June 30, 2009

Comanche Peak Nuclear Power Plant, Units 3 & 4
COL Application

Part 3,

Environmental Report

Update Tracking Report

Revision 4

Revision History

Revision	Date	Update Description
0	3/31/2009	No technical changes in Rev.0 Editorial Changes in Chapters: Ch.1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
1	4/14/2009	Updated Chapters: Ch. 1, 2, 3, 4, 5, 8, 9
2	4/24/2009	Updated Chapters: Ch. 1, 2, 4, 5, 10
-	4/28/2009	Updated Chapters: Ch. 7 See Luminant Letter TXNB-09013 dated 4/28/2009
3	5/08/2009	Updated Chapters: Ch 2, 3, 4, 5, 6
4	06/30/2009	Updated Chapters: Ch 2, 3, 4, 5, 6, 9, 10

Chapter 1

Chapter 1 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	1-xv	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00462	Table 1.3-2	1.3-5	Match to NUREG 1555	Change section titles of 4.7, 4.8, 5.11 and 5.13.	0
LU-02	Figure 1.1-5	_	Represent line from CPNPP to DeCordova as a new line.	Change color of line from CPNPP to DeCordova from red to green.	1
CTS-00693	Table 1.2-1	1.2-3 1.2-4 1.2-5 1.2-6 1.2-8 1.2-9	Table needs to accurately reflect the permit conditions and permits required.	Table 1.2-1 updated to reflect only those permits that apply.	1
CTS-00694	Table 1.2-1	1.2-3 1.2-4 1.2-5 1.2-6 1.2-8 1.2-9	Editorial	Adjust column setting and row to improve the readability	1
MET-25	Table 1.2-1	1.2-9	ER Site Audit NRC information need	Add TCEQ 30 TAC 116 State Construction Air Permit	1
ALT-11	1.0	1.0-1	Increase information as discussed with the NRC.	Revised subsection to include a concise statement of the purpose and the need for the proposed project.	2
CTS-00693	Table 1.2-1	1.2-9	Editorial	Removed the information for financial institutions	2

Chapter 2

Chapter 2 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	2-xlii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00611	2.1	2.1-1	Erratum	Change “624,067” to “653,320”; “61,115” to “62,306”; “39,875” to “39,987”; “37,976” to “41,564”; “29,184” to “29,689” to match 2006 US Census instead of 2005 US Census.	0
CTS-00611	2.1.1	2.1-2	Updated reference required to provide 2006 data not 2005 data	Change (US Census 2005) to (US Census 2006) notated as US Census Bureau. “American FactFinder – Texas By Place GCT Population Estimates.” US Census Bureau, Washington, DC. Available URL: Http://factfinder:census.gov/servlet/home/en/official - estimates.html, Accessed July 24, 2008.	0
CTS-00459	2.3.1.1.5	2.3-4	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00455	2.3.3.3.5	2.3-61	Editorial correction	Delete “No” and add “Other than CPNPP Units 1 and 2,”	0
CTS-00648	2.3.1.1.6	2.3-4	Erratum	Change “0.25 ac” to “0.78 ac”.	0
MET-04	List of Tables	2-xvii and 2-xviii	Erratum	Add “Dallas” in front of “Fort Worth” and “Airport” after Fort Worth	1
MET-14	List of Tables	2-xix 2-xx	Increase information as discussed with the NRC.	Add tables: 2.7-129, 2.7-130, 2.7-131, 2.7-132, 2.7-133, 2.7-134, 2.7-135	1
LU-05	2.2.1.1	2.2-1	Erratum	Revise paragraph to clarify mineral rights.	1
LU-01	2.2.2	2.2-5	Increase information as discussed with the NRC.	Insert sentence and add “CDP” to Pecan Plantation to clarify Pecan Plantation is a housing development and not an	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
				incorporated town.	
LU-11	2.2.2	2.2-5	Increase information as discussed with the NRC.	Insert sentence to clarify zoning along Lake Granbury.	1
LU-09	2.2.3	2.2-6	Increase information as discussed with the NRC.	Revised text to include information on Proctor Lake and adjust numbers accordingly.	1
LU-08	Figure 2.2-3		Increase information as discussed with the NRC.	Show location of state parks.	1
SOC-11	2.5.2.7.2.1	2.5-18	Increase information as discussed with the NRC.	Updated with current information and revised text to discuss public safety and medical services for Hood and Somervell counties.	1
SOC-11	2.5.2.7.2.1	2.5-19	Erratum	Update reference (The Nursing Home Project 2006) to (The Nursing Home Project 2006a).	1
SOC-11	2.5.2.7.2.2	2.5-19	Erratum	Update reference citation from TDPS 2004 to TDPS 2006	1
SOC-11	2.5.2.7.2.3	2.5-19	Increase information as discussed with the NRC.	Add new subsections to discuss Bosque, Erath, Johnson, and Tarrant counties public safety and medical services.	1
SOC-11	2.5.2.7.2.3	2.5-19	Increase information as discussed with the NRC.	Updated with current information and revised text to discuss public safety and medical services for Hood and Somervell counties. Update reference citation from TDPS 2004 to TDPS 2006	1
CR-04	2.5.3.6	2.5-25	Increase information as discussed with the NRC.	New subsection to include background for 2.5.3.	1
CR-04	2.5.6	2.5-29	Increase information as discussed with the NRC.	Add 13 new reference notations that are cited in the new Subsection 2.5.3.6.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-13	2.5.4.4	2.5-28	Increase information as discussed with the NRC.	Revised Subsection to include information on subsistence populations.	1
SOC-11	2.5.6	2.5-32	Increase information as discussed with the NRC.	Update reference notation from (The Nursing Home Project 2006) to (The Nursing Home Project 2006a)	1
SOC-11	2.5.6	2.5-34	Increase information as discussed with the NRC.	Update reference notation from (TDPS 2004) information to (TDPS 2006) information.	1
SOC-11	2.5.6	2.5-36	Increase information as discussed with the NRC.	Revised to include 11 new reference notations.	1
MET-03	2.7.1.2.4	2.7-11	Erratum	Add “16” to number of day each year and “by county” to wind events to reconcile thunderstorm information.	1
MET-04	2.7.1.2.8	2.7-17	Erratum	Add “the” in front of “Dallas Fort Worth and Airport” after “Fort Worth” to correct the reference to Forth Worth Airport.	1
MET-13	2.7.2.1.2	2.7-19 and 2.7-23	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1
MET-04	2.7.2.1.4	2.7-23	Erratum	Add “Dallas” in front of Fort Worth Airport to correct the reference to Forth Worth Airport.	1
MET-11	2.7.2.1.7	2.7-25	Erratum	Change Table 2.7-34 to Table 2.3-23 to correct reference to the table.	1
MET-13	2.7.3.1	2.7-28	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
MET-12	2.7.3.1	2.7-28	Erratum	Remove “control room” and replace with “low population zone” to correct reference to control room.	1
MET-13	2.7.3.2 And 2.7.4.2	2.7-30 and 2.7-31	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1
MET-14	2.7.4.3	2.7-33	Increase information as discussed with the NRC.	Insert new Subsection to include evaporate pond results.	1
MET-03	Table 2.7-11	2.7-68	Erratum	Change numbers in average per year (#/yr)	1
MET-13	Table 2.7-11	2.7-68	Erratum	Replaced 2006 with 7/31/2006 to describe which data years were used.	1
MET-13	Table 2.7-85	2.7-68	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1
MET-04	Table 2.7-86	2.7-150	Erratum	Add “Dallas” in front of “Fort Worth Airport” to correct the reference to Forth Worth Airport.	1
MET-04	Table 2.7-96	2.7-162	Erratum	Add “Dallas” in front of Fort Worth and “Airport” after “Fort Worth” to correct the reference to Forth Worth Airport.	1
MET-04	Table 2.7-99	2.7-165	Erratum	Add “Dallas” in front of “Fort Worth Airport” to correct the reference to Forth Worth Airport.	1
MET-14	Table 2.7-129 through Table 2.7-135		Increase information as discussed with the NRC.	Add Tables 2.7-129, 2.7-130, 2.7-131, 2.7-132, 2.7-133, 2.7-134, and 2.7-135.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-07	List of Tables	2-xi	Increase information as discussed with the NRC.	Changed the Title of Table 2.5-16 from “Hood and Somervell County 2002 and 2007 Property Taxes” to “Economic Region 2002 and 2007 Property Taxes”	2
SOC-06	2.5.2.1	2.5-8	Editorial Correction	Removed “counties” Changed Table 5.8-1 to 5.8-2.	2
SOC-06 SOC-03	2.5.2.1	2.5-10	Errata	Changed number of workers from “4300” to “4953” and from “550” to “494”	2
SOC-07	2.5.2.3.1	2.5-13	Editorial Correction	Changed “Hood and Somervell” to “the cities and” and added “in the economic region”	2
SOC-07	2.5.2.3.1	2.5-13	Increase information as discussed with the NRC.	Revised discussion in subsection to discuss the state and local taxes associated with the proposed units.	2
SOC-07	2.5.6	2.5-31	Editorial correction	Revised reference from (Combs 2007) to (Combs 2007a). Added reference (Combs 2009).	2
SOC-07	2.5.6	2.5-35 2.5-31	Increase information as discussed with the NRC.	Removed reference notation for (Combs 2006). Added two new reference notations as a result of the revisions to subsection 2.5.2.3.1.	2
SOC-07	Table 2.5-16	2.5-64	Increase information as discussed with the NRC.	Revised table to increase information for local taxes.	2
LU-03	List of Tables	2-vii	Increase information as discussed with the NRC.	Added Table 2.2-5.	3
NP-15	List of Tables	2-xii	Increase information as discussed with the NRC.	Added Tables 2.5-28 and 2.5-29.	3

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
LU-03	2.2.2	2.2-5	Increase information as discussed with the NRC.	Added a sentence to refer the reader to Table 2.2-5 for land use acreages in the pipeline right of way.	3
LU-03	Table 2.2-5	--	Increased information as discussed with the NRC.	Added Land Use Table 2.2-5 to provide pipeline land use information.	3
SOC-01 SOC-08	2.5.2.2.3	2.5-11	Increase information as discussed with the NRC.	Revised subsection to provide updated traffic information.	3
NP-15	2.5.2.3.1	2.5-13	Increase information as discussed with the NRC.	Revised subsection to discuss estimates of wages paid.	3
SOC-09	2.5.2.5	2.5-15	Increase information as discussed with the NRC.	Added sentence to discuss the proposed new recreational area at Wheeler Branch reservoir.	3
SOC-09	2.5.2.5	2.5-15	Increase information as discussed with the NRC.	Revised sentence to clarify that light pollution in the area has been lessened by CPNPP efforts to improve the aesthetics of the area.	3
SOC-09	2.5.2.6	2.5-15	Increase information as discussed with the NRC.	Revised reference to Table 5.8-1 to Table 5.8-2.	3
SOC-09	2.5.2.6	2.5-16	Increase information as discussed with the NRC	Changed “10” percent to “9.5” percent.	3
SOC-09	2.5.2.6	2.5-16	Increased information as discussed with the NRC.	Revised subsection to clarify housing information.	3
SOC-09	2.5.2.6	2.5-17	Increase information as discussed with the NRC.	Revised subsection to include additional information on RV Parks.	3

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-10	2.5.2.7.1	2.5-17 2.5-18	Increase information as discussed with the NRC	Revised subsection to reconcile inconsistencies between subsections 2.5 and 4.4.	3
SOC-12	2.5.2.8.2	2.5-20	Increased information as discussed with the NRC.	Revised subsection to clarify public education system in the vicinity of the proposed units.	3
SOC-12	2.5.2.8.3	2.5-20	Increased information as discussed with the NRC.	Added a new subsection "2.5.2.8.3 Counties in the Economic Region" to clarify public education system in the vicinity of the proposed units. Revised subsequent subsection number from "2.5.2.8.3" to "2.5.2.8.4" as a result.	3
NP-15	2.5.6	2.5-31	Increased information as discussed with the NRC.	Added two new reference notations as a result of the revisions to subsection 2.5.2.3.1.	3
SOC-10	2.5.6	2.5-30 2.5-31 2.5-33 2.5-36	Increased information as discussed with the NRC.	Added eight new reference notations as a result of the revisions in Subsection 2.5.2.7.1.	3
SOC-12	2.5.6	2.5-32	Increased information as discussed with the NRC.	Added seven new reference notations (Granbury ISD 2007) as a result of revisions in Subsection 2.5.2.8 and removed two reference notations as a result of the new references.	3
SOC-09	2.5.6	2.5-33 2.5-36	Increased information as discussed with the NRC.	Added 11 reference notations for revisions associated with this issue.	3
SOC-01 SOC-08	2.5.6	2.5-34	Increased information as discussed with the NRC.	Added new reference notation as a result of revisions to Subsection 2.5.2.2.3.	3
SOC-09	Table 2.5-18	2.5-66	Increased information as discussed with the NRC.	Revised number of housing units from "801" to "903."	3

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-10	Table 2.5-20	2.5-68 2.5-69 2.5-70	Errata	Added footnotes (a) and (b) to reconcilable inconsistencies between Subsection 2.5 and 4.4.	3
NP-15	Table 2.5-28 Table 2.5-29		Increased information as discussed with the NRC.	Added two new tables to summarize information provided in subsection 2.5.2.3.1.	3
CTS-00709	2.3.1.1.6	2.3-4	Errata	Revised number of littoral wetlands from “Fifty three” to “Forty-eight” and the cumulative area from “52.5” to “53” and the associated percentage from “0.66” to “less than one.”	4
CTS-00710	2.3.1.1.6	2.3-4	Provide a figure that depicts the streams discussed in the text.	Revised referenced figure from Figure 2.4-3 to Figure 4.3-1 to depict streams associated with wetlands.	4
CTS-00710	2.3.1.1.6	2.3-4	Errata	Revised sentence associated with the revised reference to Figure 4.3-1, and revised discussion from two littoral wetlands to one littoral wetland.	4
CTS-00469	2.3.2.2	2.3-39	Provide updated water use estimates per TXNB-08024.	Added description of “draft” 2006 TWDB postings.	4
CTS-00469	2.3.2.2.1	2.3-41	Provide updated water use estimates per TXNB-08024.	Added description of TWDB 2006 water use estimates for Somervell and Hood Counties, Texas.	4
CTS-00465	2.3.2.2.4	2.3-42	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates in FSAR.	Revised the estimated water withdrawal and consumptive use numbers to be consistent with the circulating water system description.	4

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00455	2.3.3.3.5	2.3-61	Editorial Correction	Added “no” following “Other than CPNPP Units 1 and 2,” to read: “Other than CPNPP Units 1 and 2, no ..”	4
CTS-00469	2.3.4	2.3-66	Provide updated water use estimates per TXNB-08024.	Added reference (TWDB 2009) to support the 2006 draft estimated water use values.	4
CTS-00465	Table 2.3-39	2.3-164	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates in FSAR.	Revised the estimated water discharge flow rate to Lake Granbury.	4
CTS-00711	Figure 2.4-2	--	Revise figure to depict streams.	Added streams to figure.	4
CTS-00709	2.4.1	2.4-3	Errata	Revised sentences to state “Neither species was audibly or visually identified during the April survey.”	4
CTS-00709	2.4.1.1.2	2.4-7	Errata	Changed “Fifty-three” to “Fourty-eight” and removed paragraph “The northwest wetland is approximately 0.5…”	4
CTS-00648	2.4.1.1.2	2.4-7	Erratum	Changed 0.25 to 0.78	4

on both sides of the peninsula. Six outfalls are listed on the current CPNPP Texas Pollution Discharge Elimination System (TPDES) permit; however, there are currently discharges through only three of the six discharge points. There are separate stormwater outfalls that discharge separately from wastewater outfalls covered by the TPDES permit. The three active discharge points, Outfalls 001, 003, and 004, are active process discharges that flow into SCR. Subsection 2.3.3.3.1 discusses water quality information for active process discharges that flow into SCR. Construction of Units 3 and 4 is expected to result in permanent structures occupying about 275 ac west and northwest of CPNPP Units 1 and 2. An additional ~~384~~400 ac, located southwest of SCR Dam and due south of existing CPNPP Units 1 and 2 facilities, is expected to be disturbed for construction of a cooling tower blowdown treatment facility (BDTF) for CPNPP Units 3 and 4 (Figure 1.1-4). The grading and drainage plan for CPNPP Units 3 and 4 is provided in the CPNPP Units 3 and 4 FSAR Subsection 2.4.2. The site is graded such that runoff drains away from the safety-related structures via drainage channels or sheet flow and subsequently to SCR through catch basins or as unobstructed overland flow. CTS-00459

2.3.1.1.6 Local Wetland Areas

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Cowardin, Carter, Golet, and LaRoe 1979). A wetland typically demonstrates the following three characteristic components (Mitsch and Gosselink 2000):

- Water, either at the surface or within the root zone.
- Unique soil conditions differing from adjacent uplands.
- Hydrophytic vegetation and the absence of flood-intolerant species.

Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands at the CPNPP site are dominated by macrophytic plants that include cattails, black willow, button bush, sedges, and grasses. The herbaceous layer is dominated by southern cattail and broadleaf cattail, along with Rooseveltweed, bushy bluestem, and spikerush. The tree and shrub layers are dominated by black willow, buttonbush, cottonwood, and salt cedar.

Littoral wetlands are found along the edges of lakes and reservoirs. Although a limited acreage of wetland was lost due to the impoundment of Squaw Creek to form SCR, numerous littoral wetlands have since established. ~~Fifty-three~~Forty-eight littoral wetlands occur along the shores of SCR (Figure 2.4-2). These wetlands have a cumulative area of approximately ~~52.5~~53 ac or ~~0.66~~less than one percent of the site. Dominant plant species and approximate acreage of each wetland were recorded. CTS-00709

~~Two areas of~~One littoral wetland~~s~~ currently exists at the mouth of an intermittent stream~~s~~ (shown as Stream 2 on Figure 4.3-1)along the ~~northwest and~~ southwest shoreline~~s~~ of the peninsula where the proposed cooling tower structures are to be located (Figure ~~2.4-2~~4.3-1). ~~The southwest wetland~~This littoral wetland (Figure 4.3-1) is approximately ~~0.25~~0.78 ac and has black willow, salt cedar, and Texas ash in the tree and shrub layers. The herbaceous layer comprises southern and broadleaf cattails, bushy bluestem, and Rooseveltweed. The Munsell soil matrix CTS-00710 CTS-00648

One unnamed intermittent stream channel was identified within the cooling tower BDTF area located on the southern portion of the CPNPP site. The headwaters of this stream consist of broad grass-covered swale areas, and stream channels become defined downstream near the confluence with Squaw Creek (Figure 2.3-5). The stream channel is approximately 1.25 mi in length, and elevations range from approximately 820 ft msl at the headwaters to 650 ft msl at the Squaw Creek confluence.

As shown on Figure 2.3-21, there are seven large manmade impoundments located within 150 stream-mi of the DeCordova Bend Dam on Lake Granbury that could affect or be affected by plant operations. These impoundments include Possum Kingdom Lake, Lake Palo Pinto, Lake Mineral Wells, Lake Granbury, which is the primary cooling water source for CPNPP Units 3 and 4, the on-channel reservoir located approximately 7 mi northeast of the CPNPP site, SCR, the off-channel reservoir located adjacent north and east of CPNPP Units 3 and 4, Wheeler Branch Reservoir, and Lake Whitney (Subsection 2.3.1.3). Due to their off-channel location, additional large manmade impoundments depicted on Figure 2.3-21 were not included in this discussion.

2.3.2.2 Basin Wide Water Use

Each year, the TWDB conducts an annual survey of ground and surface water use by municipal and industrial entities within Texas for water resource planning purposes (TWDB 2007a). Water use estimates are subject to revision as additional data and corrections are made available to the TWDB and as a result, the water use estimates are initially posted by the TWDB as "draft." The TWDB may consider the posted water use estimates "draft" for a period of 3 to 4 years. The most recent water use estimates posted by the TWDB are for year 2006 and are posted as "draft." The 2006 water use estimates (TWDB 2009) will most likely remain as "draft" until September 2009 when the TWDB expects to post the "draft" 2007 water use estimates. The TWDB consumptive water use estimates for municipal, manufacturing, and steam-electric power categories come from an annual survey of public water suppliers and major manufacturing and power entities. Response to this survey is mandatory, according to Section 16.012(m) of the Texas Water Code, as amended by the 78th Texas Legislature in spring 2003. CTS-00469

The TWDB separates water use into these categories.

- Municipal water use: city-owned, districts, water supply corporations, or private utilities supplying residential, commercial, and institutional water.
- Manufacturing water use: industrial process water used by large manufacturing plants.
- Steam-electric power water use: consumptive use of water used by large power generation plants that sell power on the open market, generally not co-generation plants that generate power for manufacturing or mining processes. Water that is diverted and not consumed, i.e., return flow, is not included in the power-generation total.
- Mining water use: fuel (oil or gas) and non-fuel mining operations. Mining water-use estimates are based on the annual water-use survey and an estimate of the water used in secondary recovery processes for oil and gas recovery.

In Bosque County in 2006, Chisholm Trails Adventures reported a diversion of 3621 ac-ft from the Brazos River, downstream of Lake Granbury, for irrigation use. The cities of Meridian and Clifton were identified as having significant water rights in Bosque County; however, diversions for these municipalities are on the North Bosque River and cannot affect or be impacted by CPNPP operations.

In Hill County, the BRA reported diversions of 7302 ac-ft from the Brazos River, Lake Whitney area, for municipal and industrial uses.

2.3.2.2.1 Local Water Use

CTS-00469

The TWDB has published the draft 2006 annual water use estimates (TWDB 2009). The 2006 draft estimates contain the most recent water use values by county and category, but does not break-down the estimates by groundwater and surface water use. For Hood County, the 2006 draft estimated water use is listed as 16,100 acre-feet. For Somervell County, the 2006 total draft estimated water use is listed as 48,931 acre-feet. Annual water use estimates for year 2004 by use category for Hood and Somervell counties were also obtained from the TWDB (TWDB 2007a). The 2004 data estimate total water use in Hood County at 11,857 ac-ft, of which 62 percent was reported as surface water use and 38 percent groundwater use. Somervell County estimated water use was reported at 46,611 ac-ft in 2004, of which 96 percent was reported as surface water use and 4 percent groundwater use. Total water use for Hood and Somervell counties represents 1.65 percent of the total reported water use in the Brazos River Basin.

Surface water withdrawals for Hood County were estimated at 7306 ac-ft in 2004 (TWDB 2007a). Approximately 76 percent of this use was for irrigation use, 15 percent for municipal use, 5 percent for steam electric use, and 4 percent for livestock use. Surface water withdrawals for Somervell County were estimated at 44,693 ac-ft in 2004. Approximately 99 percent of this withdrawal was for steam electric use with less than 1 percent for irrigation, mining and livestock uses. Table 2.3-35 provides annual water use estimates by use category for Hood and Somervell counties.

2.3.2.2.2 Recreational and Navigational Use

Non-consumptive use is water that is diverted and then returned to the river basin with minimal change in volume and temperature, or is used but never leaves the river system. The majority of non-consumptive water use in the CPNPP site vicinity is associated with recreational use and the return flow from power generation (Brazos G 2006). Water-related recreational activities include boating, camping, fishing, and swimming. Recreational use in the vicinity is supported by numerous state parks and by public facilities for boating and camping at various lakes and reservoirs. Navigation is another form of non-consumptive use. Other than small watercraft used primarily for recreation, Lake Granbury and the Brazos River in the vicinity of Lake Granbury are not used for navigational purposes. Lake Granbury has five public access areas for picnicking and fishing, four of which have primitive camping sites. A boating capacity study was performed on Lake Granbury in 2005 (BRA 2006a). The survey identified 6000 private boat slips and boat ramp access at 12 launch ramps. The survey indicated that the majority of Lake Granbury boaters appear to spend most of their time on the lake waterskiing (26.7 percent), cruising (21.8 percent), fishing (21.6 percent), on personal watercraft (10.1 percent), or swimming (9.9 percent).

The estimated water withdrawal for the operation of CPNPP Units 3 and 4 from Lake Granbury is ~~63,550~~65,400 gpm (~~91,512,000~~94,176,000 gpd) during maximum operations (Table 2.3-38). The water discharge rate to Lake Granbury during maximum operations, including loss estimates from the conceptual cooling tower BDTF of 1,200 gpm (1,728,000 gpd), is estimated at ~~24,876~~23,700 gpm (~~35,821,440~~34,128,000 gpd) (Table 2.3-39). Consumptive water use for Units 3 and 4 is estimated at ~~55,690,560~~60,048,000 gpd (~~171~~184 ac-ft/day). At this rate, the expected time to drawdown Lake Granbury from a normal pool elevation of 693.0 ft msl to the minimum operating elevation of 675.0 ft msl is approximately 508 days (Table 2.3-38). This estimate is based on current Lake Granbury elevation-volume data and the CPNPP Units 3 and 4 daily consumptive water use estimate. This estimate does not account for inflow, outflow, evaporation, or other water users that may draw upon Lake Granbury. Figure 3.3-1 presents a water use diagram showing flow rates to and from the various water systems. Points of consumption, and sources and discharge locations are included as part of the discussion in this section. Section 3.3 provides a narrative on the water use diagram, including maximum water consumption, water consumption during periods of minimum water availability, and average operation by month and by plant operating status. A description of the BDTF is provided Subsection 3.6.1.1. Additional information related to the CPNPP Units 3 and 4 water withdrawal and return, including withdrawal and return rates for each diversion by use is presented in Section 3.4. CTS-00465 CTS-00465

2.3.2.3 Groundwater

Portions of six major and nine minor aquifers extend into the Brazos Region G Area (Brazos G 2006). The CPNPP site and Lake Granbury are located on outcrops of the Trinity Group aquifer, which occurs mostly in Callahan, Eastland, Erath, Hood, Somervell, Comanche, Hamilton, Coryell, and Lampasas counties. The confined aquifer area is mostly in Johnson, Hill, Bosque, McLennan, Coryell, Bell, and Williamson counties (Figure 2.3-25).

The Trinity Group aquifer, a major aquifer that occurs in a north-south-trending band that extends from Williamson County to the south to Hood and Johnson counties to the north, in the Brazos Region G Area. The aquifer supplies drinking water to numerous communities, homes, and farms in Central Texas, and irrigation water to many farms, especially in Comanche and Erath counties. The aquifer is composed of the Paluxy, Glen Rose, and Travis Peak Formations. In the vicinity of the CPNPP site, and north, the Travis Peak Formation is known as the Twin Mountains Formation. South of the CPNPP site, the formation retains the Travis Peak name. Up dip where the Glen Rose thins or is missing, the Paluxy and Travis Peak Formations coalesce to form the Antlers Formation. The uppermost water-bearing zone is the Paluxy Formation. The lower water-bearing zone consists of the Travis Peak Formation and is divided into the Hensell and Hosston Members in much of the eastern part of Brazos Region G Area (Brazos G 2006).

A sole source aquifer is an aquifer designated by EPA as the "sole or principal source" of drinking water for a given service area; that is, an aquifer that is needed to supply 50 percent or more of the drinking water for that area and for which there are no reasonably available alternative sources should the aquifer become contaminated (EPA 2007). Based upon review of EPA information, the Trinity aquifer has not been designated as a sole source aquifer. Additionally, there are no sole source aquifers in the vicinity of the CPNPP site.

Groundwater withdrawal from the Trinity aquifer in 2003 is estimated at 172,098 ac-ft, of which approximately 64 percent was reported as municipal use, 20 percent irrigation use, 10 percent

Operations at these seven dams are not expected to have a direct impact on the water quality in the vicinity of the CPNPP site. A detailed discussion of these dams and their associated reservoirs is presented to Subsection 2.3.1.

2.3.3.3.4 Power Plants

Three power plants are located within a 10-mi radius of the CPNPP site. These plants include the following:

Comanche Peak Nuclear Power Plant (CPNPP)

CPNPP, formerly known as Comanche Peak Steam Electric Station, is a two-unit nuclear-fueled power plant located 4.5 mi northwest of Glen Rose in Somervell County and about 80 mi southwest of downtown Dallas. The plant is owned and operated by Luminant and has an operating capacity of 2300 megawatts (two 1150 megawatt units). The plant has approximately 1300 employees (TXU 2007).

Wolf Hollow

Wolf Hollow is 720 MW natural gas fired, combined cycle power plant that employs two gas turbines. It is located approximately 3.5 mi northeast of CPNPP and supplies 350 MWe capacity to Exelon Generation Company, pursuant to a 20-year power purchase agreement, and 330 MWe to J. Aron & Company under a 5-year supply agreement. Wolf Hollow began operation in 2003 and is currently owned by a private investment partnership and operated by Flour-Mitsubishi (F-M) Operating Company. Wolf Hollow has approximately 30 employees.

DeCordova Steam Electric Station

DeCordova Steam Electric Station consists of a conventional gas/oil steam generating unit and four combustion turbines. The DeCordova plant gas/oil unit began operating in 1975, and the four combustion turbines went into operation in 1990 (TXU 2007a). DeCordova Steam Electric Station is currently used only during peak electrical demand.

2.3.3.3.5 Hazardous Waste Generators

~~No~~Other than CPNPP Units 1 and 2, no pollutant sources with discharges to SCR that may interact with the CPNPP Units 3 and 4 site were identified within a 6-mi radius. One conditionally exempt small quantity generator (CESQG) was identified within a 6-mi radius of the CPNPP Unit 3 and 4 service water intake on Lake Granbury. DeCordova Power Plant is located approximately 1.56 mi upstream from the CPNPP service water intakes and is listed as a CESQG with no reported violations. CTS-00455

The EPA Envirofacts Data Warehouse list (EPA 2007b) was reviewed to determine how many registered hazardous waste generators/handlers exist within a 6-mi radius of the CPNPP Units 3 and 4 site proper and the service water intake and discharge structures on Lake Granbury (Figure 2.3-32). The Envirofacts Data Warehouse list reports 21 registered hazardous waste generators/handlers within the 6-mi radius. Of these 21 generators/handlers, 6 are listed as CESQG, 3 are listed as small-quantity generators (SQG), and the remaining 12 are listed as

(TWDB 2006a) Volumetric Survey Report of Lake Whitney, June 2005 Survey. Texas Water Development Board. http://www.twdb.state.tx.us/home/index.asp. Accessed November 2007.

(TWDB 2007) Water Information Integration & Dissemination (WIID) System. Groundwater Database. Texas Water Development Board. http://www.twdb.state.tx.us/home/index.asp. Accessed December 2007.

(TWDB 2007a) Historical Water Use Information, Brazos Basin. Texas Water Development Board. http://www.twdb.state.tx.us/home/index.asp. Accessed December 2007.

(TWDB 2007b) Surface Water. Texas Water Development Board. http://www.twdb.state.tx.us/data/surfacewater/surfacewater_toc.asp. Accessed December 2007.

(TWDB 2007c) GIS Data, Website, Texas Water Development Board. http://www.twdb.state.tx.us/mapping/gisdata.asp. Accessed December 2007.

(TWDB 2007d) Northern Trinity/Woodbine GAM, Assessment of Groundwater Use in the Northern Trinity Aquifer Due to Urban Growth and Barnett Shale Development, R.W. Harden & Associates, Inc. for the Texas Water Development Board, January 2007.

(TWDB 2008) Groundwater Resources Division, Website, Texas Water Development Board. http://www.twdb.state.tx.us/GwRD/pages/gwrdindex.html. Accessed March 2008.

(TWDB 2008a) Historical Water Use Information, Brazos Basin. Texas Water Development Board. http://www.twdb.state.tx.us/home/index.asp. Accessed March 2008.

(TWDB 2009) 2006 Water Use Survey Estimates Cy County in Acre-Feet, Draft. www.twdb.state.tx.us/wrpi/wus/2006est/2006wus.htm. Accessed May 22, 2009. CTS-00469

(TXU 2007) Comanche Peak Steam Electric Station. Texas Utilities (TXU) Corporation. http://www.txucorp.com/power/plants/comanche_peak.aspx. Accessed December 2007.

(TXU 2007a) DeCordova Steam Electric Station. Texas Utilities (TXU) Corporation. http://www.txucorp.com/power/plants/decordova.aspx. Accessed December 2007.

(USACE 1987) Corps of Engineers, Wetland Delineation Manual. U.S. Army Corps of Engineers Waterways Experiment Station. Wetlands Research Program Technical Report Y-87-1. http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf. Vicksburg, MS. Accessed January 2008.

(USACE 2007) Ft. Worth District Reports. U.S. Army Corps of Engineers. http://www.swf-wc.usace.army.mil/cgi-bin/rcshtml.pl?page=Reports. Accessed November 2007.

(USDA 2007) Soil Data Mart Export Notification Hood and Somervell Counties. U.S. Department of Agriculture. Accessed August 15, 2007.

(USDA 2007a) Web Soil Survey Hood and Somervell Counties. U.S. Department of Agriculture. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed December 18, 2007.

TABLE 2.3-39
CPNPP UNITS 3 AND 4 COOLING TOWER BLOWDOWN DISCHARGE ESTIMATES

Average Water Discharge to Lake Granbury CPNPP Units 3 and 4

Discharge Rate	**Conversion Calculations**				**Discharge Flow**	
gpd	gph	gpm	gps	ft^3/gal	cfs	
~~37,549,440~~37,584,000	~~1,564,560~~1,566,000	~~26,076~~26,100	~~434.6~~435.0	7.48	~~58.10~~58.16	CTS-00465

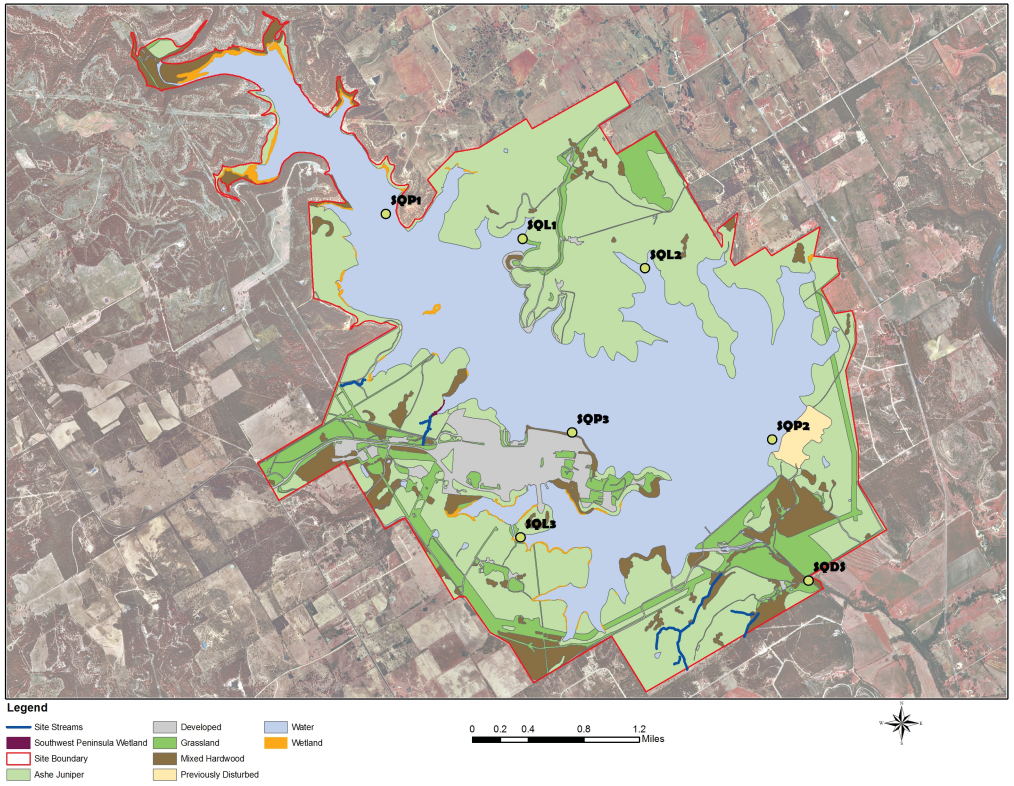
Average Water Discharge to Lake Granbury CPNPP Units 3 and 4 with BDTF[(a)]

Discharge Rate	**Conversion Calculations**				**Discharge Flow**	
gpd	gph	gpm	gps	ft^3/gal	cfs	
~~35,821,440~~34,128,000	~~1,492,560~~1,422,000	~~24,876~~23,700	~~414.6~~395.0	7.48	~~55.43~~52.81	CTS-00465

a) BDTF – Blowdown Treatment Facility for CPNPP Units 3 and 4

Notes:

gpm flow rates provided in Figure 3.3-1 were used as a source of the water discharge calculations
Dischagre rates assume 2 US-APWR Units
gpd = gallons per day
gph = gallons per hour
gpm = gallons per minute
gps = gallons per second



CTS-00711

Figure 2.4-2 Dominant Cover Types of the CPNPP Site

Unless characterized otherwise in the individual discussions below, the visits were for the purpose of ecological reconnaissance. Ecological reconnaissance refers to the examination or survey of the general ecological characteristics of a site or region, and usually results in a qualitative, not quantitative, overview of habitat and other features of ecological interest The visits occurred during daylight hours, generally between 8 a.m. and 5 p.m., and lasted the entire day unless terminated early due to inclement weather. The visits were made by professional terrestrial and aquatic ecologists. Additionally, subjective evaluation of wildlife habitat is based correctly on the assumptions that (a) the vegetation structure, including species composition and physiognomy (the outward appearance of a stand), is sufficient to define its suitability for wildlife; (b) a positive relationship exists between vegetation diversity and wildlife species diversity; and (c) the vegetation species composition and primary productivity directly influence wildlife population density.

- A walk-over reconnaissance in October 2006 of the Ashe juniper habitat on the SCR peninsula slated for construction of the CPNPP Units 3 and 4 cooling towers was followed by a return visit in January, 2007 to collect quantitative vegetation data there along 100-m line-intercept transects.

- An initial walk-over reconnaissance of the existing water pipeline right-of-way (ROW) between SCR and Lake Granbury in December, 2006 was followed by return reconnaissance visits in April and July, 2007 to characterize vegetation communities there, including any possible wetlands. The April visit also focused on evaluating emergent wetlands associated with on-site ponds and SCR, and tallying on-site species of birds with special attention to the golden-cheeked warbler and black-capped vireo by listening for their calls. The area was revisited during November 2007 to observe ecological conditions on three alternate routes for the expanded water pipeline on the CPNPP site (Subsection 2.4.1.2.2).

- Informal surveys for the golden-cheeked warbler and the black-capped vireo were conducted during April 2007 at various times of day over the course of three days. Recordings of the songs and calls of both species were studied prior to field survey. Survey for these species concentrated on the peninsula area proposed for construction of the new cooling towers. Survey methods consisted of walking transects on an east/west axes spaced approximately 100 m apart. Neither species was ~~heard or observed~~audibly or visually identified during the April survey. CTS-00709

- Emergent wetland vegetation along the shore of the SCR peninsula was delineated using GPS point coordinates obtained while surveying the lake shoreline by boat in February and May, 2007. Additionally, a May visit identified harvester ant colonies on-site that were carefully examined for presence of the Texas horned lizard. None were found. These areas were also revisited during the July, 2007 visit, which also failed to note presence of the species. Also recorded during an early May visit was a woven, pendulous nest in a low tree branch. The nest might have been constructed by the golden-cheeked warbler, but was more likely constructed by an unidentified vireo species.

- Finding a possible but unlikely warbler nest in early May, 2007 was supplemented with a second visit in mid-May specifically focused again on the presence or absence of the warbler. Like the April visit, no warblers were ~~seen or heard~~audibly or visually identified CTS-00709

- Unique soil conditions differing from adjacent uplands.

- Hydrophytic vegetation and the absence of flood-intolerant species.

Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands at the CPNPP site are dominated by emergent macrophytic plants that include cattails, black willow, button bush, sedges, and grasses. The herbaceous layer is dominated by southern cattail and broadleaf cattail, along with Rooseveltweed, bushy bluestem, and spikerush. The tree and shrub layers are dominated by black willow, buttonbush, cottonwood, and salt cedar.

Emergent littoral wetlands are found along the edges of lakes and reservoirs. Although a limited acreage of wetland was lost due to the impoundment of Squaw Creek to form SCR, numerous littoral wetlands have since established. ~~Fifty-three~~Forty-eight littoral wetlands occur along the shores of SCR (Figure 2.4-2). These wetlands have a cumulative area of approximately 53 ac or less than 1 percent of the site (Table 2.4-1). CTS-00709

Two areas of littoral wetlands currently exist at the mouth of intermittent streams along the northwest and southwest shorelines of the peninsula where the proposed cooling tower structures are to be located (Figure 2.4-2). The southwest wetland is approximately ~~0.25~~0.78 ac and has black willow, salt cedar, and Texas ash in the tree and shrub layers. The herbaceous layer comprises southern and broadleaf cattails, bushy bluestem, and Rooseveltweed. The Munsell soil matrix color is 2.5Y 3/1. The Munsell notation order is hue (2.5Y), value (3) and chroma (1). Soils ending with a chroma of 1 are always designated as hydric soils in accord with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (USACE 1987). CTS-00648

~~The northwest wetland is approximately 0.5 ac and is comprised of black willow, buttonbush, cottonwood, and hackberry in the tree and shrub layers. Cattails dominate the herbaceous layer of this wetland. The Munsell soil matrix color is 10YR 2/1, also indicating hydric soil.~~ CTS-00709

Field reconnaissance in the area of the proposed blowdown treatment facility identified a small wetland associated with seepage accumulating below the dam that formed an old stock pond. The herbaceous wetland totals about 0.25 ac in area. An unidentified rush, annual ragweed, and smartweed are the most common species in this area. The Munsell soil matrix color ranges from 10YR 4/3 at a depth of 2 in to 7.5YR 3/1 from 6 in to 16 in below the surface.

2.4.1.1.3 Wildlife

The mosaics of Ashe juniper, mixed hardwood (including bottomland) forest, open grassland, and wetland habitats at the CPNPP site result in a potentially high faunal diversity (Table 2.4-2).

The species compositions of upland vegetated areas within the CPNPP site have not significantly changed post-inundation (Subsection 2.4.1.1.1) although habitat type shifted significantly from savanna to woodland. Historical data on the inhabitants of these cover types from surveys conducted on-site during 1973 and 1974 are still applicable (TUGC 1974) (TUGC 1975). Although, as discussed above, many savanna and grassland species are now less abundant than they were while their woodland counterparts have increased in relative abundance.

Chapter 3

Chapter 3 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	3-xix	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00452	3.3.1.1	3.3-2	Editorial correction	Change “average” to “estimated”.	0
CTS-00452	3.3.1.2	3.3-2	Editorial correction	Change “average” to “estimated”.	0
CTS-00452	3.3.1.3	3.3-3	Editorial correction	Change “average” to “estimated”.	0
CTS-00452	3.3.1.3	3.4-5	Editorial correction	Remove “monthly average”.	0
CTS-00660	3.4.2.1	3.4-6	Editorial correction	Add a sentence about passive screens of the intake system.	0
CTS-00495	Table 3.4-1	3.4-8	Editorial correction	Superscript the number to represent scientific notation as opposed to a whole number	0
CTS-00612	3.5.1.1.2	3.5-5	To reflect DCD terminology	Add “containment Vessel” before reactor so that it reads: containment vessel reactor coolant drain tank, and change the acronym (RCDT) to (CVDT)	0
CTS-00612	3.5.1.1.2	3.5-6	Erratum	Change the acronym (RCDT) to (CVDT)	0
CTS-00613	3.5.1.5	3.5-8	Editorial correction	Remove “gaseous or airborne” and add “liquid” after radioactive	0
CTS-00468	3.5.4	3.5-16	Erratum	Change “179 gpm” to “7 gpm”.	0

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00614	3.5.4	3.5-16	Erratum	Change “119.79 gallons per hour (gal/hr)” to “approximately 2 gpm”.	0
CTS-00615	3.7.1	3.7-1	Editorial correction	Change “CPNPP Units 3 and 4 Switching Station (CPNPP Units 3 and 4 Switching Station)” to “Plant Switching Station”.	0
CTS-00649	3.7.1	3.7-1	Editorial correction	Change “plant switching station” to “Plant Switching Station”.	0
CTS-00615	3.7.2	3.7-2	Editorial correction	Change “CPNPP Units 3 and 4 Switching Station” to “Plant Switching Station”.	0
CTS-00615	3.7.2	3.7-2	Editorial correction	Change “Main Power Transformer (MPT)” to “Main Transformer (MT)”.	0
CTS-00616	3.7.2	3.7-3	Editorial correction	Change “MPT” to “MT”	0
CTS-00615	3.7.2	3.7-3	Editorial correction	Change “CPNPP Units 3 and 4 Switching Station” to “Plant Switching Station”.	0
CTS-00617	3.9.4	3.9-11	Erratum	Change “four” to “five”.	0
CTS-00617	3.9.4	3.9-11	Erratum	Change “94” to “74”.	0
CTS-00617	3.9.4	3.9-11	Erratum	Change “50” to “37”.	0
CTS-00618	3.9.4.1.1	3.9-12	Erratum	1st paragraph Change “five” to “four”. Change “three” to “one”. Change “three” to “one”. Change “304” to “309”.	0
CTS-00618	3.9.4.1.2	3.9-12	Erratum	Change area dimensions from “167” to “180”, and from “321” to “355”	0

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00618	3.9.4.1.2	3.9-12	Erratum	Change “three” to “four”.	0
CTS-00691	Table 3.8-4	3.8-14	Update the proprietary status of information	Remove “Withheld from Public Disclosure Under 10 CFR 2.390 (a) (4)” from the title. Remove “Note: Luminant considers the location of alternative site proprietary.”	1
TR-06	3.8.1.5	3.8-2	Increase information as discussed with the NRC.	Revised subsection to increase information for the decay heat.	3
LU-10	Figure 3.1-2	--	Increase information as discussed with the NRC.	Revised figure to show batch plant contained within the property boundaries.	3
TR-04	3.8.1.10	3.8-4	Increase information as discussed with the NRC.	Added new subsection 3.8.1.11 to discuss the decay heat. Changed subsequent subsection number “3.8.1.11”	3
TR-01	3.8.1.11	3.8-4	Increase information as discussed with the NRC.	Revised subsection to address inconsistency between assemblies per truck and per package for Subsection 3.8.1.11 and Table 3.8-1.	3
TR-07	3.8.2	3.8-8	Increase information as discussed with the NRC.	Added sentence to describe how many hours per km were used as stop time.	3
TR-01	Table 3.8-1	3.8-10	Errata	Revised table to agree with US-APWR and revised normalization factor numbers.	3
TR-03 TR-06	Table 3.8-2	3.8-11 3.8-12	Increase information as discussed with the NRC.	Added additional information to the table regarding shipments per day and applicability to Table S-4.	3
CTS-00701	Table 3.8-2	3.8-11	Editorial	Added commas to five digit numbers for readability.	3
TR-03	Table 3.8-3	3.8-12 3.8-13	Increase information as discussed with the NRC.	Revised to clarify number of shipments per day and applicability to Table S-4.	3

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00702	Table 3.8-3	3.8-13	Editorial	Added footnote designations	3
CTS-00700	Table 3.8-5	3.8-15 3.8-16	Editorial corrections	Provided formatting changes for readability. Replaced Alternative Site A, B and C with Luminant A – Coastal, Luminant B – Pineland, and Luminant C – Trading House, respectively.	3
TR-02	Table 3.8-5	3.8-15	Errata	Removed row item Min/Max radii of annular area around truck stop and revised information with regards to the stop time. Removed information from sheet 3 of 3.	3
TR-07	Table 3.8-7	3.8-19	Errata	Revised normalized average annual shipments from “1.5” to “3.4” and revised cumulative annual does, person-rem per reference reactor year.	3
CTS-00700	Table 3.8-7	3.8-19	Editorial corrections	Provided formatting changes for readability. Replaced Alternative Site A, B and C with Luminant A – Coastal, Luminant B – Pineland, and Luminant C – Trading House, respectively.	3
TR-02	Table 3.8-9	3.8-21	Errata	Revised Minimum and maximum row item information to cite the NUREG and to correct the parameter values.	3
LU-12	3.9.3.7	3.9-9	Increase information as discussed with the NRC.	Revised subsection to include information on the location of on site soil retention areas based on evaluation of certain selection criteria.	3
CTS-00465	Table 3.3-1	3.3-5	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI	Revised “Normal Flow per Unit” and Maximum Flow per Unit” numbers for the following items: Evaporation Rate”, Blowdown Rate, CWS Makeup Rate and Raw	4

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
			confirmed flow rates used in FSAR.	Water Rate, and Potable Water to be consistent with the updated water balance. Update raw water flow from 550 gpm to 1100 gpm cited in footnote “b” to be consistent with the circulating water system description. Add footnote “c).”	
CTS-00465	Figure 3.3-1	--	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised “Flow at Max Power Operation” numbers for items 1, 2 and 3 to be consistent with the circulating water system description.	4
CTS-00465	3.4.1.4	3.4-5	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised water volumes cited in the Makeup Water system discussion to be consistent with the circulating water system description.	4
CTS-00465	3.4.2.3	3.4-7	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised water flow rates entering the cooling tower to be consistent with the circulating water system description. Revised temperature from 15.5 to 15.2.	4
CTS-00465	3.4.2.3	3.4-7	Erratum	Revised temperature from 15.5 to 15.2.	4
CTS-00712	3.4.2.3	3.4-7	Reconcile cooling tower heat dissipation capacity and fan power consumption values with the Ultimate Heat Sink System.	Revised the rated heat-dissipation capacity of each cooling tower from 3.27×10^8 Btu/hr to 1.96×10^8 Btu/hr; and revised the power consumption for each fan from 187 hP to 200 hP.	4
CTS-00465	Table 3.4-2	3.4-9	Reconcile ER circulating water system, makeup water, and blowdown from Lake	Revised water flow rates for “Power Operation” Quantities withdrawn, consumed, and discharged, except for quantity discharged (ESWS)	4

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
			Granbury, with MHI confirmed flow rates used in FSAR.	to be consistent with the circulating water system description.	
CTS-00465	3.6.1.1	3.6-2	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised the water rates from 13,038 gallons per minute to 13, 050 gallons per minute, to be consistent with the circulating water system description.	4

TABLE 3.3-1
PLANT WATER USE

	Normal Flow Per Unit (gpm)	*Maximum Flow Per Unit (gpm)*	
Circulating Water System	1,317,720	1,317,720	
Evaporation Rate	~~18,412~~18,292[(c)]	~~18,412~~18,292[(c)]	CTS-00465
Blowdown Rate	~~12,929~~12,900	~~12,929~~12,900	CTS-00465
CWS Makeup Rate	~~31,341~~31,200	~~31,341~~31,200	CTS-00465
Essential Service Water System	24,000[(a)]	48,000[(a)]	
Evaporation Rate	165	735	
Blowdown Rate	109	515	
ESWS Makeup Rate	274	1260	
Raw Water (for Demineralized Water)	~~550~~1,100[(b)]	~~550~~1,100[(b)]	CTS-00465
Fire Water Makeup Rate	125[(b)]	125[(b)]	
Potable Water	~~30~~50	50	CTS-00465

a) ESWS normal flow based on two ESWS trains continuous operation. Maximum ESWS flow based on four ESWS trains operation during cooldown by CS/RHRS for duration of 4 hours.

b) Fire Water makeup flow of 125 gpm is included in the Raw Water flow of ~~550~~1,100 gpm. CTS-00465

c) Evaporation rate of 18,292 gpm is included in the drift loss of 132 gpm.

Steam	Description	Flow @ Max Power Operation	Units	Waste Constituents	Comments and References	
1	Cooling Tower Makeup from Lake Granbury (LG)	~~31,341~~31,200/Unit 3	gpm		Secondary Side Water Cooling System Study Case1Ba (revised by RFI-0202) From Lake Granbury to Cooling Tower Section 5.0 Optimization Study SSCWS - Final Report dated 8/15/07	CTS-00465
2	Cooling Tower Blowdown to Lake Granbury (LG)	~~12,929~~12,900/Unit 3	gpm	TDS-3 times LG value; Free chlorine - less than 0.2 ppm; sulfate, phosphate and trace anti-scalants will be below permit limits.	Secondary Side Water Cooling System Study Case1Ba (revised by RFI-0202) From Cooling Tower to Lake Granbury (LG) Section 5.0 Optimization Study SSCWS - Final Report dated 8/15/07	CTS-00465
3	Cooling Tower Evaporation + Drift	~~18,412~~18,292/Unit 3	gpm		Secondary Side Water Cooling system Study Case1Ba(revised by RFI-0202)	CTS-00465
4	ESW Cooling Tower Makeup from LG	274/Unit 3	gpm		(revised by RFI-0202)	
5	ESW Cooling Tower Blowdown to LG	109/Unit 3	gpm		(revised by RFI-0202)	
6	ESW CT Evaporation Loss + Drift	165/Unit 3	gpm		(revised by RFI-0202)	
7	Raw water from LG to storage tanks	320- 1,100/Unit 3 &4	gpm		A blend of LG and potable water is expected. Minimum make-up for operation is estimated from Luminant at ~ 200 gpm/Unit. Maximum construction flushing is estimated at ~ 500 gpm/Unit. Normal for 2 unit Ops will be 320 gpm from LG with remaining 230 gpm from WB.	
8	Potable water from WB raw water storage tanks	0 to 300	gpm		Assumed a 300 gpm uninterruptible supply of potable water from Somervell County Water District (SCWD) for the URS estimates..	
9	Raw water to pretreatment	1,100 to 1,250 for Units 3 & 4	gpm		Assume 80% recovery as demin water. 550 gpm is the normal MU for U3/4. Ops. 50 gpm to existing evap. Pond, 200 gpm to U 1/2 Ops, and 300 gpm to	
9A	Demineralized Make-up to Primary Water Tanks	200 to 500 per Unit			See 7 above.	
10	Raw water to construction mobile treatment skid	250/Units 3 & 4	gpm		URS estimate.	
11	Spent resin slurry from CPS	N/A			Neglect for simplified balance	
12	Excess sluice water from CPS	N/A	gpm		Neglect for simplified balance	
13	SGBD blowdown wastewater to existing evaporation pond	1,165 (see comment)	gpm		Assume during plant startup flow duration will be 4 hrs. Normal power operation flow duration is to be determined.	
14	LRWMS effluent to new evaporation pond	2,000	gals/day		Rad waste estimate. Assumed 50% of total released effluent from LRWMS.	
15	Excess sluice water from SGBD treatment	N/A	gpm		Neglect for simplified balance	
16	Evaporation from SGBD flash tank	N/A			Evaporated steam is condensed and recovered in the main condenser.	

Figure 3.3-1 Water Balance (Sheet 2 of 3)

Non-Essential and Essential Service Water Systems

The NESWS is in operation during the startup, power operation, and shutdown modes of plant operation. During each of these modes of operation, the NESWS requires makeup water from Lake Granbury via the CWS. The MWS must provide sufficient capacity to supply the NESWS with makeup for cooling tower losses due to evaporation, drift, and blowdown. The cooling tower losses provide the major discharge source to the atmosphere via evaporation. The blowdown system provides a discharge path to Lake Granbury via the CWS cooling tower basin.

The ESWS is in operation during all six modes of plant operation and requires makeup water from Lake Granbury. The MWS must provide sufficient capacity to supply the ESWS with makeup for UHS cooling tower losses due to evaporation, drift, and blowdown. Evaporation from the cooling tower to the atmosphere is the major consumptive water use. The blowdown operations provide a discharge to Lake Granbury. The amount of water supplied by the system from Lake Granbury along with the discharge quantities for each of the six modes is provided in Table 3.4-2.

Makeup Water System

During normal operation, Lake Granbury provides ~~31,341~~31,200 gpm makeup to the CWS, and 274 gpm as makeup for the ESWS, for a total of ~~31,615~~31,474 gpm per unit, plus ~~320~~1,100 gpm to the raw water storage tanks, or a total of ~~63,500~~65,400 gpm for both units. The estimated monthly ~~average~~ water need from Lake Granbury is ~~2.73 x 10^9~~ 2.83 x 10^9 gallons (gal) to operate both CPNPP Units 3 and 4. Normal operation is at 100 percent power operation, which is at a maximum makeup demand; therefore, the maximum is approximated to be the same as the normal need. The minimum demand is during an outage when the only flow being pulled from Lake Granbury for that unit is the ESWS makeup (331 gpm per unit). The estimated monthly minimum water demand from Lake Granbury is ~~1.38 x 10^9~~ 1.43 x 10^7 gal per unit. Therefore, the minimum demand occurs when one unit is in an outage and the other is in power operation. CTS-00465 CTS-00452 CTS-00465

During normal operation, Wheeler Branch 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 Wheeler Branch is bounded by the maximum need of 300 gpm, with the estimated monthly maximum being 1.3 x 10^7 gal.

3.4.2 COMPONENT DESCRIPTIONS

CPNPP Units 3 and 4 are designed with a common intake structure that supplies the necessary raw water to the plant. The MWS consists of approximately 13 miles (mi) of 42-inch prestressed reinforced concrete piping, valves, and instrumentation. This system is described in Subsection 3.4.2.1.

CPNPP Units 3 and 4 are also designed with two discharge systems, one per unit. For each unit, approximately 13 mi of 42-inch piping runs to Lake Granbury. The discharge system is described in Subsection 3.4.2.2.

basins blowdown piping is such that the water from the CWS blowdown cannot flow into that of the UHS. The location of the discharge relative to the intake structure and other major plant structures is illustrated in Figure 3.4-3, Sheets 1, 2 and 3.

During each operational mode, the raw water requirements vary. The discharge flow rates and velocities also vary. The CWS, the NESWS, and the ESWS are in service during power operation, and the discharge velocity is at the maximum and bounding rate of 19.95 fps. Flow rates for all modes of operation are shown in Table 3.4-2.

Normal blowdown from the mechanical draft CWS cooling towers and UHS is discharged into Lake Granbury through a diffuser at an approximate rate of 13,050 gpm per unit. The maximum blowdown temperature is 93°F.

3.4.2.3 Heat Dissipation

The CWS has two mechanical draft cooling towers per unit, which discharge via the blowdown pipe to the outfall structure on Lake Granbury. The outfall structure is approximately 1.2 mi downstream of the intake structure, as illustrated in Figure 2.3-13. The CWS cooling towers have 30 cells per tower, are made of FRP with polyvinyl chloride (PVC) fill, are 54.7 ft high and each has a basin with an area of 105,900 ft^2. The rated heat-dissipation capacity of each cooling tower is 9.97 x 10^9 British thermal units per hour (Btu/hr). For average monthly meteorological conditions, water from the condenser enters the cooling tower at a temperature and flow rate of 104°F and ~~31,341~~31,200 gpm, and discharges at 93°F and ~~12,929~~12,900gpm. The average discharge temperatures for each month are bounded by summer loading conditions. The mechanical draft cooling tower uses fans to force convection within the cooling tower. The volumetric flow of air in the tower varies with the mode of operation. For power operation, the flow rate is 1.55 x 10^6 cubic feet per minute (cfm). The power consumption for the fans is 250 horsepower (hP) for each cell's fan. Drift rate of the plume coming off each tower is 0.0005 percent of CWS flow. It is estimated that the mechanical draft cooling tower produces 65 dBA (decibels) at 400 ft. The wet-bulb temperature is 76°F, the approach to wet-bulb is 10.5°F, and the range is ~~15.5°F~~15.2°F. Performance curves for the mechanical draft cooling towers are not available at the time of submittal as they have not yet been procured. CTS-00465 CTS-00465

The ESWS dissipates heat via the UHS, which is comprised of four, 50 percent capacity mechanical draft cooling towers per unit that blow down to Lake Granbury via the CWS blowdown pipes. The UHS cooling towers have two cells per tower, are made of reinforced concrete, with a ceramic tile fill, are 60 ft high and have an inside basin dimension of 66 ft x 30 ft (1980 ft^2) each. The rated heat-dissipation capacity of each cooling tower is ~~3.27~~1.96 x 10^8 Btu/hr. For average monthly meteorological conditions, water enters the cooling tower at a temperature and flow rate of 104°F and 274 gpm, and discharges at 93°F and 109 gpm. The mechanical draft cooling tower uses fans to force convection within the cooling tower. The volumetric flow of air in the tower varies with the modes of operation. For power operation, the flow rate is 6.86 x 10^6 cfm. The power consumption for the fans is ~~187~~200 hP for each cell's fan. Drift rate of the plume coming off the cooling tower is approximately 0.0010 percent of UHS flow The mechanical draft cooling tower produces an estimated 45 dBA at 400 ft perpendicular distance. The wet-bulb temperature is 80°F, the approach to wet bulb is 15°F, and the range is CTS-00712 CTS-00712

TABLE 3.4-2
RAW WATER WITHDRAWN, CONSUMED AND DISCHARGED PER UNIT

Modes of Operation	Water Source	Quantity Withdrawn gpm	Quantity Consumed (CWS) gpm	Quantity Discharged (CWS) gpm	Quantity Consumed (ESWS) gpm	Quantity Discharged (ESWS) gpm	Quantity Discharged into Lake Granbury gpm
Power Operation	Lake Granbury	~~31,615~~31,466	~~18,412~~18,292	~~12,929~~12,900	165	109	~~13,038~~13,050
Startup	Lake Granbury	2,958	1,506	1,057	240	155	1,212
Hot Standby	Lake Granbury	1,178	531	373	165	109	482
Safe Shutdown	Lake Granbury	630(a)	0	0	630(a)	0(a)	0(a)
Cold Shutdown	Lake Granbury	1,283	14	10	744	515	525
Refueling (Full Core Offload)	Lake Granbury	331	5	4	195	127	131

CTS-00465

a) During accident conditions, including loss-of-cooling accident and loss of off-site power, blowdown control valves close automatically upon receipt of low water level signal or ECCS actuation signal. Make-up water may be available, but design basis of UHS does not require make-up.

General Note: The conceptual design of the Blowdown Treatment Facility assumes that approximately 1200 gpm will be routed to the evaporation pond, increasing the quantity consumed and decreasing the quantity discharged into Lake Granbury.

3.6.1.1 Circulating Water, Service Water, Potable and Sanitary Water, Demineralized Water, and Fire Protection Systems

Each unit has a CWS, essential service water system (ESWS), non-essential service water system (NESWS), potable and sanitary water system (PSWS), demineralized water system (DWS), and fire protection system (FPS). The description of the chemicals injected into these systems and the effect on the effluent discharged to Lake Granbury and SCR is discussed below.

The operation of the CWS is described in Sections 3.3 and 3.4. The operation cycle for this system for normal modes of operation is described in Section 3.4. The chemicals that are needed to maintain proper operation of the system are injected by the chemical treatment system (CTS) during the power operation, startup, hot standby, and safe shutdown modes of operation. The chemicals injected into the CWS, the amount used per year, the frequency of use, and the concentration in the waste stream are shown in Table 3.6-1. A stream of water (blowdown) is removed from each of the CWS and ultimate heat sink (UHS) cooling tower (CT) basins to control the water chemistry. For each plant unit, 24-in carbon steel blowdown piping from the two CWS CT basins is headered into a 42-in prestressed, reinforced concrete piping. The 42-in concrete piping runs approximately 13 mi to the Lake Granbury blowdown discharge outfall where water is dissipated into the lake through diffusers at a rate of ~~13,038~~13,050 gallons per minute (gpm) per plant unit. The concentration factor for this evaporative cooling system is provided in Subsection 3.4.1. Prior to discharge to Lake Granbury, approximately 46 percent of the blowdown is routed to a Blowdown Treatment Facility (BDTF). Sump pumps feed raw blowdown to the BDTF. The facility equipment produces a clean permeate stream and a concentrated waste reject stream. The clean permeate is sent to a holding sump and then pumped to blend with the remaining raw blowdown flow to produce a 2500 milligram per liter (mg/l) total dissolved solid (TDS) effluent to Lake Granbury, assuming the inlet TDS concentration is 1680 mg/l. The concentrated reject waste stream is sent to the reject sump and then pumped to the evaporation pond. CTS-00465

The evaporation pond operates at a depth of approximately 2 feet (ft), with 2 ft of freeboard, and is interconnected with a three-month storage pond equipped with pumps to recirculate to water misters for forced evaporation. The evaporation pond is sectionalized to alternate dry portions for salt removal. Waste material generated from the BDTF is planned to be disposed at an off-site non-hazardous landfill.

The operations of the SWS, both ESWS and NESWS, are described in Sections 3.3 and 3.4. The operating cycle for these systems for normal modes of operation is described in Section 3.4. The chemicals that are needed to maintain proper operation of the systems are injected by the CTS during the modes of operation that include power operation, startup, hot standby, safe shutdown, cold shutdown, and refueling. The chemicals injected into the ESWS and NESWS, the amount used per year, the frequency of use, and the concentration in the waste stream are shown in Table 3.6-1. The blowdown effluent, which combines with effluent from CWS, and the backwash strainer effluent are discharged to Lake Granbury through a system of multiport diffusers.

The operation of the PSWS is designed to continuously furnish water for domestic use and human consumption. The operation of this system is not dependent on the modes of operation of the plant. The source of potable water is provided by the Wheeler Branch Municipal Reservoir through the Somervell County Water District. The water supplied by this municipal water system

Chapter 4

Chapter 4 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	4-xvii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00650	4.1.1.1	4.1-1	Erratum	Change “275 ac” to “675 ac”.	0
CTS-00650	4.1.1.1	4.1-1	Erratum	Add “the Blowdown Treatment Facility (BDTF) area,”	0
CTS-00459	4.1.1.1	4.1-1	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00459	4.1.2	4.1-4	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00459	4.2.1.1.5	4.2-3	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00619	4.2.1.2	4.2-4	Editorial correction	Change “cooling water“ to “makeup water and blowdown”.	0
CTS-00620	4.2.1.4	4.2-5	Editorial correction	Change “cooling water” to “makeup water and blowdown system”.	0
CTS-00620	4.2.1.4.1	4.2-6	Editorial correction	Change “cooling water” to “makeup water and blowdown system”.	0
CTS-00621	4.2.1.4.1	4.2-6	Editorial correction	Change “cooling” to “makeup”.	0
CTS-00621	4.2.1.4.1	4.2-6	Editorial correction	Change “cooling water system” to “CWS and UHS”.	0

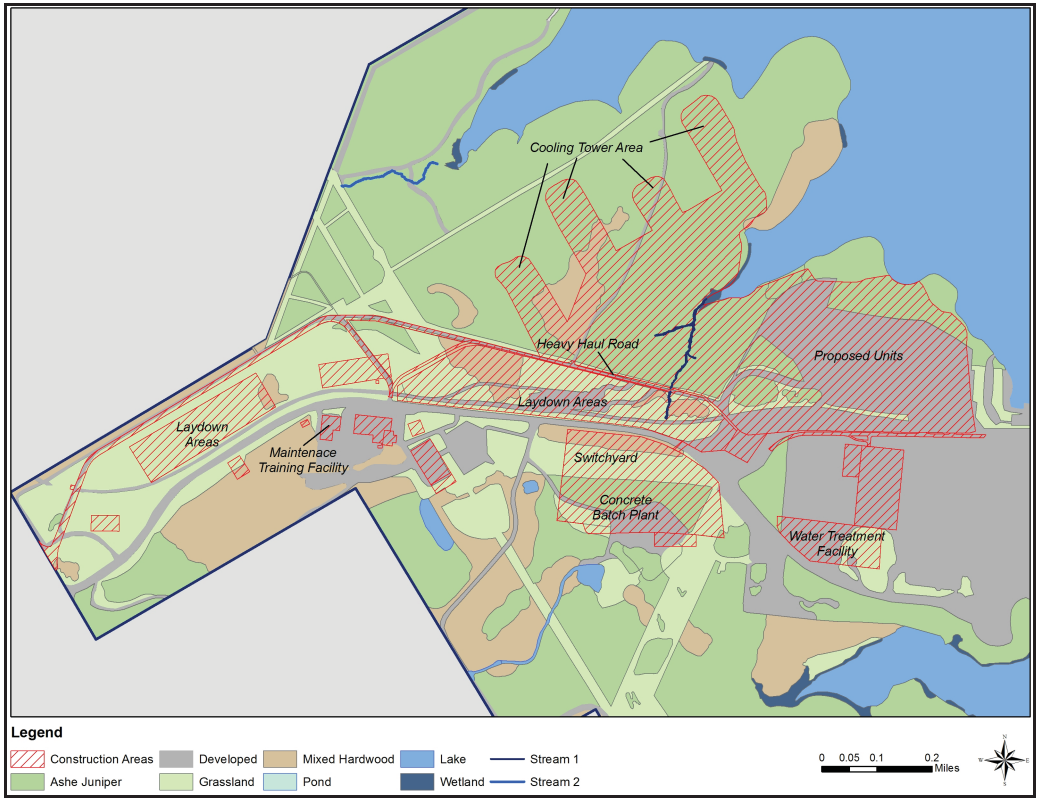
Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00622	4.2.2.1	4.2-9	Editorial correction	Change “cooling water system” and “raw water system” to “makeup water and blowdown system”, respectively.	0
CTS-00623	Table 4.2-1	4.2-14	Erratum	Change population count from “8186” to “6354” and average daily consumption from “0.383” to “0.362”.	0
CTS-00459	4.3.1	4.3-2	Erratum	Change “384 ac” to “400 ac”.	
CTS-00651	4.3.1	4.3-2	Update	Change acreages on page 4.3-2 of ER that describe area of soil disturbed during construction to agree with the new survey of the BDTF.	0
SOC-11	4.4.2.3	4.4-14	Increase information as discussed with the NRC.	Updated with current information and revised text to discuss public safety and medical services for Hood and Somervell counties.	1
SOC-11	4.4.2.3	4.4-15	Increase information as discussed with the NRC.	Delete paragraph to revise text to discuss public safety and medical services for Hood and Somervell counties.	1
SOC-11	4.4.4	4.4-20	Increase information as discussed with the NRC.	Revised to include 2 new reference notations.	1
SOC-03	List of Tables	4-v	Erratum	Changed title of Table 4.4-2 from “Total Number of Workers per Year for Construction of CPNPP Units 3 and 4” to “Total Number of On-site Workforce per Year for Construction of CPNPP Units 3 and 4”	2
SOC-03	List of Figures	4-vi	Increase information as discussed with the NRC.	Added figure 4.4-1 to show the CPNPP total project staffing	2
SOC-03	4.4.1.1	4.4-1	Increase information as discussed with the NRC.	Revised paragraph to include a discussion of the on site workforce for each quarter.	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-03	4.4.1.1	4.4-1	Errata	Changed “4300” to “5201 in 2014” Added “construction” before “workforce”	2
SOC-03	4.4.1.3	4.4-3	Increase information as discussed with the NRC.	Revised paragraph to include on site peak workforce.	2
SOC-03	4.4.1.3	4.4-3	Errata	Changed “2150” to “2601” and “4300” to “5201”	2
SOC-03	4.4.1.3	4.4-4	Erratum	Changed “4300” to “4395” Changed “2150” to “2601”	2
SOC-03 MET-07	4.4.1.5.3	4.4-8	Errata	Changed “2150” to “2601” Replaced “4300 construction workers” with “5201 total on-site workers” Changed “4300” to “4953”	2
MET-07	4.4.1.6	4.4-8	Increase information as discussed with the NRC.	Revised subsection to discuss air quality impacts from vehicle emissions.	2
MET-07	4.4.1.6	4.4-9	Increase information as discussed with the NRC.	Revised subsection to address additional air quality impacts.	2
MET-09	4.4.1.6	4.4-9	Increase information as discussed with the NRC.	Revised subsection to describe the process to be used to develop and communicate air permit compliance monitoring requirements during construction.	2
SOC-03	4.4.2.1	4.4-10 4.4-11	Increase information as discussed with the NRC.	Revised subsection to provide discussions based on new and updated construction workforce populations for the proposed units.	2
SOC-03	4.4.2.1	4.4-10	Increase information as discussed with the NRC.	Added “six counties of the” before economic region to clarify the number of counties.	2
SOC-06	4.4.2.2	4.4-11	Editorial Correction	Changed Table 5.8-1 to Table 5.8-2	2
SOC-06	4.4.2.2	4.4-11	Increase information as discussed with	Revised subsection to include basis for assumptions.	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
			the NRC.		
SOC-06	4.4.2.2	4.4-12	Increase information as discussed with the NRC.	Revised subsection to include basis for assumptions. Added “economic” in front of “the region”	2
SOC-07	4.4.2.2.1	4.4-12	Increase information as discussed with the NRC.	Revised subsection to provide additional information and to provide clarification.	2
SOC-07	4.4.2.2	4.4-13	Increase information as discussed with the NRC.	Added sentence “During the construction period, ad valoren taxes, sales and use taxes, and property taxes increase in the economic region.” Added “economic” in front of “region”	2
MET-07	4.4.4	4.4-20 4.4-21	Increase information as discussed with the NRC	Added four new reference notations as a result of revisions to subsections 4.4.1.6.	2
SOC-03	Table 4.4-2	4.4-24	Increase information as discussed with the NRC	Changed the title from “Total Number of Workers per Year for Construction of CPNPP Units 3 and 4” to “Total Number of On-site Workforce per Year for Construction of CPNPP Units 3 and 4” Expanded the table to include Construction and Operation and revised total worker numbers	2
SOC-03	Figure 4.4-1		Increase information as discussed with the NRC	Added table to show total project staffing.	2
GEN-05 GEN-06 SOC-16 CR-03	List of Tables	4-v	Increase information as discussed with the NRC.	Added Table 4.9-1.	3
LU-10	Figure 4.1-1	--	Increase information as discussed with the NRC.	Revised figure to show batch plant contained within the property boundary.	3

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
TE-07 TE-12	4.3.1	4.3-2 4.3-3 4.3-4	Increase information as discussed with the NRC.	Revised subsection to increase discussion regarding the temporary and permanent habitat disturbance plan.	3
SOC-01 SOC-08	4.4.1.3	4.4-3 4.4-4	Increase information as discussed with the NRC.	Revised subsection based on research and evaluation of existing traffic data and provided additional information.	3
SOC-01 SOC-08	4.4.1.5	4.4-8	Increase information as discussed with the NRC.	Revised the number of daily truck deliveries form “100” to “60” based on research of existing traffic data.	3
NP-15	4.4.2.2.1	4.4-12	Increase information as discussed with the NRC.	Revised subsection to provide demonstration of wages paid.	3
SOC-10	4.4.2.3	4.4-13 4.4-14	Increase information as discussed with the NRC.	Revised subsection to reconcile inconsistency between Subsection 2.5 and 4.4.	3
SOC-09	4.4.2.4	4.4-15	Increase information as discussed with the NRC.	Revised subsection to include updated housing information.	3
SOC-12	4.4.2.5	4.4-16	Increase information as discussed with the NRC.	Revised subsection to clarify the discussion of the public education system in the vicinity of the proposed units and added Granbury School District.	3
SOC-12	4.4.4	4.4-20	Increase information as discussed with the NRC.	Added a new reference notation for (Census 2000) as a result of revisions to Subsection 4.4.2.5.	3
SOC-01 SOC-08	4.4.4	4.4-20	Increase information as discussed with the NRC.	Removed reference to (TxDOT 2007) as a result of revisions in Subsection 4.4.	3
GEN-05 GEN-06 SOC-16 CR-03	4.9	--	Increase information as discussed with the NRC.	Added subsection 4.9 to address the separation of construction from preconstruction on environmental impacts.	3
GEN-05 GEN-06 SOC-16 CR-03	Table 4.9-1	--	Increase information as discussed with the NRC.	Added Table 4.9-1 to address the separation of construction from preconstruction on environmental impacts.	3
CTS-00711	Figure 4.3-1	--	Revise figure to show streams.	Revised figure to show streams.	4

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00457	Table 4.4-2	4.4-24	Clarify milestone dates are provided on Table 1.1-1	Added footnote “For construction and operation milestones, see Table 1.1-1.”	4
CTS-00457	Figure 4.4-1	--	Clarify milestone dates are provided on Table 1.1-1	Added footnote “For construction and operation milestones, see Table 1.1-1.”	4



CTS-00711

Figure 4.3-1 Ecological Cover Types Within Construction Footprint of CPNPP

TABLE 4.4-2
TOTAL NUMBER OF ON-SITE WORKFORCE~~WORKERS~~ PER YEAR FOR CONSTRUCTION OF CPNPP UNITS 3 AND 4(1)

SOC-03
CTS-00457

Year	Construction	Operation	Total Workers
2008	0	22	22
2009	0	60	~~140~~60
2010	119	76	~~270~~195
2011	621	92	~~385~~713
2012	886	168	~~726~~1054
2013	2423	213	~~2312~~2636
2014	4953	248	~~3883~~5201
2015	3739	378	~~4085~~4117
2016	598	457	~~3139~~1055
2017	0	494	~~1214~~494
2018	0	464	~~102~~464
2019	0	412	412

SOC-03

(1) For construction and operation milestones, see Table 1.1-1.

CTS-00457

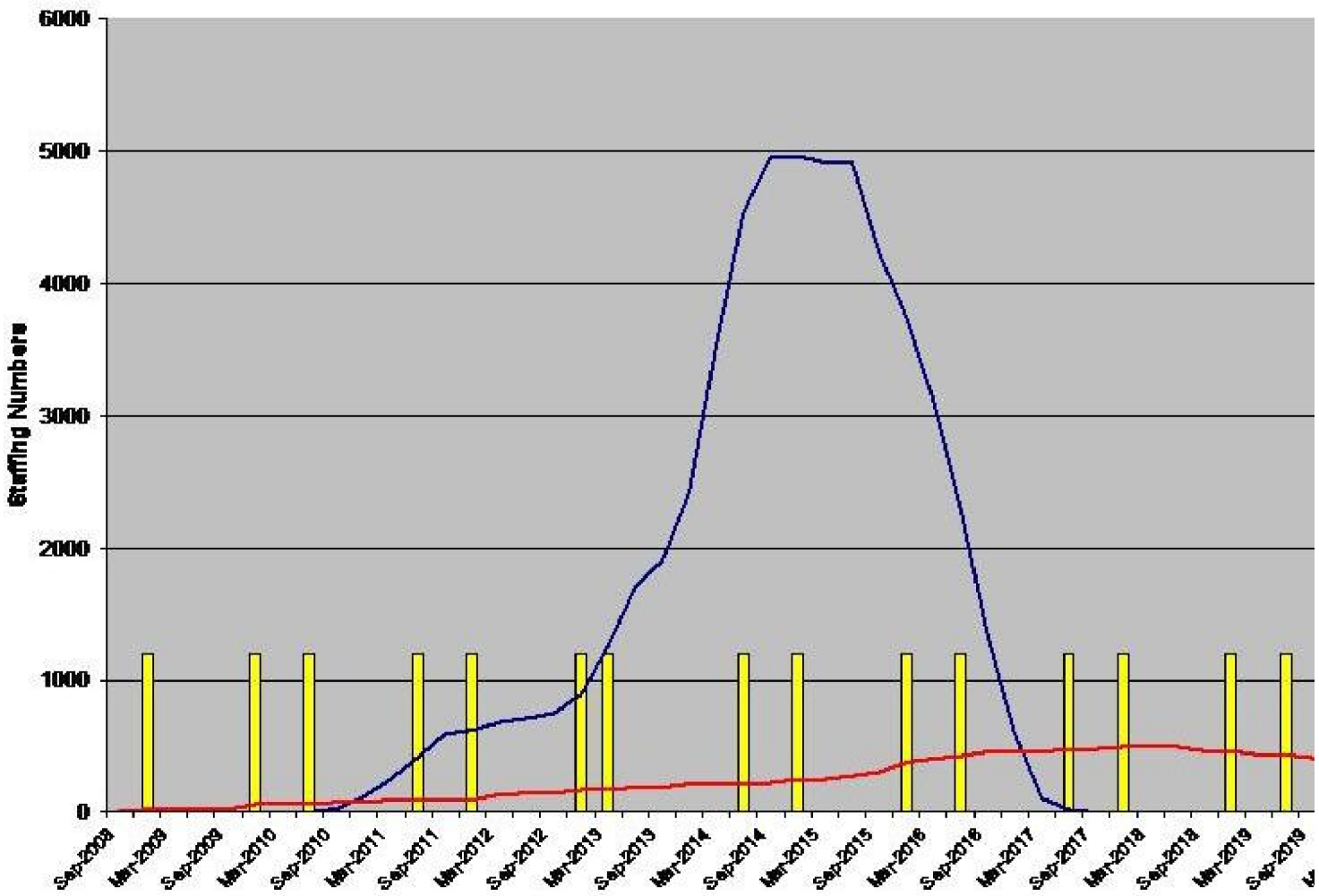


Figure 4.4-1 CPNPP Total Project Staffing(1)

SOC-03

(1) For construction and operation milestones, see Table 1.1-1.

CTS-00457

Chapter 5

Chapter 5 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	5-xxii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00624	5.1.3.1.4	5.1-5	Erratum	Change “one mi” to “two mi”.	0
CTS-00624	5.1.3.1.4	5.1-5	Editorial correction	Change “site boundary” to “property boundaries”.	0
CTS-00625	5.1.2	5.1-2	Erratum	Change number of 345-kV transmission lines from “five” to “four”.	0
CTS-00627	5.2.3.5	5.2-16	Editorial correction	Change the discussion regarding the cells and cubicles.	0
CTS-00628	Table 5.3-3	5.3-20	Editorial correction	Change the circulating water flow/tower and drift rate per tower numbers.	0
CTS-00629	Table 5.4-16	5.4-42	Erratum	Change “rad” to “person-rad”.	0
MET-13	5.3.1	5.3-11	Increase information as discussed with the NRC.	Add “Six years of site meteorological data (2001 – 2006) were also used in the analysis.	1
SOC-11	5.8.2.3.1.2	5.8-11 and 5.8-12	Increase information as discussed with the NRC.	Update with current information and revise text to discuss public safety and medical services for Hood and Somervell counties. Update reference citation from TDPS 2004 to TDPS 2006	1
SOC-11	5.8.4	5.8-17	Increase information as discussed with the NRC.	Update reference notation (TDPS 2004) information to (TDPS 2006) information.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-04	5.8.1.1	5.8-1	Errata	Changed “550” to “494” Changed “1550” to “1494” Added “in 2018” Added sentence to clarify the number of workers after one year.	2
SOC-04	5.8.1.3	5.8-2	Editorial corrections	Removed “or Texas Stae Highway 144 (SH 144)” Changed “SH 144 to Texas State Highway 144”	2
SOC-04	5.8.1.3	5.8-2 5.8-7	Errata	Changed “1550” to “1494” Changed “total of 1550” to “peak total of 1494”	2
SOC-04	5.8.2.1	5.8-8 5.8-9	Increase information as discussed with the NRC.	Revised subsection to address the operation workforce assumptions.	2
SOC-04	5.8.2.1	5.8-9	Erratum	Changed “4300” to “4953”	2
SOC-06	5.8.2.2	5.8-9 5.8-10	Increase information as discussed with the NRC.	Revised subsection to discuss workforce economics.	2
SOC-07	5.8.2.2	5.8-10	Increase information as discussed with the NRC.	Removed “(Table 2.5-13)” Replaced “0.64” with “0.32”	2
SOC-07	5.8.2.2.1	5.8-11	Editorial correction	Changed “operation” to “operational”	2
SOC-07	5.8.2.2.1	5.8-11	Increase information as discussed with the NRC.	Revised paragraph to include wage information.	2
SOC-07	5.8.4	5.8-16	Increase information as discussed with the NRC.	Added two reference notations Updated (TDPS 2004) to (TDPS 2006) information.	2
SOC-01 SOC-08	5.8.1.3	5.8-2	Increase information as discussed with the NRC.	Revised subsection based on research and evaluation of existing traffic data and provided additional information.	3

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
MET-08	5.8.1.5.4	5.8-8	Increase information as discussed with the NRC.	Revised subsection to provide quantitative estimates of emissions associated with operations.	3
NP-15	5.8.2.2	5.8-11	Increase information as discussed with the NRC.	Revised subsection to provide information on wages.	3
SOC-10	5.8.2.3	5.8-11	Editorial correction	Changed “described” to “described”	3
SOC-10	5.8.2.3.1.1	5.8-11	Errata	Replaced “an operational workforce of 550” with “the migrating workforce in 2018” and Changed “110” with “492”	3
SOC-09	5.8.2.3.2	5.8-12 5.8-13	Increase information as discussed with the NRC.	Revised subsection to provide updated housing information.	3
SOC-09	5.8.2.3.2	5.8-13	Erratum	Corrected “census” to “Census”	3
SOC-12	5.8.2.3.3	5.8-13	Increase information as discussed with the NRC.	Revised subsection to clarify the discussion of the public education system in the vicinity of the proposed units and added Granbury School District.	3
SOC-01 SOC-08	5.8.4	5.8-16	Increase information as discussed with the NRC.	Replaced Reference (TxDOT 2004) with (TxDOT 2007) notation information as a result of revisions made in subsection 5.8.	3
CTS-00465	5.2.1	5.2-1	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised the combined drift and evaporation loss rates and the maximum consumption rate of Lake Granbury to be consistent with the circulating water system description.	4
CTS-00465	5.2.1.3	5.2-3	Reconcile ER circulating water system, makeup water, and blowdown from Lake	Revised the water withdrawal rate from Lake Granbury to be consistent with the circulating water system description.	4

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
			Granbury, with MHI confirmed flow rates used in FSAR.		
CTS-00465	5.2.1.3	5.2-3 5.2-4	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised the water withdrawal rate from Lake Granbury to 65,400 gpm to be consistent with the circulating water system description. Revised water discharge rate to Lake Granbury to be 23,700 gpm.	4
CTS-00469	5.2.1.4	5.2-4	Provide updated water use estimates per TXNB-08024.	Added description of TWDB 2006 water use estimates for Somervell and Hood counties.	4
CTS-00469	5.2.4	5.2-18	Provide updated water use estimates per TXNB-08024.	Added reference (TWDB 2009) to support the 2006 draft estimated water use values.	4
CTS-00465	5.3.1.1.1	5.3-2	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised the water withdrawal rate to be consistent with the circulating water system description.	4

5.2 WATER-RELATED IMPACTS

This section provides information that describes the hydrological alterations, plant water supply, and water-related impacts of plant operations. Water-use impacts from plant operations are addressed in the following subsections:

- Hydrologic Alterations and Plant Water Supply (Subsection 5.2.1).
- Water-Use Impacts (Subsection 5.2.2).
- Water Quality Impacts (Subsection 5.2.3).

Based upon an evaluation of present and future water use, water withdrawal and discharge from the CPNPP Units 3 and 4 are considered to be of SMALL impact, and mitigation is not warranted.

5.2.1 HYDROLOGIC ALTERATIONS AND PLANT WATER SUPPLY

Hydrological alterations were evaluated to assess waters affected directly and indirectly by CPNPP Units 3 and 4 operations. Waters integral to plant operations include Lake Granbury and SCR. Waters affected by plant operations include stormwater and surface water.

Water withdrawn from Lake Granbury is (1) discharged back to Lake Granbury as cooling tower blowdown released to control solids, (2) lost as evaporation, (3) lost as drift (entrained in water vapor from the cooling towers), or (4) discharged to SCR after use and treatment for other CPNPP ancillary purposes. Water withdrawn from Lake Granbury and not returned to Lake Granbury or SCR is considered consumptive use. This necessary consumptive use of water by CPNPP results from the transfer of heat and the emission of water vapor. Drift losses are also a consumptive use but very small compared to evaporative losses and minimized to the greatest possible extent by drift eliminators included in the design of the cooling towers. The combined drift and evaporation loss is approximately ~~38,354~~36,584 gpm with two units in operation. The maximum consumption rate of Lake Granbury water, predominantly resulting from evaporation during plant operations, is expected to be approximately ~~38,674~~36,914 gpm. CTS-00465 CTS-00465

The CPNPP Units 3 and 4 plant water systems require makeup water to the cooling towers to replace water lost to evaporation, drift, and blowdown. The average withdrawal rate of Lake Granbury water to replace water losses from the plant water systems is approximately 63,550 gpm for the two-unit operation (Figure 3.3-1).

In addition to water demand, water returns were evaluated for hydrological alterations. Water returned to Lake Granbury and SCR is available as a water supply to the downstream Brazos River water users and to the aquatic communities. Water returns from plant operations include cooling tower blowdown, stormwater runoff, and treated wastewater from both the conventional and radiological waste streams. Maximum blowdown from the nonradioactive circulation water system (CWS) and the essential service water system (ESWS) is discharged into Lake Granbury at a rate of approximately ~~26,076~~26,100 gpm with both units operating (Figure 3.3-1) (Subsection 3.4.2.2). Effluent from other plant systems such as stormwater and sanitary outflows is anticipated to be discharged to the existing wastewater treatment pond and SCR. The treated liquid effluent is discharged to SCR via the Units 1 or 2 circulating water discharge. CTS-00465

to form Lake Granbury. According to information from the Brazos River Authority (BRA), there is no required minimum flow release at DeCordova Bend Dam. The BRA voluntarily makes a minimum flow release of 28 cfs under normal operating conditions.

The daily flow rate of the Brazos River near the cooling water discharge lines for CPNPP Units 3 and 4 on Lake Granbury is regulated by releases through DeCordova Bend Dam. Historical release data from BRA for the years 1969 to 2006 indicate an average monthly discharge of 1031 cfs. Table 2.3-11 presents the average monthly discharge at DeCordova Bend Dam for the period of record. The maximum recorded discharge was 72,585 cfs, recorded on October 15, 1981. Table 2.3-12 presents the annual peak discharges at DeCordova Bend Dam for the period of record.

The minimum daily flow data that was reviewed indicated several days of zero or minimal releases, approximately 28 cfs, at DeCordova Bend Dam for the period of record. As mentioned previously, the BRA voluntarily makes a minimum flow release of 28 cfs under normal operating conditions. The BRA releases additional water during flood conditions and in circumstances where BRA customers downstream request additional water. When the reservoir is full, the BRA passes inflow as it comes into the lake by adjusting gate openings as frequently as every couple of hours. The BRA calculates inflow to the lake based on change in reservoir elevation (storage) over a given period of time. In cases where there is no local runoff, releases would be similar to the USGS Brazos River Dennis gauging station hydrograph, with some lag (Figure 2.3-8). The BRA does not always base release decisions on the Dennis gauge. There can also be significant inflow to Lake Granbury from rainfall downstream of the Dennis gauge; in which cases, releases can be significantly higher than the Dennis gauge readings.

To illustrate monthly flow variability, discharge data collected by the BRA at the DeCordova Bend Dam from 1969 to 2006 are provided in Table 2.3-11. Temperature measurements for Lake Granbury showing variability with depth were collected on May 2, 2007, during the bathymetry study (Table 2.3-22). Flow characteristics of the Brazos River are discussed in greater detail in Subsections 2.3.2.2 and 2.3.1.2.3.

Low lake levels are documented for Lake Granbury in FSAR Subsection 2.4.11.3. The normal pool elevation of Lake Granbury is 693 ft msl (TWDB 2005). Estimates of frequency and duration of water-supply shortages are also presented in FSAR Subsection 2.4.11. Additional flow conditions are discussed in Subsection 5.2.2.2. Further information regarding flow data for the Brazos River can be found in Subsection 2.3.1.

Groundwater is not used for operation of CPNPP. The groundwater characteristics are discussed in Subsection 2.3.1.5 and FSAR Subsection 2.4.12.

5.2.1.3 Plant Withdrawals and Returns

Water is pumped from Lake Granbury to CPNPP Units 3 and 4. The water withdrawal rate from Lake Granbury for the two units associated with plant water systems is approximately ~~63,550~~65,400 gpm during maximum operations (Figure 3.3-1). CTS-00465

CPNPP Units 3 and 4 nonradioactive CWS and ESWS blowdown waters are returned to Lake Granbury at the discharge structure located near the DeCordova Bend Dam. The stormwater,

treated liquid low-level radioactive process water, and treated sanitary outflows are discharged to SCR. Tables 2.3-38 and 2.3-39 present plant makeup water and discharge rates. The water discharge rate to Lake Granbury during normal operations from the CWS, including loss estimates from the conceptual blowdown treatment facility (BDTF) of 1200 gpm is estimated at ~~26,076~~23,700 gpm. Effluent from other CPNPP Units 3 and 4 systems are expected to be discharged to the wastewater treatment basins (Figure 3.3-1) (Subsection 3.4.2.2). Additional information related to the CPNPP water use and discharge is presented in Sections 3.3 and 3.4. Additional information about water withdrawal, consumption, and returns, including operational and shutdown modes, is presented in Sections 3.3, 3.4, and Table 3.4-2. CTS-00465

No operational water withdrawals are planned to be associated with the operation and maintenance of the transmission lines.

5.2.1.4 Present and Future Surface Water Use

Each year, the Texas Water Development Board (TWDB) conducts an annual survey of surface water (and groundwater) use by municipal and industrial entities within Texas for water resource planning purposes (TWDB 2007a). The TWDB consumptive water use estimates for municipal, manufacturing, and steam-electric power categories come from an annual survey of public water suppliers and major manufacturing and power entities.

Non-consumptive water uses, such as navigation, hydroelectric generation, environmental flows, and recreation, are not reported by the TWDB. The water use reported by the TWDB annual survey covers consumptive withdrawals only and does not include net use by category or water return information. The TWDB reports water use by category on an annual basis and monthly use rates are not provided in the data.

~~Annual water use estimates by use category for Hood and Somervell counties were obtained from the TWDB~~The TWDB publishes annual water use estimates as described in Subsection 2.3.2.2. The 2006 draft estimated water use for Somervell County is 16,100 acre-feet and 48,931 acre-feet for Hood County (TWDB 2009). TWDB annual water use estimates for year 2004 are not considered draft and contain water use estimates in terms of groundwater and surface water use (TWDB 2007a). The 2004 data estimated total water use in Hood County at 11,857 ac-ft, of which 62 percent was reported as surface water use (and 38 percent groundwater use). Somervell County estimated water use was reported at 46,611 ac-ft in 2004, of which 96 percent was reported as surface water use (and 4 percent groundwater use). Total water use for Hood and Somervell counties represents 1.65 percent of the total reported water use in the Brazos River Basin. CTS-00469

Surface water withdrawals for Hood County were estimated at 7306 ac-ft in 2004 (TWDB 2007a). Approximately 76 percent of this use was for irrigation use, 15 percent for municipal use, five percent for steam electric use, and four percent for livestock use. Surface water withdrawals for Somervell County were estimated at 44,693 ac-ft in 2004. Approximately 99 percent of this withdrawal was for steam electric use with less than one percent for irrigation, mining, and livestock uses. Table 2.3-35 provides annual water use estimates by use category for Hood and Somervell counties.

(CORMIX 2008b) Independent CORMIX Validation Studies. http://www.cormix.info/validations.php. Accessed February 10, 2008.

(CORMIX 2008c) CORMIX Mixing Zone Glossary. http://www.cormix.info/picgal/mixingz.php. Accessed February 10, 2008.

(CPSES 2007) Comanche Peak Steam Electric Station. Final Safety Analysis Report (FSAR), Amendment 101.

(Jirka, Doneker, and Hinton 1996) User's Manual for Cormix: A Hydrodynamic Mixing Zone Model and Decision Support System for Pollutant Discharges into Surface Waters. September 1996.

(TCEQ 2006) Texas Commission on Environmental Quality. Annual Water Use Report for Comanche Peak Steam Electric Station, December 2006.

(TCEQ 2008) Texas Surface Water Quality Standards. Texas Administrative Code (TAC), Title 30 (Environmental Quality), Part 1 (Texas Commission on Environmental Quality), Chapter 307, Rule §307.10 (Appendix A).

(TPWD 2005) Texas Parks and Wildlife. Granbury Reservoir 2005 Survey Report. http://www.tpwd.state.tx.us/publications/pwdpubs/lake_survey/pwd_rp_t3200_1300/. Accessed December 2007.

(TWDB 2005) Texas Water Development Board. Volumetric Survey Report of Lake Granbury, July 2003. http://www.twdb.state.tx.us/home/index.asp. Accessed November 2007.

(TWDB 2007a) Texas Water Development Board. Historical Water Use Information, Brazos Basin. http://www.twdb.state.tx.us/home/index.asp. Accessed December 2007.

(TWDB 2009) 2006 Water Use Survey Summary Estimates by County in Acre-Feet, Draft. www.twdb.state.tx.us/wrpi/wus/2006est/2006wus.htm. Accessed May 22, 2009.

CTS-00469

(USGS 2007) U.S. Geological Survey. Hydrologic Unit Codes for Region 12 Brazos River Basin. Water Resources of the United States. http://water.usgs.gov/GIS/huc_name.html#Region12. Accessed June 15, 2007.

inflow as it comes into the lake by adjusting gate openings as frequently as every couple of hours. The BRA calculates inflow to the lake based on change in reservoir elevation (storage) over a given period of time. In cases where there is no local runoff, releases would be similar to the U.S. Geological Survey (USGS) Brazos River Dennis gauging station hydrograph, with some lag (Figure 2.3-8). The BRA does not always base release decisions on the Dennis gauge. There can also be significant inflow to Lake Granbury from rainfall downstream of the Dennis gauge; in which cases, releases can be significantly higher than the Dennis gauge readings. During periods of increased inflow and discharge through the dam, water is passed through the reservoir resulting in a southeasterly flow in the vicinity of the intake structure, and the intake water flow direction is perpendicular to the flow direction of the reservoir.

The intake, which would be constructed on an off-bank platform approximately 90 ft from the bank of the reservoir, would draw approximately ~~63,550~~65,400 gpm for two unit operation. CTS-00465
Withdrawal would be through an intake that has a low through screen velocity, less than 0.5 fps through the screens on the intake structure. Because there is no regular flow pattern within Lake Granbury, the off-bank platform location combined with the low intake velocity is unlikely to lead to scouring of the lake bottom or alterations in the general flow regime of the reservoir. During normal conditions, water would be pumped from Lake Granbury and transported to the CWS via an underground pipeline. None of this water would be used as potable water supply for the station.

The reservoir intake structure with respect to water surface and cross section of the intake system is illustrated in Figure 3.4-2 and discussed in Subsection 3.4.2.1. Lake Granbury in the vicinity of the proposed project cooling water system intake-and-discharge structures includes approximately 507 ac. The proposed project discharge structure is anticipated to be located approximately 1.14 mi downstream from the intake structure.

During the bathymetric survey of Lake Granbury, reservoir bottom elevations were surveyed from one bank to the other from well upstream of the proposed project intake structure location to the floating dam safety barriers downstream of the proposed discharge location (Figure 2.3-13). The former main channel of the Brazos River as well as several well-developed river terraces along the point bar comprising the northern shore of this area of the lake are visible on the final bathymetric map of lower Lake Granbury. A bathymetric anomaly near the DeCordova Bend Dam (southeastern edge of mapped area) abruptly truncates the main Brazos River channel. This bathymetric anomaly appears to be a man-made structure of unknown history or origin. It is known that there was an extensive attempt to establish a lock and dam system along the Brazos River during the early 20th Century for the purpose of promoting river commerce (Boss 2007). It is not known if one of these sites existed within the mapped area. Alternatively, the bathymetric anomaly could represent remains of a temporary coffer dam that may have diverted the Brazos River during construction of the DeCordova Bend Dam during the 1960s.

As discussed in Section 3.4, intake water taken from Lake Granbury passes through passive submerged screens designed to minimize uptake of aquatic biota and debris. The screens are composed of three-eighths-mm mesh and are sized for a maximum through-screen velocity of less than 0.5 fps.

During normal conditions, water is pumped from Lake Granbury via pipeline into the CWS. The net water withdrawal rate from Lake Granbury for two units and associated with plant water systems is approximately ~~63,550~~65,400 gpm during maximum operations (Figure 3.3-1). CTS-00465

The EPA has promulgated regulations that implement Section 316(b) of the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA) for new and existing electric power producing facilities. For lakes and reservoirs, these regulations include the requirement that intake flow may not disrupt natural thermal stratification or turnover patterns (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish by any fishery management agency. Section 125.83 of the CWA defines a lake or reservoir as any inland body of open water with some minimum surface area free of rooted vegetation and with an average hydraulic retention time of more than seven days. Lakes or reservoirs might be natural water bodies or impounded streams, usually fresh, surrounded by land or by land and a man-made retainer (e.g., a dam). Lakes or reservoirs might be fed by rivers, streams, springs, or local precipitation. By EPA definition, Lake Granbury is classified as a lake or reservoir because retention time has been estimated at 260 days (TPWD 2005) by the Texas Parks and Wildlife Department (TPWD).

A study performed in the vicinity of the cooling water intake and discharge structures for Units 3 and 4 indicated that Lake Granbury is thermally stratified during the summer and early fall months, and unstratified during the late fall and winter. During the spring and for certain periods during the winter, the lake is weakly stratified, with the weak stratification during the winter resulting from extended warm periods (WRE 1973). Field temperature measurements were collected at sample locations (Figure 2.3-20) in the main channel of the Brazos River on the lower portion of Lake Granbury during surface water sampling events in April, July, and October 2007, and January 2008. As shown on Table 2.3-26, water temperature differences between the surface and bottom measurements varied approximately 5°F in April, approximately 3°F in July, less than 1°F in October, and approximately 1°F in January. As shown on Table 2.3-22, temperature measurements collected in May 2007 (Figure 2.3-12) during the bathymetric survey of Lake Granbury indicated an approximate 8°F difference in water temperature between surface and bottom measurements. Based on the low intake velocity and localized area of influence at the intake structure, intake flow is not expected to disrupt natural thermal stratification or turnover patterns on Lake Granbury.

The intake structure design is planned to allow for a maximum through-screen velocity of less than 0.5 fps as required by 40 CFR 125.84 to limit organism mortality from impingement and entrainment. Detailed system description, and operation modes for the intake system are described in Section 3.4. The above evaluation indicates that the design of the proposed project intake cooling water system has the following features:

- The intake water flow direction is perpendicular to the flow direction of Lake Granbury.
- The average and maximum withdrawal of the intake cooling water does not affect thermal stratification within the reservoir.
- There are extremely low current approach velocities to the intake structure.

Chapter 6

Chapter 6 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	6-xvi	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00630	6.3.1.1	6.3-2	Editorial correction	Change “SWS” to “ESWS”	0
CTS-00631	6.5.1	6.5-2	Editorial correction	Remove “nonradioactive”.	0
CTS-00631	6.5.1	6.5-2	Editorial correction	Change “service water” to “essential service water”	0
CTS-00499	6.7	6.7-3	Editorial correction	Add information for current results regarding humidity date, and remove discussions for future additions.	0
CTS-00499	6.7	6.7-3	Editorial correction	Clean up to match ER 6.4.1 wording for RH instrumentation.	0
MET-24	6.4.1	6.4-2	Increase information as discussed with the NRC.	Revised discussion regarding the temporary relative humidity instrumentation to include current results and conclusions.	3
MET-24	6.7	6.7-3	Revised subsection as discussed in letter TXBN-08024 to the NRC dated 9/19/2008 and to increase information as discussed with the NRC.	Revised discussion regarding the temporary relative humidity instrumentation to include current results and conclusions and to be consistent with Subsection 6.4.1; and reversed change made in UTR Rev 0 “editorial correction” for CTS-00499.	3
CTS-00650	6.6.2	6.6-4	Erratum	Revised 659 to 675.	4

sampling program supports the environmental descriptions for hydrology, water use, water quality, aquatic ecology, and water supply discussed in Chapters 2 and 3.

6.6.1.2 Preapplication Groundwater Monitoring

In January 2007, a groundwater sampling program was initiated as part of a subsurface study to evaluate current geologic and hydrogeologic conditions at the CPNPP site. Twenty groundwater monitoring well clusters (47 wells total), one aquifer test recovery well, and three aquifer test observation wells were installed from October 2006 to February 2007. The groundwater monitoring wells were developed, and water levels were measured monthly from December 2006 through December 2007. A list of the monitoring wells and relevant installation data are presented in Subsection 2.3.1.5.5 (Table 2.3-29) and FSAR Subsection 2.4.12 (FSAR Table 2.4.12-201). The locations of the groundwater monitoring wells are presented in Figure 2.3-26 and FSAR Figure 2.4.12-201. In addition to the water level measurements, quarterly groundwater samples were taken from 10 of the wells and analyzed for a variety of constituents, and the results of the groundwater sampling are presented in Subsection 2.3.1.5.5 (Table 2.3-50). The groundwater samples were obtained following generally accepted field sampling procedures, including the use of clean sampling devices, and clean and prepared sample containers supplied by the laboratory that performs the analysis. The samples were taken on approximately 90-day intervals. Sample preservation and analysis followed the procedures for groundwater sampling and analysis. Groundwater samples were submitted in accordance with chain-of-custody protocol to independent third-party commercial laboratories.

6.6.2 CONSTRUCTION MONITORING

A construction monitoring program may be required by TCEQ to provide data necessary to assess surfacewater quality changes resulting from construction of CPNPP Units 3 and 4, especially in relation to construction-area stormwater runoff. The land area disturbed by construction of CPNPP Units 3 and 4 is expected to be ~~659~~675 ac, which exceeds the one-ac limit, requiring a stormwater construction permit in accordance with 40 CFR 122.26 (Subsection 4.2.1.10). CTS-00650

If construction monitoring is required by TCEQ, the results can be compared with the preapplication quarterly surfacewater and groundwater sampling program discussed in Subsections 6.6.1.1 and 6.6.1.2 and used to detect any deviations from the baseline water quality.

6.6.2.1 Construction Surfacewater Monitoring

Construction activities for CPNPP Units 3 and 4 require a TPDES stormwater construction permit in accordance with 40 CFR 122.26 and the Texas Water Code (TCEQ 2007). The CPNPP site preparation and construction activities are expected to be performed under a TPDES permit, with all requirements implemented in the monitoring program, as required.

6.6.2.2 Construction Groundwater Monitoring

Construction is expected to have no effect on groundwater; consequently, no construction groundwater monitoring program is anticipated. As described in Subsection 6.3.2.2, as

Chapter 7

Chapter 7 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	7-xvii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00470	7.2	7.2-7	Erratum	Change “5.87 x 10^{-1}” to “1.15”.	0
ACC-06	7.2-4 Tables: 7.2-5, 7.2-7, 7.2-9, 7.2-10, 7.2-11, 7.2-12, 7.2-13, 7.2-14	7.2-3, 7.2-7, 7.2-8, 7.2-13, 7.2-15, 7.2-17, 7.2-18, 7.2-19, 7.2-20, 7.2-21, 7.2-22, 7.2-23	See Luminant Letter TXNB-09013 dated 4/28/2009	Revised Subsection and Tables to reflect a 90% evacuation to a distance of 50 mi.	-

Chapter 8

Chapter 8 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	8-xvi	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
NP-03	8.1	8.1-6	Increase information as discussed with the NRC.	Revised text to address why the plants are not specifically discussed within the context of the need for power analysis.	1
NP-05	8.1	8.1-6	Increase information as discussed with the NRC.	Revised text to discuss the ERCOT assumptions driving generation capacity.	1
NP-09 NP-13	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to clarify that market participants determine how and when to retire or build new capacity.	1
NP-12	8.1	8.1-6	Increase information as discussed with the NRC.	Revised text to explain that market forces determine how to meet the forecast load.	1
NP-18	8.3.1	8.3-1	Increase information as discussed with the NRC.	Added a “pointer” to the definition of “mothballed capacity.”	1
NP-09	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to clarify how ERCOT does their analysis.	1
NP-18	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to provide information regarding mothballed generating capacity.	1
NP-03	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to address why the plants are not specifically discussed within the context of the need for power analysis and at specific points in time, given that the plants would not come on line until about 10 years in the future.	1
NP-09	8.4.1	8.4-2	Increase information as discussed with the NRC.	Revised text to clarify how ERCOT does their analysis.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
NP-09	8.4.1	8.1-4	Increase information as discussed with the NRC.	Expands the discussion of reserve margin.	1
NP-12	8.4.1	8.4-5	Increase information as discussed with the NRC.	Expanded the discussion of reserve margin to indicate the decision to increase the number of plants rests with the market participants.	1
NP-01	8.4.5	8.4-7	Increase information as discussed with the NRC.	Revise text to discuss the 2007 ERCOT assessment and other information that has become available after the 2007 reference. Added subsection 8.4.5 entitled “ERCOT Update”	1
NP-01	8.4.6	8.4-7	Increase information as discussed with the NRC.	Revise references for the increased information.	1
NP-14	Table 8.4-1	8.4-8	Increase information as discussed with the NRC.	Revised table to include the load forecast and reserve margin.	1

Chapter 9

Chapter 9 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	9-xx	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00632	9.2	9.2-9	Erratum	Change “peak” to “units”.	0
CTS-00687	9.3.4.1.3.2	9.3-14	Update the proprietary status of information	Remove (proprietary)	1
CTS-00688	9.3	9.3-30	Update the proprietary status of information	Remove “Attachment proprietary information” and add “Luminant Nuclear Power Plant Siting Report, February 09, 2009, with a modified” and remove the period after Project.	1
CTS-00689	Tables: 9.3-1A 9.3-3 9.3-4 9.3-5 9.3-6 9.3-7 9.3-8 9.3-9 9.3-10 9.3-11 9.3-12 9.3-13 9.3-14 9.3-15 9.3-16 9.3-17 9.3-18 9.3-19 9.3-20 9.3-21 9.3-22 9.3-23 9.3-24 9.3-25 9.3-26 9.3-27	9.3-33, 9.3-36, 9.3-37, 9.3-38, 9.3-39, 9.3-40, 9.3-41, 9.3-42, 9.3-43, 9.3-44, 9.3-45, 9.3-46, 9.3-47, 9.3-48, 9.3-49, 9.3-50, 9.3-51, 9.3-52, 9.3-53, 9.3-54, 9.3-55, 9.3-56, 9.3-58, 9.3-59, 9.3-60, 9. 3-61, 9.3-62, 9.3-63,	Update the proprietary status of information	Remove “Withheld from Public Disclosure Under 10 CFR 2.390 (a) (4)” from the title.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
		9.3-64, 9.3-65 9.3-66, 9.3-67, 9.3-68, 9.3-69, 9.3-70, 9.3-71, 9.3-72, 9.3-73, 9.3-74			
CTS-00690	Figure 9.3-2	-	Editorial Correction	Remove box with "Proprietary Information – Withheld Under 10 CFR 2.399 (a) (4)" and provide figure.	1
ALT-09	9.2	9.2-28	Editorial Correction	Remove the sentence "The levelized cost of electricity produced from pulverized coal fired power plants is $0.033/kWh - $0.041/kWh"	1
ALT-09	9.2	9.2-30	Erratum	Replace $575 with $544	1
CTS-00709	Table 9.3-21	9.3-39	Editorial Correction	Removed "128 [(a)] "and replaced with "53" and "6.4" with "< 1."	4
CTS-00459	9.4.2.1.4	9.4-17	Erratum	Revised 384 ac to 400 ac to be consistent with the current survey.	4

CTS-00689

TABLE 9.3-21
COMPARISON OF WETLANDS FOR EACH OF THE CANDIDATE SITES

Site Wetland Information	CPNPP Site	Luminant A - Coastal	Luminant B - Pineland	Luminant C - Trading House
Wetland Acreage	~~128~~53[a]	65[b]	214[a]	220[a]
Wetland Percentage	~~6.4~~<1%	3.2%	10.7%	11%

CTS-00709

CTS-00709

a) Denotes wetlands estimated from satellite/aerial images; estimated acreage within 2000-ac area.

b) Includes wetlands on proposed plant site only (see below).

Based on the analysis above and the results presented in Section 5.2, no adverse impacts are identified in the water supply portion of the proposed CWS, and no mitigation is warranted.

9.4.2.1.4 Water Treatment

The water treatment or circulating water chemistry, for the influent water of the proposed projects' CWS is maintained by a chemical feed system (Subsection 3.3.2). Chemical equipment would inject the required chemicals into the circulating water downstream of the CWS pumps. The chemicals used would be divided into six categories based upon function: biocide, algaecide, pH adjuster, corrosion inhibitor, scale inhibitor, and silt dispersant. The pH adjuster, corrosion inhibitor, scale inhibitor, and dispersant would be metered into the system continuously or as required to maintain proper concentrations. The biocide application frequency might vary with seasons. The algaecide would be applied, as necessary, to control algae formation on the cooling tower.

The water treatment of the blowdown water portion of the proposed projects' CWS is performed by a Blowdown Treatment Facility (BDTF) with associated evaporation ponds and misters. The design allows for a diversion of approximately 46 percent of the blowdown flow for treatment and returning 80 percent of the diverted (cleaned water) flow back into the main blowdown line back to Lake Granbury (URS 2008).

The basic equipment in the BDTF consists of parallel trains of course prefilters, ultrafilters, and reverse osmosis membranes. Also included are appropriate chemical dosing/cleaning equipment, interconnecting piping, sump/tanks and transfer pumps. One evaporation pond with multiple sections and misters will be installed along with one retention pond to store up to three months of evaporation pond overflow (URS 2008).

Ponds are expected to be lined with impermeable clay and two high density polyethylene liners to achieve the required permeability ratings. The BDTF will utilize approximately ~~384~~400 ac (~~384~~400 ac is a bounding number for the available acreage in the proposed location) of CPNPP site property (URS 2008). This area is a previously undisturbed area. No additional land will be required to be purchased. The BDTF will be constructed in the southeast corner of the site property. This area of the site shares the boundary with a sparsely populated area. CTS-00459

The noise from the BDTF is expected to be of a SMALL impact. There is little fogging and icing in this area normally and there are no public roads of significant population areas in close proximity to the BDTF. There are no crops grown in the immediate area and the impact due to salt drift is SMALL.

The system design provides for 80 percent return of diverted flow back into the main blowdown line and into Lake Granbury. The consumptive water loss impact of this system is SMALL and the impact on the water quality returned to Lake Granbury is beneficial. This system helps ensure the TPDES requirements for release to waterways will be met even with the highly variable TDS and salt concentrations of the influent water withdrawn from Lake Granbury.

Based on the analysis above and the results of Subsection 5.5.1, no adverse impacts are identified in the influent water treatment and blowdown water treatment system portion of the proposed CWS, and no mitigation is warranted.

Chapter 10

Chapter 10 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	10-xvi	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00459	10.1.1.1	10.1-1	Erratum	Change “200 ac” to “400 ac”.	0
CTS-00461	10.1.3.2.1	10.1-11	Editorial Correction	Remove “diesel generators”, and mention the auxiliary boiler as an air emission source.	0
CTS-00459	Table 10.1-1	10.1-14	Erratum	Change “200 ac” to “400 ac”.	0
CTS-00650	Table 10.1-1	10.1-14	Erratum	Change “659 ac” to “675 ac”.	0
CTS-00633	Table 10.1-1	10.1-14	Erratum	Change 4152 to indicate this is the fourth item in the table and the number cited is 152	0
CTS-00460	10.1	10.1-5	Erratum	Add text to show an additional 250 gpm will be provided for de-mineralized water, and change “fifty gpm” to “three hundred gpm”.	0
CTS-00505	10.1.3.2.2	10.1-12	Editorial correction	Remove “adds on impact”.	0
CTS-00505	10.1.3.2.2	10.1-12	Editorial correction	Remove “not”.	0
CTS-00634	10.4.1.2.1	10.4-3	Erratum	Change “4461” to “4466”.	0
CTS-00459	10.4.2.2.1	10.4-8	Erratum	Change “approximately 200 ac” to “400 ac”.	0

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00506	Table 10.4-2	10.4-15	Erratum	Change alignment of “3180”.	0
CTS-00459	Table 10.4-4	10.4-20	Erratum	Change “384 ac” to “400 ac”.	0
NP-17	10.1.1.2	10.1-2	Errata	Changed “construction workers” to “on-site workforce” Changed “reach 4300 in 2013” to “be 5201” Changed “construction” to “on-site”	2
NP-17	10.1	10.1-5	Erratum	Changed “A thermal plume created from cooling water blowdown would be discharged to the Lake Granbury” to “Subsection 5.3.2.1 describes the thermal plume analysis and impacts from CPNPP.”	2
NP-17	10.1.3.1.1	10.1-7	Errata	Changed “550” to “494” Changed “1550” to 1494”	2
NP-17	10.1.3.1.1	10.1-9	Editorial correction	Removed Radiological category discussion	2
NP-17	10.1.3.1.2	10.1-9	Errata	Changed “4300 construction” to “5201” Removed “in 2013”	2
NP-17	10.1.3.2.2	10.1-12	Errata	Changed “550” to “494” Changed “1550” to “1494”	2
NP-17	Table 10.3-1	10.3-6	Increase information as discussed with the NRC.	Changed “avoid” to “reduce”	2
NP-17	10.4.1.1.1	10.4-1	Increase information as discussed with the NRC.	Revised to clarify socioeconomics and to be consistent with other subsections.	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
NP-17	10.4.1.1.1	10.4-2	Errata	Changed “550” to “494” Changed “4300” to “4953” Added “and 248 operations workers” before “on-site” and “at the start of operations” to clarify the socioeconomics and to be consistent with other subsections.	2
NP-17	10.4.1.1.1	10.4-2	Errata	Replace “economy of the region” with “economic region” and added “economic” before “region”	2
NP-17	10.4.1.1.1	10.4-2	Increase information as discussed with the NRC.	Changed “SMALL” to “LARGE” as a result of revisions.	2
NP-17	10.4.1.1.2	10.4-2	Increase information as discussed with the NRC.	Revised subsection to clarify socioeconomics and to be consistent with other subsections.	2
NP-17	10.4.1.1.2	10.4-2	Erratum	Changed “2007” to “2006” Changed “1121” to “48,965” Changed “Hood County and 220 people unemployed in Somervell County.” to “the economic region.”	2
NP-17	10.4.1.1.2	10.4-2	Erratum	Changed “vicinity and a SMALL beneficial impact in the region.” To “economic region” and Changed vicinity to “economic region”	2
NP-17	10.4.1.1.2	10.4-3	Increase information as discussed with the NRC.	Revised subsection to clarify socioeconomics and to be consistent with other subsections.	2
NP-17	10.4.1.2.3	10.4-4	Errata	Changed “989” and “1664” Changed “5289” to “5131” Changed “4300” to “4953” Changed “550” to “494” Changed “682” to “272” Changed “1232” to “766”	2
NP-17	10.4.2.2.2	10.4-9	Errata	Changed 56,592,000 gpd” to “55,690,560 gpd” Changed “consumption” to “forced evaporation”	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
				Removed reference to "(Subsection 2.3.2.2.4)" and replace with "Table 2.3-38"	
NP-17	10.4.2.2.5	10.4-10	Discussed with the NRC	Removed subsection 10.4.2.2.5 as the discussion is not in context.	2
NP-17	10.4.2.2.6	10.4-11	Editorial Correction	Changed subsection 10.4.2.2.6 to 10.4.2.2.5	2
NP-17	10.4.2.2.7	10.4-11	Editorial Correction	Removed subsection 10.4.2.2.7 as the discussion is not in context.	2
NP-17	10.4.2.2.8	10.4-11	Editorial Correction	Changed subsection "10.4.2.2.8" to "10.4.2.2.6"	2
NP-17	Table 10.4-1 (sheet 1 of 2)	10.4-13	Errata	Changed "Net ad" to "Ad" Changed "4300" to "4953" Changed "550" to "494" Aligned the Subheading to the left. Removed subtitle below the line. Added "in $/$100 valuation" to clarify the tax rates.	2
NP-17	Table 10.4-1 (sheet 2 of 2)	10.4-14	Erratum	Removed "Dependence on Foreign Energy" row item Removed "Foreign Trade Deficit" row item.	2
NP-17	Table 10.4-2	10.4-15	Editorial Correction	Replaced footnote "a)" with "Air emissions were calculated using AP 42"	2
NP-17	Table 10.4-3 (Sheet 2 of 3)	10.4-17	Editorial Correction	Removed row "Radioactive Effluents and Emissions" and "Potential Nuclear Accident" row items.	2
NP-17	Table 10.4-4 (Sheet 1 of 4)	10.4-19	Erratum	Changed "4300" to "4953" Changed "550" to "494" Changed "1671" to "1936" Changed "989" to "1801" Changed "521" to "135"	2
NP-17	Table 10.4-4 (Sheet 2 of 4)	10.4-20	Editorial Correction	Removed row for "Foreign Trade Deficit"	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
NP-17	Table 10.4-4 (Sheet 3 of 4)	10.4-21	Editorial Correction	Removed “Potential Nuclear Accident” row item.	2
CTS-00650	10.1.3.1.1 10.1.3.2.1	10.1-8 10.1-10	Erratum	Revised 659 to 675.	4
CTS-00650	Table 10.2-1	10.2-6 10.1-22	Erratum	Revised 659 to 675.	4
CTS-00465	10.4.2.2.2	10.4-9	Reconcile ER circulating water system, makeup water, and blowdown from Lake Granbury, with MHI confirmed flow rates used in FSAR.	Revised the net consumption rate to be consistent with the circulating water system description.	4

The project would involve a continued commitment of land use of an additional ~~659~~675 ac at the CPNPP site (see Subsections 4.1.1 and 4.1.1.1). Additional land may be committed to the transmission corridors; however Oncor has not determined if additional land is required for corridor expansion. The project could result in the loss of some herbaceous/grassland habitat. This impact can be partially mitigated through revegetation and returning some of the land to its preconstruction conditions. | CTS-00650

Ecological

The project could potentially result in some destruction of habitat and disruption or loss of some individual species in the construction area. The project would include permanent alteration of some habitat areas, potentially resulting in the loss or relocation of biota over the operational lifespan. Some of these impacts could be mitigated over the long-term through revegetation and by allowing the land to return to an unmanaged state after construction is complete. The impact can also be partially mitigated by restricting construction activities as much as possible to the planned project footprint, and by following procedures and BMPs that minimize ecological impacts.

Water Resources

A SMALL amount of water would be consumed in implementing various construction activities. The amount of water is considered to be so small as to require no mitigation. Groundwater is not planned to be used to support construction.

Water Quality

Construction activities near or along Lake Granbury and the SCR shoreline could temporarily increase the sediment load and adversely affect some shoreline habitat. These impacts could be reduced through work procedures, proper construction methods, and implementation of BMPs.

Cultural Resources

There is a SMALL risk that cultural resources could be disturbed during the construction phase. A Phase 1 survey of cultural resources was completed in areas that may be disturbed during construction activities for Units 3 and 4 and their associated facilities. Ground disturbing activities in areas that were not previously cleared would be performed in compliance with the National Historic Preservation Act (NHPA) regulations. If previously unevaluated cultural resources were discovered during ground disturbing activities, associated activities would be halted until their significance would be assessed. As appropriate, the State Historical Preservation Office (SHPO) would be consulted to determine if any additional procedures need to be implemented to protect such resources.

Noise

Construction activities could have a SMALL impact on nearby wildlife. However, the impact is not considered to be significant enough to warrant mitigation. A relatively SMALL increase in ambient noise level could be mitigated through noise reduction equipment and by adhering to

Some construction activities may impact minority or low income populations; however, these impacts would not be disproportionately to minority or low income populations. In addition, there are no foreseen unavoidable adverse environmental justice impacts.

10.1.3.2 Operational Impacts

Operational impacts are summarized in Table 10.1-2. Many of the operational impacts tend to be smaller that those associated with the construction phase, but tend to range over a longer period of time.

10.1.3.2.1 Environmental

This subsection summarizes the environmental impacts that would result from operation of CPNPP Units 3 and 4.

Land Use

The project would involve a continued commitment of land use of the CPNPP site, which amounts to 7950 ac (~~659~~675 ac for CPNPP Units 3 and 4). Much of the site has been disturbed over the last 30 years, and the project is consistent with current land-use plans. Additional land would be committed to the pipeline and transmission corridors. An estimate of the amount of area disturbed by construction of the transmission corridors is currently unavailable because the actual route is currently undetermined. In terms of mitigation, some of the land could be revegetated following the end of construction and returned to its former state following completion of construction. When compared to regional use of land, the project would have a relatively SMALL impact on land use. CTS-00650

Hydrological

In terms of regional usage, this proposal would involve a relatively SMALL loss of water from Lake Granbury, principally as a result of cooling system related evaporation.

Results of the predicted thermal water plume analysis data are summarized in Table 5.3-2. Based on the data presented in this table, high and low temperature plumes are predicted to dissipate in the near-field mixing zone region, and the thermal effects of plant operation would be unlikely to have a discernible effect on water quality or the aquatic biota. The use of cooling towers acts to minimize the thermal impact to Lake Granbury and no additional mitigation measures are deemed necessary.

Water effluents consisting of nonradioactive discharge of some slightly concentrated blowdown water would be discharged into the Lake Granbury, and would constitute a relatively SMALL impact. As a mitigation measure, the wastewater would be treated as required to meet the wastewater discharge permit (TPDES) requirements prior to discharge.

Wastewater generation from the floor and equipment drains, stormwater, nonradioactive laboratory wastewater, auxiliary boiler blowdown, and sanitary wastes would be discharged into SCR. The environmental impact would be SMALL. As a mitigation measure, the wastewater

TABLE 10.1-2 (Sheet 1 of 9)
OPERATIONAL-RELATED UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

Category	Adverse Impact	Mitigation Measures	Unavoidable Adverse Impacts
Land Use	The proposal would involve a continued irreversible and irretrievable (I&I) commitment of land use over the operational life of this project, amounting to approximately ~~659~~675 ac of the 7950 ac of the existing site for the CPNPP as well as the pipeline and transmission corridors.	Much of the existing CPNPP site has been disturbed over the last 30 years and the proposed project is consistent with current land-use plans. Some of the disturbed land would be revegetated following the end of construction and into the operational phase of the project. The project would comply with requirements of applicable federal, state, and local construction permits/approvals, and local ordinances.	Continued long-term I&I commitment of land use over the operational life of this project. Some of the land would be returned to its former state following the end of construction. CTS-00650
	The CPNPP Units 3 and 4 would generate non-hazardous and hazardous waste that would need to be disposed of in permitted disposal facilities or permitted landfills.	Establish waste minimization programs to minimize the volume of wastes generated. Hazardous waste would be handled, and disposed according to RCRA standards. Follow applicable regulations for disposing of non-hazardous waste.	Land dedicated on a long-term I&I basis for the disposal of this waste and would not be available for other uses.
	The two containment vessels, cooling towers, and the corridors would be visible from nearby locations and would constitute a relatively SMALL alteration to surrounding aesthetic resources.	No practical mitigation measures have been identified for reducing the impact.	The viewscape would be impacted over the operational phase of this project.

TABLE 10.2-1 (Sheet 1 of 3)
SUMMARY OF IRREVERSIBLE AND IRRETRIEVABLE
COMMITMENT OF ENVIRONMENTAL RESOURCES

Environmental and Material Resource Issues	Irreversible	Irretrievable
Land Use	Construction of CPNPP Units 3 and 4 would disturb approximately ~~659~~675 ac of the 7950-ac CPNPP site. Additional land would be committed to the transmission and water pipeline corridors. Land may be reclaimed following decommissioning of the reactors.	N/A
Aquatic and Terrestrial Biota	Construction is expected to temporarily or permanently result in a SMALL disruption to biota on and near the CPNPP site. Some areas affected by construction may be revegetated and allowed to enter secondary succession stages during the operational phase of this project.	N/A
Degradation of Air and Water	Release of radioactive air emissions and water effluent resulted in a small adverse degradation of air and water quality.	N/A
Socioeconomic Changes	The proposed project results in both short-term and long-term changes in the population and nature and character of the local community, and the local socioeconomic structure. Some impacts on infrastructure and services are temporary, while other changes represent a permanent and irretrievable change in socioeconomic structure. Socioeconomic impacts would range from SMALL to MODERATE.	N/A

CTS-00650

SCR as described in Subsections 1.1.2 and 2.2.1.1. Approximately 123 ac of the 7950-ac site are expected to be disturbed for construction of Units 3 and 4 while 152 ac are expected to be disturbed for the cooling towers and approximately ~~200~~400 ac could be disturbed for construction of the Blowdown Treatment Facility (BDTF). A majority of this area was previously affected by prior construction activities for CPNPP Units 1 and 2. A large portion of the area where the cooling towers for the proposed project are planned to be constructed consists of undisturbed woodland that is expected to require clearing. Additional land disturbances are anticipated due to construction of some of the support buildings and refurbishment of existing and permanent roadways. A detailed description of land-use impacts is provided in Section 4.1. CTS-00459

A temporary expansion of the existing water pipeline ROW is expected during pipeline construction as it runs from the CPNPP property boundary northeast to its terminus in Lake Granbury. This expanded ROW was evaluated for potential impacts during the Phase I assessment. There are two prehistoric archaeological sites, 41HD14 and 41HD15, within the off-site APE and neither of the sites are eligible for listing in the NRHP based on their listing criteria.

One additional transmission line corridor (possibly two) is required for the proposed project. Transmission corridors are discussed in Sections 2.2, 4.1, 5.1, and 9.4. Operation of transmission lines has minimal to no effects on land use. Transmission line easements restrict placement of permanent structures in the easement or plantings that may interfere with line maintenance. Otherwise, no restrictions are placed on land use.

While the impacts of the construction of the transmission line corridors are not known at this time, the overall effect of CPNPP Units 3 and 4 construction on land use in the vicinity of the site is expected to be SMALL based on minimal impacts to local transportation systems, pipelines, rivers, and recreational areas.

10.4.2.2.2 Hydrological and Water Use

Sections 4.2 and 5.2 discuss hydrologic alterations for construction and operations. As discussed in these subsections, there are some costs associated with providing water for various needs during construction and operation. Water for construction of CPNPP Units 3 and 4 would be obtained from the Somervell County Water District (SCWD) via a pipeline from Wheeler Branch Reservoir and supplemented by water needed. Such construction activities include concrete batch plant operation, initial fills and flushes, crafts demand, and fire protection (FP) test/fill. Potable water for domestic and sanitary needs would be supplied from SCWD. Construction activities for the proposed project's facilities are expected to require an estimated average and maximum water amount of approximately 300 gpm – 1000 gpm, respectively (Section 4.2). Water would be withdrawn from SCR for dust suppression and general cleanup. Construction potable water consumptive use is estimated at 50 gpm (Section 4.2). Construction plans do not call for dewatering activities that could affect groundwater aquifer flow and quality. Environmental impacts to surface and groundwater would be SMALL and are managed under the provisions of applicable state regulatory programs.

During plant operation, cooling water would be taken from Lake Granbury, an impoundment of the Brazos River. Some of this water would be lost to evaporation and represents a permanent consumptive loss. Water loss primarily as a result of ~~consumption~~forced evaporation would result in a net consumption of approximately ~~56,592,000 gpd~~60,048,000 gpd for CPNPP Units 3 and 4 NP-17 CTS-00465