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NUREG-1943, Vol. 2

Environmental Impact Statement for Combined Licenses (COLs) for Comanche Peak Nuclear Power Plant Units 3 and 4

Final Report

U.S. Nuclear Regulatory Commission
Office of New Reactors
Washington, DC 20555-0001

U.S. Army Corps of Engineers
U.S. Army Engineer District, Fort Worth
Fort Worth, TX 76102-6199

US Army Corps of Engineers®

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Abstract

This environmental impact statement (EIS) has been prepared to satisfy the requirements of the National Environmental Policy Act of 1969, as amended. This EIS has been prepared in response to an application submitted to the U.S. Nuclear Regulatory Commission (NRC) by Luminant Generation Company LLC (Luminant), acting for itself and as agent for Nuclear Project Company LLC (subsequently renamed Comanche Peak Nuclear Power Company LLC), for combined construction permits and operating licenses (combined licenses or COLs). The proposed actions related to the Luminant application are (1) NRC issuance of COLs for two new nuclear power reactor units (Units 3 and 4) at the Comanche Peak Nuclear Power Plant (CPNPP) site in Hood and Somervell Counties, Texas, and (2) U.S. Army Corps of Engineers (Corps) issuance of a permit to perform certain construction activities on the site. The Corps is participating with the NRC in preparing this EIS as a cooperating agency and participates collaboratively on the review team.

This EIS includes the analysis by the NRC and Corps staff that considers and weighs the environmental impacts of building and operating two new nuclear units at the CPNPP site and at alternative sites, and mitigation measures available for reducing or avoiding adverse impacts.

The EIS includes the evaluation of the proposed action's impacts to waters of the United States pursuant to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) and Section 10 of the Rivers and Harbors Appropriation Act of 1899. The Corps will conduct a public interest review in accordance with the guidelines promulgated by the U.S. Environmental Protection Agency under authority of Section 404(b) of the Clean Water Act. The public interest review, which will be addressed in the Corps' permit decision document, will include an alternatives analysis to determine the Least Environmentally Damaging Practicable Alternative.

After considering the environmental aspects of the proposed action, the NRC staff's recommendation to the Commission is that the COLs be issued as requested. This recommendation is based on (1) the application, including the Environmental Report (ER) submitted by Luminant and Luminant's responses to the NRC and Corps staff's requests for additional information (RAIs); (2) consultation with Federal, State, Tribal, and local agencies; (3) the NRC and Corps staff's independent review; (4) the NRC and Corps staff's consideration of public comments; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and this EIS. The Corps permit decision will be made following issuance of the final EIS, and the Corps will issue its Record of Decision based, in part, on this EIS.

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Executive Summary

By letter dated September 19, 2008, the U.S. Nuclear Regulatory Commission (NRC) received an application from Luminant Generation Company LLC (Luminant), acting for itself and as agent for Nuclear Project Company LLC (subsequently renamed Comanche Peak Nuclear Power Company LLC), for combined construction permits and operating licenses (combined licenses or COLs) for two new nuclear reactor power units (the proposed Units 3 and 4) at the Comanche Peak Nuclear Power Plant (CPNPP) site, which is located in Hood and Somervell Counties, Texas. The NRC staff's evaluation is based on Luminant's November 2009 revision to the application, responses to requests for additional information (RAIs), and supplemental letters.

The proposed actions related to the CPNPP Unit 3 and 4 application are (1) NRC issuance of COLs for two new nuclear power reactor units at the CPNPP site and (2) U.S. Army Corps of Engineers (Corps) issuance of a permit pursuant to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) and Section 10 of the Rivers and Harbors Act to perform certain construction activities on the site. The Corps is participating as a cooperating agency with the NRC in preparing this environmental impact statement (EIS) and participates collaboratively on the review team. The reactor specified in the application is a Mitsubishi Heavy Industries, Ltd. (MHI), U.S. Advanced Pressurized-Water Reactor (US-APWR) design (hereafter referred to as US-APWR in this EIS).

Section 102 of the National Environmental Policy Act of 1969, as amended (NEPA) (42 USC 4321 et seq.) directs that an EIS be prepared for major Federal actions that significantly affect the quality of the human environment. The NRC has implemented Section 102 of NEPA in Title 10 of the Code of Federal Regulations (CFR) Part 51. Further, in 10 CFR 51.20, the NRC has determined that the issuance of a COL under 10 CFR Part 52 is an action that requires an EIS.

The purpose of Luminant's requested NRC action is to obtain COLs to construct and operate two new baseload nuclear power units. These licenses are necessary but not sufficient for construction and operation of the units. A COL applicant must obtain and maintain the necessary permits from other Federal, State, Tribal, and local agencies and permitting authorities. Therefore, the purpose of the NRC's environmental review of Luminant's application is to determine the impacts on the human environment if two new nuclear power units of the proposed US-APWR design are constructed and operated at the CPNPP site. The purpose of Luminant's requested Corps action is to obtain a permit to perform regulated activities that would have an effect on waters of the United States.

Upon acceptance of the Luminant application, the NRC began the environmental review process described in 10 CFR Part 51 by publishing in the *Federal Register* (FR) a Notice of Intent (73 FR 9604) to prepare an EIS and to conduct scoping. On January 6, 2009, the NRC held two scoping meetings in Glen Rose, Texas, to obtain public input on the scope of the environmental review. The staff reviewed the comments received during the scoping process and contacted Federal, State, Tribal, regional, and local agencies to solicit comments.

To gather information and to become familiar with the sites and their environs, the NRC, its contractors [the Oak Ridge National Laboratory (ORNL) and Information Systems Laboratories, Inc. (ISL)], and the Corps visited the CPNPP site in February 2009 to examine the ecological resources of the site and to conduct an environmental site audit. The NRC and its contractors also visited three alternative sites (the Coastal site, the Pineland site, and the Tradinghouse site) in Texas in February 2009. During the site visits, the NRC staff and its contractors met with Luminant staff, public officials, and the public.

Included in this EIS are (1) the results of the joint NRC/Corps review team's analyses, which consider and weigh the environmental effects of the proposed actions; (2) potential mitigation measures for reducing or avoiding adverse effects; (3) the environmental impacts of alternatives to the proposed action; and (4) the NRC staff's recommendation regarding the proposed action.

To guide its assessment of the environmental impacts of a proposed action or alternative actions, the NRC has established a standard of significance for impacts based on Council on Environmental Quality guidance (40 CFR 1508.27). Table B-1 of 10 CFR Part 51, Subpart A, Appendix B, provides the following definitions of the three significance levels – SMALL, MODERATE, and LARGE:

SMALL – Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

In preparing this EIS, the review team reviewed the application, including the Environmental Report (ER) submitted by Luminant; consulted with Federal, State, Tribal, and local agencies; and followed the guidance set forth in NUREG-1555, *Environmental Standard Review Plan* and Staff Memorandum on Addressing Construction and Preconstruction, Greenhouse Gas Issues, General Conformity Determinations, Environmental Justice, Need for Power, Cumulative Impact Analysis, and Cultural/Historical Resources Analysis Issues in Environmental Impact Statements. In addition, the NRC staff considered the public comments related to the environmental review received during the scoping process. Comments within the scope of the environmental review are included in Appendix D of this EIS.

A 75-day comment period began on August 13, 2010, when the U.S. Environmental Protection Agency (EPA) published a Notice of Availability of the draft EIS to allow members of the public and agencies to comment on the results of the NRC and Corps staffs' review. During this period, the NRC and Corps staff conducted two public meetings in Glen Rose, Texas, to describe the results of the environmental review, respond to questions, and receive public comments on the draft EIS. All comments received on the draft EIS are included in Appendix E. Changes made in response to public comments, updates to the material, and other substantive changes are identified by change bars in the margins of this final EIS.

The NRC staff's recommendation to the Commission related to the environmental aspects of the proposed action is that the COLs be issued as requested. This recommendation is based on (1) the application, including the ER submitted by Luminant and Luminant's supplemental letters and responses to the review team's RAIs; (2) consultation with other Federal, State, Tribal, and local agencies; (3) the review team's independent review; (4) the review team's consideration of public comments; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and this EIS. The Corps permit decision will be made following issuance of the final EIS, and the Corps will issue its Record of Decision (ROD) based, in part, on this EIS.

The NRC staff's evaluation of the site safety and emergency preparedness aspects of the proposed action will be addressed in the NRC's Safety Evaluation Report, which is still being developed. The reactor specified in the application is the MHI US-APWR design, which is currently undergoing a design certification review. The NRC staff's evaluation of the design certification is currently in progress.

Abbreviations/Acronyms

µg	micrograms
µS	microsiemens
X/Q	dispersion values
°C	degree(s) Celsius
°F	degree(s) Fahrenheit
A/B	auxiliary building
AADT	Annual Average Daily Traffic
ABWR	Advanced Boiling Water Reactor
ac	acre(s)
AC	alternating current
ACHP	Advisory Council on Historic Preservation
AD	Attainment Demonstration
AEC	Atomic Energy Commission
AEP	Archaeology and Ethnography Program
ALARA	as low as reasonably achievable
AML	abandoned mine land
AMUD	Acton Municipal Utility District
AN	ammonia nitrogen
APE	Area of Potential Effect
APLIC	Avian Powerline Interaction Committee
ASLB	Atomic Safety and Licensing Board
AWEA	American Wind Energy Association
BA	bioliquid assessment
BDTF	Blowdown Treatment Facility
BEA	Bureau of Economic Analysis
BEIR	Biological Effects of Ionizing Radiation
BLS	U.S. Bureau of Labor Statistics
BMP	best management practice
BOD	biochemical oxygen demand
Bq	Becquerel(s)
BRA	Brazos River Authority
BRM	Brazos River mile
Btu	British thermal unit(s)
BUL	balancing up load
BWR	boiling-water reactor
C/V	containment vessel
CAA	Clean Air Act
CBC	Christmas Bird Count
CBOD	carbonaceous biochemical oxygen demand
CCD	Census County Division
CCWS	component cooling water system
CDC	Center for Disease Control and Prevention

CDF	core damage frequency
CDP	census-designated place
CDR	Capacity, Demand, and Resources Report
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second (water flow)
cfu	colony forming units
Ci	Curie(s)
CLNGT	Calhoun Liquefied Natural Gas Terminal
cm	centimeters
cm^2	centimeter(s) squared
CMP	Coastal Management Program
CMZ	Coastal Management Zone
CO	carbon monoxide
CO_2	carbon dioxide
COL	combined license
Corps	U.S. Army Corps of Engineers
CP	construction permit
CPCN	Certificate of Public Convenience and Necessity
CPNPP	Comanche Peak Nuclear Power Plant
CPS	Energy City Public Service Board of San Antonio, Texas
CPUE	catch per unit effort
CR	County Road (CR 360, CR 392)
CREZ	Competitive Renewable Energy Zones
CS	containment spray
CVCS	Chemical and Volume Control System
CVDT	containment vessel reactor coolant drain tank
CWA	Clean Water Act
CWIS	circulating water intake structure
CWS	circulating water system
d	day
D/Q	annual normalized total surface deposition rates
DA	Department of the Army
dBA	decibel(s) (acoustic)
DBA	Design Basis Accident
DBH	diameter at breast height
DC	direct current
DCD	Design Control Document
DDT	dichlorodiphenyltrichloroethane
DFPS	Department of Family Protective Services
DFW	Dallas–Fort Worth
DHV	design hourly volume
DNL	day-night average sound levels
DO	dissolved oxygen
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation

DSM	demand side management
DSWG	Demand Side Working Group
DWS	demineralized water system
EAB	Exclusion Area Boundary
ECP	essential cooling pond
EFH	Energy Future Holdings Corporation
EFH	essential fish habitat
EIA	Energy Information Administration
EIS	environmental impact statement
ELCC	effective load carrying capacity
ELF	extremely low frequency
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
ER	Environmental Report
ERCOT	Electric Reliability Council of Texas
ESA	U.S. Endangered Species Act of 1973, as amended
ESP	early site permit
ESRP	Environmental Standard Review Plan
ESWS	essential service water system
FAA	Federal Aviation Administration
FAC	free available chlorine
FC	fecal coliform
FDA	final design approval
FERC	Federal Energy Regulatory Commission
FES	Final Environmental Statement
FM	Farm-to-Market Road
FPS	fire protection system
FR	Federal Register
FRA	Federal Railroad Administration
FSAR	Final Safety Analysis Report
ft	foot or feet
ft^3	cubic feet
FWS	U.S. Fish and Wildlife Service
gal	gallon(s)
GAM	general area monitoring
GATF	Generation Adequacy Task Force
GBq	gigabecquerel
GBRA	Guadelupe-Blanco River Authority
GCC	global climate change
GCD	Groundwater Conservation District
GCRP	Global Change Research Program
GE	General Electric
GED	Global Energy Decisions, Inc.
GEIS	generic environmental impact statement

GEIS-DECOM	GEIS-Decommissioning of Nuclear Facilities (NUREG-0586)
GHG	greenhouse gas
GIT	Georgia Institute of Technology
GIWW	Gulf Intracoastal Waterway
gpd	gallon(s) per day
gpm	gallon(s) per minute
GPS	global positioning system
GTG	gas turbine generator
GWMS	Gaseous Waste Management System
ha	hectare(s)
HCLPF	high confidence of low probability of failures
HCP	Ham Creek Park
hr	hour(s)
HT	holdup tank
HUD	U.S. Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
Hz	hertz
IA	Interconnection Agreement
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
IGCC	integrated gasification combined cycle
in.	inch(es)
INL	Idaho National Laboratory
IOU	investor owned utility
ISD	Independent School District
ISFSI	Independent Spent Fuel Storage Installation
ISL	Information Systems Laboratories, Inc.
ISO	independent system operator
JPPP	E.S. Joslin Power Plant Project
KC	Keystone Center
km	kilometer(s)
km^2	square kilometer(s)
kV	kilovolt(s)
kWh	kilowatt-hour(s)
L	liter(s)
LaaR	load acting as resource
lb	pound(s)
LC_{50}	concentration lethal to 50% of the sample population
LCRA	Lower Colorado River Authority
LCRWPG	Lower Colorado Regional Water Planning Group
Ldn	day-night average sound level
LEDPA	least environmentally damaging practicable alternative
lin ft	linear foot (feet)

LLMW	low-level mixed waste
LLW	low-level radioactive waste
LOCA	loss of coolant accident
LOS	Level of Service
LPSD	low power shutdown
LPZ	low population zone
LRF	large release frequency
LSI	Langelier Saturation Index
LST	local standard time
LTSF	Long-Term Storage Facility
LVW	low volume waste
LWA	Limited Work Authorization
LWMS	liquid waste management system
LWR	light-water reactor
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
mA	milliampere
MBq	megabecquerel
MCCI	molten corium-to-concrete interaction
mcf	million cubic feet
mCi	millicurie
MCR	main cooling reservoir
MDC	main drainage channel
MDCT	mechanical draft cooling tower
MEI	maximally exposed individual
mG	milligauss
mg	milligram(s)
MGD	million gallon(s) per day
MHI	Mitsubishi Heavy Industries, Ltd.
MHz	megahertz
mi	mile(s)
mi^2	square mile(s)
min	minute
MIT	Massachusetts Institute of Technology
mL	milliliter(s)
MMS	Minerals Management Service
MNES	Mitsubishi Nuclear Energy Systems
mo	month
MOU	Memorandum of Understanding
MOX	mixed oxide (fuel)
mph	mile(s) per hour
mpn	most probable number
mR	milliroentgen
mrad	millirad(s)
mrem	millirem(s)

MSA	Metropolitan Statistical Area
MSL	above mean sea level
mSv	millisievert(s)
MT	metric ton(s) (or tonne[s])
MTU	metric ton(s) of uranium
MW	megawatt(s)
MW(e)	megawatt(s) electrical
MW(t)	megawatt(s) thermal
MWd	megawatt-day(s)
MW-h	megawatt-hour(s)
MWS	makeup water system
N	nitrogen
NAAQS	National Ambient Air Quality Standard
NCA	Noise Control Act
NCI	National Cancer Institute
NCRP	National Council on Radiation Protection & Measurements
NEPA	National Environmental Policy Act of 1969, as amended
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
NESWS	nonessential service water system
NGO	nongovernmental organization
NHPA	National Historic Preservation Act of 1966, as amended through 2000
NIEHS	National Institute of Environmental Health Sciences
NMM	navigation mile marker
NO_2	nitrite
NO_3	nitrate
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxide(s)
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NWPCC	Northwest Power and Conservation Council
O&M	operations and maintenance
ODCM	offsite dose calculation manual
OECD	Organization for Economic Cooperation and Development
OPO4	orthophosphate
ORNL	Oak Ridge National Laboratory
OSF	Onsite Staging Facility
OSHA	Occupational Safety and Health Administration
P	phosphorous
PAM	primary amoebic meningoencephalitis
PBS&J	Post, Buckley, Schuh & Jernigan, Inc.
pCi	picocuries
PGC	Power Generation Company

PGMA	Priority Groundwater Management Plan
PIR	Public Interest Review
PKL	Possum Kingdom Lake
PM	particulate matter
PM_{10}	particulate matter with a diameter of 10 microns or less
$PM_{2.5}$	particulate matter with a diameter of 2.5 microns or less
PNNL	Pacific Northwest National Laboratory
ppm	parts per million
ppt	parts per thousand
PRA	probabilistic risk assessment
PSD	prevention of significant deterioration
PSWS	potable and sanitary water system
PUCT	Public Utility Commission of Texas
PURA	Public Utilities Regulatory Act
PWR	pressurized-water reactor(s)
Q	flow
QSE	qualified scheduling entity
R/B	reactor building
RAI	Request for Additional Information
RCDT	reactor coolant drain tank
RCRA	Resource Conservation and Recovery Act of 1976, as amended
RCW	Reactor Building Cooling Water
rem	Roentgen equivalent man (a special unit of radiation dose)
REMP	radiological environmental monitoring program
REP	retail electric provider
RFP	Reasonable Further Progress
RHR	residual heat removal
RIMS	Regional Input-Output Model System
RLE	review level earthquake
RMPF	Reservoir Makeup Pumping Facility
RMR	reliability must run
ROD	Record of Decision
ROI	region of interest
ROW	right-of-way
rpm	revolutions per minute
RRY	reference reactor year
RSICC	Radiation Safety Information Computational Center
RSW	Reactor Service Water
RV	recreational vehicle
RWST	refueling water storage tank
Ryr	reactor-year
s	second(s)
SACTI	Seasonal and Annual Cooling Tower Impacts Prediction Code
SAMA	severe accident mitigation alternative

SAMDA	severe accident mitigation design alternative
SAWS	San Antonio Water System
SB	Senate Bill
SCR	Squaw Creek Reservoir
SCWD	Somervell County Water District
SER	Safety Evaluation Report
SES	Steam Electric Station
SFSI	Spent Fuel Storage Installation
SG	steam generator
SGBD	Steam Generator Blowdown
SGIA	signed generation permit agreement
SGTR	steam generator tube rupture
SH	state highway
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMA	Seismic Margin Analysis
SNDC	summer net dependable capability
SO_2	sulfur dioxide
SOP	System Operation Permit
SO_x	sulfur oxide
SPP	Southwest Power Pool
SSC	structure, system, or component
STP	South Texas Project Electric Generating Station
STPNOC	STP Nuclear Operating Company
SWATS	Surface Water and Treatment System
SWMS	Solid Waste Management System
SWPPP	Stormwater Pollution Prevention Plan
SWWTS	sanitary wastewater treatment system
T&D	transmission and distribution
TAC	Texas Administrative Code
TBEG	Texas Bureau of Economic Geology
TBq	terabecquerel(s)
TCC	Texas Central Company
TCEQ	Texas Commission on Environmental Quality
TCS	turbine component cooling water system
TCWP	Texas Coastal Watershed Program
TDS	total dissolved solids
TDSHS	Texas Department of State Health Services
TEDE	total effective dose equivalent
Temp	temperature
THC	Texas Historical Commission
THPO	Tribal Historic Preservation Office
TIS	Texas Interconnected System
TLD	thermoluminescent dosimeter
TMDL	total maximum daily load
TPDES	Texas Pollutant Discharge Elimination System

TPWD	Texas Parks and Wildlife Department
TPWP	Texas Prairie Wetlands Project
tpy	tons per year
TRC	total residual chlorine
TSDC	Texas State Data Center
TSS	total suspended solids
TSWQS	Texas Surface Water Quality Standard
TUGC	Texas Utilities Generating Company
TW	terawatt
TWC	Texas Water Code
TWDB	Texas Water Development Board
TW-h	terawatt-hour(s)
TX	Texas
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
UC	University of Chicago
U_3O_8	triuranium octaoxide (“yellowcake”)
UF_6	uranium hexafluoride
UFC	uranium fuel cycle
UHS	ultimate heat sink
UO_2	uranium oxide
USACE	U.S. Army Corps of Engineers (Corps)
US-APWR	U.S. Advanced Pressurized Water Reactor
USCB	U.S. Census Bureau
USFWS	U.S. Fish and Wildlife Service
USGCRP	U.S. Global Change Research Program National Assessment
USGS	U.S. Geological Survey
VCNS	Victoria County Nuclear Station
VCT	volume control tank
VFD	Volunteer Fire Department
VOC	volatile organic compound
WBR	Wheeler Branch Reservoir
WDA	Workforce Development Area
WHO	World Health Organization
WMA	Wildlife Management Area
WWS	wastewater system
yd	yard(s)
yd^3	cubic yard(s)
yr	year(s)

Appendix A

Contributors to the Environmental Impact Statement

Appendix A

Contributors to the Environmental Impact Statement

The overall responsibility for the preparation of this environmental impact statement was assigned to the Office of New Reactors, U.S. Nuclear Regulatory Commission (NRC). The statement was prepared by members of the Offices of New Reactors with assistance from other NRC organizations, the U.S. Army Corps of Engineers, the Oak Ridge National Laboratory, and the Information Sciences Laboratory.

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Allen Fetter	Office of Federal and State Materials and Environmental Management Programs	Decommissioning

Name	Affiliation	Function or Expertise
Jim Shepherd	Office of Federal and State Materials and Environmental Management Programs	Decommissioning
U.S. ARMY CORPS OF ENGINEERS		
David Madden	Regulatory Branch, Forth Worth District	Section 404; Wetlands
OAK RIDGE NATIONAL LABORATORY (ORNL)[a]		
Gregory Zimmerman	Environmental Sciences Division	Team Leader
Barry Shumpert	Environmental Sciences Division	Land Use
Brennan Smith	Environmental Sciences Division	Hydrology
Ellen Smith	Environmental Sciences Division	Hydrology
Glenn Cada	Environmental Sciences Division	Hydrology/Water Quality
David Watson	Environmental Sciences Division	Hydrology /Geohydrology
Harry Quarles, III	Environmental Sciences Division	Terrestrial Ecology
James Saulsbury	Environmental Sciences Division	Socioeconomics; Environmental Justice
Keith Eckerman	Environmental Sciences Division	Health Physics; Human Health
Kathy Gant	Environmental Sciences Division	Health Physics; Human Health
Scott Ludwig	Global Nuclear Security Technology Division	Transportation
Kent Williams [b]	Nuclear Science & Technology Division	Uranium Fuel Cycle; Radiological Waste
Fred Peretz	Nuclear Science & Technology Division	Uranium Fuel Cycle; Radiological Waste; Decommissioning
David Bjornstad	Environmental Sciences Division	Benefit-Cost Analysis; Need for Power
Walter Koncinski	Creative Media Organization	Technical Editing
Priscilla Henson	Creative Media Organization	Technical Editing
INFORMATION SYSTEMS LABORATORIES, INC. (ISL)[c]		
Terry Gitnick	ISL	Project Manager
Steve Dillard	ISL/AECOM [d]	Aquatic Ecology
Steve Duda	ISL/AECOM [d]	Aquatic Ecology
Karmen King	ISL/SC&A [e]	Aquatic Ecology
Abe Zeitoun	ISL/SC&A [e]	Aquatic Ecology
Matt Goodwin	ISL/AECOM [d]	Cultural Resources
Susan Provenzano	ISL/AECOM [d]	Cultural Resources
Robert Dover	ISL/AECOM [d]	Meteorology/Air Quality; Alternatives
Ed Kaczmarczyk	ISL/AECOM [d]	Meteorology/Air Quality
Bruce Mrowca	ISL	Accidents
M. Ali Azarm	ISL	Accidents
Roberta Hurley	ISL/AECOM [d]	Alternatives
Kevin Taylor	ISL/AECOM [d]	Alternatives

a Oak Ridge National Laboratory is operated for the U.S. Department of Energy by UT-Battelle LLC.
b Retired from Oak Ridge National Laboratory.
c Information Systems Laboratories (ISL) is a private-sector company performing services under contract to NRC.
d AECOM is a private-sector subcontractor to ISL.
e SC&A is a private-sector subcontractor to ISL.

Appendix B

Organizations Contacted

Appendix B

Organizations Contacted

The following Federal, State, regional, Tribal, and local organizations were contacted during the course of the U.S. Nuclear Regulatory Commission staff's independent review of potential environmental impacts from the construction and operation of two new nuclear units (Units 3 and 4) at the Comanche Peak Nuclear Power Plant site in Hood and Somervell Counties, Texas.

Advisory Council on Historic Preservation, Washington, D.C.

Apache Tribe of Oklahoma, Anadarko, Oklahoma

Toni Ballew, Director, Hood County United Way, Granbury, Texas

Caddo Nation of Oklahoma, Binger, Oklahoma

Cheyenne and Arapaho Tribes of Oklahoma, Concho, Oklahoma

City of Glen Rose, Texas, Betty Gosdin, Chair of City Planning and Zoning Commission

City of Granbury, Texas, David Southern, Mayor

City of Granbury, Texas, Harold Sandel, City Manager

City of Granbury, Texas, Ron Berryman, Assistant City Manager

City of Granbury, Texas, Lee Daniels, Chair of City Planning and Zoning Commission

Luis Crespo, Pastor, Maranatha Lighthouse Church, Glen Rose, Texas

Delaware Tribe of Oklahoma, Bartlesville, Oklahoma

The Delaware Nation, Delaware Tribe of Western Oklahoma, Anadarko, Oklahoma

Hood County, Texas, Andy Rash, County Judge

Hood County, Texas, Mike Sympson, County Commissioner

Kickapoo Traditional Tribe of Texas, Eagle Pass, Texas

National Marine Fisheries Service, St. Petersburg, Florida

Oncor Electric Delivery Company LLC, Dallas, Texas

Somervell County, Texas, Walter Maynard, County Judge

Somervell County, Texas, Mike Ford, County Commissioner

Somervell County, Texas, Susanne Reynolds, Emergency Management

Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program, Austin, Texas

Texas State Historic Preservation Officer, Austin, Texas

U.S. Army Corps of Engineers, Fort Worth District, Fort Worth, Texas

U.S. Fish and Wildlife Service, Houston, Texas

Wichita and Affiliated Tribes, Anadarko, Oklahoma

Norma Wright, Volunteer, Hood County food pantry and other local charitable organizations, Granbury, Texas

Appendix C

Chronology of the Nuclear Regulatory Commission and the U.S. Army Corps of Engineers Staff Environmental Review Correspondence Related to Luminant Generation Company, LLC, Application for Combined Licenses at the Comanche Peak Nuclear Power Plant Site

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Chronology of the Nuclear Regulatory Commission and the U.S. Army Corps of Engineers Staff Environmental Review Correspondence Related to Luminant Generation Company, LLC, Application for Combined Licenses at the Comanche Peak Nuclear Power Plant Site

This appendix contains a chronological listing of correspondence between the U.S. Nuclear Regulatory Commission (NRC) and Luminant Generation Company LLC (Luminant), and other correspondence related to the NRC staff's environmental review, under Title 10 of the Code of Federal Regulations (CFR) Part 51, for Luminant's application for combined licenses (COLs) at the Comanche Peak Nuclear Power Plant (CPNPP) in Somervell and Hood Counties, Texas. Additionally, correspondence related to the U.S. Army Corps of Engineers (USACE or Corps) environmental review of Luminant's application for two new units at the CPNPP site is also included. All documents, with the exception of those containing proprietary information, are available at the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, and are available electronically from the Public Electronic Reading Room found on the internet at the following web address: http://www.nrc.gov/reading-rm.html. From this site, the public can gain access to the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents in the component of ADAMS. The ADAMS accession numbers for each document are included below.

September 19, 2008	Letter from Mr. Mitch Lucas, Vice President, Luminant Generation Company LLC (Luminant), to the U.S. Nuclear Regulatory Commission (NRC), transmitting Combined License Application for Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML082680250).
November 3, 2008	Federal Register Notice of Receipt and Availability of Application of Combined License for Luminant Generation Company LLC (73 FR 66276) (Accession No. ML083010072).
November 3, 2008	Letter from Stephen Raul Monarque, NRC, to Mr. Don Woodlan, Manager, Luminant, transmitting Acknowledgement of Receipt of the Combined License Application for Comanche Peak Nuclear Power Plant, Units 3 and 4, and Associated Federal Register Notice (Accession No. ML082420365).
December 2, 2008	Federal Register Notice of Acceptance for Docketing of an Application for Combined License for Comanche Peak Nuclear Power Plant, Units 3 and 4 (73 FR 75141) (Accession No. ML083390640).
December 2, 2008	Letter from Stephen Raul Monarque, NRC, to Mr. Mitch Lucas, Luminant, transmitting Acceptance Review for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application and Associated Federal Register Notice (Accession No. ML082420435).

December 9, 2008 Letter from Michael Willingham, NRC, to Ms. Peggy Oldham transmitting Maintenance of Reference Materials at the Somervell County Library Related to the Environmental Review of the Luminant Generation Company LLC Combined License Application at the Comanche peak Nuclear Power Plant Site (Accession No. ML083390652).

December 9, 2008 Letter from Michael Willingham, NRC, to Ms. Sheri McAllister transmitting Maintenance of Reference Materials at the Hood County Library Related to the Environmental Review of the Luminant Generation Company LLC Combined License Application at the Comanche peak Nuclear Power Plant Site (Accession No. ML083390662).

December 18, 2008 Letter from Mr. Mitch Lucas, Luminant, to Michael Willingham, NRC, transmitting Comanche Peak, Units 3 and 4, Reassessment of Proprietary Information (Accession No. ML083590296).

December 12, 2008 Federal Register Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process for the Comanche peak Nuclear Power Plant, Units 3 and 4 Combined License Application (73 FR 77076) (Accession No. ML090690659).

December 22, 2008 Memorandum to William Burton, NRC, from Michael Willingham, NRC, transmitting Notice of Public Meeting to Discuss Environmental Scoping Process for the Comanche Peak Nuclear Power Plant Combined License Application for Units 3 and 4 (TAC No. RF2683) (Accession No. ML083530985).

December 23, 2008 Letter from William Burton, NRC, to Mr. Lawerence Oaks, Executive Director, Texas State Historic Preservation Officer, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML083400507).

December 23, 2008 Letter from William Burton, NRC, to Ms. Kathy Boydston, Texas parks and Wildlife Department, transmitting Request for Participation in the Scoping Process and the List of State Listed Protected Species for the Environmental Review for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083400514).

December 23, 2008 Letter from William Burton, NRC, to Mr. Don Klima, Director, Office of Federal Agency Programs, Advisory Council on Historic Preservation, transmitting Request for Participation in the Scoping Process for the Comanche peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML083410002).

December 23, 2008 Letter from William Burton, NRC, to Mr. Tom Cloud, U.S. Fish and Wildlife Service, transmitting Request for Consultation and Participation in the Environmental Scoping Process and a List of Protected Species within the Area Under Evaluation for the Comanche peak Nuclear power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML083450242).

December 23, 2008 Letter from William Burton, NRC, to Mr. David Bernhart, National Marine Fisheries Service, transmitting Request for Participation on the Environmental Scoping Process and a List of Protected Species and Habitat within the Area under Evaluation for Comanche Peak Units 3 and 4 Combined License Application Review (Accession No. ML083450284).

December 23, 2008 Letter from William Burton, NRC, to Governor Scott Miller, Absentee Shawnee Tribe Headquarters, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Plant, Units 3 and 4 Combined License Application (Accession No. ML083460276).

December 23, 2008 Letter from William Burton, NRC, to Chairman Ronnie Lupe, White Mountain Apache Tribe, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460284).

December 23, 2008 Letter from William Burton, NRC, to Bryant Celestine, Alabama-Coushatta Tribe of Texas, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460323).

December 23, 2008 Letter From William Burton, NRC, to Chairman Alonzo Chalepah, Apache Tribe of Oklahoma, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460347).

December 23, 2008 Letter from William Burton, NRC, to Chairwoman LaRue Parker, Caddo Nation of Oklahoma, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460378).

December 23, 2008 Letter from William Burton, NRC, to Governor Darrell Flyingman, Cheyenne and Arapaho Tribes of Oklahoma, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460400).

December 23, 2008 Letter from William Burton, NCR, to Chairman Wallace Coffey, Comanche Nation, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460416).

December 23, 2008 Letter from William Burton, NRC, to President Kerry Holton, Delaware Tribe of Western Oklahoma, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant,

Units 3 and 4 Combined License Application (Accession No. ML083460442).

December 23, 2008 Letter from William Burton, NRC, to Chief Jerry Douglas, Delaware Tribe of Oklahoma, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460483).

December 23, 2008 Letter from William Burton, NRC, to Chairman Jeff Houser, Fort Sill Apache Tribe of Oklahoma, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460509).

December 23, 2008 Letter from William Burton, NRC, to Director Lorene Willis, Jicarilla Apache Nation, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460546).

December 23, 2008 Letter from William Burton, NRC, to Chairman Juan Garza, Jr., Kickapoo Traditional Tribe of Texas, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460577).

December 23, 2008 Letter from William Burton, NRC, to Chairman Billy Horse, Kiowa Tribe of Oklahoma, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460598).

December 23, 2008 Letter from William Burton, NRC, to President Carleton Naiche-Palmer, Mescalero Apache Tribe, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083460623).

December 23, 2008 Letter from William Burton, NRC, to President Leslie Standing, Wichita and Affiliated Tribes, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083470301).

December 23, 2008 Letter from William Burton, NRC, to Principal Chief Jim Roan Grey, Osage Nation, transmitting Notification and Request for Consultation and Participation in the Scoping Process for the Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML083470322).

January 5, 2009 Letter from Mr. Donald L. Patterson, Tonkawa Tribe of Oklahoma, to the NRC transmitting reply to Environmental Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML090500590).

January 8, 2009 Letter from Mr. David Bernhart, National Marine Fisheries Service, to William Burton, NRC, transmitting response to the Nuclear Regulatory Commission (NRC) letter dated December 23, 2008 regarding the Comanche Peak Nuclear Power Plant near Glen Rose, Texas (Accession No. ML090230148).

January 30, 2009 Federal Register Notice - Comanche Peak Nuclear Power Plant, Units 3 and 4, Opportunity to Petition for Leave to Intervene and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards (74 FR 6177) (Accession No. ML090140359).

January 30, 2009 Letter from Stephen Raul Monarque, NRC, to Mr. Mitch Lucas, Luminant, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Opportunity to Petition for Leave to Intervene and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information and Safeguards Information for Contention Preparation (Accession No. ML083440401).

February 2, 2009 Memorandum from Michael Willingham, NRC, to William Burton, NRC, transmitting Summary of Public Scoping Meetings Related to the Combined License Application Review of the Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML090300226).

February 5, 2009 Press Release No. 09-023: NRC Announces Opportunity to Participate In Hearing On New Reactor Application For Comanche Peak Site In Texas (Accession No. ML090360555).

February 5, 2009 Letter from Mr. Mitch Lucas, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Joint Venture Announcement and Name Change of Nuclear Project Company LLC (Accession No. ML090540056).

February 13, 2009 Letter from Mr. Mitch Lucas, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Submittal of Golden-Cheeked Warbler Report (Accession No. ML090490382).

February 13, 2009 Letter from Mr. Mitch Lucas, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Update Regarding Proprietary Information and Submittal of Nuclear Power Plant Siting Report (Accession No. ML090490419).

February 13, 2009 Letter from Ms. Cathy Gilmore, Environmental Protection Agency, to Michael Lesar, NRC, transmitting Early Coordination Comanche Peak Nuclear Power Plant (Accession No. ML090680037).

February 16, 2009 Letter from Mr. Carter Smith, Texas Parks and Wildlife Department, to Michael Lesar, NRC, transmitting Comanche Peak, Units 3 and 4

	Combined License Application Environmental Impact Statement (Accession No. ML090680387).
February 17, 2009	Letter from Ms. Charlene Dwin Vaughn, Advisory Council on Historic Preservation, to William Burton, NRC, transmitting reply to notification and request for consultation and participation in the scoping process for Units 3 and 4 Combined License Application Review for the Comanche Peak Nuclear Power Plant near Glen Rose, Texas (Accession No. ML090500077).
February 19, 2009	E-mail from Sean Patrick Edwards, U.S. Fish and Wildlife Service, to Michael Willingham, NRC, comments in regard to Units 3 and 4 Combined License Application Review for the Comanche Peak Nuclear Power Plant near Glen Rose, Texas (Accession No. ML092430749).
February 23, 2009	Letter from James Biggins, NRC, to Representative Lon Burnam, State of Texas, transmitting Response to Request for Access to Sensitive Unclassified Non-Safeguards Information Luminant Generation Company, LLC, Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML090550065).
February 23, 2009	Letter from James Biggins, NRC, to Mr. Robert Eye, Kaufman Eye, transmitting Response to Request for Access to Sensitive Unclassified Non-Safeguards Information Luminant Generation Company, LLC, Comanche Peak Nuclear Power Plant, Unit 3 and 4 (Accession No. ML090550232).
February 23, 2009	Letter from James Biggins, NRC, to Mr. Tom “Smitty” Smith and Mr. Matthew Johnson, Public Citizen, Texas Office, transmitting Response to Request for Access to Sensitive Unclassified Non-Safeguards Information Luminant Generation Company, LLC, Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML090550368).
March 10, 2009	Letter from Gregory P. Hatchett, NRC, to Mr. Stephen Brooks, U.S. Army Corps of Engineers (USACE), transmitting CPNPP Units 3 and 4, Invitation Ltr. to Participate as a Cooperating Agency in the NRC Staff's Preparation of an Environmental Impact Statement (Accession No. ML090140149).
March 31, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Submittal of Documents to Facilitate Environmental Review (Accession No. ML091120524).
April 2, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Submittal of Combined License Application Update Tracking Report, Revision 0 (Accession No. ML091120280).
April 15, 2009	Letter from Gregory P. Hatchett, NRC, to Mr. Don Woodlan, Luminant, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, COL License Application Online Reference Portal (TAC RF2695) (Accession No. ML090890219).

April 15, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Submittal of Documents to Facilitate the Environmental Review (Accession No. ML091120279).
April 16, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Transmittal of Combined License Application Update Tracking Report, Rev. 1 (Accession No. ML091130575).
April 21, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Response to Conditions for Using an Online Reference Portal During the Review of Combined License Application (Accession No. ML091120717).
April 24, 2009	Letter from Ms. Karen Hardin, Texas Parks and Wildlife Department, to Michael Lesar, NRC, transmitting Comanche Peak, Units 3 and 4 Combined License Application on Specific Yucca Species During Site Audit & Refined Data Regarding Known Occurrences of Rare Resources in Vicinity of Specific (Accession No. ML091310617).
April 27, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Submittal of Documents to Facilitate Environmental Review (Accession No. ML093290427).
April 28, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4 Combined License Application, Update Tracking Report (Accession No. ML091260719).
May 8, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Submittal of Document to Facilitate Environmental Review (Accession No. ML091320330).
May 14, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4 Combined License Application, Submittal of Update Tracking Report (Accession No. ML091400217).
May 27, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Submittal of Documents to Facilitate Environmental Review (Accession No. ML091490263).
June 26, 2009	Letter from Michael Willingham, NRC, to Mr. Don Woodlan, Luminant, transmitting Request for Additional Information (RAI) Regarding the Environmental Review of the Combined License Application for Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML091460707).
July 1, 2009	Memorandum from Michael Willingham, NRC, to Gregory P. Hatchett, NRC, transmitting Scoping Summary Report Related to the Environmental Scoping Process for the CPNPP, Units 3 and 4, COL Application (Accession No. ML091390873).
July 20, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, First Partial Response to

	Request for Additional Information re the Environmental Review of the Combined License Application (Accession No. ML092090653).
July 24, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4 Combined License Application Update Tracking Report (Accession No. ML092090582).
July 27, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Second Partial Response to Request for Additional Information Regarding the Environmental Review of the Combined License Application (Accession No. ML092180066).
August 3, 2009	Letter from John Fringer, NRC, to Mr. Don Woodlan, Luminant, transmitting RAI - Regarding the Environmental Review of the COL Application for Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML091970377).
August 10, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Final Partial Response to Request for Additional Information Regarding the Environmental Review of the Combined License Application (Accession No. ML092360142).
August 12, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Supplement to Final Partial Response to Request for Additional Information Regarding the Environmental Review of the Combined License Application of Comanche Peak Units 3 and 4 (Accession No. ML092290396).
August 28, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Supplemental Information for the Environmental Review RAI Questions SOC-09 through SOC-14 (Accession No. ML092440358).
September 1, 2009	Memorandum from John Fringer, NRC, to Gregory P. Hatchett, NRC, transmitting 08/12/2009 Summary of Teleconference Held with Luminant Generation Company LLC Regarding Requests for Additional Information (Accession No. ML092290018).
September 9, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Supplemental Information for Environmental Review RAI Responses (Accession No. ML093080095).
September 14, 2009	Memorandum from Michael Willingham, NRC, to Gregory P. Hatchett, NRC, transmitting Trip Report - Ecology Site Audit and Alternative Sites Visit related to the Review of Luminant's Combined License Application for Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML091410721).
September 16, 2009	Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4, Supplemental Information for the Environmental Review RAI, Questions GEN-03, HYD-16, SOC-23,

SOC-27, TE-04, TE-11, TE-15, TE-18, and TE-19 (Accession No. ML092640643).

October 9, 2009 Memorandum from John Fringer, NRC, to Gregory P. Hatchett, NRC, transmitting Summary of Teleconference Held with Luminant Generation Company LLC Regarding Requests for Additional Information (Accession No. ML092590369).

October 21, 2009 Letter from Mr. Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak, Units 3 and 4 Combined License Application Update Tracking Report (FSAR #7, ER #5) (Accession No. ML093020156).

December 4, 2009 Memorandum from Michael Willingham, NRC, to Gregory P. Hatchett, NRC, transmitting Summary of the Environmental Site Audit Related to the Review of the Luminant's Combined License Application for Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML092510499).

December 7, 2009 Memorandum from John Fringer, NRC, to Gregory P. Hatchett, NRC, transmitting Summary of August 20, 2009, Teleconferences held with Luminant Generation Company LLC regarding Requests for Additional Information (Accession No. ML092880235).

December 8, 2009 Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Part 3, Environmental Report, Revision 1, Update Tracking Report Revision 0 (Accession No. ML093440179).

December 18, 2009 Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Supplemental Information in Response to the Request for Additional Information Regarding the Environmental Review (Accession No. ML093620032).

January 15, 2010 Letter from Michael Willingham, NRC, to Mr. Don Woodlan, Luminant, transmitting Request for Additional Information Regarding the Environmental Review of the COL Application for CPNPP, Units 3 and 4 (Accession No. ML093280707).

January 15, 2010 Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, COL Application Part 3, Environmental Report, Update Tracking Report (Accession No. ML100191529).

January 19, 2010 Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Corrections for COL Application Part 3, Environmental Report, Update Tracking Report (Accession No. ML100210301).

January 19, 2010 Letter from Dave Matthews, NRC, to Rafael Flores, Luminant, transmitting Combined License Application Environmental Review Schedule for Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML100260655).

February 24, 2010	Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Response to Request for Additional Information Regarding the Environmental Review and Supplemental Information for Previous Environmental Questions (Accession No. ML100630660).
March 3, 2010	Letter from Gregory P. Hatchett, NRC, to Donald Woodlan, Luminant, transmitting NRC Staff Clarification for the Environmental Impact of the Blow-down Treatment Facility Proposed in the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML100500642).
March 3, 2010	Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, COL Application Part 3, Environmental Report, Update Tracking Report Revision 3 (Accession No. ML100640170).
March 5, 2010	Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Response to Environmental Review Questions ALT-03 and SOC-33, and Supplemental Information for Question TE-04 (Accession No. ML100710613).
March 9, 2010	Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Supplemental Information for Environmental Review Requests for Additional Information HYD-11, HYD-18, and HYD-19 (Accession No. ML100710027).
March 19, 2010	Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Supplemental Information for Responses to Environmental Review Request for Additional Information GEN-03 and GEN-07 (Accession No. ML100820402).
April 12, 2010	Letter from Rafael Flores, Luminant, to Dave Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Unclassified Change to Physical Security Plan Due to Squaw Creek Reservoir Opening (Accession No. ML101040261).
May 6, 2010	Letter from Rafael Flores, Luminant to David B. Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, COL Application Part 3, Environmental Report Revision 1, Update tracking Report Revision 4 (Accession No. ML101300088).
July 12, 2010	Letter from Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Update Tracking Report Regarding Opening Squaw Creek Reservoir (Accession No. ML102030191).
July 28, 2010	Letter from Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Request for Exemption from 10 CFR 50.71(e)(3)(iii) (Accession No. ML102110179).

August 6, 2010	Letter from Scott Flanders, NRC, to U.S. Environmental Protection Agency, Office of Federal Activities, transmitting Submittal of Draft Environmental Impact Statement for the Combined License for Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML101890752).
August 6, 2010	Letter from Gregory P. Hatchett, NRC, to Don Woodlan, Luminant, transmitting Notice of Availability of the Draft Environmental Impact Statement Related to the Combined Licenses for the Comanche Peak Nuclear Power Plant, Units 3 and 4 (Accession No. ML101900378).
August 6, 2010	Letter from Gregory P. Hatchett, NRC, to Tangela Niemann, Texas Commission on Environmental Quality, transmitting Notification of the Issuance of and Request for Comments on the Draft Environmental impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4, Combined License Application Review (Accession No. ML101950280).
August 6, 2010	Letter from Gregory P. Hatchett, NRC, to Tom Cloud, U.S. Fish & Wildlife Service, transmitting Request for Comments on the Draft Environmental Impact Statement and Biological Assessment Related to the Review of the Combined License Application for Comanche Peak Nuclear Power Plant, units 3 and 4 (Accession No. ML101960020).
August 6, 2010	Letter from Gregory P. Hatchett, NRC, to David Bernhart, National Marine Fisheries Service, transmitting Notification of the Issuance of and Request for Comments on the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4, Combined License Application Review (Accession No. ML101960039).
August 6, 2010	Letter from Gregory P. Hatchett, NRC, to Kathy Boydston, Texas Parks and Wildlife Department, transmitting Notification of the Issuance of and Request for Comments on the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML1019600500).
August 6, 2010	Letter from Gregory P. Hatchett, NRC, to Ronnie Lupe, White Mountain Apache Tribe, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102090382).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to LaRue Parker, Caddo Nation of Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102180328).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Henry Kostzuta, Apache Tribe of Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102180335).

August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Gary McAdams, Wichita and Affiliated Tribes, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102180341).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Charles Surveyor, Cheyenne and Arapaho Tribes of Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102180356).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Lawrence Snake, Delaware Tribe of Western Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102180361).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Jimmy Arterberry, Comanche Nation, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210305).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Don Patterson, Tonkawa Tribe of Indians of Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210307).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Jim Roan Gray, Osage Nation, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210316).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Mark Chino, Mescalero Apache Tribe, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210327).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Donald Tofpi, Kiowa Indian Tribe of Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210329).
August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Juan Garza, Kickapoo Traditional Tribe of Texas, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210332).

August 10, 2010	Letter from Gregory P. Hatchett, NRC, to Larry Nuckolls, Absentee Shawnee Tribe, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210352).
August 11, 2010	Letter from Gregory P. Hatchett, NRC, to Gifford Velarde, Jicarilla Apache Nation, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210333).
August 11, 2010	Letter from Gregory P. Hatchett, NRC, to Joe Brooks, Delaware Tribe of East Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210334).
August 11, 2010	Letter from Gregory P. Hatchett, NRC, to Jeff Houser, Fort Sill Apache Tribe of Oklahoma, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210337).
August 11, 2010	Letter from Gregory P. Hatchett, NRC, to Bryant Celestine, Alabama-Coushatta Tribe of Texas, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML102210338).
August 12, 2010	Letter from Gregory P. Hatchett, NRC, to Mark Wolfe, Texas Historical Commission, transmitting Notification of the Issuance of and the Request for Comments on the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML101950205).
August 12, 2010	Letter from Gregory P. Hatchett, NRC, to Reid Nelson, Advisory Council on Historic Preservation, transmitting Section 106 Consultation and Notification of the Issuance of the Draft Environmental Impact Statement for the Comanche peak Nuclear Power Plant, Units 3 and 4 Combined License Application Review (Accession No. ML101950267).
August 12, 2010	Letter from Jim Harrison, Texas Commission on Environmental Quality, to Gregory P. Hatchett, NRC, transmitting TCEQ Grant and Texas Review and Comment System (TRACS) #2010-420, City of Glen Rose, Somervell County – Comanche Peak Nuclear Power Plant (Accession No. ML 102600188).
August 17, 2010	Letter from Michael Willingham, NRC, to Sheri McAllister, Hood County Library, transmitting Maintenance of Reference Materials at the Hood County Library for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML101950427).

August 17, 2010	Letter from Michael Willingham, NRC, to Peggy Oldham, Somervell County Library, transmitting Maintenance of Reference Materials at the Somervell County Library for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application (Accession No. ML101950494).
September 2, 2010	E-mail from Jason Ross, Delaware Nation, to Gregory P. Hatchett and Michael Willingham, NRC, transmitting Comments regarding the Draft Environmental Impact Statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 Combined License Application Environmental Review (Accession No. ML102500343).
September 27, 2010	Letter from Stephen Monarque, NRC, to Donald Woodlan, Luminant, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Combined License Application – Exemption from the Requirements of Title 10 of the Code of Federal Regulations 50.71(e)(3)(iii) (Accession No. ML102360123).
October 20, 2010	Letter from Stephen Spencer, U.S. Department of the Interior, to Chief, Rulemaking and Directives Branch, NRC, transmitting Draft Environmental Impact Statement (DEIS), NUREG-1943, for the Combined Licenses for Comanche Peak Nuclear Power Plant, Units 3 and 4, Hood and Somervell Counties, Texas (Accession No. ML102980431).
October 25, 2010	Letter from Rafael Flores, Luminant, to David Matthews, NRC, transmitting Comanche Peak Nuclear Power Plant, Units 3 and 4, Comments on the Draft Environmental Impact Statement (Accession No. ML102990431).
October 26, 2010	Letter from Rhonda Smith, Environmental Protection Agency – Region 6, to Chief, Rulemaking and Directive Branch, NRC, transmitting Rating and Comments on the Draft Environmental Impact Statement (DEIS) dated August 2010, for the Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4 (Accession No. ML103220200).
November 5, 2010	Letter from Ross Melinchuk, Texas parks and Wildlife Department, to Cindy Bladey, NRC, transmitting Proposed Comanche peak Nuclear Power Plant Units 3 and 4 Combined License Application Review, Draft Environmental Impact Statement (DEIS), Somervell and Hood Counties (Accession No. ML103230413).

Appendix D

Scoping Comments and Responses

Appendix D

Scoping Comments and Responses

On December 12, 2008, the U.S. Nuclear Regulatory Commission (NRC) published a Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process in the *Federal Register* (73 FR 77076-8). The Notice of Intent notified the public of the staff's intent to prepare an environmental impact statement (EIS) and conduct scoping for the combined license (COL) application received from Luminant Generation Company LLC (Luminant), acting for itself and as agent for Nuclear Project Company LLC, for 2 units, identified as Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4, to be located adjacent to the existing CPNPP Units 1 and 2, located approximately 40 mi southwest of Fort Worth, Texas. This EIS has been prepared in accordance with provisions of the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality guidelines, and Title 10 of the Code of Federal Regulations (CFR) Parts 51 and 52. As outlined by NEPA, the NRC initiated the scoping process with the issuance of the *Federal Register* Notice. The NRC invited the applicant; Federal, Tribal, State, and local government agencies; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meeting and/or submitting written suggestions and comments no later than February 17, 2009.

D.1 Overview of the Scoping Process

The scoping process provides an opportunity for public participation to identify issues to be addressed in the EIS and to highlight public concerns and issues. The notice of intent identified the following objectives of the scoping process:

- Define the proposed action that is to be the subject of the EIS.
- Determine the scope of the EIS and identify significant issues to be analyzed in depth.
- Identify and eliminate from detailed study those issues that are peripheral or that are not significant.
- Identify any environmental assessments and other EISs that are being prepared or will be prepared that are related to, but not part of, the scope of the EIS being considered.
- Identify other environmental review and consultation requirements related to the proposed action.
- Identify parties consulting with the NRC under the National Historic Preservation Act (NHPA), as set forth in 36 CFR 800.8(c)(1)(i).
- Indicate the relationship between the timing of the preparation of the environmental analyses and the NRC's tentative planning and decision-making schedule.
- Identify any cooperating agencies and, as appropriate, allocate assignments for preparation and schedules for completing the EIS to the NRC and any cooperating agencies. By letter dated April 21, 2009, the U.S. Army Corps of Engineers (USACE) accepted the NRC's invitation to participate as a cooperating agency on the CPNPP Units 3 and 4 COL application environmental review.
- Describe how the EIS will be prepared, and identify any contractor assistance to be used.

Two public scoping meetings were held at the Glen Rose Expo Center, in Glen Rose, Texas, on January 6, 2009. The NRC announced the meetings in local and regional newspapers (*Glen Rose Newspaper*, *Hood County News*, and *Fort Worth Star-Telegram*) and issued press

releases locally. Approximately 110 people attended the afternoon scoping meeting and approximately 50 attended the evening session. The scoping meetings began with NRC staff members providing a brief overview of NRC's review process for COL applications and the NEPA process. After the NRC's prepared statements, the meetings were opened for public comments.

Twenty-five (25) afternoon scoping meeting attendees and 26 evening scoping meeting attendees provided oral comments that were recorded and transcribed by a certified court reporter. Twelve (12) written statements were received during the meeting. In addition to the oral and written statements provided at the public scoping meeting, 2 letters and 30 e-mail messages were received during the scoping period.

Transcripts for both afternoon and evening scoping meetings can be found in ADAMS under accession numbers ML090290409 and ML090291005, respectively. A scoping meeting summary memorandum (ML090300226) was issued February 2, 2009.

At the conclusion of the scoping period, the NRC staff reviewed the scoping meeting transcripts and all written material received during the comment period and identified individual comments. These comments were organized according to topic within the proposed EIS or according to the general topic, if outside the scope of the EIS. Once comments were grouped according to subject area, the staff determined the appropriate response for the comment. The staff made a determination on each comment that it was one of the following:

- A comment that was actually a question and introduced no new information.
- A comment that was either related to support or opposition of combined licensing in general (or specifically the Comanche Peak Unit 3 and 4 COL) or that made a general statement about the COL process. In addition, it provided no new information and did not pertain to 10 CFR Part 52.
- A comment about an environmental issue that
  - provided new information that would require evaluation during the review
  - provided no new information.
- A comment that was outside the scope of the COL, which included, but was not limited to
  - a comment on the safety of the existing units.

Preparation of the EIS has taken into account the relevant issues raised during the scoping process. The comments received on the draft EIS will be considered in the preparation of the final EIS. The final EIS, along with the staff's Safety Evaluation Report (SER), will provide much of the basis for the NRC's decision on whether to grant the Comanche Peak Unit 3 and 4 COL.

The comments related to this environmental review are included in this appendix. They were extracted from the *Specific Plant Combined License Scoping Summary Report (ML091390849)*, and are provided for convenience of those interested specifically in the scoping comments applicable to this environmental review. The comments that are outside the scope of the environmental review for the proposed Comanche Peak Units 3 and 4 are not included in this Appendix. These include comments related to:

- Safety
- Emergency Preparedness
- NRC Oversight for operating plants
- Security and Terrorism

- Support or Opposition to the licensing action, licensing process, nuclear power, hearing process or the existing plant

More detail regarding the disposition of general or out of scope comments can be found in the Scoping Summary Report (ML091390849). To maintain consistency with the Scoping Summary Report, the comment source ID and comment number along with the name of the commenter used in that report is retained in this appendix.

Table D-1 identifies in alphabetical order the individuals providing comments during the scoping period, their affiliation, if given, and the ADAMS accession number that can be used to locate the correspondence. Although all commenters are listed, the comments presented in this appendix are limited to those within the scope of the environmental review. Table D-2 lists the comment categories in alphabetical order and commenter names and comment numbers for each category. The balance of this appendix presents the comments themselves with NRC staff responses organized by topic category.

Table D-1. Individuals Providing Comments During the Comment Period

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Atkinson, Bill	Glen Rose Chamber of Commerce	Meeting Transcript (ML090290409)	0016
Bahlburg, Kelly	Self	Email (ML090230174)	0013
Bernhart, David	NOAA, National Marine Fisheries Service	Email (ML090230148)	0003
Bernier, Jim	Self	Email (ML090300670)	0020
Berry, Steve	Hood County	Meeting Transcript (ML090290409)	0016
Bisbee, Kay	Self	Meeting Transcript (ML090291005)	0017
Boydston, Kathy	Texas Parks and Wildlife Department	Email (ML090490221)	0029
Burnam, Lon	Texas Legislature	Meeting Transcript (ML090290409)	0016
Burnam, Lon	Texas Legislature	Meeting Transcript (ML090291005)	0017
Cathey, Jack	Self	Meeting Transcript (ML090260390)	0018
Cathey, Jack	Self	Meeting Transcript (ML090290409)	0016
Chorost, Amy	Self	Email (ML090230169)	0012
Cohn, Ann	Self	Meeting Transcript (ML090291005)	0017
Downing, Kevin	Self	Meeting Transcript (ML090291005)	0017
Drechel, Gary	Self	Email (ML090230155)	0007
Duck, Kathy	Self	Email (ML090230157)	0009
Duncan, Jim	North Texas Renewable Energy	Meeting Transcript (ML090291005)	0017
Duvall-Gabriel, Najah	Advisory Council on Historic Preservation	Email (ML090500077)	0036
Edwards, Chet	U.S. House of Representatives	Meeting Transcript (ML090260371)	0019
English, Maurice	Self	Meeting Transcript (ML090290409)	0016
Gentling, Suzanne	Self	Email (ML090490226)	0031

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Email (ML090230176)	0014
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Email (ML09049231)	0033
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Email (ML090480025)	0022
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Email (ML090490224)	0030
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Meeting Transcript (ML090260371)	0019
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Meeting Transcript (ML090290409)	0016
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Meeting Transcript (ML090291005)	0017
Hale, Rod	Self	Meeting Transcript (ML090290409)	0016
Harper, Debbie	Self	Meeting Transcript (ML090291005)	0017
Harper, Paul	Glen Rose Network Corp.	Meeting Transcript (ML090291005)	0017
Hind, Rebecca	Nuclear Energy for Texans (NET)	Meeting Transcript (ML090260390)	0018
Illegible, Illegible	Tokawa Tribe of Oklahoma	Letter (ML090500590)	0037
Independent School District, Glen Rose	Self	Meeting Transcript (ML090260371)	0019
Inge, Charles and Dominique	Self	Email (ML090490218)	0028
Johnson, Lisa	City of Granbury	Meeting Transcript (ML090290409)	0016
Kinzie, W.T.	Self	Meeting Transcript (ML090290409)	0016
Leising, Joe	Self	Meeting Transcript (ML090291005)	0017
Lowe, Ed	Friends of the Brazos River	Email (ML090480028)	0025
Luton, John Henry	First National Bank of Granbury	Email (ML090230149)	0004
Marks, Gary	Glen Rose Medical Center	Meeting Transcript (ML090290409)	0016
Maynard, Walter	Somervell County Commissioners Court	Meeting Transcript (ML090290409)	0016

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Maynard, Walter	Somervell County Commissioners Court	Meeting Transcript (ML090291005)	0017
Mayo, Ann B.	Self	Email (ML090480029)	0026
Meyers, Kevin	Self	Meeting Transcript (ML090290409)	0016
Miller, Pam	Glen Rose	Meeting Transcript (ML090291005)	0017
Miller, Russ	Chalk Mountain Wildlife Management Association; Light Pollution Committee	Email (ML090480030)	0024
Norton, Barbara & Tom	Self	Letter (ML090500381)	0038
Orcutt, David	Lake Granbury Medical Center	Meeting Transcript (ML090260390)	0018
Orcutt, David	Lake Granbury Medical Center	Meeting Transcript (ML090290409)	0016
Osowski Morgan, Sharon L.	U.S. Environmental Protection Agency	Email (ML090480031)	0027
Otte, Melinda	Comanche Peak WIN chapter	Email (ML090230168)	0011
Overstreet, Lee	Granbury Rotary Club	Meeting Transcript (ML090290409)	0016
Phillips, Marilyn	Somervell School District	Meeting Transcript (ML090290409)	0016
Phillips, Marilyn	Somervell School District	Meeting Transcript (ML090291005)	0017
Ramsey, Terry	Self	Email (ML090230152)	0006
Rash, Andy	Hood County Commissioners Court	Meeting Transcript (ML090290409)	0016
Rash, Andy	Hood County Commissioners Court	Meeting Transcript (ML090291005)	0017
Reed, Cyrus	Lone Star Chapter of the Sierra Club	Email (ML09040228)	0032
Reed, Cyrus	Lone Star Chapter of the Sierra Club	Email (ML090490228)	0035
Reed, Cyrus	Lone Star Chapter of the Sierra Club	Meeting Transcript (ML090290409)	0016
Richardson, Karen	Self	Email (ML090430065)	0021
Rittenhouse, Ryan	Public Citizen	Meeting Transcript (ML090291005)	0017

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Roan, Richard	Self	Meeting Transcript (ML090260390)	0018
Roan, Richard	Self	Meeting Transcript (ML090290409)	0016
Rooke, Molly	Self	Meeting Transcript (ML090291005)	0017
Rosenfeld, Joshua	Brazos River Conservation Commission	Meeting Transcript (ML090290409)	0016
Sanders, Jan	Self	Meeting Transcript (ML090291005)	0017
Scott, Mike	Granbury Chamber of Commerce	Meeting Transcript (ML090260371)	0019
Scott, Mike	Granbury Chamber of Commerce	Meeting Transcript (ML090290409)	0016
Shaar, Julie	Self	Meeting Transcript (ML090290409)	0016
Sheaks, Jerry	Self	Meeting Transcript (ML090291005)	0017
Shroyer, Danielle	Self	Email (ML090230167)	0010
Smith, Hugh	Self	Meeting Transcript (ML090290409)	0016
Smith, Tom	Texas Office of Public Citizen	Email (ML090210450)	0002
Spears, Linda	Self	Email (ML090230177)	0015
Stamler, Richard	Self	Email (ML090230156)	0008
Stuard, Gary	Interfaith Environmental Alliance	Meeting Transcript (ML090291005)	0017
Sumners, Allen	Self	Meeting Transcript (ML090291005)	0017
Sykes, Victoria	Congressman Chet Edward's Office	Meeting Transcript (ML090290409)	0016
Taylor, Kevin	Somervell County Water District	Meeting Transcript (ML090290409)	0016
Ubico, Jean	Self	Email (ML090480027)	0023
Ward, Mary	Granbury-Hood County Economic Development Corporation	Meeting Transcript (ML090290409)	0016

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Wildwood, Kathleen	Self	Meeting Transcript (ML090290409)	0016
Wohler, Will	Self	Meeting Transcript (ML090260390)	0018
Wohler, Will	Self	Meeting Transcript (ML090291005)	0017
Wolz, Conrad	Trophy Club Texas	Email (ML090230150)	0005
Wyatt, Dr. Bill	Self	Meeting Transcript (ML090291005)	0017

Table D-2. Comment Categories with Associated Commenters and Comment IDs

Comment Category	Commenter (Comment ID)
Accidents-Design Basis	• Gentling, Suzanne (0031-6) • Hadden, Karen (0017-26) (0022-47) (0022-54) • Osowski Morgan, Sharon L. (0027-4) • Reed, Cyrus (0032-10)
Accidents-Severe	• Burnam, Lon (0016-41) • Hadden, Karen (0019-11) (0022-28) (0022-45) • Harper, Debbie (0017-51) • Reed, Cyrus (0032-11)
Alternatives-Energy	• Bisbee, Kay (0017-47) • Burnam, Lon (0017-16) • Cohn, Ann (0017-34) (0017-37) • Duncan, Jim (0017-53) • Hadden, Karen (0016-12) (0016-14) (0016-15) (0016-17) (0016-19) (0016-20) (0019-7) (0022-5) (0022-48) (0022-49) (0022-50) (0022-51) (0030-2) (0030-7) • Osowski Morgan, Sharon L. (0027-3) • Reed, Cyrus (0016-51) (0032-14) (0032-15) (0032-17) • Rittenhouse, Ryan (0017-61) • Sanders, Jan (0017-73) • Shaar, Julie (0016-76) • Shroyer, Danielle (0010-2) • Stuard, Gary (0017-79) • Wildwood, Kathleen (0016-61) • Wohler, Will (0017-59) (0018-3)
Alternatives-No-Action	• Wohler, Will (0017-58)
Alternatives-System Design	• Hadden, Karen (0022-19) (0022-41) • Lowe, Ed (0025-2) • Miller, Russ (0024-1) • Osowski Morgan, Sharon L. (0027-6) (0027-8) (0027-11) • Reed, Cyrus (0032-12)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
Benefit-Cost Balance	• Gentling, Suzanne (0031-8) • Hadden, Karen (0019-8) (0030-1) • Harper, Debbie (0017-50) • Osowski Morgan, Sharon L. (0027-24) (0027-26) • Richardson, Karen (0021-3) • Sanders, Jan (0017-81) • Stuard, Gary (0017-77) • Ubico, Jean (0023-7)
Cumulative Impacts	• Burnam, Lon (0016-37) • Cathey, Jack (0016-65) • Hadden, Karen (0022-24) (0022-27) • Osowski Morgan, Sharon L. (0027-25) • Reed, Cyrus (0032-9) • Rittenhouse, Ryan (0017-64) (0017-65) • Stuard, Gary (0017-78)
Decommissioning	• Burnam, Lon (0016-38) • Hadden, Karen (0022-16) (0022-17) (0022-39) • Inge, Charles and Dominique (0028-3) • Reed, Cyrus (0032-18)
Ecology-Aquatic	• Bernier, Jim (0020-2) • Boydston, Kathy (0029-1) (0029-3) (0029-5) (0029-16) (0029-17) (0029-18) (0029-19) • Burnam, Lon (0016-43) (0017-18) • Cathey, Jack (0016-64) (0018-5) (0018-7) • Gentling, Suzanne (0031-3) • Hadden, Karen (0019-12) (0022-8) (0022-11) (0022-13) (0022-18) (0022-21) • Kinzie, W.T. (0016-69) • Lowe, Ed (0025-1) • Osowski Morgan, Sharon L. (0027-10) (0027-21) • Reed, Cyrus (0032-7)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
Ecology-Terrestrial	• Boydston, Kathy (0029-2) (0029-6) (0029-7) (0029-8) (0029-9) (0029-10) (0029-11) (0029-12) (0029-13) (0029-14) (0029-15) (0029-21) (0029-22) (0029-23) (0029-24) (0029-25) • Hadden, Karen (0022-14) • Miller, Russ (0024-2) • Osowski Morgan, Sharon L. (0027-7) (0027-22) (0027-23)
Environmental Justice	• Hadden, Karen (0019-25) • Osowski Morgan, Sharon L. (0027-20)
Geology	• Hadden, Karen (0019-22) (0022-9)
Health-Radiological	• Burnam, Lon (0016-39) (0017-10) (0017-14) (0017-17) • Gentling, Suzanne (0031-4) • Hadden, Karen (0016-21) (0016-22) (0016-25) (0019-9) (0019-10) (0019-15) (0019-27) (0022-7) (0022-12) (0022-15) (0022-26) (0022-29) (0022-30) (0022-35) (0022-36) (0022-37) (0022-38) (0022-40) • Osowski Morgan, Sharon L. (0027-5) • Reed, Cyrus (0016-53) (0016-54) (0032-8) • Rittenhouse, Ryan (0017-62) • Rooke, Molly (0017-38) (0017-39) • Sanders, Jan (0017-69) (0017-71)
Historic and Cultural Resources	• Duvall-Gabriel, Najah (0036-1) • Illegible, Illegible (0037-1) • Osowski Morgan, Sharon L. (0027-19)
Hydrology-Groundwater	• Cohn, Ann (0017-35) • Hadden, Karen (0019-13) (0019-14) (0019-28) • Kinzie, W.T. (0016-66) • Osowski Morgan, Sharon L. (0027-15) (0027-16) • Richardson, Karen (0021-2) • Rooke, Molly (0017-40) (0017-43)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
Hydrology-Surface Water	• Bernier, Jim (0020-1) • Berry, Steve (0016-28) • Burnam, Lon (0016-42) • Cathey, Jack (0016-63) (0018-4) (0018-6) • Gentling, Suzanne (0031-2) • Hadden, Karen (0016-23) (0019-16) (0019-17) (0019-31) (0019-32) (0022-6) (0022-10) (0022-20) (0022-22) (0022-55) (0030-5) • Inge, Charles and Dominique (0028-1) (0028-2) • Kinzie, W.T. (0016-62) (0016-68) • Osowski Morgan, Sharon L. (0027-9) (0027-12) (0027-13) (0027-14) • Reed, Cyrus (0016-52) (0032-5) (0032-6) • Richardson, Karen (0021-1) • Rooke, Molly (0017-41) (0017-42) • Rosenfeld, Joshua (0016-79) • Sanders, Jan (0017-66) (0017-72) • Stamler, Richard (0008-1) • Stuard, Gary (0017-76)
Land Use-Site and Vicinity	• Luton, John Henry (0004-3)
Land Use-Transmission Lines	• Hadden, Karen (0019-24)
Meteorology and Air Quality	• Osowski Morgan, Sharon L. (0027-18)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
Need for Power	• Burnam, Lon (0017-11) (0017-15) • Hadden, Karen (0016-13) (0019-21) (0030-8) • Reed, Cyrus (0016-50) (0032-16) • Bisbee, Kay (0017-46) • Cohn, Ann (0017-33) • Gentling, Suzanne (0031-1) • Harper, Debbie (0017-52) • Mayo, Ann B. (0026-3) • Stuard, Gary (0017-74) • Burnam, Lon (0016-45) • Hadden, Karen (0016-10) (0017-19) (0017-20) (0017-21) (0017-22) (0017-23) (0017-24) (0017-25) (0019-29) (0022-1) (0022-2) • Harper, Debbie (0017-49) • Mayo, Ann B. (0026-2) • Reed, Cyrus (0016-48) (0016-56) (0032-1) (0032-2) • Duncan, Jim (0017-54) • Hadden, Karen (0016-11) (0019-6) • Mayo, Ann B. (0026-1) • Reed, Cyrus (0016-49) • Rittenhouse, Ryan (0017-60) • Shroyer, Danielle (0010-1) • Wolz, Conrad (0005-1) • Berry, Steve (0016-27) • Burnam, Lon (0017-13) • Downing, Kevin (0017-31) • Hadden, Karen (0019-18) (0019-19) (0019-20) (0022-46) • Inge, Charles and Dominique (0028-4) • Maynard, Walter (0017-6) • Norton, Barbara & Tom (0038-2) • Hadden, Karen (0022-52) • Inge, Charles and Dominique (0028-5) • Smith, Tom (0002-1) • Hadden, Karen (0017-27) (0022-42) • Shroyer, Danielle (0010-4) • Hadden, Karen (0030-3) • Burnam, Lon (0016-36) • Hadden, Karen (0017-28) (0019-33) (0022-33) (0022-53) (0030-4) • Inge, Charles and Dominique (0028-6) • Kinzie, W.T. (0016-67) • Reed, Cyrus (0032-13) • Shroyer, Danielle (0010-3)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
Process-NEPA	• Chorost, Amy (0012-1) • Downing, Kevin (0017-30) • Osowski Morgan, Sharon L. (0027-1) (0027-2) (0027-27)
Site Layout and Design	• Boydston, Kathy (0029-4) • Osowski Morgan, Sharon L. (0027-17) • Rooke, Molly (0017-44) • Ubico, Jean (0023-2) (0023-3) (0023-4) (0023-5) (0023-6)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
Socioeconomics	• Boydston, Kathy (0029-20) • Burnam, Lon (0017-12) • Drechel, Gary (0007-1) • Hadden, Karen (0019-23) (0022-23) • Johnson, Lisa (0016-3) • Kinzie, W.T. (0016-70) • Luton, John Henry (0004-4) • Miller, Pam (0017-1) • Miller, Russ (0024-3) • Rosenfeld, Joshua (0016-78) • Sheaks, Jerry (0017-56) • Ubico, Jean (0023-1) • Ward, Mary (0016-32) • Atkinson, Bill (0016-47) • Bahlburg, Kelly (0013-1) • Berry, Steve (0016-26) (0016-29) • Downing, Kevin (0017-32) • Duck, Kathy (0009-1) • English, Maurice (0016-74) • Hind, Rebecca (0018-8) • Independent School District, Glen Rose (0019-2) • Johnson, Lisa (0016-2) • Leising, Joe (0017-55) • Luton, John Henry (0004-2) • Marks, Gary (0016-59) • Maynard, Walter (0016-5) (0017-5) • Meyers, Kevin (0016-46) • Miller, Pam (0017-2) • Norton, Barbara & Tom (0038-1) • Orcutt, David (0016-72) (0018-2) • Overstreet, Lee (0016-62) • Phillips, Marilyn (0016-31) (0017-9) • Ramsey, Terry (0006-1) • Rash, Andy (0016-7) (0016-9) (0017-7) • Roan, Richard (0016-6) (0018-1) • Scott, Mike (0016-34) (0019-3) • Sheaks, Jerry (0017-57) • Smith, Hugh (0016-77) • Sumners, Allen (0017-80) • Sykes, Victoria (0016-57) • Taylor, Kevin (0016-35)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Ward, Mary (0016-33) • Wyatt, Dr. Bill (0017-29) • Edwards, Chet (0019-1) • Spears, Linda (0015-1) • English, Maurice (0016-73) • Hale, Rod (0016-71) • Johnson, Lisa (0016-1) • Luton, John Henry (0004-1) • Marks, Gary (0016-58) • Maynard, Walter (0016-4) (0017-4) • Miller, Pam (0017-3) • Phillips, Marilyn (0016-30) (0017-8) • Rash, Andy (0016-8)
Transportation	• Gentling, Suzanne (0031-7)
Uranium Fuel Cycle	• Burnam, Lon (0016-40) (0016-44) • Cohn, Ann (0017-36) • Gentling, Suzanne (0031-5) • Hadden, Karen (0016-16) (0016-18) (0016-24) (0019-26) (0019-30) (0022-3) (0022-4) (0022-25) (0022-31) (0022-32) (0022-34) (0022-43) (0022-44) (0030-6) • Harper, Paul (0017-48) • Reed, Cyrus (0016-55) (0032-3) (0032-4) • Rittenhouse, Ryan (0017-63) • Rooke, Molly (0017-45) • Sanders, Jan (0017-67) (0017-68) (0017-70) • Shaar, Julie (0016-75) • Stuard, Gary (0017-75) • Wildwood, Kathleen (0016-60)

D.2 In-Scope Comments and Responses

The in-scope comment categories are listed alphabetically in Table D-3 in the order that they are presented in this EIS. In-scope comments and responses are included below the table. Parenthetical numbers shown after each comment refer to the Comment Identification (ID) number (document number-comment number) and the commenter name.

Table D-3. Comment Categories in Order as Presented in This Report

D.2.2 Comments Concerning Process - NEPA
D.2.3 Comments Concerning Site Layout and Design
D.2.4 Comments Concerning Land Use - Site and Vicinity
D.2.5 Comments Concerning Land Use - Transmission Lines
D.2.6 Comments Concerning Meteorology and Air Quality
D.2.7 Comments Concerning Geology
D.2.8 Comments Concerning Hydrology - Surface Water
D.2.9 Comments Concerning Hydrology - Groundwater
D.2.10 Comments Concerning Ecology - Terrestrial
D.2.11 Comments Concerning Ecology - Aquatic
D.2.12 Comments Concerning Socioeconomics
D.2.13 Comments Concerning Historic and Cultural Resources
D.2.14 Comments Concerning Environmental Justice
D.2.16 Comments Concerning Health - Radiological
D.2.17 Comments Concerning Accidents - Design Basis
D.2.18 Comments Concerning Accidents - Severe
D.2.19 Comments Concerning the Uranium Fuel Cycle
D.2.20 Comments Concerning Transportation
D.2.21 Comments Concerning Decommissioning
D.2.23 Comments Concerning Cumulative Impacts
D.2.25 Comments Concerning the Need for Power
D.2.26 Comments Concerning Alternatives - No-Action
D.2.27 Comments Concerning Alternatives - Energy
D.2.28 Comments Concerning Alternatives - System Design
D.2.30 Comments Concerning Benefit - Cost Balance

D.2.2 Comments Concerning Process - NEPA

Comment: Please seriously consider environmental impact when deciding on the two new reactors proposed for the Comanche Peak site. (**0012-1** [Chorost, Amy])

Response: *The NRC Staff is considering the potential environmental impacts of the proposed licensing action. An explanation of the NRC's approach to evaluating and documenting environmental impacts is available in Title 10 of the Code of Federal Regulations, Part 51.*

Comment: I think that with the due diligence that is represented by the people in this room, by the due diligence of the people that I know at the plant.

You have heard of Bruce Turner's name tonight several times. I have a lot of faith and confidence in that gentleman, and in other people like him that work for Luminant. Environmental impact studies need to happen. (**0017-30** [Downing, Kevin])

Response: *This comment provides no information related to the scope of this EIS and will therefore not be considered further in the staff's environmental review.*

Comment: The need for the project should be clearly stated, as well as potential benefits and adverse effects of the proposed project. Project impacts and impact mitigation are evaluated in the context of project need. (**0027-1** [Osowski Morgan, Sharon L.])

Response: *The purpose and need for the proposed power plant will be explained in Section 1.3 of the EIS. The impacts and alternatives will be evaluated in the context for the project need.*

Comment: The analysis of alternatives is the core of the NEPA process. The forthcoming Environmental Impact Statement (EIS) should include a minimum of two feasible action alternatives to be fully considered, as well as the No-Action Alternative.

A rationale for rejecting certain alternatives from further consideration should be provided. The rationale should include environmental reasons, along with other considerations. The selected alternative should avoid/minimize adverse impacts, so that the need for mitigation of impacts will be lessened or eliminated. A critical factor of the alternatives analysis is the avoidance/minimization of adverse impacts. (**0027-2** [Osowski Morgan, Sharon L.])

Response: *Analysis of alternatives is at the heart of the NEPA process. Chapter 9 of the EIS will evaluate appropriate alternatives to the proposed action and explain why other alternatives were not examined in detail. Mitigation measures will be examined and addressed as appropriate in Chapters 4 and 5 of the EIS.*

Comment: There is no mention of CPNPP participation in EPA's Performance Track Program or whether CPNPP has an Environmental Management System (EMS) in place. The Council on Environmental Quality (CEQ) published Aligning NEPA processes with Environmental management Systems-A Guide for NEPA and EMS Practitioners to improve NEPA implementation and environmental sustainability goals in NEPA and Executive Order 13423. The NEPA document should discuss EMS as appropriate. (**0027-27** [Osowski Morgan, Sharon L.])

Response: *Although the NRC does not require nuclear power plants to employ an environmental management system (EMS), the NRC will evaluate whether or not Luminant has developed an EMS and its use in the development of the environmental report in Section 3.3 of the EIS.*

D.2.3 Comments Concerning Site Layout and Design

Comment: do you know what would happen when the ambient temperature becomes too high, and the water temperature becomes too high for the plant to operate safely? And when that happens, do you have plans in place? Do you know what would happen at that point? (**0017-44** [Rooke, Molly])

Response: *Section 3.3.2.2 of the EIS will explain what changes to plant operations would be initiated in response to unusually high ambient temperatures. At minimum, plant power would be reduced to ensure continued safe plant operation within the constraint of the available cooling capacity. Analyses for the EIS and/or environmental regulator requirements may also lead to additional constraints on plant power to protect environmental resources.*

Comment: How long are spent rods from nuclear waste stored in temporary pools from the existing Comanche Peak reactor? (**0023-2** [Ubico, Jean])

Comment: How many pounds of nuclear waste presently exist in the temporary storage bins at Comanche Peak? (**0023-3** [Ubico, Jean])

Comment: How much additional nuclear waste will be generated as the nuclear reactor ages? (**0023-5** [Ubico, Jean])

Comment: What is the long-term plan for disposal of nuclear waste at Comanche Peak? (**0023-6** [Ubico, Jean])

Response: *Section 3.3.3 of the EIS will describe radioactive waste management activities associated with operation of the proposed units. The environmental impacts of waste management activities will be discussed in Chapter 6 of the EIS.*

Comment: How much additional waste will be generated per day by the proposed construction of the two additional reactors? (**0023-4** [Ubico, Jean])

Comment: Chapter 3 -Plant Description

The ER does not provide details of the site plan for the blowdown treatment facility (BDTF) other than large blocks showing the proposed location. The February 2, 2009 site visit indicated that several ponds of unknown size, shape or location would be constructed within this area. Power transmission lines were observed in the area.

Comment: The size, shape, and location of the BDTF ponds relative to the transmission lines need to be revealed in a site plan drawing. (**0029-4** [Boydston, Kathy])

Response: *Plant construction will be described in Section 3.3 of the EIS. The plant description will include details requested in the comments.*

Comment: The ER does not provide much information on meeting the requirements of the Resource Conservation and Recovery Act (RCRA). Clarification on RCRA permitting of Units 3 and 4, hazardous waste satellite accumulation areas, and storage times (i.e., greater than 90 days) is requested.

The contaminant monitoring list seems too narrow. We recommend reviewing site operations, wastes, chemical storage and use, etc. to determine appropriateness of including other contaminants on list. The constituents of concern (COC's) should reflect the actual constituents and their daughter or degradation products that are being utilized by CPNPP.

The information on solid waste management should be expanded. Discussion should include summary of how groundwater monitoring will include all RCRA wastes and any potential solid waste management units. (**0027-17** [Osowski Morgan, Sharon L.])

Response: *Section 3.3.4 of the EIS will describe nonradioactive waste management systems, including systems for management of hazardous materials.*

D.2.4 Comments Concerning Land Use - Site and Vicinity

Comment: The expansion of the current plant allows the wise use of the existing infrastructure ??? cooling lake, transmission lines, and the like with little or no impact on surrounding landowners or the environment. (**0004-3** [Luton, John Henry])

Response: *The impacts on land use resulting from construction and operation of the proposed facility will be discussed in Chapters 4 and 5 of the EIS.*

D.2.5 Comments Concerning Land Use - Transmission Lines

Comment:
What land will need to be condemned or purchased in order to build or upgrade new transmission lines?

What environmental and economic impacts will result from new transmission lines, including the 345 kV line planned to go between the plant site and the Whitney Switch, going through much of Somervell and Bosque Counties? (**0019-24** [Hadden, Karen])

Response: *Environmental impacts associated with any planned new transmission rights-of-way will be addressed in Chapters 4 and 5 of the EIS, as will potential impacts associated with any upgrades to existing lines or corridors. The applicant is required to follow all Federal, State, and local guidelines concerning siting, construction, and maintenance of proposed transmission corridors and lines, although the NRC does not have regulatory authority over these activities.*

D.2.6 Comments Concerning Meteorology and Air Quality

Comment: All emissions resulting from the project must be in compliance with all applicable air quality regulations, particularly relative to the National Ambient Air Quality Standards (NAAQS) for criteria air pollutants (e.g., ozone, carbon monoxide, nitrogen oxides, sulfur dioxide, lead and particulates). All construction equipment should be tuned to manufacturer's specifications to reduce air emissions. We recommend water for fugitive dust control during construction, instead of oils and other chemicals. (**0027-18** [Osowski Morgan, Sharon L.])

Response: *The NRC staff will evaluate air quality impacts from construction and operation of the station in Chapters 4 and 5, respectively, of the EIS. This evaluation will include assessment of potential equipment operation and dust control measures that may be used to reduce emissions.*

D.2.7 Comments Concerning Geology

Comment: Subsidence is a shifting downward of the earth's surface. Causes of subsidence include depleted groundwater, mining, natural gas and oil extraction. What impacts are there from existing industries that put the area at risk? What landfills are still in existence that could contaminate cooling water? Will local oil and gas operations impact the plant site or vice versa? (**0019-22** [Hadden, Karen])

Response: *Geologic impacts on the proposed facility from off-site actions are within the scope of the safety analysis and will be addressed in the (final safety analysis report) (FSAR) issued and maintained by the applicant and in the SER issued by the NRC. The topic of subsidence and the potential impact on the proposed facility will be addressed in Section 2.5 of the FSAR. This portion of the comment is out of scope with regard to the EIS. The impacts of non-plant discharges to water bodies used for Unit 3 and 4 makeup water will be addressed in the EIS, as will cumulative impacts of Unit 3 and 4 water use and discharges on local and regional water resources.*

Comment: Additional analysis should be undertaken to determine the long-term viability of the Squaw Creek Reservoir retention structure under various scenarios including seismic events, protracted drought and abandonment by the licensee. (**0022-9** [Hadden, Karen])

Response: *The availability of water for Unit 3 and 4 operations and its potential impact on water availability for Unit 1 and 2 operations will be addressed in the EIS. Seismic hazards are outside of the scope of the environmental review. As part of the NRC's site safety review, the staff considers whether, taking into consideration the site criteria in 10 CFR Part 100 and information provided by the applicant, a proposed reactor or reactors can be constructed and operated without undue risk to the health and safety of the public. Abandonment of Squaw Creek Dam by the licensee is outside the scope of the EIS, but would be regulated by the Texas Commission on Environmental Quality (TCEQ) under Title 30 of the Texas Administrative Code, Chapter 299, and would be addressed by State and Federal regulations governing decommissioning and operating license termination for the nuclear plant.*

D.2.8 Comments Concerning Hydrology - Surface Water

Comment: my question relates to the water requirement. I know from experience that when the Comanche peak reservoir gets low, they drain Lake Granbury to make up the difference. I've seen our lake drop over a foot and a half in less than a week during severe drought conditions. This combined with Brazos River Authorities recent decision to sell millions of gallons of water to the natural gas industry looks like it can form a perfect storm to drain our lake during these times of drought. (**0008-1** [Stamler, Richard])

Comment: We need to look closely at water that would be used. I've looked into the license application and found that each reactor, and there's two, would use over 30,000 gallons of water every single minute. And that's huge. And the acre-feet per year are also extensive. There are some diagrams and some facts and figures that we'll be glad to get to you. (**0016-23** [Hadden, Karen])

Comment: And, you know, even our lake—we'll talk about our lake. Granbury is built on a lake community. The whole community, we're lucky, because our water is used to cool those reactors. Because of that, we're not a constant-level lake with BRA, but because of that reason, our lake always will have access to water. (**0016-28** [Berry, Steve])

Comment: I think we've barely begun to look at the water quantity and quality issues here, but I do find it interesting the reminder that the lake is a guaranteed constant-level lake. Well, what do you think that does to everybody else down river? (**0016-42** [Burnam, Lon])

Comment: It's been mentioned about the water flow down the Brazos River. In the—every Thursday in the Fort Worth paper, it tells how much low the lakes are and the water flow. The last—on the first of this year, the PK, where this water comes from and where it would have to be released from if it came here, was 2-1/2 foot low, and the floatation was below minimum. So

if this—if y'all's lake here and your river needs more water, you're going to have to find someplace else to get it.

Granbury was also 2-1/4 foot low.. It was below minimum floatation, and the water flow was 30 cubic feet per second. And Whitney is 20 [cubic] feet per second. Sounds like the river is drying up. Their floatation is also below minimum. Whitney was 9-3/4 foot low.

(**0016-62** [Kinzie, W.T.])

Comment: The water is the biggest issue of all, I would think, because there's so much a demand for it. And if this plant takes more water than it's already taking, then, of course, they have to release more water from the Brazos River Authority. However, when they release this water, the plant takes the water, and that leaves nothing coming down the river, the Brazos River. (**0016-63** [Cathey, Jack])

Comment: So the people here may have to make a choice between, what it said in the paper, $22 billion in the economic impact and how good that's going to do you when you have no drinking water. And that problem is hitting the Dallas-Fort Worth area also.

Lon, you probably know the more specifics on the Dallas-Fort Worth area trying to have another lake or two built, reservoirs for drinking water? And the people in the local areas didn't want their land flooded to make a lake, so it's not going to happen. So Fort Worth and Dallas are trying to get other places for their drinking water. And it's getting to them to where they're not so much worried about their electricity and where it comes from, nuclear power or gas. They're worried about water. (**0016-68** [Kinzie, W.T.])

Comment: our water which we use for drinking water and for recreation, will also be under pressure. So, we have to be very careful, as many have already stated, about the water. (**0016-79** [Rosenfeld, Joshua])

Comment: how will the use of the water affect the run of the river water needed for environmental flows? (**0017-41** [Rooke, Molly])

Comment: if global warming, climate change is occurring, and as severe as we anticipate, will there be enough water for cooling decline, with a 35 percent decrease, when it occurs, in river flows? (**0017-42** [Rooke, Molly])

Comment: Waste of water. (**0017-66** [Sanders, Jan])

Comment: Water; we need to be conserving water. Not developing an energy form that is going to soak it up. We need it for our plants, for our agriculture. We need it to keep on cooling the two reactors that we already have, not building two more. (**0017-72** [Sanders, Jan])

Comment: it is now being predicted that the Southwestern part of the United States will be suffering from a permanent drought for many years. We already see that water is a shortage of water is a critical issue in this state, and will continue to be. (**0017-76** [Stuard, Gary])

Comment: Water flow from Granbury Lake needs to be looked at. (**0018-4** [Cathey, Jack])

Comment: If global warming is occurring and as severe as scientists predict will there be enough cool water to operate the reactors safely? The EIS needs to include analysis based on input from global warming scientists. (**0019-16** [Hadden, Karen])

Comment: In drought conditions, will there be enough water for cities, businesses, farms and ranches if two nuclear reactors are built? (**0019-17** [Hadden, Karen])

Comment: Every minute 31,341 gallons of makeup water from Lake Granbury would be needed for each reactor. (from Environmental report 3.3-5) "Makeup water" replaces the water lost to evaporation and the water called "blowdown" would be returned to Lake Granbury. (**0019-31** [Hadden, Karen])

Comment: This year was one of the worst for water availability that I have seen in the past 31 years. The lake has been sustained at 2.5 feet down from normal levels for most of 2008 and now going into 2009. My family hasn't been able to use the lake for skiing for most of this time. Not being able to use the lake as intended is probably due to a general lack of rain. The increase in water consumption from the lake, authorized by the BRA, hasn't helped the situation. We may be looking at decreased lake levels for years to come due to global warming.

There was an article in the Hood County News that was entitled "NUCLEAR: Lake Granbury water will cool the units". This is in reference to our water being taken to cool two new reactors. There are two points were questions should be asked. Since the conservation pool level is at 693 ft. above mean sea level and the minimum operating elevation is at 675 ft., (a difference of 18 ft.) and Luminant is still in negotiation with the BRA on releasing 75,000 acre feet of water that will help keep Granbury at a usable level and construction is proposed to start late in 2009, then where is the assurance to the people of Granbury that our lake will be usable in the future. Negotiations are not complete, and prevailing rain is not looking good. Is the BRA going to cripple Possum Kingdom Lake to save Lake Granbury? (**0020-1** [Bernier, Jim])

Comment: Global warming and its impacts on rainfall are better understood now and must be considered in the context of determining whether adequate water resources will be available for nuclear plant operations. It is clear that nuclear plants require enormous amounts of water for operations. In fact, the environmental report states that 30,000 gallons of water are needed for each reactor every minute, and shows in Figure 2.3-30 that approximately two-thirds of this water would evaporate. It is also clear, based on the Comanche Peak environmental report, that the proponents of the plant assume that there will be adequate water resources for purposes of plant operations associated with Comanche Peak Units 3 and 4. However, impacts from global warming will include protracted drought that may seriously compromise water resources required for plant operations. (**0022-55** [Hadden, Karen])

Comment: Expanded use of nuclear power in North Texas assumes that there will be an adequate supply of fresh water for purposes of plant operations. This assumption is faulty because of the failure of the Comanche Peak environmental report to analyze impacts of global warming on rainfall and the hydrological cycle. (**0022-6** [Hadden, Karen])

Comment: Future demands on water use should be evaluated. How will CPNPP interact with the surrounding area? For example, investigate interactions with activities related to the Barnett Shale as well as municipal and agricultural water use. A citation from the Texas Water Development Board (TWDB) indicates uncertainty as to whether all supplies indicated in the ER can be obtained. (**0027-12** [Osowski Morgan, Sharon L.])

Comment: The Environmental Report is confusing regarding water uses from sources other than the SCR. For example, p. 2.4-21 indicates that CPNPP is authorized to use 48,300 acre-feet from Lake Granbury each year, but 45,826 was transported in 2006. This seems to indicate that CPNPP exceeded their authorized use. Also, it is not clear why Lake Granbury is used instead of SCR. Please clarify the water uses; perhaps a matrix indicating water intake and discharge, with amounts, etc. would be helpful. (**0027-13** [Osowski Morgan, Sharon L.])

Comment: According to the ER, the estimated water withdrawal for the operation of CPNPP Units 3 and 4 from Lake Granbury is 63,550 gpm (91,512,000 gpd) during maximum operations.

The water discharge rate to Lake Granbury during maximum operations, including loss estimates is estimated at 24,876 gpm (35,821,440 gpd). Consumptive water use for Units 3 and 4 is estimated at 55,690,560 gallons per day. Where are the 55 million gallons of water going each day? (**0027-14** [Osowski Morgan, Sharon L.])

Comment: 100,000 acre feet per year gross water allocation for two new reactors is excessive considering Lake Granbury???s 130,000 gross acre foot pool, and the current (and increasing) contractual obligations for water usage relative to this pool. (**0028-1** [Inge, Charles and Dominique])

Comment: Vast quantities of increasingly precious water would be consumed (**0030-5** [Hadden, Karen])

Comment: The projected amount of water required for the cooling system is unacceptable and risky, to say the least. We are currently facing a water crisis not only in this area but all of Texas. Long range projections indicate a likely increase in drought conditions due to climate change. The continuing, rampant development of this area, along with the Barnett Shale industry, has already pushed the use of our existing water resources to dangerous limits. (**0031-2** [Gentling, Suzanne])

Comment: The application assumes that plenty of water will be available at Squaw Reservoir utilizing a complex pipeline scheme. The EIS must address short and long-term climate change and the resulting hydrological balance. Significant scholarly work now concludes that central north Texas will likely be drier, with less rainfall, putting the plant's expected water use in jeopardy. (**0032-5** [Reed, Cyrus])

Comment: The EIS should also analyze the loss of water to the Brazos River System ??? including the Paluxy River, Whitney Lake, Lake Granbury and Possum Kingdom, as well as the bays downstream, and their likely hydrological and ecological impacts. (**0032-6** [Reed, Cyrus])

Response: *The construction and operation of a nuclear plant involves the consumption of water. The staff will independently assess the impact of these consumptive water losses on the sustainability of both the local and regional water resources. This assessment will consider both current and future conditions, including changes in water demands to serve the needs of the future population and changes in water supply resulting from climate variability and climate change. While NRC does not regulate or manage water resources, it does have the responsibility under NEPA to assess and disclose the impacts of the proposed action on water resources. The staff's assessment of the impacts on the sustainability of water resources will be presented in Chapters 4 and 5 of the EIS for construction and operation, respectively.*

Comment: Need study of impact "down" river. (**0018-6** [Cathey, Jack])

Comment: Biocide, algaecide, pH adjuster, corrosion inhibitor and silt dispersant would be injected into water drawn from Lake Granbury, and only a fraction of the "blowdown" water would be treated before being returned to the lake or sent to an evaporation pond. Why wouldn't all of the water be treated before being returned to the lake? (**0019-32** [Hadden, Karen])

Comment: My primary environmental impact concerns deal with water. Specifically:

- The amount of surface water required for cooling. (33 billion gallon/year)
- The amount of evaporation rate, taking 18 billions gallons per year out of the current fresh water system
- The impact on the immediate environment having 18 billion gallons of water vapor released yearly

- The impact on the water flow in the Brazos River downstream of Lake Granbury
- The quality of the water in Lake Granbury

(**0021-1** [Richardson, Karen])

Comment: Global warming and its impacts on rainfall are better understood now and must be considered in the context of determining whether adequate water resources will be available for nuclear plant operations. It is clear that nuclear plants require enormous amounts of water for operations. In fact, the environmental report states that 30,000 gallons of water are needed for each reactor every minute, and shows in Figure 2.3-30 that approximately two-thirds of this water would evaporate. It is also clear, based on the Comanche Peak environmental report, that the proponents of the plant assume that there will be adequate water resources for purposes of plant operations associated with Comanche Peak Units 3 and 4. However, impacts from global warming will include protracted drought that may seriously compromise water resources required for plant operations.

The compromised water resources should be considered both from a quantitative perspective and a temperature sensitive analysis since plant operations are dependent on a narrow band of water temperatures. (**0022-10** [Hadden, Karen])

Comment: The study should also include an analysis of pollution impacts downstream from water contaminated by chemical treatment such as biocides, algaecides, pH adjustors, corrosion inhibitor and silt dispersant chemicals injected at the reactor site as well as chlorine, salts and non-radioactive effluent. The differential impact of treatment of 100 percent of the water versus the lesser amount of treatment proposed by the applicant should be considered. (**0022-20** [Hadden, Karen])

Comment: The EIS should also consider whether regional waterways will be impacted in terms of water quantity and quality by the use of vast quantities of water for Units 3 and 4, including Lake Granbury, the Brazos River, the Paluxy River, Whitney Lake, a popular fishing lake, and popular recreational areas such as Possum Kingdom. According to the Texas Parks and Wildlife Department web site, the drinking water at Possum Kingdom State Park is currently non-potable due to a high salt content, and visitors must bring their own water for consumption. The potential to increase salt content of waterways in the region by further drawdown of water levels, including impacts to the local aquifer and drinking wells should be examined thoroughly in the EIS. (**0022-22** [Hadden, Karen])

Comment: Questions of the water quality and quantity of "blowdown" water returned to the lake need more thorough evaluation (volume; flow; temperature; salinity; pollutants). (**0028-2** [Inge, Charles and Dominique])

Response: *The construction and operation of a nuclear plant involves the consumption of water and some discharges to nearby water bodies. The Clean Water Act designated the EPA as the Federal agency with responsibility for effluent discharges to the nation's waters. While the NRC does not regulate effluents other than radiological effluents, it does have the responsibility under NEPA to assess and disclose the expected impacts of the proposed action on water quality throughout the plant's life. That assessment will include consideration of salts concentrated in the blowdown system and chemicals injected into raw water systems. Neither does NRC regulate or manage water resources, but it does have the responsibility under NEPA to assess and disclose the impacts of the proposed action on water resources. The staff's assessment will independently determine if the designated uses of the local and regional water supplies are jeopardized by the construction or operation of a nuclear plant at the proposed site, and will independently assess the impact of any consumptive water losses on the sustainability*

of both the local and regional water resources. This assessment will consider both current and future conditions, including changes in water demands to serve the needs of the future population and changes in water supply resulting from climate variability and climate change. The staff's assessments of the nonradiological impacts to water quality and impacts to water supply sustainability will be presented in Chapters 4 and 5 of the EIS for construction and operation, respectively.

Comment: I do have significant questions about water quantity and 'water quality and the impacts of taking that much water from Lake Granbury downstream. And I would urge you, as part of your assessment, to also look at climate models and weather, given what we think we know about climate change, how that will change the water balances in Lake Granbury. (**0016-52** [Reed, Cyrus])

Response: *The construction and operation of a nuclear plant involves the consumption of water and some discharges to nearby water bodies. The Clean Water Act designated the EPA as the Federal agency with responsibility for effluent discharges to the nation's waters. While the NRC does not regulate effluents other than radiological effluents, it does have the responsibility under NEPA to assess and disclose the expected impacts of the proposed action on water quality throughout the plant's life. Neither does NRC regulate or manage water resources, but it does have the responsibility under NEPA to assess and disclose the impacts of the proposed action on water resources. The staff's assessment will independently determine if the designated uses of the local and regional water supplies are jeopardized by the construction or operation of a nuclear plant at the proposed site, and will independently assess the impact of any consumptive water losses on the sustainability of both the local and regional water resources. This assessment will consider both current and future conditions, including changes in water demands to serve the needs of the future population and changes in water supply resulting from climate variability and climate change. The staff's assessments of the nonradiological impacts to water quality and impacts to water supply sustainability will be presented in Sections 4 and 5 of the EIS for construction and operation, respectively.*

Comment: Section 6.2.5: This section indicates that within the CPNPP environs, there have been detections of tritium above lower limits of detection in Squaw Creek Reservoir (SCR), and those detections have been well below the reporting limit (30,000 pCi/l). Please clarify whether this means that there have been no detections of tritium in water in Squaw Creek below the dam. Figure 6.2-1 indicates the presence of a surface water collection site on Squaw Creek, although Table 6.2-3 does not list it. It is important to characterize tritium levels in downstream waters as well as the SCR. It would be helpful if the EIS clarified what radiologicals are being collected in Squaw Creek below the dam and provide any data available. (**0027-9** [Osowski Morgan, Sharon L.])

Response: *Staff will clarify the availability of tritium monitoring in and downstream of SCR and will include an assessment of available information in the EIS.*

D.2.9 Comments Concerning Hydrology - Groundwater

Comment: [if global warming, climate change is occurring, and as severe as we anticipate] and so then, will the ground water decline? (**0017-43** [Rooke, Molly])

Response: *The construction and operation of a nuclear plant involves the consumption of water. The staff will independently assess the impact of these consumptive water losses on the sustainability of both the local and regional water resources. This assessment will consider both current and future conditions, including changes in water demands to serve the needs of the future population and changes in water supply resulting from climate variability and climate*

change. While NRC does not regulate or manage water resources, it does have the responsibility under NEPA to assess and disclose the impacts of the proposed action on water resources. The staff's assessment of the impacts on the sustainability of water resources will be presented in Chapters 4 and 5 of the EIS for construction and operation, respectively.

Comment: will it need any groundwater for make up water. (**0017-40** [Rooke, Molly])

Response: *The design of Units 3 and 4 as presented in the license application does not require the use of groundwater for operation.*

Comment: The aquifer below Kames County has been contaminated by uranium mill tailings. The Department of Energy estimates clean up will cost $348 million but, according to a Texas Department of Agriculture report, will not implement the clean up plan. (**0019-28** [Hadden, Karen])

Response: *The issue raised in the comment is outside the scope of the environmental review. There is no evidence of hydrologic connection between Comanche Peak Nuclear Plant surface or subsurface hydrology and that of the aquifer below Karnes County, TX.*

Comment: So, you know, and then recently most of y'all have heard about the Barnett shale in the Tarrant County and Dallas County area, and y'all may have some of it here too. One of the things they do is drill wells, water wells, to get their water from to drill the gas wells, In Parker County, the local farmers, their water wells are drying up. (**0016-66** [Kinzie, W.T.])

Response: *Local and regional uses of groundwater will be considered in Section 2.3.2 of the EIS.*

Comment: The EIS should examine the impacts of vast water consumption on the aquifer and the water table levels. Will wells be sucked dry? (**0019-13** [Hadden, Karen])

Comment: [What are] The indirect impacts on the major aquifers in the region [? Specifically, the]---Paluxy and Trinity. (**0021-2** [Richardson, Karen])

Response: *The applicant is proposing to use less groundwater in the future than what is currently used. The impacts of the proposed groundwater use will be addressed in the Section 5.2 of the EIS.*

Comment: you have mentioned ground water (**0017-35** [Cohn, Ann])

Comment: How high is the risk of contamination of the aquifer and other waterways through radioactive leaks? Could the problem ever be remediated if radioactive or chemical leaks occurred? (**0019-14** [Hadden, Karen])

Comment: The hydrogeological characterization appears adequate for a fundamental understanding of the site (future reactors 3 and 4). Information contained in the ER includes subsurface geology, groundwater occurrence, water levels, flow direction and velocity, and other related information. However, the characterization may not be adequate for detailed analysis of complex groundwater flow conditions and mechanisms including complex fracture flow, groundwater flow along bedding planes, preferential pathways, and other flow complications. (**0027-15** [Osowski Morgan, Sharon L.])

Comment: The ER discusses packer tests and concludes the Glen Rose Formation and sections of the Twin Mountain Formation are impermeable. The Twin Mountain Formation is a highly productive aquifer around the site including numerous public supply wells. It is recommended that additional information be provided to substantiate the claim that these are indeed impermeable.

The ER does not include an individual section indicating the risk of groundwater contamination nor was a methodology for evaluating groundwater risk identified. This information should be part of the conceptual site model. To evaluate site impacts from future groundwater production, it will be necessary to develop a sub-regional scale groundwater model to predict how increased/decreased uses could affect units 3 and 4.

Groundwater flow velocity has been estimated using input from site-specific hydrologic test results. However, if groundwater flow directions or gradients are found to be different than reported, or change over time, the effectiveness of the well network will need to be reevaluated. It is reasonable to expect that additional wells will need to be installed as more water level data become available and flow directions are refined over time.

Groundwater monitoring should include monitoring for contaminants and mixed waste from these sources: non-radioactive solid, liquid, and gaseous waste streams associated with the construction and operation of CPNPP Units 3 and 4, chlorinated fluorocarbons (CFCs), solvents, and used oil. Other sources may include liquid scintillation fluids, other types of organic materials, and metals such as lead and chromium, and aqueous corrosives. (**0027-16** [Osowski Morgan, Sharon L.])

Response: *The risk of contamination of aquifers and other waterways will be addressed in the EIS. Although NRC regulations require licensees to make surveys, as necessary, to evaluate the potential hazard of radioactive material released in order to assess doses to members of the public and workers, recent discoveries of releases at other plants indicate that undetected leakage to groundwater from facility structures, systems, or components can occur, resulting in unmonitored and unassessed exposure pathways to members of the public. The NRC has identified several instances of unintended tritium releases, and all available information shows no threat to the public. Nonetheless, the NRC is inspecting each of these events to identify the cause, verify the impact on public health and safety, and review licensee plans to remediate the event. The NRC also established a lessons learned task force to address inadvertent, unmonitored liquid radioactive releases from U.S. commercial nuclear power plants. This task force reviewed previous incidents to identify lessons learned from these events and to determine what, if any, changes are needed to the regulatory program. Detailed information and updates on these liquid releases can be found on the NRC public website at http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.htm.*

D.2.10 Comments Concerning Ecology — Terrestrial

Comment: When the first two reactors were built the sky glow light pollution went from zero to off the scale in the direction of the reactors. The latest round of fixture modernization reduced the sky glow by about 40 percent. Our Concern is the two new units will increase the sky glow beyond what it was after initial construction. We would like to see a comprehensive relighting program for all four reactors, using the latest technology zero cut-off fixtures, such as those approved by the International Dark-sky Association in order to achieve an overall reduced light pollution impact than what now exists. www.darksky.org (**0024-2** [Miller, Russ])

Response: *Potential impacts on wildlife of light pollution from operation of the proposed two new nuclear reactor units will be addressed in Chapter 5 of the EIS.*

Comment: The environmental report indicates that Squaw Creek Reservoir will continue to be the receiving body of water for various discharges from Comanche Peak Units 3 and 4. The Environmental Report concedes that radioactive particulate matter released to Squaw Creek Reservoir in liquid effluents will be deposited into the sediment layer of the reservoir bottom and remain there indefinitely. Comanche Peak NPP Environmental Report, p.5.11-3. In the event of

a protracted drought, and inadequate flow into Squaw Creek Reservoir. The sediment layer could become exposed and, if adequately deliquified, would become dust and subject to transport by wind with clear public health and environmental consequences.

Therefore, it is crucial that the EIS include a complete radiological profile of the existing sediment in Squaw Creek Reservoir and an analysis of the cumulative radiological impacts expected from operations on it from Units 3 and 4. This analysis is required in order to fully gauge the environmental and public health impacts from the use of the earthen Squaw Creek Reservoir as a discharge point for radioactive effluent from Comanche Peak Units 3 and 4. Part of this analysis should be an assumption that the Squaw Creek Reservoir dam will at some point fail and release the sediment that is burdened by radioactive particulates. Downstream impacts on water quality, use, and impacts on mortality and morbidity must be a part of a proper EIS. The Squaw Creek Reservoir dam should also be analyzed for structural integrity. Protracted drought, seismic activity, or other natural events have the potential to weaken the dam and if a failure of the structure occurs radioactive sediment could be carried downstream with significant potential for environmental and public health impacts. (**0022-14** [Hadden, Karen])

Response: *The staff will evaluate the radiological impacts of normal operation of the proposed new reactor units in Chapter 5 and the cumulative impacts of the new units in conjunction with existing Units 1 and 2 in Chapter 7 of the EIS. Potential effects on both human health and ecological receptors will be assessed based on appropriate exposure scenarios.*

Comment: The EIS should discuss the location, amount, type, and quality of wetland acreage in the study area, and how wetlands were delineated (i.e., COE, contractor, lead agency, etc.). A draft mitigation plan to compensate for predicted wetland losses should be developed during the NEPA process. Feasible alternatives that avoid wetland impacts should be consistent with the 404(b)(I) guidelines of the Clean Water Act. (**0027-7** [Osowski Morgan, Sharon L.])

Response: *The NRC staff will describe wetlands potentially impacted by the project in Section 2.3.4 of the EIS. The potential impacts to these wetlands will be evaluated in Sections 4.3 and 5.3 of the EIS. Mitigation will be considered in Sections 4.3.3.5 and 5.3.3.5.*

Comment: Biodiversity is defined as the variety of plants and animals (biota) of a site or region, and is typically measured by the number of different species and number of individuals per species. In general, the more diverse an area is (number of habitat types and animal inhabitants) and the better represented these components are (population counts), the more rigorous (resistant, undisturbed, natural, healthy) the area is considered. Specifically, sustainable (or self managed) native biodiversity is preferred compared to an increase in the number of invasive, edge, or opportunistic species. Invasive, edge, or opportunistic species may compete with native species and have the potential to dramatically change local ecosystems so that they are not sustainable. Implementing BMPs or other measures to reduce invasive species establishment should be discussed (Executive Order 13112).
The NEPA document should discuss native biodiversity aspects of the proposal as appropriate. For example, will the project increase, restore, or decrease native biodiversity of the area or region? Coordination with the U.S. Fish and Wildlife Service (FWS), and Texas Parks and Wildlife Department is recommended regarding the design of any project mitigation areas to enhance or restore biodiversity. (**0027-22** [Osowski Morgan, Sharon L.])

Response: *The NRC staff will consider and describe biodiversity in the project area in Section 2.4 of the EIS. Impacts to biodiversity, and mitigation measures as appropriate, will be discussed in Sections 4.3 and 5.3.*

Comment: The FWS is the responsible agency for endangered species compliance, so EPA defers to FWS regarding assessments of Federally-protected endangered species. However, the NEPA document should discuss survey results and adjust the proposed alignment as appropriate. Early coordination with FWS is recommended. (**0027-23** [Osowski Morgan, Sharon L.])

Response: *The NRC staff has begun early consultation with the U.S. Fish and Wildlife Service (FWS) concerning potential project impacts on federally protected threatened and endangered species. NRC's consultations with FWS regarding threatened and endangered species will be discussed in Chapter 4 of the EIS.*

Comment: Chapter 2 -Existing Environment

Section 2.4 of the ER references a List of Somervell County Threatened and Endangered Species to address state-listed threatened or endangered species that may occur at the proposed CPNPP site. The ER failed to include the TPWD Annotated List of Rare Species for Hood County, though it appears that components of the project would occur within Hood County. Additionally, the ER only addressed state-listed threatened or endangered species, but did not address all species included on the Annotated County List of Rare Species. Those species on the list with a blank under federal or state status are tracked by TPWD and considered rare. Rare species are of conservation concern by TPWD within Texas, and efforts to minimize impact to such species are encouraged to help prevent future listing of the species.

The most up-to-date TPWD Annotated County Lists of Rare Species are available at http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx. The lists provide information regarding rare species that have potential to occur within each county. Rare species could potentially be impacted if suitable habitat is present at or near the project site. (**0029-2**[Boydston, Kathy])

Comment: The EIS should address all species on the Hood and Somervell County Lists including rare, threatened, and endangered species. The project site should be assessed to determine if suitable habitat for any of these species occurs within or near the proposed area and to determine if construction and operation of the project would impact the species or habitats. (**0029-2** [Boydston, Kathy])

Response: *The NRC staff will address potential impacts to terrestrial and aquatic biota, including State-listed threatened and endangered species, and suitable habitat potentially on the project site, in Sections 4.3 and 5.3 of the EIS.*

Comment: Wooded riparian corridors along streams generally provide nesting habitat for birds, soil stabilization for enhanced water quality, and food, cover, and travel corridors for wildlife. Riparian habitat is a high priority habitat type for conservation by TPWD across the state. Comment: The project should be designed and constructed to avoid disturbance to stream and riparian areas. (**0029-6** [Boydston, Kathy])

Response: *The NRC staff will address potential impacts to stream and riparian areas, and mitigation measures as appropriate, in Sections 4.3 and 5.3 of the EIS.*

Comment: The proposed project is situated in the Cross Timbers and Prairies Ecoregion of Texas which has generally supported native grassland valley communities with higher wooded divides. Native grassland communities have become increasingly rare in Texas due to historical conversion to row crop agriculture, overgrazing, invasion by woody species from a lack of fire on the landscape, conversion to non-native pastures and hayland, and other development associated with humans. Native grasslands are an important resource for wildlife adapted to

grassland environments. Population declines of many grassland birds are attributed to this loss of habitat. (**0029-7** [Boydston, Kathy])

Comment: The location of facilities should be sited to avoid native grassland communities and placed in areas of previous disturbance or in areas previously converted to non-native pasture. (**0029-7** [Boydston, Kathy])

Response: *The NRC staff will address potential impacts to native grassland communities, and mitigation measures as appropriate, in Sections 4.3 and 5.3 of the EIS.*

Comment: Because native vegetation is adapted to the soil and climate of the area, it usually requires less maintenance and watering than introduced species. Water conservation is warranted for the relatively dry climate of the project area. The disease tolerance of native vegetation provides longevity to the landscape without high cost. Mature trees and shrubs provide nesting, loafing, and forage habitat for birds and other wildlife. (**0029-8** [Boydston, Kathy])

Comment: The project site should be carefully planned and constructed to avoid and preserve existing native vegetation. To eliminate or reduce the need for permanent irrigation, native trees, shrubs, grasses, and forbs should be incorporated into the landscape plan. The following websites describe appropriate native vegetation for the project area, http://www.tpwd.state.tx.us/huntwild/wild/wildscapes/ and http://tpid. tpwd.state.tx.us/. (**0029-8** [Boydston, Kathy])

Response: *The NRC staff will discuss preservation of native vegetation and use of native species for revegetation in Sections 4.3 and 5.3 of the EIS.*

Comment: The revegetation and maintenance plan for temporary disturbed areas should focus on re-establishing native cover through natural regeneration and/or planting and should be developed in coordination with TPWD. Plans for natural regeneration and/or revegetation of disturbed areas should include measures to treat and control undesirable and/or invasive species and should include management practices to benefit wildlife. (**0029-9** [Boydston, Kathy])

Response: *The NRC staff will discuss preservation of native vegetation, use of native species for revegetation, and consideration of control of invasive species in Sections 4.3 and 5.3 of the EIS.*

Comment: The ER did not address the potential for the project site to contain rare plant species or sensitive plant communities that are tracked by TPWD and/or included on our annotated county lists of rare species; therefore impacts to those species or communities were not addressed. (**0029-10** [Boydston, Kathy])

Comment: Sites should be surveyed to identify potential impacts to rare plant species and natural communities identified by TPWD. (**0029-10** [Boydston, Kathy])

Response: *The NRC staff will describe rare and sensitive plant species that potentially occur on the project site in Section 2.4. The potential impacts to these species, based on the likelihood of such species to be present, and potential mitigation measures, will be evaluated in Sections 4.3 and 5.3 of the EIS.*

Comment: Protecting vegetated buffers is discussed in Section 4.3.1.1, though no vegetated buffer areas are specifically identified in the ER. (**0029-11** [Boydston, Kathy])

Comment: The vegetated buffer areas that would receive protection need to be identified and mapped. (**0029-11** [Boydston, Kathy])

Response: *The NRC staff will discuss locations and preservation of vegetative buffer areas in Sections 4.3 and 5.3 of the EIS.*

Comment: Figure 4.2-1 indicates that the area immediately adjacent to the wetland identified along SCR on the cooling tower peninsula is slated as a construction area. During the February 2,2009 site visit, Luminant noted that a buffer area would be placed around the wetland. It is unclear the amount of wooded area on the slopes of the draw that would be excluded from construction activities to serve as the buffer area to the wetland. (**0029-12** [Boydston, Kathy])

Comment: A buffer area developed in coordination with TPWD should be established along the slopes to protect water quality, provide wildlife habitat, and shelter the wetland located down slope at this location. (**0029-12** [Boydston, Kathy])

Response: *The NRC staff will address wetland mitigation, including provision of buffer areas, in Chapters 4 and 5 of the EIS.*

Comment: Section 4.3.1 of the ER indicates that the disturbed area is equivalent to 275 acres and 384 acres, for the CPNPP and the BDTF, respectively. The ER does not distinguish between permanent and temporary disturbance areas per the CPNPP site and the BDTF. The 275-acre CPNPP site is the only area showing impacts by cover type, but the amount of each cover type lost to permanent construction is not provided. No impact assessment per cover type is provided for the 384-acre BDTF, the pipelines, the power transmission lines, or the intake and return structure areas. (**0029-13** [Boydston, Kathy])

Comment: The permanent and temporary disturbances should be revealed per cover type (grassland, scrub brush, disturbed, juniper woodland, wetland, hardwood forest, etc.) per facility (CPNPP, BDTF, power transmission lines, pipelines, and intake and return structure areas). Total temporary and permanent impacts per cover type should be provided for the proposed project, inclusive of the CPNPP, the BDTF, the pipelines, the transmission lines, and the intake and discharge structure areas. This type data can easily be presented in table form. (**0029-13** [Boydston, Kathy])

Response: *The NRC staff will distinguish between permanent and temporary disturbance areas on the project site, including the area of the proposed Blowdown Treatment Facility, as well as assessing habitat cover types in the entire project area. Ecological impacts within the entire project area will be evaluated in Sections 4.3 and 5.3.*

Comment: Construction crews should be informed of the rare species in the project counties and should avoid disturbance to sensitive species if encountered during construction. Only personnel with a TPWD scientific collection permit are allowed to handle and move state listed species. For further information on the required permit please contact Chris Maldonado at (512) 389-4647. (**0029-14** [Boydston, Kathy])

Response: *The NRC staff will describe mitigation measures for rare species in Sections 4.3 and 5.3. Should mitigation include handling and movement of State-listed species, all legal and regulatory requirements would be met.*

Comment: The ER did not address the potential for the project site to contain rare species that are tracked by TPWD and included on our annotated county lists of rare species; therefore impacts to those species were not addressed. The ER does not include a detailed evaluation of impacts associated with the BDTF construction. (**0029-15** [Boydston, Kathy])

Comment: Site surveys of the CPNPP and BDTF sites for rare species with potential to occur within the area should be conducted prior to construction. Occurrences should be avoided or a mitigation plan developed in coordination with TPWD. (**0029-15** [Boydston, Kathy])

Response: *The NRC staff will describe rare and sensitive plant species that potentially occur on the project site, including the Blowdown Treatment Facility, in Section 2.4. The potential impacts to these species, based on the likelihood for such species to be present, and potential mitigation measures, will be evaluated in Sections 4.3 and 5.3 of the EIS.*

Comment: It is not apparent that Chapter 5 of the ER addresses impacts to wildlife associated with operation of the BDTF. The proposed site for the BDTF would include a large area of ponds that may be placed near and/or under existing power transmission lines. The BDTF area is also in close proximity to a large reservoir. Therefore, there is increased potential for use of the area near the transmission lines by migratory and resident waterfowl and shorebirds once the BDTF ponds are installed. The attractiveness of the BDTF ponds to birds would increase the potential for bird collision with the transmission lines. (**0029-21** [Boydston, Kathy])

Comment: Potential collision impacts to migratory and resident birds as a result of constructing large ponds near and/or under transmission lines should be addressed. Measures to avoid or mitigate potential impacts should be developed in coordination with TPWD, such as transmission line marking, relocation of the proposed BDTF ponds, and pre-and post-construction monitoring. (**0029-21** [Boydston, Kathy])

Response: *The NRC staff will describe potential impacts to wildlife from operation of the proposed Blowdown Treatment Facility, and potential mitigation measures, in Sections 4.3 and 5.3 of the EIS.*

Comment: Any potential dangers to wildlife as a result of exposure to the BDTF ponds should also be made apparent. Significant impacts should be mitigated. (**0029-22** [Boydston, Kathy])

Response: *The NRC staff will describe potential impacts to wildlife from operation of the proposed Blowdown Treatment Facility, including associated ponds, and potential mitigation measures, in Sections 4.3 and 5.3 of the EIS.*

Comment: Comment: TPWD is concerned that high salinity reject water (brine) from any desalination process be disposed of in a manner that does not impact fish and wildlife resources. TPWD may offer additional comment when Luminant provides greater detail of proposed operations of the BDTF. (**0029-23** [Boydston, Kathy])

Response: *The NRC staff notes the comment.*

Comment: Because the CPNPP boundary encompasses approximately 7,950 acres inclusive of Squaw Creek Reservoir and large areas of undeveloped property, there is opportunity for Luminant to develop a working plan for conservation, protection, and management offish and wildlife resources within the CPNPP boundary. An adaptive wildlife management plan should be developed in coordination with TPWD. Suggestions for activities to address in the management plan include, but are not limited to:

- Opening Squaw Creek Reservoir or portions of the reservoir for public fishing
- Creating and maintaining native grassland communities within transmission line ROWs and areas of non-native grasslands
- Creating and protecting riparian corridor habitat
- Developing a grazing management plan for areas leased to livestock

- Developing livestock exclusion areas or rotation plans near ponds to help improve water quality and increase wildlife diversity
- Conducting deer management in areas that are overpopulated
- Monitoring and treatment of invasive or undesirable species (**0029-24** [Boydston, Kathy])

Response: *Creation of an adaptive wildlife plan is outside the scope of this review.*

Comment: Rare Resource Occurrences

To support preparation of the EIS, the NRC has requested information regarding state-listed, proposed, and candidate species and protected habitat that may be in the vicinity of the proposed site, the alternative sites, and the transmission line ROWs.

The ER indicates that three alternative sites and a preferred site were considered for the proposed nuclear power plants. The applicant has not revealed the alternative site locations because they hold the locations as proprietary information. The three alternative sites have been described as occurring A) near the border of Victoria and Calhoun counties, B) near the border of San Augustine and Sabine counties, and C) near the border of McLennan and Limestone counties. Therefore, TPWD must present the data regarding known occurrences of rare resources based on countywide sets of data for two counties per site. TPWD has included a l-mile radius buffer beyond the two counties because including a buffer to a project site is typical practice for Texas Natural Diversity Database (TXNDD) searches. This buffer also encompasses area that may be in a different county, but still within 10 miles of the border of the two given counties. To eliminate bias in the evaluation of site alternatives by the NRC, TPWD is submitting data for the proposed site in the same manner encompassing Hood and Somervell counties and a la-mile radius buffer area.

If the actual locations of the alternative sites are provided to TPWD, then we will provide a less intensive list of TXNDD occurrences to the NRC by site location rather than countywide.

TPWD is also submitting a set of data specific to the proposed site location including occurrences within a l-mile buffer area. This data should be considered when assessing the potential impacts to rare resources if the alternatives analysis of the EIS indicates that the proposed site is adequate as the preferred site. Thus, an appropriate evaluation of impacts to rare resources specific to the preferred site can be conducted.

The ER identifies two new proposed 345-kV transmission line routes requiring new ROW, one extending 45 miles to a substation near Lake Whitney in Bosque County and one extending 17 miles to a switching station near Lake Granbury. There are also two new proposed circuits that will be added to vacant positions on two separate existing 345-kV double lattice steel tower structures, one extending 44.8 miles to a switching station in Tarrant County and one extending 41.6 miles to a switching station in Parker County. TPWD understands that the proposed transmission line ROW routes are preliminary and not final. Therefore, the information provided regarding resources within the vicinity of the two new proposed 345-kV transmission line ROWs will need to be updated and an assessment of potential impacts to rare resources will need to be reevaluated once specific routes are identified.

Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence.

The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in the database does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special s (**0029-25** [Boydston, Kathy])

Response: *The NRC staff notes the comment. Since actual locations of the alternative sites have been provided to Texas Parks and Wildlife Department by NRC, staff notes that scope of the occurrence list will be reduced.*

D.2.11 Comments Concerning Ecology - Aquatic

Comment: I want an honest environmental impact statement on protein sources at the estuary of the Brazos River. We keep, over and over again, putting negative impacts on our ability to produce protein from our coastline. And this is just one more example of that. If the NRC does not do an honest assessment of that, it is not a legitimate planning process. I'd like to see that addressed. (**0016-43** [Burnam, Lon])

Comment: It is about the production of protein at the end of this river stream. We are facing a probably extended drought, and you have got the protection here, because your lake is a guaranteed level. But I want to ask you about Possum Kingdom, which is low already. I want to ask you about maintaining the estuary and the protein production at the end of this assembly line, as it were. (**0017-18** [Burnam, Lon])

Response: *The impact of water withdrawals from and discharges to the Brazos River for operation of the proposed new nuclear units will be evaluated and presented in Chapter 5 of the EIS.*

Comment: I used to go fishing in Squaw Creek. In the local paper, like I said, it always gives the lake levels and the temperature of the waters. Squaw Creek would go -the highest I ever saw it was 104 degrees. And, yes, there would be fish dead. Matter of fact, no matter where I was in the lake, I could always see at least one dead fish, unless I was on the—close to the bank. Then there was a lot of dead fish and a lot of buzzards.

And that may sound kind of funny, but the ones that the dead fish and the maggots and that sort of stuff that the buzzards eat, it kind of went over the spillway. And that might be why these problems with Squaw Creek downstream. And also, when you came over the hill to go down to the boat ramp area, you could smell dead fish.

And it's not as if I was going to eat something I caught out of that lake at that time, but I just went out there to kind of see what kind of deal this is. And I wish I had taken a movie or something to show you, because it would make an effect on your—just the way you think. (**0016-69** [Kinzie, W.T.])

Comment: Discharging "hot" water from Squaw Creek needs to be studied. Loss of fish, turtles, frogs. (**0018-5** [Cathey, Jack])

Response: *The NRC staff will assess potential impacts to aquatic life in Lake Granbury, the Brazos River, and Squaw Creek due to thermal discharge from the proposed new reactor units in Section 5 of the EIS.*

Comment: Need study of impact "down" river. (**0018-7** [Cathey, Jack])

Response: *The NRC staff will assess potential ecological and hydrological impacts in Lake Granbury, the Brazos River, and Squaw Creek Reservoir due to operation of the intake and discharge from the proposed new reactor units in Chapter 5 of the EIS.*

Comment: The adverse effects of elevating water temperatures in our rivers is sacrificing the integrity of these precious ecosystems and harming biological development and survival. This is unacceptable and irresponsible. (**0031-3** [Gentling, Suzanne])

Response: *The NRC staff will assess potential impacts to aquatic life in the Brazos River from thermal discharge of the proposed new reactor units in Chapter 5 of the EIS.*

Comment: The EIS must do a full analysis of how much of each of these contaminants [i.e., biocide, algaecide, pH adjuster, corrosion inhibitor and silt dispersant] would end up in Lake Granbury, how much would migrate into the Brazos River and how much would escape through evaporation. The exact chemical names must be included, not just generic terms such as "biocide." The impacts of exposure of humans, animals and wildlife to these toxic compounds should be analyzed. (**0019-12** [Hadden, Karen])

Comment: The study should also include an analysis of pollution impacts downstream from water contaminated by chemical treatment such as biocides, algaecides, pH adjustors, corrosion inhibitor and silt dispersant chemicals injected at the reactor site as well as chlorine, salts and non-radioactive effluent. The differential impact of treatment of 100 percent of the water versus the lesser amount of treatment proposed by the applicant should be considered. (**0022-18** [Hadden, Karen])

Response: *The staff's assessment of the nonradiological impacts to water quality will be presented in Chapter 5 of the EIS.*

Comment: Global warming and its impacts on rainfall are better understood now and must be considered in the context of determining whether adequate water resources will be available for nuclear plant operations. It is clear that nuclear plants require enormous amounts of water for operations. In fact, the environmental report states that 30,000 gallons of water are needed for each reactor every minute, and shows in Figure 2.3-30 that approximately two-thirds of this water would evaporate. It is also clear, based on the Comanche Peak environmental report, that the proponents of the plant assume that there will be adequate water resources for purposes of plant operations associated with Comanche Peak Units 3 and 4. However, impacts from global warming will include protracted drought that may seriously compromise water resources required for plant operations. The compromised water resources should be considered both from a quantitative perspective and a temperature sensitive analysis since plant operations are dependent on a narrow band of water temperatures. (**0022-11** [Hadden, Karen])

Comment: The EIS should also consider whether regional waterways will be impacted in terms of water quantity and quality by the use of vast quantities of water for Units 3 and 4, including Lake Granbury, the Brazos River, the Paluxy River, Whitney Lake, a popular fishing lake, and popular recreational areas such as Possum Kingdom. According to the Texas Parks and Wildlife Department web site, the drinking water at Possum Kingdom State Park is currently non-potable due to a high salt content, and visitors must bring their own water for consumption. The potential to increase salt content of waterways in the region by further drawdown of water levels, including impacts to the local aquifer and drinking wells should be examined thoroughly in the EIS. Coastal environmental impacts are known to result from alterations of freshwater flow into the Gulf of Mexico, affecting lagoons, estuaries and wetlands, altering salinity patterns, nutrients, dissolved oxygen levels and therefore impacting productivity of coastal plant and

animal populations. The biological impacts must be considered in the EIS including the possibility of eutrophication, productivity and sediment impacts, and potential contamination. (**0022-21** [Hadden, Karen])

Comment: Friends of the Brazos River (FBR) is a non-profit organization with 450 members in the Glen Rose, Granbury, Dallas and Ft. Worth area whose main concern is the ecological integrity of the Brazos between Lakes Granbury and Whitney. In our opinion, the Brazos is an imperiled ecosystem, largely due to the over-allocation of Brazos water by the Brazos River Authority. We are currently working cooperatively with BRA, TCEQ and other state agencies to insure that BRA???s current water right application allows for adequate in stream flows.
It is our understanding that the cooling systems for the additional reactors at Comanche Peak will lose approximately 55,000 acre ft. of Brazos water annually to evaporation. Whereas, we do not oppose the additional reactors. We do oppose the loss of so much Brazos water. (**0025-1** [Lowe, Ed])

Response: *The staff will assess the impact of consumptive water losses related to the proposed action on the sustainability of both local and regional water resources. This assessment will consider both current and future conditions, including changes in water demands to serve the needs of future populations, and changes in water supply resulting from climate variability and climate change. The staff's assessment of impacts on water resources and related ecological impacts will be presented for construction and operation in Chapters 4 and 5 of the EIS, respectively.*

Comment: The environmental report indicates that Squaw Creek Reservoir will continue to be the receiving body of water for various discharges from Comanche Peak Units 3 and 4. The Environmental Report concedes that radioactive particulate matter released to Squaw Creek Reservoir in liquid effluents will be deposited into the sediment layer of the reservoir bottom and remain there indefinitely. Comanche Peak NPP Environmental Report, p.5.11-3. In the event of a protracted drought, and inadequate flow into Squaw Creek Reservoir. The sediment layer could become exposed and, if adequately deliquified, would become dust and subject to transport by wind with clear public health and environmental consequences.

Therefore, it is crucial that the EIS include a complete radiological profile of the existing sediment in Squaw Creek Reservoir and an analysis of the cumulative radiological impacts expected from operations on it from Units 3 and 4. This analysis is required in order to fully gauge the environmental and public health impacts from the use of the earthen Squaw Creek Reservoir as a discharge point for radioactive effluent from Comanche Peak Units 3 and 4. Part of this analysis should be an assumption that the Squaw Creek Reservoir dam will at some point fail and release the sediment that is burdened by radioactive particulates. Downstream impacts on water quality, use, and impacts on mortality and morbidity must be a part of a proper EIS. The Squaw Creek Reservoir dam should also be analyzed for structural integrity. Protracted drought, seismic activity, or other natural events have the potential to weaken the dam and if a failure of the structure occurs radioactive sediment could be carried downstream with significant potential for environmental and public health impacts. (**0022-13** [Hadden, Karen])

Comment: Squaw Creek Reservoir should be analyzed for radiological hazards because of radioactive particulates currently discharged from Comanche Peak Units 1 and 2 that are accumulating in sediment and additional radionuclide loading if Units 3 and 4 are operational. (**0022-8** [Hadden, Karen])

Response: *The staff will evaluate the radiological impacts of normal operation of the proposed new reactor units in Chapter 5, and the cumulative impacts of the new units in conjunction with*

existing Units 1 and 2 in Chapter 7 of the EIS. Potential effects on both human health and ecological receptors will be assessed based on appropriate exposure scenarios.

Comment: Tritium and other radioactive particulates as well as water temperatures are major concerns for the receiving waters. These must be adequately addressed in light of the additional water discharges from Units 3 and 4 both in the receiving waters, but also downstream. (**0032-7** [Reed, Cyrus])

Response: *The staff will evaluate the radiological impacts of normal operation of the proposed new reactor units in Chapter 5, and the cumulative impacts of the new units in conjunction with existing Units 1 and 2 in Chapter 7 of the EIS. Potential effects on both human health and ecological receptors will be assessed based on appropriate exposure scenarios. Potential impacts to aquatic life from the thermal discharge of the proposed new units also will be assessed for Lake Granbury and the Brazos River downstream in Section 5 of the EIS.*

Comment: The other thing I'd like to address is the biggest thing that we missed of all, is on the environmental studies, is what happens after they cool the plant. They release the water down Squaw Creek, which is just about a mile behind you. And that water is extremely hot. It's not warm water; it's hot water.

Now then, in the past ten to 12 years—and I'm just talking about Squaw Creek, which is not a very big area—there were many, many frogs and soft-shelled turtles, many of them, and nobody in this room has been on that river more than I have. There's no soft-shelled turtles down there. The frogs are gone. And I've always been informed in environmental, frogs are the first thing that tell you there's something wrong. And there's something wrong with the release of that water.

The water is too hot. It has bothered the spawning of the fish. When I say there's no—I don't mean there's not any. mean, they're disappearing. The fish, they're still there, but they're disappearing. There's something wrong that needs to be looked into in your study very, very serious. Something that's not happening, not something that you need to do later on; it's something that needs to be done right now. It's happening as we're sitting here.
And it's something on all these studies—and I notice on that chart up there, it said aquatic studies. I've never seen one. I've never seen one of what happens after the fact. Studies are done about the fish in the lake, but nothing is happen—and it's just growing right down the river. The—it's not the only problem, The problem is with low water, if you add hot water, you get hot water down the river in the summertime. And if you—all you have to do is go stick your hand in it. And it's hot. And it's something that I'd like for you to address, and really it's never been even looked at. And why we let it get by, I don't know, but I never thought about it until after the fact. And the only way that I really know about this is firsthand information, because I'm on that river every single day. (**0016-64** [Cathey, Jack])

Response: *The NRC staff will assess potential impacts to aquatic life in Lake Granbury, the Brazos River, and Squaw Creek due to thermal discharge from the proposed new reactor units in Chapter 5 of the EIS.*

Comment: The above article said that water will be returned at 91 to 93 degrees. If we have limited rain and the BRA chooses to decrease the flow from PK then what will happen to the water temperature of the water at the dam site? This is the only deep water area of the lake. What becomes of our game fish?
(**0020-2** [Bernier, Jim])

Response: *The NRC staff will assess potential ecological and hydrological impacts in Lake Granbury, the Brazos River, and Squaw Creek Reservoir due to operation of the intake and discharge from the proposed new reactor units in Chapter 5 of the EIS.*

Comment: A Total Dissolved Solids (TDS) concentration of 1680 mg/l is on the borderline for lethal toxicity, and a TDS concentration of 2500 mg/l is above. Given that there will also be biocide usage in the cooling towers, whole effluent toxicity (WET) testing will be required, and there is reason to expect lethal and sublethal effects in WET testing. CPNPP should sample the water from Lake Granbury and perform 7-day chronic toxicity tests. CPNPP should also evaporate a portion of the sample to approximately 2500 mg/l and perform the same test. This would be predictive of the final effluent and would provide a sound basis for decision-making. (**0027-10** [Osowski Morgan, Sharon L.])

Response: *Impacts on aquatic biota and habitat due to liquid chemical effluents resulting from facility operation will be discussed in Section 5.3.2.*

Comment: Biodiversity is defined as the variety of plants and animals (biota) of a site or region, and is typically measured by the number of different species and number of individuals per species. In general, the more diverse an area is (number of habitat types and animal inhabitants) and the better represented these components are (population counts), the more rigorous (resistant, undisturbed, natural, healthy) the area is considered. Specifically, sustainable (or self managed) native biodiversity is preferred compared to an increase in the number of invasive, edge, or opportunistic species. Invasive, edge, or opportunistic species may compete with native species and have the potential to dramatically change local ecosystems so that they are not sustainable. Implementing BMPs or other measures to reduce invasive species establishment should be discussed (Executive Order 13112).

The NEPA document should discuss native biodiversity aspects of the proposal as appropriate. For example, will the project increase, restore, or decrease native biodiversity of the area or region? Coordination with the U.S. Fish and Wildlife Service (FWS), and Texas Parks and Wildlife Department is recommended regarding the design of any project mitigation areas to enhance or restore biodiversity.

Studies as similar as possible to those performed prior to Units 1 and 2 becoming operational (1981) should be conducted for comparison purposes and to ascertain losses in species abundance and richness over time. For example, 26 species of fish were caught in 1987, but only 10 in 2007 (Table 2.4-13). Tables 2.4-3, 2.4-4, 2.4-7, 2.4-13, and 2.4-14 all show declines in species richness over time. If the method used led to misleading sample, then new sampling schemes should be developed or methods used in 1987 should be used (p. 2.4-24). Table 2.4-4 has observed and expected data; therefore, simple statistics (like Chi squared, etc) could be performed to provide confidence bounds on the data and to determine whether the observations show a true pattern or are random statistical events.

The ER indicated that CPNPP would draw water for cooling from Lake Granbury. Additional studies of the impacts to aquatic ecology should be performed. Even though aquatic organisms may retreat to other areas in SCR or Lake Granbury, there are limits to what the organisms can tolerate, both in pollutant load, sediment load, high water temperature, and the amount of time they are exposed to such conditions (p. 4.3-10). (**0027-21** [Osowski Morgan, Sharon L.])

Response: *Impacts on aquatic ecology from cooling water withdrawals and discharges, including the potential for impacts on the biodiversity of aquatic communities, will be analyzed based on available data for Lake Granbury, the Brazos River, and Squaw Creek Reservoir in Chapters 4 and 5 of the EIS.*

Comment: Chapter 2 -Existing Environment: Section 2.4 of the ER references a List of Somervell County Threatened and Endangered Species to address state-listed threatened or endangered species that may occur at the proposed CPNPP site. The ER failed to include the TPWD Annotated List of Rare Species for Hood County, though it appears that components of the project would occur within Hood County. Additionally, the ER only addressed state-listed threatened or endangered species, but did not address all species included on the Annotated County List of Rare Species. Those species on the list with a blank under federal or state status are tracked by TPWD and considered rare. Rare species are of conservation concern by TPWD within Texas, and efforts to minimize impact to such species are encouraged to help prevent future listing of the species.

The most up-to-date TPWD Annotated County Lists of Rare Species are available at http://gis.tpwd.state.tx.us/TpwEndangeredSpecies/DesktopDefault.aspx. The lists provide information regarding rare species that have potential to occur within each county. Rare species could potentially be impacted if suitable habitat is present at or near the project site. (**0029-1** [Boydston, Kathy])

Comment: The EIS should address all species on the Hood and Somervell County Lists including rare, threatened, and endangered species. The project site should be assessed to determine if suitable habitat for any of these species occurs within or near the proposed area and to determine if construction and operation of the project would impact the species or habitats. (**0029-1** [Boydston, Kathy])

Response: *For both Somervell and Hood Counties, species with a Federal or State listing status of endangered or threatened and species considered by the State as rare will be identified in Chapters 2 of the EIS, and potential impacts to these species from construction and operation of the proposed new reactor units will be evaluated in Chapters 4 and 5, respectively.*

Comment: Section 2.4.2.2 of the ER provides basic details about the fish studies conducted for Squaw Creek Reservoir and Lake Granbury. Fish avoidance of gill nets is a known problem in reservoirs with high water clarity, such as Squaw Creek Reservoir and near the dam on Lake Granbury. (**0029-3** [Boydston, Kathy])

Comment: Further information is needed about the monofilament nets used to sample the fish population, the depth at which gill nets were placed, and the gill net mesh size used. Mesh sizes too large to capture smaller fish would produce inaccurate results. Electrofishing, even with high total dissolved solids, would likely provide important additional information on fish populations in both reservoirs. Seining in littoral areas could provide information about smaller species that are unlikely to be captured by gill nets. (**0029-3** [Boydston, Kathy])

Response: *Additional information about fish sampling methods and apparatus will be provided in Section 2.4.2 of the EIS.*

Comment: During the February 2, 2009 site visit, and in Section 4.3.2.4 of the ER, it was mentioned that fish populations are struggling in Lake Granbury. The consultant's sampling at four sites near the dam claims to support this opinion. The TPWD Inland Fisheries staff conducts full fishery studies on the lake every four years as well as ongoing fish sampling. These studies show that only a few fish species have declined post-golden algae kills, many have remained at the same population levels, and some have increased in numbers (Baird and Tibbs 2006). The opinion that the fishery is dead by the dam due to golden algae is not supported by the information provided. Request: TPWD requests a copy of the fish studies conducted by Luminant's consultant, specifically the studies referenced in Chapter 2.4 of the

ER, Bio-West 2008a and 2008b. TPWD staff may have additional comments following review of the consultant's report. (**0029-5** [Boydston, Kathy])

Response: *The information provided by the TPWD fisheries study in Lake Granbury will be considered in conjunction with the studies cited in the applicant's ER when the NRC staff assesses in the EIS the current condition of fish populations in the lake and potential future impacts.*

Comment: Section 5.2 discusses water-related impacts associated with water withdrawal from Lake Granbury, water loss, and return discharge to Lake Granbury. The ER claims that there is currently minimal use of water in the Brazos River from Possum Kingdom Lake to Lake Whitney; and due to the minimal water use and other users returning water to the Brazos River Basin, the project impacts are not expected to affect the available water for other water users nor for the aquatic ecological communities of the Brazos River. The ER considers the impacts from the CPNPP water withdrawal and discharge rates as small. The ER presents the reported mean monthly discharges at DeCordova Bend Dam at 1,031 cubic feet per second (cfs) and indicates that anticipated normal discharge would be 55.43 cfs during operation of CPNPP Units 3 and 4.

The operational impacts associated with water use do not specifically address potential impacts to aquatic resources such as potential impacts to the state threatened Brazos Water Snake (Nerodia harteri), various rare species of mollusks listed on the county lists, and other aquatic resources occurring or potentially occurring downstream of Lake Granbury. Potential impacts associated with CPNPP water losses need to be specifically addressed for aquatic resources within the Brazos River Basin. (**0029-16** [Boydston, Kathy])

Response: *The NRC staff will assess potential impacts on aquatic life in the Brazos River basin due to hydrological effects from operation of the proposed new reactor units in Chapter 5 of the EIS.*

Comment: Chapter 2 Section -2.3.3.1.9 and Chapter 5 Sections -5.2.1. 7 and 5.2.3.4, Golden algae, specifically Prymnesium parvum, are microscopic plants present in Possum Kingdom Reservoir, Lake Granbury, and Lake Whitney, as well as other areas in the state. The alga prefers saltier water for growth as it is a marine species. Lower water levels in Possum Kingdom Reservoir would likely make the lake more susceptible to golden alga. Like most other reservoirs, when the water level in Possum Kingdom Reservoir is low, conditions become more saline and nutrients become more concentrated. Historically, both conditions have been associated with increased occurrence and severity of golden algal blooms in Possum Kingdom Reservoir and other Texas reservoirs. An increase in salinity (conductivity) within Lake Granbury would likely also cause enhanced golden algal blooms. With the return water entering by the dam, the potential for increased conductivity by the dam and immediately downstream is a concern as well. (**0029-17** [Boydston, Kathy])

Comment: If golden alga occurrences increase in severity after periods of water loss, then Luminant may be required through TPWD's civil restitution process to mitigate for fish mortalities from these golden alga kills and may be asked to contribute to annual restocking efforts or golden alga treatment and research. (**0029-17** [Boydston, Kathy])

Response: *Water quality impacts from operation of the proposed new reactor units and their potential effects on aquatic life will be assessed in Chapter 5 of the EIS.*

Comment: TPWD has concerns about increased selenium levels in Lake Granbury and downstream portions of the Brazos River resulting from the discharge. As stated in Section 5.2.3.4, When half the detection limit was used to estimate concentrations that would

result from CPNPP Units 3 and 4 2.4-cycle cooling tower operation, selenium was estimated to exceed the Texas Commission on Environmental Quality (TCEQ) Criteria for Specific Metals in Water for Protection of Aquatic Life and also for both the mean and maximum concentrations when mixed with Lake Granbury at low flow. However, selenium is expected to be reduced to concentrations less than the TCEQ standards for Specific Metals in Water for Protection of Aquatic Life at the edge of the mixing zone in Lake Granbury during the annual mean flow for both mean and maximum concentrations. The acute freshwater criteria for selenium is 0.020 mg/L and freshwater chronic criteria is 0.005 mg/L (TCEQ 2008). Exceeding the set criteria can be harmful to aquatic life within and downstream of the reservoir. (**0029-18** [Boydston, Kathy])

Comment: Section 5.2.2.3.1: The consumptive demands from the project are a concern for the Brazos River Basin. Chapter 3 Section 4 indicates that Luminant will use up to 103,000 acre-feet per year (ac-ft/yr) of water from Lake Granbury for the cooling process with an estimated evaporative loss of 61,000 ac-ft/yr. The loss of 61,000 ac-ft/yr from Possum Kingdom Reservoir, Lake Granbury and the Brazos River will lead to declines in lake levels, a reduction of streamflow downstream of Lake Granbury, and a resultant wide range of impacts on fish and wildlife resources and recreation.

Fisheries may be impacted; reduced flows in the Brazos River below Waco may impact several imperiled fish species, as well as a vulnerable alligator gar fishery. Water levels are also anticipated to drop in Possum Kingdom Reservoir since the water for Units 3 and 4 will be taken from Lake Granbury but supplied by releases from Possum Kingdom Reservoir. Currently, Possum Kingdom Reservoir struggles with having enough water to inundate littoral vegetation during spawning times for a variety of sport fish. The proposed water loss would exacerbate an already less than desirable condition. In addition, lowering the water level in Possum Kingdom Reservoir will expose fish habitat used for sheltering and feeding, as well as for breeding. This loss of habitat, especially during spawning season, is likely to impact fish populations. (**0029-19** [Boydston, Kathy])

Response: *The NRC staff will assess potential hydrological, water quality, and resulting ecological impacts in the Brazos River basin associated with the intake and discharge from operation of the proposed new reactor units in Chapter 5 of the EIS.*

D.2.12 Comments Concerning Socioeconomics

Comment: And as far as y'all wanting to bring in extra jobs and more people, you would think it would be a joke about Weatherford having traffic problems. But try to be on Main Street or Santa Fe some day between four and five o'clock. Weatherford has traffic jams, and it's crazy, but at least they've got those big trucks and all the equipment that are related to the Barnett shale drilling. And the trucks are tearing up our roads. (**0016-70** [Kinzie, W.T.])

Response: *Potential effects on local roads and traffic conditions will be addressed in Section 4 of the EIS for the construction period and in Chapter 5 of the EIS for the operations period.*

Comment: The City knows that this could have some burdens on the City, because we don't get any tax dollars for it, and we know that it could prevent a lot of people from moving into the city. It might have an effect on the water and the sewer and the roads. (**0017-1** [Miller, Pam])

Response: *Potential effects on local roads and traffic conditions, public services, and tax revenues will be addressed in Chapter 4 of the EIS for the construction period and in Chapter 5 of the EIS for the operations period*.

Comment: The EIS should also consider whether regional waterways will be impacted in terms of water quantity and quality by the use of vast quantities of water for Units 3 and 4, including

Lake Granbury, the Brazos River, the Paluxy River, Whitney Lake, a popular fishing lake, and popular recreational areas such as Possum Kingdom. According to the Texas Parks and Wildlife Department web site, the drinking water at Possum Kingdom State Park is currently non-potable due to a high salt content, and visitors must bring their own water for consumption. The potential to increase salt content of waterways in the region by further drawdown of water levels, including impacts to the local aquifer and drinking wells should be examined thoroughly in the EIS. (**0022-23** [Hadden, Karen])

Response: *Potential impacts of plant operations on water quantity and quality in regional waterways will be addressed in Chapter 5 of the EIS.*

Comment: Since the specialized job skills required to manufacture nuclear reactors are virtually non-existent in the US, what is the plan to create jobs for Americans if the Comanche Peak project is approved? (**0023-1** [Ubico, Jean])

Response: *Potential effects on employment will be addressed in Chapter 4 of the EIS for the construction period and in Chapter 5 of the EIS for the operations period.*

Comment: When the first two reactors were built the sky glow light pollution went from zero to off the scale in the direction of the reactors. The latest round of fixture modernization reduced the sky glow by about 40 percent. Our Concern is the two new units will increase the sky glow beyond what it was after initial construction. We would like to see a comprehensive relighting program for all four reactors, using the latest technology zero cut-off fixtures, such as those approved by the International Dark-sky Association in order to achieve an overall reduced light pollution impact than what now exists.

www.darksky.org (**0024-3** [Miller, Russ])

Response: *The effects of light pollution from the proposed new reactors will be addressed in Chapter 5 of the EIS.*

Comment: I would like to see the lake at the Comanche Peak Nuclear Power Plant reopened for fishing. The possiblilty of a special license seems like a logical way to go to me. Restricted to Texas residences with concealed handgun licenses may be an option, since they have already passed a background check. Also, advance reservations, limited number of boats on the lake at a time, no more than 3 people per boat, etc. Fingerprints, photo on file, etc. Fishing only. No skiing or jet skis. Daylight hours only. I would like to allow tube floats and oar prepelled watercraft. You could even set it up with a limited season only open during certain months. It just seems a shame to me that this lake is closed to the taxpayers of Texas and the honest law abiding fishermen (and women). (**0007-1** [Drechel, Gary])

Response: *The potential effects of plant construction and operations on recreation will be addressed in Chapters 4 and 5 of the EIS.*

Comment: The new plant will need to use existing roads and to build new ones. Lots of cars, trucks, and machinery will pass over them.

- How will Luminant ensure that roads are not congested? How will Luminant transport uranium and on which highways? Which communities will it pass through, and will their police and firefighting forces be trained to deal with a radioactive accident?
- How would Luminant transport low-level and high-level radioactive waste if offsite storage ever gets approved?

(**0019-23** [Hadden, Karen])

Response: *Existing local road and traffic conditions will be described in Chapter 2 of the EIS. The effects of plant construction and operations on local roads and traffic will be addressed under Socioeconomics in Chapters 4 and 5. In addition, the impacts of transporting unirradiated and spent fuel will be addressed directly in Chapter 6 of the EIS.*

Comment: Comanche Peak is very vital to the local economy (**0004-4** [Luton, John Henry])

Response: *The potential effects of plant construction and operations on local employment, expenditures, and tax revenues will be addressed in Chapters 4 and 5 of the EIS.*

Comment: The City of Granbury has joined Hood County in soliciting funds, or looking for funds, to build the new access route to come near the Comanche Peak location, to provide better access to and from the location. We do hope you all will endorse that project as well. (**0016-3** [Johnson, Lisa])

Response: *A description of local roads and traffic conditions in the vicinity of the site will be provided in Chapter 2 of the EIS. The effects on local roads and traffic conditions during the construction and operation periods will be addressed in Chapters 4 and 5 of the EIS. Endorsement of mitigation activities are outside the scope of the NRC's authority and will not be addressed further.*

Comment: And as an economic development, I know that the NRC is not in economic development, but it's very nice for our community to have the jobs that come along with expansion, the jobs and the need for new housing, the need for restaurants and services in our community, which currently is vastly needed. (**0016-32** [Ward, Mary])

Response: *The effects of plant construction and operations on local employment, expenditures, and housing will be addressed in Chapters 4 and 5 of the EIS.*

Comment: I'm also the incoming president of the Brazos River Conservation Coalition. ...

We're an organization of about 700 members from Parker, Palo Pinto, and Hood and Somervell County. Right now we have an initiative to declare the—and it's in the legislature, or it's going in this session—the Brazos River and Lake Granbury—Brazos River in Hood and Somervell County as part of the John Graves Scenic Riverway. I don't know how many people from outside the area know just what a beautiful resource it is. We heard some of the people talking about it. It's a resource that's under a lot of pressure. (**0016-78** [Rosenfeld, Joshua])

Response: *A description of local aesthetic and recreational resources in the vicinity of the site will be provided in Chapter 2 of the EIS. Effects on local aesthetic and recreational resources during the construction and operation periods will be addressed in Chapters 4 and 5 of the EIS.*

Comment: We don't need to contribute to the economy of Somervell County and Hood County for the benefit of their gaining on a rate. (**0017-12** [Burnam, Lon])

Response: *The impacts of plant construction and operations on local employment, expenditures, and tax revenues will be addressed in Chapters 4 and 5 of the EIS.*

Comment: I am a business owner here in Glen Rose. I have been, and I have had land here for over ten years. And one of the things that attracted me to this area was the fact that there was a nuclear power plant here. Recently, I just invested over $6 million in this community in a hotel. Based on the future growth that these kind of communities bring. (**0017-56** [Sheaks, Jerry])

Response: *The effects of plant construction and operations on the local economy and the demand for housing will be addressed in Chapters 4 and 5 of the EIS.*

Comment: Section 5.2.2.3.1: The consumptive demands from the project are a concern for the Brazos River Basin. Chapter 3 Section 4 indicates that Luminant will use up to 103,000 acre feet per year (ac-ft/yr) of water from Lake Granbury for the cooling process with an estimated evaporative loss of 61,000 ac-ft/yr. The loss of 61,000 ac-ft/yr from Possum Kingdom Reservoir, Lake Granbury and the Brazos River will lead to declines in lake levels, a reduction of streamflow downstream of Lake Granbury, and a resultant wide range of impacts on fish and wildlife resources and recreation. ... Potential recreational effects span from Possum Kingdom Reservoir, to below the Lake Granbury dam, to the Brazos River below the city of Waco. Possum Kingdom Reservoir receives heavy recreational use, Lake Granbury supports recreational use, water skiers frequently use the Brazos River between Lake Granbury and Lake Whitney, and Lake Whitney has been rated the top destination by the citizens in the Dallas/Fort Worth area. Downstream of Lake Whitney, the Brazos River has been recognized as a canoeing and kayaking destination and Lake Brazos within the city of Waco is currently being developed into a major greenbelt. (**0029-20** [Boydston, Kathy])

Response: *Potential impacts of plant operation on water-based recreation in the region will be addressed in Chapter 5 of the EIS.*

D.2.13 Comments Concerning Historic and Cultural Resources

Comment: On December 30, 2008, the Advisory Council on Historic Preservation (ACHP) received from the Nuclear Regulatory Commission (NRC) a notification pursuant to Section 800.8(c) of the ACHP's regulations, Protection of Historic Properties (36 CFR 800), regarding the referenced project. We appreciate receiving your notification, which establishes that NRC will use the process and documentation required for the preparation of an EA/FONSI or an EIS/ROD to comply with Section 106 of the National Historic Preservation Act in lieu of the procedures set forth in 36 CFR 800.3 through 800.6.

In addition to notification to the ACHP, NRC must also notify the Texas State Historic Preservation Officer and meet the standards in Section 800.8(c)(I)(i) through (v) for the following:

- identifying consulting parties;
- involving the public;
- identifying historic properties and assessing the undertaking's effects on historic properties; and
- consulting regarding the effects of the undertaking on historic properties with the SHPO/THPO, Indian tribes and Native Hawaiian organizations that might attach religious and cultural significance to affected historic properties, other consulting parties, and the ACHP, where appropriate, during NEPA scoping, environmental analysis, and the preparation of NEPA documents.

To meet the requirement to consult with the ACHP as appropriate, the NRC should notify the ACHP in the event NRC determines, in consultation with the SHPO/THPO and other consulting parties, that the proposed undertaking(s) may adversely affect properties listed, or eligible for listing, on the National Register of Historic Places (historic properties). In addition, Section 800.8(c)(2)(i) requires that you submit to the ACHP any DEIS or EIS you prepare. Inclusion of your adverse effect determination in both the DEIS/EIS and in your cover letter transmitting the DEIS/EIS to the ACHP will help ensure a timely response from the ACHP regarding its decision to participate in consultation. Please indicate in your cover letter the schedule for Section 106 consultation and a date by which you require a response by the ACHP.

The regulations do not specifically require that an agency submit an EA to the ACHP. However, keep in mind that, in the case of an objection from the ACHP or another consulting party, Sections 800.8(c)(2)(ii) and (c)(3) provide for ACHP review of an EA (in addition to a DEIS or EIS) to determine whether preparation of the EA, DEIS or EIS has met the standards set forth in Section 800.8(c)(1) and/or to evaluate whether the substantive resolution of the effects on historic properties proposed in an EA, DEIS or EIS is adequate.
If NRC's determination of adverse effect will be documented in an EA, we request that you notify us of the adverse effect and provide adequate documentation for its review. The ACHP's decision to review an EA, DEIS or EIS will be based on the applicability of the criteria in Appendix A of the ACHP's regulations. (**0036-1** [Duvall-Gabriel, Najah])

Response: *If the staff determines that the proposed undertaking will adversely affect properties listed, or eligible for listing, on the National Register of Historic Places (historic properties), the NRC will notify the ACHP in accordance with the consulting requirements. Additionally, in accordance with Section 800.8(c)(2)(i) of 36 CFR Chapter 800, the NRC staff will submit copies of the DEIS and EIS to the ACHP upon completion of the documents. As part of its environmental review of historic and cultural resources, the NRC staff consulted with the Texas Historical Commission (THC) and other appropriate information sources. The results of the analysis will be presented in Chapter 4 of the EIS, and the staff will take any appropriate action called for as a result of this review.*

Comment: The Tonkawa Tribe has no specifically designated historical or cultural sites identified in any of the above listed project areas. However if any human remains, funerary objects, or other evidence of historical or cultural significance is inadvertently discovered then the Tonkawa Tribe would certainly be interested in proper disposition thereof.

We appreciate notification by your office of the many projects on-going, and as always the Tonkawa Tribe is willing to work with your representatives in any manner to uphold the provisions of NAGPRA to the extent of our capability. (**0037-1** [Illegible, Illegible])

Response: *As part of its environmental review of historic and cultural resources, the staff met with the Texas Historical Commission (THC) and other appropriate information sources. The results of the analysis will be presented in Chapter 4 of the EIS, and the staff will take any appropriate action called for as a result of this review.*

Comment: A cultural resource survey should be coordinated with the State Historic Preservation Officer (SHPO). Besides the consideration of listed historical sites, the NEPA document should discuss procedures for events such as unearthing archaeological sites during prospective construction. Such procedures should include work cessation in the area until SHPO approval of continued construction. (**0027-19** [Osowski Morgan, Sharon L.])

Response: *A previously conducted cultural resource survey provided coverage of the area that might be impacted by the proposed project. On February 21, 2007, the Texas State Historic Preservation Officer (SHPO) sent a concurrence letter to the applicant noting that no historic properties would be affected by the proposed action. This letter was referenced in the applicant's Environmental Report and will be included in an appendix of the EIS. Additionally, the NRC staff will discuss the applicant's procedures for dealing with unanticipated archaeological finds in Chapter 4 of the EIS.*

D.2.14 Comments Concerning Environmental Justice

Comment: The proposed new plants would affect low income and minority residents.

- How much will rent go up when the influx of construction workers and their families come to Somervell County?
- Will pollution from construction and operation reach low-income housing areas?

(**0019-25** [Hadden, Karen])

Response: *Effects on housing availability will be addressed in Chapter 4 of the EIS for the construction period and in Section 5 of the EIS for the operations period. Effects on minority and low-income populations specifically will also be addressed in Chapters 4 and 5 of the EIS.*

Comment: Consistent with Executive Order 12898, potential EJ [environmental justice] impacts should be considered in the NEPA document. An EJ survey is to ensure equitable environmental protection regardless of race, ethnicity, economic status or community, so that no segment of the population bears a disproportionate share of the consequences of environmental pollution attributable to a proposed project.

Since uranium mining that occurs in the US may impact tribal lands or environmental justice areas in the western states primarily (including portions of New Mexico and Texas), the potential impacts of increased uranium mining (e.g., in situ leach) and increased exposure of residents should be evaluated. Links between the proposed project and NUREG-19l0 should be included in the NEPA document.

Secondary impacts to low income, minority, and tribal communities concerning the use of the Yucca Mountain repository and transportation routes from the uranium processing facility should also be incorporated.

EPA recommends that the EIS provide clarification regarding resource dependencies or practices, such as subsistence agriculture, hunting, or fishing, through which certain populations could be disproportionately affected. Low-income populations are likely to conduct such subsistence practices. EPA recommends the EIS include a more comprehensive discussion of potential benefits and impacts associated with the project, as it relates to minority and low-income populations and the population at large. (**0027-20** [Osowski Morgan, Sharon L.])

Response: *Impacts on low-income and minority populations residing in the impact region, including impacts associated with subsistence activities in the vicinity of the plant, will be addressed in Chapters 4 and 5 of the EIS. Possible impacts occurring outside the impact region (such as those associated with mining and spent fuel storage) are beyond the scope of this environmental review and will not be addressed in the EIS. Mining, milling, and waste storage operations are all subject to separate regulatory processes.*

D.2.16 Comments Concerning Health - Radiological

Comment: There are routine releases from nuclear plants. Most people don't know this. This is not being adequate addressed, and needs to be, through the environmental impact statement and other avenues. There is no federal standard called a MACT, maximum achievable control technology standard, for radionuclides. That has been done for other industries, for example, for their mercury in the coal plants. That needs to happen. (**0016-21** [Hadden, Karen])

Comment: Right now there are high levels of tritium from this plant, and this needs to be looked into in the environmental impact statement. And they are high compared to other nuclear reactors in the country. (**0016-25** [Hadden, Karen])

Comment: But let's talk about the cancer and the background rate.

It is a simple fact of life that there is background radiation. And then there is also a simple fact of life, since the first above-ground explosions of nuclear weapons, we've increased that background radiation. There's also a simple fact of life that background radiation is higher at every nuclear power facility in the country. And if you double that, it's a simple fact of life that you're going to double background radiation in this community.

I want the environmental impact statement to do an honest analysis and assessment of what that means to the cancer rate in this region. I represent 150,000 people within 50 miles of this facility, and I think it's reasonable to expect that that kind of analysis is done. (**0016-39** [Burnam, Lon])

Comment: I also hope that you'll be looking at issues like release of tritium to the water, the potential—I'm not—I don't know that much about this particular process, because frankly the design hasn't been certified yet, but in terms of—there have been problems in the past with releases of tritium into water at nuclear plants. I don't know if that would be the case in this particular plant. So I would urge you to look at that.

(**0016-53** [Reed, Cyrus])

Comment: I would urge you to look at, you know, there's not a lot of scientific study on what are the impacts of noble gases, which are often released at nuclear plants. But I hope that will be part of your review as well. (**0016-54** [Reed, Cyrus])

Comment: But the problem is, that not only do we have a massive increase of cancer, because of the entire fuel line from the uranium mining, to the fact that we haven't been able to resolve the deposition of the polluted radiation, we have got a gene pool issue. (**0017-10** [Burnam, Lon])

Comment: Why is the tritium level higher here? You have got the problem now with the two facilities. Will two additional facilities make that tritium level even that much higher? (**0017-14** [Burnam, Lon])

Comment: One of my biggest concerns is the risk from the radiation. And the fact that the more radiation that there is, that the greater risk will be to the community. And the Environmental Impact Statement should thoroughly examination all of the radiation health risks.

And no national standard has been set for the radio nucleate emissions, despite the fact that nuclear reactors routinely emit cancer causing radioactivity. And really, no new reactors should be licensed until this standard has been set.

Research has shown an increase in cancer rates around nuclear plants. And Dr. Joseph Mangano of the Radiation and Public Health Project studied the cancer death rate in the three counties closest to the South Texas Nuclear Project. An area that originally had a cancer rate below the statewide rate, in 16 years after the reactors began running, the cancer death rate in the area had risen over 16 percent. (**0017-38** [Rooke, Molly])

Comment: the EIS should research the extent to which the new reactors would add to the cancer risks.

And four reactors at one site would produce significantly more radioactive risks than the two existing reactors.

And what would be the total amount of low level radiation emitted? And how much would surrounding populations be exposed to this? And how much radioactivity would be emitted, just in the routine operations.

And so the EIS should use background radiation levels in their studies and to compare them to construction of the two existing nuclear reactors. And I am concerned about what would happen with the radioactive gasses that would be vented. And not just during the normal operations, but during purges. And I am also concerned about what tritium would be released into the water at the new proposed plant. (**0017-39** [Rooke, Molly])

Comment: Because as you have heard other people say, radiation affects you on a genetic level. It affects your DNA. So what damages your DNA will remain in all of the generations of your family to come. (**0017-62** [Rittenhouse, Ryan])

Comment: from the very beginning to the very end, there is risk of radioactive release. (**0017-69** [Sanders, Jan])

Comment: It hits the genetic mechanism of the human body and messes it up. And it is a slow deformity. But it has been tested out. It has been proven. And so why take the risk? (**0017-71** [Sanders, Jan])

Comment:
The EIS should research the extent to which new reactors would add to cancer risks. Four reactors at one site would produce significantly more radioactive risk than the two existing reactors. What would be the total amount of low-level radiation emitted? How much would surrounding populations be exposed? How much radioactivity would be in routine operations?

The EIS should use background radiation levels not only from before the construction of the two existing nuclear reactors also from before the testing of nuclear weapons in the United States, which resulted in radioactive fallout. (0019-10 [Hadden, Karen])

Comment: Radioactive tritium can leak from nuclear reactors and increase cancer risks. According to NRC reports tritium levels are already high at the Comanche Peak site compared to other reactor sites. What would adding more reactors do to the already high levels of contamination? (**0019-15** [Hadden, Karen])

Comment: The Environmental Impact Statement (EIS) should thoroughly examine radiation health risks. (**0019-9** [Hadden, Karen])

Comment: Comanche Peak Units 1and 2 already utilize Squaw Creek Reservoir as a discharge water body that receives radionuclides including tritium and radioactive particulates. Dr. Arjun Makhijani, president of the Institute for Energy and Environmental Research has noted the relatively high levels of tritium at this site compared to other nuclear reactors, which should be examined and compared to other sites in the EIS, and additional cumulative impacts should be analyzed. (**0022-12** [Hadden, Karen])

Comment: The cumulative impacts on the food chain from the bioaccumulation and bioconcentration of radionuclides discharged from Units 3 and 4 should be considered in terms of the public health implications and the mortality and morbidity calculations related thereto should be a part of the EIS. (**0022-29** [Hadden, Karen])

Comment: The EIS for the proposed expansion of Comanche Peak should quantify and speciate the various radionuclides emitted and quantify the total air emissions anticipated as a result of operation of Units 3 and 4 and determine mortality and morbidity consequences thereof. Additionally, because radionuclides are considered a hazardous air pollutant the EIS should analyze radioactive air emissions on a comparative basis with the emissions permitted

under the more relaxed standards applied to Units 1 and 2 and air emissions from Units 3 and 4 under a MACT standard. (**0022-38** [Hadden, Karen])

Comment: Squaw Creek Reservoir should be analyzed for radiological hazards because of radioactive particulates currently discharged from Comanche Peak Units 1 and 2 that are accumulating in sediment and additional radionuclide loading if Units 3 and 4 are operational. (**0022-7** [Hadden, Karen])

Comment: The inevitable increase in radioactive emissions into the environment will not be beneficial. (**0031-4** [Gentling, Suzanne])

Comment: Tritium and other radioactive particulates ... are major concerns for the receiving waters. These must be adequately addressed in light of the additional water discharges from Units 3 and 4 both in the receiving waters, but also downstream. (**0032-8** [Reed, Cyrus])

Response: *The EIS will address the human health impacts of exposure to radiological effluents from the existing and proposed Comanche Peak units in Section 5.9 of the EIS.*

Comment: We need to look closely at worker exposure. (**0016-22** [Hadden, Karen])

Comment: Risks to employees and area residents should be addressed.

Statements about high doses and low doses of radiation, their potential health effects, and established risk or exposure standards should be included in the NEPA document. (**0027-5** [Osowski Morgan, Sharon L.])

Response: *Occupational radiation exposure will be discussed in Chapter 5 of the EIS. Radiation exposure to construction workers will be addressed in Chapter 4 of the EIS.*

Comment: According to the Nuclear Information and Resource Service, the "Use of MOX fuel attacks commercial nuclear reactors where they are the weakest ... Because of its high neutron flux levels, the reactor pressure vessel can become embrittled and fail during accident conditions. A nuclear accident involving MOX fuel could cause a meltdown more serious than Three Mile Island or Chernobyl, because the levels of radiation inside a reactor using MOX are even higher than in a normal atomic reactor." These increased risks and the related increased worker and terrorism risks and potential resulting economic impacts from utilization of MOX fuel should be included in the EIS. (**0022-26** [Hadden, Karen])

Response: *Luminant has stated that it does not plan to use mixed-oxide fuel. If at some future date, Luminant should decide to use mixed oxide fuel at the Comanche Peak plant, the NRC staff would conduct a safety and environmental review of the proposal.*

Comment: The Comanche Peak environmental report at p. 5.7-3 concedes the fact that there is presently no means by which to dispose of high-level waste. Management of high-level waste on-site is limited to spent fuel pools or dry cask storage units. Alternatively, the environmental report suggests that for plants with inadequate wet or dry on-site storage capacity, spent fuel could be transferred off-site to another plant that has adequate storage capacity available. The EIS therefore, must consider the long-term environmental and public health consequences of spent fuel remaining on site at Comanche Peak indefinitely. A federal repository for spent fuel has not been approved and the prospects for such are, at best, problematic. Long-term spent fuel management on-site represents risks that are not fully assessed in the environmental report. ... Even if the dry cask storage units are not breached they still represent significant long-term sources of radiation. These radiation measurements should be calculated and added to the current projections for exposures to the extent that the environmental report understates such based on the assumption that spent fuel will eventually be moved off-site. The EIS should

assume that the dry cask storage units will remain on Comanche Peak's site indefinitely and make radiation exposure projections accordingly. (**0022-40** [Hadden, Karen])

Response: *Discussions of the estimated dose to construction workers and the public, including doses from dry cask storage, will be found in Chapters 4 and 5 of the EIS.*

Comment: I would love to see the issue addressed about Kleberg County, where the ground water currently contains unsafe levels of uranium and the EPA strongly advises against drinking it.

It is not just about your counties. It is about Kleberg County. (**0017-17** [Burnam, Lon])

Comment: The Environmental Protection Agency has warned residents of Kleberg County that their groundwater currently contains unsafe levels of uranium, and strongly advises against drinking it. (**0019-27** [Hadden, Karen])

Response: *The NRC will consider this information as part of the evaluation of cumulative impacts of the existing and proposed Comanche Peak units in Chapter 7 of the EIS.*

Comment:

In 1980 the NRC conducted a study of what would happen under a worst-case scenario accident at each nuclear plant site. The Comanche Peak estimates were

- 1210 early deaths (25 mile radius around plant)
- 13,800 early injuries (35 mile radius)
- $117 billion (1980 dollars) in financial consequences

The EIS should update these risk figures and include the analysis in the report, taking into account the current population since the area has grown significantly since 1980 and since there would be two additional reactors at the site.

The National Academy of Sciences has concluded that radiation is dangerous even at low levels (BEIR VII study). While low-level radiation exposure is not as damaging as high-level radiation on a short-term basis, prolonged exposure to low-level radioactivity can be just as damaging to humans. The EIS should research the extent to which new reactors would add to cancer risks, birth defects and genetic impacts.

The EIS should include analysis of how much radioactivity would be released in routine operations and the frequency of releases that would occur.

Original background radiation levels should be included in the report. Data or radiation estimates from before the two existing nuclear reactors were constructed should be included, as well as calculations of the true original background level that was present before the testing of nuclear weapons in the United States, and the radioactive fallout that resulted. (**0022-30** [Hadden, Karen])

Response: *The NRC will evaluate the human health impacts of exposure to radiological effluents from the existing and proposed Comanche Peak units in Section 5.9 of the EIS. The NRC will evaluate the human health risks of severe accidents in Section 5.10 of the EIS.*

Comment: The Comanche Peak environmental report relies on data from Table S-3. P. 5.7-17. However, Table S-3, fails to consider health effects from radioactive effluents and further does not estimate releases of either Radon-222 or Technetium-99. The Comanche Peak environmental report does discuss the dose commitment estimates of both RN-222 and TC-99.

However, there is no analysis of mortality or morbidity consequences related to conditions of either radionuclide. The EIS should consider the mortality and morbidity consequences related to the emissions of all the radionuclides anticipated from the routine operations of Comanche Peak Units 3 and 4. Mortality and morbidity analyses should also occur for accident scenarios involving releases of radionuclides from Comanche Peak Units 3 and 4. (**0022-36** [Hadden, Karen])

Comment: The EIS for the proposed expansion of Comanche Peak must account for increased quantities of radiological waste streams and the environmental impacts and public health consequences thereof. The environmental report fails to fully quantify the environmental impacts and public health consequences and omits altogether mortality and morbidity analyses associated therewith. A proper EIS must account for environmental and public health consequences associated with increased quantities of radioactive waste originating at Units 3 and 4. This analysis should include disposition of large plant components such as steam generators that may require replacement before expiration of the reactors' useful lives. Replacement and disposition of steam generators is not a far-fetched or speculative possibility. The Trojan nuclear plant in Oregon replaced its steam generators. Trojan's original steam generators were shipped on the Columbia River by barge to a disposition site in Washington state. The EIS related to Comanche Peak should include an analysis of the environmental impacts and public health consequences of replacing steam generators at Comanche Peak Units 3 and 4 including radiological impacts both on-site and off-site. (**0022-37** [Hadden, Karen])

Response: *The impacts of the uranium fuel cycle, including disposal of low-level radioactive waste and spent fuel, will be addressed in Chapter 6 of the EIS.*

Comment: The environmental report indicates that Squaw Creek Reservoir will continue to be the receiving body of water for various discharges from Comanche Peak Units 3 and 4. The Environmental Report concedes that radioactive particulate matter released to Squaw Creek Reservoir in liquid effluents will be deposited into the sediment layer of the reservoir bottom and remain there indefinitely. Comanche Peak NPP Environmental Report, p.5.11-3. In the event of a protracted drought, and inadequate flow into Squaw Creek Reservoir, the sediment layer could become exposed and, if adequately deliquified, would become dust and subject to transport by wind with clear public health and environmental consequences.

Therefore, it is crucial that the EIS include a complete radiological profile of the existing sediment in Squaw Creek Reservoir and an analysis of the cumulative radiological impacts expected from operations on it from Units 3 and 4. This analysis is required in order to fully gauge the environmental and public health impacts from the use of the earthen Squaw Creek Reservoir as a discharge point for radioactive effluent from Comanche Peak Units 3 and 4. Part of this analysis should be an assumption that the Squaw Creek Reservoir dam will at some point fail and release the sediment that is burdened by radioactive particulates. Downstream impacts on water quality, use, and impacts on mortality and morbidity must be a part of a proper EIS. The Squaw Creek Reservoir dam should also be analyzed for structural integrity. Protracted drought, seismic activity, or other natural events have the potential to weaken the dam and if a failure of the structure occurs radioactive sediment could be carried downstream with significant potential for environmental and public health impacts. (**0022-15** [Hadden, Karen])

Comment: Because the Comanche Peak nuclear plants discharge radioactive effluent into the Squaw Creek Reservoir that drains into the Brazos River and Paluxy River, the EIS should quantify the mortality and morbidity impacts, potential cancer and birth defect increases and genetic damage from exposure to radioactive water by municipal and other users. This analysis should include consideration of the public health and environmental consequences of a failure

of the Squaw Creek dam and the transport downstream of radioactive particulates in the reservoir's sediment. (**0022-35** [Hadden, Karen])

Response: *The NRC will evaluate the human health impacts of exposure to radiological effluents from the existing and proposed Comanche Peak units in Section 5.9 of the EIS. This evaluation will include exposure to radionuclides expected to be deposited in the sediments of Squaw Creek Reservoir during routine operation. The other dose pathway scenarios postulated by the commenters are very unlikely and will not be addressed in the EIS.*

D.2.17 Comments Concerning Accidents - Design Basis

Comment: I would like to request an explanation of how it is safe to build and operate new nuclear reactors prior to the implementation of the same post 9-11 security hardening requirements that existing nuclear reactors have that has not been done. Without this in place, there are risks to the environment that are increased. This should be analyzed in the Environmental Impact Statement. If they can do this at existing reactors, why not new ones? (**0017-26** [Hadden, Karen])

Response: *Comments related to security and terrorism are safety issues that are not within the scope of the staff's environmental review. The NRC is devoting substantial time and attention to terrorism-related matters, including coordination with the Department of Homeland Security. As part of its mission to protect public health and safety and the common defense and security pursuant to the Atomic Energy Act, the NRC staff is conducting vulnerability assessments for the domestic utilization of radioactive material. Since the events of September 2001, the NRC has identified the need for license holders to implement compensatory measures and has issued several orders to license holders imposing enhanced security requirements. Finally, the NRC has taken actions to ensure that applicants and license holders maintain vigilance and a high degree of security awareness. Consequently, the NRC will continue to consider measures to prevent and mitigate the consequences of acts of terrorism in fulfilling its safety mission. Additional information about the NRC staff's actions regarding physical security since September 11, 2001, can be found on the NRC's public web site http://www.nrc.gov.*

Comment: Luminant is adding two reactors on top of two existing reactors and the cumulative impacts of all four units must be addressed ... . In addition, the impacts of any minor or major accident at one unit on other units must be addressed. (**0032-10** [Reed, Cyrus])

Response: *The frequency and consequences of accident scenarios that lead to radiological consequences are determined through the use of probabilistic risk assessment techniques. In accordance with MHI, LTD., "U.S-APWR Probabilistic Risk Assessment (Level 3)," MUAP-8004-P (R1), the estimated CDF for Comanche Peak 3 and 4 is 1.2E-06 per year per unit and the sum of all containment release frequencies is 1E-07 per year per unit. Therefore, the frequency where a severe accident could potentially impact the operating units is approximately 2E-07 per year. Because this frequency is below the screening criteria (1E-06 per year) for initiating events contained in ASME/ANS RA-S-2008, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," Supporting Requirement IE-C4, its impact on the operating units would not be considered to be material. The impact of accident scenarios associated with the current units, Comanche Peak 1 and 2, on the proposed units, Comanche Peak 3 and 4, is not considered to be in-scope of the current EIS. Cumulative impacts will be addressed in Chapter 7 of the EIS.*

Comment: The evaluation methodology utilized in the Comanche Peak environmental report for design basis accidents is flawed. P. 7.1-1. The postulated loss of cooling accident assumes that there will be a lower magnitude of radioactivity releases than a worst-case scenario

assumes. The EIS should approach a loss of cooling accident from the perspective that a complete loss of radioactive inventory will occur. A complete loss of radioactive inventory should be the base assumption for determining anticipated doses that may be received by the public. Accordingly, the EIS should not adopt the Comanche Peak environmental report evaluation methodology for design basis accidents and should assume a worst-case scenario that includes a complete release of all radiation from both Units 3 and 4. (**0022-47** [Hadden, Karen])

Response: *The staff's position is that the assessment of design basis accidents is based on conservative assumptions and calculations used in NRC safety evaluations as stated in Section 15 of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants." This conservative assessment is used to establish performance requirements of the plant's engineered safety features. Among the conservative assumptions used pursuant to the Section 15 analysis is the use of adverse meteorological dispersion conditions (i.e., 95th percentile X/Q). As actual consequences will likely be far less severe than those given for the same events, design basis accidents are evaluated using more realistic meteorological conditions (50th percentile site-specific X/Q values). The evaluation methodology used in the Comanche Peak environmental report is consistent with this approach. In addition, existing requirements provide assurance that the probability of simultaneous accidents at multiple units would be substantially less (e.g., over an order of magnitude) than the probability of accidents involving a single unit. For example, 10 CFR Part 50, General Design Criterion 5, "Sharing of structures, systems, and components," requires that structures, systems, and components important to safety not be shared unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cool down of the remaining units. Also, a plant- and site-specific probabilistic risk assessment (PRA) will be required prior to operation of any future plant pursuant to 10 CFR 50.34(f)(1)(i). This PRA will determine whether the risk from the as-built units will be low and will account for any inter-unit dependencies. In contrast, the consequences associated with an accident involving multiple units (e.g., a multi-unit core-melt accident) could reasonably be expected to be only marginally greater than for a single unit event. For example, given the same accident release characteristics for both units, the total releases from two reactor cores (and the associated accident consequences) would, as a first-order-of-magnitude approximation, be about twice that for a single unit. The substantially lower frequency of a multiple unit accident would more than offset the potentially greater consequences of the multiple unit accident. Thus, the risk associated with multiple, simultaneous accidents would be a negligible contributor to the overall risk from all units on the site. Accordingly, the staff does not plan to address multi-unit accidents as part of the EIS review.*

Comment: Each nuclear reactor design has unique flaws and weaknesses, and experience shows equipment and design failures, as well as areas and situations where human error is likely. The history of similar Pressurized Reactor Water (PWR) reactors in Japan should be considered in the EIS analysis, not just the Design Control Document.

The proposed USAPWR reactor design has never been approved and the design has never been built anywhere in the world, but has been developed from the design used in existing PWR reactors in Japan. Problems with existing PWR reactors there could provide clues to potential problems with Comanche Peak Units 3 and 4, allowing estimation of the likelihood that they could result in any number of environmental and health impacts. Design history should be considered in the EIS. (**0022-54** [Hadden, Karen])

Comment: The proposed Mitsubishi reactors are of a design as yet untested in the field. This is not reassuring. (**0031-6** [Gentling, Suzanne])

Response: *The EIS will address the potential environmental impacts of postulated design-basis and severe accidents associated with the US-APWR design (the designation used for the design of the proposed Mitsubishi reactors). In a separate action, the staff is evaluating the potential consequences of design-basis accidents and the probability and consequences of severe accidents for the US-APWR as part of its review of the application for certification of the reactor design. A detailed description of the design certification review is beyond the scope of the EIS. However, the staff uses well-established methods to analyze a new design to determine the potential consequences of accidents. The results of the certification review process will be compared to the results of the evaluation of the environmental impacts of potential radiological releases to ensure consistency.*

Comment: The EIS should discuss monitoring of radiation, prevention of releases, and emergency planning procedures in case of an unintended release. (**0027-4** [Osowski Morgan, Sharon L.])

Response: *Radiation monitoring for the existing and proposed Comanche Peak units will be addressed in Section 5.9 of the EIS. Those radiation releases associated with normal operation will be addressed in Section 5.9, and those releases associated with postulated accidents will be addressed in Section 5.10. Section 5.10 also addresses the identification and evaluation of severe accident design and procedural or training mitigation alternatives that can be justified to further reduce the likelihood or consequences of severe accidents. However, emergency planning is outside the scope of the EIS and will not be considered further in the staff's environmental review. An evaluation of emergency planning issues will be part of the safety evaluation report (see 10 CFR 52.18).*

D.2.18 Comments Concerning Accidents - Severe

Comment: There is a whole issue of accident and securlty. Back in 1980, the NRC conducted a study, and they concluded at that time that early deaths—and that's a nice catchword for people that die immediately as opposed to long-term, protracted, strung-out deaths— they estimated early deaths of 1,210 within the first 25-mile radius. They estimated early injuries within a 35-mile radius of 13,800.

They estimated financial consequences—you know, we always talk in the legislative process about the unplanned consequences or the unintended consequences—well, the financial consequences could be in excess of $117 billion.
Well, you know, it doesn't take a brilliant person to figure out that almost 30 years later—it'll be 35 or 40 years later—once this thing, if it's built, is operational, that those early deaths will be far more than that. In part because of the rapid population growth in Hood and Somervell Counties, those early injuries will be far more than that. And those financial consequences to the entire North Texas region will be far more than what you projected back in 1980. So I look for and anticipate an honest and accurate analysis of those problems.
(**0016-41** [Burnam, Lon])

Response: *The EIS will include an evaluation of the risks associated with potential severe accidents, including accidents that involve reactor core melts. The EIS will address the potential consequences of postulated design-basis and severe accidents and will take into account the current and anticipated population growth of the surrounding counties during the projected operational period of these plants. However, comments related to security and terrorism are safety issues that are not within the scope of the NRC staff's environmental review and are regulated by 10 CFR Part 73, "Physical Protection of Nuclear Power and Materials."*

Comment: The risk of a nuclear accident and the magnitude of devastation would increase with more reactors on the site.

... In 1980 the NRC conducted a study of what would happen under a worst-case scenario accident at each nuclear plant site. The Comanche Peak estimates were:

- 1210 early deaths (25 mile radius around plant)
- 13,800 early injuries (35 mile radius)
- $117 billion (1980 dollars) in financial consequences

The Environmental Impact Statement should include a similar study to update these risk figures, since the population of the region has grown and since there would be more reactors. (**0019-11** [Hadden, Karen])

Response: *The EIS will include an evaluation of the risks associated with potential severe accidents, including accidents that involve reactor core melts. The EIS will address the potential consequences of postulated design-basis and severe accidents, and will take into account the current and anticipated population growth of the surrounding counties during the projected operational period of these plants.*

Comment: Additionally, cumulative impacts from accident scenarios should also be considered. For example, the EIS should consider whether a radiological accident, at one plant could interfere/interrupt operations at the remaining plants at the Comanche Peak site. Further, there should be a careful consideration of whether an accident or event at one plant could actually preclude operations at the remaining plants. This is relevant because of the close proximity of the planned Units 3 and 4 to the existing Units 1 and 2. (**0022-28** [Hadden, Karen])

Comment: Luminant is adding two reactors on top of two existing reactors and the cumulative impacts of all four units must be addressed ... . In addition, the impacts of any minor or major accident at one unit on other units must be addressed. (**0032-11** [Reed, Cyrus])

Response: *The frequency and consequences of accident scenarios that lead to radiological consequences are determined through the use of probabilistic risk assessment techniques. In accordance with MHI, LTD., "U.S-APWR Probabilistic Risk Assessment (Level 3)," MUAP-8004-P (R1), the estimated CDF for Comanche Peak 3 and 4 is 1.2E-06 per year per unit and the sum of all containment release frequencies is 1E-07 per year per unit. Therefore, the frequency where a severe accident could potentially impact the operating units is approximately 2E-07 per year. Because this frequency is below the screening criteria (1E-06 per year) for initiating events contained in ASME/ANS RA-S-2008, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," Supporting Requirement IE-C4, its impact on the operating units would not be considered to be material. The impact of accident scenarios associated with the current units, Comanche Peak 1 and 2, on the proposed units, Comanche Peak 3 and 4, is not considered to be in-scope of the current EIS. Cumulative impacts will be addressed in Chapter 7 of the EIS.*

Comment: The Comanche Peak emergency evacuation plan assumes that 100% of the affected population from a radiological emergency would be evacuated. p. 7.2-3. The model is further compromised because it does not adequately account for evacuees that are transported 25 miles from the Comanche Peak site as they "disappear" from the emergency evacuation analysis. Id. Accordingly, the results of the dose and dollar risk assessments for severe accident analysis are understated in the Comanche Peak environmental report Table 7.2-5. The EIS should not assume that 100% of the affected population will be evacuated. Rejecting this assumption requires that the data in Table 7.2-5 be adjusted to account for increased dose risk,

dollar risk, early fatalities, latent fatalities, and water ingestion dose risk. Moreover, there should be an accounting for evacuees and the doses to which they have been exposed even if those evacuees are moved 25 miles beyond the Comanche Peak site. (**0022-45** [Hadden, Karen])

Response: *This comment addresses two evacuation model issues that appear to be within the scope of the environmental review: (1) the percentage of population assumed to be evacuated and (2) the treatment of the evacuated population once they are transported over 25 miles. The removal of the evacuated population once they exceed a fixed distance is a standard analysis approach. The distance that is selected (i.e., 25 miles) is a user input. Shorter distances have been used in other analyses. Although a sensitivity analysis has not been performed, it is believed that the any additional dose that would be received by this evacuated population would not be material.*

Comment: And that, because of this, the other factor is that part of that energy bill said that if there is some kind of a dangerous, let's say, explosion or something happens that ruins the area around here, who is going to pay for it? We are. Because they put some things into the energy bill that does not require the company to be 100 percent responsible for the cleanup for it. It will be the taxpayers. And the people in Congress have been lowering the standards for that. So it all falls back on us. (**0017-51** [Harper, Debbie])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. These comments provide no new information and were not considered further. This comment provides no information related to the scope of this EIS and will therefore not be considered further in the staff's environmental review.*

D.2.19 Comments Concerning the Uranium Fuel Cycle

Comment: There are so many ways to build the local economy more effectively and not put anyone at risk from radioactive fuel, from handling it, from trying to store it. Right now it's being stored on site, and it appears that that would be the continuing manner in which the radioactive waste is handled, because we don't have a national repository. That's of huge concern. (**0016-16** [Hadden, Karen])

Comment: I want this assessment to include an evaluation of what we do with the radioactive waste. It's still on site. You all know when this facility started operating in the early '90s, it's still on site. It doesn't seem like we're any closer than we were in that time frame to get a permanent waste repository. What are we going to do with this radioactive waste and material? (**0016-40** [Burnam, Lon])

Comment: I'd also like to make it clear that while people in Somervell and Granbury may feel like it's been relatively clean and unharmful to them, they don't live where the uranium is mined. And I guarantee you, if you talk to the tribal leaders in New Mexico, you'll find out that it is not a clean process. And the cancer rates on the tribal lands where this uranium is taken from have gone up exponentially as a result of the mining. So from the beginning of the process to the end of the process, we've yet to have an honest analysis of the environmental impact on health and safety. (**0016-44** [Burnam, Lon])

Comment: And finally, I hope you're going to look at the whole cycle. While we're talking about a license for a particular plant to basically boil water, it involves a whole cycle of uranium. And 'I would hope that your assessment will look at that whole cycle, where the uranium will come from and where the results of using the uranium will go, as part of your assessment. And so I would urge you to do that. (**0016-55** [Reed, Cyrus])

Comment: For many years I've been concerned about nuclear power and the problem that we seem to ignore, what to do with the waste. I think we really need to look at that very, very carefully. (**0016-60** [Wildwood, Kathleen])

Comment: But there is no mention of the waste, the radioactive waste, which is a problem. I don't think anyone can deny that. (**0017-36** [Cohn, Ann])

Comment: So radioactive low level and high level waste is spewed out as it is being mined. It is at risk when it is being transported, if there is a wreck. There is risk in the actual production of the energy. And then there is a risk as it is put into the waste areas. The full chain is risky. (**0017-70** [Sanders, Jan])

Comment: One is the waste. We know the fact that we are drowning worldwide under nuclear waste. We do not have a safe means of having them stored. Of course, everyone will mention Yucca Mountain. Yucca Mountain is still a no-go. There have been reports of more problems with Yucca Mountain of leakage. It is not a safe place. We don't have something else to take its place. And this stuff is toxic for thousands of years. (**0017-75** [Stuard, Gary])

Comment: In the last ten years, the Texas Department of Health Services has cited several instances of radioactive waste spills by uranium mining companies, including Cogema Inc.'s 1998 spill of over 20,000 gallons of radioactive solution in Bruni, Texas. (**0019-26** [Hadden, Karen])

Comment: The uranium fuel cycle has substantial greenhouse gas impacts that should be considered at each phase of the fuel cycle.

The uranium fuel cycle is a contributor to greenhouse gases. The EIS should carefully consider and include in its analysis the greenhouse gas impacts that are unavoidable as a result of mining, processing, fabrication, transportation fuel burn up, waste streams management, decommissioning and long-term site maintenance that are an integral part of the uranium fuel cycle. While the proponents of an expanded Comanche Peak nuclear plant posit that there will be fewer greenhouse gases produced as a result of the operations of Comanche Peak Units 3 and 4 compared to fossil fueled plants, there are inevitable greenhouse gas emissions associated with each phase of the fuel cycle. These conditions need to be carefully considered to determine the full impact of an expanded Comanche Peak nuclear plant.
The decision in Massachusetts V. EPA, 549 U.S.497 (2007) requires that carbon dioxide be considered a pollutant. Carbon dioxide emissions are inevitable in the production of fuel for nuclear plants. Likewise, carbon dioxide emissions can be anticipated during routine operations of a nuclear plant and are foreseeable as a plant is decommissioned. Any benefits derived by operation of a nuclear plant in terms of avoidance of greenhouse gases needs to be considered in light of greenhouse gas production as it occurs in various stages in the fuel cycle. An adequate EIS should require such an analysis. (**0022-3** [Hadden, Karen])

Comment: Each part of the uranium fuel cycle has substantial radiological, environmental and public health impacts that are cumulative in nature and should be considered in the context of an EIS.

Each phase of the uranium fuel cycle has radiological, environmental and public health impacts that must be analyzed and quantified in the context of an EIS. For example, mining uranium is known to cause an increase in radiation related illnesses among miners. Mortality and morbidity analyses should be done for uranium mining and associated activities related to supplying fuel to Comanche Peak Units 3 and 4. (**0022-4** [Hadden, Karen])

Comment: radioactive waste would be stored onsite since there is still no national nuclear waste repository. (**0030-6** [Hadden, Karen])

Response: *Impacts related to the uranium fuel cycle and its transportation steps, including disposal of low-level radioactive waste and spent fuel, will be addressed in Chapter 6 of the EIS. The generic impacts of the fuel cycle are codified in 10 CFR 51.51(b), Table S-3, "Table of Uranium Fuel Cycle Environmental Data." Per the guidance in 10 CFR 51.51 and Section 5.7 of NUREG-1555, the staff will rely on Table S-3 as a basis for uranium fuel cycle impacts. The safety and environmental effects of long-term storage of spent fuel on site have been evaluated by the NRC and set forth in the Waste Confidence Rule at 10 CFR 51.23 (http://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-0023.html).*

Comment: Based on the assumption that Comanche Peak Units 3 and 4 will utilize MOX fuel, careful analyses of the radiological and public health impacts associated with MOX fuel fabrication should be a part of the EIS.

MOX fuel fabrication has remote handling requirements not associated with uranium fabrication facilities. MOX fuel includes plutonium, a strong alpha emitter, that has a higher specific radioactivity than uranium. The plutonium, if inhaled, presents a well-recognized health hazard. A MOX fuel fabrication facility, while subject to more stringent requirements than a uranium fuel fabrication facility, still involves handling increased amounts of plutonium. The environmental and public health impacts associated with increased use and handling of plutonium should be a part of a proper EIS. CP Environmental Report, page 5.7-4. The EIS should include environmental impacts associated with routine operations of a MOX fuel fabrication facility as well as accident scenarios that could involve such a facility. (**0022-25** [Hadden, Karen])

Comment: Our understanding is that in addition to uranium, the Comanche Peak facility will utilize MOX fuel fabrication, which in itself will lead to other environmental and public health challenges which must be addressed by an EIS. (**0032-4** [Reed, Cyrus])

Response: *The COL submitted by Luminant for CPNP Units 3 & 4 is for reactors fueled with uranium oxide only. Any future use of MOX fuel would be covered in separate license amendment process. For this reason the environmental effects of MOX fuel will not be covered in the EIS.*

Comment: The Comanche Peak environmental report recognizes that there has been an overall reduction of the demand for uranium fuel and the elimination of legal restrictions on importation of foreign uranium which has caused the closing and decommissioning of most domestic uranium mines and mills. The economic conditions pertaining to the uranium market favor utilization of foreign uranium rather than uranium mined in the United States. The Comanche Peak environmental report suggests that these changes have made uranium mining and milling and enrichment more "environmentally friendly". p. 5.7-4. However, there is no analysis in the environmental report of environmental or public health impacts of mining and milling uranium in foreign countries. The EIS should include a full analysis of the impacts of mining and milling uranium in foreign countries.
(**0022-31** [Hadden, Karen])

Response: *The NRC environmental review process only covers environmental effects in the United States. The comment above requests the review of mining operations outside the US. Since such review is outside the legal scope of this NRC licensing process, such effects will not be covered in the EIS.*

Comment: Nuclear waste is not our solution to energy independence. It has health impacts. (**0016-24** [Hadden, Karen])

Comment: One other concern I will just touch on is, that the contamination from the uranium, what would happen in building more nuclear reactors, is there would have to be more uranium brought in, of course. And it might be something that the local community isn't thinking as much about. But there are other local communities even in Texas that are very concerned about that. (**0017-45** [Rooke, Molly])

Comment: And that is the radioactive waste that is stored here in Somervell County. We take our garbage to the local dump. Or if you live in the city, you have it picked up, because the city provides that service. And then it is transported off to somewhere else. Yet we keep our radioactive waste here.

Yucca Mountain is not open. And we want to expand the amount of radioactive waste we are actually going to store here in this county, by opening these new plants. I don't think it is such a wise move to keep increasing the size of the radioactive waste, without figuring out what to do with it first. (**0017-48** [Harper, Paul])

Comment: No high or low-level waste sites are available.

- Nuclear reactors produce tons of high and low-level radioactive waste that remains dangerous to living beings for tens of thousands of years. Radioactive and toxic waste is produced at every stage of the fuel cycle, including routine plant operations.
- Federal law prohibits the licensing of any new nuclear plant until there is an adequate waste disposal plan. Nuclear plants have been operating for 50 years, but the waste disposal problem has not been solved. Radioactive waste remains stored onsite at reactors across the county.
- There is no national storage facility for high-level radioactive waste and the Yucca Mountain repository is unlikely to open in the near future. The Associated Press wrote: "The Energy Department is cutting operations and the chief contractor is laying off its staff at the desert site where the government plans to build a national nuclear waste repository..." Jan 8, 2008.
- The Andrews County low-level waste dump application has been deemed incomplete by the Texas Commission on Environmental Quality.
- The impacts and risks of storing additional high -level radioactive waste on site needs to be studied thoroughly in the EIS. The long-term cumulative health impacts of additional low-level radiation need to be studied thoroughly and included in the environmental impact study as well. Impacts on humans, wildlife and plant life need to be considered, with special attention given to threatened and endangered species.
- The EIS should study the additional safety and security risks of more radioactive waste.
- The license for two new reactors at Comanche Peak, or any other reactor, should not be issued since there is no effective resolution of the storage issue.

(**0019-30** [Hadden, Karen])

Comment: There is a resurgence of uranium mining in South Texas at this time, with nineteen exploration permits being pursued. Impacts on communities in Texas including drinking water contamination which should be researched and examined thoroughly in the EIS. New mining operations are being pursued even though aquifers contaminated by earlier mining operations have not been restored and some residents in Texas still cannot drink their water due to contamination. Adding two more reactors at Comanche Peak would likely impact the amount of mining in South Texas and environmental and health impacts in those communities should be analyzed and considered thoroughly in the EIS. (**0022-34** [Hadden, Karen])

Comment: The Comanche Peak environmental report assumes that so-called low-level radioactive waste will be disposed of at land burial facilities. Based on this assumption, the environmental report assumes that there will be no significant radioactive releases to the environment. p. 5.7-8.This assumption is dubious at best considering that low-level radioactive waste streams contain very long-lived radionuclides that would not be adequately sequestered in land burial facilities for the duration of their hazardous lives.

Moreover, the availability of land burial sites is problematic. Attempts to establish new land burial sites for the so-called low-level radioactive waste stream have largely been unsuccessful. The sites that were planned for Nebraska, California and Texas have been rejected in the past and the TCEQ decision to issue a state permit for a site in West Texas is likely to be appealed, so it should be assumed in the EIS that there will be no off-site capacity to dispose of the so-called low-level radioactive waste stream. The EIS should consider the long-term environmental and public health consequences of managing the so-called low-level radioactive waste stream on the Comanche Peak site. The analysis of this issue should include an analysis of radiation exposures to employees and the public based on the assumption that the low-level radioactive waste stream will not be disposed of off-site. (**0022-43** [Hadden, Karen])

Comment: The Comanche Peak environmental report assumes that there will be no significant radioactive releases to the environment related to off-site disposal of the radioactive waste streams that originate at Units 3 and 4. p. 5.7-8. The EIS should not adopt this assumption. The EIS should fully consider the public health and environment consequences of major releases to the environment of radioactive materials as a result of off-site disposal activities. The off-site releases could originate from on-site processing, transportation accidents, off-site processing, and long-term releases from the disposal site because of either improper or inadequate waste site characterization, natural events such as earthquakes, and intentional or unintentional releases. Irrespective of the cause of the releases such should be considered for the impacts to the environment and public health consequences. (**0022-44** [Hadden, Karen])

Comment: The only existing solution to the toxic waste issue is to bury it somewhere. I've read that West Texas is currently being identified as a depository. Storage and transportation of these wastes is simply a disaster waiting to happen and is an irresponsible choice for our environment and for future generations. (**0031-5** [Gentling, Suzanne])

Comment: The EIS must address the complete uranium cycle from cradle to grave and the impacts of that cycle. Where will the plant obtain its raw uranium for the life of the plant? Where will it be processed? Enriched? Deconverted? What are the impacts of the mining, processing and enrichment processes in their place of origin?

What happens to the waste streams along the way during that process, including at the end of the uranium cycle. Each part of the uranium fuel cycle has environmental, radiological and public health impacts that must be addressed. (**0032-3** [Reed, Cyrus])

Response: *The impact of the uranium fuel cycle and its transportation steps, including disposal of low-level radioactive waste and spent fuel, will be addressed in Chapter 6 of the EIS. The generic impacts of the fuel cycle are codified in 10 CFR 51.51(b), Table S-3, "Table of Uranium Fuel Cycle Environmental Data." Per the regulation in 10 CFR 51.51 and guidance in Section 5.7 of NUREG-1555, the staff will rely on Table S-3 as a basis for uranium fuel cycle impacts. The safety and environmental effects of long-term storage of spent fuel on site has been evaluated by the NRC and, as set forth in the Waste Confidence Rule at 10 CFR 51.23 (available at http://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-0023.html), the NRC generically determined that "if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the*

licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite of offsite independent spent fuel installations. Note that the waste confidence decision is being updated through rulemaking and references to the timing of repository availability is being omitted in the updated version. It is outside the scope of this EIS to address specific low-level waste burial locations, existing or proposed. Site specific data for these locations is developed as part of the NRC licensing process under 10 CFR 61.

Comment: Are we willing to bank on the fact that governments will still be in place thousands of years from now? How many have lasted thousands of years? Are we willing to put our children's children's children at risk because we couldn't figure out a smarter way to use our energy and to generate it? And those smarter ways exist right now, and they create jobs, and they're better for our economy. (**0016-18** [Hadden, Karen])

Response: *Chapter 6 of the EIS will address the impacts of the fuel cycle, including radioactive wastes.*

Comment: I'm also interested in sustainability, and uranium is not a sustainable product. (**0016-75** [Shaar, Julie])

Comment: Dependence on foreign sources for uranium should also be considered in the EIS as a potentially harmful environmental and public health consequence. Recent experience with dependence on foreign sources for oil has heightened awareness that supplies may be interrupted or artificially inflated in costs. The economic impacts from such dependence can be far ranging and adverse. Accordingly, such impacts should be considered in a proper EIS. (**0022-32** [Hadden, Karen])

Response: *The sufficiency of the supply of uranium for nuclear power plant fuel will be addressed in Chapter 6 of the EIS.*

Comment: Nuclear, the mining associated with nuclear power, the uranium mining is incredibly destructive. And it is killing people, literally killing. people. (**0017-63** [Rittenhouse, Ryan])

Comment: And waste [of] waste. (**0017-67** [Sanders, Jan])

Comment: It was pointed out that in Texas, we are kind of in the zero target in relation to nuclear, because there are a lot of uranium deposits in Texas. (**0017-68** [Sanders, Jan])

Response: *The impacts related to the uranium fuel cycle will be addressed in Chapter 6 of the EIS. The generic impacts of the fuel cycle are codified in 10 CFR 51.51(b), Table S-3, "Table of Uranium Fuel Cycle Environmental Data." Per the guidance in 10 CFR 51.51 and Section 5.7 of NUREG-1555, the staff will rely on Table S-3 as a basis for uranium fuel-cycle impacts.*

D.2.20 Comments Concerning Transportation

Comment: The effect of the increased truck traffic, noise and pollution levels from a construction project of this size on an infrastructure that is already pushed to the limit would not be desirable to humans or wildlife. (**0031-7** [Gentling, Suzanne])

Response: *Impacts of plant construction and operation on the use of existing local infrastructure including transportation networks, noise and pollution levels, and other community services or the need for such new infrastructure will be addressed in Chapters 4 and 5 of the EIS.*

D.2.21 Comments Concerning Decommissioning

Comment: The reality is the two now are halfway through their life cycle. They'll be closed down. They'll be moth-balled. And in the 50 years of the operation of nuclear power plants, we still have not resolved that issue. So any real, accurate environmental impact statement will have a very careful analysis of the implication of storing this material on site forever. (**0016-38** [Burnam, Lon])

Comment: Additionally, given the very long-term nature of the radiological hazard represented by the accumulation of radioactive particulates discharged during plant operations, it should be assumed that the reservoir will require, at the minimum, management and perimeter security for a time that extends far beyond the term of operation license. Questions surrounding post-license ownership of and responsibility for Squaw Creek Reservoir should be addressed and resolved in the EIS. Accordingly, the EIS should fully consider the structural reliability of the Squaw Creek Reservoir dam and analyze adverse environmental and public health consequences that could occur as a result of its failure. (**0022-16** [Hadden, Karen])

Comment: The Comanche Peak environmental report acknowledges that it does not provide anything more than an initial projection of expected future environmental impacts related to decommissioning. The details related to environmental impacts expected from decommissioning are put off to a future unspecified date. The Comanche Peak environmental report assumes impacts related to decommissioning are either negligible or require, at most, a site-specific assessment. However, the environmental report assumes that site-specific and off-site land use activities and aquatic ecology activities beyond the operational area, terrestrial ecology activities beyond the operational area, threatened and endangered species, environmental justice, and cultural historic resource impacts beyond the operational area are expected to be negligible. However, there is no analysis in the environmental report whatsoever of any of these impacts either from a public health or environmental consequence standpoint. p. 5.9-1. Accordingly, a proper EIS should carefully consider decommissioning impacts including the likelihood that a decommissioned plant will be disassembled and transported to a site that will be the recipient of highly irradiated materials. Additionally, the EIS should consider contingent possibilities that off-site removal of a decommissioned nuclear plant will not be a practicable alternative. In that scenario, the environmental consequences and public health impacts of the in situ, long-term radioactive decay of Comanche Peak Units 3 and 4 should be considered in the EIS.

Decommissioning has its own waste stream issues, as well. The EIS should consider the radiological and public health impacts from the various decommissioning waste streams and environmental justice and other implications of disposition of highly irradiated materials off-site. Additionally, the EIS should consider whether off-site disposition of decommissioning materials is even feasible. The decommissioning of nuclear plants is an evolving technology, and the land use, environmental and public health implications of decommissioning activities are not well understood. The EIS should fully analyze the probability that there will be significant resistance to transportation and disposition of highly irradiated decommissioned plant materials to a remote site.

Moreover, in promotional materials published by the reactor manufacture Mitsubishi, it is acknowledged that technology for decommissioning is still in the process of being developed. Mitsubishi Nuclear Plants, p. 27. Hence, there is currently inadequate technology to carry out decommissioning. The assumption appears to be that adequate technologies will be developed in the future. However, a proper EIS should consider the scenario that adequate technologies for decommissioning are not developed in the future or proved to be inadequate for the task. The EIS should take into account contingencies that would require long-term secure storage of

Comanche Peak Units 3 and 4 because either decommissioning technology is inadequate [or] where there is no remote site available for the disposition of wastes from decommissioning activities. This analysis would require a consideration of radiological impacts related to the long-term delay in decommissioning, as well as public health and environmental consequences related thereto. (**0022-39** [Hadden, Karen])

Comment: These enormous, single-purpose facilities have a limited life and store on site their partially-spent fuel. What provisions will be made for de-commissioning, with removal of all structures and hazardous materials, together with restoration of the site? (**0028-3** [Inge, Charles and Dominique])

Comment: The EIS should examine both the Texas and federal decommissioning procedures, as well as the funds set up to pay for decommissioning to assure that adequate monies exist to pay for any clean up and decommissioning and the public is not, as it has on multiple occasions, held responsible for these costs. How a merchant plant selling power on the wholesale market will be paid for is of serious concern. (**0032-18** [Reed, Cyrus])

Response: *NRC regulations establish a framework to ensure that decommissioning of all nuclear reactor facilities will be accomplished in a safe and timely manner and that funding will be available for this purpose. Federal regulations (10 CFR 50.33(k) and 10 CFR 50.75(b)) require an applicant for a COL license to certify that sufficient funds will be available to ensure radiological decommissioning at the end of power operations. The financial decommissioning funding assurance mechanism analysis will be in the SER not the EIS. The environmental impact from decommissioning a permanently shutdown commercial nuclear power reactor is discussed in Supplement 1 to NUREG-0586, Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, which was published in 2002. If fuel is maintained onsite in an Independent Spent Fuel Storage Installation (ISFSI), a license for the ISFSI will be maintained and any required security and monitoring would be provided by the ISFSI licensee. Evaluation of such a facility is not within the scope of this EIS. The Squaw Creek Reservoir is an existing site feature constructed for Comanche Peak 1 and 2. The evaluation of the impacts and maintenance of the Squaw Creek Reservoir dam is not within the scope of this EIS.*

Comment: Additionally, given the very long-term nature of the radiological hazard represented by the accumulation of radioactive particulates discharged during plant operations, it should be assumed that the reservoir will require, at the minimum, management and perimeter security for a time that extends far beyond the term of operation license. Questions surrounding post-license ownership of and responsibility for Squaw Creek Reservoir should be addressed and resolved in the EIS. (**0022-17** [Hadden, Karen])

Response: *The NRC regulations require the decommissioning of all nuclear power facilities. The licensee remains responsible for the site until the entire site is surveyed and released for unrestricted use.*

D.2.23 Comments Concerning Cumulative Impacts

Comment: The simple fact that you'll have twice as many reactors, the large visible target of the cooling towers, twice as much transportation issues, both for bringing the radioactive material in and dealing with it, if you ever choose to deal with it, off site, taking it off site. All of those are kind of geometrically increased problems over the two. (**0016-37** [Burnam, Lon])

Comment: But this is one thing that needs to be looked into. There's just something wrong. And if you add another power plant or two, to me, that would increase the flow of the—it would also increase the temperature of the water.

The water, I understand, it has—can't reach a certain temperature. But when they release that water, it's too hot. You need to release the water some way where it's not as hot, or find some cooling system after you release that water. I think it would help the situation. (**0016-65** [Cathey, Jack])

Comment: Adding two 1600 MW reactors to a site that has already been impacted by continued operation of Comanche Peak Units 1 and 2 will result in unprecedented concentrations of reactor operations. The cumulative impacts of operational releases of radiation from four operating reactors should be a part of a proper EIS. (**0022-27** [Hadden, Karen])

Comment: The NEPA document should estimate cumulative impacts of resources of concern associated with the proposed project. Cumulative impacts include the additive effects of a given parameter for all contributing projects in the study area and watershed. The document should define what cumulative impacts would result from implementation of the proposed project. Existing or future projects (Federal and non-Federal projects) with attendant pollutants should also be considered. (**0027-25** [Osowski Morgan, Sharon L.])

Comment: Luminant is adding two reactors on top of two existing reactors and the cumulative impacts of all four units must be addressed in terms of water discharges, air borne radioactivity, and radioactive waste. (**0032-9** [Reed, Cyrus])

Response: *Cumulative impacts are the impacts that result from the combination of the proposed action and past, present and reasonably foreseeable actions, regardless who takes the actions. The cumulative impacts associated with the construction and operation of the proposed Units 3 and 4 will be evaluated for each affected resource. The results of cumulative impact analyses will be presented in the Chapter 7 of the EIS.*

Comment: One last thing that I will mention in relationship to this global warming stuff, is there is also global warming on the thermal level. You know, it is not just how much C02 we are putting out into the atmosphere. It is actually the active heating of our planet by burning stuff. And that is something that isn't talked about very much. But that is what is referred to as the thermal load of the facility. And a nuclear plant has about three times the thermal load of a coal plant. The heat it emits and the water that it heats up is three times the amount of the average coal plant. So that is also something to consider.

(**0017-65** [Rittenhouse, Ryan])

Response: *Contributions of both direct heat emissions and greenhouse gases to cumulative effects on global climate change will be addressed in Section 7.11 of the EIS.*

Comment: There is a carbon footprint of nuclear plants. Approximately, it is estimated that about a million tons of C02 every year is attributed to one nuclear plant. And that is because of the mining process and everything else.

Yes, there is no C02 coming -out of the water coolant towers or anything like that, but there is fossil fuel burning that goes on in relationship to nuclear power generation. And it does have a carbon footprint.
Also, you are probably well aware that nuclear plants take a lot of concrete to build. And it is estimated that in every ton of concrete, there is about a ton of C02 that is released in

manufacturing that concrete. So this all adds up. And it estimated that it accounts, the amount of C02 is about the same as about a fifth to a third of a gas plant. So yes, it is less. But there are other forms—there isn't none. (**0017-64** [Rittenhouse, Ryan])

Comment: nuclear energy is not carbon free. From the cycle, the whole nuclear cycle from uranium mining, ... But the whole process from mining and milling and enrichment, fuel fabrication, and disposal of radioactive waste do add significant greenhouse gas emissions to this planet. (**0017-78** [Stuard, Gary])

Comment: The most prevalent global warming impacts come from increased heat and humidity in the atmosphere. At a nuclear power plant two-thirds of the heat energy gets emitted into the air and heated water vapor is released into the air. Thus nuclear reactors themselves are global warming agents in terms of heat, including water vapor from steam and heat radiating from cooling towers and ponds. The EIS should contain an analysis of the production of heat energy emitted into the atmosphere and water by Comanche Peak Units 3 and 4 in terms of contributions to global warming. (**0022-24** [Hadden, Karen])

Response: *The cumulative effects of heat, water vapor, and greenhouse gas emissions by construction and operation (including the fuel cycle) of the proposed units on global warming will be addressed in Section 7.11 of the EIS.*

D.2.25 Comments Concerning the Need for Power

Comment: The right way to meet our energy needs right now is through energy efficiency, first and foremost, through better building codes. And that's starting to happen throughout the state. Many cities are passing building codes. If we just get smarter about our energy use, we won't need so much. I maintain that these reactors are not necessary. (**0016-13** [Hadden, Karen])

Comment: one thing that I hope you'll do in your assessment of their assessment is to look carefully at their section dealing with the need for energy and the need for this type of power.

One thing I would say is, because of when their assessment was written, it was based upon numbers which we already think aren't legitimate. Those numbers are based on ERCOT projections of 2007. Already the ERCOT projections about power needs in Texas of May of 2008 have a much different view on the need for additional power in the coming years. And that's simply in part because of changes in the growth of our economy, but also in part because Texas has fairly aggressively begun to implement energy-efficiency programs.

And so our—we don't believe this plant is needed to meet our energy needs, and we think there are documents out there that would support that view, including ERCOT's own projections.

And I would also point out that we have a new Speaker of the House, someone who is very much in favor of energy efficiency. He passed legislation last session. Part of that legislation was to commission a report to look at the potential for greater gains in energy efficiency so we can meet more of our needs through energy-efficiency programs. So I would urge you to both look at the Itron report—and I can—in my written comments, I can get you a reference to that, but also—I don't know what your time line is, but also look at the actions during this legislative session. We expect, with the new Speaker of the House and with substantial interest in both the House and the Senate on both energy efficiency and promoting other sources of energy, like solar, geothermal, biomass, there will be significant legislative action that will add to our power mix in Texas, not in terms of nuclear, but in terms of both energy efficiency and other renewables.

So I want you to look at that projection, look at some of the studies that have been done by Itron, by ACEEE and others for Texas, to see if their assessment is realistic in terms of what's needed in Texas and whether we can't meet this demand through other means, including means that, frankly, Luminant is looking at, like wind, and I know they're looking at the potential for utility-scale solar. So I'd urge you to look at that. (**0016-50** [Reed, Cyrus])

Comment: Luminant has not proven there is a need for this new energy.

- The application ignores the effect energy efficiency and renewable energy will have in the future. Are recent state-mandated energy efficiency and renewable energy goals be factored into the energy needs assessment?
- Studies have shown that Dallas/Ft. Worth could meet 101% of projected growth in demand using efficiency and renewable energy.
- State energy use projections should be revisited in light of the economic downturn.

(**0019-21** [Hadden, Karen])

Response: *The EIS Chapter 8 analysis of need for power will reflect ongoing efforts to promote energy efficiency, conservation mandates, and updated demand forecasts by ERCOT.*

Comment: Moreover, the report [ER] largely discounts the role energy efficiency can play. Nonetheless, Luminant will be operating and selling power within ERCOT, where considerable advances in energy efficiency programs have resulted. First, the Texas Legislature through SB 7 in 1999 required the large transmission companies to meet 10 percent of their growth in demand through energy efficiency programs, a requirement that was doubled in 2007 with the passage of HB 3693. The program at the nine investor-owned utilities has been successful. Full reports of the program are available at

http://www.texasefficiency.com/report.html

The following table is from the 2007 report from Fronteir Associates and demonstrates the success of the program in reducing peak demand and saving energy for a fraction of the cost of the nuclear plant.

HB 3693 also required the Public Utility Commission to look at the potential for utilities meeting 50 percent of the growth in demand through energy efficiency programs, and the resulting study concluded that Texas statewide could reduce its peak energy demand by 23 percent by 2018, and that the 50 percent goal by 2015 was economically and technically achievable. The full report – by ITRON – is available through the Public Utility Commission website. http://www.puc.state.tx.us/rules/rulemaking/33487/33487.cmf. This legislative session, bills have already been introduced that would accomplish that or similar goals (HB 280, SB 601). (**0032-16** [Reed, Cyrus])

Response: *Chapter 8 of the EIS will reflect legislative mandates for energy conservation that apply to regulated portions of the electric power delivery system in Texas and updates to ERCOT forecasts that reflect the initial impacts of these mandates.*

Comment: We don't need the energy. (**0017-11** [Burnam, Lon])

Comment: We all know that we need to produce more energy. (**0017-15** [Burnam, Lon])

Comment: Energy efficiency can reduce electric demand, and help address global warming today, while building the local economy. (**0030-8** [Hadden, Karen])

Table 3. Utility Funds Expended with Associated Demand and Energy Savings 2007* (From the Annual Energy Efficiency Reports, including SB7 and non-SB7 programs.)

Utility	Funds Expended ($)	Demand Savings (MW)	Energy Savings (MWh)
AEP-SWEPCO	1,234,200	1.61	5,496
AEP-TCC	5,203,100	9.50	25,491
AEP-TNC	993,800	1.37	4,894
CNP	19,563,098	52.28	135,364
EGSI	2,968,000	5.34	15,034
EPE	1,115,000	1.21	5,000
TNMP	819,757	2.30	3,394
Oncor	46,384,709	89.23	216,371
Xcel	2,008,000	4.14	16,818
TOTAL	80,289,664	166.98	427,862

* All energy savings are calculated at meter.

Response: *Chapter 8 of the EIS will describe the results of the NRC staff independent review the need for power and will present an analysis of economic conditions and other factors that influence the need for power.*

Comment: Based on the assumption that a federal repository will not be available for spent fuel management, the EIS should consider the environmental and public health consequences of either the State of Texas or the United States government becoming the de facto custodians of spent fuel at the Comanche Peak site after the operating license has lapsed and post-closure activities of the licensee have been completed. If, at the end of the post-closure responsibilities of the licensee, spent fuel remains on-site it will have to be managed and secured for the indefinite future. The only institutional capacity for long-term spent fuel management is a unit or units of government. To the extent that units of government are responsible for managing on-site spent fuel, calculations for employee exposures and public exposures should be included in the EIS. Additionally, other public health environmental consequences reasonably associated with indefinite governmental management of spent fuel on site should also be considered in the EIS.

The EIS should also consider specifically what entity would actually have legal ownership of the spent fuel after the operating license has lapsed and post-closure activities have ceased. Will the ownership of the spent fuel default to some unit of government? If so, what costs can be reasonably anticipated by the de facto custodian/owner of spent fuel? Do the anticipated costs

have environmental and public health consequences? The EIS should resolve these questions. (**0022-42** [Hadden, Karen])

Response: *Impacts related to the uranium fuel cycle and its transportation steps, including disposal of low-level radioactive waste and spent fuel, will be addressed in Chapter 6 of the EIS. The generic impacts of the fuel cycle are codified in 10 CFR 51.51(b), Table S-3, "Table of Uranium Fuel Cycle Environmental Data." Per the guidance in 10 CFR 51.51 and Section 5.7 of NUREG-1555, the staff will rely on Table S-3 as a basis for uranium fuel cycle impacts. The safety and environmental effects of long-term storage of spent fuel on site have been evaluated by the NRC and set forth in the Waste Confidence Rule at 10 CFR 51.23 (http://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-0023.html).*

D.2.26 Comments Concerning Alternatives - No-Action

Comment: There are lots of impacts, environmental and otherwise of all alternatives, too, including the oft-overlooked alternative of doing little or nothing about the situation which the project is being considered. (**0017-58** [Wohler, Will])

Response: *The no-action alternative will be evaluated and addressed in Chapter 9 of the EIS in comparison with the proposed action.*

D.2.27 Comments Concerning Alternatives - Energy

Comment: I would suggest that we very seriously consider geothermal energy. (**0016-61** [Wildwood, Kathleen])

Comment: There are so many sustainable products that need to be looked into, such as was mentioned, geothermal, solar, wind, even gas. But that has disadvantages too, but I would like to ask that you look at those questions. (**0016-76** [Shaar, Julie])

Comment: I think there are cleaner, safer and more economical ways to generate electricity, which is what everybody wants. (**0017-34** [Cohn, Ann])

Comment: TXU could produce electricity safer, cleaner, and cheaper, it is my opinion, if they went solar or wind. (**0017-37** [Cohn, Ann])

Comment: There are alternatives; wind, solar. We can do better. Why can't we be visionary about energy? (**0017-47** [Bisbee, Kay])

Comment: They surely knew, saw the handwriting on the wall for the future, existing and future potential for renewable energy. Yet they went ahead and bought at least Luminant, knowing that they had designs to build these new nuclear power plants. All these facts were available. (**0017-53** [Duncan, Jim])

Comment: Alternative renewable energy sources have their own serious environmental impacts. (**0017-59** [Wohler, Will])

Comment: The energy of the future lies in wind and solar, energy efficiency and other forms of renewable power. (**0017-61** [Rittenhouse, Ryan])

Comment: Additionally, processing uranium into fuel requires substantial amounts of electrical energy and water. The impacts from the use of the substantial amounts of energy and water must be part of a proper EIS. Without this analysis of the use of energy and water in the production of uranium fuel there cannot be a meaningful comparison with practicable

alternatives that do not utilize large amounts of water and electricity for fuel production. (**0022-5** [Hadden, Karen])

Comment: The Comanche Peak environmental report also fails to carefully compare the greenhouse gas effects expected from each of the alternative technologies. This analysis is crucial because of the relationship between greenhouse gases and global warming and because it is expected that the use of fossil fuels to support the uranium fuel cycle will become more expensive over time. This circumstance will be aggravated by the anticipated use of foreign produced uranium that will have a greater greenhouse gas impact because of, among other reasons, a longer supply line. In contrast, renewable fuel technologies are expanding manufacturing capacities domestically. Hence, the EIS should project anticipated greenhouse gas emissions related to the competing technologies. (**0022-51** [Hadden, Karen])

Comment: Alternatives that assess local power generation should be evaluated. For example, several small, local power plants may equal the amount of electricity generated by the proposed Comanche Peak Nuclear Power Plant (CPNPP) project. Local power generation, in contrast to large regional power generation, may have benefits that have not been explored (e.g., local transmission and use of power instead of long distance transmission, ability to deliver electricity in the event of a catastrophic event, smaller potential impacts to water use, waste generation, etc.) (**0027-3** [Osowski Morgan, Sharon L.])

Comment: Safer, cleaner, more affordable ways are now available to generate electricity, including wind, solar and geothermal energy. (**0030-7** [Hadden, Karen])

Response: *Alternative energy sources, including fossil fuels and renewable energy sources such as wind, solar, and geothermal, will be evaluated and addressed in Chapter 9 of the EIS in comparison with the proposed action.*

Comment: If we get energy storage to combine the wind and the solar power, we can have a good base load impact. Our real needs are for peak energy to begin with, and we get that with West Texas Wind. (**0016-15** [Hadden, Karen])

Comment: The Comanche Peak environmental report generally understates the efficacy of alternative sources of electric power generation. p. 9.2-1, et seq. The EIS should evaluate alternative sources of generating capacity based on the current data available regarding capacity factors, technological advances that overcome intermittency challenges regarding wind and solar power, and historical operational experience. It should be noted that Texas leads the nation in wind generation. In 2005, Texas set a goal of 5880 MW of wind by 2015, but the state has already exceeded this amount, and nearly $5 billion additional transmission lines have already been approved. The costs of various forms of energy generation should be considered as well, especially considering that the Federal Energy Regulatory Commission (FERC) published the following data in 2008, showing nuclear power to be the most expensive way to generate electricity.

The Comanche Peak environmental report assumes that renewable fuels such as wind and solar cannot provide adequate baseload generating capacity. However, recent advances in technology such as compressed air energy storage and improved battery storage capacity call into question some of the environmental report's assumptions concerning problems with intermittency. Additionally, current technology advances are proving the assumptions about renewable fuels made in the environmental report to be outdated and inaccurate. Expansions of renewable energy capacity are occurring daily. In contrast, nuclear capacity, as a percentage of total generating capacity, is shrinking. The EIS should evaluate the competing technologies in

light of current energy policy which places a greater emphasis on renewable fuels than did previous energy policy that favored nuclear power and fossil fuels. (**0022-48** [Hadden, Karen])

Comment: The Comanche Peak environmental report understates the ability of Texas to meet its energy demands through energy efficiency and renewable energy. While acknowledging that these technologies will play an increasing role, the report submitted by Luminant assumes that Texas needs large base-load plants to meet future energy demand and that solar, wind, and geothermal technologies are incapable of meeting these needs. Nevertheless, recent reports and advances in technology show that Texas can meet its energy demand through a combination of these technologies. (**0032-14** [Reed, Cyrus])

Comment: First of all, the Texas legislature only recently, in 1999, adopted a Renewable Portfolio Standard, requiring certain utilities to obtain part of their energy mix with renewable power. By 2005, the Legislature chose to raise the requirements to 5,880 MWs by 2015 and a target of 10,000 MWs by 2025. However, Texas has already surpassed the 2105 target and recently approved a $5 billion transmission plan, awarded to some 10 companies, that will lead to approximately 18,000 MWs of largely wind development between existing and planned development. This should occur before 2015. (**0032-15** [Reed, Cyrus])

Comment: Furthermore, recent developments prove that costs for solar power, energy storage and geothermal energy have declined and will continue to decline in the future, especially given federal action to stimulate these new sources of energy. Luminant itself is engaged in a joint investment with Shell to developed air compressed storage from a wind farm in West Texas that could lead to 1,000 MWs of stored energy, in addition to the wind power itself.

The recent Federal Stimulus package as well as action by the Texas legislature could make these energy sources even more attractive, and the planned expansion of the nuclear plant should be judged against these energy sources. We would suggest that the EIS incorporate any recent changes in state and federal law which would make the development of these alternatives more likely. We would suggest that the life-cycle costs, environmental and public health impacts of nuclear be compared to solar, wind, geothermal, coal, natural gas, and energy efficiency and conservation as part of the EIS. (**0032-17** [Reed, Cyrus])

Response: *Alternative energy sources, including combinations of sources such as fossil fuels and renewable energy sources, will be evaluated and addressed in Chapter 9 of the EIS in comparison with the proposed action. Due to the extensive wind resources in the ERCOT service area and the actions already taken or planned to expand wind energy, Chapter 9 of the EIS will provide a detailed analysis of environmental impacts of wind energy as alternative to the proposed action.*

Comment: An expanding number of studies show that nuclear energy is neither clean nor cost-effective in relation to other energy alternatives such as wind and solar energy. The cost of the possible new reactor- up to $22 billion- could retrofit over 7 million Texas homes to make them more energy efficient. (**0010-2** [Shroyer, Danielle])

Comment: There are cleaner ways that make a stronger local economy. The PUC, the Public Utility Commission of Texas, Commissioner Barry Smitherman, recently testified that for every dollar put into energy efficiency, we get two dollars' worth of savings back. (**0016-20** [Hadden, Karen])

Comment: The technique of analysis used in the Comanche Peak environmental report to determine the relative advantages of renewable fuels compared to nuclear power is inherently flawed. For example, the environmental report essentially eliminates conservation/energy efficiency as an alternative that should be considered. p. 9.2-3. The environmental report

excuses the consideration of conservation/energy efficiency, because Comanche Peak Units 3 and 4 will be merchant power plants. And as such, conservation and demand side management programs to encourage consumers to modify levels of electricity usage "are not within the capability or responsibility of the wholesale baseload merchant generator." *Id*. However, the Comanche Peak reactors would operate within the ERCOT system in Texas, so the market is not unlimited. They are bound to buy or sell electricity to within ERCOT, which is wholly within the state. The environmental report attempts to rationalize omission of conservation/energy efficiency measures by citing to NRC policy that has determined that conservation measures are not reasonable alternatives to merchant power plants that sell wholesale power. *Id.* However, the EIS should not be controlled by the same artificial constraint. The Comanche Peak nuclear power plant expansion proposal should be viewed in the larger context of other means by which to influence electricity usage. Adopting the environmental report's conclusions essentially allows merchant power plants to ignore the proven effectiveness of conservation and energy efficiency programs that have been tested numerous time by various utilities as a means to curtail demand.

Texas is in the process of taking further steps to pursue energy efficiency. A new report commissioned by the Texas Public Utilities Commission shows that the state could reduce electric usage by 23% if utilities invest more in efficiency measures, saving Texans as much $11.9 billion on their electric bills. The findings bolster the call by a coalition of local elected officials, business leaders, community groups and faith leaders for the Legislature to increase the mandate on utilities for energy efficiency investments. The Texas legislature passed an energy efficiency bill last session (2007) and is expected to strengthen energy efficiency commitments in 2009, as well as enacting improved buildings codes which will significantly reduce energy demand. The federal stimulus bill includes initiatives and incentives which will further these efficiency efforts and reduce the growth in demand for electricity. (**0022-49** [Hadden, Karen])

Comment: Two additional nuclear reactors are currently proposed by Luminant for the Comanche Peak site southwest of Dallas/Fort Worth near Glen Rose, Texas, where two reactors exist now. The proposed reactors could cost up to $22 billion. This sum used differently could instead retrofit over seven million homes to make them more energy efficient, saving money for consumers, creating local jobs, reducing pollution and addressing global warming directly right now. (**0030-2** [Hadden, Karen])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. While energy efficiency measures could reduce energy demands in the Comanche Peak service area, in accordance with NUREG-1555, a merchant power plant is not required to perform a demand side management analysis or consider measure to increase energy efficiency as an alternative to the proposed action.*

Comment: Be sure to keep the broad picture in view...

Why would we consider the environmental impact of any proposed project separately from considering the impacts of whatever the alternative(s) to that project are?? For that matter, how could we consider only the environmental impacts of the project?? There are lots of impacts, environmental and otherwise, of all the alternatives, too -including the oft-ignored alternative of doing little or nothing about the situation for which the project is being considered!!

Surely, if we don't take a broad view of the situation, we run the risk of skewed policy decisions, no? (& the narrower our focus, the greater the skewing risk!)

Alternative / Renewable energy sources have their own serious environmental Impacts! (not to mention their much lower energy 'density' & continuity of availability). For example, the infrastructure needed to harness these other power sources consumes tremendous resources (in materials, land & monetarily). And unless a great deal more resources are used for the capacity storage that all these sporadically-available power sources require, we'll still have to use conventional, always-available power sources to 'fill in' for when the Alternative / Renewable sources aren't available. (Wind & Solar are highly variable in availability!)

Excessive Conservation also has adverse environmental impacts -from the more impoverished conditions resulting from too much reliance on Conservation. A more prosperous society is more able to afford the costs of higher levels of environmental preservation!

Just as "No one is an Island" (unto themselves), we dare not consider, in isolation, the impacts of just one (kind of) proposal.

Something else to keep in mind as deliberation proceeds on these proposed new nuclear power generating facilities:

The validity of scientific (and other) theories & findings, is not in any way dependent on how many -or few -people express those theories & findings. Likewise, the wisdom of any particular public policy(ies) also has no necessary relationship to the number of people supporting them. None of those things bears any necessary relationship to majority (or minority) views. (**0018-3** [Wohler, Will])

Comment: The right way to meet our energy needs right now is through energy efficiency, first and foremost, through better building codes. And that's starting to happen throughout the state. Many cities are passing building codes. If we just get smarter about our energy use, we won't need so much. I maintain that these reactors are not necessary. (0016-13 [Hadden, Karen])

Comment: Wind and solar energy are well developed now and more affordable than nuclear power. Energy efficiency helps curb demand. We do not need nuclear power or the risks that it entails. (**0019-7** [Hadden, Karen])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. While energy efficiency measures could reduce energy demands in the Comanche Peak service area, in accordance with NUREG-1555, a merchant power plant is not required to perform a demand side management analysis or to consider measures to increase energy efficiency as an alternative to the proposed action. Chapter 9 of the EIS will describe potential impacts from alternative energy sources. Due to the extensive wind resources in the ERCOT service area and the actions already taken or planned to expand wind energy, Chapter 9 of the EIS will provide a detailed analysis of environmental impacts of wind energy as alternative to the proposed action.*

Comment: With the wind turbine, there may be an accident now and then, but you don't have thousands of people at risk from a radioactive waste release with a wind turbine. (**0016-19** [Hadden, Karen])

Comment: The Comanche Peak environmental report is also flawed to the extent that it fails to make a realistic comparison between the environmental impacts and public health consequences of nuclear power compared to energy efficiency and renewable fuels. For example, there should be a side-by-side comparison of mortality and morbidity consequences of nuclear power compared to energy efficiency and renewable fuels in order to accurately determine the consequences of each. Of course, the comparisons would indicate that energy efficiency and renewable fuels do not cause increased mortality and morbidity while nuclear fuel

does. Moreover, there should be a side-by-side comparison of nuclear fuels and energy efficiency and renewable fuels, related to the effects of catastrophic accidents. Such a side-by-side comparison would indicate that a catastrophic loss of, for example, a wind generating accident or capacity loss would be negligible compared to a major loss of cooling accident at Comanche Peak Units 3 and 4. The EIS should engage such a comparative analysis in order to fairly determine the environmental consequences and public health impacts of each. (**0022-50** [Hadden, Karen])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. The EIS will evaluate the risk and consequences of design basis and severe accidents in Chapter 5. The discussion of alternative energy sources, including wind and solar, will be addressed in Chapter 9 of the EIS, which will compare and describe potential environmental impacts from alternative energy sources. Alternative energy sources will be evaluated first to determine if the energy source can meet the purpose and need of the project. If they cannot meet the purpose and need then they are not evaluated further. As part of the COL process and in conjunction with the EIS, the NRC staff will conduct a safety review detailing site-specific safety analysis and design specific analysis, including NRC acceptance.*

Comment: It's [nuclear power is] not a useful solution to climate change. You can't build reactors fast enough to meet any significant portion of the energy needs to be produced. (**0016-12** [Hadden, Karen])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. Alternative energy sources, including fossil and renewable energy sources such as wind, solar, and geothermal, will be evaluated and addressed in Chapter 9 of the EIS in comparison with the proposed action.*

Comment: Do I have to waste the energy I'm wasting today? In the little things that we do, inefficient lighting, the extras that we do through every day, the things that we leave on that we could turn off, do we have to do that so badly that we're willing to leave a legacy of radioactive waste that literally will last millions of years, that someone someday is going to have to repackage and make sure it's contained safely so it doesn't escape into the environment. (**0016-17** [Hadden, Karen])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. While energy efficiency measures could reduce energy demands in the Comanche Peak service area, in accordance with NUREG-1555, a merchant power plant is not required to perform a demand side management analysis or consider measure to increase energy efficiency as an alternative to the proposed action. Section 9 of the EIS will describe potential impacts from alternative energy sources. The impact of the uranium fuel cycle, including disposal of low-level radioactive waste and spent fuel, will be addressed in Chapter 6 of the EIS.*

Comment: there will be significant legislative action that will add to our power mix in Texas, not in terms of nuclear, but in terms of both energy efficiency and other renewables.

And I left in the back sort of some of the legislative goals that Lone Star Chapter of the Sierra Club has, many of—all of which, frankly, are also for economic benefit. It's about promoting other kinds of energy use and energy efficiency that are also good for the economy. And our view is that if you look at all the different energy sources, nuclear really should be the last option we look at.

So I want you to look at that projection, look at some of the studies that have been done by Itron, by ACEEE and others for Texas, to see if their assessment is realistic in terms of what's needed in Texas and whether we can't meet this demand through other means, including means that, frankly, Luminant is looking at, like wind, and I know they're looking at the potential for utility-scale solar. So I'd urge you to look at that. (**0016-51** [Reed, Cyrus])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. The discussion of alternative energy sources, including wind and solar, will be addressed in Chapter 9 of the EIS, which will compare and describe potential environmental impacts from alternative energy sources. Due to the extensive wind resources in the ERCOT service area and the actions already taken or planned to expand wind energy, Chapter 9 of the EIS will provide a detailed analysis of environmental impacts of wind energy as alternative to the proposed action.*

Comment: The right way to meet our energy needs right now is through energy efficiency, first and foremost, through better building codes. And that's starting to happen throughout the state. Many cities are passing building codes. If we just get smarter about our energy use, we won't need so much. I maintain that these reactors are not necessary. (**0016-14** [Hadden, Karen])

Comment: And we all know that we need to do conservation. (**0017-16** [Burnam, Lon])

Comment: An easier way to increase, or to use energy more efficiently is a better way of conserving energy, and Texas leads in being energy wasteful. Energy conservation and energy efficiency are easy ways to go. (**0017-79** [Stuard, Gary])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. While energy efficiency measures could reduce energy demands in the Comanche Peak service area, in accordance with NUREG-1555, a merchant power plant is not required to perform a demand side management analysis or consider measure to increase energy efficiency as an alternative to the proposed action.*

Comment: say, cut this off right now, and go for alternative sources of energy, truly green jobs. If you want a jobs program, get one that is not going to hurt the next generation. (**0017-73** [Sanders, Jan])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. Chapter 9 of the EIS will describe potential impacts from alternative energy sources.*

D.2.28 Comments Concerning Alternatives - System Design

Comment: The study should also include an analysis of pollution impacts downstream from water contaminated by chemical treatment such as biocides, algaecides, pH adjustors, corrosion inhibitor and silt dispersant chemicals injected at the reactor site as well as chlorine, salts and non-radioactive effluent. The differential impact of treatment of 100 percent of the water versus the lesser amount of treatment proposed by the applicant should be considered. (**0022-19** [Hadden, Karen])

Comment: The proposed project will withdraw water for cooling tower makeup from Lake Granbury and return the cooling tower blowdown back to Lake Granbury. Currently, Lake Granbury is listed as being impaired for chlorides. CPNPP should know that a total maximum daily load (TMDL) will be prepared for Lake Granbury to address the chloride impairment. The TMDL will give a wasteload allocation for chlorides to CPNPP for its cooling tower blowdown

discharge. CPNPP should be aware that it may be required to meet the water quality standard for chlorides or significantly reduce the level of chloride in its discharge. Texas Commission on Environmental Quality (TCEQ) is responsible for developing TMDLs and TMDL Implementation plans. EPA reviews and approves TMDLs developed by TCEQ. (**0027-11** [Osowski Morgan, Sharon L.])

Comment: Best Management Practices (BMPs) should be used to reduce erosion during construction. Typical BMPs include the use of staked hay bales, silt fences, mulching and reseeding, and appropriate buffer zones along water bodies. The document should include an erosion control plan or reference the State erosion control regulations and a commitment to compliance. Compliance should include both BMP application and maintenance. (**0027-8** [Osowski Morgan, Sharon L.])

Response: *The construction and operation of a nuclear plant involves some discharges to nearby water bodies. The Clean Water Act designated the U.S. Environmental Protection Agency as the Federal agency with responsibility over effluent discharges to the nation's waters. While it only regulates radiological effluents, the NRC does have the responsibility under NEPA to assess and disclose the expected impacts of the proposed action on water quality throughout the plant's life. The staff's assessment of the nonradiological impacts to water quality will be presented in Chapter 5 of the EIS. Luminant's proposed blowdown waste water treatment would return water to Lake Granbury in compliance with all regulatory water quality requirements. Consequently, additional levels of water treatment would not be necessary. Alternatives for additional water treatment, including those suggested in the comment, will not be addressed in the EIS.*

Comment: The Energy Policy Act of 2005 directed the United States Department of Energy to research and develop proliferation resistant fuel recycling and transmutation technologies that are intended to minimize damage to the environment and public health and to enhance safety of spent fuel management. The EIS should consider this alternative and determine whether it is technologically feasible and prudent to pursue. The reason for this alternative to be considered as a spent fuel management technique is because it assumes that a federal repository for spent fuel will not be available. Proliferation resistant fuel recycling and transmutation technologies may have the effect of managing spent fuel in a way that minimizes adverse impacts to the public's health and the environment. Therefore, the EIS should fully develop the state of these technologies and determine whether such would be available for purposes of managing spent fuel at Comanche Peak. (**0022-41** [Hadden, Karen])

Response: *Chapter 6 of the EIS evaluates the fuel cycle impacts including both a no-recycle process and a recycle process. The safety and environmental effects of spent fuel storage onsite have been evaluated by the NRC and, as set forth in the Waste Confidence Rule (10 CF 51.23), the NRC generically determined that such storage could be accomplished without significant environmental impacts. In the Waste Confidence Rule, the Commission determined that spent fuel can be safely stored onsite for at least 30 years beyond the plant's life.*

Comment: When the first two reactors were built the sky glow light pollution went from zero to off the scale in the direction of the reactors. The latest round of fixture modernization reduced the sky glow by about 40 percent. Our Concern is the two new units will increase the sky glow beyond what it was after initial construction. We would like to see a comprehensive relighting program for all four reactors, using the latest technology zero cut-off fixtures, such as those approved by the International Dark-sky Association in order to achieve an overall reduced light pollution impact than what now exists. www.darksky.org (**0024-1** [Miller, Russ])

Response: *The physical impacts of the facility operation at the proposed site, including the impacts of the proposed plant lighting, will be evaluated in Chapter 5 of the EIS.*

Comment: In my conversations with engineers, it is commonly believed that a better engineered cooling system could easily reduce or eliminate this water loss. [Loss of 55,000 acre feet per year to evaporative cooling.] FBR [Friends of the Brazos River] respectfully asks that you delay this permit until a less wasteful cooling system can be designed. (**0025-2** [Lowe, Ed])

Response: *The construction and operation of a nuclear plant involves the consumption of water. The staff will independently assess the impact of these consumptive water losses on the sustainability of both the local and regional water resources. This assessment will consider both current and future conditions, including changes in water demands to serve the needs of the future population, and changes in water supply resulting from climate variability and climate change. While the NRC does not regulate or manage water resources, it does have the responsibility under NEPA to assess and disclose the impacts of the proposed action on water resources. The staff's assessment of the impacts on water resources from the plant's proposed cooling system will be presented in Chapters 4 and 5 of the EIS for construction and operation, respectively. The impacts of alternatives to the proposed cooling system will be evaluated in Chapter 9 of the EIS.*

Comment: The Comanche Peak report admits that there is no federal site for disposition of high-level nuclear waste and that present options for disposal of low-level radioactive waste are limited. Given the difficulty in siting both low-level and high-level radioactive waste, an EIS should consider all of the waste disposal options, including long-term storage at the site itself. (**0032-12** [Reed, Cyrus])

Response: *The impact of the uranium fuel cycle, including disposal of low-level radioactive waste and spent fuel, will be addressed in Section 6 of the EIS. The generic impacts of the fuel cycle are codified in 10 CFR 51.51(b), Table S-3, "Table of Uranium Fuel Cycle Environmental Data." Per the guidance in 10 CFR 51.51 and Section 5.7 of NUREG-1555, the staff will rely on Table S-3 as a basis for uranium fuel-cycle impacts. The Waste Confidence Rule (10 CFR 51.23) has determined that spent fuel can be safely stored on site for at least 30 years beyond the life of the plant.*

Comment: Given the uncertainty involved with licensing the Yucca Mountain Nevada facility for the disposal of spent nuclear fuel, all utilities planning on constructing additional nuclear units on current sites should consider contingencies for long-term storage of waste on-site. (**0027-6** [Osowski Morgan, Sharon L.])

Response: *The safety and environmental effects of spent fuel storage onsite have been evaluated by the NRC and, as set forth in the Waste Confidence Rule (10 CF 51.23), the NRC generically determined that such storage could be accomplished without significant environmental impacts. In the Waste Confidence Rule, the Commission determined that spent fuel can be safely stored onsite for at least 30 years beyond the plant's life.*

D.2.30 Comments Concerning Benefit - Cost Balance

Comment: The two proposed Comanche Peak reactors could cost up to $22 billion according to Luminant's own documents. This is before cost overruns. This amount could make 7.3 million homes more energy efficient. Pursuing efficiency lowers bills, reduces electricity consumed, and creates local jobs. The existing Comanche Peak reactors ran ten times over budget and were years late coming online. What if this happened again? (**0019-8** [Hadden, Karen])

Response: *These points will be noted and discussed in the EIS. NUREG-1555 call for the Benefit-Cost analysis to include consideration of internal and external costs. The scope of the analysis for internal costs are those costs for the design proposed by the applicant (NUREG-1555). Scenario analysis of vast departures from these costs is therefore outside the scope of this analysis.*

Comment: Further, I request to see an analysis of water use per kilowatt hour produced for the proposed new plant reactors and the cost of this power if Luminiant had to pay current wholesale water rates. (**0021-3** [Richardson, Karen])

Response: *The EIS will reflect the cost of cooling systems in its analysis and the water quantities lost through evaporation and other losses in Chapter 10 of the EIS.*

Comment: 3. Reactor Lifespan - (a) What is the average effective life span of a nuclear reactor?

(b) How much additional funding will be required to maintain an aging reactor? (**0023-7** [Ubico, Jean])

Response: *The assumptions of reactor life span and costs used in this analysis will be provided in Section 10 of the EIS. Costs for all phases of reactor construction and maintenance will be discussed, but data are specific to the proposed plants and the alternatives chosen and cannot be applied to a "representative" reactor. The license period for a combined license is 40 years. A licensee can request renewal for an additional 20 years. The cost benefit analysis is done for the license period of 40 years. It would not be appropriate to assume additional cost or benefit for an additional 20 years of license renewal when that action has not been requested or approved.*

Comment: The second piece entitled 'Troubled History of Comanche Peak' is intended to bolster the case for including consideration of existing reactors' history in the EIS. The past is prelude to the future. The EIS must address the possibility that difficulties similar to those which occurred in the past might occur again. The problems that arose in the past were frequently related to using new technologies. As the USAPWR design proposed for Comanche Peak Units 3 and 4 has never been built anywhere in the world, the likelihood of problems and resulting health and environmental impacts is likely to increase. A full analysis of the difficulties of building the reactors successfully including an examination of the history of existing reactors should be undertaken in the EIS. (**0030-1** [Hadden, Karen])

Response: *The EIS will contain a detailed analysis of the proposed reactors and comparisons of alternatives to the proposed reactors. A detailed analysis of the history of the nuclear power industry that goes beyond the proposed reactors and the alternatives is beyond the scope of this EIS.*

Comment: Nuclear technology is not cost effective, requiring massive subsidies from taxpayers. (**0031-8** [Gentling, Suzanne])

Response: *The NRC is not involved in establishing energy policy; rather, it regulates nuclear energy to protect public health and safety within existing policy. An analysis of the proposed facilities and alternatives will be presented in Chapter 9 of the EIS.*

Comment: I have read, from a financial standpoint, how much taxpayers are paying for this nuclear power plant. I have read the bills that have to do with the energy bills for 2005 and so on, that show all the subsidies that are going into the nuclear power plants. So we are paying for it. (**0017-50** [Harper, Debbie])

Response: *Chapters 9 and 10 of the EIS will review the costs of constructing the plant and compare the proposed site with alternatives. Non-monetary costs, such as environmental impacts and other costs, will also be analyzed and summarized in a benefit cost section. The NRC staff is aware that nuclear energy receives some subsidies and that all other energy forms are also subsidized in different ways. A complete analysis that compares all of these subsidies on a common basis is beyond the scope of the EIS.*

Comment: [The proposed Comanche Peak units 3 and 4 are a] Waste of money. (**0017-81** [Sanders, Jan])

Response: *Chapter 10 of the EIS will contain an analysis of the need for the power for the proposed facility, the alternatives to the proposed facility, and a summary of benefits and costs. Ultimately, the plant will be evaluated relative to other ways to meet the forecasted demands for power.*

Comment: Ecosystem services are the benefits humans derive from nature. The concept of ecosystem services encompasses natural renewable resources and processes that are essential to human well being like clean water, clean air, and a host of other services that have not been traditionally incorporated into cost-benefit analyses, but can be considered. The concepts of ecosystem services and sustainability are interconnected. If use of ecosystem services exceeds the environment's capacity to perform those services, then the activity is not sustainable over time. The NEPA document should discuss aspects of ecosystem services and sustainability as appropriate. (**0027-24** [Osowski Morgan, Sharon L.])

Response: *The comment correctly notes that the environment and other natural systems provide services that contribute to societal well-being, but that these services are not marketed and are difficult to measure. For this reason, the EIS process has traditionally sought to add the costs of mitigating external impacts to the costs summarized in Chapter 10 of the EIS. Where possible a quantitative value for mitigated costs will be used and where this is not possible a qualitative analysis will be used. Unmitigated costs are termed unavoidable and are valued and included in the analysis in the same way. The scope of this analysis is described in NUREG-1555 p. 2.4.2 and will be followed in Chapter 10 of the EIS.*

Comment: The cost to the taxpayers. I think all of us should feel quite sore already from the fact that we have been stuck with high bills, given corporate malfeasance and corruption, and that we have been left with paying the bill. The only reason why nuclear power could be on the plate or the playing field is the fact that it is going to be heavily subsidized, i.e.; you and I will pay for it. I don't know about you, but that doesn't leave a good taste in my mouth.
Also a recent study that has just recently come out, called Business Risks and Costs of New Nuclear Power has put the generation cost of power or power from nuclear power plants at from 25 to 30 cents per kilowatt hour. That is triple the current U.S. electricity rate. (**0017-77** [Stuard, Gary])

Response: *The EIS will review the environmental costs of constructing the plant and compare the proposed site with alternatives. Non-monetary costs, such as environmental impacts and other costs, will also be analyzed and summarized in a benefit cost section. The NRC staff is aware that nuclear energy receives some subsidies and that all other energy forms are also subsidized in different ways. A complete analysis that compares all of these subsidies on a common basis is beyond the scope of the EIS. However, it is noteworthy that following the restructuring of the ERCOT electric power system, wholesale power producers must compete with other power suppliers and that their investors have their capital at risk if the facilities cannot successfully compete in the marketplace. Under this system, power generators are not subject to rate of return regulation and have no guaranteed profits.*

Comment: The indirect or secondary impacts should be assessed. In particular, the potential impacts associated with water use from sources other than SCR. The secondary impacts from fuel mining and processing should also be investigated. Currently, there does not seem to be enough information in Section 10.2.1.6 section to evaluate. The ER states impacts from mining on geological resources are expected to be small. This statement is not consistent with the large scale and wide-ranging impacts mining may potentially have on the environment. Additional information should be provided. (**0027-26** [Osowski Morgan, Sharon L.])

Response: *Chapters 4 and 5 of the EIS will review secondary impacts from constructing and operating the plant including impacts from water usage and from the nuclear fuel cycle, including mining, processing, and fuel fabrication. Where staff finds the applicant's analysis unpersuasive or inadequate, staff will request additional information from the applicant. If necessary staff will carry out additional independent analyses. The public will have an opportunity to review the draft EIS and to comment on it.*

Appendix E

Draft Environmental Impact Statement Comments and Responses

Appendix E

Draft Environmental Impact Statement Comments and Responses

As part of the U.S. Nuclear Regulatory Commission (NRC) review of the Luminant Generation Company LLC (Luminant) application for combined licenses (COLs) for proposed Units 3 and 4 at the Comanche Peak Nuclear Power Plant (CPNPP) site, the NRC and the U.S. Army Corps of Engineers (Corps or USACE) (together referred to as the "review team") solicited comments from the public on the draft environmental impact statement (EIS). The draft EIS was issued in August 2010. A 75-day comment period began on August 13, 2010, when the U.S. Environmental Protection Agency (EPA) issued a *Federal Register* Notice (75 FR 49486) of filing of the draft EIS to allow members of the public to comment on the results of the environmental review.

As part of the process to solicit public comments on the draft EIS, the review team:

- Placed a copy of the draft EIS at the Somervell County Public Library in Glen Rose, Texas, and at the Hood County Public Library, in Granbury, Texas
- Made the draft EIS available in the NRC's Public Document Room in Rockville, Maryland
- Placed a copy of the draft EIS on the NRC website at www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1943/
- Provided a copy of the draft EIS to any member of the public who requested one
- Sent copies of the draft EIS to certain Federal, State, Tribal, and local agencies
- Published a notice of availability of the draft EIS in the *Federal Register* on August 12, 2010 (75 FR 48998)
- Filed the draft EIS with the U.S. Environmental Protection Agency (EPA)
- Held two public meetings on September 21, 2010, in Glen Rose, Texas.

A combined total of approximately 250 people attended the two public meetings, and numerous attendees provided oral comments. A certified court reporter recorded these oral comments and prepared written transcripts of the meeting. The transcripts of the public meetings were published in October 2010 (see Agencywide Documents Access and Management System [ADAMS] Accession Number ML102850649 for the transcript of the afternoon meeting and ML102850689 for the evening meeting). In addition to the comments received at the public meeting, the NRC received 62 letters and e-mail messages with comments.

The comment letters, e-mail messages, and transcripts of the public meeting are available in ADAMS, which is accessible at http://www.nrc.gov/reading-rm.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC's Public Document Room reference staff at 1-800-397-4209 or 301-415-4737. The ADAMS accession numbers for the letters and e-mail messages are provided in Table E-1.

E.1 Disposition of Comments

Each set of comments from a given commenter was given a unique correspondence identifier, allowing each set of comments from a commenter to be traced back to the transcript, letter, or e-mail in which the comments were submitted.

After the comment period concluded, the review team considered and dispositioned all comments received. To identify each individual comment, the team reviewed the transcript of the public meeting and each letter and e-mail received related to the draft EIS. As part of the review, the review team identified statements that it believed were related to the proposed action and recorded the statements as comments. Each comment was assigned to a specific subject area, and similar comments were grouped together. Finally, responses were prepared for each comment or group of comments.

This appendix presents the comments and responses to them grouped by similar issues as follows:

- Comments Concerning Process – COL
- Comments Concerning Process – NEPA
- Comments Concerning Site Layout and Design
- Comments Concerning Land Use – Site and Vicinity
- Comments Concerning Land Use – Transmission Lines
- Comments Concerning Meteorology and Air Quality
- Comments Concerning Hydrology – Surface Water
- Comments Concerning Hydrology – Groundwater
- Comments Concerning Ecology – Terrestrial
- Comments Concerning Ecology – Aquatic
- Comments Concerning Socioeconomics
- Comments Concerning Historic and Cultural Resources
- Comments Concerning Environmental Justice
- Comments Concerning Nonradiological Waste
- Comments Concerning Nonradiological Health
- Comments Concerning Radiological Health
- Comments Concerning Severe Accidents
- Comments Concerning the Uranium Fuel Cycle
- Comments Concerning Transportation
- Comments Concerning the Need for Power
- Comments Concerning Energy Alternatives
- Comments Concerning Alternatives – System Design
- Comments Concerning Alternative Sites
- Comments Concerning Benefit-Cost Balance
- General Comments in Support of the Licensing Action
- General Comments of Support of Nuclear Power
- General Comments in Support of the Existing Plant

- General Comments in Opposition to the Licensing Action
- General Comments in Opposition to the Licensing Process
- General Comments in Opposition to Nuclear Power
- Comments Concerning Issues Outside Scope – Emergency Preparedness
- Comments Concerning Issues Outside Scope – Miscellaneous
- Comments Concerning Issues Outside Scope – Safety
- Comments Concerning Issues Outside Scope – Security and Terrorism
- General Editorial Comments

When the comments resulted in a change in the text of the draft EIS, the corresponding response refers the reader to the appropriate section of the EIS where the change was made. Throughout this EIS, with the exception of this new appendix, revisions to the text from the draft EIS are indicated by change bars (vertical lines) in the margin beside the text.

Table E-1 provides a list of commenters identified by name, affiliation (if given), comment number, and the source of the comment. Some comments addressed topics and issues that are not part of the environmental review for this proposed action. These comments included questions about NRC's safety review, general statements of support or opposition to nuclear power, and comments on the NRC regulatory process in general. These comments are included in this appendix; however, detailed responses to such comments are not provided because the comments addressed issues that do not directly relate to the environmental effects of this proposed action and are thus outside the scope of the National Environmental Policy Act (NEPA) review of this proposed action. Many comments specifically addressed the scope of the environmental review, analyses, and issues contained in the draft EIS.

Table E-2 is an alphabetical index to the comment categories and lists the commenters and comment identification number(s) that were included in each category.

The balance of this appendix presents the comments, along with review team responses, organized by topic category.

Table E-1. Individuals Providing Comments on the Draft EIS

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Answorth, Charles	Self	Meeting Transcript (ML102850649)	0063-1
Apple, Thomas	Self	Email (ML102500359)	0003
Barker, M. Blake	Self	Meeting Transcript (ML102850649)	0063-31
Barnard, James	Somervell County Commissioner	Meeting Transcript (ML102850649)	0063-8
Beard, Jim	Self	Meeting Transcript (ML102850649)	0063-26
Bellu, Toni	United Way of Hood County	Meeting Transcript (ML102850649)	0063-20
Benning, Rita	Self	Meeting Transcript (ML102850649)	0063-29
Bernier, Jim	Self	Email (ML102740519)	0048
Berry, Steve	Hood County	Meeting Transcript (ML102850649)	0063-10
Best, Darrell	Glen Rose Chamber of Commerce	Meeting Transcript (ML102850649)	0063-17
Boyd, John	Self	Email (ML102500354)	0001
Bradley, Scott	Self	Meeting Transcript (ML102850689)	0062-17
Burnam, Lon	Texas Legislature	Meeting Transcript (ML102850649)	0063-2
Burnam, Lon	Texas Legislature	Meeting Transcript (ML102850649)	0063-5
Clark, Becky	Self	Email (ML102500374)	0005
Clark, Becky	Self	Email (ML102500374)	0020
Condy, Pat	Fossil Rim Wildlife Center	Meeting Transcript (ML102850689)	0062-10
Condy, Ymke	Self	Meeting Transcript (ML102850689)	0062-1
Condy, Ymke	Self	Meeting Transcript (ML102850689)	0062-8
Conway, Bretta	Self	Meeting Transcript (ML102850649)	0063-23
Curtis, John	Self	Meeting Transcript (ML102850649)	0063-33

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Dooley, Mike	Self	Meeting Transcript (ML102850649)	0063-27
Drager, Judy	Self	Email (ML102500360)	0004
Eatenson, Linda	Self	Email (ML102660283)	0031
Edinboro, Sr., Christopher	Self	Email (ML102500377)	0015
English, Maurice	Self	Meeting Transcript (ML102850649)	0063-38
Ferrero, Phil and Tracey	Self	Email (ML102660284)	0032
Fitzgerald, C.C. (Fitz)	Self	Email (ML102500379)	0017
Fitzgerald, C.C. (Fitz)	Self	Email (ML102660287)	0034
Flores, Rafael	Comanche Peak Nuclear Power Plant	Letter (ML102990431)	0073
Flores, Rafael	Comanche Peak Nuclear Power Plant	Meeting Transcript (ML102850649)	0063-12
Flores, Rafael	Comanche Peak Nuclear Power Plant	Meeting Transcript (ML102850689)	0062-5
Ford, Mike	Somervell County Commissioner	Meeting Transcript (ML102850649)	0063-9
Fowler, John	Self	Email (ML102740518)	0047
Frick, Terry	Self	Email (ML102510150)	0005
Frick, Terry	Self	Email (ML102510150)	0022
Fuller, David	Self	Meeting Transcript (ML102850689)	0062-11
Garner, Todd	Granbury Chamber of Commerce	Letter (ML102740137)	0054
Garner, Todd	Granbury Chamber of Commerce	Meeting Transcript (ML102850649)	0063-14
Geiger, Carol	Public Citizen -- Texas Office	Email (ML103050162)	0067
Griffin, Dwayne	Somervell County Justice of the Peace	Meeting Transcript (ML102850689)	0062-4
Hackett, Ken	Self	Meeting Transcript (ML102850649)	0063-36
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Letter (ML103360219)	0071

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Hadden, Karen	Sustainable Energy & Economic Development (SEED) Coalition	Meeting Transcript (ML102850649)	0063-30
Hanna, Jim	Self	Email (ML102660286)	0033
Harrison, Jim	Texas Commission on Environmental Quality	Email (ML102600188)	0027
Higgins, Larry C.	Self	Letter (ML102740137)	0059
Hinterleiter, David	Self	Email (ML102570033)	0023
Hoodenpyle, Kelly	Paluxy River Trading Company	Letter (ML102740137)	0060
Huett, David	Mallard Pointe Property Owners Association	Letter (ML102740137)	0058
Inge, Charles	Self	Email (ML102980433)	0065
Inge, Charles	Self	Letter (ML102980433)	0055
Jacobson, Jake	Self	Email (ML102720315)	0045
Jalbert, Ann	Lake Granbury Waterfront Owners Association	Email (ML102920650)	0051
Jalbert, Pete	Lake Granbury Waterfront Owners Association	Email (ML102929650)	0051
Jones, DeeDee	Glen Rose Chamber of Commerce	Meeting Transcript (ML102850689)	0062-9
Keffer, James L.	District 60, State of Texas	Letter (ML102740137)	0057
Kelly-Elliott, Cathy	Self	Email (ML102500376)	0005
Kelly-Elliott, Cathy	Self	Email (ML102500376)	0021
King, Arnold	Brazos River Conservation Coalition	Letter (ML102740137)	0055
Kurtz, Jeff	Self	Email (ML102660298)	0040
LaMarca, Jeff	Self	Meeting Transcript (ML102850689)	0062-15
Lawson, Donny	Self	Email (ML102660279)	0028
Leach, Dan	Self	Email (ML102510789)	0005
Lowrance, Cleo	Self	Email (ML102660293)	0038
Lusty, C.P.	Self	Email (ML102700594)	0044
Marks, Gary	Glen Rose Medical Center	Meeting Transcript (ML102850649)	0063-28
Martin, Joe	Self	Email (ML102660281)	0030
Martin, Joe	Self	Email (ML102660299)	0041
Martinez, Shirley	U.S. Department of the Interior	Email (ML102980431)	0064

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Mayfield, Ron	Glen Rose Independent School District	Meeting Transcript (ML102850689)	0062-13
Maynard, Walter	Somervell County Commissioners Court	Meeting Transcript (ML102850649)	0063-3
McClain, Janet	Self	Email (ML102500363)	0006
McCold, Lance	Self	Email (ML103120125)	0069
McHugh, Judy	Lake Granbury Waterfront Owners Association	Email (ML102920650)	0051
McHugh, Judy	Lake Granbury Waterfront Owners Association	Meeting Transcript (ML102850689)	0062-6
McHugh, Judy	Self	Email (ML102530254)	0019
McLay, Chandler	Self	Meeting Transcript (ML102850689)	0062-18
Melinchuk, Ross	Texas Parks and Wildlife Department	Letter (ML103230413)	0068
Miller, Pam	Glen Rose	Meeting Transcript (ML102850649)	0063-6
Moore, Jim	Self	Email (ML102660292)	0037
Murphy, Bill	Mouser Electronics, Inc.	Email (ML102500378)	0016
Murphy, Bill	Mouser Electronics, Inc.	Email (ML102660291)	0036
Niemann, Tangela	Texas Commission on Environmental Quality	Email (ML102600188)	0027
Orcutt, David	Lake Granbury Medical Center	Letter (ML102740137)	0053
Peralta, Patsy and Dan	Self	Email (ML102660297)	0039
Petry, Susan	Self	Email (ML102660280)	0029
Phillips, Doug	Self	Email (ML102500371)	0013
Phillips, Marilyn	Somervell School District	Meeting Transcript (ML102850649)	0063-22
Pratt, Rickie	Mayor of Granbury TX	Meeting Transcript (ML102850649)	0063-7
Quirk, Jim	Self	Letter (ML102740137)	0061
Quirk, Jim and Sharon	Self	Email (ML102570034)	0024
Rash, Andy	Hood County Commissioners Court	Meeting Transcript (ML102850689)	0062-2
Reed, Cyrus	Lone Star Chapter of the Sierra Club	Meeting Transcript (ML102850649)	0063-18
Reed, Cyrus	Lone Star Chapter, Sierra Club	Letter (ML102740137)	0052

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Reed, Cyrus	Sierra Club, Lone Star Chapter	Letter (ML103420218)	0066
Reeder, Dan	Self	Email (ML102500364)	0007
Regas, Tori	State Representative James L. Keffer	Meeting Transcript (ML102850649)	0063-4
Rhodes, Bill	Self	Email (ML102500362)	0005
Roberts, Keith	Self	Email (ML102590215)	0026
Robinson, Pennie	Self	Email (ML102720317)	0046
Rollins, W.H.	Self	Email (ML102500370)	0012
Rooke, Molly	Self	Meeting Transcript (ML102850649)	0063-32
Rosenfeld, Joshua	Brazos River Conservation Coalition	Email (ML102660300)	0042
Rosenfeld, Joshua	Brazos River Conservation Coalition	Letter (ML102740137)	0055
Ross, Jason	The Delaware Nation	Email (ML102500373)	0014
Rotan, G. Wayne	Glen Rose Independent School District	Letter (ML102740137)	0056
Rotan, G. Wayne	Glen Rose Independent School District	Meeting Transcript (ML102850649)	0063-21
Slough, Gene and Phyllis	Self	Email (ML102590214)	0025
Smith, Hugh	Somervell County Water District	Meeting Transcript (ML102850649)	0063-11
Smith, Rhonda	U.S. Environmental Protection Agency	Letter (ML103220200)	0070
Smith, Tom	Texas Office of Public Citizen	Meeting Transcript (ML102850649)	0063-16
Spencer, Stephen	U.S. Department of the Interior	Email (ML102980431)	0064
Stewart, Michael	Nuclear Energy for Texas	Meeting Transcript (ML102850649)	0063-19
Sumners, Allen	Self	Meeting Transcript (ML102850689)	0062-19
Sweeney, Lorrie	Self	Email (ML102660289)	0035
Taylor, Kevin	Somervell County Water District	Meeting Transcript (ML102850689)	0062-3
Thompson, Sue	Self	Email (ML102500380)	0018
Tresnicky, Larry and Phyllis	Self	Email (ML102500365)	0008
Uhlhorn, Ralph	Self	Email (ML102500358)	0002

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID Number
Underwood, Sid	Self	Meeting Transcript (ML102850649)	0063-35
Vaughn, Jane	Friends of the Brazos River	Meeting Transcript (ML102850649)	0063-34
Veale, James	Self	Email (ML102700591)	0043
Wayson, Jacqueline and Thomas	Self	Email (ML102510149)	0005
Wayson, Thomas	Self	Email (ML102510152)	0005
Wicker, Julie	Texas Parks and Wildlife Dept.	Letter (ML103230413)	0068
Williams, Joe	Lake Granbury Waterfront Owners Association	Email (ML102920650)	0051
Williams, Joe	Save Lake Granbury	Meeting Transcript (ML102850649)	0063-15
Williams, Joe	Save Lake Granbury	Meeting Transcript (ML102850689)	0062-12
Williams, Robert	Self	Meeting Transcript (ML102850689)	0062-14
Williams, Sue	Lake Granbury Waterfront Owners Association	Email (ML102920650)	0051
Williams, Sue	Lake Granbury Waterfront Owners Association	Meeting Transcript (ML102850649)	0063-24
Williamson, Eileen	Self	Meeting Transcript (ML102850689)	0062-7
Williamson, Frank	Self	Meeting Transcript (ML102850649)	0063-25
Williamson, Frank	Self	Meeting Transcript (ML102850689)	0062-16
Williamson, William F. (Frank) and Eileen G.	Self	Email (ML102500369)	0011
Willis, Stephen	Self	Meeting Transcript (ML102850649)	0063-37
Yancey, Darren	Self	Meeting Transcript (ML102850649)	0063-13

Table E-2. Commenters and the Categories Associated with Their Respective Comments

Comment Category	Commenter (Comment ID)
Accidents-Severe	• Flores, Rafael (0073-8) (0073-9) • Hadden, Karen (0063-30-10) (0071-28) (0071-29)
Alternatives-Energy	• Beard, Jim (0063-26-1) (0063-26-3) • Boyd, John (0001-6) • Eatenson, Linda (0031-1) • Geiger, Carol (0067-10) • Hadden, Karen (0063-30-3) (0063-30-7) (0063-30-8) (0063-30-11) (0071-11) • Reed, Cyrus (0052-10) (0052-11) (0052-12) (0052-13) (0052-14) (0052-15) (0052-16) (0063-18-9) (0063-18-10) (0066-2) (0066-4) (0066-10) (0066-11) (0066-15) • Rooke, Molly (0063-32-10) • Smith, Tom (0063-16-5)
Alternatives-Sites	• Martin, Joe (0030-3) • McCold, Lance (0069-7)
Alternatives-System Design	• Apple, Thomas (0003-3) • Beard, Jim (0063-26-4) • Clark, Becky (0005-3) • Drager, Judy (0004-2) • Edinboro, Sr., Christopher (0015-3) • Fitzgerald, C.C. (Fitz) (0017-2) (0034-4) • Fowler, John (0047-1) • Frick, Terry (0005-3) • Hackett, Ken (0063-36-5) • Hinterleiter, David (0023-4) • Inge, Charles (0055-5) • Jacobson, Jake (0045-4) • Jalbert, Ann (0051-10) • Jalbert, Pete (0051-10) • Keffer, James L. (0057-4) • Kelly-Elliott, Cathy (0005-3) • King, Arnold (0055-5) • Leach, Dan (0005-3) • Lowrance, Cleo (0038-6) (0038-9) • Lusty, C.P. (0044-1)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Martin, Joe (0041-1) • McHugh, Judy (0019-3) (0051-10) • Moore, Jim (0037-7) • Murphy, Bill (0036-3) • Petry, Susan (0029-3) • Quirk, Jim and Sharon (0024-3) • Regas, Tori (0063-4-4) • Rhodes, Bill (0005-3) • Rollins, W.H. (0012-1) • Rosenfeld, Joshua (0055-5) • Smith, Rhonda (0070-6) • Sweeney, Lorrie (0035-2) • Vaughn, Jane (0063-34-1) • Veale, James (0043-2) • Wayson, Jacqueline and Thomas (0005-3) • Wayson, Thomas (0005-3) • Williams, Joe (0051-10) (0062-12-5) • Williams, Sue (0051-10) • Williamson, Eileen (0062-7-2) • Williamson, William F. (Frank) and Eileen G. (0011-4) • Yancey, Darren (0063-13-4)
Benefit-Cost Balance	• Benning, Rita (0063-29-8) • Fuller, David (0062-11-2) • Hackett, Ken (0063-36-9) • Hadden, Karen (0071-12) (0071-16) (0071-21) • Inge, Charles (0055-9) • Jalbert, Ann (0051-13) • Jalbert, Pete (0051-13) • King, Arnold (0055-9) • McHugh, Judy (0051-13) • Rosenfeld, Joshua (0055-9) • Williams, Joe (0051-13) • Williams, Sue (0051-13)
Ecology-Aquatic	• Jalbert, Ann (0051-2) (0051-3) (0051-8) • Jalbert, Pete (0051-2) (0051-3) (0051-8) • McHugh, Judy (0051-2) (0051-3) (0051-8) • Melinchuk, Ross (0068-2) (0068-20) (0068-26) (0068-27) (0068-28) (0068-29) (0068-30) (0068-46) (0068-47) (0068-56) (0068-57)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	(0068-59) (0068-64) (0068-65) • Wicker, Julie (0068-2) (0068-20) (0068-26) (0068-27) (0068-28) (0068-29) (0068-30) (0068-46) (0068-47) (0068-56) (0068-57) (0068-59) (0068-64) (0068-65) • Williams, Joe (0051-2) (0051-3) (0051-8) • Williams, Sue (0051-2) (0051-3) (0051-8)
Ecology-Terrestrial	• Flores, Rafael (0073-7) • Marks, Gary (0063-28-2) • Martinez, Shirley (0064-2) (0064-3) (0064-4) (0064-5) (0064-6) • Melinchuk, Ross (0068-3) (0068-6) (0068-7) (0068-9) (0068-11) (0068-19) (0068-21) (0068-22) (0068-23) (0068-24) (0068-25) (0068-37) (0068-40) (0068-41) (0068-42) (0068-43) (0068-44) (0068-45) (0068-50) (0068-51) (0068-53) (0068-54) (0068-55) (0068-63) • Rooke, Molly (0063-32-6) • Spencer, Stephen (0064-2) (0064-3) (0064-4) (0064-5) (0064-6) • Wicker, Julie (0068-3) (0068-6) (0068-7) (0068-9) (0068-11) (0068-19) (0068-21) (0068-22) (0068-23) (0068-24) (0068-25) (0068-37) (0068-40) (0068-41) (0068-42) (0068-43) (0068-44) (0068-45) (0068-50) (0068-51) (0068-53) (0068-54) (0068-55) (0068-63)
Editorial Comments	• Melinchuk, Ross (0068-13) • Wicker, Julie (0068-13)
Environmental Justice	• Burnam, Lon (0063-2-1) • Hadden, Karen (0071-45) (0071-46) • Smith, Rhonda (0070-17) (0070-18)
Health-Nonradiological	• Benning, Rita (0063-29-4)
Health-Radiological	• Benning, Rita (0063-29-2) (0063-29-3) (0063-29-5) (0063-29-6) • Hadden, Karen (0063-30-4) (0071-22) (0071-23) (0071-25) (0071-34) • Melinchuk, Ross (0068-38) • Smith, Rhonda (0070-2) • Wicker, Julie (0068-38)
Historic and Cultural Resources	• Ross, Jason (0014-1)
Hydrology-Groundwater	• Flores, Rafael (0073-2) • Hadden, Karen (0071-33) (0071-40) • Melinchuk, Ross (0068-10) • Smith, Rhonda (0070-4) (0070-5) (0070-7)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Wicker, Julie (0068-10)
Hydrology-Surface Water	• Answorth, Charles (0063-1-1) • Apple, Thomas (0003-1) (0003-2) • Barker, M. Blake (0063-31-1) (0063-31-2) (0063-31-3) • Benning, Rita (0063-29-1) • Bernier, Jim (0048-1) (0048-3) • Berry, Steve (0063-10-2) (0063-10-4) • Boyd, John (0001-2) (0001-5) • Burnam, Lon (0063-5-3) • Clark, Becky (0005-1) • Conway, Bretta (0063-23-2) (0063-23-3) (0063-23-5) • Flores, Rafael (0062-5-2) (0063-12-1) (0073-3) • Frick, Terry (0005-1) (0022-1) • Fuller, David (0062-11-1) • Garner, Todd (0063-14-4) • Geiger, Carol (0067-3) (0067-5) • Griffin, Dwayne (0062-4-3) • Hackett, Ken (0063-36-1) (0063-36-3) (0063-36-4) (0063-36-6) • Hadden, Karen (0063-30-2) (0063-30-13) (0071-10) (0071-31) (0071-32) (0071-36) (0071-37) • Hanna, Jim (0033-2) • Harrison, Jim (0027-3) • Hinterleiter, David (0023-1) • Huett, David (0058-2) (0058-4) • Inge, Charles (0055-1) (0055-3) (0055-4) (0055-6) • Jacobson, Jake (0045-1) • Jalbert, Ann (0051-1) (0051-4) (0051-6) (0051-7) (0051-9) (0051-12) • Jalbert, Pete (0051-1) (0051-4) (0051-6) (0051-7) (0051-9) (0051-12) • Keffer, James L. (0057-1) (0057-3) • Kelly-Elliott, Cathy (0005-1) • King, Arnold (0055-1) (0055-3) (0055-4) (0055-6) • Lawson, Donny (0028-1) • Leach, Dan (0005-1) • Lowrance, Cleo (0038-1) (0038-3) • McClain, Janet (0006-1) (0006-4) • McHugh, Judy (0019-5) (0051-1) (0051-4) (0051-6) (0051-7) (0051-9) (0051-12) (0062-6-2)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Melinchuk, Ross (0068-15) (0068-17) (0068-35) (0068-48) (0068-49) (0068-62) (0068-66) • Moore, Jim (0037-5) • Murphy, Bill (0016-2) • Niemann, Tangela (0027-3) • Orcutt, David (0053-3) • Peralta, Patsy and Dan (0039-1) • Petry, Susan (0029-1) • Phillips, Doug (0013-1) (0013-2) • Pratt, Rickie (0063-7-3) (0063-7-6) (0063-7-7) • Quirk, Jim (0061-1) • Regas, Tori (0063-4-1) (0063-4-3) • Rhodes, Bill (0005-1) • Robinson, Pennie (0046-2) • Rooke, Molly (0063-32-2) • Rosenfeld, Joshua (0042-1) (0055-1) (0055-3) (0055-4) (0055-6) • Slough, Gene and Phyllis (0025-1) (0025-2) • Smith, Rhonda (0070-3) (0070-8) (0070-9) (0070-10) (0070-11) (0070-12) (0070-14) (0070-15) • Smith, Tom (0063-16-2) (0063-16-3) • Stewart, Michael (0063-19-2) • Thompson, Sue (0018-1) • Uhlhorn, Ralph (0002-1) • Veale, James (0043-1) • Wayson, Jacqueline and Thomas (0005-1) • Wayson, Thomas (0005-1) • Wicker, Julie (0068-15) (0068-17) (0068-35) (0068-48) (0068-49) (0068-62) (0068-66) • Williams, Joe (0051-1) (0051-4) (0051-6) (0051-7) (0051-9) (0051-12) (0062-12-1) (0062-12-2) (0062-12-3) (0062-12-4) (0063-15-2) (0063-15-3) (0063-15-4) (0063-15-5) (0063-15-6) (0063-15-7) (0063-15-8) (0063-15-9) (0063-15-10) • Williams, Robert (0062-14-1) (0062-14-2) (0062-14-3) (0062-14-4) • Williams, Sue (0051-1) (0051-4) (0051-6) (0051-7) (0051-9) (0051-12) (0063-24-1) (0063-24-2) (0063-24-3) • Williamson, Frank (0062-16-1) (0062-16-2) (0062-16-3) (0063-25-1) (0063-25-2) (0063-25-3) (0063-25-5) • Williamson, William F. (Frank) and Eileen G. (0011-2) (0011-3) • Yancey, Darren (0063-13-1) (0063-13-2) (0063-13-3)
Land Use-Site and Vicinity	• Flores, Rafael (0073-6)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
Land Use-Transmission Lines	• Condy, Ymke (0062-1-1) • Hadden, Karen (0071-43) • Melinchuk, Ross (0068-16) (0068-39) • Wicker, Julie (0068-16) (0068-39)
Meteorology and Air Quality	• Harrison, Jim (0027-1) • Niemann, Tangela (0027-1) • Smith, Tom (0063-16-1)
Need for Power	• Burnam, Lon (0063-5-2) • Geiger, Carol (0067-6) • Hadden, Karen (0063-30-12) (0071-14) (0071-15) (0071-39) • Reed, Cyrus (0052-1) (0052-3) (0052-4) (0052-5) (0052-6) (0052-7) (0052-8) (0052-9) (0063-18-1) (0063-18-2) (0063-18-3) (0063-18-4) (0063-18-5) (0063-18-6) (0063-18-7) (0063-18-8) (0066-1) (0066-3) (0066-5) (0066-6) (0066-7) (0066-8) (0066-9) (0066-12) (0066-13) (0066-14) • Rooke, Molly (0063-32-11)
Opposition-Licensing Action	• Boyd, John (0001-1) (0001-3) (0001-4) (0001-7) • Clark, Becky (0020-1) • Edinboro, Sr., Christopher (0015-2) • Fitzgerald, C.C. (Fitz) (0017-1) (0034-2) • Hanna, Jim (0033-1) • Hadden, Karen (0071-27) • Hinterleiter, David (0023-3) • Kurtz, Jeff (0040-1) • Martin, Joe (0030-2) (0041-2) • McHugh, Judy (0019-2) (0019-4) • Moore, Jim (0037-3) • Murphy, Bill (0016-1) (0016-3) • Petry, Susan (0029-2) • Quirk, Jim and Sharon (0024-1) • Williamson, Eileen (0062-7-1) • Williamson, William F. (Frank) and Eileen G. (0011-1)
Opposition-Licensing Process	• Hackett, Ken (0063-36-10)
Opposition-Nuclear Power	• Hadden, Karen (0063-30-1) (0071-9) (0071-17) (0071-19)
Outside Scope-Emergency Preparedness	• Hackett, Ken (0063-36-8) • Hadden, Karen (0071-38)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Inge, Charles (0055-8) • King, Arnold (0055-8) • Rosenfeld, Joshua (0055-8)
Outside Scope-Miscellaneous	• Jalbert, Ann (0051-5) • Jalbert, Pete (0051-5) • McClain, Janet (0006-3) • McHugh, Judy (0051-5) • Pratt, Rickie (0063-7-5) • Roberts, Keith (0026-1) • Williams, Joe (0051-5) • Williams, Sue (0051-5)
Outside Scope-Safety	• Benning, Rita (0063-29-7) • Geiger, Carol (0067-1) (0067-2) (0067-4) (0067-7) (0067-8) (0067-9) • Hadden, Karen (0071-35) (0071-48) • Smith, Tom (0063-16-4)
Outside Scope-Security and Terrorism	• Hadden, Karen (0063-30-5) (0071-26) (0071-30) • Rooke, Molly (0063-32-7)
Process-COL	• Burnam, Lon (0063-5-1) (0063-5-6) • Conway, Bretta (0063-23-1) • Ferrero, Phil and Tracey (0032-2) • Flores, Rafael (0073-1) • Ford, Mike (0063-9-1) • Hadden, Karen (0071-3) (0071-4) (0071-5) (0071-6) (0071-7) (0071-8) (0071-13) (0071-20) (0071-44) • Harrison, Jim (0027-2) • Keffer, James L. (0057-5) • McHugh, Judy (0062-6-1) (0019-1) • Melinchuk, Ross (0068-5) (0068-14) (0068-34) • Niemann, Tangela (0027-2) • Regas, Tori (0063-4-5) • Smith, Hugh (0063-11-3) • Sumners, Allen (0062-19-3) • Wicker, Julie (0068-5) (0068-14) (0068-34) • Williams, Robert (0062-14-6) • Willis, Stephen (0063-37-2)
Process-NEPA	• Hadden, Karen (0071-1) (0071-2)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Harrison, Jim (0027-4) • Martinez, Shirley (0064-1) • Melinchuk, Ross (0068-1) • Niemann, Tangela (0027-4) • Ross, Jason (0014-2) • Smith, Rhonda (0070-1) • Spencer, Stephen (0064-1) • Wicker, Julie (0068-1)
Site Layout and Design	• Flores, Rafael (0073-4) (0073-5) • Hackett, Ken (0063-36-2) • Inge, Charles (0055-2) • King, Arnold (0055-2) • McCold, Lance (0069-1) (0069-2) (0069-3) (0069-4) (0069-6) • Melinchuk, Ross (0068-33) (0068-36) (0068-52) • Rosenfeld, Joshua (0055-2) • Smith, Rhonda (0070-6) • Wicker, Julie (0068-33) (0068-36) (0068-52)
Socioeconomics	• Apple, Thomas (0003-4) • Bernier, Jim (0048-2) • Berry, Steve (0063-10-1) (0063-10-3) • Clark, Becky (0005-2) • Drager, Judy (0004-1) • Ferrero, Phil and Tracey (0032-1) • Fitzgerald, C.C. (Fitz) (0017-3) (0034-3) • Frick, Terry (0005-2) (0022-2) • Garner, Todd (0054-2) (0063-14-2) • Hadden, Karen (0063-30-9) (0071-41) • Hanna, Jim (0033-3) • Hinterleiter, David (0023-2) • Huett, David (0058-1) (0058-2) (0058-3) (0058-5) • Jacobson, Jake (0045-2) (0045-3) • Jalbert, Ann (0051-11) • Jalbert, Pete (0051-11) • Keffer, James L. (0057-2) • Kelly-Elliott, Cathy (0005-2) (0021-1) • Leach, Dan (0005-2) • Lowrance, Cleo (0038-2) (0038-4) (0038-5) (0038-7) (0038-10) • Martin, Joe (0030-1)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Mayfield, Ron (0062-13-2) • McHugh, Judy (0051-11) • Melinchuk, Ross (0068-4) (0068-8) (0068-12) (0068-18) (0068-31) (0068-32) (0068-60) • Moore, Jim (0037-4) (0037-6) • Murphy, Bill (0036-1) • Quirk, Jim and Sharon (0024-2) • Reeder, Dan (0007-1) • Regas, Tori (0063-4-2) • Rhodes, Bill (0005-2) • Slough, Gene and Phyllis (0025-3) • Smith, Rhonda (0070-13) (0070-16) (0070-19) • Thompson, Sue (0018-2) • Tresnicky, Larry and Phyllis (0008-1) (0008-2) • Wayson, Jacqueline and Thomas (0005-2) • Wayson, Thomas (0005-2) • Wicker, Julie (0068-4) (0068-8) (0068-12) (0068-18) (0068-31) (0068-32) (0068-60) • Williams, Joe (0051-11) • Williams, Robert (0062-14-5) • Williams, Sue (0051-11) • Williamson, Eileen (0062-7-3) • Williamson, Frank (0062-16-4) (0062-16-5) (0062-16-6) (0063-25-4)
Support-Licensing Action	• Barnard, James (0063-8-1) (0063-8-3) • Best, Darrell (0063-17-1) (0063-17-3) • Bradley, Scott (0062-17-1) • Condy, Pat (0062-10-2) • Condy, Ymke (0062-8-1) • Dooley, Mike (0063-27-1) • English, Maurice (0063-38-1) (0063-38-2) • Garner, Todd (0054-1) (0063-14-1) • Griffin, Dwayne (0062-4-2) (0062-4-4) • Higgins, Larry C. (0059-2) • Hoodenpyle, Kelly (0060-1) • Jones, DeeDee (0062-9-3) • Lowrance, Cleo (0038-8) • Mayfield, Ron (0062-13-3) • Miller, Pam (0063-6-2)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Moore, Jim (0037-2) • Orcutt, David (0053-1) • Phillips, Marilyn (0063-22-3) • Pratt, Rickie (0063-7-1) • Rash, Andy (0062-2-2) • Robinson, Pennie (0046-1) • Rotan, G. Wayne (0056-1) (0056-2) (0063-21-2) (0063-21-4) • Smith, Hugh (0063-11-1) (0063-11-5) • Stewart, Michael (0063-19-1) • Sumners, Allen (0062-19-4) • Taylor, Kevin (0062-3-1) (0062-3-3) • Underwood, Sid (0063-35-3) • Williams, Joe (0063-15-1)
Support-Nuclear Power	• Beard, Jim (0063-26-2) • Edinboro, Sr., Christopher (0015-1) • Flores, Rafael (0062-5-1) • Jones, DeeDee (0062-9-2) • Moore, Jim (0037-1) • Orcutt, David (0053-2) (0053-4) • Pratt, Rickie (0063-7-2) • Smith, Hugh (0063-11-4) • Underwood, Sid (0063-35-1)
Support-Plant	• Barnard, James (0063-8-2) • Bellu, Toni (0063-20-1) • Best, Darrell (0063-17-2) • Condy, Pat (0062-10-1) • Conway, Bretta (0063-23-4) • Curtis, John (0063-33-1) • Griffin, Dwayne (0062-4-1) • Higgins, Larry C. (0059-1) • Jones, DeeDee (0062-9-1) • LaMarca, Jeff (0062-15-1) • Marks, Gary (0063-28-1) • Mayfield, Ron (0062-13-1) • Maynard, Walter (0063-3-1) • McLay, Chandler (0062-18-1) • Miller, Pam (0063-6-1) • Phillips, Marilyn (0063-22-1) (0063-22-2)

Table E-2. (contd)

Comment Category	Commenter (Comment ID)
	• Rash, Andy (0062-2-1) • Rotan, G. Wayne (0063-21-1) (0063-21-3) • Smith, Hugh (0063-11-2) • Sumners, Allen (0062-19-1) (0062-19-2) • Taylor, Kevin (0062-3-2) • Underwood, Sid (0063-35-2) • Willis, Stephen (0063-37-1)
Transportation	• Burnam, Lon (0063-5-5)
Uranium Fuel Cycle	• Burnam, Lon (0063-5-4a) (0063-5-4b) (0063-5-7) (0063-5-8) • Hackett, Ken (0063-36-7) • Hadden, Karen (0071-24) (0071-25) (0071-47) • Inge, Charles (0055-7) • King, Arnold (0055-7) • Melinchuk, Ross (0068-61) • Reed, Cyrus (0063-18-11) • Rooke, Molly (0063-32-3) (0063-32-4) (0063-32-5) (0063-32-8) (0063-32-9) • Rosenfeld, Joshua (0055-7) • Wicker, Julie (0068-61)

E.2 Comments and Responses

E.2.1 Comments Concerning Process – COL

Comment: [The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments:] We do not anticipate significant long term environmental impacts from this project as long as construction and waste disposal activities associated with it are completed in accordance with applicable local, state, and federal environmental permits and regulations. (**0027-2** [Harrison, Jim] [Niemann, Tangela])

Response: *In developing the EIS, the review team interacted with Federal and State agencies to obtain information relevant to the environmental review. The review team specifically solicited comments from the Texas Commission on Environmental Quality (TCEQ). The NRC appreciates the comments offered by the TCEQ. Before building and operating new units, Luminant is required to obtain certain Federal, State, and local environmental permits, as well as meet applicable statutory and regulatory requirements. The list of such authorizations, permits, and certifications relevant to the proposed Comanche Peak Units 3 and 4 is included in Appendix H of this EIS.*

Comment: And to the members of the NRC who are here -- and we constantly have the nuclear -- the US Nuclear Regulatory presence there, and I think when you look at any agency in government, state level, and especially federal level, there's a lot of agencies that I don't feel real comfortable with, but I do have a lot of faith in the NRC. I'd ask you to please continue on doing that. (**0062-19-3** [Sumners, Allen])

Comment: I have also seen how the Nuclear Regulatory Commission holds very strict guidelines to the utility and makes sure that they're following those. I believe that the Nuclear Regulatory Commission has done their part to make sure that they're looking at everything. And that's what this hearing is about today. They're doing their part to hear the community and to make sure that all the issues are addressed. (**0063-37-2** [Willis, Stephen])

Response: *These comments express support for and/or confidence in the NRC and the process by which it reviews license applications for new nuclear power generating units. Because these comments did not provide new and significant information about environmental impacts no changes were made to the EIS as the result of these comments.*

Comment: I know that you will take the concerns and suggestions of the citizens of Hood County seriously and professionally. I sincerely appreciate your consideration, and I would be happy to further discuss these issues with you personally. (**0057-5** [Keffer, James L.])

Comment: Please don't make this meeting just a check on the board; please take our comments seriously. (**0062-14-6** [Williams, Robert])

Comment: You, the Nuclear Regulatory Commission, have indicated that public sentiment is critical and crucial to your decisions. I certainly hope you mean that. (**0062-6-1** [McHugh, Judy])

Comment: I know that you will take the concerns and suggestions of the citizens of Hood County seriously and professionally. (**0063-4-5** [Regas, Tori])

Comment: What I would want to say is, all due respect to others who think otherwise, I look at this as a local issue. And by local I mean Somervell and Hood County. We are the folks that are directly affected. And one of the things that I watched at the last hearing was how much attention was being paid to those either for or against the COL from this county and the information that they were providing. I watched and read through the document that we just

received to be sure that there was attention paid to those issues that were raised at that point in time.

It occurred to me this summer as we were choking on the emissions that come from the Metroplex that we're not even invited to sit down at the table when that kind of stuff occurs there. And yet, we're -- it's -- and I understand the reason that we do invite everybody to participate in this process. But I would want to stress to the NRC and I hope you will, as you consider all of the information that you have to consider in order to determine the COL that special attention and most attention be paid to those comments and those concerns of local citizens who are going to live with this. I do believe that that is -- that's been missed in all of this. And I -- and my recommendation to you is that you pay specific and special attention to those concerns locally. (**0063-9-1** [Ford, Mike])

Comment: It is my understanding that the NRC uses public sentiment in making decisions about nuclear projects. Good for you and I hope you mean it! (**0019-1** [McHugh, Judy])

Comment: Please consider the comments, requests and ideas of those of us who live, work and play on Lake Granbury before granting Luminant it's request. Indeed, Luminant has already begun purchasing full page newspaper advertisements to support its position. Individuals like us can only compete with their kind of financial and political power by appealing to those who we hope will protect the interests of the public, not the just the corporations and lobbyists. We appeal to you. (**0032-2** [Ferrero, Phil and Tracey])

Response: *These comments request that public input be considered seriously by the NRC in its licensing decision. The licensing process for COL applications is specified in Title 10 of the Code of Federal Regulations (CFR) Part 52. The review team will make a recommendation to the Commission based on the Environmental Report submitted by the Applicant; consultation with Federal, State, Tribal and local agencies; the staff's independent review; public comments; and the assessments summarized in the EIS and in the Safety Evaluation Report. Certainly, the factual information offered by the public who live in the region around the site is important to the NRC. However, all comments received by the public on the Draft EIS are on display and are addressed in Appendix E of this EIS. Because no new or significant information about environmental impacts was offered in the comment, no changes were made to the EIS as the result of these comments.*

Comment: As stated in previous [Texas Parks and Wildlife Department] TPWD comments, this project is a federal action, and would therefore be subject to NEPA requirements. Although the [Certificate of Convenience and Necessity] CCN process is not always subject to NEPA, the transmission lines associated with the CPNPP would be associated with a federally-regulated project and would therefore have a federal nexus. As stated previously, to not fully address the direct impacts of the proposed transmission line corridors in the final EIS could appear to be "segmenting" by attempting to address the impacts of these transmission corridors under the CCN process. An analysis of alternative routes and a preferred route for each proposed new transmission line should be identified for the EIS. (**0068-34** [Melinchuk, Ross] [Wicker, Julie])

Comment: The NRC defines construction as those activities within its regulatory authority. NRC indicates activities associated with the project that are not within the purview of the NRC action to license Units 3 and 4 are grouped under the term preconstruction and include clearing and grading, excavating, erection of support buildings and transmission lines, and other associated activities. The NRC does not consider the preconstruction activities as direct impacts from the proposed action and has evaluated preconstruction activities in the cumulative impacts analysis.

Recommendation: TPWD does not agree with NRC's decision regarding the exclusion of preconstruction activities from the proposed action. TPWD finds the scope as defined by NRC to be too narrow to meet the requirements and intent of NEPA regulations. Under Council on Environmental Quality regulations, Section 1502.4, (a) Agencies shall make sure the proposal which is the subject of the environmental impact statement (EIS) is properly defined Agencies shall use the criteria for scope (Section1508.25).

Section 1508.25 clarifies the Scope criteria to include connected actions, defined in part as (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously; (iii) Are interdependent parts of a larger action and depend on the larger action for their justification TPWD recommends the scope of the DEIS be revised to include the preconstruction activities. Activities such as clearing, grading, excavating, and erection of support buildings and transmission lines, and other associated activities are necessary to build, operate and maintain the nuclear reactor. These preconstruction activities are an integral part of the larger action and should be under the scope of the DEIS. (**0068-14** [Melinchuk, Ross] [Wicker, Julie])

Comment: Proposed new location 345-kY transmission line routes have not been fully assessed through a routing and alternatives evaluation, thus impacts associated with the proposed new lines are not fully articulated. Without an assessment of routes and their alternatives for inclusion in the DEIS, the NRC may be segmenting project impacts under Section 1508.27 (7) of NEPA. This section states, Significance [of impacts] cannot be avoided by terming an action temporary or by breaking it down into small component parts. (**0068-5** [Melinchuk, Ross] [Wicker, Julie])

Response: *These comments refer to the NRC's definition of "construction" based on its regulatory authority. As authorized by the Atomic Energy Act of 1954, as amended, NRC is charged with protecting the public health and safety with regard to the civilian use of nuclear material. CEQ's environmental protection regulations at 40 CFR 1500-1508 are available to those Federal agencies that have not established their own procedures for complying with the National Environmental Policy Act. NRC's environmental protection regulations are located at 10 CFR Part 51; its regulations are subject to public participation prior to becoming effective (see, for example, 72 FR 57416-57447). As defined in 10 CFR 51.4, construction refers to building safety-related structures, systems or components (SSCs) necessary for power plant construction. Construction also includes SSCs required to provide physical protection and onsite emergency planning. Activities such as clearing and grading; excavating; building transmission lines; and erecting support buildings that are not required for nuclear safety, physical protection, or emergency planning, are now considered "preconstruction" activities. For NRC regulatory purposes, construction authorization for the facility does not include preconstruction activities such as site preparation, excavation, and transmission line routing (see 10 CFR 51.4). Most of these activities are regulated by other agencies and require permits to proceed. For example, the Public Utility Commission of Texas will conduct its own environmental review and make recommendations for the issuance of the Certificate of Convenience and Necessity to construct the new transmission lines. In this EIS, the review team has independently evaluated the proposed routes for these new lines (see Figure 2-13) and has assessed the direct environmental impacts associated with them. The review team believes the analyses contained in Chapters 4 and 5 of this EIS in regard to the new transmission lines adequately address the concerns identified in the comments. Additionally, the environmental effects of preconstruction activities are considered in the cumulative impacts evaluation for the proposed project in Chapter 7 and for the alternative sites in Chapter 9; consequently, this is not considered segmentation. No changes were made to the EIS as a result of this comment.*

Comment: Consider the following excerpted portion of the DEIS (Volume 2, page D-20) and the response that was provided:

> **D.2. Comments Concerning Land Use - Transmission Lines**
>
> **Comment:** What land will need to be condemned or purchased in order to build or upgrade new transmission lines? What environmental and economic impacts will result from new transmission lines, including the 345 kV line planned to go between the plant site and the Whitney Switch, going through much of Somervell and Bosque Counties? (0019-24 [Hadden, Karen])
>
> ***Response:*** *Environmental impacts associated with any planned new transmission rights-of way will be addressed in Chapters 4 and 5 of the EIS, as will potential impacts associated with any upgrades to existing lines or corridors. The applicant is required to follow all Federal, State, and local guidelines concerning siting, construction, and maintenance of proposed transmission corridors and lines, although the NRC does not have regulatory authority over these activities.*

This answer contains no meaningful or useful information whatsoever. It is only one example which constitutes a refusal to answer the question. (**0071-6** [Hadden, Karen])

Comment: We prepared detailed comments and questions at this time despite the fact that our first notice of the upcoming scoping hearing was by a phone call to a Public Citizen staff member on Christmas Eve. SEED Coalition Executive Director Karen Hadden received word through a phone call from the staff member while at the hospital with her sick mother, and never received any written notice, despite having requested previously to be on the notification list.

Now, with over a year and a half in which to address the many SEED Coalition concerns, it is most disappointing to see an inadequate response stating that a question will be addressed in the EIS. A real response is now long overdue. (**0071-7** [Hadden, Karen])

Response: *The first comment above, and its embedded response, was received during the scoping period for this EIS. The scoping process conducted during the earliest stages of the review is an important step in the development of an EIS; that process included the public scoping meeting in January 2009. The review team benefits from this process in revealing issues of interest so that the scope of the review is informed by the public. After the scoping period ended, the review team determined which comments and issues were within the scope of the environmental review and issued a Scoping Summary Report. The Report is not intended to resolve the comments or issues; those that are within the scope of the review are included in Appendix D of this EIS, so that the public can track how it contributed to the scope of the environmental review and how the review team accounted for the comments and issues raised. Land use as mentioned in the comment is addressed in Chapters 4 and 5 of the EIS as indicated in the response to the comment in Appendix D of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: SEED Coalition is raising some new questions and concerns, but is resubmitting many concerns raised previously because the responses given in the DEIS are inadequate, typically reflecting only a cursory look at very serious concerns and questions. The nature of many of the responses is broad and generic. Vague answers have been provided to very specific questions. (**0071-3** [Hadden, Karen])

Comment: The lack of an honest attempt to thoughtfully review, analyze and/or rebut the comments submitted demonstrates an example of why few citizens have any faith in the nuclear

licensing process or even attempt to participate in the NRCs supposed opportunities for public involvement. Based on the replies in the DEIS, a thinking individual might ask. What exactly is the point of submitting comments?(**0071-4** [Hadden, Karen])

Comment: We request real responses and real data be provided in a timely manner, which means long before the issuance of the final EIS, which to our understanding is scheduled for January 2011. (**0071-5** [Hadden, Karen])

Response: *The NRC staff prepared this EIS in accordance with the requirements of NEPA, 10 CFR Part 52, and 10 CFR Part 51. In its review, the NRC staff and the Corps (review team) focused on the environmental effects of construction and operation of a new reactor. The team's review was based on information presented in the COL application environmental report (ER) submitted by the applicant and information obtained from independent sources. Data and analyses in the EIS are to be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. The level of information on the environmental consequences of the action (and mitigative opportunities to reduce impacts) and each alternative to the action considered in detail is to reflect the depth of analysis required for sound decisionmaking. The EIS is not intended to be encyclopedic; it is intended to be a sound basis for making decisions. In the draft EIS, the review team believes that it has been responsive to all of the comments offered during the scoping period by conducting its independent evaluation and performing independent analyses, when necessary, consistent with the importance of the impacts. The public input and comments received, whether during the scoping period or during the 75-day comment period on the Draft EIS, are an important part of the NRC's environmental review process, and it is the staff's intent to adequately address all comments that fall within the scope of the environmental review. The responses to comments received on the Draft EIS appear in Appendix E of this EIS.*

Comment: The public hearing on the DEIS was equally appalling. SEED Coalition, represented by Karen Hadden, asked questions about the Lake Granbury water levels impacts that would result from Comanche Peak 3 & 4, and where in the DEIS this issue was addressed. The question was brushed off brusquely, and no answer was provided regarding these impacts. Why is it that no one could answer the question or that no one bothered to get back to me with a real response, including actual anticipated measurements and numbers related to lake water levels? (**0071-8** [Hadden, Karen])

Response: *The purposes for meetings that the review team holds in the vicinity of the nuclear power plant sites include affording the public an additional opportunity to share its comments on the Draft EIS. The conduct of the meeting is established by ground rules described by the facilitator at the outset to ensure that the entire audience has a productive meeting. The brief "question and answer (Q&A)" period provided after the review team's presentation of the content of the EIS is to assist the audience in understanding the remaining stages of the review and the format for the public's portion of the meeting. As part of this meeting process, the review team holds an informal "Open House" to assist interested members of the public, who arrive before the appointed meeting starting time, with the navigation of the EIS. At the conclusion of each meeting, the review team members are available to follow up with commenters on those areas that were not clear to them. The Q&A period is specifically not intended to provide a tutorial on one or more technical issues, nor is it intended to serve as the forum for detailed or in-depth responses. In response to the specific concern raised in this comment, water levels in Lake Granbury are addressed in Section 5.2.2.1 of this EIS. No changes were made to the EIS as a result of this comment.*

Comment: Luminant's review of the Draft Environmental Impact Statement (DEIS) found the DEIS to be a conservative, bounding assessment of the potential environmental impacts of

CPNPP Units 3 and 4. Many of the impacts in the DEIS, if not most of them, would never occur to the extent discussed in the DEIS. As a result, some impacts determined by Luminant to be SMALL in the Environmental Report (ER) were found by the NRC to be SMALL to MODERATE in the DEIS. This is not inconsistent, rather a reflection of the very conservative assessment performed by the NRC in reviewing the ER. The impacts stated in the DEIS are not expected to occur, but conservatively bound the impacts that might potentially be expected. (**0073-1** [Flores, Rafael])

Response: *The comments regarding the determination of impact levels in the DEIS is noted. The findings and conclusions in the DEIS represent the review team's independent assessment, and as such may differ from what was presented in the Applicant's Environmental Report. No changes were made to the EIS as a result of this comment.*

Comment: What environmental and economic impacts will result from new transmission lines, including the 345 kV line planned to go between the plant site and the Whitney Switch, going through much of Somervell and Bosque Counties? (**0071-44** [Hadden, Karen])

Response: *The environmental impacts of the new transmission lines are discussed primarily in Chapter 4 and are included in the assessments for each resource category. For example, Section 4.1.2 discusses the land use impacts, and Sections 4.3.1.2 and 4.3.2.2 discuss the impacts to ecological resources. In regard to the economic impacts of the new transmission lines, the cost of installing and maintaining such lines is beyond the scope of this EIS. No changes were made to the EIS as a result of this comment.*

Comment: The US-APWR reactors proposed by Luminant are a design that is not approved by the Nuclear Regulatory Commission and has never been built anywhere in the world. Why should Texans be the guinea pigs for a radioactive experiment? The reactor design isn't even scheduled to be approved until shortly before the license is to be granted. Citizens won't have the benefit of the NRC analysis of the design, while the licensing process speeds forward.

The Environmental Impact Statement should stress the need for a complete and approved design before any further steps are taken in the licensing process. Human and environmental health are at risk due to this major fast-tracking of nuclear reactor licensing. The design should be submitted and not approved until deemed adequate, then construction licensing should be considered, followed by consideration of an operating license, but all three processes are occurring simultaneously in a rush to get plants licensed. Health, safety and economic concerns are being put on the back burner, while Luminant and other utilities greedily reach for loan guarantees, a subsidy that ratepayers will pay for in the end with higher electric bills. (**0071-20** [Hadden, Karen])

Comment: There is an added level of risk for delays and construction problems with Comanche Peak 3 & 4 since the US-APWR reactor design has never been built anywhere in the world. To the best of our knowledge, the reactor design is still under review by the NRC. (**0071-13** [Hadden, Karen])

Response: *The NRC's COL licensing process provides for the simultaneous review of the design, the safety review, and the environmental review. Title 10, Part 52, of the Code of Federal Regulations (CFR) provides flexibility for a prospective applicant to decide how it would seek regulatory approval to construct and operate a nuclear power plant. Part 52 has several important features that can be addressed independently or in combination with each other. In promulgating Part 52, the NRC did consider public comments before finalizing the rule or amendments to the rule. One feature, 52.55(c), allows a COL applicant, at its own risk, to reference a design that is under review by the NRC but not yet certified. The U.S. APWR reactor design is one such design currently under review. However, a COL referencing a*

particular design cannot be issued by the NRC until the reactor design is certified by the NRC. Applicants select a reactor technology based on their own business criteria. The Design Certification Documentation for the US-APWR Reactor proposed for the Comanche Peak Units 3 and 4 was submitted to NRC in December 2007. The NRC staff is currently conducting a detailed review of that design. The documentation submitted with the application for US-APWR design certification provided sufficient details to evaluate issues relevant to this EIS. As allowed by 10 CFR 52.55(c), applicants are allowed, at their own risk, to reference a design certification application that has been docketed but not granted. If substantive changes to the design are made as a result of the NRC's certification review, those changes will be evaluated to determine whether a supplement to the EIS will be needed. The NRC's COL licensing process provides for the simultaneous review of the design, the safety review, and the environmental review. However, if the U.S. APWR does not receive certification in the timeframe sought by the applicant, Luminant then would have to determine whether it would proceed with a different reactor technology. A change in reactor technology would need to be considered by the NRC to determine whether the change would be significant in terms of the environmental impacts of construction or operation. No changes were made to the EIS as a result of this comment.

Comment: I am state representative from Fort Worth. I anticipate going into my eighth session representing an inner-city district which is predominantly low to moderate income. And it is the closest predominant low to moderate income legislative district to the proposed site in the state. And we have largely been left out of the process. So the first point I want to register is a complaint, a violation of fundamental EIS principals of who gets to participate. As a practical matter my low-income constituents in inner-city Fort Worth can't make it out to Glen Rose in the middle of the afternoon to participate in this hearing. (**0063-5-1** [Burnam, Lon])

Comment: [The transportation of radioactive waste through the region] that is one of the primary reasons we have a right to have a public hearing in Tarrant, Dallas County at night when people can get there and can talk about that. (**0063-5-6** [Burnam, Lon])

Response: *In regard to the locations of the public meetings, the NRC typically schedules public meetings in the county in which the proposed licensing action would occur. The NRC also provides advanced public notice for all interested parties to participate in those meetings. Regardless of whether a personal appearance is made at such meetings, the NRC notices also provide instructions on how to submit written by e-mail or by regular mail. The NRC staff believes all affected parties have been afforded an opportunity to participate in the scoping process and in the public comment process for this EIS. No changes were made to the document as a result of this comment.*

Comment: And I want to say that I thought this was going to be a discussion about the impact of the power plant and its additions on our environment. And I've heard very little of that. But I hear a lot of concerns about the lack of water, the lack of money going up to Fort Worth. (**0063-11-3** [Smith, Hugh])

Comment: In summary, the Chamber believes that cooperation can exist with the different entities to bring our community a significant economic boom and a healthy lake. We look forward to ongoing discussions with interested parties. (**0063-14-5** [Garner, Todd])

Response: *The purpose of the NRC's public meetings on the DEIS was to obtain public comments on the data, analyses, findings, and conclusions as presented in the DEIS. Often these meetings take on the features of a public forum in which the commenters express their opinion on a variety of topics. The types of information exchange and interactions described in these comments did occur during the September 21, 2010, public meeting in Texas; however, no changes were made to the EIS as a result of these comments.*

Comment: What we are, as Hood County citizens, asking for is for the NRC to be as aware as possible -- because spent the last three years making ourselves aware -- of the total impact of the nuclear expansion. (**0063-23-1** [Conway, Bretta])

Response: *The NRC staff, in conjunction with the U.S. Army Corps of Engineers, has developed this EIS to address the full range of potential environmental impacts that would accompany the licensing of Comanche Peak Units 3 and 4. The purpose of the NRC's public meeting on the DEIS was to obtain public comments on the data, analyses, findings, and conclusions as presented in the DEIS. The additional concerns offered in other comments from this same commenter, as well as other comments received on the DEIS from other commenters, have been taken into consideration in developing the final version of this EIS.*

E.2.2 Comments Concerning Process - NEPA

Comment: [The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments:] NRC has addressed all required elements for a NEPA assessment of environmental, socioeconomic, and public health and safety impacts. The overall impacts of the construction and operation of additional reactor units at Comanche Peak have been fully explored. Thank you for the opportunity to review this project. (**0027-4** [Harrison, Jim] [Niemann, Tangela])

Response: *The review team appreciates the review of the DEIS that was conducted by the Texas Commission on Environmental Quality (TCEQ). The comments on the required elements of NEPA, as well as the TCEQ's observations about the overall impacts being fully explored, are noted. No change was made to the EIS as a result of this particular comment.*

Comment: The U.S. Department of the Interior is providing the following comments in response to the subject DEIS and to assist in assessing and avoiding impacts to federally listed species, wetlands, and other fish and wildlife resources. (**0064-1** [Martinez, Shirley] [Spencer, Stephen])

Response: *The review team appreciates the review of the DEIS that was conducted by the U.S. Department of the Interior. No change was made to the EIS as a result of this particular comment; however, the additional comments received from the Department of the Interior have been cataloged and are addressed under the respective categories for those separate comments and concerns.*

Comment: Texas Parks and Wildlife Department (TPWD) received the August 6, 2010 notification for issuance of and request for comment on the above-referenced DEIS. The notification was submitted in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), and the Fish and Wildlife Coordination Act of 1934, as amended. Nuclear Regulatory Commission (NRC) prepared the DEIS as part of its review of Luminant Generation Company LLC (Luminant) application for combined licenses for construction and operation of two new nuclear units at its existing Comanche Peak Nuclear Power Plant (CPNPP) site near Glen Rose, Texas. U.S. Army Corps of Engineers Fort Worth District (USACE) is a cooperating agency in the DEIS so that the EIS can be used to decide on issuance of permits pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.
Based on TPWD staff review of the information provided, TPWD offers specific recommendations regarding the DEIS and concerns regarding the project that can be found in Attachment A to this letter. (**0068-1** [Melinchuk, Ross] [Wicker, Julie])

Response: *The review team appreciates the review of the DEIS that was conducted by the Texas Parks and Wildlife Department (TPWD). No change was made to the EIS as a result of this particular comment; however, the additional comments and recommendations received*

from the TPWD in its Attachment A have been cataloged and are addressed under the respective categories for those separate comments and concerns.

Comment: In accordance with the National Environmental Policy Act and Section 309 of the Clean Air Act, Environmental Protection Agency (EPA) Region 6 has reviewed the Draft Environmental Impact Statement (DEIS) dated August 2010, for Combined Licenses (COLs) for Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4. The DEIS would authorize construction and operation of two new units at the CPNPP.

EPA rates the DEIS as EC-2, i.e., EPA has Environmental Concerns and Requests Additional Information in the Final EIS (FEIS). Detailed comments are enclosed with this letter and more clearly identify our concerns and the informational needs requested for incorporation into the FEIS. EPA appreciates the opportunity to review the DEIS. (**0070-1** [Smith, Rhonda])

Response: *The review team appreciates the review of the DEIS that was conducted by the U.S. Environmental Protection Agency (EPA). The EPA rating of EC-2 for the Comanche Peak DEIS is noted. No change was made to the EIS as a result of this particular comment; however, the additional comments received in the enclosure from the EPA have been cataloged and are addressed under the respective categories for those separate comments and concerns.*

Comment: We question the quality of the consultation with Federal, State, Tribal and local agencies. (**0071-2** [Hadden, Karen])

Response: *The NRC regulations related to consultations with Federal, State, Tribal, and local agencies are identified in 10 CFR 51.28 and 10 CFR 51.29. Appendix F of this EIS presents a list of key consultation correspondence during the evaluation process for the combined license application for siting the proposed Units 3 and 4 at the Comanche Peak Nuclear Power Plant (CPNPP) site. The review team believes that the consultation process followed during the evaluation process adequately identified and obtained input from Federal, State, Tribal, and local authorities in accordance with 10 CFR 51.28, 10 CFR 51.29, and guidance set forth in NUREG-1555, Environmental Standard Review Plan, and recent updates. No changes were made to the EIS as a result of this comment.*

Comment: SEED Coalition questions whether the Draft Environmental Impact Statement satisfies the requirements of the National Environmental Policy Act of 1969 (NEPA) or requirements related to the issuance of a U.S. Army Corps of Engineers issuance of a permit to perform certain construction activities on the site. We believe that the evaluation of the proposed action's impacts to waters of the United States pursuant to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) and Section 10 of the Rivers and Harbors Appropriation Act of 1989 is inadequate. (**0071-1** [Hadden, Karen])

Response: *Section 102 of the National Environmental Policy Act (NEPA) of 1969, as amended, requires preparation of an environmental impact statement (EIS) for major Federal actions that significantly affect the quality of the human environment. The NRC has implemented Section 102 of NEPA in 10 CFR Part 51. Further, in 10 CFR 51.20, the NRC has determined that the issuance of a combined license under 10 CFR Part 52 is an action that warrants an EIS. Detailed procedures for conducting the environmental review are found in guidance set forth in NUREG-1555, Environmental Standard Review Plan, and recent updates. Section 2.3 of the EIS describes the surface water and groundwater features of the Comanche Peak Nuclear Power Plant (CPNPP) site and the surrounding region that could be affected by the construction and operation of the proposed CPNPP Units 3 and 4. Section 4.2 of the EIS describes the water related impacts involved in building the proposed units at the site. Section 5.2 describes the water-related impacts to the site and surrounding region that could occur from*

operating the proposed units. The review team believes that the EIS adequately addresses water related impacts according to the NRC's rules, regulations, and guidance. The U.S. Army Corps of Engineers (Corps) participated as part of the review team in the review of the CPNPP COL application environmental review. The Corps' role as a cooperating agency in the preparation of this EIS is to ensure that the information presented is adequate to fulfill the requirements of Corps regulations applicable to construction of the preferred alternative identified in the EIS. This EIS includes the Corps' evaluation of construction and maintenance activities that impact waters of the United States. The commenter has not provided specific facts in this comment that would allow the review team to reconsider its review and conclusions. No changes were made to the EIS as a result of this comment.

E.2.3 Comments Concerning Site Layout and Design

Comment: [T]he potential negative environmental effects of the reduced volume of water returned to the lake and river, along with increased salinity, heat discharge, salt spray mist, noise, aerosol drift, visible atmospheric plume and disposable salt accumulation associated with the preliminary design of the Blow Down Treatment Facilities (BDTF) intended to remove excess heat at the proposed plant have yet to be accurately estimated. (**0055-2** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: That the potential negative environmental effects of the reduced water volume return to the lake and river along with increased salinity, heat discharge, salt spray mist, noise, aerosol draft, visible atmospheric plume and disposable salt accumulation associated with the preliminary design of the blow-down treatment facilities intended to remove excessive heat at the proposed plant has yet to be accurately estimated. (**0063-36-2** [Hackett, Ken])

Response: *Potential impacts of the BDTF have been described, estimated, and evaluated in the EIS. The reduced volume of water returned to Lake Granbury is addressed in Section 5.2.2.1 of this EIS. The increased salinity, as well as the heat discharge, are addressed in Section 5.2.3.1 in the discussion of discharge limits to be imposed by the State of Texas. Salt spray is addressed in Sections 5.1.1 and 5.3.1.1. Noise is addressed in Section 5.8.2. Aerosol drift and visible atmospheric plume are addressed in Section 5.3.1.1. The disposable salt accumulation is addressed in Section 5.1.1. Because this comment did not offer new or significant information about environmental impacts, it did not result in any changes to the EIS.*

Comment: The description of the blowdown treatment facility (BDTF) (Section 3.2.2.2) is inadequate and leads to overly optimistic estimates of environmental impacts. By its footnote on page 3-12, the review team acknowledges that it realizes that the BDTF design is unreliable. While the footnote might lead one to believe that the uncertainty about the BDTF is just one of many minor uncertainties encountered in preparing an environmental impact statement (EIS), the truth is quite different. (**0069-1** [McCold, Lance])

Response: *The review team's assessment of potential impacts associated with the BDTF as described in Section 3.2.2.2 is based on the conceptual design provided by the Applicant. The review team has concluded that sufficient detail exists in the Applicant's conceptual design to conduct an adequate analysis of potential environmental impacts. Uncertainty within a NEPA assessment does not imply unreliability. It is important to note that 10 CFR 51.71(d) states when"[t]o the extent that there are important qualitative considerations or factors that cannot be quantified; these considerations or factors will be discussed in qualitative terms." The staff's analysis of potential impacts from the construction and operation of the BDTF addresses the uncertainties in such qualitative terms later in the EIS. Because this comment did not offer any new or significant information about environmental impacts, no changes were made to the EIS as a result of the comment.*

Comment: Section 3.2.2.2 reports that the BDTF would demineralize the blowdown by reverse osmosis and evaporate BDTF wastewater in a 128-ac evaporation pond. However, 128 ac for evaporation reported in Section 3.2.2.2 is a gross underestimate of the actual area that would be required to evaporate the quantity of water that would be produced by the BDTF if Luminant followed through with its commitment to discharge wastewater that did not exceed 2500 mg/L TDS. Evaporation pond details are not presented in the EIS. The reader must carefully review the applicant's responses to requests for additional information (cited in Section 3.5) to learn how the evaporation pond is supposed to work. (**0069-2** [McCold, Lance])

Response: *The commenter describes the function of the proposed BDTF. The review team used 400 acres in Section 4.1.1 to bound the size of the BDTF and has based its assessment of impacts upon that 400 acres and not the 128 acres mentioned in the comment. The review team has concluded that sufficient detail exists in the Applicant's conceptual design to conduct an adequate analysis of potential environmental impacts. Because this comment did not offer new or significant information about environmental impacts, no changes were made to the EIS as a result of the comment.*

Comment: Luminant estimates that they need to evaporate 5,200 gpm of reverse osmosis brine, about 7.5 million gallons per day (Mg/d). For estimating evaporation pond performance, Luminant assumed a 10-year average pan evaporation rate of 5.1 inches per month, and 182 evaporators in a 2364-ft by 2364-ft (128-acre) evaporation pond. Based on the average pan evaporation rate and Slimline Manufacturing LTD (Slimline)-provided sizing guidance for their Turbo-Mist evaporators, Luminant claims an evaporator efficiency of 35.7%. That is, they expect that over a long period of time, 35.7% of water pumped through the evaporators will be evaporated. To evaluate the reliability of the impacts that would result from the BDTF, one needs to examine Slimline information (http://www.turbomisters.com/downloadable-pdfs.php) and the results of research conducted at the Salton Sea by the U.S. Bureau of Reclamation (http://www.usbr.gov/lc/region/saltnsea/pdf_files/salincntrl/report.pdf). Review of these sources reveals several reasons that the Luminant's evaporation pond claims are not reliable. The reasons are described below.

Locating 182 misters (evaporators) in 128 acres would reduce evaporator efficiency to the point that the system would fail to achieve an average evaporation rate of 7.5 Mg/d.

The Slimline evaporator web site offers several “suggested” or “sample” pond layouts (http://turbomister.com/downloadable-pdfs.php). The radial arrangements for up to 12 evaporators indicate that the units should be located on a 20-m-diameter island with the evaporators pointed outward. One drawing indicates that the perimeter fence should be located at least 200 m from the evaporators. If 200 m to the perimeter fence is required, 12 evaporators would require 44 acres, plus space for access roads and piping. In this case, the 128 acres for evaporation would only accommodate fewer than 40 evaporators. At this density, the evaporation pond would need to be 700 to 800 acres to accommodate 182 misters. Perhaps another 100-200 acres for access would be required for a total of 800 to 1000 acres.

The U.S. Bureau of Reclamation study of evaporators at the Salton Sea seems to be the only published report on evaporator efficiency relevant to the CPNPP situation. That study offers the following recommendations related to evaporator spacing:

Based on experience gained in the operation of EES units at the test base, it would be necessary to space the devices at least 250 apart. The devices should be placed in long rows. A survey of operations at the Test Base yielded the conclusion that salt and/or mist from the evaporators can travel 1,300 feet. Therefore, the rows of evaporators should be placed at least 1,300 feet apart. The ideal configuration would be to place the units in long rows over a large

pond. The system should be designed to shut down any time the winds exceed 10 miles per hour. Otherwise, the 1,300 feet will not be adequate. Determining drift characteristics at speed in excess of 10 miles per hour was not possible at the Test Base. The permits for the operation of the EES units limited operations to 10 miles and hour or less. Additional research into drift distances at higher speeds would be required before a large-scale system could be designed. However, increased drift distances would only translate into much larger pond sizes and row spacing.

The motivation for the spacing recommendations was the tendency for the evaporators foul with gypsum and other salts. The author noted that mist was often recirculated into the intake of the evaporators. The recirculated mist caused fouling of the motor and impeller blades. To prevent damage to the impellers, they found it necessary to pressure wash the evaporators inside and out "every couple days." Using the Salton Sea study recommendation, each evaporator would need about 7.5 acres; and 182 evaporators would require 1,365 acres. In addition to the area (**0069-3** [McCold, Lance])

Response: *The detailed design information, recommendations, and observations offered in the comment are appreciated. The review team's assessment of potential impacts associated with the BDTF as described in Section 3.2.2.2 is based on the conceptual design provided by the Applicant. The review team has concluded that sufficient detail exists in the Applicant's conceptual design to conduct an adequate analysis of potential environmental impacts. Additionally, the staff assessment of the potential impacts examined the monthly evaporation rates for the region rather than a yearly average as discussed above. Applying monthly evaporation rates is necessary because the conditions in the summer could allow for the evaporation of the excess amounts of brine built up over the winter and, therefore, would be more technically accurate when factored into an assessment of impacts. Because this comment did not offer any new or significant information about environmental impacts, no changes were made to the EIS as a result of the comment.*

Comment: The foregoing discussion is structured as though Luminant would compensate by poorer than expected evaporation pond performance by expanding it and adding more misters. Such a response would lead to larger land use and increases to the impacts that are related to land use. However, expanding the BDTF evaporation pond system, perhaps to more than two square miles, may not be the most attractive solution. For example, it would be much less expensive for Luminant to negotiate a permit from the State of Texas that would allow discharge of blowdown water with higher concentrations of TDS and chloride. Or, the State of Texas could even amend the water quality standard for Lake Granbury, from 2500 to 3000 mg/L for instance. Different reaches of the Brazos River have different water quality standards. While the Lake Granbury 2500-mg/L TDS limit is relatively high, there is no assurance the State of Texas wouldn't raise it further to help Luminant. The EIS does not evaluate the environmental impacts of such a change. (**0069-4** [McCold, Lance])

Response: *The hypothetical situation described in the comment (i.e., a discharge limit into Lake Granbury that is higher than the 2500 mg/L as analyzed in Section 5.2.3.1 of this EIS) is speculative. The discharge limit for Comanche Peak Units 3 and 4 will be established and enforced by the State of Texas; the State has indicated that the limit will be 2500 mg/L. If Luminant applies for a permit with a value higher than 2500 mg/L and such a limit is established, then the environmental effects of an alternate limit may need to be considered. Establishing and enforcing water quality discharge limits is the responsibility of the Texas Commission on Environmental Quality and the U.S. Environmental Protection Agency, under the Federal Water Pollution Control Act (also known as the Clean Water Act). No changes were made to the EIS as a result of this comment.*

Comment: DEIS Section 3.3.1.13, page 3-23, lines 40-42: Two additional gravity-drain 42-in. blowdown discharge pipelines (one from Unit 3 and one from Unit 4) with multiport diffusers are to be located approximately 900 ft upstream from DeCordova Bend Dam, in the vicinity of the existing discharge pipe.

According to the response to ER RAI SOC-33 (ML100710613), the diffusers are planned to be located approximately 800 ft upstream from DeCordova Bend Dam. (**0073-4** [Flores, Rafael])

Response: *The information offered in these comments has been used to revise Section 3.3.1.13 in this Final EIS.*

Comment: DEIS Section 3.4.4.1, page 3-39, lines 33-43: Luminant reports that total suspended solids (TSS) in the vicinity of DeCordova Bend Dam near the south end of Lake Granbury average 11 mg/L with a range of results from 2 to 120 mg/L. Luminant does not report discharge of TSS. Luminant reports that TDS in blowdown discharged to Lake Granbury would be limited to 2500 mg/L assuming the inlet TDS concentration is 1680 mg/L. The use of 1680 mg/L TDS was removed from the ER by the supplemental response to ER RAI GEN-03 (ML093620032) because the statement was no longer valid. (**0073-5** [Flores, Rafael])

Response: *The text in Section 3.4.4.1 in this Final EIS has been revised to delete the reference to the value of 1680 mg/L.*

Comment: Page 3-12 discussed the BDTF as a conceptual design with design details not yet complete, though the parameters for the facility may change as Luminant pursues a permit from the state for discharging blowdown water to Lake Granbury. The 400-acre area would consist of reverse osmosis and ultrafiltration equipment buildings, a 47-acre storage pond, and a 128-acre evaporation pond. Approximately 83 percent of blowdown would pass through ultrafiltration followed by reverse osmosis to create a product stream with low total dissolved solids (TDS) and chloride concentrations, which will be mixed with the remaining 13 percent, untreated blowdown water from the cooling towers that is allowed to bypass the BDTF. This mixture will be discharged to Lake Granbury. Waste streams recovered from the reverse osmosis and ultrafiltration process would be combined in the storage pond. Storage pond water would be routed to the evaporation pond to evaporate wastewater to the point salts could be disposed of at a landfill. To accelerate evaporation, the evaporation pond would have 182 misters, each with a sound level of 95 decibels at a distance of 25 feet. Spray from the misters would be forced approximately 60 feet into the air, and the pond would be surrounded by a 16-foot tall fabric fence to capture salt drift falling out of the spray. Recommendation: When the final design for the BDTF has been completed, TPWD recommends the applicant provide the complete BDTF description and an environmental analysis for review as a supplemental report to the DEIS. (**0068-33** [Melinchuk, Ross] [Wicker, Julie])

Response: *The review team considered the conceptual design of the BDTF. The commenter summarized the function of the proposed BDTF, as well as its operational characteristics and features as analyzed in this EIS. The review team has determined that the design information submitted by the Applicant provides sufficient details to assess the potential environmental impacts of the proposed BDTF. If the actual design of the BDTF changes significantly, then the updated design may need to be considered. The BDTF would require a permit from the State of Texas, should changes be made to the design the State would consider that in its permitting action as well. No changes were made to the EIS as a result of this comment.*

Comment: The DEIS identifies many areas of uncertainty associated with the BDTF, including distance of salt deposition, concentration in the salt spray, effectiveness of the salt intercepting fence, level of wildlife safety hazard and exclusion controls. Recommendation: TPWD

recommends the uncertainty issues surrounding the BDTF operation be resolved prior to licensing. The uncertainties should be resolved in a manner that avoids and minimizes adverse impacts on wildlife and the surrounding habitat. (**0068-52** [Melinchuk, Ross] [Wicker, Julie])

Comment: There are always uncertainties inherent in preparation of an EIS. The correct way to deal with such uncertainties is to evaluate the foreseeable impacts of the possibilities and to modify the action to assure that unacceptable impacts do not result. In this case, the NRC has accepted the applicant's proposal [for the blowdown treatment facility (BDTF)] as though it were feasible. Surely, the Commission has people on its staff with sufficient technical capabilities to evaluate the applicant's faulty proposal. (**0069-6** [McCold, Lance])

Response: *These comments address uncertainties in the BDTF design and/or uncertainties noted in the review team's analyses of the impacts from the operation of the proposed BDTF. A description of the proposed BDTF is provided in Section 3.2.2.2. Additionally, footnote 2 on pg 3-12 of the EIS states that the BDTF is a conceptual design and the design parameters for the facility could change. A final design of the BDTF would not be completed until prior to the applicant's submission of a permit application to the TCEQ. The applicant would have to obtain permits from the TCEQ prior to constructing and operating the BDTF. The staff's assessment of potential environmental impacts associated with the BDTF is based on the conceptual design provided by the Applicant. The staff has concluded that sufficient detail exists in the Applicant's conceptual design to conduct an adequate analysis of potential environmental impacts. The DEIS noted the uncertainties in the impacts (such as those to land use or terrestrial ecology) that could result from the operation of the BDTF in accord with the conceptual design submitted by the Applicant; however, the review team believes that design is adequate for the purpose of evaluating potential environmental impacts because a bounding-analysis approach used. The bounding analysis includes evaluating the effects of the facility with and without the Applicant's proposed mitigation measures. The review team's acknowledgment of the uncertainties in the DEIS is an explicit part of that bounding analysis. In the event that significant changes are made to the final design of the BDTF, then the updated design may need to be evaluated by the TCEQ. No changes were made to the EIS as a result of these comments.*

Comment: An alternate disposal method for the accumulated salts [from the BDTF] could be underground injection which would require a Class I, non-hazardous Underground Injection Control (VIC) permitted well. EPA asks that NRC's consideration of an alternative treatment method of treatment be discussed in the FEIS. (**0070-6** [Smith, Rhonda])

Response: *Alternative water treatment methods are discussed in Section 9.4.2.4 of the EIS. In a letter dated March 5, 2010 (ADAMS Accession No. ML100710613), Luminant provided discussion of deep well injection, in response to a request for additional information by the review team, indicating that it would not be a viable alternative to the proposed BDTF. Luminant cited the large volume of waste generated and the potential necessity of pretreatment to reduce suspended solids and scaling as factors in considering the disposal method. Additionally, test borings would be necessary to determine if it would be possible at the site. The review team did not consider deep well injection as a viable alternative to the BDTF. No changes were made to the EIS as a result of this comment.*

Comment: Page 3-28 discussed Oncor's full-cut clearing and selective-cut transmission line ROW clearing standards, but notes the standard does not contain a directive documenting the circumstances under which either method would be applied. Recommendation: TPWD recommends NRC request clarification from the applicant or Oncor on the directives specifying the conditions under which each method is to be used. Given the 160-foot wide corridors required for the lines, the selective-cut method should be employed where safety precautions permit. (**0068-36** [Melinchuk, Ross] [Wicker, Julie])

Response: *The comment requests that the review team provide additional information regarding the conditions under which selective-cut and full-cut clearing methods would be used by Oncor, the transmission service provider, to clear transmission line right-of-ways. The NRC does not have regulatory oversight of building and operating new transmissions lines. A separate environmental analysis will be required of Oncor by the Public Utility Commission of Texas and the Electric Reliability Council of Texas. However, the EIS does describe the effects of building and operating new transmission lines. The review team's analysis of the effects of building the new transmission lines include direct injury and mortality to wildlife; habitat loss and fragmentation; disturbance and displacement of wildlife; and land use changes that may occur. This analysis also includes clearing, grading, and leveling necessary to build the transmission line. In Section 4.1.2 of the EIS, the review team concludes that building the proposed transmission lines right-of-ways will have a noticeable effect on land use, but would not destabilize important attributes of the resource. Additionally, the review team concluded in Section 4.3.1.6 of the EIS that building the proposed transmission line right-of-ways would have a noticeable effect on terrestrial resources, but would not destabilize important attributes of the resource. These sections also include potential mitigation measures that could reduce the effect of building the transmission lines. Additionally, Section 4.3.1.3 of the EIS notes that coordination with TPWD and U.S. Fish and Wildlife Service to determine the potential impacts to Federally Listed and State Listed species could be undertaken to identify additional mitigation measures that could minimize impacts. Section 4.3.1.3 of the EIS has been revised to provide a description of the types of consultations that Oncor could perform to minimize some of the effects of building new transmission lines.*

E.2.4 Comments Concerning Land Use - Site and Vicinity

Comment: DEIS Section 5.1.1, page 5-5, lines 41-48: The SMALL to MODERATE conclusion also reflects the potential for salt drift from operation of the BDTF to affect rural residential properties adjoining the CPNPP perimeter. The most serious potential adverse effect of the salt drift on those properties would be salt-induced injury to sensitive landscape vegetation, as well as possible increased corrosion rates for aluminum siding and other metal structural components of houses. Possible mitigation measures, in addition to the salt fence and directional spray misting units proposed by Luminant, might include provision of salt-tolerant vegetation, compensation for corrosion of metal property, and, in the worst case, purchase of affected residential properties. A summary of the meteorological data at CPNPP demonstrates that on an annual average the wind is generally out of the north (i.e., NW-to-NE sector) approximately 26% of the year, primarily from November through March. This wind direction would disperse the mist toward the CPNPP southern property boundary. The data summary also demonstrates the wind speed from the north averages between 9 to 13 mph with an annual average of approximately 10.3 mph. The Salton Sea Salinity Control Research Project, upon which Luminant's evaluation of the effects of BDTF operation were based, stated that salt and/or mist from the evaporators can travel 1,300 ft in a 10-mph wind. Luminant commits to limiting salt deposition beyond the CPNPP property boundary, which is greater than 1,300 ft from the BDTF, to minimize or totally prevent the potentially adverse impacts. ER Subsection 5.3.2.3 states that mitigative measures such as salt fences or wind velocity sensors that halt misting could be employed to contain salt drift when wind speeds exceed 10 mph. Therefore, Luminant is not considering provision of salt-tolerant vegetation, compensation for corrosion of metal property, and, in the worst case, purchase of affected residential properties as possible mitigation measures for BDTF operation. (**0073-6** [Flores, Rafael])

Response: *The EIS proposes possible mitigation measures, in addition to those that were proposed by Luminant, such as the ones mentioned in the comment. The EIS indicates that the proposed additional mitigation measures may reduce the effect of salt drift from the blowdown*

treatment facility (BDTF). Any decision to implement these or other mitigation measures would be made by Luminant. The SMALL to MODERATE conclusion assumes that only those salt-drift related mitigation measures specifically proposed by Luminant in the ER would be implemented. The EIS was not changed in response to this comment.

E.2.5 Comments Concerning Land Use - Transmission Lines

Comment: if you look at a map, you will see that the transmission lines that come through the wind towers or planning to put across our county. We also have gas pipelines crossing our county. My question is, have you discussed this Environmental Impact study with any other -- the impact of how your transmission lines -- talk about 1,100 acres of new transmission line right of way, so if you look at all the right of ways for pipelines and for future transmission lines, did you bring that into consideration? (**0062-1-1** [Condy, Ymke])

Response: *This EIS evaluates the impacts of general corridor locations for proposed new transmission lines to serve CPNPP Units 3 and 4. This analysis, reported in Section 4.1.2 of the EIS, does not reveal likely conflicts between the proposed corridors and existing pipelines. Under Texas statutes, Oncor Electric Delivery System LLC will be responsible for applying to the Public Utility Commission of Texas to identify specific routes for the transmission lines. If appropriate, that process may involve a more detailed evaluation of the relationship between the proposed transmission lines and existing pipelines. The EIS was not changed in response to this comment.*

Comment: Figure 2-9 Federal Lands and State Parks in the Region does not include a representation of state parks within the project vicinity. Recommendation: Geographic information system (GIS) shapefiles of park boundaries can be obtained from [the] TPWD GIS Laboratory Manager Kim Ludeke. Figure 2-9 should include state parks or wildlife management areas that occur within the vicinity of the project including Cleburne State Park (SP), Dinosaur Valley SP, Lake Whitney SP, Meridian SP, Lake Mineral Wells SP and Trailway, Possum Kingdom SP, and Cedar Hill SP. The Eagle Mountain State Recreation Area is no longer owned by TPWD, though identification of this park should be delineated on the map. (**0068-16** [Melinchuk, Ross] [Wicker, Julie])

Response: *As recommended in the comment, shape files of the state park boundaries were obtained from the TPWD GIS Laboratory. Unfortunately, these files were not in a usable format for inclusion on Figure 2-9 of the EIS. State parks in the CPNPP region have been identified in the text of Section 2.2.3 of the EIS. The only state park expected to be potentially affected by the proposed project, Dinosaur Valley State Park, is depicted on Figure 2-7. Section 2.2.3 of the EIS has been revised to include State parks not presented in Figure 2-9.*

Comment: Figure 2-13 shows the approximate corridors of the two proposed new location 345-kV transmission lines associated with the project, including the 17-mile route to DeCordova and the 45-mile route to Whitney. The DEIS indicates the routes would occupy approximately 148 acres and 954 acres, respectively, that consist of grassland, oak/juniper woodlands, and developed land. The figure shows the Whitney corridor potentially crosses Dinosaur Valley SP and Fossil Rim Wildlife Center. As previously mentioned, the exact routes have not yet been decided, and the routes would be developed as required by ERCOT and PUCT.

The DEIS evaluation of direct impacts on land use indicates the proposed Whiney transmission line corridor, as currently shown, would pass very close to Dinosaur Valley SP, possibly encroaching on its western boundary, and would cross Fossil Rim. The DEIS indicates that land-use impacts of construction and preconstruction activities associated with transmission lines and pipelines would be MODERATE and impacts of NRC-authorized construction activities

would be SMALL. Page 4-6 suggests mitigation measures for land use impacts of transmission line ROWs could include designating Dinosaur Valley State Park and Fossil Rim, and all areas visible from the park and Fossil Rim, as exclusion areas for the routing study.

Dinosaur Valley SP exhibits some of the world's best preserved fossil records of dinosaur tracks, provides endangered species habitat, and is a popular camping and hiking area. Fossil Rim is a nonprofit center specializing in breeding indigenous and exotic threatened and endangered species. Crossing through either area could adversely impact the wildlife, habitats and paleontological resources that have been protected to support their recovery and preservation for the benefit of the public. Part of the enjoyment of natural area recreation activities includes viewsheds devoid of man-made structures. Visibility of the transmission line would degrade the recreational experience for the park and wildlife center visitors. Recommendation: TPWD supports the mitigation measures, presented in this section and summarized in NRC's conclusions and recommendations Table 10-1, to designate Dinosaur Valley SP and Fossil Rim and all areas visible from these properties as land use exclusion areas during the transmission line routing study. TPWD recommends every effort be made to avoid crossing these facilities.

If the final project design requires that transmission lines cross any state-owned or managed lands, such as Dinosaur Valley State Park, the NRC, Luminant, and Oncor should be aware of the requirements of Chapter 26 of TPW Code (Chapter 26). Chapter 26 is modeled on a federal statute, known as "section 4(f)" and codified at 49 U.S.C. §303. In fact, much of Chapter 26 is taken word for word from section 4(f). Chapter 26 requires that before any department, agency, political subdivision, county or municipality of this state can approve any project that will result in the use or taking of public land designated as a park, public recreation area, scientific area, wildlife refuge, or historic site, that entity must provide certain notice to the public, conduct a hearing, and render a finding that there is no reasonable or prudent alternative and that the project includes all reasonable planning to minimize harm to taking of such lands. If it appears the transmission lines may cross or come near a state park, please contact David Riskind of TPWD State Parks Division Natural Resources Program. (**0068-39** [Melinchuk, Ross] [Wicker, Julie])

Response: *The commenter's concurrence with possible measures identified in the DEIS for mitigating impacts of a new transmission line on Dinosaur Valley State Park and Fossil Rim Wildlife center is noted. The specific route for this new transmission line would be established by the Public Utility Commission of Texas in response to an application from Oncor Electric Delivery System LLC. The route selection process will comply with all applicable Federal, State, and local laws, regulations, and ordinances. The EIS was not changed in response to this comment.*

Comment: What land will need to be condemned or purchased in order to build or upgrade new transmission lines? (**0071-43** [Hadden, Karen])

Response: *This EIS evaluates the impacts of general corridor locations for proposed new transmission lines to serve CPNPP Units 3 and 4. Based on these general corridors, estimates of the total amount of land by category that would fall within the new rights-of-way are presented in Section 4.1.2. Under Texas Statutes, Oncor Electric Delivery System LLC (Oncor) will be responsible for applying to the Public Utility Commission of Texas to identify specific routes for the transmission lines. Once the actual routing is determined from within the corridors evaluated the specific parcels will be identified. The EIS was not changed in response to this comment.*

E.2.6 Comments Concerning Meteorology and Air Quality

Comment: The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments: A review of the project for General Conformity impact in accordance with 40 CFR Part 93 and Title 30, Texas Administrative Code § 101.30 indicates that the proposed action is located in the City of Glen Rose, Somervell County, which is currently unclassified or in attainment of the National Ambient Air Quality Standards for all six criteria air pollutants. Therefore, General Conformity does not apply. Although any demolition, construction, rehabilitation or repair project will produce dust and particulate emissions, these actions should pose no significant impact upon air quality standards. Any minimal dust and particulate emissions should be easily controlled by the construction contractors using standard dust mitigation techniques. (**0027-1** [Harrison, Jim] [Niemann, Tangela])

Response: *The information provided in the comment is consistent with the information presented and conclusions reached in the DEIS. This comment did not result in any changes to the EIS.*

Comment: One of the concerns that we have is shared by the NRC and the EPA and almost every scientist in the world. And that is, the climate is changing. And the NRC is proud to promote low -- nuclear power plants as a solution to global warming. But they don't really look far enough down the process to really understand exactly how it might affect the operations in their own plants. (**0063-16-1** [Smith, Tom])

Response: *The NRC licenses and regulates nuclear power production to ensure protection of public health and safety. The NRC is not engaged in finding a "solution" to climate change and does not promote the use of nuclear energy. Additionally, the NRC is not responsible for planning for the impact of climate change on the operation of nuclear power plants. Planning and management for future conditions that may affect nuclear power plant operations is the responsibility of the plant operators, such as Luminant. It is not within the NRC's scope as a regulator of nuclear safety.*

The NRC remains vigilant of emerging environmental issues, regulatory approaches, and analytical methods that may inform its decisions. The review team relied heavily on the work of other Federal agencies, especially those with a direct mandate to address the science and the effects of climate change on public health and welfare; now that the U. S. Government position has crystallized, the review team believed that it was important to consider the new circumstances. As a starting point, on December 15, 2009, the Administrator of EPA issued her determination under her authority under the Clean Air Act that:

> *… greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare…. The Administrator reached her determination by considering both observed and projected effects of greenhouse gases in the atmosphere, their effect on climate, and the public health and welfare risks and impacts associated with such climate change. (74 FR 66496)*

In addition to the finding, the bases for the finding provide insights on the extensive efforts within the Federal government to weigh and balance science and public policy issues when considering GHG emissions and the effects of climate change; GHG emissions are treated as a surrogate for the potential effects on climate. Several of the germane findings included:

> *The Administrator has considered how elevated concentrations of the well-mixed greenhouse gases and associated climate change affect public health by evaluating the risks associated with changes in air quality, increases in temperatures, changes in*

extreme weather events, increases in food- and water-borne pathogens, and changes in aeroallergens.

The Administrator has considered how elevated concentrations of the well-mixed greenhouse gases and associated climate change affect public welfare by evaluating numerous and far-ranging risks to food production and agriculture, forestry, water resources, sea level rise and coastal areas, energy, infrastructure, and settlements, and ecosystems and wildlife.

… with regard to government acceptance and approval of IPCC [Intergovernmental Panel on Climate Change] assessment reports, the USGCRP Web site states that: "When governments accept the IPCC reports and approve their Summary for Policymakers, they acknowledge the legitimacy of their scientific content." It is the Administrator's view that such review and acceptance by the U.S. Government lends further support for placing primary weight on these major assessments.

EPA has no reason to believe that the assessment reports do not represent the best source material to determine the state of science and the consensus view of the world's scientific experts on the issues central to making an endangerment decision with respect to greenhouse gases. EPA also has no reason to believe that putting this significant body of work aside and attempting to develop a new and separate assessment would provide any better basis for making the endangerment decision, especially because any such new assessment by EPA would still have to give proper weight to these same consensus assessment reports.

The latter represents an endorsement by the EPA of the GCRP (also known as the Karl Report). The Council on Environmental Quality draft guidance regarding climate change as an element of the NEPA review has been considered by the NRC staff in crafting its approach for developing EISs for new reactor applications. While it is important to disclose the comparison of GHG emissions among the proposed project and its alternatives, the conclusion that lower GHG (or CO_2-equivalent) emissions would result in lower climate change risks from this action is too broad a conclusion to state without more detailed analysis. A more detailed analysis to support such a conclusion was not warranted for this NEPA review. Appendix J presents the review team's estimate of the CO_2 footprint of the nuclear power generation alternative. The comparison of CO_2 footprints of nuclear power and alternatives is presented in Section 9.2.5.

The NRC staff has also included consideration of climate change impacts in its assessment of cumulative impacts in EIS Section 7. These comments did not result in any changes to the EIS.

E.2.7 Comments Concerning Hydrology - Surface Water

Comment: [The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments:] We recommend that the applicant take necessary steps to insure that best management practices are utilized to control runoff from construction sites to prevent detrimental impact to surface and ground water. (**0027-3** [Harrison, Jim] [Niemann, Tangela])

Comment: EPA also recommends ensuring that the storm water management system will be designed in accordance with TCEQ standards. (**0070-15** [Smith, Rhonda])

Response: *The review team expects that the applicant will implement best management practices (BMPs) to control construction site runoff to prevent detrimental impact to surface and groundwater, consistent with the Clean Water Act stormwater permit (TPDES General Permit*

TXR150000) issued by TCEQ under the Texas Pollutant Discharge Elimination System (TPDES). No changes were made to the EIS as a result of this comment.

Comment: Twelve million dry pounds of wood fiber would be generated from clearing the main construction area, and would be used as hydraulic mulch for on-site erosion control. TPWD has concerns regarding the quality of the stormwater runoff. Depending on the binding agent used in the mulch, the stormwater runoff could potentially carry elevated levels of nutrients or chemicals, such as nitrogen and ammonium, as a result of mulch decays. Luminant has not accounted for final disposition of 36 million pounds of biomass associated with BDTF clearing. Recommendation: TPWD recommends Luminant consider the potential effects to water quality from stormwater runoff associated with decaying hydromulch material and include measures to monitor and/or treat such runoff water in the Stormwater Pollution Prevention Plan for the CPNPP site. TPWD recommends the applicant find a beneficial use for excess mulched vegetation that would not be needed for hydraulic mulching. Beneficial use could be in the form of materials donation to the Texas Department of Transportation Fort Worth and Waco Districts for erosion control on road construction projects or recycling at a composting facility. (**0068-35** [Melinchuk, Ross] [Wicker, Julie])

Response: *EIS Section 4.2.3 has been expanded to provide additional discussion on the potential for impacts from stormwater runoff from areas treated with mulched wood waste. Because the projected quantities of this material appear to exceed the quantity that could be used beneficially on-site, the other beneficial uses suggested by the commenter may be good ways to mitigate some potential impacts. The NRC has no authority to require best management practices (BMPs), monitoring, or mitigation measures such as this one to prevent nonradiological water quality impacts from site runoff. Any requirements for Stormwater Pollution Prevention Plan provisions or other mitigation measures would be the responsibility of the EPA or the Texas Commission on Environmental Quality under the authority of the Clean Water Act and other laws.*

Comment: Since all the talk of the new reactors has started suddenly the lake is being kept above the 692.5 feet BRA says it trys to maintain. The lake level figures can be readily acessed at the USGS. lake level site. I personaly believe that there is some monetary hanky panky going on here but I can not believe that our officals on Lake Granbury would do that. (**0013-2** [Phillips, Doug])

Comment: This has been one of the hottest summers in several years and official reports show we were over 5 inches of rain below normal yet the lake has remained full. What happened to the evaporation the BRA has blamed the previous low levels on? (**0038-3** [Lowrance, Cleo])

Response: *Luminant applied to the NRC for a combined operating license for proposed Units 3 and 4 in September 2008. The review team held public scoping meetings for this EIS in January 2009. USGS records available at http://waterdata.usgs.gov/ indicate that water levels in Lake Granbury fell below normal full pool early in the summer of 2008 and remained low until the fall of 2009. The water level started to recover in September 2009 and the lake has been at or near full pool since October 2009. The lake's recovery in September and October 2009 can be explained by the unusually heavy rainfall that the region received in those months (see Romolo 2009a and 2009b, below in this response). NOAA Southern Regional Climate Center data (available from http://www.srcc.lsu.edu/monthlyclimrpt/) indicate that several of the following months were much wetter than normal in the watershed above Lake Granbury; this would have allowed water levels to be maintained even if there was relatively little rain in the immediate area of the lake. No changes were made to the EIS as a result of this comment.*

- *Romolo, Luigi. 2009a. Monthly Climate Summary, September, 2009. NOAA Southern Regional Climate Center. Retrieved from http://www.srcc.lsu.edu/monthlyclimrpt/, November 29, 2010.*
- *Romolo, Luigi. 2009b. Monthly Climate Summary, October, 2009. NOAA Southern Regional Climate Center. Retrieved from http://www.srcc.lsu.edu/monthlyclimrpt/, November 29, 2010.*

Comment: According to the Draft Statement, the consumptive use of water for Units 3 and 4 will be 62,700 acre-feet/year from Lake Granbury, and 92,600 acre-feet/year with all four reactors running. The DEIS states on page 2-21 that less than 20,000 acre-feet are lost to evaporation in Units 1 and 2. EPA needs an explanation as to why there is such a large increase in consumptive water use with Units 3 and 4. Please discuss in the FEIS. (**0070-8** [Smith, Rhonda])

Response: *The difference in water consumption is explained by the use of different technologies for reactor heat dissipation. Units 1 and 2 use once-through cooling, whereas Units 3 and 4 would use mechanical-draft cooling towers. In once-through cooling systems, cooling water is returned to a body of water after circulating through the nuclear unit just once. The surplus heat from the reactor is discharged to the body of water. This increases the water temperature; it also increases evaporation, but this is a secondary effect occurring as a result of higher water temperatures. In contrast, in mechanical-draft cooling, surplus heat is discharged to the atmosphere through the physical process of evaporation of cooling water. The reliance on evaporation as a heat-dissipation mechanism means that much more water is lost to evaporation than with once-through cooling. The comparative impacts of different heat-dissipation technologies are discussed in the EIS in Section 9.4.1; that section has been revised to include additional information on their impacts on water use.*

Comment: [T]he Nuclear Regulatory Commission has relied too heavily on preliminary design and performance data furnished by the Applicants to conclude that projections of water usage from Lake Granbury and the extended Brazos River system (including Possum Kingdom Lake) will not have large (i.e., serious) long-term negative impacts on the environs of the river, and its lakes. (**0055-1** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: [T]he Nuclear Regulatory Commission has relied too heavily on preliminary design and performance data furnished by the applicant to conclude that projections of water usage from Lake Granbury and the extended Brazos River system, including Possum Kingdom Lake will not have a large, that is serious, long-term negative impacts on the environs of the river and its lakes. (**0063-36-1** [Hackett, Ken])

Response: *Section 3.2.2 of the EIS provides a description of the proposed new units structures with environmental interfaces. Some of the design information and other data used in the EIS are preliminary. This is consistent with guidance from the Council on Environmental Quality, which advises that NEPA documents should be prepared early in an agency's decision process, typically before detailed designs may be available. In its regulation 40 CFR 1501.2, the CEQ states that this should be done "to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts." The proposed new units affects on surface water use is described in Section 5.2.2.1 of the EIS. Where uncertainty exists regarding details needed in an EIS analysis, the review team has made conservative assumptions that should ensure that the EIS does not underestimate environmental impacts. The review team determined that the operation of CPNPP Units 3 and 4 would have a noticeable affect of surface water uses.*

Comment: One other thing about Lake Granbury is it builds up with sediment. At a certain point the BRA even stated that Lake Granbury will become a dead lake. My concern is not for today but off into the future. When you wind up with sedimentation built up and you don't have as much water in Lake Granbury the level might look the same but it's going to actually be full of sediment down in the bottom regions. If you're pulling water out of Lake Granbury, out of the channel, the channel is going to be the first part to start building up with this sedimentation. (**0063-7-6** [Pratt, Rickie])

Response: *The effect of future sediment buildup in Lake Granbury is included in the water availability models that are used in the EIS. Additionally, a discussion of current sediment patterns is provided in Section 2.3.1.1 on page 2-18 of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: I know there are a lot of people that are here that are better experts at speaking to the water issues than I am. And I'm going to let them take the lead in that. But I want to lift that up as a second point. I think the analysis of the Environmental Impact Statement is fundamentally flawed with regards to the water issue. (**0063-5-3** [Burnam, Lon])

Response*: Impacts to water uses are described in Section 4.2.2 and 5.2.2 of the EIS. This comment expresses concerns about the EIS analysis of water-related impacts, but it provides no specific information about those concerns and will therefore not be considered further in the staff's environmental review. No changes were made to the EIS as a result of this comment.*

Comment: I have just read the NRC study for the Comanche Peak Nuclear Complex. As a property owner in Ports O'Call, Granbury, Texas, I am appalled and concerned at its implications! Predicted population expansion around Lake Granbury in the next 50 years will apparently result in an increased demand for water of 21%. At the same time, a loss of 25% water volume is predicted on the basis of sedimentation. Add to that, the water usage requirements for the cooling of the expansion known as Comanche Peak 3 and 4, and the entire environment surrounding the lake is at risk (**0003-1** [Apple, Thomas])

Comment: According to the NRC studies in the years to come there will be 21 percent more water demand from just population grown. This doesn't include any power plant water. So household water will increase by 21 percent. And this is going to have an impact. (**0063-15-5** [Williams, Joe])

Comment: We already talked about de-sedimentation. According to the study 25 percent of the lake will be full of sedimentation here in the next 50 years. So that decreases the amount of volume. (**0063-15-6** [Williams, Joe])

Response: *The EIS considers future population increases in the region, increased demand for Brazos River water, and reservoir sedimentation based on projections contained in the Texas Water Development Board's Brazos G Regional Water Plan and related planning documents. The impacts analysis presented in EIS Section 5.2.2.1 considers the effects of water usage for Comanche Peak Units 3 and 4 in combination with the other water demands and reservoir sedimentation conditions projected for the year 2020. The discussion of cumulative surface water impacts presented in EIS Section 7.2.1.1 considers the effect of increased water demand projected for later decades. Section 7.2.1.1 has been revised in the final EIS to provide more quantitative information on future cumulative impacts.*

Comment: The plan will exhaust the water from Lake Granbury (**0001-2** [Boyd, John])

Comment: Granbury is a very shallow lake which struggles to get by in the dry summer months. The proposed water use plan would destroy everything that has been gained since the lake was created in the 1960s. (**0001-5** [Boyd, John])

Comment: Since I moved here in 2001 BRA has been unable or unwilling to keep Lake Granbury at a reasonable level. I have been coming here since the early 40's because all of my family is from this area and many times as a preteen I have swam across the Brazos river because of the numerous droughts keeping it more like a creek than a river. I believe that thousands of people that are currently living on the lake will not be able to access the lake in the summer when they would like to use it a majority of the time (**0013-1** [Phillips, Doug])

Comment: I believe that additional selling of water from Lake Granbury, by the BRA to support Comanche Peak Expansion 3 and 4, will cause detrimental effects to our lake and significantly reduce the water levels. (**0018-1** [Thompson, Sue])

Comment: The Comanche Peak Expansion will result in a net loss of 60 million gallons of water per day from Lake Granbury. The lake will be full only 46% of the time. It will be 2 feet or more lower 25% of the time. During drought conditions the water level would be 6 to 8 feet low. How can we allow this to happen? (**0023-1** [Hinterleiter, David])

Comment: As resident of Hood County, I would like to voice my concern about the proposed expansion of the Comanche Peak Power plant. Please advise how this can be done without impacting the Brazos River basin and Lake Granbury? (**0028-1** [Lawson, Donny])

Comment: The water levels of Lake Granbury vary enough due to factors of nature and man, so the addition of new nuclear reactors would obviously decrease the water levels significantly. (**0033-2** [Hanna, Jim])

Comment: I am a waterfront property owner on Lake Granbury and am concerned about the amount of water that will be lost if all the water for the Comanche Peak expansion comes from the Brazos River. (**0038-1** [Lowrance, Cleo])

Comment: I would like to voice my concern over the possibility of the BRA additional use of the water at Lake Granbury. (**0045-1** [Jacobson, Jake])

Comment: What will the effect on the water level of Lake Granbury be with the addition of plant units 3 & 4? (**0061-1** [Quirk, Jim])

Comment: I just very briefly want to state, not against the power going in, but I'm really concerned about the water at Lake Granbury. (**0062-14-1** [Williams, Robert])

Comment: Reading from the draft statement about the water usage it says, During operation of all four reactors Luminant would withdraw a total volume for approximately 137,800 feet, which incidentally is more capacity that is in the lake. Of course, it refills during the year. But so 137,800 acre-feet from Lake Granbury, while approximately 42,000 feet per year would be returned to the lake, a net loss of 96,800 acre-feet per year. Approximately 34,000 acre-feet of Lake Granbury was used -- was consumed maintaining Squaw Creek Reservoir in support of units 1 and 2. So overall, with all four units working there's about a 70 percent loss of the water that's pulled out according to the draft statement. (**0063-1-1** [Answorth, Charles])

Comment: A few weeks ago gathering with a few of my friends we were discussing about the NRC study and, you know, of course, concerning the expansion and the impact it would have on Lake Granbury. Sixty million gallons gone every day. The lake would be much lower. There would be longer durations of drought on the lake that would occur. This is from the NRC study. (**0063-15-2** [Williams, Joe])

Comment: But we have the problem that we are adamantly opposed to them drawing 20 billion gallons a year more out of Lake Granbury to cool the two new towers at Comanche Peak. We're retired business people. We spent our whole life, between us 90 years, in business. And we certainly don't oppose business, we don't oppose nuclear power. But we do not want them to drain Lake Granbury. (**0063-25-1** [Williamson, Frank])

Comment: I'm your neighbor over in Dallas-Fort Worth. I've worked on air and water issues for 15 years. And I am here to echo the concerns of some of the citizens here today about the water issue that's been expressed today. You can't replace water once it's gone. And some of the analysis and some of the comments given today about the amount of water that could be going out of Lake Granbury is of concern and needs further evaluation. (**0063-29-1** [Benning, Rita])

Comment: The DEIS points out that the water level at Lake Granbury would drop which is of great concern to SEED Coalition and many local citizens. (**0071-10** [Hadden, Karen])

Response: *The comment expresses general concern about the impacts of the proposed new units on water levels in Lake Granbury. EIS Section 5.2.2.1 presents the assessment of impacts on Lake Granbury water levels from the proposed new units. Section 5.2.2.1 has been revised to provide additional details of the analysis of impacts to Lake Granbury and Possum Kingdom Lake.*

Comment: My husband and I adamantly oppose the use of water from the BRA for cooling new towers at Comanche Peak! Hopefully our group will be loud enough and powerful enough to get this rape stopped! (**0039-1** [Peralta, Patsy and Dan])

Response: *The comment expresses opposition to the proposed action due to concern about the impacts of the proposed new units on water levels in Lake Granbury. EIS Section 5.2.2.1 presents the assessment of impacts on Lake Granbury water levels from the proposed new units. Section 5.2.2.1 has been revised to provide additional details of the analysis of impacts to Lake Granbury and Possum Kingdom Lake.*

Comment: If Lake Granbury is lowered even 20 feet, the following will result (using only area from City Beach to Indian Harbor):

1. No water at City Beach, behind the Hilton or new Convention Center (main river channel on opposite side).
2. No water in canals or behind houses near 377 bypass before the bridge.
3. No water behind new developments -- Waters Edge, most of Harbor Lakes, and Harbor Lakes canals.
4. No water behind homes or in canals in Ports O'Call and Indian Harbor. Canals and Coves off Aztec and Lands End at “normal” level have 6 feet or less.

This situation will apply in other areas as well. This is only an example. (**0011-3** [Williamson, William F. (Frank) and Eileen G.])

Comment: If it's lowered 20 feet the following will result. And this is only using the area from City Beach up to Indian Harbor where I live. There will be no water at the City Beach. There will be no water behind the Hilton. No water behind the convention center. As the main river channel is on the opposite side from where they sit. There will be no water in the canals or behind the houses along that area from 377 up by the bridge there.

There will be no water behind the new developments. Waters Edge. Probably $100 million worth of new homes that have gone in there recently. No water in Harbor Lakes canals. No

water behind the homes or in the canals in Ports of Call or Indian Harbor. No water in the canals or coves off of Aztec. Literally thousands and thousands. And we can say this is minimum effect. (**0063-25-3** [Williamson, Frank])

Response: *The comments describe some of the impacts that would occur to the Lake Granbury lakefront if the lake water level were to drop 20 feet below its normal full pool. Section 5.2.2.1 of the EIS provides a description of the effects of the withdrawal of water from Lake Granbury associated with the operations of the proposed Units 3 and 4 under year 2020 conditions, with all water rights fully exercised, for the conditions recorded in 68 years of streamflow records. The largest drop in water level found in that analysis was less than 10 feet. A 20-foot water level drop might be possible, either with or without the proposed new CPNPP units, but it is very unlikely. As a result of these comments on impacts to Lake Granbury, Section 5.2.2.1 has been revised to provide additional details of the analysis.*

Comment: After years of research and construction modifications within the scope of this +$25B project it would appear to most of us in the area that better care for the use and return of safe water would have been considered for this project. According to Federal reports on the initial 2 reactors there is no return of water resources back to the water shed once taken. That already has a devastating impact during drought and marginal rain fall periods for both Possum Kingdom and Lake Granbury communities. It also overtly demonstrates the lackadaisical attitude expressed by the NRC and the private sector towards the needs of our communities. Either figure out how to return a significant portion of the water for All reactors (new and old) during the proposed upgrade or move the project to another basin like the Colorado River system near or on Lake Austin (a constant level lake). Share the burden so to speak. (**0016-2** [Murphy, Bill])

Response: *The comment asks for consideration of several alternatives to reduce the impact of the proposed new units on water availability in Possum Kingdom Reservoir and Lake Granbury. The review team and the applicant have explored alternatives to reduce this impact, as documented in EIS Chapter 9. Section 9.4 presents the review team's assessment of several system design alternatives, including alternatives to reduce water use, and Section 9.3 presents the review team's assessment of alternative sites that the applicant considered, including sites outside the Brazos River basin. This comment did not result in any changes to the EIS.*

Comment: After receiving the blown up advertisement for the Luminant company about the Comanche Nuclear power plant and it's proposed expansion, I knew I had to write you. In the ad it went on and on about how they had helped to pay for the construction of Lake Granbury and through all of the hoopla indicated that they practically owned the lake.There was no mention about the water they plan to be taking from the lake when they build two more plants. Even when they return (maybe 30%) anyone can tell that eventually the lake would be dried up. (**0029-1** [Petry, Susan])

Response: *As discussed in Section 5.2.2.1 of the EIS, analysis indicates that the additional water use for operation of Units 3 and 4 would result in lower water levels in Lake Granbury. The independent review conducted by the review team did not discover a scenario in which Lake Granbury would dry up. As a result of these comments on impacts to Lake Granbury, Section 5.2.2.1 has been revised to provide additional details of the analysis of impacts to Lake Granbury.*

Comment: The Draft EIS indicates that Lake Granbury would be 2 feet or more below full pool 10% of the time without units 3 & 4 and 25% of the time with the additional units. It concludes that the effect is only 15% of the time and characterizes this as a moderate impact. This is flawed, in that it is, in fact, a 250% increase in the time that Lake Granbury would be 2 feet or

more below full pool. Obviously this is a large impact rather than moderate. (**0043-1** [Veale, James])

Response: *The conclusion of "moderate" impact that is stated in the EIS is not based on the "15% of the time" projection stated in the comment. The NRC has established three levels of impacts -- small, moderate, or large -- that provide a common framework for categorizing impacts. The three levels are defined below:*

- SMALL - Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
- MODERATE - Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
- LARGE - Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

Consistent with this framework, the review team determined that water use for operation of Units 3 and 4 would noticeably alter important attributes of the surface water resource, but would not destabilize the resource. Thus, water use would have MODERATE impacts on surface water resources. The conclusion is based on the percentage of time that both Lake Granbury and Possum Kingdom Lake will be at full pool and changes to the flow of the Brazos River downstream of Lake Granbury and Possum Kingdom Lake. Section 5.2.2.1 has been revised to provide additional details of the analysis of impacts to Lake Granbury..

Comment: [T]he amount of water that is going to be drawn by the plant will be of minimal Impact on Lake Granbury's water table. Palo Verde drew very little from it's supply source, and that plant was much larger. I do not find this a concern of any magnitude. (**0046-2** [Robinson, Pennie])

Response: *The comment expresses an opinion on how water use for the proposed units would affect water levels in Lake Granbury. A quantitative analysis of the size of the impact on water levels is presented in EIS Section 5.2.2.1. This comment did not result in any changes to the EIS.*

Comment: The NRC report considers no study in regards to the impact downstream that the additional water losses that would occur with the Comanche Peak Expansion. Currently, the BRA is seeking an increase in water rights with TCEQ in the amount of 500,000 acre ft. 100,000 acre ft would be needed for the Comanche Peak Expansion. Dow Chemical, Friends of the Brazos, and others have filed an injunction (see attached) to temporarily prevent the BRA from being awarded all the water rights that they seek. (**0051-7** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: I asked the NRC, what if you can't get the water because BRA does not get their water rights approval? What would you do? And they said, That's not our concern; that's between Luminant and the BRA. (**0062-12-2** [Williams, Joe])

Response: *Luminant's proposal to construct and operate Comanche Peak Units 3 & 4 is based on the assumption that BRA's application for a new system operating permit (SOP) will be approved by the State of Texas. The State's approval of the SOP would grant additional water rights to the BRA, as noted in the comment. The review team cannot speculate on whether and how Luminant might change its proposal if the State denies the BRA's application for a new SOP or if the legal challenges described in the comment are successful. This comment did not result in any changes to the EIS.*

Comment: Now, if you don't have a concern, who does? Well, let's try Dow Chemical. Dow Chemical has filed an injunction against the BRA to stop them from getting these water rights. That's why it's taken six years since they've applied for these water rights, and they haven't been able to get them yet. Who else is in this injunction? Matthews Land & Cattle Company, Texas Westmoreland Coal Company, Aldine Improvement District Number 11, Number 15; the City of Bryan and the City of College Station. They may have made a deal; I haven't quite figured that one out, so they maybe dropped out. Friends of the Brazos, the National Wildlife Federation, the Gulf Coast Water Authority, Bradley B. Ware, George Bingham out of Comanche. They've got a group of people.

All these people are trying to block the water rights that the BRA is seeking, 500,000 acre- feet adds up to about 165 billion gallons. That's what they're seeking. Now, why would Dow Chemical and friends -- why would they be concerned? They said it's minimal impact that the Comanche Peak will have on it. Why are they concerned? If it's not a concern, why are they trying to block these rights? (**0062-12-3** [Williams, Joe])

Comment: Right now the BRA has gone to the state and are asking for 500,000 more acre-feet of water rights to sell on the market. 500,000 acres. That is basically the whole Brazos River basin. Out of that 500,000 acre-feet 100,000 acre-feet will go to the Comanche Peak expansion. They don't even have their water yet. The state hasn't allowed it. They haven't agreed to that. he community's hedge against the drought and the environmental damage is just 500,000 acre-feet. This is our hedge that we always have been ensured over the years that we would never have severe drought conditions out there. How do I know that it's a hedge? I don't have to tell you.

Let Dow Chemical tell you. Dow Chemical, Friends Along the Brazos, the National Wildlife Association, they have an injunction with the -- down there in Austin to block the BRA from getting these contracts. So it's not only us. It's several people on the Brazos. They know. (**0063-15-8** [Williams, Joe])

Response: *The NRC is not a party to the lawsuit described in the comment and cannot speculate on the motivations of the plaintiffs. The review team's assessment of the impacts on the Brazos River system from operation of Units 3 and 4 is presented in Section 5.2.2.1. This comment did not result in any changes to the EIS.*

Comment: While Luminant's partnership with and contributions to the community cannot be discounted, it must be fairly balanced against the concerns of the citizens of Hood County for the preservation of the lake. I applaud the steps that Luminant has taken thus far that will serve to reduce the impact the reactors will have on the lake, such as designing a return of 40% of the new required water to the lake. (**0057-3** [Keffer, James L.])

Comment: While Luminant's partnership with and contributions to the community cannot be discounted, it must be fairly balanced against the concerns of the citizens of Hood County for the preservation of the lake. I applaud the steps that Luminant has taken thus far that will serve to reduce the impact of the reactors that they will have on the lake, such as designing a return at 40 percent of the new required water to the lake. (**0063-4-3** [Regas, Tori])

Response: *The comment notes that Luminant's proposal includes elements designed to partially mitigate the project's impacts on Lake Granbury. This comment did not result in any changes to the EIS.*

Comment: Secondly, there is a significant safety concern should the regular level of the lake be 1 to 1.5 feet below the historical regular level, not to mention the highly increased hazards in low rain or drought conditions. The lake, as you all know, has many trees and stumps only a

short distance below the regular lake level that are hazards to boaters and skiers when the lake level is reduced. (**0058-2** [Huett, David])

Response: *Section 5.2.2.1. provides a description of the effects of withdrawal of water from Lake Granbury on water levels. Boaters and skiers should expect that lake levels will fluctuate with or without the proposed new units. This comment did not result in any changes to the EIS.*

Comment: When the question of possible flooding is brought up, the answer has been that the lake is regulated to a constant level and even though there may be flooding downstream, the lake level will be maintained. Examples of flooding on the river in Pecan Plantation have been sighted as the results of such an event. The discussion usually stops there. (**0058-4** [Huett, David])

Response: *Reservoir operation is the responsibility of the BRA. The NRC does not have responsibility for managing Brazos River reservoirs, nor does it have authority over BRA's management of the Brazos River reservoirs. The NRC is not aware of any commitment by the BRA to maintain a constant water level in Lake Granbury. This comment did not result in any changes to the EIS.*

Comment: The Lake Granbury Waterfront Owners Association (LGWOA) was formed in 2007 to monitor water quantity and quality on Lake Granbury, oversee property tax evaluations, and seek economic stability for the city of Granbury. LGWOA has several hundred members along with thousands of Hood County and statewide contacts regarding Lake Granbury. We have thoroughly reviewed the U.S. Commission's Draft Report for Comment, published in August 2010, concerning Luminant's application for licensing of the Comanche Peak Expansion 3 and 4. Our research here at LGWOA, finds that the water level impact study on Lake Granbury and the Brazos River Basin has not been thoroughly reviewed, and there were other studies that were not considered. (**0051-1** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Response: *This comment states that the review team did not consider other studies relevant to Lake Granbury water level and impacts in the Brazos River basin. This comment refers to an unpublished study by Trungale Engineering & Science dated 2009 that is appended to the comment letter which addresses Lake Granbury water levels and impacts in the Brazos River basin. The review team reviewed the Trungale report during preparation of the final EIS. The review team found that Trungale's study discusses the impact of instream flow changes on aquatic ecosystem health. These impacts are discussed in EIS Section 5.3.2. Section 2.3.1.1 of the EIS provides a discription of the surface-water hydrology and Section 5.2.2.1 provides a discussion of the impacts of the proposed units on surface-water uses. The review team found that Trungale's report does not introduce any new information on instream flow thresholds or hydrologic conditions that was not already discussed and reviewed in the draft EIS. Therefore, this comment did not result in any changes to the EIS text.*

Comment: The issue is not the building of the plant but the additional cooling water requirements that will be imposed by units 3 and 4. With the current usage of 45,000 acre feet per year for units 1 and 2, we have had several years where the lake was not usable for boating during the summer months. This year the BRA has supplied Lake Granbury with enough water to sustain peak levels. Last year, with slightly less rainfall than this year for the summer months, the lake was down 2 to 3 feet. Creating an unusable lake. The EIS says that this falls into the 10 percent category where the lake would be down 2 or more feet. (Since the summer months has the least rainfall, then it is safe to assume that the 10 percent will always fall in the summer months) It the more feet that scares me. I'm told that the current agreement would allow the lake to be drawn down to 17 foot level. That agreement is in place and will stand for

units 3 and 4 as well. The project of usage for units 3 and 4 is 65,000 acre feet per year. That is a total of 110,000 acre feet per year for all four units. Lake Granbury holds 105,000 acre feet. Since Granbury doesn't even hold what the units will use, the EIS conclusion of little impact is totally dependent on rainfall. And rainfall is unpredictable at best. (**0048-1** [Bernier, Jim])

Response: *The comment expresses concern about the impacts of the proposed new units on water levels in Lake Granbury, comments on the low water levels of 2009, and expresses several opinions about the timing and predictability of periods of low water level. Water levels in the lake do not respond only to recent rainfall in the immediate area in the lake. Rather, they are affected by rainfall over long periods in the large watershed above the lake. The low water levels in 2009 resulted from the combined effects of the closure of the hydroelectric plant at Morris Sheppard Dam and a prolonged period of below-normal rainfall in upper portions of the Brazos River watershed. That drought ended after heavy rains in the fall of 2009, which resulted in more normal lake levels in much of 2010. Rainfall can be unpredictable in the short term. However, the modeling discussed in EIS Section 5.2.2.1 considers conditions in the entire watershed and the variability in rainfall and streamflow that was observed over a 68-year period. The findings reported in Section 5.2.2.1 are based on this long-term modeling. As a result of this comment on impacts to Lake Granbury, Section 5.2.2.1 has been revised to provide additional details of the analysis. Please note that low water levels in Lake Granbury do not always correspond with the summer months.*

Comment: I conclude to you, ladies and gentlemen, this is The Perfect Storm that they don't want to talk about. Let me conclude. We're asking today that Luminant not be a participant in The Perfect Storm. Please redesign the system, withdraw your pipes out of Lake Granbury. For the past 20 years we have supported Comanche Peak. Now it's Luminant's time to support the integrity in Lake -- of Lake Granbury and the Brazos River basin. Please do not take our water. (**0063-15-9** [Williams, Joe])

Response: *The comment expresses opposition to the proposed design of CPNPP Units 3 and 4 due to concern about impacts to Lake Granbury and the Brazos River basin. Section 5.2.2.1 of the EIS provides a description of the effects of water use by the proposed units on Lake Granbury. No changes were made to the EIS as a result of this comment.*

Comment: It is my understanding that the proposal will result in water levels at Lake Granbury that are approximately 5 inches lower during good weather and as much as 6.5 feet lower during extreme drought conditions. Some studies estimate the levels could be as much as 8 feet lower! This past year's lake levels were reported to be 4 feet lower than normal, so simple arithmetic would indicate that had these two towers been in operation and using cooling water from Lake Granbury, lake levels would have been between 10.5 and 12 feet lower than normal! I believe the proposed use of water for cooling Comanche Peak 3 and 4 to be ill advised, both in the immediate future and for some years to come. (**0003-2** [Apple, Thomas])

Response: *The comment expresses opposition to the proposed design of CPNPP Units 3 and 4 due to concern about impacts to Lake Granbury. The numerical estimates of impact to Lake Granbury that are cited in the comment do not fully agree with the estimates presented in EIS Section 5.2.2.1. For example, the analysis presented in that section indicates that Lake Granbury would be at its normal full pool for 46% of the time, not 5 inches lower. See Section 5.2.2.1 for additional details. Section 5.2.2.1 has been revised to provide additional details of the analysis of impacts to Lake Granbury.*

Comment: Possum Kingdom dwarfs Granbury Lake in size and in depth and capacity. That difference in size must be reflected in the commitment of water for this project. To my

knowledge BRA has made a commitment for Granbury but not for Possum Kingdom. THIS IS A DEAL BREAKER. (**0002-1** [Uhlhorn, Ralph])

Comment: We are extremely excited about it in Hood County. Those of us that live on the lake are excited about it. We may even end up with more water in our lake because they've got to supply more water to Luminant. (**0063-23-2** [Conway, Bretta])

Response: *The review team's analysis of water use impacts, presented in EIS Section 5.2.2.1, assumes that the BRA would be able to commit the necessary water for the proposed project as a result of implementing its proposed system operating plan (SOP). Under that plan, the operations of the dams that control Possum Kingdom Reservoir, Lake Granbury, and other Brazos River system reservoirs would be modified to optimize water availability for all of BRA's contracted water users. Water contracts would commit water from the flow of the river, not from a specific reservoir. Water for CPNPP Units 3 and 4 would be withdrawn from Lake Granbury, but water levels in both Lake Granbury and Possum Kingdom Reservoir would be affected. No changes were made to the EIS as a result of this comment.*

Comment: Please consider the impact of the BRA's request to increase the amount of water it can sell. While I understand that the BRA does not guarantee any lake levels as it sells water, there is more at stake with the current request than merely having lower lake levels. (**0006-1** [McClain, Janet])

Response: *The NRC does not have a role in deciding whether the BRA is granted approval to implement its proposed system operating plan (SOP). Under that plan, the BRA would modify the operation of the dams that control Brazos River system reservoirs to increase the amount of water available to the BRA's contracted water users. Under the SOP, the water supply requirements of CPNPP would be one factor in determining the volume and timing of water releases from Possum Kingdom Reservoir. The review team's analysis of water use impacts, presented in EIS Section 5.2.2.1, assumes that the BRA implements the SOP. No changes were made to the EIS as a result of this comment.*

Comment: The fact that [the BRA] does not guarantee constant lake levels should not be an excuse to ignore negative impacts that reach far beyond having less water. (**0006-4** [McClain, Janet])

Response: *In this EIS, the review team considers the potential environmental impacts of constructing and operating the CPNPP Units 3 and 4. The NRC does not have responsibility for managing Brazos River reservoirs, nor does it have authority over BRA's management of the Brazos River reservoirs. However, the review team has considered the impacts of the BRA's proposed system operating plan to the extent that those impacts are related to the impacts of the proposed nuclear units. This comment did not result in any changes to the EIS.*

Comment: We simply do not believe they should drain the Brazos River Basin to cool those towers. The Brazos River Authority had sold so much water from this Basin that even a slight drought had the water level so low last year that residents could not get their boats out of the docks and several launch ramps were closed. This extra usage would eliminate most of Lake Granbury as well as Possum Kingdom in a few short years, even given normal rainfall. (**0011-2** [Williamson, William F. (Frank) and Eileen G.])

Response: *The comment provides opinions about the causes of low water levels in Lake Granbury in 2009 and about the effects of additional water use on the lake, and it expresses opposition to the proposed design of CPNPP Units 3 and 4 due to concern about impacts to Lake Granbury, Possum Kingdom Reservoir, and the Brazos River basin. Note that water levels in the lake are affected by rainfall over long periods in the large watershed above the*

lake. Section 2.3.1 of the EIS describes the site-specific and regional hydrological features that could be affected by the proposed units. Although the drought may have seemed merely "slight" in the Granbury area, the low water levels in 2009 resulted from the combined effects of the closure of the hydroelectric plant at Morris Sheppard Dam and a prolonged period of below-normal rainfall in upper portions of the Brazos River watershed. As discussed in Section 5.2.2.1, analysis indicates that additional water use for the proposed new units would result in lower water levels in Lake Granbury and Possum Kingdom Reservoir, but neither lake would be eliminated. The NRC does not have responsibility for managing Brazos River reservoirs, nor does it have authority over BRA's management of the Brazos River reservoirs. No changes were made to the EIS as a result of this comment.

Comment: The BRA did not exercise "due diligence" in studying the environmental impact the loss of 20 million gallons a day would make on Lake Granbury and environments. (**0019-5** [McHugh, Judy])

Comment: But what we are asking for the NRC to do is to be as vigilant as we've been in trying to keep the word out to the users of water that we've got to be careful with our most precious resource. So the thing about not getting enough water through the damn at Morris Sheppard, the thing about the property values dropping when we don't have water, all of that should be taken into consideration. (**0063-23-3** [Conway, Bretta])

Response: *The NRC does not regulate or manage water resources, nor does it have authority over BRA's management of the Brazos River reservoirs. However, the NRC does have the responsibility under NEPA to assess and disclose the impacts of the proposed action on water resources, and Section 5.2.2.1 presents the review team's assessment of the impacts of CPNPP Units 3 and 4 water use on Lake Granbury and associated environments. This comment did not result in any changes to the EIS.*

Comment: Please reconsider the idea of draining our lake. Take into consideration that Possum Kingdom Lake is much deeper than Granbury lake and IF you insist on the new development please make an agreement with that if you are going to take our water that BRA should release water from Possum Kingdom lake to allow us not to become a mudhole. Our normal level now is already lower than it was when we bought our property. We are saddened by the thought that no one cares what we, the people, think. (**0025-1** [Slough, Gene and Phyllis])

Response: *The comment expresses concern about the impacts of the proposed new units on water levels in Lake Granbury and suggests using water from Possum Kingdom Reservoir instead. Luminant's proposal and EIS analysis both assume that the BRA would modify the operations of its dams, including the dams that control Possum Kingdom Reservoir and Lake Granbury, to increase the amount of water available for CPNPP and other BRA water users. Water contracts would commit water from the flow of the river, not from a specific reservoir. Water for CPNPP Units 3 and 4 would be withdrawn from Lake Granbury, but water levels in both Lake Granbury and Possum Kingdom Reservoir would be affected. This impact is discussed in EIS Section 5.2.2.1. No changes were made to the EIS as a result of this comment.*

Comment: The NRC study has no water level impact that has occurred since the closing of the Morris Shepherd Hydroelectric Plant at the Possum Kingdom dam in 2007. This closure has had a significant impact on the water flow from Possum Kingdom Lake to Lake Granbury. (**0051-4** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: The second problem we have, as you may or may not be aware, a few years ago we used to have an electrical plant coming off of Possum Kingdom. Because it was being run

by that water, they had to release X amount of water into Lake Granbury. Well, BRA has shut down that electrical plant, and as a result, we no longer get that water in Lake Granbury; it just adds a second layer of problems that we have with the water at Lake Granbury. (**0062-14-3** [Williams, Robert])

Comment: So I don't know that if either of those factors [Morris Shepard Dam not operational and BRA selling more water rights that are available] -- I've not read your document -- if they were factored into the document or if they were, if they were factored properly. But you need to consider these because these have disparate impacts on both of these counties and on the ability to survive. (**0063-13-3** [Yancey, Darren])

Comment: Mayor Pratt hit on something very lightly awhile ago about the potential issue that's been created up at Possum Kingdom Lake on the Morris Sheppard Dam with the dam not being operational. What he didn't go into detail for you on is the reasons why that dam was shut down. It's a breach of contract issue. And there's monies that have been allocated to the State of Texas and bond issuance that have not been spent that are basically in dispute that have shut that down. And what that dam does is it brings a continuous flow of acre-feet to Lake Granbury on a continuous basis. So it not only affects Lake Granbury and Hood County, it actually has an impact on Somervell County with flow down the Brazos and on recreational use. So you need to keep that in mind. (**0063-13-1** [Yancey, Darren])

Comment: Morris Sheppard Dam, hydro-electric. They shut it down. The cleanest, greenest energy we could produce. They shut it down. Brazos Electric? They breached their contract with them. They wanted to buy it from them and BRA breached the contract. BRA -- I'm sorry. Brazos Electric has taken BRA to the Texas Supreme Court on this issue. They are poorly mismanaged. Downstream we have Dow Chemical. The Friends Along the Brazos. We have those people. They have senior water rights over almost everybody in -- on the Brazos River system. Why is this important? They're going to get their water down there. They will get it. So it will flow through Lake Granbury and drain on the system and go on downstream. (**0063-15-4** [Williams, Joe])

Comment: However, the issue of water is of great concern to the constituents and the citizens around Lake Granbury. And my concern is that we have an issue with the lake that's up river of us. And I'd like for the NRC to be aware of it. It's a lake called Possum Kingdom Dam. It's an 80 foot deep lake. It's got a hydro-electric plant located at its dam. But the issue is -- and we felt this during a drought last year -- is that water can only flow over the dam at a certain level. Once that lake reaches a level below that point no water can flow over the dam. It's a manually operated dam system in the first place to allow water to flow off the levy. The only other way it can generate any water downstream is by way of its hydro-electric plant. The hydro-electric plant is capable of pulling water from the lower levels and allows it to flow down river. When we wind up not having any water flow our level at Lake Granbury drops tremendously. (**0063-7-3** [Pratt, Rickie])

Response: *The review team's impact analysis is focused on the impacts of the proposed nuclear units. The review team's analysis of water use impacts, presented in EIS Section 5.2.2.1, assumes that the BRA would implement its proposed system operating plan (SOP). Under that plan, the BRA would operate its Brazos River system reservoirs to increase the amount of water available to the BRA's contracted water users. The volume and timing of water releases from Possum Kingdom Reservoir at Morris Sheppard Dam would be adjusted to help meet the water supply requirements of CPNPP and other users. Water would be released from Morris Sheppard Dam as needed, whether or not the hydroelectric plant is operating. Additionally, Section 7.2.1.1 of the EIS provides a description of the impacts of other past*

present and reasonable foreseeable impacts to surface water uses. Section 5.2.2.1 has been revised to include more information on potential impacts to water levels in the lakes.

Comment: The study says the additional units would cause the lake level to go down 2 or more feet for 25 percent of the time. That would be 3 months out of the summer. If I'm not mistaken there are only 3 months in the summer. And the more, to 17 ft., is a distinct possibility. (**0048-3** [Bernier, Jim])

Response: *As the comment states, Section 5.2.2.1 of the EIS reports that the new units would change the frequency of water levels more than 2 feet below full pool from 10 percent of the time to 25 percent of the time. However, this does not necessarily mean that water levels would be this low every summer, as low water levels in Lake Granbury do not always correspond with the summer months. The largest drop in lake water level in Lake Granbury predicted by the model were 6.5 feet below full pool level and would increase to 9.4 feet with the operation of the proposed units. These levels were associated with the extreme drought conditions encountered during the drought of record in 1953. A drought of record is the worst recorded drought since compilation of meteorologic and hydrologic data began and is, therefore, an extreme and unusual event. In Lake Granbury, water levels 5 ft or more below full pool are estimated to occur about 3 percent of the time under current conditions and 5 percent of the time with the proposed units operating. A water level drop of 17 feet may be possible with or without the proposed new units, but it was not observed in the model. Section 5.2.2.1 has been revised to include more information on potential impacts to water levels in the lakes.*

Comment: The NRC study shows no research in regards to proposed reservoirs to be built upstream that would have an additional detrimental effect on Lake Granbury and its water levels. In 2006, the construction of the Cedar Ridge reservoir (see attached) was proposed. The new reservoir would be located north of Abilene, and would be built on the Clear Fork of the Brazos River which currently flows into Possum Kingdom Lake. Studies have now shown that Cedar Ridge would actually prohibit more water from reaching Possum Kingdom. This would be due to increased evaporation losses (est. 5000-20,000 acre ft.) and losses from the selling of water rights to the city of Abilene and other power plant facilities. This loss of Possum Kingdom water would have additional negative water level impact on Lake Granbury which has not been factored into the environmental impact study. (**0051-6** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Response: *The potential effects of Cedar Ridge Reservoir and the proposed additional allocation of Brazos River water to the city of Abilene are considered in the Brazos G water planning studies that are cited in Section 7.2.1 and used as a basis for assessing cumulative impacts of water use for the proposed new units. That EIS section has been revised to include additional quantitative information on estimated cumulative impacts.*

Comment: In the light of the rapid population growth affecting this area, along with ongoing depletion of the Trinity aquifer. Lake Granbury will increasingly serve as the principal source of area water supplies. The authorities responsible for the protection and allocation of our natural resources must be certain of the projected water withdrawal and its environmental impacts. (**0051-12** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: In the light of the rapid population growth affecting this area, along with ongoing depletion of the Trinity aquifer, Lake Granbury will increasingly serve as the principal source of area water supplies. The authorities responsible for the protection and allocation of our natural resources must be certain of the projected water withdrawal and its environmental impacts. Luminant's application does not provide sufficiently accurate data, nor does it consider

alternative plans to permit complete understanding of the additional reactors' impact. (**0055-6** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: The other -- the name of the Brazos River Authority's been brought up a couple of different times and their lake management system. And I think everybody in the room would agree the Brazos River Authority has no lake management system. They have problems. They sell off water rights that they don't have. (**0063-13-2** [Yancey, Darren])

Comment: Regarding potential water use, it's important to recognize that even if these new units are not built there is still a large water demand in the rest of the basin. So if Texas water is not used here it will be sold downstream, along with the massive economic developments that go with it. (**0063-19-2** [Stewart, Michael])

Response: *The NRC does not have the authority or responsibility to regulate or manage water resources, nor does it have authority over BRA's management of the Brazos River reservoirs. The EIS presents an analysis of the impacts of water use for the proposed new units that uses information from the authorities that are responsible for managing water resources, including the Texas Water Development Board and the Brazos River Authority. Cumulative impacts on water resources, including the effect of population growth in the region, are discussed in EIS Section 7.2. Alternatives are discussed in EIS Section 9. Where uncertainty exists regarding details needed in an EIS analysis, the NRC has made bounding assumptions to ensure that the EIS does not underestimate environmental impacts. These comments did not result in changes to the EIS text.*

Comment: I know that many present are concerned about the water levels in Lake Granbury. I recently moved to a home on Lake Granbury, and my young children are looking forward to years fishing and boating on our lake. However, opposition to the Comanche Peak expansion is not the solution. First, the Brazos River Authority controls the sale of the river's water. If they don't commit it to Comanche Peak, they will sell it elsewhere. Opposition to water commitments should be address to the BRA. Second, if the water is to be used, the best solution for Granbury and Glen Rose is for the water to be used for economic development in our counties. Finally, Comanche Peak will be returning about 40% of the water back to Lake Granbury. (**0053-3** [Orcutt, David])

Response: *The comment indicates a general concern about the impacts of the proposed new units on water levels in Lake Granbury, points out that BRA is the agency that controls water allocation, expresses support for water uses that support economic development in Hood and Somervell Counties, and notes that Luminant's proposal includes elements designed to partially mitigate the project's impacts on Lake Granbury. This comment did not result in any changes to the EIS.*

Comment: As Chairman of the Energy Resources Committee in the Texas House, I understand the importance to develop nuclear power in this state as a reliable source of energy to meet the needs of our rapidly growing population, and the Hood County community appears mostly supportive of the construction of the new reactors. I am aware that it was the original contract with Luminant, then TXU, that funded the construction of Lake Granbury, and it is Luminant's continued presence that, in part, keeps water flowing from upstream sources into Lake Granbury. In addition, the construction ofthe two proposed reactors will translate to a significant number of badly needed jobs and economic growth to the area and to the state of Texas. However, I want to stress the importance of mitigating the impact that the new reactors will have on Lake Granbury. (**0057-1** [Keffer, James L.])

Comment: I understand the importance to develop nuclear power in the state as a reliable source of energy to meet the needs of our rapidly growing population. And the Hood County appears mostly supportive of the construction of the new reactors. I am aware that it was the original contract with Luminant, then TXU that funded the construction of Lake Granbury and it's Luminant's continued presence that in part, keeps water flowing from upstream sources into Lake Granbury. In addition, the construction of the two proposed reactors will translate to a significant number of badly needed jobs and economic growth to the area and to the State of Texas. However, I want to stress the importance of mitigating the impact that the new reactors will have on Lake Granbury. (**0063-4-1** [Regas, Tori])

Response: *The comment states that it is important to mitigate the impacts of the proposed new units on Lake Granbury. The EIS describes potential mitigation measures to reduce the affect of the proposed new units on water use and water quality. No changes were made to the EIS as a result of this comment.*

Comment: And I want to get something very factual and very straight: The BRA only has control of 696,000 acre-feet of the Brazos River basin; that's it. The State limits them, and they limit them for a reason. In regards to the lake, the levels go up and down. In the last 20 years the lake has gone approximately about two to two and a half feet down, or less, 10 percent of the time. You may have a three foot, but about 10 percent of the time it goes down and then it comes back up to constant pool. So there's history, 20 years: 10 percent of the time, not very often. Now, if you read the studies, that's going to be increased to 25 percent, and they're going to be deeper and they're going to be longer. I would like to go forward, though. The BRA -- I'm going to make this very short as I can. The BRA, in regard to the contracts that they have now, has applied to the State for another 500,000 acre-feet with the TCEQ. Now, 100,000 acre-feet will be applied toward the Comanche Peak expansion if they get approval of these rights. That means today if they tried to build the plant, BRA cannot provide the water, period, today. (**0062-12-1** [Williams, Joe])

Response: *Luminant's proposal is based on an assumption that BRA's application to the State of Texas for a new system operating permit (SOP) will be approved, allowing BRA to supply water to the proposed new units at the Comanche Peak Nuclear Power Plant. The comment cites some findings of the EIS analysis of the impacts of the increased water use for the proposed new units. That analysis is based on the assumption that the BRA application will be approved. No changes were made to the EIS as a result of this comment.*

Comment: Joe Trungale is a in-flow study expert throughout the nation. He's out of Austin, Texas. It's called Trungale Engineering. He has done -- he's a civil engineer out of the University of Washington. He has done project -- these are study projects -- for the Lower Colorado River flow study in San Antonio. He's done studies for the Caddo Lake/Cypress Basin sustainable river project. He's done studies for the Trinity and San Jacinto basins, all in Texas. He's an expert. Did the NRC use his study in their DEIS? No. Why not? I don't really know. Did the BRA know about this study? Oh, yes, they know about the study. I'm going to give you the conclusion to this study. Listen very carefully. The duration of drought events would also be expected to have substantially increased under the water management plan that includes the Comanche Peak expansion project 3 and 4.

Listen: Under natural conditions, without the expansion 3 and 4, only two drought events lasted more than three months, and none any longer lasted more than four months. Under the proposed plans -- expansion of Comanche Peak 3 and 4 -- there are more than 20 events in which drought conditions are four continuous months or more, and one event that will last over 17 continuous months. (**0062-12-4** [Williams, Joe])

Comment: How do they know? How in the hell do they know that this 500,000 acre-feet that the BRA want -- how do they know that it's going to be a problem? Trungale studies. Joe Trungale is a civil engineer out of Washington. Nobody has talked about the Trungale studies. The NRC -- they did their study. Did they consider the Trungale studies? No. Who is Joe Trungale? Who is engineering. He -- Okay. Trungale is -- he has done studies on the Lower Colorado River. He's done it on the Caddo Lake. He's done it on the Trinity River. He has also done it on the Brazos River basin. This is the conclusion. Listen very carefully. The duration of drought events would also be expected to substantially increase under the water management plan that includes the proposed Comanche Peak 3 and 4 project.

Listen. Under natural conditions without 3 and 4 only two drought events lasted more than three months and none lasted more than four months. Under the proposed plans adding the additions of 3 and 4 there are more than 20 events in which drought conditions are going to be four continuous months or more. And one event that lasts for 17 continuous months. (**0063-15-10** [Williams, Joe])

Response: *These comments refer to an unpublished report by Trungale Engineering & Science dated April 2009 that was provided to the review team. The Trungale report discusses the potential effects of Units 3 and 4 on instream flows deemed necessary for aquatic ecosystem health. These impacts are discussed in EIS Section 5.3.2. The review team found that Trungale's report does not introduce any new information on instream flow thresholds or hydrologic conditions that was not already discussed and reviewed in the draft EIS. Note that when the Trungale report states that the severity, frequency and duration of "drought" would increase, a "drought event" is defined as a "continuous period of time during which flows remain below recommended targets" for instream flow. The time periods when streamflows do not meet criteria for aquatic ecosystem health do not necessarily correspond to periods of low lake water levels. No changes were made to the EIS as a result of this comment.*

Comment: As someone mentioned earlier, Hood County is a very, very fast-growing county. I believe they said it tripled, you know, ten years and tripled again. I don't remember the exact figures, but the bottom line is it is very fast growing. Where do you think we're going to get our water? It comes out of Lake Granbury. So now we've got a triple whammy going on Lake Granbury, and you're sitting there telling me the water level's not going to appreciably change. I don't believe you. (**0062-14-4** [Williams, Robert])

Response: *The EIS considers the impacts of the proposed new units together with the impacts of increased water demand due to population growth. The impacts analysis presented in EIS Section 5.2.2.1 considers the effects of water usage for Comanche Peak Units 3 and 4 in combination with the other water demands and reservoir sedimentation conditions projected for the year 2020. Section 7.2.1.1 discusses the effects of past, present, and reasonable foreseeable water demands on water resources, and includes water demand projections through the year 2060. The review team concluded that there would be a noticeable effect on water quantity as a result of the alterations in the Brazos River System to accommodate increase water demands. As a result of this and other comments on impacts to Lake Granbury, Section 5.2.2.1 has been revised to provide additional details of the analyses.*

Comment: What little bit of research I've been able to, as do was mentioned earlier, we're going to take 60 million gallons of water a day. That is not a small amount of water; I don't care what you call it. That's hefty. To tell me it's going to lower my lake by six inches, I don't believe you. It's just that simple. I don't believe you. (**0062-14-2** [Williams, Robert])

Comment: It is important to note that the environmental impact study of Units 3 and 4 includes water usage models that have been calculated using the hottest three months of the year, then

projected through the entire year. This is by far a worst-case scenario. The Nuclear Regulatory Commission then took this model and applied it to their economic impact study -- I'm sorry -- their environmental impact study. According to Section 5.221 of this study, surface water use impacts, page 5-9, lines 10 and 11, it says, Operation of Comanche Peak nuclear power plant Units 3 and 4 would reduce the average water levels by .6 feet in Lake Granbury and by 1.5 feet in Possum Kingdom Lake." That means that if we have the worst-case scenario, the addition of Units 3 and 4 could reduce current lake levels by only 7.2 inches. (**0062-4-3** [Griffin, Dwayne])

Comment: The Draft Environmental Impact Statement model identifies boundaries of potential environmental impact; it doesn't identify the reality that these two nuclear units will have on the lake. The reality is that the impact will be less than the boundaries identified, and here's a couple of examples why: The model uses the hottest times of the year and applies those temperatures across the entire year. We did that because we needed to be conservative; that's just the way the nuclear business does things: very conservative. The model also assumes the 100 percent use of all water rights, something that's never occurred. Third, in addition this model does not take into account our aggressive internal studies of how to reduce potential water use. We're continuing to take a look at what we need to do to minimize the impact to Lake Granbury. We're not through; it's been changing. And finally, this model does not take any credit for the Brazos River Authority's lake management plan, something they are currently studying. (**0062-5-2** [Flores, Rafael])

Comment: The Draft Environmental Impact Statement model identifies some boundaries of potential environmental impacts. It does not identify the reality that two new nuclear units will have on the lake. The reality is that the impact will be less than what we've identified as the boundaries. And here's why. The modeling that we used for the study uses the hottest times of the year and applies those temperatures across the entire year. We did that because we wanted to be as conservative as possible. That's really the way the nuclear business does its work. We try to be very conservative. The modeling also assumes 100 percent use of all the water rights. Something that's never occurred. In addition, the model does not take into account aggressive internal studies on how to reduce potential water use. Those are ongoing. They continue to be ongoing, as Steve mentioned in his comments. We're working to minimize the impact of that lake. And finally, this model doesn't take any credit for the Brazos River Authority's Lake Management Plan, something they're currently studying. (**0063-12-1** [Flores, Rafael])

Comment: We are not against the Comanche Peak towers 3 and 4 or nuclear energy. What we are against is the detrimental use of Lake Granbury to cool those towers. Your study supposedly indicates minimal impact on water levels. We have seen studies that indicate the opposite and, quite frankly, we cannot take the chance that you might be wrong. (**0062-6-2** [McHugh, Judy])

Comment: I want to address the water issue. I think it's of critical importance. The questions I asked earlier were real questions. And the answers were not adequate. On page 5-9 of the Draft Environmental Impact Statement -- you can get it on disc in the back of the room or get a hard copy -- there is this information. That currently Lake Granbury is at full pool 57 percent of the time. I think those around the lake need to look at that. Because I think it's pretty close to that a lot of the time. With additional reactors it would only be at full pool 46 percent of the time. And they say a .6 foot decrease would be likely. Possum Kingdom they call full pool 34 percent of the time and they say that would go down to 26 percent of the time.

For Lake Granbury they say it currently falls -- see if this is true -- two feet or more full pool 10 percent of the time. Is that true? Is it two feet low 10 percent of the time? It would be 25 percent of the time that it would be two feet or more below full pool with units 3 and 4 according to this

study. I think this data needs to be looked at. And if it is true it's a concern as it is. Possum Kingdom, five feet or more below full pool now 10 percent of the time. That would go to 25 percent of the time. And the seasonal distributions of stream flow downstream would be altered. I think this needs to be looked at seriously. And the alternations that were discussed earlier -- there was no answer to the question on that. (**0063-30-13** [Hadden, Karen])

Comment: So I would ask that as we leave here we find a way, an assurance that your draw downs are correct, that you're exactly right when you say it's only going to be seven inches. (**0063-10-4** [Berry, Steve])

Response: *These comments express concern that the analysis presented in the EIS may underestimate impacts. The analyses in the EIS are conservative. That is, in order to ensure that potential impacts are not underestimated or overlooked, the analyses are based on assumptions that are expected to result in upper-end estimates of impacts. However, while it has been stated that the water level in Lake Granbury would be 0.6 ft (7 inches) lower on average with the new units operating, this single average value does not effectively communicate the size of the impact. This is an average of values that range from zero (for periods when the water level would be unchanged) to values much larger than 7 inches. Since the analysis indicates that Lake Granbury would be at its normal full pool for 46% of the time (zero difference from the situation without the new units), the average has to reflect many values greater than 7 inches. See Section 5.2.2.1 for additional details on estimated reductions in lake water levels. The assumption that 100 percent of existing water rights are exercised by their owners may not be completely realistic, but this assumption is necessary to provide assurance that water use by CPNPP Units 3 and 4 would not conflict with other users' water rights. The EIS analysis does assume that the BRA would implement its system operating plan, which is intended to optimize water availability for the benefit of all users. It is useful to know that Luminant and the BRA are continuing to study ways to mitigate the impacts on the lakes and the river system of water use for the new units. Section 5.2.2.1 has been revised to provide additional details of the analyses.*

Comment: I fully believe that if you didn't pass this BRA would sell the water right on down the river. (**0063-10-2** [Berry, Steve])

Comment: We started thinking about the BRA. And everybody was saying, You know, it's the BRA, they control the water. Luminant does not control the water, the NRC doesn't control the water, BRA is the only organization, agency that has the water rights out of the Brazos River system. They say it's their water and they'll do what they want to with it. I question what's the truth. What is the truth? Do they control all the water? Do they do what they want to with it? I want the truth. Here's the truth. The very contracts for 696,000 acre-feet of water that they can sell off out of the Brazos River system. Period. 64,000 acre-feet can come out of Lake Granbury. Period. Most of that goes to the existing Comanche Peak that sits there here in Somervell County. This is true. This is the truth. (**0063-15-3** [Williams, Joe])

Response: *The authority or responsibility to regulate or manage water resources belongs to the Brazos River Authority. The EIS presents an analysis of the impacts of water use for the proposed new units that uses information from the authorities that are responsible for managing water resources, including the Texas Water Development Board and the BRA. Luminant's proposal to construct and operate two new nuclear power units is based on an assumption that BRA's application for a new system operating permit (SOP) will be approved by the State of Texas, allowing BRA to supply water to the proposed new units at the Comanche Peak Nuclear Power Plant site. The State's approval of the SOP would grant additional water rights to the BRA. If the BRA receives approval to increase its water sales (by implementing its proposed SOP) and the proposed new units are not built, the BRA would have the authority to sell some*

other user the water that would have been allocated to these units. The review team cannot speculate on how the BRA would utilitize the additional water made available through the SOP if the SOP is approved, but the proposed units are not built. No changes were made to the EIS as a result of these comments.

Comment: But briefly, we are concerned that nuclear power is not a real solution to climate change. It's vulnerable to severe climate conditions, as pointed out earlier to hot water temperatures. We are already seeing U.S. reactors have to shut down -- close down because the water's too hot for cooling. (**0063-30-2** [Hadden, Karen])

Comment: And so it concerns a lot of us that are in Granbury as to whether or not we're going to see the level of the water stay the same but the temperature of the water is going to wind up rising. Further into the future if you don't have that cool water flowing down river we're going to wind up suffering because our temperature is going to wind up rising. And that's going to affect the cooling of the nuclear plant. (**0063-7-7** [Pratt, Rickie])

Comment: If global warming is occurring and as severe as scientists predict will there be enough cool water to operate the reactors safely? The EIS needs to include analysis based on input from global warming scientists. (**0071-36** [Hadden, Karen])

Response: *The NRC licenses and regulates nuclear power production to ensure protection of public health and safety. The NRC is not engaged in finding a "solution" to climate change and does not promote the use of nuclear energy. Additionally, the NRC is not responsible for planning for the impact of climate change on the operation of nuclear power plants. Planning and management for future conditions that may affect nuclear power plant operations is the responsibility of the plant operators, such as Luminant. The NRC has included consideration of climate change impacts in its assessment of cumulative impacts in EIS Section 7. The gradual effects of climate change on plant operation are a safety issue, and provisions exist for license holders to update their Safety Analysis Report as required by 10 CFR 50.71(e). This includes site safety issues. Power plants have derated or shutdown during periods of high water temperature or low flow conditions. These comments did not result in any changes to the EIS.*

Comment: According to the DEIS, the project may cause the long term ambient water quality for Total Dissolved Solids (TDS) and chlorides to increase. The DEIS also states that treatment chemicals containing phosphorus will be added to the cooling water. EPA is concerned that this could possibly cause problems in the future with excess nutrients in Lake Granbury leading to algae blooms. Blue Green algae blooms are related to excessive nutrients, especially phosphorus. Currently, water quality data for Lake Granbury and Lake Whitney (downstream of Granbury) indicate that chlorophyll A levels are above their screening values. Additional loadings of phosphorus into the system may become a problem in the future. Please discuss this concern in the FEIS. (**0070-3** [Smith, Rhonda])

Response: *The comment notes that the use of water treatment chemicals containing phosphorus could increase phosphorus loading to Lake Granbury and the Brazos River when the water is discharged, thus contributing to nuisance algal blooms. In response to this comment, EIS Section 5.2.3.1 has been revised to include an analysis of the potential for impacts from the use of water treatment chemicals. Using conservative assumptions, the analysis found that the use of water treatment chemicals could increase phosphorus concentrations by a factor of 6.3×10^{-7} (about one part in 1.6 million). The review team considers the effects of this small addition to be negligible.*

Comment: Although the DEIS concludes that impacts on surface water quality would be Small to Moderate, higher levels of TDS and chlorides may increase the need for public water supply

treatment capacity. EPA recommends including an analysis of water quality and resultant treatment and cost impacts resulting from concentrated contaminants to include applicable inorganic chemicals, metals, etc. (contaminants in addition to chloride and TDS). (**0070-14** [Smith, Rhonda])

Response: *As stated in Section 5.2.3.1, higher levels of dissolved solids would increase the need for treatment to make the water suitable for public water supply and other uses. The review team has not identified any other substances potentially present in effluents from Units 3 and 4 that could create a need for new treatment capabilities. The principal public water supplier that would be affected by increased concentrations of dissolved substances is the Lake Granbury Surface Water and Treatment System (SWATS), which is operated by the BRA to supply Lake Granbury water to five municipal water systems. Reverse osmosis is the primary treatment method used by SWATS. Because reverse osmosis technology is a nonselective treatment process that minimizes the concentrations of all dissolved substances, it would be effective in treating any inorganic chemicals that would be introduced in small concentrations by discharge of CPNPP Units 3 and 4 effluents. Higher concentrations of dissolved solids could, however, increase the cost of treatment in SWATS. This comment did not result in any changes to the EIS.*

Comment: The Final EIS should also confirm, in consultation with applicable water treatment plant(s) (including Lake Granbury Surface Water and Treatment Plant) that the lowered Lake Granbury and Possum Kingdom Lake water levels will not destabilize water use which would include drinking water treatment and raw water intake. (**0070-12** [Smith, Rhonda])

Response: *The Brazos River Authority, which would supply water for the proposed new units, also is the operator of the Lake Granbury Surface Water and Treatment Plant and the two reservoirs named in the comment. As such, the BRA has the authority and the responsibility to manage water supply in these reservoirs to assure a stable supply for users. In preparing the analysis of water use impacts presented in the EIS, the review team used information from the Brazos River Authority that indicates that the proposed water allocation for the new units would not destabilize other water uses.*

Comment: The DEIS explains that the right to use surface water in the State of Texas is regulated by the Texas Water Code which is administered by the Texas Commission of Environmental Quality (TCEQ). In the Brazos River Basin, the CPNPP will have to obtain its additional water by entering a contract with the Brazos River Authority (BRA). TCEQ will then have to grant this need for more water to the BRA. EPA suggests that NRC closely coordinate with both parties on the matter ofincreased amounts of surface water use. Of particular concern is how this use will affect the water supply for the entire region in times of sustained drought. A decrease in surface water may have a detrimental affect on groundwater wells in the area. Please address this concern in the FEIS. (**0070-9** [Smith, Rhonda])

Comment: the system for prioritizing and allocating water administered by the Brazos River Authority (BRA) clearly has not anticipated the enormous consumption of water necessary for additional reactors of the type that Luminant is proposing, and that "in the case of drought conditions" that "BRA would apportion the reductions in water availability to all of its contract customers", including residential and municipal consumers who could be subject to water rationing while the nuclear plant has defacto first call on the water supply. (**0055-4** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: That the system for prioritizing and allocating water administered by the Brazos River Authority, the BRA, clearly has not anticipated the enormous consumption of water necessary for additional reactors of the type that Luminant is proposing and that in case of

drought conditions -- this is important -- that the BRA would apportion the reduction in water availability to all its contract users, including residential and municipal consumers who would be subject to water rationing while the nuclear power plant has de facto first call on all the water supply. (**0063-36-4** [Hackett, Ken])

Comment: In drought conditions, will there be enough water for cities, businesses, farms and ranches if two nuclear reactors are built? (**0071-37** [Hadden, Karen])

Response: *The EIS analysis of the impacts of water use for the proposed new units uses information from the authorities that have responsibility for managing water resources, including the Texas Water Development Board and the Brazos River Authority. The analysis described in Section 5.2.2.1 uses 68 years of historical data on streamflows in the Brazos River basin, including data from the "drought of record." It determined that the use of surface water for the proposed new units would not interfere with the supply requirements of other users in the region. A decrease in surface water availability during a sustained drought could induce additional use of groundwater. However, as discussed in EIS Section 2.3.2, the trend in the region is toward decreased use of groundwater, due in part to an increased emphasis on long-term sustainability in groundwater management in the state's water planning. This comment did not result in any changes to the EIS.*

Comment: EPA recommends mitigating low-flow or drought source water issues by ensuring that CPNPP contractually require BRA to (a) have banked (stored) water set-aside to mitigate the risk of supplies being inadequate and (b) BRA curtail other contracted water users as required. (**0070-10** [Smith, Rhonda])

Response: *The EIS evaluates the potential effects of plant construction and operation on the environment, not the effects of the environment on the plant. Therefore, the potential impacts of drought conditions on proposed Units 3 and 4 are not within the scope of environmental review. The operation of the proposed units during low-flow or drought conditions may raise site-safety issues, and license holders are required to update their Safety Analysis Report as specified in 10 CFR 50.71(e). This includes site safety issues such as low-flow or drought conditions, and, where required for safety reasons, power plants have derated or shutdown during these conditions. There would be no need to ask BRA to provide supplementary supplies or curtail other contracted water users. No changes were made to the EIS as a result of this comment.*

Comment: According to the DEIS, BRA will obtain rights to Texas water from TCEQ to fulfill the proposed CPNPP contract in accordance with the Texas Water Code to provide surface water to operate. The Final EIS should confirm, in consultation with the TCEQ Water Division (Public Drinking Water) and the Texas Water Development Board (TWDB), that the lowered Lake Granbury and Possum Kingdom Lake water levels and the reduced Brazos River flow will not destabilize water use including conditions under low flow. CPNPP Units 3 and 4 operations are estimated (via the TCEQ Water Availability Model) to result in averages of 0.6 ft lower water levels in Lake Granbury and 1.5 ft lower water levels in Possum Kingdom Lake. (**0070-11** [Smith, Rhonda])

Response: *The EIS analysis of the impacts of water use for the proposed new units uses TCEQ methodology and information from the authorities that are responsible for regulating or managing water resources, including the Texas Water Development Board and the Brazos River Authority. The analysis finds that the proposed water allocation for the new units would not destabilize other water uses under any flow condition encountered in the 68 years of record considered in the analysis. This comment did not result in any changes to the EIS.*

Comment: The DEIS refers to the site plan Figure 2-3 when discussing various features of the facility, though not all features are included or labeled on the figure. Major water features not represented on the site plan include the safety shutdown impoundment, non-radioactive wastewater evaporation ponds, an emergency spillway, stormwater retention ponds, and drainage swales. The terminology referring to several features is inconsistent or overlaps current features that support Units 1 and 2. Recommendation: TPWD recommends the DEIS clearly label various features as they relate to the current units and the proposed units on the site. TPWD recommends all water features discussed in the DEIS be shown and labeled on Figure 2-3 or a new figure to facilitate reader clarity of the water features. (**0068-15** [Melinchuk, Ross] [Wicker, Julie])

Response: *The features that the comment identifies as being missing from the site plan illustration are features that are either not included in the proposed action or have not yet been sited. The figure does not include locations for a safe shutdown impoundment or emergency spillway because neither of these is required for Units 3 and 4. The specific location for non-radioactive wastewater evaporation ponds has not been determined, but EIS Figure 2-5 shows a proposed location. Stormwater retention ponds and drainage swales will be developed as part of the SWPPP that must be reviewed and approved by TCEQ as a requirement for the applicant to obtain a permit for stormwater discharges. No changes were made to the EIS as a result of this comment.*

Comment: And there also appears to be a gross under-estimate of what will happen with increasing water shortages. (**0063-32-2** [Rooke, Molly])

Comment: In light of the rapid population growth affecting this area, along with ongoing depletion of the Trinity Aquifer Lake Granbury will increasingly serve as the principal source of area water supplies. The authorities responsible for the protection and allocation of our natural resources must be certain of the projected water withdrawal and its environmental impacts. Luminant's application does not provide sufficient accurate data, nor does it consider alternative plans to permit complete understanding of the additional reactors' impact. (**0063-36-6** [Hackett, Ken])

Response: *The comment expresses concern that the analysis presented in the EIS may underestimate impacts related to future water supplies. The analyses in the EIS are conservative. That is, in order to ensure that potential impacts are not underestimated or overlooked, the analyses are based on assumptions that are expected to result in upper-end estimates of impacts. The impacts analysis presented in EIS Section 5.2.2.1 considers the effects of water usage for the proposed Comanche Peak Nuclear Power Plant Units 3 and 4 in combination with the other water demands and reservoir sedimentation conditions projected for the year 2020. The discussion of cumulative water-use impacts presented in EIS Section 7.2.1.1 considers the effect of increased water demand projected for later decades. The review team and the applicant both have explored alternatives to reduce impacts to water resources, as documented in EIS Section 9.4. These comments did not result in changes to the EIS.*

Comment: Page 2-20 includes information regarding regional water projections of annual consumptive water demand across the region, however the DEIS indicates that the regional water demand projections do not include water requirements for the project nor for expanded development of natural gas from the Barnett Shale. Section 5.2.2 indicates that Luminant has participated in the Brazos Region G Water Planning Group process to ensure that Units 3 and 4 water use impacts are managed in coordination with other users. The DEIS lacks a summary of Luminant's involvement in the process, does not reveal an estimated projection of water demand based on the project or the Barnett Shale gas developments, nor does it reveal when reports supporting such information would be available. These factors are essential to future

projections and should be analyzed. Recommendation**:** Because the water consumption of the project and the gas development of the Barnett Shale are essential to future water demand and supply projections, TPWD recommends these water use requirements be included in the discussion of Texas Water Development Board's regional water demand projections and the Texas State Water Plan. The DEIS should indicate why these projections were left out of the Texas Water Development Board's projections and Texas State Water Plan. The DEIS should indicate when Luminant began its involvement in the Region G water planning process for Units 3 and 4 and should provide an estimate of water demand projections based on the project. The DEIS should indicate when reports supporting future water demands for the project and for expanded development of natural gas from the Barnett Shale will be available. (**0068-17** [Melinchuk, Ross] [Wicker, Julie])

Response: *The comment refers to summary water-demand information in the draft EIS that was derived from the 2007 Texas State Water Plan, which was adopted late in 2006. Water requirements for Units 3 and 4 were not included in the Water Plan adopted in 2006. However, a July 2008 amendment to the Brazos G Water Plan includes an annual requirement 103,717 acre-ft for these units, including 27,447 acre-ft of BRA water already under contract to Luminant and an additional 76,270 acre-ft of new contractual water from the BRA. Section 2.3.2 of the final EIS has been revised to add clarity regarding water demand estimates, and Section 7.2 has been revised to include additional information on water use for Barnett Shale gas development and related environmental impacts. The NRC has no role in regulating or managing water resources; questions regarding the inclusion of information in the Texas State Water Plan and Luminant's role in the water planning process are outside the scope of the EIS.*

Comment: The DEIS indicates that Luminant has been active in Region G and H Water Planning Groups and that water for Units 3 and 4 would be obtained primarily from the more efficient system-wide operations developed as part of the Brazos Water Authority (BRA) permit application on file TCEQ. The proposed system-wide operations are intended to achieve efficiency and additional water yield for its customers. The DEIS indicates stored or banked waters in BRA reservoirs under BRA current or future water rights would mitigate the risk of supplies being inadequate for Units 3 and 4 during extreme droughts. It is expected during extreme droughts that BRA would apportion the reductions in water availability to all of its contract customers.

The DEIS states that withdrawal and use of water from Lake Granbury for use by Units 3 and 4 would result in consumptive uses for Units 3 and 4 estimated at 61,617 acre-feet/year. These consumptive uses would result in lower water levels in Lake Granbury and decreased flows in the Brazos River downstream. Additionally, Brazos River system operations would be altered to accommodate the additional withdrawals including changes in timing of water releases from PKL, resulting in lowered water levels in that lake. Water levels would fall 2 feet or more below full pool for Lake Granbury, and 5 feet or more for PKL, 25 percent of the time. This would occur 15 percent more often than under current conditions which is 10 percent of the time.

The DEIS does not clearly convey 1) the effects on water levels during drought and drought-of-record conditions, and 2) definitions for drought and extreme drought. The DEIS should clearly identify Lake Granbury and PKL water levels during drought conditions and drought-of-record, under current and proposed conditions. It is TPWD's understanding that the BRA permit application has not yet been approved by TCEQ and, pending the outcome of the contested case hearing, could result in changes to the strategies that were evaluated in the DEIS. Recommendation: The DEIS should include an evaluation of impacts the anticipated withdrawals would have on lake system water levels under various seasonal and climatic conditions including drought-of-record scenarios. TPWD is concerned the water withdrawal and

consumptive use for Units 3 and 4 and the associated alterations in system-wide water management within the basin will have a significant impact on the lake system levels and overall hydrology of the Brazos River Basin. (**0068-48** [Melinchuk, Ross] [Wicker, Julie])

Response: *Sections 5.2.2.1 and 7.2.1.1 have been revised in the final EIS to provide additional quantitative information on estimated impacts of water use for the new units on lake water levels and streamflow in the Brazos River Basin.*

Comment: The DEIS indicates that the intake structure may alter flow patterns in the vicinity of the proposed diffuser during periods of low flow through the DeCordova Dam, which may diminish the effectiveness of the diffuser in mixing effluent from Units 3 and 4 while it is discharged to Lake Granbury. Locally elevated concentrations of effluent chemicals and temperature are possible under these conditions. Luminant has indicated that BRA controlled releases from PKL upstream would supply the flow required by the intake structure, thereby mitigating the potential for flow pattern alteration and any resultant local water quality perturbations. The DEIS states additional mitigation procedures that could be taken by Luminant and the BRA to support the effectiveness of their mitigation measures would include hourly or daily local flow monitoring, decision-support systems and processes, or water management policies. Recommendation: TPWD supports these measures and recommends additional water quality monitoring in Lake Granbury and Brazos River downstream, particularly during low flow periods to confirm water quality criteria are being met. (**0068-49** [Melinchuk, Ross] [Wicker, Julie])

Response: *The support for mitigation and the recommendation for additional water quality monitoring in Lake Granbury and the Brazos River are noted. The Texas Commission on Environmental Quality may consider including these requirements as conditions of permits or approvals. This comment did not result in any changes to the EIS.*

Comment: The other problem we have with this particular process and looking at the future with global warming in mind, as the NRC is doing or -- and we don't believe it has done well in this particular DEIS -- is that with global warming comes another phenomena. And that's dramatic decreases in the amount of water available in our reservoirs and river systems. The EPA says somewhere in the neighborhood of 35 percent in Texas. Kind of going in a little bit tighter and looking at this part of the world, maybe 25 percent according to George Worth, the University of Texas. That's a 25 percent decrease in the amount of water that's already coming through Possum Kingdom, down that river and into that lake. (**0063-16-3** [Smith, Tom])

Comment: There may also be questions about the amount of water available in the Brazos River Basin for recharge of Lake Granbury Since 1997 the EPA has been warning that: “A warmer and drier climate would lead to greater evaporation, as much as a 35% decrease in streamflow, and less water for recharging groundwater aquifers” A more recent study found: The efficiency of thermal power plants, fossil or nuclear, is sensitive to ambient air and water temperatures; higher temperatures reduce power outputs by affecting the efficiency of cooling. There is a high likelihood that water shortages will limit power plant electricity production in many regions. Future water constraints on electricity production in thermal power plants are projected for Arizona, Utah, Texas, Louisiana, Georgia, Alabama, Florida, California, Oregon, and Washington state by 2025.

A recent report entitled Impact of Global Warming on Texas published by the Houston Advanced Research Center found that: “(T)he question stated at the outset (is) whether Texas water supply is potentially vulnerable to climate changes on the order of those projected for a greenhouse-warmed scenario. The answer is clearly affirmative. Taking flows to the coast as a measure of river-basin impact, the net effect statewide of the assumed greenhouse climate

change, a 3.6°F increase in air temperature and a 5% decrease in precipitation, is to reduce these flows by about 25% under normal conditions and by 42% under drought conditions, relative to the already reduced flows under 2050-projected water-use demands. The 2050 projected flows to the coast are 70% of the 2000 normal values under normal conditions with the effect of a greenhouse climate imposed, and 15% of 2000 normal under drought conditions. In general, the effect of climate on water demands and watershed processing of rainfall is to amplify the changed-climate signal, because the causal connections are nonlinear and reinforcing."

The DEIS notes that the increase temperatures due to global warming could reduce the ability of Lake Granbury to dilute chlorides and waste heat. Later the DEIS notes that decreased precipitation and reduction in runoff and increased enviro- transpiration would contribute to reduced streamflow. The following charts paint a picture of the impact of drought on the demand for water. Note the 5 to 24% decrease in precipitation, the 10 to 32% increase in lake evaporation, and the 280% increase in use of water by steam electric plants. We would question whether this plant is sustainable given the high likelihood of a 20% increase in evaporation and a 36% reduction in water flows in the central Texas region. (**0067-3** [Geiger, Carol])

Comment: The electric power industry requires a consistent supply of water, and accounts for 39 percent of total freshwater withdrawals in the U.S. Fossil fuel plants and nuclear power plants require about 140 liters and 200 liters of water per kilowatt-hour of electricity produced, respectively. Water scarcity and uncertainty about the reliability of supply due to climate change may have significant impacts on operations (see Box 10). In summer 2007, prolonged drought conditions forced the Tennessee Valley Authority to partially shut down its Brown Ferry nuclear plant in Alabama due to the high temperature of the cooling water drawn from the Tennessee River. Furthermore, heated discharges from power plants have a harmful effect on water quality and local ecosystems, which is only exacerbated as water levels drop. Electricite de France had to shut down a quarter of its 58 nuclear plants due to water shortages caused by a record setting heat wave. The closures triggered price spikes of 1,300 percent and about ,¬300 million in losses for the French utility. (REF xi) (**0067-5** [Geiger, Carol])

Response: *The analyses in EIS Sections 7.2 and 9.3.2.2, 9.3.3.2, and 9.3.4.2 of cumulative impacts on water resources related to climate change at the CPNPP site and alternative sites have been revised to include discussion of the information provided in these comments. The NRC licenses and regulates nuclear power production to ensure protection of public health and safety. The NRC is not engaged in finding a "solution" to climate change and it does not promote the use of nuclear energy. The NRC does not operate nuclear power plants. Additionally, it is not responsible for planning for the impact of climate change on the operation of nuclear power plants. Planning and management for future conditions that may affect nuclear power plant operations is the responsibility of the plant operators, such as Luminant. The NRC has included consideration of climate change impacts in its assessment of cumulative impacts in EIS Section 7. The gradual effects of climate change on plant operation are a safety issue, and provisions exist for license holders to update their Safety Analysis Report as required by 10 CFR 50.71(e). This includes site safety issues, and where required for safety reasons, power plants have derated or shutdown during periods of high water temperature or low flow conditions. These comments did not result in any changes to the EIS.*

Comment: Well, will these plants operate when it gets hot. And we've heard stories out of the southern United States, France, Germany that nuclear plants have to shut down when it gets to a certain temperature. So I started looking around to see if I could figure out what the operating parameters were. And thanks to the miracles of Google I found a study done on the Comanche

Peak plant answering the question of what happens and how can we operate the plant if the water gets too hot here at Lake Granbury or at Squaw Creek. It seems that when the temperature of that water gets above 95 degrees they have to start curtailing it. At 101 degrees they have to start shutting it down. Well, my inquiring mind asked, Well, just how hot is Lake Granbury in the summertime. And I found looking at the Lake Granbury Watershed Management Plan that in the summertime the average temperature in July and August is 95 degrees, at the temperature where they have to start curtailing. And then I started thinking if as the NRC says, the impact of global warming is going to be moderate what does that mean to the ambient temperature. It's somewhere between 1.6 and 6 degrees Fahrenheit difference in the average summer temperature during our lifetimes, between now and 2050. May be some of your lifetimes. I probably won't make it to 2050. And if I do, I'll be really grumpy, I'll tell you what. But anyway, you get out there and you start looking at that increase to temperature. And so suddenly that water temperature is likely to increase according to the Watershed Management Plan the same proportion. So you might see a 96 or a 101 degree temperature. Well, at 95 they were starting to ask the question, Well, how can we cool it so we can operate that plant without curtailing. At 101 they have to shut down. (**0063-16-2** [Smith, Tom])

Response: *The report that the commenter found on the Internet (at http://www.erm-smg.com/TXU%20Comanche%20Peak.pdf) is about the effects of CPNPP Units 1 and 2 on water temperatures in Squaw Creek Reservoir. The information in that report is not relevant to Units 3 and 4. Units 1 and 2 use once-through cooling, whereas Units 3 and 4 would use mechanical-draft cooling towers. In once-through cooling, cooling water is returned to a body of water after circulating through the nuclear unit just once, discharging the surplus heat from the reactor to the body of water. In contrast, in mechanical-draft cooling, surplus heat is discharged to the atmosphere. Because cooling towers will be used to dissipate heat from the new units, thermal impacts on water resources are much smaller than with the once-through cooling technology that is employed in Units 1 and 2 and most of the other nuclear plants mentioned in the comment. Also, because Units 3 and 4 would neither use water from Squaw Creek Reservoir nor discharge water to it, the temperature in Squaw Creek Reservoir has no relevance to the operation of Units 3 and 4. The review team's assessment of the thermal effects of Units 3 and 4 on Lake Granbury, presented in EIS Section 5.3.2, found minimal effects.*

Comment: And so last week, when we got so much rain, I was beginning to doubt who controlled it. We got about nine or ten inches at my place; the lake came up nine feet, and it got within two feet of the finished- floor level of my house. My wife was sending me pictures all day, as I watched the water level come up, and thank goodness it finally quit. I think the problem at Lake Granbury the homeowners associations and all have is the water going the other direction, I think. And so I understand your pain, but what I really would encourage you to do is even if Units 3 and 4 were never built, I think the homeowners associations ought to look at that and really partner with the BRA and start partnering with them, because that water level in Lake Granbury is going to change regardless if we're ever built of not. And it's going to go up and down and it's going to go up and down, so I'd really encourage you to partner with the BRA, work with the BRA, and understand who really controls that water level, and it's not Comanche Peak. (**0062-11-1** [Fuller, David])

Response: *The comment points out that reservoir operation is the responsibility of the BRA and that water levels in the BRA reservoirs will fluctuate with or without the proposed new reactor units. This comment did not result in any changes to the EIS.*

Comment: I'm not going to go through everything that I said this afternoon, but I am going to summarize it quickly for you. I spoke, based on the 15 years that my wife and I were in the

marine business in southern California, about the effects that overselling water out of the Colorado River has had on that whole ecological system, up through the Grand Canyon and all the way up past Glen Canyon, down to Lake Powell. Lake Powell at the moment is down 41 percent from its normal level. Lake Mead, as I'm sure most of you have been there to see Hoover Dam -- if you're as old as I am, you went there when it was named Boulder Dam; that was a long time ago. But Lake Mead has a normal full level of 500 feet. If you go to that dam right now, you have to look down 300 feet to see the water level. There's only 200 feet in it behind the dam. Now, this was caused because of overselling the water. Initially the water was going to go to Los Angeles, San Diego, farming communities down that way, Laughlin, Las Vegas, and a few other small cities. In the late '80s and the early '90s, the Authority decided that they would also supply water to Phoenix and then to Tucson and to some Indian communities and small communities in between.

In the period of the last 12 years, Lake Mead has dropped 120 feet since they got that elevator in and started taking the water up over the mountains to Phoenix and Tucson. The problem is they don't have any place to go now. They've already done it. They're down to 200 feet on Lake Mead; they're down a couple hundred feet from their full level on Lake Powell. What are they going to do? They could go to desalination. We lived only 25 miles from the San Onofre plant when we lived in southern California, and it is operated off of water out of the Pacific Ocean, as you probably know. But they've got a long ways to go to build desalination plants and try to get water back into southern California. It was caused first by selling it. Secondly they blame it on lack of snow pack. We haven't had enough snow in any year to drain the water down and fill the Colorado River back up. And thirdly, of course, on the drought, because they've had a pretty severe drought in the western states for a number of years. (**0062-16-1** [Williamson, Frank])

Comment: And I've heard what they've said. And frankly, I don't believe it. And I'm going to tell you why. I lived for 15 years before I retired here, in California. There's a little river out there called the Colorado River some of you may be familiar with. The -- We were in the marine business so I was over there on that river and on those lakes all the time. We saw firsthand the effects of over consumption from a river. Water level in 2009 was down 60 percent at Hoover Dam. Hoover Dam is full at 500 feet. So actually, 726 feet tall. But it's full at 500 feet. So if it's down 60 percent they've got 200 feet of water backed up behind that dam. Now, you consider what that did to Lake Mead all the way up to the other end. Let me just tell you a couple of things about it. River flow between the two lakes was reduced so much that the Grand Canyon's ecological system is totally imbalanced. They've tried to solve the problem by allowing surges from Glen Canyon down to simulate the flash flooding which used to occur before the dam was completed in 1966. There's even talk that they might completely knock this dam down to return the natural flow of the river through the Grand Canyon. (**0063-25-5** [Williamson, Frank])

Response: *These comments provide information on the impacts of drought and water management decisions on water levels and other conditions in the Colorado River basin in the western United States. The NRC does not have the authority or responsibility to regulate or manage water resources. The EIS analysis of the impacts of water use for the proposed new units uses information from the authorities that do have responsibility for managing water resources, including the Texas Water Development Board and the Brazos River Authority. The analysis described in Section 5.2.2.1 uses 68 years of historical data on streamflows in the Brazos River basin, including data from the "drought of record." These comments did not result in any changes to the EIS.*

Comment: But my problem is this: I don't believe in models. I watch the weather every night, and I hear these guys talking about, Our model shows it's going to do this, and our model shows it's going to do that. And I don't care whether you're talking about hurricanes or rainstorms or whatever. They don't get it right 50 percent of the time. And also we've got this climate change model, where the Himalayas were going to melt by 2035; all the glaciers in that area were going to melt. They write all these models, but models are models; they're not the facts. (**0062-16-2** [Williamson, Frank])

Comment: We are writing to you because we are concerned about the lake level after the Comanche Peak Expansion. As you know the lake level dropped so low in 2009 that even the public boat ramps closed. We were not able to get on the lake from our home way before that. Evidently, the people in charge do not take into consideration the homeowners that live on canals or shallow parts of the lake because they continued to let water out. When I made a comment at the appraisal office the person there said, ' oh the lake is 20 or more feet'. Well, not where a lot of us live. How can Lake Granbury handle even more water being let out after the expansion? Yes, I know it was a drought that year but it won't even have to be a drought to keep it that low after the expansion. And God forbid if there is a drought. (**0025-2** [Slough, Gene and Phyllis])

Comment: We had a big drought here recently, AND the Burnett Shale people or somebody was purchasing vast quantities of water from Lk. Granbury in 2009, and Lk. Granbury looked almost empty. The canal I have my property on was down at least 3 feet. You could see dry ground under the boat lifts. (**0037-5** [Moore, Jim])

Response: *These comments express a current concern in reliance upon models and a preference for facts. The EIS must address questions about what might happen in the future. It is not possible to describe actual observations regarding conditions that do not yet exist and events that have not yet occurred. Therefore, predictive models are a valuable tool. Models are scientifically accepted representations of the physical world. Moreover, the review team is required to base its analysis on the best practice currently available, and modeling is accepted best practice in science. The models used to evaluate the impacts of water use for the new units could be described as being similar to a complex collection of computer spreadsheets. The models use real historical data on stream conditions, gathered over a 68-year period. Starting with the historical data, models are used to calculate what conditions would have been throughout the Brazos River basin for that 68-year period under various different conditions. For example, the models are used to postulate the reservoir water levels for every month during that period assuming the existing system of dams and reservoirs had been in place and that all water rights were fully exercised. The review team used the models to compare water conditions with the new reactor units operating to water conditions without the new units. As a result of the conservation assumptions made, the models could overstate the severity of the lake-level impacts, both with and without the new units. However, the model predictionsfor conditions without the proposed units compare reasonably well with historical data. No changes were made to the EIS as a result of these comments.*

Comment: [W]e have 55 feet behind our dam here. As you go up the river -- I live in Indian Harbor -- we have 43 feet in the deepest part of the lake. If you go on up to the city beach, you have about 35 feet in the deepest part of the lake, but that's the deepest part of the lake, where the old river ran for years and years and years before we made this lake. The shallow part of the lake is five feet, and there are hundreds and hundreds and hundreds of houses that, when the lake was down four feet last year, could not get their boats off their -- out of the docks. (**0062-16-3** [Williamson, Frank])

Response: *The comment provides information on water depths in Lake Granbury and how lower water levels can affect access to the lake for boaters. This comment did not result in any changes to the EIS.*

Comment: It's important to note that there are huge differences between the lake levels the BRA reports and those exhibited upriver. I mentioned that in Lake Mead the upriver marina had to be closed. Here when the water level is reported as being down two feet at my house, which is only about seven miles up from the dam, the water will actually be down about four feet. If you go on up as far as the city like behind where the new beach is being built and behind the convention center and those areas it will be down even more than the four feet that it is at my house. If Lake Granbury is lowered 20 feet -- and I know you guys are saying, It's only going to be lowered about a foot -- right? We're going to take 60 billion gallons a year out of it but we're only going to lower a foot? Come on. Give me a break. (**0063-25-2** [Williamson, Frank])

Response: *The comment states that reductions in water level are not uniform throughout Lake Granbury and expresses disbelief in statements about the amount that Lake Granbury water levels would decline as a result of the operating the proposed new units. EIS Section 5.2.2.1 presents the review team's assessment of impacts on Lake Granbury water levels from the proposed new units. The analysis finds that there would be many periods when the lake's water level would be unchanged and other periods when lake levels would be lower due to water use in the new units. The largest total drop in water level predicted by the analysis was less than 10 feet. A 20-foot drop in water level might be possible, either with or without the proposed new CPNPP units, but it is very unlikely. There could be large reductions in water levels. Because the lake surface is not flat during periods of significant streamflow in the Brazos River, the water elevation at full pool is somewhat higher at the upstream end of the lake than near the dam. Thus, as the commenter notes, during low-water periods when little flow is occurring and the water surface is nearly flat, the observed reduction in water level is higher in upstream areas than near the dam. As a result of this and other comments on impacts to Lake Granbury, Section 5.2.2.1 has been revised to provide additional details of the analysis.*

Comment: I think Hood County is getting a lot of lemons in passing the lemonade downstream. I don't see many benefits at all for Hood County. I am a selfish, lakefront owner who has retired to Granbury, living in some wonderful places around the world in my life. On July 7 of this last year my shoreline here extended to where the partition is. My boat dock was in between. On August -- I'm talking about small and moderate impact. That's a small impact. Right? On August 17 the water only came about to the end of that wall. 130 feet from shore during that drought. 130 feet. Another two-and-a-half feet drop in a drought is going to increase it to 225 feet from the shoreline. Kind of tough to get a boat out. Kind of tough to throw a line that far. (**0063-31-1** [Barker, M. Blake])

Response: *The comment provides information on water depths in Lake Granbury and how lower water levels can affect access to the lake and it questions the conclusions of "small and moderate" impact that are stated in the EIS. The NRC has established three levels of impacts -- smsall, moderate, or large -- that provide a common framework for categorizing impacts and describing them. The three levels are defined below:*

- SMALL - Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
- MODERATE - Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
- LARGE - Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

Consistent with this framework, the review team determined that water use for operation of Units 3 and 4 would noticeably alter important attributes of the surface water resource, but would not destabilize the resource. Thus, water use would have MODERATE impacts on surface water resources. Section 5.2.2.1 has been revised to provide additional details of the analysis.

Comment: We have a fixed pool in Granbury. So many gallons can be there. As the drought and as water is turned out the saline increases, which affects the biostock within the lake, which increases the silt levels within the lake, which raises the temperature of the lake. None of them good things. (**0063-31-2** [Barker, M. Blake])

Response: *The comment expresses concern about the effects of lower lake water levels on salinity, aquatic life, siltation, and water temperature. Potential impacts of Units 3 and 4 on lake salinity are discussed in EIS Section 5.2.3.1. Potential impacts on aquatic life and water temperature are discussed in EIS Section 5.3.2. Siltation occurs in dammed streams because the dams prevent sediment from moving downstream; lower lake levels do not normally increase siltation. However, the effects of siltation on reservoir water volume are considered in the assessments of water-use impacts presented in Sections 5.2.2.1 and 7.2.1.1.*

Comment: DEIS Section 3.2.2.1, page 3-9, lines 1-5: During normal operation, the Wheeler Branch Reservoir (WBR) supplies up to 300 gpm. This water supply includes up to 50 gpm for daily potable water use for the entire site and from 0 to 250 gpm to the raw water storage tanks, which in turn supply water to the demineralized water system (DWS). The amount of water needed from WBR is bounded by the maximum delivery rate of 300 gpm, with the estimated monthly maximum being 1.3 x 10^7 gal.

According to the response to ER Request for Additional Information (RAI) HYD-27 (ML100630660), WBR supplies up to 350 gpm during normal operation, of which 50 gpm is for potable and from 0 to 300 gpm is for the raw water storage tanks. The estimated monthly maximum is 1.51 x 10^7 gal. (**0073-3** [Flores, Rafael])

Response: *Section 3.2.2.1 of the final EIS has been revised to incorporate this information.*

Comment: Do a very simple thing on a $45 million investment that TXU funded to create Lake Granbury. Increase the pool. Dredge the shallows of the lake. Use that as landfill on the new projects for units 3 and 4 and you increase the oxygen level, you decrease the silt level, you increase the habitat for the fish in the lake and you increase a larger pool to draw from which is a cooler lake. You can remove 20 cubic yards of soil for $200. Seems like a pretty simple solution and a pretty much a win-win for Granbury and the area and Luminant, as well. (**0063-31-3** [Barker, M. Blake])

Response: *This comment suggests or proposes an alternate means of increasing the quantity of water in Lake Granbury to provide cooling water for the proposed new nuclear units. The NRC does not have the authority or responsibility to regulate or manage water resources. The EIS analysis of the impacts of water use for the proposed new units, located in Section 5.2.2, uses information from the authorities that do have responsibility for managing water resources, including the Texas Water Development Board and the Brazos River Authority. Alterations to the the hydrologic resources such as the one mentioined by the commenter, would be the responsibility of those authorities. No changes were made to the EIS as a result of this comment.*

Comment: Page 7-7 indicates the U.S. Global Climate Research Program projects this region (Great Plains) may warm as much as 12 degrees Fahrenheit between 2000 and 2090 and tend to have less rainfall. Page 7-9 notes water management, under proposed changed strategies in

this water planning region, would minimize adverse impacts on water availability for users with valid water rights. The decreased precipitation and increased temperatures associated with global climate change would reduce surface water runoff and increase evapotranspiration, contributing to cumulative impacts on water quantity of streamflows. The NRC review team identifies the cumulative impacts on surface water quantity as MODERATE with noticeable alterations in the Brazos River system. The surface-water quality impacts discussion in Section 7.2.2.1 (page 7-11) states these changes could reduce the ability of Lake Granbury and the Brazos River to dilute natural salt concentrations and waste heat and other constituents in the effluent from Units 3 and 4. The cumulative impacts to surface water quality is evaluated as SMALL to MODERATE with the MODERATE level based on the potential impacts to ambient water conditions and downstream users from increased dissolved solids, particularly during low flow conditions. The DEIS, however, does state that current and future potable water users would still be required to treat water to address salinity regardless of the increase in salt concentrations attributable to Units 3 and 4. Aquatic life in the Brazos River Basin does not presently qualify for a water right and under the current system, has been adversely impacted. It is unclear if the ecosystem could stabilize, under these future cumulative conditions. Recommendation: The facility should plan to address adverse impacts imposed by global climate changes. To offset cumulative impacts, TPWD recommends that Luminant's discharge to Lake Granbury during seasonal and drought low flow conditions be maintained at or below ambient lake concentrations. It would result in larger volumes of salt solids needing to be disposed off site, but would only occur during drought and summer periods. This mitigation measure would avoid the added stress of the lake and river needing to dilute Units 3 and 4 effluents. (**0068-62** [Melinchuk, Ross] [Wicker, Julie])

Response: *The comment recommends that, as a mitigation measure for water quality impacts in Lake Granbury and downstream, dissolved solids concentrations in discharges to Lake Granbury from Units 3 and 4 should be maintained below ambient concentrations in the lake. As discussed in EIS Section 5.2.3.1, Luminant proposes to maintain discharge concentrations below the Texas state water quality standards for Lake Granbury of 2500 mg/L and 1000 mg/L of TDS and chloride, respectively. Although concentrations in the lake sometimes are above these criteria, the average TDS concentration in the lake is lower, so discharges at these concentrations would result in a small net increase in the TDS concentration in Lake Granbury and downstream (a study cited in the EIS estimated that the average TDS concentration could increase by 50 to 60 mg/L). The proposed mitigation measure would prevent this small increase. However, as the comment notes, this measure would result in a larger quantity of salt solids needing to be disposed offsite. Also, it would somewhat reduce the amount of water returned to the lake and somewhat increase the required production capacity of the BDTF. The NRC has no authority over water quality limits for discharges to the lake. Any requirement related to this proposed mitigation measure would be the responsibility of EPA or the Texas Commission on Environmental Quality under authority of the Clean Water Act and other laws. No changes were made to the EIS as a result of this comment.*

Comment: In an area that suffers drought conditions one-third of the time such a huge additional drain on the water reserves does not seem prudent. Over- allocation of water increases the fragility of the ecology and the economy of the entire area. Committing such a huge volume of water limits the options available to us for a robust future in the Brazos River basin. (**0063-24-2** [Williams, Sue])

Comment: Finally, keep this analogy in mind [with respect to the proposed withdrawal of water from Lake Granbury]. Human blood donors only donate one pint of blood at a time. If you pull out pint number two the donor won't do very well. And pint number three just might kill him. (**0063-24-3** [Williams, Sue])

Response: *The comments express concern about the cumulative impacts of water use. The assessment of water use impacts in EIS Section 5.2.2.1 considers the impacts of the new units in the context of other existing uses of Brazos River water, and the discussion of cumulative impacts in Section 7.2.1 also considers impacts of other past, present, and reasonably foreseeable demands. Section 5.2.2.1 of the EIS has been revised to include more details of the review teams analysis.*

Comment: After reviewing the study I have come to the conclusion that the loss of this water to the Expansion will be devastating to the Brazos River Basin and Lake Granbury. Here are the most important critical issues regarding Lake Granbury that are stated in the study: * The Comanche Peak Expansion would require 102,000 acre ft (33 billion gallons) from Lake Granbury for cooling purposes. 30-40% (13 billion gallons) would return to Lake Granbury with a net loss of 20 billion gallons. This amount would be equal to 60 million gallons of water LOST EVERY DAY.

* With the additions of Comanche Peak 3 and 4, Lake Granbury would be at full pool (level) only 46% of the time. The water level at Lake Granbury would also be 2 feet or MORE lower 25% of the time. The operations of units 3 and 4 would result in somewhat smaller releases from Lake Granbury and lower resulting water flow in the Brazos River near Glen Rose. (Sec 5-8)

* Consumptive water use for cooling 3 and 4 would cause lower lake levels at Possum Kingdom (PK) and Lake Granbury, and decreased flows in the Brazos River Basin below Lake Granbury. Elevations at PK would be 1.3 ft. LOWER on average, and elevations in Lake Granbury would be .4 ft LOWER due to 3 and 4 water consumption. During extreme drought conditions, Lake Granbury would be 2.5 ft LOWER (than previous drought conditions without 3 and 4) and PK would be 12.6 ft Lower. (Sec 5-18)

Case in point: Last year on Lake Granbury the lake was 4 ft low because of drought conditions. With the additions of Comanche Peak 3 and 4 under those same conditions, the lake would actually be 6.5 ft lower. Some models are indicating that might actually be closer to 8 ft.

* Even without the Comanche Peak Expansion, future modeling of Lake Granbury for the next 50 years shows there will be an increase in demand from 85,138 acre ft/year to 107,302 acre ft/year(21% increase) due to population growth. The model also indicates that 25% of the lake will lose its volume in water due to sedimentation. (Sec. 7-8)

How can we allow 60 million gallons of water EVERY DAY from Lake Granbury to disappear forever? As you can see from the study this would be devastating to the Brazos River Basin and Lake Granbury. (**0005-1** [Clark, Becky] [Frick, Terry] [Kelly-Elliott, Cathy] [Leach, Dan] [Rhodes, Bill] [Wayson, Jacqueline and Thomas] [Wayson, Thomas])

Response: *The comment expresses concern about the impacts of the proposed new units on water levels in Lake Granbury and it restates some of the findings regarding impacts that were presented in Sections 5.2.2.1, 5.3.1.1, and 7.2.1.1 of the draft EIS. These sections present and discuss the review team's assessment of impacts on Lake Granbury water levels from the proposed new units; some additional information has been provided and other revisions have been made in these sections of the final EIS.*

Comment: If the statistics below are true, you can bet the NRC will be under extreme fire for letting these 2 new reactors get built without have a water-conservation plan for Lake Granbury in place. (**0022-1** [Frick, Terry])

Response: *The comment expresses concern about the impacts of the proposed new units on water levels in Lake Granbury and calls for a water conservation plan. It also restates some of*

the findings regarding impacts that were presented in Sections 5.2.2.1, 5.3.1.1, and 7.2.1.1 of the draft EIS. These sections present and discuss the review team's assessment of impacts on Lake Granbury water levels from the proposed new units; some additional information has been provided and other revisions have been made in these sections of the final EIS. The NRC does not have the authority or responsibility to regulate or manage water resources or to require water conservation plans. Water conservation planning falls under the jurisdictions of organizations including TCEQ, the Texas Water Development Board, and the Brazos River Authority.

Comment: In light of remarks made at the NRC Town Hall meeting in Glen Rose on Sept. 21, I submit the following article for your consideration: http://journals.tdl.org/twj/article/view/1043/740 This article places the water availability situation into the context of climate change, and raises serious doubts about the drought model for the Comanche Peak expansion. (**0042-1** [Rosenfeld, Joshua])

Response: *The comment refers to an article entitled "Climate Change Impacts on Texas Water: A White Paper Assessment of the Past, Present and Future and Recommendations for Action," published online by the Texas Water Resources Institute in* Texas Water Journal*, Volume 1, Number 1, Pages 1-19, September 2010. The article discusses paleoclimate research findings that indicate that in the last thousand years Texas experienced droughts of longer duration than the 1950s "drought of record," and it states a need for Texas water resource managers to consider the potential for droughts more severe than the drought of record to occur again due to natural or human-induced climate change. In response to this and other comments on this topic, the analyses in EIS Sections 7.2 and 9.3.2.2, 9.3.3.2, and 9.3.4.2 of cumulative impacts on water resources related to climate change at the CPNPP site and alternative sites have been revised to include discussion of the potential impacts of drought conditions more severe than the drought of record.*

Comment: LGWOA believes that other factors of consideration that have not been fully studied include excessive water temperature increases on Lake Granbury (**0051-9** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Response: *The review team's assessment of the thermal effects of Units 3 and 4 on Lake Granbury and its aquatic ecosystem is presented in EIS Section 5.3.2. That assessment found minimal effects.*

Comment: Take all these elements into place. You got the contracts the BRA is already selling. You already have Morris Sheppard Dam shut down where you don't get any flow. You got Dow Chemical. They want their water. You've got, you know, population growth. And guess what you've got after that. You have Mother Nature. Rain? Drought? Which one are we going to get. We have no control over that. So we have all these elements. Four out of the five elements happened last year when our lake was four feet low. Four out of five. Right? The only thing that didn't occur that -- we didn't have the population growth over the years to come. Was that The Perfect Storm? Hum. That was barely a thunderstorm. (**0063-15-7** [Williams, Joe])

Response: *The comment expresses concern about the cumulative impacts of water use. The assessment of water use impacts in EIS Section 5.2.2.1 considered the variability in rainfall and streamflow that was observed over a 68-year period, including the "drought of record," and considers the impacts of the new units in the context of other existing uses of Brazos River water. The discussion of cumulative impacts in Section 7.2.1 also considers impacts of other past, present, and reasonably foreseeable demands. No changes were made to the EIS as a result of this comment.*

Comment: If you think we love our water, you're absolutely right. So let's all try to protect it, whether you're Somervell or Hood. If you're NRC, TCEQ or the BRA, let's take care of the water. (**0063-23-5** [Conway, Bretta])

Response: *The support for measures to protect and conserve Brazos River Basin water is noted. No changes were made to the EIS as a result of this comment.*

Comment: I am personally very, very concerned with the water issues facing our area, our state and our nation. During the 1950s there was a drought across this land that brought the great State of Texas to its knees. In response to the devastation that gripped our state the Texas Water Development Board was created. Its charge is to head up the development and implementation of a plan to prevent hardships and losses due to conditions similar to the great drought of record. Texans have responded to the call to protect their state providing their property, their money and their labor. As a result Texas has an enviable system of water reservoirs and pock lines across the state to make sure that water is available when needed. One would think gazing today over a brimming Lake Granbury that there is plenty of water for everyone and for every purpose. But evidently, such is not the case. I have read the official reports, read the newspaper articles, spoken with water district officials, researched the international group reports and even read the statement in a hunting magazine from a state senator that there will not be enough water. There is not enough water available to meet the future demands of our state. Period. And at this time we don't even know what and when unexpected demands will appear. Why then would we commit to providing such a amount of additional water to the Comanche Peak expansion from Lake Granbury? (**0063-24-1** [Williams, Sue])

Response: *The comment expresses general concern about the impacts of the proposed new units on Texas water resources, particularly Lake Granbury. EIS Section 5.2.2.1 presents the review team's assessment of impacts from the proposed new units on the Brazos River water and on Lake Granbury water levels.*

Comment: Many groups that have been involved would include Luminant, Lake Granbury Waterfront Owners Association, the City of Granbury and even the Brazos River Authority. Through the discovery process the Chamber understands that lake levels have tremendous complexity and are affected by many variables. The Chamber believes that our work with the Task Force is unfinished. We do appreciate that the Brazos River Authority has acknowledged the usability difference in lake levels between Lake Granbury and Possum Kingdom Lake. We anxiously anticipate the BRA study that compares the two lakes and should make a recommendation for better methods at synchronizing lake levels. In addition, the Chamber looks to the BRA to provide information about the closure of the Morris Sheppard Dam. We believe that this was a major factor in the low lake levels in the summer of 2009. (**0063-14-4** [Garner, Todd])

Response: *The NRC does not have the authority or responsibility to regulate or manage water resources, including reservoir water levels. Water management falls under the authority of organizations including TCEQ, the Texas Water Development Board, and the Brazos River Authority. In assessing the impacts of the proposed new nuclear units in this EIS, the review team assumes that the BRA would manage the reservoirs in accordance with its proposed system operating plan. This comment did not result in any changes to the EIS.*

Comment: Biocide, algaecide, pH adjuster, corrosion inhibitor and silt dispersant would be injected into water drawn from Lake Granbury, and only a fraction of the "blowdown" water would be treated before being returned to the lake or sent to an evaporation pond.Why wouldn't all of the water be treated before being returned to the lake? (**0071-31** [Hadden, Karen])

Response: *Luminant proposes to treat blowdown water to the extent necessary to ensure that effluent discharged to Lake Granbury meets the Texas State Water Quality Criteria for that lake, which are 2500 mg/L and 1000 mg/L for TDS and chloride, respectively. The NRC has no authority over Luminant's water treatment or wastewater discharge. However, in EIS Section 9.4.2.4, the review team assesses the potential environmental impacts of several possible alternatives for treatment of influent and effluent water. In the State of Texas, regulatory authority over wastewater discharge is administered by the TCEQ. Luminant will need to obtain a permit to discharge wastewater into or adjacent to waters of the State from the TCEQ prior to operations. Appendix H of the EIS list the permits and licenses that Luminant will need to obtain prior to building and operating the proposed units. This comment did not result in any changes to the EIS.*

Comment: The EIS must do a full analysis of how much of each of these contaminants [from the treated blowdown water discharge] would end up in Lake Granbury, how much would migrate into the Brazos River and how much would escape through evaporation. The exact chemical names must be included, not just generic terms such as “biocide.” The impacts of exposure of humans, animals and wildlife to these toxic compounds should be analyzed. (**0071-32** [Hadden, Karen])

Response: *EIS Table 3-3 provides information on the chemical names and quantities of water additives proposed for use in CPNPP Units 3 and 4, as well as expected effluent concentration limits for residual chlorine and sulfuric acid, which are the only potentially toxic compounds proposed for use in the facility. Concentrations and loadings of these substances would be small. EIS Section 5.2.3.1 has been revised to include additional information regarding the assessment of potential impacts from water additives.*

Comment: [A] specific case in point is the Applicant's use of the annual average wet-bulb temperature (76°F) rather than the normal summer design wet-bulb temperature (78°F) to calculate cooling water usage, indicating that a greater volume of cooling water will be needed at precisely the time of year when area and reactor water demand is at its maximum and drought conditions are most likely. In addition, the exhaust from the four large cooling towers and associated spray ponds should increase the design wet bulb temperature for the cooling towers by 1 or 2 degrees, thus increasing the cooling tower size considerably and the amount of water usage for make-up and blow-down. (**0055-3** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: That a specific case in point in the applicant's use of the annual average wet-bulb temperature of 76 degrees Fahrenheit, rather than normal summer design wet-bulb temperature of 78 degrees Fahrenheit to calculate cooling water usage, indicating that a greater volume of cooling water will be needed at precisely the time when the area and the reactor water demand is at its maximum and drought conditions are most likely. In addition, the exhaust from the four large cooling towers and associated spray ponds should increase the design wet-bulb temperature for the cooling towers by one or two degrees, thus increasing the cooling tower size considerably and the amount of water usage for makeup water and blow-down. (**0063-36-3** [Hackett, Ken])

Response: *These comments question the assumptions used by the Applicant in estimating the amount of water required to operate the proposed CPNPP Units 3 and 4. The comments suggest that the Applicant may have underestimated the water requirement. Although the wet-bulb temperature design value of 76 degrees Fahrenheit, as used by the Applicant to size the cooling towers, is lower than the worst one-day average value of 78.6 degrees Fahreneit reported for the Dallas-Ft. Worth Airport, it is consistent with the worst consecutive 30-day wet bulb average value, which is 76.1 degrees Fahrenheit. As a result, there may be short periods when the actual wet-bulb temperature exceeds the design wet-bulb temperature. This*

would decrease the operating efficiency of CPNPP Units 3 and 4, and it might require that the units de-rate (i.e., reduce electrical output) or shut down, but it would not affect the amount of heat that must be dissipated by the cooling tower or the amount of water used for operating the units. These comments did not result in any changes to the EIS text.

Comment: The shoreline habitat discussion on page 5-19 identified a reduction in water levels in PKL and Lake Granbury and a reduction in Brazos River flows between Lake Granbury and Lake Whitney. The DEIS indicates a maximum modeled change during periods of extreme drought in Lake Granbury is 2.5 feet and at PKL is 12.6 feet. The DEIS did not indicate the amount of reduction in Brazos River flows. Some shoreline areas contain steep, rocky terrain, while other portions, such as coves, contain shallower wetland habitat. The water level changes in the lakes will cause shoreline vegetation to migrate to a lower elevation. Drastic changes in water level can cause colonization of undesirable or invasive vegetation and affect shallow wetland habitat. Recommendation: TPWD recommends the applicant mitigate for the ecosystem impacts resulting from drops in water levels. TPWD suggests Luminant delineate and quantify shoreline habitat from PKL to the Brazos River at Lake Whitney and utilize these data to develop a strategic monitoring and mitigation plan to account for impacts to the Brazos River ecosystem including impacts to shoreline habitat and wetlands. Habitats should be delineated pre-operation and at incremental periods once operation begins. Mitigation could include monitoring and controlling undesirable or invasive species and restoring diverse wetland habitats along the lakes and river shoreline. The anticipated amount of reduction in Brazos River flows should be provided in the DEIS. (**0068-66** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 5.2.2.1 of the EIS has been revised to provide additional information on impacts of the proposed new units on water levels in the lakes and stream flows in the Brazos River. For the extreme conditions of the drought of record in 1953, the analysis indicates that Lake Granbury water levels could be almost 3 ft lower than with the new units operating than without the new units, while Possum Kingdom Lake water levels could be almost 15 ft lower with the new units than without them. Under more typical conditions, flows and water levels would be lower on average, but the overall ranges of water levels and flows would be essentially the same. That is, there would still be periods of high stream flows and full pools in the lakes, lower flows and reduced pools in the lakes would occur more often. Drastic fluctuations could occur during floods and other high-flow periods, but operation of the new units would not cause drastic fluctuations at other times. However, lower average stream flows and lake levels would increase the duration and areal extent of dry conditions affecting shoreline habitat. The recommendation in the comment is noted.*

E.2.8 Comments Concerning Hydrology - Groundwater

Comment: TPWD notes various inconsistencies in the DEIS including the following: The number of potable groundwater wells stated on Page 2-20 differs from what is stated on Page 2-24. (**0068-10** [Melinchuk, Ross] [Wicker, Julie])

Comment: DEIS Section 2.3.1.2, page 2-20, lines 9-15: Eleven existing water wells were identified on the CPNPP site. The wells include: six potable water wells that support CPNPP Units 1 and 2 operations; four observation wells, one of which was identified as a converted domestic well; and one privately owned stock well.

ER Revision 0 did state there were 11 onsite wells, but the number was revised in Revision 1 to correctly state 12 onsite wells. The wells include seven active potable water wells that support CPNPP Units 1 and 2 operations, one inactive potable water well associated with Squaw Creek Park, and four observation wells. [ER 2.3.2.3] (**0073-2** [Flores, Rafael])

Response: *Sections 2.3.1.2 and 2.3.2 in the final EIS have been corrected to resolve inconsistencies and incorporate the revised information supplied by the applicant.*

Comment: The DEIS explains that CPNPP will use only a small amount of groundwater and that depletion of the aquifer should not be a concern. The CPNPP is located in Hood and Somervell counties. Hood County is in the Upper Trinity Groundwater Conservation District and Somervell County is in the Prairie land Groundwater Conservation District, no legal restrictions are imposed on groundwater withdrawals. However, if the amount of groundwater usage should increase in the future, EPA recommends that the Groundwater Conservation Districts (GCD) should be contacted. Their contact information can be found at the following website. http://www.twdb.state.tx.us/gwrd/gcd/gcdhome.htm (**0070-4** [Smith, Rhonda])

Response: *Section 2.3.2.2 of the final EIS has been revised to acknowledge that Somervell County is now part of the Prairielands Groundwater Conservation District, which was formed in 2009. As discussed in Section 2.3.2.2, Luminant plans to supply all CPNPP site potable water needs with water from Wheeler Branch Reservoir, and Luminant has implemented a groundwater use reduction program at Units 1 and 2 which has greatly reduced its current groundwater use. Thus, there is no expectation of increased groundwater use. If the use of groundwater were to increase in the future, Luminant would be responsible for coordination with the respective Groundwater Conservation Districts.*

Comment: The CPNPP is located in the Trinity Aquifers outcrop area where released contaminants have the potential to percolate to the Twin Peaks formation which is a source of fresh water for down gradient users. From the groundwater point of view, a major concern of EPA is the facility's reliance on a Blowdown Treatment Facility (BDTF) that has a 47 acre storage pond and a 128 acre evaporation pond to treat high TDS waters. This could result in a build-up of even higher TDS as the minerals build up in the evaporation pond as evaporation reduces the water volume. This water has the potential to overflow, given that the freeboard design is only for a 10 year, 2 hour rainfall event. EPA is concerned that over time, the accumulation of salts from the cool down towers and the misters at the BDTF have the potential to infiltrate into the groundwater. (**0070-5** [Smith, Rhonda])

Response: *The discussion in Section 5.2.3.2 of groundwater quality impacts associated with the proposed BDTF has been revised to more fully address the potential for impacts, as described in the comment.*

Comment: Also, because of potential groundwater contamination, EPA recommends that the twenty 100 feet deep well clusters that were installed in 2006 for baseline monitoring for CPNPP Units 3 and 4 continue to be monitored during operational time ofthe CPNPP and for the same time after Units 3 and 4 have been discontinued to insure no contaminants (salts from evaporation and lagoon leakage) are endangering the groundwater in the project vicinity. (**0070-7** [Smith, Rhonda])

Response: *Monitoring of groundwater in the vicinity of the BDTF is a potential mitigation measure that could help to avoid or reduce adverse impacts related to the evaporation ponds. Section 5.2.5 has been revised to reflect this. However, because many of the baseline monitoring wells installed in 2006 will be destroyed during construction they could not be used for long-term monitoring. Additionally, while the NRC has authority to require and review radiological monitoring on the site, any requirement for non-radiological groundwater monitoring near site facilities, such as the BDTF, would be implemented under the EPA Clean Water Act or by the Texas Commission on Environmental Quality through the applicable permitting process. The permits that Luminant must obtain are listed in Appendix H of this EIS.*

Comment: The EIS should examine the impacts of vast water consumption on the aquifer and the water table levels. Will wells be sucked dry? How high is the risk of contamination of the aquifer and other waterways through radioactive leaks? Could the problem ever be remediated if radioactive or chemical leaks occurred? (**0071-33** [Hadden, Karen])

Response: *Impacts on groundwater quantity from reactor operation are examined in EIS Section 5.2.2.2. Operation of CPNPP Units 3 and 4 would not increase the use of groundwater at the CPNPP site. The water requirements for the new units would be supplied from surface water sources. Also, groundwater use by Units 1 and 2 has been reduced in recent years and is expected to decrease further in the future due to the use of surface water from Wheeler Branch Reservoir. As a result of this decreased usage, the impact on groundwater quantity is judged to be SMALL. Impacts on groundwater quality from construction and operation are examined in EIS Sections 4.2.3.2 and 5.2.3.2, respectively, and are judged to be SMALL. Because shallow groundwater in the vicinity of the site area is not used for water supply, the underlying drinking water aquifer is overlain by low permeability rock, and the most plausible pathway of any contamination entering shallow groundwater from leaks or spills is toward Squaw Creek Reservoir, there is little risk of contamination to the aquifer. No changes were made to the EIS as a result of this comment.*

Comment: Subsidence is a shifting downward of the earth's surface. Causes of subsidence include depleted groundwater, mining, natural gas and oil extraction. What impacts are there from existing industries that put the area at risk? What landfills are still in existence that could contaminate cooling water? Will local oil and gas operations impact the plant site or vice versa? (**0071-40** [Hadden, Karen])

Response: *The comment is concerned with the potential for land-surface subsidence and groundwater contamination due to resource-extraction activities, industry, and landfills in the area. The review team conducted a review to identify past, present, and reasonably foreseeable future actions and activities in the site region that could result in cumulative impacts. EIS Section 7 describes the methodology and findings of this review and Section 7.2.2.2 presents an assessment of potential cumulative impacts to groundwater quality. Also, Section 2.8 discusses subsidence, which is not an issue in the site area. No changes were made to the EIS as a result of this comment.*

E.2.9 Comments Concerning Ecology - Terrestrial

Comment: Last but not least, from an economic -- from an ecological standpoint, I noticed we saw the golden-cheeked warblers and some other animals that have been evaluated here. But also, as a hobby of mine as a photographer of nature, the last five to ten years I've seen bald eagles, osprey eagles, Mexican eagles, owls all migrate to this area. So I think this has been an ecologically stronghold for bringing in nature that has typically not been in this area. And that's something that I've observed the last five to ten years, as opposed to the '50s and '60s when there were not those type of migratory birds in this area. (**0063-28-2** [Marks, Gary])

Response: *These comments support the discussion of baseline ecological conditions presented in Section 2.4.1.1 of the EIS. This baseline discussion supports the analyses of potential impacts of birds and other terrestrial wildlife in Sections 4.3.1, 5.3.1, and 7.3. .These Sections have been revised to include additional information regarding threatened and endangered species.*

Comment: I also wanted to say that the impact on humans, wildlife and plant life need to be considered with special attention given to threatened and endangered species. (**0063-32-6** [Rooke, Molly])

Response: *These impacts have been considered in the EIS. Impacts to threatened and endangered species are specifically addressed in Sections 2.4.1.3, 4.3.1.3, and 5.3.1.3. These Sections have been revised to include additional information regarding threatened and endangered species .*

Comment: The DEIS indicates that the endangered black-capped vireo (Vireo atricapillus) and golden- cheeked warbler (Dendroica chrysoparia) may occur within Hood and Somervell Counties. A relatively small patch of potentially suitable golden-cheeked warbler habitat exists within a portion of the project site near the reservoir shoreline. On February 2, 2009, U.S. Fish and Wildlife Service personnel and Comanche Peak Nuclear Power Plant facility staff visited the project area to assess habitat suitability. During this site visit, habitat patch size was determined to be too small and distant from other suitable habitat to be likely to support golden-cheeked warblers. Likewise, the vegetation present consisted almost entirely of ashe juniper (Juniperus asheii) with few necessary hardwood trees present. (**0064-2** [Martinez, Shirley] [Spencer, Stephen])

Response: *Information describing this small patch of potentially suitable habitat and the basis for a conclusion that it is too small for a breeding pair of golden-cheeked warblers is included in Section 4.3.1.3 of the EIS. The EIS was not changed in response to this comment.*

Comment: The DEIS does not, however, mention the endangered whooping crane (Grus americana) which is known to stopover at wetlands, water bodies, and croplands in Hood and Somervell Counties during its annual migration. The FWS is concerned that the proposed 47-acre storage pond and 128-acre evaporation pond may be an attractive destination to migrating whooping cranes. (**0064-4** [Martinez, Shirley] [Spencer, Stephen])

Response: *Additional information concerning potential impacts to whooping cranes from proposed project features has been added to the EIS in Sections 2.4.1.3, 4.3.1.3 and 5.3.1.3.*

Comment: Because the new transmission lines are in the vicinity of potential habitat, known occurrences, and migratory corridors of endangered species, there may be unforeseen impacts to the federal-and state-endangered Black-capped Vireo (Vireo atricapilla) (BCY), Golden-cheeked Warbler (Dendroica chrysoparia) (GCW), and Whooping Crane (Grus americana). Potential impacts to these species associated with transmission line construction and operation cannot be determined from the information presented in the DEIS, as site surveys along the routes for suitable breeding and/or migratory stopover habitat have not been conducted. (**0068-6** [Melinchuk, Ross] [Wicker, Julie])

Response: *Potential impacts to Federal and state listed threatened and endangered species from new transmission lines following estimated general corridors are discussed in Sections 4.3.1.3 and 5.3.1.3 of the EIS. The EIS text notes that until the exact routes of the transmission lines are chosen, the possibility of adverse impacts to these species as a result of constructing the transmission lines can not be ruled out. Sections 4.3.1.3 and 5.3.1.3 of the EIS have been revised to provide additional details on Federal and state listed threatened and endangered species.*

Comment: Hydrologic changes in the Brazos River ecosystem will result from increased withdrawals and consumptive water losses and associated alterations in water management from Possum Kingdom Lake to the Brazos River below Lake Granbury. Impacts on aquatic and wetlands biota and habitat could be substantial as a result of hydrologic alterations to the Brazos River system, particularly Lake Granbury, Possum Kingdom Lake, and the river below Lake Granbury. The reductions in water levels would likely change shoreline vegetation, affect

shallow water habitats, and affect access to both public and private boat docks and ramps, especially during drought conditions. (**0068-3** [Melinchuk, Ross] [Wicker, Julie])

Response: *Impacts to shoreline habitat are described in Section 5.3.1.1. Impacts to aquatic and wetlands biota are addressed in Section 5.3.2. No changes to the the EIS have been made as a result of this comment.*

Comment: Page 2-40 indicates the CPNPP site is a migratory stopover for birds, especially waterfowl. Within Texas, the federal- and state-listed endangered Whooping Crane (Grus americana) utilizes a 200mile wide primary migration corridor. The CPNPP site occurs within the central-most 60-mile wide corridor within which 75 percent of migration sightings have been documented. Recommendation: TPWD recommends the DEIS Page 2-40 reflect the Whooping Crane migration corridor as an important migratory and stopover route that crosses the CPNPP site. (**0068-19** [Melinchuk, Ross] [Wicker, Julie])

Response: *This information has been added to Section 2.4.1.1.*

Comment: Page 2-45 indicates the federal- and state-listed endangered Black-capped Vireo (Vireo atricapilla) (BCV) is only found in Oklahoma and Texas. BCV are known to nest in Mexico and winter exclusively in Mexico. Recommendation: TPWD recommends the DEIS include BCV current range. (**0068-21** [Melinchuk, Ross] [Wicker, Julie])

Response: *This information has been added to Section 2.4.1.3.*

Comment: Page 2-50 mentions a record for the species of concern Glen Rose yucca (Yucca necopina) as possibly occurring within the discharge pipeline ROW. TPWD is including more detailed reports and maps for all records of rare and listed species within 1.5 miles of the project site, transmission lines and pipelines. Please note that three records for this species, EOID 8961, 7952 and 813, could occur in the ROW of the transmission line or water pipeline, depending on the final proposed alignments. As indicated through previous correspondence, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in the database does not imply that a species is absent from the area. Recommendation: TPWD recommends updating the DEIS to indicate that Glen Rose yucca may occur where suitable habitat is present and suitable habitat for the species may occur within the project site including the proposed transmission line and pipeline ROWs. (**0068-24** [Melinchuk, Ross] [Wicker, Julie])

Response: *Additional information on the Glen Rose yucca has been added to the EIS in Section 2.4.1.3.*

Comment: The DEIS indicates that the native grasses are the preferred cover for most disturbed areas and promote diversity. However, page 4-13 refers to buffalograss (Bouteloua dactyloides) as an improved grass that would be used in highly erosive areas. Recommendation: Buffalograss is a native grass and TPWD recommends correcting the text. TPWD supports the use of this species in landscaped areas mixed with Blue grama (Bouteloua gracilis) for a low maintenance turf grass. Buffalograss can be used elsewhere for erosion control in diverse native seed mixes with Blue grama, Green sprangletop (Leptochloa dubia), Curly mesquite (Hilaria berlangeri), Indiangrass (Sorghum nutans), Little bluestem (Schizachyrium scoparium), Prairie wildrye (Elymus canadensis), Texas cupgrass (Eriochloa sericea), Sand dropseed (Sporobolus cryptandrus), Sand Lovegrass (Eragrostis trichodes), Cane bluestem (Bothriochloa barbinodis) and Sideoats grama (Bouteloua curtipendula). (**0068-40** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 4.3.1.1 has been revised to indicate that buffalograss is a native species and to include other information from this comment in the discussion of how disturbed areas might be seeded.*

Comment: Page 4-22 states that monitoring for federally and state protected species would take place during pre-construction activities, and Luminant would stop work and contact state agency officials if workers encounter special status species, their habitat or vegetation. Recommendation: TPWD appreciates that Luminant has made this commitment to help protect sensitive state resources. Luminant may contact the following staff if special status species are encountered at the site: TPWD regional diversity biologist Nathan Rains, TPWD Headquarters Diversity Program at (512) 389-8111, or TPWD assessment biologist Celeste Brancel. (**0068-44** [Melinchuk, Ross] [Wicker, Julie])

Response: *Your recommendation is noted. No changes to the EIS have been made as a result of this comment.*

Comment: There is no reference to Fossil Rim regarding potential areas of important species impacts. Recommendation: TPWD recommends including the potential for impacts to Fossil Rim as contributing to the potential for moderate impacts. (**0068-45** [Melinchuk, Ross] [Wicker, Julie])

Response: *A discussion of potential impacts to Fossil Rim have been added to Section 4.3.1.3, 4.3.1.6, and 5.3.1.3 of the EIS.*

Comment: The DEIS indicates that new transmission lines are not anticipated to cause any increase in bird collisions if proper mitigation were employed and would not be expect to increase and contribute to cumulative effects. TPWD is concerned that the proposed project and future development in the area would increase the number of transmission lines in the area, and without guaranteed mitigation measures, may cause cumulative increases in bird collisions. At this time, mitigation measures to reduce bird collisions for this project have not been decided for the five proposed transmission lines associates with the project. Additionally, the BDTF site layout has not been finalized; thus strategic placement of the evaporation ponds away from existing transmission lines to minimize bird collisions has not been finalized or employed. The DEIS indicates the proposed project and future development in the area would likely reduce habitat of the Limestone Cut Plain of the Western Cross Timbers ecoregion, and such impacts may be sufficient to noticeably alter the important attributes of wildlife habitat. Cumulative impacts to terrestrial ecological resources are assessed as MODERATE. Recommendation: Strategic transmission line placement and guaranteed use of bird collision deterrent devices would be actions to reduce the cumulative impacts. To mitigate for cumulative losses to wildlife habitat, developers for this and future projects should employ site planning, design, and construction to limit disturbance footprints and to permanently set aside large contiguous areas and corridors to support wildlife habitat. Because the CPNPP site encompasses a large area of habitat that will remain undeveloped, management strategies to promote wildlife conservation and diversity will aid in mitigating the cumulative impact associated with habitat loss due to the project. (**0068-63** [Melinchuk, Ross] [Wicker, Julie])

Response: *The mitigation measures proposed in this comment would aid in minimizing cumulative impact associated with habitat loss due to the project. Information on the possible benefits of the measures has been added to Sections 4.3.1.5 of the EIS. However, any decision to implement the measures would have to be made by Luminant and Oncor. The NRC does not have the authority to require the proposed mitigation.*

Comment: Figure 2-13 shows the approximate 345-kV transmission line alignment to Whitney could cross through both Dinosaur Valley SP and Fossil Rim. Ecologically oriented recreational areas identified in the DEIS as wildlife protection areas include, among others, Dinosaur Valley SP and Fossil Rim, though Page 2-50 indicates that Dinosaur Valley SP is the only wildlife protection area that could potentially be affected by new transmission line construction. Recommendation: The DEIS page 2-50 should be updated to reflect that Fossil Rim may also be affected by a transmission line crossing. Subsequent DEIS evaluation of impacts associated with the Whitney transmission line should also include Fossil Rim. (**0068-25** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 2.4.1.3 of the EIS has been updated to indicate that Fossil Rim may also be affected by a transmission line crossing. Potential impacts of this crossing have been evaluated in subsequent sections.*

Comment: The DEIS also indicated that, depending on the final route ultimately selected, the Whitney transmission line right-of-way associated with this project could pass through habitat occupied by black-capped vireos and/or golden-cheeked warblers. The FWS recommends a qualified biologist assess habitat suitability for both species within the proposed Whitney transmission line right-of-way and contact the FWS if suitable habitat is found. The FWS would be willing to assist in developing alternative routes or other measures to minimize/avoid impacts to either of these species. (**0064-3** [Martinez, Shirley] [Spencer, Stephen])

Response: *The EIS evaluates potential impacts from estimated general corridors for the transmission lines. Under Texas Statutes, Oncor Electric Delivery System LLC would be responsible for applying to the Public Utility Commission of Texas to identify specific routes for the transmission lines. As explained in Section 4.3.1.2 of the EIS, selection of the final routes for the transmission lines will follow a legal and regulatory process of ERCOT and PUCT that includes the preparation of a separate Environmental Analysis. If appropriate, field evaluations of habitat within the selected routes can be conducted at that time. Your recommendation is appreciated and should be made as part of this future regulatory process. The EIS was not changed in response to this comment.*

Comment: Because new power lines are also proposed to provide power for necessary pumping facilities for these ponds, along with high voltage power lines planned and existing within the vicinity, the possibility exists that whooping cranes or other migratory birds may be killed by colliding with these power lines. The DEIS does not indicate that bird flight diverters or other marking devices would be installed as part of the proposed project. The FWS is requesting the electric transmission industry's assistance in reducing the cumulative impacts to the whooping crane from power lines within the migratory corridor. The FWS is recommending the proposed project be marked as described in, "Mitigating Bird Collisions with Power Lines: The State of the Art in 1994," by the Avian Power Line Interaction Committee. For the FWS to track cooperative efforts to mitigate collision hazards, we would appreciate being notified if any active mitigation measures (i.e., bird flight diverters) for whooping cranes and other migratory birds are incorporated into this project. Marking power lines with red aviation balls or similar bird diverters, especially near wetlands and riparian corridors, has been shown to reduce the incidence of collision by 60 to 70 percent (APLIC 1994 [Mitigating Bird Collisions with Power Lines: the State of the Art in 1994. Edison Electric Institute. Washington, D.C.]). By marking new, re-constructed, and existing power lines in areas within close proximity to known or anticipated stop-over and foraging sites, the collision hazard can be substantially reduced. (**0064-5** [Martinez, Shirley] [Spencer, Stephen])

Response: *Section 5.3.1.1 of the EIS states that transmission lines would be monitored for possible adverse impacts on birds and bird deterrent procedures and equipment would be used*

as needed (e.g., noise cannons, netting, artificial predators, periodic patrols, and minimizing periods of time in which standing water is present) (Luminant 2009f). Luminant further states that bird deterrents or other devices that might be used would be selected during the final design stage based on discussions with the TPWD and the USFWS (Luminant 2009f). Recommendations concerning marking of power lines associated with cooling system operation, as well as the new Whitney and DeCordova transmission lines, could be coordinated during these discussions. In addition, your recommendations could be presented during the final route selection process according to legal and regulatory process of ERCOT and PUCT. This process includes the preparation of a separate Environmental Analysis for the Whitney and DeCordova transmission lines. The EIS was not changed in response to this comment.

Comment: Construction of the transmission line may potentially take nesting migratory birds (eggs, nestlings, or adults) if that construction occurs during the nesting season. Such take would constitute a violation of the Migratory Bird Treaty Act (MBTA). To avoid take under the MBTA, those actions that could take migratory birds should be completed outside of their nesting seasons. This includes clearing or cutting of vegetation or grubbing. Nesting seasons for migratory birds vary greatly between species and geographic location, but generally peak from early April to mid-July. However, the breadth of the nesting season can extend from early February through late August depending on which species occur in the project area, with a few species nesting into November. Eagles may initiate nesting as early as late December or January in some areas. Due to this variability, project proponents should consult with the FWS's Regional Migratory Bird Office (U.S. Fish and Wildlife Service, Migratory Bird Office, P.O. Box 1306, Albuquerque, New Mexico 87103; phone: 505-248-6878) for information on specific nesting seasons at the locality in question. The FWS recommends you strive to complete all disruptive activities outside the peak of migratory bird nesting season to the greatest extent possible and always avoid any habitat alteration, removal, or destruction during the primary nesting season for migratory birds. Clearing of vegetation in the year prior to construction (but not within the nesting season) may discourage birds from attempting to nest in the proposed construction area, thereby decreasing chance of take during construction activities. (**0064-6** [Martinez, Shirley] [Spencer, Stephen])

Response: *This request for consultation and mitigation for possible transmission line impacts is noted. Section 4.3.1.5 has been expanded to discuss the possible benefits of these actions; however, the decision to implement them will lie with Luminant and Ocor once they have selected exact routes for the transmission lines.*

Comment: The approximate location of the proposed 345-kV Whitney transmission line shown in the DEIS crosses Dinosaur Valley State Park. In addition to providing habitat for the BCY and GCW, this state park offers public recreation activities that would be impacted by construction of a transmission line across or in sight of the park. This park and its viewshed should be avoided if at all possible. If the final project design requires that transmission lines cross any state-owned or managed lands, such as Dinosaur Valley State Park, the NRC, Luminant, and Oncor should be aware of the requirements of Chapter 26 of TPW Code (Chapter 26) discussed in Attachment A. (**0068-7** [Melinchuk, Ross] [Wicker, Julie])

Response: *The specific route for this new transmission line would be established by the Public Utility Commission of Texas in response to an application from Oncor Electric Delivery System LLC. The route selection process will comply with all applicable Federal, State, and local laws, regulations, and ordinances. The EIS was not changed in response to this comment.*

Comment: The NRC transmittal letter indicated that the NRC and USACE have different regulatory authorities and requests that if TPWD issues an incidental take statement then TPWD should specify within the statement which terms and conditions are imposed on which

agency. Under Chapter 68, Texas Parks and Wildlife (TPW) Code, state-listed species are prohibited from take. TPW Code does not establish an incidental take permit analogous to the U.S. Fish and Wildlife Service (USFWS) Section 10 permit established under the Endangered Species Act. TPWD cannot provide an incidental take permit in response to a DEIS. Recommendation: Although TPWD does not provide incidental take permits, only personnel with a TPWD scientific collection permit are allowed to handle and move state-listed species. Should the applicant require moving state-listed species out of harms way for construction activities, the person handling the species must possess a scientific collection permit, which can be obtained from TPWD Permitting Specialist, Chris Maldonado, at (512) 389-4647 or at Chris.Maldonado@tpwd.state.tx.us. (**0068-9** [Melinchuk, Ross] [Wicker, Julie])

Response: *This comment is directed toward the applicant since the NRC has no authority over the State of Texas' permitting requirement. However, Section 4.3.1.4 of the EIS has been revised to discuss the requirement for a scientific collection permit prior to relocation of state-listed species.*

Comment: Pages 2-46 and 2-47 and Chapter 4 pages 4-20 and 4-21 correctly indicate the BCV and the federal- and state-listed endangered Golden-cheeked Warbler (Dendroica chrysoparia) (GCW) have been observed as foraging and nesting within Dinosaur Valley SP. TPWD records indicate the BCV and GCW have also been observed at Fossil Rim Wildlife Center (Fossil Rim) and are identified as Texas Natural Diversity Database (TXNDD) Element Occurrence Record (EOID) 7664 and EOID 2780, respectively. These occurrences were mapped and provided in DEIS reference TPWD 2009i. Please refer to the additional attached detail records for these locations. Recommendation: The DEIS should be updated to indicate that the BCV and GCW have been recorded at Fossil Rim, which tentatively occurs within the proposed corridor of the 45-mile Whitney transmission line. TPWD recommends the NRC contact Fossil Rim directly for more current information on the documented rare, threatened and endangered species present at the site. This facility conducts research and breeding programs for endangered species, including native and exotic endangered species. Subsequent chapters that address impacts should include potential impacts at Fossil Rim. Please note that later sections in this letter address TPWD concerns related to transmission lines in the vicinity of state parks and impacts of transmission line construction on wildlife, habitats and paleontological resources. (**0068-22** [Melinchuk, Ross] [Wicker, Julie])

Response: *The information provided in this comment, including additional information on ongoing activities at Fossil Rim, has been added to the EIS.*

Comment: Page 2-47 indicated the Whooping Crane could possibly migrate over the project area, though no natural heritage records for occurrence exist for the species in Hood, Somervell or Bosque counties, nor are there natural heritage records for occurrences within 10 miles of the site, transmission lines, and pipelines. It is important to understand the basis and limitations of the TXNDD dataset for appropriate interpretation. For the Whooping Crane, methodology includes mapping only wintering grounds and repeated-use stopover sites in Texas. Because observations of birds in migration would not be mapped, the TXNDD is not expected to contain an occurrence record of a migratory flyover or single confirmed stopover of the Whooping Crane. As indicated in previous correspondence, for federally-listed species it is important to contact the USFWS for additional data and information on these species. Recommendation: TPWD recommends the NRC consult with the USFWS for possible additional information on the nearest and most current recorded stopover sites for the Whooping Crane in central and north Texas. The DEIS should include additional detail on this species, including the potential on-site habitat and suitable stopover habitat in the vicinity of the proposed transmission lines and pipelines. Wetland habitat should not be limited to jurisdictional wetlands, as non-jurisdictional

wetlands also provide habitat for the Whooping Crane. Further information on the Whooping Crane migration corridor and Whooping Crane migratory behaviors are available in the International Recovery Plan for the Whooping Crane (USFWS 2007) at http://ecos.fws.gov/docs/ recovery_plan/070604_v4.pdf and in Whooping Cranes and Wind Development: An Issue Paper (USFWS 2009) at http://www.fws.gov/southwest/es/library/. (**0068-23** [Melinchuk, Ross] [Wicker, Julie])

Response: *NRC obtained additional information from USFWS on stopover habitat for the whooping crane in central and north Texas. Sections 4.3.1.3 and 5.3.1.3 of the EIS have been modified to include consideration of this additional information. The EIS addresses impacts to any wetlands meeting federal criteria based on vegetation, soils, and hydrology, regardless of jurisdictional status under the Clean Water Act.*

Comment: Page 3-28 also states the electrical lines would meet or exceed the design requirements set forth in the National Electrical Safety Code and American National Standards Institute. The Avian Power Line Interaction Committee (APLIC) has developed the following guidelines for minimizing adverse encounters with wildlife.

- APLIC. 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute, Washington, D.C., 78 pp.
- APLIC. 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission, Washington, D.C. and Sacramento, CA, 140 pp.

Recommendation: TPWD recommends Luminant and Oncor incorporate these guidelines into the project to limit adverse impacts to wildlife, including migratory birds. These resources are available online at: www.aplic.org, www.eei.org, www.energy.ca.gov or at 1-800-334-5453. (**0068-37** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 5.3.1.1 of the EIS states that for transmission lines associated with cooling system operation potential impacts on birds would be monitored and bird deterrent procedures and equipment would be used as needed (e.g., noise cannons, netting, artificial predators, periodic patrols, and minimizing periods of time in which standing water is present) (Luminant 2009f). Luminant further states that bird deterrents or other devices that might be used would be selected during the final design stage based on discussions with the TPWD and the USFWS (Luminant 2009f). The recommendations included in the comment concerning marking of power lines associated with cooling system operation, as well as the new Whitney and DeCordova transmission lines, could be coordinated during these discussions. In addition, the recommendations could be presented during the final route selection process according to legal and regulatory process of ERCOT and PUCT. This procedure includes the preparation of a separate Environmental Analysis for the Whitney and DeCordova transmission lines. The APLIC references have been added to Section 5.3.1.5 as potential mitigation measures. Other than that, the EIS was not changed in response to this comment.*

Comment: Page 4-21 states the map provided by TPWD showed no records of rare species occurrences at Fossil Rim. As previously discussed, occurrences for the BCV and GCW, EOID 7664 and 2870, respectively, have been recorded for Fossil Rim. The discussion of impacts indicates that, other than Dinosaur Valley SP, construction and preconstruction would have minimal impact on important habitat. TPWD notes that Dinosaur Valley SP and Fossil Rim are not the only important terrestrial habitat in the area. Large acreages of grassland and forest occur within the affected counties. It is erroneous to assume that the managed preserves and areas with known TXNDD occurrences of rare resources are the only important sources of habitat. Not only are known locations of rare resources important, also important are

undocumented locations of rare resources. The absence of data in the TXNDD is not to be interpreted as absence of rare and protected species or important habitats on the landscape. Recommendation: TPWD recommends every effort be made to avoid crossing Dinosaur Valley SP and Fossil Rim and to avoid disturbance to wildlife habitat along the transmission line routes with potential to support rare species. Wildlife habitat contiguous with Dinosaur Valley SP and Fossil Rim should also be avoided. To protect large areas of habitat important to wildlife, TPWD also recommends that the transmission lines be sited in previously disturbed areas, along existing utility ROW, and away from areas of habitat to minimize the fragmentation that results from transmissions lines. Site surveys of the preferred and alternative routes should be conducted for the EIS to assess the habitat and determine potential impacts, including potential impacts to listed species and their habitat. Mitigation measures, of this section and NRC's conclusions and recommendations Table 10-1, should include avoidance of Fossil Rim as well as avoidance of areas of BCV and GCW suitable habitat. (**0068-41** [Melinchuk, Ross] [Wicker, Julie])

Response: *The specific route for this new transmission line would be established by the Public Utility Commission of Texas in response to an application from Oncor Electric Delivery System LLC. The route selection process will comply with all applicable Federal, State, and local laws, regulations, and ordinances. The recommendations in this comment could be presented during the final route selection process according to the legal and regulatory procedures of ERCOT and PUCT. These procedures include the preparation of a separate Environmental Analysis for the transmission lines. The EIS has been updated to include information on Fossil Rim Wildlife Center. Mitigation measures in Section 4.3.1.5 and Table 10-1 have modified to include avoidance of Fossil Rim Wildlife Center and areas of black-capped vireo and golden-cheeked warbler suitable habitat.*

Comment: The discussion of avoiding impacts to BCV and GCW, pages 4-21, 4-22 and 10-3, suggest that Oncor could adjust the timing of building and the location of the transmission lines within the corridors. Recommendation: Adjustments to ROW clearing and construction timing to avoid impacts may not be an acceptable practice and should be discussed with USFWS prior to implementing the practice. TPWD supports the recommendation to adjusting the location of the transmission lines to avoid habitat of BCV and GCW habitat. TPWD recommends Luminant and Oncor avoid removal of BCV and GCW habitat, wherever feasible, and mitigate for the loss of habitat for both species when avoidance is not feasible. Avoiding removal of habitat should be practiced in the vicinity of Dinosaur Valley SP and Fossil Rim as well as other locations within the affected counties that exhibit habitat for these species. Surveys should be conducted along the proposed routes to identify suitable habitat. USFWS should be consulted regarding permits required for take of federal-listed species and plans to offset the loss of habitat for either of these species. If recommended by the USFWS, Oncor and Luminant should manage for BCV habitat within transmission line ROW, where site characteristics are appropriate. (**0068-42** [Melinchuk, Ross] [Wicker, Julie])

Response: *The specific route for this new transmission line would be established by the Public Utility Commission of Texas in response to an application from Oncor Electric Delivery System LLC. The route selection process would comply with all applicable Federal, State, and local laws, regulations, and ordinances. The recommendations in this comment could be presented during the final route selection process according to the legal and regulatory procedures of ERCOT and PUCT. These procedures include the preparation of a separate Environmental Analysis for the transmission lines. The EIS was not changed in response to this comment.*

Comment: The DEIS page 4-23 discusses mitigation actions to be utilized if the Glen Rose yucca is encountered during pipeline placement. As previously commented, the Glen Rose

yucca may occur where suitable habitat is present throughout the project area including the transmission line and pipeline ROWs. Recommendation: TPWD supports our previous recommendation to survey for the Glen Rose yucca in areas of suitable habitat that would be disturbed by the project activities. TPWD recommends avoiding impact to the Glen Rose yucca during site planning and design. If the Glen Rose yucca is found in an area that must be disturbed, transplanting the specimens to a new location should be done under the guidance of a botanist familiar with this rare species and with the requirements specific to cultivating this species. (**0068-43** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 4.3.1.3 of the EIS states that monitoring for state protected species, such as Glen Rose yucca, would take place prior to ground disturbance of potentially suitable habitat, and that Luminant would stop work and contact state officials if workers encounter special status species or their habitat. Coordination of any mitigation efforts, such as transplanting, could be done during this contact. The EIS was not changed in response to this comment.*

Comment: The DEIS notes the vicinity of the proposed BDTF ponds under and adjacent to existing transmission lines and discusses the potential of the ponds to attract birds and cause collision-related deaths. The DEIS indicates that Luminant is prepared to monitor for potential impacts to birds, conduct bird deterrent procedures, and install bird deterrent equipment as needed including noise cannons, netting, artificial predators, periodic patrols, and minimizing periods of time in which standing water is present. Such bird deterrent procedures and devices would be selected during final design based on discussions with TPWD and USFWS. Recommendation: Because the design of the BDTF is not yet finalized, TPWD recommends the applicant consider a proactive approach by locating the BDTF ponds away from existing or proposed transmission lines. This would eliminate the need for avoidable long-term, labor-intensive, or costly preventative measures. TPWD prefers locating the BDTF in areas of previous disturbance or low quality habitat, where feasible. An alternative consideration would be to re-locate the existing transmission lines away from the proposed ponds. (**0068-50** [Melinchuk, Ross] [Wicker, Julie])

Response: *The recommendations included in this comment and their possible benefits have been noted in Section 5.3.1.1 of the EIS.*

Comment: Page 5-17 indicates that fogging may occur within 0.25 mile north and south of the cooling towers including areas around SCR and small wetlands. The DEIS did not indicate if tall structures would be within 0.25 mile of the cooling towers and potentially within the fog plume. Recommendation: The DEIS should address if fogging due to the cooling towers could increase potential bird collisions with existing or proposed tall structures within 0.25 mile of Units 3 and 4 cooling towers. Tall structures in the area may include Units 1 and 2 and existing or proposed transmission lines and towers. (**0068-51** [Melinchuk, Ross] [Wicker, Julie])

Response: *Additional information has been received from the applicant indicating that the area of fogging is larger than originally modeled and reported in the DEIS, and now would extend to 0.37 mi. Information on the possible occurrence of tall structures within the anticipated maximum fogging zone and the possible hazards they pose to birds has been added to Section 5.3.1.1 of the EIS.*

Comment: The DEIS indicates that additional nighttime artificial lighting would be minimal, and it would be lessened by using low sodium lighting as was previously done to lessen lighting impact from Units 1 and 2. Nighttime artificial lighting can induce fatal light attraction phenomenon on night migrating birds. Additional nighttime light may contribute to the effects on night-migrating birds when nighttime light combines with cooling tower fog. Recommendation: As appropriate to Chapters 2, 3, and 5, TPWD recommends the DEIS include discussions on

the amount of additional nighttime light created by the proposed project and the potential effect increased lighting combined with cooling tower fog may have on wildlife. In addition to lowering lighting levels, TPWD recommends down shielding lights to prevent light from being directed up into the night sky. (**0068-53** [Melinchuk, Ross] [Wicker, Julie])

Response: *The discussion of potential adverse impacts of artificial lighting on migrating birds in Section 5.3.1 of the EIS has been expanded. The expanded discussion includes information on the possible benefits of down shielding lights*.

Comment: The shoreline habitat discussion on page 5-19 identified a reduction in water levels in PKL and Lake Granbury and a reduction in Brazos River flows between Lake Granbury and Lake Whitney. The DEIS indicates a maximum modeled change during periods of extreme drought in Lake Granbury is 2.5 feet and at PKL is 12.6 feet. The DEIS did not indicate the amount of reduction in Brazos River flows. Some shoreline areas contain steep, rocky terrain, while other portions, such as coves, contain shallower wetland habitat. The water level changes in the lakes will cause shoreline vegetation to migrate to a lower elevation. Drastic changes in water level can cause colonization of undesirable or invasive vegetation and affect shallow wetland habitat. Recommendation: TPWD recommends the applicant mitigate for the ecosystem impacts resulting from drops in water levels. TPWD suggests Luminant delineate and quantify shoreline habitat from PKL to the Brazos River at Lake Whitney and utilize these data to develop a strategic monitoring and mitigation plan to account for impacts to the Brazos River ecosystem including impacts to shoreline habitat and wetlands. Habitats should be delineated pre-operation and at incremental periods once operation begins. Mitigation could include monitoring and controlling undesirable or invasive species and restoring diverse wetland habitats along the lakes and river shoreline. The anticipated amount of reduction in Brazos River flows should be provided in the DEIS. (**0068-54** [Melinchuk, Ross] [Wicker, Julie])

Response: *The discussion of possible mitigation measures addressing impacts to shoreline habitats in EIS section 5.3.1.5 has been expanded to describe the measures recommended in this comment. Any decision to implement these mitigation measures would lie with Luminant.*

Comment: [TPWD notes various inconsistencies in the DEIS including the following:] Section 5 species-specific reference for the Guadalupe bass (Micropterus treculiii), TPWD 2009d, is used for the reference on every state-listed species on Page 5-23. (**0068-11** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 5.3.1.3 of the EIS has been revised in response to this comment.*

Comment: The DEIS and the Biological Assessment of Appendix F (BA) do not assess operational impacts to the federal- and state-listed endangered Whooping Crane. The BA analysis relies on observations at the CPNPP site and known occurrences in the TXNDD and does not consider migration stopover. The BA indicates Whooping Crane are not likely to use the inland habitats found on the site for foraging, roosting, or nesting; thus they are not considered further in the BA. As previously indicated, the project site is located within the Whooping Crane migratory corridor, which is based on all verified stopover and fatality sites recorded for the cranes. These records are estimated to only account for approximately 4 percent of stopovers. The entire alignment for the proposed transmission lines is within the 60-mile wide central pathway of the statistical corridor. Please note the only naturally occurring population of the Whooping Crane in the wild is currently estimated at less than 250 individuals, and collisions with power lines are a known cause of fledged Whooping Crane mortality. Whooping Cranes can choose stopover sites opportunistically and due to weather conditions. Project site features that can attract Whooping Cranes include wetlands, shoreline, lakes (as large distinct landmarks), rivers, rural setting, and distance from previous stopover site. The

DEIS page 4-29 noted the DeCordova transmission line would cross several inlets of the SCR, Squaw Creek, the Brazos River, and Lake Granbury. The Whitney transmission line would cross the Paluxy River, Lake Whitney and tributaries of the Brazos River. Sixty to 80 percent of Whooping Crane deaths occur during migration, and electrical utility lines are a leading known cause of death in Whooping Cranes. The issue paper previously cited, Whooping Cranes and Wind Development, includes a discussion on the impacts from utility lines.

Two repeated-use Whooping Crane stopover sites, the Salt Plains National Wildlife Refuge (NWR), Oklahoma and the Quivira NWR, Kansas, are just over 300 and 400 miles from CPNPP, respectively. Whooping Cranes average between 200 and 400 miles between stopovers, possibly giving the project and surrounding area a higher probability for birds to stopover, if they have utilized these NWRs as their previous stops. Recommendation: The DEIS should address potential operational impacts to the federal- and state- endangered Whooping Crane. Additional information regarding the Whooping Crane migration corridor and potential impacts to this species from transmission lines should be coordinated with the USFWS. The existing transmission lines and lattice towers and the project's proposed addition of new lines and towers could pose a threat to migrating cranes that may utilize stopover habitat in the vicinity of the project. The biological assessment of Appendix F and the DEIS should incorporate and assess potential impacts to the Whooping Crane and should identify all reasonable factors that may adversely impact this species.

Luminant and Oncor should develop, maintain, and operate the transmission line system under an Avian Protection Plan (APP). TPWD recommends the plan ensure all transmission lines on the CPNPP site and the five new 345-kV lines proposed beyond the CPNPP site provide the best available protection for BCV, GCW, and Whooping Crane as well as other avian species. TPWD recommends contacting the USFWS to discuss the most appropriate safety measures to incorporate on the power lines and poles to protect Whooping Cranes and other large birds from collision hazards. TPWD recommends the plan be developed in accordance with the guidance provided by the Avian Power Line Interaction Committee, accessible online at http://www.aplic.org/ as referenced earlier in this letter, and with guidance from the USFWS. (**0068-55** [Melinchuk, Ross] [Wicker, Julie])

Response: *The EIS has been updated to include consideration of additional information obtained from the USFWS regarding the whooping crane migration corridor and potential impacts to whooping cranes from transmission lines. Section 5.3.1.1 of the EIS states that for transmission lines associated with cooling system operation potential impacts on birds would be monitored and bird deterrent procedures and equipment would be used as needed (e.g., noise cannons, netting, artificial predators, periodic patrols, and minimizing periods of time in which standing water is present) (Luminant 2009f). Luminant further states that bird deterrents or other devices that might be used would be selected during the final design stage based on discussions with the TPWD and the USFWS (Luminant 2009f). The recommendations concerning marking of power lines associated with cooling system operation, as well as the new Whitney and DeCordova transmission lines, could be coordinated during these discussions. In addition, these recommendations could be presented during the final route selection process according to legal and regulatory procedure of ERCOT and PUCT. This procedure includes the preparation of a separate Environmental Analysis for the Whitney and DeCordova transmission lines.*

Comment: DEIS Section 5.3.1.5, page 5-23, lines 38-43: Luminant has also indicated that they plan to confer with USFWS and TPWD regarding possible measures to reduce operational impacts from the BDTF. There could potentially be a need for the following mitigation

measures: Redesign and/or relocate BDTF to reduce potential for salt drift and fogging. Reroute existing transmission lines away from BDTF.

Luminant has shown in the ER that salt drift will be managed, and concluded (ML100630660) that steam fog produced by the evaporation pond would be thin and mister operation will not cause fog (TE-21). Luminant is not considering rerouting the existing transmission lines. (**0073-7** [Flores, Rafael])

Response: *After reviewing the available evidence, the review team continues to believe that uncertainty remains concerning the potential for adverse effects on terrestrial habitats caused by salt drift and fogging generated by BDTF operation, including a risk of increased bird strikes involving transmission lines crossing the BDTF. Section 5.3.1.5 states that agencies such as the USFWS and TPWD might recommend the indicated mitigation measures. Any decision to implement the measures would be Luminant's. The EIS assesses impacts to terrestrial resources from BDTF operation assuming that the BDTF would be built in the location indicated by Luminant, without relocation of the existing transmission lines crossing that location. The EIS was not changed in response to this comment.*

E.2.10 Comments Concerning Ecology - Aquatic

Comment: Upon review of the study regarding water level impact on Lake Granbury, there was no research that includes the Brazos River Basin such as the Trungale Study (see attached). The Trungale Study researches the impact of the Comanche Peak Expansion and shows the sizable impact, not only on Lake Granbury but on the Brazos River Basin. This study gives a complete analysis of the deeper drought periods that would occur with the addition of the Expansion and the longer times of recovery. (**0051-2** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: This [the deeper drought periods that would occur with the addition of the Expansion and the longer times of recovery] would have a tremendous destructive impact on marine life and the surrounding environment. (**0051-3** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: Along with the Trungale Study, many of the plaintiffs are concerned about the impact that the water losses would have on the Brazos River Basin including surrounding environment, loss of marine life, and overall long term viability of the Brazos River Basin. (**0051-8** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: Hydrologic changes in the Brazos River ecosystem will result from increased withdrawals and consumptive water losses and associated alterations in water management from Possum Kingdom Lake to the Brazos River below Lake Granbury. Impacts on aquatic and wetlands biota and habitat could be substantial as a result of hydrologic alterations to the Brazos River system, particularly Lake Granbury, Possum Kingdom Lake, and the river below Lake Granbury. The reductions in water levels would likely change shoreline vegetation, affect shallow water habitats, and affect access to both public and private boat docks and ramps, especially during drought conditions. Reduced Brazos River flows downstream of Lake Granbury may impact aquatic resources including the state-threatened Brazos Water Snake (Nerodia harteri) and state-threatened and rare mussels. (**0068-2** [Melinchuk, Ross] [Wicker, Julie])

Response: *The EIS recognizes that water fluctuations and losses would occur and may affect the aquatic ecology and the surrounding environment. Sections 4.3.2 and 5.3.2 were revised in response to these comments.*

Comment: In addition to the ecologically oriented recreational areas and wildlife protection areas listed on page 2-40 and 2-41 of the DEIS, the Paluxy River and the section of the Brazos River below the Lake Granbury dam down to its confluence with Camp Creek are both identified by TPWD as ecologically significant stream segments (ESSS). Through extensive review by TPWD staff, ESSSs throughout the state were identified to assist regional water planning groups in designating ecologically unique stream segments under Texas Administrative Code Title 31 Section 357.8. Until approved by the legislature, they are not a legal designation. The Brazos River ESSS was identified because it was a Texas Natural Rivers System nominee for outstandingly remarkable wildlife values and was rated the number one scenic and recreational river in the northern half of Texas by the National Parks Service (NPS) in 1995. The Paluxy River ESSS was identified as a riparian conservation area containing Dinosaur Valley State Park, which is a National Natural Landmark. Additional information about ESSSs can be found at http://www.tpwd.state.tx.us/landwater/water/environconcerns/ water_quality/sigsegs/. Recommendation: TPWD recommends these two stream segments be included as ecologically oriented recreational areas and wildlife protection areas in the DEIS. (**0068-20** [Melinchuk, Ross] [Wicker, Julie])

Response: *This comment identifies the fact that the Paluxy River and the section of the Brazos River below Lake Granbury dam down to its confluence with Camp Creek have been identified by TPWD as "ecologically significant stream segments." Section 2.4.1.1 of the EIS was revised in response to this comment.*

Comment: The discussion of Lake Granbury aquatic community states that fish populations have been adversely affected since 2001 by golden alga (Prymnesium parvum) and that Lake Granbury has experienced relatively recent major fish kills, dated 2005, as a result of golden alga blooms. These findings were based on a 2009 reference to TPWD's website for golden alga. Please note that in 2009, golden algae did not create a large fish kill as in years prior to the fish studies conducted in 2007 and 2008 by Luminant's consultant, Bio-West. TPWD's data regarding the reduced impacts due to golden algae in recent years do not support the DEIS claim that the Lake Granbury fishery is declining due to the algae. TPWD previously commented on this during the scoping process. Additional links on TPWD's website provide status reports showing that from 2007-2009 Lake Granbury did not experience further fish kills of large magnitude. Additionally, pages 2-54 and 2-66, and portions of Chapter 7, Section 7.3.2 continue to use older references and suggests that the fisheries in Lake Granbury have been severely impacted by golden algae. This conclusion is not warranted or scientifically documented. Current information is available online to more appropriately describe the status of the Lake Granbury fisheries. Lake Granbury is still a very good fishery, though varies depending on the species. Recommendation: TPWD recommends the DEIS be modified to correctly characterize the historic and current condition of the fisheries in Lake Granbury using the best currently available information. The most recent survey is online at http://www.tpwd.state.tx.us/publications/pwdpubs/media/lake_survey/pwd_rp_t3200_1300_2009 .pdf. (**0068-26** [Melinchuk, Ross] [Wicker, Julie])

Response: *The findings from the recent TPWD "Granbury Reservoir, 2009 Survey Report" (Prepared by M.S. Baird and J. Tibbs; July 31, 2010) have been incorporated into Sections 2.4.2.1, 5.3.2.1, and 7.3.2 of the EIS, which have been revised in response to this comment.*

Comment: The status for the state-listed threatened Brazos Water Snake (*Nerodia harteri*) on page 2-74 and in Chapters 4 and 5 notes the species as having not been observed in 20 years. Recent thesis work has found populations of this snake above and below Lake Granbury in the Brazos River. These surveys were conducted in 2006 and 2008. This species was not found in Lake Granbury; the researcher noted that high lake levels and undesirable sampling period

(July) combined to reduce the likelihood of finding this snake. Habitat for this species was found just below the Decordova dam and at the confluence of the Paluxy River and Brazos River (McBride 2009). Recommendation: TPWD recommends the DEIS include more current information on this species, its prey and habitat. A copy of the thesis is attached for your reference. (**0068-27** [Melinchuk, Ross] [Wicker, Julie])

Comment: Regarding impacts on recreational fishery species within PKL, Lake Granbury, and Brazos River below Lake Granbury as a result of changes in water levels and flow regime, the DEIS indicates that impacts may range from negligible to noticeable. The impacts are dependent on the species and degree to which their habitat is affected, as well as the uncertainties of project impacts to characteristics associated with reproductive success.

Regarding aquatic threatened and endangered species, the DEIS indicates no potential effects to the state-threatened Brazos Water Snake based on 1) no TXNDD reported observations of the snake in the vicinity of the project in more than 20 years, 2) the operation of submerged intake and discharge structures in Lake Granbury would not substantially alter the shallow, shoreline habitat potentially utilized by the snake nor reduce populations of small forage fish on which the snake would feed, and 3) there would be limited effects of water level changes on shoreline habitat along PKL and the Brazos River between PKL and Lake. However, as previously discussed in this letter, recent thesis work found populations of this snake above and below Lake Granbury in the Brazos River. Recommendation: Transmission lines across waterbodies can serve as perch sites for raptors that prey on aquatic species, including on the Brazos Water Snake. Long-term changes to the water levels proposed for the project could further modify the habitat of this species by moving the water level away from the current shoreline and leaving riffle areas dry. The sensitivity of this species and its prey base to changes in water quality, levels and temperatures are unknown. While juvenile snakes seem to adhere to the near shore areas, adults utilize deeper waters; therefore, the analysis should indicate whether this species could become impinged on the intake screens. The analysis provided in the DEIS should identify all reasonable factors that could come into play to adversely impact this species. (**0068-56** [Melinchuk, Ross] [Wicker, Julie])

Response: *Sections 2.4.2, 4.3.2, and 5.3.2 of the EIS have been revised in response to these comments.*

Comment: Page 2-54 indicates surveys of the lake bottom above the Lake Granbury dam identified a limited community of benthic macroinvertebrates. No mussels appear to have been found; however all sampling appears to have been conducted around the cooling water intake and discharge points. The methodology used to identify sample locations on the lake bottom was not described. Recommendation: The DEIS should clarify why sampling was restricted to the areas around the intake and discharge points. Since effects in an aquatic environment can spread to both upstream and downstream reaches of a waterbody, the methodology used to select the sampling locations should be described. To properly characterize the benthic fauna, sampling should include areas representative of the variations in habitat used by benthic macroinvertebrates. (**0068-28** [Melinchuk, Ross] [Wicker, Julie])

Response: *The 2008 Bio-West surveys captured "five sampling sites based on information provided by Enercon Services professionals. The sites are all within 2.6 kilometers of the dam and located on the southern shore because any potential future intake or discharge structures will likely be located in this area; four of the sites are located in Lake Granbury and one site is located in the Brazos River downstream of DeCordova Bend Dam." The lake sites encompassed different types of habitat settings and included a pelagic location located 110 to 120 m from shore. A diversity of substrates was included by using these locations. The Brazos River site was approximately 75 m of stream length that was chosen "to adequately characterize*

the assortment of aquatic habitats in the area." The sampling program was designed to capture the spectrum of habitat types within Lake Granbury. Section 2.4.2.1 of the EIS has been revised in response to this comment.

Comment: On November 5, 2009, the Texas Parks and Wildlife Commission acted to place 15 native freshwater mussel species on the state threatened species list; therefore, previous TPWD correspondence regarding the proposed project did not fully address the newly-listed species. The DEIS correctly identifies the threatened listing status of the Texas Fawnsfoot (Truncilla macrodon), False Spike (Quadrula mitchelli), and Smooth Pimpleback (Q. houstonensis). However, the 2007 and 2008 Bio-West fish surveys, which occurred at the project footprint location within Lake Granbury and at limited survey locations downstream of Decordova Dam within the Brazos River do not appear to have utilized appropriate survey methodology to assess mussels in the Brazos River from Possum Kingdom Lake (PKL) to downstream reaches below Lake Granbury. These areas of the river would experience changes in flow rate due the project as discussed later in the DEIS.

The DEIS indicates that the Brazos River from Lake Granbury downstream to Lake Whitney could contain habitat supportive of rare and threatened mussels, though none were found during the Bio-West studies and none are known to occur in this river segment. Please note that the Brazos River from the dam at PKL in Palo Pinto County downstream to FM 2580 in Parker County, is designated by Texas Administrative Code (TAC Title 31, §57.157) as a mussel sanctuary. Surveys determined that some of the last remaining Texas Fawnsfoot mussels occur in this area. Texas Fawnsfoot only occurs in Central Texas and only about a dozen specimens have been found alive in recent decades (Howells 2004). Additionally, TPWD survey records of Brazos River in the vicinity of the project, which are not currently included in the TXNDD, indicate Texas Fawnsfoot in the area. Live Texas Fawnsfoot were found in Palo Pinto and Parker counties, and dead Texas Fawnsfoot ranging from recently dead to very long dead were found in Somervell, McLennan, and Stephens counties (Howells 1994 and 1996). Texas Mussel Watch Program found dead shells or valves in the following counties and years: Hood 2005, 2006, 2007; Somervell 2007; and Palo Pinto 2000. Recommendation: TPWD recommends the DEIS include a description of the mussels sampling methodology and its appropriateness for obtaining baseline data. The DEIS should include a summary of existing TPWD survey data for mussels from PKL to downstream of Lake Granbury. Because the data may be outdated, TPWD recommends Luminant conduct additional pre-operation mussels sampling from PKL to downstream reaches below Lake Granbury. Using survey methodology appropriate for mussels, sampling should assess the habitats that have suitable conditions to support mussels. For additional data regarding mussel survey records for the Brazos River in the project vicinity, please coordinate with Michael Warriner, TPWD Invertebrate Biologist, at (512) 389-8759. (**0068-29** [Melinchuk, Ross] [Wicker, Julie])

Comment: The DEIS indicates that although habitat of all five of the rare mussels discussed in the document may occur within the Brazos River between Lake Granbury and Lake Whitney, none are known to occur there and none were found during the recent Bio-West studies conducted for this project. The DEIS indicates minimal impacts would occur to rare mussels. As previously discussed in this letter, there is potential for occurrence of state-threatened and rare mussels within the Brazos River below Lake Granbury to Lake Whitney, and lack of occurrences in TXNDD cannot be used as absence data from that region. Additionally, the Bio-West studies conducted for the project did not appear to target mussels and were limited in scope, though detailed survey methodology was not presented in the DEIS. (**0068-57** [Melinchuk, Ross] [Wicker, Julie])

Response: *The 2008 Bio-West surveys relied upon the use of D-frame nets along the bank edges and within the channel to collect organisms for identification. All samples were immediately stored in 95% ethanol solution and identification of invertebrates was performed in the laboratory. The D-frame net is a common benthic sampling tool that can capture most types of benthic aquatic species. NRC staff coordinated with Michael Warriner, and additional data collected during surveys in 1996, 2006, and 2007 for mussels have been obtained from TPWD. These datawere used to revise Section 2.4.2.1 of this EIS. Luminant does not plan to conduct formal development-related monitoring of aquatic ecosystems due to the small potential for adverse impacts. However if a protected species is observed, Luminant would contact appropriate agency officials to determine proper mitigation measures. Sections 2.4.2, 4.3.2, and 5.3.2 of the EIS were revised in response to these comments.*

Comment: Page 2-75 indicates that specific operational monitoring programs have not yet been established for CPNPP Units 3 and 4, though they are expected to be similar to or modifications of existing monitoring programs for Units 1 and 2. Monitoring of fish and other components of ecological communities of Lake Granbury, SCR, PKL, and Brazos River may also be required by state regulatory agencies. Recommendation: TPWD recommends Luminant conduct long-term operational monitoring for mussels and Brazos Water Snake within the Brazos River system in the project vicinity. (**0068-30** [Melinchuk, Ross] [Wicker, Julie])

Response: *Luminant does not plan to conduct formal monitoring of aquatic ecosystems.However, if a protected species is observed, Luminant would contact appropriate agency officials to determine proper mitigation measures. NRC lacks the authority to require such monitoring. No changes were made to the EIS in response to this comment.*

Comment: The DEIS indicates that the entire proposed DeCordova transmission line, 27 miles of the Whitney transmission line, and the proposed intake and discharge pipelines would parallel existing ROW. Infrastructure currently present to allow vehicles to cross streams in the existing transmission line and pipeline ROW could be used during the construction and long-term maintenance of the new transmission lines and pipeline. To further minimize stream and riparian habitat impacts, the pipelines would bore under all streams. However, the initial 18-mile segment of the Whitney transmission line would be located on new-location ROW; thus installation of permanent culvert crossings at streams for construction and long-term maintenance access roads are proposed. Recommendation: TPWD supports the plan to bore pipelines under stream crossings and their associated riparian corridors. TPWD recommends placing the bore entry/exit locations and equipment staging areas outside riparian habitat in previously disturbed sites. To minimize unnecessary disturbance to stream and riparian habitat along the new location portions of the Whitney transmission line, all efforts should be made to locate construction and maintenance access roads so that placement of temporary and/or permanent culverts in streams can be avoided. Culverts can also disrupt stream morphology as well as migration of aquatic wildlife in the stream; thus existing roads and bridge crossings should be used. (**0068-46** [Melinchuk, Ross] [Wicker, Julie])

Response: *NRC lacks the authority to require such recommendations. However, USACE would require compensatory mitigation for project-related impacts to waters of the United States through the development of a mitigation plan. No changes were made to the EIS as a result of this comment.*

Comment: Page 4-33 discusses construction and preconstruction impacts to the state-listed threatened Brazos Water Snake. The potential for encounters with most rare species is low due to the rarity of the species. The Brazos Water Snake has a very restricted range but does occur in portions of the project area. Although there are specific habitat features along lake and river shoreline that attract the Brazos Water Snake, it may travel along the Brazos River and Lake

Granbury outside of its preferred habitat. Potential construction impacts to this snake or its habitat may occur at the project footprint along Lake Granbury shoreline. The cooling water intake/discharge structures could impede access for this species to its shoreline habitat along Lake Granbury. Recommendation: TPWD recommends Luminant restore all shoreline areas temporarily disturbed by project activities with habitat features appropriate for this species. If structures would be permanently placed at the shoreline, the structure-water interface should contain rocky habitat appropriate for this species. TPWD private lands biologist Dean Marquardt should be contacted for assistance in design details that would benefit this species. (**0068-47** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 4.3.2.4 states that in the event that a protected species were to be found present in areas affected by development, work in the area would be halted and the appropriated Federal and State agency officials and environmental consultants would be contacted. NRC lacks authority to require such recommendations. However, USACE would require in-kind compensatory mitigation for impacts to waters of the United States through the development of a mitigation plan. No changes were made to the EIS in response to this comment.*

Comment: The NRC review team summary of operational impacts on aquatic and wetland resources (Section 5.3.2.11) states substantial uncertainty associated with the magnitude of ecological effects that may result from hydrological changes in the Brazos River as well as Lake Granbury and PKL. The DEIS finds operational impacts on aquatic resources may range from SMALL to MODERATE and additional mitigation may be warranted to help reduce adverse effects of flow alterations on the Brazos River and suggest such mitigation measures could include managing water releases from PKL and Lake Granbury to maintain higher base flows and to periodically provide episodic high flows that would better simulate the natural instream flows regime of the river. TPWD is concerned that the anticipated changes in water levels at PKL and Lake Granbury will cause reductions in the fish and benthic invertebrate habitat and both aquatic and terrestrial cover along the edges of the lakes, which can have cascading adverse effects on reproduction and reduce recreational fishing areas. TPWD is also concerned that reduced flows anticipated for the Brazos River downstream of Lake Granbury to Lake Whitney will affect native organisms that rely on variable flow and certain water levels, including the Brazos Water Snake and rare mussels. Recommendation: Because of the uncertainty of impacts to biota and habitat of PKL, Lake Granbury, and Brazos River both below and above Lake Granbury as a result of water level changes and flow regime changes, TPWD recommends the NRC and USACE conservatively assume the effects are noticeable and substantial until Luminant is able to prove otherwise. Given the findings addressed in Section 5.3.2 Ecological Impacts: Aquatic and Wetland Impacts, TPWD recommends operational monitoring of aquatic resources (biota and habitat) of PKL, Lake Granbury and Brazos River from PKL downstream to Lake Whitney. Operation procedures should be developed to detect levels of aquatic biota and habitat impact and to implement mitigation strategies as impacts above negligible levels are detected. An adaptive management strategy should be incorporated to mitigate the impacts revealed through monitoring. Additional pressures on biota and habitat as a result of the project should be reduced through mitigation to restore, enhance or create habitat to help offset anticipated impacts. As discussed in this section and in NRC's conclusions and recommendations Table 10-2, TPWD supports the NRC review team suggestion of manipulating base flows and episodic releases to simulate the natural instream flow regime of the river to aid in mitigating impacts. (**0068-59** [Melinchuk, Ross] [Wicker, Julie])

Comment: Withdrawals of water from the Brazos River system for Units 3 and 4 would be a major component of the increased withdrawals planned for under BRA water management policy. However, these increases are likely to occur even without Units 3 and 4 because the

2060 Brazos G Water Plan calls for full utilization of the yield from the Brazos River system between now and 2060. The DEIS indicates that future development of industries that compete for water along the Brazos River, as well as management of water budgets across the state, would likely affect aquatic resources in the Brazos River. The DEIS indicates noticeable SMALL to MODERATE cumulative effects on aquatic biota from the hydrological changes in the Brazos River, PKL, and Lake Granbury associated with increased water consumption by the proposed Units 3 and 4 in combination with other future users of BRA water allocations.

Recommendation: TPWD recommends a mitigation measure to minimize cumulative effects on aquatic resources through aquatic life water allocations within the Brazos River. Any future innovations in cooling operating processes that reduce water consumption should be considered and employed, where feasible, at the CPNPP site. (**0068-64** [Melinchuk, Ross] [Wicker, Julie])

Response: *The review team's conclusions of SMALL to MODERATE in Sections 5.3.2 and 7.3.2 are based in part on the uncertainty of the water management and flow regimes. Depending on how the water is distributed by natural events and by the Brazos River Authority within the Brazos River system, the impacts of the proposed project could be SMALL, or the impacts of the proposed project could be MODERATE. NRC lacks the authority to require the recommended mitigation measures, but the USACE would require monitoring to establish compliance with the performance standards of elements included in the compensatory mitigation plan. Appendix H of the EIS list other permits and licenses that Luminant would need to obtain prior to building and operating the proposed units. No changes were made to the EIS as a result of these comments.*

Comment: Page D-40, response to comment 0029-5, regarding TPWD's and the applicant's aquatic biota studies indicates that TPWD fisheries data would be considered, but did not indicate it would send the requested Bio-West studies to TPWD. Additionally, the NRC website shows an environmental Request for Additional Information (RAI) dated August 3, 2009, for which no response was received from Luminant (http://www.nrc.gov/reactors/new-reactors/col/comanche-peak/rai.html). The RAI requested copies of reference materials be placed on the NRC docket and reading room for citation and reference in the EIS. The Bio-West 2008a and 2008b studies were included in this request. TPWD was not able to locate these documents in the NRC reading room. Recommendation: TPWD has not received the studies, but is still interested in reviewing the documents. Please send Bio-West 2008a and 2008b reference materials to the attention of Gloria Garza, TPWD Wildlife Habitat Assessment Program, at TPWD headquarters or Gloria.Garza@tpwd.state.tx.us for proper receipt/internal tracking and distribution to appropriate review personnel. (**0068-65** [Melinchuk, Ross] [Wicker, Julie])

Response: *The requested reference documents have been placed on the NRC docket; additionally, They are available on the NRC's web-based Agencywide Documents Access and Management System (ADAMS) at http://www.nrc.gov/reading-rm/adams/web-based.html under ADAMS Accession Nos. ML092180087 and ML092180088.*

E.2.11 Comments Concerning Socioeconomics

Comment: [The water usage requirements for cooling Comanche Peak 3 and 4 will place the entire environment surrounding the lake at risk] as will be the property values for property owners! The just past summer of 2009 saw drought conditions and lake levels so low that many of us with property on the numerous canals off of Lake Granbury were unable to launch their boats after Memorial Day until Labor Day! (**0003-4** [Apple, Thomas])

Comment: I live on a canal and I will be very unhappy if I cannot launch my boat during the summer. I will be even more distressed if I am looking at a muddy ditch instead of a canal. In that event I will be expecting a massive reduction in my real estate taxes. If my neighbors and I are successful in getting tax relief, it will mean that taxes for those not living on the lake will go up. (**0023-2** [Hinterleiter, David])

Comment: Lake Granbury has homes that are located close to the water and boat docks that are at a fixed height, not floating. If the lake level is lowered, our docks will not be useable, therefore lowering our property values. (**0024-2** [Quirk, Jim and Sharon])

Comment: My boathouse would definitely be quite dry and that result defeats the whole purpose of building the facility, not to mention the cost of the project ($36000). (**0033-3** [Hanna, Jim])

Comment: I told my Hood Co. Commissioners and anyone else who would listen at that time, "If I have dry ground where my canal was, then re-evaluate my property and I'll pay only 1/3rd of the property taxes I now pay because instead of my house/prop. being evalued at $200K, it will be like the guy across the street (not waterfront) at $80K. I'm adamant about this lake being at a constant level. (**0037-6** [Moore, Jim])

Comment: Granbury stands to lose a lot of revenue if this goes through because the lake lots won't be near as valuable and all of the lake owners will have to pay a lot of money to dock companies to allow the docks to float. I know I for one will be asking for a very significant decrease in the property valuations that just doubled a year ago. The lake front won't be as desirable anymore. (**0045-3** [Jacobson, Jake])

Comment: It all comes down to risk. Luminant feels that the risk is low enough to go ahead with the project. The home owners feel the risk is high enough to cause a decrease in property value due to the non-usability of the lake for recreation. Since Luminant calculated a low risk, then let them buy our property after the two units are built. We didn't buy into Lake Granbury because of the reactors, but because the lake level stays relatively constant. With two new units that changes, and property value goes down. (**0048-2** [Bernier, Jim])

Comment: Thirdly is the impact on property values in our development and others on the lake or, for that matter, in the whole county should the economic status be deeply affected. The BRA has done a poor job in dispelling the myth that Lake Granbury is a "constant level lake." Realtors for years have mentioned that or at least have not clearly explained the reality. (**0058-3** [Huett, David])

Comment: People have invested great amounts of money for water front property as first or second homes, paying up to, and perhaps more than, $300,000 per acre for property that provides access to the lake for visual and recreational use. This plan will have an enormous impact on those investments. Please find a way to avoid destroying the economic investment that many thousands have made over the years. The lake has made Hood County what it is today and is vital to its future. (**0058-5** [Huett, David])

Comment: Now, this is the other point: When we were sold the house here -- we lived in southern California; we're retiring -- we'd boated on Lake Michigan when we lived in Chicago; we'd boated on Lake of the Ozarks when we lived in St. Louis; we'd boated on the Pacific in the California, and I could go on and on and on -- we selected Lake Granbury because we thought it was a beautiful little place to retire, and we would be able to afford a place on the lake. This afternoon a couple of the Somervell County executives took a real shot at the Lake Granbury owners and asked them, saying, Suck it up; so what if your lake gets drained. You didn't have the water there before you dammed up the river anyway, before Luminant -- or back in those

days it wasn't Luminant. And I took umbrage with those guys, and I've been stewing on it all day long, to be honest with you, that we didn't live here when they offered that lake to -- when they offered this nuclear plant to Hood County. We didn't turn it down. And I'll bet you that that's true of 75 percent of the people on that lake. The ones who were initially on the lake have mostly died, quite honestly. And the ones who retired here came here because we could buy lakefront property; we could afford it. We worked 45 years to build up a small nest egg, and we spent about half that nest egg on our property on this lake. And these guys speaking today said, Suck it up. If you lose your water, so what. And I don't think that's right, but I do think this: that we have hundreds and hundreds of houses, thousands and thousands, actually, that were sold on Lake Granbury by the realtors on the basis that this is a fixed level lake and your level will always -- will be within a foot or two of what it is supposed to be at a constant level. (**0062-16-4** [Williamson, Frank])

Comment: That these houses were all sold by realtors. The BRA says, We don't guarantee a lake level. But all these homes were sold by realtors who said, This is a fixed level lake, come here and retire and you've already got your boat dock out there and you won't have to worry. Every three boat docks going up and down the river represents about a hundred -- I mean, going up to the lake represents about $100,000 of investment. There have been millions and millions of new homes built here the last two years on the false premise that this lake would be maintained at a certain level. And if it's not maintained at that level the economy of this area -- being Granbury -- is going to be devastating and there will be residual effects long over these other areas, as well. (**0063-25-4** [Williamson, Frank])

Response: *These comments address concerns of residents in proximity to Lake Granbury and Possum Kingdom Lake with respect to property values affected by lower lake levels. The review team has revised Section 5.4.4.3 (Housing) to include a discussion of the potential impacts of operating CPNPP Units 3 and 4 on property values proximate to the lakes in question.*

Comment: The City of Granbury and it's surrounding communities rely heavily on Lake Granbury for the economic stability of the city. Without the continued recreational use of the lake, our city's economy and tourist dollars will wither away. (**0004-1** [Drager, Judy])

Comment: This would have a horrible effect on the economy in Granbury, tax revenues in Hood County, real estate sales and values in Granbury, future water needs for the community and a general sluggish population growth within the community (**0005-2** [Clark, Becky] [Frick, Terry] [Kelly-Elliott, Cathy] [Leach, Dan] [Rhodes, Bill] [Wayson, Jacqueline and Thomas] [Wayson, Thomas])

Comment: I live on Lake Granbury. I have lived here two 1/2 years and I have seen the lake go up and down like a yo-yo. A water front property costs approximately $100,000. over the non-water front neighbors. When the lake is way down, it is a liability, not an asset to the value of the property. If the Comanche Peak Nuclear expansion takes place, estimates say the lake will lose a minimum of 2 or more feet. That is when things are good. During a dry spell, that could mean 6 or more feet additional loss of water. This town of Granbury has grown because of the lake. If the lake is unusable (all boat ramps were closed once last year) the town will take a major hit financially and to the reputation of the area. We would love to have the additional jobs and money influx from the plant expansion, but not at the cost of our lake. (**0007-1** [Reeder, Dan])

Comment: To take additional water from Lake Granbury will probably have such an impact on the City of Granbury, that it will probably lose the aura of what makes Granbury the city it is today. With the loss at the proportions proposed, Granbury would lose me & many other out-of-towners that have lake property for recreational use only. With the amount of money we spend annually and multiply that figure by the thousand, there would be a trickle down impact as if a tornado went through town. (**0008-1** [Tresnicky, Larry and Phyllis])

Comment: As a Lakefront homeowner on Lake Granbury, I am pleading with you, along with many of my neighbors, regarding the BRA's request for additional water rights, and to do anything in your power to conserve our ability to use Lake Granbury for recreation. Two years ago, the Lake was down approx. 5 ft and it was devastating & impossible for many homeowners to use their boat docks. It certainly had to have a negative impact on all facets of the City of Granbury. Sales tax revenue, restaurants, boat dealers, shops on the Square all had to experience a negative impact. If we lose water at the proposed proportions, Granbury will be no more than a highway going north & south. (**0008-2** [Tresnicky, Larry and Phyllis])

Comment: the economic impact of lower water levels on the city of Granbury and Hood County such as loss of tourism needs to be fully taken into consideration. (**0051-11** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: I represent the approximately 174 property owners of Mallard Pointe on Lake Granbury. The entire development was established on the recreational use of Lake Granbury and each property is either directly on the water or has deeded rights to a slip in the association owned marina. We have major concerns including, first, the economic impact to the Hood County community as it is largely dependent on Lake Granbury as a tourist destination. Many businesses will not survive if the lake is not useful by residents, weekend property owners and tourists. (**0058-1** [Huett, David])

Comment: Last point I'd like to make is the town is Granbury is very much a tourist town. The city fathers I think have done a pretty good job of attracting tourists by various attractions. The biggest attraction is the lake. You go out there any time you want, look how many people are launching boats, from the Fort Worth-Dallas area; it's well thought of. If I can remind you of our drought that we had I believe it was about two years ago, you couldn't get a boat down to the lake, and that was before we took water to supply plants 3 and 4.

The point I'm trying to make, I think you're going to have a very serious impact on the businesses and the economics of Granbury whenever the lake level is low. I think to prove that fact -- I haven't done my homework, so I can't say this is factual, but I think at the very least you guys should go talk to the various business owners in town. Ask them how were they affected by that drought and then add whatever the proper number is for the lake level going down and see how they're going to be affected. I think you will find they were affected a great deal. (**0062-14-5** [Williams, Robert])

Response: *These comments address concerns related to the impacts of lower water levels in Lake Granbury and Possum Kingdom Lake on the recreation component of the local economy. Consequently, the review team has expanded Section 5.4.3.1 (Economy) to include a discussion of the potential impacts of operating CPNPP Units 3 and 4 on the recreation-related aspect of the local economy.*

Comment: Drawing more water from Lake Granbury will not only negatively effect the property values of all current waterfront property owners, but also any future industrial and residential expansion in the Granbury area. (**0017-3** [Fitzgerald, C.C. (Fitz)])

Comment: Not only will existing water front owner's property values be negatively affected, Lake Grandbury will no longer be the lake of choice for individuals who desire to live on a lake. This community is built around the lake and low water levels not only affects water recreation but there could be dire economic consequences for the real estate market. (**0018-2** [Thompson, Sue])

Comment: I am very concerned about the Comanche Peak Expansion and the significant impact it will have on the environment, which will have a further negative impact on property values and the local economy. (**0021-1** [Kelly-Elliott, Cathy])

Comment: So far they've paid lip-service to the concerns of both citizens and retailers (hey, without water, Granbury will dry up as a tourist destination), so it's time for the NRC to listen and for authorities to wake-up. (**0022-2** [Frick, Terry])

Comment: Again, we are very concerned about the value of our home and the income of businesses being dropped to the point of having to close. Look around there are many towns near that have music, plays, antique stores, shopping. Granbury is unique we have all of that and it is right downtown with a lake. If we don't have the boating, fishing, and swimming attraction we will be like any other historical town around here. What will make the tourist come here and not that other historical town? (**0025-3** [Slough, Gene and Phyllis])

Comment: The local Lake Granbury communities need the lake levels as they are in order to survive. Local economies will be hard hit if water levels were to decrease. (**0030-1** [Martin, Joe])

Comment: Additional water draw will negatively effect current lakefront property owners in that the water will be too low to have a boat dock and/or launch our boats from existant docks. Additionally, decreased lake levels will negatively effect future growth of the Granbury area where the lake is a major attraction. (**0034-3** [Fitzgerald, C.C. (Fitz)])

Comment: I believe they intentionally kept the level up this summer to quiet the complaints of low levels until the selling of water for the reactors suck the life from our property values and tourism. Our lake brings tourist dollars to Granbury and we need those dollars. (**0038-4** [Lowrance, Cleo])

Comment: If the recreational boaters and tourists quit coming to Granbury all these new hotels, restaurants and other businesses will be empty and the tax dollars will dry up as quickly as our waterfront property values. (**0038-7** [Lowrance, Cleo])

Comment: The value of the lake as an essential element to the economy and prosperity of Hood County cannot be overstated. Many people have made substantial personal investments-life savings in many cases-building homes and businesses that depend on the health and robustness of the lake. (**0057-2** [Keffer, James L.])

Comment: Lowering the water level of Lake Granbury would not only have a negative effect on current property values but also on future industrial and residential growth in the Granbury area. (**0062-7-3** [Williamson, Eileen])

Comment: The value of the lake as an essential element to the economy and prosperity of Hood County cannot be overstated. Many people have made substantial personal investments, life savings in many cases, building homes and businesses that depend on the health and robustness of the lake. (**0063-4-2** [Regas, Tori])

Response: *These comments address concerns related to the impacts of lower water levels in Lake Granbury and Possum Kingdom Lake on lakefront property values and the recreation component of the local economy. Consequently, the review team has revised Section 5.4.4.3 (Housing) to include a discussion of the potential impacts of operating CPNPP Units 3 and 4 on property values proximate to the lakes in question. Additionally, Section 5.4.3.1 (Economy) has been expanded to include a discussion of the potential impacts of operating CPNPP Units 3 and 4 on the recreation-related aspect of the local economy.*

Comment: I bought my property on what I thought was a 'constant level' lake. How did I figure that? Well, Possum Kingdom, Grapevine, and Whitney are variable level lakes, meaning you cannot own property up to the water's edge. You can own up to the water's edge on Lake Granbury and several other lakes in Texas like Cedar Creek Lake. (**0037-4** [Moore, Jim])

Comment: I have owned and originally built my house on the lake in 1988. When I bought I was told that it was a constant water lake. I know this to be true because none of the docks on the lake float!!! If it wasn't why would the BRA approve all of the docks as stationary! They now claim that this is not the case but they are lying. (**0045-2** [Jacobson, Jake])

Response: *These comments address concerns related to the impacts of lower water levels in Lake Granbury and Possum Kingdom Lake without specific reference to aesthetics, recreation, property values, or the local economy. While the review team considered these comments to be important, no changes were made to the EIS based on them. The review team has revised Sections 5.4.1.4 (Aesthetics), 5.4.4.2 (Recreation), 5.4.4.3 (Housing), and 5.4.3.1 (Economy) because of specific comments related to these socioeconomic categories.*

Comment: For several summers our lake has been dangerous for recreation due to low water levels. (**0038-2** [Lowrance, Cleo])

Comment: Secondly, there is a significant safety concern should the regular level of the lake be 1 to 1.5 feet below the historical regular level, not to mention the highly increased hazards in low rain or drought conditions. The lake, as you all know, has many trees and stumps only a short distance below the regular lake level that are hazards to boaters and skiers when the lake level is reduced. (**0058-2** [Huett, David])

Response: *These comments address concerns related to recreation on Lake Granbury and Possum Kingdom Lake. The review team assessed the potential for reduced recreational opportunities as a result of operating the proposed new reactors in Section 5.4.4.2 (Recreation). The review team acknowledged that the operation of CPNPP Units 3 and 4 would have a noticeable impact on the current level of recreational activity in the two lakes, but that the impact would not destabilize the recreation industry. Boaters and skiers should expect that lake levels will fluctuate with or without the proposed new units, and should take appropriate precautions. This comment provided no new information that would change the review team's determination; hence, no changes were made to the EIS as a result of these comments.*

Comment: We all have boat docks. That was a part of the plan; we wanted to have our boat in our backyard where we could go out boating, fishing, whatever, when we retired. These boat docks are not floating boat docks like they are in the West. On the Pacific Ocean, because the tide fluctuates, you have to have floating boat docks. I told you I was in the marine business; I know about this. On the lakes in California you have to have floating boat docks because there's a tremendous fluctuation in the lake from Eastman to Lake Pharr [phonetic]. And this is true throughout the west. Here every dock was built based on the fact that that's going to be the lake level, and you don't have to ever float that dock out further than where it is. (**0062-16-5** [Williamson, Frank])

Comment: Everybody has a seawall that they've built that the county thinks that we who live on this lake are so good that they've increased my little lot size in appraisal from $70,000 to $170,000 in the eight years that we owned it. When I go down to protest it, what do I get? Well, you live on the main lake. That makes your lot worth a whole lot more money. The other night I went to a commissioners -- county commissioners meeting, and they said in that -- Judge Rash himself said in that meeting the average property in Hood County is taxed at $125,000. Well,

my lot's gone from $70,000 to $170,000 in eight years, so I don't think it'll ever go back down if you take this lake away from us. (**0062-16-6** [Williamson, Frank])

Response: *These comments address concerns related to the economic and recreational consequences of reduced access of lakefront property owners if water levels on Lake Granbury or Possum Kingdom Lake decrease due to the operation of CPNPP Units 3 and 4. The review team has revised Section 5.4.4.2 (Recreation) to address lower water level impacts.*

Comment: We need to work with the Nuclear Regulatory Commission, TCEQ, Luminant to be a good neighbor. Judge Maynard's right. They've been a great neighbor. We've been a great neighbor to Somervell County. We just not reap the same benefits. So at the same time I would like to ask Luminant, BRA, TCEQ to be a great neighbor to Hood County and help assure us quality of life. If our lake levels continue to go down and stay down it will affect our ad valorem. Your property values will drop. When that does it will affect me. That's the only way my job comes into play. (**0063-10-3** [Berry, Steve])

Comment: The Chamber also recognizes that many of our members are directly or indirectly impacted by low lake levels. Business revenues, property values and Granbury as a destination point suffer during periods of low water. Thus, the Chamber has been very involved in the Lake Granbury Task Force over the past year to address lake issues. (**0063-14-2** [Garner, Todd])

Response: *These comments address concerns related to the economic and fiscal consequences of reduced water levels on Lake Granbury and Possum Kingdom Lake due to the operation of CPNPP Units 3 and 4. While these comments provided no new information, the general concern for economic impacts due to reduced water levels is addressed in Section 5.4.4.2 (Recreation).*

Comment: Hydrologic changes in the Brazos River ecosystem will result from increased withdrawals and consumptive water losses and associated alterations in water management from Possum Kingdom Lake to the Brazos River below Lake Granbury. Impacts on aquatic and wetlands biota and habitat could be substantial as a result of hydrologic alterations to the Brazos River system, particularly Lake Granbury, Possum Kingdom Lake, and the river below Lake Granbury. The reductions in water levels would likely change shoreline vegetation, affect shallow water habitats, and affect access to both public and private boat docks and ramps, especially during drought conditions. (**0068-4** [Melinchuk, Ross] [Wicker, Julie])

Response: *This comment addresses a broad spectrum of concerns related to the potential reduction of water levels in Lake Granbury and Possum Kingdom Lake. These concerns were addressed by the review team in Sections 5.3.1 (Terrestrial Impacts Related to Operations), 5.3.2 (Aquatic and Wetland Impacts), and 5.4.4.2 (Recreation). While this comment provides no new information, the general concern for economic impacts due to reduced water levels is addressed in Section 5.4.4.2 (Recreation).*

Comment: When quantifying surface water quantity impact and socioeconomic effects, EPA suggests considering tourism and recreation in determination of the DEIS significance levels. (**0070-16** [Smith, Rhonda])

Response: *This comment recommends a methodology for determining socioeconomic impacts from the operation of CPNPP Units 3 and 4. The review team's methodology is governed by a process defined in the guidance document NUREG-1555, Environmental Standard Review Plan (ESRP) (NRC 2000) and contains the suggestions proposed. This comment did not provide new information that would change the review team's determination; hence, no changes were made to the EIS as a result of this comment.*

Comment: The DEIS discusses the abundance of outdoor recreation offered at area lakes and parks. The area lakes and parks offering such recreation are listed on page 2-91, though Possum Kingdom SP is not included. Table 2-10 identifies ecological oriented public recreation areas within 50 miles of CPNPP. Although Possum Kingdom SP is not within 50 miles of CPNPP, the project will require water withdrawls from PKL and affect its water levels. Recommendation: Because the project would require water withdrawls from PKL to supply Lake Granbury, Possum Kingdom SP should be included in the list of recreation areas within the project area. Subsequent evaluations in the DEIS should address potential impacts to Possum Kingdom SP. (**0068-32** [Melinchuk, Ross] [Wicker, Julie])

Response: *This comment recommends inclusion of Possum Kingdom State Park in the analysis of recreational impacts from operations even though Possum Kingdom Lake is beyond the typical 50 mile radius the review team establishes for assessing impacts. Upon consideration of this recommendation, the review team has revised Sections 5.4.1.4 (Aesthetics) and 5.4.4.2 (Recreation) to include additional information about the potential impacts of water level decreases in Possum Kingdom Lake on aesthetics and recreation. In addition, Section 5.4.3.1 (Economy) has been expanded to include a discussion of the potential impacts of operating CPNPP Units 3 and 4 on the recreation-related aspect of the local economy.*

Comment: We moved to Granbury seven years ago and invested all of our equity in a home on Lake Granbury. Anything that affects the beauty and quality of Lake Granbury literally affects our financial future. Meanwhile, we understand that the NRC's Draft Environmental Impact Statement (DEIS) concludes that there are no environmental impacts that would preclude issuing permits for two additional reactors (Comanche Peak 3 and 4) at Luminant Energy's Glen Rose facility (italics added). Obviously, the definition of "environment" is far too narrow for the real impact on Lake Granbury. Indeed, our environment is our quality of life and any action that will reduce the water levels, recreational usage and beauty of Lake Granbury directly impacts that environment. (**0032-1** [Ferrero, Phil and Tracey])

Comment: I have read that preliminary reports showed little to no environmental impact. I don't know what the criteria for environmental impact is but lowering the lake level an average of 7 inches to 2 feet at times is certainly going to impact our property values and way of life. In drought years we won't be able to use our docks for boating or fishing and we surely won't be able to sell our property for what we paid for it. There are those that will profit from selling our water that will argue that the water belongs to them and we just bought property next to "their water." In their opinions what we think and what happens to our property values does not matter. The taxpayers in this country are getting tired of being told what we think and what happens to what we have worked our entire lives for does not matter. We are reasonable people that feel with some effort the needs for Luminant and the needs of the waterfront property owners can both be met. (**0038-10** [Lowrance, Cleo])

Comment: The Chamber also recognizes that many of our members are directly or indirectly impacted by low lake levels. Business revenues, property values, and Granbury as a destination point suffer during periods of low water.

Thus, the Chamber has also been very involved in the Lake Granbury task force that has met over the past year to address lake issues. Many groups have been involved including Luminant, Lake Granbury Waterfront Owners Association, City of Granbury, and even the Brazos River Authority. Through the discovery process, the Chamber understands that lake levels have tremendous complexity and are affected by many variables.

The Chamber believes that our work with the task force is unfinished. We do appreciate that the Brazos River Authority has acknowledged a usability difference in lake levels between Lake Granbury and Possum Kingdom. We anxiously anticipate the BRA study that compares the two lakes and should make a recommendation for better methods at synchronizing water levels.

In addition, the Chamber looks to the BRA to provide information about the closure of the Morris Shepperd Dam. We believe that this was a major factor in the low lake levels during the summer of 2009.

In summary, the Chamber believes that cooperation can exist with the different entities to bring our community a significant economic boom and a healthy lake. We look forward to ongoing discussions with interested parties. (**0054-2** [Garner, Todd])

Response: *These comments address concerns related to a number of socioeconomic categories, including aesthetics and recreational opportunities at Lake Granbury and Possum Kingdom Lake not only for property owners, but also as a fundamental component of the local economy. Consequently, the review team has revised Sections 5.4.1.4 (Aesthetics) and 5.4.4.2 (Recreation) to include additional information about the potential impacts of water level decreases in Lake Granbury and Possum Kingdom Lake on these socioeconomic categories. In addition, Section 5.4.4.3 (Housing) has been revised to include a discussion of the potential impacts of operating CPNPP Units 3 and 4 on property values proximate to the lakes in question. Finally, Section 5.4.3.1 (Economy) has been expanded to include a discussion of the potential impacts of operating CPNPP Units 3 and 4 on the recreation-related aspect of the local economy.*

Comment: We must work together to protect our water resources that we have come to depend on in this region of Texas. It is not just the concern over property values and recreation. It is the real concern for the ability of this area to depend on water for our very existence as more people move to this area over time. (**0036-1** [Murphy, Bill])

Response: *This comment presents a concern for the availability of domestic water due to the construction and operation of CPNPP Units 3 and 4. Sections 4.4.4.4 and 5.4.4.4 (Public Services) discuss the potential domestic water-related impacts of building and operating CPNPP Units 3 and 4. The review team determined the in-migration of new workers and the consumptive use of water from operating the plant would constitute minimal impacts on local water supplies. This comment provided no new information that would affect the review team's determination of no environmental justice impact; hence, no changes were made to the EIS as a result of this comment.*

Comment: The temporary influx of workers on the Barnett Shale brought money into the city and the businesses in Granbury. Most of these workers and spenders have moved on to other areas taking their money with them. The process of building the two new reactors will add workers but once the construction is complete some of these workers will also move on to the next project. (**0038-5** [Lowrance, Cleo])

Response: *This comment presents a concern for the impact of new workers arriving for the construction and operation of CPNPP Units 3 and 4. Sections 4.4.2 and 5.4.2 (Demography) and Sections 4.4.3.1 and 5.4.3.1 (Economy) discuss the potential impacts from new workers during the construction and operation of CPNPP Units 3 and 4, and determined those economic and fiscal impacts to be generally beneficial. This comment provided no new information that would affect the review team's determination of no environmental justice impact; hence, no changes were made to the EIS as a result of this comment.*

Comment: In terms of financial impact, we look for the project to play a vital part in addressing our future financial issues for Granbury ISD. Experience with education and legislation over the past 20 years will indicate to us that we'll still be facing an educational financial crisis in the state of Texas by the time this plant goes on line. Financial assistance will and can be accomplished through student enrollment. During the past year Granbury ISD enrollment dropped 253 students from September 9 to May 28. This drop in our enrollment translates into over $1.7 million in revenues for our district. The problem with a loss of 253 students across 11 campuses and 13 grades means that we did not have an opportunity to reduce our expenditures, because we could not eliminate any teaching position. The flip side of that is that if we can regain those 253 students, then we don't have to add any teaching positions across those grade levels, so we would not see any increased expenditures, but yet we'd see an increase of over $1.7 million on revenues for our district. I would venture to say right now, after careful review and study, that we could add over 300 students to Granbury ISD and not increase our teaching staff any to meet the needs of those students, thus increasing our district's revenue over $2 million. (**0062-13-2** [Mayfield, Ron])

Response: *This comment is a general discussion of the historic and expected changes in school funding and capacity and does not provide any new information to the EIS process. Sections 4.4.4.5 and 5.4.4.5 (Education) discuss the potential impacts from new workers during the construction and operation of CPNPP Units 3 and 4 on local schools. No changes were made to the EIS as a result of this comment.*

Comment: The main reason why I think this group sitting here and the large hands who show is a quality-of-life issue. A county commissioner doesn't appoint the board of the BRA. I don't know what the TCEQ board. I set ad valorem taxes. And the quality of-life issue has to do with the ad valorem tax. And that's what the Nuclear Regulatory Commission needs to understand. (**0063-10-1** [Berry, Steve])

Response: *This comment addresses a concern for potential impacts to local residents from changes to the ad valorem tax due to the construction and operation of CPNPP Units 3 and 4. Sections 4.4.3.2 and 5.4.3.2 (Taxes) discuss the potential impacts on local taxes and find the impacts to be generally beneficial. No changes were made to the EIS as a result of this comment.*

Comment: A lot of the money would go overseas and to workers brought into the community while the local community would bear the cost of infrastructure, housing, hospitals, schools. (**0063-30-9** [Hadden, Karen])

Comment: The construction phase will require skilled labor and the low-income residents are unlikely to be hired for this work. After construction, the majority of workers at the nuclear power plant will be technical in nature. Please address in the FEIS the number of jobs that will be available to local residents, and or a plan to include the residents in the work force at the Comanche Peak Nuclear Power Plant. (**0070-19** [Smith, Rhonda])

Response: *This comment addresses potential inequities through which local residents would experience the costs of building and operating CPNPP Units 3 and 4, while in-migrating workers would only experience the beneficial (wage-related) impacts of that project. Sections 4.4.2 and 5.4.2 (Demography) and Sections 4.4.3.1 and 5.4.3.1 (Economy) discuss the potential impacts from new workers during the building and operating of CPNPP Units 3 and 4, and determined those economic and fiscal impacts to be generally beneficial. These comments provided no new information that would affect the review team's determination of no environmental justice impact; hence, no changes were made to the EIS as a result of this comment.*

Comment: [TPWD notes various inconsistencies in the DEIS including the following:] Section 7, Page 7-4 states the Squaw Creek Reservoir (SCR) is closed to recreational activities, though Section 2 and most other references have been updated to indicate SCR is now open for boating and fishing. (**0068-12** [Melinchuk, Ross] [Wicker, Julie])

Comment: TPWD recommended in its February 16, 2009 comments that SCR be opened for recreational use. As such, DEIS page 2-24 indicates Luminant has reopened the reservoir for limited public use, including boating and fishing. TPWD recognizes and appreciates Luminant's efforts at providing public recreation opportunity at SCR. (**0068-18** [Melinchuk, Ross] [Wicker, Julie])

Response*: These comments identify a statement in the draft EIS that has become outdated. Due to new information provided with the help of these comments, the review team has revised the EIS accordingly. No changes were made to the EIS as a result of this comment.*

Comment: Any increased water treatment cost at the water treatment plant(s); and any resultant socioeconomic impacts associated with water quality alteration should be fully evaluated. (**0070-13** [Smith, Rhonda])

Response: *Sections 4.4.4.4 and 5.4.4.4 discuss the potential socioeconomic impacts of building and operating CPNPP Units 3 and 4 to public services, including water and wastewater treatment. After reviewing the information provided by the applicant in its Environmental Report and conducting its own independent investigation and consultation with local public services managers, the review team determined the potential impact to public services from building and operating the two proposed units at CPNPP would be minimal. This comment did not provide any new information and, therefore, no changes were made to the EIS as a result of this comment.*

Comment: The new plant will need to use existing roads and to build new ones. Lots of cars, trucks, and machinery will pass over them. How will Luminant ensure that roads are not congested? How will Luminant transport uranium and on which highways? Which communities will it pass through, and will their police and firefighting forces be trained to deal with a radioactive accident? (**0071-41** [Hadden, Karen])

Response: *This comment refers to four transportation-related concerns: the need for a new haul road into the site, traffic congestion, transportation of radioactive materials, and emergency response. Sections 4.4.4.1 and 5.4.4.1 address the potential impacts of building and operating CPNPP Units 3 and 4 in terms of traffic congestion on local roads. The sections discuss possible mitigation measures that could be implemented by Luminant and/or the Texas Department of Transportation. In regard to how uranium would be transported, the transportation of radioactive material to and from the Comanche Peak site, including unirradiated fuel, spent fuel, and radioactive waste, will be conducted in accordance with Federal regulations. The NRC and U.S. Department of Transportation (DOT) are the lead Federal agencies in charge of regulating the safety of shipments of radioactive materials. The NRC establishes requirements for the design and manufacture of packages for radioactive materials (10 CFR 71, Packaging and Transportation of Radioactive Materials). The DOT regulates the shipments while they are in transit, and sets standards for labeling and smaller quantity packages (Title 49, Transportation, U.S. Code of Federal Regulations). In regard to which highways would be used to transport uranium, as well as the training of police and firefighting forces to deal with the transport of radioactive materials, those items are beyond the scope of this EIS. In particular, the training of local personnel falls under emergency preparedness, which will be addressed as part of the safety review that is being conducted by the NRC. Section 5.4.4.4 of the EIS (Public Services) discusses police and fire department impacts in general, and Section 5.11 (Environmental Impacts of Postulated Accidents)*

discusses the general state of and expected impacts to local police and fire services from building and operating CPNPP Units 3 and 4. Because this comment provided no new information and did not identify an area of omission in the EIS, no changes were made to the EIS as a result of this comment.

Comment: Page 2-91 indicates that Luminant installed low-sodium lighting at Units 1 and 2 as a result of local resident complaints of light pollution. The DEIS indicates the same type of low-sodium lighting for Units 3 and 4 would be installed. Recommendation: TPWD recommends DEIS indicate the amount of light pollution that exists at Units 1 and 2 with the use of low-sodium lighting. Subsequent impact evaluations in the DEIS should include the magnitude of light pollution increase that would occur with Units 3 and 4. (**0068-31** [Melinchuk, Ross] [Wicker, Julie])

Response: *Section 5.4.1.4 (Aesthetics) includes a discussion of the potential impacts of light pollution from the proposed CPNPP Units 3 and 4 and concludes that the impact would be SMALL. This comment suggests the NRC should provide greater detail to that discussion by quantifying the amount of light pollution extant and the increase in light pollution that would occur if the proposed new units were built and operated. The review team did not revise the EIS discussion of light pollution because the quantification of the present and future levels of light pollution would not change the conclusions of the analysis.*

Comment: The DEIS states the operation of Units 3 and 4 could affect the recreational use of Lake Granbury and PKL by decreasing water level elevations, especially during summer months. With Units 3 and 4, the average water level of Lake Granbury could decrease by a minimum of 0.6 foot and a maximum of 2.9 feet. The water level in PKL could decrease by a minimum of 1.5 feet and a maximum of 14.8 feet. The maximum reductions in water level provided in this section are different than those given in the discussion of shoreline habitat in Section 5.3.1.1, page 5-19. During the 2009 drought, Lake Granbury water level dropped 3.5 feet, the lowest level since 1984. During that time in 2009, half of the public boat ramps (3) and many of the private boat ramps and fixed boat docks were out of the water. The DEIS concludes that a 0.6-foot decrease would have a SMALL impact on recreational use, and a 2.9-foot decrease in water level during drought conditions would have a MODERATE impact on recreational use, particularly on the use of boat ramps and fixed boat docks.
This would be especially noticeable given that most of the residential boat docks are fixed docks and cannot adjust to changes in water level.

In the 2009 drought PKL level dropped 5.2 feet below full pool elevation. The DEIS concluded that a 1.5-foot decrease at PKL would have a SMALL impact on recreational use; a 14.8-foot decrease during drought conditions would have a MODERATE impact on recreational use. The DEIS concludes that impact to recreation on PKL might be less noticeable than on Lake Granbury, due to the fact that most residential boat docks on PKL are floating docks that can adjust somewhat to changes in water level.

TPWD is concerned with the amount of boat docks and boat ramps that would be left dry during drought periods combined with water level reductions due to Units 3 and 4. It appears that water levels would be at their lowest during spring and summer when recreational use of boat docks and ramps is at its highest. Nighttime lighting is not addressed in this section on recreation, although Dinosaur Valley SP is located approximately 2.5 miles from the CPNPP site. Recommendation: TPWD recommends the applicant propose mitigation for loss of access to public and private boat ramps and docks. TPWD recommends Luminant provide financial assistance to both public and private entities for retrofitting existing ramps and docks to allow reasonable access to these surface waters. WAM models should include an assessment of the amount of time water levels would be reduced such that any of the existing public boat ramps

would be dry and access from the boat ramps would be impacted. The values given for maximum water level reductions should be consistent throughout the document. Potential impacts associated with increased nighttime light pollution to park users at Dinosaur Valley SP should be addressed. Measures to minimize impacts to state parks should be developed in coordination with David Riskind of TPWD State Parks Division Natural Resources Program at (512) 389- 4897. (**0068-60** [Melinchuk, Ross] [Wicker, Julie])

Response: *In these comments, the Texas Parks and Wildlife Department (TPWD) advised the review team of potentially conflicting water level estimates discussed in different sections of the EIS. The review team acknowledges this issue and will resolve it in the final EIS. The remainder of TPWD's comment does not provide any new information that would necessitate a change in the EIS. In its recommendations, TPWD suggested actions for the applicant, which falls outside the scope of the NRC's authority to implement. Consequently, the review team did not revise the EIS as a result of information contained in this comment.*

Comment: The approximate location of the proposed 345-kV Whitney transmission line shown in the DEIS crosses Dinosaur Valley State Park. In addition to providing habitat for the BCY and GCW, this state park offers public recreation activities that would be impacted by construction of a transmission line across or in sight of the park. This park and its viewshed should be avoided if at all possible. If the final project design requires that transmission lines cross any state-owned or managed lands, such as Dinosaur Valley State Park, the NRC, Luminant, and Oncor should be aware of the requirements of Chapter 26 of TPW Code (Chapter 26) discussed in Attachment A. (**0068-8** [Melinchuk, Ross] [Wicker, Julie])

Response: *While this comment mentions recreation, the intent of the comment is not a socioeconomic issue, but a land use issue. Transmission lines are discussed in Section 5.3.1.2 (Terrestrial Resources—Transmission Lines and Cooling Water Pipelines). The last part of this comment involves advice to the applicant about relevant state regulations governing transmission line siting on state owned or managed lands. This recommendation is not within the scope of the NRC's authority to ensure, but the accessibility of all comments to the public indicates the applicant's project management team has access to this Texas Parks and Wildlife Department comment. No changes were made to the EIS as a result of this comment.*

E.2.12 Comments Concerning Historic and Cultural Resources

Comment: the Delaware Nation has no comment to provide on the project. Please continue with the project. (**0014-1** [Ross, Jason])

Comment: The Delaware Nation has received correspondence regarding Notification of the issuance of the draft environmental impact statement for the Comanche Peak Nuclear Power Plant, Units 3 and 4 combined license application review. The Cultural Preservation Director, Ms. Tamara Francis has reviewed the information provided along with cross referencing with our files and has determined that the Delaware Nation has no comment to provide on the project. Please continue with the project. (**0014-2** [Ross, Jason])

Response: *The NRC appreciates the review of the DEIS that was conducted by the Delaware Nation. The lack of comments and the recommendation to continue with the project are both noted. No change was made to the EIS as a result of this comment.*

E.2.13 Comments Concerning Environmental Justice

Comment: And I'm very aware of the negative impact the last round nuclear power plants had on constituents. Was in -- at the time I was involved with a consumer organization and we fought the 25 percent rate increases that we experienced in the early '90s as a result of those

plants. And I want to preface my question with a question to the audience. Because I've laid the predicate at previous public -- How many of you are actually from this county, Somervell County? And how many of you are from Hood County? And how many of you are from Tarrant County or Dallas County? Okay. So most of the low-income, minority populations in the State of Texas either live in urban areas or rural south Texas or east Texas. The design of this project in this area is fundamentally flawed from my perspective because we're not having any of these meetings in Tarrant or Dallas County and we haven't been asked about it. But why are there no public meetings in places where those people live? (**0063-2-1** [Burnam, Lon])

Response: *EIS Sections 4.5 and 5.5 discuss the potential impacts of building and operating CPNPP Units 3 and 4 on minority and low-income populations within a 50-mile radius of the CPNPP, including a portion of Tarrant County. The NRC schedules public meetings in the community closest to where the proposed licensing action would occur and provides public notice for all interested parties to participate. The review team also performs extensive outreach within the communities within the area surrounding the proposed plant where socioeconomic impacts would most likely be seen. This comment provides no new information which would affect the EIS' environmental justice determination; hence, no changes were made to the EIS as a result of this comment.*

Comment: According to the DEIS, generally the construction and operation of this facility at this site will not disproportionately and adversely impact low-income and minority residents in the area, however, in some ways it may impact residents of Hood and Somervell Counties adversely and negatively. The DEIS describes the need for increased water supply for the plant's cooling system, etc. from local water sources (Lake Granbury, Possum Kingdom Lake and the Brazos River). Because of frequent droughts, increasing population rates and global warming, these water sources are decreasing. This may cause water rates to increase as the local municipalities seek solutions to their water problems. This could have a disproportionate effect on the lowincome residents who do live in these two counties because they have low-paying jobs and few resources. (**0070-17** [Smith, Rhonda])

Response: *The EIS analysis of the impacts of water use for the proposed new units uses information from the Texas Water Development Board and the Brazos River Authority supplied to the review team by Luminant. Due to uncertainties in the project design and other factors relevant to impacts, that information is based on assumptions that are expected to result in upper-end estimates of impacts. This is appropriate in order to ensure that potential impacts are not underestimated or overlooked. The assumption that 100 percent of existing water rights are exercised by their owners may not be completely realistic, but this assumption is necessary to provide assurance that water use by CPNPP Units 3 and 4 would not conflict with other users' water rights. The analysis described in Section 5.2.2.1 uses 68 years of historical data on streamflows in the Brazos River basin, including data from the "drought of record." It determined that the use of surface water for the proposed new units would not interfere with the supply requirements of all other users in the region, including municipal and private water demand. EIS Sections 4.4.4.4 and 5.4.4.4 (Public Services) and 4.5.2 and 5.5.2 Socioeconomic Impacts [to Environmental Justice communities]) discuss the potential domestic water-related impacts of building and operating CPNPP Units 3 and 4 on minority and low-income populations within a 50-mile radius of the CPNPP. The review team determined the in-migration of new workers and the consumptive use of water from operating the plant would constitute minimal impacts on local water supplies. These determinations were made after extensive assessment of the local hydrology and discussions with local public services managers. This comment provided no new information that would affect the review team's determination of no environmental justice impact; hence, no changes were made to the EIS as a result of this comment.*

Comment: The DEIS discusses the impact of heavy truck traffic on the roads and highways during the construction phase. During the operational phase, traffic will increase due to the additional workers at the plant. Although the counties/municipalities will receive large tax revenues from the facility, taxes may increase for the residents to offset the cost of increased services (police, fire protection, social services, etc.). These tax increases for residents could have a disproportionately negative impact on low-income residents. (**0070-18** [Smith, Rhonda])

Response: *EIS Sections 4.4.1.3 and 5.4.1.3 (Roads) discuss the potential impacts to roads from building and operating CPNPP Units 3 and 4. The review team determined that the construction-related impacts to roads and traffic would be SMALL on most roads in the EIA, but MODERATE on FM 56, especially north of the CPNPP entrance. The operations-related impacts to roads and traffic would necessarily be smaller, because the size of the operations workforce would be so much smaller than that of the building phase. Therefore, the review team determined that all of the operations-related impacts would be SMALL. Sections 4.5.2 and 5.5.2 (Socioeconomic Impacts) discuss the potential impacts of building and operating CPNPP Units 3 and 4 on minority and low-income populations within a 50-mile radius of the CPNPP. The review team determined that because there are no special conditions characterizing minority and low-income populations of interest in the vicinity of the plant, that there was no disproportionately high and adverse impact on environmental justice communities. This comment did not provide any new information or indicate any area of omission that would warrant revision to the EIS.*

Comment: The proposed new plants would affect low income and minority residents. How much will rent go up when the influx of construction workers and their families come to Somervell County? (**0071-45** [Hadden, Karen])

Response: *EIS Sections 4.4.4.3 and 4.5.2 (Housing) address the potential impacts of in-migrating construction and operations workers for CPNPP Units 3 and 4 on housing demand and prices, particularly for low-income residents. These sections state the reasons why the review team determined that the impacts from potential increases in housing costs would be minimal. This comment provided no new information and, therefore, the review team did not revise the EIS.*

Comment: Will pollution from construction and operation reach low-income housing areas? (**0071-46** [Hadden, Karen])

Response: *Construction and pre-construction impacts on air quality for the general public can be found in Sections 4.7.1(Construction and Preconstruction Activities) and 4.4.1.6 (Air Quality). Construction and pre-construction-related impacts on minority and low-income populations are addressed in greater detail in Section 4.5.1.3 (Air Pathway). Similarly, Sections 5.7.1(Air Quality Impacts) and 5.4.1.6 (Air Quality) discuss operations-related air quality impacts to the general public, and Section 5.5.1.3 (Air Pathway) discusses operations related air quality impacts to minority and low-income populations. Primarily due to the distance between identified minority and low-income populations of interest and the source of air quality emissions, the review team determined these impacts would be minimal. No changes were made to the EIS as a result of this comment.*

E.2.14 Comments Concerning Health - Nonradiological

Comment: One of the other issues I worked on in the DFW area is cement plants that burn hazardous waste in that county, a town that's governed by cement near Midlothian. One of the largest Down Syndrome clusters in the state. And increase of cancer rates, prostate and breast

cancer. These types of things need to be in consideration. We may be getting jobs and taxes but what are we doing to our families and our children? (**0063-29-4** [Benning, Rita])

Response: *This comment concerns cumulative health impacts. Potential non-radiological health effects from operation of CPNP Units 3 and 4 are discussed in Section 5.8. Section 7.7 contains a discussion of the cumulative effects of the proposed two units, when the two existing units and other activities near the site are considered. No changes have been made to the EIS as a result of these comments.*

E.2.15 Comments Concerning Health - Radiological

Comment: But the other reason I'm here today is for another reason. And that is this environmental impact statement should thoroughly examine more on the radioactive health risks of these reactors. No national maximum available control technology standard has been set for radio nuclide emissions despite the fact that nuclear reactors routinely emit cancer-causing radioactivity. No new reactors should be licensed until the standard is set. (**0063-29-2** [Benning, Rita])

Comment: Research has shown an increase in cancer rates around nuclear plants. Dr. Joseph Majohno of the Radiation and Public Health Project studied the cancer death rate in the three counties closest to the South Texas Nuclear Project, an area that originally had a cancer rate below the statewide rate. Sixteen years after the reactors began running the cancer death rate in the area has risen over 16 percent. (**0063-29-3** [Benning, Rita])

Comment: The National Academy of Scientists has concluded that radiation is dangerous even at low levels. While low-level radiation exposure is not as damaging as high-level radiation on a short-term basis, prolonged exposure to low-level radioactivity can be just as damaging to humans. (**0063-29-5** [Benning, Rita])

Comment: The Environmental Impact Statement (EIS) should thoroughly examine radiation health risks. No national (MACT) standard has been set for radionuclide emissions, despite the fact that nuclear reactors routinely emit cancer-causing radioactivity. No new reactors should be licensed until this standard is set.

- Research has shown an increase in cancer rates around nuclear plants. Dr. Joseph Mangano of the Radiation and Public Health Project studied the cancer death rate in thethree counties closest to the South Texas Nuclear Project, an area that originally had a cancer rate below the statewide rate. Sixteen years after the reactors began running, the cancer death rate in the in the area had risen over 16%.
- The National Academy of Sciences has concluded that radiation is dangerous even at low levels (BEIR VII study).
- While low-level radiation exposure is not as damaging as high-level radiation on a short-term basis, prolonged exposure to low-level radioactivity can be just as damaging to humans. (**0071-22** [Hadden, Karen])

Comment: The EIS should research the extent to which new reactors would add to cancer risks. Four reactors at one site would produce significantly more radioactive risk than the two existing reactors. What would be the total amount of low-level radiation emitted? How much would surrounding populations be exposed? How much radioactivity would be in routine operations? The EIS should use background radiation levels not only from before the construction of the two existing nuclear reactors also from before the testing of nuclear weapons in the United States, which resulted in radioactive fallout. (**0071-23** [Hadden, Karen])

Comment: The environmental impact statement should research the extent to which new reactors would add cancer risk. After all, you're doubling the amount of reactors that you have now. Four reactors at one site would produce significantly more risk than two existing reactors. What would be the total amount of low level radiation emitted? Was anybody given the information regarding that? How much would surrounding populations be exposed? Not just right around the lake but beyond that. How much radioactivity would be in routine operations? (**0063-29-6** [Benning, Rita])

Comment: there are routine emissions of radio-nuclides. Those are not adequately addressed in the DEIS. (**0063-30-4** [Hadden, Karen])

Response: *The comments concern potential health effects such as cancer from radiation exposure. Section 5.9 discusses the estimated doses that members of the public would receive from operation of proposed CPNPP Units 3 and 4 and compares those doses to NRC and EPA dose standards. To assess cumulative impact, Table 5-17 compares the total expected doses from operation of the two existing reactors and the two proposed reactors at CPNPP to EPA's dose standards. As Section 5.9 indicates, NRC assumes there is some health risk associated with any amount of radiation dose, no matter how small; this approach is consistent with the conclusions of BEIR VII and other expert panels such as the International Commisssion on Radiation Protection. Section 5.9 also discusses the potential health effects from operation of CPNPP Units 3 and 4 and concludes that there would most likely be zero excess health effects. The NRC staff has reviewed the claims by Dr. Mangano of the Radiation and Public Health Project of increased cancer around the South Texas Nuclear Project and discussed those claims with the Texas Department of State Health Services. The NRC concludes that the increases in cancer claimed by Dr. Mangano are not related to radiation exposure from the South Texas Project. No changes have been made to the EIS as a result of these comments.*

Comment: Liquid, gaseous, and solid radioactive waste would be produced as a byproduct of the facility operation. Each effluent will be processed to maintain releases within regulatory limits and as low as reasonably achievable before being released to the environment. The waste-processing systems are designed to meet objectives of federal guidelines discussed in the DEIS. Liquid radioactive waste is processed with radiation detection and sampling prior to release. The treated stream is discharged to SCR via CPNPP Units 1 and 2 circulating return line. The DEIS indicates that SCR tritium levels may approach allowable levels with all four units discharging to SCR at the same time, so Luminant plans to divert a portion the effluent to an evaporation pond, which would create an airborne dose pathway of tritium that is evaluated in Chapter 5 impacts. The DEIS does not indicate which evaporation pond and where liquid effluent from the evaporation pond discharges. Based on the discussion of the LRW handling processes, it is unclear if effluent other than to SCR may potentially contain tritium. Gaseous radioactive waste (GRW) containing radioactive isotopes, xenon, krypton, and iodine is processed to control and minimize release to the environment. The processed GRW is diluted with heating, ventilating and air conditioning (HVAC) flow and their release system is equipped with a discharge valve that closes if the radiation set point is exceeded. The temporary on-site storage of solid radioactive waste (SRW) is designed to store waste for up to 10 years. Approximately 30,000 cubic feet of SRW would be shipped from Units 3 and 4 annually. The DEIS does not indicate where the SRW would be shipped after leaving CPNPP. Recommendation: TPWD recommends the DEIS indicate to which evaporation pond the LRW may be routed, if liquid effluent from this pond is discharged, and to which surface water the evaporation pond discharges. TPWD recommends the DEIS indicate where the SRW would be shipped after temporary on-site storage. Impacts associated with SRW transportation should be assessed in subsequent chapters of the DEIS. (**0068-38** [Melinchuk, Ross] [Wicker, Julie])

Response: *The comment concerns radioactive effluent release paths for the proposed CPNPP Units 3 and 4. Section 5.9.2.1 has been revised to indicate that any discharge from the evaporation pond in extreme weather conditions would be released to SCR along with the rest of the liquid radioactive effluents through the circulating water return line from CPNPP Units 1 and 2. Radioactive material is not released to the evaporation pond that receives blowdown from the cooling towers. Section 6.2 addresses the environmental impacts of transportation of radioactive waste.*

Comment: EPA recommends CPNPP sample above and below the dam on Squaw Creek Reservoir. The reason being many older existing nuclear power plants (e.g., Oyster Creek in New Jersey for instance) is experiencing tritium leaks of close to 20,000 pico-curie / liter. Please respond to this concern in the FEIS. (**0070-2** [Smith, Rhonda])

Response: *The comment concerns radiological monitoring at SCR. The current Radiological Environmental Monitoring Program for CPNPP Units 1 and 2 includes water sampling in SCR. In addition, Luminant samples a number of wells on the CPNPP site for radioactive materials, including tritium. As described in Section 5.2.3.2, any leaked materials are expected to move toward SCR. No changes have been made to the EIS as a result of this comment.*

Comment: The impacts and risks of storing additional high -level radioactive waste on site needs to be studied thoroughly in the EIS. The long- term cumulative health impacts of additional low-level radiation need to be studied thoroughly and included in the environmental impact study as well. Impacts on humans, wildlife and plant life need to be considered, with special attention given to threatened and endangered species. (**0071-25** [Hadden, Karen])

Comment:

- Radioactive tritium can leak from nuclear reactors and increase cancer risks. According to NRC reports tritium levels are already high at the Comanche Peak site compared to other reactor sites. What would adding more reactors do to the already high levels of contamination?
- Numerous radioactive tritium leaks in Illinois are so severe that people can't drink or bathe in their water due to contamination. Cancer cluster, wildlife impacts, fines and lawsuits resulted. (**0071-34** [Hadden, Karen])

Response: *The comment concerns the potential cumulative level of tritium contamination in SCR and the potential for tritium leaks from operation of the proposed CPNPP Units 3 and 4. Section 5.9.1 has been revised to address the potential for tritium leaks from the proposed CPNPP Units 3 and 4. Section 7.8 has been revised to address the potential radiological impacts of the expected cumulative tritium concentration in SCR with all four CPNPP units operating (the two existing units and the two proposed units.)*

E.2.16 Comments Concerning Accidents - Severe

Comment: And there are risks that come with radioactivity for workers, for the community and especially if there ever was a severe accident that simply do not come with other forms of electric generation. (**0063-30-10** [Hadden, Karen])

Comment:

- The risk of a nuclear accident and the magnitude of devastation would increase with more reactors on the site.

- The public deserves to know the real risks of nuclear power. In 1980 the NRC conducted a study of what would happen under a worst-case scenario accident at each nuclear plant site. The Comanche Peak estimates were:
  - 1210 early deaths (25 mile radius around plant)
  - 13,800 early injuries (35 mile radius)
  - $117 billion (1980 dollars) in financial consequences

The Environmental Impact Statement should include a similar study to update these risk figures, since the population of the region has grown and since there would be more reactors. (**0071-28** [Hadden, Karen])

Response: *The comments concern the risks of severe accidents. Section 5.11.2 addresses the potential consequence impacts of severe accidents for CPNPP Units 3 and 4. In particular, Table 5-25 estimates the risks of early and latent fatalities and environmental costs. These values are all presented as risk values per reactor-year; for example, the early fatalities are estimated by multiplying the release class frequency by the population dose for that release class and the health risk coefficient (early fatalities per person-Sv). The NRC believes that these risk values represent the most meaningful way to place the risk in context and inform the environmental assessment process. The values quoted by the commenter were peak values from a range of possible values based on worst case scenarios for the current Comanche Peak reactors. The values in Table 5-25 are based on mean estimates (more likely estimates) for the proposed Comanche peak reactors. The design of the proposed reactors includes features intended to lower the risk of severe accidents even further than the already safe risk level of the current reactors. The cumulative risk of severe accidents for all four reactors at CPNPP (the two currently operating and the two proposed) is discussed in Section 7.9. No changes have been made to the EIS as a result of these comments.*

Comment: The EIS should analyze and publicize the impacts of an airplane crashing into a nuclear reactor or the spent fuel pool and the impact that such a disaster would have for both humans and the environment. (**0071-29** [Hadden, Karen])

Response: *The comment concerns the potential impacts from an airplane crash. The likelihood of an airplane crash as an unintentional act will be evaluated as part of the safety review of this COL application; generally the estimated frequency of such a crash is less than* 1×10^{-7}*, and the NRC does not consider events at such low frequencies in an EIS because they are "remote and speculative." In addition, the NRC does not assess the risk or environmental impact of releases of radioactive material that could be caused by terrorist attacks in an EIS. NRC considers postulation of such attacks to be "remote and speculative" as defined by NEPA. More appropriately, NRC does evaluate security issues outside the NEPA process. The NRC evaluates aircraft hazards and aspects of physical security as part of the safety review of a COL application. With regard to aircraft impacts, NRC regulations (74 FR 28112) require applicants for new nuclear power reactors to perform a rigorous assessment of the design to identify design features and functional capabilities that could provide additional inherent protection to avoid or mitigate the effects of an aircraft impact. No changes have been made to the EIS as a result of this comment.*

Comment: DEIS Section 5.11.2, page 5-91, lines 6-9: The cumulative population dose associated with a severe accident without loss of containment at the CPNPP site is calculated to be 9 person-Sv. The population dose risk for this release class is the product of 1.1 x 10-6 Ryr-1 and 9 person-Sv, which equals 1.1 x 10-5 person-Sv Ryr-1.The frequency of an intact containment event (RC6 -Intact Containment) is 1.1 E-06/RY as provided in ER Table 7.2-6. The dose risk is presented in this table for the 2001, 2003 and 2006 meteorological data cases

as: 9.97E-04, 1.18E-03, and 1.01 E-03 person-rem/RY, respectively (note: 100 rem = 1 Sv). The NRC value of 1.1 x 10-5 person-Sv Ryr-1 is not supported by the information in the DEIS (i.e., 1.1 x 10-6 Ryr-1 times 9 person-Sv). This is a very minor difference and is only included to inform the NRC of the error. (**0073-8** [Flores, Rafael])

Response: *The comment questions a risk value presented in Section 5.11.2 of the Draft EIS. The value was an error and has been corrected in Section 5.11.2. The error did not affect the conclusions of the analysis.*

Comment: DEIS Section 5.11.2.1, page 5-95, lines 22-26: The average individual latent cancer fatality risk is calculated using the population distribution within 10 mi of the~plant. For the plants considered in NUREG-1150, these risks were well below the Commission's safety goals (NRC 1990). Risks calculated for the US-APWR design at the CPNPP site as shown in Table 5-25 are also well below the Commission's safety goals. The DEIS states that dose risk is calculated at 10 miles from the plant, but DEIS Table 5-25 is based on 50-miles (**0073-9** [Flores, Rafael])

Response: *The comment questions statements regarding the basis of risk estimates in Section 5.11.2.1 of the DEIS. Section 5.11.2.1 has been revised to clarify the basis of the risk estimates. MACCS2 calculates the average individual latent cancer fatality risk to the 10-mi population (latent fatality column in Table 5-22). Table 5-25 presents 50-mi population dose risks. The population dose risk estimates in Table 5-22 are also based on the 50-mi population.*

E.2.17 Comments Concerning the Uranium Fuel Cycle

Comment: As residents of this area, we also have serious concerns about the increased build-up of on-site nuclear waste (**0055-7** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: And I'm also concerned about the environmental impact of additional reactors, including the environmental impact of the nuclear waste, whether it's stored here at Comanche Peak or trucked around to other locations. Because regarding radioactive waste there is no solution in sight. There are no high or low- level waste currently available. Nuclear reactors produce tons of high and low-level radioactive waste that remains dangerous to living beings for tens of thousands of years.

Radioactive and toxic waste is produced at every stage of the fuel cycle, including routine plant operations. And federal law prohibits licensing of any new nuclear plant until there is an adequate waste disposal plan. Nuclear plants have been operating for 50 years but the waste disposal problem has not yet been solved. (**0063-32-3** [Rooke, Molly])

Comment: The impact and risk of storing additional high-level radioactive waste on site needs to be studied thoroughly in the EIS and the long-term cumulative health impact of additional low-level radiation needs to be studied and included in the study, as well. (**0063-32-5** [Rooke, Molly])

Comment: As residents of this area we are -- we have serious concerns about the increased buildup of onsite nuclear waste (**0063-36-7** [Hackett, Ken])

Comment: I may have more expertise in this area than anybody else in the room. And that is the entire fuel cycle. Chapter 6 is one of about four chapters that I consider to be fundamentally flawed. And I want to talk about that one the most. It's the fuel cycle. It's the transportation. And it's the de-commission in cost. For the seven sessions -- 14 years -- that I've been in the Legislature we have been struggling at the legislative state government level over what to do with the waste. The waste has been accumulating at this site since the first operation in the

early '90s. Now you're asking for the opportunity to double that amount of waste. And we have not resolved what to do with that. (**0063-5-4a** [Burnam, Lon])

Comment: Let's talk about the radioactive waste on site here. It is likely -- because of the failure of the state government to address the issues, it is likely once those two facilities are operating that that waste will continue to be stored on this site. That adds to any number of problems. This is simple math. You are doubling the amount of radioactive waste there. (**0063-5-7** [Burnam, Lon])

Comment: You need in the DEIS -- there's a discussion about the low level radioactive waste site. We will again submit comments. But you need to know that license is under appeal. Whether that actual facility actually opens up at the end of this year as they expect is under question. They're also under enforcement. And you also need to reflect that that license that has been granted by TCEQ is based upon waste from existing nuclear plants, including Comanche Peak, South Texas and the Vermont Yankee. But the license that was given by TCEQ, which is under appeal, is not large enough to actually incorporate waste from these new facilities. They don't have that license. Maybe in the future they'll expand it. But that current license would not cover this waste. (**0063-18-11** [Reed, Cyrus])

Comment: Radioactive waste remains stored on site of reactors across the country. And there is no national storage facility for high-level radioactive waste. And the Yucca Mountain repository is unlikely to open in the near future. The Andrews County low-level waste dump application has been deemed incomplete by the Texas Commission on Environmental Quality. (**0063-32-4** [Rooke, Molly])

Comment: I want to make sure people understand what we're talking about in storing this waste. Years ago the national government set up a Compact Commission process. Texas was one of three states in the Compact. And in theory we've agreed to be the host state to two other states. One state has withdrawn. The other one, Vermont Yankee -- well, the State of Vermont. But Vermont Yankee will be the major source, about 99 percent of the waste from Vermont will come from that decommissioned facility. They're not ready for it. And we're not funding the state agency that is responsible for regulating because we're doing this 5 percent and 10 percent slash and burn to all our state agencies. Texas is fundamentally not in a good place to manage the waste that is already produced at the two nuclear power plants and the reactors that we have now. It is an even worse place to manage doubling in Texas. And it is phenomenal to me that people are not discussing the issue of the way the law was passed. And the way we are progressing in time it is most likely that this nuclear waste dump in Texas will fill up with nuclear waste other than Texas-generated waste before these facilities reach the end of their life if they're asked to be licensed. And the way the law is set up the people that get to pay for that mistake are the taxpayers of Texas. Because we fundamentally failed people in passing the legislation. The billionaire that owns this site made sure that he would make his money in the first 15 years just like any slum landlord building an apartment complex. And then the State of Texas will inherit the economic responsibilities for managing God knows how much waste generated from outside of the state. No telling what we're going to do with the waste if we add to that. (**0063-5-8** [Burnam, Lon])

Comment: [P]lease consider the full life cycle of the environmental impact of these proposed nuclear reactors (**0063-32-9** [Rooke, Molly])

Comment: The DEIS indicates that Class A low-level radioactive water (LLW) would be acceptable for disposal at the Energy Solutions site in Clive, Utah, though Class B and C LLW would not be acceptable at the Energy Solutions site in Barnwell, South Carolina. The DEIS indicates that Class A, B, and C LLW created from CPNPP Units 3 and 4 may likely be

disposable at the Waste Control Specialists, LLC (WCS) newly licensed radioactive material low-level waste facility in Andrews County, Texas. WCS received its license from TCEQ in September 2009, though at the time of the DEIS, construction and operation of the facility had not yet been approved. Approval of the WCS facility is expected in late 2010. The DEIS indicated it is likely alternate disposal pathways for Class B and C LLW would include compaction and storage at offsite vendor locations until disposal is secured and blending of waste types with subsequent disposal at available disposal sites. It is anticipated that Luminant could also temporarily store Class B and C LLW onsite in accordance with existing NRC regulations until offsite storage is available.

The DEIS indicates that high-level and transuranic wastes are to be buried at a repository such as the candidate repository at Yucca Mountain, Nevada. The NRC Waste Confidence Decision, 10 CFR 51.23, has made the generic determination that if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life for operation of that reactor at its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations. Additionally, the NRC believes there is reasonable assurance that at least one mined geologic repository will be available within the first quarter of the 21st century and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time. Thus the NRC concludes SMALL impact associated with LLW and high level waste generated by Units 3 and 4. Recommendation: If the DEIS and EIS are not finalized until 2011, TPWD recommends the documents be updated to indicate the construction and operation status of the LLW WCS facility in Andrews County, Texas. Updates regarding the status of pending availability of high-level waste repositories should also be included as the EIS becomes finalized. (**0068-61** [Melinchuk, Ross] [Wicker, Julie])

Comment: No high or low-level waste sites are available.

- Nuclear reactors produce tons of high and low-level radioactive waste that remains dangerous to living beings for tens of thousands of years. Radioactive and toxic waste is produced at every stage of the fuel cycle, including routine plant operations.
- Federal law prohibits the licensing of any new nuclear plant until there is an adequate waste disposal plan. Nuclear plants have been operating for 50 years, but the waste disposal problem has not been solved. Radioactive waste remains stored onsite at reactors across the county.
- There is no national storage facility for high-level radioactive waste and the Yucca Mountain repository is unlikely to open in the near future. The Associated Press wrote: The Energy Department is cutting operations and the chief contractor is laying off its staff at the desert site where the government plans to build a national nuclear waste repository... Jan 8, 2008.
- The Andrews County low-level waste dump application has been deemed incomplete by the Texas Commission on Environmental Quality. (**0071-24** [Hadden, Karen])

Comment: The impacts and risks of storing additional high -level radioactive waste on site needs to be studied thoroughly in the EIS. The long- term cumulative health impacts of additional low-level radiation need to be studied thoroughly and included in the environmental impact study as well. Impacts on humans, wildlife and plant life need to be considered, with special attention given to threatened and endangered species. (**0071-25** [Hadden, Karen])

Response: *These comments concern the environmental impacts of onsite storage and eventual disposal of (1) low-level radioactive waste and (2) spent fuel and high-level radioactive*

waste produced by the proposed CPNPP Units 3 and 4. Section 5.9 of the EIS addresses the radiological impacts of operation of the proposed CPNPP Units 3 and 4, including the onsite storage of radioactive wastes until they can be shipped to a licensed waste disposal facility. Section 6.1 of the EIS addresses the environmental impacts of the fuel cycle, and Section 6.1.6 specifically addresses the environmental impacts of radioactive waste disposal after it is shipped from the CPNPP site. Section 6.1.6 also addresses options such as the addition of temporary onsite storage capacity if licensed disposal facilities are temporarily not available. Section 6.1.6 has been revised to update the construction and operating status of the Waste Control Specialists LLC low-level radioactive waste disposal facility in Andrews County, Texas.

Section 6.1.6 has also been revised to incorporate the recent revision of the NRC Commission's Waste Confidence Decision and Rule (F75 FR 81037). In this decision, the Commission determines that that "if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and at either onsite or offsite independent spent fuel storage installations. Further, the Commission believes there is reasonable assurance that sufficient mined geologic repository capacity will be available to dispose of the commercial high-level radioactive waste and spent fuel generated in any reactor when necessary."

Comment: In Chapter 6 we should have talked about the fuel cycle and the incidents of increased cancer in the uranium fields, both in south Texas and New Mexico. Anybody on the Indian reservations in northwestern New Mexico can tell you about the cancer rates caused by inadequate regulation in adequately addressing the fuel cycle issues. (**0063-5-4b** [Burnam, Lon])

Comment: And another big concern is when you're going to be putting in new reactors, you're going to be needing more fuel. And being originally from south Texas and still having a ranch down there, I know there's a lot of opposition to the mining of uranium down there and the contamination of water supply, because the mining and enrichment of uranium results in radioactive contamination of the environment and a risk to public health. Exposure to radon has been shown to cause kidney failure, chronic lung disease and tumors of the brain, bone, lung and nasal passage. And in the last ten years the Texas Department of Health Services has cited several instances of radioactive waste spills by uranium mining companies, including the 1998 of over 20,000 gallons of radioactive solution in Bruni, Texas.

The Environmental Protection Agency has warned that residents of Kleberg County and their groundwater currently contains unsafe levels of uranium and strongly advises against drinking it. And residents of Goliad and Kleberg Counties have both publicly opposed the continued operations of mining company below their communities. The aquifer below Karnes County has been contaminated by uranium mills tailings, and the Department of Energy estimates clean-up costs will cost 348 million but, according to a Texas Department of Agriculture report, will not implement the clean-up plan. (**0063-32-8** [Rooke, Molly])

Comment: Contamination from Uranium would increase in South Texas Mining and enriching uranium results in radioactive contamination of the environment and risks to public health. Exposure to radon has been shown to cause kidney failure, chronic lung disease, and tumors for the brain, bone, lung, and nasal passage.

- In the last ten years, the Texas Department of Health Services has cited several instances of radioactive waste spills by uranium mining companies, including Cogema Inc.'s 1998 spill of over 20,000 gallons of radioactive solution in Bruni, Texas.

- The Environmental Protection Agency has warned residents of Kleberg County that their groundwater currently contains unsafe levels of uranium, and strongly advises against drinking it.
- Residents of Goliad and Kleberg counties have both publicly opposed the continued operations of mining companies in their communities.
- The aquifer below Karnes County has been contaminated by uranium mill tailings. The Department of Energy estimates clean up will cost $348 million but, according to a Texas Department of Agriculture report, will not implement the clean up plan. (**0071-47** [Hadden, Karen])

Response: *These comments concern the levels of uranium in the groundwater in south Texas and New Mexico. Contamination at specific uranium mines or mills is beyond the scope of the assessment of environmental impacts for the COL application for the proposed CPNPP Units 3 and 4. No change was made to the EIS as a result of these comments.*

E.2.18 Comments Concerning Transportation

Comment: When it comes to transportation, because the state law is so fundamentally flawed and it will likely open the west Texas site becoming not only the nation's but maybe the international nuclear waste site, my district will get to be -- play host to most of the nuclear waste generated in this country as it comes from the east and midwest through the Dallas- Fort Worth area. (**0063-5-5** [Burnam, Lon])

Response: *The comments concern the environmental impacts of transportation of radioactive waste. The environmental impacts of transporting spent fuel and other radioactive wastes associated with the proposed new reactor units are discussed in Section 6.2 of this EIS. As discussed in Section 6.2, the transport of spent fuel and other radioactive wastes would be conducted in accordance with Department of Transportation (DOT) and NRC regulations. In addition, the cumulative impacts of transportation of spent fuel and other radioqctive wastes are addressed in Section 7.10.2 of this EIS. No changes were made to the EIS as a result of these comments.*

E.2.19 Comments Concerning the Need for Power

Comment: Moreover, the need for power analysis is based upon the need for additional peak power, when nuclear power is intended to provide baseload power. Indeed, the DEIS should assess the expected growth in average load rather than peak power to determine additional needs in Texas. (**0052-6** [Reed, Cyrus])

Comment: We also object to your almost near reliance on ERCOT's planning projections which are really based on peak demand when this plant is not about peak demand. It's about base-load. And we feel like you need to add some additional information as you look into the future that doesn't just reflect the rising peak but the actual annual load growth. (**0063-18-7** [Reed, Cyrus])

Response: *In response to these comments a discussion of baseload power was added to Section 8.4. The conclusions of the chapter were not changed in response to this comment.*

Comment: I would also mention that at least two commissioners at the Utility Commission -- this is again about new sources -- have told me they will be introducing a 500 megawatt by 2015 requirement for renewable sources other than wind as a proposal at the end of this month or next month. Depending on the timing, we may need to incorporate that into your analysis. I've said that already. (**0063-18-8** [Reed, Cyrus])

Response: *This comment speculates on the impact of a requirement that has not been implemented. The conclusions of this chapter were not changed in response to this comment.*

Comment: [Please consider] whether or not these proposed units are even needed. (**0063-32-11** [Rooke, Molly])

Response: *This comment provides a general request for consideration of the need for power in the relevant area be incorporated in the EIS. Since they offered no additional information or identified an area of omission in the EIS Chapter 8 (Need For Power), the review team did not revise the EIS because of these comments.*

Comment: [T]he DEIS notes that ERCOT values wind capacity at 8.7 percent of name capacity, but this number was used for a reliability figure several years ago for peak times and is not reflective of wind capacity today, both overall and at peak. Thus, the DEIS should be updated to reflect more recent trends in wind development, which would show the need for power is much less than suggested in the DEIS. (**0052-8** [Reed, Cyrus])

Comment: [T]he analysis seems to admit the buildout of wind in Texas on the one hand, but then fails to consider the additional capacity that would result from that build-out. The analysis also relies on the ERCOT valuation of wind at peak as only providing 8.7 percent of name capacity, even though the number is acknowledged by most as undervaluing wind's contribution at peak. Indeed, even if assuming wind's capacity is only 8.7 percent in hot summer afternoons, the analysis should provide wind's overall capacity during a year, since presumably nuclear power would be a base resource and not a peak resource. (**0066-8** [Reed, Cyrus])

Response*: These comments challenge the use of an 8.7 percent load carrying factor for wind. Since the publication of the DEIS, the ERCOT Board has reaffirmed the use of the 8.7 percent load carrying capacity parameter. NRC Staff has therefore maintained this assumption in our analysis. To an extent, the wind scenario added to the discussion addresses this comment by illustrating the impact of a doubling of wind power. The conclusions of the chapter were not changed in response to this comment.*

Comment: Nuclear plants in the southeastern U.S. faced a similar threat in 2007 when one nuclear plant was partially closed and several others were threatened by drought-induced water shortages. “Water is the nuclear industry”s Achilles heel,” says Jim Warren, executive director of the North Carolina Waste Awareness and Reduction Network. Nuclear plant closures in the southeastern U.S. would have adverse impacts on businesses due to the higher cost of replacement power. “Currently, nuclear power costs between $5 to $7 to produce a megawatt hour,” says Daniele Seitz, an energy analyst with New York-based Dahlman Rose & Co. “It would cost 10 times that amount if you had to buy replacement power – especially during the summer.” (REF xii) (**0067-6** [Geiger, Carol])

Response: *This comment discusses potential economic problems related to plant closures if the proposed CPNPP Units 3 and 4 were to be shut down as a result of drought conditions. Operations-related impacts as an environmental consideration (ecological, biological, and economic) are discussed in the EIS in Sections 5.2 (Water-Related Impacts), 5.3.2 Aquatic and Wetlands Impacts), 5.4.4.4 (Public Services—Water and Wastewater subsection), and 5.5.1.2 (Water Pathway—for Environmental Justice considerations). Operations-related shortage issues are a safety concern and are covered thoroughly in the Safety Report. Since these comments provided no new information or identified any area of omission in the EIS, the review team did not revise the EIS because of these comments.*

Comment: Constellation Energy just withdrew their license application for a Maryland nuclear reactor due to high costs. Luminant’s parent company, Energy Future Holdings, has been

struggling financially, and shouldn't even consider taking on extensive additional debt, which will likely result in skyrocketing electric bills and could result in the collapse of the company. (**0071-14** [Hadden, Karen])

Response: *This comment discusses concerns about the potential rate increases that may occur if the proposed CPNPP Units 3 and 4 were to be constructed and operated. The purpose of the EIS is to disclose the potential environmental impacts of constructing and operating the proposed Units 2 and 3. Setting retail power rates in the context of a deregulated wholesale market is outside NRC's regulatory purview Because of the dynamic nature of the rate-setting process, including the uncertainty as to how any increase would be distributed between residential, commercial, and industrial customers, analyzing the likelihood and magnitude of future rate changes (if any) would entail undue speculation by the NRC Staff. The EIS was not modified as a result of these comments.*

Comment: By contrast to the wind, you know, that's on the increase in Texas, nuclear power is currently generating twelve-and-a-half percent of our power. One of the reactors went down in August at South Texas Project and no one even noticed it, 350 megawatts off 136 the grid one day. No one even blinked. We have a 21 percent reserve margin. ERCOT says we don't need and the economy does not support new coal or nuclear reactors at this point in time. That is their latest study. Why would anyone want to invest in that at this point in time? Who is going to buy the most expensive power on the market? There's not going to be buyers. And the cost to rate payers is going to go through the roof. (**0063-30-12** [Hadden, Karen])

Comment: The Electric Reliability Council of Texas (ERCOT) 2009 State of the Market report says "Estimated net revenues for nuclear and coal resources were also insufficient to support new entry in 2009." (**0071-15** [Hadden, Karen])

Response: *These comments state that current conditions in ERCOT do not justify building new Nuclear generating capacity and cites an ERCOT public report/statement to that effect. The 2009 State of the Market Report was produced by Potomac Economics Ltd and was not a policy statement of the ERCOT Board. It referred to market conditions in 2009. The data in chapter 8, while not addressing the same issues as the Market Report, are focused on the period of 2014-2024. Chapter 8 reports a reserve margin similar to the Market Report for 2010 but a quite low reserve margin for 2024. The conclusions of this chapter were not changed in response to this comment.*

Comment: As shown by Table 8-1, the DEIS published in August 2010, finds the analysis performed by Luminant assumed a peak electricity demand of 86, 803 MWs would be needed in 2024, while the peak demand found in the DEIS based on 2009 analysis was significantly less, about 81,000 MWs. Thus even since the original application, the expected demand in Texas has been forecasted to be much less than expected just two years ago. Even with these lower projection within ERCOT, however, the DEIS overemphasizes the need for power and underestimates the expected savings from energy efficiency programs at utilities as well as savings from weatherization, demand response programs and new building codes. Thus, if these additional factors are considered, the additional 3200 MWs of the proposed two units are not needed, either for Texas as a whole or the North Central Texas region. (**0052-1** [Reed, Cyrus])

Comment: [T]he analysis contained in the DEIS fails to account for three recent regulatory or legal changes that should reduce both load and peak demand in Texas substantially in the coming years: The June of 2010 decision by the State Energy Conservation Office to raise the minimum energy code from 2001 to 2009 standards beginning in April of 2011, which will lower overall energy use in new homes and buildings (**0052-3** [Reed, Cyrus])

Comment: [the analysis contained in the DEIS fails to account for three recent regulatory or legal changes that should reduce both load and peak demand in Texas substantially in the coming years:] The August of 2010 decision by the PUC to raise the energy efficiency goals of the nine Investor-owned Utilities, including ONCOR, from 20 to 30 percent of growth in demand (**0052-4** [Reed, Cyrus])

Comment: [the analysis contained in the DEIS fails to account for three recent regulatory or legal changes that should reduce both load and peak demand in Texas substantially in the coming years:] The spending of nearly $800 million between 2009 and 2012 as part of the American Recovery and Renewal Act, which includes some $300 million in weatherization monies, some $300 million in energy efficiency and onsite renewable projects in public buildings, and an additional $200 million in block grants to cities for energy efficiency. The analysis should reflect the expected declines in demand from these [three] changes. (**0052-5** [Reed, Cyrus])

Comment: Finally, ERCOT's analysis relied upon in the DEIS fails to consider the additional capacity that is coming on-line in wind generation, --some 8,000 MWs of additional wind in the coming years -- and underestimates the capacity factor of wind in Texas, (**0052-7** [Reed, Cyrus])

Comment: Luminant does not actually need to build two new units at Comanche Peak because load growth will not grow as much as even ERCOT estimated in 2009, it does not reflect recent changes to building codes, the use of the ARRA monies and the updated goals for utilities to meet demand through energy efficiency. It also fails to consider the expanded use of wind in Texas. (**0052-9** [Reed, Cyrus])

Comment: Let me talk about the need for power. Let me first say that in Texas we don't require -- unlike some other states, we don't require generators of electricity to prove they need the plant in our deregulated market. That might be true for some other areas of Texas but within ERCOT we don't require them to do that. So this public assessment is very important because it may be our only public chance to look at do we need 3,200 megawatts into the future in Texas base-load from this plant. Let me say that as pointed out in the DEIS, the applicant used some numbers from ERCOT, who's our grid operator, from 2007, which is the data they had at the time. This application -- this DEIS uses 2009 data. And let me tell you, from two years, from 2007 to 2009 the guesstimate of what we need in Texas within ERCOT was reduced by 5,800 megawatts. Just two years ERCOT looking at data, their guesstimate went down by 5,800 megawatts. Just in two years. That shows how quickly the energy markets can change. And I think that's important. (**0063-18-1** [Reed, Cyrus])

Comment: [T]his year the Public Utility Commission raised the energy efficiency goals that companies like Encore, the wireless company, must meet into the future. The goal has been raised from 20 percent of growth and demand to 30 percent of growth and demand by 2013. That should reduce the need for power. That should reflect in your DEIS. I don't know if it changes your conclusion. But we'd like your DEIS to reflect that. (**0063-18-2** [Reed, Cyrus])

Comment: [I]n June of this year the State Energy Conservation Office said, All jurisdictions in Texas by the end of 2011 must update their building codes for new construction. They must adopt what's called -- this gets technical. But the 2009 IETC codes for all construction and for single-family homes in 2009 international residential codes energy chapter. Many cities already have those codes. But many places do not. That should reduce slightly the demand in Texas from new buildings, new homes and new commercial buildings. That should be reflected that we're going to have those changes within Texas. (**0063-18-3** [Reed, Cyrus])

Comment: Another fact, whether you agree with it or not, there were about -- there are about $800 million being spent from the Stimulus Funds, specifically on weatherization, efficiency of public buildings, onsite renewable power. We feel like the reduction demand should be reflected from those programs. That's a lot of money to spend between 2009 and 2012. Whether you think it was a good idea or a bad idea it will reduce overall energy needs. (**0063-18-4** [Reed, Cyrus])

Comment: AP, Encore have all started solar -- small solar rebate programs that again, should reduce demand slightly in these areas. So I'm saying demand is not going to be as high as you say it will be. (**0063-18-5** [Reed, Cyrus])

Comment: The other thing we seriously object to is in this analysis you used a study of ERCOT that suggested for reliability we should use wind capacity at 8.7 percent. So the capacity of the wind at peak times. If we look at the reality of what's actually happened on the grid in these years, even at peak times when capacity is much greater and overall, obviously it's much greater. (**0063-18-6** [Reed, Cyrus])

Comment: So I'm here to represent them and say 25 percent rate increase is what we last experienced. If you look at the economic environmental impact it may be great news for the people of Somervell County. But it is bad news for everybody else, many of whom are captive in a system that is not truly a competitive electric system. In the deregulation process we changed a fundamental rule. We had what was called CWIP, Construction Work in Progress. And I do not believe the change in the political environment in Texas that radically favors the industry over the consumer since the last project was started was even taken into consideration. So I feel like a lot of the economic analysis if fundamentally flawed. (**0063-5-2** [Burnam, Lon])

Comment: While we have a variety of concerns about the proposed expansion of the plant and the draft environmental impact study, we are most concerned about the actual need for the power itself and alternatives --whether 3200 MWs of power will be needed by the time the plant would be built (**0066-1** [Reed, Cyrus])

Comment: The analysis also fails to take into account an expected rule change presented as a strawman by the PUC earlier this year to implement a provision of Texas law which would require some 500 MWs of renewable energy other than wind to be developed by 2015. While it is still too early to predict whether this rulemaking will go forward -PUC has indicated it could propose a rule later this year or in early 2011, the final EIS should at least analyze the impact of this change in the ERCOT market. (**0066-12** [Reed, Cyrus])

Comment: [W]e now have three announced utility-scale solar plants announced in Texas, including the Austin Energy Webberville project and two announced plants being pursued by CPS Energy. While these projects are relatively small -30 or 14 MWs as opposed to 3,200 MWs -they point to the potential to replace a large project with several smaller-scale flexible projects throughout Texas. As mentioned, both Austin Energy and CPS Energy have made long-term commitments to obtain hundreds of Megawatts of electricity from solar over the next 10 years. (**0066-13** [Reed, Cyrus])

Comment: In addition to the utility-scale announcements, Texas has begun to install onsite photovoltaic solar production. Thus, while still a tiny part of the market -perhaps 5 to 10 MW s currently -a series of announcements in San Antonio, Austin and especially the Oncor Service territory suggest that onsite solar will lead to further reduction in demand for power from the proposed plant. Thus, earlier this year, SolarCily, a California company, announced a partnership in the Oncor Service Territory. Under this partnership, SolarCity will build solar

installations on homes in return for the ONCOR solar rebate and then charge homes only $35 per month. (**0066-14** [Reed, Cyrus])

Comment: We believe that the demand analysis contained in the DEIS seriously underestimates the reduction in demands and additional resources that will be arriving from energy efficiency, demand response, advanced meters, onsite solar and large-scale renewables resources like wind and solar. In fact, we believe the need for a large 3200 MW baseload plant for hire is questionable at best. (**0066-3** [Reed, Cyrus])

Comment: [there is missing text here in the original comment] it should reduce energy use from new buildings by 10 to 15% according to the independent analysis done in September of 2009 by the Energy Systems Laboratory. Only in the last year, Austin, El Paso, College Station and Laredo among others have adopted the 2009 IEec as their base code, in some cases with local amendments that make the codes stricter for new construction. This week, delegates at the International Code Council will he approving a new version of the IECC codes -the 2012 Codes -and it should be expected that codes will continue to get more stringent in terms of energy use in new buildings. (**0066-5** [Reed, Cyrus])

Comment: [I]n August of 2010, the Public Utility Commission approved new rules for the Energy Efficiency Program, which currently requires the seven Transmission and Distribution Companies to meet at least 20 percent of the average growth in peak demand -as well as a corresponding energy goal-in 2010. The new rules will raise that goal to 25% in 2012 and 30% in 2013 and thereafter. Again, while not a huge factor, the approved rules should drive more money into reducing both peak demand and overall energy use. An independent analysis attached suggests that these rule changes will not have major impacts on the programs through 2014, but afterwards, as energy demand grows, they could become major drivers to reduce demand in Texas. The NRC should consider the impact of this rulemaking on overall demand in Texas. (**0066-6** [Reed, Cyrus])

Comment: The third major change in Texas involves the spending of nearly $800 million in weatherization, energy efficiency and conservation block grants and programs run by the State Energy Conservation Office as part of funding provided by the American Recovery and Renewal Act (ARRA). (**0066-7** [Reed, Cyrus])

Comment: In addition to these changes in the competitive energy market, several other factors within municipalities in Texas may also impact overall energy demand, meaning the need for such power plants as the proposed Comanche Peak units will shrink. Thus, there is no discussion about CPS Energy laudatory plan to reduce peak demand by 771 MWs by 2020, there is no attempt to assess how this would impact overall demand or the need for baseload power in the state as a whole. Thus, CPS Energy itself recently discovered that the combination of reduced demand, energy efficiency goals and increasing investments in renewable energy had made its initial plan to buy 1,200 MWs of power from nuclear plants unnecessary (**0066-9** [Reed, Cyrus])

Comment: Luminant has not proven there is a need for this new energy.

- The application ignores the effect energy efficiency and renewable energy will have in the future. Are recent state-mandated energy efficiency and renewable energy goals be factored into the energy needs assessment?
- Studies have shown that Dallas/Ft. Worth could meet 101% of projected growth indemand using efficiency and renewable energy.
- State energy use projections should be revisited in light of the economic downturn. (**0071-39** [Hadden, Karen])

Response: *These comments challenge the review team's need for power determination or its methodology and assumptions in a number of categories that pertain to updating the data in the chapter, taking into account various conservation initiatives, and taking into account the potential growth of wind power. Chapter 8 of the NRC's NUREG-1555, Environmental Standard Review Plan (ESRP) (NRC 2000) guided the Staff's review and analysis of the need for power from the proposed nuclear power plant. This guidance states that when forecasts and analyses, such as those by ERCOT, can be determined to be systematic, comprehensive, subject to confirmation, and responsive to forecasting uncertainty then the analysis is acceptable and need not be subject to further review by NRC. The NRC Staff determined that the ERCOT data, forecasts and analyses meet these criteria. Consequently, the review team relied upon the decision made by the Electric Reliability Council of Texas (ERCOT). Implicit in the NUREG 1555 methodology is the acceptance of all underlying assumptions made by ERCOT, including all assumptions about future technology mixes, capacities, and implementation levels for voluntary programs such as Energy Efficiency (EE) and Demand Side Management (DSM). Moreover, NRC does not supplant or replace the determination of the States, which have traditionally been responsible for assessing the need for power generating facilities, their economic feasibility and for regulating rates and services. Finally, as ERCOT revises its analyses and the underlying assumptions that drive them, the NRC Staff assesses whether or not such changes need to be incorporated into the EIS Chapter 8 need for power analysis. As a result of updates to the ERCOT forecasts, data, and analyses, substantial revisions were made to the need for power analysis to incorporate the latest ERCOT data. In response to comments, the NRC Review team also added three scenarios to the chapter. These scenarios are not intended to replace the ERCOT forecasts, data and analyses, but rather to illustrate the degree of robustness of the ERCOT information. The scenarios considered an increase in energy savings due to conservation, a doubling of wind generation capacity, and the retirement of generating capacity greater than fifty years of age. As would be expected, additional wind capacity and additional conservation decreased the need for power and earlier retirements increased the need for power, but none affected Staff's conclusons. No changes to the chapter's conclusions resulted from the scenario analysis.*

E.2.20 Comments Concerning Alternatives - Energy

Comment: We must move beyond the cheap energy solutions - BP nearly destroyed the Gulf and it's way of life with shortcuts. (**0001-6** [Boyd, John])

Comment: Please, please, don't go this direction to meet our needs for power. Invest in energy that is truly clean and renewable, and does not pose the long list of problems that nuclear does. -- The best way to have an impact on the environment is to have as little impact as possible. (**0031-1** [Eatenson, Linda])

Comment: It is not a solution to energy independence. (**0063-30-8** [Hadden, Karen])

Comment: [F]airly compare this with all alternative sources of power (**0063-32-10** [Rooke, Molly])

Comment: [T]he Lone Star Chapter believes given its high cost, inflexibility and lengthy implementation schedule, Texas would be better served by developing smaller, more flexible, cheaper alternatives like on and off-site solar, additional natural gas plants, energy efficiency, coastal wind, energy storage and geothermal resources. (**0066-15** [Reed, Cyrus])

Response: *The NRC and the Corps do not establish energy policy for the Federal government nor do they promote any particular form of electrical energy generation, including nuclear power. However, the review team examined alternative energy sources that could provide the baseload electrical energy supply as part of its responsibilities to evaluate environmental*

impacts of proposed actions. The review team's evaluation of renewable alternative energy sources, including wind, solar and other alternatives, in Section 9.2 of the EIS describes potential impacts from these sources in comparison with the proposed action. The review team concluded that individual renewable technologies did not represent reasonable alternatives to a large baseload power plant located at the Comanche peak site. No change was made to the EIS as a result of these comments.

Comment: The DEIS correctly assumes that building new nuclear units is not the only option available to Luminant. However, the DEIS concludes that it is reasonable for Luminant to choice to pursue a 3200 MW nuclear facility, rather than a combination of available resources. Thus, the DEIS notes that a recent study in Texas concluded that ERCOT could incorporate between 18,000 and 24,000 MWs of wind from West Texas once transmission lines are complete, but discounts the potential for these added wind resources to be able to replace the resources for a new nuclear plant. (**0052-10** [Reed, Cyrus])

Comment: Let me just say on the alternatives chapter I appreciate it's a big improvement over what Luminant had submitted, in terms of the alternatives. But again, we feel like it discounts the capacity of wind. We're building -- and some people don't like these transmission lines -- but we're going to build out to west Texas. We're talking about eight to 10,000 megawatts of additional power from west Texas from wind that Luminant has invested in and certainly could invest in some more. We think that meets -- we'll be providing some data on why we think the numbers will be bigger than you say they are in the DEIS. (**0063-18-9** [Reed, Cyrus])

Comment: Wind power is Texas' most impressive victory that we've had in years. We have had now 25 percent of the energy up and turning, the energy that's on the ERCOT grid, coming from wind. Twenty-five percent was an all time high. It's a major success story. We're learning how to do it. We're learning how to deal with the intermittent sea of wind. We're learning more about energy storage. We're learning more about solar. And we're learning how to bring those costs down. And Luminant admits that these technologies are viable. In fact, the Atomic Safety and Licensing Board panel has accepted a contention submitted by our organization and others and a legal challenge that is about this very issue. Can't we use other ways to generate that electricity? And we say absolutely yes. (**0063-30-11** [Hadden, Karen])

Comment: While the previous sections discussed why the need for the new nuclear plants are overstated in the EIS, we would also note that even if additional power is needed, Luminant has other options besides the nuclear plant to meet those needs and compete for share in the market. Indeed, the EIS admits as much, and presents several alternative scenarios for Luminant to build out 3200 MWs of power.

One such scenario -replacing the nuke investments with wind power -is discounted by the EIS even though ERCOT is incorporating at least 18,000 MWs of power from West Texas, even as wind from East Texas along the coast is being developed as well. Thus, the analysis seems to discount the potential for a combination of east Texas and West Texas wind to do away with the need for the nuclear power plant even as other utilities like Austin Energy and CPS Energy are making large-scale investments in wind power even as they decide not to make major investments in nuclear energy. (**0066-10** [Reed, Cyrus])

Response: *These comments are related to the level of analysis the EIS provided with respect to wind energy and a combination of energies including wind as a component as an alternative to building and operating Comanche Peak Units 3 and 4. Alternatives requiring new generation capacity are described in Section 9.2 of the EIS. The EIS includes a thorough and accurate analysis of the energy sources that can meet the purpose and need for the project; a more detailed analysis of the available wind resources in the ERCOT region was considered*

recognizing that such resources are currently being developed. However, while there are significant wind resource potential in the region, ERCOT still acknowledges that significant new baseload energy sources are needed to meet anticipated future power demands and reserve margins. In ERCOT's high wind generation case, this baseload power is provided by 2724 MW of new baseload nuclear power and more than 3000 MW of new gas turbines. These insights were considered in defining the reasonable set of energy alternatives discussed in Section 9.2. No changes were made to the EIS as a result of these comments.

Comment: In addition, while recognizing the vast solar potential throughout Texas, again the DEIS concludes that solar technology can not be part of an alternative approach because 3200 MWs are simply not available and the amount of land needed to provide an equivalent amount of land would be too large. It should be noted that the analysis was based on some recent proposed plants in California for solar, but did not account for more recent developments in solar PV utility-scale plants. (**0052-11** [Reed, Cyrus])

Comment: In addition, the analysis fails to consider that solar could be an available option for Luminant, since the land needed to generate a similar amount of power would be vast. However, again the analysis is based on available California plants and does not take into account more recent developments in both concentrated solar plants and PV plants that are currently being developed that are much more efficient in terms of power generated per acre of land. (**0066-11** [Reed, Cyrus])

Response: *The comments are related to the level of analysis the EIS provided with respect to solar energy as an individual energy alternative to building and operating Comanche Peak Units 3 and 4. The DEIS includes an analysis of the available solar resources in the ERCOT region. ERCOT states that the region has a solar generation capacity of up to 4600 MW(e). However, the Solar Energy Industries Association (SEIA) currently list only 16 MW of utility-scale concentrating solar plants (CSP) and photovoltaic (PV) plants under construction in Texas and less than 450 MW(e) under development (SEIA 2010) and development of these resources would have a significant impact on land use. The review team does not believe that even full development of the region's solar generation capacity would provide a reasonable alternative to baseload power provided by Comanche Peak Units 3 and 4. Nevertheless, the review team does consider that solar energy, in combination with other energy sources is a reasonable alternative; that analysis is provided in Section 9.2.4. The review team concluded that a combination of alternatives including solar resources would not be environmentally preferable to the proposed new nuclear units. The EIS did not changes as a result of these comments.*

Comment: While the DEIS suggests several scenarios where a combination of wind, energy storage, solar and natural gas could replace the need for a new 3200 MW new nuclear plant, it sees no benefit in pursuing this strategy compared with the nuclear option. But such a combination approach would be more beneficial to Texas consumers and the environment. (**0052-12** [Reed, Cyrus])

Comment: Recent analysis find that while the projected cost of nuclear power continues to climb, the cost of wind and solar continues to fall, while natural gas prices continue to remain low. Thus, by pursuing a flexible combination of other options, Luminant would not be locked into an inflexible, costly solution to Texas's power needs, and could also better operate a fleet of resources to respond to both average load and peak demand. (**0052-16** [Reed, Cyrus])

Comment: And it is the most expensive way to generate electricity. Who says so? The Federal Energy Regulatory Commission among others. Comanche Peak 1 and 2 were the most expensive nuclear reactors built in the country. And the reactor design now chosen to be built is

one that has never been built anywhere in the world. There are similar ones but this design has never been built. (**0063-30-7** [Hadden, Karen])

Comment: Texas is more likely to need flexible, smaller plants to meet energy needs at peak times, as well as a combination of energy storage and renewable energy and existing plants - such as those provided by natural gas --to meet baseload. Interestingly, the applicant, Luminant, is indeed involved in and exploring options like energy storage and large-scale renewables, while the other companies owned by Energy Future Holdings, Oncor and TXU Energy -while not generation companies -have been actively involved in designing and implementing onsite solar and energy efficiency programs for their customers. (**0066-4** [Reed, Cyrus])

Comment: we also question whether the cost of replacement power at peak during hot summer months, if curtailed, would be economical. We would argue that consideration of other alternatives such as energy efficiency, renewable energy with storage, or natural gas might be less risky and less costly than building a nuclear power plant that is too hot to cool. (**0067-10** [Geiger, Carol])

Comment: We think you discount with the capability of renewable storage. We appreciate that you looked to the combination approach. And our argument would be a combination approach, a natural -- if you really did need that amount of power, a natural gas plant combined with solar and wind and storage would make more sense. Why? Because it's more flexible. You're not putting all of your chips, all of your money into one technology, into one huge centralized plant. You have more flexibility. If we really need 3,200 megawatts of power I'm the first to say let's do it. But we don't really know we need to invest 22 billion to make -- to do that today, that we might need that power in 15 years from now. So it seems like having a combination approach chunk by chunk, little by little, being flexible would be better environmentally, it wouldn't have the water impacts, it wouldn't have the radioactive waste impacts. And that's the approach we would prefer. (**0063-18-10** [Reed, Cyrus])

Comment: In addition, by combining wind, solar and natural gas, Luminant could run the natural gas units when the sun wasn't shining or the wind wasn't blowing or when natural gas prices were low. (**0052-14** [Reed, Cyrus])

Comment: [While we have a variety of concerns about the proposed expansion of the plant and the draft environmental impact study, we are most concerned about] the lack of analysis to alternatives to the proposed plant itself (**0066-2** [Reed, Cyrus])

Comment: rather than having to sink major resources into building two large, centralized facilities that might not even be needed and have no flexibility, Luminant could build up resources over time as they are needed. (**0052-13** [Reed, Cyrus])

Comment: The failure of Luminant to analyze cleaner, cheaper and safer energy alternatives in their license application is a glaring omission considering that Luminant and Shell are exploring compressed air energy storage. Texas has excess energy capacity, with a 21% reserve margin, where only a 12.5% reserve margin is required. Texas leads the nation in wind generation and has met our state goals for 2025 already. Solar costs are plummeting. Energy storage and cheap gas can be used to back up renewable solar and wind power. By contrast, the proposed reactors are a hazard to our health, safety and our pocketbooks. (**0071-11** [Hadden, Karen])

Comment: [Nuclear energy/power] It's not a good alternative to coal. (**0063-30-3** [Hadden, Karen])

Response: *As regulatory agencies, the NRC and the Corps do not establish or comment on public or private policy regarding electric power supply alternatives, nor do they promote the use of nuclear power as a preferred energy alternative. Decisions regarding the need for new generation capacity, the timing for additional electrical energy supplies and which of the electrical generation sources to deploy are made by the applicant through least-cost planning and integrated resource plans. Additional regulatory adjudication is provided by bodies such as State energy-planning agencies and public utility commissions. The review team considered alternatives to the proposed Comanche Peak Units 3 and 4 individually and in combination, that could be reasonably expected to meet the need for power (including baseload power needs) of the proposed project, individually and in combination, in order to meet their obligations under NEPA. In addition, the review team considered the No-Action alternative under which the proposed project would not be built.*

As described more fully in Section 9.2 of this EIS, the alternatives energy sources that are considered are not established arbitrarily. Specific criteria are considered in determining the reasonable set of new electrical generation alternatives. The alternatives that are to be considered must be technically reasonable and commercially viable. The energy technology should be developed, proven, and available in the region; pilot, demonstration, prototype, and research projects do not meet these criteria. The energy source should provide power generation equivalent to the power level output of the Applicant's proposed project baseload power and capacity factor. The power should be available within the time frame needed for the proposed project. Finally, There should be no unusual environmental impacts or exceptional costs associated with the energy source that would make it impractical.

Chapter 9 of the EIS includes individual electrical generation supply alternatives (including renewable energy such as wind and solar, with and without energy storage strategies), and a reasonable combination of alternatives that can meet the purpose and need. For the reasonable alternatives, the potential environmental impacts of each alternative are assessed against those of the proposed Units 3 and 4 for key resource areas. If either one of the alternatives or the combination of alternatives was environmentally preferable to the proposed action, then institutional factors, including economic impacts, would have been considered. While the review team identified reasonable alternatives to the proposed project, none of these alternatives was found to be environmentally preferable to the proposed project. No changes were made to the EIS as a result of these comments.

Comment: the use of solar and wind facilities would, like nuclear, involve limited emissions associated with the manufacture of those products, but unlike nuclear, would not involve such large water use, nor the production of highly toxic and dangerous radioactive waste. (**0052-15** [Reed, Cyrus])

Comment: And I want to speak against wind-powered sources of electric energy because they will stop the flow of wind across the surface of the earth, stopping the distribution of water, which will result in climate change, as you might well figure out. (**0063-26-1** [Beard, Jim])

Comment: We don't have to worry about making -- we don't have to worry about our carbon footprint. The energy from the sun stored by the plant life on the earth is in the form of carbon storage. It's responsible for all the food that everything on the earth eats comes from plants. There is not an animal on the earth that can absorb energy from the sun and make food. All they do is consume food. So we need carbon dioxide to grow plants to have food for everything that's alive on the earth. Carbon dioxide is the food that all plants eat and they exhale the oxygen that we breathe to make us run. So this carbon footprint is an obstacle and it's totally false in terms of science as being a pollutant. So we don't want to throw away our gas power plants to make electricity. We don't want to throw away our coal power plants to make

electricity. We want to make those plants knuckle down and reduce the pollution they put out. And carbon dioxide is not one. They put out water and they put out carbon dioxide inert fluid gases. Everything else can be taken out scientifically so it's not a pollutant. So don't throw away gas plants, don't throw away coal plants, don't throw away nuclear plants. Make science make it cleaner. And don't believe anybody that says that carbon dioxide is a polluting gas and you need to worry about your carbon footprint. Because if you do away with the food of the plants on the earth then all you have left to store energy from the sun is water in the ocean. So oil, gas, all those are carbon stored energy sources from our sun. (**0063-26-3** [Beard, Jim])

Comment: Are we making an investment in the wrong kind of technology to come up with a plant that we know is going to dump hundreds of millions of therms of increased temperature into a lake that already is 95 degrees in the summertime, into a climate that we know is going to warm up, into a climate that we know we're going to have less water coming through that system. Now, for us as a society that might have to depend on this plant to keep our lights on the hottest days of the summer it's a darned good question. For those of you who live on this land and are the people who have to fish here, the people who are depending on this for water supply and for recreation it's an incredibly important question for you to answer. And we don't think that the DEIS as currently written fairly and adequately analyzes this question. And it should. (**0063-16-5** [Smith, Tom])

Response: *Alternative actions such as the No-Action alternative (energy efficiency and demand-side management), new generation alternatives (including natural gas and coal), purchased electrical power, alternative technologies (including renewable energy sources such as wind and solar), and the combination of alternatives are considered in Chapter 9 of the EIS. These considerations include evaluations of the impacts to local water resource and waste generation. All reasonable baseload power options summarized in Table 9-5 were considered to have MODERATE impacts on waste resources. Therefore there is no preferred option based on this category alone. All options, other than the coal option, were determined to have SMALL waste management impacts. Therefore there is no preferred option based on this category alone. The bases for consideration of Units 3 and 4 as the preferred option involve the full suite of environmental resource areas, including air resources and greenhouse gases. No changes were made to the EIS as a result of these comments.*

E.2.21 Comments Concerning Alternatives - System Design

Comment: I also believe that there are viable alternatives to the use of Lake Granbury water for the Comanche Peak Expansion Project, and I strongly encourage all concerned to pursue those alternatives. (**0003-3** [Apple, Thomas])

Comment: [I would plead with] Luminant to seek other water alternatives. (**0005-3** [Clark, Becky] [Frick, Terry] [Kelly-Elliott, Cathy] [Leach, Dan] [Rhodes, Bill] [Wayson, Jacqueline and Thomas] [Wayson, Thomas])

Comment: We want to voice our concern that 20 billion gal. of water yearly from Lake Granbury will be used to cool proposed towers 3 and 4 at the Comanche Peak in Glenrose. Lake Granbury as well as the entire Brazos River Basin will experience great stress by this action of BRA. Alternative methods need to be found to save Lake Granbury (**0012-1** [Rollins, W.H.])

Comment: I agree that the expansion should occur but believe that the required cooling water should come from another source. Lake Granbury already provides its fair share! (**0017-2** [Fitzgerald, C.C. (Fitz)])

Comment: We encourage you to require the BRA to look elsewhere for the water needed for the nuclear power plant addition. (**0024-3** [Quirk, Jim and Sharon])

Comment: Please do what you can to save our beloved lake and make them find another solution for finding a source of water for coolant. (**0029-3** [Petry, Susan])

Comment: The water for cooling the additional reactors should come from elsewhere! (**0034-4** [Fitzgerald, C.C. (Fitz)])

Comment: [Luminant should] Up your budget to include a new lake. (**0037-7** [Moore, Jim])

Comment: Lake Granbury is too important to our area to not look for other sources for cooling water. (**0038-6** [Lowrance, Cleo])

Comment: I don't believe trading a precious resource like the Brazos River and Lake Granbury is the best solution. There are many large and small ranchers, farmers, and other landowners around Comanche Peak that would probably love to have small reservoir lakes built on their property. Some of the water needed for the reactors could come from these lakes giving the landowners a nice lake and some additional income from selling their own water. Being located closer to the reactors should be a plus by requiring shorter pipelines. A network of small lakes would still not supply all their needs but it would surely reduce the need from Lake Granbury. Better large rainwater collection systems and storage and of course wells could also help. (**0038-9** [Lowrance, Cleo])

Comment: Please, the communities that depend on the water levels of Lake Granbury cannot survive the proposed nuclear reactors to be added to the Glen Rose plant. Please do not allow these reactors to be added unless an alternate source for their required cooling is obtained. (**0041-1** [Martin, Joe])

Comment: The Final EIS should not recommend approval unless alternate water sources can be identified and made available. (**0043-2** [Veale, James])

Comment: Because of the proposed units 3 and 4 will be a long time energy source and we feel it should be feasible to build a pipeline to from Whitney to supply water for cooling the reactor coils. The water could be dispersed back into Lake Granbury then sent back down the Brazos. Lake Whitney is a Army Corps of Engineers lake and has no water front properties that would be affecting property values that will be costly for Hood County if the lake levels drop significantly, as we feel will be the case, property taxes will drop along with the lake levels and we need those funds to operate our county effectively. Please understand we need the units to be built for our economy but we also feel that this could be a "win win" situation for all involved. We ask you to PLEASE take this idea into consideration for the sake of our livelyhoods and our lake. (**0047-1** [Fowler, John])

Comment: [LGWOA believes that other factors of consideration that have not been fully studied include] availability of other water resources such as Lake Whitney. (**0051-10** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: the Applicant has not developed a broad enough approach to the use of the Brazos River system as its sole source of the Makeup Water for the Nuclear Plant. Lake Whitney, with almost 10 times the capacity of Lake Granbury, should be considered as a source through a connecting pipeline to capture and recirculate the discharge from Units 3 & 4 in order to decrease the impact on our area. Shoreline development and salinity in Lake Whitney are not nearly as sensitive to fluctuations in lake level as they are in Lake Granbury and Possum Kingdom Lake. (**0055-5** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: I do not oppose the expansion per se, but I feel that the additional cooling water required should come from somewhere else. We already provide our fair share. (**0062-7-2** [Williamson, Eileen])

Comment: That the applicant has not developed a broad enough approach to the use of the Brazos River system as its sole source of the makeup water for the nuclear plant. Lake Whitney, with almost ten times the capacity of Lake Granbury should be considered as a source through a connecting pipeline to capture and recirculate the discharge from units 3 and 4 in order to decrease the impact to our area. Shoreline development and salinity in Lake Whitney are not nearly as sensitive to fluctuation in lake level as they are in Lake Granbury and Possum Kingdom Lake. (**0063-36-5** [Hackett, Ken])

Response: *These comments suggest or propose alternate sources of cooling water for the proposed new nuclear units. Alternative surface water supplies are addressed in Section 9.4.2.3 of this EIS. Groundwater is not a viable option. The use of either Possum Kingdom Lake (located approximately 50 miles from the Comanche Peak site) or Lake Whitney (approximately 25 miles away) would involve the withdrawal of water from the same Brazos River that feeds Lake Granbury; consequently, there does not appear to be an environmental preference with water supplied from either Possum Kingdom Lake or Lake Whitney. Other nearby surface water bodies would not be capable of supplying the quantities of water required. Because these comments offer no new or significant information about environmental impacts, they did not result in any changes to the EIS.*

Comment: It makes absolutely no sense to purposely do this to the Brazos River Basin. Luminant has many alternative ways to cool those towers. If they are allowed to do this, it will only be a few years until they will have to pursue other alternatives anyway, but by that time the economy of Hood County and Palo Pinto County (and several more down the river as well) will be devastated. (**0011-4** [Williamson, William F. (Frank) and Eileen G.])

Comment: Believe that alternate cooling methods are available to the NRC. Please direct Luminant to per sue alternate sources of cooling other than using Brazos water. (**0015-3** [Edinboro, Sr., Christopher])

Comment: We also know there are alternatives to the use of Lake Granbury, but they would not yield the revenue the BRA is anticipating. (**0019-3** [McHugh, Judy])

Comment: Other alternatives [instead of water taken from Lake Granbury] must be used. (**0023-4** [Hinterleiter, David])

Comment: I just want to let you know that as a resident of Lake Granbury, I am not against the Comanche Peak expansion project, just the taking of Lake Granbury water to cool it. There are alternate methods that can and should be looked into. (**0035-2** [Sweeney, Lorrie])

Comment: Please help us put a stop to this and get them to use other options that will keep them from reducing the lake levels. (**0045-4** [Jacobson, Jake])

Comment: I understand that you may be presented with some alternative solutions that will further reduce the impact of the proposed to the lake. (**0057-4** [Keffer, James L.])

Comment: So in conclusion, we are not against the Comanche Peak expansion. What we would like to do is to take this back to the drawing board, take the water lines out of Lake Granbury, out of the Brazos River basin, and withdraw it from Lake Granbury. For 20 years we have supported the community -- Granbury, Hood County has supported Comanche Peak. Now it's Luminant's time to support the integrity of Lake Granbury and the Brazos River basin. You must not take our water. (**0062-12-5** [Williams, Joe])

Comment: We need to think more about the future of our children in terms of science and not in terms of water. The water can be solved. They could solve it. Luminant could solve it. It just costs more. Don't worry about loss of water because won't have a boat to fish in. We need water to grow plants to feed everything that's alive on this earth. (**0063-26-4** [Beard, Jim])

Comment: Friends of the Brazos does not oppose the addition of the two new reactors at Comanche Peak. We do oppose the current plan to withdraw 75,000 acre- feet of Brazos water per year from Lake Granbury. It's our understanding that roughly 75 percent of this water will be lost to evaporation. It's also our understanding that a closed-cycle recirculating cooling system certainly is one good alternative that would result in the withdrawal of significantly less water. There may be other -- well be other, more cost-effective ways to reduce this loss of water. Whereas, alternative cooling methods may increase the cost, further withdrawals of the Brazos water, especially in drought areas would have devastating effects on the ecological health of the Brazos downstream from Lake Granbury. (**0063-34-1** [Vaughn, Jane])

Comment: I understand that you will be presented -- you may be presented with some alternative solutions that will further reduce the impact of the proposed reactors to the lake. (**0063-4-4** [Regas, Tori])

Response: *These comments suggest or propose alternative methods for cooling the proposed new reactor units. Alternative heat dissipation systems are addressed in Section 9.4.1 of this EIS. None of the systems and/or designs that were evaluated were found to be environmentally preferable to the system design that is proposed for use at the Comanche Peak site. Because these comments did not offer any new or significant information about environmental impacts, they did not result in any changes to the EIS.*

Comment: PUMP THE HOT WATER BACK TO LAKE GRANBURY, OUGHT TO BE CHEAP, ITS YOUR ELECTRICITY (**0044-1** [Lusty, C.P.])

Response: *It is not evident what issue or concern is associated with the "hot water" mentioned by the commenter. As described in Section 3.2.2.2 of this EIS, the proposed cooling towers and blowdown treatment facility would operate under a permit from the State of Texas such that the water returned to Lake Granbury would not exceed a temperature of 93 degrees Fahrenheit. The economics of moving water to and from Lake Granbury are not of concern in the assessments in this EIS. No changes were made to the EIS as a result of this comment.*

Comment: please consider that there must be a plan to engineer the expansion of the plant so that we return at least 75% of the water back into Lake Granbury in order for our city to survive and continue to be a wonderful place to live and visit. (**0004-2** [Drager, Judy])

Response: *The data in Table 3-2 in this EIS indicate that approximately 40% of the water withdrawn from Lake Granbury during power operation of the proposed new units would be returned to the lake. This is possible due to the design of the wet mechanical draft cooling towers that are proposed for the two new nuclear units. One of the consequences of discharging larger quantities of water (such as the 75% mentioned in the comment), and thus reducing the evaporative cooling, would be to increase the temperature of the water being discharged. As stated in Section 3.2.2.1 in this EIS, the State of Texas specifies a limit of 93 degrees Fahrenheit for the discharge limit into Lake Granbury. No changes were made to the EIS as a result of this comment.*

Comment: Reliant and their engineering partners can find better ways to manage their cooling needs without disrupting and or destroying our way of life. I am almost sure none of us are blessed with an engineering back ground however the available information on alternative cooling should be looked at more closely. When you know how other countries handle it you

can see where there is a will there is a way at relatively low cost. Please make yourselves aware of these alternatives and start asking questions to motivate Luminant to alter their design approach. It is not too late! See below from World Nuclear Association http://www.world-nuclear.org/info/cooling_power_plants_inf121.html : 2. Cooling to condense the steam and discharge surplus heat. The second function for water in such a power plant is to cool the system so as to condense the low-pressure steam and recycle it. As the steam in the internal circuit condenses back to water, the surplus (waste) heat which is removed from it needs to be discharged by transfer to the air or to a body of water. This is a major consideration in siting power plants, and in the UK siting study in 2009 all recommendations were for sites within 2 km of abundant water - sea or estuary. This cooling function to condense the steam may be done in one of three ways: (1) Direct or "once-through" cooling. If the power plant is next to the sea, a big river, or large inland water body it may be done simply by running a large amount of water through the condensers in a single pass and discharging it back into the sea, lake or river a few degrees warmer and without much loss from the amount withdrawn[5]. That is the simplest method. The water may be salt or fresh. Some small amount of evaporation will occur off site due to the water being a few degrees warmer. (2) Recirculating or indirect cooling. If the power plant does not have access to abundant water, cooling may be done by passing the steam through the condenser and then using a cooling tower, where an up draught of air through water droplets cools the water. Sometimes an on-site pond or canal may be sufficient for cooling the water. Normally the cooling is chiefly through evaporation, with simple heat transfer to the air being of less significance. The cooling tower evaporates up to 5% of the flow and the cooled water is then returned to the power plant's condenser. The 3 to 5% or so is effectively consumed, and must be continually replaced. This is the main type of recirculating or indirect cooling. (3) Dry cooling. A few power plants are cooled simply by air, without relying on the physics of evaporation. This may involve cooling towers with a closed circuit, or high forced draft air flow though a finned assembly like a car radiator (**0036-3** [Murphy, Bill])

Response: *Alternative heat dissipation systems are addressed in Section 9.4.1 of this EIS, which includes consideration of each of the three methods described in the comment. None of the systems and/or designs that were evaluated were found to be environmentally preferable to the system design that is proposed for use at the Comanche Peak site. Because this comment did not offer any new or significant information about environmental impacts, it did not result in any changes to the EIS.*

Comment: There is a potential solution that you may have to look at, though, if you decide to go through with this because you are going to bring down water. It is going to have an economic impact. And that is, how do you get other water in without taking over these existing natural systems.

We know we don't have enough groundwater. We know the aquifers are not being replenished enough. You're not going to have enough surface water. Building another reservoir is not a feasible option. One of the things you might want to consider is looking into desalination systems. Now, we all know that the current desalination technologies that are on the marketplace are prohibitively expensive and they do have environmental impacts on their own. But there are new technologies that are emerging. And my company happens to be one on the forefront where they're bringing out solar desalination technologies. In other words, this is something where we can take salt water, take the salt out and make it useable. And you can build plants and you can pipe water in. And what we're talking about is a potential long-term solution, not only for this situation but for other situations in Texas and throughout the United States. (**0063-13-4** [Yancey, Darren])

Response: *The commenter advocates desalination systems to provide water for cooling; however, the source of water near the Comanche Peak Nuclear Power Plant site requiring desalination is not evident. Alternative sources of cooling water are addressed in Section 9.4.2.3 of this EIS. While desalination systems are a proven technology, the water available from Lake Granbury would not require any such desalination before it could be used for cooling purposes. No other viable source of cooling water has been identified that would require desalination. Because this comment did not offer any new or significant information about environmental impacts, it did not result in any changes to the EIS.*

Comment: An alternate disposal method for the accumulated salts [from the BDTF] could be underground injection which would require a Class I, non-hazardous Underground Injection Control (VIC) permitted well. EPA asks that NRC's consideration of an alternative treatment method of treatment be discussed in the FEIS. (**0070-6** [Smith, Rhonda])

Response: *The analyses in this EIS are based on the BDTF design put forth by the Applicant. The NRC has no approval authority over the Applicant's BDTF, for which a discharge permit will be required from the State of Texas. Nevertheless, the review team previously asked the Applicant about the option of deep-well injection for disposition of the salt wastes from the BDTF. In its response (see Luminant's RAI response letter dated March 5, 2010; Luminant Reference No. TXNB-10021; ML100710613), the Applicant stated that deep-well injection would not be a viable option due to the volume of waste being generated and the fact that pre-treatment of the blowdown would most likely be required to make it suitable for deep-well injection in order to avoid clogging of the well screens. In addition, suspended solids would likely need to be removed and softening may be required due to the potential for the high hardness or high TDS to form unwanted scale on the well screens that could interfere with discharge. No changes were made to the EIS as a result of this comment.*

E.2.22 Comments Concerning Alternatives - Sites

Comment: Please find another location for this progress in power production. (**0030-3** [Martin, Joe])

Response: *Luminant conducted an adequate site selection study and chose the proposed site at the Comanche Peak Nuclear Power Plant (CPNPP) for business reasons. Luminant and the NRC -- in its independent review, as documented in Chapter 9 of this EIS -- undertook a site-by-site comparison of alternative sites with the CPNPP site to determine if any of the alternative sites were environmentally preferable to the proposed site. The review process involved the two-part sequential test outlined in NUREG-1555 (NRC 2000). The NRC's review process used reconnaissance-level information to determine whether there were environmentally preferable sites among the alternative sites; however, none of the alternative sites proved to be environmentally preferable to the proposed CPNPP site. No change was made to the EIS as a result of the comment.*

Comment: An important aspect of the NRC environmental decision is whether there is an alternative site that would be “environmentally preferable or obviously superior to the proposed CPNPP site.” In Section 10.5, the NRC Staff concludes that no alternative site would meet either of these criteria. Perhaps, this conclusion would not hold if the staff gave consideration to the full impacts of a realistic BDTF design. The ultimate reason for the BDTF is the existing poor water quality of the Brazos River at Lake Granbury. A site with better existing water quality would not need a BDTF to meet water quality standards, and would not involve the BDTF impacts that are necessary at Comanche Peak. The staff should prepare an honest assessment of the impacts likely to result from operation of a realistic BDTF, followed by a reassessment of its conclusions about alternative sites. (**0069-7** [McCold, Lance])

Response: *The review team's conclusions in Section 10.5 considered that a BDTF would not be required for water treatment at any of the three alternative sites considered. Thus, the impacts of the BDTF at the Comanche Peak site were adequately factored into the comparison between and among alternative sites. All resource areas are considered in the final weighing and balancing of environmental impacts. With regard to that portion of the comment about "a realistic BDTF," the independent evaluation in this EIS included consideration of the BDTF design offered by the Applicant, which was in sufficient detail for consideration by the review team. This ultimate design would require permit approval from the state of Texas before authorized to operate. If the Applicant's design is revised or altered significantly, then further consideration of the environmental impacts may be necessary. No changes were made to the EIS as a result of this comment.*

E.2.23 Comments Concerning Benefit-Cost Balance

Comment: LGWOA believes that the short term gains such as temporary jobs and negligible tax revenues for Hood County will fall short of long term losses due to the impacts of low water levels for Lake Granbury and the surrounding community. (**0051-13** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: The undoubted short-and intermediate-term economic benefits to be derived from the employment, taxes and non-fossil fuel power generation associated with the development of nuclear generating plants need to be carefully weighed against the longer-term critical disadvantage of overtaxing our water resources. (**0055-9** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: I think that Chapter 4 of this environmental impact study it talks about the economic impact. I think we build the units, the economic impact will be very great for this area, and then I do believe it would still have a minimal impact as the -- I think the impact study shows small to moderate impact on the environment. (**0062-11-2** [Fuller, David])

Comment: The undoubted short-term and intermediate-term economic benefits to be derived from the employment, the taxes and non-fossil fuel power generation associated with the development of nuclear- generating plants needs to be carefully weighted against the longer-term critical disadvantage of overtaxing our water resources. (**0063-36-9** [Hackett, Ken])

Response: *These comments provide general opinions about the EIS but do not provide any specific errors or omissions that would require revising the EIS. The review team did not revise the EIS because of these comments.*

Comment: So I say to you, my neighbors in Granbury, there are a lot of questions that aren't being answered in this DEIS today. That's what we need to look at. What about the water? What about the health of your community and your children? Taxes and jobs can never replace that. (**0063-29-8** [Benning, Rita])

Response: *This comment suggests deficiencies in the EIS but does not identify specific errors or omissions that would lead to revisions of the EIS. Construction-related water issues can be found in Sections 4.2 (Water-Related Impacts), 4.3.2 (Aquatic Ecology and Wetlands Impacts Related to Construction and Preconstruction), 4.4.4.4 (Public Services—Water and Wastewater subsection), and 4.5.1.2 (Water Pathway—for Environmental Justice considerations). Operations-related water issues can be found in Sections 5.2 (Water-Related Impacts), 5.3.2 Aquatic and Wetlands Impacts), 5.4.4.4 (Public Services—Water and Wastewater subsection), and 5.5.1.2 (Water Pathway—for Environmental Justice considerations). Construction-related health issues can be found in Section 4.8 (Nonradiological Health Impacts). Operations-related health issues can be found in Sections 5.8 (Nonradiological Health Impacts) and 5.9*

(Radiological Impacts of Normal Operations). Construction- and operations-related taxes and jobs are discussed in the EIS in Sections 4.4.3 and 5.4.3, respectively. The review team did not revise the EIS because of this comment.

Comment: Nuclear power is the most expensive way to generate electricity. According to the applicant, the proposed Comanche Peak reactors could reach $22 billion or more, roughly equal to the current budget shortfall for the entire state of Texas. This is before cost overruns from delays and construction problems and the added costs of radioactive waste disposal and decommissioning. Nuclear reactors don't make sense financially. (**0071-12** [Hadden, Karen])

Comment: The two proposed Comanche Peak reactors could cost up to $22 billion according to Luminant's own documents. This is before cost overruns. This amount could make 7.3 million homes more energy efficient. Pursuing efficiency lowers bills, reduces electricity consumed, and creates local jobs. The existing Comanche Peak reactors ran ten times over budget and were years late coming online. What if this happened again? (**0071-21** [Hadden, Karen])

Response: *These comments discuss the magnitude of the construction cost for the proposed CPNPP Units 3 and 4. The costs associated with the construction and operation of the proposed CPNPP project, including construction and debt management, operations and maintenance, fuel costs, and decommissioning are discussed in Section 10.6 of the EIS. The review team determined there was no new information of any identification of an omission in this comment that would warrant revising the EIS.*

Comment: The Associated Press recently reported, Even companies that are finalists for federal loan guarantees, NRG Energy and Constellation Energy, announced recently that they have nearly stopped spending on their projects... Analysts say low natural gas prices are making the project uneconomic. NRG chief executive David Crane said he will not pursue the company's two-reactor project in South Texas if gas prices stay low, even if his project is offered a loan guarantee. Luminant and Energy Future Holdings should pay heed to these serious financial concerns. (**0071-16** [Hadden, Karen])

Response: *This comment discusses the uncertainty of the proposed CPNPP project in the context of competitiveness* vis a vis *other electricity generating technologies' fuel prices. Competitiveness and profitability are not within the scope of the NRC's authority and therefore the review team did not revise the EIS in response to this comment.*

E.2.24 General Comments in Support of the Licensing Action

Comment: I'm all for Comanche Peak adding on new reactors! (**0037-2** [Moore, Jim])

Comment: I believe nuclear power is the best way to meet our energy needs for the future and would love to see the expansion at Comanche Peak. (**0038-8** [Lowrance, Cleo])

Comment: I am in support of the Licensing Application for the two new reactors at Comanche Peak. I have lived and owned business's by the largest Nuclear plant in the United States Palo Verde, and I can state from experience that there was no Environmental Impact at all from this plants operation. (**0046-1** [Robinson, Pennie])

Comment: I wish to express my support for the expansion at Comanche Peak Nuclear Power Plant. (**0053-1** [Orcutt, David])

Comment: Undeniably, the future expansion of the nuclear plant will bring an economic boom to Granbury. We certainly support the efforts of Luminant as they undertake this massive

endeavor. The financial impact to the Granbury area will be extraordinary. (**0054-1** [Garner, Todd])

Comment: Whereas, Luminant has announced its intention to develop a combined operating and licensing application for 2 new nuclear power units at Comanche Peak in the Glen Rose Independent School District, and

Whereas, Comanche Peak and Luminant have been a good business neighbor, providing jobs, taxes and helping the community meet its needs, and

Whereas, Texas officials have clearly stated the need for continued investment into electric generation to meet the growing population of our state, and

Whereas, if constructed, the new facilities will provide many jobs during construction and hundreds of permanent jobs after the units are running, and

Whereas, if constructed, the units will add millions of dollars in estimated spending to the Somervell County economy, and

Whereas, if constructed, the new facilities would add significant value to the property tax value of Somervell County and the Glen Rose Independent School District, and

Whereas, Luminant is consistently available to provide information and answer questions about the existing units and the proposed license application to the Glen Rose Independent School District Board of Trustees

Now, therefore be it resolved, that the Board of Trustees of the Glen Rose Independent School District endorses the combined operating and licensing application for Luminant's proposed facilities, Comanche Peak Units 3 & 4, in Somervell County, (**0056-1** [Rotan, G. Wayne])

Comment: Be it further resolved, that Board of Trustees of the Glen Rose Independent School District encourages Federal and State officials to move forward to grant appropriate licensing and permitting and approve Luminant Power's combined operating and licensing request application for Comanche Peak units 3 & 4, (**0056-2** [Rotan, G. Wayne])

Comment: Yes, we need this expansion here for our future growth of Glen Rose and I might add also for the surrounding community. (**0059-2** [Higgins, Larry C.])

Comment: As a Somervell Co resident & business owner I would like to express my support of the expansion of Comanche Peak. I believe it would be a Great benefit to our local economy and continue to be a clean & reliable source of energy for the State of Texas. (**0060-1** [Hoodenpyle, Kelly])

Comment: So we very much support Luminant as it exists now, and we support the future of Luminant, and we look forward to the extended, expanded power station building an even stronger local economy, which in its turn will help us build an even stronger tourism industry. (**0062-10-2** [Condy, Pat])

Comment: Based on past experiences with Luminant, the potential for student growth, and the current educational partnerships, we support expansion of Luminant with this project. (**0062-13-3** [Mayfield, Ron])

Comment: I'm supporting the new units. I've been a proponent of nuclear power all my life; specifically these two units I believe will not only help the economy of this area but they're the most environmentally sound answer we got. I also believe Rafael Flores that we're going to continue studying the water issue so we will not impact the lake. I don't live on the lake, but I

live in a community that uses the lake, and I play a lot of golf, and we use that lake water to water the golf course. I also believe in Squaw Creek, Squaw Valley. (**0062-17-1** [Bradley, Scott])

Comment: And in closing I'd like to say that plant is important, because America needs the energy. Nationwide we need energy, and we need it from all sources, whether it be nuclear or power or fossil fuel. We do have to operate those in a responsible manner regardless of whether they're at or how they're powered. And for those of us that are really ecologically minded, particular living in areas like the Metroplex, where we're anxious for things and change and improvements like electric cars -- and I was just looking at a commercial the other day on electric cars, and just think, if everyone in Fort Worth, or a great percentage, went out and bought one of these little electric cars, when they go home at night and they open that little door and plug it up, where's the electricity coming from? We've got to have it. (**0062-19-4** [Sumners, Allen])

Comment: And I'll just say that I'm in support of this expansion of the power plant. I've been to Washington three times and visited with the Nuclear Regulatory Commission and talked to them at length about this expansion, and I hope that you'll issue the license and we'll go ahead with it. And I think we can all coexist here and figure out a way to make it work. (**0062-2-2** [Rash, Andy])

Comment: I'm here today speaking in support of the Luminant license application and the clean energy that it will bring to North Texas. (**0062-3-1** [Taylor, Kevin])

Comment: I'm here today to express the support of the Somervell County Water District for this project, as well as the Somervell -- Glen Rose ISD, but also I think you heard earlier today from the Glen Rose ISD superintendent, and you know that we have passed a resolution at the school in support of this application, and that's why I'm here today. (**0062-3-3** [Taylor, Kevin])

Comment: If built, Units 3 and 4 would produce the largest economic development project in Texas history. (**0062-4-2** [Griffin, Dwayne])

Comment: This plant has been a great neighbor to our community for over 25 years and a great steward of our environment. I look forward to many more years of working closely with Comanche Peak, and for these reasons I strongly support this expansion. (**0062-4-4** [Griffin, Dwayne])

Comment: I just want to thank NRC for the outstanding work. We're excited, we want to wish you well, and I'm for the expansion. (**0062-8-1** [Condy, Ymke])

Comment: And I do want to also stress that the economic impact is very, very important, not just for Somervell but for Hood County, and we do appreciate very much the NRC and how much you have carefully considered this, and I do want to support the expansion. (**0062-9-3** [Jones, DeeDee])

Comment: First, let me say that I am in favor of the NRC granting the permit to go forward. (**0063-11-1** [Smith, Hugh])

Comment: I don't understand about this worry about water. God is going to control that. They can -- He can shut down and we can have a drought. Every time I go to church after a drought I hear the congregation pray and thank God for the rain that we have received. Well, who started the drought? Everything is going to depend on our nature no matter what. We need to take care of it. And I am certain NRC is going to look at it from that point of view. I'm for the granting of the permit to go forward. (**0063-11-5** [Smith, Hugh])

Comment: Undeniably, the future expansion of the nuclear plant will bring an economic boom to Granbury, as well as Somervell County. We certainly support the efforts of Luminant as they

undertake this massive endeavor. The financial impact to the Granbury area and other surrounding areas will be extraordinary. (**0063-14-1** [Garner, Todd])

Comment: For the past 20 years the majority of the Granbury community and myself have supported the Comanche Peak Power Plant. We will continue to support the expansion but we need one slightly design change done on the expansion here. (**0063-15-1** [Williams, Joe])

Comment: I'm here in support of Luminant's application and am happy to see that the draft has supported the application, as well. (**0063-17-1** [Best, Darrell])

Comment: And I would like to add the Chamber would like to see this permit approved. (**0063-17-3** [Best, Darrell])

Comment: While our country is looking to decrease reliance on foreign energy sources Texas is also in need of safe, reliable energy. Our state is expecting a surge in electrical demand over the next 20 years. The current sources of electricity are not nearly enough to meet these future needs. In addition, Texas continues to experience strong population growth, all of whom need more electricity from everything from iphones to appliances to computers. We believe the best policy answer to these needs in Texas is nuclear power. In this case, the proposed expansion of Comanche Peak. It is clean, safe and reliable with a low environmental impact. (**0063-19-1** [Stewart, Michael])

Comment: On May 19, 2008 the Glen Rose ISD Board of Trustees passed a resolution that endorsed the licensing application for Comanche Peak and the expansion with the addition of units 3 and 4. (**0063-21-2** [Rotan, G. Wayne])

Comment: And on behalf of the Board of Trustees we support the licensing application for the addition of units 3 and 4. (**0063-21-4** [Rotan, G. Wayne])

Comment: Speaking for myself as a local citizen and business owner and community leader, I welcome the proposed expansion and to boost our local economy that it promises to bring. (**0063-22-3** [Phillips, Marilyn])

Comment: My company manages this building and we wouldn't be here and I wouldn't be here if it weren't for Comanche Peak and Luminant and all the people that work there. And I wanted to say when you're looking at all the needs -- and a lot of them are obvious like water -- you need to look at what we have here in this community and in north Texas in this region. And this is the perfect place to add these two reactors. And it couldn't come at a better time. (**0063-27-1** [Dooley, Mike])

Comment: I believe it is a safe and effective way to make power. If I didn't, as I said earlier, I wouldn't be involved with it. And I support it and will continue to do so. (**0063-35-3** [Underwood, Sid])

Comment: I'm for the application of unit 3 and 4. And I'll tell you why. Recently I was able to visit the plant. And I would challenge some of you that are concerned about safety or security or environmental interests to make a visit. The visit --First of all, they are number one concerned about safety at the plant. And second, I think, environmental. And the security -- be prepared to spend about 30 or 40 minutes trying to get into the plant. But that's good. You don't want to have a plant out there that is concerned with nuclear energy that isn't number one concerned a little bit about security or a lot about security. That is the same reason that we have the security that we do in this country at -- in airports, nuclear plants and other plants of interest that will attract some type of a threat. (**0063-38-1** [English, Maurice])

Comment: First of all, I think that when you apply or when this application is granted or if it is granted to Comanche Peak we hope to see a lot of economy will be a necessary of it many people have talked about. I'm not going to be redundant because I think most of the things I would say have been discussed. And as an educator -- a retired educator with over 50 years experience, I have witnessed a lot of experiences in life. I look forward to the application being granted. And I think not only for my generation, but the future generations a safe and reliable source of energy is very important to this country's welfare. (**0063-38-2** [English, Maurice])

Comment: I've lived in Glen Rose since 1961. So I've seen Glen Rose when it was one of the poorest communities and the schools were one of the poorest community -- poorest schools in the state. And then I've seen it after the plant has been here. And I just think everything that it has provided has been such a wonderful impact for this city and this community. And I just -- I think actually, we were fortunate to be the place chosen for the new units. And I think it will not only provide jobs for people here, but all the surrounding communities. I think it will have such an impact on the local businesses, as well. So I just wanted to say we support you and we are glad to do whatever we can. (**0063-6-2** [Miller, Pam])

Comment: You know, it's great that we've got a $22 billion infusion into our local economy. And I welcome that whole-heartedly. (**0063-7-1** [Pratt, Rickie])

Comment: I am Commissioner James Barnard, Somervell County, Precinct 4. And I'm here in support of the Luminant permit. (**0063-8-1** [Barnard, James])

Comment: Thank you. I'm in support of the permit. (**0063-8-3** [Barnard, James])

Response: *These comments express support for the addition of new reactor units at the Comanche Peak Nuclear Power Plant site. They do not provide any specific information relating to the environmental effects of the proposed. No change was made to the EIS as a result of these comments.*

E.2.25 General Comments in Support of Nuclear Power

Comment: I fully support the expansion of nuclear power generation in the USA. (**0015-1** [Edinboro, Sr., Christopher])

Comment: I'm all for nuclear power! (**0037-1** [Moore, Jim])

Comment: Our country is in dire need of domestic energy sources -nuclear power is the best we have. It is a source of high-quality American jobs, and creates long-term power sources. (**0053-2** [Orcutt, David])

Comment: Much of the opposition to the proposed expansion stems from mis-education about the risks of nuclear power, and even a desire to change our lifestyles to dramatically reduce energy consumption. This is mis-guided. Nuclear power is a clean and safe energy source, with a manageable and containable by-product that can be efficiently stored. Significant adoption of nuclear power for base-load energy would dramatically reduce the nation's carbon footprint. Whether or not we are successful at reducing energy consumption, nuclear power is an important part of whatever ratio of powers sources we use. (**0053-4** [Orcutt, David])

Comment: We believe nuclear power is a responsible way to produce electricity, and an environmentally friendly way. (**0062-5-1** [Flores, Rafael])

Comment: We also recognize the need for energy, and energy is something that all of us, whether we like it or not, have to have., and I think this is the safest way that I know that we can

have this energy, and it seems to me from what I've heard that this is the minimal impact. (**0062-9-2** [Jones, DeeDee])

Comment: Please, let's start thinking in terms of our future and our children and what they've got to have. We can get all of the gas we want until it runs out, just like our oil is going to run out. But there seems to be an endless supply of atoms. They work, folks. They work. (**0063-11-4** [Smith, Hugh])

Comment: Now, nuclear power can make clean, nonpolluting energy. And they can do it without water if they want to. So we don't have to give up our water to have clean nuclear energy. It just will cost more. (**0063-26-2** [Beard, Jim])

Comment: I do support nuclear power. If I didn't support nuclear power I wouldn't work there. If I didn't think it was safe I wouldn't work there. If I didn't think it was safe I would not have helped rear three children in this area. So I do believe it's safe, as my friend, John Curtis, mentioned earlier. (**0063-35-1** [Underwood, Sid])

Comment: I'm a proponent for nuclear electricity. I've found that it's fascinated me since I was a kid. (**0063-7-2** [Pratt, Rickie])

Response: *These comments provide general information in support of nuclear power. They do not provide any specific information relating to the environmental effects of the proposed action and will not be evaluated further in the EIS.*

E.2.26 General Comments in Support of the Existing Plant

Comment: I believe the Comanche Peak Nuclear Power Plant is vital for our economic growth. It helps create jobs, housing, even growth in our schools. It also has a large impact on our business here in town. I personally know quite a few employees presently working at the power plant. I believe safety is their #1 priority in operating that facility. (**0059-1** [Higgins, Larry C.])

Comment: we are a tourist operation and a tourist theme, one of the biggest in this region, and it's very important from a tourism-attraction point of view that a tourist venue is situated in a place where the local economy is vibrant. Where you have a tourist facility in an area where the local economy is poor and almost nonexistent, it's extremely hard to get tourists to come to your facility. And in that regard, Luminant up to this point in time has been a very powerful and very fine neighbor and impact on the local economy, which makes it so much easier for Fossil Rim, among other venues, to help make tourism a very vibrant tourism industry in this local area. And I'm not just talking about Glen Rose, but Granbury benefits very much from it; so does Cleburne and so does Stephenville. (**0062-10-1** [Condy, Pat])

Comment: In our past history, Luminant's been a great supporter of Granbury ISD, and I believe there would be no reason not to support this expansion. We understand we may not see the kind of student growth that we experienced in the '80s, but we would anticipate that we would get our fair share. (**0062-13-1** [Mayfield, Ron])

Comment: I've been a scoutmaster for many years, and part of the items that a scoutmaster is concerned about is the environment, and the environment around Comanche Peak has been kept excellent. We've been able to use the resources around Squaw Creek for some of our camping trips. The boys and their parents have enjoyed the fishing, the outdoors, and the whole area around the power plant, and I know the company has been a great environmental source to make sure that it stays that way. (**0062-15-1** [LaMarca, Jeff])

Comment: I lived in the community for a number of years, and then I was gone, and then I've come back. And it's a beautiful community, and what that facility does for our community has

allowed many people to have a livelihood, students to get an education that is really superior to many places. I've lived in many small communities, and when there's not a place that can support them economically, it's difficult. So I'm in support of what you do for the community and for the young ones at Fossil Rim and for all of who need electricity. We have become too dependent on it, I think, but we need it. (**0062-18-1** [McLay, Chandler])

Comment: we looked at all the statistics, everything that you could find, and all the good things there are in Somervell County. And of course there's a nuclear power plant here, and we knew that. And I'm not a nuclear expert, but my last several years in the Air Force I was in emergency management, and we dealt with quite a lot, in emergency, nuclear contingencies. But we moved here, we didn't have any concern with the safety. And when you look at a company like Luminant and their predecessor, or the name before that, TXU, they've run that plant for many, many years, and they run it very efficiently. And I'm proud to be here and be a neighbor in Somervell County. I'm very proud that we have a corporate neighbor such as Luminant. They are a fantastic corporate neighbor, and I can say that in comparison to other counties, when you've lived near something really nice and clean like a paper mill. Have y'all ever seen a paper mill? Man, I tell you, that's rough on the environment. (**0062-19-1** [Sumners, Allen])

Comment: Also, taking into consideration concerns of safety and the many safety plans and contingencies that are in place, and I think Hood County and Somervell County have partnered with Luminant and their emergency preparedness people, have done an excellent job. And I feel very safe living here, and I'd ask that Luminant continue on to run that plan in the professional, efficient manner that they've always run it. (**0062-19-2** [Sumners, Allen])

Comment: I was not here earlier in the day; I couldn't make it to the earlier session, but I'd like to say that, in working with Luminant through the years, they have been a very good neighbor to the community. I've lived here all my life, and I've seen Granbury develop from around a population of 5,000 in the county, which was pretty stagnant until the lake was built, and then Texas Utilities came in and built the power plant after building the dam and creating Lake Granbury and, within the next ten years after that lake filled, tripled to around 18,000, and since then it's more than tripled again. Population estimated 2009 was 51,600. I don't know what the Census is going to show, but I think it's going to be close to 55,000.

Without the lake being built and the power plants coming in here and bringing people into the community, that gave us a start, and it brought a lot of other people into the community, and it's been very good for the economic development of the community. One other thing I'll say, as director of emergency operations for the county, we probably have the best emergency operations plan in the state of Texas, and it's largely due to working with the people from Luminant and them helping us with our emergency plans and making sure that we have a good plan where we can, if we were to have some issue with the power plant, which, God willing, we'll never have, we have a plan to take care of it. They've been good for the community; there's hundreds and hundreds of people integrated into the community that came to help build the power plant and stayed here. There's people here that work at the plant now for Luminant that are very much a part of this community, and they are as concerned about what's going on here as the rest of you are, because they are a part of the community, and they want to see it continue to be a thriving community. (**0062-2-1** [Rash, Andy])

Comment: I've worked very closely over the years with Comanche Peak, especially their environmental groups. I have nothing but respect for those guys. They're very good at what they do. Luminant's been a good neighbor to the residents of Somervell County; we've managed to coexist for a number of years. I have no reason to believe that we wouldn't continue to coexist with the two proposed units. (**0062-3-2** [Taylor, Kevin])

Comment: Comanche Peak nuclear power plant has greatly improved the life of the citizens of Somervell County through the great school system, roads, hospital, and their continued support of this community as a whole. (**0062-4-1** [Griffin, Dwayne])

Comment: I want to reiterate our consideration that Luminant -- and, of course, we always refer to it as TXU; I can't ever remember Luminant -- has been a very good neighbor to us for many, many years. I was a teacher in the school system here, and I want to say how much we have appreciated all the concern and help that we have had through the taxes, of course, in this county. Most of you know that this was a very, very poor county before the power plant moved to this area, and we have really benefitted from all these things that we have had here. (**0062-9-1** [Jones, DeeDee])

Comment: Bless the heart of Luminant. They have become very successful, very friendly, environmentally friendly. (**0063-11-2** [Smith, Hugh])

Comment: Luminant is an excellent corporate citizen. They are involved in a number of activities in Somervell County and Hood County that supports a number of organizations from Christmas In Action to Chambers to any number of organizations that needs additional help. And they're here and they're a good corporate citizen. They're also a good corporation. They provide employment with a liveable wage that supports our communities and the people that live here. When you look at a county like Somervell, people graduating from high school here, they want to return here because there's good jobs at a place to call home. Good jobs in engineering, technical and so forth. So not only are they a good corporate citizen, but they're a good corporate employer. (**0063-17-2** [Best, Darrell])

Comment: Hood County is a community of haves and have-nots. Forty-eight percent of our children in the public school are on free and reduced lunch. What Luminant has done in the Hood County is unbelievable. Because they have given over 33 percent in the last ten years of the money that United Way has given away. They have not only given it by their employees but their corporation has matched dollar for dollar. I will tell you right now there are a lot of people in our community that would be hungry, would not have school supplies, would not have a health clinic if it were not for Luminant. Last year we had -- we opened a free health clinic. Before we got the doors open, Luminant called and said, What we can do? And their employees came out, and they painted, they built a ramp, they put all kinds of things together. I've been in the business of non-profit for 40 years. I've worked with a lot of corporations. And I understand the corporate culture comes from the top. The giving that goes on at the nuclear plant is because the company believes in the individual citizen. What that entails means that they serve on almost every single committee or board in Hood County. They come willingly. They give their time. And the -- one of the reasons they do that is because the company supports it all the way down from the top. We are very lucky to have them.

Now, when you talk about poor people, you know what poor people need? They need jobs. And they need an economy that flourishes. And the way for that to happen is to have a company like Luminant bring the economic development in. It spills over all the way down. One of the beautiful things about the building of the nuclear plant is you don't have to have a master's or a Ph.D to work on that plant. You have to be able to do multiple different kinds of tasks. It allows community to bring people in who have different levels of actual expertise. I believe that what they want to do up there is a very good thing for our community. Locally, I believe it's very good. I will also tell you that it's my understanding that the BRA is going to sell that water whether we like it or not. I would prefer we sell the water to a company that has the kind of corporate responsibility that Luminant has demonstrated over the last 25 years. (**0063-20-1** [Bellu, Toni])

Comment: I'm superintendent of the Glen Rose Independent School District. Glen Rose ISD is considered a Chapter 41 school district. What does Chapter 41 mean? It means we're subject to Chapter 41 of the Texas Education Code, which means our wealth level exceeds a certain level per student and we have to send money back to the State of Texas. So since the inception of the Robin Hood school finance, Glen Rose ISD has sent 500 million local tax dollars to the State of Texas to finance, equalize other school districts across the State of Texas.

With this project -- I heard somebody talk about the economic benefit to the school district -- it's kind of like the water, if it's not used here it's going to go on downstream. That -- none of that money is actually going to stay here unless our number of students goes up and allows us to retain more of that money. Currently right now about 50 cents out of every local tax dollar we collect is sent back to Austin, sent back to subsidize other school districts. And when you look at that a lot of people associate property wealth of a school district with the wealth of its students. Fifty percent, five out of ten of the kids that attend Glen Rose ISD live below the Federal Poverty Guidelines right now. Five out of ten of our students are on free and reduced lunch.

Those are things that we feel like the plant expansion would help bring jobs to the community and help to improve the quality of life for some of our students. (**0063-21-1** [Rotan, G. Wayne])

Comment: Luminant has been a great partner and continues to be a great partner with the school district. They have helped us fund a dual-credit welding certification program. When a lack of skilled labor was not available they helped us get a program started in which our students could graduate with a welding certification. They've also helped us start environmental studies science class that goes out and monitors the water quality in the Paluxy River. They have a program that -- Women in Nuclear, where they come and speak with our female students and help them get females excited about science and involved in science. They've sponsored environmental essay competitions for our grade level campuses. They've made lots of contributions to our district, to our students and to our community. (**0063-21-3** [Rotan, G. Wayne])

Comment: as a 43 year citizen, 25 year business owner and 13 year member of the Glen Rose ISD Board of Trustees, along with having the opportunity to serve on many other community boards and committees, I can truthfully and with no reservations say that Comanche, TXU, Luminant has certainly been a friend to this community and our city and county and school on many levels. I know the reason -- main goal to be here is to produce electricity. And we have reaped many of the benefits from their being here. And I know it's been mentioned, the tax base, the jobs, the infrastructure, the activities that have come just as a result of their being here. And they have become a real member of our community. Through hosting and participating in community activities, their philanthropic giving to multiple local causes, Comanche Peak has become synonymous with Glen Rose, Somervell County. (**0063-22-1** [Phillips, Marilyn])

Comment: And I would be lying if I were to say I understood everything about nuclear power and all the advantages and disadvantages, the potential risks and/or gain. But I believe that this company and particularly, this site of Comanche Peak has earned our respect and our trust as they have proven over the years their dedication to safety and to the environment. No one takes this more seriously than they do, which is evident by their continued success and their numerous awards in this area. (**0063-22-2** [Phillips, Marilyn])

Comment: We do very much appreciate the good citizens that Luminant has been. As you heard earlier, we meet with them on a regular basis to try to figure out ways that we can support

each other and get the benefit for all of us brought about. So if you think that we don't love our neighbors, you're wrong. (**0063-23-4** [Conway, Bretta])

Comment: They've been a great partner in the school system. When we had all the construction workers move into our community our school became over-crowded in the '80s. And it was the Texas Utilities that stepped up and helped us move our program forward to take care of issues and problems that we encountered at that time. So I feel very strongly that the owners of Texas Utilities and Luminant now have been a very, very good partner of this community during the entire process. (**0063-28-1** [Marks, Gary])

Comment: I don't know of any company that spends more time or effort in making sure they're good stewards of the environment. They've spent more time just seeing how little water they could use in their operations out there. Not the -- producing power, but in the -- just the daily operations, the water coolers, the air conditioning. And, you know, a lot of people don't even think about companies that take the effort to do that. But I -- Bruce Turner's here somewhere. He's the head over that. I don't remember how much water they've saved, how little water they put back into the ground, as far as septic and all of that. Again, I cannot think of a company that has been a better partnership to this community than Luminant and Comanche Peak has been. I read the Nuclear Regulatory Commission's mission here. It says, Protect public health and safety, promote common defense and security, protect the environment. That describes Comanche Peak better than anybody I know. We spent the morning rehearsing emergency management today. And again, you just have to be involved in it to know the effort that they take in this. I've taken friends out to the plant. And they are just overwhelmed by the effort out there and the cleanliness and all of that. But anyway, yes, we have a vested interest. And we're the ones that will have the plant in our community. There are pluses and there are minuses. And so it's not all pluses. And it's -- we hope that they'll go forward with it. But in you all's comments on environment, I can't think of a company that's better stewards in the environment than Luminant, TXU, whatever the current name is. They wore out their badges changing it, I think. (**0063-3-1** [Maynard, Walter])

Comment: I'm a resident of Somervell County. I went to work at Comanche Peak in 1979, so I lived through the start-ups, the delays, and I finished with the replacement of the steam generators in '07. My primary responsibility at Comanche Peak was radiation safety. The last 11 years at Comanche Peak I was the radiation safety manager. So I'm fully aware of the concerns with radiation exposure.

From an environmental standpoint, I think the NRC is well aware of the tens of thousands of surveys that we have taken, are taking and will continue to take and know the impact that we have had on the environment. And if it was negative, it would have been in the Fort Worth Star-Telegram. You don't read that. And that is due to a fact of a dedicated work force, not because they work for Luminant, Texas Utilities; because we believe in what we do. We're out there to do a good job, to protect the health and safety of the public. And if you don't believe that I'm sorry. But that's what I stand for. (**0063-33-1** [Curtis, John])

Comment: But also, I look at the stability that that site -- those plants have brought to this area. And I was familiar with Glen Rose and Somervell County before I moved here. But to see over the years the good things this plant has done, to see the impact it's had, to see the impact it will have in the future -- We have young folks here who have an option. They don't have to move off if they don't want to. There are sustainable jobs here with the existing units. And if you look down the road for generations to come it will offer opportunities. (**0063-35-2** [Underwood, Sid])

Comment: I just want to say that I appreciate the utility for all they do for the community. And I appreciate mostly what they do for the environment. Most of the employees at Comanche Peak

live in the surrounding communities. And I have seen to their efforts, the caring and the things that they do to help the environment, to help the community. And I have seen what the plant has done. (**0063-37-1** [Willis, Stephen])

Comment: I just wanted to say first of all, I agree with Judge Maynard about Comanche Peak being such a good neighbor and a good steward of the environment. And I also wanted to say that we really support -- I really support the new plants being here. (**0063-6-1** [Miller, Pam])

Comment: They have been a very good environmental neighbor since they've been here. TXU before, now Luminant. I echo what Judge Maynard said. I thought he touched on a lot of good things that they've done. They have cared for and operate Squaw Creek Park since the mid to late '80s. And I was just brought aware that they're in support with the Glen Rose ISD about the environmental classes in the classroom and in the field, which the kids are doing water samples and studies. (**0063-8-2** [Barnard, James])

Response: *These comments express support either for the Applicant or the existing reactor units at the Comanche Peak site. Because they did not provide any new information, no change was made to the EIS as a result of these comments.*

E.2.27 General Comments in Opposition to the Licensing Action

Comment: I am very opposed to the current expansion plan for Comanche Power Plant. (**0001-1** [Boyd, John])

Comment: [The plan will] destroy homes, community and a way of life. (**0001-3** [Boyd, John])

Comment: Mis use and lack of honesty by the current government appointed board that oversees this lake has already created a major upheaval in our community. While the claim of "more jobs!" may sound great in this economy. The destruction this project will cause far outweighs any short term job benefit. (**0001-4** [Boyd, John])

Comment: Do not let the expansion destroy another community and way of life just because their business model needs cheap water that is used irresponsibly. (**0001-7** [Boyd, John])

Comment: We are adamantly opposed to the use of 20 Billion gallons per year of additional Lake Granbury water to cool the two new towers at Comanche Peak. (**0011-1** [Williamson, William F. (Frank) and Eileen G.])

Comment: I do not support the planned use of water from the Brazos Basin. This would be detrimental to the quality of life for lake dwellers and users. (**0015-2** [Edinboro, Sr., Christopher])

Comment: I am apposed to the nuclear reactor expansion project to include 2 new reactors at the Comanche Peak facility. I am not apposed to nuclear energy but rather the use/misuse of water resources planned to be drawn from the BRA watershed. (**0016-1** [Murphy, Bill])

Comment: I have no objection to nuclear power; just a singular concern for the impact on our communities that already have heavy growing dependence on the BRA watershed now and in the near future. Help us support the life and life styles we have come to know since the founding of these communities over 100 years ago. Electricity to power tens of thousands of American homes can not come at the economic loss/cost of the equivalent numbers of people in our region of America. Simply put, it's Just Not Right! (**0016-3** [Murphy, Bill])

Comment: I oppose drawing more water from Lake Granbury to accommodate the proposed expansion of the Comanche Peak power plant. (**0017-1** [Fitzgerald, C.C. (Fitz)])

Comment: I am totally against the use of Lake Granbury to cool the 2 new towers. We can't afford to give up that water. (**0019-2** [McHugh, Judy])

Comment: Now is the time to say NO to the BRA and Luminant. Let me make this clear. This is not about being against nuclear energy, it is about the WATER! Our Lake WATER. Dont destroy it. Don't Kill Lake Granbury (**0019-4** [McHugh, Judy])

Comment: This is written in opposition to the expansion of the Comanche Peak power plant. (**0020-1** [Clark, Becky])

Comment: The use of water from the Brazos River Basin to supply the Comanche Peak Expansion will be a nightmare for everyone in Granbury and the politicians will be getting lots of heat for allowing it. Please oppose the use of water from Lake Granbury and the Brazos River Basin for the Comanche Peak Expansion. (**0023-3** [Hinterleiter, David])

Comment: Having been water front owning residents of Granbury for over 30 years, we feel that we have a vested interest in the survival of the lake. We do vehemently oppose the BRA removing any additional water in support of the Nuclear Power Plant in Glen Rose, Texas. (**0024-1** [Quirk, Jim and Sharon])

Comment: If this happens, Granbury would become a ghost town for sure and the Nuclear facility would also have to find another source. Somebody has to protect us. (**0029-2** [Petry, Susan])

Comment: Please do not proceed with the proposed additional reactors which would necessitate lowering Lake Granbury water levels in order to provide cooling for these reactors. (**0030-2** [Martin, Joe])

Comment: As a lakefront homeowner at Lake Granbury, I am adamantly opposed to the construction of two additional reactors at Comanche Peak. (**0033-1** [Hanna, Jim])

Comment: I am very much OPPOSED to drawing any more water from our lake for the proposed additional two reactors at Comanche Peak. We already provide our fair share!! (**0034-2** [Fitzgerald, C.C. (Fitz)])

Comment: What I'm NOT for is using Lk. Granbury for cooling water. (**0037-3** [Moore, Jim])

Comment: I am strongly opposed to the expansion of comanche peak due to the increased amount of water that will be used from the Brazos river. I do live on lake Granbury so I will personally be harmed by low water levels. (**0040-1** [Kurtz, Jeff])

Comment: Please DO NOT SACRIFICE THE LOCAL Lake Granbury communities dependent on the water levels as they are now for this new power source. (**0041-2** [Martin, Joe])

Comment: I am opposed to the proposal to increase the amount of water drawn from Lake Granbury for Comanche Peak usage when the expansion of that facility is completed. (**0062-7-1** [Williamson, Eileen])

Comment: The license for two new reactors at Comanche Peak, or any other reactor, should not be issued since there is no effective resolution of the storage issue. (**0071-27** [Hadden, Karen])

Response: *These comments express general opposition to the licensing action for the proposed new units at the Comanche Peak site. They do not provide any specific information relating to the environmental effects of the proposed action. No changes were made to the EIS as a result of these comments.*

E.2.28 General Comments in Opposition to the Licensing Process

Comment: Therefore, we suggest that the NRC reject the current environmental study until planning deficiencies outlined above are remedied. (**0063-36-10** [Hackett, Ken])

Response: *This comment expresses general dissatisfaction with the EIS. As a required part of its licensing process, the review team has carefully reviewed the COL application and relevant information against its regulations that are intended to protect public health and safety and the environment. The staff has also assessed the environmental impacts, including physical, economical, and social aspects of the proposed action according to applicable regulations. No change was made to the EIS as a result of this particular comment; however, the "deficiencies" enumerated by this same commenter have been cataloged and are addressed under the respective categories for those separate comments and concerns.*

E.2.29 General Comments in Opposition to Nuclear Power

Comment: Our organization is opposed to building new nuclear reactors. And there are many reasons why. I'm not going to dwell on that so much today. (**0063-30-1** [Hadden, Karen])

Comment: Nuclear power is a bad choice for generating electricity and would divert precious resources from readily available technologies to reduce global warming gases that are both cheaper and can be deployed faster.

Nuclear power:

- Is not a useful solution to climate change.
- Is vulnerable to severe climate conditions which prevent reliable operation.
- Is not the alternative to coal. Efficiency, energy storage and renewable energy can do the job.
- Is not clean.
- Is not safe.
- Poses serious terrorism risks.
- Is the most expensive way to generate electricity.
- Radioactive waste remains an unsolved problem.
- Fosters nuclear weapons proliferation.
- Is not the solution to energy independence.
- Has negative health impacts.
- Is not supported by the public at large.

Why is nuclear power even being considered at a time when clean, affordable energy solutions exist? (**0071-17** [Hadden, Karen])

Comment: When nuclear reactors were licensed in the 1970's there were no great realistic alternatives. Wind and solar energy are well developed now and are more affordable than nuclear power. Energy efficiency helps curb demand. We do not need nuclear power or the risks that it entails. There is a moral imperative to not leave radioactive waste to generations to come, along with the nightmare of storing and repackaging it for millions of years. (**0071-19** [Hadden, Karen])

Comment: Radioactive waste, safety and security issues, economics and the vast consumption of water are all reasons to avoid more nuclear reactors. (**0071-9** [Hadden, Karen])

Response: *These comments express general opposition to nuclear power and do not provide any specific information relating to the environmental effects of the proposed action. No changes were made to the EIS as a result of these comments.*

E.2.30 Comments Concerning Issues Outside Scope - Emergency Preparedness

Comment: [As residents of this area, we also have serious concerns about . . .] existing critical emergency evacuation bottlenecks that will only get worse as development accelerates. (**0055-8** [Inge, Charles] [King, Arnold] [Rosenfeld, Joshua])

Comment: [As residents of this area we are -- we have serious concerns about] existing critical emergency evacuation -- bottlenecks -- that will only get worse as development accelerates. (**0063-36-8** [Hackett, Ken])

Comment: Luminant and the NRC need to do more to prepare the community for action in the event ofan accident or disaster, including distributing potassium iodide tablets. Readiness for an accident is a serious issue.

- If there is an accident, will the community be able to evacuate? What hospitals would be used to care for those who might be exposed to radiation and how many people could they care for? How does the hospital facility availability compare to the number of potential injuries and radiation exposure victims?
- Are there adequate firefighting and police forces? Do they have any training or any equipment to shield themselves from radioactivity in case of a nuclear accident? What more is needed to protect themselves, as well as others?
- Potassium iodide tablets would be needed if there were a nuclear accident. The tablets would reduce human uptake of radioactive iodine, a carcinogen which goes to the thyroid gland. According to NRC rules, residents near nuclear plants must receive potassium iodide tablets in case of emergency.
- Has anyone in the 50-mile radius around the existing two Comanche Peak reactors ever received potassium iodide tablets? Have they been told how to get them? (**0071-38** [Hadden, Karen])

Response: *Emergency preparedness capabilities of the proposed facility, evacuation procedures, and evacuation routes are emergency planning issues and are outside the scope of the environmental review. As part of its site safety review, the NRC staff will determine, after consultation with the Department of Homeland Security and the Federal Emergency Management Agency, whether emergency plans submitted by the applicant are acceptable. No changes to the EIS were made as a result of these comments.*

E.2.31 Comments Concerning Issues Outside Scope - Miscellaneous

Comment: Energy Efficiency Done Right invites you to a webinar with information on opportunities in manufacturing or being a dealer of In'Flector See Through Radiant Barrier Window and Skylight Insulators. (**0026-1** [Roberts, Keith])

Response: *This comment provides no new information relevant to the environmental review of the COL application and therefore will not be evaluated further in the FEIS.*

Comment: I know you have received information from the NRC study, but I want to add my own plea that the BRA's request be denied in order to find another solution for Comanche Peak. We should not predicate the decision on just "doing things the same old way." In these stressed economic times we need to be creative and after meeting with the BRA I do not see any attempt to consider options. The BRA even admitted that quite a bit less water was being released due

to it closing a hydro plant at Possum Kingdom that released a good amount of water daily. The reason for the closing was cited as due to it being expensive to run the plant. With added revenue of the sale of additional water it seems that the hydro plant should be either turned back on or some money spent to find a way to run it more economically. I do not get the impression that either has been considered. That is just one consideration that easily comes to mind. (**0006-3** [McClain, Janet])

Comment: The BRA has taken NO STEPS in the resolution of the working status of this facility [the Morris Shepherd Hydroelectric Plant] and continues to not be a good steward of the Brazos River Basin in the management of this facility. Also in this matter, the BRA is in litigation with Brazos Electric (http://www.supreme.courts.state.tx.us/ebriefs/files/20100611.htm) ; in the Texas Supreme Court which has allowed the answers to Morris Shepherd to go unresolved. (**0051-5** [Jalbert, Ann] [Jalbert, Pete] [McHugh, Judy] [Williams, Joe] [Williams, Sue])

Comment: And right now there's litigation going on with the hydroelectric plant. I'd like to see if there's not some manner that the NRC or possibly Luminant might be able to step in, take over the dam in such a manner. I would like to see Luminant take over the hydroelectric plant in an effort to see water flow again. There's -- one of the issues that I've overheard from the BRA is that it costs X number of dollars to operate the plant and maintain it. And now they're in litigation with an electric coop that's effectively shut down the dam. And we're not sure how long before we see litigation resolved. So that's -- I would appreciate anything that we could get that would benefit Lake Granbury. It would also be a safety issue. (**0063-7-5** [Pratt, Rickie])

Response: *The NRC does not have regulatory authority over the operation of energy sources except nuclear power. Thus, the situation at Morris Shepherd Dam is outside the scope of the environmental review of the COL for Comanche Peak Units 3 and 4. Safety issues will be evaluated separately by the NRC as part of the NRC's development of a Safety Evaluation Report for this proposed action. These comments did not result in any changes in the EIS.*

E.2.32 Comments Concerning Issues Outside Scope - Safety

Comment: Added to the kind of withdrawals that you all are talking about from this plant you have to question whether or not this plant will be able to operate with the increased temperatures. And that's what, in fact, TXU or Luminant, as they're now called, asked the -- their consultants. And they said, So how do we begin to reduce the intake temperature? And they came up with three or four different ways and said, All of them are technologically possible. We can increase the amount of our cooling surfaces, we can spray the intake water, we can do a bunch of other stuff, but none of them are cost effective. (**0063-16-4** [Smith, Tom])

Comment: If global warming occurs as rapidly as projected, will Comanche Peak be able to operate safely especially during the hottest months when it is needed the most? On August 12, 2010 , the La Salle nuclear plant in Illinois went off line due to overheated cooling water which exceeded 101 degrees Fahrenheit (°F). (REF i) There is a chance that climate change will warm the temperatures of the cooling water at Comanche Peak to levels in excess of 101°F or too high to allow the plants to operate safely. In the summer months of July and August, Lake Granbury air temperatures exceed 95°F, which is the temperature that leads to a reduction in generation at the plant. It appears that if the temperature exceeds 101 degrees, then the plant ultimately needs to be shut down. A recent study on Comanche Peak 1 and 2 alerted us to potential problems. It may be found at http://www.erm-smg.com/TXU%20Comanche%20Peak.pdf

Water temperatures at Granbury Lake could exceed safe operating temperatures With additional potential increases in air temperature that might result from global warming, it is likely

that the water temperature will also increase thus making the feed water intake temperature close or above the 101 degrees that resulted in the shut down at La Salle and other operating reactors. The Lake Granbury Watershed Protection Plan notes how susceptible to the lake temperature is to air temperature: “Temperature changes are rapid, especially in winter and early spring when cold, dry polar air replaces warm, moist tropical air. Periods of cold weather are short and occur mostly in January; fair, mild weather is frequent. High daytime temperatures prevail for a long period in the summer when the maximum temperature reaches or exceeds 90°F daily. July is the hottest month with an average daily maximum temperature of 95°F.” (REF ii)

Vertical variation in temperature and dissolved oxygen (DO) are evident in historical data; data for the period February 1972 through March 2006 were analyzed. Temperature stratification is common April through August, with average temperature difference being greater than 5°C (Figure 3-2). Min and max temperature for each measurement where profiles were taken are shown in Figure 3-3. Depth to greatest change in temperature (approximation of thermocline depth) is generally 11m near the dam (Segment 1) in May, followed by either greater or lesser depths through September.

Average water temperature in Lake Granbury run a little lower than air temperatures. They average about 27 degrees Celsius (°C) in most summer months or 89.6°F but have peaked at approximately 50°C or 104°F. More importantly there is a 7°F average differentiation between the hottest part of the lake and the norm bringing the average “hot spot” temperature to 93°F. (REF iii) This hot spot is very close to the cooling water inlets in section one near the dam and the outlet, which will increase the temperatures by an additional 1°F. If you add the increased 4-12°F air temperature increase due to global warming, the lake could be too hot to cool the proposed reactors. (**0067-1** [Geiger, Carol])

Comment: Likely increase of ambient air temperatures.

The DEIS for Comanche Peak notes on page 7-17 at lines 34-35 that the GCRP shows temperatures in the area could increase by as much as 12°F by 2090. Using the analysis from the Nature Conservancy based on the Intergovernmental Panel on Climate Change’s (IPCC) Fourth Assessment Report at http://www.ClimateWizard.org, we find that likely temperature changes within the expected operating life of the plant to be in excess of 6°F. Add that to the average current high temperatures on Lake Granbury and the plant will likely have to curtail generation and may not be able to operate without constraint several months each summer. (**0067-2** [Geiger, Carol])

Comment: Nuclear Power has been curtailed worldwide due to high temperatures and it has been costly to replace the power! France, Germany and Spain were forced to shut down dozens of nuclear plants due to a prolonged heat wave and low water levels. Scientists say climate change was a contributing factor to all of these events, which had far-reaching business impacts. (**0067-4** [Geiger, Carol])

Comment: Cooling water could be too hot at Comanche Peak 1 and 2 and study found supplemental cooling water systems were not cost effective A recent study on Comanche Peak units 1 and 2 examined the impact of high cooling water temperatures and found when cooling temperature exceed 95°F plant production decreased and above 101°F required the plant to be shut down. It is noteworthy that the 80 days above 95°F simulation chosen closely mirrors the air temperature records in the Lake Granbury water shed. Could this mean that the water temperature will be too high to cool proposed units 3 and 4? For the simulation year chosen, intake temperatures exceeded 95°F more than 80 days. Plant production decreases once the intake temperature goes above 95°F and ultimately needs to be shut down at 101°F when the

condenser pressure reaches 5.0 in. HgA The study looked at four options to reduce temperatures: The supplemental cooling options that were analyzed for the study were: Oriented Spray Cooling Systems (OSCS) Mechanical Draft Cooling Towers (MDCT), and Water Garden Steps (WGS). The option of increasing the SCR surface area by 5% to enhance the surface heat exchange was also considered. These supplemental cooling systems were designed to cool 25% of the intake water. To increase the overall effectiveness of these systems, a dike enclosing the intake was designed to restrict the mixing of the cooled water and the hot reservoir water. (**0067-7** [Geiger, Carol])

Comment: Results The SCR's response to the designed supplemental cooling system was found to be favorable. On the other hand, the increased surface area did not contribute much to decrease the intake temperature. The supplemental cooling systems lowered the intake temperatures by up to 5 F making the occurrence of the "greater than 95°F" event almost non-existent. While effective, these supplemental cooling systems increased the house load by a considerable amount. This increased house load alone rendered the MDCT and WGS systems ineffective in terms of capital and operational costs to benefit ratio. OSCS resulted in an increased power generation but was associated with high capital cost. A minimal return on investment of 2% was not justifiable economically and thus became the basis for subsequent rejection of the OSCS system. (REF xiii) (**0067-8** [Geiger, Carol])

Comment: The question of whether global warming will make the water temperature too hot to cool the proposed units 3 and 4 is central to the issuance of a license and the final EIS. The DEIS documents the problem: global climate change may increase air by as much as 12°F, (REF xiv) which will increase enviro-transpiration; and decrease precipitation and runoff. (REF xv) The Lake Granbury watershed protection plan notes that there is a strong correlation between air and water temperature. (REF xvi) The charts show that the temperatures near the intake are often near the 95 at which generation is curtailed and have exceeded 101 the plant has to be shut off. Thus the ability of cooling lakes to dissipate could be degraded by global warming. (REF xvii)

Comanche Peak has begun to study the effects of excess heat on the operations of units 1 and 2 and the researchers noted that at temperatures above 95°F operations are curtail and above 101°F the plant has to be shut off. (REF xviii) Thus we question whether the plant may not be able to operate due to high temperature cooling water within the lifetime of the plant (**0067-9** [Geiger, Carol])

Comment: Nuclear reactors heat up the air and water around them. Several U.S. reactors have had to cut back electric generation because the cooling water got too hot. During the 2006 heat wave in France nuclear and coal plants had to be shut down because the water was too hot to cool them. 2000 MW of energy had to be imported. (Source: False Promises, Debunking Nuclear Industry Propaganda, Nuclear Information and Resource Service,May 2008.) (**0071-35** [Hadden, Karen])

Response: *These comments express general concerns about the safety of the proposed nuclear power plants, particularly in regard to acceptable water intake temperatures. These comments are not related to environmental impacts of plant construction or operation; therefore, they will not be addressed in the EIS. The NRC is developing a Safety Evaluation Report that analyzes all aspects of reactor and operational safety for the proposed new units.*

Comment: Now, you know, I've heard talk today about what a good neighbor Luminant and TXU has been in the past. But let's think about some of the historical headlines that have been in the area. 1984, Wall Street Journal, Safety Procedures at Comanche Peak Cited by NRC

Panel, at which time the article cited that 1974 the plant then was supposed to be $780 million. At that time in '84 it was $3.89 billion. Quite a cost overrun.

Wall Street Journal, 1986, Texas Utility Company Finds New Problems at Comanche Peak. Wall Street Journal, December of '86, NRC Criticizes Manager in Texas Office on Data For Comanche Peak Nuclear Unit. New York Times, 1989, Texas Plant Comes Under Scrutiny as Coverup of Problems Charged. Fort Worth Star Telegram, 1991, Weakened Cooling System Closes Comanche Peak.

I've got about 20 [newspaper articles] here. But here's another one. Fort Worth Star Telegram, 1991, Comanche Peak Called Number One in Safety Violations. And in that same year a spokesman said the early closure and condenser repair would have minimal impact on the plant, completed at a cost of 9.1 billion, which in 1991 was more than ten times the original cost of this plant. (**0063-29-7** [Benning, Rita])

Comment: Competence and Character in question, Poor Track Record at Existing Reactors. Here are some excerpts from articles about Comanche Peak reactors: (**0071-48** [Hadden, Karen])

Response: *The commenters offer a list of newspaper articles regarding surveys, inquiries, and NRC inspections of the existing reactors at the Comanche Peak Nuclear Power Plant site. Because the news excerpts deal primarily with safety and safety-related issues, these comments are beyond the scope of this EIS. The NRC is conducting a separate safety review for this COL, and the types of issues and concerns identified in the comments would be addressed in the safety review. Because these comments did not offer any new or significant information about environmental impacts, no changes were made to the EIS as a result of these comments.*

E.2.33 Comments Concerning Issues Outside Scope - Security and Terrorism

Comment: [Nuclear energy/power] It's not safe. We have terrorism risks. We don't have those if we pursue other kinds of energy generation. (**0063-30-5** [Hadden, Karen])

Comment: And the additional safety and security risks of more radioactive waste definitely needs to be studied. (**0063-32-7** [Rooke, Molly])

Comment: The EIS should study the additional safety and security risks of more radioactive waste. (**0071-26** [Hadden, Karen])

Comment:

- Terrorists have considered crashing airplanes into nuclear reactors. Terrorist risks must be more thoroughly analyzed, as it would be easy enough to lob mortar from a construction site toward the existing spent fuel pool, creating a major nuclear accident. Heavy construction equipment could breach barricades between a construction site and existing reactors. Workers would come from any number of foreign countries, creating language barriers and security challenges.
- The EIS should recommend that no new nuclear reactors be licensed until they can at least meet the same post-911 security hardening requirements as existing reactors.
- The EIS should also recommend that no design be approved that cannot safely withstand an airplane attack or other form of terrorist assault. (**0071-30** [Hadden, Karen])

Response: *Comments related to aspects site safety, security, and terrorism are not within the scope of the staff's environmental review. In addition, the Commission, has determined that terrorism is not predictable and is not an inevitable consequence of a proposed licensing action,*

*and that an EIS is not an appropriate format to address the challenges of terrorism. Additional information about the review team's actions regarding physical security since September 11, 2001, can be found on the NRC's public web site (*www.nrc.gov*).*

E.2.34 General Editorial Comments

Comment: TPWD recommends all numerics, references and duplicative statements between sections of the DEIS be checked for consistency and accuracy to ensure the proposed action is represented accurately and any contradictory statements have been removed from DEIS. (**0068-13** [Melinchuk, Ross] [Wicker, Julie])

Response: *The specific items identified in other comments from this same commenter have been corrected in the Final EIS. In addition, the NRC staff has reviewed the EIS in detail, and additional changes of an editorial nature have been made to the EIS in response to the general items identified in this comment.*

Appendix F

Key Consultation Correspondence Regarding the Comanche Peak Nuclear Power Plant, Units 3 and 4, Combined Licenses Application

Appendix F

Key Consultation Correspondence Regarding the Comanche Peak Nuclear Power Plant, Units 3 and 4, Combined Licenses Application

Correspondence sent and received during the evaluation process for the combined license application for the siting of two new nuclear units, Units 3 and 4, at the Comanche Peak Nuclear Power Plant site in Somervell and Hood Counties, Texas is identified in Table 1. In addition, a full copy of the Biological Assessment is included in this appendix.

Table 1. Key Consultation Correspondence

Source	Recipient	Date of Correspondence
U.S. Nuclear Regulatory Commission (William Burton)	Texas State Historic Preservation Officer (Lawerence Oaks)	December 23, 2008 ML083400507
U.S. Nuclear Regulatory Commission (William Burton)	Texas Parks and Wildlife Department (Kathy Boydston)	December 23, 2008 ML083400514
U.S. Nuclear Regulatory Commission (William Burton)	U.S. Advisory Council on Historic Preservation (Don Klima)	December 23, 2008 ML083410002
U.S. Nuclear Regulatory Commission (William Burton)	U.S. Fish and Wildlife Service (Tom Cloud)	December 23, 2008 ML083450242
U.S. Nuclear Regulatory Commission (William Burton)	National Marine Fisheries Service (David Bernhart)	December 23, 2008 ML083450284
U.S. Nuclear Regulatory Commission (William Burton)	Absentee-Shawnee Tribe of Oklahoma (Scott Miller)	December 23, 2008 ML083460276
U.S. Nuclear Regulatory Commission (William Burton)	White Mountain Apache Tribe (Ronnie Lupe)	December 23, 2008 ML083460284
U.S. Nuclear Regulatory Commission (William Burton)	Alabama-Coushatta Tribe of Texas (Bryant Celestine)	December 23, 2008 ML083460323
U.S. Nuclear Regulatory Commission (William Burton)	Apache Tribe of Oklahoma (Alonzo Chalepah)	December 23, 2008 ML083460347
U.S. Nuclear Regulatory Commission (William Burton)	Caddo Nation of Oklahoma (LaRue Parker)	December 23, 2008 ML083460378
U.S. Nuclear Regulatory Commission (William Burton)	Cheyenne Arapaho tribes of Oklahoma (Darrell Flyingman)	December 23, 2008 ML083460400
U.S. Nuclear Regulatory Commission (William Burton)	Comanche Nation (Wallace Coffey)	December 23, 2008 ML083460416

Table 1. (contd)

Source	Recipient	Date of Correspondence
U.S. Nuclear Regulatory Commission (William Burton)	The Delaware nation, Delaware Tribe of Western Oklahoma (Kerry Holton)	December 23, 2008 ML083460442
U.S. Nuclear Regulatory Commission (William Burton)	Delaware Tribe of Western Oklahoma (Jerry Douglas)	December 23, 2008 ML083460483
U.S. Nuclear Regulatory Commission (William Burton)	Ft. Sill Apache Tribe of Oklahoma (Jeff Houser)	December 23, 2008 ML083460509
U.S. Nuclear Regulatory Commission (William Burton)	Jicarilla Apache Nation (Lorene Willis)	December 23, 2008 ML083460546
U.S. Nuclear Regulatory Commission (William Burton)	Kickapoo Traditional Tribe of Texas (Juan Garza)	December 23, 2008 ML083460577
U.S. Nuclear Regulatory Commission (William Burton)	Kiowa Tribe of Oklahoma (Billy Horse)	December 23, 2008 ML083460598
U.S. Nuclear Regulatory Commission (William Burton)	Mescalero Apache Tribe (Carleton Naiche-Palmer)	December 23, 2008 ML083460623
U.S. Nuclear Regulatory Commission (William Burton)	Wichita and Affiliated Tribes (Leslie Standing)	December 23, 2008 ML083470301
U.S. Nuclear Regulatory Commission (William Burton)	Osage Nation (Jim Roan Gray)	December 23, 2008 ML083470322
U.S. Nuclear Regulatory Commission (William Burton)	Tonkawa Tribe of Oklahoma (Anthony Street)	December 23, 2008 ML083470373
Tonkawa Tribe of Oklahoma (Donald L. Patterson)	U.S. Nuclear Regulatory Commission (William Burton)	January 5, 2009 ML090500590
National Marine Fisheries Service (David M. Bernhart)	U.S. Nuclear Regulatory Commission (William Burton)	January 8, 2009 ML090230148
U.S. Environmental Protection Agency, Region 6 (Cathy Gilmore)	U.S. Nuclear Regulatory Commission (Michael Lesar)	February 13, 2009 ML090680037
Texas Parks and Wildlife Department (Carter Smith)	U.S. Nuclear Regulatory Commission (Michael Lesar)	February 16, 2009 ML090680387
Advisory Council on Historic Preservation (Charlene Dwin Vaughn)	U.S. Nuclear Regulatory Commission (William Burton)	February 17, 2009 ML090500077
U.S. Fish and Wildlife Services (Sean Patrick Edwards)	U.S. Nuclear Regulatory Commission (Michael Willingham)	February 19, 2009 ML092430749
Texas Parks and Wildlife Department (Karen Hardin)	U.S. Nuclear Regulatory Commission (Michael Lesar)	April 24, 2009 ML091310617
Texas Historical Commission (Mark Wolfe)	Enercon Services Inc. (Stacy Burgess)	June 10, 2009 ML092090669

Table 1. (contd)

Source	Recipient	Date of Correspondence
U.S. Nuclear Regulatory Commission (Scott Flanders)	U.S. Environmental Protection Agency	August 6, 2010 ML101290752
U.S> Nuclear Regulatory Commission (Gregory P. Hatchett)	Texas Commission on Environmental Quality (Tangela Niemann)	August 6, 2010 ML101950280
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	U.S. Fish and Wildliffe Service (Tom Cloud)	August 6, 2010 ML101960020
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	National Marine Fisheries Service (David Bernhart)	August 6, 2010 ML101960039
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Texas Parks and Wildlife Department (Kathy Boydston)	August 6, 2010 ML101960050
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	White Mountain Apache Tribe (Ronnie Lupe)	August 6, 2010 ML102090382
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Caddo Nation of Oklahoma (LaRue Parker)	August 10, 2010 ML102180328
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Apache Tribe of Oklahoma (Henry Kostzuta)	August 10, 2010 ML102180335
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Wichita and Affiliated Tribes (Gary McAdams)	August 10, 2010 ML102180341
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Cheyenne and Arapaho Tribes of Oklahoma (Charles Surveyor)	August 10, 2010 ML102180356
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Delaware Tribe of Western Oklahoma (Lawrence Snake)	August 10, 2010 ML102180361
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Comanche Nation (Jimmy Arterberry)	August 10, 2010 ML102210305
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Tonkawa Tribe of Indians of Oklahoma (Don Patterson)	August 10, 2010 ML102210307
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Osage Nation (Jim Roan Gray)	August 10, 2010 ML102210316
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Mescalero Apache Tribe (Mark Chino)	August 10, 2010 ML102210327
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Kiowa Indian Tribe of Oklahoma (Donald Tofpi)	August 10, 2010 ML102210329
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Kickapoo Traditional Tribe of Texas (Juan Garza)	August 10, 2010 ML102210332
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Absentee Shawnee Tribe (Larry Nuckolls)	August 10, 2010 ML102210352
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Jicarilla Apache Nation (Gifford Velarde)	August 11, 2010 ML102210333

Table 1. (contd)

Source	Recipient	Date of Correspondence
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Delaware Tribe of East Oklahoma (Joe Brooks)	August 11, 2010 ML102210334
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Fort Sill Apache Tribe of Oklahoma (Jeff Houser)	August 11, 2010 ML102210337
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Alabama-Coushatta Tribe of Texas (Bryant Celestine)	August 11, 2010 ML102210338
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Texas Historical Commission (Mark Wolfe)	August 12, 2010 ML101950205
U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	Advisory Council on Historic Preservation (Reid Nelson)	August 12, 2010 ML101950267
Texas Commission on Environmental Quality (Jim Harrison)	U.S. Nuclear Regulatory Commission (Gregory P. Hatchett)	August 12, 2010 ML102600188
Delaware Nation (Jason Ross)	U.S. Nuclear Regulatory Commission (Gregory P. Hatchett and Michael Willingham)	September 2, 2010 ML102500343
U.S. Department of the Interior (Stephen Spencer)	U.S. Nuclear Regulatory Commission (Rulemaking and Directives Branch)	October 20, 2010 ML102980431
Environmental Protection Agency – Region 6 (Rhonda Smith)	U.S. Nuclear Regulatory Commission (Rulemaking and Directives Branch)	October 26, 2010 ML103220200
Texas Parks and Wildlife Department (Ross Melinchuk)	U.S. Nuclear Regulatory Commission (Cindy Bladely))	November 5, 2010 ML103230413)

Biological Assessment

U.S. Fish and Wildlife Service

Comanche Peak Nuclear Power Plant
Units 3 and 4

U.S. Nuclear Regulatory Commission Combined License Application
Docket Nos. 52-034 and 52-035

U.S. Army Corps of Engineers Permit Application

August 2010

U.S. Nuclear Regulatory Commission
Rockville, Maryland

U.S. Army Corps of Engineers
Fort Worth District

1.0 Introduction

The U.S. Nuclear Regulatory Commission (NRC) is reviewing an application from Luminant Generation Company LLC (Luminant) for two combined licenses (COLs) for construction and operation of two new nuclear power plants at its Comanche Peak Nuclear Power Plant (CPNPP) site. The CPNPP site lies approximately 5 mi north of Glen Rose, Texas, and approximately 9 mi south of Granbury, Texas, outside the limits of either city (see Figure 1). The COL application was submitted by Luminant to the NRC on September 19, 2008. Concurrent with the NRC's review, the U.S. Army Corps of Engineers (USACE) is reviewing Luminant's COL application for a Department of the Army (DA) Permit to build the reactors and support structures in waters of the United States on the CPNPP site. The NRC and the USACE are cooperating agencies with the NRC being the lead agency, and this biological assessment (BA) supports a joint consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA) of 1973. The USACE is cooperating with the NRC to ensure the information presented in the EIS is adequate to fulfill the requirements of Corps regulations; the Clean Water Act Section 404(b)(1) Guidelines, which contain the substantive environmental criteria used by the USACE in evaluating discharges of dredged or fill material into waters of the United States; and the USACE public interest review process. Currently there are two operating nuclear reactors on the CPNPP site, Units 1 and 2.

The proposed new reactors, Units 3 and 4, would be located adjacent to the existing units in areas that had experienced previous temporary disturbance during development of Units 1 and 2, along with some adjoining areas of previously undisturbed areas of land. The proposed support structures would also occupy previously developed land as well as grasslands, Ashe juniper (*Juniperus ashei*) woodland - savanna, and mixed hardwood communities. Luminant has identified the need for new and expanded transmission line and pipeline corridors as part of the project (see Figure 2). The routes for a proposed 17-mi transmission line (referred to as the DeCordova line) and a proposed 17-mi cooling water pipeline to Lake Granbury would go through Somervell and Hood Counties, Texas. A proposed 45-mi transmission line (referred to as the Whitney line) would go through Somervell and Bosque Counties. Although approximate corridors for the new lines have been identified, exact rights-of-way (ROWs) for the new lines are yet-to-be determined. For three other transmission line ROWs with lengths of 41.6, 22.4, and 22.4 mi, Luminant has stated that no land-use impacts are anticipated, since the new conductors would be added to vacant circuit positions on existing steel towers on ROWs where vegetative maintenance is already being performed on those ROWs (Luminant 2009a).

The NRC is required to prepare an environmental impact statement (EIS) as part of the agency's review of the COL and DA permit applications. As required by Title 10 of the Code of Federal Regulations (CFR) Part 51.26, the NRC has published in the Federal Register a Notice of Intent (73 FR 77076) to prepare an EIS and to conduct scoping. The final EIS would be issued after considering public comments on the draft EIS. The impact analysis in the EIS includes an assessment of the potential environmental impacts of the construction and operation of the two new nuclear power units at the CPNPP site and along the associated transmission and pipeline corridors, including potential impacts to threatened and endangered species. If approved, the COL and DA permit would authorize Luminant to construct and operate the new units.

This BA examines the potential impacts on federally listed threatened or endangered terrestrial species of construction and operation of the proposed Units 3 and 4 at the CPNPP site and along the proposed new transmission and pipeline ROW, pursuant to Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended.

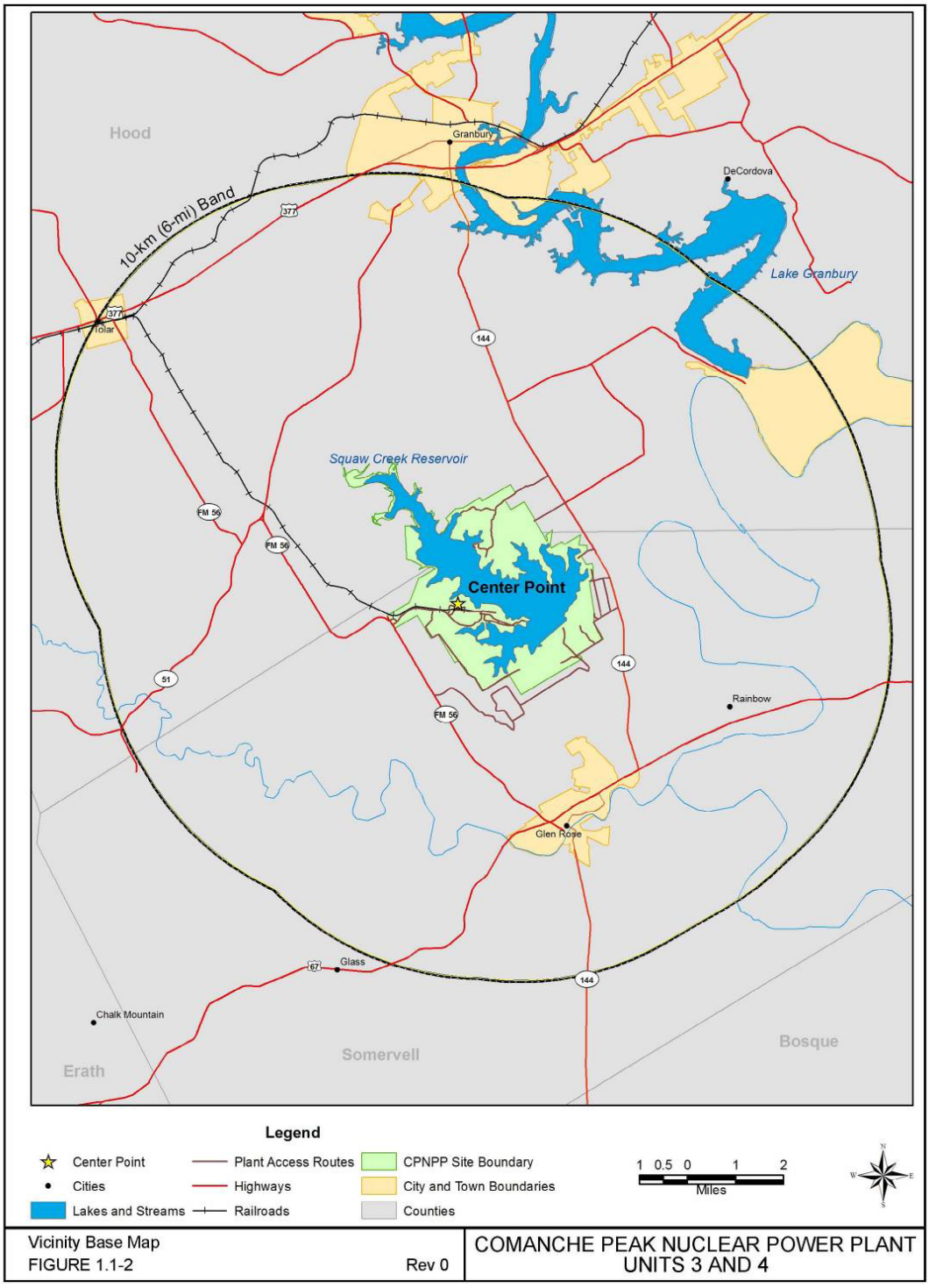

Figure 1. Location of the CPNPP Site Within Hood and Somervell Counties, Texas (Luminant 2009a)

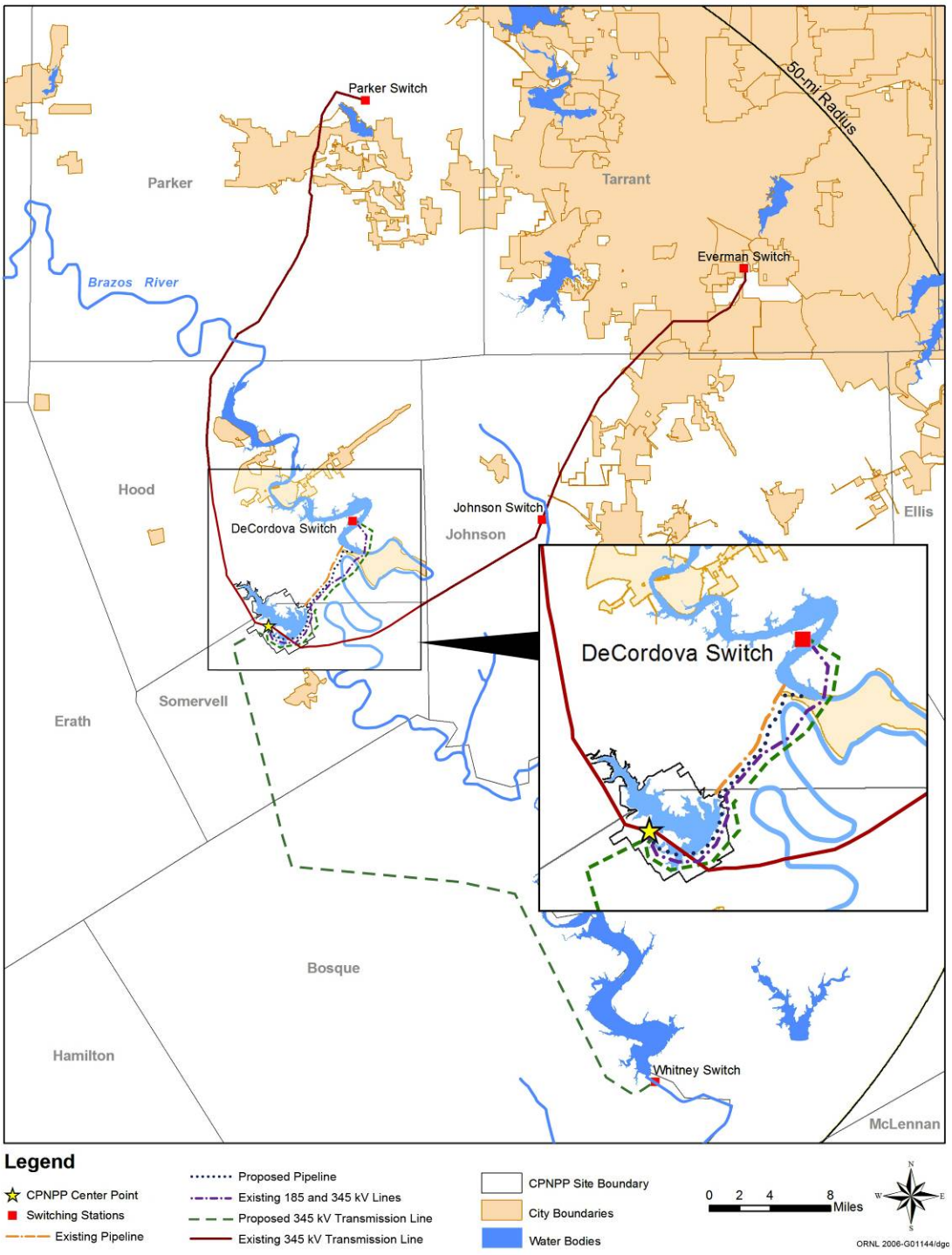

Figure 2. Existing and Proposed Transmission Line Rights-of-Way and Pipeline Routes. Note: All Routes are Approximate, and the Exact Alignments of the Routes have Yet to be Determined. The Existing 345-kV Transmission Line Rights-of-Way Can Support a Second Circuit on the Existing Support Towers. The Existing 185 and 345-kV Transmission Lines will not be Modified (Adapted from Luminant 2009a)

2.0 CPNPP Project Site Description

The CPNPP site lies within the Western Cross Timbers subdivision of the Grand Prairie physiographic province (Wermund 1996). The province is transitional between the vast prairies to the west and the forested hills or low mountains to the east. Ecologically, the site lies within the Western Cross Timbers subdivision of the Grand Prairie ecoregion, which is characterized by a mosaic of forest, woodland, savanna, and prairie with dominant vegetation that includes little bluestem (*Schizachyrium scoparium*) with scattered stands of blackjack oak (*Quercus marilandica*) and post oak (*Q. stellata*) (Griffith et al. 2004). Historical records indicate that much of the region existed as a grassland or open live oak savanna that supported herds of bison and other herbivores dependent on the tall grasses that dominated the region (TPWD 2007). The introduction of domestic livestock, farming operations, and wildfire control changed the landscape of much of the region. These practices created a landscape that experienced invasion and localized domination in some areas by problematic scrub species such as mesquite (*Prosopis* spp.), Ashe juniper, and other native woody species. Overgrazing by livestock and elimination of naturally occurring fire also reduced native grass cover and allowed the invasion of other, less desirable annual grasses and forbs.

Luminant prepared an ecological vegetation cover type map of the CPNPP site based on interpretation of aerial photographs showing the current spatial distribution of vegetation types and aquatic habitats present (Figure 3). The two general regional vegetation cover types (oak-mesquite-juniper savanna and woodlands, and silver bluestem [*Bothriochloa saccharoides*]–Texas wintergrass [*Nassela* (=*Stipa) leucotricha*]) were further classified into more site-specific descriptions using 1999 infrared aerial photography and ground-truthing in 2006 and 2007 (Luminant 2009a). Figure 3 shows that terrestrial cover of the site is predominantly Ashe juniper woodland – savanna and grasslands. A description of each cover type follows:

Ashe Juniper Woodland - Savanna. Strands of Ashe juniper woodland – savanna are evergreen, dominated by mature Ashe juniper trees or a combination of mature and immature Ashe juniper trees and saplings. Mature Ashe juniper trees are over 15 ft high with 5 in or more in diameter at breast height (DBH), approximately 4.5 ft above the ground. Hardwood species occupy 10 percent or less of the canopy. This cover type is the most common terrestrial habitat type at CPNPP and occupies a total of about 3071 ac or approximately 39 percent of the site. Ashe juniper woodland - savanna covers about 60 percent of the peninsula where new cooling towers for Units 3 and 4 would be located. This peninsula is located just to the northwest of, and adjacent to, the peninsula on which existing Units 1 and 2 are located (Figure 4). Substantial land clearing would be needed on the peninsula to accommodate the cooling towers. Similarly, the proposed blowdown treatment facility (BDTF), which is located to the southeast (see Figure 5), would be developed in what is now predominantly Ashe juniper habitat. This facility is only in design concept phase, but the roughly 400-ac location it would occupy, including its associated evaporation ponds, is depicted in Figure 5.

Mixed Hardwood Forest. Mixed hardwood forests are dominated by a combination of hardwood tree species including live oak (*Quercus virginiana*), cedar elms (*Ulmus crassifolia*), mesquite, hackberry (*Celtis* spp.), Texas ash (*Fraxinus texensis*), chittamwood (*Sideroxlyon lanuginosa*), and occasional persimmon (*Diospyros texana*) trees. Ashe junipers comprise 30 percent or less of the tree canopy in mixed hardwood stands. The shrub layer includes buckbrush (*Ceanothus cuneatus*), agarito (*Berberis trifoliata*), lemon sumac (*Rhus aromatica*), and Mexican buckeye (*Ungnadia speciosa*). This cover type occupies a total of about 528 ac at CPNPP or approximately 7 percent of the site. Transect data, collected by Luminant in 2007

(Luminant 2009a) on the peninsula where new cooling towers would be located, show that mixed hardwood forest covers approximately 16 percent of the transect lines surveyed.

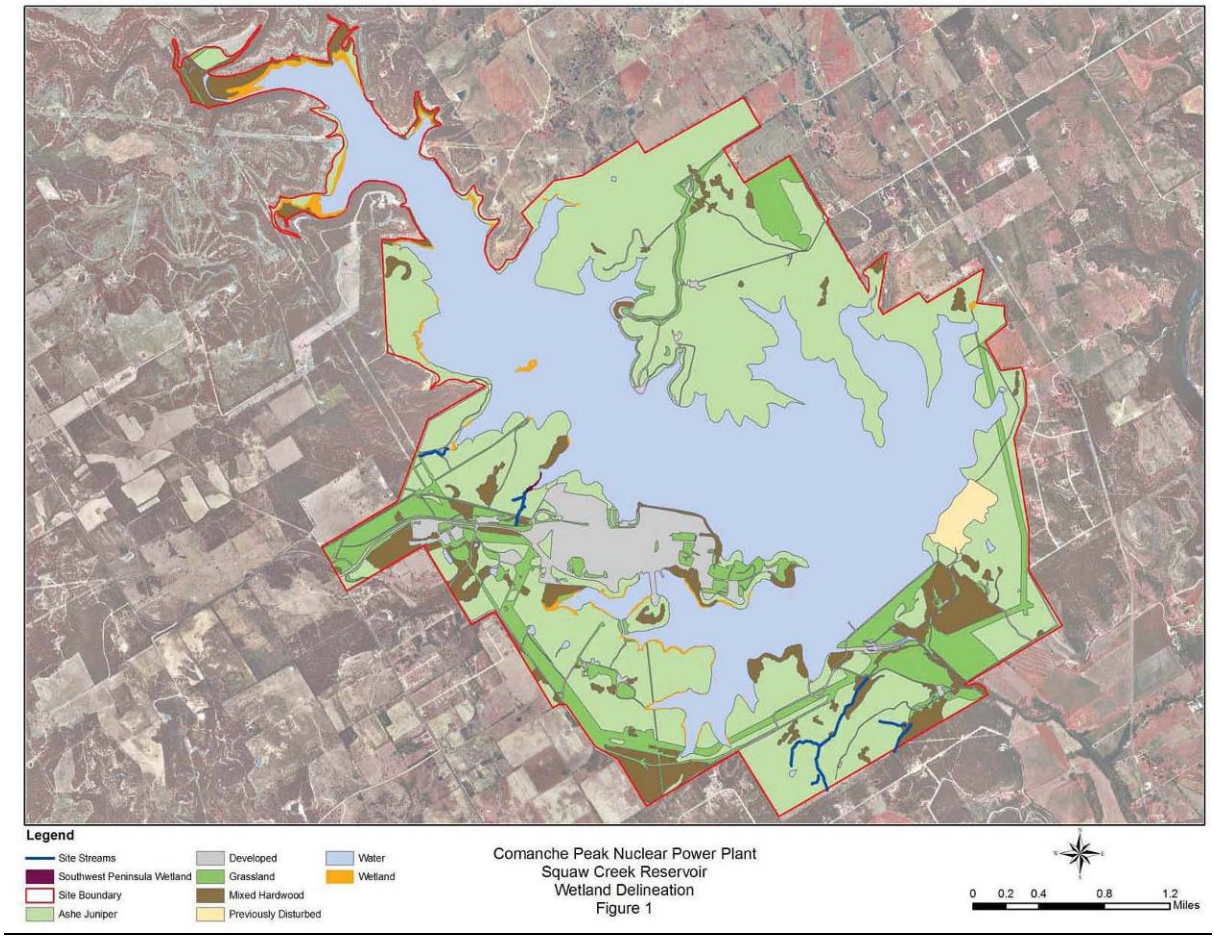

Figure 3. Ecological Vegetation Cover Type Map of the CPNPP Site (Luminant 2009a; Enercon 2009)

Grassland. Grasslands within the site are dominated by either a variety of native grasses, such as big (*Andropogon gerardii*), little, and silver bluestem; gramas (*Bouteloua* spp.); Texas wintergrass; and some forbs, or by monocultures of turf grass such as Bermuda grass (*Cynodon dactylon*) or fescues (*Festuca* spp.). Bermuda grass lawns are common at the site near the facility entrance and around buildings. Fescue is a genus of more than 300 species of tufted grasses commonly planted to supplement native grass in pastures. This cover type occupies a total of about 698 ac at CPNPP or approximately 9 percent of the site. Transect data collected by Luminant in 2007 (Luminant 2009a) on the peninsula where new cooling towers would be located show that grassy openings cover about 24 percent of the transect lines surveyed.

Previously Disturbed. These are areas within the site that are either mechanically or naturally disturbed and consist either of bare ground or weedy plant species that are indicators of disturbance. This cover type occupies a total of about 60 ac at CPNPP or less than 1 percent of the site.

Figure 4. Peninsula Where New Cooling Towers for Units 3 and 4 Would be Located (Enercon 2009)

Developed Areas. Developed areas within the site consist of office buildings, reactors and related facilities, switchyards, and storage facilities as well as pavement or gravel for parking lots and roads. Also included within this cover type are the dam, spillway, structures related to the dam, and the Safe Shutdown Impoundment and its equalization channel. This cover type occupies a total of about 439 ac at CPNPP or approximately 6 percent of the site.

Open Water. The open water type at CPNPP consists primarily of Squaw Creek Reservoir (SCR), the Safe Shutdown Impoundment, evaporation ponds for nonradioactive waste water, and an emergency spillway. Because of SCR, open water is the most extensive cover type on the site and occupies a total of about 3125 ac or approximately 39 percent.

Wetlands. Wetlands are areas transitional between land and open water. At CPNPP small areas of wetland occur primarily in and along the shoreline of coves on SCR. Wetlands occupy a total of about 53 ac at CPNPP or less than 1 percent of the site.

The electric transmission lines and pipelines originating from CPNPP cross forested and range habitats typical of north-central Texas, predominantly grassland with patches of deciduous and evergreen forest. Acreages of vegetation types likely to be crossed by new transmission and pipeline ROWs are shown in Table 2. Acreages of vegetation types to be crossed cannot be determined precisely until the exact ROW boundaries are determined.

Below is a brief description of the construction, operation, and related activities that could potentially affect federally listed threatened or endangered terrestrial species, should any be present. The determination of potential effects was based on habitat affinities and life history considerations, as well as the nature and spatial and temporal considerations of the activities.

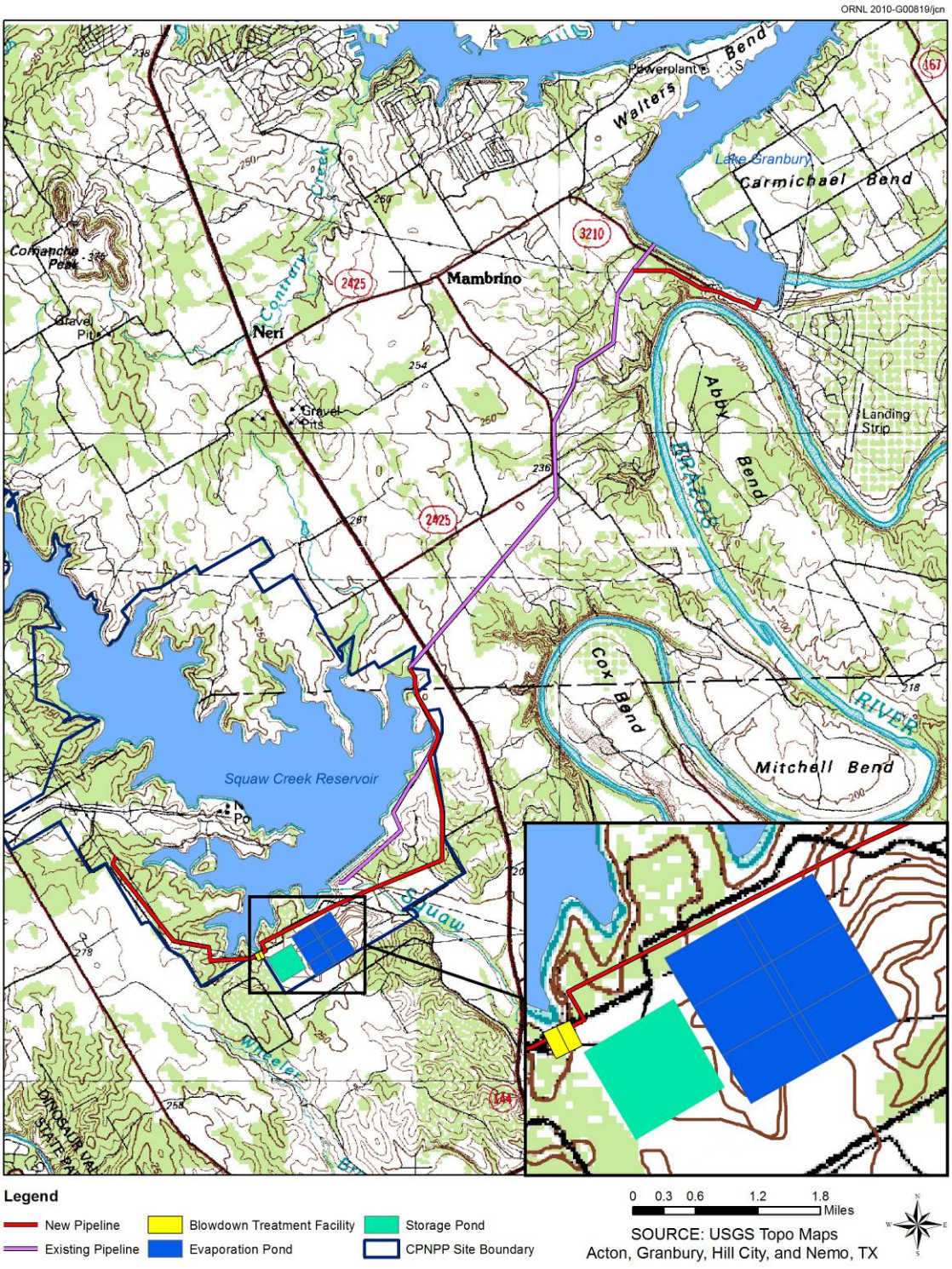

Figure. 5. Approximate Location of 400 ac BDTF and Associated Evaporation and Storage Ponds (Adapted from Luminant 2009a)

Table 2. Acreages of Vegetation Types Likely to be Crossed by New Transmission and Pipeline Right-of-Way

Cover Type	Whitney	DeCordova	Cooling Water Pipeline
Water	3.1	11.0	0.2
Developed	20.7	12.9	7.7
Barren Land	0.4	0.9	0.2
Deciduous Forest	176.1	10.1	6.3
Evergreen Forest	137.0	3.1	3.7
Mixed Forest	0.0	0.0	0.0
Scrub/Shrub	0.0	0.0	0.0
Grassland	550.0	107.5	31.4
Pasture	35.8	1.3	0.0
Cropland	7.6	0.0	0.4
Woody Wetlands	22.9	1.6	0.1
Total	953.6	148.4	50.0

Source: Luminant 2009a.

3.0 Proposed Federal Actions

The proposed federal actions are (1) NRC's issuance of two COLs for the construction and operation of two new nuclear reactors at the proposed CPNPP site pursuant to Title 10 of the Code of Federal Regulations (CFR), Section 52.97 (10 CFR 52.97),, and (2) the USACE's issuance of a DA permit pursuant to Section 404 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act of 1899.

The NRC, in a final rule dated October 9, 2007 (72 FR 57416), limited the definition of "construction" in 10 CFR 50.10 and to those activities that fall within its regulatory authority in 10 CFR 51.4. Many of the activities required to build a nuclear power plant are not part of the NRC action to license the plant. Activities associated with building the plant that are not within the purview of the NRC action are grouped under the term "preconstruction." Examples of preconstruction activities include the clearing and grading, building support buildings, and building transmission lines. Preconstruction activities may take place before the application for a COL is submitted, during the staff's review of a COL application, or after a COL is granted. Although preconstruction activities are outside the NRC's regulatory authority, many of them are within the regulatory authority of local, State, or other Federal agencies. The distinction between construction and preconstruction is not carried forward in this BA, and both are discussed jointly as construction for the purposes of this BA prepared jointly by NRC and USACE.

The 7950-ac CPNPP site lies around SCR (Figure 6). Units 3 and 4 would be placed on the peninsula where Units 1 and 2 are located in areas of previously disturbed habitat and some adjoining undeveloped land. Cooling towers would be built on undisturbed land on a peninsula adjacent to and west of the new units, and the BDTF would be located in largely undisturbed habitat

Figure 6. Location of Proposed CPNPP Units 3 and 4 in Relation to Existing Units 1 and 2 (Luminant 2009a

southeast of Units 1 and 2 below the SCR dam. The BDTF would remove salt via evaporation and reverse osmosis from used cooling water before returning it to its source, Lake Granbury. The DeCordova transmission line would leave the site and extend northeast to DeCordova. The Whitney transmission line would leave the site along a route to the south to Whitney (Figure 2). The cooling water pipeline would leave the site and extend northeast to Lake Granbury. Exact routes for these proposed new lines have not yet been determined. Specific locations would be

determined through a Routing Study Process considering environmental impacts, conducted under review of the Public Utility Commission of Texas (Luminant 2009a).

The development (construction and preconstruction) and operation activities that could affect federally listed species include the following:

Development (Construction and Preconstruction)

- Removal (clearing) of habitat used by federally threatened or endangered terrestrial species for development of reactors and support structures.
- Removal (clearing) of habitat used by federally threatened or endangered terrestrial species for development of new transmission and pipeline ROWs.
- Fragmentation of habitat and interference with movement of wildlife.
- Generation of sediment and fugitive dust.
- Generation of noise by construction equipment and personnel.
- Possible avian collisions with tall equipment or structures such as construction cranes or transmission towers.

Operation

- Potential impacts of noise, salt drift, fogging, and icing from operation of reactor cooling systems, should suitable habitat be present.
- Potential impacts of required periodic vegetation maintenance on reactor grounds and transmission line and pipeline ROWs.

Construction and Preconstruction: A total of 675 ac at the CPNPP site would be affected by construction and preconstruction activities for Units 3 and 4 and support structures, including the cooling towers and BDTF and associated evaporation ponds (Luminant 2009a). Of this area 125 ac would be revegetated, and 550 ac would be occupied by various structures. The habitat that would be affected consists of 413 ac of Ashe juniper, 63 ac of mixed hardwood, 94 ac of grassland, and 105 ac that has already been developed (Luminant 2009a). These activities would result in loss of habitat in the areas developed as structures, and alteration of the remaining affected areas which would be revegetated. During clearing activities, as well as throughout preconstruction and construction work, nearby wildlife could be temporarily displaced and disturbed by noise.

Building power lines and pipelines on new ROWs would result in a relatively small amount of permanent habitat loss for towers, access roads, and other structures. Most of the land crossed would not be occupied by permanent structures. Tower locations could be adjusted in the field to avoid particularly ecologically sensitive areas. Forested areas would be initially cleared, resulting in loss of forest habitat and fragmentation of remaining forest areas. Grassland areas would not be permanently altered, but all new ROWs would require vegetation management to keep woody species from becoming established and interfering with operations. As shown in Table 2, forested area to be crossed and managed would be approximately 313 ac for the Whitney transmission line, 13 ac for the DeCordova transmission line, and 10 ac for the cooling water pipeline. Actual acreages cannot be determined until exact routes for these lines have been selected.

Operation: Wildlife present in locales adjacent to areas cleared by project activities could be affected by operation of the new structures associated with Units 3 and 4. Potential impacts from operation of cooling towers and the BDTF include increased fogging, icing, and salt drift

from evaporated water. Wildlife present along new transmission line and pipeline ROWs would be affected by periodic vegetation management of these areas.

The transmission lines to be constructed are 385-kV (Luminant 2009a). This voltage is relatively small for major transmission lines; no electromagnetic effects to nearby flora and fauna would be expected (NRC 1996).

4.0 Species Descriptions

Federally threatened or endangered species listed by USFWS as occurring in Hood, Somervell, or Bosque counties are all birds: black-capped vireo (*Vireo atricapillus*), golden-cheeked warbler (*Dendroica chrysoparia*), and whooping crane (*Grus americana*) (USFWS 2010). There are two additional species (both fish) potentially occurring in Hood and Somervell Counties that are designated by USFWS as Federal candidates for listing: the sharpnose shiner (*Notropis oxyrhynchus*) and the smalleye shiner (*Notropis buccula*). Candidate species are under consideration for listing but are not currently protected under the ESA: therefore they are not addressed further in this BA. No critical habitat for these species has been designated within these counties (50 CFR Part 17.11).

There are no known Federally listed aquatic species recorded as occurring in the three counties in which CPNPP Units 3 and 4 (Hood and Somervell Counties) and the proposed new transmission line ROWs (Somervell and Bosque Counties) would be located.

4.1 Whooping crane

The whooping crane is listed as occurring in Hood, Somervell, and Bosque Counties (USFWS 2010). Critical wintering habitat for the whooping crane lies approximately 525 mi southwest of the site at the Aransas National Wildlife Refuge. This species has not been observed on the CPNPP site (Luminant 2009a). No known occurrences of whooping cranes have been reported within a 10-mi radius of the CPNPP site, or the proposed powerline and pipeline corridors (TPWD 2009), and they are not likely to use the inland habitats found on the CPNPP site for foraging, roosting, or nesting. Therefore they are not considered further in this BA.

4.2 Black-capped vireo

Black-capped vireos are small, about 4.5 inches size, insectivorous, migratory songbirds found only in Oklahoma and Texas. Black-capped vireos prefer patchy woodlands or shrublands. Males are characterized by olive-green backs, white stomachs, and black caps with a white patch around a reddish eye. Females are more cryptic in color than males with dark coloration along their backs (Campbell 2003, Grzybowski 1995, USFWS 1991).

The black-capped vireo was Federally listed as endangered in 1987 due to threats from brown-headed cowbird (*Molothrus ater*) nest parasitism and loss of habitat due to such factors as urbanization, grazing, range improvement, and succession (52 FR 37420). A more recent status review of this species recommended the black-capped vireo be downlisted to Federally threatened due to finding that the known population is much larger than at the time of listing, and that while original threats to the species still exist, their magnitude has decreased (USFWS 2007).

Black-capped vireos arrive in Texas from mid-March to mid-April. Breeding habitat is quite variable across its range, but generally consists of shrublands with a distinctive patchy structure (USFWS 2007). They nest in areas with 30–60 percent cover of deciduous trees. Their preferred habitat contains woody plants in excess of 6 ft high with cover extending to the ground. Open grasslands play an important role in habitat, providing foraging areas for the vireos (Campbell 2003, Graber 1961). Home ranges vary from 3–10 ac (Campbell 2003, Graber 1961). Males and females both contribute to nest site selection and building, often in a fork of a deciduous tree branch (Grzybowski 1995). Black-capped vireos may live for more than five years, and usually return year after year to the same territory. They begin to migrate to the wintering grounds on Mexico's western coast in July and are usually gone from Texas by mid-September (USFWS 2007).

Habitat losses have occurred through development, overbrowsing, and suppression and alteration of natural disturbance regimes. Cowbird nest parasitism has reduced vireo reproduction in many areas (USFWS 1991). Much of the current threat can largely be attributed to the invasion and growth of juniper species, especially Ashe juniper (USFWS 2007). Juniper invasion has contributed to an overall afforestation of rangeland habitats throughout much of the species' breeding range (USFWS 2007). Suppression of fire has favored the spread of junipers over fire-adapted *Quercus* and *Rhus* species, resulting in loss of black-capped vireo habitat (USFWS 1991).

4.3 Golden-cheeked warbler

Golden-cheeked warblers are small migratory insectivorous songbirds, about 5 in long, which are characterized by yellow cheeks bisected by a black streak extending across the eye. Males and females are similar in appearance, although females are drabber in color (Campbell 2003, Ladd and Gass 1999). They are endemic to Texas during the breeding season, and certain upland sites within mature Ashe juniper forest at CPNPP may provide appropriate habitat (Luminant 2009a). During non-breeding season the range includes portions of Mexico, Guatemala, Honduras, and Nicaragua (USFWS 1992).

The golden-cheeked warbler was Federally listed as endangered in 1990 (55 FR 53153) due to habitat loss and fragmentation resulting from urban encroachment into its range and widespread clearing of juniper as a range management practice. Brown-headed cowbird parasitism has increased in magnitude as habitat becomes more fragmented. A 5-year review to ensure that the classification of this species is still accurate was announced on April 21, 2006 (71 FR 20714); to date its listing status has not changed (USFWS 2010).

Golden-cheeked warblers are dependent on Ashe juniper, but also require stands mixed with oaks, elms, and other hardwoods in relatively moist areas, such as steep canyons and slopes, and adjacent uplands (USFWS 1992). Kroll (1980) reported that occupied golden-cheeked warbler habitats had lower juniper-oak ratio (1.35:1), contained junipers over 40 years old, and had lower understory diversity than unoccupied areas. Older Ashe junipers have peeling bark that is an essential component of golden-cheeked warbler nest construction. Older Ashe junipers are utilized as calling sites during mating.

Breeding territory size estimates range from about 3.2 ac (Pulich 1976) to about 19.8 ac (Kroll 1980) per pair. Wahl et al (1990) reported the median density for all study sites with golden-cheeked warblers to be 16.5 ac per pair.

After females arrive in March, mating begins and extends until April or May. Decline of golden-cheeked warblers is attributed to habitat loss and fragmentation due to range improvement

practices, rapid urban development, flood control, and construction of impoundments (Ladd and Gass 1999). Nest parasitism by the brown-headed cowbird, and competition with blue jays (*Cyanocitta cristata*) have also contributed to population declines (Campbell 2003, Engels and Sexton 1994). The USFWS along with TPWD have implemented land-owner management plans and Safe Harbor Agreements to protect and enhance existing and potential golden-cheeked warbler habitat (Campbell 2003, Ladd and Gass 1999, USFWS 1992).

5.0 Potential Environmental Effects of the Proposed Actions

This section describes potential impacts to black-capped vireo and golden-cheeked warbler from development and operation of the proposed Units 3 and 4 at the CPNPP site.

5.1 Black-capped vireo

CPNPP site: Ten occurrences of black-capped vireo have been reported in the Texas Natural Diversity Database (TXNDD) for the area within 10 mi of the CPNPP site and new transmission and pipelines (TPWD 2009). None of the reported occurrences, however, is closer than about 2.5 mi to the CPNPP site.

Nevertheless, to determine whether black-capped vireos might use habitats at the site, Luminant conducted informal surveys during April 2007 at various times of the day over the course of three days at CPNPP concentrating on the peninsula area proposed for construction of the new cooling towers (Figure 4) (Luminant 2009a). Survey methods consisted of walking transects on east/west axes spaced approximately 100 m (328ft) apart. Black-capped vireos were not audibly or visually identified, and no suitable breeding habitat was noted (Luminant 2009a). During an early May visit in 2007, a woven, pendulous nest was noted in a low tree branch. This nest may have been constructed by an unidentified vireo species, or possibly by a golden-cheeked warbler (Luminant 2009a). In April and May of 2008 the same area was surveyed again, but this time looking specifically for golden-cheeked warblers; presence of other bird species was noted and black-capped vireos was not reported (PBS&J 2008).

DeCordova power transmission line, and cooling water pipeline: Neither the DeCordova transmission line ROW, nor the cooling water pipeline ROW, lie closer than about 2.5 mi to any TXNDD reported occurrence of black-capped vireo (TPWD 2009).

Whitney power transmission line: Recorded occurrences of black-capped vireo have been documented about 2.5 mi southwest of the CPNPP site in Dinosaur Valley State Park where breeding populations of both species occur (TPWD 2009). The Whitney transmission line ROW might pass very close to, or possibly through, a small portion of the northwest corner of the park. Depending on the exact ROW that Oncor ultimately chooses, black-capped vireo habitat in Dinosaur Valley State Park, and possibly at other locations along the Whitney ROW, could be noticeably affected. Suitable breeding habitat could be lost, and nest parasitism by brown-headed cowbird could be increased due to additional forest fragmentation.

Regulatory Coordination: Oncor would coordination with TPWD and USFWS to determine the potential for impacts to black-capped vireo would be undertaken as part of the environmental review process of the Electric Reliability Council of Texas (ERCOT) and the Public Utility Commission of Texas (PUCT) once it selects the exact ROW (Luminant 2009a). It is likely that with possible rerouting of the ROW, adjustment of tower placement, and timing of site preparation activities to avoid the breeding season, impacts to black-capped vireo could be

minimized or avoided. The review team expects that Oncor could adjust the exact ROW location and tower placement, as well as time project activities to avoid the breeding season, in a way that avoids or minimizes impacts to black-capped vireo.

5.2 Golden-cheeked warbler

This section describes potential impacts to golden-cheeked warbler from development and operation of the proposed Units 3 and 4 at the CPNPP site.

CPNPP site: Thirteen occurrences of golden-cheeked warbler have been reported in the Texas Natural Diversity Database (TXNDD) for the area within 10 mi of the CPNPP site and new transmission and pipelines (TPWD 2009). None of these, however, is closer than about 2.5 mi to the CPNPP site.

Nevertheless, to determine whether golden-cheeked warblers might use habitats at the site, an informal survey for them was conducted during April 2007 at various times of the day over the course of three days at CPNPP concentrating on the peninsula area proposed for construction of the new cooling towers (Figure 7). Survey methods consisted of walking transects on east/west axes spaced approximately 100 m (328 ft) apart. Golden-cheeked warblers were not audibly or visually identified (Luminant 2009a). During a separate visit in early May in 2007, a woven, pendulous nest was noted in a low tree branch. This nest may have been constructed by an unidentified vireo species, or possibly by a golden-cheeked warbler (Luminant 2009a). In 2007 on the last day of the breeding season, May 15th, a targeted presence/absence survey for golden-cheeked warblers on the peninsula area was conducted, and again no visual or audio confirmation of golden-cheeked warbler presence was noted (PBS&J 2007). The biologist conducting the 2007 survey noted that most of the area of the peninsula would not be considered golden-cheeked warbler habitat due to the lack of a 20-percent mixture of hardwoods (PBS&J 2007). However, at a stream confluence at the southern base of the peninsula contained a slight mixture of hardwoods along the stream channels that would be considered as having very minimal characteristics associated with golden-cheeked warbler habitat (PBS&J 2007).

In April and May of 2008, during the breeding season for golden-cheeked warbler, a second targeted presence/absence survey was conducted to USFWS protocol on the peninsula area (Figure 7) (PBS&J 2008). No golden-cheeked warblers were observed within the project survey area (PBS&J 2008). As in the 2007 survey, most of the peninsula area was judged not to meet golden-cheeked warbler habitat requirements, but one 3.7 ac area of a mixture of Ashe juniper and hardwoods at the confluence of three streams (outlined in red on Figure 7) was considered to exhibit marginal golden-cheeked warbler nesting habitat characteristics (PBS&J 2008). The investigators did not consider this area to be favorable for use as breeding/nesting habitat, however, because:

> These areas are lacking in extended habitat characteristics (canopy cover, hardwood diversity, and structural characteristics) beyond the vegetation surrounding the stream channel perimeter, and are therefore isolated from any nearby populations. The sum of the primary survey area (i.e., the potential golden-cheeked warbler habitat) is 3.7 acres, and is spread out across three thin corridors; this area is considered to be highly fragmented and too small in size to support favorable nesting conditions (PBS&J 2008).

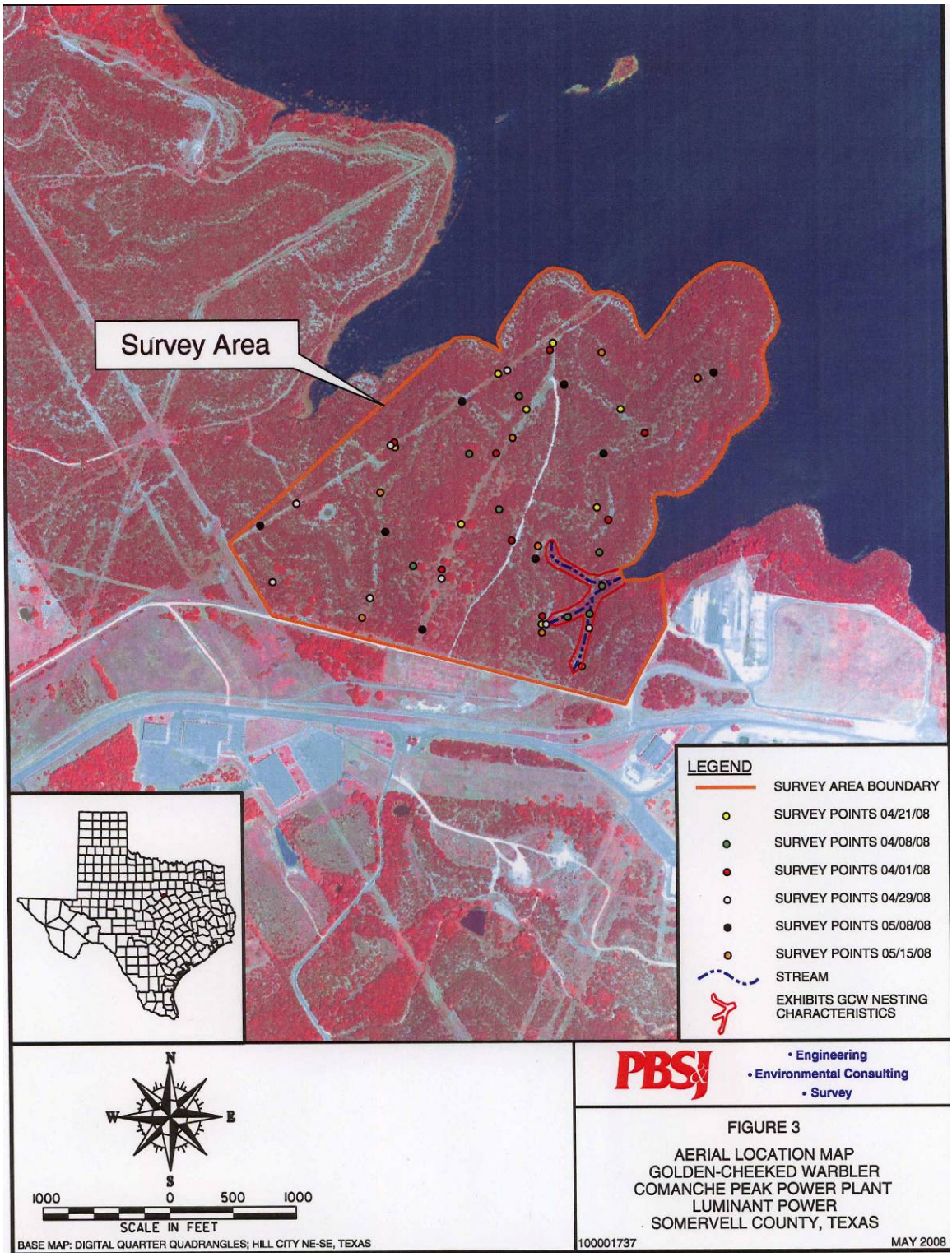

Figure 7. Area Surveyed in Targeted Golden Cheeked Warbler Survey Conducted to USFWS Protocol in 2008 (PBS&J 2008)

The 3.7 ac area was discussed at a scoping meeting with USFWS and TPWD held at CPNPP on February 2, 2009. It was noted that this area is surrounded by a small wetland, and USFWS recommended avoiding the wetland by an additional 100 ft buffer to provide a wildlife corridor in addition to a vegetative run-off "filter" to protect water quality (Edwards 2009). Current project plans, however, show that much of this area would be lost to project development (Enercon 2009).

An additional portion of the CPNPP site to be directly affected by development that could possibly contain suitable habitat for the golden-cheeked warbler is the 400-ac area that would be occupied by the BDTF and associated evaporation ponds (Figure 6). This area contains Ashe juniper habitat and smaller areas of mixed hardwood (Figure 4). To learn of habitat suitability, infrared aerial photographs of the area were examined to determine which areas would provide potential nesting habitat for the golden-cheeked warbler based on habitat descriptions provided by the USFWS (Luminant 2009a). Photographic signatures of tree species were used to identify areas that might require focused surveys. Areas were identified that had a mixture of Ashe juniper and deciduous hardwoods. These areas were ground-truthed by a visual qualitative analysis of density, canopy cover, and tree age on November 14, 2007 to determine if habitat was present that would be suitable for golden-cheeked warblers (Luminant 2009a). The comparison was based on percent cover of hardwood and evergreen canopy from point-transect data taken within a known golden-cheeked warbler site in Dinosaur Valley State Park. It was determined that the BDTF area did not contain the density and maturity of Ashe junipers necessary to qualify as suitable for golden-cheeked warblers (Luminant 2009a). Canopy cover in and adjacent to the BDTF was found to be only about 20 percent, which is less than the 35 percent minimum thought to be required (Luminant 2010a). Additional site reconnaissance performed on February 4, 2009 reconfirmed absence of suitable golden-cheeked warbler habitat in the area of the BDTF (Luminant 2009a).

It is unknown whether the additional Ashe juniper and hardwood cover type areas in the vicinity of the proposed BDTF, especially the isolated peninsula to the north (see Figure 4), could be suitable golden-cheeked warbler habitat. No golden-cheeked warbler surveys are known to have been performed in these areas. Depending on the location and design chosen for the BDTF, areas outside of the 400 ac could be affected by salt drift. Although salt drift from the misting system proposed to evaporate water at the BDTF has not been modeled in detail, salt concentrations leaving the misters would be approximately 576 kg/min (Luminant 2009a).

Luminant estimates that salt drift from the misting units could be deposited up to 1300 ft from the source with a wind speed of 10 mph (Luminant 2009b). The tentative location of the evaporation pond is close to the CPNPP site boundary (Figure 5) and vegetation in the vicinity is primarily Ashe juniper woodland - savanna (Figure 3). Although the exact location of the BDTF has not yet been determined, Luminant provided a conceptual sketch of the location of the ponds within the 400 ac to be occupied by the BDTF (Figure 8) (Luminant 2010b).

Luminant's response states that a salt fence would surround the evaporation ponds, and a 500 ft wide buffer would be provided between the first bank of misters and the outside edge of the evaporation ponds to provide sufficient distance between the mister nozzles and the salt fence barrier to ensure proper functioning of the salt fence to prevent drift (Luminant 2010b). The salt fence referred to by Luminant (Luminant 2010c) would be a 5 m (16 ft) high agricultural shade cloth netting which would be attached to a framework at the top, but loose at the bottom so it could blow in the wind to cause the fabric to shed accumulated salt. The manufacturer of the netting claims that salt passing through the netting falls out within one meter (3 ft) (Turbomist 2010). Further, Luminant states that precautions will be taken to contain the salt within the

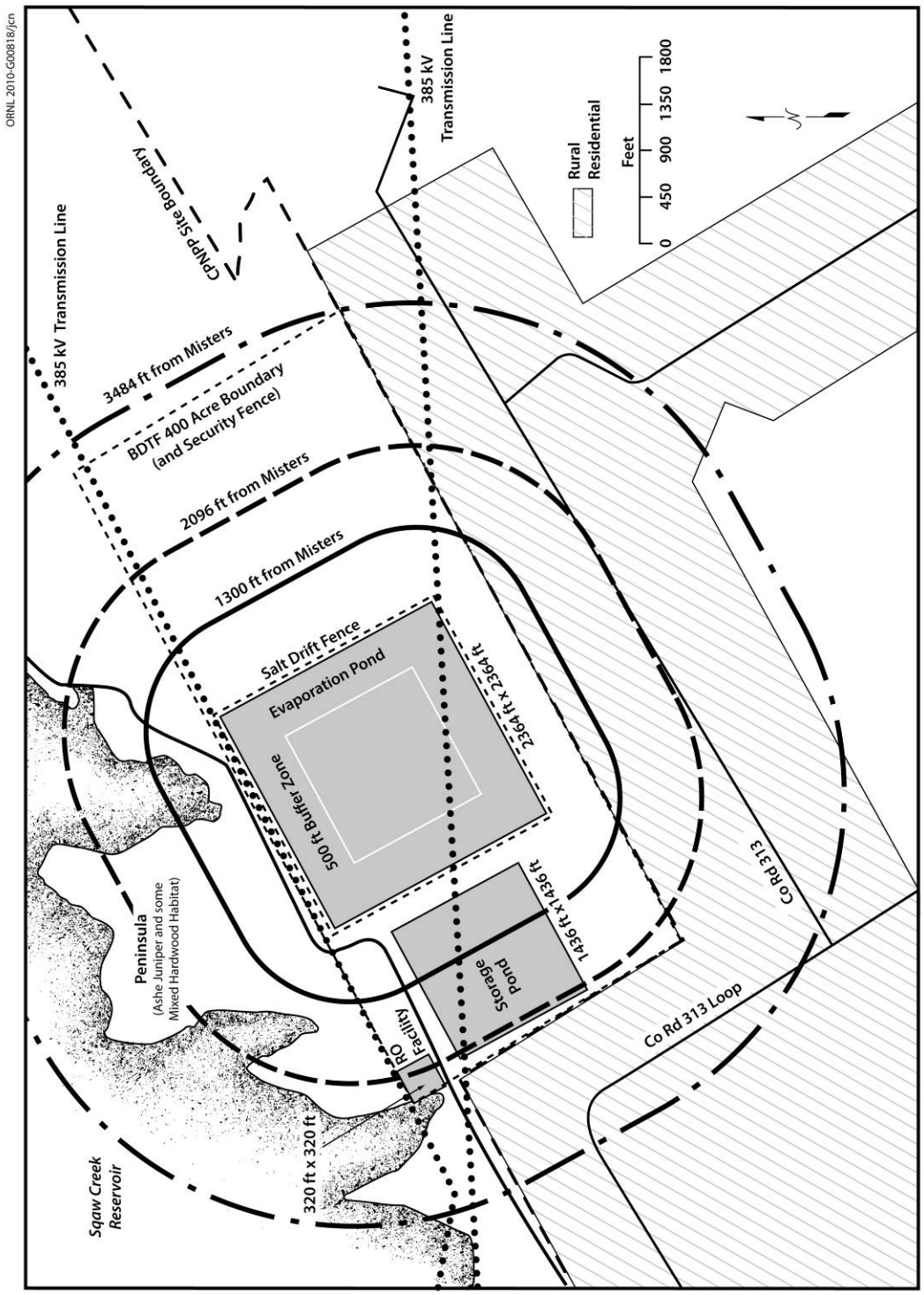

Figure 8. Schematic Layout of the Proposed Blowdown Treatment Facility Showing Distances from the Misters to Nearby Locations (Adapted from Luminant 2010b)

BDTF by using directional spray misting units in addition to the salt fences (Luminant 2010a). With these measures in place, Luminant estimates that salt deposition is anticipated to be less than 1 kg/ha/yr beyond the 400 ac of the BDTF (Luminant 2010c), which is less than what the NRC recognized as capable of injuring vegetation (NRC 2000).

The information provided by Luminant (Turbomist 2010) is not extensive enough to completely eliminate uncertainty regarding the potential for salt to be deposited beyond one meter from the salt fence. Luminant states that without the salt fence salt could drift 1300 ft from the misters (Luminant 2010b). If salt drifts to that distance then the review team estimates that deposition could spread over an area of about 199 ac beyond the evaporation pond (Quarles 2010). Much of this areal extent would be within the 400-ac area to be cleared for building the BDTF where the native vegetation would have been removed.

Potential for salt drift may be greater than 1300 ft, however. A study of salt deposition from an evaporative spray system using the same general type of mister proposed by Luminant found that deposition rates of salt were substantially increased at a distance of 2096 to 3484 ft surrounding the misters (Alonso et al. 2005). Based on Luminant's sketch of mister locations (Luminant 2010b) the review team estimates that this could result in drift over a total area beyond the evaporation pond of about 494 to 1226 ac. The area of increased salt deposition, assuming drift over the range of 1300 to 3484 ft, would extend over some or all of a peninsula to the north of the proposed BDTF location and covered by Ashe juniper woodland – savanna and mixed hardwood forest (Figure 3).

Considering the limited case history data available to the review team regarding the misters and the salt fence, it is uncertain if the measures (including but not limited to salt fence, and unidirectional operation of the misters) proposed by Luminant could completely prevent salt drift from the BDTF from affecting nearby natural vegetation. Salt deposition potential from the BDTF has not been quantified further because the facility is only in conceptual design phase. Due to the high volumes of salt that would be processed by the facility, even a small percentage loss of salt to the surrounding environment could have the potential to damage vegetation.

Depending on the exact extent of drift that results from operation of the BDTF, some of the Ashe juniper woodland - savanna and mixed hardwood forest habitat on the isolated peninsula to the north of the BDTF could be susceptible to salt drift injury. If this area contains suitable habitat for golden-cheeked warbler, then salt drift could affect this habitat and thereby affect golden-cheeked warbler. Otherwise, impacts to golden-cheeked warbler would be minimal.

DeCordova power transmission line, and cooling water pipeline: Neither the DeCordova transmission line ROW, nor the cooling water pipeline ROW, lies closer than about 2.5 mi to any TXNDD reported occurrence of golden-cheeked warbler (TPWD 2009). Recorded occurrences of golden-cheeked warbler, however, as well as black-capped vireo, have been documented about 2.5 mi southwest of the CPNPP site in Dinosaur Valley State Park where breeding populations of both species exist (TPWD 2009). The Whitney transmission line ROW might pass very close to, or possibly through, a small portion of the northwest corner of the park. Depending on the exact ROW that Oncor ultimately chooses, golden-cheeked warbler in Dinosaur Valley State Park, and possibly at other locations along the Whitney ROW, could be affected. Suitable breeding habitat could be lost, and predation by brown-headed cowbird could be increased due to additional forest fragmentation.

Regulatory Coordination: Oncor would coordinate with TPWD and USFWS to determine the potential for impacts to golden-cheeked warbler as part of the environmental review process of ERCOT and PUCT once it selects the exact location of the new ROW (Luminant 2009a). The review team expects that Oncor could adjust the exact ROW location and tower placement, as

well as time project activities to avoid the breeding season, in a way that avoids or minimizes impacts to golden-cheeked warbler.

6.0 Cumulative Impacts to Federal Protected Species

In addition to impacts from construction, preconstruction, and operation, the following cumulative analysis also considers other past, present, and reasonably foreseeable projects that could affect the black-capped vireo and golden-cheeked warbler. For purposes of this cumulative analysis, a geographic area of interest is defined as Somervell, Hood, and Bosque Counties. These counties encompass the CPNPP site, anticipated transmission line and pipeline ROWs, and adjoining areas. They lie almost completely in the Limestone Cut Plain of the Western Cross Timbers ecoregion (Griffith et al. 2004). They are expected to encompass those other projects capable of interacting with the CPNNP Units 3 and 4 project to affect the the black-capped vireo and golden-cheeked warbler.

Prior to settlement, the landscape in the three counties existed as grassland or open live oak savanna that supported herds of bison and other herbivores. Introduction of domestic livestock, farming, and wildfire control substantially altered the landscape. Today the landscape consists of a mosaic of forest, woodland, savanna, and prairie. The grassland with scattered blackjack oak and post oak trees is used mostly for rangeland and pastureland, with some areas of woody plant invasion and closed forest. Habitats favored by the black-capped vireo and golden-cheeked warbler remain in only scattered locations.

Since establishment of CPNPP Units 1 and 2, development in the three counties has continued and additional habitat for the black-capped vireo and golden-cheeked warbler has been lost or modified by farming, ranching, residential development, river and watershed projects, and transportation projects. Oil production has been a major activity in the area for over 80 years (Griffith et al. 2004), and oil and natural gas exploration and production continue. These trends are expected to continue over the projected operating life of proposed Units 3 and 4.

Current and reasonably foreseeable actions within the three counties that could adversely affect the black-capped vireo and golden-cheeked warbler in a similar way to the CPNPP Units 3 and 4 project include multiple proposed transportation projects, future urbanization, and continued oil and gas exploration and development. Other future actions that would contribute to cumulative effects include building and upgrading utility lines, including but not limited to those for Units 3 and 4; new road development and expansion; continued industrial and urban development; increased outdoor recreation; and nonpoint source runoff from agriculture, ranching, and development.

Continued urbanization is a contributing factor to the losses of habitat for the black-capped vireo and golden-cheeked warbler. The Texas State Data Center (TSDC) projects that the population in a six-county area surrounding the CPNPP site (including Bosque, Erath, Hood, Johnson, Somervell, and Tarrant Counties) will increase by 41.5 percent by the year 2040 (TSDC 2009). The highest growth in the six-county area is projected to occur in areas close to Fort Worth; however, the more outlying counties are still expected to experience substantial growth. Even with the anticipated growth, the area around the CPNPP site is likely to continue to be predominantly rural in character, with some areas still providing habitat for black-capped vireo and golden-cheeked warbler. Recent urbanization in this area has occurred primarily in and around the cities of Granbury and Glen Rose. This trend is likely to continue, with most of the growth occurring in Hood County around and northeast of Lake Granbury, due primarily to recreation home development and commuting patterns associated with Fort Worth. The preconstruction, construction, and operations workforce for CPNPP Units 3 and 4 would make

only a minor contribution to this increase in the urban growth of the region. The cumulative urbanization in the geographic area of interest could reduce habitat available for black-capped vireo and golden-cheeked warbler.

Global climate change is another factor contributing to the loss or degradation of habitat for the black-capped vireo and golden-cheeked warbler. The report on Global Climate Change Impacts in the United States, provided by the U.S. Global Change Research Program, summarizes the projected impacts of future climate changes in the U.S. (Karl et al. 2009). The report divides the U.S. into nine regions. The CPNPP site is located in the Great Plains region. The GCRP climate models for this region project continued warming in all seasons and an increase of as much as 12°F from 2000 to 2090. Additionally, climate models project that there will tend to be less rainfall in this area. The GCRP states that the precipitation could possibly alter the character of terrestrial habitats in the area, including habitats used by the black-capped vireo and golden-cheeked warbler.

The actions noted above may potentially affect black-capped vireo and golden-cheeked warbler by decreasing or degrading available habitat. As noted in Chapter 4 of this BA, the major threats to both species are habitat modification, habitat loss, and habitat fragmentation due to range management practices and continued development. As noted in Chapter 5 of this BA, one of the expanded transmission line ROWs required for CPNPP Units 3 and 4 (the Whitney ROW) might pass through habitat occupied by both species. In addition, habitat potentially suitable for the golden-cheeked warbler could be altered by salt drift from the BDTF. Habitat loss and alteration due to the CPNPP project activities noted above, combined with effects from other projects, including non-Federal projects, in the area of geographical interest could be sufficient to noticeably alter populations of both species.

Because suitable black-capped vireo habitat is not available on or close to the CPNPP site, DeCordova transmission line ROW, or cooling water pipeline ROW, activities proposed for those locations would not contribute to the cumulative effects on black-capped vireo. Activities on the Whitney transmission line ROW could however contribute substantially to cumulative effects on the black-capped vireo. Activities on both the site and transmission line ROWs could substantially contribute to cumulative effects on the golden-cheeked warbler.

7.0 Conclusions

The following section presents the conclusions of this BA.

7.1 CPNPP site, DeCordova power transmission line and cooling water pipeline

Black-capped vireo

No habitat was seen in these areas; therefore, development and operation of project facilities in these locations is not likely to adversely affect black-capped vireos. Therefore, the review team concludes that these project elements would have no effect on the black-capped vireo.

Golden-cheeked warbler

On-site surveys did not indicate that golden-cheeked warblers are present in the areas surveyed; only marginal habitat was observed. However, possible golden-cheeked warbler habitat may exist in areas subject to possible salt drift from the BDTF. Should any of these areas be suitable for golden-cheeked warbler habitat, then operation at the CPNPP site may

affect golden-cheeked warblers. The potential for significant adverse effects is not discountable. Therefore, the review team concludes that development and operation of project facilities may affect, and is likely to adversely affect the golden-cheeked warblers.

7.2 Whitney power transmission line

Black-capped vireo and Golden-cheeked warblers

If known locations of black capped vireo and golden-cheeked warblers, including Dinosaur Valley State Park, are avoided with sufficient buffer, then development and operation of the transmission line would not affect these species. If known breeding habitat cannot be avoided, then these species may be adversely affected. Because the potential for significant adverse effects is not discountable based on information available to the review team, the review team concludes that the project may affect, and is likely to adversely affect, the black-capped vireo and the golden-cheeked warbler.

7.3 Summary

Table 3 summarizes the review team's conclusions.

Table 3. Summary and Conclusions

	Black-capped vireo	Golden-cheeked warbler
CPNPP Site	No effect	May affect, is likely adversely affect
DeCordova line and pipeline	No effect	No effect
Whitney line	May affect, is likely to adversely affect	May affect, is likely to adversely affect

8.0 References

10 CFR Part 50. Code of Federal Regulations, Title 10, *Energy,* Part 50, "Domestic Licensing of Production and Utilization Facilities."

10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy,* Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

10 CFR Part 52. Code of Federal Regulations, Title 10. *Energy,* Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants."

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Appendix G

Supporting Information and Data:
Population Projections and Health Physics

Appendix G

Supporting Information and Data: Population Projections and Health Physics

G.1 Population Projections

Tables G-1 and G-2 provide population projections for 2007 followed by 10-year increments to 40 years beyond the estimated Comanche Peak Nuclear Power Plant (CPNPP) start-up date in 2016 (Luminant 2009a). Projections were derived from county estimates that were based on the cohort-component method (TSDC 2009). Population projections for the years 2007, 2016, 2026, 2036, 2046, and 2056 were estimated for each sector using the following methodology:

1. Using linear and polynomial regression, an equation was derived for each county. This equation was then used in conjunction with the 2000 county level census data to produce a county growth ratio set for each projected year.
2. Each set was then weighted by area into sectors and summed.
3. The 2000 Census block level data were then sorted into the radial grid, weighted by area, and summed.
4. The block level values for each sector were multiplied by their projection ratio, described in Step 1, to produce the final population sector tables (Tables G-1 and G-2) (Luminant 2009a, TSDC 2009).

Tables G-3 and G-4 provide transient population data that correspond by sector.

Table G-1. The Projected Permanent Population for Each Sector 0–16 km (10 mi) for Years 2007, 2016, 2026, 2036, 2046, and 2056

Direction / Year		Sector 0-2 (km)	2-4 (km)	4-6 (km)	6-8 (km)	8-10 (km)	10-16 (km)	0-16 (km)
NORTH	2007	0	16	51	154	337	9395	9953
	2016	0	18	59	179	390	10,884	11,530
	2026	0	21	67	206	450	12,540	13,284
	2036	0	24	76	233	509	14,195	15,037
	2046	0	27	85	260	568	15,850	16,790
	2056	0	29	94	287	628	17,506	18,544
NNE	2007	1	18	39	113	220	6379	6770
	2016	1	21	45	131	255	7391	7844
	2026	1	24	52	151	293	8515	9036
	2036	1	26	59	171	332	9639	10,228
	2046	1	29	66	191	371	10,763	11,421
	2056	1	32	73	210	409	11,887	12,612
NE	2007	0	15	112	161	359	2296	2943
	2016	0	17	130	186	416	2660	3409
	2026	0	19	150	214	479	3065	3927
	2036	0	21	170	243	542	3469	4445
	2046	0	23	190	271	605	3874	4963
	2056	0	25	209	299	668	4279	5480
ENE	2007	0	2	36	84	271	2566	2959
	2016	0	2	40	95	311	2970	3418
	2026	0	3	45	108	355	3867	3929
	2036	0	3	49	121	399	4315	4439
	2046	0	3	54	133	443	4315	4948
	2056	0	3	58	146	488	4763	5458
EAST	2007	0	5	131	29	54	161	380
	2016	0	6	145	32	60	177	420
	2026	0	6	159	35	66	195	461
	2036	0	7	174	39	72	213	505
	2046	0	8	188	42	78	232	548
	2056	0	8	203	45	84	250	590

Table G-1. (contd)

Direction / Year		Sector 0-2 (km)	2-4 (km)	4-6 (km)	6-8 (km)	8-10 (km)	10-16 (km)	0-16 (km)
ESE	2007	0	23	57	111	247	495	933
	2016	0	25	62	123	272	544	1026
	2026	0	27	69	135	299	600	1131
	2036	0	30	75	147	327	655	1234
	2046	0	33	81	160	355	710	1339
	2056	0	35	87	172	382	765	1442
SE	2007	0	71	89	135	316	304	915
	2016	0	79	98	148	348	335	1008
	2026	0	87	108	163	383	369	1110
	2036	0	95	117	178	419	403	1212
	2046	0	102	127	193	454	437	1313
	2056	0	110	137	208	489	471	1415
SSE	2007	0	140	109	799	1516	598	3162
	2016	0	154	120	879	1668	658	3479
	2026	0	169	132	968	1837	725	3831
	2036	0	185	144	1057	2006	791	4183
	2046	0	200	156	1146	2175	858	4535
	2056	0	216	168	1235	2344	925	4888
SSW	2007	29	67	20	25	40	193	374
	2016	32	74	22	27	44	213	412
	2026	35	81	25	30	48	234	453
	2036	38	89	27	33	52	256	495
	2046	41	96	29	36	57	277	536
	2056	44	104	32	38	61	299	578
SW	2007	28	51	31	44	42	92	288
	2016	31	56	35	48	46	101	317
	2026	34	62	38	53	51	112	350
	2036	37	68	42	58	55	122	382
	2046	40	73	45	63	60	132	413
	2056	43	79	49	67	65	143	446

Table G-1. (contd)

Direction / Year		Sector 0-2 (km)	2-4 (km)	4-6 (km)	6-8 (km)	8-10 (km)	10-16 (km)	0-16 (km)
WSW	2007	39	31	40	23	44	73	250
	2016	43	34	45	26	50	83	281
	2026	47	37	50	29	56	94	313
	2036	52	41	54	32	62	105	346
	2046	56	44	59	36	69	115	379
	2056	61	48	64	39	75	126	413
WEST	2007	12	12	49	101	45	119	338
	2016	14	14	57	117	52	138	392
	2026	15	16	65	135	60	159	450
	2036	16	17	74	153	68	180	508
	2046	18	19	83	170	76	201	567
	2056	19	21	91	188	83	222	624
WNW	2007	1	5	22	68	77	216	389
	2016	1	6	26	79	89	250	451
	2026	1	7	29	91	102	288	518
	2036	1	8	33	103	116	326	587
	2046	1	9	37	115	130	364	656
	2056	1	10	41	127	143	402	724
NW	2007	1	2	6	4	27	985	1025
	2016	1	3	7	4	32	1141	1188
	2026	1	3	8	5	37	1315	1369
	2036	1	4	9	5	41	1488	1548
	2046	1	4	10	6	46	1662	1729
	2056	1	4	11	7	51	1835	1909
NNW	2007	1	4	16	63	169	851	1103
	2016	1	4	18	73	196	986	1277
	2026	1	5	21	85	226	1136	1473
	2036	1	6	24	96	256	1286	1668
	2046	1	6	26	107	285	1436	1860
	2056	1	7	29	118	315	1585	2054

Table G-1. (contd)

Direction / Year		Sector 0-2 (km)	2-4 (km)	4-6 (km)	6-8 (km)	8-10 (km)	10-16 (km)	0-16 (km)
Totals	2007	119	542	832	2038	3832	25,088	32,451
	2016	131	601	935	2283	4304	28,932	37,186
	2026	143	665	1047	2558	4825	33,207	42,445
	2036	156	730	1159	2832	5347	37,478	47,702
	2046	169	791	1271	3106	5870	41,749	52,956
	2056	182	855	1384	3377	6391	46,022	58,211
Cumulative Totals		**0-2 (km)**	**0-4 (km)**	**0-6 (km)**	**0-8 (km)**	**0-10 (km)**	**0-16 (km)**	
	2007	119	661	1493	3531	7363	32,451	
	2016	131	732	1667	3950	8254	37,186	
	2026	143	808	1855	4413	9238	42,445	
	2036	156	886	2045	4877	10,224	47,702	
	2046	169	960	2231	5337	11,207	52,956	
	2056	182	1037	2421	5798	12,189	58,211	

Source: Luminant 2009a, TSDC 2009

Table G-2. The Projected Permanent Population for Each Sector 16 km (10 mi)–80 km (50 mi) for Years 2007, 2016, 2026, 2036, 2046, and 2056

Direction / Year		Sector 16-40 (km)	40-60 (km)	60-80 (km)	16-80 (km)
NORTH	2007	11,320	37,256	17,904	66,480
	2016	13,082	42,981	20,702	76,765
	2026	15,040	49,342	23,811	88,193
	2036	16,997	55,702	26,920	99,619
	2046	18,955	62,063	30,028	111,046
	2056	20,913	68,424	33,137	122,474
NNE	2007	7586	61,636	91,401	160,623
	2016	8777	70,856	104,610	184,243
	2026	10,099	81,100	119,287	210,486
	2036	11,422	91,345	133,964	236,731
	2046	12,745	101,589	148,641	262,975
	2056	14,067	111,834	163,318	289,219

Table G-2. (contd)

Direction / Year		Sector 16-40 (km)	40-60 (km)	60-80 (km)	16-80 (km)
NE	2007	5896	207,161	646,328	859,385
	2016	6963	237,503	736,399	980,865
	2026	8149	271,217	836,478	1,115,844
	2036	9335	304,930	936,557	1,250,822
	2046	10,521	338,644	1,036,636	1,385,801
	2056	11,707	372,358	1,136,715	1,520,780
ENE	2007	11,865	69,338	142,365	223,568
	2016	14,123	82,491	167,494	264,108
	2026	16,632	97,106	195,416	309,154
	2036	19,141	111,721	223,337	354,199
	2046	21,650	126,336	251,259	399,245
	2056	24,160	140,950	279,180	444,290
EAST	2007	27,428	15,290	9326	52,044
	2016	32,648	18,041	11,060	61,749
	2026	38,447	21,097	12,987	72,531
	2036	44,246	24,154	14,914	83,314
	2046	50,045	27,211	16,840	94,096
	2056	55,845	30,267	18,767	104,879
ESE	2007	975	3951	13,732	18,658
	2016	1129	4398	15,293	20,820
	2026	1301	4894	17,026	23,221
	2036	1472	5391	18,760	25,623
	2046	1644	5888	20,493	28,025
	2056	1815	6384	22,227	30,426
SE	2007	1154	8043	6691	15,788
	2016	1249	8816	7258	17,323
	2026	1355	9676	7999	19,030
	2036	1461	10,535	8740	20,736
	2046	1566	11,394	9481	22,441
	2056	1672	12,254	10,222	24,148

Table G-2. (contd)

Direction / Year		Sector 16-40 (km)	40-60 (km)	60-80 (km)	16-80 (km)
SSE	2007	1061	2866	7218	11,145
	2016	1145	3092	7792	12,029
	2026	1238	3342	8430	13,010
	2036	1331	3593	9069	13,993
	2046	1424	3844	9707	14,975
	2056	1517	4094	10,345	15,956
SOUTH	2007	1673	933	2547	5153
	2016	1808	1000	2776	5584
	2026	1958	1074	3022	6054
	2036	2108	1147	3262	6517
	2046	2258	1220	3493	6971
	2056	2408	1291	3718	7417
SSW	2007	688	2050	4478	7216
	2016	748	2132	4639	7519
	2026	814	2211	4788	7813
	2036	880	2276	4906	8062
	2046	946	2329	4991	8266
	2056	1012	2368	5045	8425
SW	2007	1172	1360	1492	4024
	2016	1291	1471	1541	4303
	2026	1424	1590	1580	4594
	2036	1557	1706	1601	4864
	2046	1689	1819	1605	5113
	2056	1822	1927	1592	5341
WSW	2007	5206	21,732	5543	32,481
	2016	5738	23,951	5796	35,485
	2026	6329	26,417	6024	38,770
	2036	6919	28,883	6196	41,998
	2046	7510	31,348	6313	45,171
	2056	8101	33,814	6374	48,289

Table G-2. (contd)

Direction / Year		Sector 16-40 (km)	40-60 (km)	60-80 (km)	16-80 (km)
WEST	2007	1566	3388	996	5950
	2016	1728	3734	1035	6497
	2026	1908	4118	1068	7094
	2036	2087	4503	1090	7680
	2046	2267	4887	1100	8245
	2056	2447	5271	1100	8818
WNW	2007	1236	853	1777	3866
	2016	1374	936	1890	4200
	2026	1527	1027	2009	4563
	2036	1680	1118	2120	4918
	2046	1833	1210	2224	5267
	2056	1986	1301	2320	5607
NW	2007	1805	1949	1703	5457
	2016	2061	2104	1834	5999
	2026	2345	2277	1980	6602
	2036	2629	2449	2126	7204
	2046	2914	2622	2272	7808
	2056	3198	2794	2418	8410
NNW	2007	4307	7022	23,143	34,472
	2016	4979	8013	25,718	38,710
	2026	5726	9115	28,580	43,421
	2036	6474	10,216	31,441	48,131
	2046	7221	11,317	34,303	52,841
	2056	7969	12,419	37,165	57,553

Table G-2. (contd)

Direction / Year		Sector 16-40 (km)	40-60 (km)	60-80 (km)	16-80 (km)
Totals	2007	84,938	444,828	976,544	1,506,310
	2016	98,843	511,519	1,115,837	1,726,199
	2026	111,292	585,603	1,270,485	1,970,380
	2036	129,739	659,669	1,425,003	2,214,411
	2046	145,188	733,721	1,579,386	2,458,295
	2056	160,639	807,750	1,733,643	2,702,032
Cumulative Totals		**16-40 (km)**	**16-60 (km)**	**16-80 (km)**	
	2007	84,938	529,766	1,506,310	
	2016	98,843	610,362	1,726,199	
	2026	114,292	699,895	1,970,380	
	2036	129,739	789,408	2,214,411	
	2046	145,188	878,909	2,458,295	
	2056	160,639	968,389	2,702,032	

Source: Luminant 2009a, TSCD 2009

Table G-3. The Current Residential and Transient Population for Each Sector 0–16 km (10 mi)

Direction (2007)	Sector 0-2 (km)	2-4 (km)	4-6 (km)	6-8 (km)	8-10 (km)	10-16 (km)	0-16 (km)
NORTH	0	16	51	154	337	39,034	39,592
NNE	1	18	39	113	220	6439	6830
NE	0	15	112	161	359	2504	3151
ENE	0	2	36	84	271	2566	2959
EAST	0	5	131	29	54	161	380
ESE	0	23	57	111	247	495	933
SE	0	71	2989	2326	879	373	6638
SSE	0	140	109	799	3238	598	4884
SOUTH	8	80	24	377	68	665	1222
SSW	29	67	726	25	40	193	1080
SW	28	51	31	44	42	92	288
WSW	69	31	40	23	44	73	280
WEST	12	12	49	101	45	119	338
WNW	1	5	22	68	77	216	389
NW	1	2	6	4	27	1154	1194
NNW	0	4	16	63	169	851	1103
Totals	149	542	4438	4482	6117	55,533	71,261
Cumulative Totals	**0-2 (km)**	**0-4 (km)**	**0-6 (km)**	**0-8 (km)**	**0-10 (km)**	**0-16 (km)**	
2007	149	691	5129	9611	15,728	71,261	

Source: Luminant 2009a

Table G-4. The Projected Transient Population for Each Sector 0–80 km (50 mi) for Years 2007, 2016, 2026, 2036, 2046, and 2056

Distance (km)	Direction	2007	2016	2026	2036	2046	2056
2	WSW	30	33	36	39	42	46
6	SE	2900	3191	2514	3837	4160	4483
6	SSW	706	776	855	934	1012	1091
8	SE	2191	2411	2655	2899	3143	3387
8	S	253	278	307	335	363	391
10	SE	563	620	682	745	808	871
10	SSE	1722	1895	2087	2279	2471	2663
16	N	29,639	34,339	39,561	44,784	50,006	55,228
16	NNE	60	69	80	90	101	111
16	NE	208	242	278	315	352	388
16	SE	69	76	84	91	99	107
16	S	300	330	364	397	431	464
16	NW	169	196	226	255	285	315
40	N	136	157	180	204	227	251
40	NNE	107	124	143	162	181	199
40	NE	80	95	111	127	144	160
40	E	11,634	13,848	16,308	18,768	21,228	23,687
40	SSW	270	294	320	346	372	398
40	SW	1	1	1	1	2	2
40	WSW	5580	6150	6783	7416	8050	8683
40	NW	22	26	29	33	36	40
40	NNW	6	7	8	9	9	10
60	N	45,423	52,403	60,158	67,913	75,668	83,423
60	NNE	92	106	122	137	152	168
60	NE	2215	2539	2899	3260	3620	3981
60	ENE	5680	6757	7955	9152	10349	11,546
60	SE	11,135	12,205	13,395	14,585	15,775	16,964
60	SSE	715	771	834	896	959	1022
80	N	114	131	151	171	191	210
80	NNE	898	1028	1172	1316	1460	1604
80	NE	210,974	240,374	273,042	305,710	338,377	371,045
80	SSE	5321	5744	6215	6685	7155	7626
80	SSW	1750	1813	1871	1917	1950	1971
80	NNW	11,256	12,508	13,900	15,292	16,684	18,075

Source: Luminant 2009a, TSCD 2009

G.2 Supporting Documentation on Radiological Dose Assessment

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed and performed an independent dose assessment of the radiological impacts from normal operation of the new and existing nuclear units at the CPNPP site. The results of the assessment are presented in this appendix and are compared with the results from Luminant's assessment found in the Environmental Report (ER), Section 4.5, Radiation Exposure to Construction workers, and 5.4, Radiological Impacts of Normal Operation (Luminant 2009a, 2010). The appendix is divided into four sections: (1) dose estimates to the public from liquid effluents; (2) dose estimates to the public from gaseous effluents; (3) cumulative dose estimates; and (4) dose estimates to the biota from gaseous and liquid effluents.

G.2.1 Dose Estimates to the Public from Liquid Effluents

The NRC staff used the dose assessment approach specified in Regulatory Guide 1.109 (NRC 1977) and the LADTAP II computer code (Strenge et al. 1986) to estimate doses to the maximally exposed individual (MEI) and population within 50 mi from the liquid effluent pathway of the proposed Units 3 and 4. The NRC staff used the projected radioactive effluents release values from the Final Safety Analysis Report (Luminant 2009b). The GASPAR II computer code (Strenge et al. 1987) was used to estimate doses to the MEI and population from liquid effluent diverted to an evaporation pond during the course of operations of the proposed Units 3 and 4.

G.2.1.1 Scope

The NRC staff and Luminant calculated the dose to the MEI assuming recreational use of the Squaw Creek Reservoir (SCR). Pathways included were the ingestion of fish caught in the SCR and external exposure to contaminated sediments deposited along the shoreline and to waterborne radionuclides while boating on the SCR. Water downstream of the SCR is not used as either drinking water or for irrigation. Access to the SCR for recreational activity (boating, fishing and shoreline activity) is controlled by Luminant. Population doses were calculated for the same pathways as were used for the MEI dose evaluation.

The NRC staff reviewed the assumed exposure pathways and the input parameters and values used by Luminant for appropriateness. Default values from Regulatory Guide 1.109 (NRC 1977) were used when site-specific input parameters were not available. The NRC staff concluded that the assumed exposure pathways were appropriate ingestion of fish and external exposure associated with recreational activities on the SCR. The NRC staff also concluded that the input parameters and values used by Luminant were appropriate.

G.2.1.2 Resources Used

To calculate doses to the public from liquid effluents, the NRC staff used a personal computer version of the LADTAP II code and GASPAR II code entitled NRCDOSE Version 2.3.15, (Chesapeake Nuclear Services, Inc. 2007) obtained through the Oak Ridge Radiation Safety Information Computational Center (RSICC).

G.2.1.3 Input Parameters

Table G-5 lists the major parameters used in calculating dose to the public from liquid effluent releases during normal operation. Luminant (2009a) projected the 50 mi population to the year 2058. Section 5.4-1 of the Environmental Standard Review Plan (ESRP) (NRC 2000) suggests that the population be projected only five years out from the date of licensing action under

consideration. However, the projected population for 2058 is larger than the projected population for the time suggested by the ESRP. Therefore, use of the 2058 population provides a bounding dose estimate.

Table G-5. Parameters Used in Calculating Dose to the Public from Liquid Effluent Releases

	Annual Release (Ci)			Annual Release (Ci)	
Nuclide[(a)]	**Liquid**	**Evaporation Pond**	**Nuclide[(a)]**	**Liquid**	**Evaporation Pond**
H-3	1.60E+03	8.0E+02	Na-24	4.70E-03	2.35E-03
Cr-51	1.30E-03	6.50E-04	Mn-54	7.00E-03	3.50E-04
Fe-55	5.00E-04	2.50E-04	Fe-59	1.00E-04	5.00E-05
Co-58	1.90E-03	9.50E-04	Zn-65	2.20E-04	1.10E-04
Rb-88	2.80E-02	1.40E-02	Sr-89	6.00E-05	3.00E-05
Sr-90	8.00E-06	4.00E-06	Sr-91	6.80E-05	3.40E-05
Y-91m	4.40E-05	2.20E-05	Y-91	1.00E-05	5.00E-06
Y-93	2.90E-04	1.45E-04	Zr-95	2.00E-04	1.00E-04
Nb-95	1.00E-04	5.00E-05	Mo-99	1.64E-03	8.20E-04
Tc-99m	1.70E-03	8.50E-04	Ru-103	3.11E-03	1.56E-03
Ru-106	3.81E-02	1.91E-02	Ag-110m	6.00E-04	3.00E-04
Te-129m	7.80E-05	3.90E-05	Te-129	3.10E-04	1.55E-04
Te-131m	2.50E-04	1.25E-04	Te-131	7.60E-05	3.80E-05
Te-132	4.70E-04	2.35E-04	I-131	4.00E-04	2.00E-04
I-132	3.10E-04	1.55E-04	I-133	8.10E-04	4.05E-04
I-134	8.90E-05	4.45E-05	I-135	7.80E-04	3.90E-04
Cs-134	1.00E-03	5.00E-04	Cs-136	2.16E-02	1.08E-02
Cs-137	2.00E-03	1.00E-03	Ba-140	4.89E-03	2.45E-03
La-140	8.00E-03	4.00E-03	Ce-141	6.00E-05	3.00E-05
Ce-143	5.00E-04	2.50E-04	Ce-144	1.70E-03	8.50E-04
Pr-143	7.90E-05	3.95E-05	Pr-144	1.70E-03	8.50E-04
W-187	3.50E-04	1.25E-04	Np-239	5.30E-04	2.65E-04

Table G-5. (contd)

Parameter	Staff Value	Comments
Discharge flow rate	248500 gal/min 553.7 ft^3/s	Value from ER Table 5.4-1 (Luminant 2009a).
Site type	Fresh water	Discharge to freshwater SCR.
Re-concentration model	Completely mixed impoundment model	Value from ER Table 5.4-1 (Luminant 2009a).
Average effluent discharge rate from SCR	45.4 ft^3/sec	Value from ER Table 5.4-1 (Luminant 2009a).
Volume of SCR	6.3 x 10^9 ft^3	Value from ER Table 5.4-1 (Luminant 2009a).
Shore width factor (Squaw Creek)	0.2	ER Table 5.4.-1 as suggested for river shoreline (NRC 1977).
Dilution factors for aquatic food and boating, shoreline and swimming, and drinking water (Squaw Creek)	1	ER Table 5.4-1; value of 1 indicates no dilution.
Transit time to location of maximum individual dose (hr)	7.3 hr	ER Table 5.4-1.
Consumption and usage factors for adults, teens, children, and infants	Shoreline usage (hr/yr) 12 (adult) 67 (teen) 14 (child) NA (infant) Boating exposure (hr/yr) 12 (adult) 67 (teen) 14 (child) NA (infant) Fish consumption (kg/yr) 21 (adult) 16 (teen) 6.9 (child) NA (infant)	ER Table 5.4-2; values from Reg. Guide 1.1.09, Table E-5. Swimming exposure assumed to be the same as shoreline usage.
50-mile population	3,493,553	ER Table 5/4-1 (Luminant 2009a).
Annual fish harvest, Whitney Reservoir and Brazos River (kg/yr)	324,375 kg/yr	ER Table 5.4-1 (Luminant 2009a).
50-mi population usage of shoreline	22,358,746 person-hr/yr	ER Table 5.4.1; based on Reg. Guide 1.109 exposure times, age group fractions and 50% of 50-mi population.
50-mi population swimming usage	22,358,746 person-hr/yr	ER Table 5.4.1; based on Reg. Guide 1.109 exposure times, age group fractions and 50% of 50-mi population.
50-mi population boating usage	22,358,746 person-hr/yr	ER Table 5.4.1; based on Reg. Guide 1.109 exposure times, age group fractions and 50% of 50-mi population.

(a) Only radionuclides included in Regulatory Guide 1.109 (NRC 1977) are considered.

G.2.1.4 Comparison of Results

NRC staff's dose calculations confirmed the doses estimated by Luminant.

G.2.2 Dose Estimates to the Public from Gaseous Effluents

The NRC staff used the dose assessment approach specified in Regulatory Guide 1.109 (NRC 1977) and the GASPAR II computer code (Strenge et al. 1987) to estimate doses to the MEI and to the population within 50 mi of the Comanche Peak site from the gaseous effluent pathway for both the proposed units. The NRC staff used the projected radioactive gaseous effluents release values from the Final Safety Analysis Report (FSAR) (Luminant 2009b).

G.2.2.1 Scope

The NRC staff and Luminant calculated the MEI dose at 0.79 mi south-southwest (SSW) of the new units. Pathways included were plume, ground, inhalation, and ingestion of locally grown meat and vegetables. Although no milk animals were reported within 5 mi of the site, ingestion of milk from a cow was also considered at this location (0.79 mi SSW) for completeness. Milk animals could be introduced to the 5-mi area around the site in the future.

The NRC staff reviewed the parameters and values used by Luminant (2009a) for appropriateness. Default values from Regulatory Guide 1.109 (NRC 1977) were used when site-specific input parameters were not available. The NRC staff concluded that the assumed exposure pathways and input parameters were appropriate. These pathways and parameters were used by the NRC staff in its independent calculations using GASPAR II.

Joint frequency distribution data of wind speed and wind direction by atmospheric stability class for the Comanche Peak site provided in ER Table 2.7-105 (Luminant 2009a) were used as input to the XOQDOQ code (Sagendorf et al. 1982) to calculate average χ/Q and D/Q values for routine releases. The NRC staff reviewed the XOQDOQ output files provided by Luminant and concluded they are appropriate for use in dose calculations for the gaseous effluents.

Population doses were calculated for all types of releases (i.e., noble gases, particulates, iodines, H-3 and C-14) using the GASPAR II code for the following: plume immersion; direct radiation from radionuclides deposited on the ground, inhalation; and ingestion of vegetables, milk, and meat. As noted in Section 5.9.2.2, milk consumption was included based on an earlier land-use census (Luminant 2009a).

G.2.2.2 Resources Used

To calculate doses to the public from gaseous effluents, the NRC staff used a personal computer version of the XOQDOQ and GASPAR II codes entitled, NRCDOSE Version 2.3.15, (Chesapeake Nuclear Services, Inc. 2007) obtained through the Oak Ridge RSICC.

G.2.2.3 Input Parameters

Tables G-6 provides a listing of the major parameters used in calculating dose to the public from gaseous effluent releases during normal operation.

Table G-6. Parameters Used in Calculating Dose to the Public from Gaseous Effluent Releases

Nuclide	Annual Release (Ci)	Nuclide	Annual Release (Ci)
H-3	1.80E+02	C-14	7.30E+00
Ar-41	3.40E+01	Cr-51	6.10E-04
Mn-54	4.30E-04	Co-57	8.20E-06
Co-58	2.30E-02	Co-60	8.80E-03
Fe-59	7.90E-05	Kr-85	1.40E+03
Sr-89	3.00E-03	Sr-90	1.20E-03
Zr-95	1.00E-03	Nb-95	2.50E-03
Ru-103	8.00E-05	Ru-106	7.80E-05
Sb-125	6.10E-05	I-131	4.20E-03
I-133	6.40E-02	Xe-131m	2.60E+02
Xe-133m	2.00E+00	Xe-135m	4.00E+00
Xe-135	2.00E+00	Xe-137	4.00E+00
Xe-138	1.00E+00	Cs-134	2.30E-03
Cs-136	8.50E-05	Cs-137	3.60E-03
Ba-140	4.20E-04	Ce-141	4.20E-05

Parameter	Staff Value	Comments
Wind speed and direction	ER Tables 2.7-58 and 2.7-71 (Luminant 2009a)	Site-specific data for 5-yr period 2001-2006
Atmospheric dispersion coefficients	ER Tables 2.7-122 to 2.7-126 (Luminant 2009a)	Site-specific data
Ground deposition coefficient	ER Table 2.7-127 (Luminant 2009a)	Site-specific data
Annual milk production within 50-mi radius of site	9.08×10^8 L/yr	Site-specific data from ER Table 5.4-3 (Luminant 2009a)
Annual vegetable production within 50-mi radius of site	4.81×10^8 kg/yr	Site-specific data from ER Table 5.4-3 (Luminant 2009a)
Annual meat production within 50-mi radius of site	4.26×10^7 kg/yr	Site-specific data from ER Table 5.4-3 (Luminant 2009a)
Receptor locations and Dispersion coefficients		Site specific values ER Table 5.55 (Luminant 2009a)

Table G-6. (contd)

Receptor	Atmospheric Dispersion Coefficient χ/Q (s m^{-3})			D/Q (m^{-2})
	Plain	**Decayed**	**Decayed & depleted**	
Exclusion Area Boundary 0.37 mi NNW	5.5×10^{-6}	5.5×10^{-6}	5.1×10^{-6}	5.5×10^{-8}
Nearest residence 0.79 mi SSW Plant vents	4.4×10^{-7}	4.4×10^{-7}	3.9×10^{-7}	4.5×10^{-6}
Nearest residence 0.79 mi SSW Evaporation Pond	3.1×10^{-6}	3.1×10^{-6}	2.9×10^{-6}	2.1×10^{-8}
Swim Beach 0.79 mi SSW	8.3×10^{-7}	8.2×10^{-7}	7.3×10^{-7}	4.5×10^{-7}

Consumption factors:

Consumption factors; ER Table 5.4-3 (Luminant 2009a)				
	Adult	Teen	Child	Infant
Milk (L/yr)	310	400	330	330
Meat (kg/yr)	110	65	41	-
Vegetables(kg/yr)				
Leafy	64	42	26	-
Other	520	639	520	-

Fraction of year leafy vegetables are grown	1.0	Site-specific value ER Table 5.403 (Luminant 2009a)
Fraction of year milk cows are on pasture	1.0	Site-specific value ER Table 5.403 (Luminant 2009a)
Fraction of MEI's vegetable intake from own garden	0.76	Site-specific value ER Table 5.403 (Luminant 2009a)
Fraction of year beef cattle on pasture	1.0	Site-specific value ER Table 5.403 (Luminant 2009a)

Source: ER Table 5.4-7 (Luminant 2009a)

Values from ER Table 5.4-7 (Luminant 2009a)

G.2.2.4 Comparison of Doses to the MEI from Gaseous Effluent Releases

The NRC staff's dose calculations confirmed the doses estimated by Luminant (2009a, 2010). In a revision of the ER, Luminant indicated that recreational activities will be allowed on SCR under its control. The NRC staff evaluated the dose to individuals using the "swim beach" location for such activities. The resulting doses are shown in Table G-7 and were found to be smaller than the MEI for gaseous effluent releases.

Table G-7. Annual Dose (mrem/yr) at Swim Beach[(a)] Due to Gaseous Effluent Releases

Receptor	Total Body	Thyroid	Skin
Adult	0.000014	0.000020	0.000014
Teen	0.000078	0.00012	0.000077
Child	0.000016	0.000028	0.000016
Infant[(b)]	0.000010	0.000020	0.000010

(a) Recreational activities involve exposure pathways of inhalation and external exposure to plume and ground.
(b) Infant's external exposure during recreational activities based on mother's exposure time.

Table G-8, developed by NRC staff compares the combined dose estimates from direct radiation and gaseous and liquid effluents from existing Units 1 and 2 and the proposed Units 3 and 4 against the 40 CFR Part 190 standards. The NRC staff used the reported MEI dose values for the year 2008 operation of Units 1 and 2 (Luminant 2009c) in Table G-8 .

Table G-8. Comparison of MEI Annual Doses (mrem/yr) with 40 CFR Part 190 Standards

	CPNPP Units 1 and 2[(a)]				CPNPP Units 3 and 4[(b)]				
	Liquid	Gaseous	Direct[(c)]	Total	Liquid	Gaseous	Total	Site Total	Regulatory Standard
Total Body	0.087	0.088	8.8	9.0	1.8	1.7	3.5	12	25
Thyroid	0.13	0.41	8.8	9.3	0.3	3.1	1.8	11	75
Other	<0.001	0.0028	8.8	8.8	2.6	5.1	7.7	17	25

(a) Liquid and gaseous dose values for Unit 1 and 2 operation in 2009 (Luminant 2009c).
(b) Derived from ER Table 5.4-12 (Luminant 2009a).
(c) Direct radiation values from ER Section 5.4.1.3 (Luminant 2009a).

G.2.3 Cumulative and Population Dose Estimates

Based on parameters shown for the liquid and gaseous pathways, Table G-5 and Table G-6, respectively, doses from the two proposed units were calculated for the MEI using LADTAP II and GASPAR II. The NRC staff's assessment of the MEI dose for Units 1 and 2 is based on the doses reported for the MEI due to operations of Units 1 and 2 in 2008 (Luminant 2009c). The effluent releases during 2008 exceeded those in the preceding five years.

Based on parameters shown for the liquid and gaseous pathways, Table G-5 and Table G-6, respectively, doses were calculated using LADTAP II and GASPAR II to the population within 50 mi of the CPNPP site (as discussed in Section G.2.1.3 and G.2.2.3). Doses due to milk ingestion were determined based on the 2002 agricultural census except in counties where that census indicated no milk animals (cows or goats) were present; in these cases, data from the 1997 census were substituted. The dose estimated to the population within 50 mi of the CPNPP site from operations of proposed Units 3 and 4 is 8.0 person-rem. It is noted that the 50-mi population was assumed to be for the year 2058; as discussed in Section G.2.1.3, this results in a bounding calculation of the dose compared to the ESRP methodology. For comparison, the annual background dose to the population within 50 mi from background radiation was estimated to be approximately 985,000 person-rem. This estimate is the product of the annual average dose to individuals from natural sources of 311 mrem, as stated in NCRP Report 160 (NCRP 2009), and the 2058 population of 3,490,000 persons.

G.2.4 Dose Estimates to the Biota from Liquid and Gaseous Effluents

The NRC staff performed confirmatory calculations of the doses to biota from liquid and gaseous effluents using the LADTAP II and GASPAR II. The NRC staff used a personal computer version of the LADTAP II code and GASPAR II code entitled, NRCDOSE Version 2.3.15, (Chesapeake Nuclear Services, Inc. 2007) obtained through the RSICC.

G.2.4.1 Liquid Effluent Pathways

The NRC estimated doses to biota from liquid effluents using fish, invertebrates, and algae as surrogate aquatic biota species. Muskrats, raccoons, herons, and ducks are used as surrogate

terrestrial biota species. The NRC staff recognizes the LADTAP II computer program as an appropriate method for calculating dose to the aquatic biota and for calculating the liquid pathway contribution to terrestrial biota. Most of the LADTAP II input parameters are specified in Section G.2.1.3; including the source term, the discharge flow rate to the receiving fresh water system, and the shore width factor. The NRC staff concluded these parameters were appropriate to use in calculating biota dose in the SCR. The NRC staff's dose analysis confirmed the liquid pathway doses to biota estimated by Luminant as shown in Table 5-13.

G.2.4.2 Gaseous Effluent Pathways

The NRC staff assessed doses to terrestrial biota from the gaseous effluent pathway based on the results of the GASPAR II calculations for human doses discussed in Section G.2.2. Again, muskrats, raccoons, herons, and ducks are used as surrogate terrestrial biota species. The NRC staff assessed the doses at the exclusion area boundary (0.37 mi NNW) to achieve a reasonable estimate of the doses to terrestrial biota that might live on the CPNPP site. It was assumed that doses for raccoons and ducks were equivalent to adult human doses for inhalation, vegetation ingestion, and the plume. The dose from ground exposure was doubled. The doubling of doses from ground deposition reflects the closer proximity of these organisms to the ground. Muskrats and herons do not consume terrestrial vegetation, so that pathway was not included for these organisms. The NRC staff's dose assessment confirmed the gaseous pathway doses to biota estimated by Luminant as shown in Table 5-13.

G.3 References

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Appendix H

List of Authorizations, Permits, and Certifications

Appendix H

List of Authorizations, Permits, and Certifications

Table H-1 contains a list of the environmental-related authorizations, permits, and certifications potentially required by Federal, State, regional, local, and affected Native American tribal agencies related to the combined licenses for the Comanche Peak Nuclear Power Plant, Units 3 and 4. The table has been modified from Table 1.2-1 of the Environmental Report submitted to the U.S. Nuclear Regulatory Commission by the applicant, Luminant Generation Company LLC (Luminant 2009a).

Reference

Luminant Generation Company LLC (Luminant). 2009a. *Comanche Peak Nuclear Power Plant Units 3 and 4, COL Application; Part 3, Environmental Report* (Rev. 1). Luminant Generation Company LLC, Glen Rose, Texas, November 20. Accession No. ML100081557.

Table H-1. Authorizations, Permits, and Certifications Required for Combined Licenses

Agency	Authority	Requirements	Activity Covered/Comments
U.S. Nuclear Regulatory Commission (NRC)	10 Code of Federal Regulations (CFR) Part 30	By-product License	Approval to receive, possess, and use byproduct material.
NRC	10 CFR 40	Source Materials License	Approval to receive, possess, and use source material.
NRC	10 CFR Part 52	Applicant submits Construction and Operating License Application (COLA) to NRC	Applicant is required to submit an application to the NRC for a combined construction and operating license (COL).
NRC	10 CFR 52.79	Applicant submits an Environmental Report (ER)	Applicant is required to submit a complete ER, 10 CFR 52.80 (b), 72 FR 57447, Oct 9, 2007, 10 CFR 52.79, 10 CFR 51.45, 10 CFR 51.50.
NRC	10 CFR Part 70	Special Nuclear Materials License	Approval tp receive, possess, and use special nuclear material.
U.S. Department of Energy (DOE)	Nuclear Waste Policy Act of 1982; Section 302(b)(B)	Applicant must have an agreement with the Department of Energy for the disposal of high-level waste and spent nuclear fuel	Contracts with DOE exist for disposal of spent nuclear fuel and/or high-level radioactive waste. (Contract No. DE-CR01-09RW09022 for Comanche Peak Nuclear Power Plant (CPNPP) Unit 1; Contract No. DE-CR01-09RW09023 for CPNPP Unit 2).
U.S. Fish and Wildlife Service (USFWS) & Texas Parks and Wildlife Department (TPWD)		Consultation with Fish and Wildlife, Federal and State (FWS 2006)	Consultation concerning potential impacts to federally threatened and endangered species must be obtained and interference with any listed species must be resolved prior to disturbance.

Table H-1. (contd)

Agency	Authority	Requirements	Activity Covered/Comments
Federal Aviation Administration (FAA) & Texas Department of Transportation (TDOT)	14 CFR 77.13	Notice of construction for permanent structures	Permit for structures over 200 ft in height (containment buildings, permanent facilities, cooling towers, etc.). Thirty days prior to construction of the obstruction.
FAA & TDOT	14 CFR 77.13	Notice of construction for temporary structures	Permit for structures over 200 ft in height (construction cranes, towers, etc.). Thirty days prior to construction of the obstruction.
Texas Commission on Environmental Quality (TCEQ) & U.S. Environmental Protection Agency (EPA)	30 Texas Annotated Code (TAC) 335; EPA applies only to Units 1 and 2	Notice of Registration for solid waste management	Transport, treatment, storage, and disposal of solid waste. Notice requires modification 3 months prior to any new solid waste not previously described. (Solid Waste Reg. # 33306; EPA ID # TXD02332078)
U.S. Army Corps of Engineers (USACE) & TCEQ	Clean Water Act 404 Permit	Construction in a wetland or shoreline	Submit 24 months prior to dredging/filling activities in wetland if required. Depends on the 401 permit process.
EPA & TCEQ	Clean Water Act Section 401	Construction in a wetland or shoreline	Submit 24 months prior to dredging/filling activities in wetland if required.
TCEQ	Storm Water Pollution Prevention Plan (SWPPP); Texas Water Code Chapter 26	SWPPP for construction activities	Stormwater to surface water discharge associated with land disturbance and industrial activity during construction activities. Submit plan modification with Notice of Intent for a disturbance of 5 acres or more. (General Permit No. TXR 150000)

Table H-1. (contd)

Agency	Authority	Requirements	Activity Covered/Comments
TCEQ	Notice of Intent (NOI); Texas Water Code Chapter 26 (SWPPP)	Pertains to General Permit relating to stormwater discharges from construction activities	Submit NOI 3 months prior to disturbance of land. (General Permit No. TXR 150000)
TCEQ	SWPPP; Texas Water Code Chapter 26	SWPPP for operations of facility	Submit plan modification concurrent with submittal of Stormwater Operations NOI. (Part III of General Permit No. TXR 050000)
TCEQ	NOI; Texas Water Code Chapter 26	Pertains to General Permit relating to stormwater discharges from operation activities	Submit NOI 3 months prior to operations. (General Permit No. TXR 050000)
TCEQ	Texas Water Code Chapter 5 and 26 Texas Pollutant Discharge Elimination System (TPDES) Industrial Wastewater Permit (Major Source Modification); Clean Water Act Section 402	Modification or additions to wastewater facilities	Certification and licensing of municipal and domestic wastewater facilities. Submit 18 months prior to new construction or modification. (TPDES # WQ0001854000; Must be renewed, but may require modification)
TCEQ	30 TAC 285	Submit on-site sewage treatment and design permit	Six months prior to construction.

Table H-1. (contd)

Agency	Authority	Requirements	Activity Covered/Comments
Public Utilities Commission (PUC) of Texas		Certificate of Convenience and Need Application	Certification that present and future public convenience and necessity require or will require the operation of such equipment or facility and that it will be constructed and operated in compatibility with the environment.
State Historic Preservation Officer (SHPO); Native American Tribes	13 TAC 26; Archeological sites	Permission required prior to clearing of any lands (SHPO 2007)	Identification and evaluation of historic properties and any cultural sites of significance to Native American tribes (site, transmission corridors, pipeline corridors).
SHPO	Section 106 National Historic Preservation Act (NHPA); 36 CFR 800	Permission required prior to clearing of any lands (SHPO 2007)	Review and analysis of cultural and historical resources, including completion of NHPA Section 106 consultation. SHPO concurrence supports no new study needed at CPNPP site.
Brazos River Authority (BRA)		Use of surface water approved by local water authority	New surface water rights secured from Lake Granbury for transfer to CPNPP site and return to Lake Granbury.
TPWD	31 TAC 69	Scientific Collection Permit	Sampling contractors need to have permit in hand for species collection. (Each Vendor maintains a permit for collection)
TCEQ	30 TAC 335	Landfill #6 Closure Plan	Plan to close landfill is needed 3 months prior to its being disturbed.
TCEQ	30 TAC 335	Landfill #6 Closure Certification Report	Report upon completion of excavation as to the results versus the plan.
TCEQ	30 TAC 116	Concrete batch plant air permit	Concrete batch plant air permit required 6 months prior to construction for operation of an on-site concrete plant.

Table H-1. (contd)

Agency	Authority	Requirements	Activity Covered/Comments
TCEQ	30 TAC 122	Title V Operating Permit for diesel units	Diesel engines air permit for discharge to environment. Emergency diesels, fire pump diesels, auxiliary boilers, gas turbines, etc. Twelve months prior to initial firing of diesels. [TCEQ Air Permit No. 19225 (not Title V permit); Requires modification]
TCEQ	7 TAC 111	Air permit for burning debris in pit	After burn pit is constructed, the permit is required 3 months prior to any burn activities.
EPA	40 CFR 110/112	Spill Prevention Control and Countermeasures Plan (SPCCP)	Revise existing plan 6 months prior to construction if changes are indicated.
EPA	40 CFR 110/112	SPCCP – Revision	A revision to the plan may be required if contractors store more than 1320 gallons of petroleum products.
TDOT; Hood and Somervell County agencies		Road construction, road crossings, interruption of traffic flow	Affected areas involving old or new roads – changes or interruption of traffic.
TCEQ	30 TAC 106	Rock crusher operations	For rock debris going to be crushed, obtain a permit 6 months prior to operation.
NRC		Appendix B - Facilities Operating License Environmental Protection Plan, non-radiological	Changes required in the Environmental Protection Plan, non-radiological, to be modified pending final design reviews, approvals, and prior to operation of the facility.
TCEQ	30 TAC 321.255; 30 TAC 210.23; 30 TAC 309	Evaporation pond liner and size requirements	Certify evaporation pond meets requirements prior to use.

Table H-1. (contd)

Agency	Authority	Requirements	Activity Covered/Comments
TCEQ		Hazardous materials storage (Superfund Amendments and Reauthorization Act Title III)	
TCEQ		Toxic chemical release inventory reporting form	
TCEQ	Disposal Facility	Radiological waste (Radwaste) disposal registration	
PUC of Texas		PUC approval of decommissioning plan	
TCEQ	30 TAC 116	State construction air permit	

Appendix I

Severe Accident Mitigation Alternatives

Appendix I

Severe Accident Mitigation Alternatives

I.1 Introduction

Luminant has submitted an application to construct two U.S. Advanced Pressurized Water Reactors (US-APWR) at the Comanche Peak Nuclear Power Plant (CPNPP) site. Current policy developed after the Limerick decision (Limerick 1989) requires that the U.S. Nuclear Regulatory Commission (NRC) staff consider alternatives to mitigate the consequences of severe accidents in a site-specific environmental impact statement (EIS). The severe accident mitigation alternative (SAMA) review presented here considers both severe accident mitigation design alternatives (SAMDAs) and procedural alternatives.

In Title 10 of the Code of Federal Regulations (CFR), 10 CFR 52.79(a)(38), the NRC requires that applicants for combined licenses (COLs) include "… a description and analysis of design features for the prevention and mitigation of severe accidents…" The Environmental Report (ER) (Luminant 2009a) and the Final Safety Analysis Report (FSAR) (Luminant 2009b) in the Luminant COL application address these requirements.

In 10 CFR 52.47(a)(23), the NRC requires that applicants for design certification include "… a description and analysis of design features for the prevention and mitigation of severe accidents…" in the application for design certification. In 10 CFR 52.47(a)(27) the NRC requires a description of a "…plant-specific probabilistic risk assessment (PRA) and its results," and in 10 CFR 52.47(b)(2) the NRC requires an ER that contains the information required by 10 CFR 51.55. Mitsubishi Heavy Industries, Ltd. (MHI) has submitted all of this information in documents that are part of the application for certification of the US-APWR design.

While the NRC staff has not completed its generic SAMDA review of the US-APWR for design certification, the staff has conducted a review of the Luminant SAMDA analysis specific to operation of two US-APWRs at the CPNPP site (Luminant 2009a). The analysis is based on:

1. the PRA included as Section 19.1 of the Comanche Peak FSAR (Luminant 2009b) and the SAMDA analysis in the US-APWR ER (Luminant 2009a), and
2. results of the analysis of probability-weighted risks of US-APWR design at the CPNPP site described in Section 5.11.2 of this EIS.

An analysis for a US-APWR at a generic site is presented first; then the analysis is extended to include consideration of CPNPP site-specific information. The SAMDA analysis for the proposed US-APWR design certification will be finally resolved through the design certification rulemaking process.

I.2 US-APWR SAMDA Review – Generic Site

This section addresses the generic analysis of SAMDAs conducted by MHI, the applicant for certification of the US-APWR design. The SAMA review in Section I.3 extends the generic SAMDA analysis to include CPNPP site-specific factors including meteorology, population, and land use. Section I.3 also addresses SAMAs that were not included in the generic analysis because they do not involve reactor system design.

I.2.1 US-APWR PRA Results

MHI, the applicant for certification of the US-APWR design, conducted Level 1 and Level 2 PRAs to estimate the core damage frequencies (CDFs) that might result from a large number of initiating events and accident sequences. Table I-1 lists these CDF estimates and estimates of the large release frequencies (LRFs) of iodine, cesium, or tellurium. Releases associated with containment bypass, containment isolation failure, or containment failure at or before reactor vessel failure are considered to be large. Table I-1 also lists NRC staff goals related to CDFs and LRFs.

Table I-1. Comparison of US-APWR PRA Results with the Design Goals

	NRC Design Goal[(a)]		US-APWR PRA Results[(b)]	
	Core Damage Frequency (yr^{-1})	**Large Release Frequency (yr^{-1})**	**Core Damage Frequency (yr^{-1})**	**Large Release Frequency (yr^{-1})**
Internal At Power Events	1.0×10^{-4}	1.0×10^{-6}	1.2×10^{-6}	1.0×10^{-7}
Internal Flooding Events	1.0×10^{-4}	1.0×10^{-6}	1.5×10^{-6}	4.0×10^{-7}
Internal Fire Events	1.0×10^{-4}	1.0×10^{-6}	1.7×10^{-6}	1.2×10^{-7}
Low Power and Shutdown Events	1.0×10^{-4}	1.0×10^{-6}	2.5×10^{-7}	$2..5 \times 10^{-7}$

(a) SECY-90-016 (NRC 1990a) and associated SRM (NRC 1990b)
(b) From Chapter 19 of MHI (2009a)

Although the US-APWR PRAs did not provide quantitative estimates of CDFs and LRFs for seismic and other external initiating events such as hurricanes and tornadoes, they are discussed in the FSAR. The Section 19.1.5.1 of the FSAR (Luminant 2009b) presents the results of a seismic margins analysis in which PRA methods are used to identify potential vulnerabilities in the design and so corrective measures can be taken to reduce risk. Similarly, FSAR Section 19.1.5 addresses risks associated with high winds and tornadoes, external flooding, transportation and nearby facility accidents and aircraft crash. Risks associated with these events are considered to be insignificant by MHI.

I.2.2 Potential Design Improvements

In the ER submitted as part of the design certification application (MHI 2009b), MHI identified 156 candidate alternatives based on a review of industry documents, including previous SAMDA reviews and NRC evaluations of those reviews, and consideration of plant-specific enhancements. The candidate alternatives were then screened to identify candidates for detailed evaluation. The categories used in screening were:

- not applicable
- already implemented
- combined
- excessive implementation cost
- very low benefit

The development of the US-APWR design has benefitted from insights gained in numerous PRAs. The low CDFs and LRFs in Table I-1 are attributable to the implementation of design

improvements already incorporated into the US-APWR design. The following are examples of the 22 candidate alternatives included in the design:

- install a gas turbine generator
- improve emergency core cooling system suction strainers
- provide an in-containment reactor water storage tank
- provide capability for remote, manual operation of secondary side pilot-operated relief valves in a station blackout
- provide a reactor coolant depressurization system
- provide hardware connections to allow another essential raw cooling water system to cool charging pump seals
- provide ability for emergency connection of existing or new water sources to feedwater and condensate systems
- provide a reactor cavity flooding system

The screening process eliminated 20 candidate alternatives as being inapplicable for the US-APWR design; 3 candidate alternatives were combined with similar alternatives; and 29 candidate alternatives were procedural or administrative rather than design alternatives. Of the remaining 82 candidate alternatives, 69 were categorized as very low benefit because it would not significantly reduce risk, and 3 were categorized as having excessive implementation costs. These screening processes identified 10 candidate alternatives for further evaluation. The 10 candidate SAMDAs are:

1. Provide additional direct current (dc) battery capacity (At least one train emergency dc power can be supplied more than 24 hours.)
2. Provide an additional diesel generator (At least one train emergency alternating current (ac) power can be supplied more than 24 hours.)
3. Install an additional, buried off-site power source
4. Provide an additional high pressure injection pump with independent diesel (With dedicated pump cooling)
5. Add a service water pump (Add independent train)
6. Install an independent reactor coolant pump seal injection system, with dedicated diesel (With dedicated pump cooling)
7. Install an additional component cooling water pump (Add independent train)
8. Add a motor-driven feedwater pump (With independent room cooling)
9. Install a filtered containment vent to remove decay heat
10. Install a redundant containment spray system (Add independent train)

I.2.3 Cost-Benefit Comparison

MHI used the cost-benefit methodology found in NUREG/BR-0184, *Regulatory Analysis Technical Evaluation Handbook* (NRC 1997), to calculate the maximum attainable benefit associated with completely eliminating all risk for the US-APWR.

This methodology involves determining the net value for a SAMDA according to the following formula:

Net Value = (APE + AOC + AOE + AOSC) - COE

Where

APE = present value of averted public exposure ($)
AOC = present value of averted offsite property damage costs ($)
AOE = present value of averted occupational exposure costs ($)
AOSC = present value of averted onsite costs ($); this includes cleanup, decontamination, and long-term replacement power costs
COE = cost of enhancement ($)

If the net value of a SAMDA is negative, the cost of implementing the SAMDA is larger than the benefit associated with the SAMDA and it is not considered to be cost beneficial.

To assess the risk reduction potential for SAMDAs, MHI (MHI 2009b) assumed that each design alternative would completely eliminate all severe accident risk. This assumption is conservative as it maximizes the benefit of each design alternative. Luminant estimated the public exposure benefits for the design alternative on the basis of the reduction of risk expressed in terms of whole body person-rem per year received by the total population within a 50-mi radius of the generic site hosting a US-APWR.

Table I-2 summarizes MHI's estimates of each of the associated cost elements. The provided results are based on the approach, parameters, and data listed in NUREG/BR-0184. Baseline risks used in the analysis were 3.0×10^{-1} person-rem Ryr^{-1} for population dose risk and \$706 Ryr^{-1} for cost risk for internal events during full-power operation (Luminant 2009a).

Table I-2. Summary of Estimated Maximum Averted Costs for a Generic Site

Quantitative Attributes		Averted Cost Estimate ($) x 1000[a]	
		7% Discount	3% Discount
Health	Public (APE)	29.1	75.1
	Occupational (AOE)	2.3	5.9
Property	Offsite[b] (AOC)	0.5	1.3
	Onsite	NA[c]	NA[c]
Cleanup and Decontamination	Onsite (AOSC)[d]	69.8	180.2
Replacement Power	(AOSC)[d]	187.6	484.4k
Total		289.3	747.1

(a) From the design certification ER (MHI 2008).
(b) Includes offsite cleanup and decontamination costs.
(c) Not Analyzed.
(d) AOSC includes onsite cleanup and decontamination costs and the cost of replacement power.
(e) Based on internal event, internal flooding, and internal fire risks.

The monetary present value estimate for each risk attribute does not represent the expected reduction in risk resulting from a single accident; rather, it is the present value of a stream of potential losses extending over the projected lifetime of the facility (in this case projected to be 60 years). Therefore, the averted cost estimates reflect the expected annual loss resulting from a single accident, the possibility that such an accident could occur at any time over the licensed life, and the effect of discounting these potential future losses to present value.

As indicated above, MHI estimated the total present dollar value equivalent associated with complete elimination of severe accidents at a single US-APWR unit site to range between about $289k and about $747,000. The estimated cost of replacement power has the largest effect on the averted cost. For any SAMDA to be cost beneficial, the enhancement cost must be less than $747,000. Based on a cost estimate of $289,000, MHI concluded that none of the SAMDA candidates are cost beneficial. MHI states that older studies were used for cost examples of SAMDA candidates without attempting to adjust to present-day dollars with the exception of cost associated with procurement and installation, and where applicable, long-term maintenance, surveillance, calibration and training. In one case (Containment Spray System, SAMDA 10), the cost was scaled from a lower-power unit to the larger power (1610 Mwe) appropriate for the US-APWR. The cost of other SAMDA candidates was determined without power scaling (MHI 2008).

I.2.4 Staff Evaluation

In 10 CFR 52.47(a)(27), the NRC requires that an applicant for design certification perform a plant- or site-specific PRA. The aim of this PRA is to seek improvements in the reliability of core and containment heat removal systems that are significant and practical. The set of potential design improvements considered for the US-APWR include those from industry guidance, previous SAMDA review, and review of the US-APWR design. The US-APWR design already incorporates many design enhancements related to severe accident mitigation. Such design improvements have resulted in a CDF that is a factor of 3 of magnitude lower than the CDFs for the existing CPNPP Units 1 and 2.

MHI's averted cost estimates are based on point-estimate values, without consideration of uncertainties in CDF or offsite consequences. Even though this approach is consistent with that used in previous design alternative evaluations, further consideration of these factors could lead to significantly higher risk reduction values, given the extremely small CDF and risk estimates in the baseline PRA. Uncertainties either in CDF or in offsite radiation exposures resulting from a core damage event are fairly large because key safety features of the US-APWR design are unique, and their reliability has been evaluated through analysis and testing programs rather than through operating experience.

Further, in evaluating the costs of SAMDA candidates, MHI did not explicitly assess the capital costs associated with the various alternatives. Instead, MHI used estimated costs of back fitting of similar SAMDAs provided by industry in license renewal applications. This approach has the potential to overestimate the actual costs of SAMDAs because the cost of implementing a modification to a reactor that has been built is always greater than implementing the modification in a design that is still evolving.

I.3 Comanche Peak Site-Specific SAMA Review

The discussion above evaluates SAMDAs for the US-APWR at a generic site. The discussion that follows updates that evaluation to include consideration of CPNPP site-specific factors including meteorological conditions, population distribution, and land use. It is based on the Luminant SAMDA analysis presented in the ER (Luminant 2009a). The last part of this discussion deals with procedural and training SAMAs.

I.3.1 Risk Estimates

Luminant estimated severe accident risks for a US-APWR at the CPNPP site in Section 7.2 of its ER (Luminant 2009a). The NRC staff evaluated the information for the US-APWR design supplied by MHI and Luminant (MHI 2009b; Luminant 2009b) and CPNPP site-specific data

(meteorology, demographics, and land use) provided by Luminant. The results of these analyses are found in Table 5-22, "Environmental Risks from a US APWR Severe Accident at the Comanche Peak Site," in Chapter 5 of this EIS.

Table 5-22 gives a CDF of 1.2×10^{-6} Ryr^{-1} and population dose and cost risks of 0.3 person-rem Ryr^{-1} and \$714 Ryr^{-1}, respectively. These risks are based on internally initiated events. Table 5-23 [(Total Severe Accident Health Effects (based on 2006 Meteorological Data)] gives a CDF of 4.6×10^{-6} Ryr^{-1} when internal flooding events, internal fire events that occur while the reactor is at power, and low power and shutdown events are considered.

I.3.2 Cost-Benefit Comparison

In Section 7.3.2 of the ER (Luminant 2009a), Luminant estimates the averted costs associated with eliminating all severe accident risks associated for a US-APWR at the CPNPP site. The Luminant analysis is an update the MHI SAMDA analysis (MHI 2009b) to include site specific information. Luminant substituted population dose and offsite cost risks based on 2056 population projections for the CPNPP site for the population dose and offsite property costs in the MHI analysis. Table I-3 shows both the MHI generic averted cost estimates and the Luminant estimates.

Table I-3. Summary of Estimated Averted Costs for the Comanche Peak Site

Quantitative Attributes		Averted Cost Value Estimate ($) x 1000			
		MHI Generic[(a)]		Comanche Peak Site[(b)]	
		7% Discount	3% Discount	7% Discount	3% Discount
Health	Public (APE)	29.1	75.1	16.5	42.7
	Occupational (AOE)	2.3	5.9	2.3	6.0
Property	Offsite[(c)] (AOC)	0.5	1.3	28.0	72.4
	Onsite	NA[(d)]	NA[(d)]	NA[(d)]	NA[(d)]
Cleanup and Decontamination	Onsite (AOSC)[(e)]	69.8	180.2	70.5	182.0
Replacement Power	(AOSC)[(e)]	187.6	484.4	187	483.7
Total		**289.3**	**\$747.1**	**304.6**	**786.7**

(a) From MHI (2009b)
(b) Luminant estimates (Luminant 2009a)
(c) Includes cleanup and decontamination costs
(d) Not analyzed
(e) AOSC includes onsite cleanup and decontamination cost and the cost of replacement power

In assessing the risk reduction potential of design improvements for the US-APWR, the NRC staff evaluated the MHI risk reduction estimates for the various design alternatives and assessed the potential impact of uncertainties on the results. The analyses in Table I-2 and Table I-3 present the value of reducing the severe accident risk to zero. These values are used in screening potential SAMDAs. Using the results in Table I-2, MHI concluded that no candidate alternative from an initial list of 156 alternatives would be cost beneficial. The CPNPP site-specific values, although higher than those estimated for a generic site, are below the minimum

estimated cost for a design change. Moreover, no SAMDA can reduce the risk to zero. Therefore, the staff concludes that it is highly unlikely that any SAMDA would be cost beneficial at the CPNPP site.

I.3.3 Procedural and Training SAMAs

The original list of 156 US-APWR SAMDAs included 29 candidate alternatives that were procedural or training in nature. These items were eliminated from consideration because they did not involve design changes. Examples of items screened out for this reason include

- revise procedure to allow bypass of diesel generator trips
- develop procedures for replenishing diesel fuel oil
- emphasize steps in recovery of offsite power after a station blackout in training
- provide additional training on loss of component cooling water
- implement procedures to stagger high pressure safety injection pump use after a loss of service water
- proceduralize local manual operation of auxiliary feedwater system when control power is lost.

These candidate alternatives fall within the scope of the SAMA review that the NRC staff conducts as part of its environmental review of applications. However, such SAMAs generally involve procedures that have not been developed for a reactor that has not been built and that are typically not developed until construction has been completed and the plant is approaching operation.

The staff reviewed the candidate alternatives that were previously screened out because they did not involve design changes. Because the maximum attainable benefit is low, an SAMA based on procedures or training for a US-APWR at the CPNPP site would have to reduce the CDF or risk by approximately 20 percent to become cost beneficial. Based on its evaluation, the staff concludes that none of these SAMAs would reduce the CDF or risk by 20 percent for a US-APWR at CPNPP. Therefore, they would not be likely to be cost effective if the procedures that are referenced actually existed.

Luminant has stated that evaluation of administrative SAMAs would not be appropriate until the plant design is complete and that the appropriate administrative controls on plant operations would be incorporated into the plant's managements systems as part of its baseline configuration (Luminant 2009b, Chapter 19). Based on this statement, the staff expects that Luminant will consider risk insights and mitigation measures in the development of procedures and training; however, this expectation is not crucial to the staff's conclusions because the staff already concluded procedural and training SAMAs would be unlikely to be cost effective.

I.4 Conclusions

Based on its evaluation of the US-APWR PRA (MHI 2009a) and SAMDA analysis (MHI 2009b), the CPNPP site-specific severe accident and SAMDA analyses (Luminant 2009a and Luminant 2009b) and its own independent review, the staff concludes that that there are no US-APWR SAMDAs that would be cost beneficial at the CPNPP site. The staff expects that Luminant will consider risk insights and mitigation measures in the development of procedures and training; however, this expectation is not crucial to the staff's conclusions because the staff concludes that procedural and training SAMAs would be unlikely to be cost effective.

I.5 References

10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy*, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

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Appendix J

Carbon Dioxide Footprint Estimates for a 1000 MW(e) Light Water Reactor (LWR)

Appendix J

Carbon Dioxide Footprint Estimates for a 1000 MW(e) Light Water Reactor (LWR)

The review team has estimated the carbon dioxide (CO_2) footprint of various activities associated with nuclear power plants. These activities include building, operating, and decommissioning the plant. The estimates include direct emissions from the nuclear facility and indirect emissions from workforce transportation and the uranium fuel cycle.

Construction equipment estimates listed in Table J-1 are based on hours of equipment use estimated for a single nuclear power plant at a site requiring a moderate amount of terrain modification. Equipment usage for a multiple unit facility would be larger, but it is likely that it would not be a factor of 2 larger. A reasonable set of emissions factors used to convert the hours of equipment use to CO_2 emissions are based on carbon monoxide emissions (UniStar 2007) scaled to CO_2 using a scaling factor of 165 tons of CO_2 per ton of CO. This scaling factor is based on emissions factors in Table 3.3-1 of AP-42 (EPA 1995). Equipment emissions estimated for decommissioning are one half of those for construction.

Table J-1. Construction Equipment CO_2 Emissions (Metric Tons Equivalent)

Equipment	Construction Total[(a)]	Decommissioning Total[(b)]
Earthwork and Dewatering	1.1×10^4	5.4×10^3
Batch Plant Operations	3.3×10^3	1.6×10^3
Concrete	4.0×10^3	2.0×10^3
Lifting and Rigging	5.4×10^3	2.7×10^3
Shop Fabrication	9.2×10^2	4.6×10^2
Warehouse Operations	1.4×10^3	6.8×10^2
Equipment Maintenance	9.6×10^3	4.8×10^3
TOTAL[(c)]	3.5×10^4	1.8×10^4

(a) Based on hours of equipment usage over 7-yr period.

(b) Based on equipment usage over 10-yr period.

(c) Total not equal to the sum due to rounding.

Workforce estimates are typical workforce numbers for new plant construction and operation based on estimates in various combined license (COL) applications, and decommissioning workforce emissions estimates are based on decommissioning workforce estimates in NUREG-0586 S1, *Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, Supplement 1 Regarding the Decommissioning of Nuclear Power Reactors* (NRC 2002). A typical construction workforce averages about 2500 for a 7-year period with a peak work force of about 4000. A typical operations workforce for the 40-year life of the plant is assumed to be about 400, and the decommissioning workforce during a decontamination and dismantling

period of 10 years is assumed to be 200 to 400. In all cases, the daily commute is assumed to involve a 100-mi roundtrip with 2 individuals per vehicle. Considering shifts, holidays, and vacations,1250 roundtrips per day are assumed each day of the year during construction; 200 roundtrips per day are assumed each day during operations; and 150 roundtrips per day are assumed 250 days per year for the decontamination and dismantling portion of decommissioning. If the SAFSTOR decommissioning option is included in decommissioning, 20 roundtrips each day of the year are assumed for the caretaker workforce.

Table J-2 lists the review team's estimates of the CO_2 equivalent emissions associated with workforce transport. The table lists the assumptions used to estimate total miles traveled by each workforce and the factors used to convert total miles to metric tons CO_2 equivalent. CO_2 equivalent accounts for other greenhouse gases, such as methane and nitrous oxide, that are emitted by internal combustion engines. The workers are assumed to travel in gasoline powered passenger vehicles (cars, trucks, vans, and sport utility vehicles) that get an average of 19.7 mi per gallon of gas (FHWA 2006). Conversion from gallons of gasoline burned to CO_2 equivalent is based on Environmental Protection Agency emissions factors (EPA 2007a, 2007b).

Table J-2. Workforce CO_2 Footprint Estimates

	Construction Workforce	Operational Workforce	Decommissioning Workforce	SAFSTOR Workforce
Roundtrips per day	1250	200	150	20
Miles per roundtrip	100	100	100	100
Days per year	365	365	250	365
Years	7	40	10	40
Miles traveled	3.2×10^8	2.9×10^8	3.8×10^7	2.92×10^7
Miles per gallon[(a)]	19.7	19.7	19.7	19.7
Gallons fuel burned	1.6×10^7	1.5×10^7	1.9×10^6	1.58×10^6
Metric tons CO_2 per gallon[(b)]	8.81×10^{-3}	8.81×10^{-3}	8.81×10^{-3}	8.81×10^{-3}
Metric tons CO_2	1.4×10^5	1.3×10^5	1.7×10^4	1.3×10^4
CO_2 equivalent factor[(c)]	0.971	0.971	0.971	0.971
Metric tons CO_2 equivalent	1.5×10^5	1.3×10^5	1.7×10^4	1.3×10^4

(a) Source: FHWA 2006

(b) Source: EPA 2007a

(c) Source: EPA 2007b

Published estimates of uranium fuel cycle CO_2 emissions required to support a nuclear power plant range from about 1 percent to about 5 percent of the CO_2 emissions from a comparably sized coal-fired plant (Sovacool 2008). A coal-fired power plant emits about 1 metric ton of CO_2

for each megawatt hour generated (Miller and Van Atten 2004). Therefore, for consistency with Table S-3 of Title 10 of the Code of Federal Regulations 51.51 (10 CFR Part 51), the review team estimated the uranium fuel cycle CO_2 emissions as 0.05 metric tons of CO_2 per MWh generated. Finally, the review team estimated the CO_2 emissions directly related to plant operations from the typical usage of various diesel generators onsite using EPA emissions factors (EPA 1995). The review team assumed an average of 600 hrs of emergency diesel generator operation per year (total for 4 generators) and 200 hrs of station blackout diesel generator operation per year (total for 2 generators).

Given the various sources of CO_2 emissions discussed above, the review team estimates the total life CO_2 footprint for a reference 1000 MW(e) nuclear power plant with an 80 percent capacity factor to be about 18 million metric tons. The components of the footprint are summarized in Table J-3. The uranium fuel cycle component of the footprint dominates all other components. It is directly related to power generated. As a result, it is reasonable to use reactor power to scale the footprint to larger reactors.

In closing, the review team considers the footprint estimated in Table J-3 to be appropriately conservative. The CO_2 emissions estimates for the dominant component (uranium fuel cycle) are based on 30 year old enrichment technology assuming that the energy required for enrichment is provided by coal-fired generation. Different assumptions related to the source of energy used for enrichment or the enrichment technology that would be just as reasonable could lead to a significantly reduced footprint.

Table J-3. 1000 MW(e) LWR Lifetime Carbon Dioxide Footprint

Source	Activity Duration (yr)	Total Emissions (Metric Tons)
Construction Equipment	7	3.5×10^4
Construction Workforce	7	1.5×10^5
Plant Operations	40	1.9×10^5
Operations Workforce	40	1.3×10^5
Uranium Fuel Cycle	40	1.7×10^7
Decommissioning Equipment	10	1.8×10^4
Decommissioning Workforce	10	1.7×10^4
SAFSTOR Workforce	40	1.3×10^4
TOTAL		1.8×10^7

Emissions estimates presented in the body of this EIS have been scaled to values that are appropriate for the proposed project. The uranium fuel cycle emissions have been scaled by reactor power using the scaling factor determined in Chapter 6 and by the number of reactors to be built. Plant operations emissions have been adjusted to represent the number of large CO_2 emissions sources (diesel generators, boilers, etc.) associated with the project. The workforce emissions estimates have been scaled to account for differences in workforce numbers and commuting distance. Finally, equipment emissions estimates have been scaled by estimated

equipment usage. As can be seen in Table J-3, only the scaling of the uranium fuel cycle emissions estimates makes a significant difference in the total carbon footprint of the project.

J.1 References

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10. SUPPLEMENTARY NOTES

Docket Nos. 52-034 and 52-035

11. ABSTRACT *(200 words or less)*

This environmental impact statement (EIS) has been prepared to satisfy the requirements of the National Environmental Policy Act of 1969, as amended. This EIS has been prepared in response to an application submitted to the U.S. Nuclear Regulatory Commission (NRC) by Luminant Generation Company LLC (Luminant), acting for itself and as agent for the Nuclear Project Company LLC (subsequently renamed Comanche Peak Nuclear Power Company LLC), for combined construction permits and operating licenses (combined licenses or COLs). The proposed actions related to the Luminant application are (1) NRC issuance of COLs for two new nuclear power reactor units (Units 3 and 4) at the Comanche Peak Nuclear Power Plant (CPNPP) site in Hood and Somervell Counties, Texas, and (2) U.S. Army Corps of Engineers (Corps) issuance of a permit to perform certain construction activities on the site. The Corps is participating with the NRC in preparing this EIS as a cooperating agency and participates collaboratively on the review team.

After considering the environmental aspects of the proposed action, the NRC staff's recommendation to the Commission is that the COLs be issued as requested. This recommendation to the Commission is based on (1) the application, including the environmental report (ER) submitted by Luminant and Luminant's responses to the NRC and Corps staff's request for additional information (RAIs); (2) consultation with Federal, State, Tribal, and local agencies; (3) the NRC and Corps staff's independent review; (4) the NRC and Corps staff's consideration of public comments; and (5) the assessments summarized in the EIS, including the potential mitigation measures identified in the ER and this EIS. the Corps will issue its Record of Decision based, in part , on the EIS.

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