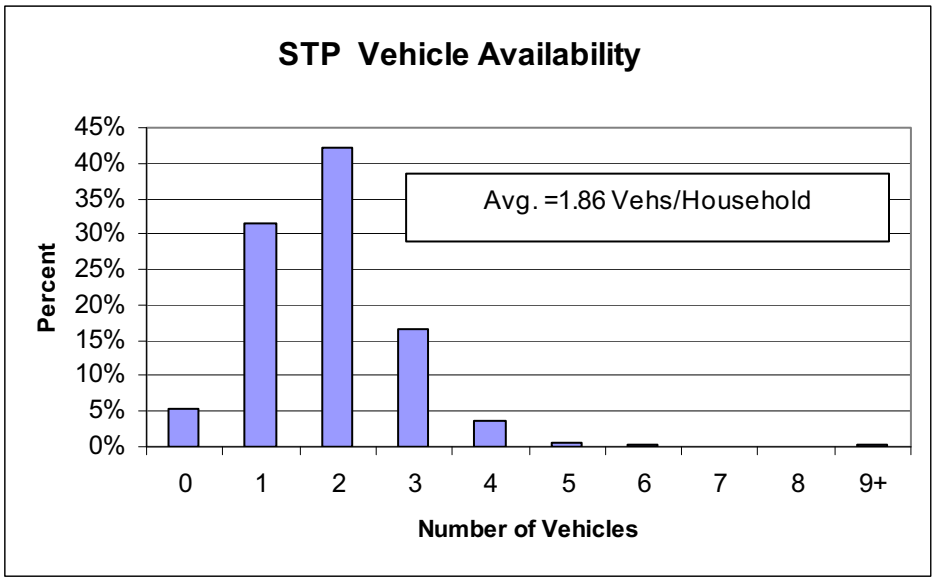


Figure F-2. Household Vehicle Availability

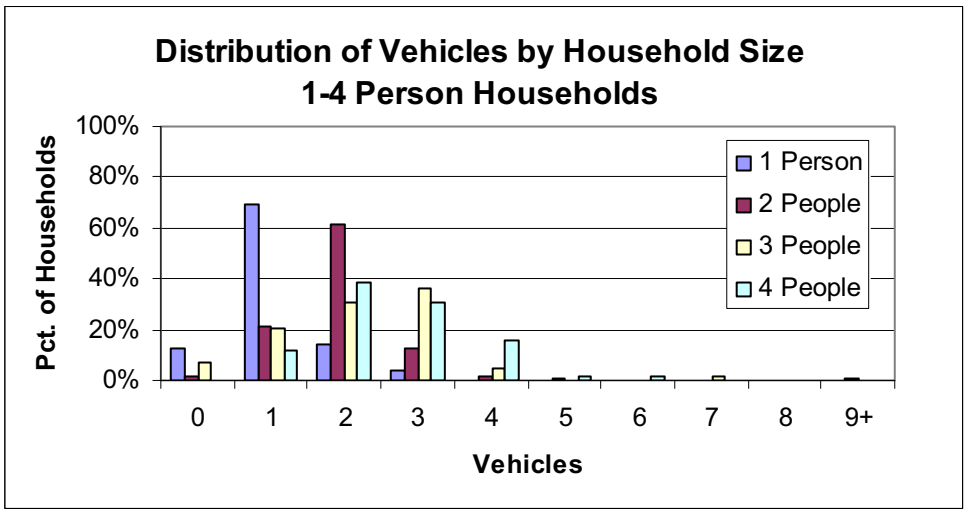


Figure F-3. Vehicle Availability – 1 to 4 Person Households

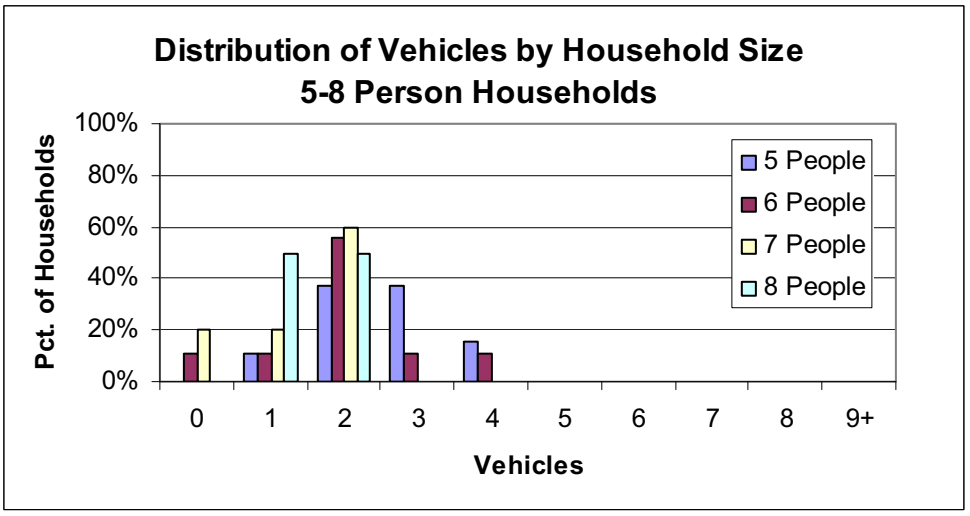


Figure F-4. Vehicle Availability – 5 to 8 Person Households

School Children

The average number of school children per household identified by the survey is 0.62. Figure F-5 presents the distribution of school children.

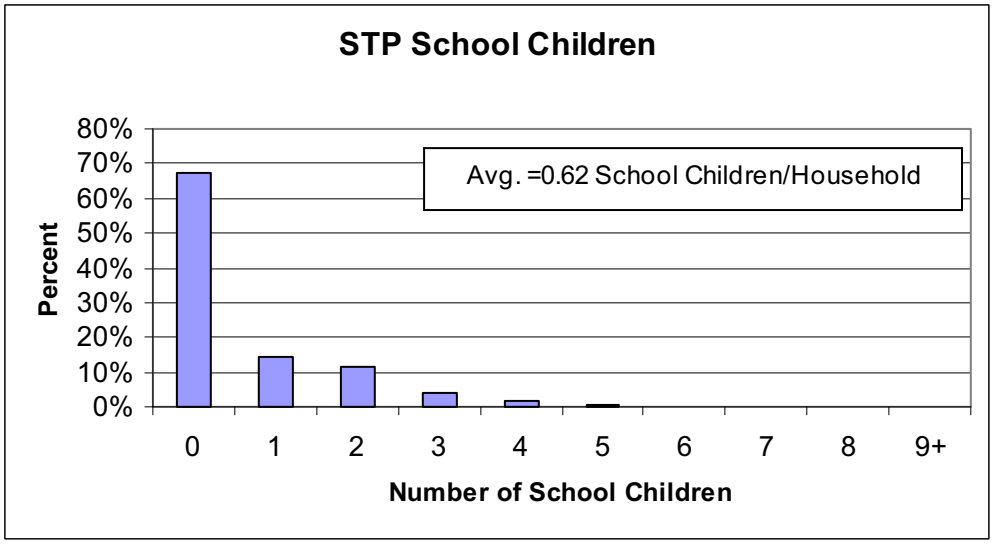


Figure F-5. School Children in Households

Commuters

Figure F-6 presents the distribution of the number of commuters in each household. The data shows an average of 0.82 commuters in each household in the EPZ.

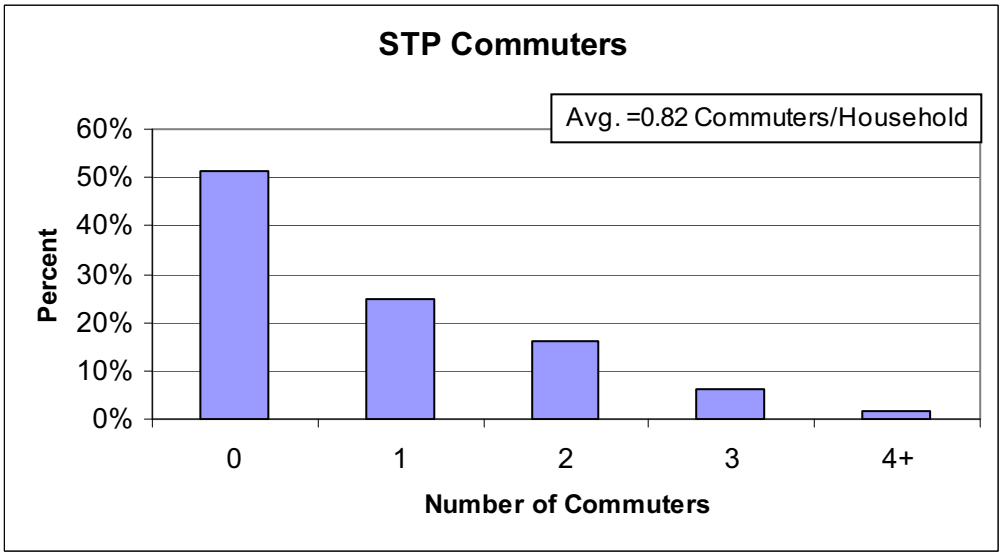


Figure F-6. Commuters in Households in the EPZ

Commuter Travel Modes

Figure F-7 presents the mode of travel that commuters use on a daily basis. The vast majority of commuters use their private automobiles to travel to work or school.

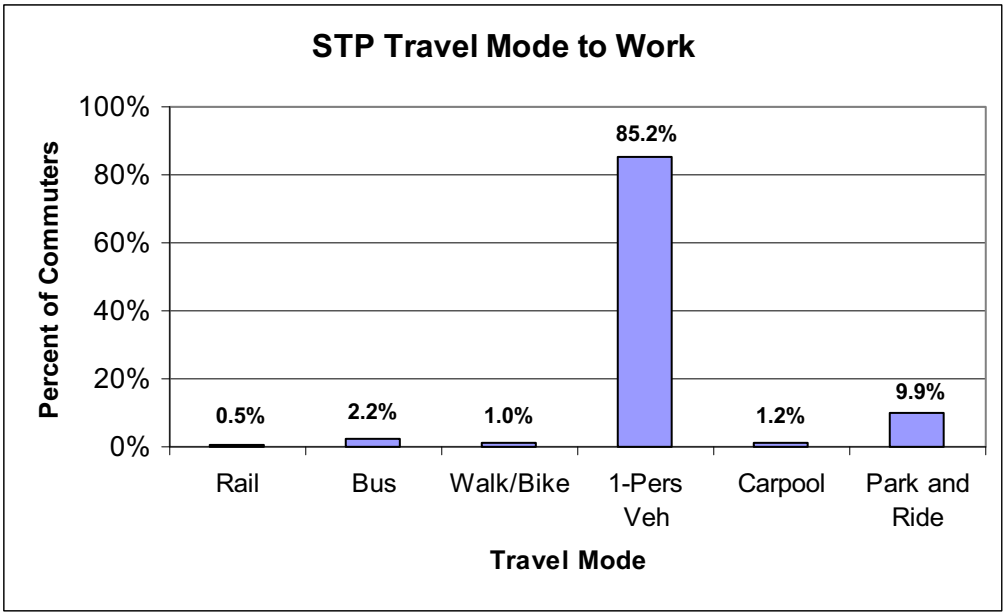


Figure F-7. Modes of Travel in the EPZ

Evacuation Response

Several questions were asked which are used to gauge the population's response to an emergency. The first of these asked "How many of the vehicles that are usually available to the household would your family use during an evacuation?" The response is shown in Figure F-8. On average, 1.43 vehicles per household would be used for evacuation purposes.

The second evacuation response question asked was "When the commuters are away from home, is there a vehicle at home that is available for evacuation during any emergency?" Of the survey participants who responded, 65 percent said that there was another vehicle available to evacuate, while 35 percent answered that there would be no vehicle available for evacuation.

The third evacuation response question was "Would your family await the return of other family members prior to evacuating the area?" Of the survey participants who responded, 70 percent said they would await the return of other family members before evacuating and 30 percent indicated that they would not await the return of other family members.

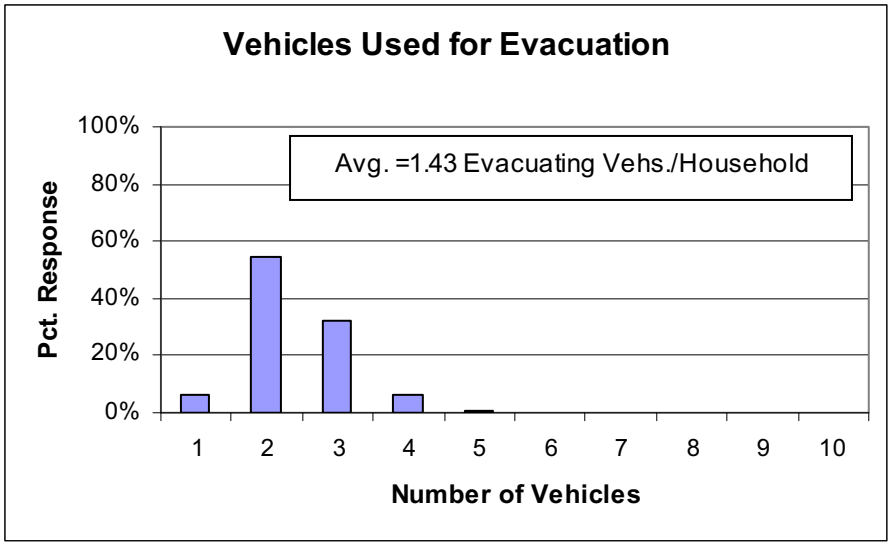


Figure F-8. Number of Vehicles Used for Evacuation

Time Distribution Results

The survey asked several questions about the amount of time it takes to perform certain pre-evacuation activities. These activities involve actions taken by residents during the course of their day-to-day lives. Thus, the answers fall within the realm of the responder's experience.

How long does it take the commuter to complete preparation for leaving work? Figure F-9 presents the cumulative distribution. 57 percent can leave within 15 minutes; 90 percent can leave within one hour. Only 2 percent of commuters surveyed said they would need more than two hours to prepare to leave work or school.

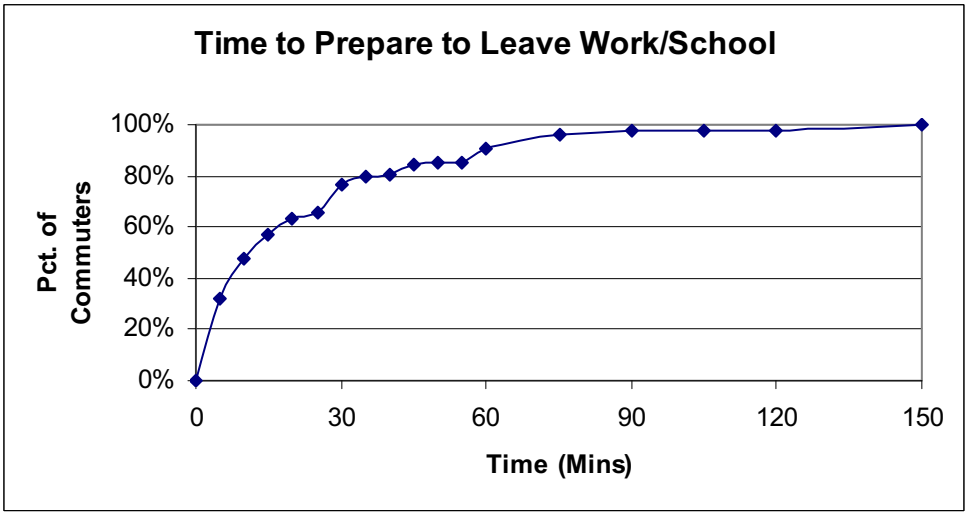


Figure F-9. Time Required to Prepare to Leave Work/School

How long would it take the commuter to travel home?

Figure F-10 presents the work to home travel time. Over 90 percent of commuters can arrive home within about 45 minutes of leaving work; nearly all within 75 minutes.

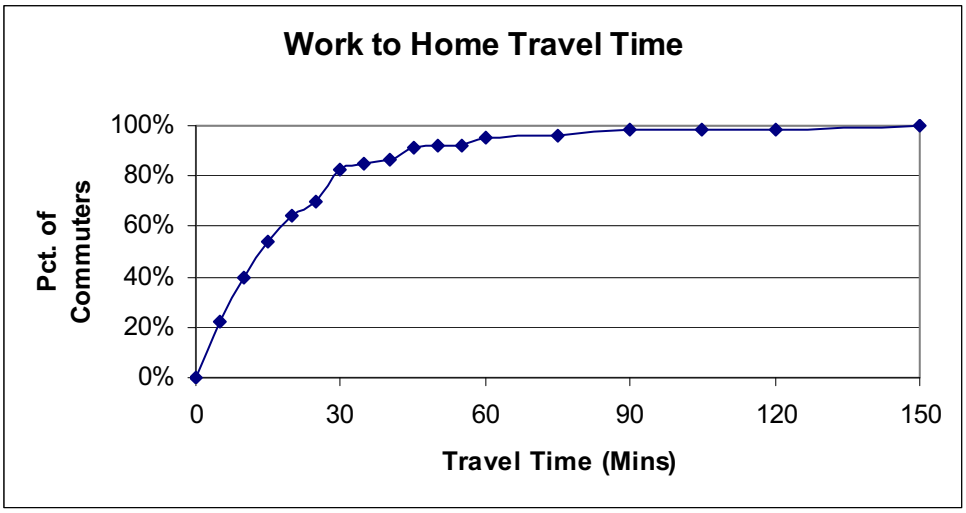


Figure F-10. Work to Home Travel Time

How long would it take the family to pack clothing, secure the house, and load the car?

Figure F-11 presents the time required to prepare for leaving on an evacuation trip. In many ways this activity mimics a family's preparation for a short holiday or weekend away from home. Hence, the responses represent the experience of the responder in performing similar activities.

The raw data indicates that about 10% of households responded they would need over 6 hours to prepare their homes for evacuation. Although the survey preamble did attempt to eliminate "weather-related" emergencies (hurricanes) from consideration, the EPZ is in on the Texas gulf coast and hurricane evacuations (especially in light of the [nearby] Hurricane Rita experience in Houston) likely played a role in determining the response to this question.

A recent survey KLD conducted on the Florida Gulf coast specifically stated the emergency being discussed was not weather related. The results of that survey indicated that over 95% of households would complete their home preparation activities by about 4 hours. If we eliminate the outlier data from the STP results, approximately 93% of households would complete their preparations by 4 hours. Since an Advisory to Evacuate predicated on a "fast-breaking" event at STP is fundamentally different than the slow approach of a hurricane, we feel justified in building our trip generation distribution based on the elimination of the outlier data.

Both the raw data and the modified distributions are shown in Figure F-11. Approximately 55 percent of households can be ready to leave home within one hour; between 80 and 90 percent of households can be ready to leave within 3 hours.

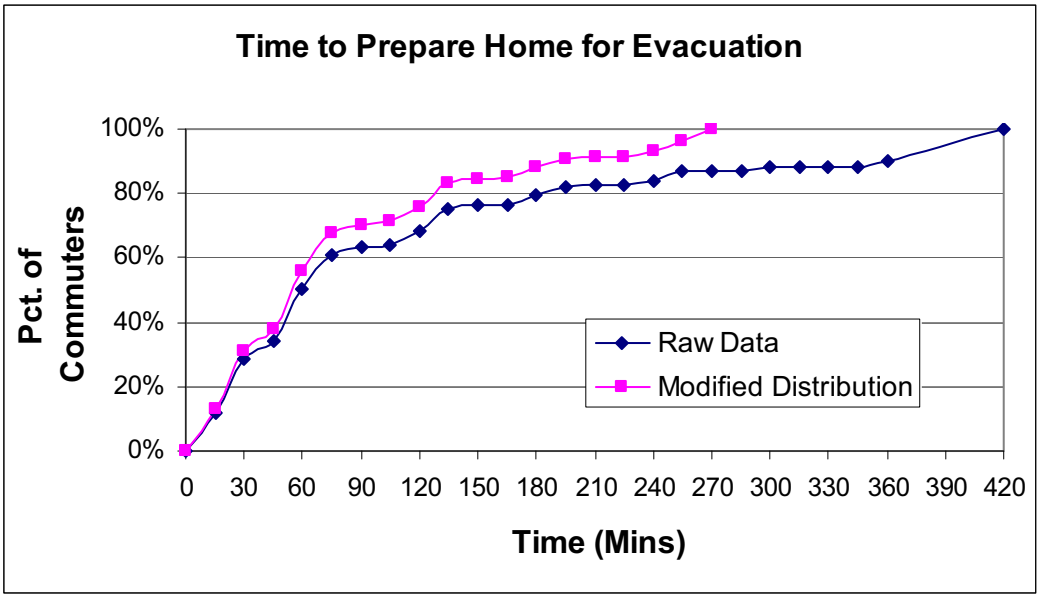


Figure F-11. Time to Prepare Home for Evacuation

4. CONCLUSIONS

The telephone survey provides valuable, relevant data that have been used to quantify "mobilization time" which can influence evacuation time estimates.

ATTACHMENT A

Telephone Survey Instrument

Survey Instrument

Hello, my name is _____ and I'm working on a survey being made for [insert marketing firm name] designed to identify local travel patterns in your area. The information obtained will be used in a traffic engineering study and in connection with an update of the county's emergency response plans. The survey will be used for emergency plans in response to hazards that **are not weather-related**. Your participation in this survey will greatly enhance the county's emergency preparedness program.

COL.1 Unused
COL.2 Unused
COL.3 Unused
COL.4 Unused
COL.5 Unused

Sex **COL. 8**
1 Male
2 Female

INTERVIEWER: ASK TO SPEAK TO THE HEAD OF HOUSEHOLD OR THE SPOUSE OF THE HEAD OF HOUSEHOLD.
(Terminate call if not a single-family residence)

DO NOT ASK:

1A. Record area code. To Be Determined

COL. 9-11

1B. Record exchange number. To Be Determined

COL. 12-14

---

2. What is your home Zip Code — **Col. 15-19**

3. In total, how many cars, or other vehicles are usually available to the household? (DO NOT READ ANSWERS.)

COL.20
1 ONE
2 TWO
3 THREE
4 FOUR
5 FIVE
6 SIX
7 SEVEN
8 EIGHT
9 NINE OR MORE
0 ZERO (NONE)
X REFUSED

---

4. How many people usually live in this household? (DO NOT READ ANSWERS.)

COL.21
1 ONE
2 TWO
3 THREE
4 FOUR
5 FIVE
6 SIX
7 SEVEN
8 EIGHT
9 NINE

COL.22
0 TEN
1 ELEVEN
2 TWELVE
3 THIRTEEN
4 FOURTEEN
5 FIFTEEN
6 SIXTEEN
7 SEVENTEEN
8 EIGHTEEN
9 NINETEEN OR MORE
X REFUSED

5. How many children living in this household go to local public, private, or parochial schools? (DO NOT READ ANSWERS.)

COL.23	
0	ZERO
1	ONE
2	TWO
3	THREE
4	FOUR
5	FIVE
6	SIX
7	SEVEN
8	EIGHT
9	NINE OR MORE
X	REFUSED

---

6. How many people in the household commute to a job, or to college, at least 4 times a week?

COL.24		SKIP TO
0	ZERO	Q. 12
1	ONE	Q. 7
2	TWO	Q. 7
3	THREE	Q. 7
4	FOUR OR MORE	Q. 7
5	DON'T KNOW/REFUSED	Q. 12

INTERVIEWER: For each person identified in Question 6, ask Questions 7, 8, 9, and 10.

7. Thinking about commuter #1, how does that person usually travel to work or college? (REPEAT QUESTION FOR EACH COMMUTER.)

	Commuter #1 COL.25	Commuter #2 COL.26	Commuter #3 COL.27	Commuter #4 COL.28
Rail	1	1	1	1
Bus	2	2	2	2
Walk/Bicycle	3	3	3	3
Driver Car/Van	4	4	4	4
Park & Ride (Car/Rail, Xpress_bus)	5	5	5	5
Driver Carpool-2 or more people	6	6	6	6
Passenger Carpool-2 or more people	7	7	7	7
Taxi	8	8	8	8
Refused	9	9	9	9

---

8. What is the name of the city, town or community in which Commuter #1 works or attends school? (REPEAT QUESTION FOR EACH COMMUTER.) (FILL IN ANSWER.)

COMMUTER #1			COMMUTER #2			COMMUTER #3			COMMUTER #4		
City/Town		State	City/Town		State	City/Town		State	City/Town		State
COL.29	COL.30	COL.31	COL.32	COL.33	COL.34	COL.35	COL.36	COL.37	COL.38	COL.39	COL.40
0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9

9. How long would it take Commuter #1 to travel home from work or college? (REPEAT QUESTION FOR EACH COMMUTER.) (DO NOT READ ANSWERS.)

COMMUTER #1

COL.41		COL.42	
1	5 MINUTES OR LESS	1	46-50 MINUTES
2	6-10 MINUTES	2	51-55 MINUTES
3	11-15 MINUTES	3	56 - 1 HOUR
4	16-20 MINUTES	4	OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5	21-25 MINUTES	5	BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6	26-30 MINUTES	6	BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7	31-35 MINUTES	7	BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8	36-40 MINUTES	8	OVER 2 HOURS (SPECIFY _____)
9	41-45 MINUTES	9	
		0	
		X	DON'T KNOW/REFUSED

COMMUTER #2

COL.43		COL.44	
1	5 MINUTES OR LESS	1	46-50 MINUTES
2	6-10 MINUTES	2	51-55 MINUTES
3	11-15 MINUTES	3	56 - 1 HOUR
4	16-20 MINUTES	4	OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5	21-25 MINUTES	5	BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6	26-30 MINUTES	6	BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7	31-35 MINUTES	7	BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8	36-40 MINUTES	8	OVER 2 HOURS (SPECIFY _____)
9	41-45 MINUTES	9	
		0	
		X	DON'T KNOW/REFUSED

COMMUTER #3

COL.45		COL.46	
1	5 MINUTES OR LESS	1	46-50 MINUTES
2	6-10 MINUTES	2	51-55 MINUTES
3	11-15 MINUTES	3	56 - 1 HOUR
4	16-20 MINUTES	4	OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5	21-25 MINUTES	5	BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6	26-30 MINUTES	6	BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7	31-35 MINUTES	7	BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8	36-40 MINUTES	8	OVER 2 HOURS (SPECIFY _____)
9	41-45 MINUTES	9	
		0	
		X	DON'T KNOW/REFUSED

COMMUTER #4

COL.47		COL.48	
1	5 MINUTES OR LESS	1	46-50 MINUTES
2	6-10 MINUTES	2	51-55 MINUTES
3	11-15 MINUTES	3	56 - 1 HOUR
4	16-20 MINUTES	4	OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5	21-25 MINUTES	5	BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6	26-30 MINUTES	6	BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7	31-35 MINUTES	7	BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8	36-40 MINUTES	8	OVER 2 HOURS (SPECIFY _____)
9	41-45 MINUTES	9	
		0	
		X	DON'T KNOW/REFUSED

10. Approximately how long does it take Commuter #1 to complete preparation for leaving work or college prior to starting the trip home? (REPEAT QUESTION FOR EACH COMMUTER.) (DO NOT READ ANSWERS.)

COMMUTER #1

COL. 49	COL.50
1 5 MINUTES OR LESS	1 46-50 MINUTES
2 6-10 MINUTES	2 51-55 MINUTES
3 11-15 MINUTES	3 56 - 1 HOUR
4 16-20 MINUTES	4 OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5 21-25 MINUTES	5 BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6 26-30 MINUTES	6 BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7 31-35 MINUTES	7 BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8 36-40 MINUTES	8 OVER 2 HOURS (SPECIFY _____)
9 41-45 MINUTES	9
	0
	X DON'T KNOW/REFUSED

COMMUTER #2

COL.51	COL. 52
1 5 MINUTES OR LESS	1 46-50 MINUTES
2 6-10 MINUTES	2 51-55 MINUTES
3 11-15 MINUTES	3 56 - 1 HOUR
4 16-20 MINUTES	4 OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5 21-25 MINUTES	5 BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6 26-30 MINUTES	6 BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7 31-35 MINUTES	7 BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8 36-40 MINUTES	8 OVER 2 HOURS (SPECIFY _____)
9 41-45 MINUTES	9
	0
	X DON'T KNOW/REFUSED

COMMUTER #3

COL. 53	COL. 54
1 5 MINUTES OR LESS	1 46-50 MINUTES
2 6-10 MINUTES	2 51-55 MINUTES
3 11-15 MINUTES	3 56 - 1 HOUR
4 16-20 MINUTES	4 OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5 21-25 MINUTES	5 BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6 26-30 MINUTES	6 BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7 31-35 MINUTES	7 BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8 36-40 MINUTES	8 OVER 2 HOURS (SPECIFY _____)
9 41-45 MINUTES	9
	0
	X DON'T KNOW/REFUSED

COMMUTER #4

COL. 55	COL. 56
1 5 MINUTES OR LESS	1 46-50 MINUTES
2 6-10 MINUTES	2 51-55 MINUTES
3 11-15 MINUTES	3 56 - 1 HOUR
4 16-20 MINUTES	4 OVER 1 HOUR, BUT LESS THAN 1 HOUR 15 MINUTES
5 21-25 MINUTES	5 BETWEEN 1 HOUR 16 MINUTES AND 1 HOUR 30 MINUTES
6 26-30 MINUTES	6 BETWEEN 1 HOUR 31 MINUTES AND 1 HOUR 45 MINUTES
7 31-35 MINUTES	7 BETWEEN 1 HOUR 46 MINUTES AND 2 HOURS
8 36-40 MINUTES	8 OVER 2 HOURS (SPECIFY _____)
9 41-45 MINUTES	9
	0
	X DON'T KNOW/REFUSED

---

11. When the commuters are away from home, is there a vehicle at home that is available for evacuation during any emergency?

Col. 57	
1	Yes
2	No
3	Don't Know/Refused

12. Would you await the return of family members prior to evacuating the area?

Col. 58	
1	Yes
2	No
3	Don't Know/Refused

---

13. How many of the vehicles that are usually available to the household would your family use during an evacuation? (DO NOT READ ANSWERS.)

COL.59	
1	ONE
2	TWO
3	THREE
4	FOUR
5	FIVE
6	SIX
7	SEVEN
8	EIGHT
9	NINE OR MORE
0	ZERO (NONE)
X	REFUSED

---

14. How long would it take the family to pack clothing, secure the house, load the car, and complete preparations prior to evacuating the area? (DO NOT READ ANSWERS.)

COL.60	
1	LESS THAN 15 MINUTES
2	15-30 MINUTES
3	31-45 MINUTES
4	46 MINUTES - 1 HOUR
5	1 HOUR TO 1 HOUR 15 MINUTES
6	1 HOUR 16 MINUTES TO 1 HOUR 30 MINUTES
7	1 HOUR 31 MINUTES TO 1 HOUR 45 MINUTES
8	1 HOUR 46 MINUTES TO 2 HOURS
9	2 HOURS TO 2 HOURS 15 MINUTES
0	2 HOURS 16 MINUTES TO 2 HOURS 30 MINUTES
X	2 HOURS 31 MINUTES TO 2 HOURS 45 MINUTES
Y	2 HOURS 46 MINUTES TO 3 HOURS

COL.61	
1	3 HOURS TO 3 HOURS 15 MINUTES
2	3 HOURS 16 MINUTES TO 3 HOURS 30 MINUTES
3	3 HOURS 31 MINUTES TO 3 HOURS 45 MINUTES
4	3 HOURS 46 MINUTES TO 4 HOURS
5	4 HOURS TO 4 HOURS 15 MINUTES
6	4 HOURS 16 MINUTES TO 4 HOURS 30 MINUTES
7	4 HOURS 31 MINUTES TO 4 HOURS 45 MINUTES
8	4 HOURS 46 MINUTES TO 5 HOURS
9	5 HOURS TO 5 HOURS 15 MINUTES
0	5 HOURS 16 MINUTES TO 5 HOURS 30 MINUTES
X	5 HOURS 31 MINUTES TO 5 HOURS 45 MINUTES
Y	5 HOURS 46 MINUTES TO 6 HOURS

COL.62	
1	DON'T KNOW

---

15. Would you take household pets with you if you were asked to evacuate the area?

Col. 58	
1	Yes
2	No
3	Don't Know/Refused

Thank you very much. _____
(TELEPHONE NUMBER CALLED)

If requested:
For Additional information
Contact your County Emergency Management Office

ANNEX B
Code of Data Collection Standards With Notes Section
Market Research Association

P.O. Box 230 • Rocky Hill, CT 06067-0230 • 860-257-4008 • Fax: 860-257-3990

Code Approved May 1997
Notes Added September 1999

RESPONSIBILITIES TO RESPONDENTS

Data Collection Companies ...

1. will make factually correct statements to secure cooperation and will honor promises to respondents, whether verbal or written;
2. will not use information to identify respondents without the permission of the respondent, except to those who check the data or are involved in processing the data. If such permission is given, it must be recorded by the interviewer at the time the permission is secured;
3. will respect the respondent's right to withdraw or to refuse to cooperate at any stage of the study and not use any procedure or technique to coerce or imply that cooperation is obligatory;
4. will obtain and document respondent consent when it is known that the name and address or identity of the respondent may be passed to a third party for legal or other purposes, such as audio or video recordings;
5. will obtain permission and document consent of a parent, legal guardian or responsible guardian before interviewing children 12 years old or younger;
6. will give respondents the opportunity to refuse to participate in the research when there is a possibility they may be identifiable even without the use of their name or address (e.g., because of the size of the population being sampled).

Interviewers ...

1. will treat the respondent with respect and not influence him or her through direct or indirect attempts, including the framing of questions and/or a respondent's opinion or attitudes on any issue;
2. will obtain and document permission from a parent, legal guardian or responsible guardian before interviewing children 12 years old or younger. Prior to obtaining permission, the interviewer should divulge the subject matter, length of the interview and other special tasks that will be required.

RESPONSIBILITIES TO CLIENTS

Data Collection Companies ...

1. will ensure that each study is conducted according to the client's exact specifications;
2. will observe confidentiality with all research techniques or methodologies and with information considered confidential or proprietary. Information will not be revealed that could be used to identify clients or respondents without proper authorization;
3. will ensure that companies, their employees and subcontractors involved in data collection take all reasonable precautions so that more than one survey is not conducted in one interview without explicit permission from the Client
4. will report research results accurately and honestly;
5. will not misrepresent themselves as having qualifications, experience, skills or facilities that they do not possess;
6. will refrain from referring to membership in the Marketing Research Association as proof of competence, since the Association does not certify any person's or organization's competency or skill level.

RESPONSIBILITIES TO DATA COLLECTORS

Clients ...

1. will be responsible for providing products and services that are safe and fit or their intended use and disclose/label all product contents;
2. will provide verbal or written instructions;
3. will not ask our members who subcontract research to engage in any activity that is not acceptable as defined in this Code or that is prohibited under any applicable federal, state, local laws, regulations and/or ordinances.

RESPONSIBILITIES TO THE GENERAL PUBLIC AND BUSINESS COMMUNITY

Data Collection Companies ...

1. will not intentionally abuse public confidence in marketing and opinion research;
2. will not represent a non-research activity to be marketing and opinion research, such as:
    - questions whose sole objective is to obtain personal information about respondents, whether for legal, political, private or other purposes,
    - the compilation of lists, registers or data banks of names and addresses for any non-research purposes (e.g., canvassing or fundraising),
    - industrial, commercial or any other form of espionage,
    - the acquisition of information for use by credit rating services or similar organizations,
    - sales or promotional approaches to the respondent,
    - the collection of debts;
3. will make interviewers aware of any special conditions that may be applicable to any minor (18 years old or younger).

These notes are intended to help users of the Code to interpret and apply it in practice. Any questions about how to apply the Code in a specific situation should be addressed to MRA Headquarters.

RESPONSIBILITIES TO RESPONDENTS

Data Collection Companies ...

1. will make factually correct statements to secure cooperation and honor promises to respondents, whether oral or written; *Interviewers will not knowingly provide respondents with information that misrepresents any portion of the interviewing process, such as; length of the interview, scope of task involved, compensation, or intended use of the information collected.*
2. will not use information to identify respondents without the permission of the respondent, except to those who check the data or are involved in processing the data. If such permission is given, it must be recorded by the interviewer at the time the permission is secured; *Respondent information will be linked to data collected only for research purposes such as validation, evaluating data in aggregate based on demographic information, modeling. Providing respondent information is not permissible for any purpose other than legitimate research purposes as mentioned above. If anyone requests respondent identifiable information it will only be provided upon receipt of written declaration of and agreement of some intended use. Such use shall be determined by the provider to qualify as legitimate research use. (i.e. validation, planned recalls, modeling, demographic analysis.) No other use of this information falls within the boundaries of the Code. This applies to all types of respondent sample sources including client supplied lists.*
3. will respect the respondent's right to withdraw or to refuse to cooperate at any stage of the study and not use any procedure or technique to coerce or imply that cooperation is obligatory. *Respondent cooperation is strictly on a voluntary basis. Respondents are entitled to withdraw from an interview at any stage or to refuse to cooperate in a research project. Interviewers should never lead respondents to believe they have no choice in their participation.*
4. will obtain and record respondent consent when it is known that the name and addresses or identity of the respondent may be passed to a third party for legal or other purposes, such as audio or video recordings; *By documenting the respondent's consent for a defined specific use of his/ her name and address we are confirming the respondent realizes we are asking something new of them, i.e., possible participation in another research project.*
5. will obtain permission and document consent of a parent, legal guardian or responsible guardian before interviewing children 12 years old or younger; *Interviewers must take special care when interviewing children or young people. The informed consent of the parent or responsible adult must first be obtained for interviews with children.*
6. will give respondents the opportunity to refuse to participate in the research when there is a possibility they may be identifiable even without the use of their name or address (e.g., because of the size of the population being sampled.) *Respondent cooperation is strictly on a voluntary basis. Respondents are entitled to withdraw from a research project. Company policies and/or interviewer instructions should state the interviewer must give respondents the opportunity to not participate for any reason.*

Interviewers ...

1. will treat the respondent with respect and not influence him or her through direct or indirect attempts, including the framing of questions, a respondent's opinion or attitudes on any issue. *Interviewers cannot ask questions in a way that leads or influences respondents' answers, nor can they provide their own opinions, thoughts or feelings that might bias a respondent and therefore impact the answers they give.*
2. will obtain and document permission of a parent, legal guardian or responsible guardian before interviewing children 12 years old or younger. Prior to obtaining permission, the interviewer should divulge the subject matter, length of interview and other special tasks that will be required. *Interviewers must take special care when interviewing children and young people. The informed consent of the parent or responsible adult must first be obtained for interviews with children. Parents or responsible adults must be told some specifics about the interview process and special tasks, such as audio or video recording, taste testing, respondent fees and special tasks, before permission is obtained.*

RESPONSIBILITIES TO CLIENTS

Data Collection Companies ...

1. will ensure that each study is conducted according to the client's specifications; *Procedures are implemented to conform or verify that client specifications are being followed.*
2. will observe confidentiality with all research techniques or methodologies and with information considered confidential or proprietary. Information will not be revealed that could be used to identify clients or respondents without proper authorization; *Respondent information will be linked to data collected only for research purposes and will not be used for any purpose other than legitimate research. Protect the confidentiality of anything learned about the respondent and/or his or her business.*
3. will ensure that companies, their employees and subcontractors involved in data collection take all reasonable precautions so that no more than one survey is conducted in one interview without explicit permission from the sponsorship company or companies; *Company policies or procedures indicate the practice of conducting more than one survey within an interview is not done without specific permission from the relevant clients.*
4. will report research results accurately and honestly; *Describe how the research was done in enough detail that a skilled researcher could repeat the study; provide data representative of a defined population or activity and enough data to yield projectable results; present the results understandably and fairly, including any results that may seem contradictory or unfavorable.*
5. will not misrepresent themselves as having qualifications, experience, skills or facilities that they do no possess; *If regularly subcontracting data collection, should not infer to clients and prospective clients that they possess this capability "in house"; claim only legitimate academic degrees, clients and other qualifications.*
6. will refrain from referring to membership in the Marketing Research Association as proof of competence, since the Association does not certify any person's or organization's competency or skill level. *MRA does not currently have a certification program for marketing research competency, therefore while members can state their membership in the Association, they cannot claim that this automatically conveys a message of their competency to carry out the marketing research process.*

RESPONSIBILITIES TO DATA COLLECTORS

Clients ...

1. will be responsible for providing products and services that are safe and fit for their intended use and disclose/label all product contents; *It is the client's responsibility to ensure that all test products are in compliance with all safety standards and that all product contents information is provided to the data collectors. Data Collectors should request in writing all pertinent information as well as emergency numbers for respondents and themselves.*
2. will provide oral or written instructions; *To ensure the success of the research, detailed instructions are to be provided prior to the start of any project. These instructions must be written and then confirmed orally for: understanding, ability of the agency to implement and agreement to comply.*
3. will not ask our members who subcontract research to engage in any activity that is not acceptable as defined in this Code or that is prohibited under any applicable federal, state and local laws, regulations and ordinances. *All MRA Members have agreed to comply with the Code as written and thus will not agree to, or ask anyone else to, knowingly violate any of the points of the Code.*

RESPONSIBILITIES TO THE GENERAL PUBLIC AND BUSINESS COMMUNITY

Data Collection Companies ...

1. will not intentionally abuse public confidence in marketing and opinion research; *Marketing research shall be conducted and reported for the sole purpose of providing factual information upon which decisions will be made. At no time is marketing research information to be used to intentionally mislead public opinion. Instances of abuse of public confidence undermine the credibility of our Industry.*
2. will not represent a non-research activity to be marketing and opinion research, such as:
    - questions whose sole objective is to obtain personal information about respondents, whether for legal, political, private or other purposes,
    - the compilation of lists, registers or data banks of names and addresses for any non-research purposes (e.g., canvassing or fundraising),
    - industrial, commercial or any other form of espionage,
    - the acquisition of information for use by credit rating services or similar organizations,
    - sales or promotional approaches to the respondent,

APPENDIX G

Traffic Control

APPENDIX G: TRAFFIC CONTROL

This appendix presents the traffic control tactics implemented in developing evacuation time-estimates for STP.

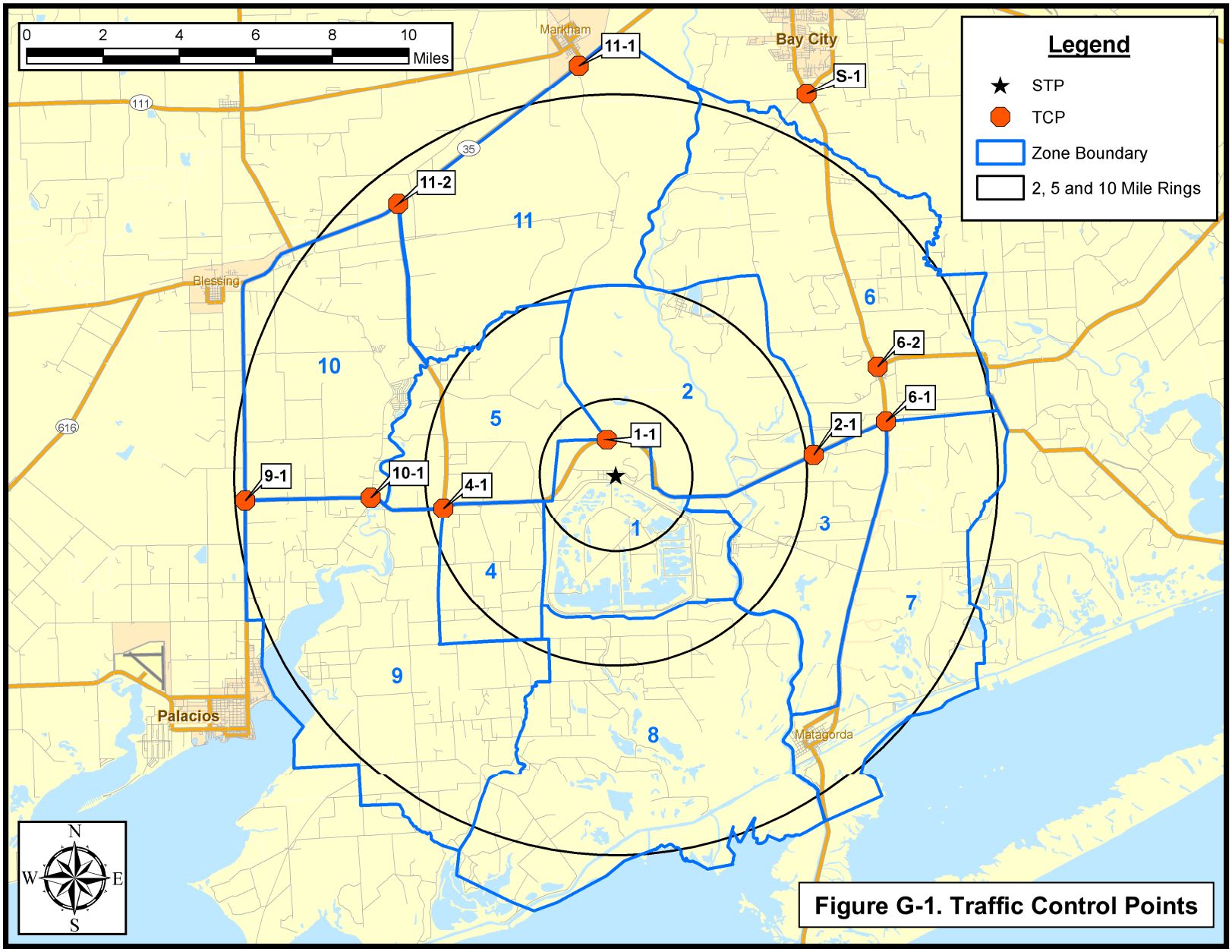


Figure G-1. Traffic Control Points

Table G-1. Traffic Control Points					
Priority	**TCP ID #**	**Town**	**Intersection Location**	**# of Guides**	**# of Cones**
1	S-1	Bay City	FM 2668 & STHY 60	2	6
1	1-1	Simpsonville	FM 521 & FM 1468/Buckeye Rd	1	3
1	2-1	Wadsworth	FM 521 & FM 2668	1	3
1	4-1	Simpsonville	FM 521 & STHY 1095	1	6
1	6-1	Wadsworth	FM 521 & STHY 60	1	3
1	6-2	Wadsworth	FM 521 & STHY 60	1	3
1	9-1	Blessing	FM 521 & STHY 35	1	3
1	10-1	Ashby	FM 521 & FM 2853	1	6
1	11-1	Markham	FM 1468 & STHY 35	1	3
1	11-2	Elmaton	FM 1095 & STHY 35	1	3
Total Manpower & Equipment for EPZ				**11**	**39**

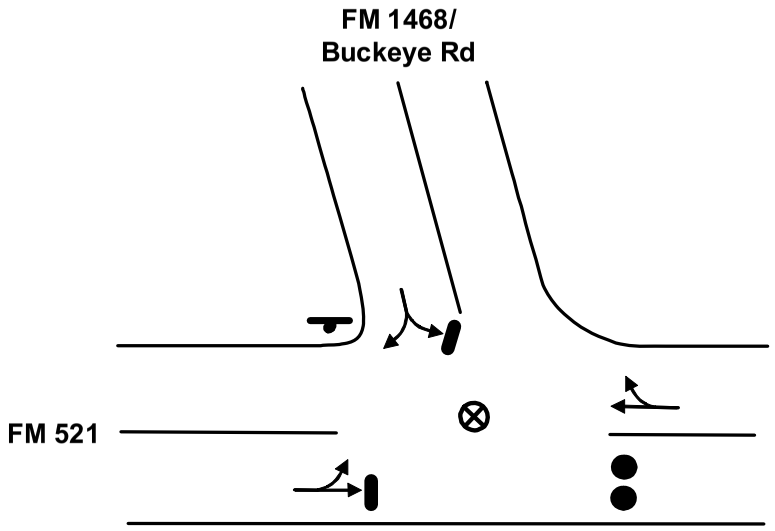
TCP

TOWN: SIMPSONVILLE

LOCATION: FM 521 & FM 1468/BUCKEYE RD

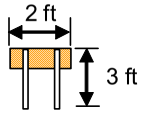
TCP ID: 1-1

ERPA: 1



KEY

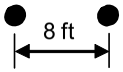
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage eastbound movement on FM 521

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
3 Traffic Cones

LOCATION PRIORITY

1

N

****Traffic Guide should position himself safely**

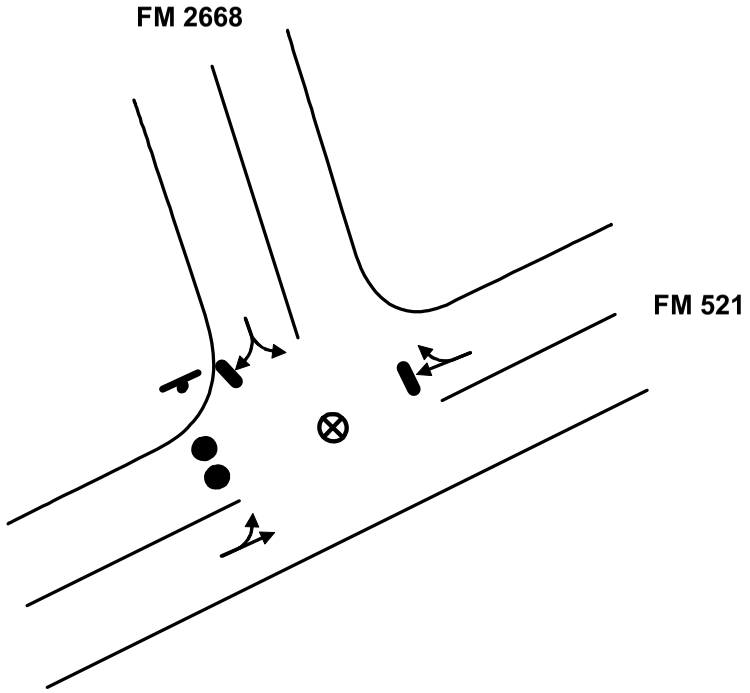
TCP

TOWN: WADSWORTH

LOCATION: FM 521 & FM 2668

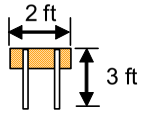
TCP ID: 2-1

ERPA: 2



KEY

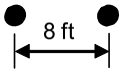
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage westbound movement on FM 521

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
3 Traffic Cones

LOCATION PRIORITY

1

N

****Traffic Guide should position himself safely**

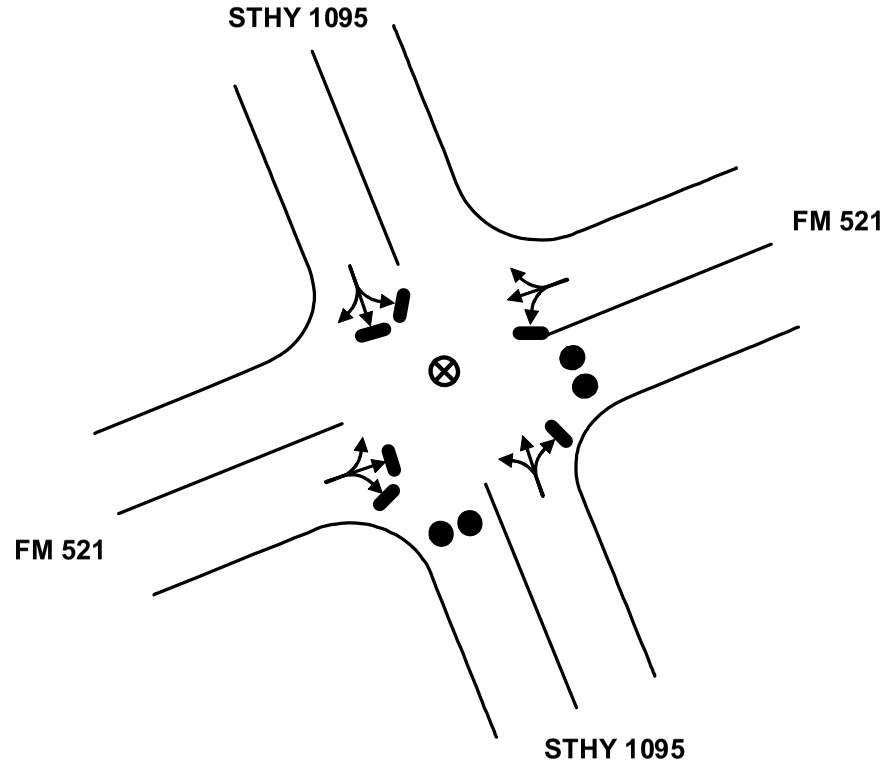
TCP

TOWN: SIMPSONVILLE

LOCATION: FM 521 & STHY 1095

TCP ID: 4-1

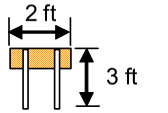
ERPA: 4



****Traffic Guide should position himself safely**

KEY

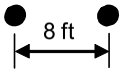
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage eastbound movement on FM 521
2. Discourage southbound movement on STHY 1095

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
6 Traffic Cones

LOCATION PRIORITY

1

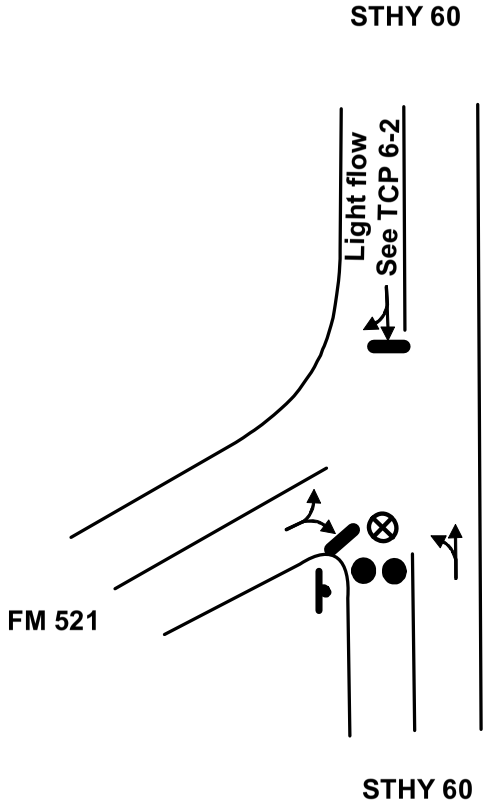
TCP

TOWN: WADSWORTH

LOCATION: FM 521 & STHY 60

TCP ID: 6-1

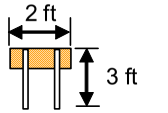
ERPA: 6



****Traffic Guide should position himself safely**

KEY

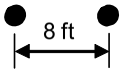
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage southbound movement on STHY 60
2. Permit westbound movement on FM 521; traffic will be turned north at TCP 2-1

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
3 Traffic Cones

LOCATION PRIORITY

1

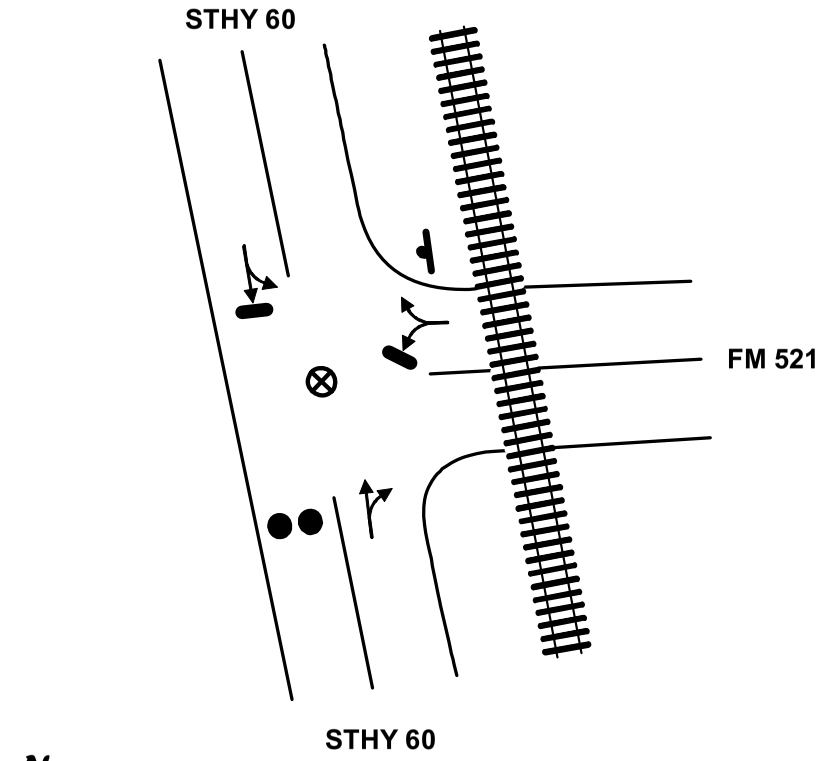
TCP

TOWN: WADSWORTH

LOCATION: FM 521 & STHY 60

TCP ID: 6-2

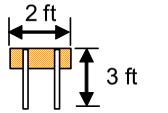
ERPA: 6



****Traffic Guide should position himself safely**

KEY

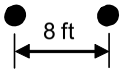
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage southbound movement on STHY 60

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
3 Traffic Cones

LOCATION PRIORITY

1

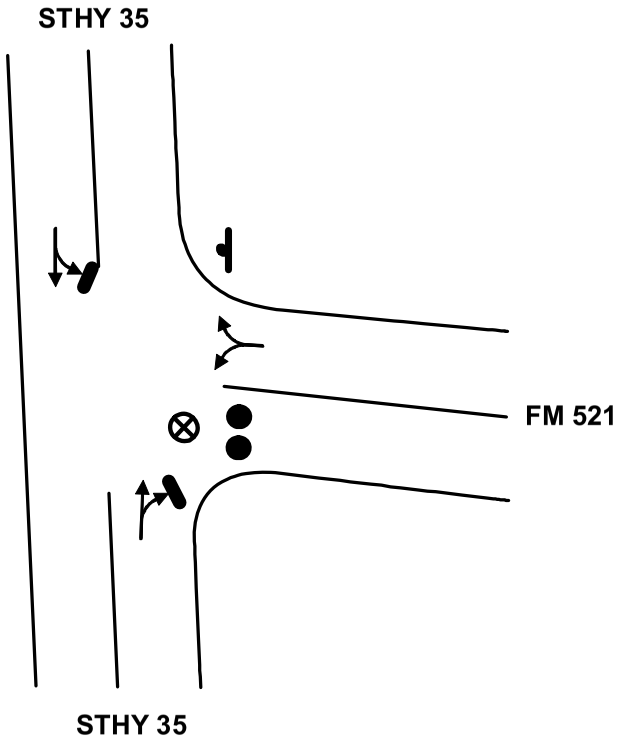
TCP

TOWN: BLESSING

LOCATION: FM 521 & STHY 35

TCP ID: 9-1

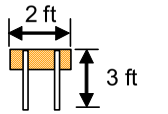
ERPA: 9



****Traffic Guide should position himself safely**

KEY

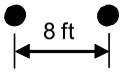
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage eastbound movement on FM 521

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
3 Traffic Cones

LOCATION PRIORITY

1

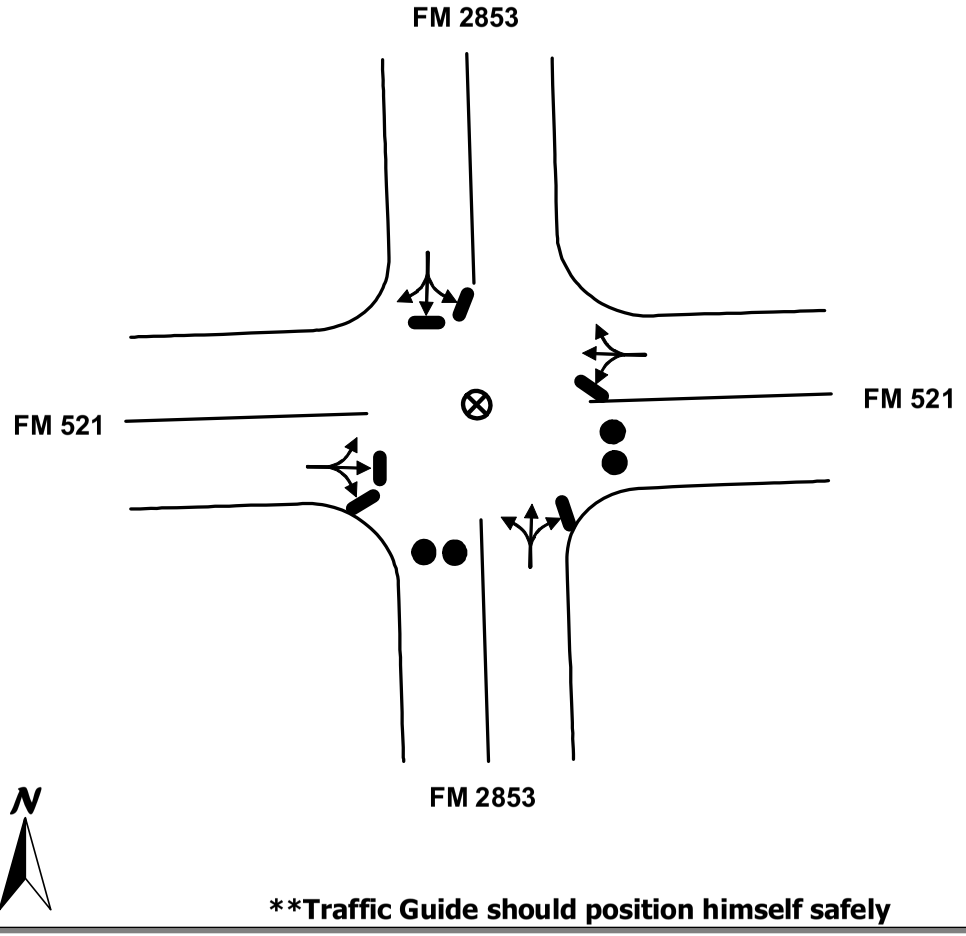
TCP

TOWN: ASHBY

LOCATION: FM 521 & FM 2853

TCP ID: 10-1

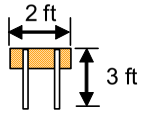
ERPA: 10



****Traffic Guide should position himself safely**

KEY

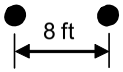
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage eastbound movement on FM 521
2. Discourage southbound movement on FM 2853

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
6 Traffic Cones

LOCATION PRIORITY

1

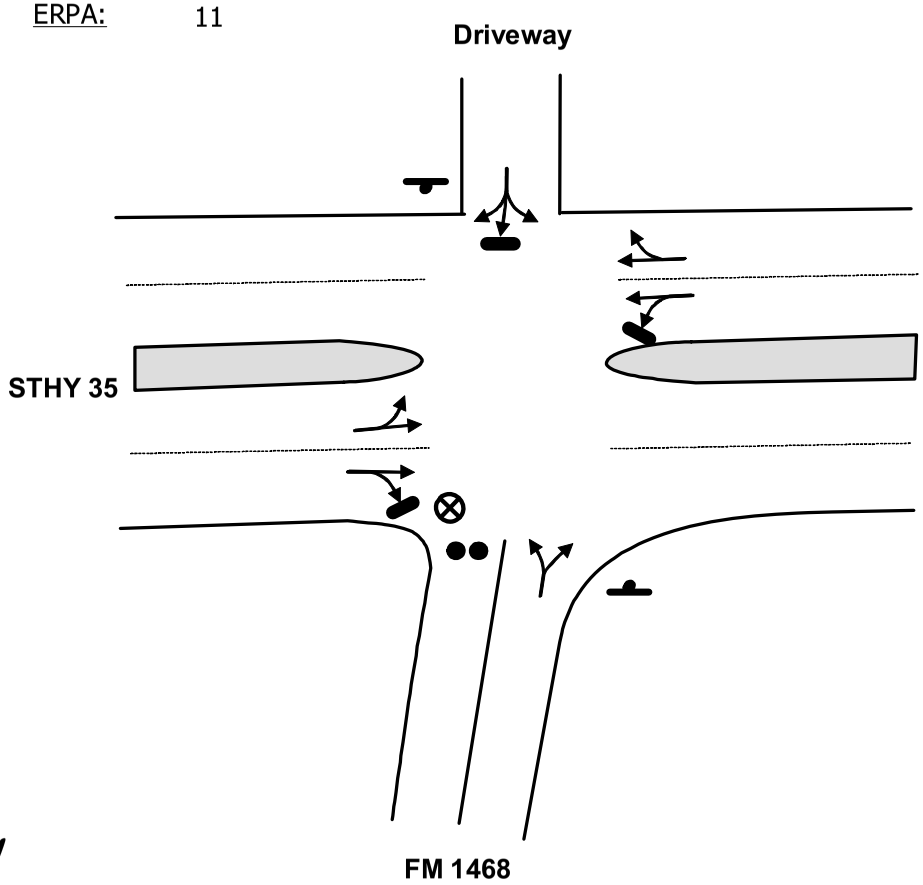
TCP

TOWN: MARKHAM

LOCATION: FM 1468 & STHY 35

TCP ID: 11-1

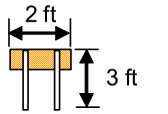
ERPA: 11



****Traffic Guide should position himself safely**

KEY

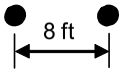
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage southbound movement on FM 1468

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
3 Traffic Cones

LOCATION PRIORITY

1

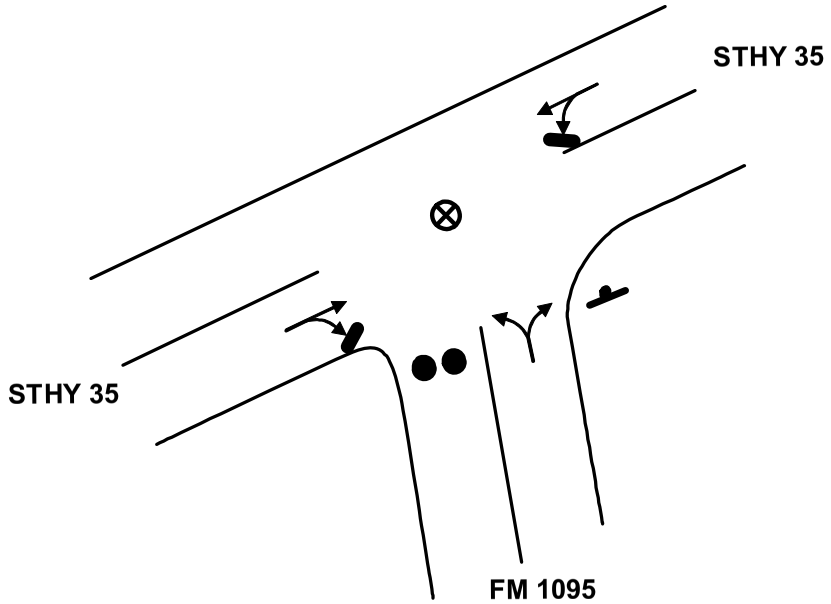
TCP

TOWN: ELMATON

LOCATION: FM 1095 & STHY 35

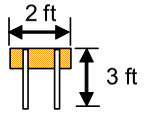
TCP ID: 11-2

ERPA: 11



KEY

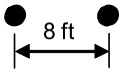
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage southbound movement on FM 1095

MANPOWER/EQUIPMENT ESTIMATE

1 Traffic Guide(s)
3 Traffic Cones

LOCATION PRIORITY

1

****Traffic Guide should position himself safely**

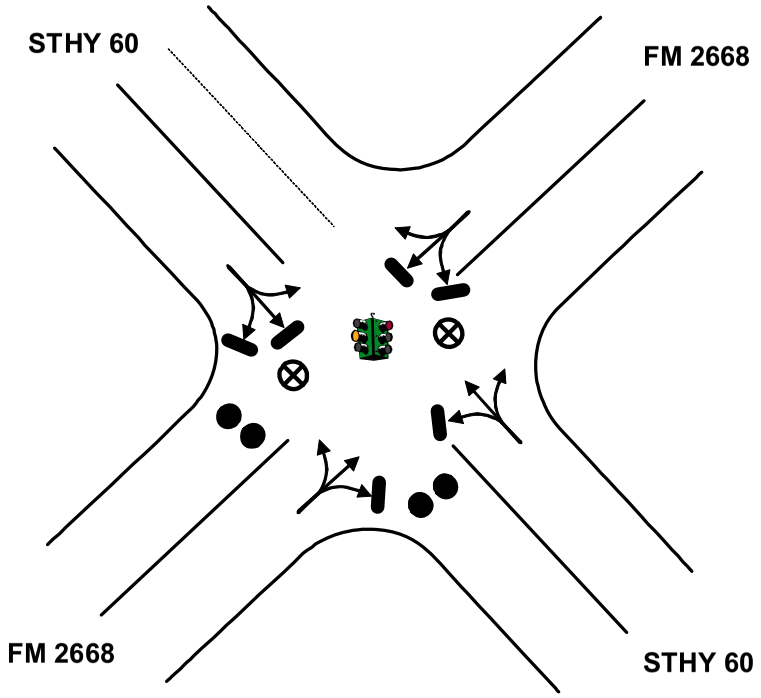
TCP

TOWN: BAY CITY

LOCATION: FM 2668 & STHY 60

TCP ID: S-1

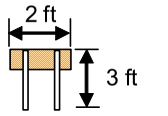
ERPA: Shadow



****Traffic Guide should position himself safely**

KEY

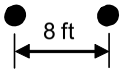
- MOVEMENT FACILITATED
- MOVEMENT DISCOURAGED/DIVERTED
- TRAFFIC GUIDE
- STOP SIGN
- TRAFFIC BARRICADE



2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY AND RAMPS)

- TRAFFIC SIGNAL
- TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



ACTIONS TO BE TAKEN

1. Discourage southbound movement on STHY 60
2. Discourage southbound movement on FM 2668

MANPOWER/EQUIPMENT ESTIMATE

2 Traffic Guide(s)
6 Traffic Cones

LOCATION PRIORITY

1

APPENDIX H

Evacuation Regions

APPENDIX H: EVACUATION REGIONS

This appendix presents the assumed voluntary evacuation percentages for each Evacuation Region (Table H-1) based on assumption 5 in Section 2.2, shown graphically in Figure 2-1. Maps of all Evacuation Regions are presented as Figures H-1 through H-22.

Table H-1. Percent of Zone Population Evacuating for Each Region																						
	REGION																					
	2-Mile Ring, 5-Mile Ring, Entire EPZ			2-Mile Radius and Downwind to 5-Miles							5-Mile Radius and Downwind to EPZ Boundary											
ZONE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2	35%	100%	100%	50%	50%	50%	100%	100%	100%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3	35%	100%	100%	50%	50%	50%	50%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
4	35%	100%	100%	100%	100%	50%	50%	50%	50%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
5	35%	100%	100%	50%	100%	100%	100%	50%	50%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
6	35%	35%	100%	35%	35%	35%	35%	35%	35%	35%	50%	50%	50%	50%	50%	100%	100%	100%	100%	50%	50%	50%
7	35%	35%	100%	35%	35%	35%	35%	35%	35%	35%	50%	50%	50%	50%	50%	50%	50%	50%	100%	100%	100%	100%
8	35%	35%	100%	35%	35%	35%	35%	35%	35%	35%	100%	100%	50%	50%	50%	50%	50%	50%	50%	50%	100%	100%
9	35%	35%	100%	35%	35%	35%	35%	35%	35%	35%	100%	100%	100%	100%	50%	50%	50%	50%	50%	50%	50%	100%
10	35%	35%	100%	35%	35%	35%	35%	35%	35%	35%	50%	100%	100%	100%	100%	100%	50%	50%	50%	50%	50%	50%
11	35%	35%	100%	35%	35%	35%	35%	35%	35%	35%	50%	50%	50%	100%	100%	100%	100%	50%	50%	50%	50%	50%

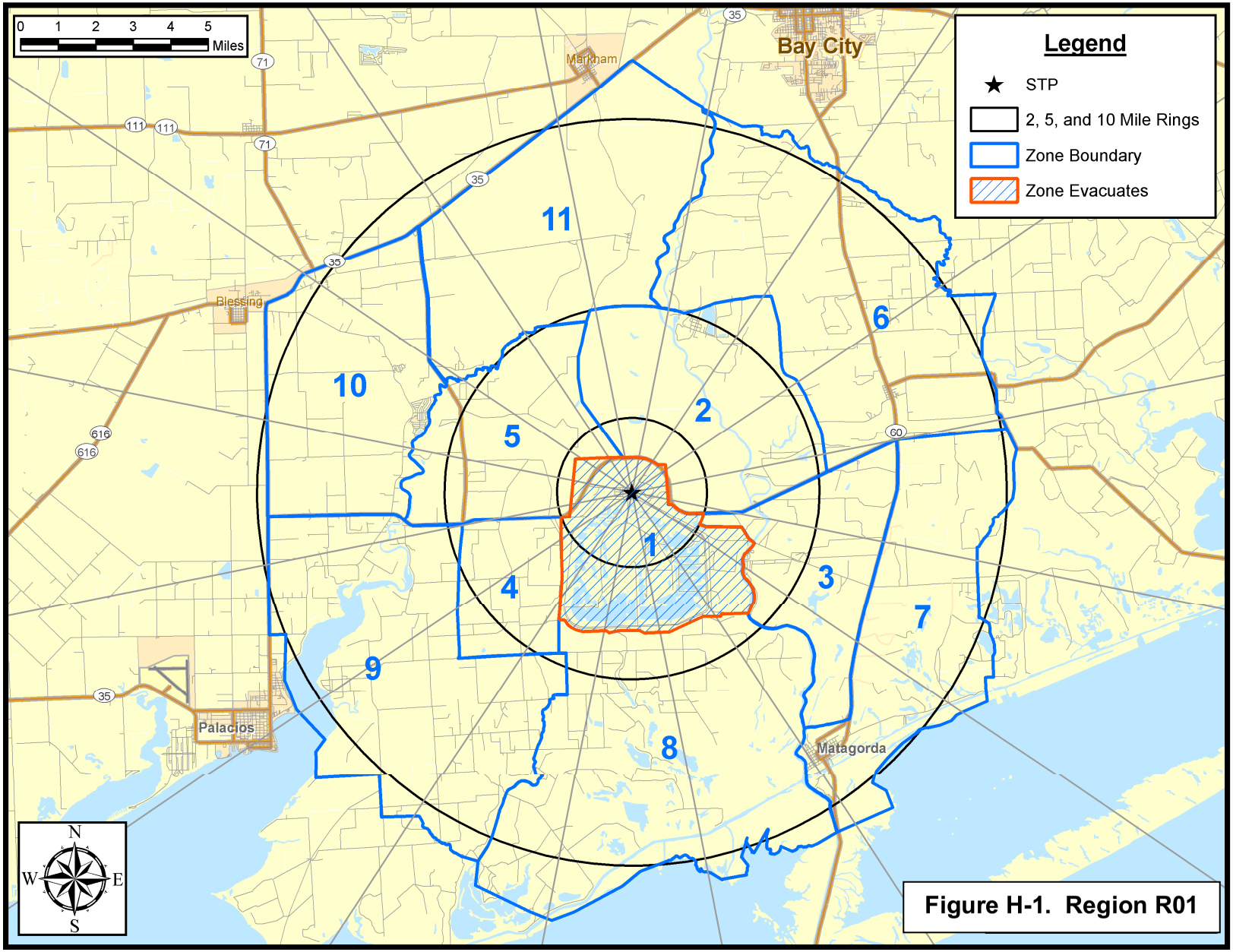


Figure H-1. Region R01

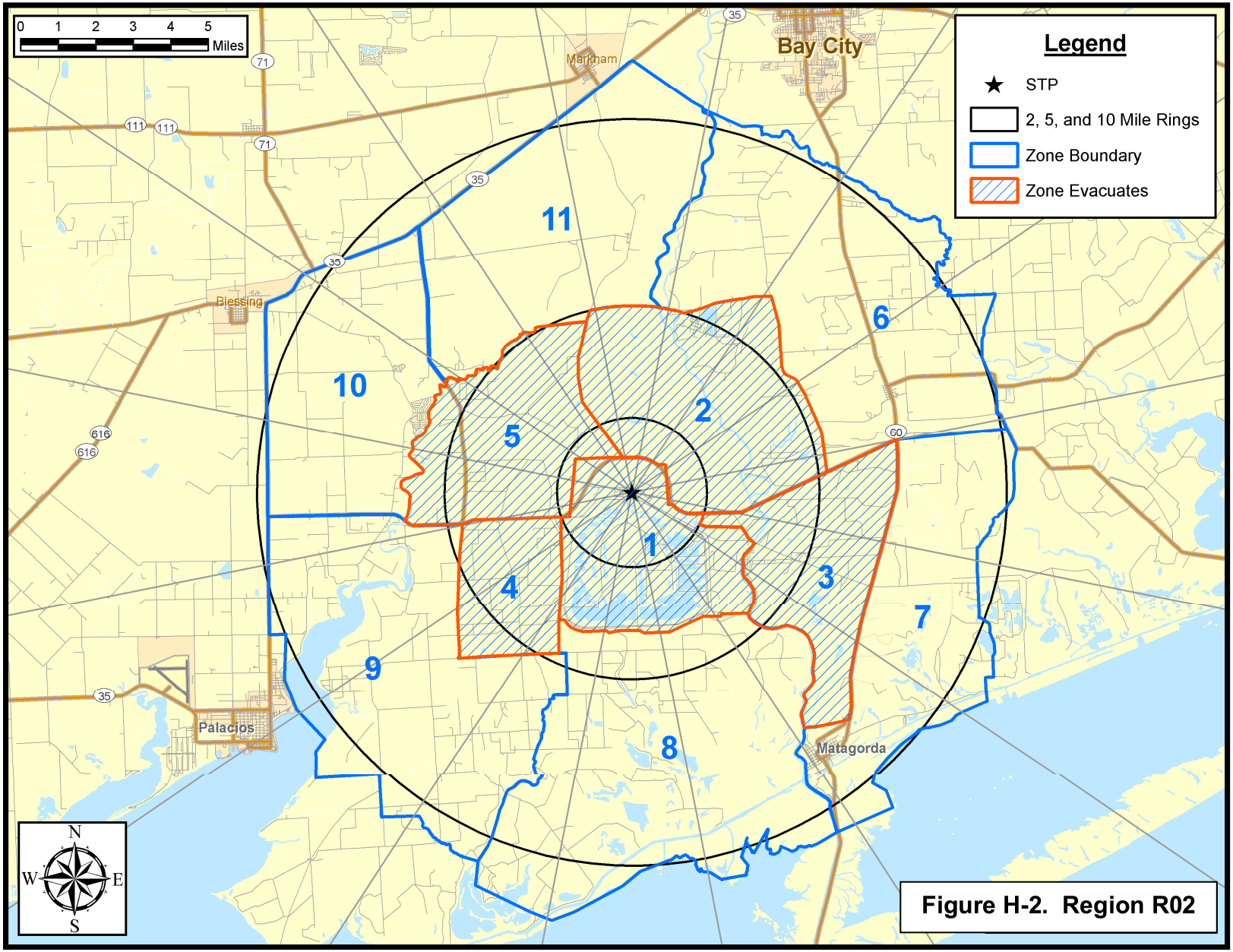


Figure H-2. Region R02

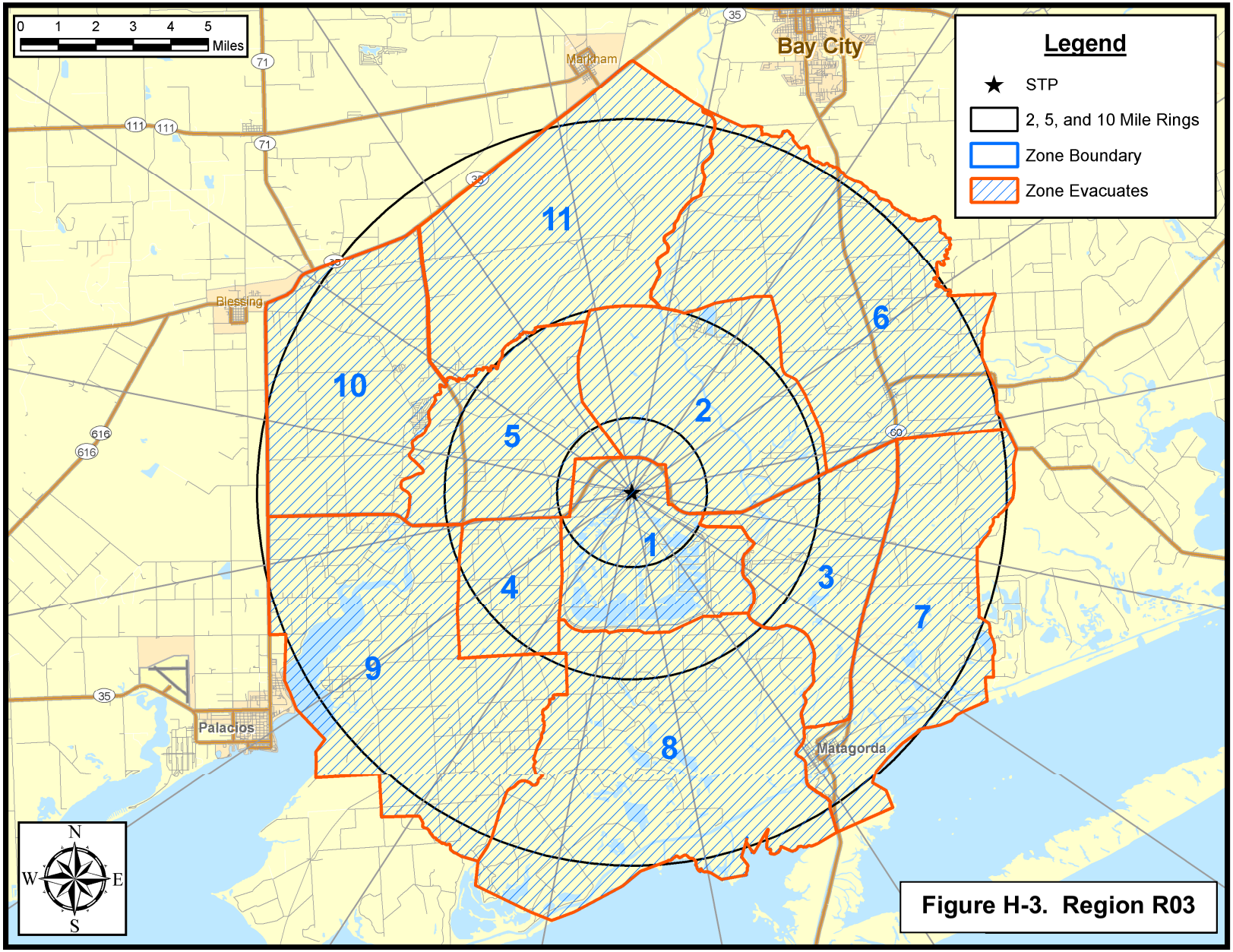


Figure H-3. Region R03

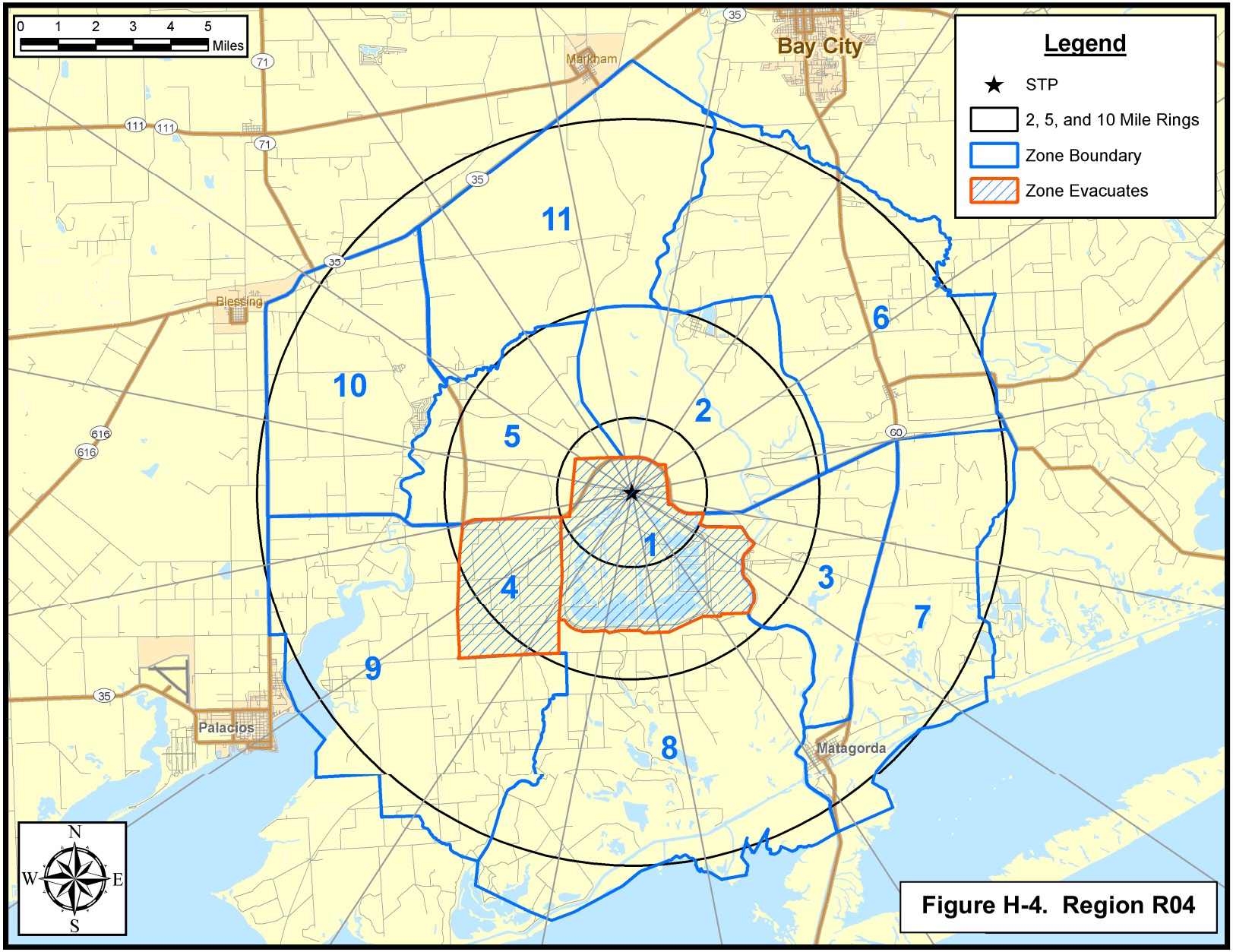


Figure H-4. Region R04

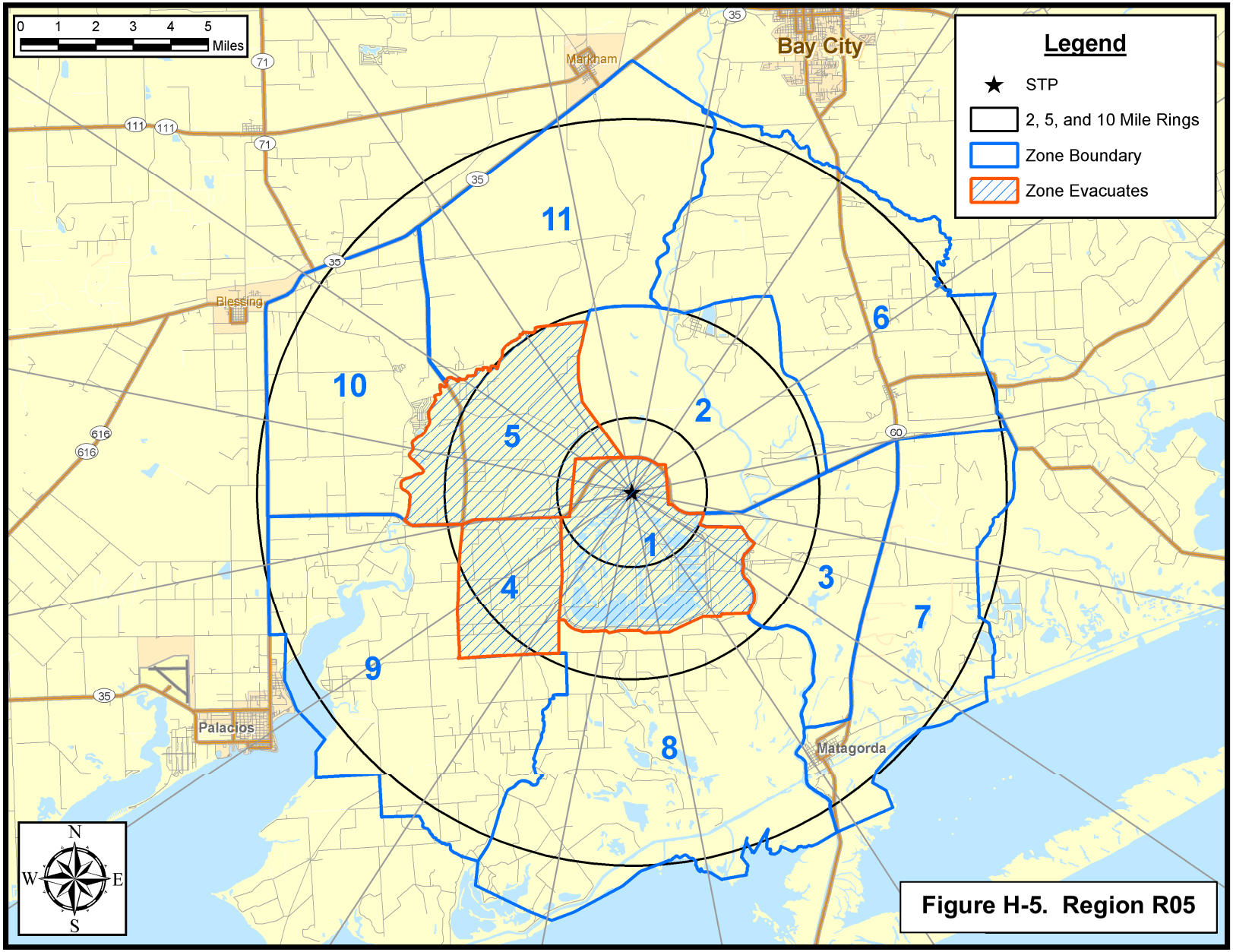


Figure H-5. Region R05

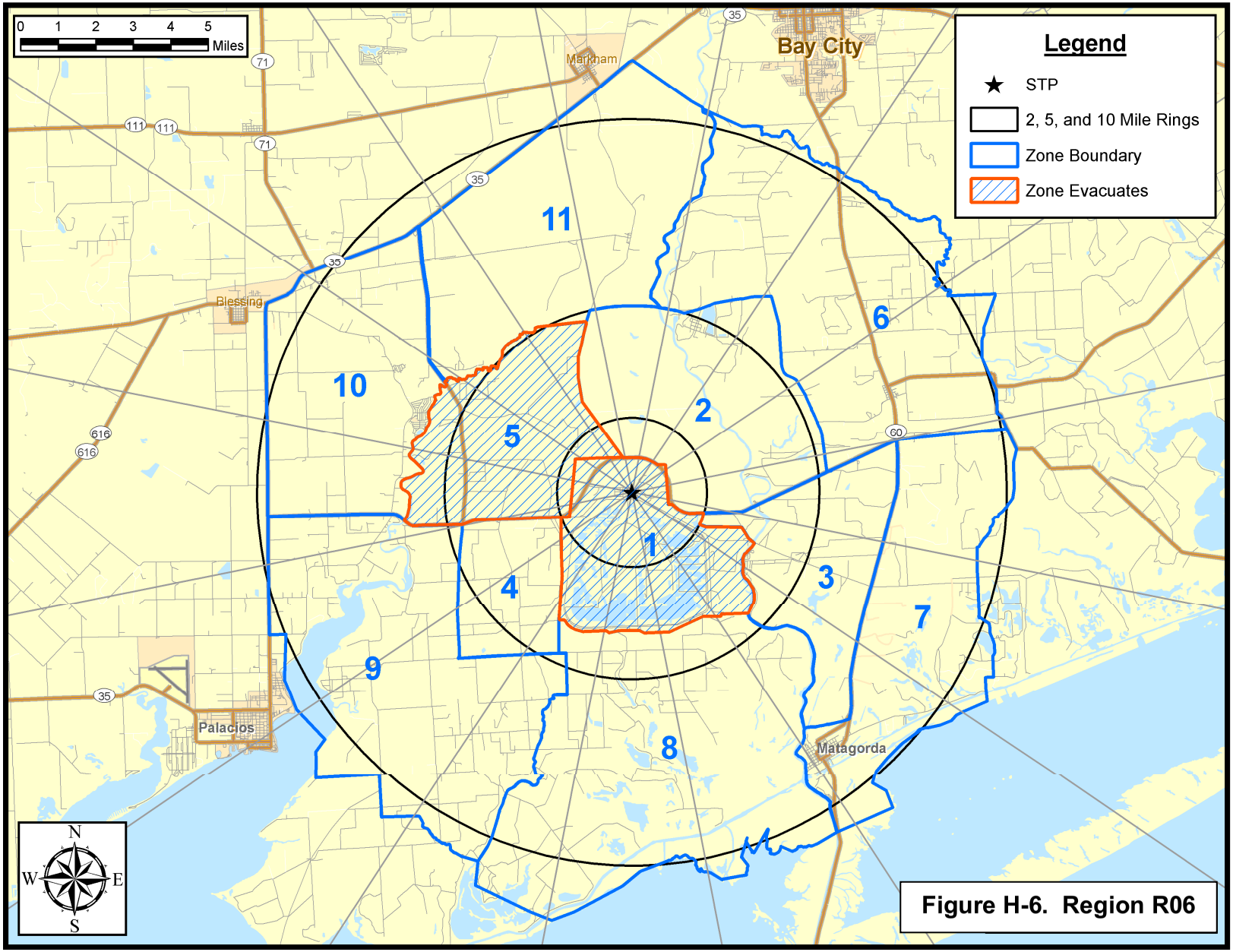


Figure H-6. Region R06

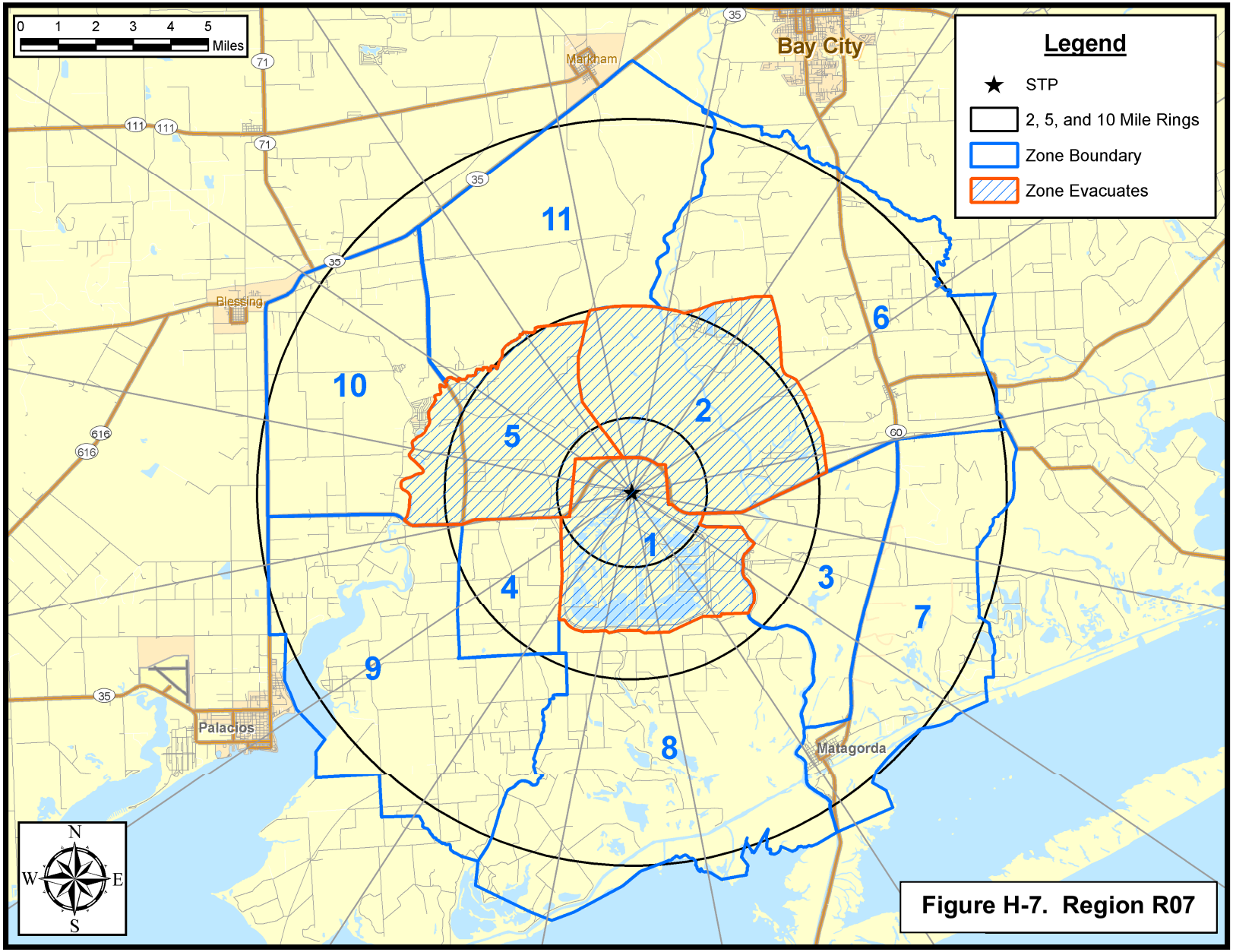


Figure H-7. Region R07

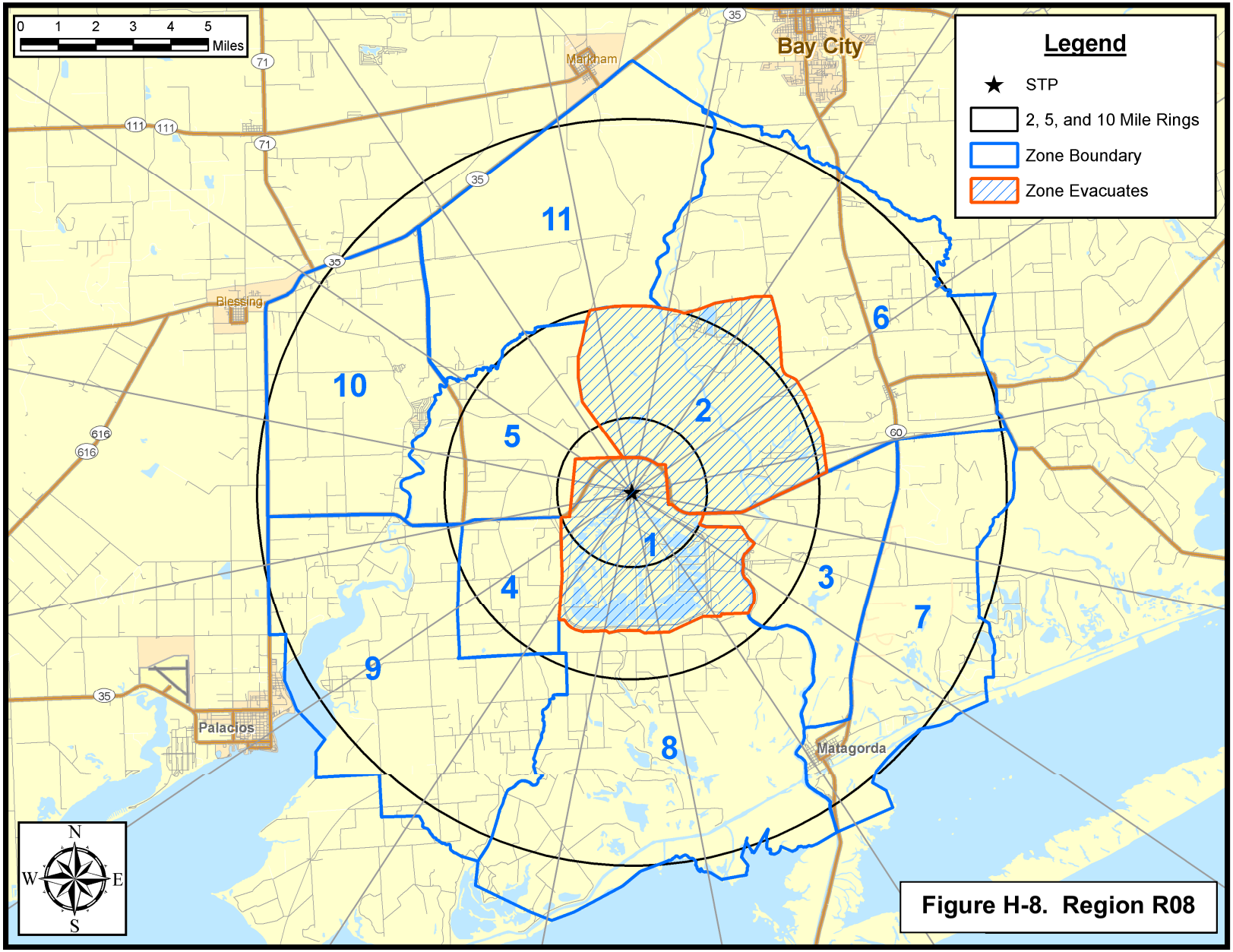


Figure H-8. Region R08

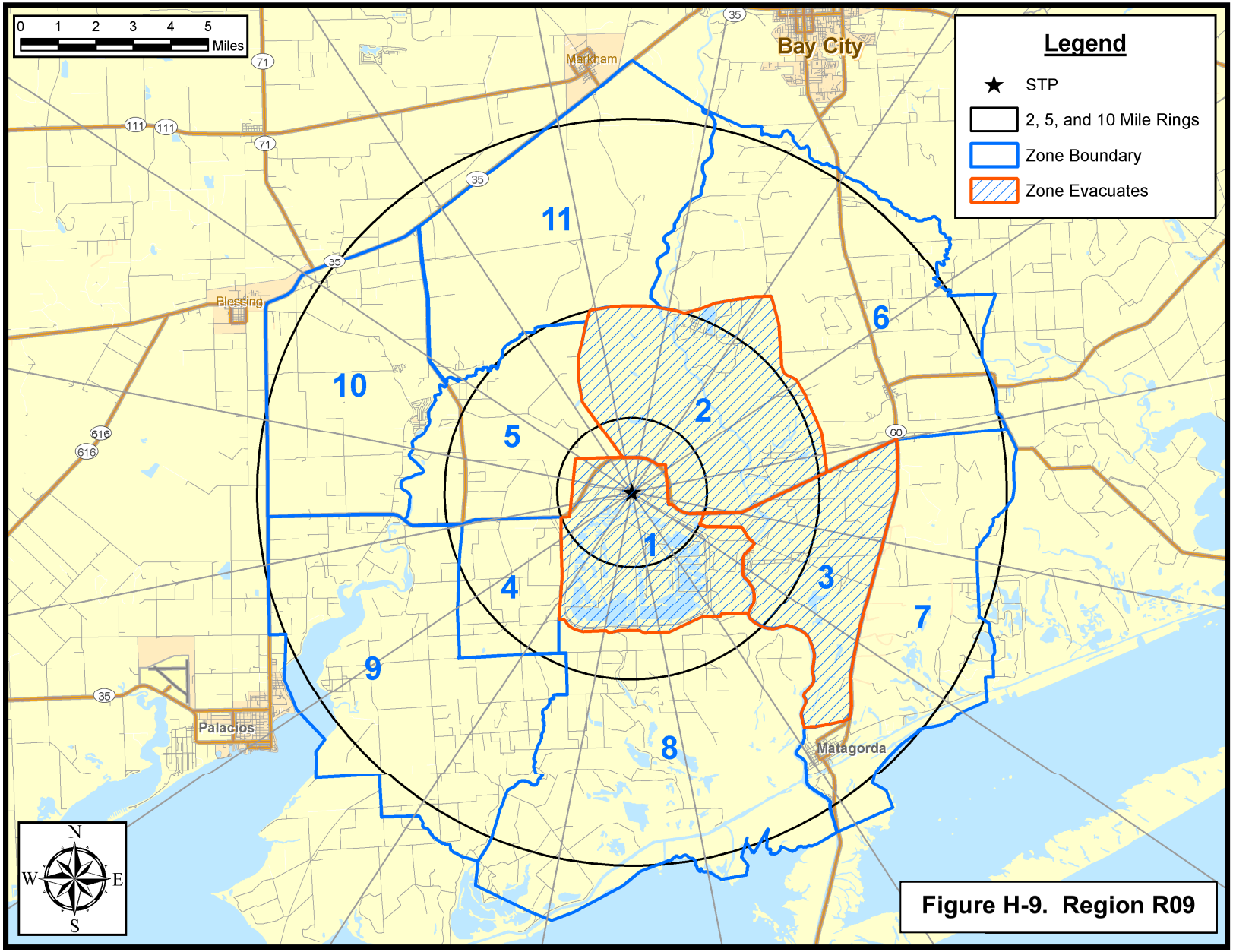


Figure H-9. Region R09

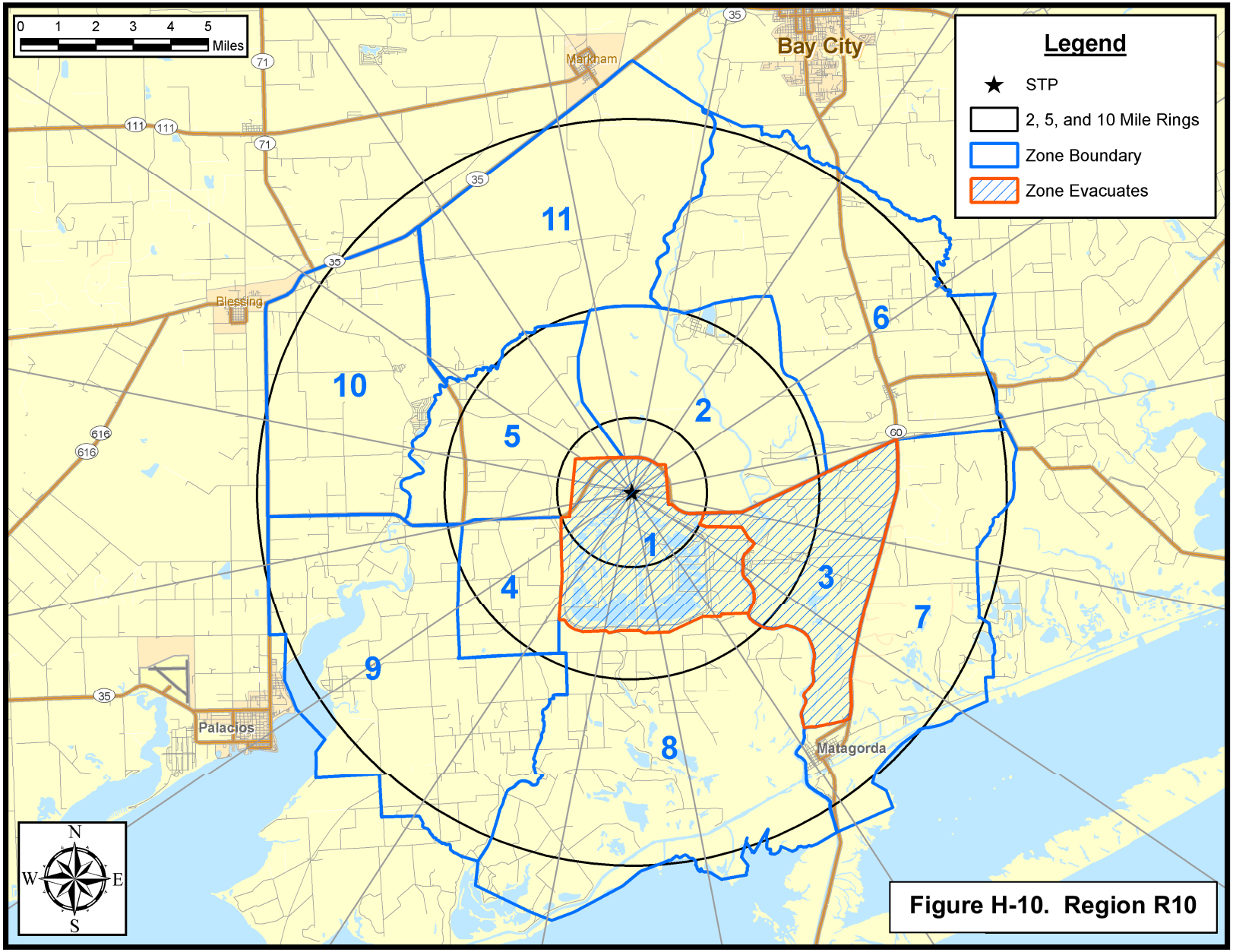


Figure H-10. Region R10

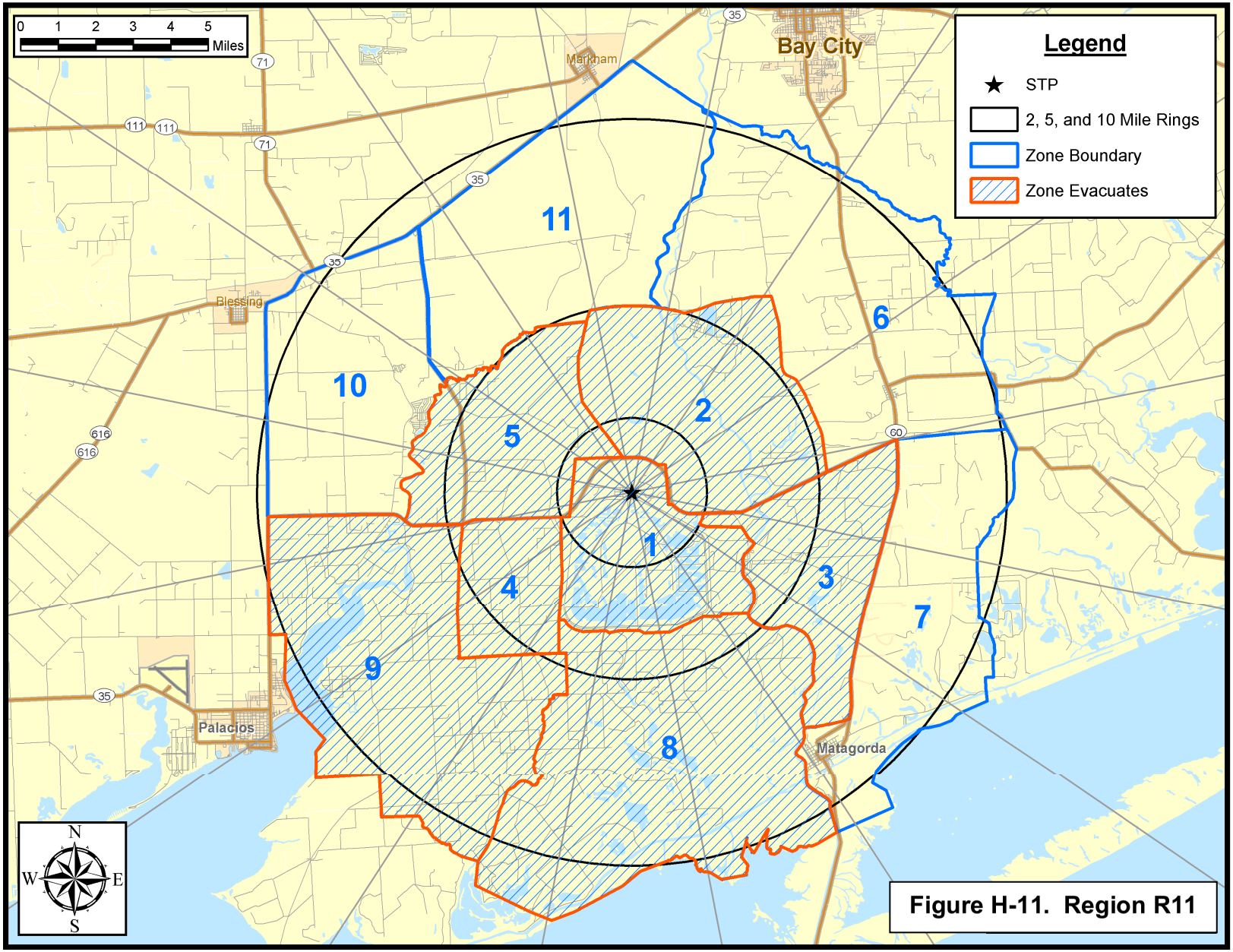


Figure H-11. Region R11

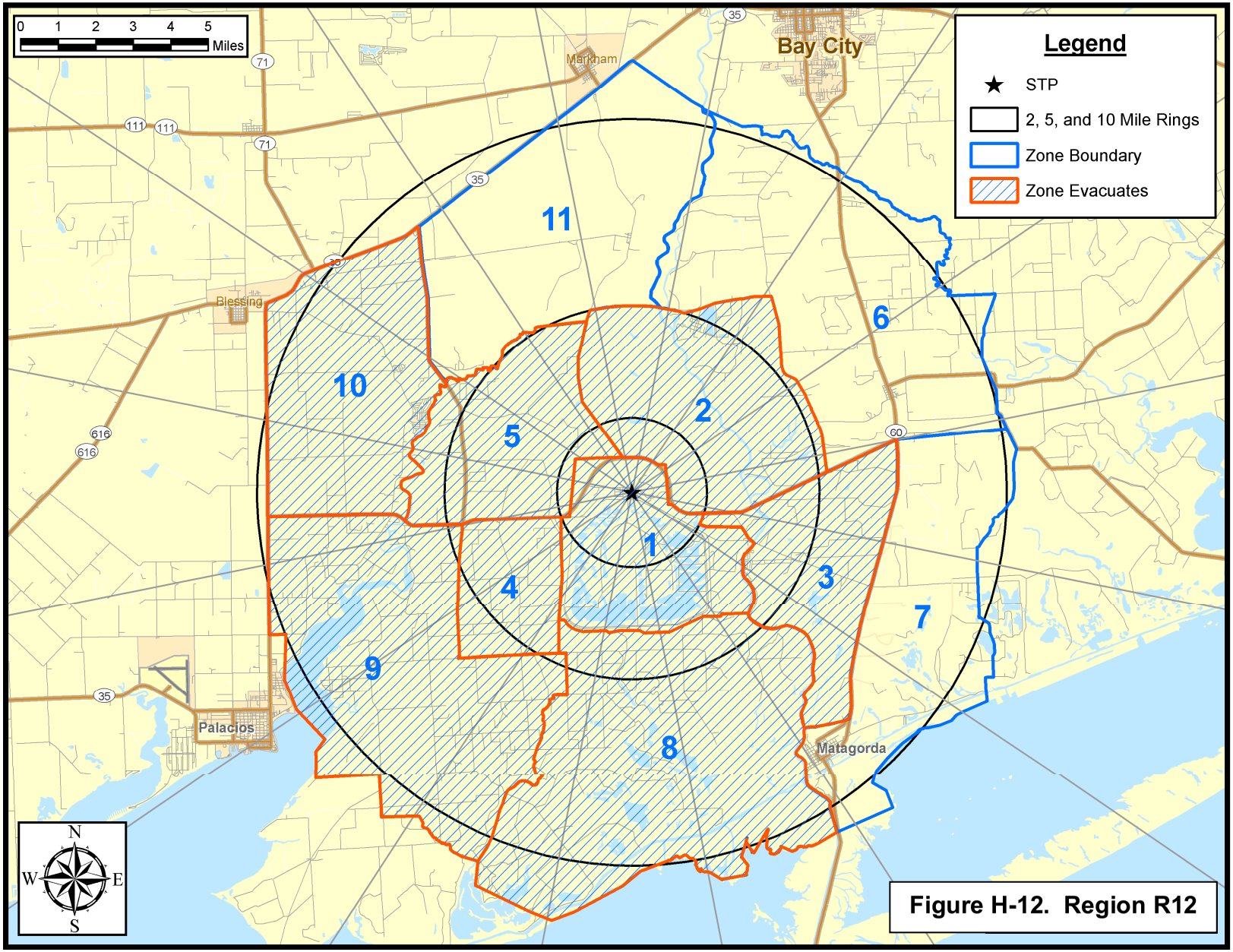


Figure H-12. Region R12

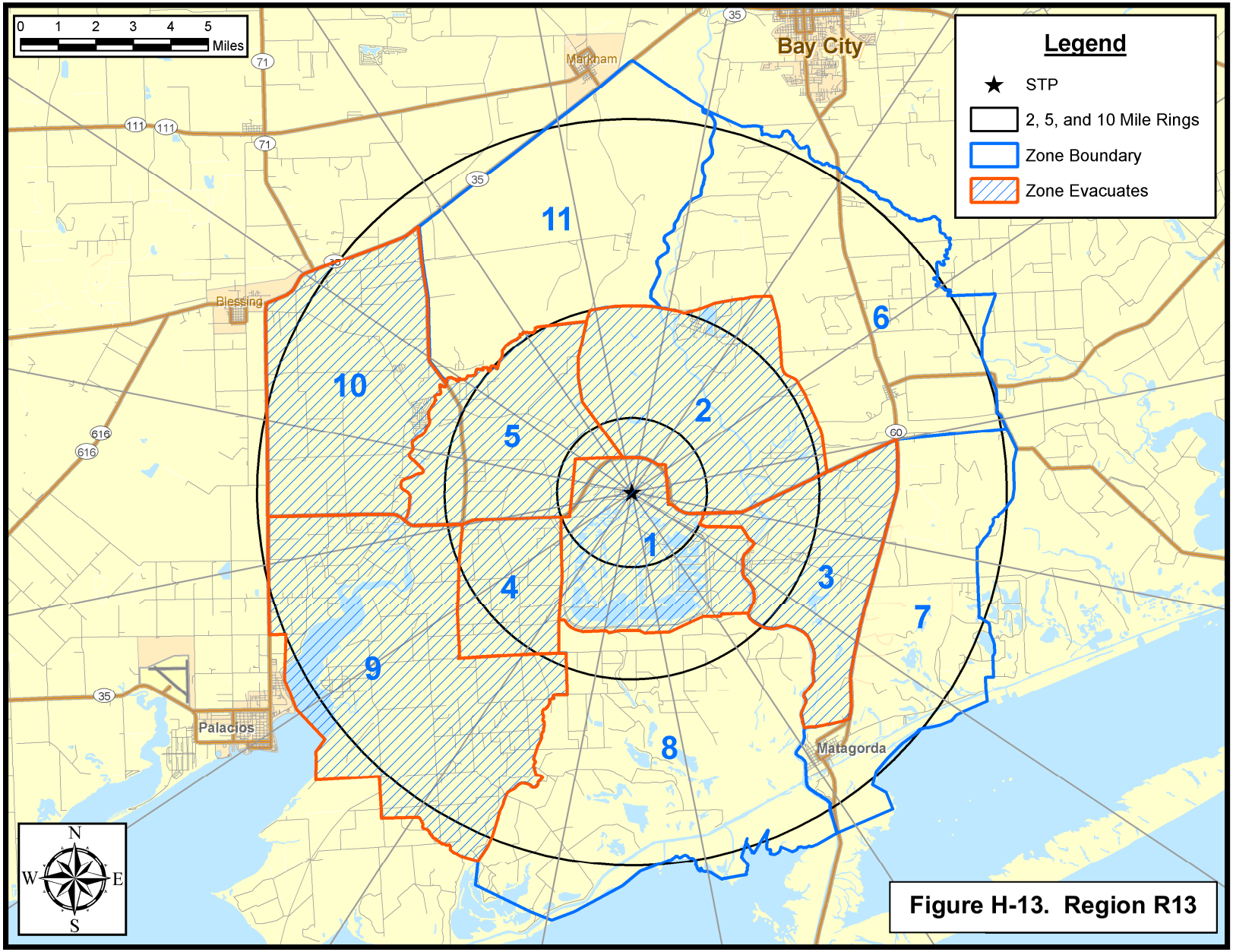


Figure H-13. Region R13

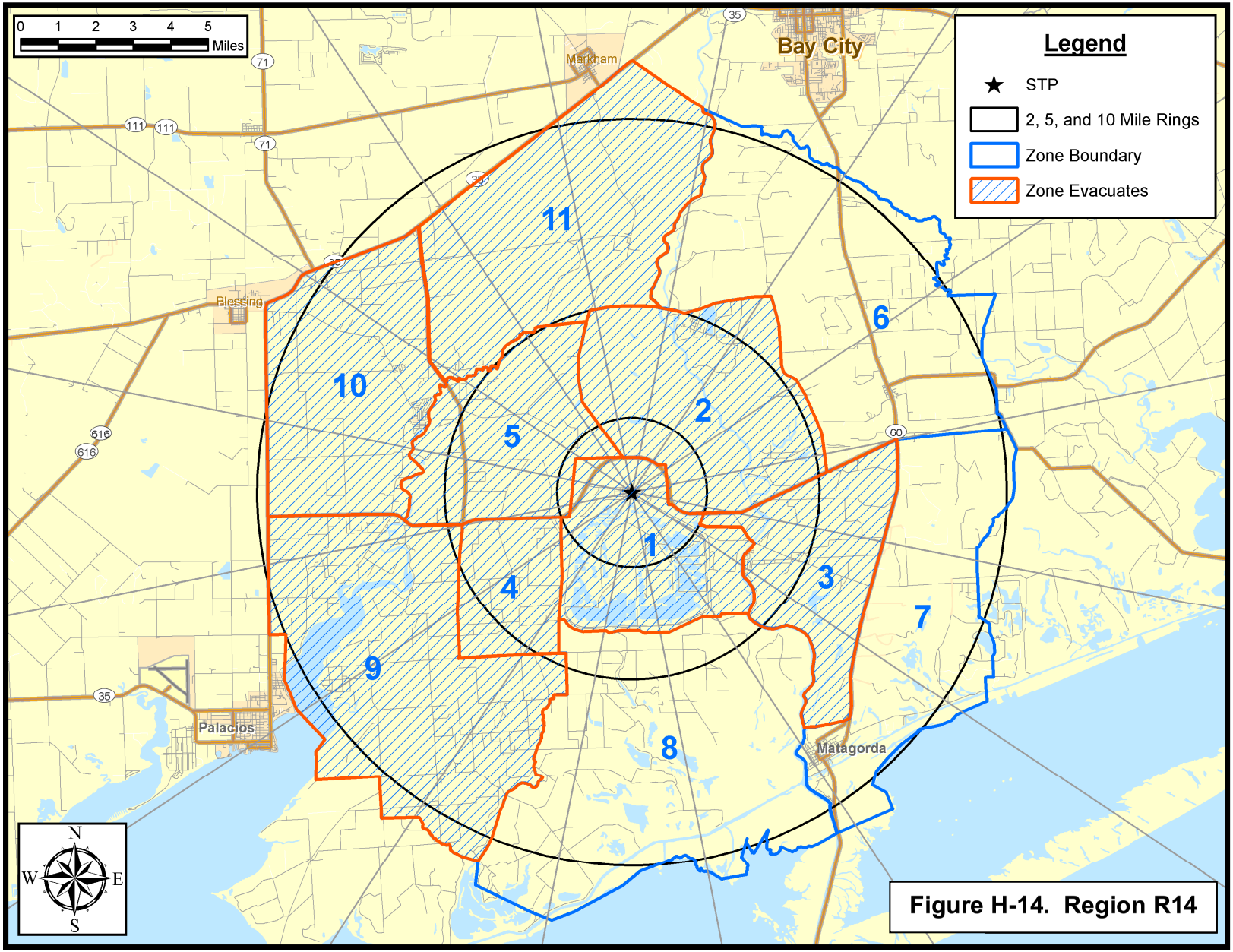


Figure H-14. Region R14

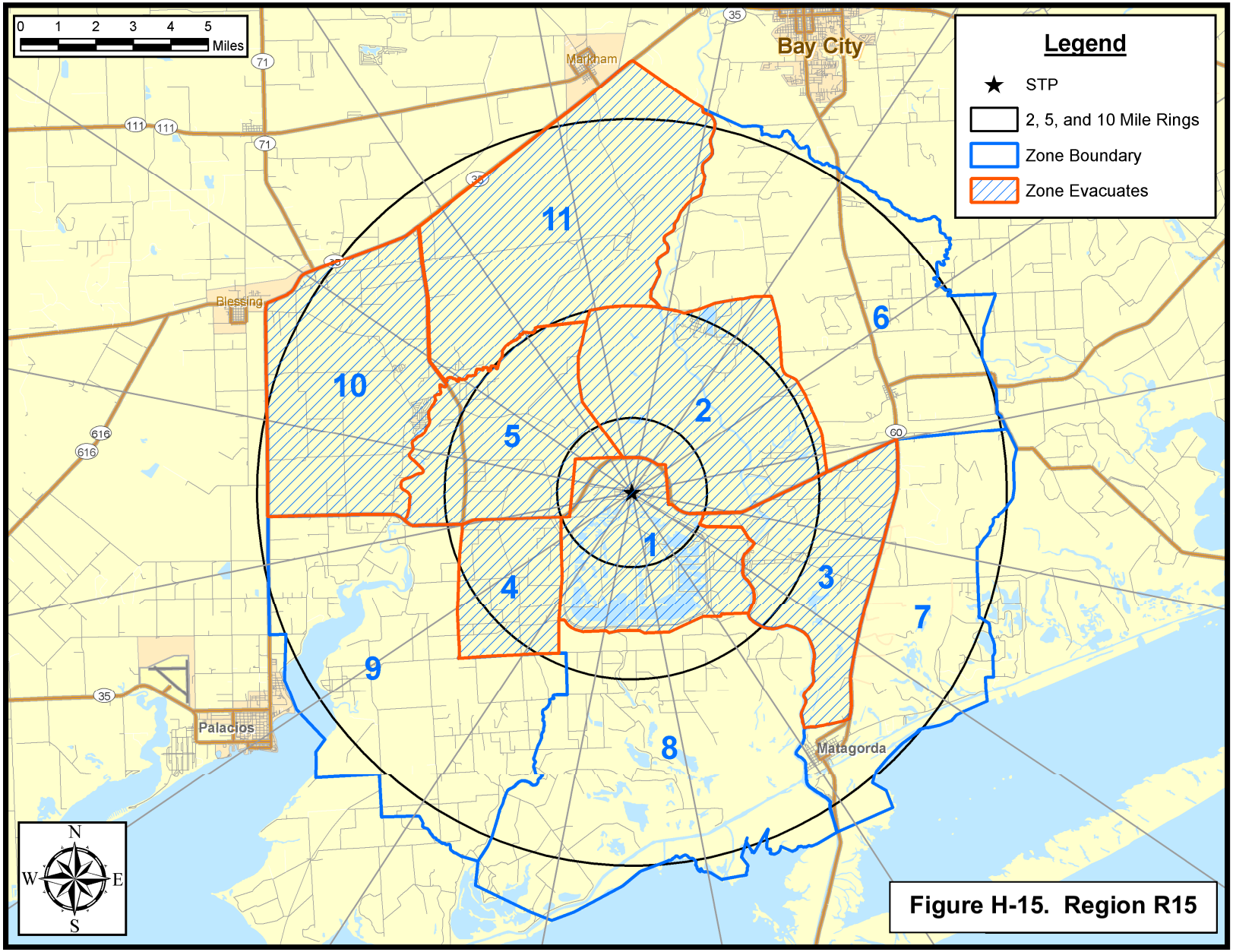


Figure H-15. Region R15

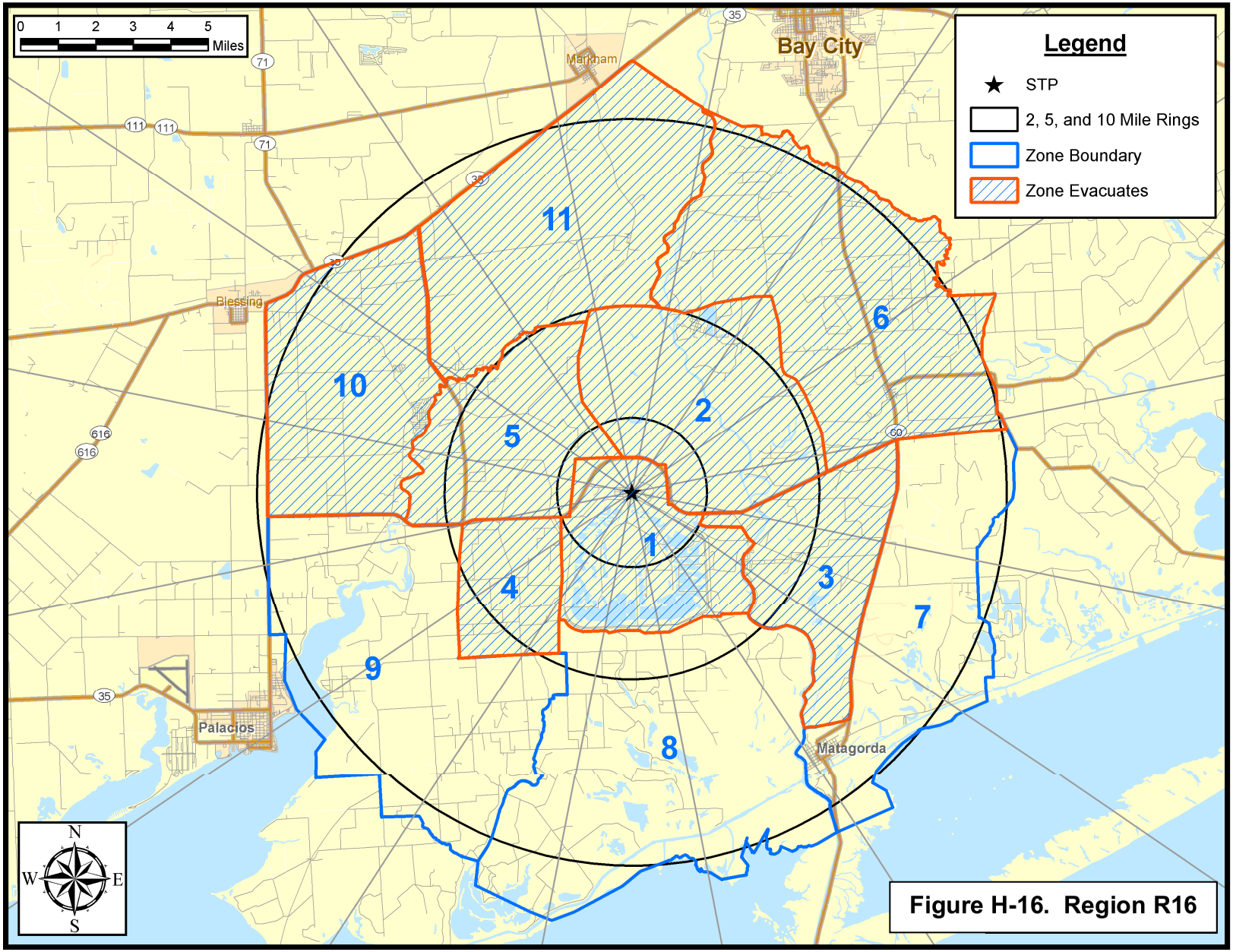


Figure H-16. Region R16

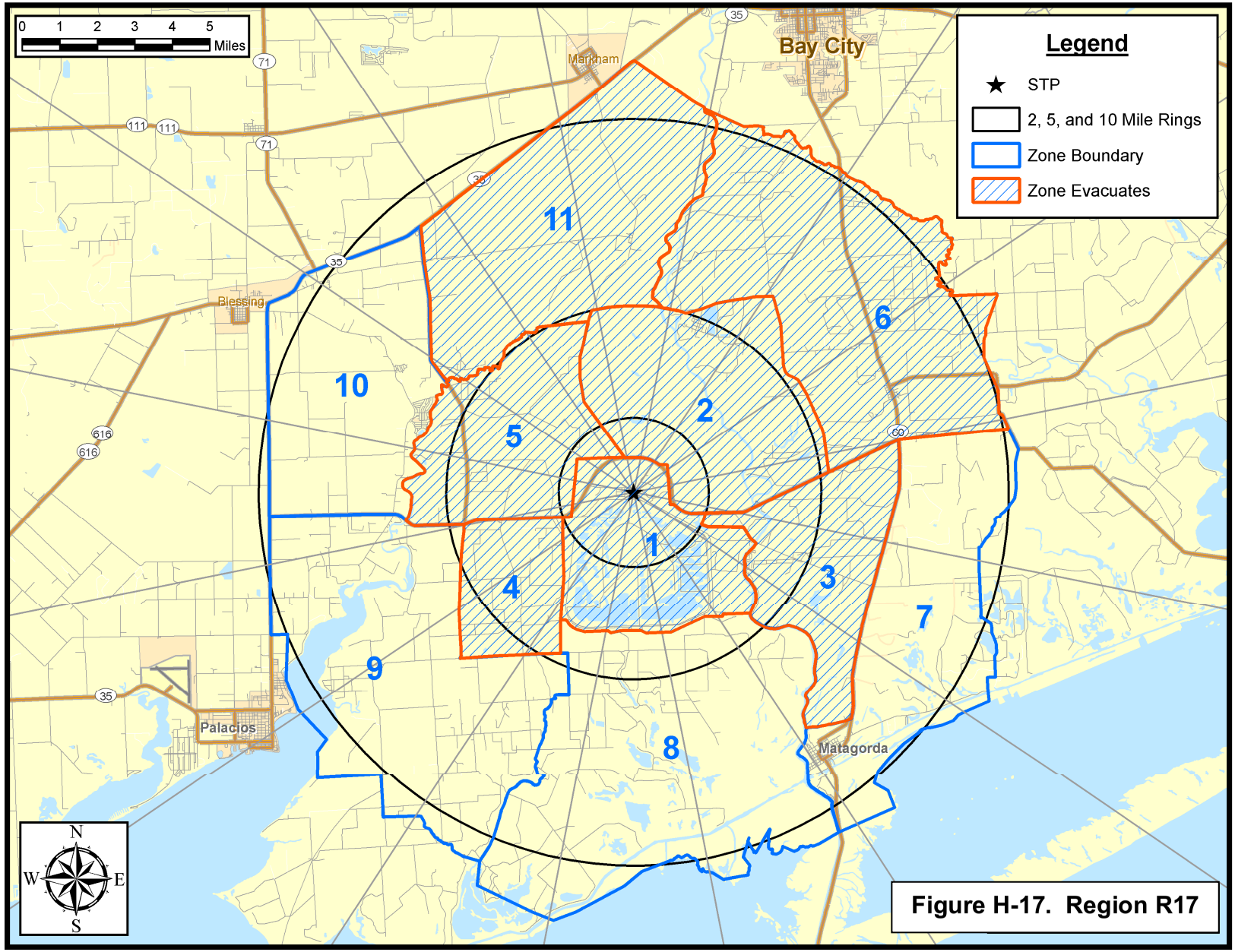


Figure H-17. Region R17

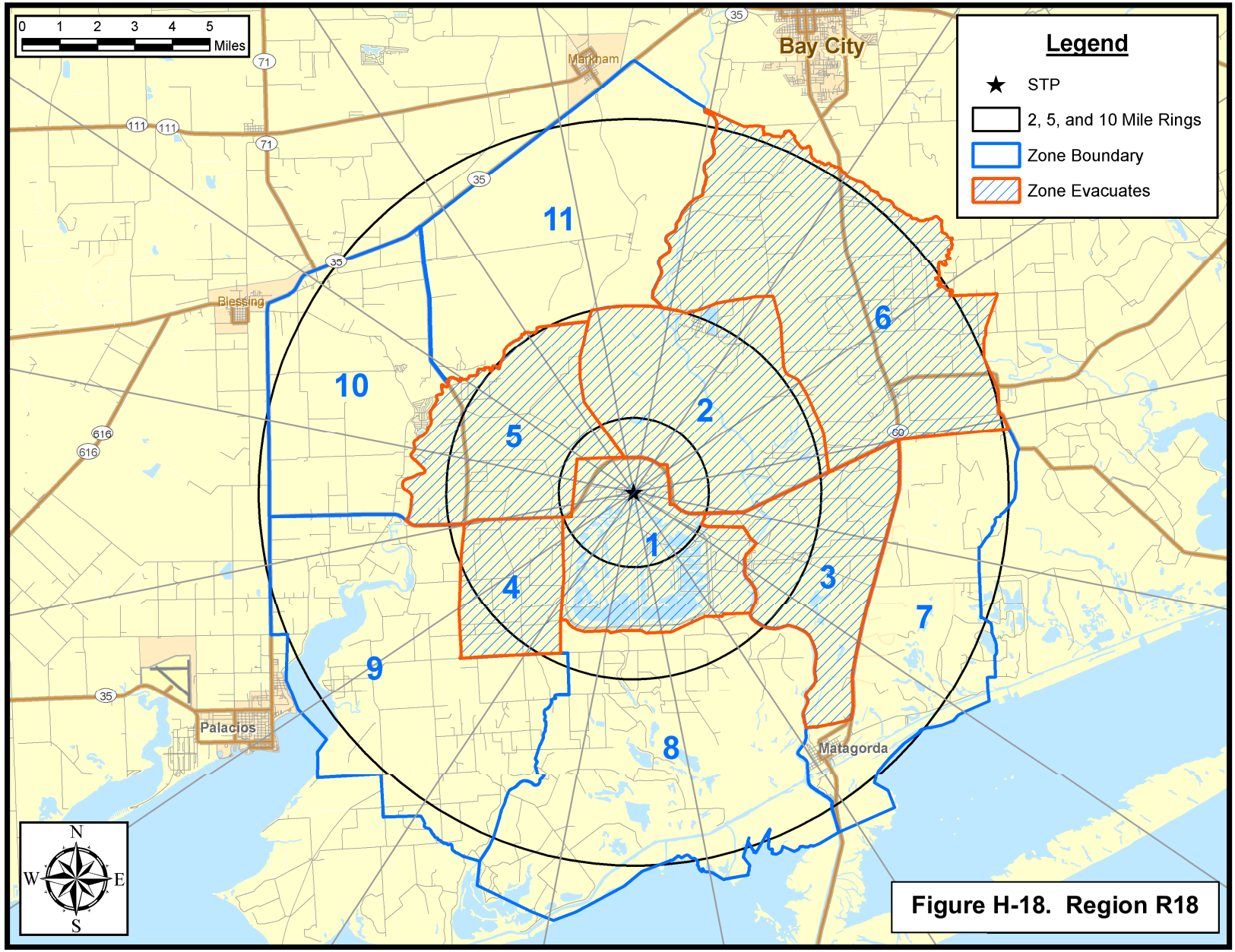


Figure H-18. Region R18

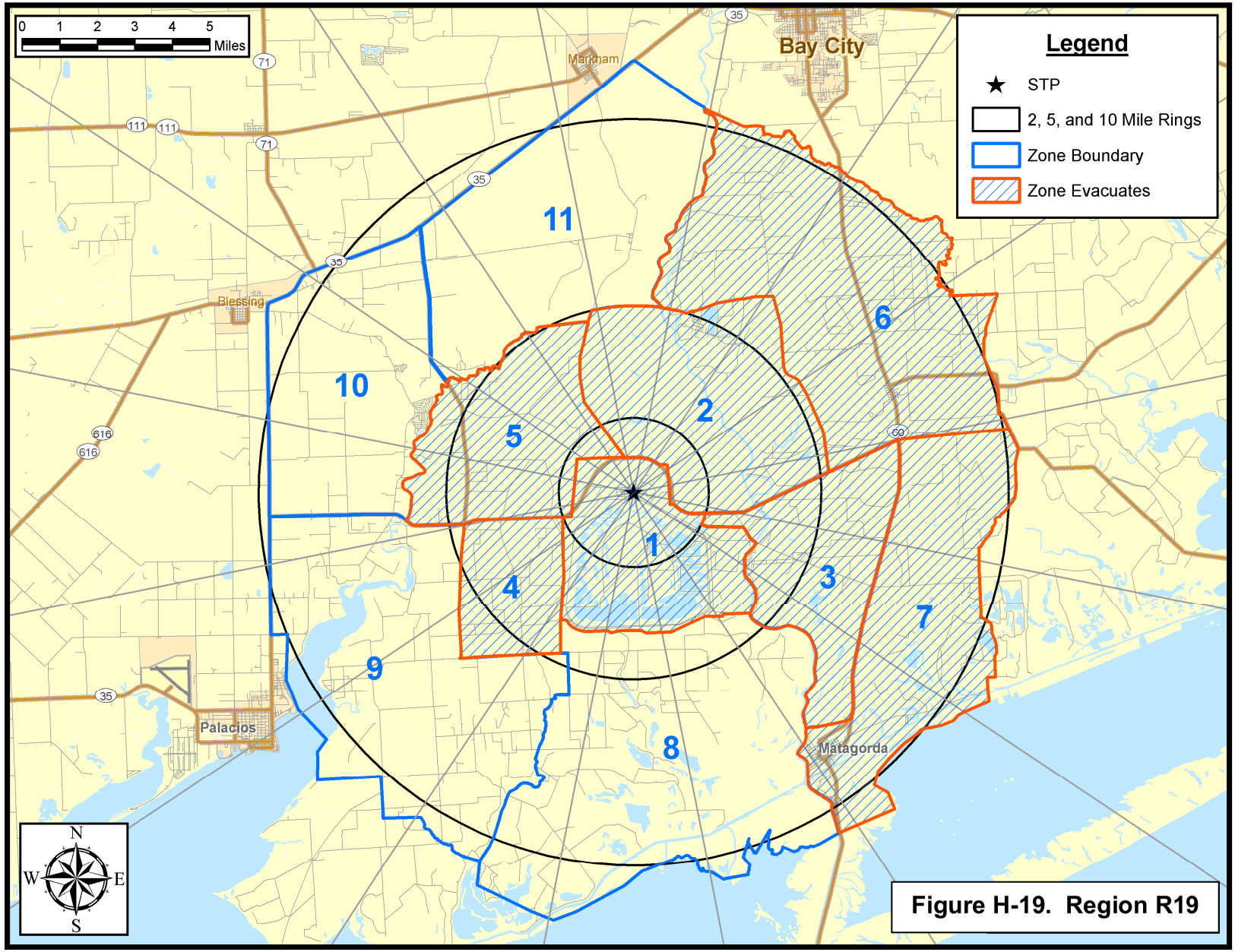


Figure H-19. Region R19

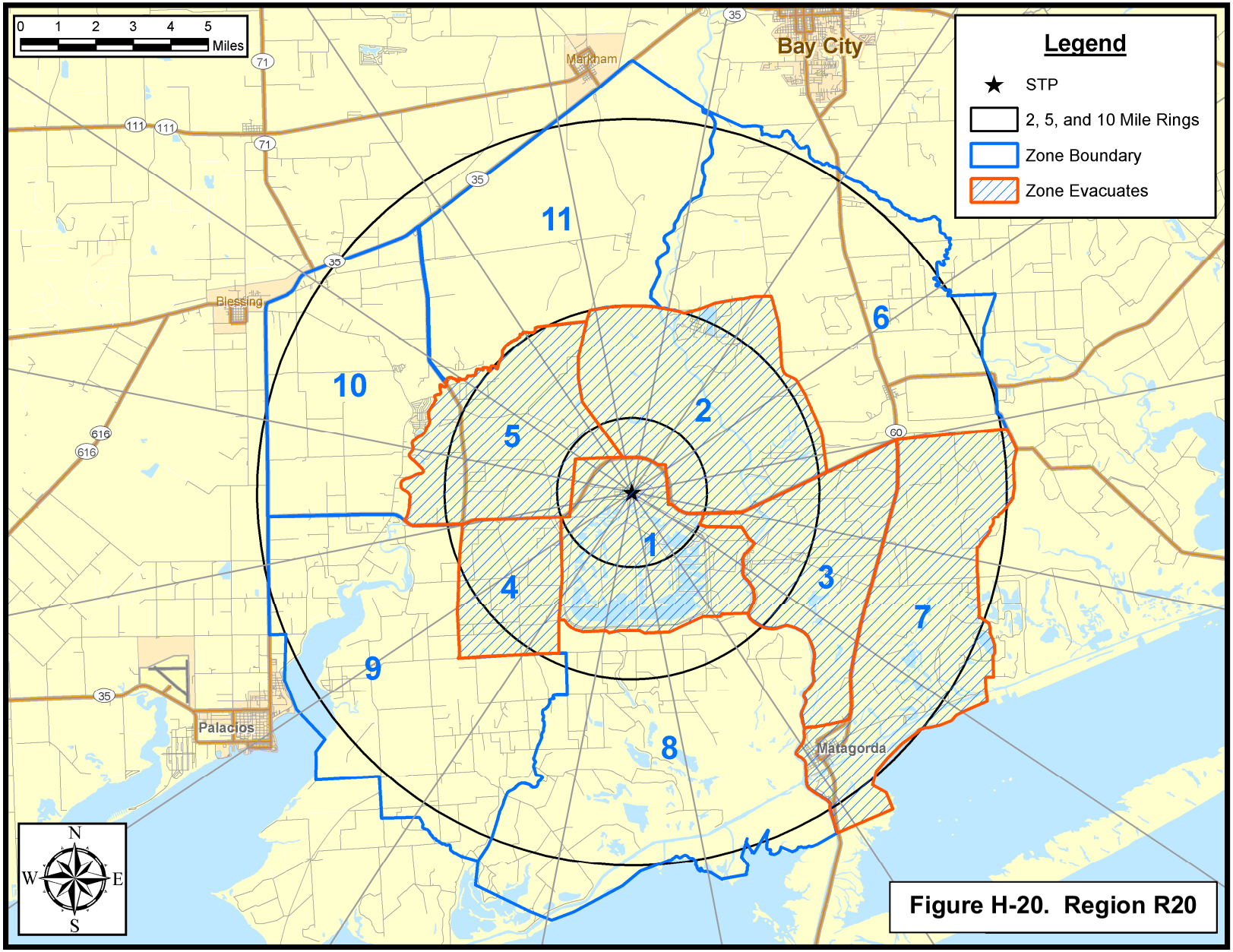


Figure H-20. Region R20

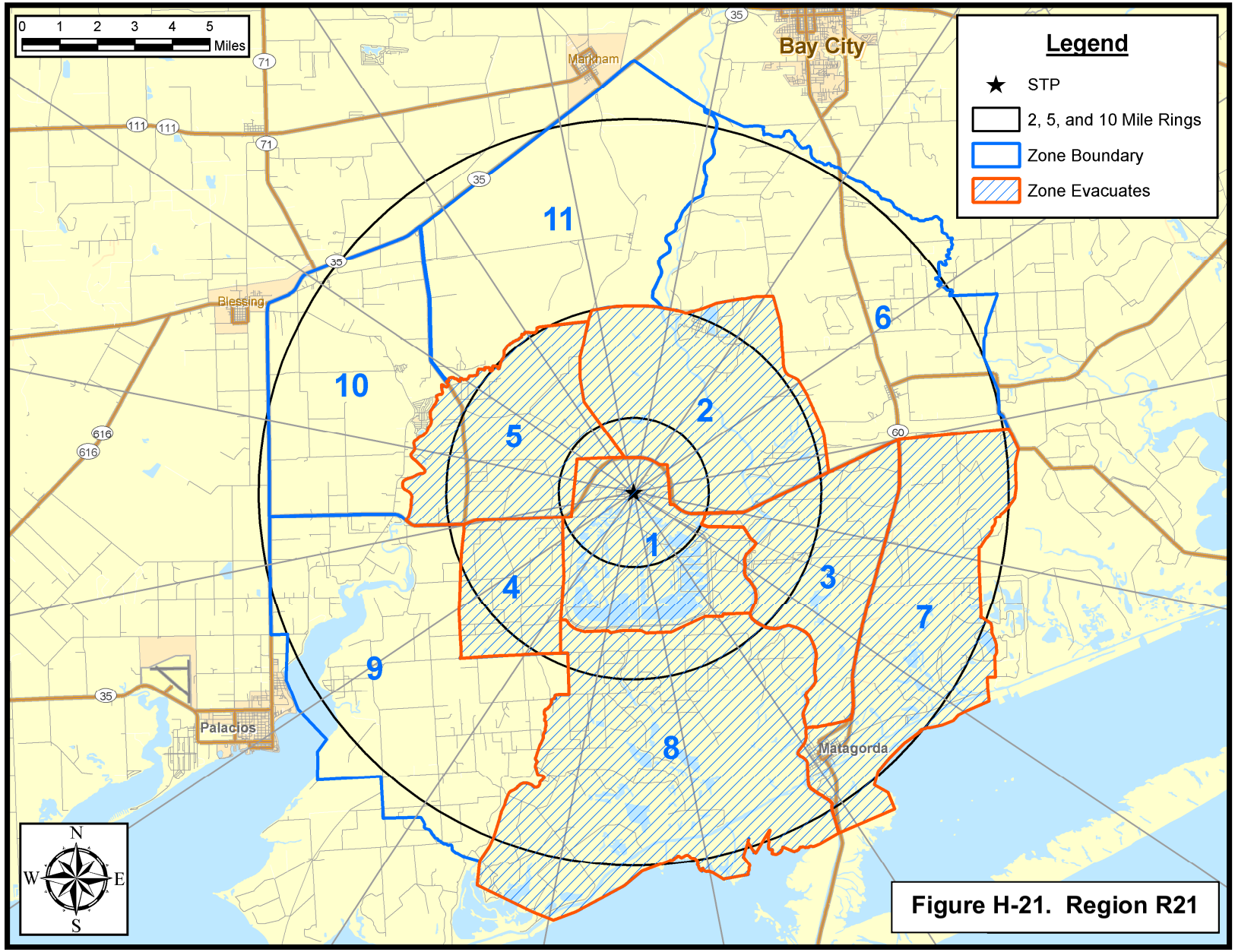


Figure H-21. Region R21

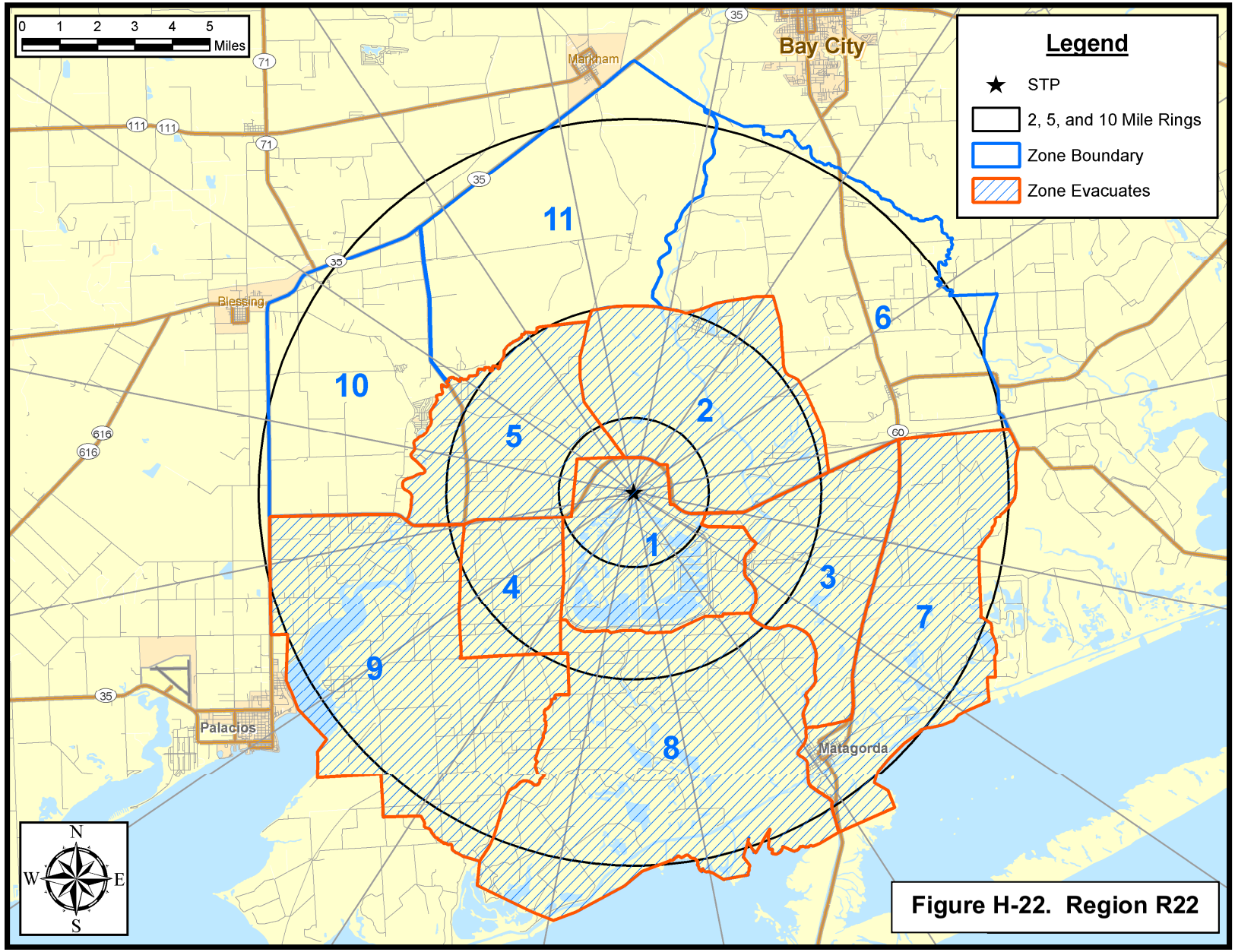


Figure H-22. Region R22

APPENDIX I

Evacuation Sensitivity Studies

APPENDIX I: EVACUATION SENSITIVITY STUDIES

A sensitivity study was performed to determine whether changes in the estimated trip generation time have an effect upon the Evacuation Time Estimates (ETE) for the entire EPZ. The case considered was Scenario 1, Region 3; a summer, midweek, midday, good weather evacuation of the entire EPZ. Table I-1 presents the results of this study.

Table I-1. Evacuation Time Estimates for Trip Generation Sensitivity Study

	Evacuation Time Estimate		
Trip Generation Period	**2-Mile Region**	**5-Mile Region**	**Entire EPZ**
3 Hours	1:00	3:10	3:10
6 Hours (Base)	1:00	6:00	6:10

As the mobilization time is reduced, the ETE for 2-mile, 5-mile, and the full EPZ reduce accordingly. The results confirm the importance of accurately estimating trip generation times. The evacuation time estimates closely mirror the values for the time the last evacuation trip is generated. The reason for this is the lack of significant traffic congestion during an evacuation. The results indicate that programs to educate the public to encourage faster responses to a radiological emergency, can considerably reduce ETE.

A sensitivity study was also conducted to determine the effects on ETE of changes in the percentage of people who decide to relocate from the Shadow Region. The movement of people in the shadow region has the potential to impede vehicles evacuating from an Evacuation Region within the EPZ. The case considered was Scenario 3, Region 3; a summer, weekend, midday, good weather evacuation of the entire EPZ. Refer to Section 7.1 for additional information on population within the shadow region.

Table I-2 presents the evacuation time estimates for each of these cases. The ETE for the 2-mile, 5-mile and Entire EPZ regions remain unchanged as the percentage of people who decide to relocate from areas within the Shadow Region increases from 15% to 60%. These results indicate that the ETE are not impacted by the "shadow effect" and further illustrates that the ETE are dictated by the mobilization time of the evacuating populous.

Table I-2. Evacuation Time Estimates for Shadow Sensitivity Study

Percent Shadow Evacuation	Evacuating Shadow Population	Evacuating Shadow Vehicles	Evacuation Time Estimate		
			2-Mile Region	5-Mile Region	Entire EPZ
15	4,142	2,488	1:00	5:10	5:50
30 (Base)	8,284	4,976	1:00	5:10	5:50
60	16,568	9,951	1:00	5:10	5:50

APPENDIX J

Evacuation Time Estimates for All Evacuation Regions and Scenarios
And
Evacuation Time Graphs for Region R03, for all Scenarios

APPENDIX J: EVACUATION TIME ESTIMATES FOR ALL EVACUATION REGIONS AND SCENARIOS

AND

EVACUATION TIME GRAPHS FOR REGION R03, FOR ALL SCENARIOS

This appendix presents the ETE Results for all 22 Regions and all 12 Scenarios (Tables J-1A through J-1D).

Plots of Evacuating vehicles vs. Elapsed Time leaving the 2-mile and 5-mile circular areas around STP, and the entire EPZ (Region R03), for all 12 scenarios are presented (Figures J-1 through J-12). Each plot has points indicating the evacuation times corresponding to the 50th, 90th, and 95th percentiles of evacuated vehicles.

J.1 Guidance on Using ETE Tables

Tables J-1A through J-1D present the ETE values for all 22 Evacuation Regions and all 12 Evacuation Scenarios. They are organized as follows:

Table	Contents
J-1A	ETE represents the elapsed time required for 50 percent of the vehicles within a Region, to evacuate from that Region.
J-1B	ETE represents the elapsed time required for 90 percent of the vehicles within a Region, to evacuate from that Region.
J-1C	ETE represents the elapsed time required for 95 percent of the vehicles within a Region, to evacuate from that Region.
J-1D	ETE represents the elapsed time required for 100 percent of the vehicles within a Region, to evacuate from that Region.

The user first determines the percentile of vehicles for which the ETE is sought. The applicable value of ETE within the chosen Table may then be identified using the following procedure:

1. Identify the applicable **Scenario**:
    - The Season
        - Summer
        - Winter (also Autumn and Spring)

- The Day of Week
  - Midweek
  - Weekend
- The Time of Day
  - Midday
  - Evening
- Weather Condition
  - Good Weather
  - Rain
- Special Event
  - Holiday Beach Weekend
  - New Plant Construction

While these Scenarios are designed, in aggregate, to represent conditions throughout the year, some further clarification is warranted:

- The conditions of a summer evening (either midweek or weekend) and rain are not explicitly identified in Tables J-1A through J-1D. For these conditions, Scenario (4) applies.
- The conditions of a winter evening (either midweek or weekend) and rain are not explicitly identified in Tables J-1A through J-1D. For these conditions, Scenario (9) applies.
- The seasons are defined as follows:
  - Summer implies that public schools are *not* in session.
  - Winter, Spring, and Autumn imply that public schools *are* in session.
- Time of Day: Midday implies the time over which most commuters are at work.

2. With the Scenario identified, now identify the **Evacuation Region**:
   - Determine the projected azimuth direction of the plume, as dictated by the wind direction. The wind direction is expressed in degrees, clockwise from North and represents the direction *from which* the wind originates.
   - Determine the distance that the Evacuation Region will extend from the South Texas Project. The applicable distances and their associated candidate Regions are given below:
     - 2 Miles (Region R01)
     - 5 Miles (Regions R02 and R04 through R10)
     - To EPZ Boundary (Regions R03 and R11 through R22)
   - Enter Table 7-2 and identify the applicable group of candidate Regions based on the distance that the selected Region extends from STP. Select the Evacuation Region identifier in that row from the first column of the Table

3. Determine the **ETE for the Scenario** identified in Step 1 and the Region identified in Step 2, as follows:
    - The columns of Table J-1 are labeled with the Scenario numbers. Identify the proper column in the selected Table using the Scenario number determined in Step 1.
    - Identify the row in this table that provides ETE values for the Region identified in Step 2.
    - The unique data cell defined by the column and row so determined contains the desired value of ETE expressed in Hours:Minutes.

Example

It is desired to identify the ETE for the following conditions:

- Sunday, August 10th at 4:00 AM.
- The weather is good.
- Wind direction is from 300°.
- Wind speed is such that the distance to be evacuated is judged to be 10 miles (to EPZ boundary).
- The desired ETE is that value needed to evacuate 95 percent of the population from within the impacted Region.

Table J-1C is applicable because the 95th-percentile population is desired. Proceed as follows:

1. Identify the Scenario as summer, weekend, evening and good weather. Entering Table J-1C these descriptors identify this combination of circumstances as being Scenario 5.

2. Enter Table J-1C and locate the group entitled "Evacuate 5-Mile Ring and Downwind to EPZ Boundary". Under "Wind Direction", identify the 299° to 343° azimuth and read REGION R21 in the first column of that row.

3. Enter Table J-1C to locate the data cell containing the value of ETE for Scenario 5 and Region R21. This data cell is in column (5) and in the row for Region R21; it contains the ETE value of **3:30**.

Table J-1A. Time To Clear The Indicated Area of 50 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:40	0:40	0:40	0:40	0:40	R01 2-mile ring	0:40	0:40	0:40	0:40	0:40	R01 2-mile ring	0:40	0:50
R02 5-mile ring	0:55	0:55	1:05	1:05	1:05	R02 5-mile ring	0:55	0:55	1:05	1:05	1:10	R02 5-mile ring	1:45	1:00
R03 Entire EPZ	1:10	1:10	1:15	1:20	1:10	R03 Entire EPZ	1:10	1:10	1:15	1:20	1:25	R03 Entire EPZ	1:35	1:15
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	0:40	0:45	0:45	0:45	0:45	R04 29° to 50°	0:40	0:45	0:45	0:45	0:45	R04 29° to 50°	0:45	0:50
R05 51° to 106°	0:45	0:45	0:50	0:50	0:50	R05 51° to 106°	0:45	0:45	0:50	0:50	0:50	R05 51° to 106°	0:50	0:55
R06 107° to 140°	0:45	0:45	0:45	0:50	0:45	R06 107° to 140°	0:45	0:45	0:45	0:50	0:45	R06 107° to 140°	0:45	0:55
R07 141° to 174°	0:50	0:50	0:50	0:50	0:50	R07 141° to 174°	0:50	0:50	0:50	0:50	0:50	R07 141° to 174°	0:50	0:55
R08 175° to 230°	0:45	0:45	0:45	0:45	0:45	R08 175° to 230°	0:45	0:45	0:45	0:45	0:45	R08 175° to 230°	0:45	0:55
R09 231° to 286°	0:50	0:55	1:00	1:05	1:00	R09 231° to 286°	0:50	0:50	1:00	1:05	1:05	R09 231° to 286°	1:45	1:00
R10 287° to 331°	0:50	0:50	1:00	1:05	1:00	R10 287° to 331°	0:50	0:50	1:00	1:05	1:05	R10 287° to 331°	1:45	0:55
R01 332° to 28°	0:40	0:40	0:40	0:40	0:40	R01 332° to 28°	0:40	0:40	0:40	0:40	0:40	R01 332° to 28°	0:40	0:50
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	1:00	1:00	1:05	1:05	1:05	R11 355° to 50°	1:00	1:00	1:10	1:10	1:15	R11 355° to 50°	1:25	1:05
R12 51° to 61°	1:00	1:00	1:05	1:05	1:05	R12 51° to 61°	1:00	1:00	1:10	1:10	1:15	R12 51° to 61°	1:25	1:05
R13 62° to 95°	1:00	1:00	1:05	1:05	1:05	R13 62° to 95°	1:00	1:00	1:10	1:10	1:15	R13 62° to 95°	1:25	1:05
R14 96° to 129°	1:00	1:00	1:05	1:05	1:05	R14 96° to 129°	1:00	1:00	1:10	1:10	1:20	R14 96° to 129°	1:25	1:05
R15 130° to 163°	1:00	1:00	1:05	1:05	1:05	R15 130° to 163°	1:00	1:00	1:05	1:05	1:15	R15 130° to 163°	1:25	1:05
R16 164° to 174°	1:05	1:10	1:10	1:15	1:10	R16 164° to 174°	1:05	1:10	1:15	1:20	1:20	R16 164° to 174°	1:30	1:15
R17 175° to 219°	1:05	1:10	1:10	1:15	1:10	R17 175° to 219°	1:05	1:10	1:15	1:20	1:20	R17 175° to 219°	1:50	1:15
R18 220° to 230°	1:05	1:05	1:10	1:15	1:10	R18 220° to 230°	1:05	1:05	1:15	1:15	1:20	R18 220° to 230°	1:50	1:10
R19 231° to 286°	1:05	1:10	1:15	1:20	1:10	R19 231° to 286°	1:05	1:05	1:15	1:15	1:20	R19 231° to 286°	2:00	1:15
R20 287° to 298°	0:55	0:55	1:05	1:10	1:05	R20 287° to 298°	0:55	0:55	1:05	1:10	1:10	R20 287° to 298°	1:50	1:00
R21 299° to 343°	0:55	0:55	1:05	1:10	1:05	R21 299° to 343°	0:55	0:55	1:05	1:10	1:10	R21 299° to 343°	1:50	1:00
R22 344° to 354°	1:00	1:05	1:10	1:15	1:05	R22 344° to 354°	1:00	1:00	1:15	1:15	1:20	R22 344° to 354°	1:50	1:05

Table J-1B. Time To Clear The Indicated Area of 90 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:50	1:20
R02 5-mile ring	2:10	2:20	2:10	2:10	2:30	R02 5-mile ring	2:30	2:40	2:50	2:50	3:00	R02 5-mile ring	3:10	1:50
R03 Entire EPZ	3:00	3:00	2:40	2:40	2:50	R03 Entire EPZ	3:30	3:30	3:20	3:20	3:40	R03 Entire EPZ	3:30	3:00
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	0:55	1:00	1:40	1:40	1:40	R04 29° to 50°	1:00	1:00	1:50	1:50	1:50	R04 29° to 50°	1:40	1:25
R05 51° to 106°	1:00	1:00	2:30	2:30	2:30	R05 51° to 106°	1:05	1:05	2:30	2:30	2:30	R05 51° to 106°	2:30	1:30
R06 107° to 140°	1:00	1:00	2:00	2:00	2:00	R06 107° to 140°	1:00	1:00	2:00	2:00	2:00	R06 107° to 140°	2:00	1:30
R07 141° to 174°	1:05	1:05	2:10	2:10	2:10	R07 141° to 174°	1:05	1:05	2:10	2:10	2:10	R07 141° to 174°	2:10	1:30
R08 175° to 230°	0:55	1:00	1:00	1:00	1:00	R08 175° to 230°	1:00	1:00	1:00	1:00	1:00	R08 175° to 230°	1:00	1:30
R09 231° to 286°	2:10	2:10	2:00	2:00	2:10	R09 231° to 286°	2:20	2:20	2:40	2:40	2:50	R09 231° to 286°	3:10	1:40
R10 287° to 331°	2:00	2:10	2:00	2:00	2:10	R10 287° to 331°	2:20	2:20	2:40	2:40	2:50	R10 287° to 331°	3:10	1:40
R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:50	1:20
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	2:50	2:50	2:40	2:40	2:50	R11 355° to 50°	3:10	3:10	3:30	3:30	3:40	R11 355° to 50°	3:15	2:00
R12 51° to 61°	2:40	2:40	2:20	2:20	2:40	R12 51° to 61°	3:10	3:10	3:10	3:10	3:30	R12 51° to 61°	3:10	2:10
R13 62° to 95°	2:40	2:40	2:20	2:20	2:40	R13 62° to 95°	3:10	3:10	3:10	3:10	3:30	R13 62° to 95°	3:10	2:10
R14 96° to 129°	2:50	2:50	2:20	2:20	2:40	R14 96° to 129°	3:20	3:20	3:10	3:10	3:30	R14 96° to 129°	3:10	2:10
R15 130° to 163°	2:30	2:30	2:10	2:10	2:30	R15 130° to 163°	3:00	3:00	2:50	2:50	3:10	R15 130° to 163°	3:10	2:00
R16 164° to 174°	2:50	2:50	2:20	2:20	2:40	R16 164° to 174°	3:20	3:20	3:00	3:10	3:20	R16 164° to 174°	3:10	3:00
R17 175° to 219°	3:00	3:00	2:40	2:40	2:50	R17 175° to 219°	3:20	3:20	3:20	3:20	3:30	R17 175° to 219°	3:20	3:00
R18 220° to 230°	2:50	2:50	2:40	2:40	2:50	R18 220° to 230°	3:10	3:10	3:10	3:20	3:30	R18 220° to 230°	3:20	3:00
R19 231° to 286°	2:50	2:50	2:40	2:40	2:50	R19 231° to 286°	3:10	3:10	3:10	3:20	3:30	R19 231° to 286°	3:30	3:00
R20 287° to 298°	2:20	2:20	2:10	2:10	2:30	R20 287° to 298°	2:50	2:50	2:50	2:50	3:10	R20 287° to 298°	3:25	1:50
R21 299° to 343°	2:20	2:20	2:10	2:10	2:30	R21 299° to 343°	2:50	2:50	2:50	2:50	3:10	R21 299° to 343°	3:25	1:50
R22 344° to 354°	2:40	2:40	2:30	2:30	2:50	R22 344° to 354°	3:10	3:10	3:20	3:20	3:40	R22 344° to 354°	3:25	2:00

Table J-1C. Time To Clear The Indicated Area of 95 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:50	1:40
R02 5-mile ring	3:10	3:20	3:00	3:00	3:20	R02 5-mile ring	3:40	3:40	3:50	3:50	4:10	R02 5-mile ring	3:25	2:10
R03 Entire EPZ	4:00	4:00	3:40	3:40	4:00	R03 Entire EPZ	4:20	4:20	4:10	4:20	4:20	R03 Entire EPZ	3:50	3:40
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	1:00	1:00	2:30	2:30	2:50	R04 29° to 50°	1:00	1:00	2:50	2:50	2:50	R04 29° to 50°	2:30	1:40
R05 51° to 106°	1:50	1:50	3:25	3:25	3:30	R05 51° to 106°	1:50	1:50	3:40	3:40	3:40	R05 51° to 106°	3:25	1:40
R06 107° to 140°	1:30	1:30	2:50	2:50	2:40	R06 107° to 140°	1:30	1:30	2:50	2:50	2:50	R06 107° to 140°	2:50	1:40
R07 141° to 174°	1:50	1:50	2:50	2:50	2:40	R07 141° to 174°	1:50	1:50	2:50	2:50	2:50	R07 141° to 174°	2:50	1:50
R08 175° to 230°	1:00	1:00	1:30	1:30	1:30	R08 175° to 230°	1:00	1:00	1:30	1:30	1:30	R08 175° to 230°	1:30	1:40
R09 231° to 286°	3:00	3:00	2:50	2:50	3:00	R09 231° to 286°	3:30	3:30	3:40	3:40	4:00	R09 231° to 286°	3:25	2:00
R10 287° to 331°	3:00	3:00	2:50	2:50	3:00	R10 287° to 331°	3:30	3:30	3:40	3:40	4:00	R10 287° to 331°	3:25	2:00
R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:55	0:55	0:50	0:50	0:50	R01 332° to 28°	0:50	1:40
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	3:50	3:50	3:40	3:40	3:50	R11 355° to 50°	4:10	4:10	4:10	4:20	4:20	R11 355° to 50°	3:25	2:50
R12 51° to 61°	3:40	3:40	3:20	3:30	3:50	R12 51° to 61°	4:10	4:10	4:10	4:10	4:20	R12 51° to 61°	3:25	3:00
R13 62° to 95°	3:40	3:40	3:20	3:30	3:50	R13 62° to 95°	4:10	4:10	4:10	4:10	4:20	R13 62° to 95°	3:25	3:00
R14 96° to 129°	3:50	3:50	3:30	3:30	3:50	R14 96° to 129°	4:10	4:10	4:10	4:10	4:20	R14 96° to 129°	3:25	3:10
R15 130° to 163°	3:30	3:30	3:00	3:00	3:30	R15 130° to 163°	4:00	4:00	4:00	4:00	4:10	R15 130° to 163°	3:25	2:50
R16 164° to 174°	3:50	3:50	3:20	3:30	3:50	R16 164° to 174°	4:10	4:10	4:10	4:10	4:20	R16 164° to 174°	3:30	3:40
R17 175° to 219°	4:00	4:00	3:40	3:40	4:00	R17 175° to 219°	4:10	4:10	4:10	4:20	4:20	R17 175° to 219°	3:35	3:40
R18 220° to 230°	3:50	3:50	3:40	3:40	4:00	R18 220° to 230°	4:10	4:10	4:10	4:20	4:20	R18 220° to 230°	3:35	3:30
R19 231° to 286°	3:50	3:50	3:40	3:40	3:50	R19 231° to 286°	4:10	4:10	4:10	4:20	4:20	R19 231° to 286°	3:50	3:30
R20 287° to 298°	3:20	3:20	3:00	3:00	3:30	R20 287° to 298°	3:50	3:50	4:00	4:00	4:10	R20 287° to 298°	3:40	2:30
R21 299° to 343°	3:20	3:20	3:00	3:00	3:30	R21 299° to 343°	3:50	3:50	4:00	4:00	4:10	R21 299° to 343°	3:40	2:30
R22 344° to 354°	3:50	3:50	3:40	3:40	3:50	R22 344° to 354°	4:10	4:10	4:10	4:20	4:20	R22 344° to 354°	3:40	3:00

Table J-1D. Time To Clear The Indicated Area of 100 Percent of the Affected Population														
	Summer		Summer		Summer		Winter		Winter		Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek		Weekend		Midweek Weekend		Holiday	Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	Scenario:	(11)	(12)
Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday		Midday		Evening	Region Wind From:	Midday	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Good Weather	Rain	Good Weather		Beach Holiday	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	1:00	1:00	1:00	1:00	1:00	R01 2-mile ring	1:00	1:00	1:00	1:00	1:00	R01 2-mile ring	1:00	2:00
R02 5-mile ring	6:00	6:10	5:10	5:10	5:10	R02 5-mile ring	6:00	6:00	5:10	5:10	5:10	R02 5-mile ring	5:10	6:00
R03 Entire EPZ	6:10	6:10	5:50	5:50	5:50	R03 Entire EPZ	6:10	6:10	5:50	5:50	5:50	R03 Entire EPZ	5:50	6:10
2-Mile Ring and Downwind to 5 Miles														
R04 29° to 50°	4:50	5:00	4:50	4:50	4:50	R04 29° to 50°	4:50	5:00	4:50	4:50	4:50	R04 29° to 50°	4:50	5:00
R05 51° to 106°	4:50	5:00	5:00	5:00	5:00	R05 51° to 106°	4:50	5:00	5:00	5:00	5:00	R05 51° to 106°	5:00	5:00
R06 107° to 140°	4:50	4:50	5:00	5:00	5:00	R06 107° to 140°	4:50	4:50	5:00	5:00	5:00	R06 107° to 140°	5:00	5:00
R07 141° to 174°	4:50	4:50	5:00	5:00	5:00	R07 141° to 174°	4:50	4:50	5:00	5:00	5:00	R07 141° to 174°	5:00	5:00
R08 175° to 230°	3:50	3:50	2:50	2:50	2:50	R08 175° to 230°	3:50	3:50	2:50	2:50	2:50	R08 175° to 230°	2:50	3:50
R09 231° to 286°	6:00	6:10	5:10	5:10	5:10	R09 231° to 286°	6:00	6:00	5:10	5:10	5:10	R09 231° to 286°	5:10	6:00
R10 287° to 331°	6:00	6:10	5:10	5:10	5:10	R10 287° to 331°	6:00	6:00	5:10	5:10	5:10	R10 287° to 331°	5:10	6:00
R01 332° to 28°	1:00	1:00	1:00	1:00	1:00	R01 332° to 28°	1:00	1:00	1:00	1:00	1:00	R01 332° to 28°	1:00	2:00
5-Mile Ring and Downwind to EPZ Boundary														
R11 355° to 50°	6:00	6:10	5:50	5:50	5:50	R11 355° to 50°	6:00	6:00	5:50	5:50	5:50	R11 355° to 50°	5:50	6:00
R12 51° to 61°	6:00	6:10	5:50	5:50	5:50	R12 51° to 61°	6:00	6:10	5:50	5:50	5:50	R12 51° to 61°	5:50	6:00
R13 62° to 95°	6:00	6:10	5:50	5:50	5:50	R13 62° to 95°	6:00	6:10	5:50	5:50	5:50	R13 62° to 95°	5:50	6:00
R14 96° to 129°	6:00	6:10	5:50	5:50	5:50	R14 96° to 129°	6:00	6:10	5:50	5:50	5:50	R14 96° to 129°	5:50	6:00
R15 130° to 163°	6:00	6:10	5:10	5:10	5:10	R15 130° to 163°	6:00	6:00	5:10	5:10	5:10	R15 130° to 163°	5:10	6:00
R16 164° to 174°	6:10	6:10	5:20	5:20	5:20	R16 164° to 174°	6:10	6:10	5:20	5:20	5:10	R16 164° to 174°	5:10	6:00
R17 175° to 219°	6:10	6:10	5:20	5:20	5:20	R17 175° to 219°	6:10	6:10	5:20	5:20	5:10	R17 175° to 219°	5:10	6:10
R18 220° to 230°	6:10	6:10	5:20	5:20	5:20	R18 220° to 230°	6:10	6:10	5:20	5:20	5:10	R18 220° to 230°	5:10	6:10
R19 231° to 286°	6:10	6:10	5:20	5:20	5:20	R19 231° to 286°	6:10	6:10	5:20	5:20	5:20	R19 231° to 286°	5:10	6:10
R20 287° to 298°	6:10	6:10	5:10	5:10	5:10	R20 287° to 298°	6:10	6:10	5:10	5:10	5:10	R20 287° to 298°	5:10	6:00
R21 299° to 343°	6:10	6:10	5:10	5:10	5:10	R21 299° to 343°	6:10	6:10	5:10	5:10	5:10	R21 299° to 343°	5:10	6:00
R22 344° to 354°	6:10	6:10	5:50	5:50	5:50	R22 344° to 354°	6:10	6:10	5:50	5:50	5:50	R22 344° to 354°	5:50	6:00

Table J-2. Description of Evacuation Regions												
		ZONE										
Region	Description	1	2	3	4	5	6	7	8	9	10	11
R01	2 mile ring	■										
R02	5-mile ring	■	■	■	■	■						
R03	Full EPZ	■	■	■	■	■	■	■	■	■	■	■
Evacuate 2 mile ring and 5 miles downwind												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R04	29 - 50	■			■							
R05	51 - 106	■			■	■						
R06	107 - 140	■				■						
R07	141 - 174	■	■			■						
R08	175 - 230	■	■									
R09	231 - 286	■	■	■								
R10	287 - 331	■		■								
R01*	332 - 28	■										
Evacuate 5 mile ring and downwind to EPZ boundary												
		ZONE										
Region	Wind Direction (From) in Degrees	1	2	3	4	5	6	7	8	9	10	11
R11	355 - 50	■	■	■	■	■			■	■		
R12	51 - 61	■	■	■	■	■			■	■	■	
R13	62 - 95	■	■	■	■	■				■	■	
R14	96 - 129	■	■	■	■	■				■	■	■
R15	130 - 163	■	■	■	■	■					■	■
R16	164 - 174	■	■	■	■	■	■				■	■
R17	175 - 219	■	■	■	■	■	■					■
R18	220 - 230	■	■	■	■	■	■					
R19	231 - 286	■	■	■	■	■	■	■				
R20	287 - 298	■	■	■	■	■		■				
R21	299 - 343	■	■	■	■	■		■	■			
R22	344 - 354	■	■	■	■	■		■	■	■		

Residents and Transients in the Matagorda Beach area are always evacuated.
* Note that evacuating the 2-mile ring and evacuating the 5-mile ring with wind from 332° to 28° both result in the evacuation of Region 1. Thus, R01 is shown twice in the table above.

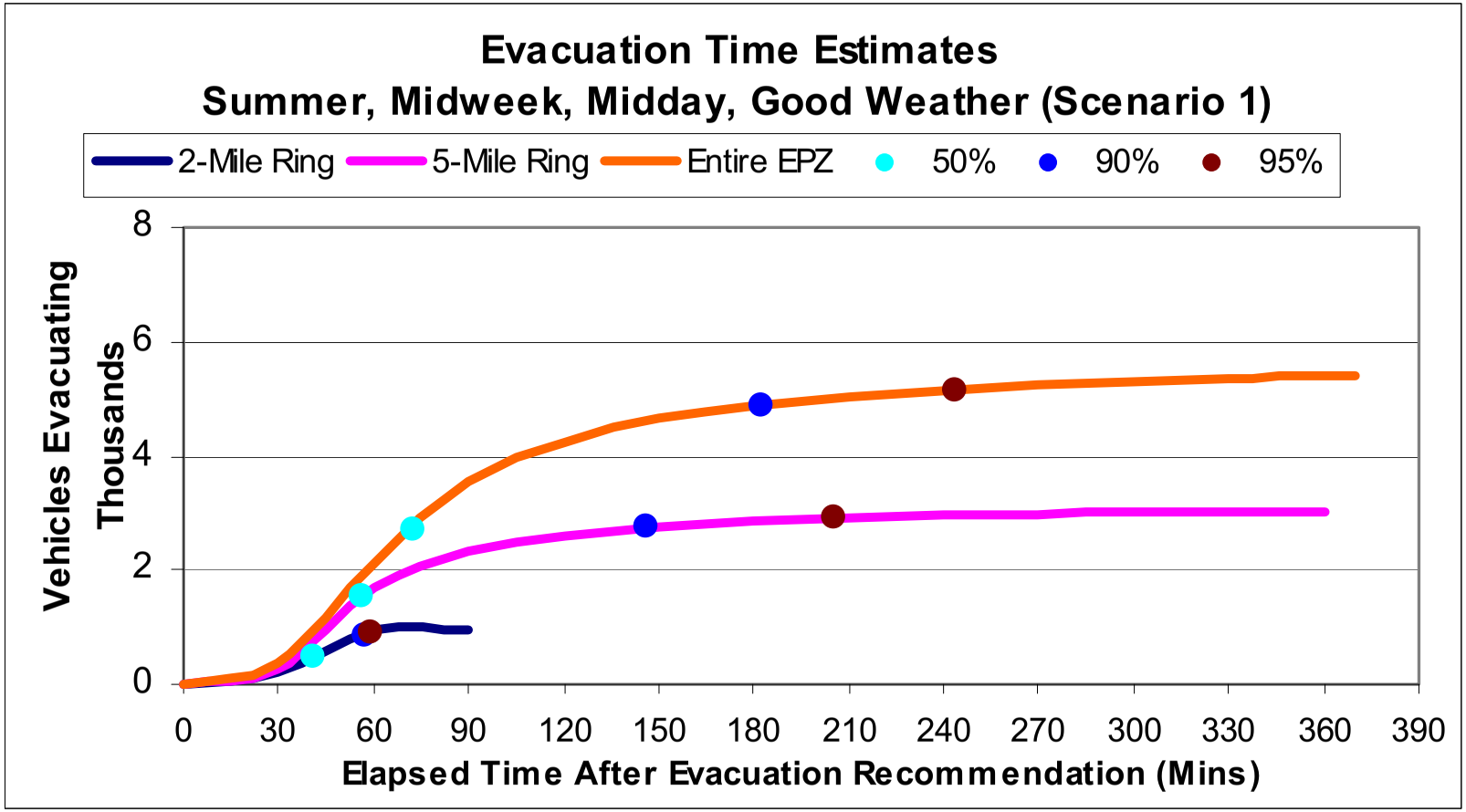


Figure J-1. Evacuation Time Estimates Scenario 1 for Region R03 (Entire EPZ)

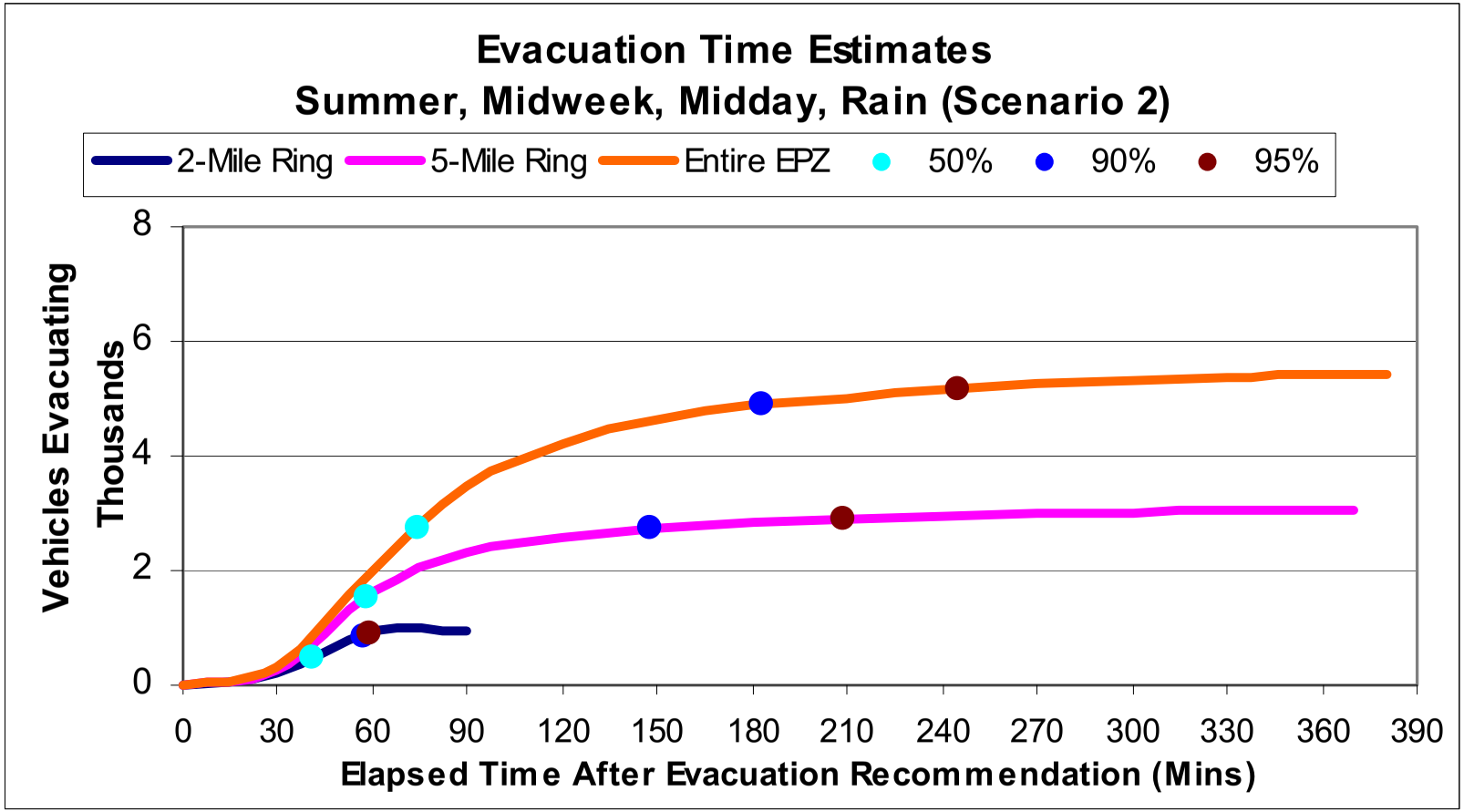


Figure J-2. Evacuation Time Estimates
Scenario 2 for Region R03 (Entire EPZ)

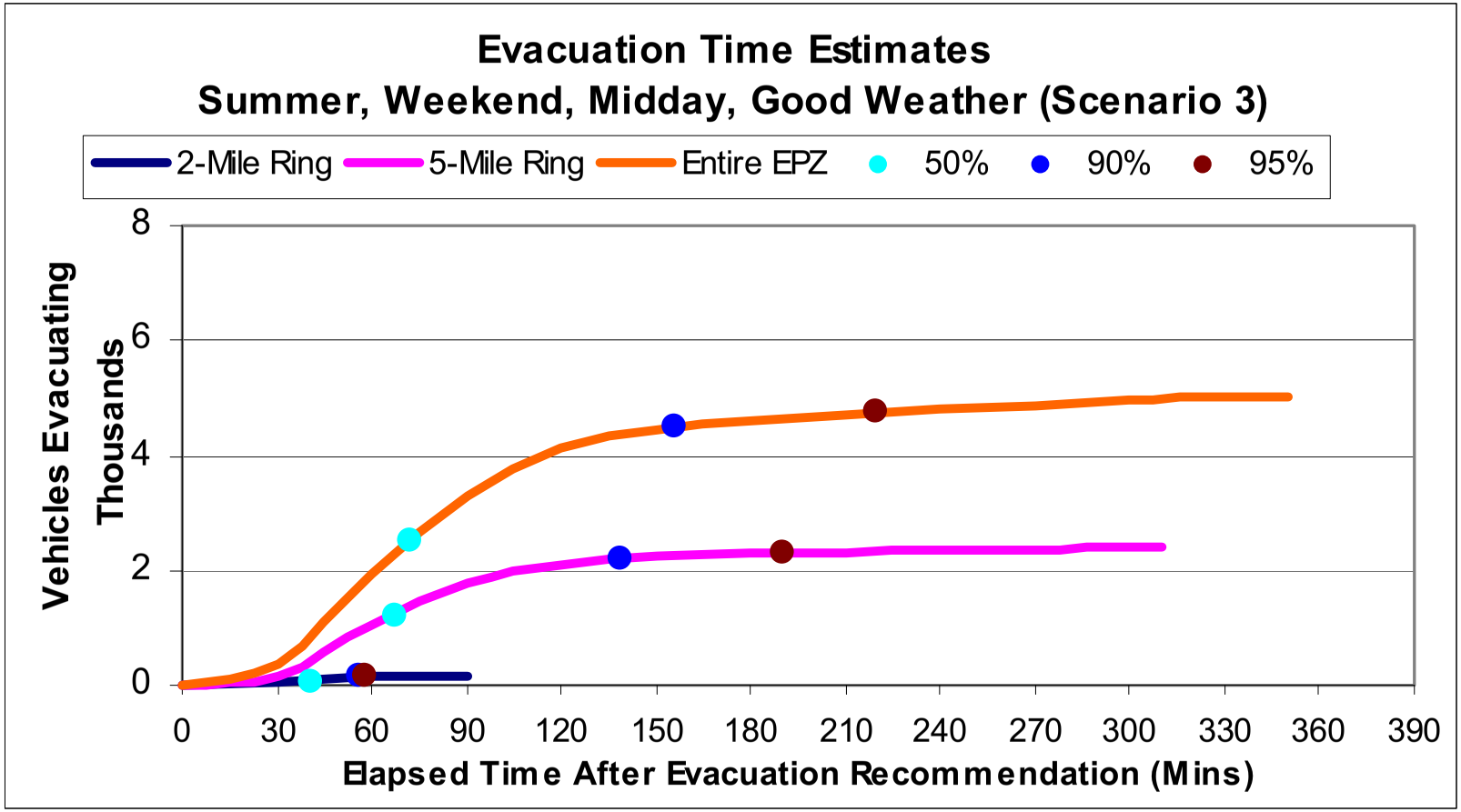


Figure J-3. Evacuation Time Estimates Scenario 3 for Region R03 (Entire EPZ)

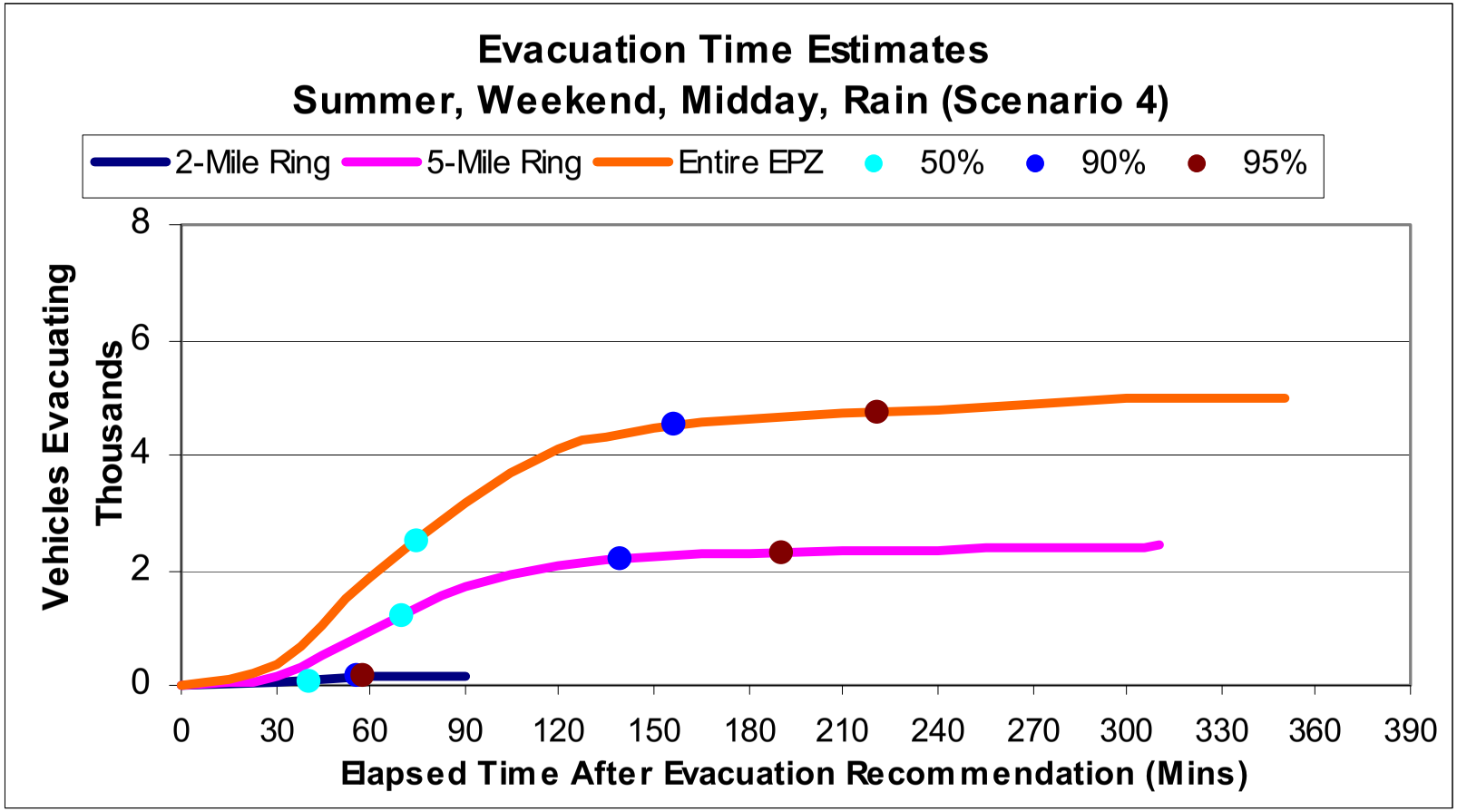


Figure J-4. Evacuation Time Estimates
Scenario 4 for Region R03 (Entire EPZ)

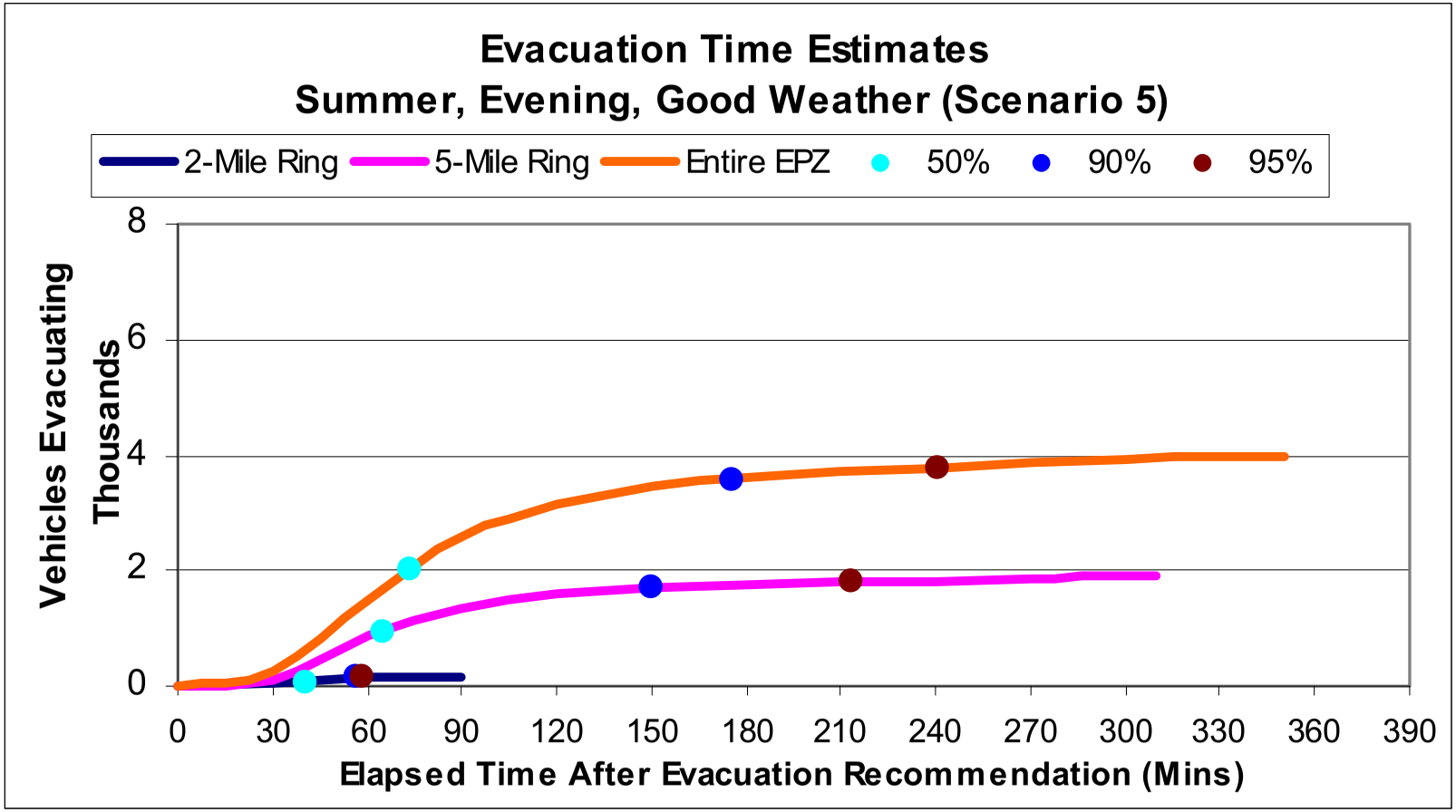


Figure J-5. Evacuation Time Estimates
Scenario 5 for Region R03 (Entire EPZ)

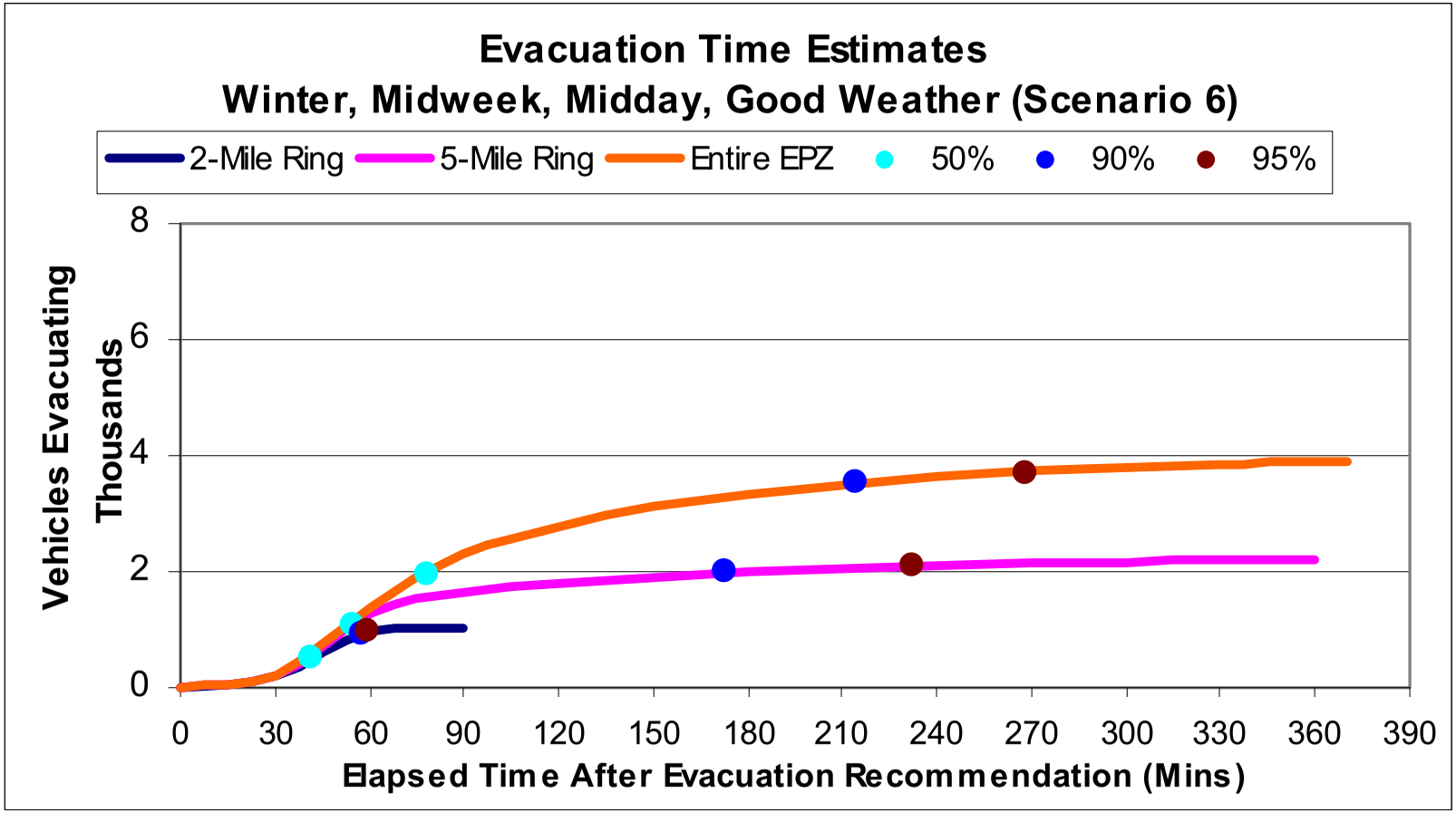


Figure J-6. Evacuation Time Estimates Scenario 6 for Region R03 (Entire EPZ)

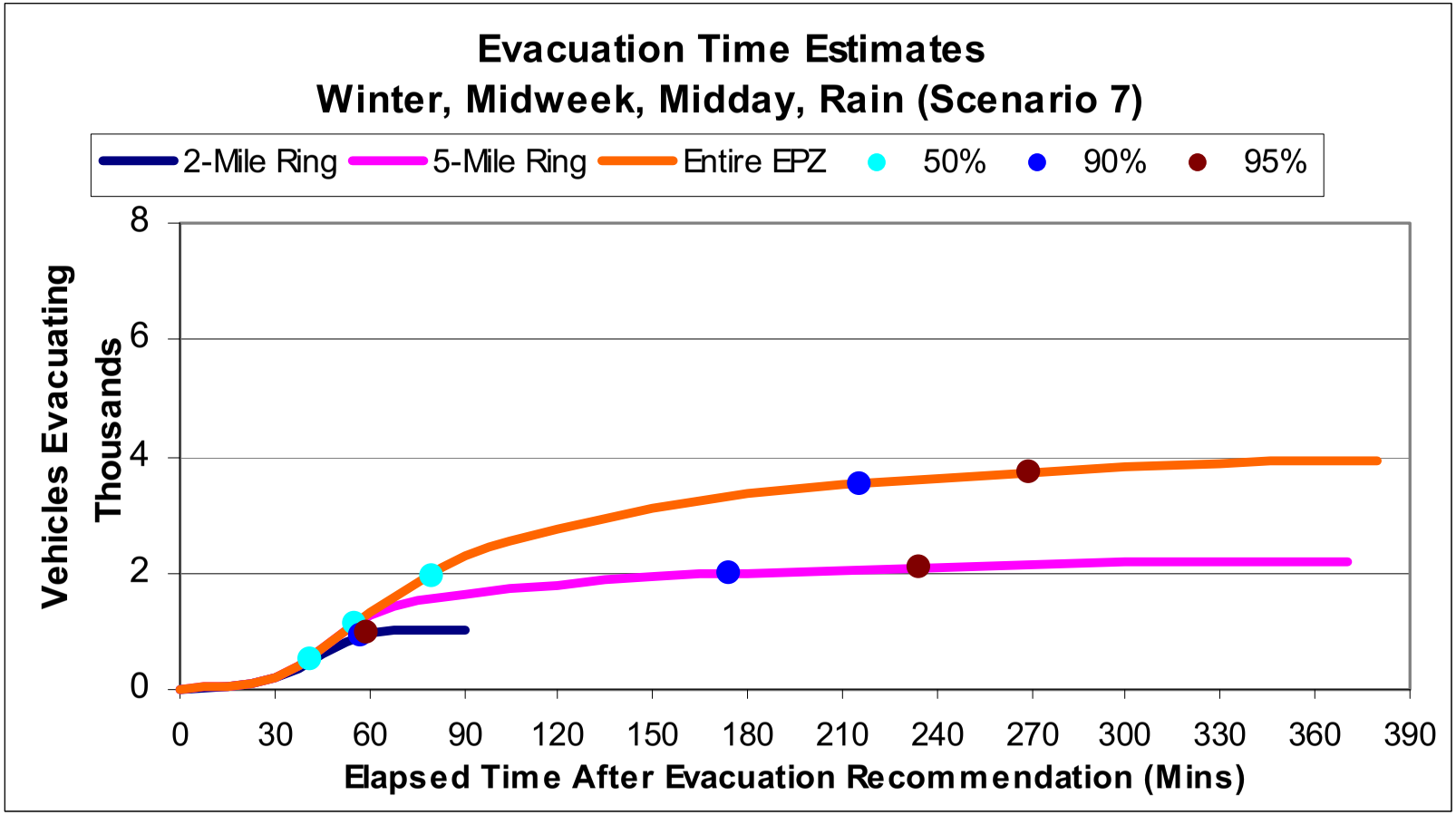


Figure J-7. Evacuation Time Estimates Scenario 7 for Region R03 (Entire EPZ)

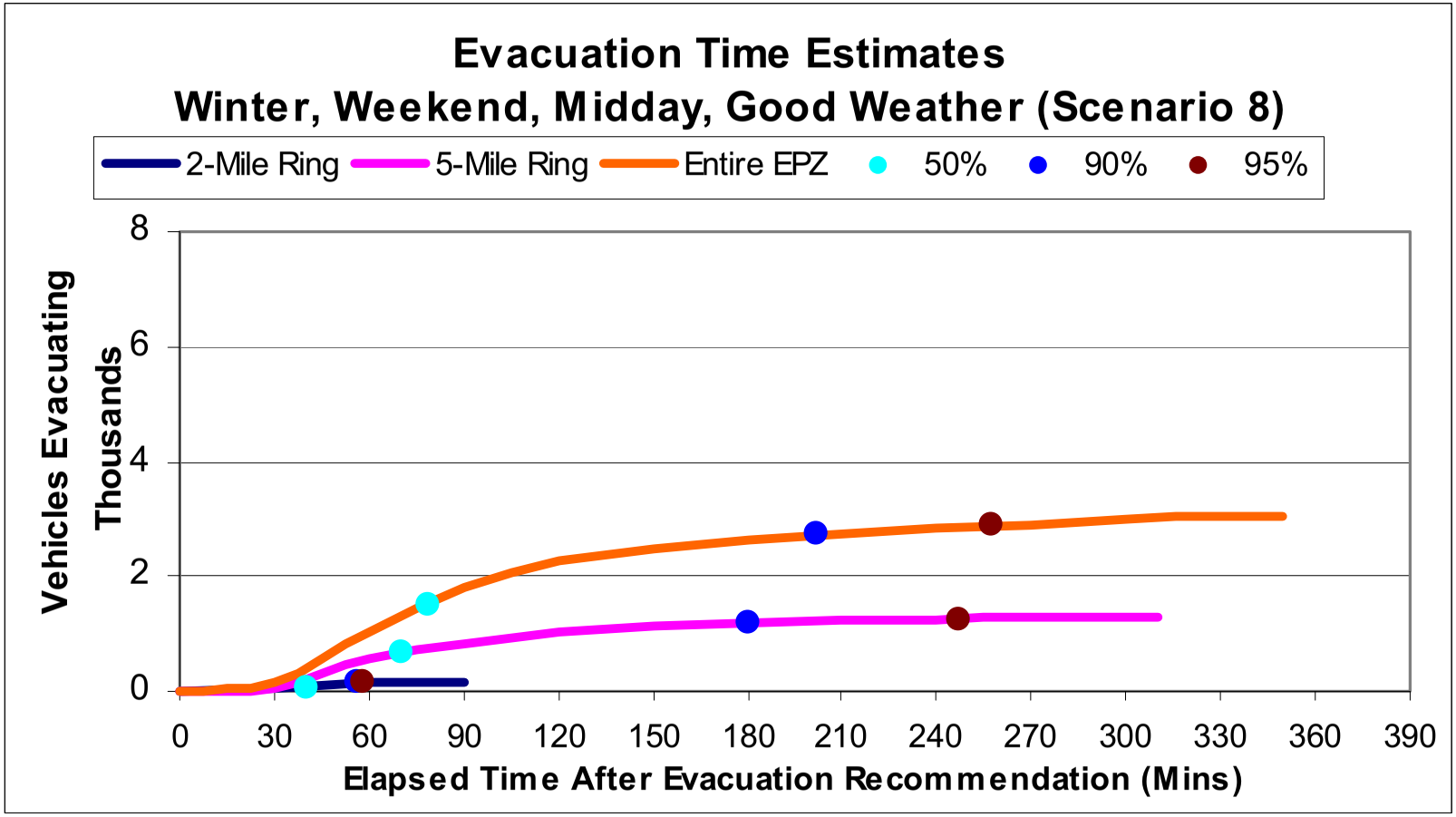


Figure J-8. Evacuation Time Estimates
Scenario 8 for Region R03 (Entire EPZ)

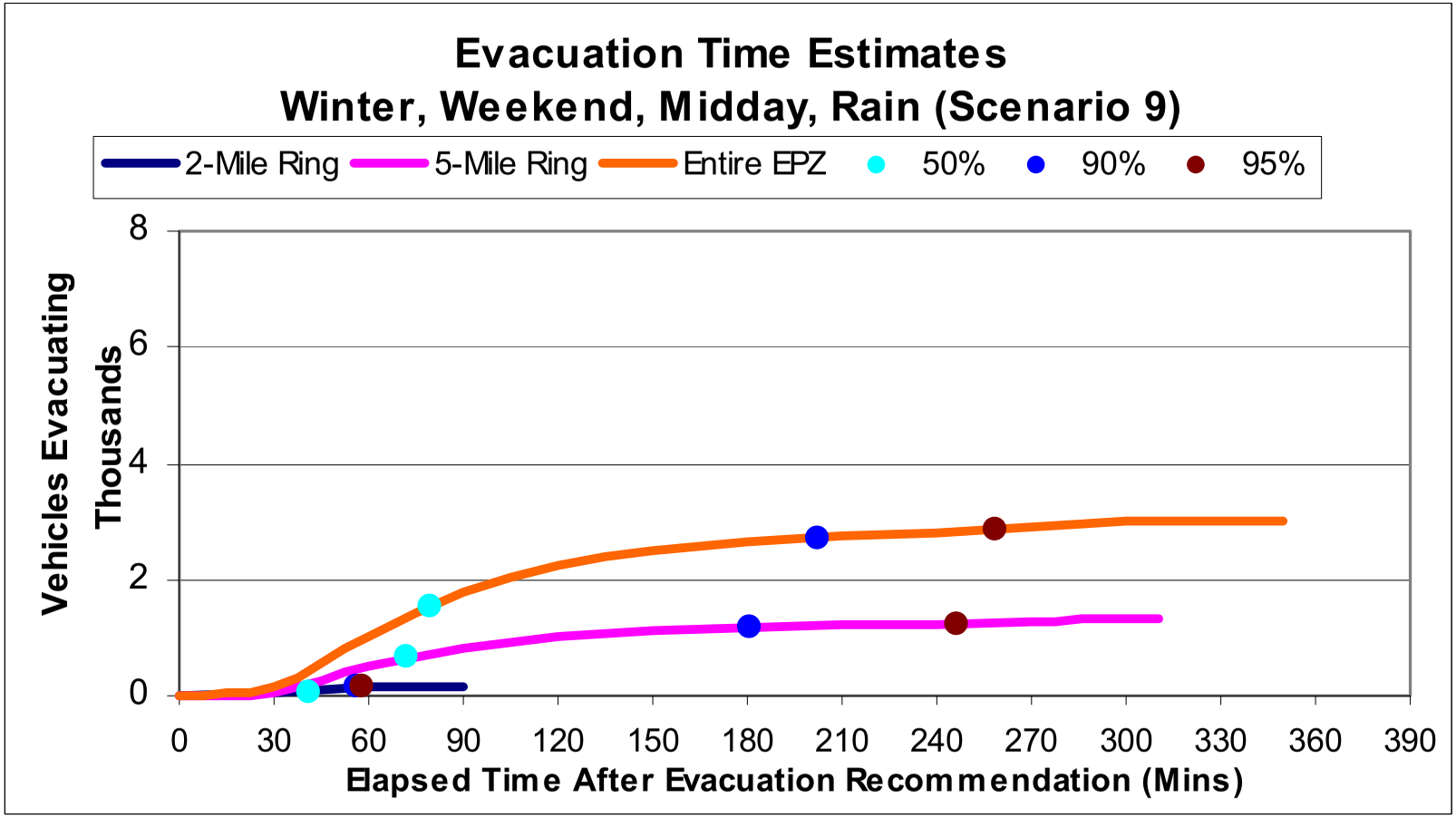


Figure J-9. Evacuation Time Estimates Scenario 9 for Region R03 (Entire EPZ)

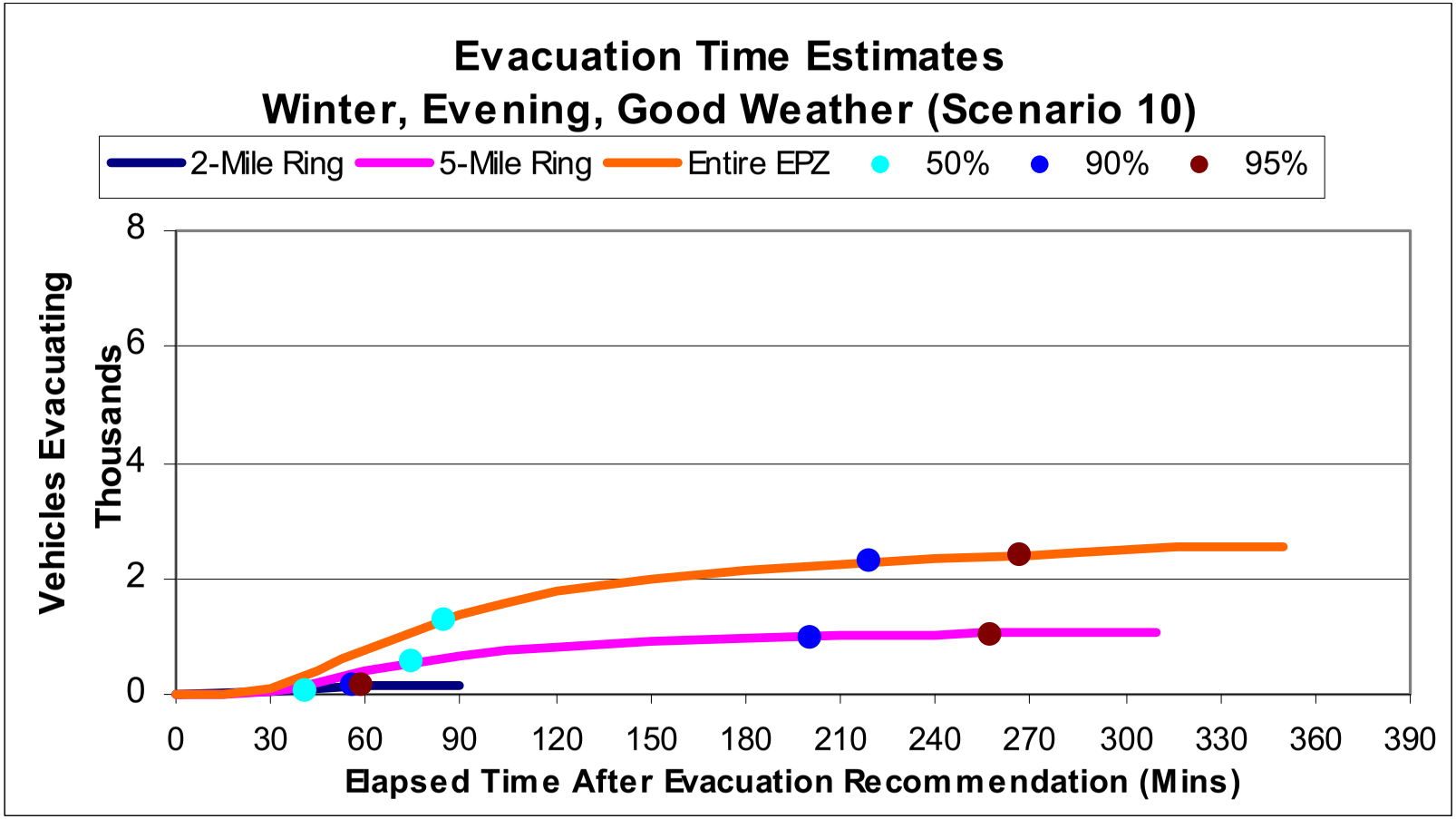


Figure J-10. Evacuation Time Estimates Scenario 10 for Region R03 (Entire EPZ)

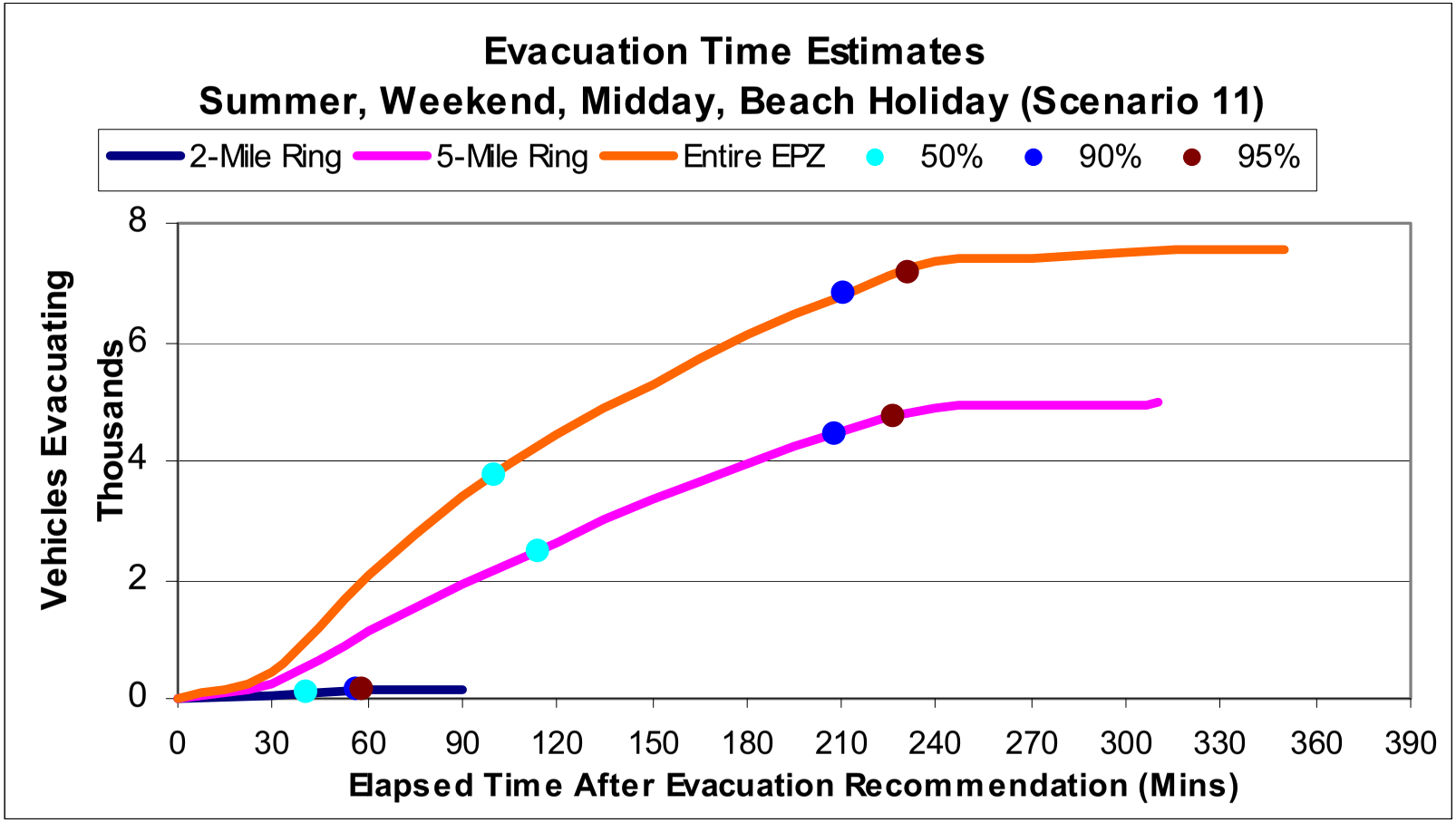


Figure J-11. Evacuation Time Estimates
Scenario 11 for Region R03 (Entire EPZ)

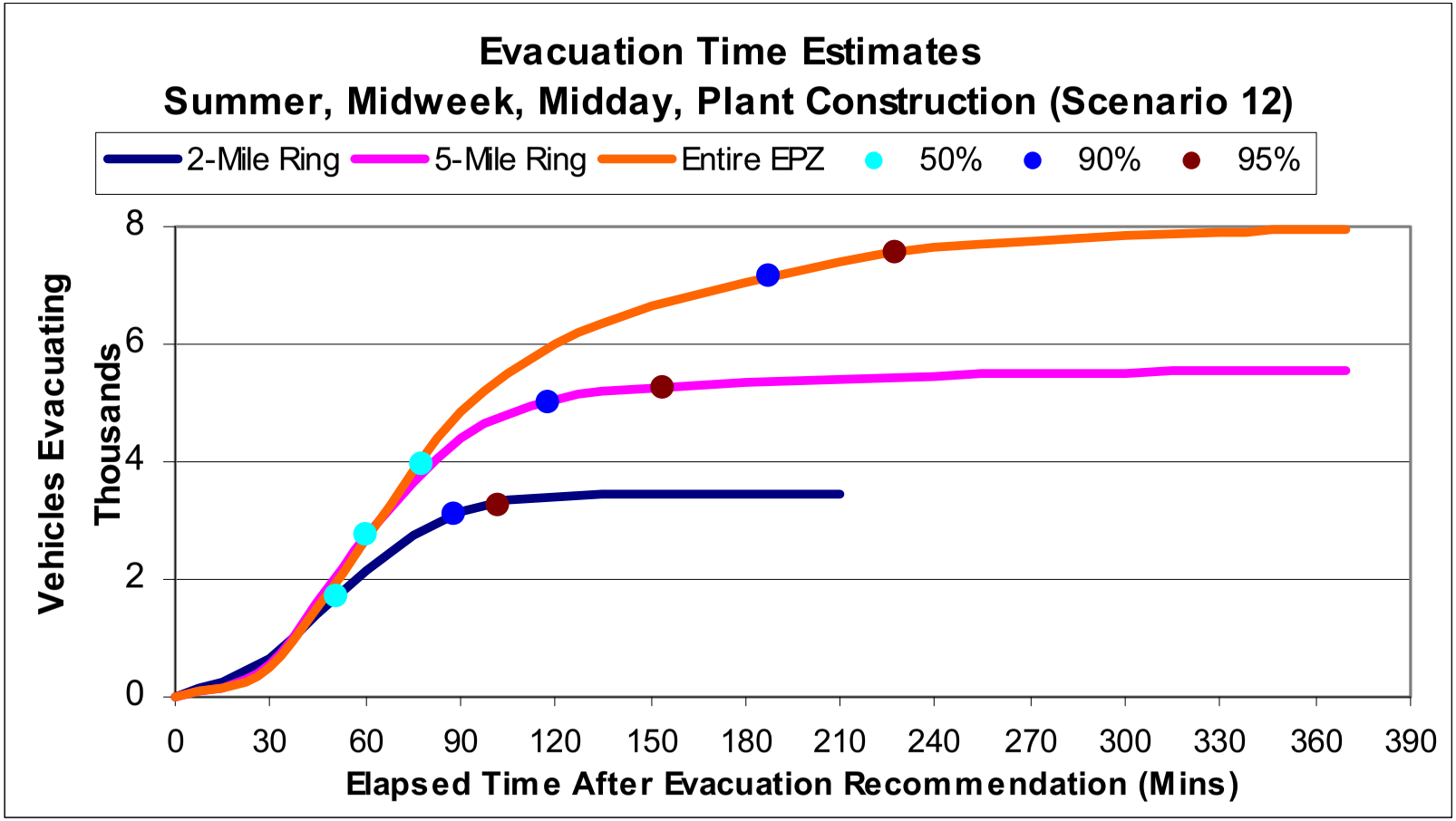


Figure J-12. Evacuation Time Estimates
Scenario 12 for Region R03 (Entire EPZ)

APPENDIX K

Evacuation Roadway Network Characteristics

APPENDIX K: EVACUATION ROADWAY NETWORK CHARACTERISTCS

As discussed in Section 1.3, a computerized link-node analysis network was constructed to model the roadway network within the study area. Figure K-1 provides an overview of the link-node analysis network. The figure has been divided up into 20 more detailed figures (Figures K-2 through K-21) which show each of the links and nodes in the network.

The analysis network was calibrated using the observations made during the field survey discussed in Section 1.3. Table K-1 lists the characteristics of each roadway section modeled in the ETE analysis. Each link is identified by its upstream and downstream node numbers. These node numbers can be cross-referenced to Figures K-1 through K-21 to identify the geographic location of each link.

The term, “Full Lanes” in Table K-1 identifies the number of lanes that extend throughout the length of the link. Many links have additional lanes on the immediate approach to an intersection (turn pockets); these have been recorded and entered into the I-DYNEV System input stream.

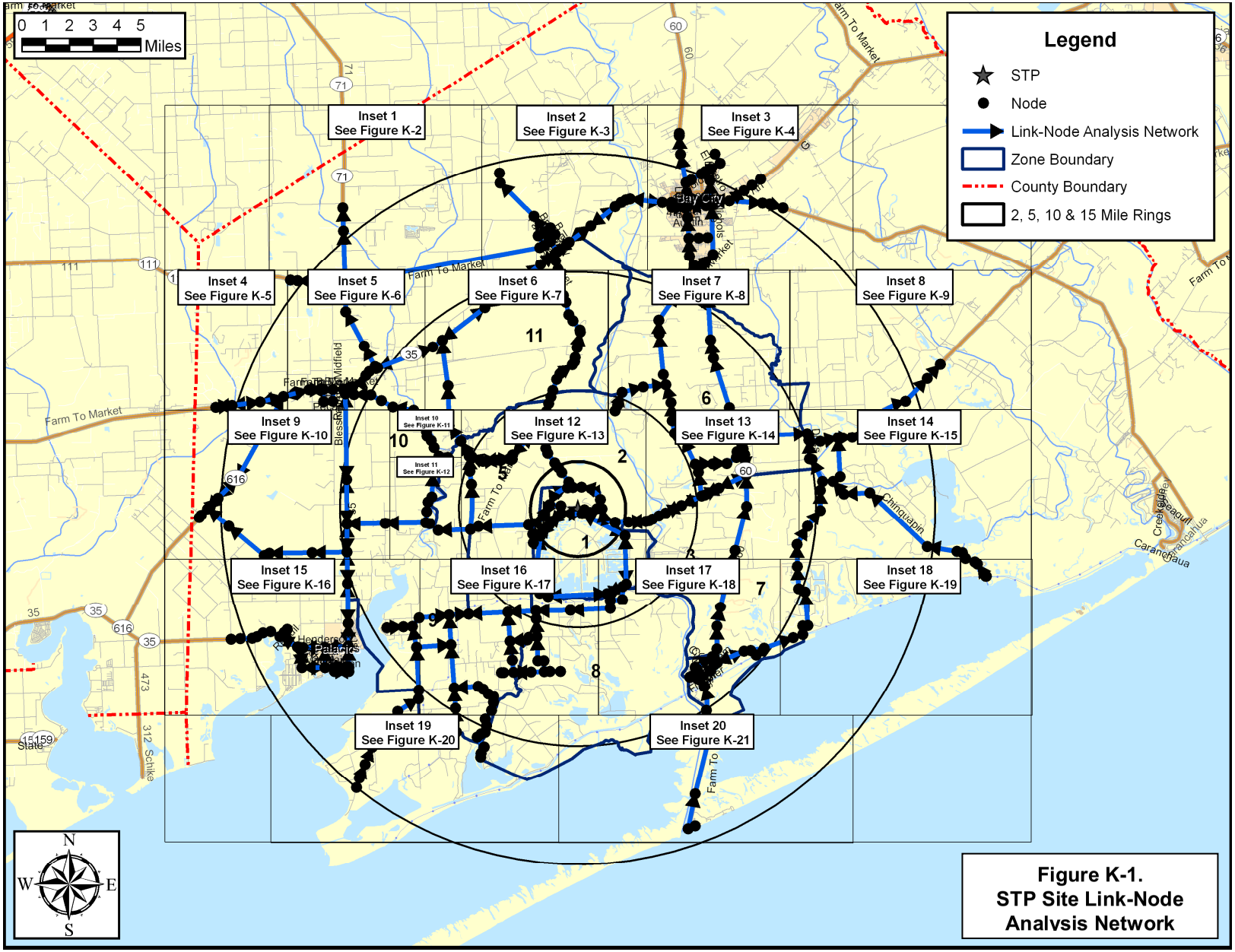
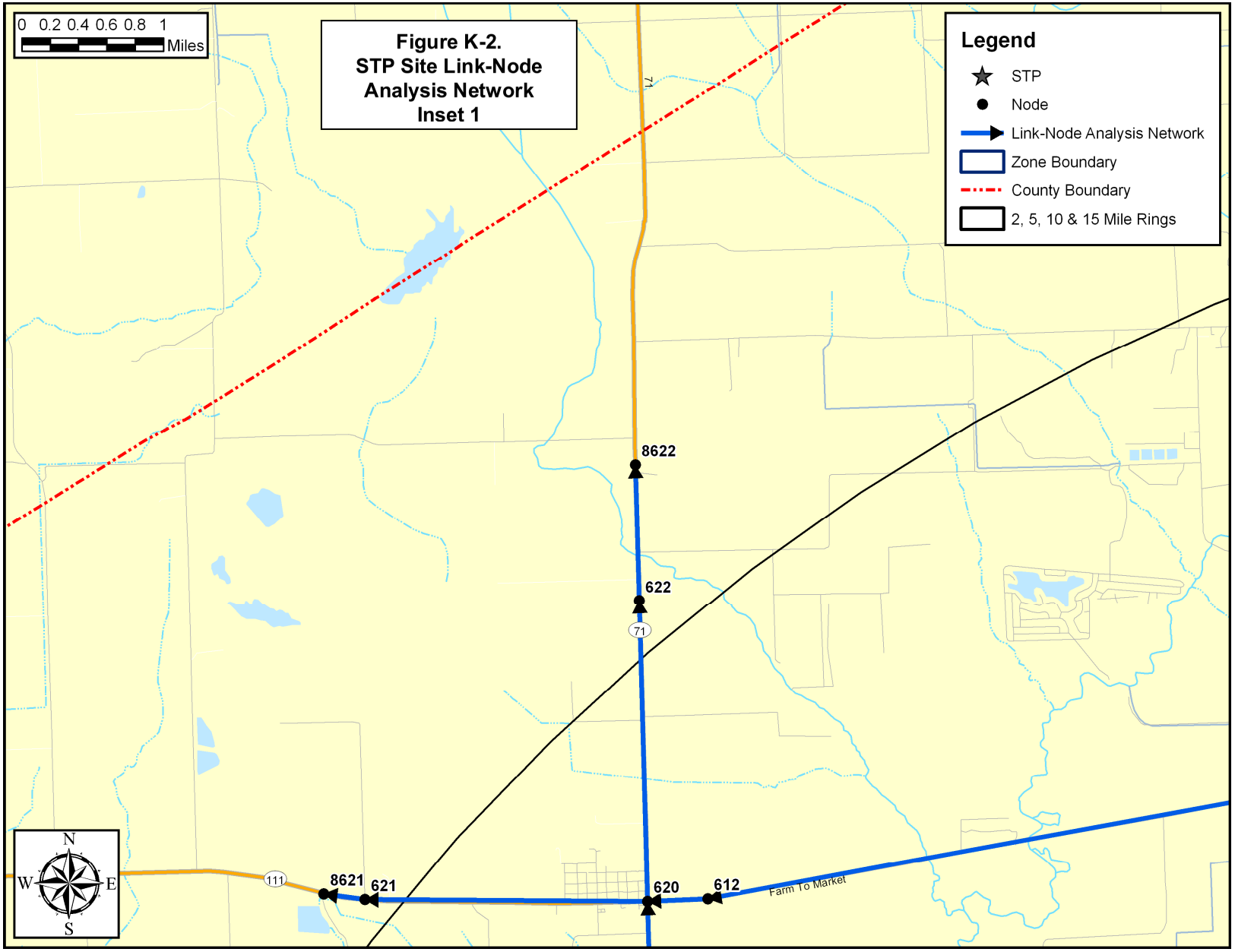


Figure K-1.
STP Site Link-Node Analysis Network


0 0.2 0.4 0.6 0.8 1
Miles
Figure K-2.
STP Site Link-Node
Analysis Network
Inset 1
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
8622
622
71
8621
621
620
612
111
Farm To Market
N
W
E
S

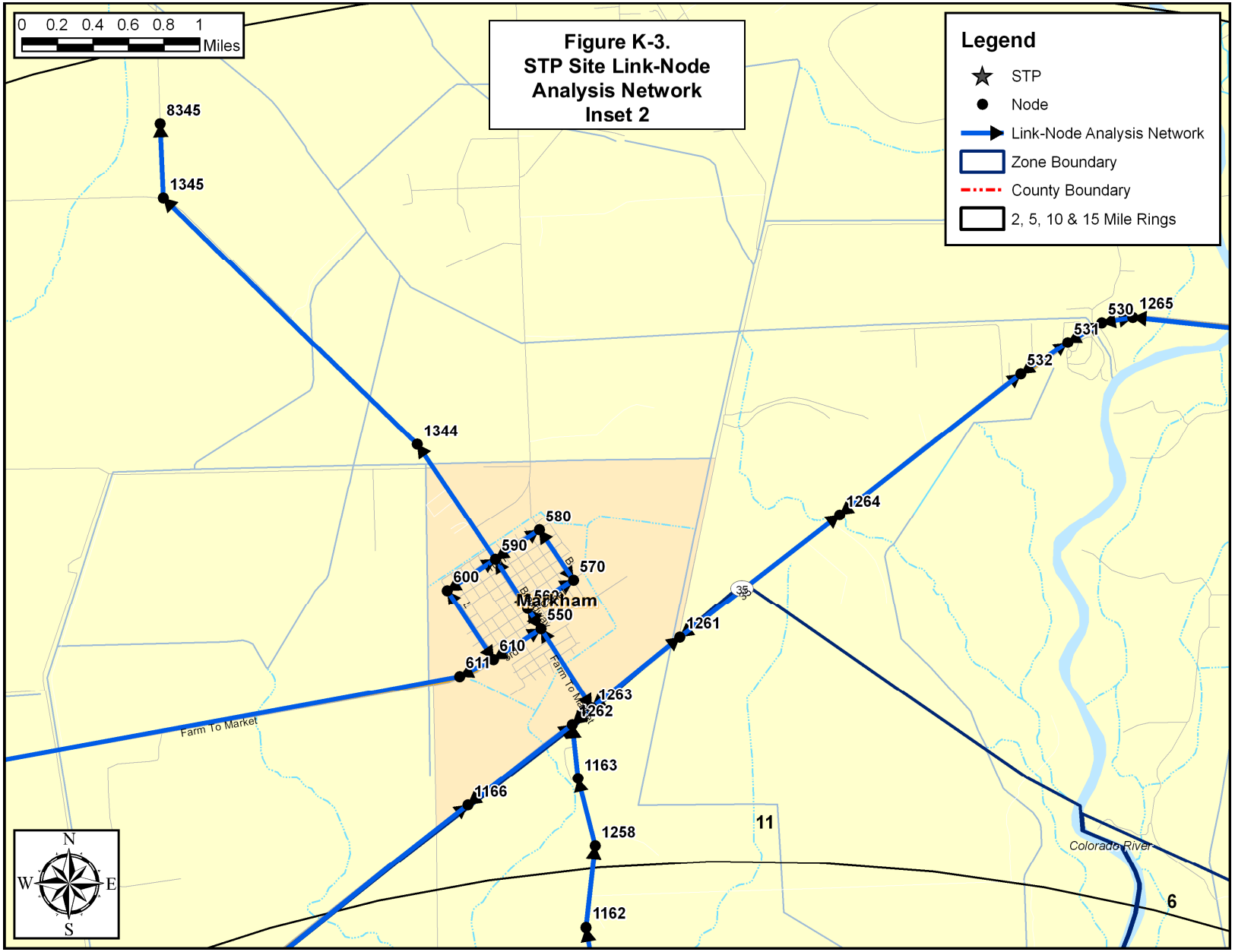
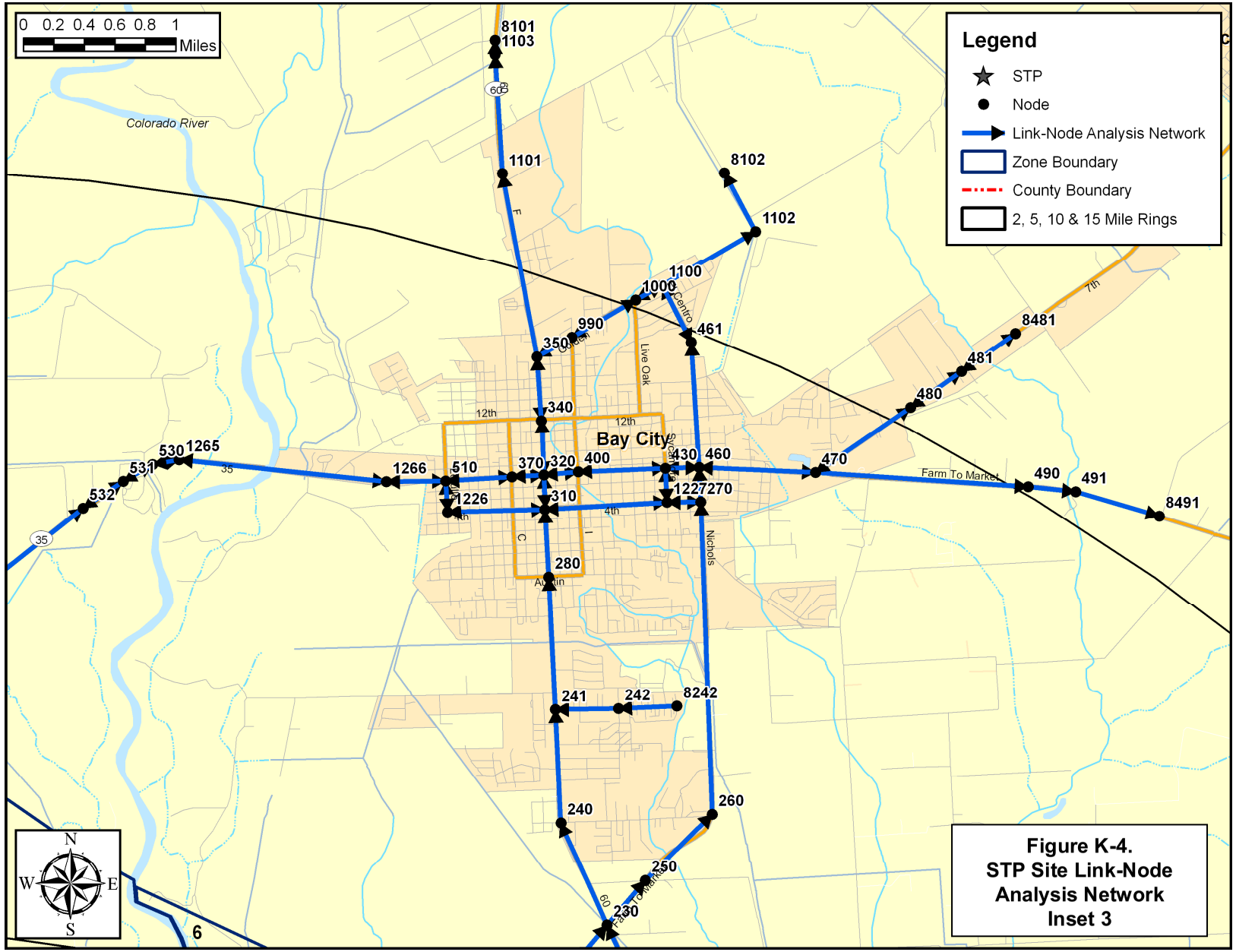
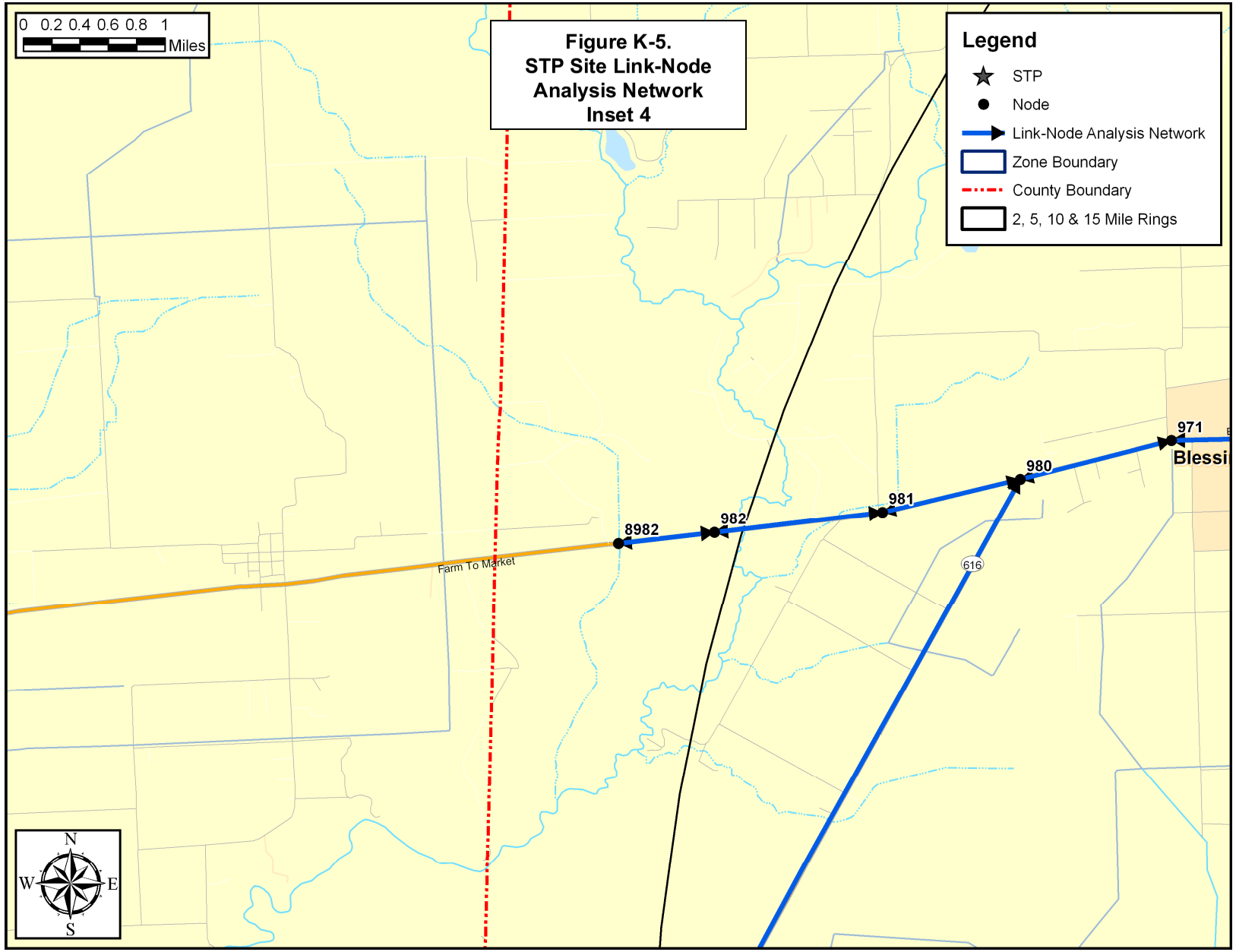


Figure K-3.
STP Site Link-Node
Analysis Network
Inset 2
0 0.2 0.4 0.6 0.8 1
Miles
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
8345
1345
1344
580
590
570
600
560
550
610
611
Markham
1263
1262
1261
1264
530
1265
531
532
1163
1166
1258
1162
Farm To Market
Colorado River
11
6
N
W
E
S


0 0.2 0.4 0.6 0.8 1
Miles
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
Colorado River
Bay City
8101
1103
1101
8102
1102
1100
1000
990
350
461
340
8481
481
480
530
1265
531
532
1266
510
370
320
400
430
460
470
490
491
8491
1226
310
1227
270
280
241
242
8242
240
260
250
230
Figure K-4.
STP Site Link-Node
Analysis Network
Inset 3


0 0.2 0.4 0.6 0.8 1
Miles
Figure K-5.
STP Site Link-Node
Analysis Network
Inset 4
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
971
980
981
982
8982
Farm To Market
616
N
W
E
S

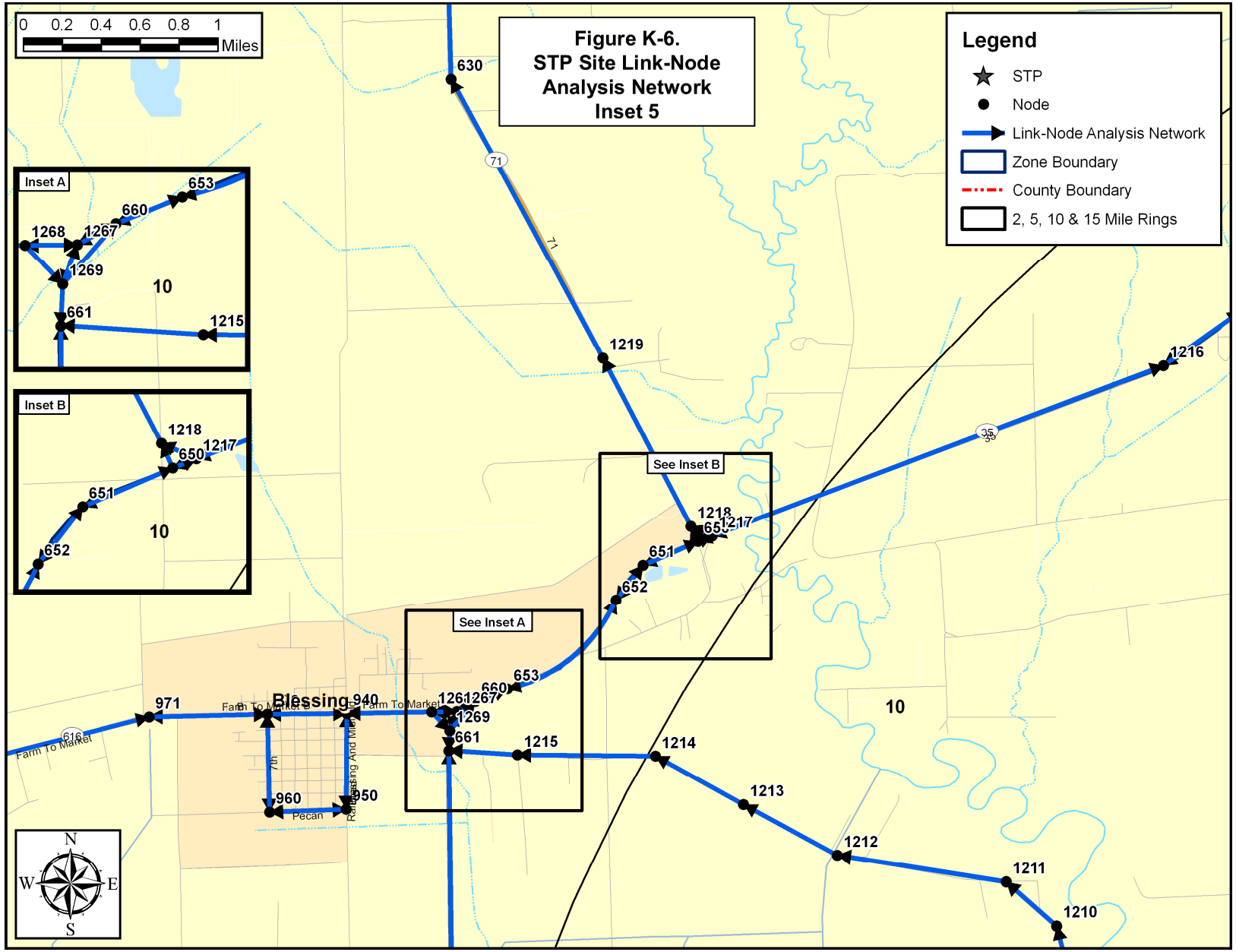
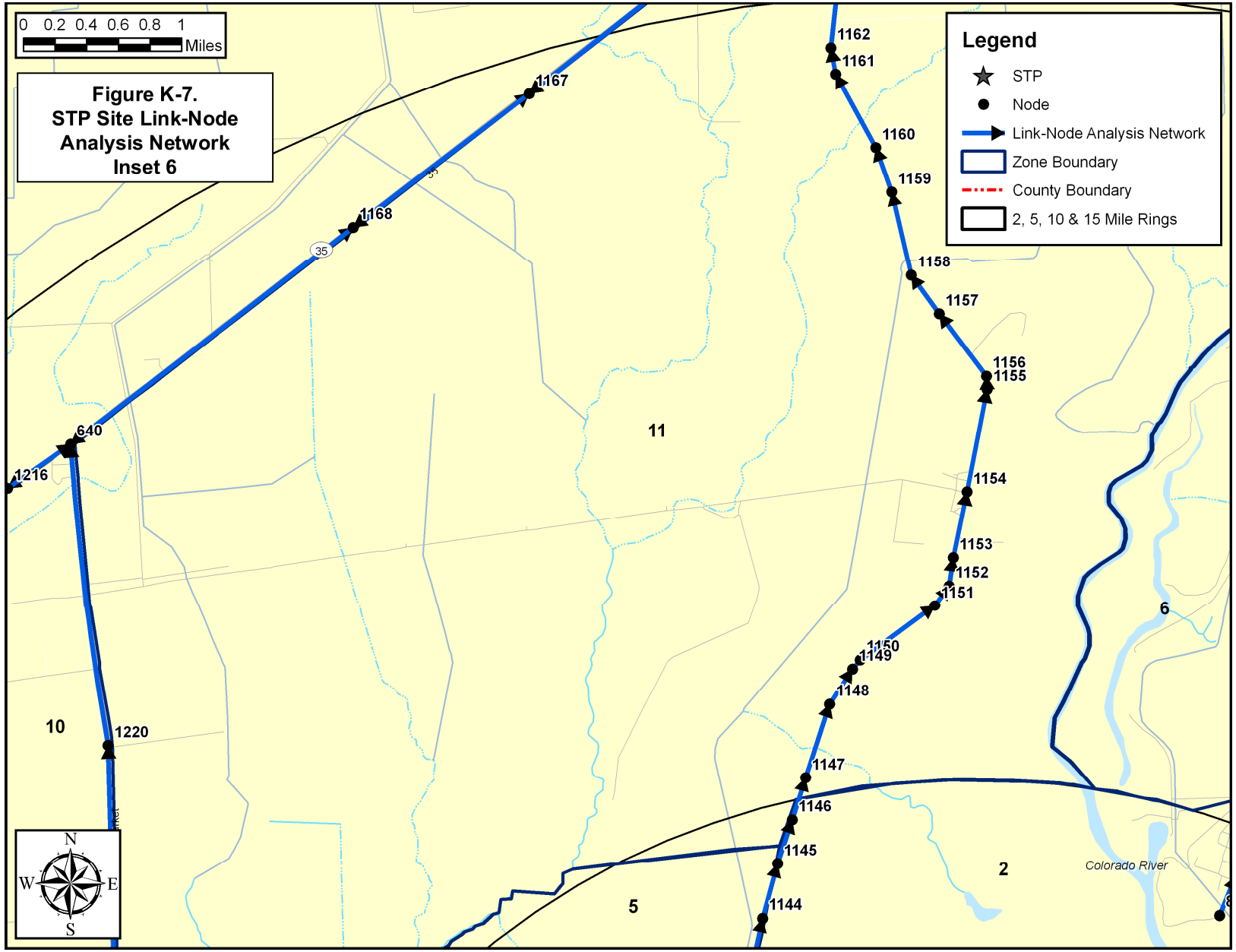


Figure K-6.
STP Site Link-Node
Analysis Network
Inset 5
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
0 0.2 0.4 0.6 0.8 1
Miles
Inset A
Inset B
See Inset A
See Inset B
630
71
1219
1216
653
660
1268
1267
1269
661
1215
1218
650
1217
651
652
971
Blessing
940
Farm To Market
616
7th
960
950
Pecan
1261
1214
1213
1212
1211
1210
10
N
S
E
W


0 0.2 0.4 0.6 0.8 1
Miles
Figure K-7.
STP Site Link-Node
Analysis Network
Inset 6
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
1162
1161
1160
1159
1158
1157
1156
1155
1154
1153
1152
1151
1150
1149
1148
1147
1146
1145
1144
1167
1168
640
1216
1220
11
10
6
5
2
35
Colorado River
N
W
E
S

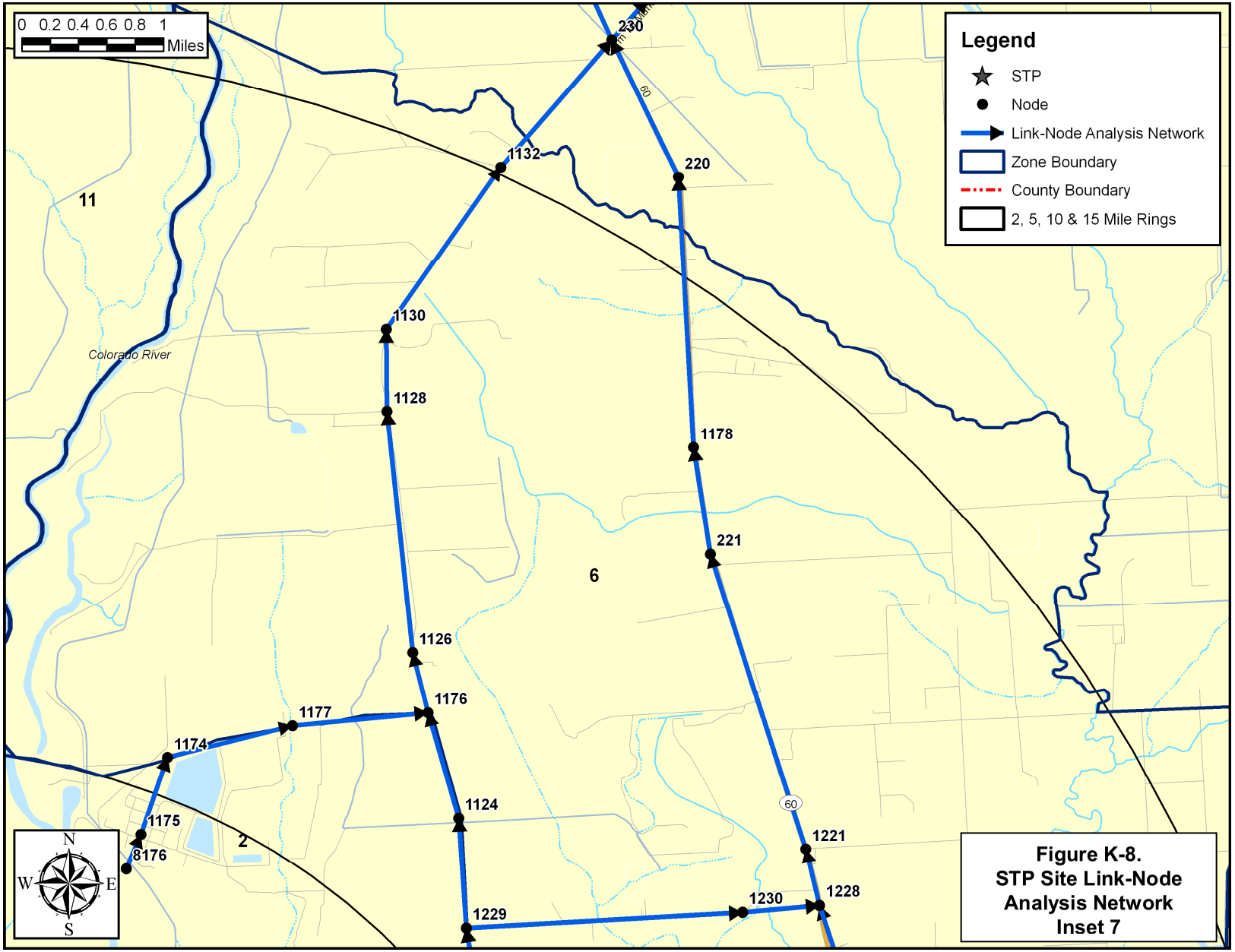
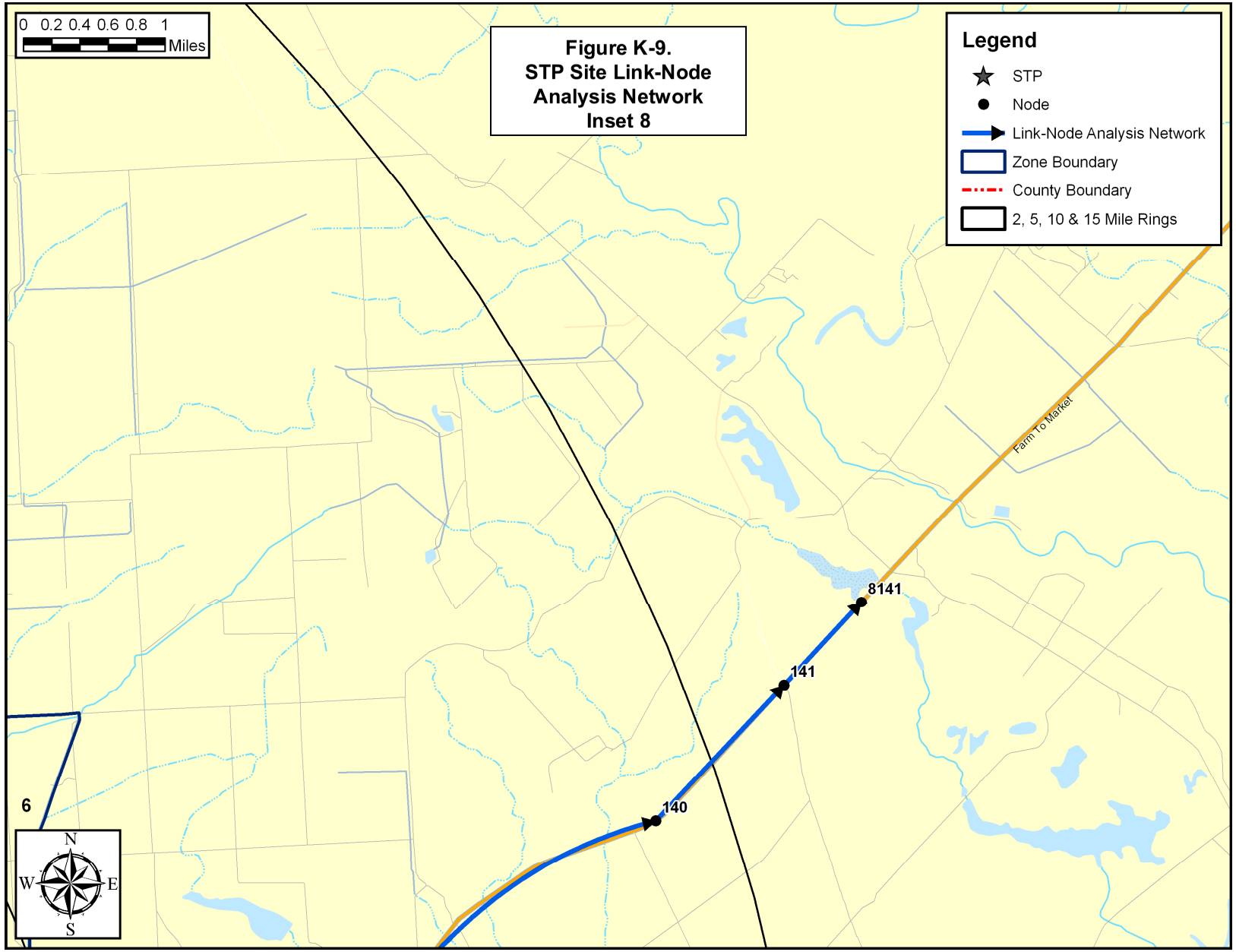
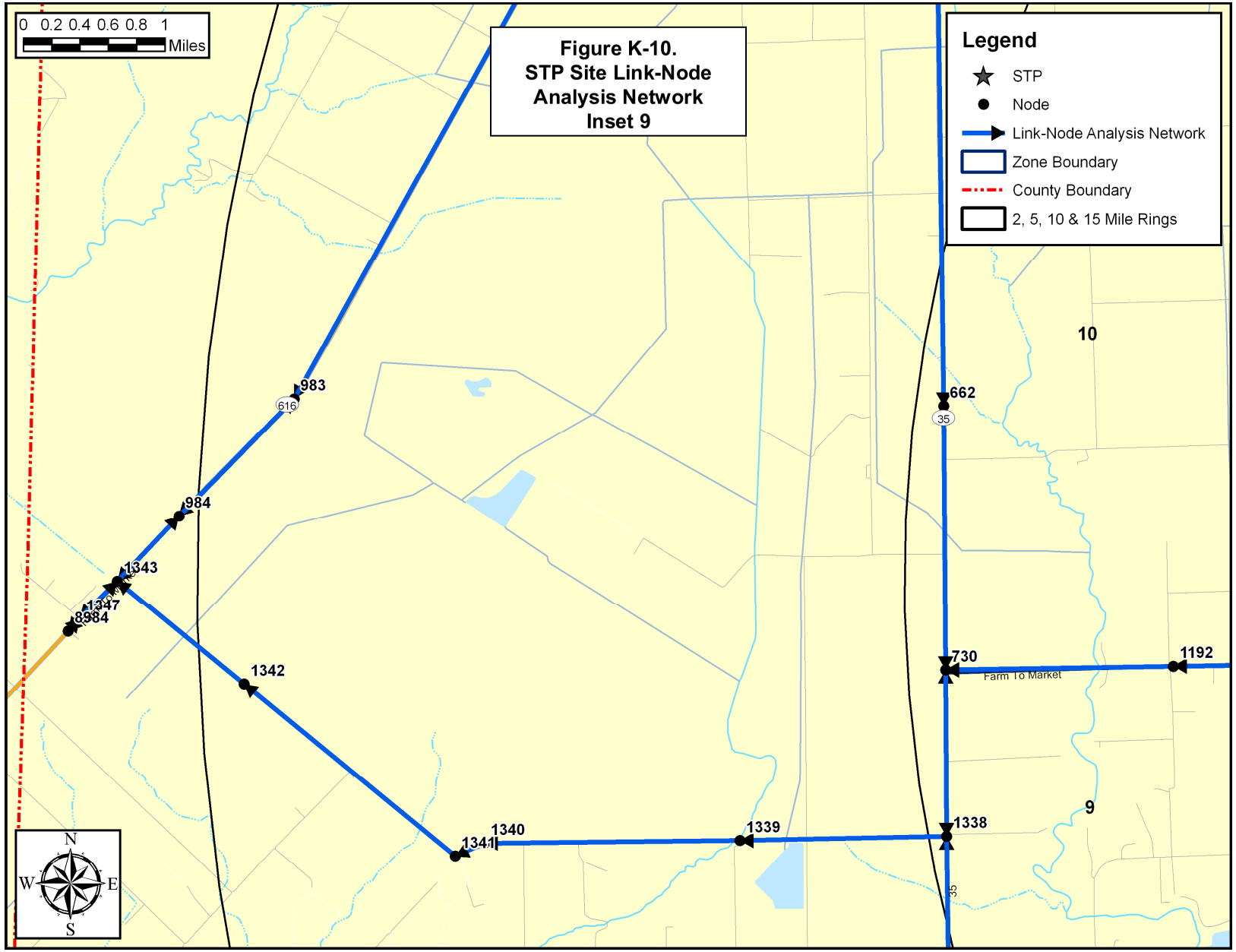


Figure K-8.
STP Site Link-Node Analysis Network Inset 7


0 0.2 0.4 0.6 0.8 1
Miles
Figure K-9.
STP Site Link-Node
Analysis Network
Inset 8
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
Farm To Market
8141
141
140
6
N
W
E
S


0 0.2 0.4 0.6 0.8 1
Miles
Figure K-10.
STP Site Link-Node
Analysis Network
Inset 9
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
983
984
1343
1347
8984
1342
1340
1341
1339
1338
662
730
1192
Farm To Market
10
9
616
35
N
W
E
S

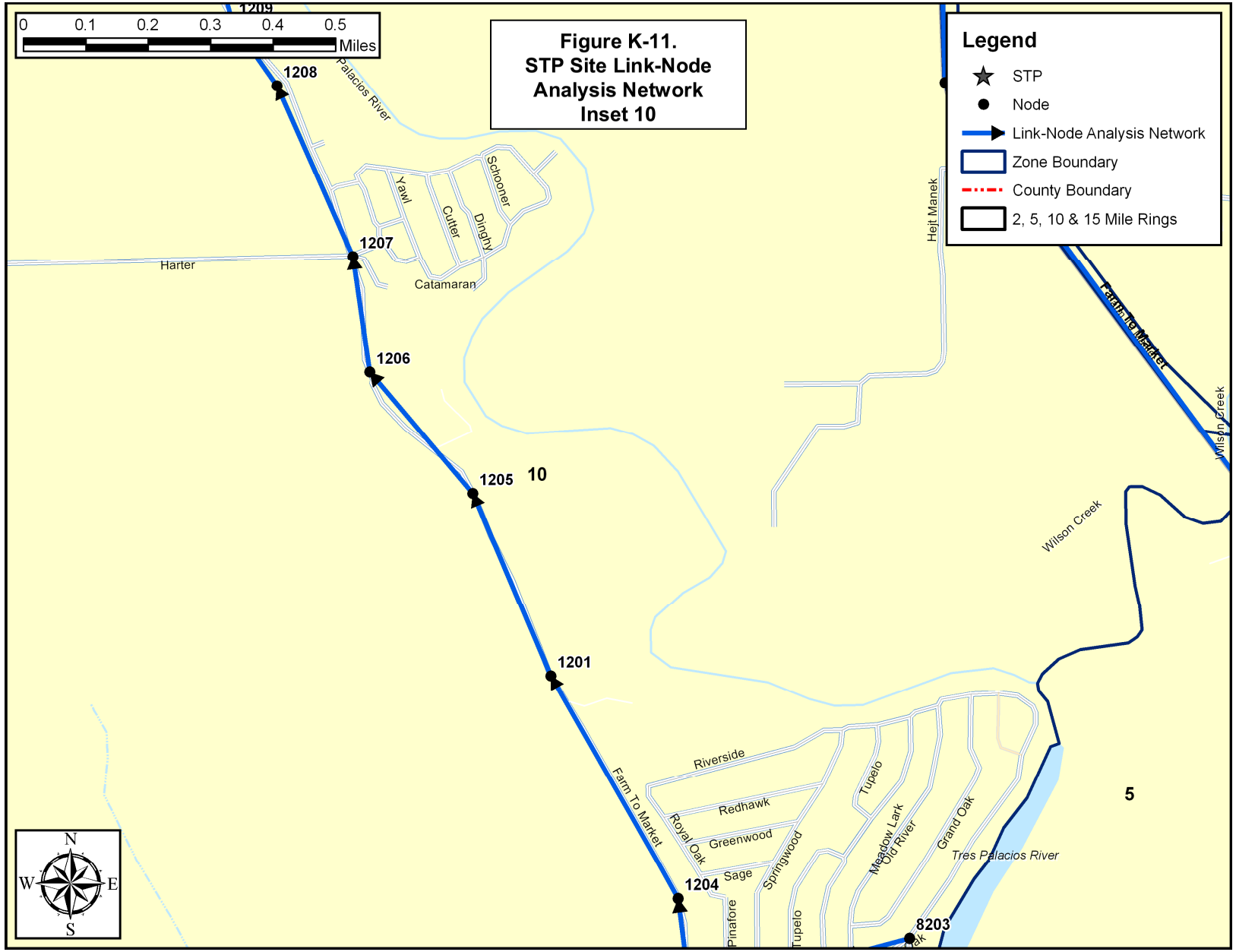
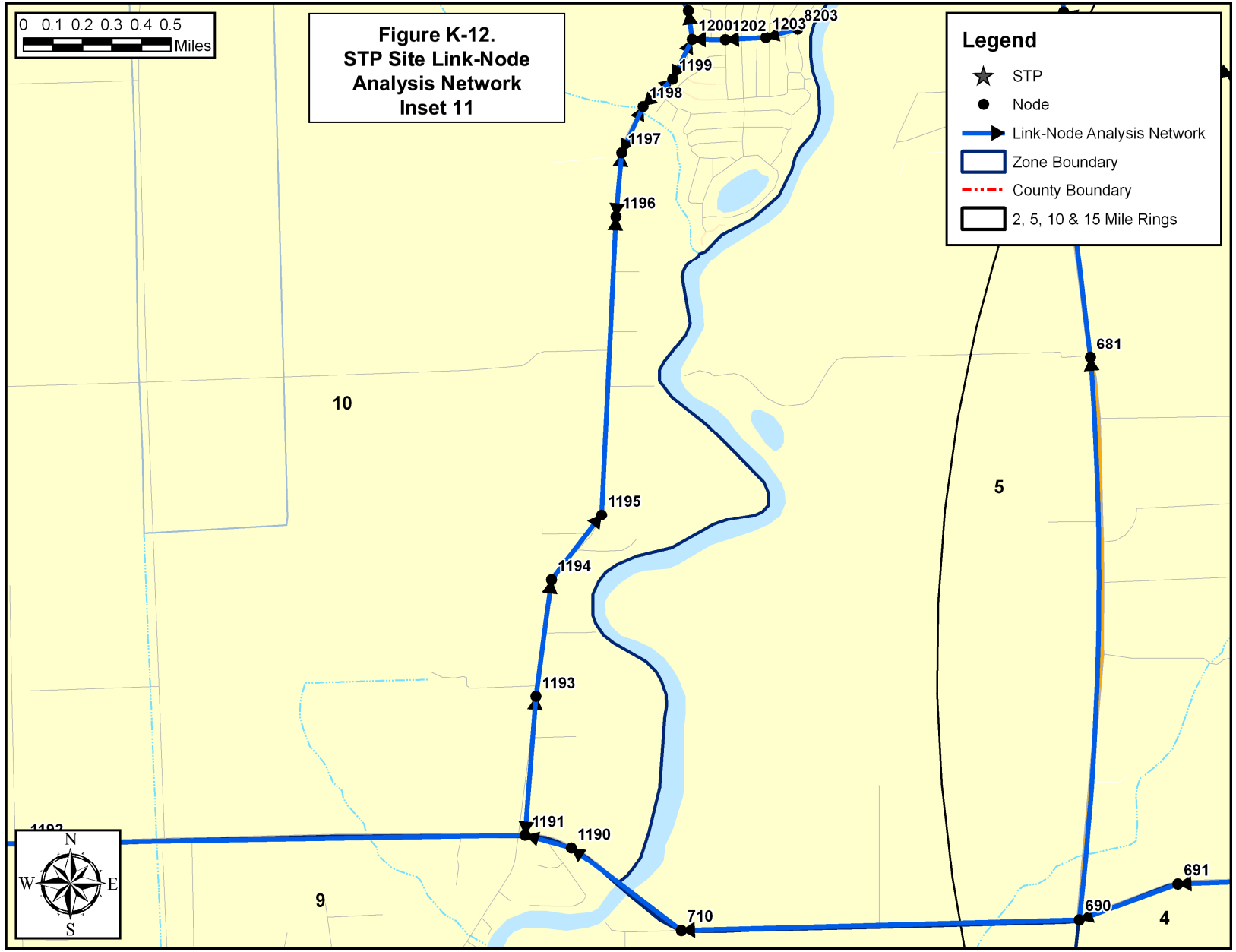


Figure K-11.
STP Site Link-Node
Analysis Network
Inset 10
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
0 0.1 0.2 0.3 0.4 0.5
Miles
1209
1208
1207
1206
1205
1201
1204
8203
10
5
Palacios River
Yawl
Cutter
Dinghy
Schooner
Catamaran
Harter
Heit Manek
Farm To Market
Wilson Creek
Riverside
Redhawk
Royal Oak
Greenwood
Sage
Springwood
Pinafore
Tupelo
Meadow Lark
Old River
Grand Oak
Tres Palacios River
N
S
E
W


0 0.1 0.2 0.3 0.4 0.5
Miles
Figure K-12.
STP Site Link-Node
Analysis Network
Inset 11
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
1200
1202
1203
8203
1199
1198
1197
1196
1195
1194
1193
1191
1190
710
681
691
690
10
5
9
4
N
W
E
S

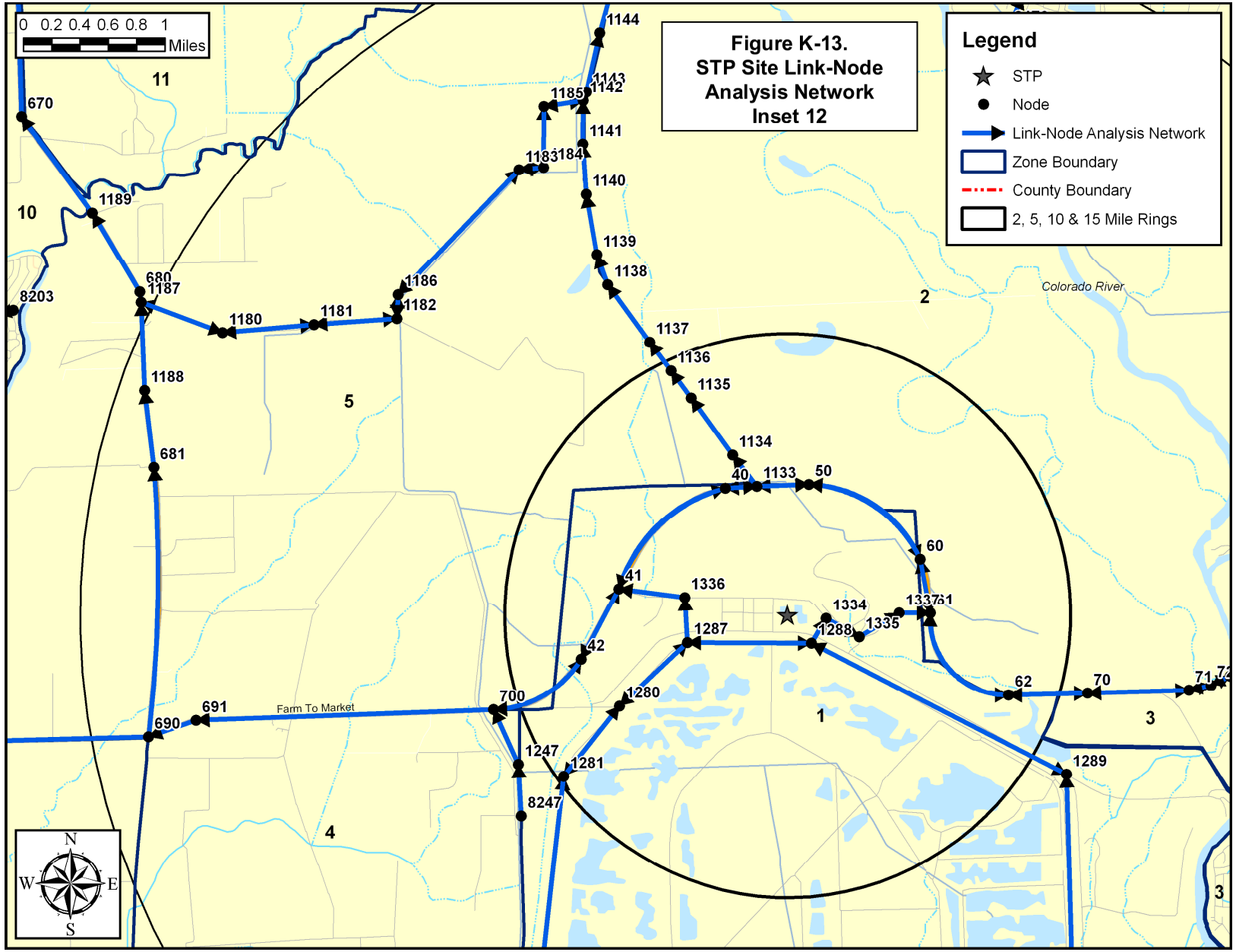
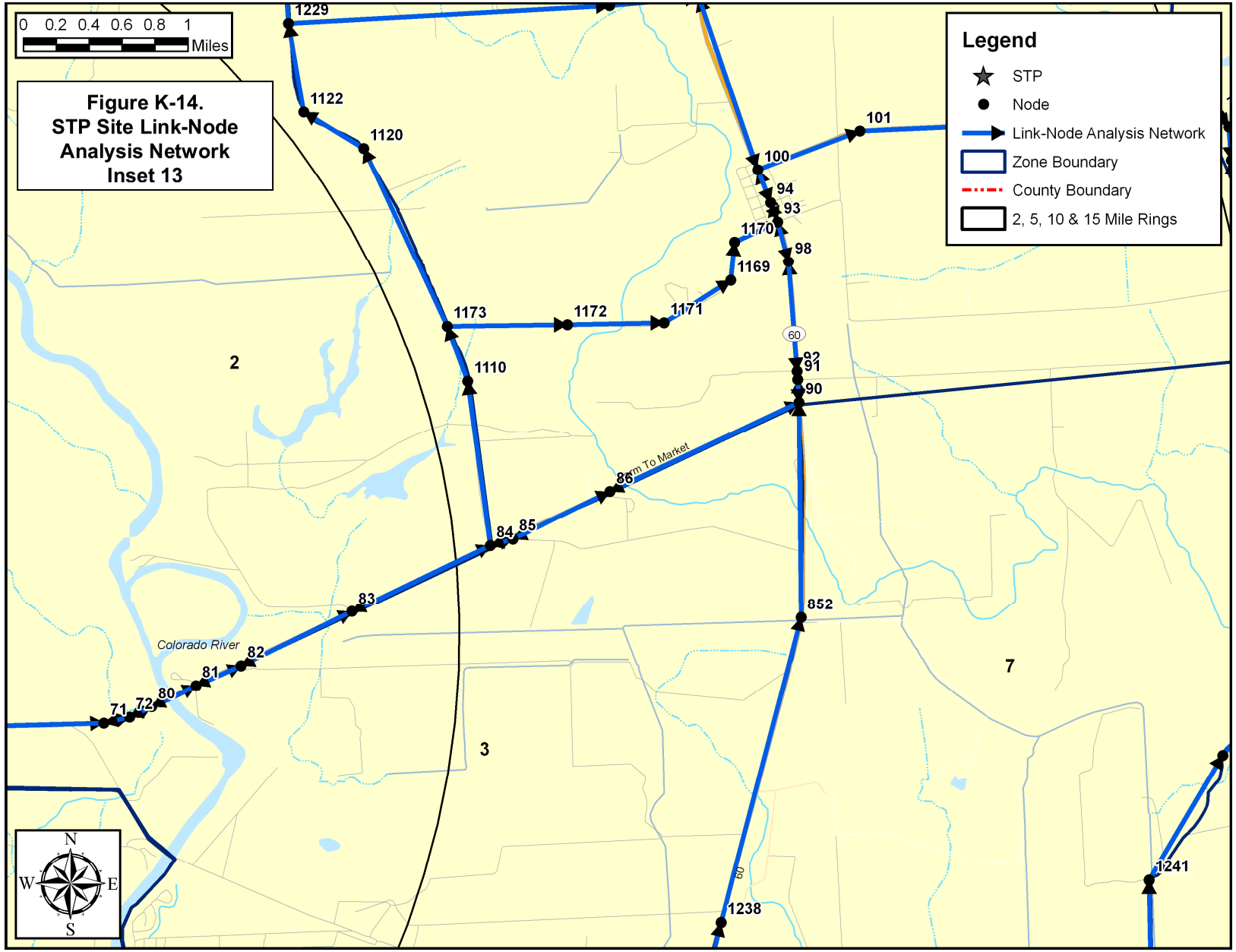


Figure K-13.
STP Site Link-Node
Analysis Network
Inset 12
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
0 0.2 0.4 0.6 0.8 1
Miles
Colorado River
Farm To Market
1144
1143
1142
1185
1141
1183
1184
1140
1139
1138
1137
1136
1135
1134
1133
1186
1182
1187
1180
1181
1189
1188
681
670
8203
680
691
690
700
1247
1281
8247
1280
1287
1336
1334
1335
1288
1337
1289
62
70
60
50
40
41
42
11
10
5
4
2
1
3


0 0.2 0.4 0.6 0.8 1
Miles
Figure K-14.
STP Site Link-Node
Analysis Network
Inset 13
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
1229
1122
1120
101
100
94
93
1170
98
1169
1173
1172
1171
60
2
1110
92
91
90
Farm To Market
86
84
85
83
852
Colorado River
82
81
80
71
72
7
3
N
W
E
S
60
1238
1241

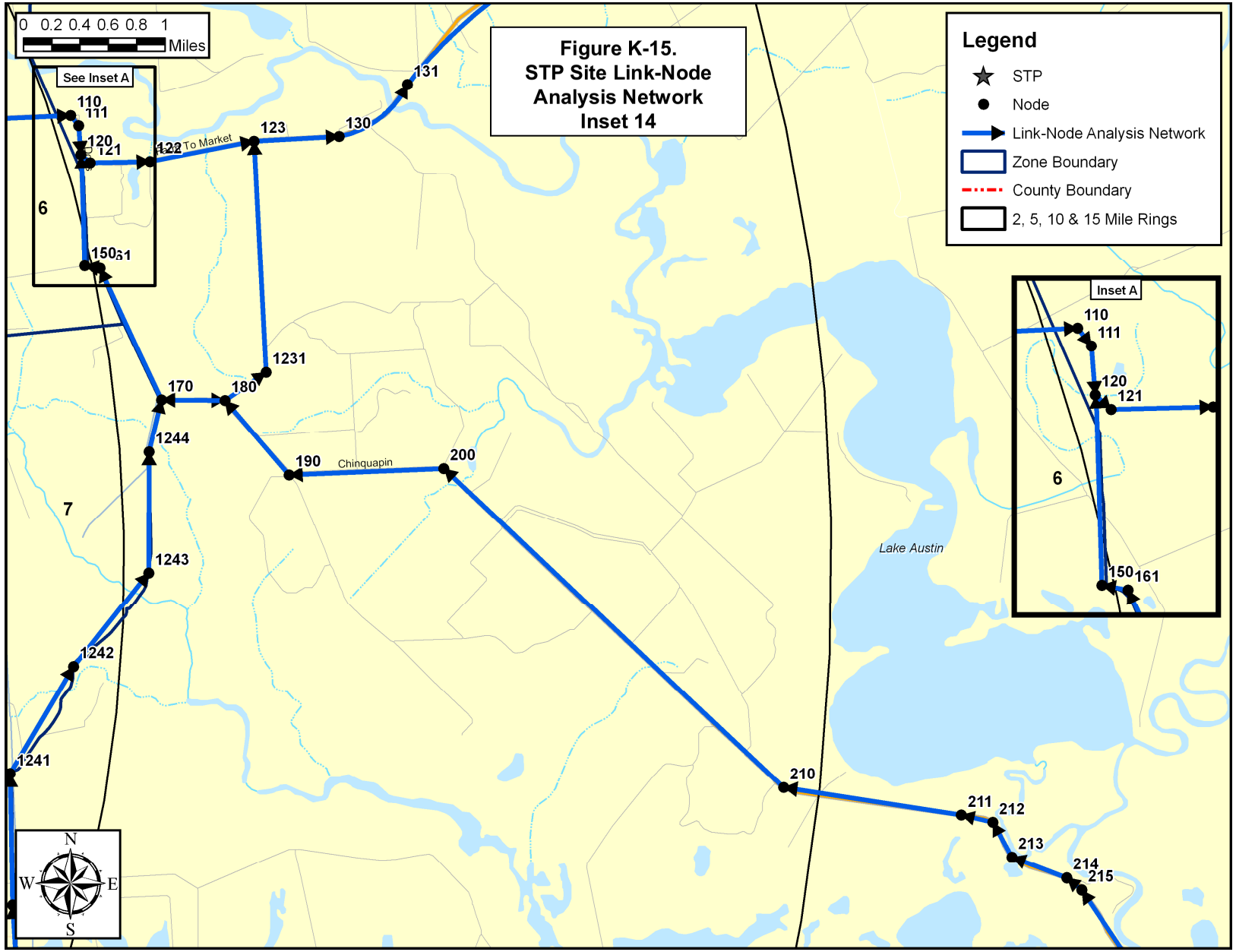


Figure K-15.
STP Site Link-Node
Analysis Network
Inset 14
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
0 0.2 0.4 0.6 0.8 1
Miles
See Inset A
Inset A
To Market
Chinquapin
Lake Austin
6
7
110
111
120
121
122
123
130
131
150
151
161
170
180
190
200
210
211
212
213
214
215
1231
1241
1242
1243
1244
N
S
E
W

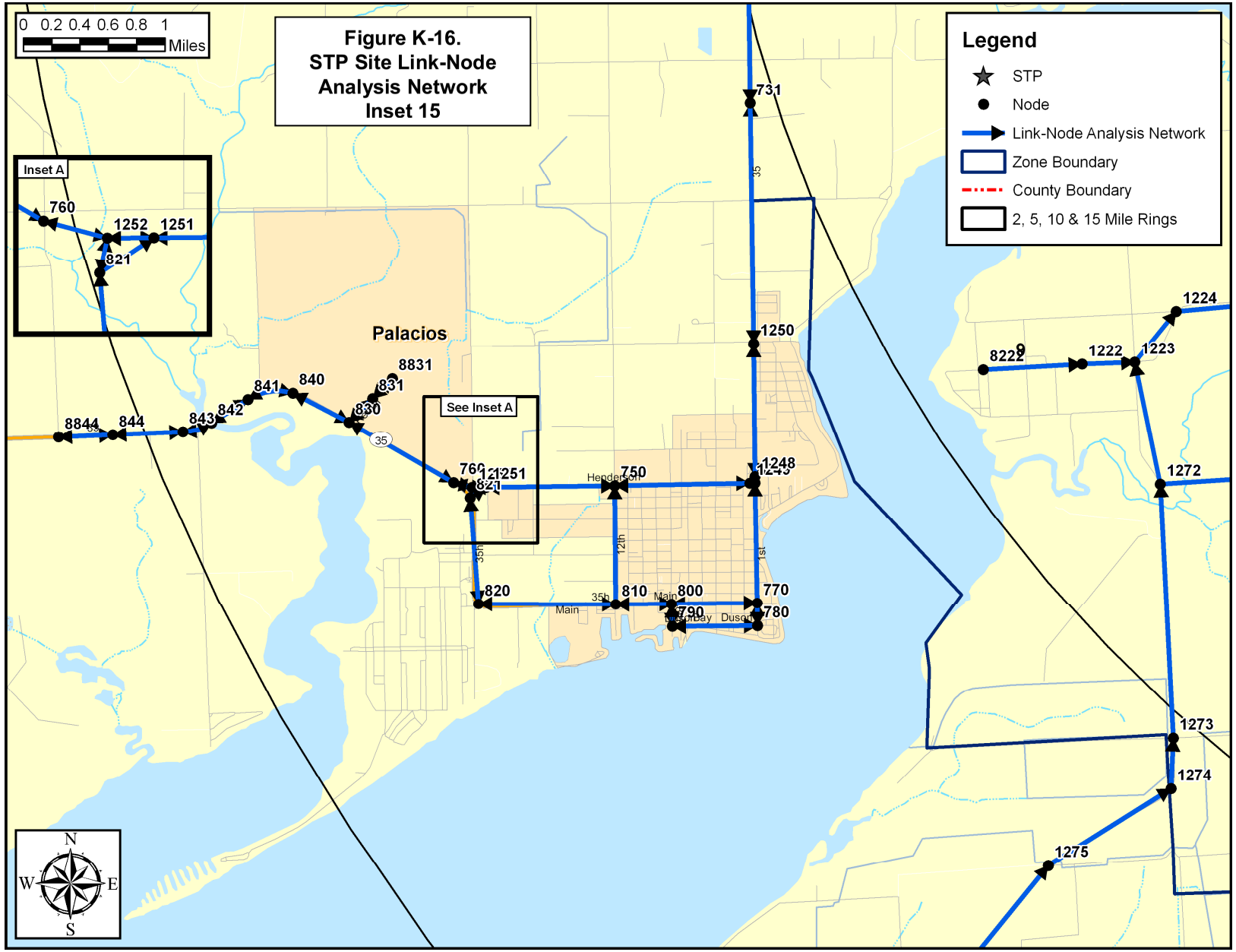
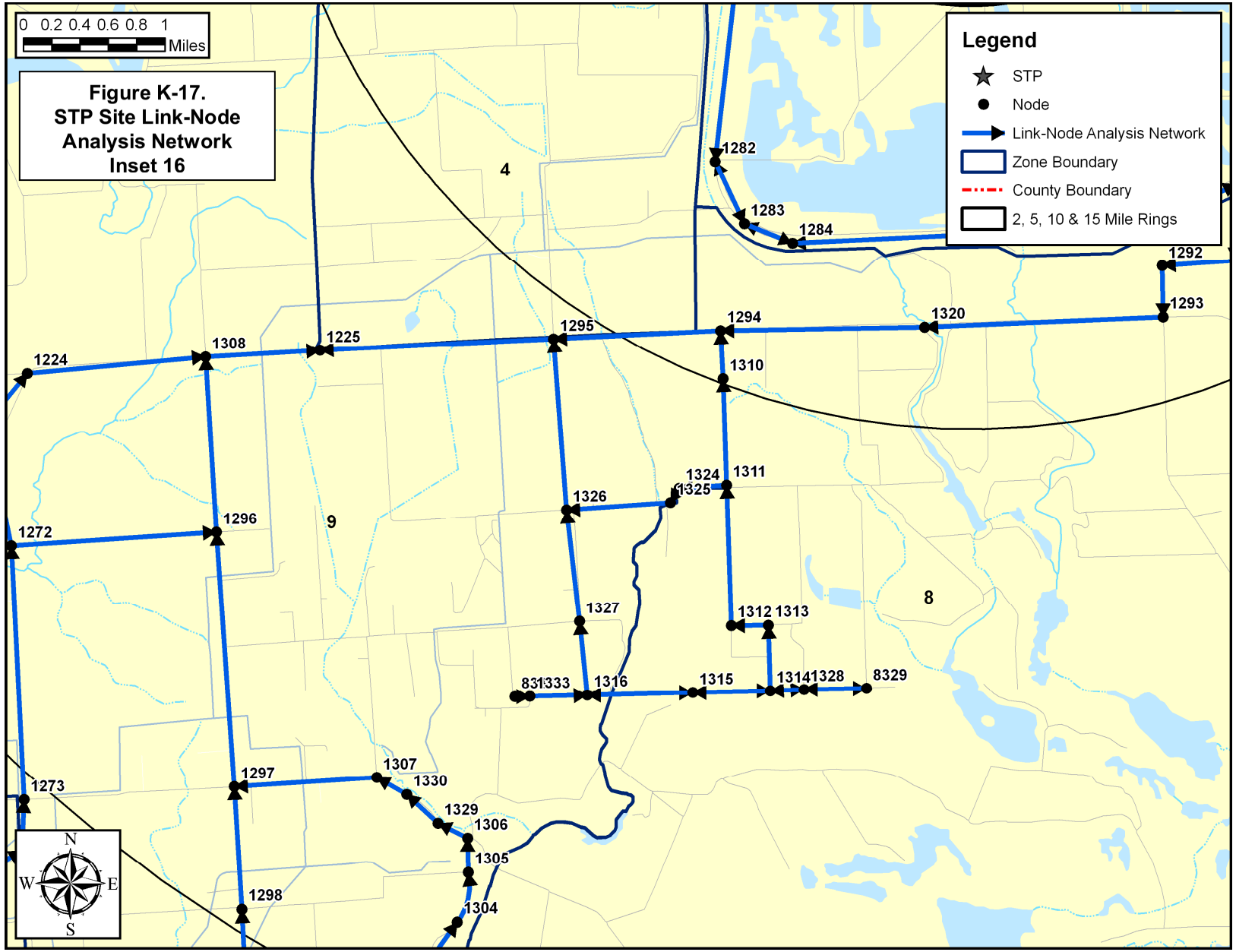


Figure K-16.
STP Site Link-Node
Analysis Network
Inset 15
0 0.2 0.4 0.6 0.8 1
Miles
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
Inset A
760
1252
1251
821
Palacios
See Inset A
8831
831
840
841
842
843
844
8844
830
35
731
1250
1248
750
820
810
800
790
770
780
1222
1223
1224
1272
1273
1274
1275
35h
12th
1st
Main
Henderson
Dusony
N
W
E
S


0 0.2 0.4 0.6 0.8 1
Miles
Figure K-17.
STP Site Link-Node
Analysis Network
Inset 16
Legend
STP
Node
Link-Node Analysis Network
Zone Boundary
County Boundary
2, 5, 10 & 15 Mile Rings
4
9
8
1282
1283
1284
1292
1293
1294
1320
1295
1225
1308
1224
1310
1311
1324
1325
1326
1296
1272
1327
1312
1313
8329
1328
1314
1315
1316
1333
1273
1297
1307
1330
1329
1306
1305
1298
1304
N
W
E
S

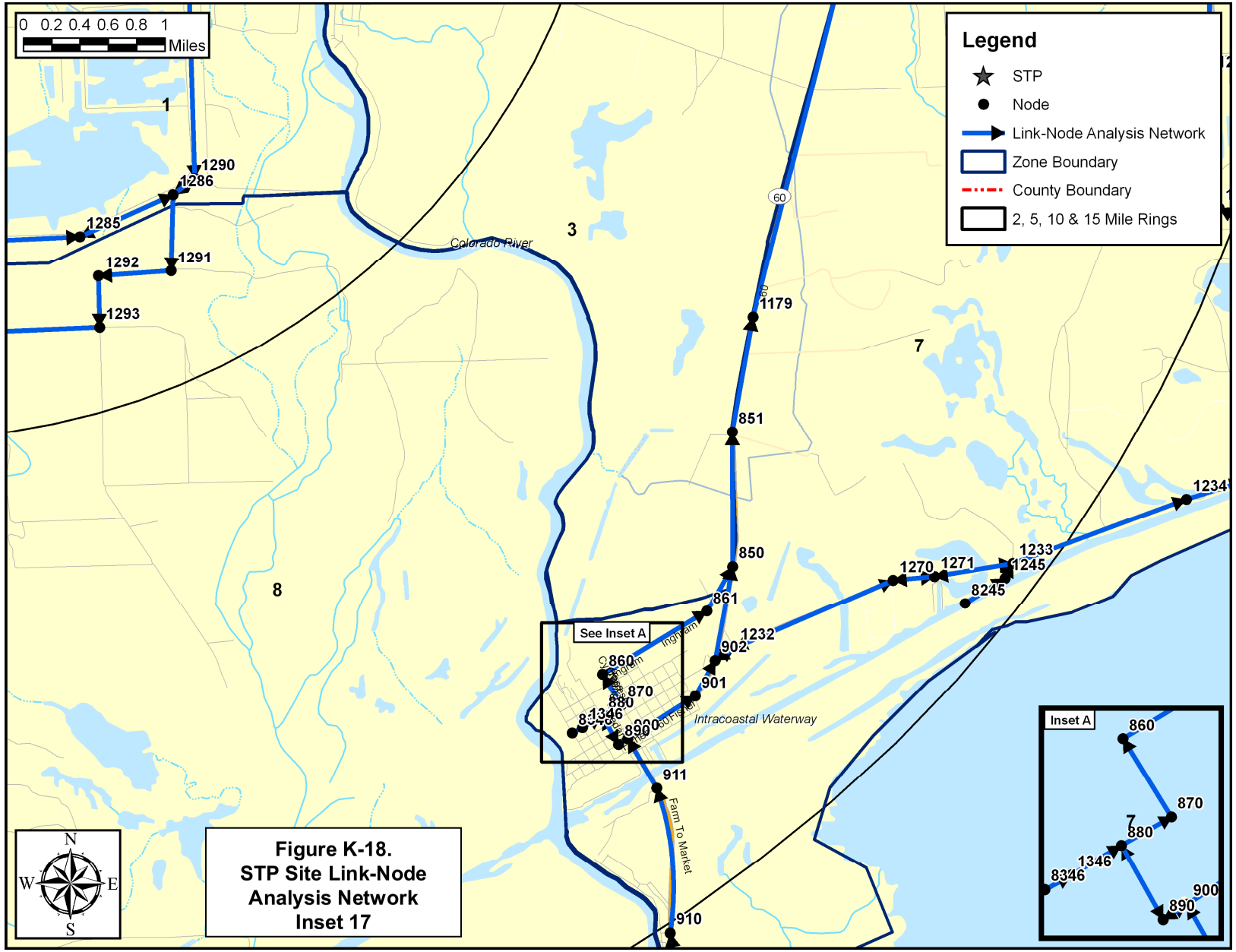


Figure K-18.
STP Site Link-Node Analysis Network Inset 17

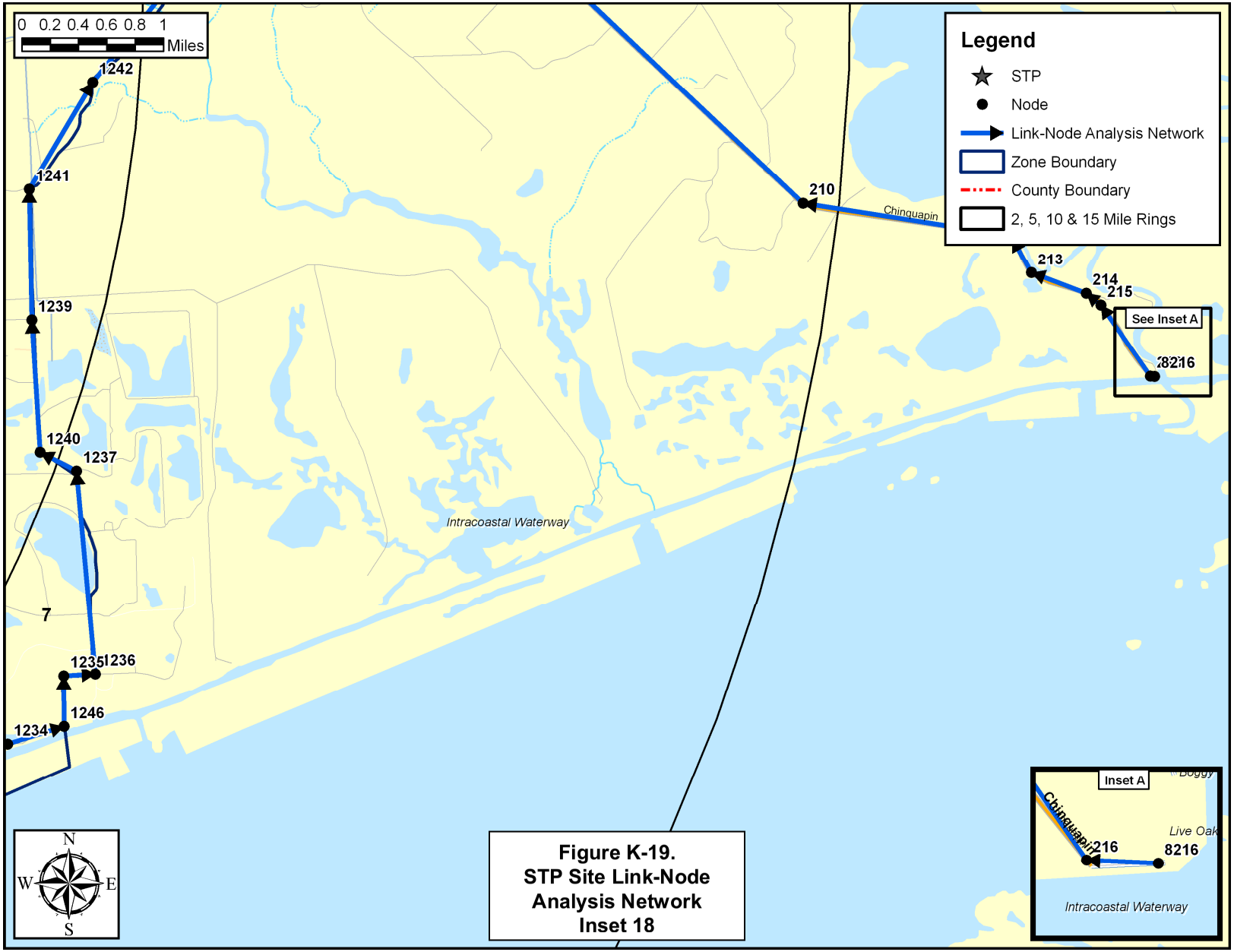


Figure K-19.
STP Site Link-Node Analysis Network
Inset 18

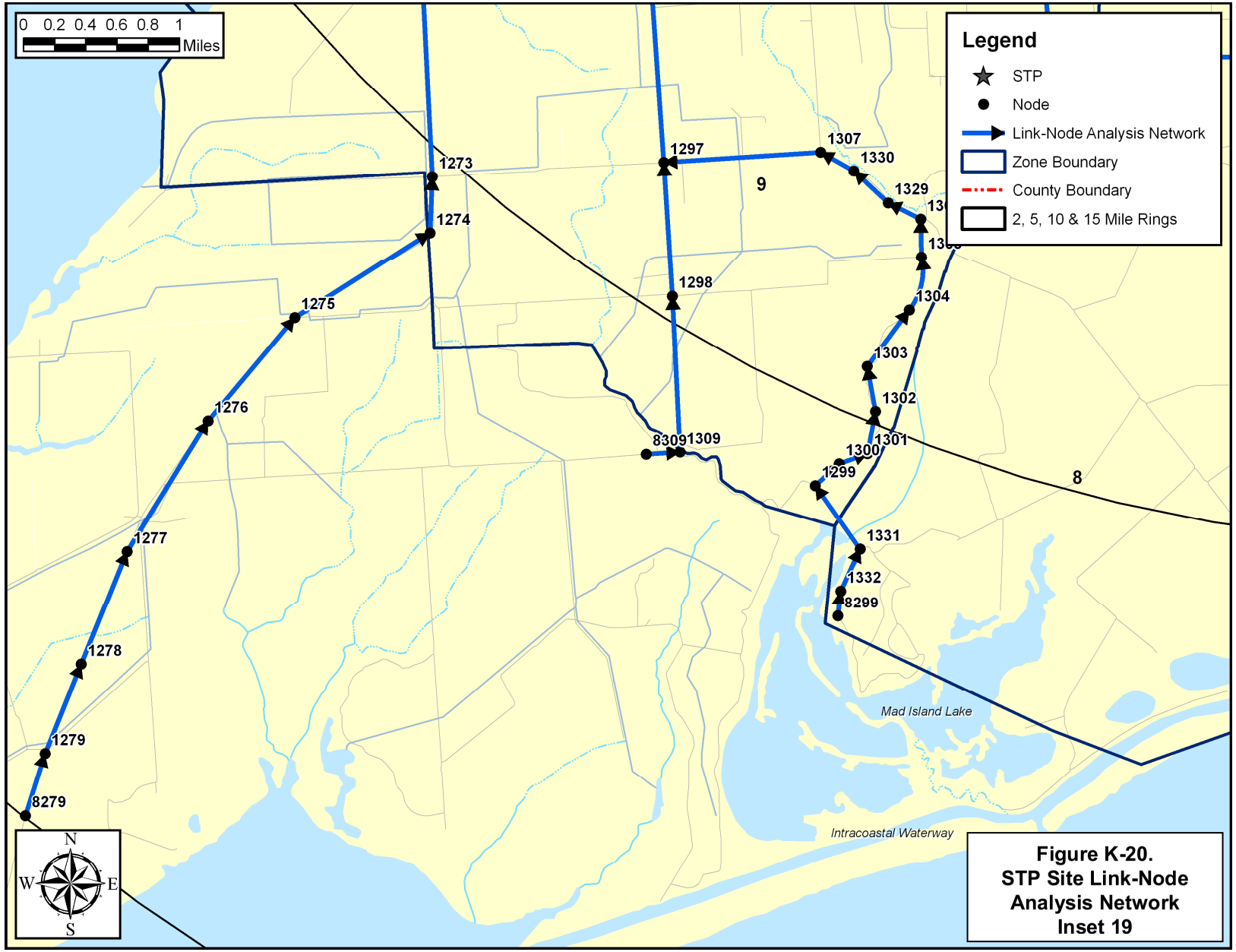


Figure K-20.
STP Site Link-Node Analysis Network Inset 19

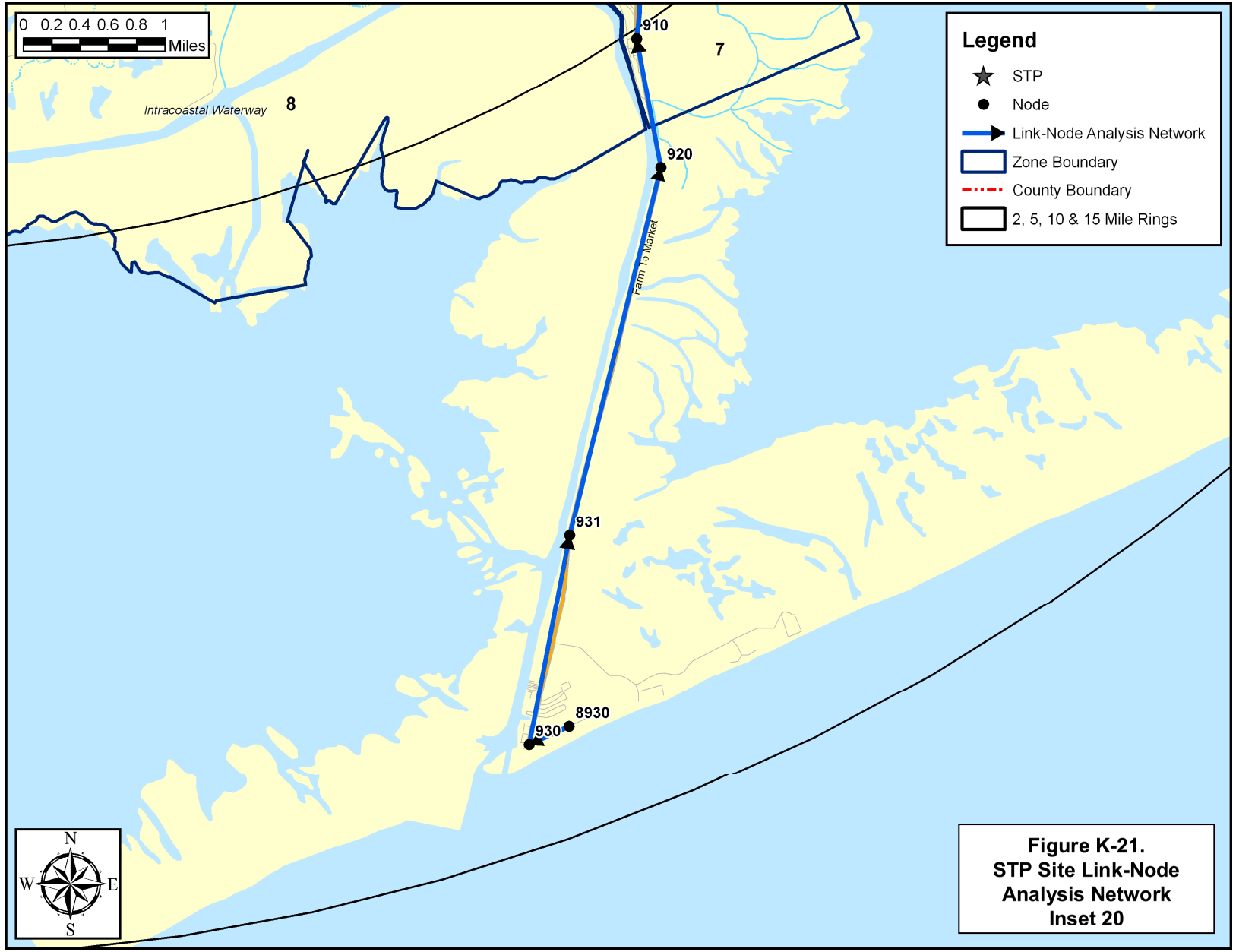


Figure K-21.
STP Site Link-Node Analysis Network Inset 20

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
40	41	111	1	1714	50
40	1133	21	1	1714	50
41	40	111	1	1714	50
41	42	55	1	1714	55
42	41	55	1	1714	50
42	700	71	1	1714	65
50	60	95	1	1714	50
50	1133	42	1	1714	50
60	50	95	1	1714	50
60	61	42	1	1714	50
61	60	42	1	1714	50
61	62	92	1	1714	50
62	61	92	1	1714	50
62	70	49	1	1714	70
70	62	49	1	1714	60
70	71	76	1	1714	70
71	70	76	1	1714	70
71	72	15	1	1714	70
72	71	15	1	1714	70
72	80	12	1	1714	70
80	72	12	1	1714	70
80	81	31	1	1714	70
81	80	31	1	1714	70
81	82	30	1	1714	70
82	81	30	1	1714	70
82	83	74	1	1714	70
83	82	74	1	1714	70
83	84	95	1	1714	65
84	83	95	1	1714	70
84	85	15	1	1714	70
84	1110	102	1	1714	55
85	84	15	1	1714	65
85	86	66	1	1714	70
86	85	66	1	1714	70
86	90	127	1	1714	40
90	86	127	1	1714	70
90	91	16	1	1714	45
91	90	16	1	1714	40
91	92	5	1	1714	45

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
92	91	5	1	1714	45
92	98	67	1	1714	45
93	94	12	1	1714	45
93	98	26	1	1714	45
94	93	12	1	1714	45
94	100	23	1	1714	45
98	92	67	1	1714	45
98	93	26	1	1714	45
100	94	23	1	1714	45
100	101	66	1	1714	45
100	1228	111	1	1714	55
101	110	214	1	1714	55
110	111	15	1	1714	45
111	120	22	1	1714	30
120	121	9	1	1714	35
121	122	38	1	1714	45
122	123	73	1	1714	50
123	130	67	1	1714	55
130	131	61	1	1714	55
131	140	213	1	1714	55
140	141	135	1	1714	55
150	120	79	1	1714	45
161	150	8	1	1714	30
170	161	104	1	1714	45
170	180	43	1	1714	30
180	170	43	1	1714	30
180	1231	38	1	1714	45
190	180	71	1	1714	30
200	190	110	1	1714	50
210	200	323	1	1714	50
211	210	146	1	1714	50
212	211	22	1	1714	50
213	212	29	1	1714	50
214	213	26	1	1714	45
215	214	13	1	1714	45
216	215	60	1	1714	45
220	230	108	1	1714	55
221	1178	77	1	1714	70
230	240	71	2	1714	55
230	250	60	1	1714	55

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
240	241	77	2	1714	55
241	280	87	2	1714	55
242	241	41	1	1500	40
250	260	40	1	1714	50
260	270	206	1	1500	40
270	460	23	1	1714	30
270	1227	25	1	1500	30
280	310	44	2	1500	30
310	320	22	2	1500	30
310	1226	64	1	1500	30
310	1227	77	1	1500	30
320	310	22	2	1500	30
320	340	37	2	1500	40
320	370	21	1	1500	30
320	400	23	1	1500	30
340	320	37	2	1500	30
340	350	42	1	1500	40
350	340	42	1	1500	40
350	990	26	1	1500	40
350	1101	177	1	1714	50
370	320	21	1	1500	30
370	510	44	1	1500	30
400	320	23	1	1500	30
400	430	57	1	1500	30
430	400	57	1	1500	30
430	460	22	1	1714	30
430	1227	23	1	1500	30
460	430	22	1	1500	30
460	461	83	1	1500	30
460	470	76	1	1714	50
461	460	83	1	1714	30
461	1100	41	1	1714	40
470	460	76	1	1714	30
470	480	74	1	1714	65
470	490	141	1	1714	65
480	470	74	1	1714	65
480	481	45	1	1714	65
481	480	45	1	1714	65
490	491	41	1	1714	65
510	370	44	1	1500	30

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
510	1226	22	1	1500	30
510	1266	43	1	1714	45
530	531	21	2	1714	70
530	1265	14	2	1714	70
531	530	21	2	1714	70
531	532	35	2	1500	70
532	531	35	2	1714	70
532	1264	128	2	1500	70
550	560	15	1	1500	30
550	610	30	1	1500	30
550	1263	51	1	1714	40
560	550	15	1	1500	30
560	570	31	1	1500	30
560	590	34	1	1500	30
570	560	31	1	1500	30
570	580	34	1	1500	30
580	570	34	1	1500	30
580	590	30	1	1500	30
590	560	34	1	1500	30
590	580	30	1	1500	30
590	600	32	1	1500	30
590	1344	63	1	1714	50
600	590	32	1	1500	30
600	610	46	1	1500	30
610	550	30	1	1714	30
610	600	46	1	1500	30
610	611	19	1	1714	45
611	612	788	1	1714	60
612	620	45	1	1714	50
620	621	191	1	1714	50
620	622	212	1	1714	50
630	620	131	1	1714	50
640	1168	225	1	1714	70
640	1216	52	1	1714	70
650	651	20	2	1714	65
650	1217	9	2	1714	65
650	1218	8	1	1895	30
651	650	20	2	1714	65
651	652	31	2	1714	60
652	651	31	2	1714	65

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
652	653	76	1	1714	60
653	652	76	1	1895	65
653	660	18	1	1714	50
660	653	18	1	1714	60
660	1267	10	1	1714	50
661	662	362	1	1714	55
661	1269	9	1	1714	50
662	661	362	1	1714	50
662	730	189	1	1800	70
670	1220	167	1	1714	65
680	1189	64	1	1714	65
681	1188	57	1	1714	60
690	681	191	1	1714	60
690	710	139	1	1714	55
691	690	35	1	1714	65
700	42	71	1	1714	65
700	691	217	1	1714	70
710	1190	46	1	1714	50
730	662	189	1	1714	60
730	1338	115	1	1714	70
731	1250	168	1	1714	70
731	1338	133	1	1714	70
740	770	85	1	1714	40
740	1248	6	1	1714	35
740	1249	6	1	1895	30
750	810	84	1	1500	40
750	1249	94	1	1895	40
750	1251	92	1	1714	50
760	830	85	1	1714	55
760	1252	13	1	1714	50
770	740	85	1	1714	70
770	780	15	1	1500	35
770	800	61	1	1500	35
780	770	15	1	1714	40
780	790	60	1	1500	35
790	780	60	1	1500	35
790	800	15	1	1500	35
800	770	61	1	1714	40
800	790	15	1	1500	35
800	810	39	1	1500	40

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
810	750	84	1	1714	30
810	800	39	1	1500	35
810	820	99	1	1714	40
820	810	99	1	1500	40
820	821	79	1	1714	45
821	820	79	1	1714	40
821	1251	9	1	1714	40
821	1252	5	1	1714	40
830	760	85	1	1714	50
830	831	25	1	1714	30
830	840	46	1	1714	55
831	830	25	1	1714	55
840	830	46	1	1714	55
840	841	30	1	1714	40
841	840	30	1	1714	40
841	842	35	1	1714	55
842	841	35	1	1714	55
842	843	21	1	1714	45
843	842	21	1	1714	45
843	844	49	1	1714	55
844	843	49	1	1714	55
850	851	93	1	1714	45
851	1179	80	1	1714	55
852	90	134	1	1714	50
860	861	86	1	1500	35
861	850	39	1	1714	35
870	860	26	1	1500	30
880	870	16	1	1500	30
880	890	25	1	1714	50
890	880	25	1	1500	30
890	900	8	1	1714	50
900	890	8	1	1714	50
900	901	56	1	1714	35
901	902	25	1	1714	35
902	850	74	1	1714	35
902	1232	40	1	1500	45
910	911	98	1	1714	35
911	900	36	1	1714	50
920	910	102	1	1714	45
930	931	151	1	1714	45

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
931	920	269	1	1714	45
940	950	48	1	1500	30
940	970	41	1	1714	45
940	1268	45	1	1714	50
950	940	48	1	1500	30
950	960	39	1	1500	30
960	950	39	1	1500	30
960	970	50	1	1500	30
970	940	41	1	1714	45
970	960	50	1	1500	30
970	971	63	1	1714	50
971	970	63	1	1714	50
971	980	109	1	1714	50
980	971	109	1	1714	50
980	981	96	1	1714	55
980	983	394	1	1714	55
981	980	96	1	1714	50
981	982	123	1	1714	55
982	981	123	1	1714	55
983	980	394	1	1714	50
983	984	122	1	1714	55
984	983	122	1	1714	50
984	1343	60	1	1714	50
990	350	26	1	1500	30
990	1000	48	1	1714	40
1000	990	48	1	1500	40
1000	1100	20	1	1714	40
1100	461	41	1	1500	30
1100	1000	20	1	1714	40
1100	1102	71	1	1714	55
1101	1103	30	1	1714	50
1110	1173	40	1	1714	55
1120	1122	43	1	1714	55
1122	1229	58	1	1714	55
1124	1176	78	1	1714	60
1126	1128	179	1	1714	65
1128	1130	59	1	1714	60
1130	1132	142	1	1714	65
1132	230	118	1	1714	55
1133	40	21	1	1714	50

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
1133	50	42	1	1714	50
1133	1134	31	1	1714	65
1134	1135	42	1	1714	65
1135	1136	30	1	1714	65
1136	1137	20	1	1714	65
1137	1138	56	1	1714	65
1138	1139	20	1	1714	65
1139	1140	40	1	1714	65
1140	1141	38	1	1714	65
1141	1142	32	1	1714	65
1142	1143	5	1	1714	65
1142	1185	29	1	1714	40
1143	1144	45	1	1714	65
1144	1145	35	1	1714	65
1145	1146	29	1	1714	65
1146	1147	28	1	1714	65
1147	1148	49	1	1714	65
1148	1149	27	1	1714	65
1149	1150	9	1	1714	65
1150	1151	57	1	1714	65
1151	1152	22	1	1714	65
1152	1153	11	1	1714	65
1153	1154	43	1	1714	65
1154	1155	62	1	1714	65
1155	1156	17	1	1714	65
1156	1157	45	1	1714	65
1157	1158	31	1	1714	65
1158	1159	53	1	1714	65
1159	1160	30	1	1714	65
1160	1161	53	1	1714	65
1161	1162	17	1	1714	65
1162	1258	46	1	1714	70
1163	1262	25	1	1714	45
1166	1167	157	1	1714	70
1166	1262	74	2	1714	70
1167	1166	157	1	1714	70
1167	1168	140	1	1714	70
1168	640	225	1	1714	70
1168	1167	140	1	1714	70
1169	1170	21	1	1714	30

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
1170	93	33	1	1714	30
1171	1169	39	1	1714	30
1172	1171	71	1	1895	45
1173	1120	116	1	1714	55
1173	1172	69	1	1714	45
1174	1177	91	1	1714	50
1175	1174	58	1	1714	50
1176	1126	38	1	1714	60
1177	1176	96	1	1714	40
1178	220	192	1	1714	70
1179	1238	241	1	1714	65
1180	1181	70	1	1714	50
1180	1187	61	1	1714	45
1181	1180	70	1	1714	50
1181	1182	56	1	1714	30
1182	1181	56	1	1714	50
1182	1186	17	1	1714	30
1183	1184	17	1	1714	30
1183	1186	123	1	1714	50
1184	1183	17	1	1895	30
1184	1185	45	1	1714	40
1185	1142	29	1	1714	30
1185	1184	45	1	1714	40
1186	1182	17	1	1714	30
1186	1183	123	1	1895	50
1187	680	6	1	1714	55
1187	1180	61	1	1714	50
1188	1187	62	1	1714	60
1189	670	87	1	1714	65
1190	1191	16	1	1714	50
1191	1192	171	1	1714	60
1191	1193	51	1	1714	50
1192	730	158	1	1895	40
1193	1191	51	1	1714	40
1193	1194	36	1	1714	55
1194	1193	36	1	1714	50
1194	1195	28	1	1714	55
1195	1194	28	1	1714	55
1195	1196	102	1	1714	55
1196	1195	102	1	1714	55

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
1196	1197	23	1	1714	55
1197	1196	23	1	1714	55
1197	1198	18	1	1714	50
1198	1197	18	1	1714	55
1198	1199	17	1	1714	45
1199	1198	17	1	1714	50
1199	1200	12	1	1714	45
1200	1199	12	1	1714	45
1200	1204	9	1	1714	50
1201	1205	31	1	1714	60
1202	1200	11	1	1500	30
1203	1202	16	1	1500	30
1204	1201	40	1	1714	60
1205	1206	26	1	1714	60
1206	1207	21	1	1714	60
1207	1208	29	1	1714	60
1208	1209	17	1	1714	50
1209	1210	29	1	1714	50
1210	1211	34	1	1714	50
1211	1212	87	1	1714	65
1212	1213	55	1	1714	65
1213	1214	52	1	1714	55
1214	1215	68	1	1714	55
1215	661	39	1	1714	30
1216	640	52	1	1714	70
1216	1217	244	2	1714	65
1217	650	9	2	1714	65
1217	1216	244	2	1714	70
1217	1218	12	1	1895	60
1218	1219	93	1	1714	60
1219	630	167	1	1714	60
1220	640	193	1	1714	40
1221	221	220	1	1714	70
1222	1223	39	1	1500	30
1223	1224	62	1	1500	30
1224	1308	107	1	1714	60
1225	690	356	1	1714	60
1226	310	64	1	1500	30
1226	510	22	1	1500	30
1227	270	25	1	1500	30

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
1227	310	77	1	1500	30
1227	430	23	1	1500	30
1228	100	111	1	1714	45
1228	1221	40	1	1714	55
1229	1124	74	1	1714	60
1229	1230	192	1	1714	40
1230	1228	55	1	1714	40
1231	123	160	1	1714	45
1232	902	40	1	1714	35
1232	1270	101	1	1714	45
1233	1234	129	1	1500	45
1233	1271	69	1	1714	45
1234	1246	30	1	1500	30
1235	1236	18	1	1500	30
1236	1237	142	1	1500	35
1237	1240	30	1	1500	40
1238	852	199	1	1714	55
1239	1241	89	1	1500	45
1240	1239	97	1	1500	45
1241	1242	95	1	1500	45
1242	1243	81	1	1500	45
1243	1244	86	1	1500	45
1244	170	37	1	1500	30
1245	1233	23	1	1714	30
1246	1235	33	1	1500	30
1247	700	43	1	1714	30
1248	740	6	1	1895	30
1248	1249	7	1	1895	30
1248	1250	96	1	1714	70
1249	740	6	1	1895	30
1249	750	94	1	1714	40
1250	731	168	1	1714	70
1250	1248	96	1	1714	60
1251	750	92	1	1714	40
1251	1252	8	1	1714	50
1252	760	13	1	1714	45
1252	821	5	1	1714	40
1252	1251	8	1	1714	50
1258	1163	45	1	1714	50
1261	1263	39	2	1714	70

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
1261	1264	138	2	1500	70
1262	1166	74	2	1714	70
1262	1263	15	2	1714	70
1263	550	51	1	1714	40
1263	1261	39	2	1714	70
1263	1262	15	2	1714	70
1264	532	128	2	1500	70
1264	1261	138	2	1714	70
1265	530	14	2	1714	70
1265	1266	137	2	1714	45
1266	510	43	1	1714	30
1266	1265	137	2	1714	70
1267	1268	12	1	1714	50
1267	1269	13	1	1714	50
1268	940	45	1	1714	45
1268	1269	14	1	1714	45
1269	660	20	1	1714	50
1269	661	9	1	1714	50
1269	1267	13	1	1714	30
1270	1232	101	1	1714	50
1270	1271	29	1	1714	45
1271	1233	69	1	1714	30
1271	1270	29	1	1714	45
1272	1223	74	1	1714	50
1272	1296	155	1	1714	50
1273	1272	188	1	1714	60
1274	1273	44	1	1714	60
1275	1274	89	1	1714	60
1276	1275	86	1	1714	60
1277	1276	102	1	1714	60
1278	1277	79	1	1714	60
1279	1278	59	1	1714	60
1280	1281	50	1	1714	45
1280	1287	77	1	1714	45
1281	1280	50	1	1714	45
1281	1282	205	1	1714	45
1282	1281	205	1	1714	45
1282	1283	44	1	1714	40
1283	1282	44	1	1714	40
1283	1284	39	1	1714	45

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
1284	1283	39	1	1714	40
1284	1285	254	1	1714	45
1285	1284	254	1	1714	45
1285	1286	52	1	1714	40
1286	1285	52	1	1714	45
1286	1290	36	1	1714	40
1286	1291	52	1	1714	30
1287	1280	77	1	1714	45
1287	1288	86	1	1714	45
1287	1336	29	1	1714	35
1288	1287	86	1	1714	45
1288	1289	205	1	1714	45
1288	1334	20	1	1714	30
1289	1288	205	1	1714	45
1289	1290	192	1	1714	45
1290	1286	36	1	1714	40
1290	1289	192	1	1714	45
1291	1292	45	1	1714	30
1292	1293	35	1	1714	30
1293	1320	179	1	1714	50
1294	1295	122	1	1714	50
1295	1225	171	1	1714	50
1296	1308	124	1	1714	50
1297	1296	186	1	1714	50
1298	1297	89	1	1714	60
1299	1300	25	1	1714	40
1300	1301	18	1	1714	45
1301	1302	28	1	1714	45
1302	1303	28	1	1714	45
1303	1304	44	1	1714	45
1304	1305	37	1	1714	45
1305	1306	25	1	1714	45
1306	1329	20	1	1714	45
1307	1297	103	1	1714	50
1308	1225	82	1	1714	50
1309	1298	94	1	1714	60
1310	1294	31	1	1714	45
1311	1310	81	1	1714	50
1311	1324	34	1	1714	40
1312	1311	96	1	1714	45

Table K-1. Evacuation Roadway Network Characteristics					
Upstream Node Number	**Downstream Node Number**	**Length (miles * 100)**	**Full Lanes**	**Saturation Flow Rate (Veh/hr/ln)**	**Free Flow Speed (MPH)**
1313	1312	29	1	1714	45
1314	1313	44	1	1714	45
1314	1315	54	1	1714	45
1314	1328	30	1	1714	45
1315	1314	54	1	1714	45
1315	1316	77	1	1714	40
1316	1315	77	1	1714	45
1316	1327	54	1	1714	45
1320	1294	129	1	1714	50
1324	1325	17	1	1714	35
1325	1326	67	1	1714	40
1326	1295	123	1	1714	45
1327	1326	80	1	1714	50
1328	1314	30	1	1714	40
1329	1330	32	1	1714	45
1330	1307	28	1	1714	50
1331	1299	47	1	1714	45
1332	1331	30	1	1714	45
1333	1316	40	1	1714	40
1334	1335	25	1	1714	45
1335	1337	28	1	1714	45
1336	41	51	1	1714	45
1337	61	28	1	1714	45
1338	730	115	1	1714	70
1338	731	133	1	1714	70
1338	1339	148	1	1714	55
1339	1340	181	1	1714	50
1340	1341	21	1	1714	35
1341	1342	195	1	1714	55
1342	1343	114	1	1714	40
1343	984	60	1	1714	50
1343	1347	22	1	1714	50
1344	1345	221	1	1714	50
1346	880	16	1	1500	30
1347	1343	22	1	1714	50

APPENDIX L

Zone Boundaries

APPENDIX L: Zone Boundaries

Zone 1

This area includes the site of the South Texas Project. It is defined by the following boundaries:

- East of CR 392
- Southwest of FM 521,with the north western boundary extending over FM 521
- West of the Colorado River
- North of the STP Station southern property boundary

Zone 2

This is an area generally northeast of the South Texas Project, which includes Celanese. It is defined by the following boundaries:

- East of FM 1468
- South of FM 3057
- West of FM 2668
- North of FM 521

Zone 3

This is an area generally southeast of the South Texas Project which includes Selkirk Island, Exotic Isle, and Equistar. It is defined by the following boundaries:

- East of the Colorado River and Kelly Lake
- South of FM 521
- West of State Highway (SH) 60
- North of the protection levee at Matagorda

Zone 4

This is an area generally west of the South Texas Project which includes Tin Top and Citrus Grove Community. It is defined by the following boundaries:

- East of FM 1095
- South of FM 521
- West of CR 392
- North of CR 391

Zone 5

This is an area generally northwest of the South Texas Project, defined by the following boundaries:

- East of the Tres Palacios River
- South of Wilson Creek
- West of FM 1468
- North of FM 521

Zone 6

This is an area generally northeast of the South Texas Project which includes Riverside Park, Hales Acres, and Meadowbrook Estates. It is defined by the following boundaries:

- East of the Colorado River
- South and west of Live Oak Creek
- West of CR 262
- North of FM 521 and FM 3057

Zone 7

This is an area generally east and southeast of the South Texas Project which includes the town of Matagorda and the Intracoastal Waterway east of the Colorado River. It is defined by the following boundaries:

- East of SH 60
- South of CR 237 and the protection levee at Matagorda
- West of CR 262, CR241, CR 248, and CR 247 (Chinquapin, Brimsteader, Bear Ranch, and North Gulf Roads)
- North of the Intracoastal Waterway

Zone 8

This is an area generally south of the South Texas Project defined by the following boundaries:

- East of Mad Island Slough
- South of the STP Station southern property boundary
- West of the Colorado River
- North of West Matagorda Bay

Zone 9

This is an area generally southwest of the South Texas Project which includes Collegeport and the northern portion of Tres Palacios Bay. It is defined by the following boundaries:

- East of SH 35
- South of FM 521
- West of FM 1095 and Mad Island Slough
- North of CR 372

Zone 10

This is an area generally northwest of the South Texas Project which includes Tidewater Oaks and Tres Palacios Oaks. It is defined by the following boundaries:

- East and south of SH 35
- West of the northern portion of FM 1095 and the Tres Palacios River
- North of FM 521

Zone 11

This is an area generally north of the South Texas Project which includes El Maton and Buckeye. It is defined by the following boundaries:

- East of the northern portion of FM 1095
- South of SH 35
- West of the northern portion of the Colorado River
- North of Wilson Creek and the 5 mile ring

EMERGENCY MANAGEMENT BASIC PLAN

FOR

MATAGORDA COUNTY, BAY CITY, AND PALACIOS

Rev. 13
June 18, 2009

RECORD OF REVISIONS

Revision Number	Effective Date	Date Entered	Signature
5	01-10-92		
6	03-01-93		
7	12-29-94		
8	12-19-96		
9	12-30-97		
10	02-25-99		
11	09-11-03		
12	08-31-05		
13	06-18-09		

To All Recipients:

Transmitted herewith is the revised Matagorda County Emergency Management Basic Plan for Matagorda County and the incorporated cities of Bay City and Palacios. This plan supersedes any previous plans. It provides a framework in which officials of Matagorda County can plan and perform their respective emergency functions during a disaster or national emergency.

This plan includes and has been approved by Matagorda County and the cities of Bay City and Palacios. It will be revised and updated as required. All recipients are requested to advise the Matagorda County Office of Emergency Management on any changes which might result in its improvement or increase its usefulness. Plan changes will be transmitted to all addressees on the distribution list.

_____
Matagorda County Judge

_____
Mayor of Bay City

_____
Mayor of Palacios

FOREWORD

As Emergency Management Director, the Matagorda County Judge is charged with the responsibility to develop and implement an emergency management plan in Matagorda County, inclusive of incorporated and unincorporated areas. The Emergency Management Basic Plan attempts to be all inclusive in combining the four phases of management, which are 1) mitigation: those activities which eliminate or reduce the probability of disaster; 2) preparedness: those activities which governments, organizations, and individuals develop to save lives and minimize damage; 3) response: those activities that are designed to prevent loss of lives and property and provide emergency assistance; and 4) recovery: short- and long-term activities which return all systems to normal or improved standards.

The situations addressed by this plan are those in which the actions of many different agencies must be coordinated. This major coordination effort differs from those emergencies handled on a daily basis by local fire, law enforcement, and medical service personnel.

ANNEX W PLAN AND PROCEDURES
VOLUMES 3 AND 4
DISTRIBUTION LIST
(Page 1 of 4)

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Mayor	683	1
Police Department	644	1
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Public Works Director	696	1
OXEA	042	1
Emergency Medical Services		
Matagorda County Emergency Medical Service	698	1
Lyondell/Basell	101	1
FEMA		
Headquarters	014	1
Region VI, Denton, Texas	071	1
Independent School District ISD		
Bay City Independent School District, Central Office	701	1
Bay City Independent School District, Transportation Director	685	1
Matagorda Independent School District	686	1

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VOLUMES 3 AND 4
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KKHA Radio	692	1
KMKS Radio	737	1
Matagorda County		
County Judge	682	1
Emergency Operations Center	645	1
Environmental Health	699	1
Matagorda Regional Medical Center	667	1
National Weather Service		1
Office of Emergency Management	046	1
Palacios Community Medical Center	937	1
Precinct Commissioners		
Precinct 1	066	1
Precinct 2	051	1
Precinct 3	040	1
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Palacios		
City Administrator	684	1
Police Department	647	1
Public Library	112	1
State of Texas		
Department of State Health Services	367	1
Department of Public Safety, Pierce, Texas	360	1
Governor's Division of Emergency Management, State EOC	571	1
STP Nuclear Operating Company		
Emergency Operations Facility	016	1
Emergency Response Division	205/770	2
Nuclear Support Center Library	900	1
MOF Library	999	1
Records Management Systems	FDC	1
United States Nuclear Regulatory Commission		
USNRC Public Document Desk, Washington D.C.	1078	1
USNRC, Operations Center	1079	1
USNRC, Region IV	564	1
USNRC Public Document Room, Wharton County Junior College	114	1
Volunteer Fire Departments of Matagorda County		
Bay City Volunteer Fire Department	082	1
Blessing Volunteer Fire Department	064	1

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VOLUMES 3 AND 4
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Matagorda Volunteer Fire Department	689	1
Midfield Volunteer Fire Department	058	1
Palacios Volunteer Fire Department	690	1
Sergeant Volunteer Fire Department	067	1
Wadsworth Volunteer Fire Department	038	1
Total		57

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BASIC PLAN

I. AUTHORITY AND REFERENCE

The organization and operational concepts set forth in this Plan are promulgated under one or more of the following:

A. FEDERAL

1. Federal Disaster Relief Act of 1974, Public Law 93-288
   Presidential Executive Order 11988, Floodplain Management
2. Presidential Executive Order 11990, Protection of Wet Lands
3. NUREG-0654/FEMA-REP-1, as amended, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"
4. Emergency Management and Assistance, Code of Federal Regulations, Title 44
5. Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707 or PL 93-288, as amended
6. Title III, of the Superfund Amendments and Reauthorization Act of 1986, (SARA), PL 99-499, as amended
7. emergency Planning & Community Right-to-Know Act, 42USC Chapter 111
8. Emergency Management & Assistance, 44 CFR
9. Hazardous Waste Operations & Emergency Response, 29 CFR 1910.120
10. National Response Plan
11. Nuclear/Radiological Incident Annex of the National Response Plan
12. Homeland Security Presidential Directive, HSPD-5, Management of Domestic Incidents
13. Homeland Security Presidential Directive, HSPD-3, Homeland Security
14. National Incident Management Response Plan
15. National Strategy for Homeland Security, July 2002

B. STATE

1. Texas Disaster Act of 1975, as amended
2. Executive Order of the Governor of Texas, Relating to Emergency Management
3. State of Texas Emergency Management Plan
4. Attorney General Opinion, MW-140
5. Hazard Communication Act, Title 83, Article 5182b
6. Texas Hazardous Substances Spill Prevention and Control Act, Chapter 26, Subcharter G, Texas Water Code
7. State Solid Waste Disposal Act, Texas Civil Statutes Article 4477-7
8. Government Code, Chapter 418, Emergency Management
9. Government Code, Chapter 433 (State of Emergency)
10. Government Code, Chapter 791 (Inter-local cooperation contracts)
11. Health & Safety Code, Chapter 778 (Emergency Management Assistance Compact)
12. Administrative Code, Title 37, Part 1, Chapter 7 (Division of Emergency Management)

13. Government Code, Chapter 421 (Homeland Security)
14. Executive Order of the Governor Relating to the National Incident Management System
15. The Texas Homeland Security Strategic Plan, Parts I and II, December 15, 2003
16. The Texas Homeland Security Strategic Plan, Part III, February 2004

C. LOCAL

1. Matagorda County Commissioner's Court Order, dated February 8, 1999 on file in the County Clerk's Office
2. Bay City Ordinance, Number 1304, of June 12, 2003 on file in the County Clerk's Office
3. Palacios City Ordinance, Number 669, of February 3, 2003 on file in the County Clerk's Office
4. Bay City Resolution Number R-03-18, dated June 12, 2003 on file in the County Clerk's Office
5. Matagorda County and City of Bay City Joint Resolution dated June 16, 2003.
6. Matagorda County/City of Palacios Joint Resolution dated, June 16, 2003 on file in the County Clerk's Office
7. Current Letters of Agreement are maintained by the Emergency Management Coordinator and are on file in the Matagorda County Judge's Office.
8. Local National Incident Management System Resolution and Ordinance as follows:
   Matagorda County Resolution dated 27th of June 2005
   Bay City Ordinance Number 1321 dated 23rd of June 2005
   City of Palacios Ordinance Number 09-07-2005
9. Matagorda County Emergency Management Plan, Basic Plan
10. Matagorda County Emergency Management Plan, Annex W REP Plan
11. Matagorda County Emergency Management Plan, Annex W REP Procedures
12. Matagorda County Emergency Management Plan, All Hazards Annexes
13. Matagorda County Hospital District Radiological Emergency Plan

II. PURPOSE

The purpose of this plan is to provide for emergency operations in Matagorda County, including the cities of Bay City and Palacios and the unincorporated towns within the County proper.

Existing forms of local governments are utilized in the formulation and implementation of this plan.

This plan seeks to mitigate the effects of a hazard, to prepare officials for measures to be taken which will preserve life and minimize damage, to provide for response during emergencies and for necessary assistance, and to establish a recovery system in order to return the community to its normal state of affairs.

This plan defines who does what, when, where, and how, in order to mitigate, prepare for, respond to, and recover from the effects of war, natural disaster, technological accidents, and other major incidents.

III. SITUATION AND ASSUMPTIONS

A. SITUATION

Matagorda County is exposed to many hazards, all of which have the potential for disrupting the community, causing damage, and creating casualties. Possible natural hazards include floods, tornadoes, hurricanes, fires, and winter storms. There is also the threat of a war-related incident such as a nuclear, biochemical, or conventional attack. Other disaster situations could develop from a hazardous materials accident, fixed nuclear facility accident, conflagration, major transportation accident, terrorism, or civil disorder. (More detailed information is provided in our Hazard Analysis, published separately).

Specific areas that could be threatened include the following:

1. Matagorda Peninsula Recreational Areas,
2. Habitats of rare, threatened, and endangered animal species,
3. Varied coastal sensitivity index including high, moderate, and low impact potential,
4. Wildlife Management Area (San Bernard National Wildlife Refuge).

Matagorda County, with an estimated population of 37,957 (2000 Census), is situated on the Texas Gulf Coast about midway between Houston and Corpus Christi. The county is a coastal plain with elevations running from sea level to about 70 feet above sea level.

The industries which contribute to the county's economy are nuclear power generation, petroleum operations, petrochemical production, varied manufacturing, and tourism. The primary industry is agribusiness. The County's population is distributed throughout the two cities of Bay City, the County seat with a population of 18,667 (2000 Census); Palacios, a seaside fishing and resort town with a population of 5,153 (2000 Census); and several non-incorporated townships and communities, and the County proper.

Matagorda County enjoys a varied transportation system centered around two railroads Burlington Northern (BN) & Santa Fe (SF), two general aviation airports, State Highways 35 and 60 which intersect in Bay City, State Highway 71, and numerous farm-to-market and county roadways.

The County is serviced by two general aviation airports.

1. The Palacios Municipal Airport has three 5000 foot runways laid out in a triangulated configuration, operated by the City of Palacios. The airport is unattended, but service has an authorized fueling system – pay by credit card. Aviation gasoline and jet fuel are stored onsite. An Automated Surface Observing System (ASOS) is available. The ASOS is a computerized system that reports area weather conditions minute-by-minute. The facility has jet fuel and 100 low lead aviation fuel. City Hall can be contacted for service during working hours. Emergency service can be provided off hours by Palacios Police Department.

2. The Bay City Municipal Airport is a single paved 5120 foot runway with jet fuel and aviation gasoline stored onsite. The airport is attended seven days a week from 7:00 a.m. to 5:00 p.m., except certain holidays. Assistance is available off hours by contacting the Bay City Police Department. Some mechanical services are obtainable on site from the airport operator. Two instrument approaches are available, NDB and VOR/DME. Rental cars are accessible at the airport from Enterprise. Credit card payment for of aviation fuel is available.

   The Intracoastal Waterway traverses Matagorda County paralleling the Texas Gulf Coast and providing navigable waters for barge traffic.

   Bay City and Palacios have adopted a home rule charter form of government. The county is a judge-commissioner court government. Each city provides water, sewer/waste water, road maintenance, refuse disposal, and police services. Additionally, several unincorporated communities provide water and sewer services. Matagorda County furnishes road maintenance, refuse disposal, law enforcement, and health services. Bay City owns a natural gas supply system which operates within the city limits. Fire suppression and emergency rescue services are provided by volunteer fire departments.

   The Matagorda County Hospital District, housed in Bay City, operates Matagorda Regional Medical Center in Bay City. The district, being a form of government, levies a tax to support its operation. The tax revenues supplement the medical service charges levied by the hospitals and convalescent home. This hospital has emergency room facilities with physician coverage available 24 hours per day, 7 days a week. The Palacios Medical Foundation operates the Palacios Community Medical Center (PCMC). PCMC has emergency room facilities with physician extenders and an on call physician available 24 hrs/day, 7 days/wk. The Matagorda Regional Medial Center and PCMC are equipped with decontamination facilities for the treatment of personnel who may be radiologically contaminated. News and communications facilities in Matagorda County are comprised of one bi-weekly newspaper and two weekly newspapers (in Bay City & Palacios), KMKS-FM (102.5), KKHA (92.5) radio stations in Bay City and a host of south-southeast Texas radio and television stations available by cable, satellite, or by direct antenna reception. AT&T and Verizon are the primary providers of hard-wired telephone service throughout the County. A number of cellular telephone provide service in Matagorda County. There are numerous two-way radio systems throughout the County: police, city, county, Citizens Band, amateur, industry, and private. Electric utility connections in the county are provided by American Electric Power (AEP) and Jackson Electric Co-Op. The primary natural gas providers for the county are Entex and the gas companies in Bay City and Markham.

B. ASSUMPTIONS

1. Matagorda County will continue to be exposed to the hazards noted below in III.B.7, as well as others which may develop in the future.

2. Outside assistance will be available in most emergency situations affecting this county. Although this plan defines procedures for coordinating such assistance, it is essential for the County to be prepared to carry out disaster response and short-term actions on an independent basis.

3. It is possible for a major disaster to occur at any time and at any place in Matagorda County. In some cases, dissemination of warning and increased readiness measures may be possible. However, many disasters and events can, and will, occur with little or no warning.

4. Local government officials recognize and accept their responsibilities for the safety and well-being of the public and will assume their responsibilities in the implementation of this emergency management plan.

5. Proper development and execution of a radiological protection program will significantly reduce the number of casualties which may otherwise result from a radiological emergency.

6. Proper implementation of this plan will reduce or prevent disaster related losses.

7. Because of its geographical location, topography, and industrial and transportation facilities, Matagorda County and the cities of Bay City and Palacios are subject to any of the following emergency or disaster situations:

   a. Tornadoes
   b. Flooding
   c. Hurricanes
   d. Transportation accidents - highway, railway, air, shipboard
   e. Hazardous material spills, fires, explosions, leaks, radioactive materials accidents
   f. Petroleum pipeline leaks, explosions, fires
   g. Drought
   h. Civil disturbances
   i. Prolonged electrical outage
   j. Radiation emissions from a Fixed Nuclear Facility (FNF)
   k. Major fires - residential, industrial, brush, grass
   l. Nuclear war
   m. Winter storms
   n. Biochemical or conventional attack
   o. Terrorism
   p. Earthquake
   q. Dam Failure
   r. Water System Failure

Attachment B-1

Hazard Summary

	Likelihood of Occurrence*	Estimated Impact on Public Health & Safety			Estimated Impact on Property		
Hazard Type:	**(See below)**	**Limited**	**Moderate**	**Major**	**Limited**	**Moderate**	**Major**
Natural	Highly Likely		Moderate			Moderate	
Drought	Highly Likely		Moderate			Moderate	
Earthquake	Unlikely		Limited			Limited	
Pipeline	Unlikely		Limited			Limited	
Flooding (river or tidal)	Likely		Moderate				Major
Hurricane	Occasional		Moderate				Major
Subsidence	Occasional		Limited			Moderate	
Tornado	Occasional		Moderate			Moderate	
Wildfire	Occasional		Limited			Limited	
Winter Storm	Unlikely		Moderate			Moderate	
Technological							
Dam Failure	Unlikely		Limited			Limited	
Energy/Fuel Shortage	Unlikely		Moderate			Limited	
Hazmat/Oil Spill (fixed site)	Unlikely		Limited			Limited	
Hazmat/Oil Spill (transport)	Occasional			Major			Major
Major Structural Fire	Unlikely			Major			Major
Nuclear Facility Incident	Unlikely			Major			Major
Water System Failure	Occasional		Moderate			Moderate	
Security							
Civil Disorder	Unlikely		Limited			Limited	
Enemy Military Attack	Unlikely			Major			Major
Terrorism	Unlikely			Major			Major
*Likelihood of Occurrence							

8. It can be assumed that in the event of a nuclear attack, Matagorda County, and the cities and communities within, may receive varied levels of radioactive fallout.

9. Matagorda County and/or Bay City or Palacios may be isolated for several weeks in the event of nuclear warfare, or for several hours or days in the event of a large scale natural disaster.

IV. OPERATIONAL CONCEPT

A. GENERAL

It is the responsibility of government to protect life and property from the effects of hazardous events. Local government has the primary responsibility for emergency management activities. This plan is based upon the concept that the emergency functions for various agencies involved in emergency management will generally parallel day-to-day functions. To the extent possible, the same personnel and material resources will be employed in both cases. Day-to-day functions that do not contribute directly to the emergency may be suspended for the duration of any emergency. The efforts that would normally be required for those functions will be redirected to the accomplishment of emergency tasks by the agency concerned.

A local state of disaster may be declared by the Matagorda County Judge, or the Mayors of Bay City and Palacios for their jurisdictions. The effect of the declaration is to activate the recovery and rehabilitation aspects of the plan and to authorize the furnishing of aid and assistance. When the emergency exceeds local government capability to respond, assistance will be requested from neighboring jurisdictions and/or the state government.

B. DIRECTION AND CONTROL

The County Judge and City Mayors, as chief elected officials, are responsible for development and maintenance of emergency response plans and measures within their respective jurisdictions. The basic functions of county/city officials are to coordinate activities for utmost efficiency and effectiveness and to assure that any skills not normally available in existing county/city governments are obtained from other resources, in addition, providing guidance for disaster response and recovery operations, all in compliance with the NIMS. The County will be the lead governmental entity during an emergency.

(Refer to Section IX for information regarding Lines of Succession.)

The Emergency Management Director, City Mayors, County Commissioners, Emergency Management Coordinator and the Sheriff acting as the key members of the Direction and Control Group, will exercise direction and control from the County or respective city Emergency Operations Center (EOC).

C. EMERGENCY OPERATIONS CENTER (EOC)

Response activities will normally be coordinated from the Matagorda County Emergency Operations Center (EOC), located at the Matagorda County Sheriff's Office in Bay City, Texas. The EOC will be activated upon notification of a possible or actual emergency. EOC responsibilities and activation procedures are addressed in Annex N (EOC/Direction and Control), for hazards not related to a Fixed Nuclear Facility (FNF) accident. EOC responsibilities and activation relating to a FNF accident are addressed in Annex W. During emergency situations, certain agencies will be required to relocate to the EOC. During large scale emergencies, the EOC will become the seat of government for the duration of the crisis. In Matagorda County, the incorporated cities of Bay City and Palacios look to the County for emergency management guidance.

1. The primary Matagorda County EOC is located in the Matagorda County Sheriff's Office (MCSO) in Bay City.

2. The Emergency Management Director has the authority to activate the respective EOC as deemed appropriate to respond to actual or threatened emergencies. Persons having emergency EOC assignments will proceed to their respective EOC when it is activated. The EOC's may also be partially activated. In these situations, the Emergency Management Director will determine which agencies should respond to the EOC to coordinate activities. The EOC's are:

	Primary	**Alternate**
Matagorda County	MCSO	County Courthouse
Bay City	ECC	MCSO
Palacios	City Hall	MCSO

3. The Matagorda County Emergency Management Coordinator will prepare and maintain the Emergency Operations Center (EOC), Standing Operating Procedures (SOPs) and EOC staff rosters for EOC operations.

D. ORGANIZATION FOR EMERGENCIES

1. The emergency organization parallels the normal day-to-day organization. Illustrations of the emergency organizations are contained in Attachments 11, 13, and 15.

2. Each emergency organization shall prepare, through planning and call-out lists, the capability to perform emergency functions over an extended period of days or weeks, 24-hours per day. The use of trained volunteer support groups is encouraged when appropriate.

3. Copies of the legal basis for Emergency Management are contained in Section I, "Authority and Reference."

E. PHASES OF MANAGEMENT

The basic plan follows an all hazard approach and acknowledges that most responsibilities and functions performed during an emergency are not hazard specific. Likewise, this plan accounts for activities before and after, as well as during emergency operations; consequently, all phases of emergency management are addressed, as shown below.

1. Mitigation

Mitigation activities are those which eliminate or reduce the probability of a disaster occurring. Also included are those long-term activities which lessen the effects of unavoidable hazards. Mitigation activities will be conducted as an integral part of our emergency management program. Mitigation is intended to eliminate hazards, reduce the probability of hazards causing an emergency situation, or lessen the consequences of unavoidable hazards. Mitigation should be a pre-disaster activity, although mitigation may also occur in the aftermath of an emergency situation with the intent of avoiding repetition of the situation. The county mitigation program is outlined in Annex P, Mitigation.

2. Preparedness

Preparedness activities serve to develop the response capabilities needed in the event an emergency should arise. Planning and training are among the activities conducted under this phase. Preparedness activities will be conducted to develop the response capabilities needed in the event of an emergency. Among the preparedness activities included in our emergency management program are:

a) Providing emergency equipment and facilities.

b) Emergency planning, including maintaining this plan, its annexes, and appropriate SOPS.

c) Conducting or arranging appropriate training for emergency responders, emergency management personnel, other local officials, and volunteer groups who assist us during emergencies.

d) Conducting periodic drills and exercises to test our plans and training.

3. Response

Response is the actual provision of emergency services during a crisis. These activities help to reduce casualties and damage, and speed recovery. Response activities include warning, evacuation, rescue, and other similar operations. Emergency situations will be responded to effectively and efficiently. The focus of most of this plan and its annexes is on planning for the response to emergencies. Response operations are intended to resolve an emergency situation while minimizing casualties and property damage. Response activities include warning, emergency medical services, firefighting, law enforcement operations, evacuation, shelter and mass care, emergency public information, search and rescue, as well as other associated functions.

4. Recovery

Recovery is both a short-term and long-term process. Short-term operations seek to restore vital services to the community and provide for the basic needs of the public. Long-term recovery focuses on restoring the community to its normal, or improved, state of affairs. The recovery period is also an opportune time to institute mitigation measures, particularly those related to the recent emergency. Examples of recovery actions are temporary housing and food, restoration of non-vital government services, and reconstruction of damaged areas. If a disaster occurs, a recovery program will be carried out that involves both short-term and long-term efforts. Short-term operations seek to restore vital services to the community and provide for the basic needs of the public. Long-term recovery focuses on restoring the community to its normal state. The federal government pursuant to the Stafford Act, provides the vast majority of disaster recovery assistance. The recovery process includes assistance to individuals, businesses, and to government and other public institutions. Examples of recovery programs include temporary housing, restoration of government services, debris removal, restoration of utilities, disaster mental health services, and reconstruction of damaged roads and bridges. Our recovery program is outlined in Annex J, Recovery.

V. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

In addition to the responsibilities and tasks assigned below, each department head is responsible for developing appropriate emergency procedures and training programs to provide for extended 24 hour operation, which may be several days or weeks. The use of trained volunteers to supplement staff personnel is acceptable.

The Matagorda County and city governments are responsible to their respective citizens to do everything possible to save lives, minimize damage, alleviate suffering, and help to restore and rehabilitate property and society in the event of a natural disaster, manmade incident, or national emergency, including nuclear attack, accidental missile launch, or threat thereof.

A. EXECUTIVE GROUP

1. County Judge, Mayors, and County Commissioners

The Executive Group is referred to in this plan as a single body. This group has several components with representation from each local political jurisdiction within the emergency management program, which include Matagorda County, and the cities of Bay City and Palacios. Each group is responsible for the activities conducted within the respective jurisdictions.

The members of the Group include both elected and appointed officials with certain legal responsibilities and are identified in Section IX, "Continuity of Government".

The responsibilities of the Executive Group are to:

a. Act as Emergency Management Director for the respective jurisdiction.

b. Direct county and city departments and volunteers in all types of planning and emergency actions.

c. Inform citizens of the situation, and of the actions required of the public, including ordering evacuations, if appropriate to the emergency situation.

d. Declare a state of emergency or disaster and make emergency policy decisions governing the direction of disaster operations within their respective jurisdictions.

e. Request aid from State and Federal government including military support, if required.

f. Supervise and direct activities of outside assistance operating within the county and cities.

g. Establish policy and regulations necessary to provide for:

1) Wage, price, and rent controls and other economic stabilization methods in the event of a disaster;
2) Curfews, blockades, and limitations on utility usage.
3) Rules governing egress and ingress to affected areas, and other security measures.
4) Cooperative assistance agreements with other political jurisdictions, industries, and emergency response groups, and approve same.

2. Emergency Management Coordinator

The responsibilities of the Emergency Management Coordinator are to:

a. Assist the chief executive in all phases of the emergency preparedness effort as a staff advisor, including implementation of Increased Readiness Conditions and Recovery.

b. Manage the EOC during emergencies, as operations supervisor.

c. Serve as liaison between the executive group and other emergency forces.

d. Coordinate with and receive assistance from county/city departments, schools, American Red Cross, hospitals, private utilities, industry, civic groups, and religious organizations, in the development of the Emergency Management Basic plan.

e. Establish a program to prepare, review, revise, distribute, and maintain the Matagorda County Emergency Management Basic Plan and revisions to the county or city departments/agencies, private emergency response groups, and other organizations. Revised pages will be dated and marked to indicate where changes were made.

f. Coordinate other agencies' emergency plans, i.e., schools, American Red Cross, hospitals, private utilities, industries, civic groups, and religious organizations.

g. Arrange for disaster preparedness and response training classes to meet the needs of county/city departments and the general public, including drills and exercises.

h. Prepare and/or ensure preparation of Direction and Control, Annex N, and other applicable procedures, charts, rosters, and maps for operation of the EOC to include:

1) EOC staff rosters
2) EOC organization
3) Resource management
4) Requests for assistance
5) Reports
6) County/city maps

i. Maintain liaison with nearby communities, industry, state and federal emergency management agencies.

j. Coordinate emergency and recovery actions for the chief executives.

k. Ensure logistics such as food and supplies are available to the EOC staff.

l. Prepare and maintain a resource inventory.

m. Ensure the operational capability of the EOC.

n. Activate the EOC.

o. Keep the County Judge and Mayors apprised of the county and the cities preparedness status and anticipated needs.

p. Advise the State Disaster District, DPS, Pierce, concerning the county/city situation during emergency situations.

q. Serve as day-to-day liaison between the county and the state emergency management organizations.

r. Maintain liaison with organized emergency volunteer groups and private agencies.

s. Develop applicable agreements with area broadcasters for activation and use of the Emergency Alert System (EAS).

t. Initiate and monitor the increased readiness actions among the county and the cities services when disaster threatens (Refer to Section VI, Increased Readiness Procedures).

B. DEPARTMENT AND AGENCY FUNCTIONS

FUNCTIONS
RESPONSIBLE DEPARTMENT/AGENCY HEAD

1. WARNING (Annex A):

Matagorda County	-	County Sheriff
Bay City	-	Police Chief
Palacios	-	Police Chief

Warning includes receiving and disseminating warning information to the general public and key county and city officials, and includes the following actions.

a. Receive all types of warning, i.e., nuclear attack, weather, flood, offsite releases from the South Texas Project Electric Generating Station (STPEGS), and other warning messages, and disseminate these warning messages throughout the respective jurisdictions as required.

b. Ensure a 24-hour per day capability exists to receive and disseminate emergency notification/warning information.

c. Prepare procedures for alerting county/city officials, department heads, schools, hospitals, special populations, other agencies, and the general public.

d. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

e. Prepare and maintain Annex A and applicable procedures to accomplish the above functions.

2. COMMUNICATIONS (Annex B):

Matagorda County	-	County Sheriff
Bay City	-	Police Chief
Palacios	-	Police Chief

Communications involve establishing and maintaining an emergency communications system; coordinating the use of public and private communications systems during emergencies; and for managing and coordinating all communications operations within the respective Emergency Operations Center (EOC). Communications includes the following functions:

a. Oversee communications services which will provide voice links between EOC, county/city service departments, shelters, operating teams or agencies, other cities, counties, State Disaster District and federal agencies on a continuous 24-hour per day status for emergency response and recovery.

b. Secure additional land line communications, if necessary.

c. Compile and maintain a list of repair services to be called upon during emergencies to repair defective equipment.

d. Position emergency radio communication equipment in the EOC when it is activated.

e. Coordinate the use of volunteer communication systems (amateur, citizen, industry, etc.).

f. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

g. Prepare and maintain Annex B and applicable procedures to accomplish the above functions.

3. SHELTER/MASS CARE (Annex C):
American Red Cross

Shelter involves providing citizens with protective shelter from the direct effects of hazards when exposure could cause injury or death, and evacuation is not a viable option. Examples include tornadoes, hazardous materials spills, and radioactive fallout as a result of nuclear attack, or a radiological event at a nuclear power plant. Sheltering responsibility entails identifying appropriate shelters and supervising the shelter management program for natural or manmade disaster and nuclear attack, and includes the following actions:

a. Provide up to date information to the State concerning the Community Shelter Plan (CSP), as necessary.

b. Plan for and direct shelter occupancy, including preparation of shelters for natural or nuclear disasters, and providing appropriate living space (e.g., 40 square foot/person) for each relocated person.

c. Coordinate to provide organized shelter leadership, and selection and training of shelter staffs.

d. Coordinate with schools, churches, building owners, civic organizations and others for use of their personnel and/or facilities.

e. Direct filling of shelters, overloading if required, movement between shelters, evacuation of persons from endangered shelters and final closure of shelters.

f. Coordinate communications requirements between shelters and the EOC.

g. Assist Environmental Health Department in establishing a Reception Center.

h. Establish shelter reporting procedures, natural, fixed nuclear facility, and war-related.

i. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

j. Prepare and maintain Annex C and applicable procedures to accomplish the above functions.

4. RADIOLOGICAL PROTECTION (Annex D): Environmental Health Director or designee

Radiological protection includes developing and maintaining capabilities and procedures for radiation detection, monitoring of persons or equipment, including radioactive materials transportation and handling incidents, and nuclear attack.

The Environmental Health Director or designee is responsible for radiological services within the county/city, which include the following actions:

a. Advise the executive group regarding maximum dosage and movement during radioactive fallout conditions.

b. Develop and train assistant Radiological Officers (ROs).

c. Coordinate radiological training and exercises for emergency response personnel.

d. Obtain, maintain and distribute personal dosimetry and monitoring equipment to emergency workers during a radiological incident at the South Texas Project Electric Generating Station (STPEGS) or a nuclear attack.

e. Assist the American Red Cross in establishing Reception Centers that double as decontamination facilities.

f. Ensure assignment of Radiological Monitors to shelters under radioactive fallout conditions.

g. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

h. Prepare and maintain Annex D and applicable procedures to perform the above functions.

5. EVACUATION (Annex E):

Matagorda County	-	EMD (County Judge, Mayor, Emergency Commissioner)
	-	EMC
	-	Sheriff
Bay City	-	Police Chief
Palacios	-	Police Chief

Evacuation relocates people to safe areas when emergencies or threats necessitate such action. The decision to evacuate would normally be made by the chief executive of the affected political jurisdiction, upon the advice of the Emergency Management Coordinator, or for wartime threats upon the recommendation of the Governor. The Emergency Management Coordinator is responsible for establishing clear and detailed procedures for carrying out complete or partial evacuation of citizens.

The senior elected official in the city or the county has the authority, by Texas law, to order an evacuation and to carry out the following actions:

a. Define responsibilities of county and city departments and private sector groups.

b. Identify high hazard areas and the number of potential evacuees.

c. Coordinate evacuation planning to include:

1) Movement control,
2) Health and medical requirements,
3) Transportation needs,
4) Emergency Public Information materials, and
5) Procedures for accountability of people in an evacuation area and evacuation of special facilities.

d. The Matagorda County Sheriff and Bay City and Palacios Police Chiefs have the responsibility to coordinate and direct evacuation of emergency areas if directed by the Emergency Management Director.

e. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

f. Prepare and maintain Annex E and applicable procedures to accomplish the above functions.

6. FIRE AND RESCUE (Annex F):
Emergency Medical Services
Matagorda County Volunteer Fire Department (VFD) Chiefs

Bay City	Palacios
Blessing	Sargent
Markham	Selkirk
Matagorda	Wadsworth
Midfield	

Fire chiefs are responsible for fire control in their respective fire districts. The Bay City fire chief serves as the Fire Services Coordinator and as a member of the EOC. General responsibilities are to limit loss of life and property from fires and other damage, provide leadership and training in fire prevention and suppression, and coordinate search and rescue activities.

Ambulance service in Matagorda County is provided by Matagorda County Emergency Medical Service (MCEMS), is privately owned and provides basic life support, mobile medical aid, and ambulance transport. Matagorda, Midfield, Sargent and Selkirk operate volunteer ambulance services.

Fire Chiefs will:

a. Notify, mobilize, and use fire department personnel, volunteers, and equipment for control and suppression of all types of fires, including fire protection at public shelters.

b. Implement fire prevention measures to reduce vulnerability of buildings and areas to fire.

c. Conduct rescue operations for entrapped persons and provide emergency first aid to the injured.

d. Assist Sheriff and Police Chiefs in dissemination of warning to the general public, in all disaster conditions.

e. Assist in severe weather watch.

f. Determine and identify hazardous chemicals and materials and provide advice to the Emergency Management Director.

g. Coordinate requests for chemical and explosive accident assistance with the Matagorda County Sheriff's Department.

h. Ensure that fire department personnel are trained and equipped for radiological monitoring.

i. Perform radiological monitoring as required.

j. Bay City VFD provides landing zone coordination for air ambulance services.

k. Assist in traffic and access control.

l. Initiate Incident Command System.

m. Terrorist Incident Response

n. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

o. Prepare and maintain Annex F and applicable procedures to accomplish the above functions.

7. LAW ENFORCEMENT (Annex G):

Matagorda County	-	Sheriff
Bay City	-	Chief of Police
Palacios	-	Chief of Police
Texas Park and Wildlife	-	Fish and Game

Law enforcement includes maintaining law and order through traffic and crowd control, security functions, preventing crime against people and property, coordinating evacuation movement, isolation of damage areas, and providing security for vital facilities and supplies.

Law Enforcement will:

a. Maintain law and order, and protect life and property.

b. Enforce existing laws, ordinances, court orders, and the Emergency Management Basic Plan.

c. Establish traffic access and/or crowd control, as needed for roadways, waterways, rail and airspace.

d. Control access to emergency scenes and vacated areas, and prevent looting.

e. Perform weather-watch service.

f. Ensure law enforcement personnel are trained in and equipped for radiological monitoring and perform monitoring as required by the situation at hand.

g. Coordinate related activities with other law enforcement agencies.

h. Assist in rescue operations.

i. Assist in gathering damage assessment information.

j. Protect vital installations.

k. Dispatch ambulance, Justice of the Peace, and wreckers as required.

l. Coordinate and direct evacuation of emergency areas if recommended by the Emergency Management Director.

m. Participate in the Incident Command System, as appropriate

n. Terrorist Incident Response

o. Refer to Annex W, Fixed Nuclear Facilities Response for specific responsibilities in response to an incident at STPEGS.

p. Prepare and maintain Annex G and applicable procedures to accomplish the above functions.

8. HEALTH AND MEDICAL (Annex H):

County Health Officer
Environmental Health Director or designee
Hospital Administrators

Public health responsibilities include the safeguarding of public health, minimizing the incidence of communicable disease, establishing environmental controls, and coordinating burial.

Emergency medical responsibilities include providing emergency medical care and treatment for the ill and injured, coordinating patient loads of medical facilities during emergencies, coordinating evacuation and relocation of health care patients, and managing medical resources, such as personnel, equipment, and supplies.

a. The County Health Official will:

1) Advise officials on health and medical problems.

2) Ensure emergency medical support is provided to sheltered populations.

3) Ensure emergency medical care, immunization, and treatment centers are established.

4) Monitor treatment standards and identify medical resupply needs, and communicate to the Hospital Administrators, as appropriate.

5) Coordinate with the Hospital Administrators and others, as necessary, available health and medical resources, including location and procedure to obtain nearest Packaged Disaster Hospital.

6) Coordinate emergency assignments of medical personnel and use of medical facilities with the Hospital Administrators.

7) Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

8) Prepare and maintain Annex H and applicable procedures to accomplish the above functions.

b. The Environmental Health Director or designee will:

1) Advise officials on health problems.

2) Institute environmental sanitation measures.

3) Provide inspection and analysis of water supplies and food stocks.

4) Act as County Radiological Officer.

5) Assign Radiological Monitors to shelters under radiological fallout conditions.

6) Coordinate with local mortuaries and establish an emergency morgue, if necessary.

7) Initiate and coordinate contamination control measures with appropriate local and county officials.

8) Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

9) Prepare and maintain Annex H and applicable procedures to accomplish the above functions.

c. The Hospital Administrators will:

1) Advise officials on health and medical problems.

2) Provide for the emergency medical care and treatment of the ill and injured.

3) Assist the Environmental Health Director or designee and County Health Officer in minimizing the incidence of disease in the course of a disaster.

4) Coordinate the efforts of Matagorda General Hospital, Palacios Community Medical Center, Military Medical Assistance, and Mobile Army Surgical Team (MAST) operations.

5) Coordinate and supervise the receipt, setup, and operation of the Packaged Disaster Hospital, if requested by the County Health Officer.

6) Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

7) Prepare and maintain Annex H and applicable procedures to accomplish the above functions.

9. PUBLIC INFORMATION (Annex I): Matagorda County Public Information Officers

The Public Information Officer (PIO) is responsible for keeping the public advised as to the emergency situation. The PIO plays an important role through coordination with the news media in advising the public of proper action to take. The establishment of rumor control procedures and disaster information centers is also an important function, as is the ongoing requirement for emergency preparedness education efforts. All public information will be coordinated through the EOC where the PIO will function as a member of the EOC staff.

During emergencies involving the STPEGS, the PIO will remain a part of the EOC staff, but will report to the Joint Information Center (JIC) upon activation of the JIC.

The PIO will:

a. Establish and maintain a program to provide public education on disaster preparedness, warning signals, and the planned public response to the warning signals.

b. Maintain a program of organizational publicity designed to inform the public of actions being taken by their governing officials in the emergency preparedness (management) program area.

c. Monitor the news media, broadcast and print, and be alert to rumors. Provide a method to deal with rumors and correct the information to the extent possible.

d. Under emergency conditions, disseminate verified and authoritative information to the general public through the news media in an effort to advise, educate and reassure those citizens affected.

e. Prepare daily status report for the Direction and Control group.

f. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

g. Prepare and maintain Annex I and applicable procedures to accomplish the above functions.

10. DAMAGE ASSESSMENT (Annex J):

Matagorda County	-	County Judge, Precinct Commissioners, Chief Appraiser Tax Assessor/Collector
Bay City	-	Public Works Director
Palacios	-	Public Works Director
County Agents	-	Trained Volunteers
FSA (Farm Service Agency)		

Damage Assessment is handled by the affected jurisdiction's County Judge, Precinct Commissioner, Tax Assessor/Collector, County Agents, and FSA who are responsible for ensuring that personnel and procedures are available to provide preliminary estimates and descriptions of the extent of damage resulting from large scale disasters. This responsibility includes evaluation of the effects on the economic index, tax base, bond ratings, and insurance ratings for use in long-range recovery planning.

The County Judge, Precinct Commissioners, Chief Appraiser, Tax Assessor/Collector, County Agents, FSA and Public Works Directors will:

a. Gather damage information from department heads and other sources so the executive group can make decisions regarding requests for disaster assistance.

b. Compile reports of damage estimates on public and private property, and injuries and deaths for transmission to the State Disaster District, DPS, Pierce.

c. Assure revision of property tax records to reflect changes in property value from loss or restoration.

d. Secure photographic documentation of disaster areas and disaster damage, and provide to Damage Assessment.

e. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

f. Prepare and maintain Annex J and applicable procedures to accomplish the above functions.

11. PUBLIC WORKS/ENGINEERING (Annex K):

PUBLIC WORKS:

Matagorda County	-	Precinct Commissioners
Bay City	-	Public Works Director
Palacios	-	Public Works Director

The Public Works area involves providing a flexible response capability in the area of engineering, construction, and the repair and restoration of public facilities. Responsibilities include developing the capability and procedures for debris removal, condemnation of unsafe structures, post disaster safety inspections, assessment of damage to streets, bridges, traffic control devices, wastewater treatment plants, and other public works facilities.

The Precinct Commissioners/Public Works Director will:

a. Maintain and restore streets, roads and bridges.

b. Remove debris.

c. Assist law enforcement officials with barricading disaster areas.

d. Assist in decontaminating roads or streets and adjacent grounds.

e. Provide sanitation services such as garbage collection and disposal.

f. Conduct insect spraying (Vector control).

g. Identify source, location and availability of resources to support emergency response, such as: earth moving equipment, dump trucks, road graders, fuel, etc.

h. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

i. Prepare and maintain Annex K, in conjunction with Engineering, and applicable procedures to accomplish the above functions.

ENGINEERING:

Matagorda County	-	Precinct Commissioners
Bay City	-	Building Inspector
Palacios	-	Public Works Director

Engineering will:

a. Inspect, condemn, post, and if necessary, demolish unsafe buildings, bridges and structures.

b. Compile a list of engineering companies who could assist during an emergency.

c. Assist State and Federal engineers with damage surveys during restoration of damaged areas.

d. Report extent of damages to the EOC.

e. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

f. Prepare and maintain Annex K, in conjunction with Public Works, and applicable procedures to accomplish the above functions.

12. UTILITIES (Annex L):

a. PUBLIC UTILITIES:

Matagorda County	- Precinct Commissioners
Bay City	- Public Works Director
Palacios	- Public Works Director

The utilities functional area involves providing a flexible response capability for provision of telephones, natural gas, and electrical power sources as required. Responsibility includes coordination with private utility companies for priority restoration of service to vital facilities, providing emergency power sources as required, and damage assessment and identification of recovery times for affected utility systems.

1) Public Utilities will:

a) Coordinate, maintain and restore water, sewer systems, and facilities.

b) Prepare for and prevent water contamination.

c) Report damage of water and/or sewer systems to the EOC.

d) Coordinate with private utilities for assistance, as required.

e) Provide restoration of public utilities on a priority basis as established by the Emergency Management Director.

f) Bay City Only - Maintain the natural gas systems, restoring service in the priority order established by the Emergency Management Director.

g) Initiate curtailment procedures for shortages or overload conditions, as directed by the Emergency Management Director.

h) Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

i) Prepare and maintain Annex L and applicable procedures to accomplish the above functions.

b. PRIVATE UTILITIES:

Matagorda County	-	Precinct Commissioners
Bay City	-	Building Inspector
Palacios	-	Public Works Director

1) Private Utilities liaison will:

a) Ensure that all private utility companies' emergency plans support this Emergency Management Basic Plan.

b) Coordinate priority restoration of private utilities.

c) If shortages or overload conditions appear imminent, initiate curtailment procedures as directed by the Emergency Management Director.

d) Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

e) Prepare and maintain Annex L and applicable procedures to accomplish the above functions.

13. RESOURCE MANAGEMENT (Annex M):

Matagorda County	-	County Judge/Precinct Commissioners/County Auditor
Bay City	-	Mayor/City Manager
Palacios	-	Mayor/City Manager

Resource Management involves the responsibility for coordination and effective utilization of personnel, equipment, supplies, facilities, and services during emergency situations. It includes establishing procedures for employing temporary personnel for disaster operations; for establishing and maintaining a manpower reserve; for establishing marshalling areas; and coordinating the use of unsolicited personnel and equipment.

This responsibility also includes establishing emergency purchasing procedures (or a disaster contingency fund) and maintaining records of emergency related expenditures for goods, services, and personnel.

The Judge and Mayor, or designee, for the respective jurisdictions, will

a. Determine temporary transfer of county/city employees to disaster duty.

b. Hire additional staff or recruit volunteers during emergencies, if requested by a county/city department or agency.

c. Issue identification to county/city employees, residents, or other qualified individuals to permit reaching disaster assignments or homes.

d. Endeavor to keep a current list of individuals who specialize in the knowledge of various types of chemicals, conditions of safety, etc.

e. Establish a personnel and equipment pool, and a standby area for resources not being used.

f. Make and/or authorize emergency purchases during emergency situations.

g. Develop procedures concerning acquisition and disbursement of emergency funds.

h. Maintain records of all emergency purchases and use of private equipment or supplies for possible reimbursement.

i. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

j. Prepare and maintain Annex M and applicable procedures to accomplish the above functions.

14. DIRECTION AND CONTROL/EOC (Annex N):

County Judge
Mayor of Bay City
Mayor of Palacios
Emergency Management Coordinator for the County and Cities
County Precinct Commissioners
Sheriff or designee

Direction and Control is fulfilled by the executive officers of the county and cities utilizing the expertise of Emergency Operations Center staff. In general, direction and control responsibilities will include the assigning of tasks, directing planning efforts, monitoring the environment, and informing the public. To provide for centralized and coordinated management, these activities will be conducted from the Emergency Operations Center (EOC).

In situations involving only the County or both the county and the cities, the County Judge will assume direction and control of the EOC. The Emergency Commissioner will serve as the alternate or relief if shifts are established.

If only the Cities of Bay City or Palacios are directly involved, the Mayor of the respective city will assume direction and control of the EOC, with the Mayor Pro-Tem serving as alternate or relief if shifts are established.

Briefly stated, the line of succession for the direction and control within the respective EOC is as follows:

Matagorda County	Bay City	Palacios
County Judge	Mayor	Mayor
Emergency Commissioner	Mayor Pro-Tem	Mayor Pro-Tem

For guidance on Direction and Control during a Fixed Nuclear Facilities event, refer to Annex W.

15. HUMAN SERVICES (Annex O):
American Red Cross

The Human Services function involves assisting disaster victims with special needs such as food, clothing, housing, medical, and crisis counseling when shelters are not established. Human Services also involves coordinating volunteers and disaster relief agencies (American Red Cross, Salvation Army, etc.), and staffing Disaster Assistance Centers when such centers are established.

The American Red Cross will:

a. Coordinate relief agencies such as American Red Cross, Salvation Army, religious organizations, service clubs and other welfare organizations.

b. Coordinate emergency clothing, feeding, housing, registration and rehabilitation services.

c. Coordinate and assign families and individuals to State and Federally supplied temporary housing facilities.

d. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

e. Prepare and maintain Annex O and applicable procedures to accomplish the above functions.

16. HAZARD MITIGATION (Annex P):

Matagorda/Bay City/Palacios - Hazard Mitigation Officer/Public Works Directors

Mitigation actions are long-term, continuing processes which require multiple skills and expertise. This Annex provides a means for mitigation actions to be accomplished both as an ongoing process and as a response to a disaster. The Flood Plain Manager and/or cities Public Works Directors will assume the position of Hazard Mitigation Officer, with the Volunteer Fire Chiefs providing necessary support as required. A Hazard Mitigation Officer is not a position usually found on a county or city government staff. The selection of a Hazard Mitigation Officer must be based on ability to accomplish the responsibilities associated with this activity.

The Hazard Mitigation Officer will:

a. Survey potential hazardous situations within the county and cities.

b. Develop specific plans to lessen the hazardous effects.

c. Coordinate removal of the hazard to a safe location or situation.

d. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

e. Prepare and maintain Annex P and applicable procedures to accomplish the above functions.

17. HAZARDOUS MATERIALS RESPONSE (Annex Q):

Volunteer Fire Chiefs

Hazardous Materials Response personnel communicate with the nearest local government, providing information concerning the hazardous material, as well as, handling containment and removal of the threat.

The Fire Department Personnel will:

a. Determine hazard potential,

b. Initiate public protective actions as directed by the EOC,

c. Contain and control the area,

d. Inform public about the hazard,

e. Monitor and survey area,

f. Arrange removal of contaminants,

g. Document event,

h. Assist Environmental Health Director with Radiological Protection, and

i. Assist county commissioners and cities Public Works Directors with hazard mitigation.

j. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

k. Prepare and maintain Annex Q and applicable procedures to accomplish the above functions.

18. SEARCH AND RESCUE (Annex R)

Chief Rescue Officer

The Chief Rescue Officer has the primary responsibility for SAR for Matagorda County, as well as, the Cities of Bay City and Palacios. For the most part, SAR will be handled by the SAR team, with assistance from one or two other emergency agencies working under Incident Command.

The Chief Rescue Officer will:

a. Coordinate and conduct search activates.

b. Identify requirements for specialized resources to support rescue operations.

c. Prepare and execute inter-local agreements to support SAR.

d. Prepare and maintain Annex R and applicable procedures to accomplish the above functions.

19. TRANSPORTATION (Annex S): Transportation Officer

Transportation entails identifying local transportation resources and arranging for their use during emergencies; coordinating deployment of transportation equipment to county and city services requiring augmentation; establishing priorities for use of transportation where conflicts or shortages occur, and for maintaining records on use of privately owned transportation equipment for purposes of possible reimbursement.

The Transportation Officer will:

a. Coordinate and maintain appropriate records for all private and public transportation resources in emergencies.

b. Compile a list of vehicles and operators that can be made available during emergencies, and ensure that all operators are properly certified and trained.

c. Assist law enforcement officials in planning and executing movement of vehicular and pedestrian traffic in emergencies, including movement to shelters.

d. Support the EOC with emergency standby vehicles.

e. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

f. Prepare and maintain Annex S and applicable procedures to accomplish the above functions.

20. DONATIONS MANAGEMENT: (Annex T)

Donations Coordinator

The Donations Coordinator has the responsibility for coordinating the efforts of volunteer groups and local government to manage the donation of goods in the aftermath of an emergency.

a. Compile resource requirements identified by the Resource Management staff.

b. Solicit donations to meet needs.

c. Establish and implement procedures to receive, accept, or turn down offers of donated goods, and provide instructions to donors of needed goods.

d. In coordination with Resource Management, establish a facility to receive sort, and distribute donated goods.

e. Prepare and maintain Annex T and applicable procedures to accomplish the above functions.

21. LEGAL (Annex U):

Matagorda County	-	County Attorney
Bay City	-	City Attorney
Palacios	-	City Attorney

The legal service is responsible for advising county and city officials concerning the emergency power of local governments and necessary procedures to invoke the following measures: Implementing wage, price, and rent controls; rationing of critical resources; establishing curfews; restricting or denying access; specifying routes of egress; limiting use of water or other utilities; use of publicly or privately owned resources with or without payment to the owner; and debris removal from publicly or privately owned property.

The legal service is also responsible for advising county and city officials on possible liabilities arising from disaster operations; preparing and recommending legislation to implement emergency powers which may be required during a crisis, and advising local officials and department heads on record keeping requirements and other documentation necessary for the exercising of emergency powers.

Legal Services will:

a. Provide county/city officials with legal advice for contingency planning in areas of government liability and authority during emergency situations, including resource management.

b. Refer to Annex W, Fixed Nuclear Facility Response, for specific responsibilities in response to an incident at STPEGS.

c. Prepare and maintain Annex U and applicable procedures to accomplish the above functions.

22. TERRORIST INCIDENT RESONSE (Annex V)

Matagorda County	-	Sheriff
Bay City	-	Chief of Police
Palacios	-	Chief of Police

The county/cities are vulnerable to terrorist incidents. A significant terrorist attack is considered unlikely. However, the consequences of a major terrorist incident could be catastrophic; hence, mitigating against, preparing for, and responding to such incidents and recovering from them is an important function of government.

Local resources for combating terrorist attacks are very limited. In the event of a significant terrorist threat or incident, it is anticipated that state and federal resources will be requested in order to supplement local capabilities.

Terrorist attacks may be directed at government facilities, public and private institutions, business or industry, transportation, and individuals or groups. Such acts may involve: arson; shootings; bombings; including use of weapons of mass destruction (nuclear, chemical, or biological weapons); kidnapping or hostage taking; and other activities.

23. FIXED NUCLEAR FACILITY RESPONSE (Annex W):

Emergency Management Coordinator
STPEGS Emergency Response Organization

Annex W establishes the assignments, systems, and procedures necessary for the governments of Matagorda County to respond to an emergency at the South Texas Project Electric Generating Station (STPEGS). This is accomplished by providing for: Coordination of law enforcement activities to ensure the safety of life and property; a fire fighting plan to respond to the demands of an emergency; coordinating public health and medical services to reduce death and injury; assessing and reporting of damage; public works service plans for emergencies when extra measures must be taken to protect lives and property; a utilities service plan for emergencies when extra measures must be taken to protect lives and property; and a plan for effective use of human and material resources needed to deal with an emergency.

The Emergency Management Coordinator will:

a. Coordinate this plan with the Emergency Plan for the STPEGS.

b. Coordinate this plan with State response plans for STPEGS.

c. Refer to Annex W, Fixed Nuclear Facilities Response, for specific responsibilities in response to an incident at STPEGS.

d. Prepare and maintain Annex W and applicable procedures to accomplish the above functions.

24. OTHER DEPARTMENTS - Department Heads

Other departments or agencies not assigned a responsibility under this plan will make their personnel and facilities available to perform emergency duties or support other departments as directed by the chief executive or his designated representative.

For guidance on response during a Fixed Nuclear Facility event, departments should refer to Annex W.

25. VOLUNTEER & OTHER SERVICES

a. Volunteer Groups – The following are local volunteer agencies that can provide disaster relief services and traditionally have coordinated their efforts with our local government.

1. **Rio Colorado Chapter, American Red Cross** provides shelter management, feeding at fixed facilities and through mobile units, first aid, replacement of eyeglasses and medications, provision of basic clothing, and limited financial assistance to those affected by emergency situations. The Red Cross also provides feeding for emergency workers.

2. **The Salvation Army** provides emergency assistance to include mass and mobile feeding, temporary shelter, counseling, missing person services, medical assistance, and the warehousing and distribution of donated goods including food, clothing, and household items. It also provides referrals to government and private agencies for special services.

3. **Southern Baptist Convention Disaster Relief** provides mobile feeding units staffed by volunteers. Active in providing disaster childcare, the agency has several mobile childcare units. Can also assist with clean-up activities, temporary repairs, reconstruction, counseling, and bilingual services.

4. **RACES (Radio Amateur Civil Emergency Service)** provides amateur radio support for emergency operations, including communications support in the EOC.

b. Business Support

The following business have agreed to provide support for emergency operations as indicated:

1. Ministerial Alliance

2. Interagency Council

VI. INCREASED READINESS PROCEDURES

A. GENERAL

Most emergencies follow some recognizable build-up period during which actions can be taken to achieve a state of maximum readiness. General departmental actions are outlined in the appropriate annex while specific actions are detailed in Standard Operating Procedures (SOPs).

B. SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION EMERGENCY CLASSIFICATION LEVELS

The four Emergency Classification Level (ECL) Guidelines for the South Texas Project Electric Generating Station listed below are outlined in Annex W, and explained in NUREG-0654. Due to the technical aspects involved in emergency preparedness for this facility the nomenclature differs from readiness conditions for other hazards. (See Annex W examples for Initiating Emergency Action Levels).

1. UNUSUAL EVENT (UE):

Indicates the unusual events are in process or occurred which indicate a potential degradation of the level of safety of the station or indicate a security threat to facility protection has been initiated. No release of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

2. ALERT:

Indicates events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the station or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline (PAG) exposure levels.

3. SITE AREA EMERGENCY (SAE):

Indicates events are in process or have occurred which involve an actual or likely major failure of station functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed Environmental Protection Agency (EPA) Protective Action Guidelines (PAG) exposure levels beyond the site boundary.

4. GENERAL EMERGENCY (GE):

Indicates events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed Environmental Protection Agency (EPA) Protective Action Guidelines (PAG) exposure levels offsite for more than the immediate site area.

C. The following READINESS LEVELS will be used as a means of increasing the alert posture for Matagorda County and the incorporated cities of Bay City and Palacios for other manmade and natural disasters. The county and cities use a four-tier system. Readiness levels will be determined by the County Judge/Mayors, or under certain circumstances by the Emergency Management Coordinator.

1. **Level 4: Normal Conditions**

a. Emergency incidents occur and local officials are notified. One or more departments or agencies respond to handle the incident; an incident command post may be established. Limited assistance may be requested from other jurisdictions pursuant to established inter-local agreements.

b. The normal operations of government are not affected.

2. **Level 3: Increased Readiness**

a. Increased Readiness refers to a situation that presents a greater potential threat than "Level 4", but poses no immediate threat to life and/or property. Increased readiness actions may be appropriate when the situations similar to the following occur:

1) Tropical Weather Threat - A tropical weather system has developed that has the potential to impact the local area. Readiness actions may include regular situation monitoring, a review of plans and resource status, determining staff availability and placing personnel on-call.

2) Tornado Watch – Indicates possibility of tornado development. Readiness actions may include increased situation monitoring and placing selected staff on alert.

3) Flash Flood Watch – Indicates flash flooding is possible due to heavy rains occurring or expected to occur. Readiness actions may include increased situation monitoring, reconnaissance of known trouble spots, deploying warning signs.

4) Wildfire Threat – During periods of extreme wildfire threat, readiness actions may include deploying additional resources to areas most at risk, arranging for standby commercial water tanker support, conducting daily aerial reconnaissance, or initiating burn bans.

5) Mass Gathering – For mass gatherings with previous history of problems, readiness actions may include reviewing security, traffic control, fire protection, and first aid planning with organizers and determining additional requirements.

b. Declaration of "Level 3" will generally require the initiation of the "Increased Readiness" activities identified in each annex to this plan.

3. **Level 2: High Readiness**

a. High Readiness refers to a situation with a significant potential and probability of causing loss of life and/or property. This condition will normally require some degree of warning to the public. Actions would be triggered by severe weather warning information issued by the National Weather Service such as:

1) Tropical Weather Treat – A tropical weather system may impact the local area within 72 hours. Readiness actions may include continuous storm monitoring, identifying worst-case decision points, increasing preparedness of personnel and equipment, updating evacuation checklists, verifying evacuation route status, and providing the public information for techniques to protect homes and businesses on the evacuation routes.

2) Tornado Warning – Issued when a tornado has actually been sighted in the vicinity or indicted by radio, and may strike in the local area. Readiness actions may include activating the EOC, continuous situation monitoring, and notifying the public about the warning.

3) Flash Flood Warning – Issued to alert persons that flash flooding is imminent or occurring on certain streams or designated areas, and immediate action should be taken. Readiness actions may include notifying the public about the warning, evacuating low-lying areas, open shelters to house evacuees, and continuous situation monitoring.

4) Winter Storm Warning – Issued when heavy snow, sleet, or freezing rain are forecast to occur separately or in a combination. Readiness actions may include preparing for possible power outages, putting road crews on stand-by to clear and/or sand the roads, and continuous situation monitoring.

5) Mass Gathering – Civil disorder with relatively large-scale localized violence is imminent. Readiness actions may include increased law enforcement presence, putting hospitals and fire departments on alert and continuous situation monitoring.

b. Declaration of a "Level 2" will generally require the initiation of the "High Readiness" activities identified in each annex to this plan.

c. A "Level 2" also exists when a Site Area Emergency is declared at STPEGS.

4. **Level 1: Maximum Readiness**

a. Maximum readiness refers to situation that hazardous conditions are imminent. This condition denotes a greater sense of danger and urgency than associated with a "Level 2" event. Actions could also be generated by severe weather warning information issued by the National Weather Service combined with factors making the event more imminent.

1) Tropical Weather Threat – The evacuation decision period is nearing for an approaching tropical weather system that may impact the local area. Readiness actions may include continuous situation monitoring, cull activation of the EOC, recommending precautionary actions for special facilities, placing emergency personnel and equipment into position for emergency operations, and preparing public transportation resources for evacuation support.

2) Tornado Warning – Tornado has been sited especially close to a populated area or moving towards a populated area. Readiness actions may include taking immediate shelter and put damage assessment teams on stand-by.

3) Flash Flood Warning – Flooding is imminent or occurring at specific locations. Readiness actions may include evacuations, rescue teams on alert, sheltering evacuees and/or others displaced by the flooding, and continuous monitoring of the situation.

4) Mass Gathering – Civil disorder is about to erupt into large-scale and widespread violence. Readiness actions may include having all EMS units on stand-by, all law enforcement present for duty, notify the DDC that assistance may be needed and keep them apprised of the situation, and continuous situation monitoring is required.

b. Declaration of "Level 1" will generally require the initiation of the "Maximum Readiness" activities identified in each annex to this plan.

c. A "Level 1" also exits when a General Emergency is declared at STPEGS.

1. RECOVERY ACTIONS

The Matagorda County Judge, or his designee, shall provide overall direction for recovery actions, and will:

a. Check and/or re-establish communications.

b. Maintain law and order.

c. Perform fire protection and rescue operations.

d. Set up triage stations if necessary and re-establish safe health conditions.

e. Assess extent of damage.

f. Perform emergency cleanup and debris removal.

g. Request outside assistance as required.

h. Establish controls on critical resources and direct their distribution.

i. Designate restricted areas as necessary.

j. Furnish regular status reports to the Department of Public Safety Disaster District Committee Headquarters, Pierce.

k. Keep the public informed of the situation through the news media.

l. Ensure orderly operations of shelters, provide welfare necessities to the extent possible, and determine when conditions will allow shelter emergency.

m. Under conditions of nuclear warfare, conduct radiological monitoring of fallout during all stages of operations.

n. Secure the disaster area for life safety hazards which include Private Utilities.

o. Perform an inventory of personnel and equipment in all departments and ensure agencies available for disaster recovery efforts.

p. Refer to Annex W, Fixed Nuclear Facilities Response, for recovery actions resulting from an incident at STPEGS.

VII. ADMINISTRATION AND SUPPORT

A. ADMINISTRATION

1. Reports and Records

Required reports will be submitted to the appropriate authorities in accordance with individual annexes.

a) Hazardous Material Spill Reporting – If a release of hazardous materials occurs of a type or quantity that must be reported to state and federal agencies, the department or agency responsible for the spill shall make the required report. See Annex Q, Hazardous Materials and Oil Spill Response, for more information. If the party responsible for a reportable spill cannot be located, the Incident Commander shall ensure that the required report(s) are made.

b) Initial Emergency Report – This short report should be prepared and transmitted by the EOC when an on-going emergency incident appears likely to worsen and we may need assistance from other local governments or the State. See Annex N, Direction and Control for the format and instructions for this report.

c) Situation Report – A daily situation report should be prepared and distributed by the EOC during major emergencies or disasters. See Annex N, Direction and Control, for the format of and instructions for this report.

d) Other Reports – Several other reports covering specific functions are described in the annexes to this plan.

2. Relief Assistance

All individual relief assistance will be provided in accordance with the policies set forth in local, state, and federal provisions.

3. Consumer Protection

Consumer complaints pertaining to alleged unfair or illegal business practices will be referred to the State Attorney Generals' Consumer Protection Division.

B. SUPPORT

1. Requests for State or Federal assistance, including activities of the Texas National Guard or other military assistance, will be made by calling the State Disaster District Committee Headquarters in Pierce. The Disaster District staff will forward requests for assistance that cannot be satisfied by state resources within the district to the State Operations Center in Austin for action. In the event the State Disaster District Committee Headquarters cannot be reached, the request for assistance shall be made by contacting the local DPS trooper.

2. Military assistance will complement and not be a substitute for participation in emergency operations by local government. Military forces, if made available, will remain at all times under military command, but will support and assist local forces and may receive from the County Judge/Mayor mission-type requests to include objectives, priorities, and other information to accomplish those missions.

3. Requests for state or federal assistance will be placed with the State Disaster District Committee Headquarters in Pierce by the Emergency Management Director or in his name by other officials specifically authorized by him. When a need for assistance is identified by any of the emergency management organization response groups, that information is to be forwarded to the Emergency Management Director.

4. Should local resources prove to be inadequate during an emergency, requests will be made for assistance from other local jurisdictions and other agencies, in accordance with existing or emergency negotiated mutual-aid agreements and understandings. Such assistance may take the form of equipment, supplies, personnel, or other available capabilities. All agreements will be entered into by duly authorized officials and will be formalized in writing, whenever possible. Agreements and contracts should identify the local officials authorized to request assistance pursuant to those documents.

5. In an effort to facilitate assistance pursuant to mutual aid agreements, our available resources are identified and will become a part of the Texas Regional Response Network (TRRN).

6. The agreements and contracts pertinent to emergency management that the county and cities are a party to are summarized in Attachment 25.

C. RECORDS

1. Record Keeping for Emergency Operations

The county/cities are responsible for establishing the administrative controls necessary to manage the expenditure of funds and to provide reasonable accountability and justification for expenditures made to support emergency operations. This shall be done in accordance with the established local fiscal policies and standard cost accounting procedures.

a. Activity Logs. The Incident Command Post and the EOC shall maintain accurate logs recording key response activities, including:

1) Activation or deactivation of emergency facilities

2) Emergency notifications to other local governments and to state and federal agencies

3) Significant changes in the emergency facilities

4) Major commitments of resources or requests for additional resources from external sources

5) Issuance of protective action recommendations to the public

6) Evacuations

7) Causalities

8) Containment or termination of the incident

b. Incident Costs. All departments and agencies shall maintain records summarizing the use of personnel, equipment, and supplies during the response to day-to-day incidents to obtain a estimate of annual emergency response costs than can be used as in preparing future department of agency budgets.

c. Emergency or Disaster Costs. For major emergencies or disasters, all departments and agencies participating in the emergency response shall maintain detailed of costs for emergency operations to include:

1) Personnel costs, especially overtime costs

2) Equipment operations costs

3) Costs for leased or rented equipment

4) Costs for contract services to support emergency operations

5) Costs of specialized supplies expended for emergency operations

These records may be used to recover costs from the responsible party or insurers or as a basis for requesting financial assistance for certain allowable response and recovery costs from the state and/or federal government.

2. Preservation of Records

a. In order to continue normal government operations following an emergency situation disaster, vital records must be protected. These include legal documents as well as property and tax records. The principal cause of damage to records are fire and water; therefore, essential records should be protected accordingly. Each agency responsible for preparation of annexes to this plan will include protection of vital records in its SOPs.

b. If records are damaged during an emergency situation, we will seek professional assistance to preserve and restore them.

D. TRAINING

It will be the responsibility of each agency direction to ensure that agency personnel, in accordance with the National Incident Management System (NIMS), posses the level of training, experience, credentialing, currency, physical and medical fitness, or capability for any positions they are tasked to fill.

E. CONSUMER PROTECTION

Consumer complaints regarding alleged unfair or illegal business practices often occur in the aftermath of a disaster. Such complaints will be referred to the county/city Attorney, who will pass such complaints to the Consumer Protection Division of the Office of the Attorney General.

F. POST-INCIDENT AND EXERCISE REVIEW

The County Judge, Mayors, and/or EMC are responsible for organizing and conducting a critique following the conclusion of a significant emergency event/incident or exercise. The after action report will entail both written and verbal input from all appropriate participants. Where deficiencies are identified, an individual, department, or agency will be assigned responsibility for correcting the deficiency and a due date shall be established for that action.

VIII. RESOURCE CONTROL

Rationing, curfews, price freezing, designation of restricted areas, or other resource controls may be imposed at the direction of the County Judge/Mayor or Commissioners/Council members as deemed necessary during the emergency or as the situation warrants. All resources within the limits of the county and cities, both publicly and privately owned, will be used where deemed necessary by local government officials, and upon orders from the County Judge/Mayor or Commissioners/Council members. Matagorda County and the cities of Bay City and Palacios will assume no financial liability for the use of privately owned equipment or personnel; however, accurate records of such use will be kept for the purpose of possible reimbursement.

IX. INCIDENT COMMAND SYSTEM (ICS)/NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS)

A. Overview of Incident Command

1. ICS will be employed, an integral part of NIMS, in managing emergencies. ICS is both a strategy and a set of organizational arrangements for directing and controlling field operations. It is designed to effectively integrate resources from different agencies into a temporary emergency organization at an incident site that can expand and contract with the magnitude of the incident and resources on hand.

2. The incident commander is responsible for carrying out the ICS function of command – managing the incident. The four other major management activities that form the basis of ICS are operations, planning, logistics, and finance/administration. For small-scale incidents, the incident commander and one or two individuals may perform all of these functions. For larger incidents, a number of individuals from different departments or agencies may be assigned to separate staff sections charged with those functions. A copy of an organizational chart is included as Attachment 26.

3. An incident commander using response resources from one or two departments or agencies can handle the majority of emergency situations. Departments or agencies participating in this type of incident response will normally obtain support through their own department or agency.

4. In emergency situations where other jurisdictions or the state or federal government is providing significant response resources or technical assistance, it is generally desirable to transition from the normal ICS structure to a Unified Command structure. This arrangement helps to ensure that all participating agencies are involved in developing objectives and strategies to deal with the emergency. Attachment 27 provides additional information on Unified and Area Commands.

5. An incident command post or command posts will be established in the vicinity of the incident site(s) as required to mitigate the emergency situation.

B. Incident Command System – EOC Interface

1. For major emergencies and disasters, the Emergency Operations Center (EOC) will be activated. When the EOC is activated, it is essential to establish a division of responsibilities between the incident command post and the EOC. A general division of responsibilities is outlined below. It is essential that a precise division of responsibilities be determined for specific emergency operations.

2. The incident commander is generally responsible for field operations, including:

   a. Isolating the scene

   b. Directing and controlling the on-scene response to the emergency situation and managing the emergency resources committed there.

   c. Warning the population in the area of the incident and providing emergency instructions to them.

   d. Determining and implementing protective measures (evacuation or in-place sheltering) for the population in the immediate area of the incident and for emergency responders at the scene.

   e. Implementing traffic control arrangements in and around the incident scene.

   f. Requesting additional resources from the EOC.

3. The EOC is generally responsible for:

   a. Providing resource support for the incident command operations

   b. Issuing community-wide warning

   c. Issuing instructions and providing information the general public

   d. Organizing and implementing large-scale evacuation

   e. Organizing and implementing shelter and mass arrangements for evacuees

   f. Coordinating traffic control for large-scale evacuations

   g. Requesting assistance from the State and other external sources

4. In some large-scale emergencies or disasters, emergency operations with different objectives may be conducted at geographically separated scenes. In such situations, more than one incident command operation may be established. If this situation occurs, a transition to an Area Command or a Unified Area Commend is desirable, and that the allocation of resources to specific field operations be coordinated through the EOC.

C. National Incident Management System (NIMS)

1. Matagorda County has adopted the National Incident Management System (NIMS) in accordance with the President's Homeland Security Directive (HSPD)-5. Our adoption of NIMS will provide a consistent approach to the effective management of situations involving natural or man-made disasters, or terrorism. NIMS allows us to integrate our response activities using a set of standardized organizational structures designed to improve interoperability between all levels of government, private sector, and nongovernmental organizations.

2. This plan, in accordance with the National Response Plan (NRP), is an integral part of the national effort to prevent and reduce America's vulnerability to terrorism, major disasters, and other emergencies, minimize the damage and recover from attacks, major disasters, and other emergencies that occur. In the event of an Incident of National Significance, as defined in HSPD-5, we will integrate all operations with all levels of government, private sector, and nongovernmental organizations through the use of NRP coordinating structures, processes, and protocols. Matagorda County will employ the six components of the NIMS in all operations, which will provide a standardized framework that facilitates our operations in all phases of emergency management. Attachment 27 provides further details on the NIMS.

X. CONTINUITY OF GOVERNMENT

A. Lines of Succession

1. The Line of succession within the county for decisions concerning county jurisdictional areas is from the Judge to the Emergency Commissioner as appointed by the Commissioners Court.

2. The Line of Succession to the Mayor(s) is the Mayor Pro-Tem followed by the City Council members according to established SOPs.

3. The Line of Succession to the Emergency Management Coordinator is the County Sheriff.

4. The Lines of Succession to each department head are according to the SOPs established by each department.

B. Preservation of Records

1. In order to continue normal government operations following an emergency situation disaster, vital records must be protected. These include legal documents as well as property and tax records. The principal causes of damage to records are fire and water; therefore, essential records should be protected accordingly. Each agency responsible for preparation of annexes to this plan will include protection of vital records in its SOPS.

2. If records are damaged during an emergency situation, we will seek professional assistance to preserve and restore them.

3. Essential records are protected in a vault at the County Courthouse under control of the County Clerk. Protection of departmental essential records is the responsibility of each department.

XI. PLAN DEVELOPMENT, MAINTENANCE, AND IMPLEMENTATION

A. If a plan is to be effective, its contents must be known and understood by those who are responsible for its implementation. The Emergency Management Coordinator will brief the appropriate public/private officials concerning their role in emergency management and ensure proper distribution of the plan and changes thereto.

B. All agencies will be responsible for the development and maintenance of their respective annexes and SOPs identified in SECTION V, Organization and Assignment of Responsibilities.

C. The basic and annexes plan will be reviewed annually and updated as necessary and revised at least every five years, based upon deficiencies identified by drills and exercises, changes in local government structure, technological changes, etc. The Emergency Management Coordinator will incorporate approved changes to the plan and will forward changes to all organizations and individuals identified as having responsibility for implementation. Revised pages will be marked to show where changes have been made. The plan will be activated at least biennially to provide practical experience to those having EOC responsibilities. This plan will be recertified biennially by the chief elected official.

D. §418.043(4) of the Government Code provides that DEM shall review local emergency management plans. The process for submitting new or updated planning documents to DEM is described in Chapter 6 of the DEM-10. The [County Judge/Mayor/EMC] is responsible for submitting copies of planning documents to our DEM Regional Liaison Officer for review.

E. This plan supersedes and rescinds all previous editions of the Matagorda County Emergency Management Basic plan and is effective upon signing by the County Judge and the Mayors of Bay City and Palacios.

If any portion of this plan is held invalid by judicial or administrative ruling, such ruling shall not affect the validity of the remaining portions of the plan.

All existing annexes and procedures remain in effect to the extent that they are not in conflict with this Plan.

_____
County Judge, Matagorda County

_____
Mayor, Bay City

_____
Mayor, Palacios

ATTACHMENT 1
REFERENCES

Federal Emergency Management Agency (FEMA), 1980. Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG-0654.

Federal Emergency Management Agency (FEMA), 1984. Federal Assistance Handbook: Emergency Management, Direction and Control Programs, CPG 1-3.

FEMA, 1984. Objectives for Local Emergency Management, CPG 1-5.

FEMA, 1981. Disaster Operations, CPG 1-6.

FEMA, 1981. Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis, CPG 1-7.

FEMA, 1985. Guide for Development of State and Local Emergency Operations Plans.

FEMA - REP - 14, September 1991. Radiological Emergency Preparedness Exercise Manual.

Texas Department of Public Safety, Division of Emergency Management, 1990. Local Emergency Management Basic Plan Development Handbook, DEM-10.

Governor's Division of Emergency Management. State of Texas Emergency Management Basic Plan.

ATTACHMENT 2

STATE AND LOCAL LEGAL DOCUMENTS

Attachment 2	-	State and Local Legal Documents
Attachment 3	-	Executive Order, RP-01
Attachment 4	-	Government Code, Chapter 418, Emergency Management
Attachment 5	-	Matagorda County Commissioners Court Order
Attachment 6	-	City of Bay City Ordinance #1304
Attachment 7	-	City of Palacios Ordinance #669
Attachment 8	-	Bay City Resolution #R-03-18
Attachment 9	-	Matagorda County/City of Palacios Joint Resolution

Attachment 3

Executive Order RP01 - April 3, 2002

by the
GOVERNOR OF THE STATE OF TEXAS
Executive Department
Austin, Texas
April 3, 2002

WHEREAS, the Legislature of the State of Texas has enacted the Texas Disaster Act (the "Act") of 1975, Chapter 418 of the Texas Government Code to:

- Reduce the vulnerability of people and communities of this state to damage, injury, and loss of life and property resulting from natural or man-made catastrophes, riots, or hostile military or paramilitary actions;
- Prepare for prompt and efficient rescue, care, and treatment of persons victimized or threatened by disaster;
- Provide a setting conducive to the rapid and orderly restoration and rehabilitation of persons and property affected by disasters;
- Clarify and strengthen the roles of the Governor, state agencies, and local governments in the mitigation of, preparation for, response to, and recovery from disasters;
- Authorize and provide for cooperation and coordination of activities relating to mitigation, preparedness, response, and recovery by agencies and officers of this state, and similar state-local, interstate, federal-state, and foreign activities in which the state and its political subdivisions may participate;
- Provide a comprehensive emergency management system for Texas that is coordinated to make the best possible use of existing organizations and resources within government and industry, and which includes provisions for actions to be taken at all levels of government before, during, and after the onset of an emergency situation;
- Assist in the mitigation of disasters caused or aggravated by inadequate planning for and regulation of public and private facilities and land use; and
- Provide the authority and mechanism to respond to an energy emergency; and;

WHEREAS, the Governor is expressly authorized under Section 418.013 of the Act to establish by executive order an Emergency Management Council comprised of the heads of state agencies, boards, and commissions and representatives of organized volunteer groups to advise and assist the Governor in all matters relating to mitigation, preparedness, response, and recovery; and,

WHEREAS, a Division of Emergency Management is established in the Office of the Governor under Section 418.041 of the Act, and the Director of the Division of Emergency Management is to be appointed by and serve at the pleasure of the Governor; and,

WHEREAS, with the aid and assistance of the Emergency Management Council and Division of Emergency Management, the Governor may recommend that cities, counties, and other political subdivisions of the state undertake appropriate emergency management programs and assist and cooperate with those developed at the state level;

NOW, THEREFORE, I, Rick Perry, Governor of Texas, by virtue of the power and authority vested in me by the Constitution and laws of the State of Texas, do hereby order the following:

The Emergency Management Council (the "Council") shall be created and maintained. The Council shall be comprised of the heads of the following state agencies, boards, commissions, and organized volunteer groups or any successors to each of these entities:

- Adjutant General's Department
- American Red Cross
- Department of Information Resources
- General Land Office *
- Governor's Division of Emergency Management *
- Office of Rural Community Affairs
- Public Utility Commission of Texas
- Railroad Commission of Texas *
- Salvation Army, The
- State Aircraft Pooling Board
- State Auditor's Office
- State Comptroller of Public Accounts
- Texas Animal Health Commission
- Texas Attorney General's Office
- Texas Building and Procurement Commission
- Texas Commission on Fire Protection *
- Texas Department of Agriculture *
- Texas Department of Criminal Justice
- Texas Department of Economic Development
- Texas Department of State Health Services*
- Texas Department of Housing and Community Affairs
- Texas Department of Insurance

- Texas Department of Mental Health and Mental Retardation
- Texas Department of Public Safety *
- Texas Department of Transportation *
- Texas Education Agency
- Texas Engineering Extension Service *
- Texas Forest Service
- Texas Commission of Environmental Quality *
- Texas Parks and Wildlife Department *
- Texas Rehabilitation Commission
- Texas Workforce Commission
- * (member of the State Emergency Response Commission)

The specific duties and responsibilities of each member of this group shall be as designated in the State Emergency Management Plan and Annexes thereto. Each member of the group may designate a staff member representative to the Council.

The Director of the Texas Department of Public Safety shall be designated to serve as Chair of the Council and as Director of the Division of Emergency Management (the "Director").

The Division of Emergency Management shall be designated as the agency to exercise the powers granted to me under the Act in the administration and supervision of the Act, including, but not limited to, the power to accept from the federal government, or any public or private agency or individual, any offer of services, equipment, supplies, materials, or funds as gifts, grants, or loans for the purposes of emergency services or disaster recovery, and may dispense such gifts, grants, or loans for the purposes for which they are made without further authorization other than as contained herein.

The Director shall establish emergency operation areas to be known as Disaster Districts which shall correspond to the boundaries of the Texas Highway Patrol Districts and Sub-Districts and shall establish in each a Disaster District Committee comprised of representatives of the state agencies, boards, commissions, and organized volunteer groups having membership on the Council. The Highway Patrol Commanding Officer of each Highway Patrol District or Sub-District shall serve as Chair of the Disaster District Committee and report to the Director on matters relating to disasters and emergencies. The Disaster District Committee Chair shall be assisted by the Council representatives assigned to that district, who shall provide guidance, counsel, and administrative support as required.

The Council is authorized to issue such directives as may be necessary to effectuate the purpose of the Act, and is further authorized and empowered to exercise the specific powers enumerated in the Act.

- The State Emergency Response Commission shall be a standing element of the Council in order to carry out certain state emergency planning, community right-to-know, and response functions relating to hazardous materials. The Commission shall be comprised of representatives named by the heads of the agencies and commissions marked with an asterisk (*) in the listing of the Council above. The State Coordinator, as appointed by the Director under Section 418.041 of the Act, shall chair the State Emergency Response Commission or designate a chair.

- The mayor of each municipal corporation and the county judge of each county in the state shall be designated as the Emergency Management Director for each such political subdivision in accordance with Sections 418.102, 418.103, and 418.105 of the Act, and published rules of the Division of Emergency Management. These mayors and county judges shall serve as the Governor's designated agents in the administration and supervision of the Act, and may exercise the powers, on an appropriate local scale, granted the Governor therein. Each mayor and county judge may designate an Emergency Management Coordinator who shall serve as assistant to the presiding officer of the political subdivision for emergency management purposes when so designated.

  Each political subdivision of the state, pursuant to Section 418.104, of the Act, is authorized to establish in the county in which they are sited, inter-jurisdictional agencies by intergovernmental agreement, supported as needed by local city ordinance or commissioner's court order, in cooperation and coordination with the Division of Emergency Management of the Governor's Office. In compliance with Section 418.101 of the Act, the presiding officer of each political subdivision shall promptly notify the Division of Emergency Management of the manner in which it is providing or securing an emergency management program and the person designated to head that program.

  This executive order supersedes all previous executive orders on emergency management including Executive Order RP-01, and shall remain in effect until modified, amended, rescinded, or superseded by me or by a succeeding Governor.

  Given under my hand this the 3rd day of April, 2002.

  RICK PERRY (signature)
  Governor

  GWYNN SHEA (signature)
  Secretary of State

ATTACHMENT 4

Government Code Chapter 418

EMERGENCY MANAGEMENT

Prepared by

Division of Emergency Management
Texas Department of Public Safety

P.O. BOX 4087
Austin, TX. 78773-0001
512-424-2138

(DEM-88)
December 1995

Rev. 13
June 18, 2009

CHAPTER 418. EMERGENCY MANAGEMENT

SUBCHAPTER A. GENERAL PROVISIONS

Section

[Sections 418.005 to 418.010 reserved for expansion]

SUBCHAPTER B. POWERS AND DUTIES OF GOVERNOR

[Sections 418.025 to 418.040 reserved for expansion]

SUBCHAPTER C. DIVISION OF EMERGENCY MANAGEMENT

[Sections 418.049 to 418.070 reserved for expansion]

SUBCHAPTER D. FINANCE

Section

[Sections 418.075 to 418.100 reserved for expansion]

SUBCHAPTER E. LOCAL AND INTERJURISDICTIONAL EMERGENCY MANAGEMENT

[Sections 418.110 to 418.120 reserved for expansion]

SUBCHAPTER F. DISASTER PREVENTION

[Sections 418.125 to 418.150 reserved for expansion]

SUBCHAPTER G. CITIZEN DUTIES AND CLAIMS FOR COMPENSATION

[Sections 418.155 to 418.170 reserved for expansion]

SUBCHAPTER H. MISCELLANEOUS PROVISIONS

Section

WESTLAW Electronic Research

See WESTLAW Electronic Research Guide following the Preface.

SUBCHAPTER A. GENERAL PROVISIONS

§ 418.001. Short Title

This chapter may be cited as the Texas Disaster Act of 1975.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.002. Purposes

The purposes of this chapter are to:

(1) reduce vulnerability of people and communities of this state to damage, injury, and loss of life and property resulting from natural or man-made catastrophes, riots, or hostile military or paramilitary action;

(2) prepare for prompt and efficient rescue, care, and treatment of persons victimized or threatened by disaster;

(3) provide a setting conducive to the rapid and orderly restoration and rehabilitation of persons and property affected by disasters;

(4) clarify and strengthen the roles of the governor, state agencies, and local governments in prevention of, preparation for, response to, and recovery from disasters;

(5) authorize and provide for cooperation in disaster mitigation, preparedness, response, and recovery;

(6) authorize and provide for coordination of activities relating to disaster mitigation, preparedness, response, and recovery by agencies and officers of this state, and similar state-local, interstate, federal-state, and foreign activities in which the state and its political subdivisions may participate;

(7) provide an emergency management system embodying all aspects of predisaster preparedness and post disaster response;

(8) assist in mitigation of disasters caused or aggravated by inadequate planning for and regulation of public and private facilities and land use; and

(9) provide the authority and mechanism to respond to an energy emergency.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 1, eff. Sept. 1, 1997.

§ 418.003. Limitations

This chapter does not:

(1) limit the governor's authority to apply for, administer, or expend any grant, gift, or payment in aid of disaster mitigation, preparedness, response, or recovery;

(2) interfere with the course or conduct of a labor dispute, except that actions otherwise authorized by this chapter or other laws may be taken when necessary to forestall or mitigate imminent or existing danger to public health or safety;

(3) interfere with dissemination of news or comment on public affairs, but any communications facility or organization, including radio and television stations, wire services, and newspapers, may be required to transmit or print public service messages furnishing information or instructions in connection with a disaster or potential disaster;

(4) affect the jurisdiction or responsibilities of police forces, fire-fighting forces, units of the armed forces of the United States, or of any of their personnel when on active duty, but state, local, and interjurisdictional emergency management plans shall place reliance on the forces available for performance of functions related to disasters; or

(5) limit, modify, or abridge the authority of the governor to proclaim martial law or exercise any other powers vested in the governor under the constitution or laws of this state independent of or in conjunction with any provisions of this chapter.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 1, eff. Sept. 1, 1997.

§ 418.004. Definitions

In this chapter:

(1) "Disaster" means the occurrence or imminent threat of widespread or severe damage, injury, or loss of life or property resulting from any natural or man-made cause, including fire, flood, earthquake, wind, storm, wave action, oil spill or other water contamination, volcanic activity, epidemic, air contamination, blight, drought, infestation, explosion, riot, hostile military or paramilitary action, other public calamity requiring emergency action, or energy emergency.

(2) "Division" means the division of emergency management in the office of the governor.

(3) "Energy emergency" means a temporary statewide, regional, or local shortage of petroleum or liquid fuels energy supplies that makes emergency measures necessary to reduce demand or allocate supply.

(4) "Interjurisdictional agency" means a disaster agency maintained by and serving more than one political subdivision.

(5) "Organized volunteer group" means an organization such as the American National Red Cross, the Salvation Army, the Civil Air Patrol, the Radio Amateur Civil Emergency Services, a volunteer fire department, a volunteer rescue squad, or other similar organization recognized by federal or state statute, regulation, or memorandum.

(6) "Political subdivision" means a county or incorporated city.

(7) "Temporary housing" has the meaning assigned by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Pub. L. No. 93–288, as amended.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1995, 74th Leg., ch. 497, § 1, eff. June 12, 1995; Acts 1997, 75th Leg., ch. 992, § 2, eff. Sept. 1, 1997.

SUBCHAPTER B. POWERS AND DUTIES OF GOVERNOR

§ 418.011. Responsibility of Governor

The governor is responsible for meeting:

(1) the dangers to the state and people presented by disasters; and

(2) disruptions to the state and people caused by energy emergencies.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.012. Executive Orders

Under this chapter, the governor may issue executive orders, proclamations, and regulations and amend or rescind them. Executive orders, proclamations, and regulations have the force and effect of law.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.013. Emergency Management Council

(a) The governor by executive order may establish an emergency management council to advise and assist the governor in all matters relating to disaster mitigation, preparedness, response, and recovery.

(b) The emergency management council is composed of the heads of state agencies, boards, and commissions and representatives of organized volunteer groups.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 3, eff. Sept. 1, 1997.

§ 418.014. Declaration of State of Disaster

(a) The governor by executive order or proclamation may declare a state of disaster if the governor finds a disaster has occurred or that the occurrence or threat of disaster is imminent.

(b) Except as provided by Subsection (c), the state of disaster continues until the governor:

  (1) finds that:

    (A) the threat or danger has passed; or

    (B) the disaster has been dealt with to the extent that emergency conditions no longer exist; and

  (2) terminates the state of disaster by executive order.

(c) A state of disaster may not continue for more than 30 days unless renewed by the governor. The legislature by law may terminate a state of disaster at any time. On termination by the legislature, the governor shall issue an executive order ending the state of disaster.

(d) An executive order or proclamation issued under this section must include:

(1) a description of the nature of the disaster;
(2) a designation of the area threatened; and
(3) a description of the conditions that have brought the state of disaster about or made possible the termination of the state of disaster.

(e) An executive order or proclamation shall be disseminated promptly by means intended to bring its contents to the attention of the general public. An order or proclamation shall be filed promptly with the division of emergency management, the secretary of state, and the county clerk or city secretary in each area to which it applies unless the circumstances attendant on the disaster prevent or impede the filing.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.015. Effect of Disaster Declaration

(a) An executive order or proclamation declaring a state of disaster:
(1) activates the disaster recovery and rehabilitation aspects of the state emergency management plan applicable to the area subject to the declaration; and
(2) authorizes the deployment and use of any forces to which the plan applies and the use or distribution of any supplies, equipment, and materials or facilities assembled, stockpiled, or arranged to be made available under this chapter or other law relating to disasters.

(b) The preparedness and response aspects of the state emergency management plan are activated as provided by that plan.

(c) During a state of disaster and the following recovery period, the governor is the commander in chief of state agencies, boards, and commissions having emergency responsibilities. To the greatest extent possible, the governor shall delegate or assign command authority by prior arrangement embodied in appropriate executive orders or plans, but this chapter does not restrict the governor's authority to do so by orders issued at the time of the disaster.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.016. Suspension of Procedural Laws and Rules

The governor may suspend the provisions of any regulatory statute prescribing the procedures for conduct of state business or the orders or rules of a state agency if strict compliance with the provisions, orders, or rules would in any way prevent, hinder, or delay necessary action in coping with a disaster.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.017. Use of Public and Private Resources

(a) The governor may use all available resources of state government and of political subdivisions that are reasonably necessary to cope with a disaster.
(b) The governor may temporarily reassign resources, personnel, or functions of state executive departments and agencies or their units for the purpose of performing or facilitating emergency services.
(c) The governor may commandeer or use any private property if the governor finds it necessary to cope with a disaster, subject to the compensation requirements of this chapter.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.018. Movement of People

(a) The governor may recommend the evacuation of all or part of the population from a stricken or threatened area in the state if the governor considers the action necessary for the preservation of life or other disaster mitigation, response, or recovery.
(b) The governor may prescribe routes, modes of transportation, and destinations in connection with an evacuation.
(c) The governor may control ingress and egress to and from a disaster area and the movement of persons and the occupancy of premises in the area.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.019. Restricted Sale and Transportation of Materials

The governor may suspend or limit the sale, dispensing, or transportation of alcoholic beverages, firearms, explosives, and combustibles.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.020. Temporary Housing

(a) The governor may enter into purchase, lease, or other arrangements with an agency of the United States for temporary housing units to be occupied by disaster victims and may make units available to any political subdivision.
(b) The governor may assist a political subdivision that is the locus of temporary housing for disaster victims to acquire sites necessary for temporary housing and to do all things required to prepare the sites to receive and use temporary housing units by:
    (1) advancing or lending funds available to the governor from any appropriation made by the legislature or from any other source;
    (2) allocating funds made available by a public or private agency; or
    (3) becoming a copartner with the political subdivision for the execution and performance of any temporary housing project for disaster victims.

(c) Under regulations prescribed by the governor, the governor may temporarily suspend or modify for a period of not more than 60 days any public health, safety, zoning, intrastate transportation, or other law or regulation if by proclamation the governor considers the suspension or modification essential to provide temporary housing for disaster victims.

(d) Any political subdivision may temporarily or permanently acquire by lease, purchase, or other means sites required for installation of temporary housing units for disaster victims and may enter into arrangements necessary to prepare or equip the sites to use the housing units, including arrangements for the purchase of temporary housing units and the payment of transportation charges.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.021. Federal Aid for Local Government

(a) On the governor's determination that a local government of the state has suffered or will suffer a substantial loss of tax and other revenue from a major disaster and has demonstrated a need for financial assistance to perform its governmental functions, the governor may apply to the federal government on behalf of the local government for a loan and may receive and disburse the proceeds of an approved loan to the local government.

(b) The governor may determine the amount needed by a local government to restore or resume its governmental functions and certify that amount to the federal government. The amount sought for the local government may not exceed 25 percent of the annual operating budget of the local government for the fiscal year in which the major disaster occurs.

(c) The governor may recommend to the federal government, based on the governor's review, the cancellation of all or part of repayment if in the first three full fiscal years following the major disaster the revenues of the local government are insufficient to meet its operating expenses, including additional disaster-related expenses of a municipal operation character.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.022. Aid for Individuals

(a) On the governor's determination that financial assistance is essential to meet disaster-related necessary expenses or serious needs of individuals or families adversely affected by a major disaster that cannot be otherwise adequately met from other means of assistance, the governor may accept a grant by the federal government to fund the financial assistance, subject to the terms and conditions imposed on the grant. The governor may agree with the federal government or any officer or agency of the United States pledging the state to participate in funding not more than 25 percent of the financial assistance.

(b) The governor may make financial grants to meet disaster-related necessary expenses or serious needs of individuals or families adversely affected by a major disaster that cannot otherwise adequately be met from other means of assistance. The grants may not exceed an aggregate amount in excess of that established by federal statute for an individual or family in any single major disaster declared by the president of the United States.

(c) The governor may designate in the state emergency management plan the Department of Human Services or another state agency to carry out the functions of providing financial aid to individuals or families qualified for disaster relief. The designated agency may employ temporary personnel for those functions to be paid from funds appropriated to the agency, from federal funds, or from the disaster contingency fund. The merit system does not apply to the temporary positions. The governor may allocate funds appropriated under this chapter to implement the purposes of this chapter.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.023. Clearance of Debris

(a) Through the use of any state agency or instrumentality, the governor, acting through members of the Emergency Management Council, may clear or remove debris or wreckage from public or private land or water if it threatens public health or safety or public or private property in a state of disaster declared by the governor or major disaster declared by the president of the United States.

(b) The governor may accept funds from the federal government and use the funds to make grants to a local government for the purpose of removing debris or wreckage from public or private land or water.

(c) Debris or wreckage may not be removed from public or private property until the affected local government, corporation, organization, or individual presents to the governor or member of the Emergency Management Council an unconditional authorization for removal. Debris or wreckage may not be removed from private property until the state is indemnified against any claim arising from removal. In instances where it is not practical and further delay would create a greater risk to public health or safety, the governor, acting through the Emergency Management Council, may remove debris or wreckage from public or private property without an unconditional authorization or indemnification.

(d) If the governor provides for clearance of debris or wreckage under this chapter, state employees or other individuals acting by authority of the governor may enter on private land or water to perform tasks necessary to the removal or clearance operation. Except in cases of willful misconduct, gross negligence, or bad faith, a state employee or agent performing his duties while complying with orders of the governor issued under this chapter is not liable for the death of or injury to a person or for damage to property.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 4, eff. Sept. 1, 1997.

§ 418.024. Rules

The governor may adopt rules necessary for carrying out the purposes of this chapter, including rules on:

(1) standards of eligibility for persons applying for benefits;
(2) procedures for applying for benefits;
(3) procedures for the administration, investigation, filing, and approval of applications for benefits;
(4) procedures for the formation of local or statewide boards to pass on applications for benefits; and
(5) procedures for appeals of decisions relating to applications for benefits.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

SUBCHAPTER C. DIVISION OF EMERGENCY MANAGEMENT

§ 418.041. Organization

(a) The division of emergency management is a division of the office of the governor.
(b) The division is managed by a director appointed by the governor. The director serves at the pleasure of the governor.
(c) The director shall appoint a state coordinator.
(d) The division shall employ other coordinating and planning officers and other professional, technical, secretarial, and clerical personnel necessary to the performance of its functions.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.042. State Emergency Management Plan

(a) The division shall prepare and keep current a comprehensive state emergency management plan. The plan may include:
    (1) provisions for prevention and minimization of injury and damage caused by disaster;
    (2) provisions for prompt and effective response to disaster;
    (3) provisions for emergency relief;
    (4) provisions for energy emergencies;
    (5) identification of areas particularly vulnerable to disasters;
    (6) recommendations for zoning, building restrictions, and other land-use controls, safety measures for securing mobile homes or other nonpermanent or semi permanent structures, and other preventive and preparedness measures designed to eliminate or reduce disasters or their impact;
    (7) provisions for assistance to local officials in designing local emergency management plans;
    (8) authorization and procedures for the erection or other construction of temporary works designed to protect against or mitigate danger, damage, or loss from flood, fire, or other disaster;
    (9) preparation and distribution to the appropriate state and local officials of state catalogs of federal, state, and private assistance programs;

(10) organization of manpower and channels of assistance;
(11) coordination of federal, state, and local emergency management activities;
(12) coordination of the state emergency management plan with the emergency management plans of the federal government;
(13) coordination of federal and state energy emergency plans; and
(14) other necessary matters relating to disasters.

(b) In preparing and revising the state emergency management plan, the division shall seek the advice and assistance of local government, business, labor, industry, agriculture, civic organizations, volunteer organizations, and community leaders.

(c) All or part of the state emergency management plan may be incorporated into regulations of the division or executive orders that have the force and effect of law.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.043. Other Powers and Duties

The division shall:

(1) determine requirements of the state and its political subdivisions for food, clothing, and other necessities in event of a disaster;
(2) procure and position supplies, medicines, materials, and equipment;
(3) adopt standards and requirements for local and interjurisdictional emergency management plans;
(4) periodically review local and interjurisdictional emergency management plans;
(5) coordinate deployment of mobile support units;
(6) establish and operate training programs and programs of public information or assist political subdivisions and emergency management agencies to establish and operate the programs;
(7) make surveys of public and private industries, resources, and facilities in the state that are necessary to carry out the purposes of this chapter;
(8) plan and make arrangements for the availability and use of any private facilities, services, and property and provide for payment for use under terms and conditions agreed on if the facilities are used and payment is necessary;
(9) establish a register of persons with types of training and skills important in disaster mitigation, preparedness, response, and recovery;
(10) establish a register of mobile and construction equipment and temporary housing available for use in a disaster;
(11) prepare, for issuance by the governor, executive orders and regulations necessary or appropriate in coping with disasters;
(12) cooperate with the federal government and any public or private agency or entity in achieving any purpose of this chapter and in implementing programs for disaster mitigation, preparation, response, and recovery; and
(13) do other things necessary, incidental, or appropriate for the implementation of this chapter.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 5, eff. Sept. 1, 1997.

§ 418.044. Assistance in Development of Local Plans

(a) The division shall take an integral part in the development and revision of local and interjurisdictional emergency management plans. For that purpose, the division shall employ or otherwise secure the services of professional and technical personnel capable of providing expert assistance to political subdivisions and emergency management agencies. Those personnel shall consult with the subdivisions and agencies on a regularly scheduled basis and shall make field reviews of the areas, circumstances, and conditions to which particular local and interjurisdictional emergency management plans apply and may suggest revisions.

(b) The division shall encourage local and interjurisdictional agencies to seek advice from local government, business, labor, industry, agriculture, civic organizations, volunteer organizations, and community leaders.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 6, eff. Sept. 1, 1997.

§ 418.045. Temporary Personnel

The division may employ or contract with temporary personnel from funds appropriated to the division, from federal funds, or from the disaster contingency fund. The merit system does not apply to the temporary or contract positions.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 7, eff. Sept. 1, 1997.

§ 418.046. Assistance to Aviators

(a) The division may provide assistance to private aviators, including partial reimbursement for funds expended, to meet the actual costs of aircraft operation in performing search, rescue, or disaster-related functions requested by the governor or the governor's designee.

(b) Any reimbursement must be limited to the actual cost of aircraft operation not reimbursable from other sources.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.0461. Assistance to Civil Air Patrol

The division may provide financial assistance to the Civil Air Patrol, Texas Wing, to support the wing's disaster-related activities that assist the state and state agencies and the wing's training and exercises associated with those activities.

Added by Acts 1995, 74th Leg., ch. 889, § 1, eff. Aug. 28, 1995.

§ 418.047. Communications

(a) In cooperation with other state agencies, the division shall ascertain what means exist for rapid and efficient communication in times of disaster.
(b) The division shall consider the desirability of supplementing the communication resources or integrating them into a state or state-federal telecommunication or other communication system or network.
(c) In studying the character and feasibility of any system or its parts, the division shall evaluate the possibility of its multipurpose use for general state and local governmental purposes.
(d) The division shall make recommendations to the governor as appropriate.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.048. Monitoring Weather; Suspension of Weather Modification

(a) The division shall keep continuously apprised of weather conditions that present danger of climatic activity, such as precipitation, severe enough to constitute a disaster.
(b) If the division determines that precipitation that may result from weather modification operations, either by itself or in conjunction with other precipitation or climatic conditions or activity, would create or contribute to the severity of a disaster, it shall request in the name of the governor that the officer or agency empowered to issue permits for weather modification operations suspend the issuance of permits. On the governor's request, no permits may be issued until the division informs the officer or agency that the danger has passed.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

SUBCHAPTER D. FINANCE

§ 418.071. State Policy

It is the intent of the legislature and the policy of the state that funds to meet disaster emergencies always be available.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.072. Disaster Emergency Funding Board

The disaster emergency funding board is composed of:
(1) the governor;
(2) the lieutenant governor;
(3) the commissioner of insurance;
(4) the commissioner of the Department of Human Services; and
(5) the director of the division.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 8, eff. Sept. 1, 1997.

§ 418.073. Disaster Contingency Fund

(a) The disaster contingency fund consists of money appropriated to the fund.

(b) If the governor finds that the demands placed on funds regularly appropriated to state and local agencies are unreasonably great for coping with a particular disaster, the governor with the concurrence of the disaster emergency funding board may make funds available from the disaster contingency fund. It is the intent of the legislature that first recourse be to the funds regularly appropriated to state and local agencies.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.074. Acceptance and Allocation of Gifts and Grants

(a) If the federal government, another public or private agency, or an individual offers to the state or through the state to a political subdivision services, equipment, supplies, materials, or funds as a gift, grant, or loan for purposes of emergency services or disaster recovery, the governor (if required by the donor) or the presiding officer of the governing body of the political subdivision may accept the offer on behalf of the state or political subdivision, as applicable.

(b) If a gift, grant, or loan is accepted by the state, the governor, or the emergency management council or state coordinator if designated by the governor, may dispense the gift, grant, or loan directly to accomplish the purpose for which it was made or may allocate and transfer to a political subdivision services, equipment, supplies, materials, or funds in the amount the governor or the governor's designee may determine.

(c) Funds received by the state shall be placed in one or more special funds and shall be disbursed by warrants issued by the comptroller on order of the governor or the governor's designee. The governor shall name the designee in a written agreement accepting the funds or in a written authorization filed with the secretary of state. On receipt of an order for disbursement, the comptroller shall issue a warrant without delay.

(d) If the funds are to be used for purchase of equipment, supplies, or commodities of any kind, it is not necessary that bids be obtained or that the purchases be approved by any other agency.

(e) A political subdivision may accept and use all services, equipment, supplies, materials, and funds to the full extent authorized by the agreement under which they are received by the state or political subdivision.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

SUBCHAPTER E. LOCAL AND INTERJURISDICTIONAL EMERGENCY MANAGEMENT

§ 418.101. All Political Subdivisions Served

(a) Each political subdivision is within the jurisdiction of and served by the division and by a local or interjurisdictional agency responsible for disaster preparedness and coordination of response.

(b) The presiding officer of the governing body of each political subdivision shall notify the division of the manner in which the political subdivision is providing or securing an emergency management program, identify the person who heads the agency responsible for the program, and furnish additional pertinent information that the division requires. The person so designated shall accomplish training prescribed by the division.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 9, eff. Sept. 1, 1997.

§ 418.102. County Programs

(a) Each county shall maintain an emergency management program or participate in a local or interjurisdictional emergency management program that, except as otherwise provided by this chapter, has jurisdiction over and serves the entire county or interjurisdictional area.

(b) The county program is the first channel through which a municipal corporation shall request assistance when its resources are exceeded. Requests that exceed the county capability shall be forwarded to the state as prescribed in the state emergency management plan.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 10, eff. Sept. 1, 1997.

§ 418.103. Municipal Programs

(a) The governor shall determine which municipal corporations need emergency management programs of their own and shall recommend that they be established and maintained. The governor shall make the determinations on the basis of the municipality's disaster vulnerability and capability of response related to population size and concentration.

(b) The emergency management program of a county must be coordinated with the emergency management programs of municipalities situated in the county but does not apply in a municipality having its own emergency management program.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.104. Interjurisdictional Programs

The governor may recommend that a political subdivision establish and maintain a program and form an interjurisdictional agency jointly with one or more other political subdivisions if the governor finds that the establishment and maintenance of a joint program or participation in it is made necessary by circumstances or conditions that make it unusually difficult to provide disaster mitigation, preparedness, response, or recovery services under other provisions of this chapter.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 10, eff. Sept. 1, 1997.

§ 418.105. Liaison Officers

(a) Each city that does not have a program and has not made arrangements to secure or participate in the services of an existing program shall designate a liaison officer to facilitate the cooperation and protection of the city in the work of disaster mitigation, preparedness, response, and recovery.

(b) Each county shall provide an office and a liaison officer to coordinate with state and federal emergency management personnel concerning disaster mitigation, preparedness, response, and recovery activities under other provisions of this chapter.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 10, eff. Sept. 1, 1997.

§ 418.106. Local and Interjurisdictional Emergency Management Plans

(a) Each local and interjurisdictional agency shall prepare and keep current an emergency management plan for its area providing for disaster mitigation, preparedness, response, and recovery.

(b) The plan must provide for:

(1) wage, price, and rent controls and other economic stabilization methods in the event of a disaster; and

(2) curfews, blockades, and limitations on utility use in an area affected by a disaster, rules governing entrance to and exit from the affected area, and other security measures.

(c) The local or interjurisdictional emergency management agency shall prepare in written form and distribute to all appropriate officials a clear and complete statement of the disaster responsibilities of all local agencies and officials and of the disaster channels of assistance.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 11, eff. Sept. 1, 1997.

§ 418.107. Local Finance

(a) A political subdivision may make appropriations for emergency management services as provided by law for making appropriations for ordinary expenses.

(b) Political subdivisions may make agreements for the purpose of organizing emergency management service divisions and provide for a mutual method of financing the organization of units on a basis satisfactory to the subdivisions. The functioning of the units shall be coordinated by the emergency management council.

(c) A political subdivision may render aid to other subdivisions under mutual aid agreements.

(d) A political subdivision may issue time warrants for the payment of the cost of any equipment, construction, acquisition, or any improvements for carrying out this chapter. The warrants shall be issued in accordance with Chapter 252, Local Government Code, in the case of a municipality, or Subchapter C, Chapter 262, Local Government Code, in the case of a county. Time warrants issued for financing permanent construction or improvement for emergency management purposes are subject to the right of the voters to require a referendum vote under Section 252.045 or 262.029, Local Government Code, as applicable.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.
Amended by Acts 1999, 76th Leg., ch. 1064, § 30, eff. Sept. 1, 1999.

§ 418.108. Declaration of Local Disaster

(a) The presiding officer of the governing body of a political subdivision may declare a local state of disaster.

(b A declaration of local disaster may not be continued or renewed for a period of more than seven days except with the consent of the governing body of the political subdivision.

(c) An order or proclamation declaring, continuing, or terminating a local state of disaster shall be given prompt and general publicity and shall be filed promptly with the city secretary or county clerk, as applicable.

(d) A declaration of local disaster activates the recovery and rehabilitation aspects of all applicable local or interjurisdictional emergency management plans and authorizes the furnishing of aid and assistance under the declaration. The preparedness and response aspects of the plans are activated as provided in the plans.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.109. Mutual Aid

(a) The division shall encourage and assist political subdivisions not participating in interjurisdictional arrangements under this chapter to make suitable arrangements for furnishing mutual aid in coping with disasters. The arrangements must include provision of aid by public employees and agencies.

(b) In reviewing local emergency management plans, the division shall consider whether a plan contains adequate provisions for the rendering and receipt of mutual aid.

(c) In reviewing local and interjurisdictional emergency management plans, the division may require mutual aid agreements between political subdivisions if it determines that the political subdivisions have available equipment, supplies, and forces necessary to provide mutual aid on a regional basis and that the political subdivisions have not already made adequate provisions for mutual aid.

(d) A municipality, county, rural fire prevention district, emergency services district, fire protection agency, organized volunteer group, or other emergency services entity may provide mutual aid assistance on request from another municipality, county, rural fire prevention district, emergency services district, fire protection agency, organized volunteer group, or other emergency services entity. The chief or highest ranking officer of the entity from which assistance is requested, with the approval and consent of the presiding officer of the governing body of that entity, may provide that assistance while acting in accordance with the policies, ordinances, and procedures established by the governing body of that entity and consistent with any mutual aid plans developed by the emergency management council.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1995, 74th Leg., ch. 497, § 2, eff. June 12, 1995.

§ 418.110. Statewide Mutual Aid Program for Fire Emergencies

The division, in consultation with the Texas Commission on Fire Protection, shall develop a statewide mutual aid program for fire emergencies.

Added by Acts 1997, 75th Leg., ch. 1172, § 5.01, eff. Sept. 1, 1997.

SUBCHAPTER F. DISASTER MITIGATION

§ 418.121. Duty of Governor

(a) In addition to disaster mitigation measures included in the state, local, and interjurisdictional emergency management plans, the governor shall as a continuing duty consider steps that could be taken to mitigate the harmful consequences of disasters.

(b) At the direction of the governor and pursuant to any other authority and competence a state agency may have, a state agency shall study matters related to disaster mitigation. This includes agencies charged with responsibility in connection with floodplain management, stream encroachment and flow regulation, weather modification, fire prevention and control, air quality, public works, land use and land use planning, and construction standards.

(c) The governor shall from time to time make recommendations to the legislature, local governments, and other appropriate public and private entities as may facilitate measures to mitigate the harmful consequences of disasters.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1997, 75th Leg., ch. 992, § 13, eff. Sept. 1, 1997.

§ 418.122. State Study of Land Use and Construction Standards

(a) The Texas Natural Resource Conservation Commission and other state agencies, in conjunction with the division, shall keep land uses and construction of structures and other facilities under continuing study and shall identify areas that are particularly susceptible to severe land shifting, subsidence, flooding, or other catastrophes.

(b) The studies shall concentrate on means of reducing or avoiding the dangers and consequences of a catastrophe.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987. Amended by Acts 1995, 74th Leg., ch. 76, § 11.08, eff. Sept. 1, 1995.

§ 418.123. Recommendations for Changes in Land Use or Construction Standards

(a) The division shall recommend to the governor the changes it considers essential if the division believes, on the basis of the studies under Section 418.122 or other competent evidence that:
   (1) an area is susceptible to a disaster of catastrophic proportions without adequate warning;
   (2) existing building standards and land-use controls in that area are inadequate and could add substantially to the magnitude of the disaster; and
   (3) changes in zoning regulations, other land-use regulations, or building requirements are essential to further the purposes of this subchapter.

(b) The governor shall review the recommendations. If after public hearing the governor finds the changes are essential, the governor shall make appropriate recommendations to the agencies or local governments with jurisdiction over the area and subject matter.

(c) If no action or insufficient action pursuant to the governor's recommendations is taken within the time specified by the governor, the governor shall inform the legislature and request legislative action appropriate to mitigate the impact of the disaster.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.124. Suspension of Land Use or Construction Standards

(a) When the governor makes recommendations under Section 418.123, the governor may suspend the standard or control found to be inadequate to protect the public safety and by rule may place a new standard or control in effect.

(b) The new standard or control remains in effect until rejected by concurrent resolution of both houses of the legislature or amended by the governor.

(c) During the time the new standard or control is in effect, it shall be administered and given effect by all appropriate regulatory agencies of the state and of the local governments to which it applies.

(d) The governor's action under this section is subject to judicial review but is not subject to temporary stay pending litigation.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

SUBCHAPTER G. CITIZEN DUTIES AND CLAIMS FOR COMPENSATION

§ 418.151. Citizen Duties

(a) Each person in this state shall conduct himself and keep and manage his affairs and property in ways that will reasonably assist and will not unreasonably detract from the ability of the state and the public successfully to manage emergencies. This obligation includes appropriate personal service and use or restriction on the use of property in time of disaster.

(b) This chapter neither increases nor decreases these obligations but recognizes their existence under the constitution and statutes of this state and the common law.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.152. Compensation for Services and Property

(a) Services or the taking or use of property shall be compensated only to the extent that:
  (1) the obligations recognized in this chapter are exceeded in a particular case; and
  (2) the claimant may not be considered to have volunteered services or property without compensation.

(b) Personal services may not be compensated by the state or a subdivision or agency of the state except under statute or ordinance.

(c) Compensation for property may be made only if the property was commandeered or otherwise used in coping with a disaster and its use or destruction was ordered by the governor or a member of the disaster forces of this state.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.153. Compensation Claims

(a) A person claiming compensation for the use, damage, loss, or destruction of property under this chapter shall file a claim for compensation with the division in the form and manner required by the division.

(b) Unless the amount of compensation on account of property damage, loss, or destruction is agreed on between the claimant and the division, the amount of compensation is computed in the same manner as compensation due for taking of property under the condemnation laws of this state.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.154. Certain Claims Excluded

This subchapter does not apply to or authorize compensation for:

(1) the destruction or damaging of standing timber or other property in order to provide a firebreak;

(2) the release of water or breach of impoundments in order to reduce pressure or other danger from actual or threatened flood; or

(3) contravention of Article I, Section 17, of the Texas Constitution or statutes pertaining to that section.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

SUBCHAPTER H. MISCELLANEOUS PROVISIONS

§ 418.171. Qualifications for Rendering Aid

A person who holds a license, certificate, or other permit issued by a state or political subdivision of any state evidencing the meeting of qualifications for professional, mechanical, or other skills may render aid involving the skill in this state to meet an emergency or disaster. This state shall give due consideration to the license, certificate, or other permit.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.172. Insurance Coverage

(a) Property damage insurance covering state facilities may be purchased by agencies of the state if necessary to qualify for federal disaster assistance funds.

(b) If sufficient funds are not available for the required insurance, an agency may petition the disaster emergency funding board to purchase the insurance on the agency's behalf. The board may spend money from that fund for that purpose.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.173. Penalty for Violation of Emergency Management Plan

(a) A state, local, or interjurisdictional emergency management plan may provide that failure to comply with the plan or with a rule, order, or ordinance adopted under the plan is an offense.

(b) The plan may prescribe a punishment for the offense but may not prescribe a fine that exceeds $1,000 or confinement in jail for a term that exceeds 180 days.

Acts 1987, 70th Leg., ch. 147, § 1, eff. Sept. 1, 1987.

§ 418.174. Personal Liability Exemption of Member of Emergency Planning Council or Local Emergency Planning Committee

A member of the emergency management council established under Section 418.013 or of a local emergency planning committee established to develop an emergency management program in accordance with Subchapter E of this chapter[1] is not personally liable for civil damages for an action arising from the performance of the person's duties on the council or committee.

Added by Acts 1989, 71st Leg., ch. 851, § 1, eff. Aug. 28, 1989.

§ 418.175. Certain Information Confidential

(a) Information that relates to physically or mentally disabled individuals or other medically fragile individuals and that is maintained for purposes of emergency management or disaster planning is confidential and excepted from required disclosure under Chapter 552.

(b) This section applies to information in the possession of any person, including:

(1) the state, an agency of the state, a political subdivision, or an agency of a political subdivision; or

(2) an electric, telecommunications, gas, or water utility.

Added by Acts 1999, 76th Leg., ch. 778, § 1, eff. June 18, 1999.

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ATTACHMENT 5
MATAGORDA COUNTY COMMISSIONER'S COURT ORDER
DATED FEBRUARY 8, 1999

THE STATE OF TEXAS

COUNTY OF MATAGORDA

AN ORDER

BY THE COMMISSIONERS COURT OF MATAGORDA COUNTY, TEXAS ESTABLISHING A PROGRAM OF COMPREHENSIVE EMERGENCY MANAGEMENT WHICH INCLUDES THE MITIGATION, PREPAREDNESS, RESPONSE AND RECOVERY PHASES OF EMERGENCY MANAGEMENT; ACKNOWLEDGING THE OFFICE OF EMERGENCY MANAGEMENT DIRECTOR; AUTHORIZING THE APPOINTMENT OF AN EMERGENCY MANAGEMENT COORDINATOR; AND PROVIDING THE DUTIES AND RESPONSIBILITIES OF THOSE OFFICES; IDENTIFYING AN OPERATIONAL ORGANIZATION; GRANTING NECESSARY POWERS TO COPE WITH ALL PHASES OF EMERGENCY MANAGEMENT WHICH THREATEN LIFE AND PROPERTY IN THE COUNTY OF MATAGORDA; AUTHORIZING COOPERATIVE AND MUTUAL AID AGREEMENTS FOR RELIEF WORK BETWEEN THIS AND OTHER COUNTIES OR CITES FOR RELATED PURPOSES; PROHIBITING UNAUTHORIZED WARNING AND ALL-CLEAR SIGNALS AND MAKING VIOLATIONS A MISDEMEANOR PUNISHABLE BY FINE NOT TO EXCEED $200.00.

WHEREAS, the Commissioners Court of the County of Matagorda finds that the identification of potential hazards and the prevention of mitigation of their effects must be an ongoing concern of the County if the lives and property of the populace are to be protected; and

WHEREAS, the Commissioners Court hereby declared that the preparation of a plan, and the means of its implementation, for the protection of lives and property in the County of Matagorda from natural or man-caused disasters or threat thereof is immediately essential; and

WHEREAS, the Commissioners Court further finds that in times of disasters which may imperil the safety of the inhabitants of the County, or their property, it becomes necessary to effectuate and place into operation the preconceived plans and preparations with a minimum of delay; and

WHEREAS, the Commissioners Court finds, therefore, that the preparation, adoption and implementation of such plans are now imperative, BE IT ORDERED, ADJUDGED AND DECREED BY THE COMMISSIONERS COURT OF MATAGORDA COUNTY, TEXAS:

Section 1. There exists the office of Emergency Management Director of the County of Matagorda, which shall be held by the County Judge in accordance with state law.

(a) An Emergency Management Coordinator may be appointed by and serve at the pleasure of the Director;

(b) The Director shall be responsible for conducting a program of comprehensive emergency management within the County and for carrying out the duties and responsibilities set forth in Section 4 of this order. He may delegate authority for execution of these duties to the Coordinator, but ultimate responsibility for such execution shall remain with the Director.

Section 2. The powers and duties of the Director shall include an ongoing survey of actual or potential major hazards which threaten life and property within the county; and an ongoing program of identifying and requiring or recommending the implementation of measures which would tend to occur. As a part of his responsibility in hazard mitigation, the Director shall supervise the development of an Emergency Management Basic plan for Matagorda County, and shall recommend that plan for adoption by the Commissioners Court along with any and all mutual aid plans and agreements which are deemed essential for implementation of such Emergency Management Basic plan. The powers of the Director shall include the authority to declare a state of disaster, but such action may be subject to confirmation by the Commissioners Court at its next meeting. The Duties of the Director shall also include the causing of a survey of the availability of existing personnel, equipment, supplies and services which could be used during a disaster, as provided for herein, as well as a continuing study of the need for amendments and improvements in the Emergency Management Basic plan.

Section 3. The County Judge is hereby authorized to join with the mayors of the cities in Matagorda County in the formation of an Emergency Management Council for the County of Matagorda and shall have the authority to cooperate in the preparation of a joint emergency management plan and in powers necessary to participate in a county-wide program of emergency management insofar as said program may effect Matagorda County.

Section 4. The duties and responsibilities of the Emergency Management Director shall include the following:

(a) The direction and control of the actual disaster operations of the Matagorda County Emergency Management organization as well as the training of Emergency Management personnel.
(b) The determination of all questions of authority and responsibility that may arise within the Emergency Management organization of the county.
(c) The maintenance of necessary liaison with other county, municipal, district, state, regional, federal or other Emergency Management organizations.
(d) The marshaling, after declaration of a disaster as provided for above, of all necessary personnel, equipment or supplies from any department of Matagorda County to aid in the carrying out of the provisions of the Emergency Management Basic plan.
(e) The issuance of all necessary proclamations as to the existence of a disaster and the immediate operational effectiveness of the Matagorda County Emergency Management Basic plan.
(f) The issuance of reasonable rules, regulations or directives which are necessary for the protection of life and property in Matagorda County, to be filed with the County Clerk, and shall receive widespread publicity unless publicity would be of aid and comfort to the enemy.
(g) The supervision of the drafting and execution of mutual aide agreements, in cooperation with the representatives of the state or other local political subdivisions of the state, and the drafting and execution, if deemed desirable, of an agreement with the cities located in Matagorda County for the county-wide coordination of Emergency Management efforts.
(h) The supervision of and final authorization for the procurement of all necessary supplies and equipment, including acceptance of private contributions which may be offered for the purpose of improving Emergency Management within the County.
(i) The authorizing of agreements, after approval of the County Attorney, for use of private property for public shelter and other purposes.

Section 5. The operational emergency management organization of Matagorda County shall consist of the officers and employees of the County so designated by the director in the Emergency Management Basic plan, as well as organized volunteer groups. The functions and duties of this organization shall be distributed among such officers and employees in accordance with the terms of the Emergency Management Basic plan. Such plan shall set forth the form of the organization, establish and designate officers and employees to carry out the provisions of this order. Insofar as possible, the form of organization, titles, and terminology shall conform to the recommendations of the State Division of Emergency Management of the State of Texas and of the Federal Government.

Section 6. Any unauthorized person who shall operate a siren or other device so as to simulate a warning signal, or the termination of a warning, shall be deemed guilty of a violation of this order and shall be subject to the penalties imposed by this order.

Section 7. At all times when the orders, rules and regulations made and promulgated pursuant to this order shall be in effect, they shall supersede and override all existing orders, rules and regulations insofar as the latter may be inconsistent therewith.

Section 8. This order shall not be construed so as to conflict with any state or federal statute or with any military or naval order, rule or regulation.

Section 9. This order is an exercise by the County of its governmental functions for the protection of the public peace, health and safety and neither Matagorda County, the agents and representatives of said County, or any individual, receiver, firm, partnership, corporation, association or trustee, or any of the agents thereof, in good faith carrying out, complying with or attempting or comply with, any order, rule or regulation promulgated pursuant to the provisions of this order shall be liable for any damage sustained to persons as the result of said activity. Any person owning or controlling real estate or other premises who voluntarily and without compensation grants to the County of Matagorda a license of privilege, or otherwise permits the County to inspect, designate and use the whole or any part or parts of such real estate or premises for the purpose of sheltering persons during an actual, impending or practice enemy attack shall, together with his successors in interest, if any, not be civilly liable for the death of, or injury to, any person on or about such real estate or premises under such license, privilege or other permission or for loss of, or damage to, the property of such persons.

Section 10. No person shall have the right to expend any public funds of the County in carrying out any Emergency Management activity authorized by this order without prior approval by the Commissioners Court, nor shall any person have any right to bind the County by contract, agreement or otherwise without prior and specific approval of the Commissioners Court.

Section 11. It shall be unlawful for any person willfully to obstruct, hinder or delay any member of the Emergency Management organization in the enforcement of any rule or regulation issued pursuant to this order, or to do any act forbidden by any rule or regulation issued pursuant to the authority contained in this order. It shall likewise be unlawful for any person to wear, carry or display any emblem, insignia or any other means of identification as a member of the Emergency Management organization of the County of Matagorda, unless authority to do so has been granted to such person by the proper officials. Convictions for violations of the provisions of this order shall be punishable for fine not to exceed two hundred dollars ($200.00).

Section 12. Each employee or any individual that is assigned a function or responsibility shall solemnly swear or affirm to support and defend the Constitution of the United States, laws of the State of Texas and the orders of the County of Matagorda.

Section 13. If any portion of this order shall, for any reason, be declared invalid, such invalidity shall not effect the remaining provisions thereof.

Section 14. All orders, parts of orders, or resolutions in conflict herewith are expressly repealed.

SIGNED THIS THE 8 day of February, 1999.

/s/ Greg Westmoreland
County of Matagorda, County Judge
Bay City, Texas

/s/ Mike Pruett
Commissioner

/s/ Leonard Lamar
Commissioner

/s/ George Deshotels
Commissioner

/s/ Percy Carroll
Commissioner

ATTEST: /s/ Gail Denn
County Clerk

ATTACHMENT 6
CITY OF BAY CITY ORDINANCE NO. 1304

AN ORDINANCE ESTABLISHING A PROGRAM OF COMPREHENSIVE EMERGENCY MANAGEMENT WHICH INCLUDES THE MITIGATION, PREPAREDNESS RESPONSE AND RECOVERY PHASES OF CIVIL PREPAREDNESS: ACKNOWLEDGING THE OFFICE OF EMERGENCY MANAGEMENT DIRECTOR: AUTHORIZING THE APPOINTMENT OF AN EMERGENCY MANAGEMENT COORDINATOR: AND PROVIDING THE DUTIES AND RESPONSIBILITIES OF THOSE OFFICES: IDENTIFYING AN OPERATIONAL ORGANIZATION: GRANTING NECESSARY POWERS TO COPE WITH ALL PHASES OF EMERGENCY MANAGEMENT WHICH THREATEN LIFE AND PROPERTY IN THE CITY OF BAY CITY: AUTHORIZING COOPERATIVE AND MUTUAL AID AGREEMENTS FOR RELIEF WORK BETWEEN THIS AND OTHER CITIES AND COUNTIES AND FOR RELATED PURPOSES: PROHIBITING UNAUTHORIZED WARNING AND ALL-CLEAR SIGNALS AND MAKING VIOLATIONS A MISDEMEANOR PUNISHABLE BY FINE NOT TO EXCEED $l,000.

WHEREAS, the City Council of the City of Bay City, Texas finds that the identification of potential hazards and the prevention or mitigation of their effects must be an on-going concern of the City of the lives and property of the populace are to be protected; and

WHEREAS, the City Council hereby declares that the preparation of a plan and the means for its implementation, for the protection of lives and property in the City of Bay City from natural or man-caused disasters or threat thereof is immediately essential; and

WHEREAS, the City Council further finds that in times of disasters which may imperil the safety of the inhabitants of the City, or their property, it becomes necessary to effectuate and place into operation the preconceived plans and preparations with a minimum of delay; and

WHEREAS, the City Council finds, therefore, that the preparation, adoption, and implementation of such plans are now imperative;

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BAY CITY**:**

Section 1. There exists the office of Emergency Management Director of the City of Bay City, which shall be held by the Mayor in accordance with state law.

(a) An Emergency Management Coordinator may be appointed by and serve at the pleasure of the Director.

(b) The Director shall be responsible for conducting a program of comprehensive emergency management within the City and for carrying out the duties and responsibilities set forth in Section 4 of this ordinance. He may delegate authority for execution of these duties to the Coordinator, but ultimate responsibility for such execution shall remain with the Director.

Section 2. The powers and duties of the Director will include an ongoing survey of actual or potential major hazards which threaten life and property with the City, and an ongoing program of identifying and requiring or recommending the implementation of measures which would tend to prevent the occurrence or reduce the impact of such hazards if a disaster did occur. As part of his responsibility in hazard mitigation, the Director shall supervise the development of an emergency management plan for the City Council along with any and all mutual aid plans and agreements which are deemed essential for the implementation of such emergency management plans. The powers of the Director shall include the authority to declare a state of disaster, but such action may be subject to confirmation by the City Council at its next meeting. The duties of the Director shall also include the causing of a survey of the availability of existing personnel, equipment, supplies and services which could be used during a disaster, as provided for herein, as well as a continuing study of the need for amendments and improvements in the emergency management plan.

Section 3. The Mayor is hereby authorized to join with the County Judge of the County of Matagorda and the mayors of the other cities in said county in the formation of an Emergency Management Council for the County of Matagorda and shall have the authority to cooperate in the preparations of a joint emergency management plan and in the appointment of a joint Emergency Management Coordinator, as well as all powers necessary to participate in a county-wide program of emergency management insofar as said program may affect the City of Bay City.

Section 4. The duties and responsibilities of the Emergency Management Director shall include the following:

(a) The direction and control of the actual disaster operations of the Bay City emergency management organization as well as the training of emergency management personnel.

(b) The determination of all questions of authority and responsibility that may arise within the emergency management organization of the City.

(c) The maintenance of necessary liaison with other municipal, county, district, state, regional, federal, or other Emergency Management organizations.

(d) The marshaling, after declaration of a disaster as provided for above, of all necessary personnel, equipment or supplies from any department of the City to aid in the carrying out of the provisions of the emergency management plan.

(e) The issuance of all necessary proclamations as to the existence of a disaster and the immediate operational effectiveness of the City of Bay City emergency management plan.

(f) The issuance of reasonable rules, regulations or directives that is necessary for the protection of life and property in the City of Bay City. Such rules and regulations shall be filed in the office of the City Secretary and shall receive widespread publicity unless publicity would be of aid and comfort to the enemy.

(g) The supervision of the drafting and execution of mutual aide agreements, in cooperation with the representatives of the state and of other local political subdivisions of the state, and the drafting and execution, if deemed desirable, or an agreement with the county in which said city is located and with other municipalities within the county, for the county-wide coordination of emergency management efforts.

(h) The supervision of, and final authorization for the procurement of all necessary supplies and equipment, including acceptance of private contributions which may be offered for the purpose of improving emergency management within the City.

(i) The authorizing of agreements, after approval by the City Attorney, for use of private property for public shelter and other purposes.

Section 5. The operational emergency management organization of the City of Bay City shall consist of the officers and employees of the City so designated by the Director in the emergency management plan, as well as all organized volunteer groups. The functions and duties of this organization shall be distributed among such officers and employees in accordance with the terms of the emergency management plan. Such plan shall set forth the form of the organization, establish and designate divisions and functions, assign tasks, duties and powers, and designate officers and employees to carry out the provisions of this ordinance. Insofar as possible, the form of organization, titles and terminology shall conform to the recommendations of the State Division of Emergency Management of the State of Texas and of the Federal Government.

Section 6. Any unauthorized person who shall operate a siren or other device so as to simulate a warning signal, or the termination of a warning, shall be deemed guilty of a violation of this ordinance and shall be subject to the penalties imposed by this ordinance.

Section 7. At all times when the orders, rules, and regulations made promulgated pursuant to this ordinance shall be in effect, they shall supersede and override all existing ordinances, orders, rules, and regulations insofar as the latter may be inconsistent therewith.

Section 8. This ordinance shall not be construed so as to conflict with any State or Federal statute or with any military or naval order, rule, or regulation.

Section 9. This ordinance is an exercise by the City of its governmental functions for the protection of the public peace, health, and safety and neither the City of Bay City, the agents and representatives of said City, nor any individual, receiver, firm, partnership, corporation, association, or trustee, nor any of the agents thereof, in good faith carrying out, complying with or attempting to comply with, any order, rule, or regulation promulgated pursuant to the provisions of this ordinance shall be liable for any damage sustained to persons as the result of said activity. Any person owning or controlling real estate or other premises who voluntarily and without compensation grants to the City of Bay City a license of privilege, or otherwise permits the City to inspect, designate and use the whole or any part or parts of such real estate or premises for the purpose of sheltering persons during an actual, impending or practice enemy attack shall, together with his successors in interest, if any, not be civilly liable for the death or, or injury to, any person on or about such real estate or premises under such license, privilege or other permission or for loss of, or damage to, the property of such person.

Section 10. No person shall have the right to expend any public funds of the City in carrying out any emergency management activity authorized by this ordinance without prior approval by the City Council, nor shall any person have any right to bind the City by contract, agreement or otherwise without prior and specific approval of the City Council.

Section 11. It shall be unlawful for any person willfully to obstruct, hinder, or delay any member of the emergency management organization in the enforcement of any rule or regulation issued pursuant to this ordinance, or to do any act forbidden by any rule or regulation issued pursuant to the authority contained in this ordinance. It shall likewise be unlawful for any person to wear, carry or display any emblem, insignia or any other means of identification as a member of the emergency management organization of the City of Bay City, unless authority to do so has been granted to such person by the proper officials. Convictions for violations of the provisions of this ordinance shall be punishable by fine not to exceed one thousand dollars ($1000) and each day a violation continues shall be punishable as a separate offense.

Section 12. Each employee or any individual that is assigned a function or responsibility shall solemnly swear or affirm to support and defend the Constitution of the United States, laws of the State of Texas and the Ordinances of the City of Bay City.

Section 13. If any portion of this ordinance shall, for any reason, be declared invalid, such invalidity shall not affect the remaining provisions thereof.

Section 14. All ordinances, parts of ordinances, or resolutions in conflict herewith are expressly repealed.

PASSED and APPROVED this 12th day of June, 2003.

CITY OF BAY CITY, TEXAS

/s/Charles Martinez, Jr. , Mayor
Charles Martinez, Jr., Mayor

Council Member	Voted Aye	Voted No
Booker T. Holbert	x	
Anthony Andy Hawkins	x	
Joseph D. Enoch	Absent	
Brent Marceaux	x	
Michael Chavarria	x	

I hereby approve the above and foregoing Ordinance on this the 12th day of June, 2003.

Mayor, Charles Martinez, Jr.
Mayor, Charles Martinez, Jr.
City of Bay City

ATTEST:

/s/Angie Tenberg
Angie Tenberg, City Secretary

APPROVED AS TO FORM AND SUBSTANCE:

/s/J. L. Ziegenhals
J.L. Ziegenhals, City Attorney

ATTACHMENT 7
CITY OF PALACIOS ORDINANCE NO. 669

AN ORDINANCE ESTABLISHING A PROGRAM OF COMPREHENSIVE EMERGENCY MANAGEMENT WHICH INCLUDES THE MITIGATION, PREPAREDNESS RESPONSE AND RECOVERY PHASES OF CIVIL PREPAREDNESS: ACKNOWLEDGING THE OFFICE OF EMERGENCY MANAGEMENT DIRECTOR: AUTHORIZING THE APPOINTMENT OF AN EMERGENCY MANAGEMENT COORDINATOR: AND PROVIDING THE DUTIES AND RESPONSIBILITIES OF THOSE OFFICES: IDENTIFYING AN OPERATIONAL ORGANIZATION: GRANTING NECESSARY POWERS TO COPE WITH ALL PHASES OF EMERGENCY MANAGEMENT WHICH THREATEN LIFE AND PROPERTY IN THE CITY OF PALACIOS; AUTHORIZING COOPERATIVE AND MUTUAL AID AGREEMENTS FOR RELIEF WORK BETWEEN THIS AND OTHER CITIES OR COUNTIES AND FOR RELATED PURPOSES: PROHIBITING UNAUTHORIZED WARNING AND ALL-CLEAR SIGNALS AND MAKING VIOLATIONS A MISDEMEANOR PUNISHABLE BY FINE NOT TO EXCEED $200.

WHEREAS, the City Council of the City of Palacios finds that the identification of potential hazards and the prevention of mitigation of their effects must be an on-going concern of the City if the lives and property of the populace are to be protected; and

WHEREAS, the City Council hereby declares that the preparation of a plan and the means for its implementation, for the protection of lives and property in the city of Palacios from natural or man-caused disasters or threat thereof is immediately essential; and

WHEREAS, the City Council further finds that in times of disasters which may imperil the safety of the inhabitants of the City, or their property, it becomes necessary to effectuate and place into operation the preconceived plans and preparations with a minimum of delay; and

WHEREAS, the City Council finds, therefore, that the preparation, adoption, and implementation of such plans are now imperative; BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF PALACIOS:

Section 1. There exists the office of Emergency Management Director of the City of Palacios, which shall be held by the Mayor in accordance with state law.

(a) An Emergency Management Coordinator may be appointed by and serve at the pleasure of the Director;

(b) The Director shall be responsible for conducting a program of comprehensive emergency management within the city and for carrying out the duties and responsibilities set forth in Section 4 of this ordinance. He may delegate authority for execution of these duties to the Coordinator, but ultimate responsibility for such execution shall remain with the Director.

Section 2. The powers and duties of the Director shall include an on-going survey of actual or potential major hazards which threaten life and property within the city; and an on-going program of identifying and requiring or recommending the implementation of measures which would tend to prevent the occurrence or reduce the impact of such hazards if a disaster did occur. As part of his responsibility in hazard mitigation, the Director shall supervise the development of an emergency management plan for the City Council along with any and all mutual aid plans and agreements which are deemed essential for the implementation of such Emergency Management Basic plan. The powers of the Director shall include the authority to declare a state of disaster, but such action may be subject to confirmation by the City Council at its next meeting. The duties of the Director shall also include the causing of a survey of the availability of existing personnel, equipment, supplies and services which could be used during a disaster, as provided for herein, as well as a continuing study of the need for amendments and improvements in the Emergency Management Basic plan.

Section 3. The Mayor is hereby authorized to join with the County Judge of the County of Matagorda and the mayors of the other cities in said county in the formation of an Emergency Management Council for the County of Matagorda and shall have the authority to cooperate in the preparations of a joint Emergency Management Basic plan and in the appointment of a joint Emergency Management Coordinator, as well as all powers necessary to participate in a county-wide program of emergency management insofar as said program may affect the City of Palacios.

Section 4. The duties and responsibilities of the Emergency Management Director shall include the following:

(a) The direction and control of the actual disaster operations of the Palacios Emergency Management organization as well as the training of Emergency Management personnel.

(b) The determination of all questions of authority and responsibility that may arise within the Emergency Management organization of the City.

(c) The maintenance of necessary liaison with other municipal, county, district, state, regional, federal, or other Emergency Management organizations.

(d) The marshalling, after declaration of a disaster as provided for above, of all necessary personnel, equipment or supplies from any department of the City to aid in the carrying out of the provisions of the Emergency Management Basic plan.

(e) The issuance of all necessary proclamations as to the existence of a disaster and the immediate operational effectiveness of the City of Palacios Emergency Management Basic plan.

(f) The issuance of reasonable rules, regulations or directives which are necessary for the protection of life and property in the City of Palacios. Such rules and regulations shall be filed in the office of the City Secretary and shall receive widespread publicity unless publicity would be of aid and comfort to the enemy.

(g) The supervision of the drafting and execution of mutual aide agreements, in cooperation with the representatives of the state and of other local political subdivisions of the state, and the drafting and execution, if deemed desirable, or an agreement with the county in which said city is located and with other municipalities within the county, for the county-wide coordination of Emergency Management efforts.

(h) The supervision of, and final authorization for the procurement of all necessary supplies and equipment, including acceptance of private contributions which may be offered for the purpose of improving Emergency Management within the City.

(i) The authorizing of agreements, after approval by the City Attorney, for use of private property for public shelter and other purposes.

Section 5. The operational Emergency Management organization of the City of Palacios shall consist of the officers and employees of the City so designated by the Director in the Emergency Management Basic plan, as well as all organized volunteer groups. The functions and duties of this organization shall be distributed among such officers and employees in accordance with the terms of the Emergency Management Basic plan. Such plan shall set forth the form of the organization, establish and designate divisions and functions, assign tasks, duties and powers, and designate officers and employees to carry out the provisions of this ordinance. Insofar as possible, the form of organization, titles and terminology shall conform to the recommendations of the State Division of Emergency Management of the State of Texas and of the Federal Government.

Section 6. Any unauthorized person who shall operate a siren or other device so as to simulate a warning signal, or the termination of a warning, shall be deemed guilty of a violation of this ordinance and shall be subject to the penalties imposed by this ordinance.

Section 7. At all times when the orders, rules, and regulations made promulgated pursuant to this ordinance shall be in effect, they shall supersede and override all existing ordinances, orders, rules, and regulations insofar as the latter may be inconsistent therewith.

Section 8. This ordinance shall not be construed so as to conflict with any State or Federal statute or with any military or naval order, rule, or regulation.

Section 9. This ordinance is an exercise by the City of its governmental functions for the protection of the public peace, health, and safety and neither the City of Palacios, the agents and representatives of said city, nor any individual, receiver, firm, partnership, corporation, association, or trustee, nor any of the agents thereof, in good faith carrying out, complying with or attempting to comply with, any order, rule, or regulation promulgated pursuant to the provisions of this ordinance shall be liable for any damage sustained to persons as the result of said activity. Any person owning or controlling real estate or other premises who voluntarily and without compensation grants to the City of Palacios a license of privilege, or otherwise permits the City to inspect, designate and use the whole or any part or parts of such real estate or premises for the purpose of sheltering persons during an actual, impending or practice enemy attack shall, together with his successors in interest, if any, not be civilly liable for the death of, or injury to, any person on or about such real estate or premises under such license, privilege or other permission or for loss of, or damage to, the property of such person.

Section 10. No person shall have the right to expend any public funds of the City in carrying out any Emergency Management activity authorized by this ordinance without prior approval by the City Council, nor shall any person have any right to bind the City by contract, agreement or otherwise without prior and specific approval of the City Council.

Section 11. It shall be unlawful for any person willfully to obstruct, hinder, or delay any member of the Emergency Management organization in the enforcement of any rule or regulation issued pursuant to this ordinance, or to do any act forbidden by any rule or regulation issued pursuant to the authority contained in this ordinance. It shall likewise be unlawful for any person to wear, carry or display any emblem, insignia or any other means of identification as a member of the Emergency Management organization of the City of Palacios, unless authority to do so has been granted to such person by the proper officials. Convictions for violations of the provisions of this ordinance shall be punishable by fine not to exceed two hundred dollars ($200) and each day a violation continues shall be punishable as a separate offense.

Section 12. Each employee or any individual that is assigned a function or responsibility shall solemnly swear or affirm to support and defend the Constitution of the United States, laws of the State of Texas and the Ordinances of the City of Palacios.

Section 13. If any portion of this ordinance shall, for any reason, be declared invalid, such invalidity shall not affect the remaining provisions thereof.

Section 14. All ordinances, parts of ordinances, or resolutions in conflict herewith are expressly repealed.

READ AND APPROVED on first reading this the third day of February, 2003.

/s/ John Conner
John Conner, Mayor
City of Palacios, Texas

ATTEST:

/s/ Patsy E. Gibson
Patsy E. Gibson, City Secretary

ATTACHMENT 8
MATAGORDA COUNTY AND CITY OF BAY CITY
JOINT RESOLUTION

WHEREAS, the City Council of the City of Bay City by Ordinance No. 1304 did establish a program of comprehensive emergency management, including mitigation, preparedness, response and recovery phases of civil preparedness, including acknowledging the office of Emergency Management Director, and authorizing the appointment of an Emergency Management Coordinator. The Ordinance additionally provides for the duties and responsibilities of those offices and set forth procedures for organization and management in the event of emergencies; and

WHEREAS, Matagorda County by Commissioner's Court Order dated November 28, 1994, did establish programs of comprehensive emergency management which included the mitigation preparedness response and recovery phases of emergency management; and

WHEREAS, the City of Bay City and Matagorda County find that vulnerability to many potential hazards is shared by residents of the City of Bay City and the various and unincorporated areas of Matagorda County; and

WHEREAS, the City of Bay City and Matagorda County find that the common goal of emergency management can best be achieved through an organization which shares the combined resources; and

WHEREAS, the contemplated action for emergency management is specifically authorized by the aforementioned Ordinance of the City of Bay City and by the aforesaid Commissioners Court Order;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF BAY CITY, TEXAS, AND THE MATAGORDA COUNTY COMMISSIONERS COURT that there is hereby established the Matagorda County Emergency Management Organization which shall consist of the officers and employees of the City of Bay City and Matagorda County designated in a joint emergency management basic plan together with such organized volunteer groups as the plan may specify; and

BE IT FURTHER RESOLVED that the Matagorda County judge shall appoint an emergency management coordinator to coordinate all aspects of the Matagorda County program of comprehensive emergency management, including the preparation and management of a joint emergency management basic plan for the City of Bay City and for Matagorda County, Texas, in accordance with this resolution.

RESOLVED this the 16th day of June, 2003.

ATTEST:

/s/ Charles Martinez
Mayor Charles Martinez
City of Bay City

/s/ Greg Westermoreland
Judge Greg B. Westmoreland
Matagorda County

/s/ Angie Tenberg
Angie Tenberg, City Secretary

/s/ Gail Denn
Gail Denn, County Clerk

ATTACHMENT 9
MATAGORDA COUNTY/CITY OF PALACIOS JOINT RESOLUTION

WHEREAS, the city of Palacios by City Ordinance No. 669, and Matagorda County by Commissioners Court Order dated February 8, 1999, have established similar programs of comprehensive emergency management which includes the mitigation, preparedness, response and recovery phases of emergency management; and

WHEREAS, the City and County find that vulnerability to many potential hazards is shared by residents of Palacios and the unincorporated portions of Matagorda County; and

WHEREAS, the City and County further find that the common goal of emergency management can best be achieved through an organization which shares the combined resources of the City and the County; and

WHEREAS, the contemplated action is specifically authorized by the aforementioned Ordinance and Court Order;

THEREFORE, BE IT RESOLVED that there is hereby established the Matagorda County Emergency Management organization which shall consist of the officers and employees of the City and of the County as designated in a joint Emergency Management Basic plan, together with such organized volunteer groups as that Plan may specify, and

BE IT FURTHER RESOLVED that the Matagorda County Judge shall appoint an Emergency Management Coordinator to coordinate all aspects of the Matagorda County program of comprehensive emergency management, including the preparation and maintenance of a joint Emergency Management Basic plan for Palacios and Matagorda County in accordance with this resolution.

RESOLVED this the 16th day of June, 2003.

/s/ John Conner
Mayor
City of Palacios

/s/ Greg Westmoreland
County Judge, Matagorda County

ATTEST:

/s/ Patsy Gibson
City Secretary

/s/ Gail Denn
County Clerk

ATTACHMENT 10

ADDITIONAL ATTACHMENTS

Attachment 10 - Additional Attachments

Attachment 11 - Matagorda County Emergency Organization

Attachment 12 - Matagorda County Emergency Management Functional Responsibilities

Attachment 13 - City of Bay City Emergency Organization

Attachment 14 - City of Bay City Emergency Management Functional Responsibilities

Attachment 15 - City of Palacios Emergency Organization

Attachment 16 - City of Palacios Emergency Management Functional Responsibilities

Attachment 17 - Disaster District Boundaries

Attachment 18 - Emergency Management Council

Attachment 19 - Channels For Requesting Operational Assistance

Attachment 20 - Request Procedure For Military Assistance

Attachment 21 - Annex Assignment

Attachment 22 - Letters of Agreement

Attachment 23 - Glossary

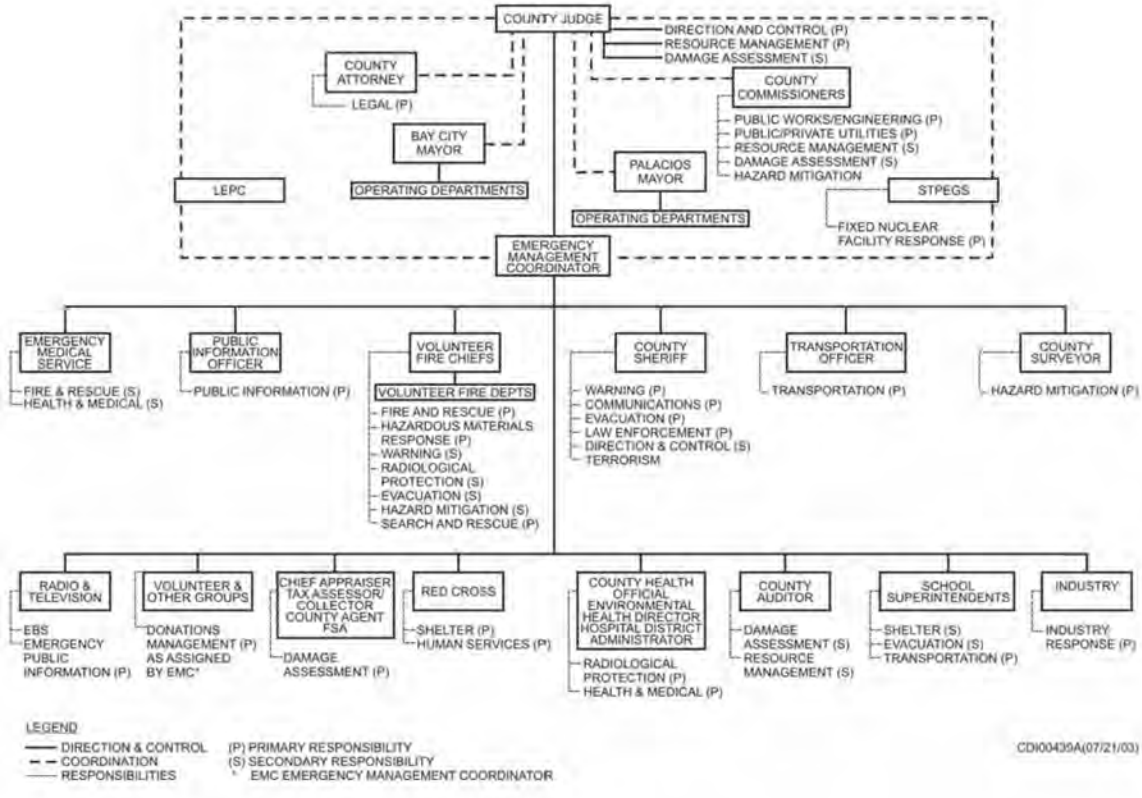
Attachment 24 - Abbreviations and Acronyms

Attachment 25 - Agreements and Contracts

Attachment 26 - Organization for Incident Command System

Attachment 27 - National Incident Management System Summary

MATAGORDA COUNTY
EMERGENCY ORGANIZATION



LEGEND

—— DIRECTION & CONTROL
– – COORDINATION
—— RESPONSIBILITIES

(P) PRIMARY RESPONSIBILITY
(S) SECONDARY RESPONSIBILITY
* EMC EMERGENCY MANAGEMENT COORDINATOR

CDI00439A(07/21/03)

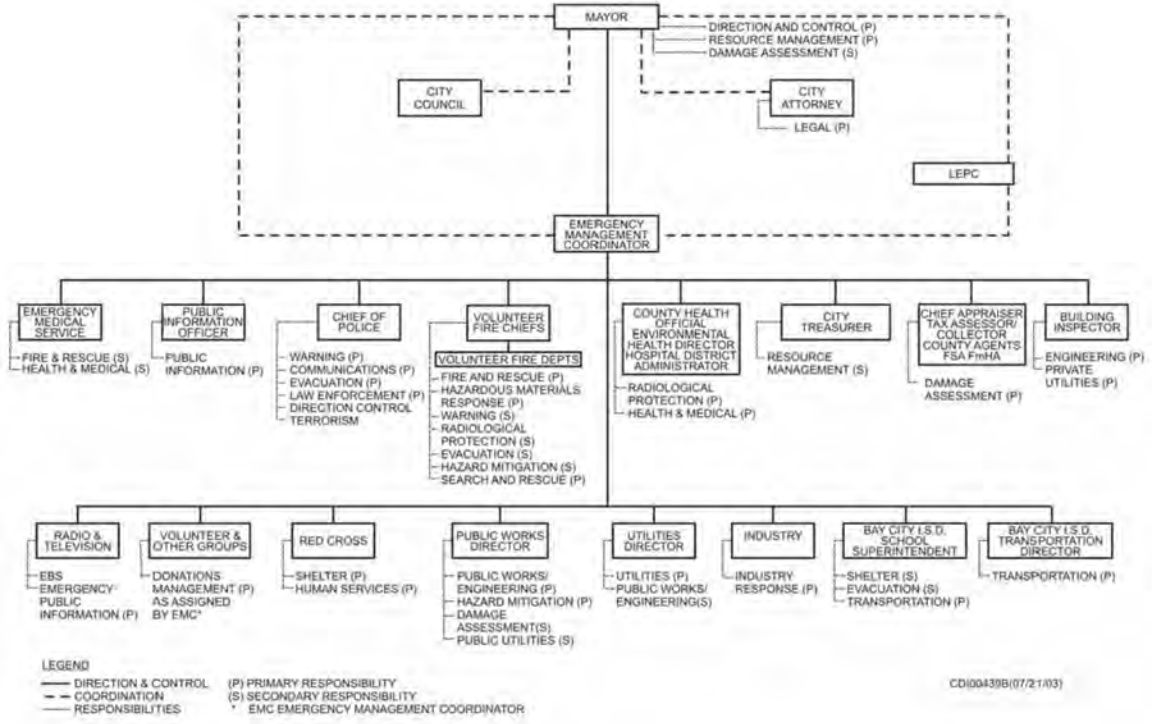
MATAGORDA COUNTY
EMERGENCY MANAGEMENT FUNCTIONAL RESPONSIBILITIES

	WARNING (A)	COMMUNICATION (B)	SHELTER (C)	RADIOLOGICAL PROTECTION (D)	EVACUATION (E)	FIRE & RESCUE (F)	LAW ENFORCEMENT (G)	HEALTH & MEDICAL (H)	EMERGENCY PUBLIC INFORMATION (I)	DAMAGE ASSESSMENT (J)	PUBLIC WORKS/ENGINEERING (K)	UTILITIES (L)	RESOURCE MANAGEMENT (M)	DIRECTION & CONTROL/EOC (N)	HUMAN SERVICE (O)	HAZARD MITIGATION (P)	HAZARDOUS MATERIALS RESPONSE (Q)	SEARCH & RESCUE (R)	TRANSPORTATION (S)	DONATIONS MANAGEMENT (T)	LEGAL SERVICES (U)	TERRORIST INCIDENT COMMAND (V)	FIXED NUCLEAR FACILITY RESPONSE (W)
COUNTY JUDGE									S			P	P								S		
COUNTY COMMISSIONERS									S	P	P	S			S								
EMERGENCY MGMT. COORDINATOR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C		C	C	C	
COUNTY SHERIFF	P	P			P		P						S								P		
EMERGENCY MEDICAL SERVICES						S		S													S		
SCHOOL SUPERINTENDENT			S		S													P					
RED CROSS			P											P									
ENVIRONMENTAL HEALTH DIRECTOR				P				P															
TRANSPORTATION OFFICER																		P					
VOLUNTEER FIRE CHIEFS	S			S	S	P									S	P	P				S		
COUNTY AUDITOR									S			S											
HAZARD MITIGATION OFFICER															P								
COUNTY ATTORNEY																				P			
PUBLIC INFORMATION OFFICER								P															
COUNTY HEALTH OFFICIAL/ HOSPITAL ADMINISTRATOR								P													S		
CHIEF APPRAISER TAX ASSESSOR/ COLLECTOR,COUNTY AGENTS, FSA, TRAINED VOLUNTEERS									P														
RADIO & TELEVISION								P															
STPEGS																							P
DONATIONS COORDINATOR																			P				

P - INDICATES PRIMARY RESPONSIBILITY
S - INDICATES SUPPORT RESPONSIBILITY
C - INDICATES COORDINATION RESPONSIBILITY (CORRESPONDING ANNEX)

CDI00439D(6/09)

CITY OF BAY CITY
EMERGENCY ORGANIZATION



LEGEND

—— DIRECTION & CONTROL
– – COORDINATION
—— RESPONSIBILITIES

(P) PRIMARY RESPONSIBILITY
(S) SECONDARY RESPONSIBILITY
* EMC EMERGENCY MANAGEMENT COORDINATOR

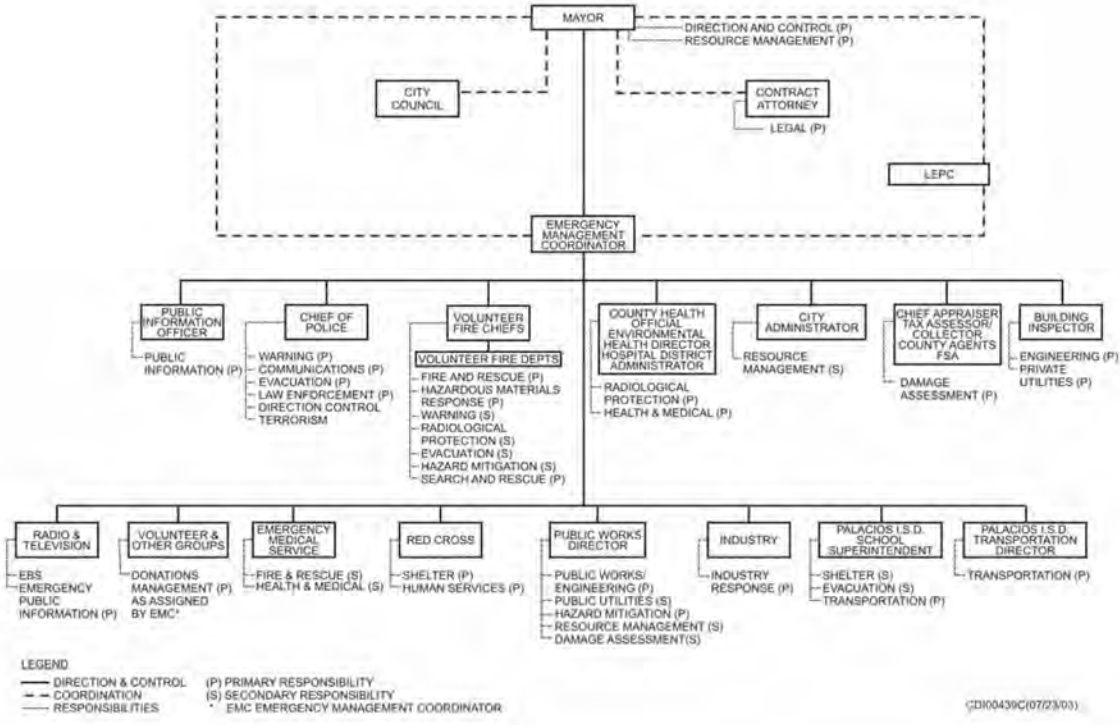
CDI00439B(07/21/03)

CITY OF BAY CITY
EMERGENCY MANAGEMENT FUNCTIONAL RESPONSIBILITIES

	WARNING (A)	COMMUNICATION (B)	SHELTER (C)	RADIOLOGICAL PROTECTION (D)	EVACUATION (E)	FIRE & RESCUE (F)	LAW ENFORCEMENT (G)	HEALTH & MEDICAL (H)	EMERGENCY PUBLIC INFORMATION (I)	DAMAGE ASSESSMENT (J)	PUBLIC WORKS/ENGINEERING (K)	UTILITIES (L)	RESOURCE MANAGEMENT (M)	DIRECTION & CONTROL/EOC (N)	HUMAN SERVICE (O)	HAZARD MITIGATION (P)	HAZARDOUS MATERIALS RESPONSE (Q)	SEARCH & RESCUE (R)	TRANSPORTATION (S)	DONATIONS MANAGEMENT (T)	LEGAL SERVICES (U)	TERRORIST INCIDENT RESPONSE (V)	FIXED NUCLEAR FACILITY RESPONSE (W)
MAYOR									S			P	P								S		
EMERGENCY MGMT. COORDINATOR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C		C	C	C	
POLICE CHIEF	P	P			P		P						S								P		
PUBLIC WORKS DIRECTOR									P	P	P				P								
BUILDING INSPECTOR										P	P												
EMERGENCY MEDICAL SERVICE						S		S													S		
TRANSPORTATION OFFICER			S		S													P					
RED CROSS			P											P									
ENVIRONMENTAL HEALTH DIRECTOR				P				P															
BAY CITY FIRE CHIEF	S		S	S	S	P									S	P	P				S		
CITY ATTORNEY																			P				
PUBLIC INFORMATION OFFICER									P														
COUNTY HEALTH OFFICIAL/ HOSPITAL ADMINISTRATOR								P															
CHIEF APPRAISER TAX ASSESSOR/COLLECTOR, COUNTY AGENTS, FSA									S	P													
RADIO & TELEVISION									P														
STPEGS																							P
DONATIONS COORDINATOR																			P				

P - INDICATES PRIMARY RESPONSIBILITY
S - INDICATES SUPPORT RESPONSIBILITY
C - INDICATES COORDINATION RESPONSIBILITY (CORRESPONDING ANNEX)

CITY OF PALACIOS
EMERGENCY ORGANIZATION



LEGEND

—— DIRECTION & CONTROL
– – COORDINATION
—— RESPONSIBILITIES

(P) PRIMARY RESPONSIBILITY
(S) SECONDARY RESPONSIBILITY
* EMC EMERGENCY MANAGEMENT COORDINATOR

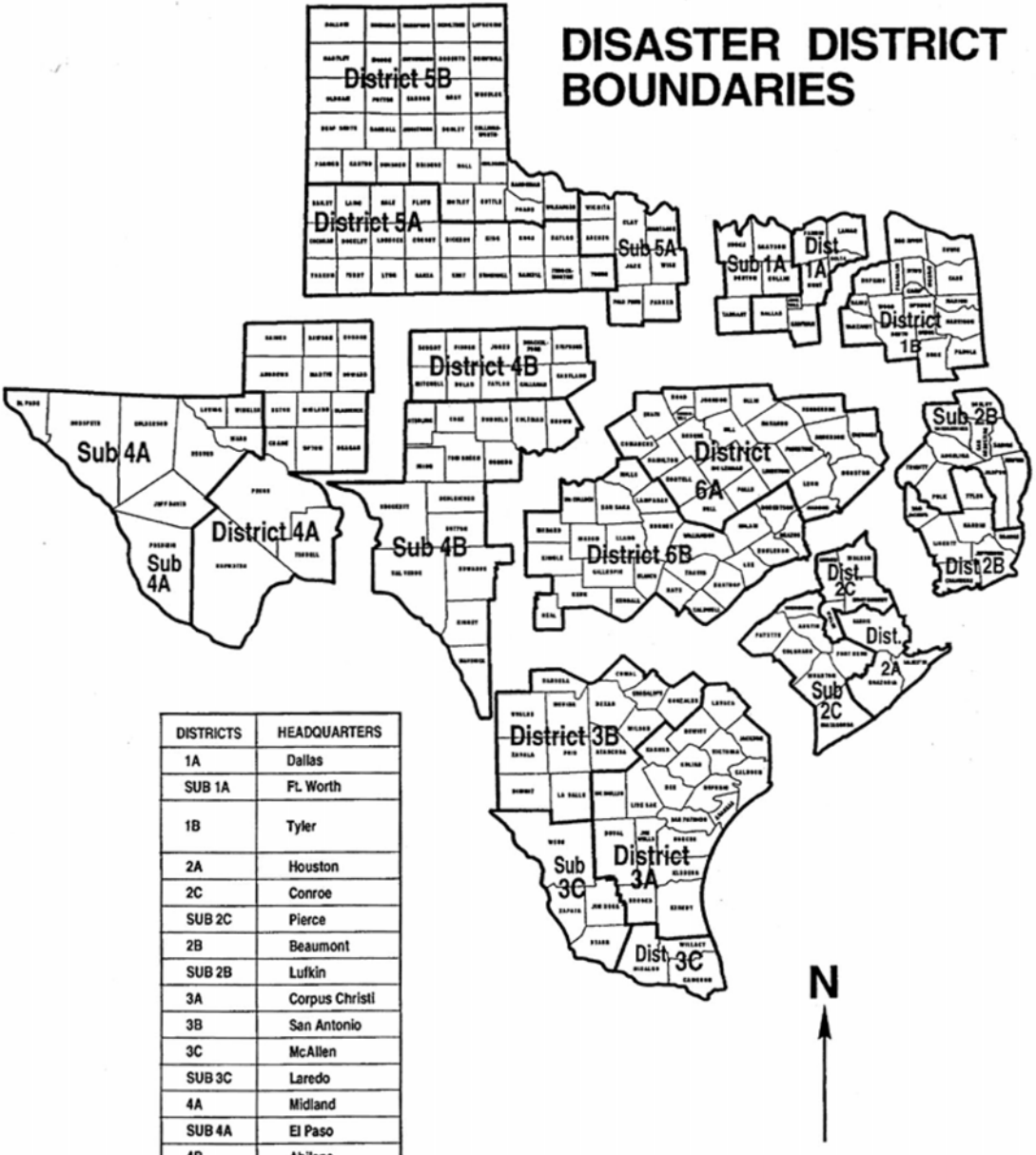
(CDI00439C(07/23/03)

CITY OF PALACIOS
EMERGENCY MANAGEMENT FUNCTIONAL RESPONSIBILITIES

	WARNING (A)	COMMUNICATION (B)	SHELTER (C)	RADIOLOGICAL PROTECTION (D)	EVACUATION (E)	FIRE & RESCUE (F)	LAW ENFORCEMENT (G)	HEALTH & MEDICAL (H)	EMERGENCY PUBLIC INFORMATION (I)	DAMAGE ASSESSMENT (J)	PUBLIC WORKS/ENGINEERING (K)	UTILITIES (L)	RESOURCE MANAGEMENT (M)	DIRECTION & CONTROL (N)	HUMAN SERVICE (O)	HAZARD MITIGATION (P)	HAZARDOUS MATERIALS RESPONSE (Q)	SEARCH & RESCUE (R)	TRANSPORTATION (S)	DONATIONS MANAGEMENT (T)	LEGAL SERVICES (U)	TERRORIST INCIDENT RESPONSE (V)	FIXED NUCLEAR FACILITY RESPONSE (W)
MAYOR									S			P	P										
EMERGENCY MGMT. COORDINATOR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C		C	C	C	
POLICE CHIEF	P	P			P		P						S								P		
CITY ATTORNEY																				P			
PUBLIC WORKS DIRECTOR									P	P	P	S			P								
EMERGENCY MEDICAL SERVICE						S		S													S		
BUILDING INSPECTOR										P	P												
TRANSPORTATION OFFICER			S		S													P					
RED CROSS			P											P									
ENVIRONMENTAL HEALTH DIRECTOR				P				P															
PALACIOS FIRE CHIEF	S			S	S	P									S	P	P				S		
CITY ADMINISTRATOR												S											
PUBLIC INFORMATION OFFICER									P														
COUNTY HEALTH OFFICIAL/ HOSPITAL ADMINISTRATOR								P													S		
CHIEF APPRAISER TAX ASSESSOR/COLLECTOR, COUNTY AGENTS, FSA									P														
RADIO & TELEVISION									P														
STPEGS																							P
DONATIONS COORDINATOR																			P				

P - INDICATES PRIMARY RESPONSIBILITY
S - INDICATES SUPPORT RESPONSIBILITY
C - INDICATES COORDINATION RESPONSIBILITY
(CORRESPONDING ANNEX)

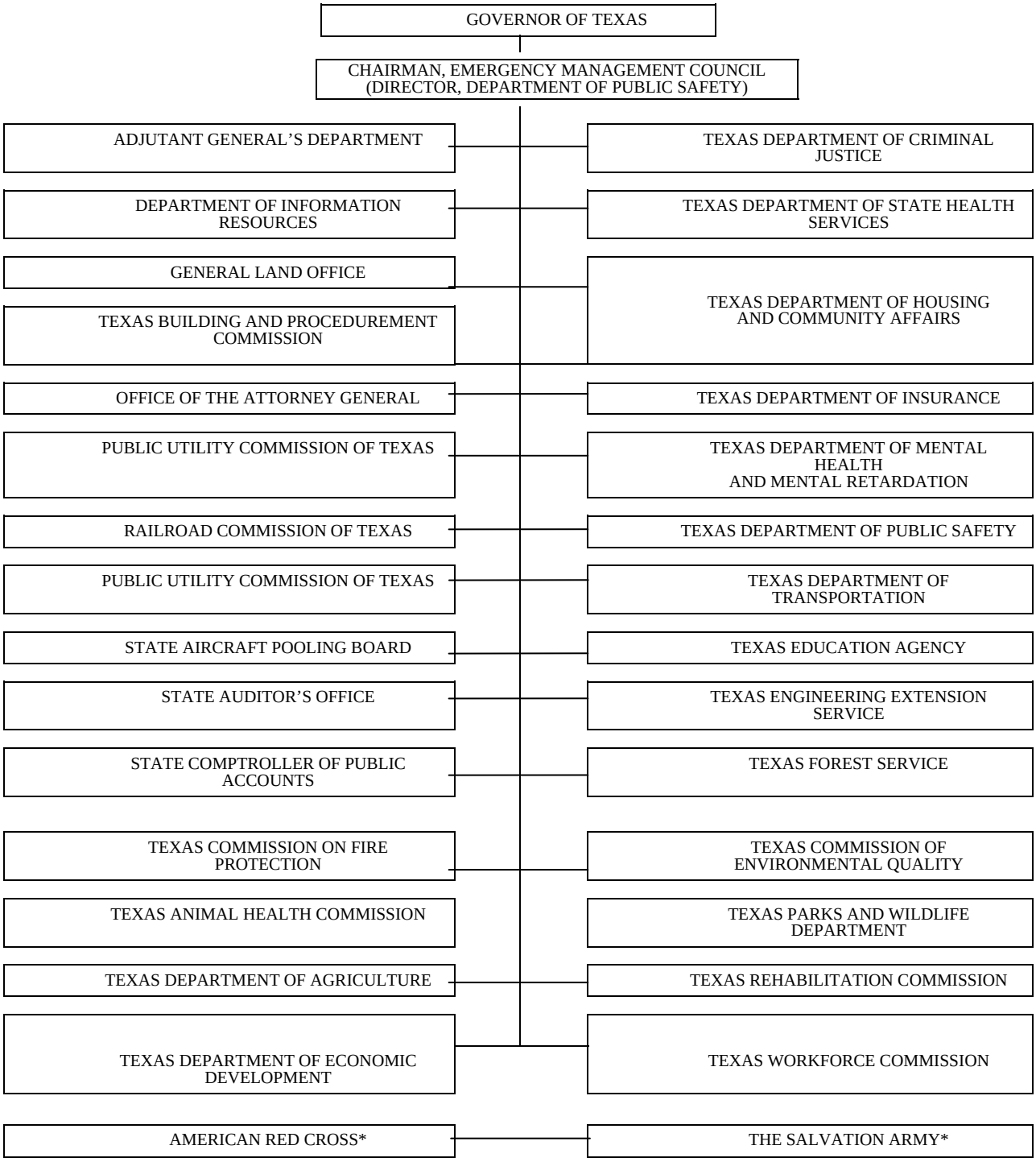
DISASTER DISTRICT BOUNDARIES



DISTRICTS	HEADQUARTERS
1A	Dallas
SUB 1A	Ft. Worth
1B	Tyler
2A	Houston
2C	Conroe
SUB 2C	Pierce
2B	Beaumont
SUB 2B	Lufkin
3A	Corpus Christi
3B	San Antonio
3C	McAllen
SUB 3C	Laredo
4A	Midland
SUB 4A	El Paso
4B	Abilene
SUB 4B	San Angelo
5A	Lubbock
SUB 5A	Wichita Falls
5B	Amarillo
6A	Waco
6B	Austin

ATTACHMENT 2

ATTACHMENT 18
EMERGENCY MANAGEMENT COUNCIL

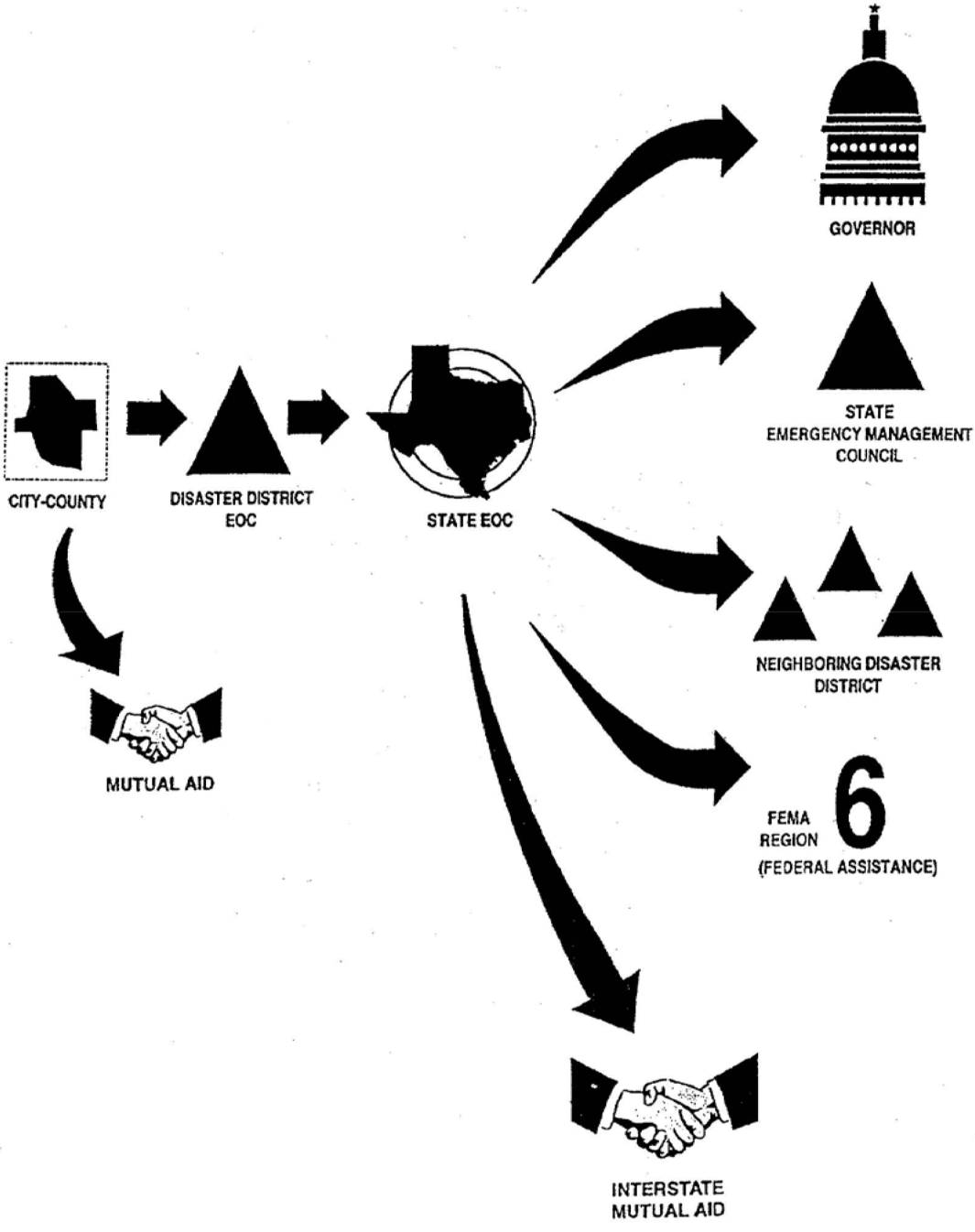


AUTHORITY: EXECUTIVE ORDER OF THE GOVERNOR

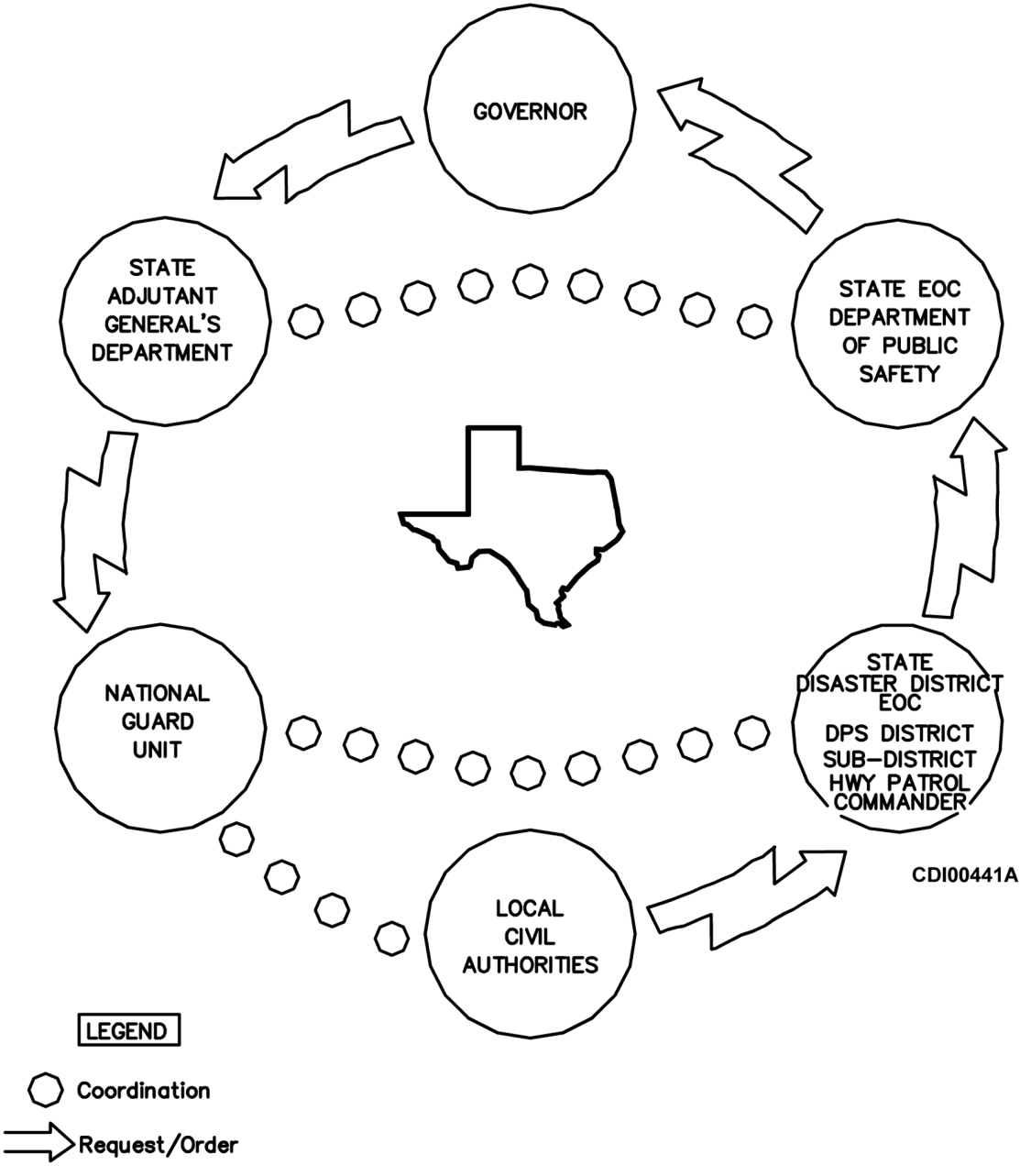
* NON STATE AGENCY

Rev. 13
June 18, 2009

CHANNELS FOR REQUESTING OPERATIONAL ASSISTANCE



REQUEST PROCEDURE FOR MILITARY ASSISTANCE



ATTACHMENT 21
ANNEX ASSIGNMENT

ANNEX		**ASSIGNED TO:**
ANNEX A:	WARNING	SHERIFF/POLICE CHIEFS
ANNEX B:	COMMUNICATIONS	SHERIFF/POLICE CHIEFS
ANNEX C:	SHELTER/MASS CARE	RED CROSS
ANNEX D:	RADIOLOGICAL PROTECTION	ENVIRONMENTAL HEALTH DIRECTOR
ANNEX E:	EVACUATION	SHERIFF/POLICE CHIEFS
ANNEX F:	FIRE AND RESCUE	VOLUNTEER FIRE CHIEFS
ANNEX G:	LAW ENFORCEMENT	SHERIFF/POLICE CHIEFS
ANNEX H:	HEALTH AND MEDICAL	COUNTY HEALTH OFFICIAL ENVIRONMENTAL HEALTH DIRECTOR HOSPITAL ADMINISTRATORS
ANNEX I:	PUBLIC INFORMATION	PUBLIC INFORMATION OFFICERS
ANNEX J:	DAMAGE ASSESSMENT	CHIEF APPRAISER* TAX ASSESSOR/COLLECTOR* TRAINED VOLUNTEERS (ARC) COUNTY AGENTS/FSA PUBLIC WORKS DIRECTOR'S
ANNEX K:	PUBLIC WORK/ENGINEERING	PRECINCT COMMISSIONERS PUBLIC WORKS DIRECTORS BUILDING INSPECTORS
ANNEX L:	UTILITIES	PRECINCT COMMISSIONERS PUBLIC WORKS DIRECTORS

ANNEX		ASSIGNED TO:
ANNEX M:	RESOURCE MANAGEMENT	COUNTY JUDGE MAYORS
ANNEX N:	DIRECTION AND CONTROL/EOC	COUNTY JUDGE MAYORS/COMMISSIONERS EMERGENCY MANAGEMENT COORDINATORS
ANNEX O:	HUMAN SERVICES	AMERICAN RED CROSS
ANNEX P:	HAZARD MITIGATION	HAZARD MITIGATION OFFICER PUBLIC WORKS DIRECTORS
ANNEX Q:	HAZARDOUS MATERIALS RESPONSE	VOLUNTEER FIRE CHIEFS LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)
ANNEX R	SEARCH AND RESCUE	BAY CITY VOLUNTEER FIRE CHIEF
ANNEX S:	TRANSPORTATION	TRANSPORTATION OFFICER
ANNEX T	DONATIONS MANAGEMENT	DONATIONS COORDINATOR
ANNEX U:	LEGAL	COUNTY AND CITIES ATTORNEYS
ANNEX V	TERRORIST INCIDENT RESPONSE	SHERRIFF CHIEF OF POLICE CHIEF OF POLICE
ANNEX W:	FIXED NUCLEAR FACILITY	SOUTH TEXAS PROJECT

* The Basic Plan and Annexes are available in the County Judge's office.

ATTACHMENT 22
LETTERS OF AGREEMENT

The following organizations have executed Letters of Agreement to support the Emergency Management Plan for Matagorda County, Bay City, and Palacios, Texas. Current Letters of Agreement are maintained on file in the Matagorda County, County Judge's Office.

Emergency Information Broadcasting

Bay City Cablevision

KKHA - FM, Bay City

KMKS - FM, Bay City

Emergency Ambulance

Matagorda County Emergency Medical Services

Matagorda Emergency Medical Service

Midfield Emergency Medical Service

Sargent Area Volunteer Emergency Services (SAVES)

Selkirk Emergency Medical Service

Fire Suppression and Rescue

Matagorda County Firefighters Association

Bay City Volunteer Fire Department

Blessing Volunteer Fire Department

Fire Suppression and Rescue (Cont.)

Markham Volunteer Fire Department

Matagorda Volunteer Fire Department

Midfield Volunteer Fire Department

Palacios Volunteer Fire Department

Sargent Volunteer Fire Department

Selkirk Volunteer Fire Department

Wadsworth Volunteer Fire Department

Shelter, Reception Center, and Mass Care

American Red Cross

Communications

Matagorda County Amateur Radio Club

Independent School Districts

Bay City Independent School District

Matagorda Independent School District

Palacios Independent School District

Tidehaven Independent School District

Van Vleck Independent School District

ATTACHMENT 23
GLOSSARY

Access Control: Activities accomplished for the purpose of controlling entry or re-entry into a restricted zone because of radiological contamination to minimize the radiation exposure of individuals. This function is needed to prevent the general public from entering the restricted zone and permitting only emergency workers with essential missions and limited members of the general public to enter a restricted zone.

Action Levels Thresholds for contamination levels that trigger the need for decontamination established in the plans.

Activation: A process by which a facility is brought up to emergency mode from a normal mode of operation. Activation is completed when the facility is ready to carry out full emergency operations.

Alerting of Personnel: Transmission of a signal or message that places personnel on notice that a situation has developed that may require that they report for emergency duty.

Alerting the Public: Activating an attention-getting warning signal through such means as sirens, emergency alert radios, route alerting, and speakers on cars, helicopters, and boats.

Allocation: The process of designating where evacuees or shelterees go for protective shelter, temporary lodging, or feeding.

Area Command (Unified Area Command): An organization established (1) to oversee the management of multiple incidents that are each being managed by an ICS organization or (2) to oversee the management of large or multiple incidents to which several Incident Management Teams have been assigned. Sets overall strategy and priorities, allocates critical resources according to priorities, ensures that incidents are properly managed, and ensures that objectives are met and strategies followed. Area Command becomes Unified Area Command when incidents are multijurisdictional.

Assessment: (Radiological): The interpretation of radiological measurements in such a way that the measurements can be a basis for decision-making. Assessment can include making dose or effect predictions and advisory actions that might be taken to minimize harmful effects.

Buffer Zone: An area adjacent to a restricted zone, to which residents may return, but for which protective measures are recommended to minimize exposure to radiation.

Buffer Zone (Medical Facilities): Indicates an area adjacent to the radiological emergency area (restricted zone) for which protective measures are recommended to minimize both exposure to radiation and the spread of radiological contamination to radiological clean areas.

Business Band Radio: Any commercial radio communications not otherwise specifically stated.

Capability Assessment - (CA): A formal measurement of current capabilities against standards and criteria that have been established as necessary to perform basic emergency management functions.

Category - (CAT): When related to fallout shelter spaces, indicates a range of protection factors (PF). This is used to more easily define the capability of a shelter since there will be a wide range of protection factors throughout the facility. Categories normally used are:

CAT 0 - PF 10-19

CAT 1 - PF 20-39

CAT 2 - PF 40-69 (usually combined with CAT 3 extending the range to PF 99)

CAT 4 - PF 100-up

Chain-of-Custody: A form which refers to the documentation of the transfer of samples from one organization/individual to another with respect to the name of the organization/individual and dates of acceptance and/or transfer of samples.

Chemical Transportation Emergency Center (CEMTREC): Located in Washington, D.C., this facility, sponsored by the chemical industry, provides 24-hour assistance in dealing with chemical transportation emergencies.

Check Source: A radioisotope with a relatively fixed activity level used to determine the responsiveness of survey instruments.

Civil Defense Emergency: An emergency declared by the President of the United States or Congress pursuant to applicable federal law finding that an attack upon the United States has occurred or is anticipated and that national safety requires the invocation of the emergency authority provided for by federal law.

Committed Dose: The dose that will be received over a period of 50 years from the ingestion or inhalation of a particular quantity of a radionuclide or a specific mix of radionuclides.

Committed Dose Equivalent Thyroid (CDE Thyroid): If projected CDE Thyroid is 10 Rem or greater, then recommend administering stable iodine.

Committed Effective Dose Equivalent (CEDE): The sum of the 50-year committed doses to individual organs from inhalation (or ingestion) or radionuclides, where the individual organ doses have been adjusted so that the associated risk of fatal cancer can be added to the risk of fatal cancer from whole-body dose.

Community Shelter Plan (CSP): A document (normally published in map form) that enables a local government to give its people the answers to questions, "Where do I go for shelter?" and "What do I do?" when the warning sounds. The (CSP designates specific shelters to be used by people working or living in specific areas of the community, thus allocating the people to the best available fallout protection. It is part of the Emergency Management Basic plan and is sometimes referred to as the In-Place Shelter Plan.

Conglomerate (Crisis Relocation): A term used to identify a nuclear high risk area and its associated reception areas.

Congregate Care: The provision of temporary housing and basic necessities for evacuees.

Congregate Care Center: A facility for temporary housing, care, and feeding of evacuees.

Congregate Care Facility: Facilities, to include public and private buildings, in reception areas that may be used to lodge and accommodate evacuees. Generally, assigned space is approximately 40 square feet per person.

Contaminated: The adhesion of radioactive particulates on individuals and objects.

Contaminated, Injured, or Exposed Individuals: Individuals who are: contaminated, contaminated and otherwise physically injured, or exposed to high levels or radiation.

Counting: Using an instrument to detect individual particles or gamma rays which interact with the detector on the instrument. For example, ambient radiation can be counted, or alternatively, the radiation emitted by specific samples can be counted.

Crisis Relocation: The concept designed to move populations from areas at high risk to areas of lower risk and to provide for their well-being (i.e., congregate care housing, feeding, fallout protection, etc.)

Decontamination: The reduction or removal of contaminating radioactive or chemical material from a structure, area, object, or person.

Deep Dose Equivalent (DDE): DDE is the same thing as external whole body dose. The value is read on the Direct-Reading-Dosimeter.

Derived Respond Level: A calculated concentration of a particular radionuclide in a particular medium (e.g., food) that will produce a dose equal to a protection action guide.

Direction and Control: The control group in the EOC during the emergency operations consists of the Chief Executives (County Judge/Mayor, etc.), the Emergency Management Coordinator, and the legal advisor as deemed necessary.

Disabled Individuals: Individuals who are deaf, blind, non-ambulatory and require support (e.g., crutches), frail, dependent upon life-support systems, or mentally or emotionally impaired.

Disaster: An event, the effects of which cause loss of life, human suffering, property damage, both public and private, and/or severe economic and social disruption. Disasters can be natural or manmade events; major accidents, or enemy attack. Disasters are differentiated from those day-to-day emergencies and accidents that are routinely responded to by local emergency organizations, and may be of such magnitude or unusual circumstance as to require response by all levels of government -- federal, state, and local.

Disaster Assistance Center (DAC): A location established in a disaster area which houses all federal, state and local agencies that deal directly with the needs of the individual victim. DACs may be established after a Presidential Declaration. This center may serve a dual role of collective damage information relative to the private (individual) sector, as well as a referral to help individuals in getting available assistance to meet immediate needs.

Disaster District: Disaster Districts are regional state emergency management organizations mandated by the Executive Order of the Governor relating to Emergency Management whose boundaries parallel those of Highway Patrol Districts and Sub-Districts of the Texas Department of Public Safety.

Disaster District Committee: The DDC consists of a Chairperson (the local Highway Patrol captain or command lieutenant), and agency representatives that mirror the membership of the State Emergency Management Council. The DDC Chairperson supported by committee members, is responsible for identifying, coordinating the use of, committing, and directing state resources within the district to respond to emergencies.

Dose Equivalent: Radiation dose to the whole body or a single organ that has been adjusted to make it equivalent in risk of cancer to the amount of dose from gamma radiation that would cause the same risk of cancer. No adjustments are required for the predominate types of radiation associated with reactor accident source terms.

Dose Limits for Emergency Workers: The allowable accumulated dose during the entire period of the emergency. Action to avoid exceeding the limit is taken based on actual measurements of integrated gamma exposure. In contrast, protective action guides are trigger levels of projected dose at which actions are taken to protect the public. These actions are taken prior to the dose being received.

Drill: A supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill is often a component of an exercise.

DSHS Emergency Response Team: Response team dispatched to the site of a radiological incident by the Texas Department of State Health Services. The team, which includes emergency response personnel, is comprised of specialty elements such as Field Monitoring Teams, Contamination Control Teams, and Decontamination Assistance Teams.

Emergency Action Level (EAL): A plant event that triggers the declaration of an emergency classification level (ECL).

EAS - Emergency Alert System: A network of broadcast stations and interconnecting facilities authorized by the Federal Communications Commission to operate in a controlled manner during a war, state of public peril, disaster, or other national emergency.

Emergency Classification Level(s) (ECL) (for fixed nuclear facilities):

(1) **Unusual Event** indicates that unusual events are in process or have occurred that indicate a potential degradation in the level of plant safety. No releases of radioactive material requiring offsite response or monitoring are expected, unless further degradation of safety systems occurs.

(2) **Alert** indicates that events are in process or have occurred that involve an actual or potential substantial degradation in level of plant safety. Releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) protective action guides (PAG) exposure levels.

(3) **Site Area Emergency** indicates that events are in process or have occurred that involve actual or likely major failures in the plant functions needed for protecting the public. Releases are not expected to exceed EPA PAG exposure levels, except near the site boundary.

(4) **General Emergency** indicates that events are in process or have occurred that involve actual or imminent substantial core degradation or melting, with potential for loss of containment integrity. Releases can reasonably be expected to exceed EPA PAG exposure levels offsite, beyond the immediate site area.

Emergency Clinic (Crisis Relocation): A temporary facility established to render out-patient medical care for relocatees.

Emergency Hospital: A temporary facility established to care for hospital patients when the capacity of the existing medical facilities are exceeded.

Emergency Information: Material designed to improve public knowledge or understanding of an emergency.

Emergency Instructions: Information provided to the general public during an emergency pertaining to protective action recommendations for actions such as evacuation and sheltering.

Emergency Operations Center (EOC): The site from which civil government officials (municipal, county, state, and federal) exercise direction and control in an emergency or disaster. To qualify as a fully operational EOC, the facility must provide protection from radioactive fallout, have back-up emergency power with a 14-day fuel supply, and staff support facilities.

Emergency Operations Facility (EOF): A facility that is the primary base of emergency operations for a licensee in an industry radiological incident.

Emergency Phase: The initial phase of response actions, during which actions are taken in response to a threat of a radiological release or a release in progress.

Emergency Protective Actions: Measures taken during or after a disaster to prevent or minimize consequences to persons in the threatened area. Examples of emergency protective actions are: area access control; facility shelter; evacuation; in-house shelter; decontamination; and/or, respiratory protection.

Emergency Situations: As used in this plan, this term is intended to describe a range of occurrences, from a minor incident to a catastrophic disaster. It includes the following:

a. Incident An incident is a situation that is limited in scope and potential effects. Characteristics of an incident include:

1) Involves a limited area and/or limited population.
2) Evacuation or in-place sheltering is typically limited to the immediate area of the incident.
3) Warning and public instructions are provided in the immediate area, not community-wide.
4) One or two local response agencies or departments acting under an incident commander normally handle incidents. Requests for resource support are normally handled through agency and/or departmental channels.
5) May require limited external assistance from other local response agencies or contractors.
6) For the purpose of the NRP, incidents include the full range of occurrences that require an emergency response to protect life or property.

b. Emergency An emergency is a situation that is larger in scope and more severe in terms of actual or potential effects than an incident. Characteristics include:

1) Involves a large area, significant population, or important facilities.
2) May require implementation of large-scale evacuation or in-place sheltering and implementation of temporary shelter and mass care operations.
3) May require community-wide warning and public instructions.
4) Requires a sizable multi-agency response operating under an incident commander.
5) May require some external assistance from other local response agencies, contractors, and limited assistance from state or federal agencies.
6) The EOC will be activated to provide general guidance and direction, coordinate external support, and provide resource support for the incident.
7) For the purpose of the NRP, an emergency (as defined by the Stafford Act) is “any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of catastrophe in any part of the United States.”

c. Disaster A disaster involves the occurrence of threat of significant casualties and/or widespread property damage that is beyond the capability of the local government to handle with its organic resources. Characteristics include:

1) Involves a large area, a sizable population, and/or important facilities.
2) May require implementation of large-scale evacuation or in-place sheltering and implementation of temporary shelter and mass care operations.
3) Requires community-wide warning and public instructions.
4) Requires a response by all local response agencies operating under one or more incident commanders.
5) Requires significant external assistance from other local response agencies, contractors, and extensive state or federal assistance.
6) The EOC will be activated to provide general guidance and direction, provide emergency information to the public, coordinate state and federal support, and coordinate resource support for emergency operations.
7) For the purposes of the NRP, a *major disaster* (as defined by the Stafford Act) is any catastrophe, regardless of the cause, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster federal assistance.

d. Catastrophic Incident For the purposes of the NRP, this term is used to describe any natural or manmade occurrence that results in extraordinary levels of mass casualties, property damage, or disruptions that severely affect the population, infrastructure, environment, economy, national morale, and/or government functions. An occurrence of this magnitude would result in sustained national impacts over prolonged periods of time, and would immediately overwhelm local and state capabilities. All catastrophic incidents are *Incidents of National Significance.*

Emergency Worker: Individuals who perform functions to protect the health and safety of the public in response to the declared emergency, or individuals approved to reenter an area where access control has been established. Emergency workers may include: Radiation monitoring team personnel; transportation services (evacuation vehicle/bus drivers); law enforcement; fire fighting and rescue personnel, including ambulance crews; route alerting personnel; traffic control personnel; health services; critical industrial facility personnel; utility essential personnel; agribusiness essential personnel.

Electromagnetic Pulse-(EMP): An effect that occurs when a nuclear weapon is detonated. EMP energy can be collected by long cables or antennas to form voltage surges strong enough to burn out many items of electrical equipment.

Emergency Medical Technician-(EMT): An individual who has completed the required training and is licensed by the State of Texas to perform emergency basic life support functions.

EOC Staff: The Emergency Management Director and members of the Emergency Management Organization tasked to operate the Emergency Operating Center during disasters. Also includes key coordinating and supporting staff positions that function only during disasters such as: EOC Communications Officer, Public Information Officer Transportation Officer etc.

Emergency Operations Plan-(EOP): A document which describes action to be taken, provides instructions to all individuals and local government services, and states what will be done in an anticipated emergency. The plan will state the method of taking coordinated action to meet the needs of the situation. It will state the action to be taken by whom, what, when, and where, based on predetermined assumptions, objectives and capabilities. Synonymous with the term - Emergency Management Plan.

Emergency Planning Zones-(EPZ): Areas of Matagorda County used for planning response actions to various types of emergencies. Zone designators are usually identified by natural boundaries. May be used in planning for nuclear power plant emergencies, coastal areas subject to flooding, or areas surrounding industry which use or produce potentially hazardous materials.

Emergency Public Information-(EPI): Information which is disseminated before, during and/or after an emergency which instructs and transmits instructions or recommendations to the pubic via the news media.

Essential Emergency Functions: Includes communications, direction and control of operations, alert and notification of the public, accident assessment, information for the public and media, radiological monitoring, protective response, and medical and public health support.

Evacuating Jurisdiction: The jurisdiction that is recommending its people move into unaffected areas during the emergency period.

Evacuation Control Procedures: The plans made by the various services to outline their duties and to ensure the orderly movement of people during the evacuation period.

Evacuation Time Estimate (ETE): An estimate, contained in emergency plans, of the time that would be required to evacuate general and special populations within the plume pathway emergency planning zone under emergency conditions.

Evacuees, Spontaneous: The persons who might leave an area in periods of intense crisis in response to a real or feared threat whether or not they are advised to do so.

Exception Area: An area located approximately 5 to 10 miles from a nuclear power plant and specifically designated in an organization's plan, for which the 15-minute alerting and notification provision does not apply. For these areas, off-site authorities have approximately 45 minutes to complete alert and notification of the public.

Exposure Rate: The amount of gamma radiation that a individual would receive in one hour as measured in air (typically expressed in units of milliroentgen per hour or Roentgens per hour).

Executive Group: The control group in the Emergency Operations Center during emergency operations consists of the Chief Executives (County Judge/Mayor, etc.) of the affected jurisdictions and/or their deputies.

Exercise: An activity designed to promote emergency preparedness; test or evaluate emergency operations plans, procedures or facilities; train personnel in emergency response duties; and demonstrate operational capability. There are three specific types of exercises:

A. Tabletop Drill: An activity in which elected and appointed officials and key agency staff are presented with simulated emergency situations without time constraints. It is usually informal, in a conference room environment, and designed to elicit constructive discussion by the participants as they attempt to examine and then resolve problems based on existing emergency operating plans. The purpose is for participants to evaluate plans and procedures and to resolve questions of coordination and assignment of responsibilities in a non-threatening format and under minimum stress.

Functional Exercises: An activity designed to test or evaluate the capability of an individual function or complex activity within a function. It is applicable where the activity is capable of being effectively evaluated in isolation from other emergency management activity.

(Example) A Direction and Control Functional Exercise: An activity designed to test and evaluate the centralized emergency operations capability and timely response of one or more units of government under a stress environment. It is centered in an EOC, or interim EOC, and simulates the use of outside activity and resources.

B. Combined Functional Drills will be conducted periodically in accordance with federal agency criteria to ensure the adequacy of the planning and preparedness effort for Matagorda County Officials.

C. Full Scale Exercise: A full-scale exercise (sometimes called a combined functional drill) is intended to evaluate the operational capability of emergency management systems in an interactive manner over a substantial period of time. It involves the testing of a major portion of the basic elements existing within emergency operations plans and organizations in a stress environment. This type of exercise includes the mobilization of personnel and resources and the actual movement of emergency workers, equipment, and resources required to demonstrate coordination and response capability.

Facility: Any building, center, room(s), or mobile units(s) designed and equipped to support emergency operations.

Fallout, Radioactive: The process or phenomenon of the fallback to the earth's surface of particles contaminated with radioactive materials from a cloud of this matter formed by a nuclear detonation. The term is also applied in a collective sense to the contaminated particulate matter itself. The early (or local) fallout is defined, somewhat arbitrarily, as those particles which reach the earth within 24 hours after a nuclear explosion. The delayed (or worldwide) fallout consists of the smaller particles which ascend into the upper troposphere and into the stratosphere and are carried by winds to all parts of the earth. The delayed fallout is brought to earth mainly by rain or snow, over extended periods ranging from months to years.

Fallout Shelter: A habitable structure, facility, or space--public or private--used to protect its occupants from radioactive fallout. Space is allocated at 10 square feet per person.

Federal Coordinating Officer-(FCO): Responsible for the coordination of all federal disaster assistance efforts in the affected area. He works closely with the State Coordinating Officer (SCO) to assure effective implementation of assistance programs. The FCO is usually located in the Disaster Field Office. During response to a fixed nuclear facility, the FCO may initially be located in the Federal Response Center (FRC).

Federal Agency: Any department, independent establishment, government corporation, or other agency of the Executive Branch of the Federal Government, including the United States Postal Service, but shall not include the American Red Cross.

Federal Agency Disaster Designation: Certain Federal agencies have programs under their own authority which allow them to provide assistance without a Presidential Declaration.

Federal Emergency Management Agency (FEMA): The federal agency charged with development of an integrated emergency management system and with supporting emergency management and disaster assistance efforts at all levels of government.

Federal Response Center-(FRC): The on scene focal point for federal agency response. Responding federal agencies send representatives to the FRC. The FRC is set up in support of state & local governments.

Federal or Other Support Organizations: Federal agencies such as FEMA, the U.S. Nuclear Regulatory Commission, or any other governmental, quasi-governmental, or private organizations (e.g., American Red Cross, Civil Air Patrol, Radio Amateur Civil Emergency Services, cooperating state compact radiological monitoring or sampling personnel, and national or university laboratories) that may provide assistance in emergencies.

Field Team Coordinator: The individual who manages the functions of field teams and coordinates data with the dose assessment group located in emergency operation centers and facilities.

Fixed Contamination: Contamination that remains after loose contamination has been removed by decontamination.

Fixed (reproducible) Geometry: A method of measuring levels or radioactivity in samples by using a standard size or volume of samples held at a fixed distance from the measuring instrument.

Geiger-Mueller Detector: Refers to a type of radiation detector that can be used to measure the gamma, or beta plus gamma radiation depending on whether the detector is covered by a beta shield.

Governor's Authorized Representative: The person named by the Governor in the Federal-State Agreement to execute on behalf of the state all necessary documents for disaster assistance following the declaration of an emergency or major disaster, including certification of applications for public assistance.

Governor's Emergency Fund: A fund established by state law that may be expended, upon direction of the Governor, for any state of emergency to supplement local efforts to maintain and/or promptly restore essential public facilities or services when threatened or damaged as a result of a natural disaster.

Governor's Proclamation - State of Disaster Emergency: The Governor is notified that a disaster has occurred or that the occurrence or threat thereof is imminent within the state or any part thereof, and he has activated the disaster response and recovery aspects of state, local and interjurisdictional organizations for the purpose of aiding the affected individuals and local governments.

Groups, Institutionalized: Persons who reside in public and private group quarters of a varied nature rather than households. This includes hospitals, nursing homes, orphanages, colleges, universities, and correctional facilities. Residents generally lack household possessions or transportation, or require special care and custody.

Half-life: The time required for a particular quantity of a radionuclide to reduce the rate at which it emits radiation by one half.

Hazard: A potential event or circumstance which presents a threat to life and/or property.

HAZMAT -Hazardous Materials: Substances which, if released in an uncontrolled manner (i.e., spilled), can be harmful to people, animals, property, and/or the environment.

Health Physics Professional: A person who is registered with or meets the qualifications of registration as a Plenary Member with the Health Physics Society.

Hazard Identification-(HI): The process of identifying the potential hazards that could affect the jurisdiction and determine the probable impact each of these hazards can have on people and property.

Hazard Identification/Capability Assessment-(HI/CA): A process implemented in Fiscal Year 1985 which surveys jurisdictions, documenting aspects of the formal hazard identification capability assessment.

Health Physics Technician: An individual trained in radiation protection.

High Exposure Rate: Rates greater than 100 mR/hr (milliroentgen) per hour.

High Levels of Radiation Exposure: Doses of 100 R (rem) or greater.

High Risk Area: Areas designated by the Federal Government, or locally through a hazard vulnerability analysis, as relatively more likely to experience the direct effects of certain disasters.

History: The record of occurrences of previous disasters or events.

Host Area: A geographical area outside the danger area where functions such as congregate care, radiological monitoring, decontamination, and registration are conducted.

Host School: A location where evacuated school children are housed until picked up by a parent or guardian. A host school is outside any hazardous area.

Individual Assistance Officer-(IAO): A principal staff officer on the Federal Coordinating Office (FCO's) staff and directly responsible to the FCO for all matters relating to individual assistance, including the establishment, location, and operation of Disaster Assistance Center (DACs) and mobile teams. The IAO is co-located with the FCO.

Information Center-(IC) (Local): Located at or near the Emergency Operating Center (EOC). Information is compiled and verified as factual before released. This facility also deals with the confirmation of information and rumor control.

Incident of National Significance: An actual or potential high-impact event that requires a coordinated and effective response by an appropriate combination of federal, state, local, tribal, nongovernmental, and/or private sector entities in order to save lives and minimize damage, and provide the basis for long-term communication recovery and mitigation activities.

ICU: Intensive Care Unit

Integrated Emergency Management System - (IEMS): A concept that applies mitigation, preparedness, response, and recovery activities to all-hazards in a local/state/federal partnership.

"In-Place" Planning: Community Shelter Plan (CSP).

Inquiry Center (Local): A location separated from the Emergency Operating Center where information requests from the public can be handled. Special disaster information telephone numbers are published relieving pressure on the emergency response system. This term is synonymous with "Rumor Control".

Increased Readiness Reporting-(IRR): A reporting system outlined in FEMA CPG 2-10 document series which provides information concerning actions taken by local and state governments to increase readiness during periods of increased hazard as well as public response to a crisis.

Institutionalized Individuals: Are individuals who reside in institutions, such as nursing homes or prisons, and may need to depend on others for assistance with protective actions. Institutionalized individuals may or may not have special needs.

Isotope: One of two or more atoms of an element which have the same number of neutrons. Some isotopes of a particular element may be radioactive while the others are not.

Joint Information Center (JIC): A Center set up in a central location where public information officers from the involved agencies come together to ensure coordination of information to be released to the media and the public. This center becomes the central point for media access to latest developments and emergency information. All information released is coordinated among the agencies involved to ensure its consistency and accuracy.

Key Personnel: Those officials of local government and other agencies and organizations who have primary functional responsibilities under this plan.

Key Staff: Emergency personnel, sufficient in numbers and functions, necessary to carry out emergency operations as required as set forth in the jurisdiction's emergency plans.

Key Worker: An individual whose skills or services are required to continue operation of vital facilities and activities that will provide goods and services to the relocated population and host county residents or ensure continuance of the nation's production capabilities and preservation of the economic system.

KI (Potassium Iodide): A prophylactic drug that can be used effectively to block the uptake or radioiodine by the thyroid gland.

Liaison Team: A group of High Risk Area key personnel whose function is to coordinate Risk Area operations with Host Area officials.

Lodging Facilities: Public or private buildings in designated reception areas that may be used to lodge and care for evacuees. Generally, assigned space is approximately 40 square feet per person. The facility may or may not meet criteria for designation as a protective or fallout shelter.

Low Exposure Rate: Rates less than 100 mR/hr (milliroentgen) per hour.

Major Disaster: According to the Disaster Relief Act of 1974 (PL 93-288), the term major disaster means any hurricane, tornado, storm, flood, high water, wind-driven water, tsunami (tidal wave), earthquake, volcanic eruption, landslide, mudslide, snowstorm, drought, fire, explosion or other catastrophe in any part of the United States, which, in the determination of the President, causes damage of sufficient severity and magnitude to warrant major disaster assistance under this Act, above and beyond emergency services by the federal government to supplement the efforts and available resources of states, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.

Mass Casualty Incident-(MCI): An incident, emergency, or disaster which generates sufficient casualties where:

1. The number of patients and the nature of their injuries make the normal level of stabilization and care unachievable, or

2. The number of Emergency Medical Technicians and ambulances that can be brought to the field within the time allowed is not enough, or

3. The stabilization capabilities of the hospital are insufficient to handle all the patients.

Maximally Exposed Individual: A hypothetical individual who receives the greatest possible projected dose in the area of highest radiation levels over a specified period of time.

Maximum Threat: The greatest destruction that can be expected from a disaster.

Measuring: Counting to detect radiation levels or determining other parameters, such as the energy of radiation physical characteristics of samples, such as the volume of an air sample.

Media Release Point (Local): Designated location for release of information from the Information Center (IC) to the general media for dissemination to the public. May be located at or near the Information Center.

Medical Control: The term used to designate overall command of medical treatment field operations.

Minor Civil Division-(MCD): Those component parts of counties that have been used traditionally for the presentation of statistics. They represent political or administrative subdivision of the state and may be townships, precincts, districts, independent municipalities, etc.

Mobile Assistance Team: Personnel from federal, state, local and private relief agencies which conduct meetings throughout an affected area to immediately aid victims or refer victims to where assistance may be available.

Mobilized Organization: An organization that has completed the alerting, notification, and mobilization of key emergency staff sufficient to carry out the essential emergency functions, as required by scenario events and as set forth in the emergency plans.

Monitoring: The measurement of radiation levels, usually with a portable survey instrument.

Monitoring and Decontamination Facility: A temporary facility established outside the emergency area for the purpose of monitoring and decontaminating the general public, emergency workers, and their vehicles and equipment used in the plume and/or areas contaminated by the plume.

Mutual-Aid Agreements: Arrangements between organizations, either public or private, for reciprocal aid and assistance in case of disaster too great to be dealt with unassisted.

National Warning System-(NAWAS): A nationwide dedicated telephone warning system. This system operates on the federal and state levels when warning is disseminated to all warning points on the system.

National Shelter Survey-(NSS): Computer listings of facilities which provide protection from radioactive fallout.

Noble Gases: Chemically inert radioactive gases that are released during an accident at a nuclear power plant.

National Incident Management System (NIMS): National Incident Management System (NIMS): A system mandated by HSPD-5 that provides a consistent nationwide approach for Federal, State, local, and tribal governments; the private-sector, and nongovernmental organizations to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, local, and tribal capabilities, the NMIS includes a core set of concepts, principles, and terminology. HSPD-5 identifies these as the ICS; multi-agency coordination systems; training; identification and management of resources (including systems for classifying types of resources); qualification and certification; and the collection, tracking, and reporting of incident information and incident resources." This is the glossary definition in the NIMS document dated March 1, 2004. HSPD-5 is the Homeland Security Presidential Directive-5– *Management of Domestic Incidents* that requires Federal departments and agencies to make adoption of the NIMS by State, tribal and local organizations a condition for Federal preparedness assistance beginning in FY 2005.

Notification and Mobilization of Personnel: The transmission of messages to emergency personnel informing them of an emergency situation and directing them to report for emergency duty at their assigned duty stations.

Notifying The Public: Distributing an instructional message, either through the Emergency Alert System or some other system.

Nuclear Civil Protection-(NCP): A planning effort designed to provide protection of the population umbrella of Population Protection Planning.

Offsite Response Organization (ORO): State and local government, supporting private industry and voluntary organizations and licensee offsite response organizations that are responsible for carrying out emergency functions during a radiological emergency.

Onsite Personnel: Licensee or contract personnel working at commercial nuclear power plants.

Operationally Mobilized Organization: An organization that has completed the mobilization process required by and the Offsite Response Organization (ORO) emergency plan and procedures for specific duty stations. Operational mobilization is achieved when key personnel are at their duty stations prior to the time they need to begin emergency operations, except for fast-breaking emergency situations.

Operations Plan: A description of actions to be taken in facing an anticipated disaster situation and the method or scheme for coordinating to meet the needs of that situation. It describes the action to be taken (who, what, where, when, and how) on the basis of assumptions, objectives, and capabilities.

Operations Planning: The process of determining the need for application of resources and determining the methods of obtaining and committing these resources to fill the operational needs.

Overpressure: The transient pressure, usually expressed in pounds per square inch, exceeding the ambient pressure, manifested in the shock (or blast) wave from an explosion. The variation of the overpressure with time depends on the energy yield of the explosion, the distance from the point of burst, and the medium in which the weapon detonated. The peak overpressure is the maximum value of the overpressure at a given location and is generally experienced at the instant the shock (or blast) wave reaches the location.

Plan: An organization's documented concept of operations and implementing procedures for managing its internal response and coordinating its external response with other organizations to radiological emergencies.

Planning Area: A predesignated geographic subdivision of the plume pathway emergency planning zone. In some plans, it may be referred to as an Emergency Response Planning Area or an equivalent term.

Plume Dose Projections: Are estimates of dosage of the public from exposure to the plume, over a period of time, in the absence of initiating protective actions.

Portal Monitor: A radiation monitor consisting of several radiation detectors arranged in a fixed position within a frame that forms a passageway for individuals being monitored.

Potential Dose: An amount of radiation dose that could result from a particular set of plant conditions but is not supported by estimated or measured releases or measured environmental levels.

Precautionary Action: A protective action taken on the basis of the potential for a release of radioactive material, such as an embargo of food products.

Projected Dose: The estimated or calculated amount of radiation dose to an individual from exposure to the plume and/or deposited materials, over a period of time, in the absence of protective action.

Protection Factor-(PF) (Nuclear Attack): Ratio of outside radiation to that experienced inside a fallout shelter; i.e., a person inside a PF 40 Shelter would receive only 1/40th of the radiation that exists outside the shelter.

Protective Action Guide (PAG): Projected dose to an individual in the general population that warrants the implementation of protective action. Specific PAG's have been recommended in terms of the level of projected dose that warrants the implementation of evacuation/sheltering, relocation, and limiting the use of contaminated food, water, or animal feed.

Population Protection Planning-(PPP): A process which provides for the development, exercising, maintenance, and improvement of plans to cope with the effects of natural disasters, technological hazards, and nuclear attack.

PPP Survey: A listing of facilities which have a capability to lodge and feed evacuees.

Presidential Emergency Declaration: Issued when the President has decided that a catastrophe, in any part of the United States, requires federal emergency assistance to supplement state and local efforts to save lives and protect property, public health and safety, or to avert or lessen the threat of a natural disaster which because of the pressure of time or because of the unique capabilities of a federal agency, assistance can be more readily provided by the Federal Government.

Presidential Major Disaster Declaration: Issued when in the determination of the President, a catastrophe causes damage of sufficient severity and magnitude to warrant Federal assistance under PL 93-288 or subsequent legislation, above and beyond emergency services provided by the Federal Government to supplement the efforts and available resources of states, local governments, and other relief organizations in alleviating the damage, loss, hardship, or suffering as a result of the catastrophe.

Preventive Protective Actions: Ingestion measures that may be taken to prevent or reduce contamination of milk, food, and drinking water.

Probability: The likelihood an event will occur.

Protective Shelter: Any shelter with the capability to protect individuals, animals, or equipment from the effects of hazards such as tornadoes, blast, fire, initial radiation, and fallout. Some additional terms associated with protective shelters are:

A. Expedient Shelter: Any shelter constructed in an emergency or crisis period on a crash basis by government, individuals or single families.

B. Fallout Shelter: A habitable structure, facility, or space used to protect its occupants from radioactive fallout. Criteria include a protection factor of 40PF or greater, a minimum of 10 square feet of floor space per person, and at least 3 cubic feet of fresh air per minute per person when capacity is based on minimum space requirements. In unventilated underground space, 500 cubic feet of space per person is required.

C. Upgradable Shelter: Shelter space obtained by taking actions to improve fallout protection in existing facilities and spaces; usually accomplished by adding mass overhead and to walls through use of earth and other materials to establish a protection factor of PF40 or better.

Public Information: Information that is disseminated to the public via the news media before, during, and after an emergency or disaster.

Radio Amateur Civil Emergency Services - (RACES): Radio communications services conducted by volunteer licensed amateur radio operators providing emergency radio communications to local, regional, or state emergency management organizations.

Radiation Safety Officer: A health physicist or other individual experienced in radiation protection who advises medical facility staff and/or jurisdictional officials regarding the hazards associated with high levels of radiation.

Radiological Emergency: A radiological/nuclear incident which requires immediate action to save lives, to protect public health, to preserve property, or to reduce or avoid an increase in the threat resulting from the incident.

Radiological Emergency Area: An area established on an ad hoc basis in a medical facility for monitoring, decontamination, and treatment of contaminated injured individuals, and for contamination control.

Radiological Monitoring: The use of detection equipment to determine the levels of radiation or the presence and concentration of radioactive contamination to include the planning and data collection necessary to the task.

Radiological Protection: The organized effort, through warning, detection, and preventive or remedial measures, to minimize the effect of nuclear radiation on people and resources.

Radionuclide: A radioactive isotope of a particular element.

Reception Area: A specified area designated for reception and care of evacuees that is unaffected by the disaster or hazard, or in the case of possible nuclear attack, is relatively unlikely to experience direct weapons effects (blast of 2 psi or more, heat, and initial nuclear radiation).

Reception Center: A facility where monitoring, decontamination, and registration of evacuees is conducted and where congregate care can be arranged.

Recovery: Phase when individuals are permitted to re-occupy previously restricted areas. Depending on residual exposure rates and the potential for resuspension, precautions or limitations may be recommended. Routes of exposure during this phase are the same as during reentry. However, an additional ceiling on exposure, total dose commitment, is now being considered.

Recovery Worker: An individual who is permitted to enter the restricted zone under controlled conditions to perform work or to retrieve valuable property.

Reentry Phase: Emergency workers perform detailed radiation dose rate surveys and conduct environmental samplings. The results will be utilized as the basis for protective actions or release to restricted or unrestricted use. Routes of exposure during this phase are external (ground deposition) and internal (inhalation of resuspended particles).

Relocation: The inability to restore affected areas to unrestricted use. People are removed or excluded from these areas in order to avoid chronic radiation exposures in excess of established limits. Factors on which decisions to relocate or attempt restoration will be based on both technological and economic considerations.

Relocation Center: A facility where monitoring, decontamination, and registration of evacuees is conducted, and congregate care can be arranged.

Responsible Offsite Response Organization (ORO): An organization designated in an emergency response plan as the organization responsible for a specific emergency function.

Responsible School Official(s): The official(s) of the schools participating in the exercise or event who are responsible for implementing school emergency procedures according to the plan.

Restricted Zone: An area of controlled access from which the population has been evacuated or relocated.

Return: Reoccupation of areas cleared for unrestricted residence or use by previously evacuated or relocated populations.

Resources: Manpower, raw or basic materials, finished goods and products, services, and facilities.

1. Primary Resources: those which by their nature have a national or interstate use. These generally include interstate wholesale stocks or manufacturers inventories.

2. Secondary Resources: those which generally include retail stocks and intrastate wholesale stocks to meet essential needs within a single state (Post-Attack).

Resources List: A current list of all resources (equipment, personnel, supplies) which can be used by emergency services in response to local disasters/emergencies.

REM - Roentgen Equivalent Man: A special equivalent or radiation dose equivalent.

Roentgen: The unit of exposure from X or gamma rays.

Rumors: Information circulated by individuals and organizations during an emergency that may or may not be true. (Usually, rumors originate and are spread on an ad hoc, not official basis.)

Sampling: Collecting specimens of material (e.g. particles or radioiodine in the air) at field locations.

State Coordinating Officer - (SCO): The person appointed by the Governor to act as the state representative for state assistance and to coordinate with the Federal Coordinating Officer.

Shelter Manager: A pre-trained individual selected by their local coordinator who provides for internal organization, administration, and operation of a shelter facility.

Special Populations: Groups of individuals with physical or mental handicaps that need assistance when protective actions are implemented.

Standing Operating Procedures-(SOP): A ready and continuous reference to those procedures which are unique to a situation and which are used for accomplishing specialized functions.

Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act authorizes federal agencies to undertake special measures designed to assist the efforts of states in expediting the rendering of aid, assistance, emergency services, and reconstruction and rehabilitation of areas devastated by disaster.

Staging Area (SA): A pre-selected location having large parking areas and cover for equipment, vehicle operators, and other personnel. An SA may be located in a major shopping area, school, etc. The SA provides a base for coordinated emergency operations, assembly of persons to be moved by public transportation to reception jurisdictions, a rally point for mutual aid, and a debarking area for returning evacuees. Several of these areas may be designated to each evacuating/hazard and reception jurisdiction. During a fixed nuclear facility event, the Department of State Health Services (BRC) staging area is used to assemble and dispatch field monitoring teams.

State Emergency Plan: A State plan which is designated specifically for state-level response to emergencies or major disasters and which sets forth actions to be taken by the state and local governments, including those for implementing federal disaster assistance.

Termination: Activities of the formal recovery organization may be terminated once the following conditions have essentially been met.

A. All portions of the restricted zone have been surveyed.

B. Work under the decontamination plan has been completed to a stage where continued effort does not appear to be cost effective.

C. Long-term exposures have been calculated for residences and places of employment where some significant potential for exposure continues to exist.

D. Occupancy or use limitations have been posted for all buildings and areas where continued restrictions are necessary.

E. Residents and workers have been afforded the opportunity to return to all areas for which restrictions have been lifted.

F. Relocation to permanent or long-term temporary facilities has been accomplished for those persons who can not be allowed to return following completion of work under the formal decontamination plan.

Access control to restricted zones may be a continuing requirement, and environmental monitoring activities are likely to continue for many years following a major release of radioactive materials. Periodically, as a result of weathering and radioactive decay, additional portions of the restricted zone will be eligible for release to unrestricted use. As this occurs, portions of the recovery organization may be temporarily reactivated on an as needed basis.

Total Effective Dose Equivalent (TEDE): The equivalent to the whole body deep dose equivalent (external), and Committed Effective Dose Equivalent (internal dose) added together. That is DDE + CEDE = TEDE or 5 times the Direct Reading Dosimeter (DRD) value if the worker is not wearing respiratory protection.

Traffic Control: Activities accomplished for the purpose of facilitating the evacuation of the general public in vehicles along specific routes.

Traffic Control Points: Places along evacuation routes that are manned by law enforcement officials to direct and control movement to and from the area being evacuated.

Transportation-dependent Individuals: Those individuals who do not have their own transportation and must depend on other individuals, taxis, or public transportation.

Triage: A system of assigning priorities of medical treatment to the injured and/or ill on the basis of urgency, chance of survival, etc.

Turn-Back Values: Total accumulated external exposure limits or exposure rates, established by the offsite health authority, at which the emergency worker should leave the area without further consultation or direction.

Vulnerability or Risk: The degree to which people, property, the environment, or social and economic activity--in short, all elements-at-risk--are susceptible to injury, damage, disruption, or loss of life.

Urgent Medical Condition: Problems for which a delay in treatment may cause extended recovery time, reduced level of recovery, or death.

ATTACHMENT 24
ABBREVIATIONS AND ACRONYMS
(Page 1 of 3)

AAR	-	After Action Report
AMA	-	American Medical Association
ANI	-	American Nuclear Insurers
ARC	-	American Red Cross
ARCA	-	Area(s) Requiring Corrective Action
ARFI	-	Area(s) Recommended For Improvement
ACP	-	Access Control Point(s)
CAN	-	Community Alert Network
CEDE	-	Committed Effective Dose Equivalent
CFR	-	Code of Federal Regulations
CSP	-	Community Shelter Plan
CPM	-	Counts Per Minute
DAC	-	Disaster Assistance Center
DDC	-	Disaster District Committee
DFO	-	Disaster Field Offices
DHHS	-	U.S. Department of Health and Human Services
DHS	-	Department of Homeland Security
DOE	-	U.S. Department of Energy
DPS	-	Texas Department of Public Safety
DRD	-	Direct Reading Dosimeter
DSHS	-	Department of State Health Services
EAL	-	Emergency Action Levels
EAS	-	Emergency Alert System
ECL	-	Emergency Classification Level(s)
EMP	-	Electromagnetic Pulse
EMT	-	Emergency Medical Technician
EOC	-	Emergency Operations Center(s)
EOF	-	Emergency Operations Facility(ies)
EOP	-	Emergency Operations Plan
EPA	-	U.S. Environmental Protection Agency
EPI	-	Emergency Public Information
EPZ	-	Emergency Planning Zone(s)
ETA	-	Estimated Time(s) Of Arrival
ETE	-	Evacuation Time Estimate(s)
FBI	-	Federal Bureau of Investigation

ATTACHMENT 24
ABBREVIATIONS AND ACRONYMS
(Page 2 of 3)

FR	-	Federal Register
FDA	-	U.S. Food and Drug Administration
FEMA	-	Federal Emergency Management Agency, an element of the U.S. Department of Homeland Security
FNF	-	Fixed Nuclear Facility
FRC	-	Federal Response Center
FTC	-	Field Team Coordinator(s)
Ft/min	-	Feet per minute
Ft3/min	-	Cubic feet per minute
GE	-	General Emergency
Ge/(Li)	-	Lithium Drifted Germanium
GM	-	Guidance Memorandum (a)
GDEM	-	Governors Division of Emergency Management
HAZMAT	-	Hazardous Material
HSPD-5	-	Homeland Security Presidential Directive-5
ICP	-	Incident Command Post
ICS	-	Incident Command System
IP	-	Improvement Plan
JFO	-	Joint Field Office
JIC	-	Joint Information Center
JPIC	-	Joint Public Information Center(s)
KI	-	Potassium Iodide
MAST	-	Mobile Army Surgical Team
MCSO	-	Matagorda County Sheriff's Office
mR	-	Milliroentgen(s)
mR/h	-	Milliroentgen(s) Per Hour
NIMS	-	National Incident Management System
NOAA	-	Nation Oceanic and Atmospheric Administration
NOUE	-	Notification of Unusual Event
NRC	-	U.S. Nuclear Regulatory Commission
NRP	-	National Response Plan

ATTACHMENT 24
ABBREVIATIONS AND ACRONYMS
(Page 3 of 3)

NUREG - NRC Document Reference
ORO - Offsite Response Organization(s)
OSHA - Occupational Safety & Health Administration
PA - Public Address
PAD - Protective Action Decision(s)
PAG - Protective Action Guide(s)
PAO - Public Affairs Official(s)
PAR - Protective Action Recommendation(s)ATTACHMENT 24
PIO - Public Information Officer
PL - Public Law
POR - Point(s) of Review
R - Roentgen(s)
RAC - Regional Assistance Committee(s)
RACES - Radio Amateur Civil Emergency Services
REA - Radiological Emergency Area(s)
REM - Roentgen Equivalent Man
REP - Radiological Emergency Preparedness
R/h - Roentgens Per Hour
RPZ - Radiological Protective Zone
SAE - Site Area Emergency
SOC - State Operation Center
SOP - Standard Operating Procedures
STPEGS - South Texas Project Electric Generating Station
STPNOC - STP Nuclear Operating Company
TCP - Traffic Control Point(s)
TDD - Telecommunications Device(s) for the Deaf
TEDE - Total Effective Dose Equivalent
TLD - Thermoluminescent Dosimeter(s)
TRRN - Texas Regional Response Network
TSA - The Salvation Army
UE - Unusual Event

ATTACHMENT 25

AGREEMENTS – CONTRACTS

Agreements

Description: **Mutual Aid Agreement**
Between the counties of: Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Walker, Waller, and Wharton

Summary of Provisions: Mutual Aid in the form of personnel, supplies, and equipment during emergencies and/or disasters, as well as during cleanup.

Officials Authorized to Implement: Each County Judge

Costs: The party rendering aid may be reimbursed by the requesting party for the cost of wages and disability payments of the personnel provided.

Copies Held By: Each County's Emergency Management Director

Description: **Mutual Aid Agreement**
Between the Counties of Matagorda and Jackson

Summary of Provisions: Mutual Aid in the form of personnel, and equipment during Emergencies and/or disasters as well as during cleanup.

Officials Authorized to Implement: The County Emergency Management Directors or Coordinators

Costs: None

Copies Held By: County's Emergency Management Director

Contracts

Description: **Garner Environmental**

Summary of Provisions: Includes containment, removal, neutralization, decontamination, recovery, repackaging, transportation, remediation, and disposal of hazardous and/or non hazardous waste.

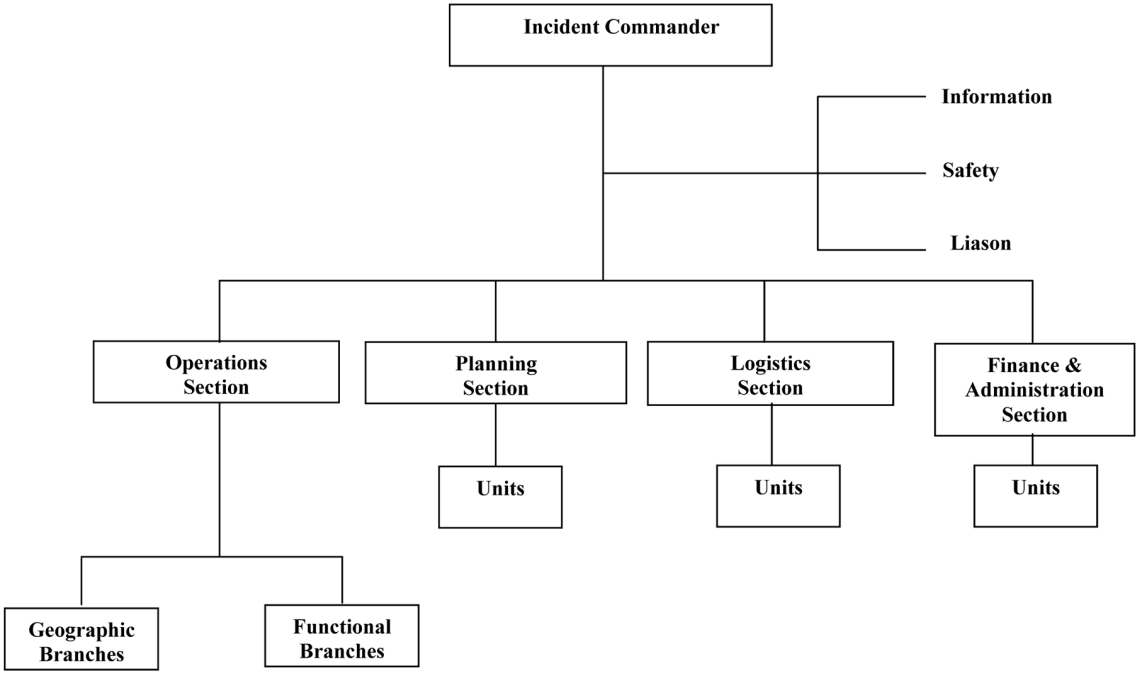
Officials Authorized to Implement: Emergency Management Director

Costs: Based on rate schedule updated each year

Copies Held by: County Emergency Management Director

ORGANIZATION FOR INCIDENT COMMAND SYSTEM

ATTACHMENT 26



ATTACHMENT 27

NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS) SUMMARY

A. BACKGROUND

1. NIMS is a comprehensive, national approach to incident management that is applicable to all jurisdictional levels and across functional disciplines. This system is suitable across a wide range of incidents and hazard scenarios, regardless of size or complexity. It provides a flexible framework for all phases of incident management, as well as requirements for processes, procedures, and systems designed to improve interoperability.

2. NIMS is a multifaceted system that provides a national framework for preparing for, preventing, responding to, and recovering from domestic incidents.

B. COMPONENTS

1. Command and Management. The incident management structures employed by NIMS can be used to manage emergency incidents or non-emergency events such as celebrations. The system works equally well for small incidents and large-scale emergency situations. The system has built-in flexibility to grow or shrink depending on current needs. It is a standardized system, so personnel from a variety of agencies and geographic locations can be rapidly incorporated into a common management structure.

   a. Incident Management System. A system that can be used to manage emergency incidents or non-emergency events such as celebrations.

      1) FEATURES OF ICS

      ICS has a number of features that work together to make it a real management system. Among the primary attributes of ICS are:

      a) Common Terminology. ICS requires the use of common terminology, such as the use of standard titles for facilities and positions within an organization, to ensure efficient and clear communications.

      b) Organizational Resources. All resources including personnel, facilities, major equipment, and supply items used to support incident management activities must be "typed" with respect to capability. This typing will minimize confusion and enhance interoperability.

      c) Manageable Span of Control. Span of control should ideally vary from three to seven. Anything less or more requires expansion or consolidation of the organization.

d) Organizational Facilities. Common terminology is used to define incident facilities, the activities conducted at these facilities, and the organizational positions that can be found working there.

e) Use of Position Titles. All ICS positions have distinct titles.

f) Reliance on an Incident Action Plan. The incident action plan, which may be verbal or written, is intended to provide supervisory personnel a common understanding of the situation and direction for future action. The plan includes a statement of objectives, organizational description, assignments, and support material such as maps. Written plans are desirable when two or more jurisdictions are involved, when state and/or federal agencies are assisting local response personnel, or there has been significant turnover in the incident staff.

g) Integrated Communications. Integrated communications includes interfacing disparate communications as effectively as possible, planning for the use of all available systems and frequencies, and requiring the use of clear text in communications.

h) Accountability. ICS is based on an orderly chain of command, check-in for all responders, and only one supervisor for each responder.

2) UNIFIED COMMAND

a) Unified Command is a variant of ICS used when there is more than one agency or jurisdiction with responsibility for the incident or when personnel and equipment from a number of different agencies or jurisdictions are responding to it. This might occur when the incident site crosses jurisdictional boundaries or when an emergency situation involves matters for which state and/or federal agencies have regulatory responsibility or legal requirements.

b) ICS Unified Command is intended to integrate the efforts of multiple agencies and jurisdictions. The major change from a normal ICS structure is at the top. In a Unified command, senior representatives of each agency or jurisdiction responding to the incident collectively agree on objectives, priorities, and an overall strategy or strategies to accomplish objectives; approve a coordinated Incident Action Plan; and designate an Operations Section Chief. The Operations Section Chief is responsible for managing available resources to achieve objectives. Agency and jurisdictional resources remain under the administrative control of their agencies or jurisdictions, but respond to mission assignments and direction provided by the Operations Section Chief based on the requirements of the Incident Action Plan.

3) AREA COMMAND

a) An Area Command is intended for situations where there are multiple incidents that are each being managed by an ICS organization or to oversee the management of large or multiple incidents to which several Incident Management Teams have been assigned. Area Command becomes Unified Area Command when incidents are multijurisdictional.

b) The organization of an Area Command is different from a Unified Command in that there is no operations section, since all operations are conducted on-scene, at the separate ICPs.

b. Multiagency Coordination Systems. Multiagency coordination systems may be required for incidents that require higher level resource management or information management. The components of multiagency coordination systems include facilities, equipment, EOCs, specific multiagency coordination entities, personnel, procedures, and communications; all of which are integrated into a common framework for coordinating and supporting incident management.

c. Public Information. The NIMS system fully integrates the ICS Joint Information System (JIS) and the Joint Information Center (JIC). The JIC is a physical location where public information staff involved in incident management activities can collocate to perform critical emergency information, crisis communications, and public affairs functions. More information on JICs can be obtained in the DHS National Incident Management System Plan, dated March 2004.

2. Preparedness. Preparedness activities include planning, training, and exercises as well as certification of response personnel, and equipment acquisition and certification. Activities would also include the creation of mutual aid agreements and Emergency Management Assistance Compacts. Any public information activities such as publication management would also be preparedness activities.

3. Resource Management. All resources, such as equipment and personnel, must be identified and typed. Systems for describing, inventorying, requesting, and tracking resources must also be established.

4. Communications and Information Management. Adherence to NIMS specified standards by all agencies ensures interoperability and compatibility in communications and information management.

5. Supporting Technologies. This would include any technologies that enhance the capabilities essential to implementing the NIMS. For instance, voice and data communication systems, resource tracking systems, or data display systems.

6. Ongoing Management and Maintenance. The NIMS Integration Center provides strategic direction and oversight in support of routine review and continual refinement of both the system and its components over the long term.

STI 32462478

EMERGENCY MANAGEMENT PLAN
FOR
MATAGORDA COUNTY, BAY CITY, AND PALACIOS
ANNEX W PLAN
FIXED NUCLEAR FACILITIES RESPONSE

RADIOLOGICAL EMERGENCY PREPAREDNESS (REP) PLAN
(SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION)

EMERGENCY MANAGEMENT PLAN
FOR
MATAGORDA COUNTY, BAY CITY, AND PALACIOS

ANNEX W PLAN
FIXED NUCLEAR FACILITIES RESPONSE

RECORD OF REVISIONS

Revision Number	Effective Date	Date Entered	Signature
5	04-15-93		
6	12-29-94		
7	12-19-96		
8	12-30-97		
9	12-13-99		
10	05-20-04		
11	04/27/06		
12	06/23/09		

ANNEX W PLAN FIXED NUCLEAR FACILITIES RESPONSE
DISTRIBUTION LIST
(Page 1 of 4)

Jurisdiction/Agency	Control Number	Number of Copies
Amateur Radio Emergency Services	069	1
American Red Cross, Matagorda County Chapter	691	1
Bay City		
Mayor	683	1
Police Department	644	1
Public Library Bay City	060	1
Public Works Director	696	1
OXEA	042	1
Department of Homeland Security (FEMA)		
Headquarters	014	1
Region VI, Denton, Texas	071	1
Emergency Medical Services		
Matagorda County Emergency Medical Service	698	1
Independent School District ISD		
Bay City Independent School District, Central Office	701	1
Bay City Independent School District, Transportation Director	685	1
Matagorda Independent School District	686	1

ANNEX W PLAN FIXED NUCLEAR FACILITIES RESPONSE
DISTRIBUTION LIST
(Page 2 of 4)

Jurisdiction/Agency	Control Number	Number of Copies
Independent School Districts ISD (continued)		
Palacios Independent School District	688	1
Tidehaven Independent School District	687	1
Van Vleck Independent School District	072	1
Joint Information Center – Matagorda Hotel	378	1
KKHA Radio	737	1
KMKS Radio	692	1
LyondellBasell	101	1
Matagorda County		
County Judge	682	1
Emergency Operations Center	645	1
Environmental Health	699	1
Matagorda Regional Medical Center	667	1
Office of Emergency Management	046	1
Palacios Community Medical Center	937	1
Precinct Commissioners		
Precinct 1	066	1
Precinct 2	051	1
Precinct 3	040	1
Precinct 4	096	1

ANNEX W PLAN FIXED NUCLEAR FACILITIES RESPONSE
DISTRIBUTION LIST
(Page 3 of 4)

Jurisdiction/Agency	Control Number	Number of Copies
Public Information Officer	106	1
Sheriff	1039	1
Palacios		
City Administrator	684	1
Police Department	647	1
Public Library	112	1
State of Texas		
Department of State Health Services	367	1
Department of Public Safety, Pierce, Texas	360	1
Governor's Division of Emergency Management (GDEM)	571	1
STP Nuclear Operating Company		
Emergency Operations Facility	016	1
Emergency Response Division	205/770	2
Nuclear Support Center Library	900	1
MOF Library	999	1
Records Management Systems	FDC	1
United States Nuclear Regulatory Commission		
USNRC Public Document Desk, Washington D.C.	1078	1
USNRC, Operations Center	1079	1
USNRC, Region IV	564	1
USNRC Public Document Room, Wharton County Junior College	114	1
Volunteer Fire Departments of Matagorda County		
Bay City Volunteer Fire Department	082	1
Blessing Volunteer Fire Department	064	1

ANNEX W PLAN FIXED NUCLEAR FACILITIES RESPONSE
DISTRIBUTION LIST
(Page 4 of 4)

Jurisdiction/Agency	Control Number	Number of Copies
Volunteer Fire Department of Matagorda County (continued)		
Markham Volunteer Fire Department	047	1
Matagorda Volunteer Fire Department	689	1
Midfield Volunteer Fire Department	058	1
Palacios Volunteer Fire Department	690	1
Sergeant Volunteer Fire Department	067	1
Van Vleck Volunteer Fire Department	074	1
Wadsworth Volunteer Fire Department	038	1
Total		57

EMERGENCY MANAGEMENT PLAN
FOR
MATAGORDA COUNTY, BAY CITY, AND PALACIOS

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FOR
MATAGORDA COUNTY, BAY CITY, AND PALACIOS

LIST OF PROCEDURES

EMERGENCY MANAGEMENT PLAN
FOR
MATAGORDA COUNTY, BAY CITY, AND PALACIOS

I. Authority

This annex to the Matagorda County, Bay City and Palacios Emergency Management Basic Plan is promulgated under the auspices of the following authorities:

A. The Texas Disaster Act of 1975, as amended.

B. Emergency Management Basic Plan for Matagorda County, Bay City and Palacios.

C. Other applicable authorities cited in the Basic Plan.

II. Purpose

The purpose of this annex is to establish the assignments, systems, and procedures necessary for the governments of Matagorda County to respond to an incident at the South Texas Project Electric Generating Station (STPEGS). This is accomplished by providing for:

A. Coordination of law enforcement activities to ensure the safety of life and property;

B. A fire fighting plan to respond to the demands of an emergency;

C. Coordination of public health and medical services during emergency situations to reduce death and injury and to assist in damage assessment;

D. Assessment and reporting of damage;

E. Public works service plans for emergencies when extra measures must be taken to protect lives and property;

F. A utilities service plan for emergencies when extra measures must be taken to protect lives and property; and

G. A plan for effective use of human and material resources needed to deal with an emergency.

Purpose statements are included in the Tabs to this Annex.

This Annex is further specified by procedures.

III. Situation and Assumptions

A. Situation

1. The South Texas Project Electric Generating Station (STPEGS) is a power generation facility using a nuclear fission process to generate steam. The South Texas Project Electric Generating Station (STPEGS) is located approximately 12 miles northeast of the City of Palacios and approximately 14 miles southwest of the City of Bay City in Matagorda County.

2. The South Texas Project Electric Generating Station (STPEGS) Plume Exposure Pathway Emergency Planning Zone (EPZ) is within Matagorda County. (See Figure 1)

3. The governments of Matagorda County, Bay City, and Palacios and the State of Texas are responsible for responding to emergencies at the South Texas Project Electric Generating Station (STPEGS) to protect the public. Such response will be made in concert with government agencies of the State of Texas.

4. The Department of State Health Services (DSHS) will assist the county in matters relating to Fixed Nuclear Facility (FNF) incidents. The Department of State Health Services (DSHS) will serve as the County's technical advisor in matters involving radiation releases by the South Texas Project Electric Generating Station (STPEGS).

5. The Governor’s Division of Emergency Management (GDEM) will assist the County in matters related to Fixed Nuclear Facility (FNF) incidents. The GDEM will assist the County by providing resource support and by coordinating the Governor's office response activities.

6. During times of emergency at the South Texas Project Electric Generating Station (STPEGS), law enforcement agencies may be called upon to expand their operations. Matagorda County has arrangements with several federal agencies which can provide support to local agencies as needed.

7. The following situations apply to health and medical:

   a) Residents of Matagorda County are vulnerable to radiological releases which could result in a need for emergency health or medical support.

   b) Emergency medical care is provided by the Matagorda Regional Medical Center and the Palacios Community Medical Center.

8. In Matagorda County a Fixed Nuclear Facility has the potential for causing extensive property damage. In the event damage does occur, damage assessment and reporting is essential for response and recovery operations.

9. Matagorda County is subject to radiological emergencies that could create a need for emergency public works services.

10. Matagorda County is subject to radiological emergencies that could create a need for emergency utility services, which could cause a general detrimental affect on the safety and welfare of the people.

11. Matagorda County is subject to radiological emergencies that require the County to inventory resources on a continuing basis and have procedures to use these resources in a timely manner during an emergency.

12. In order to provide the most effective response to an emergency, all efforts are coordinated through the Matagorda County Emergency Operations Center (EOC) which has been designated as the base for all emergency management activities.

13. There may be occasions when services to special populations are necessary during an emergency situation.

14. Hazardous materials are commonly used, transported, and produced in Matagorda County; hence, hazardous material incidents may occur as the result of natural disasters, human error, or accident.

15. Fire prevention and control are daily problems faced by fire services personnel. These problems become more significant during emergency situations. Severe hazards could result in trapped persons in damaged and collapsed structures, missing persons, and fatalities.

16. Situation descriptions are covered in Tabs to this Annex.

B. Assumptions

1. In the event of an incident involving an actual or potential release of radiation with exposures exceeding established limits from the South Texas Project Electric Generating Station (STPEGS), Matagorda County officials will be called upon to coordinate an effective response to protect the public.

2. The County may have to act upon its own initiative in the event of an emergency if state, private, and federal resources cannot be mobilized quickly enough to initiate protective response actions.

3. The statistical and demonstrated probability of the plant's experiencing an incident severe enough to involve the public is extremely low.

4. The state and federal governments will provide certain specialized services which the County cannot provide, such as radiation monitoring and dose evaluation.

5. The Department of State Health Services (DSHS) will advise Matagorda County officials if and when protective actions are necessary, but the decision to implement those protective actions remains the sole responsibility of the County Judge or Emergency Commissioner.

6. Local law enforcement personnel will generally be able to provide adequate police control. If local capabilities are exceeded, support will be available from any of several state and federal law enforcement groups. Bay City and Palacios Police Chiefs will provide support for evacuation as directed by the County Judge or Emergency Commissioner.

7. The following assumptions apply to health and medical:

   a) Although some health-related problems can be associated with radiological emergencies, there is an adequate local capability to meet most emergency situations. When necessary, support will be available from state and federal agencies through the District Disaster Committee, located at the Department of Public Safety in Pierce, Texas.

   b) The public may require guidance concerning how best to avoid health hazards created by the disaster or arising from conditions existing in the affected area during the recovery and rehabilitation phase.

8. The timely and accurate assessment of damage to private and public property will be of vital concern to local officials following a disaster and will have great bearing upon the manner in which recovery is effected in Matagorda County.

9. The following assumptions apply to Public Works/Engineering:

   a) All Public Works equipment and personnel will be available to manage an anticipated emergency.

   b) Local contractors have resources to assist Public Works recovery efforts.

   c) Assistance will be available from outside the jurisdiction.

   d) Repair and restoration of essential services and vital facilities is possible and such that Public Works can reasonably be expected to accomplish this task.

10. The following assumptions apply to Utilities:

   a) All Utility equipment and personnel will be available to manage an anticipated emergency.

   b) Repair and restoration of essential services and vital facilities are possible and such that Utilities can reasonably be expected to accomplish this task.

   c) The primary responsibility of Utilities will be the maintenance and restoration of Utility services.

   d) Utility services have the capability to accept emergency increased demands.

   e) Private Utility companies will cooperate with and assist Matagorda County government services.

11. The following assumptions apply to resource management:

   a) Shortages in the County response resources may occur in any emergency that lasts longer than 24 hours.

   b) Matagorda County professionals and paraprofessionals, private contractors, and volunteer agencies will be willing and able to assist the community during an emergency.

c) Volunteers will assist as needed.

d) Support will be available through requests to state and federal agencies.

e) Matagorda County agencies will support emergency resource management actions.

12. The response activities presented are applicable to radiological emergency situations and will provide adequate direction for proper emergency management.

13. The following assumptions apply to human services:

a) There will be instances where the complete Reception Center/Congregate Care operation will not be implemented; however, people who would not normally be clients of local and State human service agencies may require some form of public assistance under emergency conditions.

b) The American Red Cross will provide assistance to evacuees.

c) Other professional/volunteer organizations which normally respond to an emergency will do so.

d) Churches and Church groups are a vital community resource and will function as support organizations to provide assistance.

14. The following assumptions apply to hazardous materials responses:

a) Disasters involving hazardous materials are usually confined to a localized area and actions must be taken to contain resultant spills as promptly as possible.

b) Rapid communication channels must be utilized to inform responsible officials for emergency response.

c) The resources of industry, local, state, or federal government, separately or in combination, may be required to manage the situation, dependent on the magnitude, nature, and area threatened.

15. A trained, equipped, organized rescue service will provide the capability to conduct search and rescue operations, suppress and minimize loss of life, shore up and stabilize weakened structures, release trapped persons, and locate the missing and dead.

16. Existing fire personnel and equipment will be capable of managing most emergency situations. When additional support is required, assistance can be obtained from state and federal agencies.

17. Additional assumptions are covered in their respective Tabs to this Annex.

IV. Concept of Operations

A. General

1. The County Judge, or the Emergency Commissioner, will direct the operations of the County's emergency response forces.

2. The County Sheriff will direct the law enforcement operations.

3. The Mayors of Bay City and Palacios will direct the operations of the emergency response forces of their respective cities, under direction of the County.

4. An individual shall be designated by each Department identified by this Plan to report to the County Emergency Operations Center (EOC) when notified.

5. Each department, agency or group shall develop a staff training program to ensure that sufficient trained personnel are available to provide essential emergency service throughout a protracted 24-hour operation.

6. Periodic drills and exercises will be held to provide training and demonstrate effectiveness or proficiency in performing an assigned task or function. Participation in the drills and exercises is a necessity for emergency response personnel. Department heads are responsible for ensuring that applicable personnel are trained and participate in the drills and exercises as scheduled with the state, the South Texas Project Electric Generating Station (STPEGS), and/or a regulatory agency of the federal government.

7. Departments, agencies and groups of the county and cities of Matagorda County shall ensure that sufficient trained staff, supplemented by trained volunteers if necessary, are available to support an extended 24-hour per day emergency operation.

8. All political jurisdictions within the County will coordinate their activities, operations, and informational functions through the office of the County Judge.

9. Phases of emergency management for alerting and notification, communications, evacuation, protective action, public information, Reception Center/Congregate Care, and transportation are covered in Tabs to this Annex. Phases of emergency management for other activities are provided in Figure 2.

B. Emergency Operations Center (EOC)

1. The Matagorda County Emergency Operations Center (EOC) is in the Matagorda County Sheriff's Office in Bay City. The alternate Emergency Operations Center (EOC) is in the Matagorda County Courthouse in Bay City.

2. The County Judge, Emergency Commissioner, Sheriff or the Emergency Management Coordinator, or his alternate will direct the set up and partial activation or full activation of the Matagorda County Emergency Operations Center (EOC) upon notice of declaration of an Alert at the South Texas Project Electric Generating Station (STPEGS). Full EOC activation will be initiated upon declaration of a Site Area Emergency, and at such other times as, in the opinion of the Judge or his alternate, it is advisable to do so to coordinate emergency response actions within Matagorda County.

3. The County and all cities will coordinate their operations with the Matagorda County Emergency Operations Center (EOC).

4. The County Judge or Emergency Commissioner shall communicate with the South Texas Project Electric Generating Station (STPEGS) EOF to coordinate emergency actions, as appropriate.

V. Assignment of Responsibilities

The following responsibilities and tasks are critical to Fixed Nuclear Facility response operations. The individuals assigned are responsible for developing and maintaining procedures and training programs necessary to perform the assigned tasks, and demonstrating proficiency through participation in periodic drills and exercises. The assignments are as follows:

Tasks	**Assigned To**
A. Direction and Control	Matagorda County Judge (Emergency Management Director) Mayors of Bay City and Palacios Emergency Management Coordinator County Commissioners Matagorda County Sheriff

1. Direct the operations of governmental forces.

2. Make emergency policy decisions and request from the state a Declaration of a State of Emergency or Disaster.

3. Provide for emergency expenditures.

4. Request assistance from state, federal and volunteer organizations.

5. Provide and authorize information and instructions to the public.

6. Receive Protective Action Recommendations (PARs) from the South Texas Project Electric Generating Station (STPEGS) Emergency Director and/or the Department of State Health Services (DSHS).

7. Instruct the public as to what protective actions need to be accomplished.

8. Cooperate with the state and the South Texas Project Electric Generating Station (STPEGS) in completing exercises, drills, and training programs as required or as requested to assure emergency response and preparedness capabilities.

9. Approve radiological exposures to personnel under their respective direction in excess of Environmental Protection Agency (EPA) and/or Department of State Health Services (DSHS) limits.

10. Identify special populations and special facilities that may require assistance in transportation, evacuation or other aid during a declared emergency at the South Texas Project Electric Generating Station (STPEGS).

11. Assist the South Texas Project Electric Generating Station (STPEGS) onsite personnel in the event of a site evacuation as requested by the Emergency Director at the South Texas Project Electric Generating Station (STPEGS).

B. Communications — Matagorda County Sheriff Communications Officer

1. Maintain 24-hour communications capability.

2. Receive and authenticate notifications and information received from the South Texas Project Electric Generating Station (STPEGS) or from the Disaster District, Department of Public Safety, Pierce, and disseminate as appropriate.

3. Maintain contact with the Texas Department of Public Safety, Disaster District Sub 2C Headquarters, Pierce, throughout the course of an incident.

4. Conduct monthly tests of the communications systems with the state and with the South Texas Project Electric Generating Station (STPEGS).

5. Participate in radiological and communications emergency annual training and periodic drills and exercises with the state and/or the South Texas Project Electric Generating Station (STPEGS).

6. Develop primary and alternate communications systems to interlink the South Texas Project Electric Generating Station (STPEGS), and State Emergency Operations Center (EOC), with the Matagorda County Emergency Operations Center (EOC) and other emergency response organizations.

7. Notifying the Matagorda County Emergency Response Organization of emergency conditions at South Texas Project Electric Generating Station.

C. Warning (Notification) — Matagorda County Sheriff Communications Officer

1. Maintain 24-hour capability to receive, authenticate, and disseminate warning/notification to the public within the South Texas Project Electric Generating Station (STPEGS) Plume Exposure Pathway Emergency Planning Zone (EPZ).

2. Disseminate notification to the public in timely manner (approximately 15 minutes) of the decision to recommend protective actions by the Emergency Management Director. The primary source of notification of emergency classification is the South Texas Project Electric Generating Station (STPEGS).

3. Disseminate notice of return conditions to the public.

4. Verify that notification is received by the public, to the extent possible.

5. Enlist cooperation of the National Weather Services and local area electronic media including the Emergency Alert System (EAS) to disseminate notifications and emergency information to the public.

6. Direct activation of the Prompt Notification System upon request from the County Judge or a designated alternate.

7. Conduct and document biweekly silent, quarterly growl, and annual/complete cycle tests of the Prompt Notification System. Ensure preventive maintenance and repair is performed as required.

8. Develop and maintain procedures necessary for warning receipt, verification, and dissemination.

D. Public Information — Public Information Officer/Writer

1. Establish and maintain an annual program to provide public education to permanent and transient populations on emergency preparedness, warning signals, and the planned public response to the warning signals. This information shall include, but is not limited to:

   a) Educational information on radiation;

   b) Contact for additional information;

c) Protective measures, e.g., evacuation routes and Reception Centers/Congregate Care Facilities, respiratory protection;

d) Assistance to special populations; and

e) EAS frequencies.

2. Means to accomplish this distribution may include, but are not limited to:

a) Information in the telephone book*;

b) Posting in public areas;

c) Publications distributed on an annual basis; and,

d) Brochures*.

*Note: At a minimum, annual delivery of written material to residents and transients within the EPZ.

3. Distribute updates to the public information and media information programs at least annually. The program and updates shall include provisions for permanent and transient populations within the Plume Exposure Pathway Emergency Planning Zone (EPZ), and shall provide for distribution to those persons who are hearing impaired, or vision impaired.

4. Maintain a program to inform the public of actions being taken by their governing officials in the emergency preparedness and emergency management program areas.

5. Establish and conduct an annual training program for the press and broadcast media to acquaint them with the emergency management plans, information concerning radiation, and points of contact for releases of public information during an emergency. The media training program shall be coordinated with the county, state, and the South Texas Project Electric Generating Station (STPEGS).

6. Establish procedures to verify emergency notification information thus establishing the authenticity prior to release to the public.

7. Participate in the Joint Information Center (JIC) activities as the spokesperson for the Matagorda County officials and emergency response organizations. A Joint Information Center (JIC) will be established at the Best Western Matagorda Hotel and Conference Center in Bay City, Texas during emergencies at the South Texas Project Electric Generating Station (STPEGS).

8. Coordinate news media releases with the spokespersons of the state, the Federal Emergency Management Agency (FEMA), the Nuclear Regulatory Commission (NRC), and the South Texas Project Electric Generating Station (STPEGS) prior to release to the media. The coordination is a function of the County Public Information Officer and is accomplished at the Joint Information Center (JIC). Obtain authorization for media information releases to the media and the public from the Emergency Management Director prior to release.

9. Monitor the news media, broadcast and print, and be alert to rumors. Forward rumors to the Joint Information Center (JIC) Rumor Control for disposition.

10. Provide the public with information on recommended protective measures at the onset of an actual or threatening incident and during the course of an incident as directed and authorized by the Emergency Management Director.

11. Participate in annual training and periodic drills and exercises with the state and/or the South Texas Project Electric Generating Station (STPEGS).

12. Publicize Reception Center and Congregate Care Facility plans and procedures to the residents of the County.

13. Identify special populations.

E. Accident Assessment — Matagorda County Judge
(Emergency Management Director)
Emergency Management Coordinator

Assessment of radiological incidents is primarily the responsibility of the State of Texas Department of State Health Services (DSHS). The County will not normally be called upon to perform radiological monitoring or to supply radiological data to the state or the South Texas Project Electric Generating Station (STPEGS); however, the local officials will be prepared to offer assistance to the state upon request, to the extent that resources are available. Refer to the State of Texas Radiological Emergency Management Plan and Procedures for additional information on this subject.

F.	Public Health and Sanitation	Matagorda County Health Official Hospital Administrators Matagorda County EMS

1. Assist the state in locating and inspecting food and water supplies.

2. Initiate protective measures, such as condemning food stocks, when such action is necessary or recommended by the state.

3. Advise Reception Center managers on health and sanitation matters for Congregate Care Facilities during a radiological emergency.

4. Participate in annual training and periodic drills and exercises with the state and/or the South Texas Project Electric Generating Station (STPEGS).

5. Assess required levels of medical support.

G.	Social Services	Matagorda County Judge (Emergency Management Director) Emergency Management Coordinator

A social services program will be administered by the American Red Cross and other volunteer agencies. This includes counseling of disaster victims and staffing Disaster Assistance Centers, as required. The chief executives will coordinate the locating and identifying of areas in need of attention. The Texas Department of Human Resources provides assistance services as authorized by state and federal statutes.

H.	Fire Protection and Rescue	Matagorda County-Volunteer Fire Chiefs for Bay City (Fire Services Coordinator) Blessing Markham Matagorda Midfield Palacios Sargent Selkirk Van Vleck Wadsworth

1. Provide fire suppression services adjacent to the South Texas Project Electric Generating Station (STPEGS) upon request.

2. Assist in fire and rescue services at the South Texas Project Electric Generating Station (STPEGS), if requested.

3. Conduct search and rescue operations for entrapped and/or injured persons.

4. Provide a secondary radiological monitoring capability upon request.

5. Assist the state in decontamination activities, if requested.

6. Develop mutual aid agreements with nearby departments for assistance when requested.

7. Participate in annual training and periodic drills and exercises with the State and/or the South Texas Project Electric Generating Station (STPEGS).

8. Assist in route alerting to the general public, as requested.

I.	Traffic Control and Law Enforcement	Matagorda County Sheriff Communications Officer

1. Establish traffic and access control points for evacuation.

2. Secure evacuated areas.

3. Provide security at the Matagorda County EOC, Joint Information Center, Reception Centers and Congregate Care Facilities or other facilities as requested.

4. Direct the activities of supporting law enforcement agencies from other jurisdictions.

5. Determine the need for waiving of normal traffic regulations, such as changing two-way streets to one-way, allowing the use of unlicensed vehicles, etc.

6. Develop mutual aid agreements with nearby law enforcement agencies to provide assistance upon request, if necessary.

7. Provide secondary radiological monitoring capability to the State upon request.

8. Participate in annual training and periodic drills and exercises with the State and/or the South Texas Project Electric Generating Station (STPEGS).

J.	Emergency Medical Services	Matagorda County Hospital Administrators EMS Service: Matagorda County EMS

1. Provide for emergency medical care of evacuees and emergency workers by either local treatment or sending patients to other hospitals.

2. Identify other medical facilities which can provide support and develop mutual aid agreements as appropriate.

3. Provide medical support to Reception Centers and Congregate Care Facilities.

4. Provide for receipt, decontamination, and medical care of injured patient(s) with radiological contamination. Disposal of decontamination waste will be handled by the South Texas Project Electric Generating Station (STPEGS).

5. Assist the Department of State Health Services (DSHS) with administration of radioprotective drugs, if requested.

6. Maintain accurate records of patients treated and treatments given.

7. Participate in annual training and periodic drills and exercises involving simulated contaminated victims, as requested by the State or the South Texas Project Electric Generating Station (STPEGS).

8. Evaluate exposure and uptake with assistance from the Department of State Health Services (DSHS) and the South Texas Project Electric Generating Station (STPEGS), as necessary.

9. Provide for emergency transportation (ambulance) of radiologically contaminated injured person(s).

K.	Transportation	Transportation Officer

1. Provide emergency mass transportation by use of school vehicles.

2. Maintain rosters of qualified drivers and provide training where necessary.

3. Establish a driver notification system.

4. Provide assistance to identified persons requiring transportation assistance. Perform annual assessment of those needing special assistance. A list of special populations will be kept by the American Red Cross.

5. Ensure operability of transportation equipment and service facilities.

6. Develop mutual assistance agreements with nearby districts to provide facilities, personnel, and equipment upon request.

7. Participate in annual training and periodic drills and exercises with the State and/or the South Texas Project Electric Generating Station (STPEGS).

8. Ensure bus drivers receive a briefing on the scope of the emergency mission.

9. Provide transportation resources to support evacuations of both the general public and the South Texas Project Electric Generating Station (STPEGS) onsite personnel.

L. Protective Response — Environmental Health Director (or designee)

1. In concert with school superintendents and the American Red Cross, assist as necessary in the selection of facilities suitable for use as Reception Centers and Congregate Care Facilities.

2. Ensure radiological monitoring/decontamination is provided at the Reception Centers.

3. Provide trained personnel for the performance of monitoring and decontamination at the Reception Centers.

4. Participate in annual training and periodic drills and exercises with the State and/or the South Texas Project Electric Generating Station (STPEGS).

5. Maintain a list of names and phone numbers of individuals trained to perform monitoring and decontamination.

M. Radiological Exposure Control Environmental Health Director (or designee)

1. Obtain, maintain, and distribute personal dosimetry, KI, protective equipment and monitoring equipment, as required. Figure 3 is a list of typical emergency radiological equipment and supplies. The South Texas Project (STP), in accordance with STP procedure 0PGP05-ZV-0012, provides and maintains radiological equipment and supplies for Matagorda County.

2. Exposure control is primarily the function of the State of Texas Department of State Health Services (DSHS), including recommendations to use, and provisions for radioprotective drugs; however, the County Environmental Health Director will provide radiological monitoring assistance and dosimetry issue and control.

3. Ensure radiological equipment is inspected, inventoried and operationally checked at least once every calendar quarter and after each use.

4. Provide dosimetry for county personnel working in a radiological environment. Dosimeters will be read at frequencies specified by State guidelines. Dose records of emergency workers will be maintained in accordance with State guidelines.

5. Provide county personnel a briefing on the proper use of dosimetry, KI, and appropriate radiological exposure control measures.

6. Direct Reading Dosimeter should be read approximately every 30 minutes or as directed by the assigned supervisor.

7. Provide guidance in monitoring decontamination of personnel and facilities.

8. Identify decontamination facilities, as required.

9. Turn over decontamination waste to the South Texas Project Electric Generating Station (STPEGS).

N. Continuity of Operations — Matagorda County Judge
Emergency Commissioner
Mayor of Bay City
Mayor of Palacios

1. Each of the chief executives will assure the continuity of their jurisdiction's operational capability by establishing lines of succession for key officers and themselves.

2. The lines of succession for chief executives are established in Section IX of the Emergency Management Basic Plan for Matagorda County, Bay City and Palacios.

O.	Evacuation	Matagorda County Judge (Emergency Management Director) County Commissioners Mayor of Bay City Mayor of Palacios Emergency Management Coordinator

1. Define responsibilities of city/county departments and private sector groups.

2. Identify high hazard areas and number of potential evacuees.

3. Coordinate evacuation planning to include:

   a) Movement control

   b) Health/medical requirements

   c) Transportation needs

   d) Emergency Public Information (EPI) materials

   e) Procedures for accountability of people in an evacuated area and evacuation of special facilities.

P.	Reception Centers and Congregate Care Facilities	American Red Cross Director

1. Plan and direct Reception Centers and Congregate Care Facilities occupancy, including preparation for radiological emergencies, and providing appropriate living space for each registered person. Maintain and update reception center and shelter maps which are maintained on file in the Emergency Operations Center.

2. Provide organized Reception Center and Congregate Care leadership, selection, and training of staffs.

3. Coordinate with schools, churches, building owners, civic organizations and others for use of their personnel and/or facilities.

4. Direct filling of Reception Centers and Congregate Care Facilities, overloading if required, movement between Reception Centers and Congregate Care Facilities, evacuation of persons from endangered Reception Centers and Congregate Care Facilities, and final closure.

5. Coordinate communications requirements between the Reception Centers and Congregate Care Facilities and the Emergency Operations Center (EOC).

6. Establish Reception Center and Congregate Care Facility reporting procedures.

7. The Environmental Health Department supervises the monitoring and decontamination activities at the Reception Center.

VI. Emergency Classifications

Incidents occurring at the South Texas Project Electric Generating Station (STPEGS) will be classified by the terms described below. Specific County actions are given in each individual position procedure. General County actions are given for the emergency classification. The classifications are listed in ascending order of severity.

A. UNUSUAL EVENT

1. Description

Indicates that unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the station or indicate a security threat to facility protection has been initiated. No release of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

2. Actions

Upon receiving and authenticating, as needed, an "UNUSUAL EVENT" notification from the South Texas Project Electric Generating Station (STPEGS) official, the Sheriff's Office Dispatcher shall notify the County Emergency Response personnel in accordance with procedure.

Response shall be in accordance with individual position procedures and as directed by the Emergency Management Director or Emergency Management Coordinator.

B. ALERT

1. Description

Indicates events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the station or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline (PAG) exposure levels.

2. Actions

Upon receiving and authenticating, as needed, an "ALERT" notification from the South Texas Project Electric Generating Station (STPEGS), the Sheriff's Office Dispatcher, or the EOC, if activated, will disseminate the information in accordance with procedure.

Response shall be in accordance with individual position procedures and as directed by the Emergency Management Director or Emergency Management Coordinator.

C. SITE AREA EMERGENCY

1. Description

Indicates events are in process or have occurred which involve an actual or likely major failure of station functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed Environmental Protection Agency (EPA) Protective Action Guideline (PAG) exposure levels beyond the site boundary.

2. Actions

Upon receiving and authenticating, as needed, a "SITE AREA EMERGENCY" notification from the South Texas Project Electric Generating Station (STPEGS), the Sheriff's Office Dispatcher or, if the EOC is activated, the Communications Officer will disseminate the information according to procedure.

Matagorda County officials will advise the public of the situation via the broadcast media and will provide support at the plant as requested. Primary response forces will preposition themselves to initiate protective actions if recommended by the County Emergency Management Director, and will provide support at the plant as requested.

D. GENERAL EMERGENCY

1. Description

Indicates events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed Environmental Protection Agency (EPA) Protective Action Guideline (PAG) exposure levels offsite for more than the immediate site area.

2. Actions

Upon receiving and authenticating, as needed, a "GENERAL EMERGENCY" notification from the South Texas Project Electric Generating Station (STPEGS), the Sheriff's Office Dispatcher or, if the county EOC is activated, the Communications Officer will disseminate the information according to procedure.

Public notification procedures will be initiated according to the protective actions recommended by the County Emergency Management Director. If evacuation is recommended, Reception Center and Congregate Care procedures will be initiated.

E. RECOVERY/RETURN

1. Description

Recovery refers to the reduction of hazardous material levels in the environment to acceptable levels for return by the general public for unconditional occupancy or use. Return refers to the reoccupation of areas cleared for unrestricted use by previously evacuated or relocated public. Return includes all associated activities such as when public may return and by what routes, as well as what actions public should take upon return.

2. Actions

The recovery actions for a radiological emergency discussed here are extensions of the Post-Emergency Actions in Section VI. C.5 of the Basic Plan. Recovery actions include, but are not limited to the following:

	Actions	**Responsibility**
a)	Provide protective action recommendations when the area is available for recovery and return.	Department of State Health Services (DSHS)
b)	Determine that the return is appropriate for the time and situation	County Judge
c)	Disseminate return notifications and instructions to the public.	County Judge
d)	Participate in media briefing(s).	Public Information Officer
e)	Coordinate recovery and cleanup, and monitor operations in the return area, as appropriate.	Environmental Health Director or designee

VII. Support

A. The County Judge or the Mayors may request state or federal assistance by contacting the Disaster District Sub 2C Headquarters, Pierce, stating the situation and specifying what assistance is required.

B. Operations chiefs, such as those in charge of fire, police, and rescue services, shall coordinate their assistance requests through their chief executives in order to reduce response time.

C. Requests should specify:

1. The type of resources needed
2. The quantity needed
3. The purpose for which it is needed
4. The individual to whom it should be dispatched, and
5. The location to which it should be dispatched.

VIII. Direction and Control

A. Fire Protection and Rescue

Routine Operations will be handled by Standard Operating Procedures (SOPs). During major emergency situations, which require County Emergency Operations Center (EOC) activation, the senior fire person on the scene from the first responding fire department will be in charge of fire suppression or other emergency activities at the scene and report to the Fire Services Coordinator, if the position is activated. If the Fire Services Coordinator position is not activated, then the Emergency Management Director/Coordinator will direct the following activities instead of the Fire Services Coordinator. The Fire Services Coordinator will establish and maintain communications with the Incident Command System, and in conjunction with the National Incident Management System direct emergency operations in coordination with other responding agencies. If local capabilities are exceeded, the Fire Services Coordinator will request outside assistance with the approval of the Emergency Management Director. Outside assistance will be provided from state or federal sources.

B. Law Enforcement

Routine operations will be handled by standard operating procedures (SOPs). During major emergency or disaster situations, which require Matagorda County Emergency Operations Center (EOC) activation, the Matagorda County Sheriff or designee will be the Chief Law Enforcement Officer responsible for coordinating all emergency law enforcement operations within the jurisdiction from the County Emergency Operations Center (EOC). An incident command post(s) may be established. The senior Law Enforcement person on the scene will be in charge of law enforcement activities at the scene and report to the Chief Law Enforcement Officer in the Emergency Operations Center (EOC). The Chief Law Enforcement Officer will establish and maintain communications with the onsite incident commander. In conjunction with the National Incident Management System the Chief Law Enforcement Officer directs emergency operations from the Emergency Operations Center (EOC) in coordination with other responding agency representatives in the Emergency Operations Center (EOC). If local capabilities are exceeded, the Chief Law Enforcement Officer will request outside assistance from the Emergency Management Director. Outside assistance may be provided from state or federal sources.

C. Health and Medical

The Hospital Administrators have primary responsibility for gathering information concerning injuries and fatalities resulting from emergency occurrences. Since accurate information concerning casualties is essential in identifying required levels of medical support, information of this type must be forwarded to the District Disaster as soon as it is available.

D. Damage Assessment

Following emergency situations, the appropriate local officials will coordinate all damage assessment activities. When directed by the County Judge, a damage assessment team will be assembled. Once surveys of the affected area have been completed, the results will be reported to the County Judge. It is imperative that accuracy be maintained in compiling Damage Assessment Reports so that local officials can judge the need for requesting state and federal assistance. If a determination is made that state and/or federal assistance is needed, then a Disaster Summary Outline will be forwarded to the Governor's Division of Emergency Management (GDEM).

E. Public Works/Engineering

The usual supervisors will exercise operational control of Public Works forces with the Precinct Commissioner maintaining overall management of equipment and personnel. The Commissioner will set priorities for resources and coordinate activities with the Emergency Operations Center (EOC).

The Precinct Commissioner will coordinate the call and deployment of mutual aid forces and volunteer/auxiliary forces. Mutual aid forces will operate under the direct supervision of their own supervisors while volunteer/auxiliary forces will work under the supervision of the senior Public Works official in the jurisdiction where they are deployed.

F. Utilities

1. The usual supervisors will continue their day-to-day responsibility during an emergency, exercising operational control of Utility forces. When the Emergency Operations Center (EOC) is activated, a Utilities representative will report to the Emergency Operations Center (EOC), if requested. The Emergency Management Coordinator or designee shall maintain overall management of equipment and personnel and shall set priorities for resources and coordinate activities with the Emergency Operations Center (EOC).

2. The Emergency Management Coordinator or designee will coordinate the request for deployment of mutual aid forces and volunteer/auxiliary forces. Mutual aid forces will operate under the direct supervision of their own supervisors. Volunteer and auxiliary forces will work under the supervision of the senior Utility official where they are deployed.

G. Resource Management

1. The Emergency Management Director serves as the overall authority for resource management.

2. The department heads and supervisors continue their day-to-day responsibilities during an emergency, exercising operational control of their work forces. They will keep the Emergency Management Director or his designee informed of resource requirements and coordinate emergency resource requests. To the extent practical, potential resource shortages will be projected, identified and made known to the Emergency Management Director or his designee.

3. Priorities for resource allocation will be established by the Emergency Management Director and Emergency Management Coordinator.

4. The Emergency Management Director may designate private citizens to coordinate resources obtained from the private sector but retains overall responsibility.

5. Direction and control for activities addressed by the Tabs of this Annex are covered in the respective Tabs.

IX. Administration

A. Fire Protection and Rescue

1. Communications

Communications are established from each fire department to the County Emergency Operations Center (EOC). Each fire department maintains an internal call roster.

2. Resources

Each fire department maintains a listing of their available resources.

B. Law Enforcement

1. Entry into Evacuated Areas

A County emergency procedure has been established to identify authorized people and vehicles in an evacuated area.

2. Communications

The law enforcement personnel will establish communications with the County Emergency Operations Center (EOC). Each law enforcement agency will maintain an internal call roster.

3. Resources

Each law enforcement agency will maintain a list of available resources.

C. Health and Medical

Health and medical services will participate as required in drills and exercises conducted by the Matagorda County Office of Emergency Management or Disaster District Committee. Additional drills and exercises may be conducted by various agencies and services for the purpose of developing and testing abilities to make effective response to various types of emergency.

D. Damage Assessment

1. Records and Team Reports

a) Survey Team Reports

Each damage survey team will collect field data. This data will be forwarded to the appropriate personnel.

b) Damage Assessment Report

A Damage Assessment Report should be utilized to determine priorities for beginning repairs and evaluating the need for requesting state and federal assistance.

2. Release of Assessment Information

Private appraisers, insurance adjusters, and others may obtain damage assessment reports from the designated coordinator with the consent of local authorities. Accurate information will be provided to the state for release to the federal agencies in a timely and effective manner.

E. Public Works and Engineering

1. Administration

a) The timely and efficient response of Public Works forces will require coordination between field forces and the Emergency Operations Center (EOC). Priorities assigned by the Precinct Commissioner will facilitate an orderly use of Public Works forces.

b) The Commissioner's Court shall develop procedures for the emergency hiring of private contractors and individuals to assist in response and recovery.

2. Supply and Support

   a) A preplanned list will be prepared with stock-level requirements.

3. The Precinct Commissioner will establish communications with the Emergency Operations Center (EOC).

F. Utilities

1. Administration

   a) The timely and efficient response of Utility forces will require coordination between field forces and the Emergency Operations Center (EOC). Priorities will be assigned by the Emergency Management Coordinator or designee to facilitate an orderly use of Utility forces.

2. Support

   a) Emergency requests shall be coordinated through the Emergency Operations Center (EOC).

   b) The Emergency Management Coordinator or designee may purchase equipment, supplies and personnel services to support response and recovery efforts, subject to approval by the Emergency Management Director.

   c) Adequate records of all purchase, costs and expenses incurred in direct support of an emergency will be maintained to support subsequent reimbursement claims and to critique the operation.

3. Communications

   The Utilities will establish communications with the Emergency Operations Center (EOC). An internal call roster will be maintained by the Office of Emergency Management.

G. Resource Management

1. Administration

a) Emergency requests shall be coordinated through the Emergency Operations Center (EOC).

b) Through the Department Heads, the Emergency Management Director or his designee shall maintain and retain adequate records of all emergency related purchases, costs, and expenses incurred in order to support subsequent reimbursement claims and to critique the operation. Conventional accounting methods will be used.

2. Support

a) In cooperation with Department Heads, the Emergency Management Director or his designee is responsible for agreements and understandings with private organizations.

b) The Emergency Management Director or his designee may initiate mutual aid agreements pertaining to resource support with neighboring jurisdictions.

c) The Emergency Management Coordinator or his designee will advise the Emergency Management Director on the need and timeliness of requests for state or federal resource assistance.

H. Administrative Requirements

Administrative requirements associated with topics covered by Tabs to this Annex are covered in the respective tabs.

I. Procedures

The following listed procedures are applicable to Annex W, Fixed Nuclear Facilities Response and are to be implemented, as appropriate, in the event of a declared emergency at the South Texas Project Electric Generating Station (STPEGS).

Direction and Control
Procedure 10, Emergency Management Director
Procedure 11, Emergency Management Coordinator
Procedure 12, EOC Administrative Assistant
Procedure 13, EPC Concept of Operations and Activation
Procedure 14, Protective Action Guides

Law Enforcement and Traffic Control
Procedure 20, Sheriff's Office Dispatcher
Procedure 21, Communications Officer
Procedure 22, Warning and Evacuation/Traffic and Access Control
Procedure 23, Activation of the Public Warning System
Procedure 24, Matagorda County Sheriff

Fire and Rescue
Procedure 30, Fire Services Coordinator

Health and Medical Services
Procedure 40, Hospital Administrators
Procedure 41, Environmental Health Director
Procedure 42, Exposure Control for Emergency Workers

Transportation
Procedure 50, Transportation Officer

Public Information
Procedure 60, Public Information Officer
Procedure 61, KMKS Radio Operations
Procedure 62, KKHA Radio Operations
Procedure 63, Emergency Alert System Messages and News Advisories
Procedure 64, National Weather Services

Reception Centers
Procedure 70, American Red Cross Director
Procedure 71, Reception Center Operations (American Red Cross)
Procedure 72, Reception Center Operations (Environmental Health Department)

X. Resources Management

Section VIII of the Emergency Management Plan addresses resource management. In addition, the interrelationship of the Emergency Response Organization is addressed in the Basic Plan in Attachment 11, 12, 13, 14, 15, and 16.

XI. Lines of Succession

Each operations manager assigned a responsibility in this Annex shall establish a line of succession to assure continuity of operations. Those lines of succession are contained within the respective department policies and procedures.

XII. Implementation

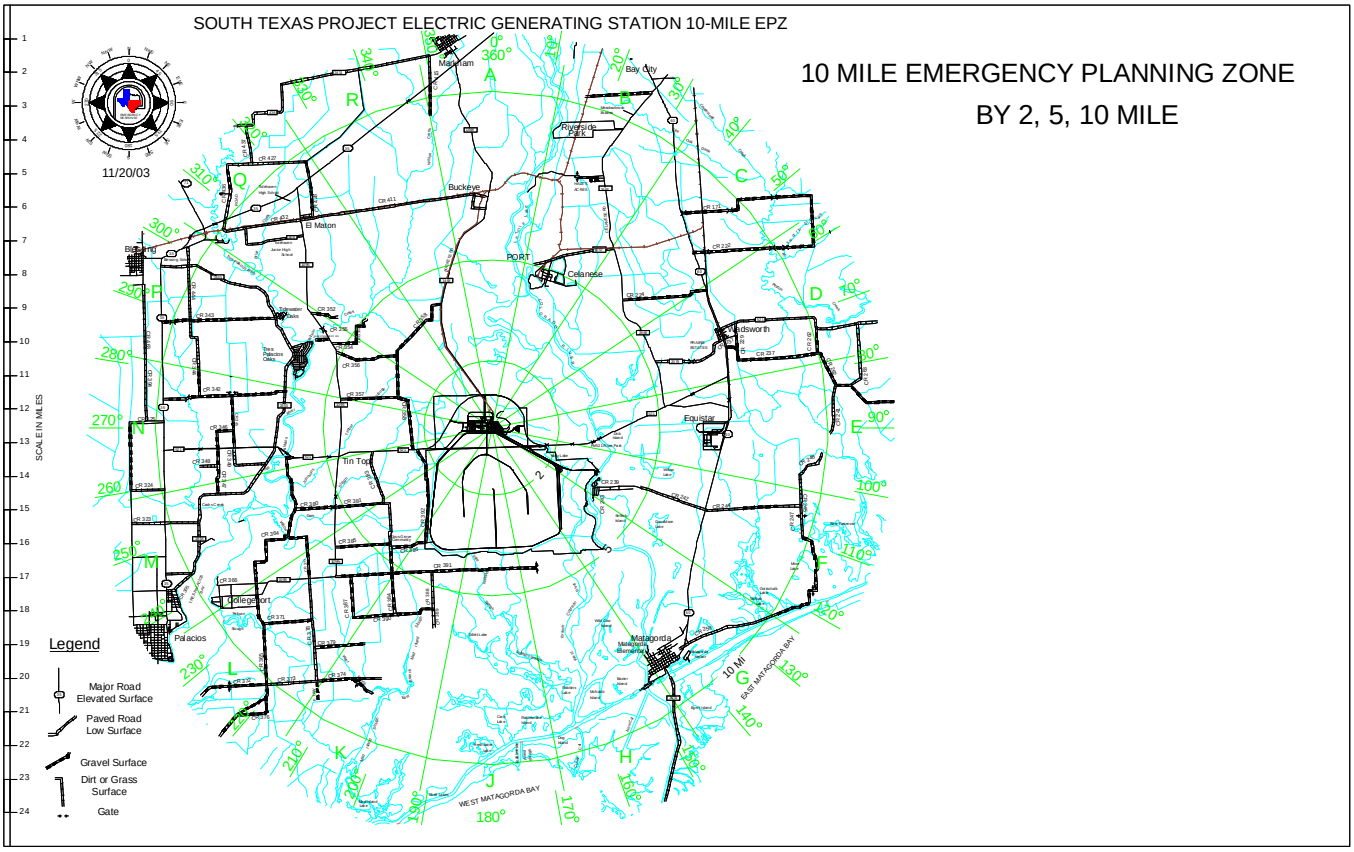
This Annex including all Tabs, Attachments, and Procedures, is considered part of the Basic Plan.

An annual review and update of this Annex, associated Tabs, and Procedures will be accomplished as a part of the annual review and update of the Basic Plan.

The annual review will include the results of actual use, drill and exercise critiques, and changes to regulations or law. The annual review is the responsibility of the Matagorda County Emergency Management Coordinator.

Approved: Signature on File Date: 06/23/09

Figure 1
10 Mile South Texas Project Electric Generating Station (STPEGS)
Plume Exposure Pathway Emergency Planning Zone (EPZ) Map
(Page 1 of 1)
(Typical)



NOTE: Actual full size map is maintained on file in the Emergency Operations Center.

Figure 2
Concept of Operations
Phases of Emergency Management
(Page 1 of 7)

A. Law Enforcement

1. Mitigation
   a. Provide plan review and updating.

2. Preparedness
   a. Prepare plans for traffic and access control points.
   b. Develop adequate communications systems for emergencies.
   c. Provide training of primary and auxiliary personnel.

3. Response
   a. Maintain law and order.
   b. Operate a local warning system.
   c. Provide security for key facilities.
   d. Patrol evacuated areas.
   e. Provide back-up communications for Reception Center/Congregate Care Facility operations.
   f. Provide traffic and crowd control.
   g. Control access to restricted area.

4. Recovery
   a. Continue response operations.
   b. Assist in damage assessment.

B. Health and Medical

1. Mitigation
   a. Provide specialized training.

2. Preparedness
   a. Maintain medical supplies.
   b. Coordinate with County officials to ensure water quality.
   c. Coordinate with County officials to provide safe waste disposal.
   d. Develop emergency plans for laboratory activities regarding examination of food and water, diagnostic tests, and identification, registration and disposal of the deceased.

Figure 2
Concept of Operations
Phases of Emergency Management
(Page 2 of 7)

3. Response
   a. Provide for sanitation activities.
   b. Provide a potable water supply.
   c. Provide environmental health activities regarding waste disposal, refuse, food and water control.

4. Recovery
   a. Continue response activities, as needed.
   b. Compile health reports for state and federal officials.
   c. Identify potential or actual continuing hazards affecting public health and offer appropriate guidance for mitigation of harmful affects.

C. Damage Assessment

1. Mitigation
   None

2. Preparedness
   a. Identify Damage Assessment Team members.

3. Response
   a. Collect damage information.
   b. Compile damage assessment reports.
   c. Complete disaster summary outline.

4. Recovery
   a. Monitor recovery activities.

D. Public Works/Engineering

1. Mitigation
   a. Train personnel in emergency procedures.

2. Preparedness
   a. Ensure that adequate barrier and roadblock materials and equipment are available.
   b. Review and update all Utility and Public Works maps of Matagorda County.
   c. Review emergency staffing plans.
   d. Place standby equipment in operational readiness.
   e. Coordinate communications procedures with Emergency Operations Center (EOC).
   f. Review contingency plans and coordinate task assignments with other agencies and volunteer groups.
   g. Develop procedures to support accomplishment of tasks outlined in this Annex.

Figure 2
Concept of Operations
Phases of Emergency Management
(Page 3 of 7)

3. Response
   a. Survey disaster areas and evaluate in terms of engineering estimates.
   b. Maintain contact with Emergency Operations Center (EOC).
   c. Repair Emergency Operations Center (EOC) facilities and equipment, as necessary.
   d. Assess damage.
   e. Clear roads, as necessary.
   f. Barricade evacuated areas, as directed.
   g. Call out private contractors and other assistance, as necessary.
   h. Assist in search and rescue operations, as directed.

4. Recovery
   a. Repair public works and buildings.
   b. Support decontamination work, as necessary.
   c. Participate in compiling after-action report and critiques. Suggest necessary changes and improvements in the Emergency Management Plan.

E. Utilities

1. Mitigation
   a. Train personnel in emergency procedures.
   b. Identify any private contractors useful for support during emergencies.

2. Preparedness
   a. Review emergency plans and procedures.
   b. Review Utility capabilities status; take necessary action.
   c. Review and update Utility Emergency Plans.
   d. Review emergency staffing plan.
   e. Place standby equipment in operational readiness.
   f. Review communications procedures with Emergency Operations Center (EOC).
   g. Review procedures to support accomplishment of task outlined in this Annex.

Figure 2
Concept of Operations
Phases of Emergency Management
(Page 4 of 7)

3. Response
   a. Maintain contact with Emergency Operations Center (EOC).
   b. Maintain Emergency Operations Center (EOC) utilities, as necessary.
   c. Repair and restore essential services and vital utility services, as required.
   d. Assess damage; survey disaster area, and evaluate in terms of utility estimates.
   e. Secure assistance of private contractors, request aid from other jurisdictions and from the private sector as needed.
   f. Effect movement of equipment and supplies as required.
   g. If shortages or overload conditions appear imminent, the Emergency Management Coordinator, in coordination with the Emergency Operations Center (EOC) executive group, will initiate curtailment procedures.
   h. Install or restore service to refugee locations without utility service.
   i. Ration utility usage if necessary.

4. Recovery
   a. Perform repairs, as necessary.
   b. Support decontamination work, as necessary.
   c. Coordinate private and volunteer aid.
   d. Replace damaged or destroyed Utilities' equipment.
   e. Participate in after-action report and critiques. Suggest necessary changes and improvements for the Emergency Management Plan.
   f. Restore normal services.

F. Resource Management

1. Mitigation
   a. Analyze resource requirements.
   b. Designate areas of responsibility for providing resource management support.

2. Preparedness
   a. Identify sources of equipment, manpower and transportation.
   b. Prepare and update resources list.
   c. Coordinate resources with other agencies and volunteers in order to maintain adequate reserves.
   d. Establish emergency purchasing procedures.

Figure 2
Concept of Operations
Phases of Emergency Management
(Page 5 of 7)

3. Response
   a. Establish priorities and allocate resources.
   b. Coordinate delivery of resources to response teams and disaster victims.
   c. Coordinate local efforts with other agencies.
   d. Maintain records of emergency-related expenditures, services, and resources rendered during emergencies.

4. Recovery
   a. Assess recovery needs.
   b. Estimate costs of providing resources.
   c. Assess impact of emergency on available resources, and identify repair, maintenance, and replenishment needs.
   d. Set priorities on available resources.
   e. Coordinate resource utilization.
   f. Maintain appropriate records.
   g. Disseminate public information via the Emergency Management Director regarding resource availability.

G. Human Services

1. Mitigation
   a. Identify volunteer groups.

2. Preparedness
   a. Identify sources of food and clothing.
   b. Coordinate responsibilities with other agencies and/or volunteer groups.

3. Response
   a. Provide food and clothing as needed.
   b. Assist registration of evacuees/victims.
   c. Provide information for victims needing additional services.

4. Recovery
   a. Assess continued human needs of victims.
   b. Inform public of extended care availability.
   c. Staff Disaster Assistance Center (DAC).

Figure 2
Concept of Operations
Phases of Emergency Management
(Page 6 of 7)

H. Hazardous Materials Response

1. Mitigation
   a. Conduct hazard identification.
   b. Develop inspection procedures.
2. Preparedness
   a. Develop public orientation/education programs.
   b. Train emergency personnel.
   c. Identify resources.
   d. Develop procedures.
3. Response
   a. Determine hazard potential.
   b. Evacuate population as necessary.
   c. Contain and control the area.
4. Recovery
   a. Monitor/survey to declare area safe.
   b. Remove contaminants.
   c. Document event.
   d. Determine liability.
   e. Develop reimbursement procedures.

I. Fire Protection and Rescue

1. Mitigation
   a. Enforce fire code.
2. Preparedness
   a. Maintain equipment.
   b. Train fire personnel.
   c. Develop communications procedures.
   d. Train rescue squads and EMTs on a regular basis.
   e. Test, maintain, and repair equipment on a scheduled basis.
   f. Revise and update response plans at regular intervals.

Figure 2
Concept of Operations
Phases of Emergency Management
(Page 7 of 7)

3. Response
   a. Contain, control, and extinguish fires.
   b. Initiate rescue missions as necessary.
   c. Operate local fire warning system.
   d. Perform radiological protection measures, as necessary.
   e. Control hazardous materials incidents within capability - request assistance as needed.

4. Recovery
   a. Perform inspection of restored or reconstructed buildings.
   b. Perform or assist in decontamination and cleanup, if required.
   c. Recommend condemnation of unsafe buildings.

Figure 3
Emergency Radiological Equipment List (Typical)
(Page 1 of 1)

Instrument

Survey Meter

Dosimeter 0-200 mR

Dosimeter 0-5R

Dosimeter 0-20R

Electronic Personal Dosimeter (EPD)

Thermoluminescent Dosimeter (TLD)

Chargers

This list is a minimum of needed radiological equipment and is not meant to be all-inclusive.

This list excludes kits used by DPS.

NOTE: 0-20R dosimeters are not required at Reception Centers, Emergency Medical Services (EMS) or at the county hospitals.

Emergency worker supplies may include the following items:

0 to 200 mR direct-reading dosimeter (DRD) 0 to 5 R direct-reading dosimeter (DRD)
0 to 20 R direct-reading dosimeter (DRD) **or**
Electronic Personal Dosimeter
Thermoluminescent Dosimeter (TLD)
Survey meter (1 per Emergency Worker Team)
Potassium Iodide (KI) tablets
Instruction and information sheets for:

- Traffic Control/Access Control Points, Attachment from Annex W, Procedure 22
- Public Warning Messages, Attachment from Annex W, Procedure 22
- Traffic and Access Control Points Entry Logs, Annex W, Procedure 22
- Emergency Worker Radiation Exposure Record
- Use of Potassium Iodide (KI) Instructions
- Emergency Worker Exposure Instructions