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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NOS. 50-445 AND 50-446
TRANSMITTAL OF YEAR 2012 RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

Dear Sir or Madam:

Enclosed is the Annual Radiological Environmental Operating Report for the Comanche Peak Radiological Environmental Monitoring Program. This report is submitted pursuant to Section 5.6.2 of the Comanche Peak Units 1 and 2 Technical Specifications (Appendix A to Operating License Nos. NPF-87 and NPF-89). The report covers the period from January 1, 2012 through December 31, 2012 and summarizes the results of measurements and analysis of data obtained from samples collected during this interval.

If there are any questions regarding this report, please contact Steve Dixon at (254) 897-5482 or Scott Bradley at (254) 897-5495.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: Fred W Madden
Fred W. Madden
Director, Oversight & Regulatory Affairs

IE25
NRR

Enclosure - Comanche Peak Annual Radiological Environmental Operating Report for 2012

c - A. T. Howell, Region IV
L. K. Gibson, NRR
Resident Inspectors, Comanche Peak

Enclosure 1

Comanche Peak Annual Radiological Environmental Operating Report for 2012

LUMINANT

COMANCHE PEAK NUCLEAR POWER PLANT

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT FOR 2012

JANUARY 1, 2012 through DECEMBER 31, 2012

LUMINANT REVIEW and APPROVAL

CREATED BY: Bonnie Vaughan 3/19/13
Bonnie Vaughan — Date
Radiation Protection Technician

REVIEWED BY: 3/19/13
Mike Macho — Date
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APPROVED BY: 3/20/13
Deborah O'Connor — Date
Health Physics Supervisor

Documented on RPI-710-2

Table of Contents

I. Introduction

Results of the Radiological Environmental Monitoring Program for the Comanche Peak Nuclear Power Plant (CPNPP) for the year 2012 are contained within this report. This report covers the period from January 1, 2012 through December 31, 2012 and summarizes the results of measurements and analysis of data obtained from environmental samples collected during this same timeframe.

A. Site and Station Description

CPNPP consists of two pressurized water reactor units, each designed to operate at a power level of about 1250 megawatts (electrical). The Station is located on Squaw Creek reservoir in Somervell and Hood counties, about forty miles southwest of Fort Worth, Texas. Unit 1 received a low power operating license February 8, 1990 and achieved initial criticality on April 3, 1990. A full power license for Unit 1 was issued on April 17, 1990 and commercial operation was declared on August 13, 1990. Unit 2 achieved initial criticality on March 24, 1993 and commercial operation was declared on August 3, 1993.

B. Objectives and Overviews of the CPNPP Radiological Environmental Monitoring Program

The United States Nuclear Regulatory Commission (USNRC) regulations require that nuclear power plants be designed, constructed, and operated to keep levels of radioactive material in effluents to unrestricted areas as low as reasonably achievable (ALARA). To assure that these criteria are met, each license authorizing reactor operation includes technical specifications governing the release of radioactive effluents.

In-plant monitoring is used to assure that these predetermined release limits are not exceeded. However, as a precaution against unexpected and undefined processes that might allow undue accumulation of radioactivity in any sector of the environment, a program for monitoring the plant environs is also included.

Sampling locations were selected on the basis of local ecology, meteorology, physical characteristics of the region, and demographic and land use features of the site vicinity. The radiological environmental monitoring program was designed on the basis of the USNRC Branch Technical Position "An Acceptable Radiological Environmental Monitoring Program" on radiological environmental monitoring issued by the Radiological Assessment Branch, Revision 1 (November 1979), the CPNPP Technical Specification "Technical Specifications for Comanche Peak Nuclear Power Plant Units 1 and 2" and the "CPSES Offsite Dose Calculation Manual" (ODCM).

In 2012, the Radiological Environmental Monitoring Program included the following:

- The measurement of ambient gamma radiation by Optically Stimulated Luminescent dosimetry;
- The determination of airborne gross beta, gamma emitters, and Iodine-131;
- The determination of tritium and gamma emitters in surface water;
- The determination of gross beta, tritium, Iodine-131, and gamma emitters in drinking water;
- The determination of tritium and gamma emitters in ground water;
- The determination of gamma emitters in sediment and fish;
- The determination of gamma emitters in food products and;
- The determination of gamma emitters and Iodine-131 in broadleaf vegetation.

The regulations governing the quantities of radioactivity in reactor effluents allow nuclear power plants to contribute, at most, only a small percentage increase above normal background radioactivity. Background levels at any one location are not constant but vary with time as they are influenced by external events such as cosmic ray bombardment; weapons test fallout, and seasonal variations. These levels also can vary spatially within relatively short distances reflecting variations in geological composition. To differentiate between background radiation levels and increases resulting from operation of CPNPP, the radiological surveys of the plant environs were divided into pre-operational and operational phases.

The pre-operational phase of the program provided a general characterization of the radiation levels and concentrations prevalent in these areas prior to plant operation along with an indication of the degree of natural variation to be expected. The operational phase of the program obtains data which, when considered along with the data obtained in the pre-operational phase, assists in the evaluation of the radiological impact of plant operation.

Pre-operational measurements were conducted at CPNPP from 1981 to 1989. These pre-operational measurements were performed to:

- Evaluate procedures, equipment, and techniques;
- Identify potentially important pathways to be monitored after plant operation;
- Measure background levels and the variations along potentially important pathways;
- Provide baseline data for statistical comparisons with future operational analytical results.

The operational Radiological Environmental Monitoring Program is conducted to:

- Verify that measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways;
- Verify the effectiveness of in-plant measures used for controlling the release of radioactive materials;
- Identify changes in the areas at and beyond the site boundary that may impact the principal pathways of exposure.

This report documents the twenty-second year of operational measurements and is submitted in accordance with the requirements of the CPSES Offsite Dose Calculation Manual, Part I, Administrative Control 6.9.1.3.

II. Program Descriptions and Results

A. Sample Locations

Within a radius of twenty miles of the CPNPP site there are seventy-three (73) sample locations included in the monitoring program for the year 2012. The number of sample points and the specific locations for the sample points were determined by considering locations where the highest off-site environmental concentrations have been predicted from plant effluent source terms, site hydrology, and site meteorological conditions. Other factors considered were applicable regulations, population distribution, and ease of access to sampling stations, availability of samples at desired locations, security and future program integrity. Additionally an annual land use census is conducted to identify changes in the areas surrounding the plant. If changes are identified that impact the principle pathways of exposure, appropriate changes to the radiological environmental monitoring program are implemented. A copy of the report "Comanche Peak Nuclear Power Plant Land Use Census 2012" is provided in Appendix A to this report.

Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2012 contains a brief outline of the current program. This table specifies the sample media type, the number of locations for each media type, the sector and distance identifier for each sample location, the sample frequency, the type of analysis required and the analytical frequency required.

Table 2 – Key to Environmental Sampling Locations provides a reference that links the sampling point designations used in procedures and forms to the appropriate physical sample location (sector and distance) and to the correct sample type. This cross-reference enhances the ability to review data and tie the data to the correct sample points and to ensure all samples are collected and analyzed as specified.

Currently there are no milk sample locations within ten miles of the CPNPP site and there are no milk sample locations within twenty miles that will participate in the environmental program. CPNPP already samples extra broadleaf locations as required due to no milk locations within the ten-mile radius therefore, no changes to the program are necessary. Milk sampling will be resumed if any future annual land use census determines a dairy has been established within the specified area.

Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2012

Media	Number of Locations	Identification by Sector and Distance (miles)	Sampling Frequency (a)	Analysis	Analytical Frequency (a)
Gamma Exposure	43	N-1.45; N-4.4; N-6.5; N-9.4; NNE-1.1; NNE-5.65; NE-1.7; NE-4.8; ENE-2.5; ENE-5.0; E-0.5; E-1.9; E-3.5; E-4.2; ESE-1.4; ESE-4.7; SE-1.3; SE-3.85; SE-4.6; SSE-1.3; SSE-4.4; SSE-4.5; S-1.5; S-4.2; SSW-1.1; SSW-4.4; SW-0.9; SW-4.8; SW-12.3; WSW-1.0; WSW-5.35; WSW-7.0; W-1.0; W-2.0; W-5.5; WNW-1.0; WNW-5.0; WNW-6.7; NW-1.0; NW-5.7; NW-9.9; NNW-1.35; NNW-4.6	Q, A	Optically Stimulated Luminescent Dosimetry	Q, A
Air Particulate Air Iodine	8	N-9.4; E-3.5; SSE-4.5; SW-12.3; NW-1.0; N-1.45; SW/WSW-0.95; S/SSW-1.2	W	Gross Beta Gamma Isotopic Filter Gamma Isotopic Charcoal	W QC W
Surface Water	4	N-19.3; ESE-1.4; N-1.5; NE-7.4	M(b)	Gamma Isotopic Tritium	M QC
Surface Water/Drinking	2	NNW-0.1; N-9.9	M(c)	Gross Beta Gamma Isotopic Iodine-131 Tritium	M M M QC
Ground Water	5	SSE-4.6; W-1.2; WSW-0.1; N-9.8; N-1.45	Q	Gamma Isotopic Tritium	Q Q
Sediment	4	N-9.9; NNE-1.0; NE-7.4; SE-5.3	SA	Gamma Isotopic	SA
Fish	2	NNE-8.0; ENE-2.0	SA	Gamma Isotopic	SA
Food Products	2	ENE-9.0, E-4.2	MH	Gamma Isotopic Iodine-131	MH MH
Broadleaf Vegetation	3	N-1.45; SW-1.0; SW-13.5	M	Gamma Isotopic	M

(a) Frequency codes are: W–Weekly; M-Monthly; Q-Quarterly; QC-Quarterly Composite; MH-Monthly at Harvest; SA-Semiannual; A-Annual

(b) Surface water samples from Squaw Creek are monthly composites of weekly grab samples. Surface water samples from Lake Granbury are monthly grab samples.

(c) Surface water drinking samples are a monthly composite of weekly grab samples.

Table 2
Key to Environmental Sampling Locations

SAMPLING POINT	LOCATION (SECTOR-MILE)	SAMPLE TYPE*	SAMPLING POINT	LOCATION (SECTOR-MILE)	SAMPLE TYPE*
A1	N-1.45	A	R29	SW-12.3	R
A2	N-9.4	A	R30	WSW-1.0	R
A3	E-3.5	A	R31	WSW-5.35	R
A4	SSE-4.5	A	R32	WSW-7.0	R
A5	S/SSW-1.2	A	R33	W-1.0	R
A6	SW-12.3	A	R34	W-2.0	R
A7	SW/WSW-0.95	A	R35	W-5.5	R
A8	NW-1.0	A	R36	WNW-1.0	R
R1	N-1.45	R	R37	WNW-5.0	R
R2	N-4.4	R	R38	WNW-6.7	R
R3	N-6.5	R	R39	NW-1.0	R
R4	N-9.4	R	R40	NW-5.7	R
R5	NNE-1.1	R	R41	NW-9.9	R
R6	NNE-5.65	R	R42	NNW-1.35	R
R7	NE-1.7	R	R43	NNW-4.6	R
R8	NE-4.8	R	SW1	N-1.5	SW
R9	ENE-2.5	R	SW2	N-9.9	SW/DW
R10	ENE-5.0	R	SW3	N-19.9	SW
R11	E-0.5	R	SW4	NE-7.4	SW
R12	E-1.9	R	SW5	ESE-1.4	SW
R13	E-3.5	R	SW6	NNW-0.1	SW/DW
R14	E-4.2	R	GW1	W-1.2	GW/DW
R15	ESE-1.4	R	GW2	WSW-0.1	GW/DW
R16	ESE-4.7	R	GW3	SSE-4.6	GW/DW
R17	SE-1.3	R	GW4	N-9.8	GW/DW
R18	SE-3.85	R	GW5	N-1.45	GW/DW
R19	SE-4.6	R	SS1	NNE-1.0	SS
R20	SSE-1.3	R	SS2	N-9.9	SS
R21	SSE-4.4	R	SS3	NE-7.4	SS
R22	SSE-4.5	R	SS4	SE-5.3	SS
R23	S-1.5	R	F1	ENE-2.0	F
R24	S-4.2	R	F2	NNE-8.0	F
R25	SSW-1.1	R	FP1	ENE-9.0	FP
R26	SSW-4.4	R	FP2	E-4.2	FP
R27	SW-0.9	R	BL1	N-1.45	BL
R28	SW-4.8	R	BL2	SW-1.0	BL
			BL3	SW-13.5	BL

Sample Type*

A – AIR SAMPLE
F – FISH
SS – SHORELINE SEDIMENT
SW – SURFACE WATER
DW – DRINKING WATER
GW – GROUND WATER
R – DIRECT RADIATION
FP – FOOD PRODUCT
BL – BROADLEAF VEGETATION

B. Direct Radiation

Starting in 2009 Optically Stimulated Luminescent dosimeters (OSLs) were used to determine the direct (ambient) radiation levels at the designated monitoring locations. The monitoring locations were chosen according to the criteria given in the USNRC Branch Technical Position on Radiation Monitoring (Revision 1, November 1979). The area around the station was divided into 16 radial sectors of 22-1/2 degrees each, corresponding to the cardinal points of the compass. OSLs were placed in each of these sectors. The Optically Stimulated Luminescent dosimeters were placed in two rings around the station. An inner ring was located as close as possible to the site boundary and an outer ring was located at a distance of 4 to 6 miles from the station. Eleven additional OSLs were located at points of special interest, including two control locations. For routine direct radiation measurements, two sets of the Optically Stimulated Luminescent dosimeters (OSLs) were used at each of the 43 monitoring locations. One set of OSLs was exchanged on a quarterly basis and a second set of OSLs was exchanged on a yearly basis. Additional sets of in-transit OSLs were used as control OSLs for the quarterly and annual OSLs.

From years 2001 to 2008 thermoluminescent dosimeters TLDs were processed on-site by CPNPP National Voluntary Laboratory Accreditation Program (NVLAP) certified dosimetry personnel. Individual dosimeters were calibrated by exposure to an accurately known radiation field from a certified Cs-137 source. The year 2001 was the first year that CPNPP used the Panasonic TLD System to supply all the required direct radiation (ambient) monitoring.

In 2009 CPNPP contracted the services of Landauer Inc. to provide and process Optically Stimulated Luminescent dosimeters (OSLs.) The OSLs are used to determine the direct (ambient) radiation levels in designated monitoring locations. Landauer Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP.)

D. C. Oakley's report "National Radiation Exposure in the United States", published in 1972, calculated a background radiation dose rate equivalent of 0.22 mr/day for the area surrounding Fort Worth, Texas. This calculated value varies widely with changes in location but represents an appropriate reference value to compare with actual measured OSL doses.

Using data from the pre-operational program for the two years prior to the startup of Unit 1, the quarterly TLDs averaged a calculated dose rate of 0.14 mr/day while the yearly TLDs averaged a calculated dose rate of 0.16 mr/day. The range of measured values from this same two-year period varied from a minimum of 0.11 mr/day to a maximum of 0.22 mr/day.

Table 3 – 2012 Environmental Direct Radiation

Table 3 – 2012 Environmental Direct Radiation Results contains the measured dose (mr) for each quarterly OSL from each of the 43 monitoring locations. The corresponding quarterly calculated dose rate (mr/day) values are listed as well. The statistical average doses (mr) and dose rate (mr/day) values for each set of quarterly OSLs is also displayed. Additionally, the table includes the total dose (mr) of all four quarters for each specific location. The table also includes the measured dose (mr) for each annual OSL from each of the 43 monitoring locations. The corresponding annual calculated dose rate (mr/day) values are listed as well. The statistical annual average dose (mr) for the entire set of annual OSLs is reported along with the average dose rate (mr/day) for the entire set of annual OSLs.

For the year 2012, the measured dose rates of all the quarterly OSLs ranged from a minimum of **0.158 mr/day** to a maximum of **0.378 mr/day** with an average dose rate of **0.297 mr/day**. This resulted in an average quarterly dose of **24.5 mr** and a total annual dose of **98 mr** for all of the forty three monitoring stations.

The measured dose rates of all the annual OSL's ranged from a minimum of **0.130 mr/day** to a maximum of **0.258 mr/day** with an average dose rate of **0.175 mr/day**. This resulted in an average quarterly dose of **16.25 mr** and an average annual dose of **65 mr** for all of the forty three monitoring stations.

Comparing the pre-operational data and operational data collected through the year 2012 did not produce any anomalies. The direct radiation dose data for 2012 was consistent with previous years of data during both the pre-operational program and the previous years of the operational program except as noted on Table 14. . Table 14 – OSL Trend Quarterly Average contains the average quarterly OSL/TLD for the five most current years from each of the 43 monitoring locations. The implementation of the Landauer OSL system, the algorithms and type of holders for the OSL's used to process the data from the OSL badge (implemented in 2009) accounts for the lower values.

No abnormal quarterly results were obtained by either CPNPP or by the State of Texas, Bureau of Radiation Control.

During the year 2012, there were no exceptions to the Direct Radiation Program.

Table 3 - 2012 Environmental Direct Radiation Results (years)

(Units of mr dose and mr/day dose rate)

Location		1ST QTR Total	Average Mr/day	2ND QTR Total	Average mr/day	3RD QTR Total	Average mr/day	4TH QTR Total	Average mr/day	AVG QTR Total	Annual OSL Total	Annual OSL Average mr/day
N-1.45	R1	27	0.300	22	0.247	26	0.286	28	0.297	25.75	65	0.177
N-4.4	R2	27	0.300	26	0.292	28	0.308	22	0.226	25.75	72	0.196
N-6.5	R3	24	0.267	24	0.270	28	0.308	23	0.247	24.75	64	0.174
N-9.4	R4	25	0.278	26	0.292	28	0.308	24	0.257	25.75	78	0.212
NNE-1.1	R5	22	0.244	19	0.213	23	0.253	17	0.179	20.25	48	0.130
NNE-6.65	R6	31	0.344	22	0.247	28	0.308	26	0.273	26.75	76	0.207
NE-1.7	R7	21	0.233	20	0.225	22	0.242	19	0.199	20.50	54	0.146
NE-4.8	R8	26	0.289	21	0.236	27	0.297	27	0.286	25.25	80	0.217
ENE-2.5	R9	31	0.344	23	0.258	29	0.319	25	0.259	27.00	81	0.220
ENE-5.0	R10	29	0.322	33	0.371	32	0.352	24	0.256	29.50	95	0.258
E-0.5	R11	29	0.322	23	0.258	28	0.308	26	0.269	26.50	71	0.193
E-1.9	R12	25	0.278	22	0.247	22	0.242	22	0.233	22.75	66	0.179
E-3.5	R13	27	0.300	23	0.258	27	0.297	23	0.244	25.00	67	0.182
E-4.2	R14	28	0.311	25	0.281	29	0.319	24	0.257	26.50	80	0.217
ESE-1.4	R15	27	0.300	24	0.270	25	0.275	20	0.211	24.00	71	0.193
ESE-4.7	R16	26	0.289	25	0.281	27	0.297	24	0.252	25.50	74	0.201
SE-1.3	R17	26	0.289	25	0.281	30	0.330	22	0.237	25.75	73	0.198
SE-3.85	R18	24	0.267	20	0.225	25	0.275	18	0.194	21.75	69	0.188
SE-4.6	R19	26	0.289	20	0.222	26	0.286	23	0.243	23.75	66	0.179
SSE-1.3	R20	23	0.256	20	0.225	28	0.308	24	0.252	23.75	71	0.193
SSE-4.4	R21	25	0.278	22	0.247	29	0.319	20	0.215	24.00	72	0.196
SSE-4.5	R22	34	0.378	25	0.281	28	0.308	21	0.216	27.00	66	0.179
S-1.5	R23	22	0.244	21	0.236	23	0.253	18	0.186	21.00	66	0.179
S-4.2	R24	25	0.278	24	0.267	23	0.253	24	0.254	24.00	77	0.209
SSW-1.1	R25	29	0.322	24	0.270	25	0.275	23	0.244	25.25	69	0.188
SSW-4.8	R26	26	0.289	23	0.258	28	0.308	26	0.270	25.75	70	0.190
SW-0.9	R27	25	0.278	24	0.270	25	0.275	24	0.251	24.50	74	0.201
SW-4.8	R28	25	0.278	22	0.247	25	0.275	23	0.244	23.75	66	0.179
SW-12.3 (C)	R29	29	0.322	24	0.270	23	0.253	25	0.264	25.25	69	0.188
WSW-1.0	R30	26	0.289	25	0.281	25	0.275	27	0.280	25.75	71	0.193
WSW-5.35	R31	27	0.300	24	0.270	25	0.275	24	0.256	25.00	66	0.179
WSW-7.0 (C)	R32	28	0.311	24	0.270	29	0.319	24	0.255	26.25	70	0.190
W-1.0	R33	23	0.256	22	0.244	27	0.297	21	0.222	23.25	64	0.174
W-2.0	R34	27	0.300	18	0.202	22	0.242	22	0.227	22.25	61	0.166
W-5.5	R35	25	0.278	21	0.236	23	0.253	24	0.253	23.25	62	0.168
WNW-1.0	R36	27	0.300	26	0.292	30	0.330	21	0.226	26.00	72	0.196
WNW-5.0	R37	28	0.311	23	0.258	26	0.286	24	0.253	25.25	79	0.215
WNW-6.7	R38	26	0.289	22	0.247	27	0.297	23	0.242	24.50	68	0.185
NW-1.0	R39	24	0.267	25	0.281	24	0.264	20	0.214	23.25	70	0.190
NW-5.7	R40	21	0.233	25	0.229	27	0.342	22	0.235	23.75	71	0.193
NW-9.9	R41	25	0.278	21	0.236	25	0.275	19	0.200	22.50	67	0.182
NNW-1.35	R42	24	0.267	18	0.202	21	0.231	15	0.158	19.50	51	0.138
NNW-4.6	R43	27	0.300	28	0.315	27	0.297	21	0.224	25.75	78	0.212
AVERAGES		**26.1**	**0.290**	**23.1**	**0.258**	**26.2**	**0.289**	**22.60**	**0.239**	**24.49**	**69.76**	**0.190**

Table 14 – OSL Trend Quarterly Average (Five most current years)

Location	2008	2009	2010	2011	2012	% Diff 2012 to 2011	2008-2012 mR Avg	% Diff 2012 to Average
R1	19.10	20.3	21.8	23	25.75	11%	21.97	16%
R2	30.95	34.3	22.8	21.75	25.75	17%	27.09	-5%
R3	21.15	15.3	22.3	20.25	24.75	20%	20.73	18%
R4	22.40	24.3	21.5	21.5	25.75	18%	23.08	11%
R5	4.15	10.3	16.8	16.75	20.25	19%	13.63	39%
R6	22.35	18.3	22.8	22.5	26.75	17%	22.52	17%
R7	4.35	2.25	18.8	16.75	20.5	20%	12.52	48%
R8	20.20	23.3	24.5	23.75	25.25	6%	23.39	8%
R9	30.25	34.3	23.5	22.75	27	17%	27.55	-2%
R10	36.75	44.3	24.3	25.75	29.5	14%	32.10	-8%
R11	22.30	28.3	23.3	20.75	24.5	17%	23.81	3%
R12	14.70	19.3	19.8	20.5	22.75	10%	19.39	16%
R13	37.60	34.3	22	20.5	25	20%	27.87	-11%
R14	31.25	32.3	24.5	23.25	26.5	13%	27.55	-4%
R15	20.95	14.3	22	21.25	24	12%	20.49	16%
R16	22.20	31.3	23	23.25	25.5	9%	25.04	2%
R17	25.50	26.3	23.3	23.5	25.75	9%	24.85	4%
R18	19.60	23.3	20.8	21.5	21.75	1%	21.37	2%
R19	10.50	26.3	21.8	21.25	23.75	11%	20.70	14%
R20	20.45	23.3	22.5	21	23.75	12%	22.19	7%
R21	12.75	28.3	23	20.75	24	15%	21.75	10%
R22	21.60	24.3	23.3	20.75	27	26%	23.37	14%
R23	16.40	23.3	21.3	19	21	10%	20.18	4%
R24	21.35	21.3	20.3	21	24	13%	21.57	11%
R25	24.00	17.3	20.8	21.5	25.25	16%	21.75	15%
R26	17.90	27.3	22.3	21.5	25.75	18%	22.93	12%
R27	17.00	16.3	20	21.5	24.5	13%	19.85	21%
R28	18.40	23.3	22.3	21	23.75	12%	21.73	9%
R29	21.50	16.3	22.5	21.25	25.25	17%	21.35	17%
R30	24.45	26.3	21.8	20.25	25.75	24%	23.69	8%
R31	18.05	15.3	21.8	22	25	13%	20.41	20%
R32	15.00	23.3	23.5	21.25	26.25	21%	21.85	18%
R33	14.45	11.3	20	19.25	23.25	19%	17.64	27%
R34	12.60	8.25	21.5	17.75	22.25	23%	16.47	30%
R35	19.35	18.3	20	18.5	23.25	23%	19.87	16%
R36	24.35	28.3	22.8	24.25	26	7%	25.12	3%
R37	24.20	26.3	23.5	23	25.25	9%	24.44	3%
R38	21.60	21.3	22.5	21.5	24.5	13%	22.27	10%
R39	18.75	25.3	22.8	20.5	23.25	13%	22.10	5%
R40	25.25	30.3	23	22.25	23.75	7%	24.90	-5%
R41	19.25	11.3	20.8	19	22.5	17%	18.55	19%
R42	0.00	0.25	18.3	16.5	19.5	17%	10.90	57%
R43	27.95	32.3	24.3	21	25.75	20%	26.24	-2%

1) R5, R7, R33, R34, R42 - Readings low during previous years. The OSL/TLD elements could have been wet/ damaged.

2) R22 indicated a higher 1st quarter 2012 OSL reading which is reflected in a higher average response. The R22 annual OSL reading was consistent with all other monitoring locations.

Legend:

< 50% Lower
> 25% Higher

C. Airborne Program

Air particulate and air iodine samples were collected each week from the eight monitoring locations described in Table 1 – Comanche Peak Nuclear Power Plant Radiological Monitoring Program for 2012. Each air particulate sample was collected by drawing air through a 47 millimeter-diameter glass-fiber filter. Air iodine was collected by drawing air through a TEDA impregnated charcoal cartridge which was connected in series behind the air particulate filter. Shipped to an independent laboratory, air particulate filters were analyzed weekly for gross beta activity and were composited quarterly for gamma spectrometry analysis. Charcoal cartridges were analyzed weekly for Iodine-131.

For the year 2012, a total of 415 air particulate filters were collected and analyzed for gross beta activity. The reported gross beta activity ranged from a minimum value of **1.09E-02 pCi/m^3** to a maximum value of **1.01E-01 pCi/m^3**. Table 4 – 2012 Environmental Airborne Particulate Gross Beta Results contains the reported values of all samples. There were no anomalies noted in the data reported for 2012 when compared to pre-operational and previous operational data. Graph 1 – 2012 Environmental Air Sample Gross Beta Results – Maximum and Minimum trends the weekly high and low gross beta values to show the seasonal variation of the results as well as providing indication of consistency between the individual monitoring locations.

A total of 416 charcoal cartridges were analyzed for airborne Iodine-131. Table 5 – 2011 Environmental Air Sample Iodine-131 Results contains the reported values of each Iodine-131 analysis, all of which are less than the required lower limit of detection (LLD).

All air particulate filters were collected and composited quarterly and then analyzed by gamma spectrometry. The gamma isotopic data is presented in Table 6 – 2012 Environmental Air Particulate Composite Gamma Isotopic Results. Typical of pre-operational and previous operational data results, the only radioactive nuclide identified in all the samples was cosmogenic Beryllium-7, a naturally occurring isotope. Several Air Particulate Composite results were positive for Potassium-40. However, results indicate both were below the reporting levels,

A review of all the State of Texas air sample data indicated no anomalies. However, on 6/19/12 State 1 Sampler had no particulate filter and no Beta analysis was determined for that period. CR 2012-006195 was written to document this event.

During the year 2012, there was one exception to the Airborne Program. A deficiency occurred on 7/24/12. Air Sampling Station A-7 was missing a particulate filter; therefore, no Beta analysis was available for the period 7/17/12 through 7/24/12. CR 2012-007374 was written to document this deficiency.

Table 4 -- 2012 Environmental Airborne Particulate Gross Beta Results
(Units of pCi/m3)

	A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2
	Location							
	NW-1.0	SW/WSW-0.95	S/SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4
Date				Control				Control
01-03-12	6.55E-02	8.53E-02	5.66E-02	6.04E-02	7.76E-02	6.93E-02	6.88E-02	7.72E-02
01-10-12	6.59E-02	8.62E-02	5.70E-02	7.41E-02	8.53E-02	7.00E-02	6.92E-02	7.77E-02
01-17-12	5.23E-02	8.25E-02	4.54E-02	5.16E-02	6.19E-02	4.12E-02	5.91E-02	4.94E-02
01-24-12	6.34E-02	1.10E-01	6.83E-02	8.28E-02	8.62E-02	6.46E-02	8.09E-02	8.58E-02
01-31-12	4.58E-02	6.79E-02	3.65E-02	4.03E-02	5.97E-02	3.02E-02	1.37E-01	5.47E-02
02-07-12	4.67E-02	7.37E-02	3.92E-02	5.61E-02	5.32E-02	3.62E-02	1.53E-02	5.35E-02
02-14-12	5.19E-02	8.47E-02	3.82E-02	5.52E-02	7.07E-02	4.30E-02	5.42E-02	5.02E-02
02-21-12	6.14E-02	3.26E-02	3.81E-02	3.60E-02	4.14E-02	7.25E-02	7.01E-02	5.72E-02
02-28-12	4.31E-02	3.55E-02	3.27E-02	3.54E-02	4.08E-02	3.21E-02	3.40E-02	3.02E-02
03-06-12	4.89E-02	4.67E-02	3.01E-02	4.59E-02	3.68E-02	4.42E-02	3.97E-02	4.05E-02
03-13-12	4.01E-02	3.72E-02	3.42E-02	4.01E-02	4.20E-02	2.11E-02	3.83E-02	3.81E-02
03-20-12	3.08E-02	2.62E-02	2.93E-02	3.17E-02	3.46E-02	2.14E-02	2.38E-02	3.11E-02
03-27-12	4.23E-02	3.92E-02	3.82E-02	3.36E-02	4.98E-02	3.94E-02	4.29E-02	4.48E-02
04-03-12	6.33E-02	4.72E-02	3.97E-02	4.89E-02	5.32E-02	4.86E-02	4.44E-02	5.14E-02
04-10-12	4.55E-02	5.10E-02	3.81E-02	4.50E-02	5.00E-02	3.57E-02	4.27E-02	4.83E-02
04-17-12	5.53E-02	4.59E-02	4.17E-02	5.15E-02	5.69E-02	4.45E-02	4.91E-02	6.19E-02
04-24-12	4.00E-02	5.14E-02	3.55E-02	4.11E-02	5.07E-02	3.68E-02	4.72E-02	5.47E-02
05-01-12	5.74E-02	6.71E-02	4.70E-02	5.61E-02	5.54E-02	5.08E-02	5.47E-02	6.09E-02
05-08-12	4.08E-02	4.85E-02	2.48E-02	4.19E-02	4.74E-02	4.02E-02	4.77E-02	4.23E-02
05-15-12	5.01E-02	5.75E-02	4.32E-02	4.67E-02	5.79E-02	4.10E-02	5.52E-02	5.63E-02
05-22-12	7.26E-02	8.22E-02	6.12E-02	8.47E-02	7.77E-02	5.97E-02	8.70E-02	7.69E-02
05-29-12	4.99E-02	6.26E-02	4.75E-02	5.74E-02	5.60E-02	4.01E-02	6.18E-02	5.47E-02
06-05-12	4.68E-02	4.83E-02	4.05E-02	4.50E-02	4.41E-02	3.99E-02	5.82E-02	4.63E-02
06-12-12	5.04E-02	5.60E-02	3.77E-02	4.85E-02	5.43E-02	4.51E-02	5.14E-02	5.53E-02
06-19-12	4.86E-02	4.30E-02	2.79E-02	3.93E-02	4.49E-02	3.78E-02	3.59E-02	4.12E-02
06-26-12	7.87E-02	4.94E-02	4.88E-02	6.28E-02	6.13E-02	4.49E-02	5.82E-02	6.21E-02
07-03-12	1.13E-01	5.56E-02	5.10E-02	8.53E-02	1.64E-02	7.31E-02	7.31E-02	7.53E-02
07-10-12	6.40E-02	3.40E-02	3.66E-02	5.34E-02	8.96E-02	4.01E-02	5.02E-02	4.11E-02
07-17-12	7.27E-02	3.76E-02	3.74E-02	4.96E-02	7.86E-02	4.33E-02	5.14E-02	4.33E-02
07-24-12	6.35E-02	*CR 2012-007374	3.69E-02	5.08E-02	4.20E-02	4.17E-02	5.03E-02	4.92E-02
07-31-12	8.62E-02	5.15E-02	3.72E-02	6.68E-02	6.09E-02	6.88E-02	5.77E-02	5.50E-02
08-07-12	8.25E-02	3.91E-02	3.66E-02	4.80E-02	5.40E-02	5.37E-02	5.16E-02	5.35E-02
08-14-12	9.10E-02	4.67E-02	5.87E-02	7.00E-02	7.07E-02	6.41E-02	7.70E-02	6.05E-02
08-21-12	6.10E-02	4.31E-02	3.97E-02	4.79E-02	5.87E-02	4.82E-02	6.30E-02	4.82E-02
08-28-12	6.69E-02	5.48E-02	4.28E-02	5.78E-02	6.38E-02	5.58E-02	6.62E-02	6.24E-02
09-04-12	6.46E-02	4.75E-02	3.34E-02	5.13E-02	6.15E-02	5.28E-02	6.10E-02	5.08E-02
09-11-12	6.09E-02	5.17E-02	2.87E-02	6.47E-02	5.33E-02	6.69E-02	5.10E-02	5.76E-02
09-18-12	5.53E-02	4.52E-02	3.48E-02	4.74E-02	4.55E-02	5.30E-02	7.66E-02	5.90E-02
09-25-12	8.61E-02	7.85E-02	5.26E-02	7.61E-02	8.01E-02	7.68E-02	8.43E-02	7.99E-02
10-02-12	7.27E-02	6.44E-02	4.10E-02	6.97E-02	6.86E-02	6.62E-02	7.66E-02	7.53E-02
10-09-12	1.01E-01	1.08E-01	7.20E-02	9.32E-02	9.11E-02	8.96E-02	1.11E-01	9.71E-02
10-16-12	9.88E-02	9.90E-02	7.72E-02	9.90E-02	1.11E-01	1.31E-01	1.03E-01	9.89E-02
10-23-12	7.91E-02	5.72E-02	4.57E-02	5.80E-02	6.09E-02	5.58E-02	6.51E-02	6.83E-02
10-30-12	6.64E-02	4.74E-02	3.30E-02	4.59E-02	5.78E-02	4.59E-02	6.71E-02	5.89E-02
11-06-12	1.09E-01	7.24E-02	6.95E-02	8.81E-02	9.38E-02	8.28E-02	9.71E-02	9.16E-02
11-13-12	8.28E-02	5.95E-02	4.47E-02	5.80E-02	6.24E-02	5.75E-02	7.75E-02	6.36E-02
11-20-12	1.27E-01	8.77E-02	6.08E-02	8.16E-02	1.09E-01	1.11E-01	1.08E-01	1.11E-01
11-27-12	8.57E-02	5.42E-02	4.70E-02	6.41E-02	7.89E-02	6.68E-02	7.92E-02	6.59E-02
12-04-12	8.79E-02	6.34E-02	5.88E-02	7.74E-02	8.90E-02	7.72E-02	9.59E-02	8.60E-02
12-11-12	7.93E-02	9.78E-02	7.71E-02	8.56E-02	8.29E-02	7.03E-02	8.69E-02	7.88E-02
12-18-12	4.75E-02	5.43E-02	5.92E-02	4.77E-02	6.71E-02	6.62E-02	6.31E-02	6.37E-02
12-25-12	6.97E-02	8.78E-02	9.13E-02	8.19E-02	7.61E-02	9.83E-02	1.21E-01	8.63E-02
Required LLD	1.00E-02							

Graph 1 -- 2012 Environmental Air Sample Gross Beta Results - Maximum and Minumum

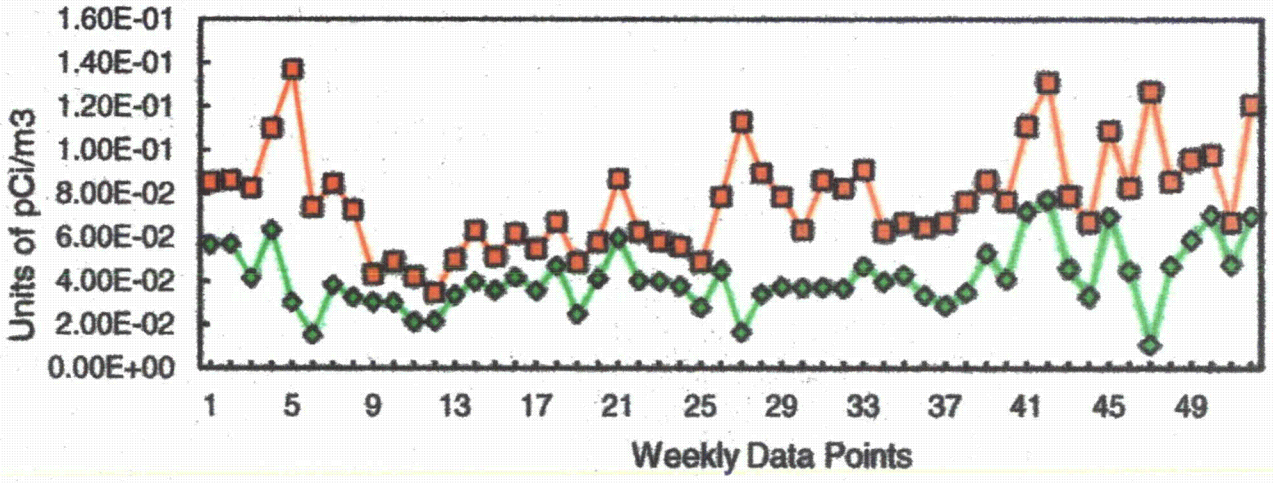


Table 5 -- 2012 Environmental Air Sample Iodine-131 Results
(Units of pCi/m3)

	A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2
	NW-1.6	SW/WSW-0.98	S/SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4
Date				Control				Control
01-03-12	<4.43E-02	<2.30E-02	<2.66E-02	<2.28E-02	<1.40E-02	<3.60E-02	<1.72E-02	<2.01E-02
01-10-12	<2.20E-02	<3.15E-02	<1.68E-02	<2.03E-02	<2.99E-02	<2.73E-02	<2.33E-02	<2.25E-02
01-17-02	<2.69E-02	<4.55E-02	<1.88E-02	<2.46E-02	<2.96E-02	<4.18E-02	<2.89E-02	<2.27E-02
01-24-12	<4.65E-02	<2.15E-02	<4.72E-02	<3.17E-02	<2.46E-02	<2.41E-02	<2.97E-02	<3.65E-02
01-31-12	<2.34E-02	<2.91E-02	<3.05E-02	<2.44E-02	<4.36E-02	<4.99E-02	<4.89E-02	<2.84E-02
02-07-12	<2.65E-02	<1.89E-02	<1.36E-02	<4.41E-02	<2.15E-02	<2.76E-02	<2.95E-02	<2.08E-02
02-14-02	<1.91E-02	<3.77E-02	<2.05E-02	<2.26E-02	<3.88E-02	<2.02E-02	<2.11E-02	<3.57E-02
02-21-12	<2.73E-02	<2.52E-02	<2.20E-02	<2.79E-02	<2.49E-02	<2.70E-02	<2.30E-02	<1.59E-02
02-28-12	<5.22E-03	<5.11E-03	<9.40E-03	<6.58E-03	<6.12E-03	<4.97E-03	<5.15E-03	<5.92E-03
03-06-12	<3.39E-02	<2.15E-02	<1.74E-02	<2.26E-02	<1.65E-02	<1.39E-02	<1.34E-02	<2.14E-02
03-13-12	<2.06E-02	<2.30E-02	<2.10E-02	<4.25E-02	<2.21E-02	<3.01E-02	<2.78E-02	<2.73E-02
03-20-12	<2.41E-02	<3.84E-02	<3.20E-02	<2.43E-02	<3.10E-02	<2.39E-02	<3.24E-02	<3.34E-02
03-27-12	<2.55E-02	<4.52E-02	<3.58E-02	<5.52E-02	<5.39E-02	<6.43E-02	<4.01E-02	<5.32E-02
04-03-12	<1.62E-02	<1.72E-02	<2.14E-02	<2.89E-02	<2.22E-02	<1.47E-02	<2.04E-02	<2.12E-02
04-10-12	<1.49E-02	<1.95E-02	<3.11E-02	<1.60E-02	<2.71E-02	<2.43E-02	<1.80E-02	<2.04E-02
04-17-12	<2.14E-02	<2.54E-02	<2.55E-02	<1.92E-02	<3.68E-02	<1.99E-02	<2.26E-02	<2.61E-02
04-24-12	<2.31E-02	<2.42E-02	<3.49E-02	<2.41E-02	<1.90E-02	<3.02E-02	<2.36E-02	<2.01E-02
05-01-12	<3.19E-02	<2.75E-02	<2.25E-02	<2.99E-02	<2.45E-02	<2.44E-02	<2.85E-02	<2.11E-02
05-08-12	<4.71E-02	<2.37E-02	<2.26E-02	<2.68E-02	<2.56E-02	<3.08E-02	<3.83E-02	<3.03E-02
05-15-12	<3.07E-02	<4.30E-02	<2.61E-02	<2.53E-02	<2.29E-02	<4.16E-02	<3.07E-02	<2.49E-02
05-22-12	<3.04E-02	<3.07E-02	<1.89E-02	<1.97E-02	<2.48E-02	<3.00E-02	<3.74E-02	<1.89E-02
05-29-12	<3.24E-02	<2.64E-02	<2.97E-02	<1.68E-02	<2.52E-02	<3.49E-02	<4.36E-02	<1.72E-02
06-05-12	<3.84E-02	<4.51E-02	<6.55E-02	<3.30E-02	<3.02E-02	<3.40E-02	<2.88E-02	<6.72E-02
06-12-12	<4.22E-02	<2.32E-02	<3.77E-02	<1.93E-02	<1.68E-02	<2.43E-02	<2.02E-02	<2.71E-02
06-19-12	<4.58E-02	<2.02E-02	<2.20E-02	<2.71E-02	<3.95E-02	<5.11E-02	<2.25E-02	<2.29E-02
06-26-12	<1.70E-02	<2.67E-02	<1.72E-02	<2.32E-02	<2.04E-02	<1.91E-02	<1.71E-02	<1.70E-02
07-03-12	<2.28E-02	<1.88E-02	<3.70E-02	<3.32E-02	<3.61E-02	<2.93E-02	<5.30E-02	<2.95E-02
07-10-12	<2.81E-02	<3.78E-02	<1.34E_02	<6.76E-02	<5.29E-02	<1.92E-02	<2.97E-02	<3.49E-02
07-17-12	<3.61E-02	<4.93E-02	<3.44E-02	<2.44E-02	<3.55E-02	<4.29E-02	<3.43E-02	<4.58E-02
07-24-12	<2.27E-02	<2.50E-02	<2.66E-02	<1.68E-02	<3.00E-02	<2.94E-02	<2.27E-02	<3.24E-02
07-31-12	<2.45E-02	<1.50E-02	<1.98E-02	<2.46E-02	<2.27E-02	<1.84E-02	<2.02E-02	<1.48E-02
08-07-12	<3.82E-02	<3.13E-02	<3.31E-02	<2.67E-02	<5.84E-02	<3.74E-02	<3.57E-02	<3.87E-02
08-14-12	<4.01E-02	<4.51E-02	<6.52E-02	<5.84E-02	<4.45E-02	<3.38E-02	<5.25E-02	<4.50E-02
08-21-12	<2.64E-02	<6.35E-02	<4.01E-02	<3.05E-02	<3.91E-02	<2.29E-02	<3.30E-02	<4.22E-02
08-28-12	<3.52E-02	<4.25E-02	<2.36E-02	<2.36E-02	<4.44E-02	<2.78E-02	<1.78E-02	<1.69E-02
09-04-12	<1.02E-02	<1.22E-02	<2.02E-02	<1.04E-02	<8.12E-03	<9.26E-03	<1.19E-02	<9.48E-03
09-11-12	<1.88E-02	<2.87E-02	<2.81E-02	<2.73E-02	<3.79E-02	<2.17E-02	<2.76E-02	<3.42E-02
09-18-12	<4.56E-02	<2.24E-02	<2.65E-02	<2.32E-02	<2.99E-02	<4.63E-02	<1.94E-02	<3.57E-02
09-25-12	<2.16E-02	<1.78E-02	<2.85E-02	<2.57E-02	<3.10E-02	<1.96E-02	<2.41E-02	<2.12E-02
10-02-12	<1.88E-02	<1.75E-02	<4.38E-02	<2.53E-02	<1.62E-02	<1.72E-02	<2.19E-02	<1.97E-02
10-09-12	<8.84E-03	<1.01E-02	<1.73E-02	<9.18E-03	<1.15E-02	<9.51E-03	<2.01E-02	<8.53E-03
10-16-12	<1.84E-02	<1.79E-02	<1.44E-02	<1.25E-02	<1.34E-02	<1.71E-02	<1.27E-02	<2.25E-02
10-23-12	<2.43E-02	<2.82E-02	<2.07E-02	<2.68E-02	<2.54E-02	<2.63E-02	<1.87E-02	<2.28E-02
10-30-12	<3.44E-02	<3.08E-02	<2.76E-02	<2.23E-02	<2.32E-02	<4.94E-02	<1.97E-02	<2.43E-02
11-06-12	<3.28E-02	<2.86E-02	<4.62E-02	<2.38E-02	<2.25E-02	<2.39E-02	<3.02E-02	<5.22E-02
11-13-12	<3.22E-02	<2.90E-02	<2.06e-02	<2.47e-02	<3.12e-02	<2.16e-02	<2.45e-02	<2.66e-02
11-20-12	<4.82E-02	<4.38E-02	<2.25E-02	<2.08E-02	<2.97E-02	<5.15E-02	<2.76E-02	<2.42E-02
11-27-12	<3.22E-02	<2.21E-02	<3.55E-02	<2.58E-02	<2.49E-02	<2.27E-02	<2.90E-02	<2.94E-02
12-04-12	<2.59E-02	<2.44E-02	<2.13E-02	<3.16E-02	<2.85E-02	<3.36E-02	<3.04E-02	<2.45E-02
12-11-12	<2.85E-02	<3.45E-02	<2.02E-02	<2.24E-02	<2.44E-02	<4.88E-02	<2.78E-02	<2.31E-02
12-18-25	<2.38E-02	<2.78E-02	<2.44E-02	<2.57E-02	<3.83E-02	<2.71E-02	<2.89E-02	<2.32E-02
12-25-12	<1.24E-02	<2.84E-02	<1.80E-02	<2.24E-02	<2.07E-02	<1.62E-02	<1.75E-02	<3.15E-02
Required LLD 7.00E-02								

Table 6 -- 2012 Environmental Air Particulate Composite Gamma Isotopic Results
(Units of pCi/m3)

		A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2	
	Location	NW-1.0	SW/WSW-0.95	SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4	
	Nuclides				Control				Control	
	Ba-140	<1.49E-01	<9.94E-02	<1.23E-01	<1.63E-01	<1.85E-01	<1.49E-01	<1.20E-01	<1.74E-01	
	Be-7	1.64E-01	2.04E-01	1.51E-01	1.81E-01	2.03E-01	1.19E-01	2.26E-01	2.03E-01	
	Co-57	<4.15E-04	<3.39E-04	<3.41E-04	<3.30E-04	<3.26E-04	<3.57E-04	<4.28E-04	<3.88E-04	
	Co-58	<1.57E-03	<1.12E-03	<1.39E-03	<1.10E-03	<1.39E-03	<9.89E-04	<1.16E-03	<1.30E-03	
Composite Dates	Co-60	<8.38E-04	<4.78E-04	<7.27E-04	<5.72E-04	<6.56E-04	<5.63E-04	<9.38E-04	<4.07E-04	
1ST QTR	Cs-134	<7.86E-04	<4.15E-04	<6.80E-04	<5.81E-04	<9.76E-04	<5.74E-04	<6.90E-04	<7.52E-04	Required LLD 5.0E-2
1/1/12 – 3/31/12	Cs-137	<6.14E-04	<5.00E-04	<6.01E-04	<6.89E-04	<6.29E-04	<6.30E-04	<6.16E-04	<5.75E-04	Required LLD 6.0E-2
	Fe-59	<5.35E-03	<3.78E-03	<4.66E-03	<5.33E-03	<5.46E-03	<4.43E-03	<7.20E-03	<5.89E-03	
	K-40	<1.17E-02	7.18E-03	1.34E-02	8.44E-03	1.27E-02	8.83E-03	5.98E-03	1.12E-02	
	La-140	<1.49E-01	<9.94E-02	<1.23E-01	<1.63E-01	<1.85E-01	<1.49E-01	<1.20E-01	<1.74E-01	
	Mn-54	<7.34E-04	<5.46E-04	<6.98E-04	<6.88E-04	<7.10E-04	<5.51E-04	<6.77E-04	<7.47E-04	
	Nb-95	<1.75E-03	<1.26E-03	<1.76E-03	<1.08E-03	<1.46E-03	<1.26E-03	<1.69E-03	<1.37E-03	
	Zn-65	<1.96E-03	<1.23E-03	<1.87E-03	<1.20E-03	<2.05E-03	<1.72E-03	<1.56E-03	<1.32E-03	
	Zr-95	<3.05E-03	<2.08E-03	<2.66E-03	<2.66E-03	<3.11E-03	<2.33E-03	<2.97E-03	<3.01E-03	
	Ba-140	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
	Be-7	2.25E-01	1.82E-01	1.41E-01	2.06E-01	1.77E-01	1.76E-01	1.87E-01	1.96E-01	
	Co-57	<6.20E-04	<5.48E-04	<4.78E-04	<5.00E-04	<6.11E-04	<4.29E-04	<5.82E-04	<6.43E-04	
	Co-58	<1.92E-03	<2.05E-03	<2.19E-03	<2.70E-03	<2.11E-03	<2.93E-03	<2.95E-03	<2.03E-03	
Composite Dates	Co-60	<1.23E-03	<9.19E-04	<8.28E-04	<1.15E-03	<9.29E-04	<8.24E-04	<9.52E-04	<6.27E-04	
2ND QTR	Cs-134	<7.57E-04	<9.38E-04	<7.87E-04	<8.36E-04	<1.03E-03	<8.57E-04	<1.22E-03	<1.03E-03	Required LLD 5.0E-2
4/3/12 – 6/26/12	Cs-137	<7.56E-04	<7.76E-04	<7.20E-04	<7.29E-04	<7.25E-04	<7.14E-04	<9.04E-04	<1.04E-03	Required LLD 6.0E-2
	Fe-59	<8.35E-03	<1.15E-02	<7.79E-03	<5.67E-03	<6.21E-03	<1.20E-02	<1.11E-02	<1.04E-02	
	K-40	<1.43E-02	<1.57E-02	<1.66E-02	1.00E-02	<1.61E-02	<1.97E-02	<1.92E-02	<1.74E-02	
	La-140	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
	Mn-54	<9.02E-04	<7.86E-04	<8.03E-04	<1.14E-03	<8.79E-04	<1.01E-03	<1.09E-03	<1.10E-03	
	Nb-95	<2.62E-03	<2.56E-03	<2.34E-03	<3.08E-03	<2.61E-03	<2.78E-03	<2.82E-03	<2.37E-03	
	Zn-65	<2.64E-03	<2.02E-03	<1.78E-03	<1.42E-03	<1.81E-03	<3.15E-03	<2.93E-03	<2.40E-03	
	Zr-95	<3.82E-03	<4.23E-03	<4.43E-03	<3.68E-03	<4.70E-03	<3.86E-03	<5.29E-03	<4.20E-03	

Table 6 – 2012 Environmental Air Particulate Composite Gamma Isotopic Results (continued)
(Units of pCi/m3)

		A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2	
	Location	NW-1.0	SW/WSW-0.95	SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4	
	Nuclides				Control				Control	
	Ba-140	<3.61E-01	<4.36E-01	<2.79E-01	<3.32E-01	<5.37E-01	<5.61E-01	<3.43E-01	<5.01E-01	
	Be-7	2.06E-01	1.27E-01	1.15E-01	1.62E-01	1.94E-01	1.33E-01	2.07E-01	1.51E-01	
	Co-57	<3.33E-04	<5.12E-04	<3.45E-04	<3.22E-04	<4.49E-04	<5.08E-04	<4.39E-04	<5.69E-04	
	Co-58	<1.02E-03	<1.44E-03	<9.45E-04	<1.41E-03	<1.45E-03	<1.70E-03	<1.60E-03	<1.19E-03	
Composite Dates	Co-60	<5.95E-04	<8.19E-04	<7.40E-04	<5.62E-04	<8.41E-04	<1.23E-03	<6.24E-04	<5.88E-04	
3RD QTR	Cs-134	<5.08E-04	<7.41E-04	<6.78E-04	<6.47E-04	<7.52E-04	<1.21E-03	<8.04E-04	<8.77E-04	Required LLD 5.0E-2
7/3/12 – 9/25/12	Cs-137	<5.33E-04	<6.31E-04	<4.60E-04	<5.03E-04	<7.77E-04	<6.51E-04	<6.76E-04	<8.60E-04	Required LLD 6.0E-2
	Fe-59	<4.69E-03	<6.03E-03	<4.08E-03	<3.69E-03	<6.58E-03	<7.12E-03	<4.21E-03	<5.81E-03	
	K-40	<4.28E-03	<8.44E-03	<1.07E-02	<1.08E-02	<1.74E-02	<7.28E-03	<1.42E-02	<1.10E-02	
	La-140	<1.40E-01	<1.71E-01	<1.06E-01	<1.96E-01	<2.48E-01	<1.41E-01	<1.71E-01	<2.47E-01	
	Mn-54	<6.85E-04	<8.23E-04	<6.39E-04	<6.34E-04	<7.46E-04	<1.02E-03	<7.28E-04	<1.04E-03	
	Nb-95	<1.29E-03	<2.04E-03	<1.20E-03	<1.68E-03	<2.44E-03	<2.47E-03	<1.33E-03	<1.90E-03	
	Zn-65	<1.59E-03	<2.09E-03	<1.11E-03	<2.13E-03	<3.00E-03	<2.16E-03	<2.26E-03	<2.26E-03	
	Zr-95	<2.33E-03	<3.45E-03	<2.00E-03	<2.59E-03	<4.26E-03	<4.40E-03	<2.40E-03	<2.61E-03	
	Ba-140	<2.84E-01	<4.10E-01	<2.56E-01	<3.57E-01	<3.01E-01	<3.57E-01	<4.29E-01	<2.47E-01	
	Be-7	1.92E-01	1.48E-01	1.11E-01	1.67E-01	1.73E-01	1.38E-01	1.72E-01	1.87E-01	
	Co-57	<3.71E-04	<4.08E-04	<3.47E-04	<4.08E-04	<3.82E-04	<3.95E-04	<3.95E-04	<3.03E-04	
	Co-58	<1.51E-03	<1.29E-03	<1.06E-03	<1.08E-03	<1.46E-03	<1.56E-03	<1.66E-03	<9.11E-04	
Composite Dates	Co-60	<4.99E-04	<7.29E-04	<5.45E-04	<5.98E-04	<5.80E-04	<7.35E-04	<7.30E-04	<4.56E-04	
4TH QTR	Cs-134	<7.29E-04	<5.98E-04	<7.73E-04	<6.89E-04	<7.57E-04	<7.33E-04	<7.63e-04	<6.16E-04	Required LLD 5.0E-2
10/2/12 – 12/25/12	Cs-137	<4.85E-04	<6.05E-04	<6.21E-04	<6.21E-04	<5.23E-04	<5.73E-04	<7.27E-04	<5.52E-04	Required LLD 6.0E-2
	Fe-59	<4.85E-03	<3.78E-03	<4.72E-03	<4.06E-03	<5.31E-03	<3.60e-03	<5.99E-03	<3.78E-03	
	K-40	7.20E-03	1.01E-02	7.40E-03	9.01E-03	9.01E-03	9.17E-03	9.37E-03	<1.22E-02	
	La-140	<9.84E-02	<1.37E-01	<1.13E-01	<1.06E-01	<9.60E-02	<1.40E-01	<1.56E-01	<1.34E-01	
	Mn-54	<5.81E-04	<6.26E-04	<6.98E-04	<6.79E-04	<6.57E-04	<6.71E-04	<7.12E-04	<5.11E-04	
	Nb-95	<1.31E-03	<1.40E-03	<1.35E-03	<1.72E-03	<1.43E-03	<1.60E-03	<1.56E-03	<1.42E-03	
	Zn-65	<1.47E-03	<1.48E-03	<1.25E-03	<1.70E-03	<1.62E-03	<1.46E-03	<1.90E-03	<1.65E-03	
	Zr-95	<2.40E-03	<2.64E-03	<2.38E-03	<2.29E-03	<2.62E-03	<2.09E-03	<3.38e-03	<2.01E-03	

D. Surface Water Program

Surface water monitoring stations are found at four locations as detailed in Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program. Location N-1.5 provides samples representative of Squaw Creek reservoir surface water at a location beyond significant influence of the plant discharge. Location ESE-1.4 provides samples representative of discharges from Squaw Creek reservoir downstream to Squaw Creek and to Lake Granbury via an installed return line. [*NOTE: The installed return line to Lake Granbury has never been used to send water back to Lake Granbury.*] Location NE-7.4 provides samples of Lake Granbury surface water downstream of the discharge from the return line from Squaw Creek reservoir. A control sample is obtained from the Brazos River, upstream of Lake Granbury at location N-19.3. Surface water samples from Squaw Creek reservoir locations were collected weekly and composited for monthly gamma isotopic analysis. Samples from Lake Granbury locations were collected monthly and analyzed by gamma spectrometry. All surface water samples were also composited quarterly by location for tritium analysis.

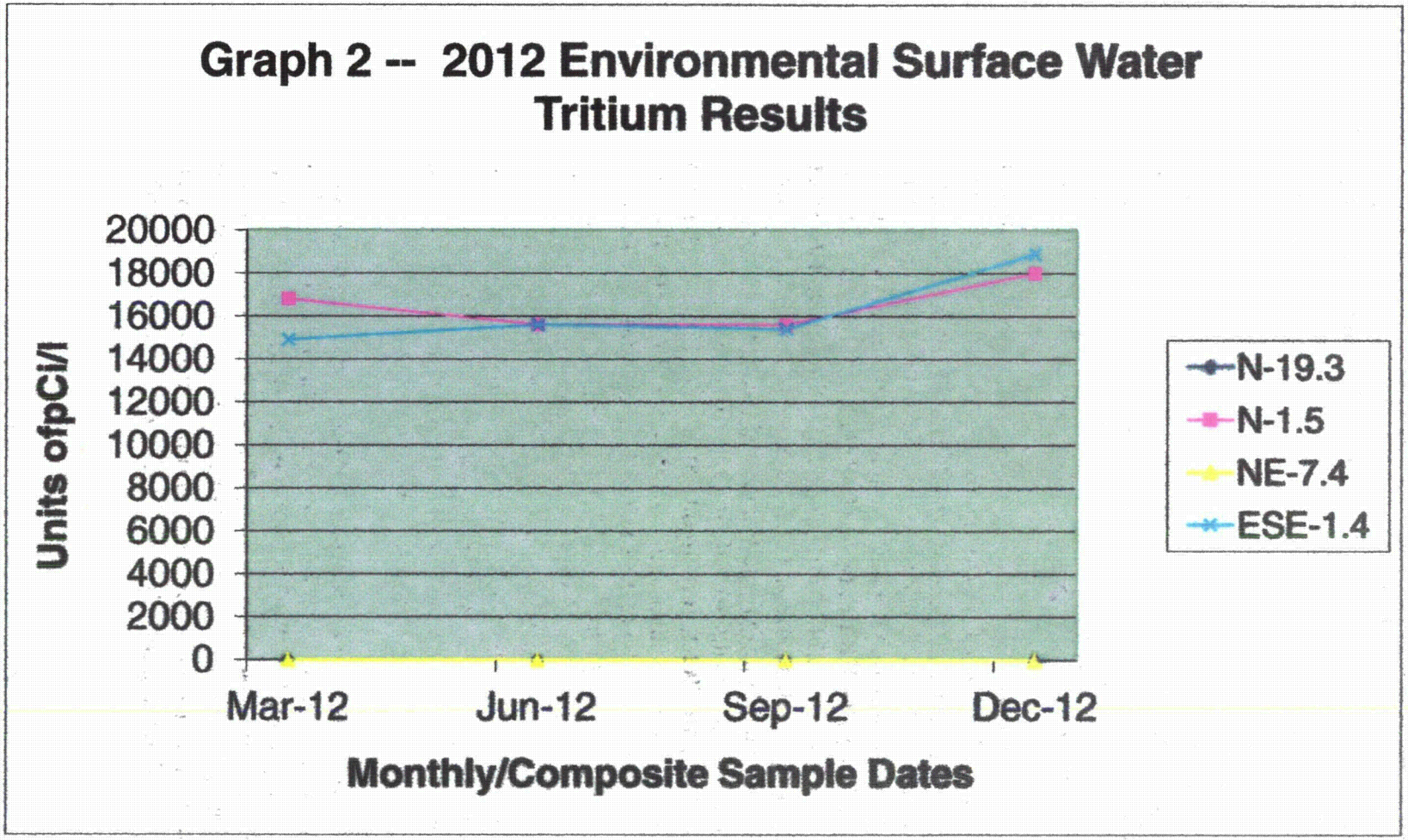
For the year 2012 all surface water samples were collected as required. Table 7 -- 2012 Environmental Surface Water Tritium and Gamma Isotopic Results contains the reported values. Forty-eight samples were analyzed by gamma spectrometry. All results for the required radionuclides were reported as less than the required LLDs. Sixteen quarterly composited samples were analyzed for tritium. The results of the reported tritium values for Squaw Creek reservoir were in line with expected concentrations. The tritium values ranged from a high of **1.89E+04** pCi/l to a low of **1.49E+04** pCi/l. The results from Lake Granbury were all less than the required LLDs as expected. The tritium concentration reported in Squaw Creek is below the action level of **3.0E+4** pCi/l and is following the expected concentration variations based on fuel cycles, power histories and reservoir makeup due to rain and pump transfers from Lake Granbury. Graph 2 – 2012 Environmental Surface Water Tritium Results indicates the current results and the short-term trend of the tritium concentration in Squaw Creek reservoir. Graph 3 – Squaw Creek Maximum Tritium Values trends the reservoir tritium concentration since it was first detected in 1990 after Unit 1 startup and is located on page 27. **Squaw Creek reservoir tritium is a direct product of the operation of CPNPP and is the only consistent indicator detectable in the environment surrounding Comanche Peak.**

There should not be any significant changes in the tritium concentrations in the near future and no action levels are anticipated. A review of pre-operational and operational data indicated the 2012 results were both expected and consistent with previous data and that no anomalies had occurred.

During the year 2012 were no additional exceptions to the Surface Water Program.

Table 7 -- 2012 Environmental Surface Water Tritium and Gamma Isotopic Results
(Units of pCi/l)

Date	SW-5 Location	H-3	Nuclides Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-31-12	ESE-1.4		<6.06E+00	<2.04E+01	<2.10E+00	<2.36E+00	<2.57E+00	<1.91E+00	<5.07E+00	<9.32E+00	<2.14E+01	<6.06E+00	<2.11E+00	<2.29E+00	<4.72E+00	<4.29E+00
02-28-12	ESE-1.4		<5.63E+00	<2.10E+01	<2.19E+00	<1.98E+00	<2.55E+00	<2.31E+00	<5.16E+00	<8.99E+00	2.43E+01	<5.63E+00	<2.02E+00	<2.67E+00	<4.57E+00	<4.22E+00
03-27-12	ESE-1.4	1.49E+04	<5.94E+00	<2.12E+01	<2.14E+00	<2.05E+00	<2.70E+00	<2.22E+00	<5.00E+00	<9.34E+00	<2.07E+01	<5.94E+00	<2.12E+00	<2.61E+00	<4.64E+00	<4.39E+00
04-24-12	ESE-1.4		<5.32E+00	<1.92E+01	<2.18E+00	<2.14E+00	<2.49E+00	<2.30E+00	<4.95E+00	<8.67E+00	4.29E+01	<5.32E+00	<2.18E+00	<2.39E+00	<4.16E+00	<4.38E+00
05-29-12	ESE-1.4		<1.07E+01	<2.54E+01	<3.01E+00	<2.86E+00	<3.27E+00	<2.70E+00	<7.10E+00	<1.37E+01	<2.96E+01	<1.07E+01	<2.73E+00	<3.14E+00	<5.51E+00	<5.14E+00
06-26-12	ESE-1.4	1.56E+04	<4.21E+00	<1.45E+01	<1.49E+00	<1.64E+00	<1.67E+00	<1.50E+00	<3.58E+00	<6.47E+00	<1.48E+01	<4.21E+00	<1.39E+00	<1.64E+00	<3.18E+00	<2.88E+00
07-31-12	ESE-1.4		<4.63E+00	<1.57E+01	<1.59E+00	<1.80E+00	<2.03E+00	<1.60E+00	<3.97E+00	<6.80E+00	4.31E+01	<4.63E+00	<1.55E+00	<1.67E+00	<3.37E+00	<3.09E+00
08-28-12	ESE-1.4		<3.74E+00	<1.39E+01	<1.60E+00	<1.83E+00	<1.80E+00	<1.63E+00	<3.83E+00	<6.31E+00	2.34E+01	<3.74E+00	<1.55E+00	<1.73E+00	<3.02E+00	<2.97E+00
09-25-12	ESE-1.4	1.54E+04	<4.73E+00	<1.94E+01	<1.86E+00	<1.92E+00	<2.21E+00	<1.67E+00	<4.42E+00	<8.20E+00	<2.78E+01	<4.73E+00	<1.73E+00	<2.17E+00	<3.80E+00	<3.56E+00
10-30-12	ESE-1.4		<6.32E+00	<1.74E+01	<1.73E+00	<1.57E+00	<2.04E+00	<1.57E+00	<4.41E+00	<1.03E+01	2.10E+01	<6.32E+00	<1.67E+00	<2.12E+00	<3.48E+00	<3.03E+00
11-27-12	ESE-1.4		<4.57E+00	<1.71E+01	<1.89E+00	<1.85E+00	<1.81E+00	<1.84E+00	<4.34E+00	<7.61E+00	<1.79E+01	<4.57E+00	<1.66E+00	<1.90E+00	<3.58E+00	<3.29E+00
12-25-12	ESE-1.4	1.89E+04	<3.18E+00	<1.25E+01	<1.41E+00	<1.61E+00	<1.42E+00	<1.38E+00	<3.26E+00	<4.27E+00	<1.24E+01	<3.18E+00	<1.32E+00	<1.48E+00	<2.44E+00	<2.36E+00
	SW-1															
01-31-12	N-1.5		<5.26E+00	<5.66E+01	<1.97E+00	<1.89E+00	<2.26E+00	<2.34E+00	<4.14E+00	<8.47E+00	<2.08E+01	<5.26E+00	<1.78E+00	<2.08E+00	<3.62E+00	<3.60E+00
02-28-12	N-1.5		<6.44E+00	<2.08E+01	<2.28E+00	<2.29E+00	<2.50E+00	<2.25E+00	<4.92E+00	<8.60E+00	6.45E+01	<6.44E+00	<2.19E+00	<2.17E+00	<3.97E+00	<3.71E+00
03-27-12	N-1.5	1.68E+04	<6.02E+00	<1.95E+01	<1.99E+00	<2.14E+00	<2.33E+00	<1.98E+00	<4.78E+00	<8.15E+00	<2.79E+01	<6.02E+00	<1.83E+00	<2.35E+00	<3.96E+00	<3.82E+00
04-24-12	N-1.5		<3.72E+00	<1.56E+01	<1.65E+00	<1.72E+00	<1.92E+00	<1.71E+00	<3.75E+00	<5.43E+00	5.02E+01	<3.72E+00	<1.71E+00	<1.92E+00	<3.14E+00	<3.27E+00
05-29-12	N-1.5		<6.03E+00	<1.92E+01	<1.99E+00	<2.31E+00	<2.18E+00	<1.69E+00	<5.14E+00	<1.06E+01	2.74E+01	<6.03E+00	<1.82E+00	<2.11E+00	<4.05E+00	<3.83E+00
06-26-12	N-1.5	1.55E+04	<5.79E+00	<1.09E+01	<1.96E+00	<1.96E+00	<2.04E+00	<1.83E+00	<3.87E+00	<8.15E+00	3.93E+01	<5.79E+00	<1.70E+00	<2.01E+00	<3.43E+00	<3.50E+00
07-31-12	N-1.5		<3.88E+00	<1.57E+01	<1.62E+00	<1.78E+00	<1.83E+00	<1.96E+00	<3.72E+00	<6.07E+00	<1.51E+01	<3.88E+00	<1.48E+00	<1.72E+00	<3.18E+00	<2.65E+00
08-28-12	N-1.5		<4.58E+00	<1.56E+01	<1.78E+00	<1.74E+00	<1.79E+00	<1.78E+00	<3.95E+00	<6.77E+00	2.11E+01	<4.58E+00	<1.55E+00	<1.89E+00	<3.27E+00	<3.30E+00
09-25-12	N-1.5	1.58E+04	<4.67E+00	<1.76E+01	<1.71E+00	<1.82E+00	<2.11E+00	<1.74E+00	<4.06E+00	<7.27E+00	<1.71E+01	<4.67E+00	<1.58E+00	<1.99E+00	<3.60E+00	<3.37E+00
10-30-12	N-1.5		<6.93E+00	<1.87E+01	<2.20E+00	<2.12E+00	2.38E+00	<1.78E+00	<4.13E+00	<1.15E+01	5.08E+01	<6.93E+00	<1.79E+00	<2.30E+00	<4.12E+00	<3.51E+00
11-27-12	N-1.5		<4.18E+00	<1.55E+01	<1.55E+00	<1.52E+00	<1.71E+00	<1.64E+00	<3.79E+00	<6.50E+00	3.30E+01	<4.18E+00	<1.50E+00	<1.86E+00	<3.27E+00	<3.10E+00
12-25-12	N-1.5	1.60E+04	<3.75E+00	<1.51E+01	<1.63E+00	<1.59E+00	<1.64E+00	<1.67E+00	<3.58E+00	<4.72E+00	1.60E+01	<3.75E+00	<1.45E+00	<1.59E+00	<2.99E+00	<2.98E+00
	SW-4															
01-31-12	NE-7.4		<2.91E+00	<1.61E+01	<1.67E+00	<2.07E+00	<2.16E+00	<1.93E+00	<3.38E+00	<2.49E+00	1.65E+01	<2.91E+00	<1.77E+00	<1.96E+00	<3.41E+00	<2.80E+00
02-28-12	NE-7.4		<2.98E+00	<1.59E+01	<1.89E+00	<2.13E+00	<2.18E+00	<1.88E+00	<3.29E+00	<3.12E+00	<2.52E+01	<2.98E+00	<1.79E+00	<1.83E+00	<3.79E+00	<3.09+00
03-27-12	NE-7.4	<4.09E+02	<3.51E+00	<1.84E+01	<2.30E+00	<2.16E+00	<2.61E+00	<2.26E+00	<4.17E+00	<3.78E+00	<2.75E+01	<3.51E+00	<2.08E+00	<2.22E+00	<3.95E+00	<3.83E+00
04-24-12	NE-7.4		<2.61E+00	<1.66E+01	<1.80E+00	<1.82E+00	<2.45E+00	<2.02E+00	<3.98E+00	<2.46E+00	<2.75E+01	<2.61E+00	<1.88E+00	<2.12E+00	<4.23E+00	<3.30E+00
05-29-12	NE-7.4		<3.67E+00	<1.76E+01	<1.91E+00	<2.19E+00	<2.44E+00	<2.01E+00	<4.04E+00	<3.97E+00	3.46E+01	<3.67E+00	<1.88E+00	<2.13E+00	<4.02E+00	<3.73E+00
06-26-12	NE-7.4	<8.50E+02	<2.31E+00	<1.09E+01	<1.16E+00	<1.31E+00	<1.56E+00	<1.33E+00	<2.48E+00	<2.37E+00	<1.17E+01	<2.31E+00	<1.16E+00	<1.18E+00	<2.61E+00	<2.21E+00
07-31-12	NE-7.4		<2.31E+00	<1.42E+01	<1.61E+00	<1.67E+00	<2.07E+00	<1.80E+00	<3.13E+00	<2.01E+00	<1.61E+01	<2.31E+00	<1.63E+00	<1.63E+00	<3.18E+00	<2.72E+00
08-28-12	NE-7.4		<4.47E+00	<1.80E+01	<2.27E+00	<2.73E+00	<2.81E+00	<2.48E+00	<4.77E+00	<3.34E+00	<3.37E+01	<4.47E+00	<2.09E+00	<2.54E+00	<4.73E+00	<4.38E+00
09-25-12	NE-7.4	<4.40E+02	<2.60E+00	<1.75E+01	<1.98E+00	<2.20E+00	<2.40E+00	<2.08E+00	<3.77E+00	<2.68E+00	<2.75E+01	<2.60E+00	<1.94E+00	<2.02E+00	<3.97E+00	<3.50E+00
10-30-12	NE-7.4		<3.20E+00	<1.97E+01	<2.02E+00	<2.06E+00	<2.38E+00	<2.22E+00	<4.23E+00	<3.10E+00	<2.75E+01	<3.20E+00	<1.92E+00	<1.98E+00	<4.18E+00	<3.22E+00
11-27-12	NE-7.4		<2.75E+00	<1.49E+01	<1.67E+00	<1.73E+00	<1.69E+00	<1.71E+00	<3.09E+00	<2.71E+00	4.16E+01	<2.75E+00	<1.54E+00	<1.70E+00	<3.44E+00	<1.50E+00
12-25-12	NE-7.4	<3.89E+02	<1.97E+00	<1.10E+01	<1.32E+00	<1.38E+00	<1.43E+00	<1.77E+00	<2.57E+00	<1.79E+00	<1.84E+01	<1.97E+00	<1.30E+00	<1.40E+00	<2.51E+00	<2.28E+00
	SW-3															
01-31-12	N-19.3		<2.51E+00	<1.38E+01	<1.75E+00	<1.68E+00	<2.21E+00	<1.74E+00	<3.27E+00	<2.22E+00	<1.66E+01	<2.51E+00	<1.62E+00	<1.81E+00	<3.60E+00	<2.97E+00
02-28-12	N-19.3		<2.58E+00	<1.36E+01	<1.84E+00	<1.64E+00	<2.02E+00	<2.07E+00	<3.12E+00	<2.90E+00	3.53E+01	<2.58E+00	<1.57E+00	<1.82E+00	<3.25E+00	<2.85E+00
03-27-12	N-19.3	<4.12E+02	<2.81E+00	<1.52E+01	<1.73E+00	<1.83E+00	<2.13E+00	<2.13E+00	<2.84E+00	<2.94E+00	4.28E+01	<2.81E+00	<1.74E+00	<1.72E+00	<3.48E+00	<2.93E+00
04-24-12	N-19.3		<1.95E+00	<1.37E+01	<1.48E+00	<1.88E+00	<1.98E+00	<1.91E+00	<3.16E+00	<2.16E+00	1.82E+01	<1.95E+00	<1.66E+00	<1.77E+00	<3.19E+00	<2.84E+00
05-29-12	N-19.3		<3.00E+00	<1.64E+01	<1.81E+00	<2.13E+00	<2.39E+00	<2.15E+00	<3.65E+00	<3.61E+00	<2.77E+01	<3.00E+00	<2.08E+00	<1.91E+00	<3.93E+00	<3.23E+00
06-26-12	N-19.3	<5.55E+02	<2.74E+00	<1.24E+01	<1.46E+00	<1.52E+00	<1.75E+00	<1.49E+00	<2.95E+00	<2.77E+00	2.91E+01	<2.74E+00	<1.46E+00	<1.56E+00	<3.09E+00	<2.78E+00
07-31-12	N-19.3		<1.93E+00	<1.19E+01	<1.35E+00	<1.57E+00	<1.84E+00	<1.83E+00	<2.69E+00	<1.78E+00	<1.44E+01	<1.93E+00	<1.45E+00	<1.33E+00	<2.63E+00	<2.41E+00
08-28-12	N-19.3		<3.60E+00	<1.64E+01	<1.86E+00	<2.04E+00	<2.66E+00	<2.00E+00	<4.05E+00	<3.31E+00	4.61E+01	<3.60E+00	<1.97E+00	<2.04E+00	<4.06E+00	<3.69E+00
09-25-12	N-19.3	<4.54E+02	<2.81E+00	<1.51E+01	<1.72E+00	<2.27E+00	<2.26E+00	<1.94E+00	<3.78E+00	<2.79E+00	<2.68E+01	<2.81E+00	<1.83E+00	<1.99E+00	<4.25E+00	<3.48E+00
10-30-12	N-19.3		<3.11E+00	<1.82E+01	<1.77E+00	<2.13E+00	<2.40E+00	<2.20E+00	<4.14E+00	<2.80E+00	<1.95E+01	<3.11E+00	<1.89E+00	<2.03E+00	<4.10E+00	<3.35E+00
11-27-12	N-19.3		<2.31E+00	<1.14E+01	<1.32E+00	<1.51E+00	<1.43E+00	<1.35E+00	<2.86E+00	<2.36E+00	<2.05E+01	<2.31E+00	<1.31E+00	<1.45E+00	<3.01E+00	<2.47E+00
12-25-12	N-19.3	<3.66E+02	<1.81E+00	<1.20E+01	<1.20E+00	<1.34E+00	<1.51E+00	<1.42E+00	<2.56E+00	<1.86E+00	<1.97E+01	<1.81E+00	<1.24E+00	<1.23E+00	<2.63E+00	<2.32E+00
Required LLD's		2.00E+03	1.50e+01		1.50e+01	1.50e+01	1.50e+01	1.50e+01	3.00e+01			1.50e+01	1.50e+01	1.50e+01	3.00e+01	1.50e+01
Reportable Level		3.00e+04	2.00e+02		1.00e+03	3.00e+02	3.00e+01	6.00e+01	4.00e+02			2.00e+02	1.00e+03	4.00e+03	3.00e+02	4.00e+02


Graph 2 -- 2012 Environmental Surface Water Tritium Results
Units ofpCi/l
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Mar-12
Jun-12
Sep-12
Dec-12
Monthly/Composite Sample Dates
N-19.3
N-1.5
NE-7.4
ESE-1.4

E. Surface Drinking Water Program

Surface drinking water was collected at two monitoring locations. Table 1 -- Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2012 details the location and types of analysis required. Samples of water from Squaw Creek reservoir were collected at the monitoring location NNW-0.1 and analyzed at detection levels required for drinking water standards even though the water is not allowed to be used as potable water. There is not a surface water drinking source within a mile of CPNPP. Monitoring location N-9.9 was used as a surface drinking water location based on the proximity of the City of Granbury intake to the Granbury potable water system. All surface drinking water samples were collected weekly and then composited for Iodine-131 analysis, gamma isotopic analysis, and gross beta analysis on a monthly basis. Tritium analysis was performed on a quarterly basis.

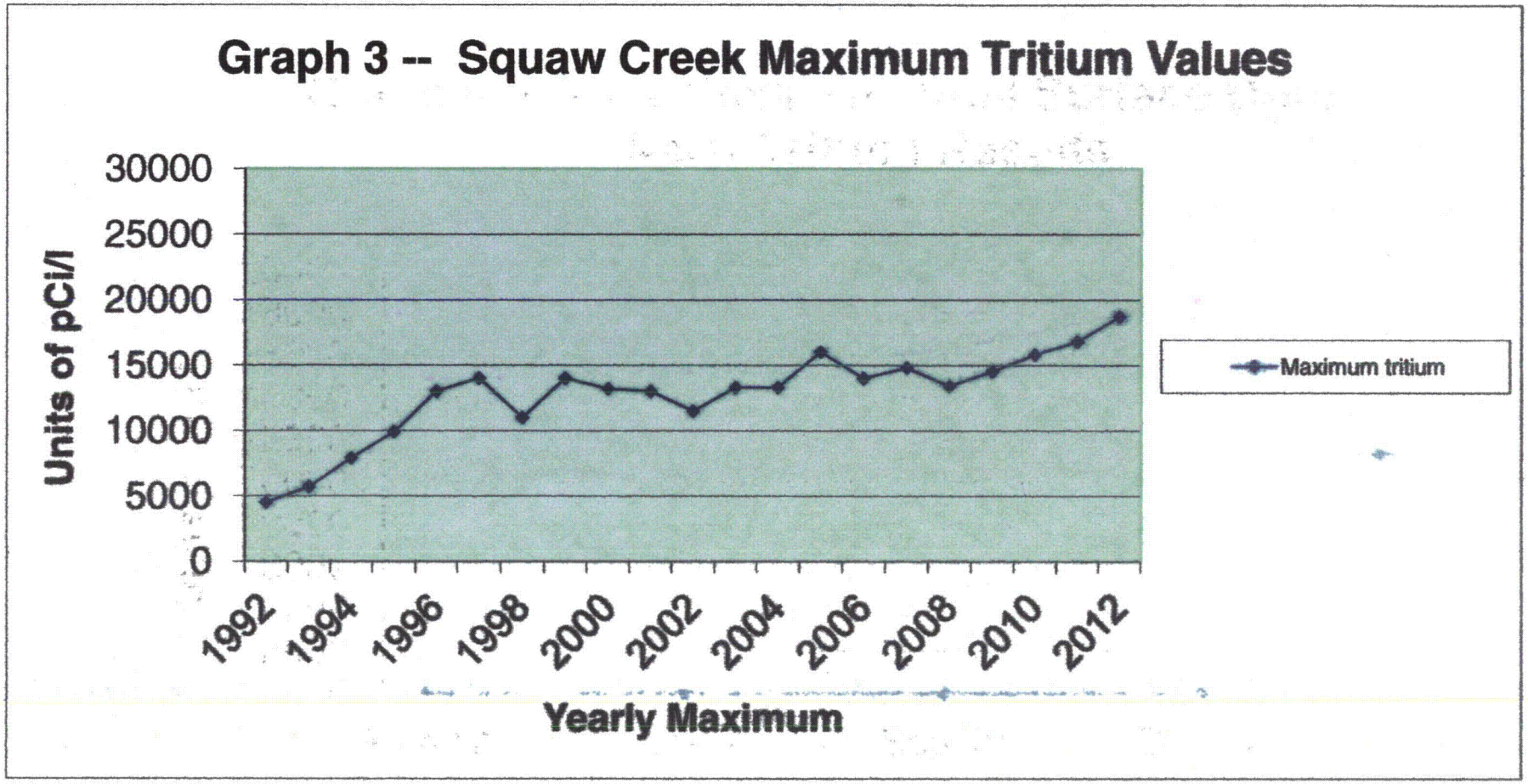
For the year 2012, all samples were analyzed for gamma emitting radionuclides. The results are reported in Table 8 – Environmental Surface Drinking Water Tritium, Gross Beta and Gamma Isotopic Results. There were no gamma emitting radionuclides identified in any of the twenty-four composite samples. Tritium reported in Squaw Creek reservoir ranged from **1.48E+04 pCi/l to 1.87E+04 pCi/l** and **averaged 1.63E+04 pCi/l.** Tritium reported from all Lake Granbury water samples indicated less than the required LLD as expected. Graph 4 – 2012 Environmental Surface Drinking Water Tritium Results trends the results reported for the year 2012. Gross Beta results at the indicator location NNW-0.1 ranged from **<7.99+00 pCi/l to 2.49E+01 pCi/l** with an average of **1.63E+01 pCi/l.** Gross Beta results at the control location N-9.9 ranged from **<3.13E+00 pCi/l to 1.53E+01 pCi/l** with an average of **7.36E+00pCi/l.** Graph 5 – 2011 Environmental Surface Drinking Water Gross Beta Results trends the gross beta results for the two monitor locations and indicates no influence from Comanche Peak in the levels detected in the two different bodies of water. Past gross beta results for Lake Granbury have been as high as **83 pCi/l.** The gross beta results received are within values previously reported and there is no reportable level for gross beta so no action is required at this time.

During 2012, there was one Condition Report, CR-2013-001838, written to document that the results from GEL Laboratories for Surface Water LLD was not met on 7/17/12 for samples SW-2 and SW-6 Gross Beta, 8/18/12 for the SW-6 Gross Beta, and 9/11/2012 for the SW-6 and SW-2 Gross Beta activity analysis. CR 2013-001838 was written to document this issue and water samples now have additional closure to prevent loss of the sample during shipment.

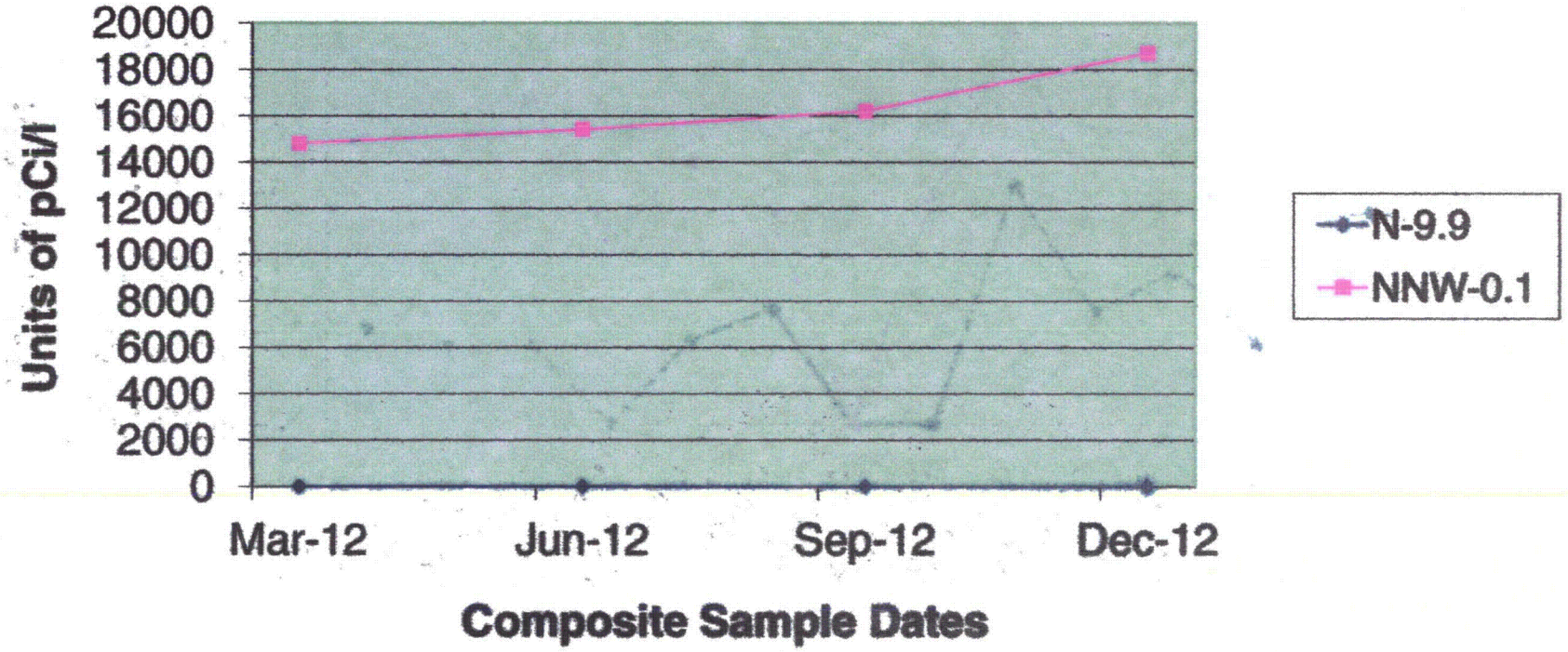
Table 8 -- 2012 Environmental Surface Drinking Water Tritium, Gross Beta and Gamma Isotopic Results
(Units of pCi/l)

	SW-6		Gross	Nuclides											
Date	Location	H-3	Beta	I-131	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-31-12	NNW-0.1		1.81E+01	<8.94E-01	<4.71E+00	<1.84E+00	<1.75E+00	<2.03E+00	<1.89E+00	<3.83E+00	<4.71E+00	<1.65E+00	<1.97E+00	<3.52E+00	<3.17E+00
02-28-12	NNW-0.1		1.64E+01	<8.35E-01	<4.51E+00	<1.84E+00	<1.86E+00	<2.12E+00	<1.78E+00	<3.92E+00	<4.51E+00	<1.59E+00	<2.02E+00	<3.60E+00	<3.39E+00
03-27-12	NNW-0.1	1.48E+04	2.07E+01	<7.90E-01	<5.07E+00	<1.90E+00	<1.78E+00	<1.99E+00	<1.84E+00	<3.70E+00	<5.07E+00	<1.69E+00	<1.92E+00	<3.54E+00	<3.46E+00
04-24-12	NNW-0.1		1.22E+01	<5.98E+00	<4.13E+00	<2.02E+00	<2.02E+00	<2.33E+00	<1.86E+00	<4.38E+00	<4.13E+00	<1.87E+00	<2.12E+00	<4.01E+00	<3.29E+00
05-29-12	NNW-0.1		1.67E+01	<1.09E+01	<6.48E+00	<1.76E+00	<1.71E+00	<1.98E+00	<1.85E+00	<4.37E+00	<6.48E+00	<1.74E+00	<1.92E+00	<3.52E+00	<3.62E+00
06-26-12	NNW-0.1	1.54E+04	1.33E+01	<6.85E-01	<4.28E+00	<1.69E+00	<1.57E+00	<1.66E+00	<1.54E+00	<3.73E+00	<4.28E+00	<1.56E+00	<1.66E+00	<2.90E+00	<2.84E+00
07-31-12	NNW-0.1		<7.99E+00	<8.49E-01	<3.89E+00	<1.45E+00	<1.67E+00	<1.45E+00	<1.32E+00	<2.91E+00	<3.89E+00	<1.27E+00	<1.51E+00	<2.88E+00	<2.52E+00
08-28-12	NNW-0.1		1.44E+01	<8.65E-01	<5.00E+00	<1.93E+00	<1.96E+00	<2.15E+00	<1.91E+00	<4.17E+00	<5.00E+00	<1.71E+00	<2.09E+00	<3.88E+00	<3.46E+00
09-25-12	NNW-0.1	1.62E+04	2.49E+01	<9.20E-01	<6.09E+00	<2.40E+00	<2.30E+00	<2.36E+00	<1.98E+00	<5.51E+00	<6.09E+00	<1.99E+00	<2.27E+00	<3.98E+00	<3.76E+00
10-30-12	NNW-0.1		1.37E+01	<8.31E-01	<7.59E+00	<1.93E+00	<1.95E+00	<2.21E+00	<2.02E+00	<4.62E+00	<7.59E+00	<1.72E+00	<2.15E+00	<4.16E+00	<3.84E+00
11-27-12	NNW-0.1		1.43E+01	<8.56E-01	<4.49E+00	<1.49E+00	<1.48E+00	<1.53E+00	<1.44E+00	<3.36E+00	<4.49E+00	<1.37E+00	<1.58E+00	<2.98E+00	<2.96E+00
12-25-12	NNW-0.1	1.87E+04	1.49E+01	<8.00E-01	<5.49E+00	<1.90E+00	<1.95E+00	<1.93E+00	<1.67E+00	<4.19E+00	<5.49E+00	<1.83E+00	<2.28E+00	<3.79E+00	<4.13E+00
	SW-2														
01-31-12	N-9.9		6.03E+00	<8.27E-01	<7.01E+00	<2.60E+00	<2.67E+00	<3.19E+00	<2.53E+00	<6.34E+00	<7.01E+00	<2.24E+00	<2.64E+00	<5.28E+00	<4.35E+00
02-28-12	N-9.9		4.91E+00	<7.99E-01	<6.66E+00	<2.52E+00	<2.49E+00	<2.89E+00	<2.33E+00	<6.16E+00	<6.66E+00	<2.12E+00	<2.70E+00	<5.08E+00	<4.85E+00
03-27-12	N-9.9	<4.09E+02	5.18E+00	<8.29E-01	<4.61E+00	<1.86E+00	<1.73E+00	<2.14E+00	<1.87E+00	<3.89E+00	<4.61E+00	<1.66E+00	<1.85E+00	<3.94E+00	<3.09E+00
04-24-12	N-9.9		<3.17E+00	<5.84E+00	<4.17E+00	<2.07E+00	<1.81E+00	<2.32E+00	<1.86E+00	<3.94E+00	<4.17E+00	<1.70E+00	<1.89E+00	<3.80E+00	<3.50E+00
05-29-12	N-9.9		5.38E+00	<1.29E+01	<8.28E+00	<2.24E+00	<2.40E+00	<2.50E+00	<2.10E+00	<5.25E+00	<8.28E+00	<2.04E+00	<2.42E+00	<4.59E+00	<4.08E+00
06-26-12	N-9.9	<5.41E+02	7.36E+00	<4.83E-01	<4.66E+00	<1.52E+00	<1.39E+00	<1.71E+00	<1.43E+00	<3.22E+00	<4.66E+00	<1.38E+00	<1.69E+00	<2.93E+00	<2.60E+00
07-31-12	N-9.9		<8.52E+00	<6.72E-01	<3.99E+00	<1.66E+00	<1.43E+00	<1.84E+00	<1.55E+00	<3.22E+00	<3.99E+00	<1.51E+00	<1.70E+00	<2.82E+00	<2.92E+00
08-28-12	N-9.9		<3.13E+00	<7.92E-01	<5.94E+00	<2.16E+00	<2.03E+00	<2.42E+00	<1.94E+00	<4.58E+00	<5.94E+00	<1.76E+00	<2.13E+00	<4.12E+00	<3.80E+00
09-25-12	N-9.9	<4.39E+02	1.53E+01	<8.93E-01	<5.27E+00	<1.93E+00	<1.78E+00	<2.20E+00	<1.89E+00	<3.97E+00	<5.27E+00	<1.79E+00	<2.11E+00	<3.40E+00	<3.60E+00
10-30-12	N-9.9		7.17E+00	<9.13E-01	<7.36E+00	<1.98E+00	<2.18E+00	<2.29E+00	<1.94E+00	<5.35E+00	<7.36E+00	<1.94E+00	<2.39E+00	<3.90E+00	<4.21E+00
11-27-12	N-9.9		9.79E+00	<8.38E-01	<4.31E+00	<1.38E+00	<1.54E+00	<1.48E+00	<1.60E+00	<3.35E+00	<4.31E+00	<1.36E+00	<1.62E+00	<2.66E+00	<2.88E+00
12-25-12	N-9.9	<3.72E+02	5.11E+00	<7.59E-01	<3.44E+00	<1.48E+00	<1.57E+00	<1.61E+00	<1.49E+00	<3.49E+00	<3.44E+00	<1.28E+00	<1.45E+00	<2.83E+00	<2.51E+00
Required LLD's		2.00E+03	4.00E+00	1.00E+00	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.80E+01	3.00E+01	1.50E+01	1.50E+01	1.50E+01	3.00E+01	1.50E+01
Reportable Level		3.00E+04*	None	2.00E+00	2.00E+02	1.00E+03	3.00E+02	3.00E+01	5.00E+01	4.00E+02	2.00E+02	1.00E+03	4.00E+02	3.00E+02	4.00E+02

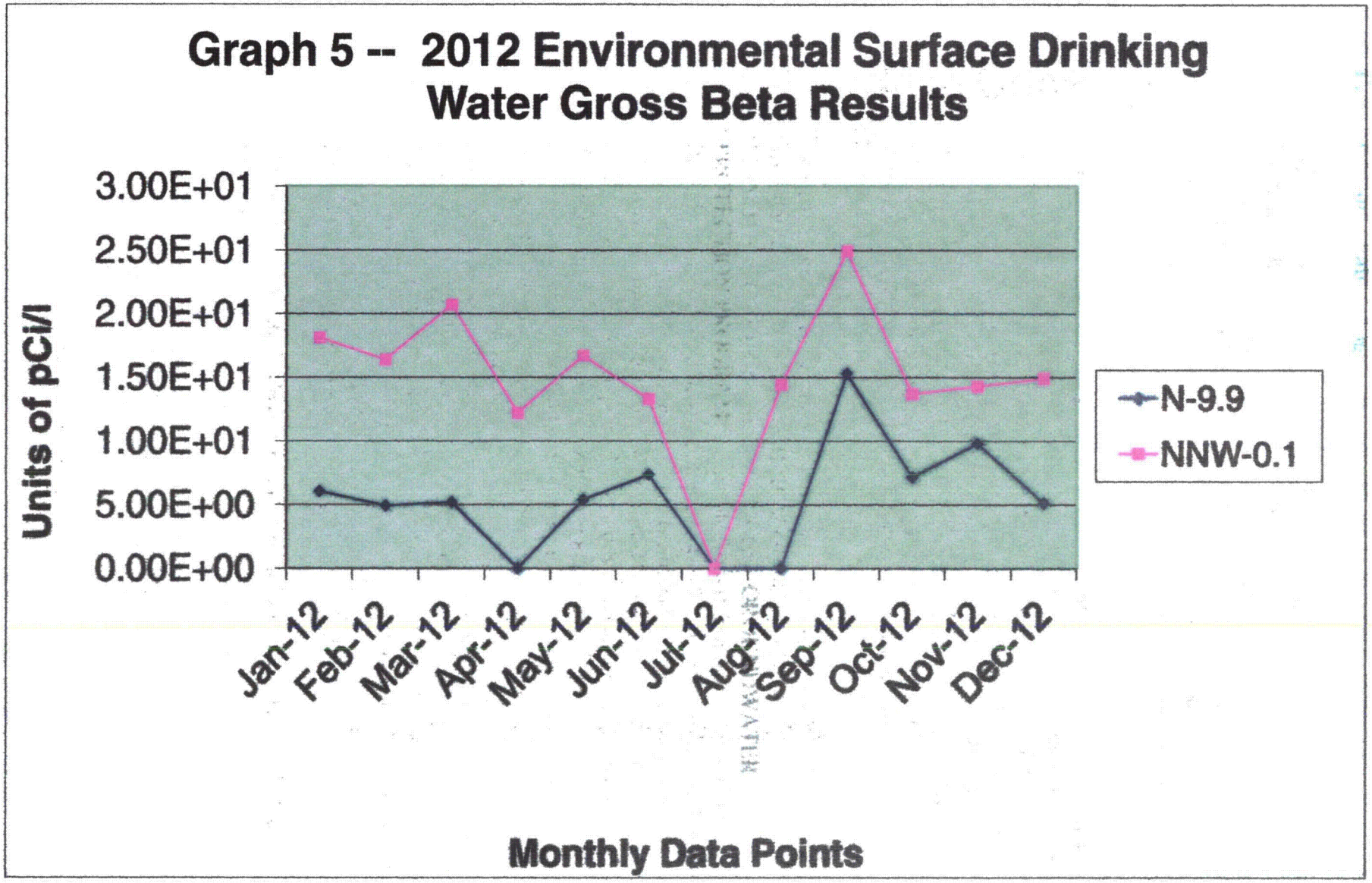
*Squaw Creek is not a drinking water pathway, a value of 30,000 pCi/l is used as referenced in the Comanche Peak ODCM.


Graph 3 -- Squaw Creek Maximum Tritium Values
Units of pCi/l
30000
25000
20000
15000
10000
5000
0
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Yearly Maximum
Maximum tritium

Graph 4 -- 2012 Environmental Surface Drinking Water Tritium Results



Graph 5 -- 2012 Environmental Surface Drinking Water Gross Beta Results



F. Ground Water Program

Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2012 specifies the five groundwater monitoring locations. Groundwater supplies in the site area are not affected by plant effluents and are sampled only to provide confirmation that groundwater is not affected by plant discharges. Groundwater samples were collected quarterly and analyzed for gamma isotopes and tritium at each location.

For the year 2012 a total of twenty groundwater samples were collected from the five different monitoring locations. There were no radionuclides identified in any of the samples. All required LLDs were met for each required gamma emitting radionuclide. Tritium analysis was performed on twenty samples, all indicated less than the required LLD. Results for all the groundwater analyses are reported in Table 9 - 2012 Environmental Groundwater Tritium and Gamma Isotopic Results. These results confirm that plant discharges are having no effect on groundwater in the area surrounding Comanche Peak.

The 2012 samples of perched groundwater were taken quarterly in accordance with ENV-323, "TRITIUM GROUNDWATER MONITORING PROGRAM" and STA-654, GROUNDWATER PROTECTION PROGRAM. A sample from the Drainage Flow Catch Basin had a positive value of 4550 picocuries/liter) for Tritium. The 2012 sample from the Drainage Flow Catch Basin had values ranging from 2210 to 4550 picocuries/liter for Tritium. The sample from the Water Production plant leachate pond A had a positive value ranging from < 7.68E-07 picocuries/liter to 17900 picocuries/liter. Variations in the tritium values from the Pond A Leachate are thought to come from pockets of water trapped in between the inner and outer liner by many inches of lake sediment resting on top of the liner. These pockets of water are from basin water previously transferred to the space between the liners to test for liner repair work effectiveness. Work is in progress to remove this sediment from the pond. As the sediment is removed, pockets of residual basin water are reintroduced into the Leachate sample. No further evaluation is necessary. These had been previously documented in CR-2011-003303, CR 2011-009873 and CR-2011-010251.

During the year 2012, there were no exceptions to the Ground Water Program.

Table 9 -- 2012 Environmental Groundwater Tritium and Gamma Isotopic Results
(Units of pCi/l)

		Nuclides												
	Location	H-3	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Date	GW-3													
03-27-12	SSE-4.6	<4.46E+02	<2.51E+00	<1.63E+00	<1.83E+00	<1.78E+00	<1.58E+00	<3.48E+00	<2.62E+00	<2.51E+00	<1.47E+00	<1.63E+00	<2.96E+00	<2.87E+00
06-26-12	SSE-4.6	<5.59E+02	<2.97E+00	<1.76E+00	<1.88E+00	<2.31E+00	<2.10E+00	<3.89E+00	<3.57E+00	<2.97E+00	<1.77E+00	<2.06E+00	<3.59E+00	<3.45E+00
09-25-12	SSE-4.6	<5.09E+02	<3.20E+00	<1.86E+00	<2.45E+00	<2.43E+00	<2.12E+00	<3.97E+00	<2.88E+00	<3.20E+00	<2.02E+00	<2.07E+00	<4.52E+00	<3.57E+00
12-25-12	SSE-4.6	<5.63E+02	<2.15E+00	<1.45E+00	<1.50E+00	<1.40E+00	<1.42E+00	<2.67E+00	<1.69E+00	<2.15E+00	<1.22E+00	<1.32E+00	<2.70E+00	<2.34E+00
	GW-5													
03-27-12	N-1.45	<4.52E+02	<2.56E+00	<1.63E+00	<1.87E+00	<1.89E+00	<1.71E+00	<3.32E+00	<2.89E+00	<2.56E+00	<1.51E+00	<1.73E+00	<2.94E+00	<2.89E+00
06-26-12	N-1.45	<5.63E+02	<3.67E+00	<1.95E+00	<2.08E+00	<2.21E+00	<2.04E+00	<4.10E+00	<4.14E+00	<3.67E+00	<1.79E+00	<2.07E+00	<4.19E+00	<3.35E+00
09-25-12	N-1.45	<5.09E+02	<2.59E+00	<1.58E+00	<2.06E+00	<2.12E+00	<1.89E+00	<3.29E+00	<2.65E+00	<2.59E+00	<1.65E+00	<1.93E+00	<3.64E+00	<3.06E+00
12-25-12	N-1.45	<5.74E+02	<2.10E+00	<1.27E+00	<1.58E+00	<1.33E+00	<1.43E+00	<2.71E+00	<2.32E+00	<2.10E+00	<1.23E+00	<1.33E+00	<2.81E+00	<2.36E+00
	GW-4													
03-27-12	N-9.8	<4.43E+02	<3.65E+00	<2.15E+00	<2.43E+00	<2.70E+00	<3.62E+00	<4.47E+00	<3.56E+00	<3.65E+00	<2.17E+00	<2.40E+00	<4.55E+00	<3.89E+00
06-26-12	N-9.8	<5.53E+02	<4.08E+00	<2.13E+00	<2.16E+00	<2.58E+00	<2.25E+00	<4.39E+00	<4.78E+00	<4.08E+00	<1.93E+00	<2.52E+00	<4.17E+00	<3.93E+00
09-25-12	N-9.8	<4.97E+02	<2.60E+00	<1.73E+00	<1.75E+00	<1.87E+00	<1.83E+00	<3.41E+00	<2.41E+00	<2.60E+00	<1.69E+00	<1.78E+00	<3.42E+00	<3.17E+00
12-25-12	N-9.8	<5.68E+02	<2.56E+00	<1.48E+00	<1.53E+00	<1.77E+00	<1.69E+00	<3.06E+00	<2.69E+00	<2.56E+00	<1.53E+00	<1.68E+00	<3.11E+00	<2.83E+00
	GW-1													
03-27-12	W-1.2	<4.58E+02	<2.79E+00	<1.70E+00	<2.01E+00	<2.37E+00	<1.86E+00	<3.68E+00	<3.20E+00	<2.79E+00	<1.82E+00	<1.79E+00	<3.51E+00	<3.17E+00
06-26-12	W-1.2	<5.61E+02	<3.94E+00	<1.75E+00	<2.23E+00	<2.59E+00	<2.30E+00	<4.25E+00	<4.73E+00	<3.94E+00	<1.90E+00	<2.15E+00	<3.92E+00	<3.81E+00
09-25-12	W-1.2	<5.06E+02	<2.23E+00	<1.94E+00	<1.79E+00	<2.41E+00	<2.12E+00	<3.28E+00	<3.13E+00	<2.23E+00	<2.07E+00	<2.04E+00	<3.52E+00	<3.49E+00
12-25-12	W-1.2	<5.63E+02	<2.23E+00	<1.30E+00	<1.41E+00	<1.52E+00	<1.82E+00	<3.06E+00	<2.36E+00	<2.23E+00	<1.38E+00	<1.34E+00	<2.76E+00	<2.22E+00
	GW-2													
03-27-12	WSW-0.1	<4.47E+02	<2.54E+00	<1.35E+00	<1.74E+00	<1.88E+00	<1.61E+00	<3.06E+00	<2.57E+00	<2.54E+00	<1.54E+00	<1.45E+00	<3.26E+00	<2.79E+00
06-26-12	WSW-0.1	<5.60E+02	<3.27E+00	<1.94E+00	<1.85E+00	<2.13E+00	<2.31E+00	<4.19E+00	<3.99E+00	<3.27E+00	<1.69E+00	<1.90E+00	<3.22E+00	<3.12E+00
09-25-12	WSW-0.1	<5.07E+02	<2.19E+00	<1.47E+00	<1.58E+00	<1.72E+00	<1.65E+00	<3.05E+00	<2.27E+00	<2.19E+00	<1.49E+00	<1.57E+00	<3.33E+00	<2.54E+00
12-25-12	WSW-0.1	<5.78E+02	<2.05E+00	<1.28E+00	<1.47E+00	<1.43E+00	<1.44E+00	<2.60E+00	<2.37E+00	<2.05E+00	<1.29E+00	<1.34E+00	<2.40E+00	<2.31E+00
Required LLD's		3.00E+03	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.80E+01	3.00E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	3.00E+01	1.50E+01
Reportable Levels		2.00E+04	2.00E+02	1.00E+03	3.00E+02	3.00E+01	5.00E+01	4.00E+02	2.00E+01	2.00E+02	1.00E+03	4.00E+02	3.00E+02	4.00E+02

G. Sediment Program

Shoreline sediments were collected at four different monitoring locations. One sample location is along the shore of Squaw Creek Reservoir, one sample location is on Squaw Creek down stream of the dam discharge and two locations are along Lake Granbury's shores. Each sample is collected on a six-month frequency and sent to the contract laboratory for analysis by gamma spectrometry.

The process of shoreline sedimentation is a complex evolution whereby potential radionuclides and stable elements may concentrate in the bottom sediment of particular bodies of water. The concentrations are effected by such things as colloidal particles combining with chelating agents and biological action of bacteria and other benthic organisms. Monitoring of the area shorelines provides one of the first and best indicators of radionuclide deposition.

For the year 2012 results from the gamma isotopic analysis of shoreline sediments is reported in Table 10 – 2012 Environmental Sediment Gamma Isotopic Results. As expected and in agreement with previous results from both the pre-operational and operational programs, naturally occurring Potassium-40 was detected in all eight samples and Beryillum-7 was detected in one sample. All required radionuclide results were reported as less than the required LLDs. During previous years, both pre-operational and operational, positive indications occasionally had been noted for Cesium-137 and during 2012 there were no positive Cesium-137 results reported. As expected, there were no results in any sediment sample that indicated any direct influence from CPNPP discharges to the local environment.

During the year 2012, there were no exceptions to the Sediment Program.

Table 10 -- 2012 Environmental Sediment Gamma Isotopic Results
(Units of pCi/kg)

		Nuclides													
		Ba-140	Be-7	Co-58	Co-60	Cs-134	Ce-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Date	Location														
01-03-12	SE-5.3	<2.56E+02	<9.92E+02	<8.30E+01	<6.83E+01	<1.32E+02	<8.51E+01	<2.11E+02	<5.17E+02	6.08E+03	<2.56E+02	<6.4E+01	<1.07E+02	<2.19E+02	<1.97E+02
01-03-12	NNE-1.0	<2.78E+02	<8.05E+02	<7.40E+01	<8.40E+01	<8.78E+01	<8.42E+01	<1.72E+02	<5.79E+02	2.38E+03	<2.78E+02	<7.35E+01	<9.51E+01	<1.20E+02	<1.62E+02
01-03-12	NE-7.4	<2.84E+02	<6.86E+02	<9.23E+01	<8.34E+01	<8.13E+01	<7.38E+01	<1.63E+02	<5.88E+02	2.19E+03	<2.84E+02	<8.15E+01	<9.67E+01	<1.4E+02	<1.44E+02
01-03-12	N-9.9	<2.63E+02	<5.50E+02	<6.06E+01	<5.80E+01	<9.93E+01	<4.24E+01	<1.42E+02	<3.84E+02	5.95E+03	<2.63E+02	<6.88E+01	<9.59E+01	<1.55E+02	<1.38E+02
07-10-12	SE-5.3	<9.08E+01	<5.23E+02	<7.11E+01	<6.43E+01	<9.01E+01	<7.45E+01	<1.41E+02	<1.14E+02	5.14E+03	<9.08E+01	<7.15E+01	<6.87E+01	<1.34E+02	<1.12E+02
07-10-12	NNE-1.0	<9.90E+01	<5.81E+02	<5.95E+01	<6.88E+01	<8.85E+01	<7.87E+01	<1.25E+02	<1.07E+02	3.38E+03	<9.90E+01	<6.55E+01	<6.42E+01	<1.38E+02	<1.34E+02
07-10-12	NE-7.4	<6.46E+01	<3.95E+02	<4.05E+01	<3.90E+01	<5.67E+01	<5.21E+01	<9.47E+01	<8.21E+01	1.75E+03	<6.46E+01	<4.23E+01	<4.80E+01	<8.45E+01	<8.03E+01
07-10-12	N-9.9	<4.78E+01	1.15E+03	<2.56E+01	<3.22E+01	<3.73E+01	<3.52E+01	<6.38E+01	<6.69E+01	2.02E+03	<4.78E+01	<3.24E+01	<3.69E+01	<5.83E+01	<5.24E+01
Required LLD's						1.50E+02	1.80E+02								
Reportable Levels						None	None								

NOTE: During previous years, both pre-operational and operational, positive indications occasionally had been noted for Cesium-137 and during 2012 there were no positive Cesium-137 results reported.

H. Fish Program

Fish samples were collected at two locations during the year 2012. One monitoring location is an area approximately two miles east-northeast of the site on Squaw Creek Reservoir. The second location is on Lake Granbury approximately eight miles north-northeast of the site. Fish sampling is scheduled for the months of April and October. The collected fish are frozen and shipped to the independent laboratory where the edible portions are analyzed for gamma emitting radio-nuclides.

For the year 2012, the results of the analysis performed on the collected fish samples are reported in Table 11 -- 2012 Environmental Fish Gamma Isotopic Results. Catfish and Bass samples were analyzed as indicated in the table. There were no positive results reported except for the expected Potassium-40, which is naturally occurring in all living organisms. All required radionuclide results were reported as less than the required LLDs. As a result of the fish-sampling program, there were no anomalies noted and no indication of any influence on the surrounding environment from Comanche Peak plant discharges.

No abnormal results were reported by CPNPP or by the State of Texas. As expected, Potassium-40 was the only positive isotope found.

During the year 2012 there were no exceptions to the Fish Program.

Table 11 -- 2012 Environmental Fish Gamma Isotopic Results
(Units of pCi/kg wet)

		Nuclides													
		Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95	Fish Type
Date	Location														
04-17-12	Squaw Creek	<9.29E-02	<6.10E-03	<4.58E-03	<5.00E-03	<4.14E-.03	<2.22E-02	<4.64E-01	3.60E+00	<9.29E-02	<4.37E-03	<7.08E-03	<1.16E-02	<1.16E-02	Catfish
04-17-12	Squaw Creek	<4.11E-02	<4.97E-03	<4.28E-03	<4.01E-03	<3.31E-03	<1.60E-02	<1.88E-01	3.71E+00	<4.11E-02	<3.76E-03	<5.02E-03	<9.84E-03	<9.33E-03	Bass
10-02-12	Squaw Creek	<8.72E-03	<3.86E-03	<4.20E-03	<4.12E-03	<3.76E-03	<1.04E-02	<1.63E-02	2.70E+00	<8.72E-03	<3.47E-03	<3.92E-03	<8.90E-03	<6.74E-03	Catfish
10-02-12	Squaw Creek	<9.13E-03	<3.36E-03	<3.49E-03	<3.71E-03	<3.07E-03	<8.55E-03	<1.35E-02	2.24E+00	<9.13E-03	<3.00E-03	<3.49E-03	<8.31E-03	<6.36E-03	Bass
04-17-12	Lake Granbury	<1.33E-02	<3.79E-03	<3.95E-03	<4.36E-03	<3.44E-03	<1.19E-02	<2.50E-02	3.59E+00	<1.33E-02	<3.86E-03	<4.44E-03	<1.01E-02	<7.57E-03	Catfish
04-17-12	Lake Granbury	<7.60E-02	<5.65E-03	<4.17E-03	<4.93E-03	<3.79E-03	<1.90E-02	<3.53E-01	3.25E+00	<7.60E-02	<4.24E-03	<6.16E-03	<1.12E-02	<1.17E-02	Bass
10-02-12	Lake Granbury	<9.16E-03	<3.32E-03	<3.35E-03	<3.83E-03	<3.17E-03	<9.02E-03	<1.61E-02	2.16E+00	<9.16E-03	<2.99E-03	<3.42E-03	<7.45E-03	<5.92E-03	Catfish
10-02-12	Lake Granbury	<5.51E-02	<1.94E-02	<1.94E-02	<2.16E-02	2.27E-02	<4.60E-02	<9.97E-02	3.58E+00	<5.51E-02	<1.90E-02	<2.14E-02	<4.55E-02	<3.52E-02	Bass
Required LLD's			1.30E+02	1.30E+02	1.30E+02	1.50E+02	2.60E+02				1.30E+02		2.60E+02		
Reportable Levels			3.00E+04	1.00E+04	1.00E+03	2.00E+03	1.00E+04				3.00E+04		2.00E+04		

I. Food Products Program

Food products (pecan and cantaloupes) were collected at the time of harvest. The samples are obtained at monitoring location ENE-9.0 and E-4.2 at the time of harvest and are shipped to the contract laboratory for gamma isotopic analysis.

For the year 2012, results of the gamma isotopic analyses are reported in Table 12 -- 2012 Environmental Food Products Gamma Isotopic Results. Naturally occurring Potassium 40 was detected in the samples as expected.

During the year 2012, there were no exceptions to the Food Products Program.

Table 12 -- 2012 Environmental Food Products Gamma Isotopic Results
(Units of pCi/kg wet)

		Food Type -- Pecans/Fruit &Vegetables													
		Nuclides													
		Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Date	Location														
11-13/12	ENE-9.0	<2.27E+01	<4.57E+01	<5.63E+00	<7.07E+00	<6.74E+00	<6.02E+00	<1.33E+01	<6.93E+00	2.94E+03	<7.06E+00	<5.81E+00	<6.02E+00	<1.31E+01	<1.10E+01
	Location E-4.2														
08-21-12		<5.03E+00	<2.89E+01	<3.61E+00	<4.64E+00	<4.84E+00	<3.92E+00	<9.64E+00	<6.00E+00	3.37E+03	<5.03E+00	<4.24E+00	<4.03E+00	<9.62E+00	<6.83E+00
Required LLD's						6.00E+01	8.00E+01		6.00E+01						
Reportable Levels						1.00E+03	2.00E+03		1.00E+02						

J. Broadleaf Program

Broadleaf sample collection is conducted in accordance with the requirements of the Radiological Environmental Monitoring Program. The program specifies the sampling based on the absence of milk monitoring locations. One broadleaf control location is located at SW-13.5 in the vicinity of the previous control milk location. The two indicator locations, N-1.45 and SW-1.0, are located near the site boundaries. The broadleaf samples consist of mainly native grasses and cedar leaves and are analyzed for Iodine-131 and gamma emitting isotopes.

For the year 2012, all radionuclide analysis met their required LLDs. The naturally occurring radionuclide of Potassium-40 was found in 36 of 36 samples taken. The radionuclide Beryllium-7 was present in 35 of 36 samples. No positive results for Cesium-137 were present.

No abnormal results were reported by CPNPP or by the State of Texas.

During the year 2012, there were no exceptions to the Broadleaf Program.

Table 13 -- 2012 Environmental Broadleaf Iodine-131 and Gamma Isotopic Results
(Units of pCi/kg wet)

		Nuclides													
	BL-1	I-131	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Date	Location														
01-31-12	N-1.45	<4.73E+01	<3.80E+01	2.24E+04	<2.17E+01	<2.68E+01	<2.85E+01	<2.61E+01	<4.90E+01	1.17E+03	<3.80E+01	<2.29E+01	<2.42E+01	<5.12E+01	<3.91E+01
02-28-12	N-1.45	<1.65E+01	<8.60E+02	2.28E+03	<1.71E+01	<9.38E+00	<1.06E+01	<8.26E+00	<5.90E+01	2.22E+03	<8.60E+02	<9.88E+00	<1.98E+01	<2.50E+01	<3.30E+01
03-27-12	N-1.45	<1.85E+01	<1.30E+01	1.41E+03	<1.11E+01	<1.13E+01	<1.42E+01	<1.18E+01	<2.42E+01	6.36E+03	<1.30E+01	<1.08E+01	<1.15E+01	<2.41E+01	<2.10E+01
04-24-12	N-1.45	<1.68E+01	<1.50E+01	4.80E+02	<1.32E+01	<1.27E+01	<1.78E+01	<1.36E+01	<2.53E+01	5.04E+03	<1.50E+01	<1.56E+01	<1.36E+01	<3.04E+01	<2.50E+01
05-29-12	N-1.45	<2.61E+01	<1.92E+01	3.22E+03	<1.96E+01	<1.72E+01	<2.53E+01	<2.09E+01	<3.50E+01	4.12E+03	<1.92E+01	<1.98E+01	<1.90E+01	<3.69E+01	<3.25E+01
06-26-12	N-1.45	<1.54E+01	<1.42E+01	2.00E+03	<1.19E+01	<1.44E+01	<1.60E+01	<1.30E+01	<2.83E+01	7.27E+03	<1.42E+01	<1.33E+01	<1.26E+01	<3.11E+01	<2.01E+01
07-31-12	N-1.45	<5.58E+01	<4.46E+01	4.78E+03	<2.81E+01	<3.48E+01	<3.38E+01	<3.03E+01	<5.02E+01	2.99E+03	<4.46E+01	<2.47E+01	<2.91E+01	<5.98E+01	<4.98E+01
08-28-12	N-1.45	<1.79E+01	<1.80E+01	4.35E+03	<1.17E+01	<1.39E+01	<1.68E+01	<1.40E+01	<2.65E+01	3.67E+03	<1.80E+01	<1.27E+01	<1.31E+01	<2.78E+01	<2.08E+01
09-25-12	N-1.45	<2.71E+01	<3.05E+01	5.52E+02	<2.36E+01	<2.79E+01	<3.02E+01	<2.36E+01	<4.98E+01	5.13E+03	<3.05E+01	<2.32E+01	<2.60E+01	<5.33E+01	<4.41E+01
10-30-12	N-1.45	<2.44E+01	<7.28E+01	1.60E+03	<1.71E+01	<1.79E+01	<1.86E+01	<1.67E+01	<3.06E+01	4.31E+03	<2.30E+01	<1.65E+01	<1.64E+01	<3.56E+01	<2.75E+01
11-27-12	N-1.45	<2.12E+01	<6.64E+01	7.30E+02	<1.65E+01	<1.99E+01	<1.92E+01	<1.74E+01	<3.51E+01	8.29E+03	<2.20E+01	<1.64E+01	<1.84E+01	<4.12E+01	<2.91E+01
12-25-12	N-1.45	<1.51E+01	<4.69E+01	8.24E+02	<1.18E+01	<1.47E+01	<1.43E+01	<1.33E+01	<2.56E+01	2.57E+03	<1.71E+01	<1.26E+01	<1.30E+01	<2.72E+01	<2.17E+01
	BL-3	I-131	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
	Control														
01-31-12	SW-13.5	<1.29E+01	<1.23E+01	1.39E+03	<8.96E+00	<1.07E+01	<1.11E+01	<8.03E+00	<2.38E+01	8.00E+03	<1.23E+01	<8.78E+00	<8.22E+00	<2.52E+01	<1.56E+01
02-28-12	SW-13.5	<1.68E+01	<5.69E+02	3.97E+02	<1.26E+01	<7.39E+00	<8.53E+00	<6.58E+00	<5.05E+01	6.81E+03	<5.69E+02	<7.49E+00	<1.50E+01	<2.00E+01	<2.63E+01
03-27-12	SW-13.5	<1.16E+01	<1.13E+01	1.11E+03	<8.50E+00	<7.80E+00	<8.14E+00	<7.05E+00	<1.66E+01	4.67E+03	<1.13E+01	<7.07E+00	<7.43E+00	<1.71E+01	<1.30E+01
04-24-12	SW-13.5	<1.28E+01	<1.11E+01	4.82E+02	<9.37E+00	<1.31E+01	<1.42E+01	<1.19E+01	<2.14E+01	4.64E+03	<1.11E+01	<1.06E+00	<1.01E+01	<2.44E+01	<1.80E+01
05-29-12	SW-13.5	<1.58E+01	<1.58E+01	1.74E+03	<1.14E+01	<1.28E+01	<1.36E+01	<1.27E+01	<2.61E+01	4.23E+03	<1.58E+01	<1.24E+01	<1.21E+01	<2.90E+01	<2.10E+01
06-26-12	SW-13.5	<1.32E+01	<1.24E+01	1.45E+03	<9.88E+00	<1.48E+01	<1.35E+01	<1.23E+01	<2.03E+01	2.28E+03	<1.24E+01	<1.09E+01	<1.01E+01	<2.18E+01	<1.92E+01
07-31-12	SW-13.5	<2.18E+01	<2.07E+01	1.87E+03	<9.43E+00	<1.19E+01	<1.14E+01	<1.01E+01	<2.34E+01	2.32E+03	<2.07E+01	<1.05E+01	<1.00E+01	<2.23E+01	<1.94E+01
08-28-12	SW-13.5	<1.97E+01	<2.04E+01	1.11E+03	<1.70E+01	<1.67E+01	<2.19E+01	<1.74E+01	<3.26E+01	4.29E+03	<2.04E+01	<1.77E+01	<1.82E+01	<3.70E+01	<2.72E+01
09-25-12	SW-13.5	<1.96E+01	<2.05E+01	1.05E+03	<1.18E+01	<1.54E+01	<1.54E+01	<1.28E+01	<2.77E+01	2.61E+03	<2.05E+01	<1.15E+01	<1.30E+01	<2.75E+01	<2.04E+01
10-30-12	SW-13.5	<3.62E+01	<1.05E+02	2.60E+03	<2.13E+01	<2.22E+01	<2.32E+01	<2.07E+01	<4.08E+01	2.98E+03	<3.53E+01	<2.12E+01	<2.24E+01	<4.12E+01	<3.86E+01
11-27-12	SW-13.5	<3.45E+01	<1.01E+02	1.77E+03	<2.47E+01	<2.93E+01	<2.77E+01	<2.66E+01	<4.99E+01	2.74E+03	<3.96E+01	<2.54E+01	<2.66E+01	<5.47E+01	<4.10E+01
12-25-12	SW-13.5	<1.86E+01	<4.65E+01	1.64E+03	<8.09E+00	<9.30E+00	<1.01E+01	<9.61E+00	<1.96E+01	1.94E+03	<1.60E+01	<9.58E+00	<9.43E+00	<1.73E+01	<1.55E+01
	BL-2	I-131	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-31-12	SW-1.0	<5.07E+01	<5.63E+01	1.15E+04	<3.33E+01	<3.59E+01	<4.07E+01	<3.66E+01	<7.38E+01	2.09E+03	<5.63E+01	<3.66E+01	<3.69E+01	<7.83E+01	<6.03E+01
02-28-12	SW-1.0	<4.58E+01	<2.63E+03	1.45E+04	<4.43E+01	<2.67E+01	<2.96E+01	<2.23E+01	<1.50E+02	2.41E+03	<2.63E+03	<2.85E+01	<5.46E+01	<6.18E+01	<9.47E+01
03-27-12	SW-1.0	<1.54E+01	<1.50E+01	5.46E+03	<1.03E+01	<1.27E+01	<1.11E+01	<1.05E+01	<2.38E+01	3.19E+03	<1.50E+01	<1.05E+01	<9.28E+00	<2.51E+01	<1.88E+01
04-24-12	SW-1.0	<2.39E+01	<2.86E+01	3.71E+03	<1.94E+01	<2.64E+01	<2.85E+01	<2.62E+01	<4.65E+01	6.04E+03	<2.86E+01	<2.08E+01	<2.18E+01	<5.59E+01	<3.83E+01
05-29-12	SW-1.0	<1.35E+01	<1.45E+01	6.62E+02	<1.08E+01	<1.18E+01	<1.37E+01	<1.08E+01	<2.30E+01	3.87E+03	<1.45E+01	<1.12E+01	<1.17E+01	<2.52E+01	<1.81E+01
06-26-12	SW-1.0	<1.41E+01	<1.23E+01	1.47E+03	<9.87E+00	<1.12E+01	<1.29E+01	<1.15E+01	<2.19E+01	3.65E+03	<1.23E+01	<1.11E+01	<1.10E+01	<2.51E+01	<1.92E+01
07-31-12	SW-1.0	<2.90E+01	<2.29E+01	9.87E+02	<1.32E+01	<1.40E+01	<1.62E+01	<1.33E+01	<3.29E+01	5.82E+03	<2.29E+01	<1.42E+01	<1.41E+01	<3.47E+01	<2.34E+01
08-28-12	SW-1.0	<2.49E+01	<2.53E+01	5.63E+03	<1.86E+01	<1.84E+01	<2.16E+01	<2.04E+01	<3.66E+01	2.68E+03	<2.53E+01	<1.73E+01	<1.81E+01	<3.78E+01	<3.25E+01
09-25-12	SW-1.0	<1.57E+01	<1.34E+01	3.29E+02	<1.01E+01	<1.10E+01	<1.19E+01	<9.98E+00	<2.28E+01	4.98E+03	<1.34E+01	<9.58E+00	<1.03E+01	<2.42E+01	<1.66E+01
10-30-12	SW-1.0	<2.67E+01	<7.61E+01	1.68E+03	<1.63E+01	<1.46E+01	<1.70E+01	<1.57E+01	<2.84E+01	3.59E+03	<1.97E+01	<1.80E+01	<1.58E+01	<2.82E+01	<2.80E+01
11-27-12	SW-1.0	<2.37E+01	<7.30E+01	7.85E+02	<1.71+01	<2.13E+01	<1.92E+01	<1.88E+01	<4.27E+01	8.69E+03	<2.45E+01	<1.97E+01	<1.86E+01	<4.44E+01	<3.22E+01
12-25-12	SW-1.0	<1.58E+01	<4.76E+01	4.56E+02	<1.12E+01	<1.25E+01	<1.31E+01	<1.25E+01	<2.31E+01	1.98E+03	<1.69E+01	<1.05E+01	<1.14E+01	<2.47E+01	<1.83E+01
Required LLD's		6.00E+01					6.00E+01	8.00E+01							
Reportable Levels		1.00E+02					1.00E+03	2.00E+03							

K. Conclusions

For the year 2012, based on the results presented in this report and from comparisons with the pre-operational and operational program results from previous years, it can be concluded that the impact of Comanche Peak on the environment is very small. **The only indication directly attributable to Comanche Peak is the tritium detected in Squaw Creek reservoir**.

Gross beta trend indications concerning Squaw Creek Reservoir are generally consistent, but some seasonal differences are observable. The general Gross Beta trend does not indicate any increase due to influence from Comanche Peak. Future data will be evaluated as it is received and changes will be addressed as necessary.

The atmospheric environment was sampled for airborne particulate matter, radioiodine and direct radiation. The terrestrial environment was sampled using groundwater, surface drinking water, food products and broadleaf vegetation. The aquatic environment was sampled using surface water, fish and shoreline sediments. All other analyses of provided results were below the measurement detection limits, or were indicative of expected natural terrestrial and cosmogenic levels, except for the tritium in the water samples of Squaw Creek reservoir. **The tritium in Squaw Creek reservoir showed some increase, but is expected to remain well below the reportable level.**

There were no values reported during the year 2012 that exceeded any NRC reportable limit.

L. Inter Laboratory Comparison and Cross Check Program

GEL Laboratories LLC

GEL Laboratories LLC is the independent contract laboratory that processes the radiological environmental monitoring samples collected by CPNPP. The contract laboratory is required to participate in an Interlaboratory Comparison Program in accordance with the ODCM Control 3.12.3. GEL participates in multiple programs to ensure all environmental media sent to them are analyzed to the proper standards.

GEL Laboratories, LLC (GEL) is a privately owned environmental laboratory. GEL was established as an analytical testing laboratory in 1981. Now a full service lab, their analytical divisions use state of the art equipment and methods to provide a comprehensive array of organic, inorganic, and radiochemical analyses.

GEL administers the QA program in accordance with the Quality Assurance Plan, GL-QS-B-001. Their Quality Systems include all quality assurance (QA) policies and quality control (QC) procedures necessary to plan, implement, and assess the work they perform. GEL's QA Program establishes a quality management system (QMS) that governs all of the activities of their organization.

Summary of Data Results

During 2012, forty-three radioisotopes associated with seven matrix types were analyzed under Ziegler Analytics. Matrix types were representative of client analyses performed during 2012. The list below contains the type of matrix evaluated by GEL.

- Air Filter
- Cartridge
- Water
- Milk
- Soil
- Liquid
- Vegetation

Summary of Participation in the Eckert & Ziegler Analytics Environmental Cross-Check Program

Eckert & Ziegler Analytics provided samples for ninety-two (92) individual environmental analyses. The accuracy of each result reported to Eckert & Ziegler Analytics, Inc. is measured by the ratio of GEL's result to the known value. All results fell within GEL's acceptance criteria(100%).

Summary of Participation in the MAPEP Monitoring Program

MAPEP Series 25, 26 and 27 were analyzed by the laboratory. Of the one hundred twenty-nine (129) analyses, 94% (121 out of 129) of all results fell within the PT provider's acceptance criteria. Eight analytical failures occurred: Cobalt-57 in soil, Uranium-234/235 in filter, Strontium-90 in vegetation, Uranium 234/235 in vegetation, Strontium-90 in soil, Uranium-234/235 in filter, Uranium-238 in filter and Gross Alpha in Filter.

The corrective actions associated with MAPEP Series 26 and 27, are included in CARR120711-694, CARR120711-698, CARR121127-742, CARR121127-743, and CARR121127-744 table 8 in the GEL Laboratories LLC 2012 Annual Quality Assurance Report.

Summary of Participation in the ERA MRaD PT Program

The ERA MRad program provided samples (MRAD-16 and MRAD-17) for one hundred seventy-nine individual environmental analyses. All results (100%) fell within the PT provider's acceptance criteria.

Summary of Participation in the ERA PT Program
The ERA program provided samples (RAD-88, RAD-89, RAD-90 and RAD-91) for forty-four (44) individual environmental analyses. Of the 44 analyses, 93% (41 out of 44) of all results fell within the PT provider's acceptance criteria. Three analytical failures occurred: Barium-133 in water, Zinc-65 in soil, and I-131 in water. For the corrective actions associated with RAD-88, and RAD-90, refer to corrective actions CARR120306-667 and CARR120831-715 (Table 8) in the GEL Laboratories LLC 2012 Annual Quality Assurance Report..

Corrective Action Request and Report (CARR)
There are two categories of corrective action at GEL. One is corrective action implemented at the analytical and data review level in accordance with the analytical SOP. The other is formal corrective action documented by the Quality Systems Team in accordance with GL-QS-E-002. A formal corrective action is initiated when a nonconformance reoccurs or is so significant that permanent elimination or prevention of the problem is required. GEL includes quality requirements in most analytical standard operating procedures to ensure that data are reported only if the quality control criteria are met or the quality control measures that did not meet the acceptance criteria are documented. A formal corrective action is implemented according to GL-QS-E-002 for Conducting Corrective/Preventive Action and Identifying Opportunities for Improvement. Recording and documentation is performed following guidelines stated in GL-QS-E-012 for Client NCR Database Operation. Any employee at GEL can identify and report a nonconformance and request that corrective action be taken. Any GEL employee can participate on a corrective action team as requested by the QS team or Group Leaders. The steps for conducting corrective action are detailed in GL-QS-E-002. In the event that correctness or validity of the laboratory's test results in doubt, the laboratory will take corrective action. If investigations show that the results have been impacted, affected clients will be informed of the issue in writing within five (5) calendar days of the discovery.

Quality Assurance Program for Internal and External Audits
During each annual reporting period, at least one internal assessment is conducted in accordance with the pre-established schedule from Standard Operating Procedure for the Conduct of Quality Audits, GL-QS-E001. The annual internal audit plan is reviewed for adequacy and includes the scheduled frequency and scope of quality control actions necessary to GEL's QA program. Internal audits are conducted at least annually in accordance with a schedule approved by the Quality Systems Director. Supplier audits are contingent upon the categorization of the supplier, and may or may not be conducted prior to the use of a supplier

or subcontractor. Type I suppliers and subcontractors, regardless of how they were initially qualified, are re-evaluated at least once every three years. In addition, prospective customers audit GEL during pre-contract audits. GEL hosts several external audits each year for both our clients and other programs. These programs include environmental monitoring, waste characterization, and radiobioassay. The following list of Programs may audit GEL at least annually or up to every three years depending on the program.

- NELAC, National Environmental Laboratory Accreditation Program
- DOECAP, U.S. Department of Energy Consolidated Audit Program
- DOELAP, U.S. Department of Energy Laboratory Accreditation Program
- DOE QSAS, U.S. Department of Energy, Quality Systems for Analytical Services
- ISO/IEC 17025
- A2LA, American Association for Laboratory Accreditation
- DOD ELAP, US Department of Defense Environmental Accreditation Program
- NUPIC, Nuclear Procurement Issues Committee
- South Carolina Department of Heath and Environmental Control (SC DHEC)

The annual radiochemistry laboratory internal audit (12-RAD-001) was conducted in March 2012. Two (2) findings, three (3) observations, and four (3) recommendations resulted from this assessment. In May 2012, each finding was closed and appropriate laboratory staff addressed each observation and recommendation.

Appendix A

Comanche Peak Nuclear Power Plant
Land Use Census
2012

COPY

COMANCHE PEAK NUCLEAR POWER PLANT
LAND USE CENSUS 2012

The Land Use Census identified receptors within a five (5) mile radius of the plant in each of the sixteen (16) meteorological sectors. The Land Use Census was conducted July 23 -27, 2012 and includes the following items:

1. Evaluation of the 2012 Land Use Census
2. Nearest Resident by Sector, Distance, X/Q and D/Q
3. Nearest Garden by Sector, Distance and D/Q
4. Nearest Milk Animal by Sector, Distance and D/Q
5. Population by Sector and Distance
6. Environmental Sample Locations Table
7. Environmental Monitoring Locations Map – 2 Mile Radius*
8. 5 Mile Sector and Road Map with Field Data*
9. Environmental Monitoring Locations Map – all sample locations

*These maps are vaulted along with this census. Copies of this census will not contain a copy of these maps unless specifically requested.

Evaluation of the 2012 Land Use Census

The results of the 2012 Land Use Census were reviewed for impact on the Radiological Environmental Monitoring Program (REMP). The specific areas reviewed, that could be affected by changes found in the land use census, were the sampling requirements for milk, broadleaf vegetation and food products.

Reviewing the milk sampling requirements from the ODCM Table 3.12-1 requires that samples are to be obtained from milking animals in three locations within a 5 km distance having the highest potential dose. If none are available, samples are acceptable from milking animals in locations 5 to 8 km distance where doses are calculated to be greater than 1 mrem per year. A sample is also required at a control location. There are currently no identified commercial milking animals (cow or goat) within the specified distances therefore; there are no current milk samples during the year 2012. NOTE: A Control milk location was identified at 12.3 Miles SW, Deridder Dairy, but operator did not wish to participate. CR-2011-0013802.

If no milk samples are available, the broadleaf vegetation sampling specified in ODCM Table 3.12-1 will be performed. Broadleaf sample requirements are such that samples of broadleaf vegetation are to be collected from each of two offsite locations of the highest predicted annual average D/Q if milk sampling is not performed at all the required locations. Currently, broadleaf vegetation samples are collected at two indicator locations (N - 1.45 and SW - 1.0) and one control location (SW - 13.5). These indicator locations are near the site boundary in sectors where broadleaf vegetation is available and D/Q is high. Therefore, no change to the broadleaf sampling program is required.

Food product sample requirements of ODCM Table 3.12-1 requires that one sample of each principal class of food product be collected from any area that is irrigated with water in which liquid plant waste has been discharged. Of the gardens identified in the land use census, no gardens are located in any area that irrigates with water in which liquid plant wastes are discharged. Currently, food products are sampled from one indicator location (ENE - 9.0) when in season. The indicator location for ENE-9.0 for pecans at time of harvest will be continued since it is a major source of food products sold to the public.

The 2012 Land Use Census did identify one location within 5 miles with a garden of greater than 500 ft^2 producing broadleaf vegetation as outlined in CPNPP procedures and Comanche Peak Steam Electric Station Offsite Dose Calculation Manual. Condition Report 2012-007544 was written to evaluate, determine if sampling/analysis is required, and initiate sample collection at this location, based on the results of the evaluation. The sampling is based on identified locations that would yield a calculated dose or dose commitment 20% greater than established when initial control sampling was performed.

Nearest Resident by sector D/Q X/Q

Calculated values for the associated X/Q and D/Q values for each controlling receptor location and pathway are included along with the receptor distances in the data tables of this land use census. The values used to determine potential dose due to radioactive effluent discharges are the highest calculated values based on annual average values. The annual average X/Q used for dose calculations is 3.30E-6, tritium X/Q is 4.36E-6, and the D/Q value is 3.34 E-8. All these values are conservative based on the 2012 Land Use Census data and therefore no changes are required in the dose calculation parameters as verified by the field data.

* X/Q units are Sec/cubic meter * D/Q units are inverse square meters

Nearest Resident by Sector, Distance, X/Q and D/Q

Sector	Distance (Miles)	X/Q	D/Q
N	2.2	9.28E-07	5.32E-09
NNE	2.2	5.58E-07	2.90E-09
NE	2.2	3.92E-07	1.42E-09
ENE	2.4	2.58E-07	7.08E-10
E	2.4	3.02E-07	6.62E-10
ESE	2.0	4.7E-07	1.20E-09
SE	2.0	7.1E-07	2.80E-09
SSE	1.5	1.10E-06	6.60E-09
S	1.5	8.50E-07	5.20E-09
SSW	1.8	5.66 E-7	2.79 E-9
SW	0.8	3.56E-06	1.85E-08
WSW	0.8	3.92E-06	1.32E-08
W	1.6	7.64E-07	2.50E-09
WNW	2.8	4.07E-07	1.18E-09
NW	4.8	2.52E-07	1.30E-10
NNW	2.5	8.4E-07	3.6E-09

Note: The Annual Average X/Q used for dose calculations is 3.30E-06 sec/cubic meter. The Tritium value X/Q used for dose calculations is 4.36E-06 sec/cubic meter. The Annual Average D/Q used for dose calculations is 3.34E-08 inverse square meters.

Nearest Garden by Sector, Distance and D/Q

Sector	Distance (Miles)*	D/Q
N	None	None
NNE	None	None
NE	None	None
ENE	None	None
E	4.5	1.6E-10
ESE	None	None
SE	None	None
SSE	None	None
S	None	None
SSW	None	None
SW	None	None
WSW	None	None
W	None	None
WNW	None	None
NW	None	None
NNW	None	None

Nearest Milk Animal by Sector, Distance and D/Q

Sector	Distance (Miles)*	D/Q
N	None	None
NNE	None	None
NE	None	None
ENE	None	None
E	None	None
ESE	None	None
SE	None	None
SSE	None	None
S	None	None
SSW	None	None
SW	None	None
WSW	None	None
W	None	None
WNW	None	None
NW	None	None
NNW	None	None

*No Milk samples are currently being collected.

Population by Sector and Distance

Sector	0-1	1-2	2-3	3-4	4-5	Total
N	-	-	6	57	83	146
NNE	-	-	8	54	31	93
NE	-	-	88	208	245	541
ENE	-	-	77	30	18	125
E	-	-	151	90	36	277
ESE	-	-	66	88	66	220
SE	-	-	135	159	85	379
SSE	-	74	72	94	2491	2731
S	-	14	121	61	190	386
SSW	-	6	3	6	66	81
SW	9	143	9	69	47	277
WSW	9	135	9	11	-	164
W	-	69	6	36	3	114
WNW	-	-	3	47	52	102
NW	-	-	3	-	3	6
NNW	-	-	6	34	54	94
TOTAL	18	441	763	1044	3470	5736

The average number of residents per house was obtained from North Central Texas Council of Governments for Hood and Somervell Counties. The number of residents per house is 2.57 and 2.74, respectively.

Note: 2011 and 2012 Land Use Census was performed with the use of maps and information provided by Somervell County/Hood County 9-1-1 addressing/ geographic information system. Changes were noted during the 2011 Land Use Census in sector population which attributed to use of 911 (Hood and Somervell counties) dispatchers maps. The most notable Distance/Sector change was 1-2 miles in sector WSW which was estimated at 349 people in 2010 and 63 people in 2011. A 9-1-1 map is vaulted under RPI-714-1.

Environmental Sample Locations Table

Sampling Point	Location	Sample Type*
A1	N-1.45 (Squaw Creek Park)	A
A2	N-9.4 (Granbury)	A
A3	E-3.5 (Children's Home)	A
A4	SSE-4.5 (Glen Rose)	A
A5	S/SSW-1.2	A
A6	SW-12.3 (CONTROL)	A
A7	SW/WSW-0.95	A
A8	NW-1.0	A
R1	N-1.45 (Squaw Creek Park)	R
R2	N-4.4	R
R3	N-6.5	R
R4	N-9.4 (Granbury)	R
R5	NNE-1.1	R
R6	NNE-5.65	R
R7	NE-1.7	R
R8	NE-4.8	R
R9	ENE-2.5	R
R10	ENE-5.0	R
R11	E-0.5	R
R12	E-1.9	R
R13	E-3.5 (Children's Home)	R
R14	E-4.2	R
R15	ESE-1.4	R
R16	ESE-4.7	R
R17	SE-1.3	R
R18	SE-3.85	R

Environmental Sample Locations Table (cont.)

Sampling Point	Location	Sample Type*
R19	SE-4.6	R
R20	SSE-1.3	R
R21	SSE-4.4 (Glen Rose)	R
R22	SSE-4.5 (Glen Rose)	R
R23	S-1.5	R
R24	S-4.2	R
R25	SSW-1.1	R
R26	SSW-4.4 (State Park)	R
R27	SW-0.9	R
R28	SW-4.8 (Girl Scout Camp)	R
R29	SW-12.3 (CONTROL)	R
R30	WSW-1.0	R
R31	WSW-5.35	R
R32	WSW-7.0 (CONTROL)	R
R33	W-1.0	R
R34	W-2.0	R
R35	W-5.5	R
R36	WNW-1.0	R
R37	WNW-5.0	R
R38	WNW-6.7	R
R39	NW-1.0	R
R40	NW-5.7	R
R41	NW-9.9 (Tolar)	R
R42	NNW-1.35	R
R43	NNW-4.6	R

Environmental Sample Locations Table (cont.)

Sampling Point	Location	Sample Type*
SW1	N-1.5 (Squaw Creek Reservoir Marina)	SW
SW2	N-9.9 (Lake Granbury)	SW/DW[1]
SW3	N-19.3 (CONTROL-Brazos River)	SW
SW4	NE-7.4 (Lake Granbury)	SW
SW5	ESE-1.4 (Squaw Creek Reservoir)	SW[2]
SW6	NNW-0.1 (Squaw Creek Reservoir)	SW/DW[2, 3]
GW1	W-1.2 (Security Rifle Range)	GW
GW2	WSW-0.1 (Somerville Water district)	GW[3, 4]
GW3	SSE-4.6 (Glen Rose – Somerville Water District)	GW[4]
GW4	N-9.8 (Granbury)	GW[1, 4]
GW5	N-1.45 (Squaw Creek Park)	GW[4]
SS1	NNE-1.0 (Squaw Creek Reservoir)	SS
SS2	N-9.9 (Lake Granbury)	SS
SS3	NE-7.4 (Lake Granbury)	SS
SS4	SE-5.3 (Squaw Creek)	SS
F1	ENE-2.0 (Squaw Creek Reservoir)	F
F2	NNE-8.0 (Lake Granbury)	F
FP1	ENE-9.0 (Leonard Bros. Pecan Farm)	FP

Environmental Sample Locations Table (cont.)

Sampling Point	Location	Sample Type*
BL1	N-1.45	BL
BL2	SW-1.0	BL[5]
BL3	SW-13.5 (CONTROL)	BL[5]

*Sample Type: A - Air Sample; R - Direct Radiation; SW - Surface Water; DW - Drinking Water GW - Ground Water; SS - Shoreline Sediments; M - Milk; F - Fish; FP - Food Products; BL - Broadleaf Vegetation

NOTES:

1) The municipal water system for the City of Granbury is supplied by surface water from Lake Granbury (location SW2) and ground water (location GW4). Each of these supplies is sampled. These samples are not required for compliance with Radiological Effluent Control 3/4.12.1, Table 3.12-1, because they are not affected by plant discharges.

2) This sample (location SW6) is representative of discharges from Squaw Creek Reservoir both down Squaw Creek and to Lake Granbury via the return line to Lake Granbury if used.

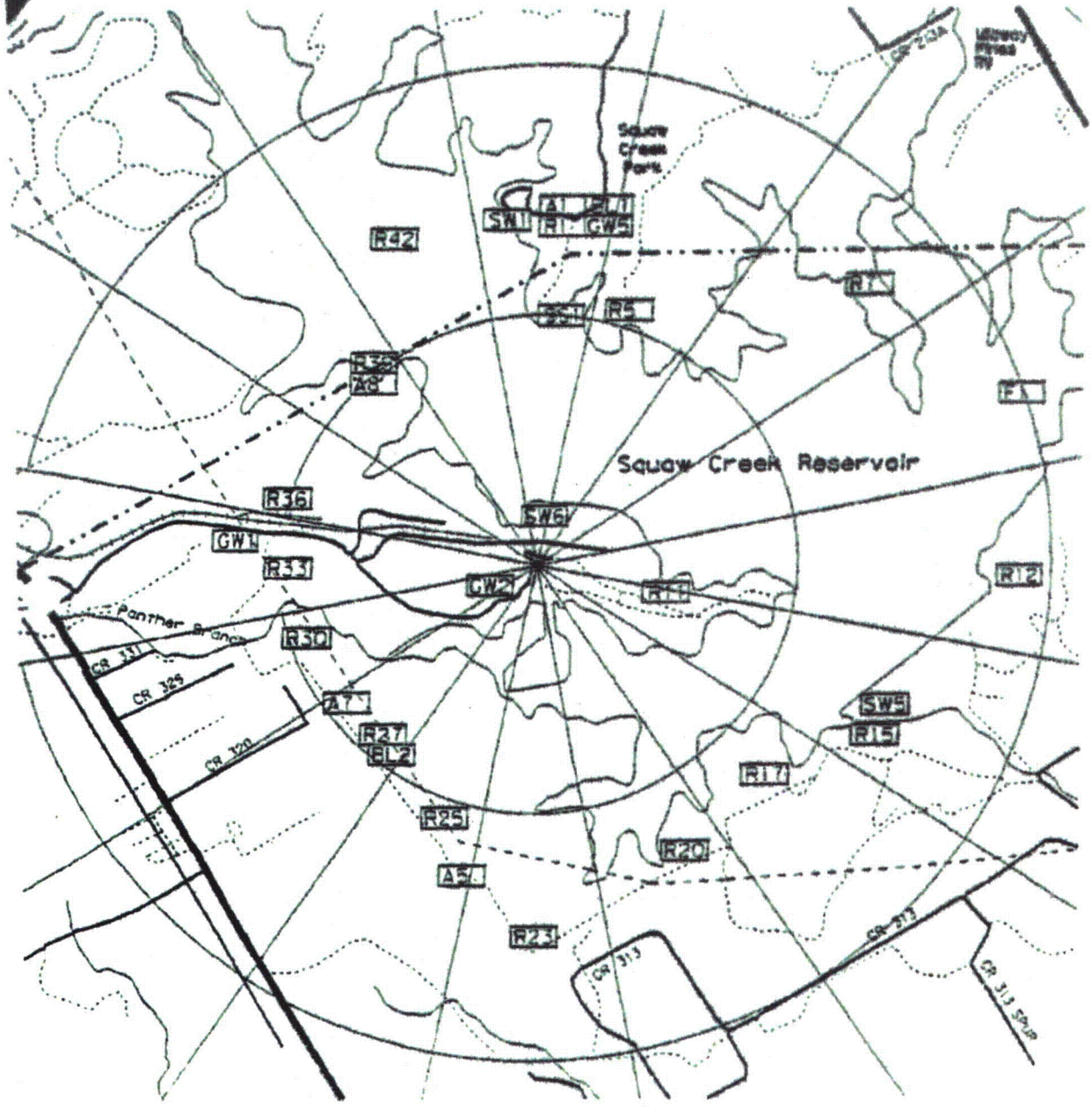
3) Plant potable water could be supplied by surface water from Squaw Creek Reservoir (location SW6) or ground water from onsite wells (location GW2) but is normally supplied by the Somerville County Water District from the Wheeler Branch Reservoir. Each of these possible sources of water are sampled.

4) Ground water supplies in the plant site area are not affected by plant liquid effluents as discussed in CPSES FSAR Section 2.4.13 and are therefore not required to be monitored for radioactivity to meet the requirements of the Radiological Effluent Control 3/4.12.1, Table 3.12-1.

5) Broadleaf sampling will be performed at the specified locations if milk samples are unavailable from any location.

6) Plant Potable Water (GW2) and Glen Rose (GW3) are supplied from surface water by the Somerville Water District from the Wheeler Branch Reservoir.

7) CPNPP Security Rifle Range (GW1) is supplied by a local Well.



Environmental Sample Locations Map - 2 Mile Radius

The following Drawing specifically

Reference

Environmental

Sample

Location Map

20 Mile Radius

D01