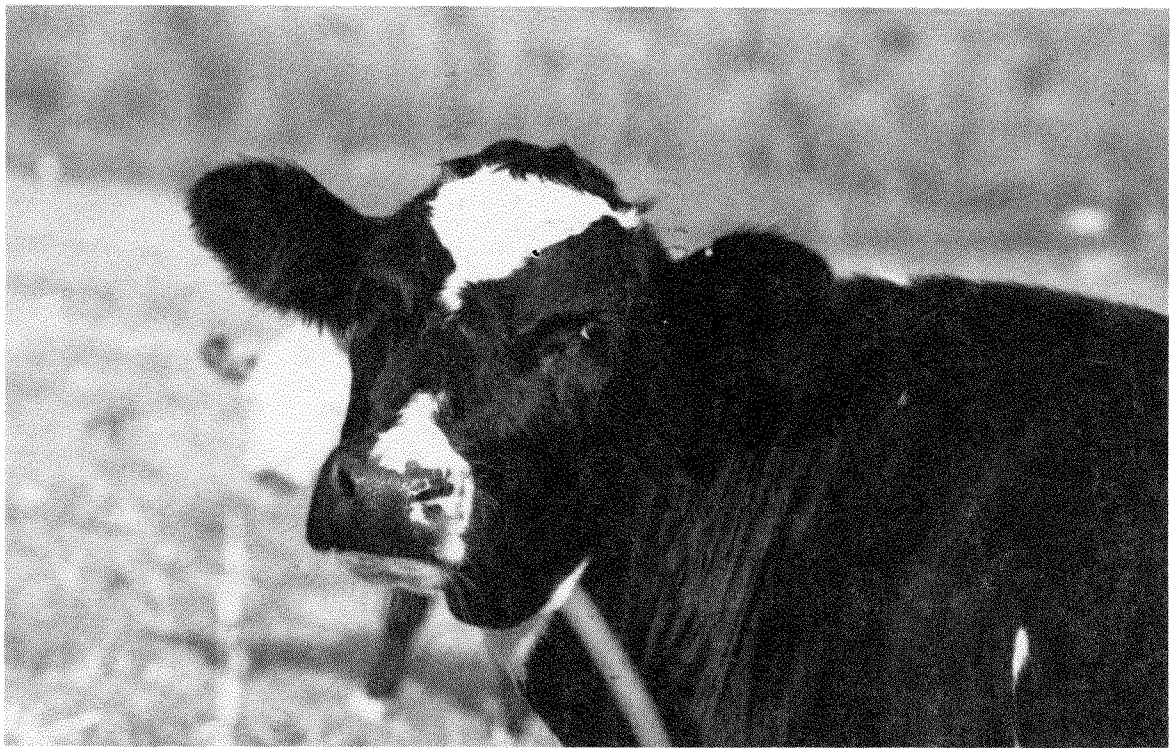


WHAT SORT OF SAMPLE DO YOU WANT?

APPENDIX C - 3

SUMMARY OF BIOLOGICAL SAMPLE DATA

Table C - 3. 1

Radioactivity Concentrations in Milk (μCi/mL) - 1989

Location	H-3	Sr-90	I-129	Cs-134	Cs-137
NNW Farm (BFMREED) 1st Qtr 1989	< 2.01 E-07	< 2.00 E-09	< 7.96 E-10	< 6.09 E-09	< 8.10 E-09
WNW Farm (BFMCOBO) 1st Qtr 1989	< 2.01 E-07	< 2.00 E-09	< 7.96 E-10	< 5.56 E-09	< 5.25 E-09
Control (BFMCTLS) 1st Qtr 1989	< 2.01 E-07	< 2.00 E-09	< 7.96 E-10	< 6.43 E-09	< 9.62 E-09
Control (BFMCTLN) 1st Qtr 1989	< 2.01 E-07	< 2.00 E-09	< 7.96 E-10	< 7.44 E-09	< 9.92 E-09
NNW Farm (BFMREED) 2nd Qtr 1989	< 2.0 E-07	< 2.0 E-09	< 8.0 E-10	< 2.85 E-09	< 3.15 E-09
WNW Farm (BFMCOBO) 2nd Qtr 1989	< 2.0 E-07	< 2.0 E-09	< 8.0 E-10	< 3.10 E-09	< 4.06 E-09
Control (BFMCTLS) 2nd Qtr 1989	< 2.0 E-07	< 2.0 E-09	< 8.0 E-10	< 2.56 E-09	< 2.65 E-09
Control (BFMCTLN) 2nd Qtr 1989	< 2.0 E-07	4.14 ± 0.47 E-09	< 8.0 E-10	< 2.98 E-09	< 4.13E-09
NNW Farm (BFMREED) 3rd Qtr 1989	< 1.27 E-07	1.13 ± 0.34 E-09	< 8.0 E-10	< 2.52E-09	< 2.79E-09
WNW Farm (BFMCOBO) 3rd Qtr 1989	2.81 ± 1.37 E-07	3.40 ±0.41 E-09	< 8.0 E-10	< 4.75E-09	< 6.40E-09
Control (BFMCTLS) 3rd Qtr 1989	2.35±1.34E-07	1.94±0.33E-09	8.32±4.06E-10	< 5.65E-09	< 6.72E-09
Control (BFMCTLN) 3rd Qtr 1989	2.34±0.33E-06	2.56±0.34E-09	< 8.0E-10	< 5.40E-09	< 5.80E-09
NNW Farm (BFMREED) 4th Qtr 1989	< 2.2 E-07	2.72 ± 0.36 E-09	< 8.06 E-10	< 8.51 E-09	< 9.17 E-09
WNW Farm (BFMCOBO) 4th Qtr 1989	< 2.2 E-07	4.57 ± 0.53 E-09	< 8.06 E-10	< 6.86 E-09	< 9.07 E-09
Control (BFMCTLS) 4th Qtr 1989	< 2.2 E-07	2.15 ± 0.29 E-09	< 8.06 E-10	< 9.30 E-09	< 1.04 E-08
Control (BFMCTLN) 4th Qtr 1989	< 2.2 E-07	3.01 ± 0.37 E−09	< 8.06 E-10	< 9.09 E-09	< 1.10 E-08
SE Farm (BFMWIDR) September 1989	5.18 ±1.51 E-07	3.89±0.58 E-09	< 8.0 E-10	< 5.36E-09	< 6.51E-09
SSW Farm (BFMHAUR) September 1989	9.94 ±1.85 E-07	4.75 ± 0.55 E-09	< 8.0 E-10	< 5.36E-09	< 5.09E-09

Table C - 3. 2

Radioactivity Concentrations in Meat (μCi/g Dry) – 1989

Location	% Moisture	Sr-90	Cs-134	Cs-137	K-40
Deer Flesh - Near Site (BFDNEAR #1) 12/89	74.5	9.66 ± 1.80 E−09	not reported	<8 E-08	3.41 ± 0.56 E-07
Deer Flesh - Near Site (BFDNEAR #2) 12/89	42.5	2.89 ± 1.30 E−09	not reported	<8 E-08	9.38 ± 1.27 E-06
Deer Flesh - Near Site (BFDNEAR #3) 12/89	73.8	<1.80 E-09	not reported	<8 E-08	5.05 ± 0.83 E−06
Deer Flesh - Background (BFDCTRL #1) 11/89	69.6	6.12 ± 1.34 E−09	not reported	<8 E-08	3.38 ± 0.56 E-06
Deer Flesh - Background (BFDCTRL #2) 12/89	68.0	4.62 ± 1.56 E −09	not reported	<8E-08	5.66 ± 0.78 E-06
Deer Flesh - Background (BFDCTRL #3) 12/89	73.6	7.04 ± 2.15 E−09	<1.52 E-08	5.84 ± 1.96 E-08	1.03 ± 0.16 E-05
Beef Flesh - Background (BFBCTRL) 7/89	77.3	5.20 ± 1.48 E−09	<6.15 E-09	<8.07 E-09	1.14 ± 0.12 E-05
Beef Flesh - Near Site (BFBNEAR) 7/89	74.8	8.21 ± 1.83 E−09	<5.13 E-09	<6.47 E-09	5.20 ± 0.56 E-06
Beef Flesh - Background (BFBCTRL) 11/89	74.0	3.08 ± 1.39 E−09	not reported	1.54 ± 0.35 E-07	7.35 ± 1.04 E-06
Beef Flesh - Near Site (BFBNEAR) 12/89	75.9	1.20 ± 0.22 E−08	<3 E-08	<3 E-08	1.37 ± 0.15 E-05

Table C - 3. 3

Radioactivity Concentrations in Food Crops (μCi/g Dry) - 1989

Location	% Moisture	H-3 (μCi/ml)	Sr-90	K-40	Co-60	Cs-137
Beans - Near-site (BFVNEAR)	95	1.18 ± 0.93 E−05	1.68 ± 0.23 E-07	3.85 ±0.66 E-05	<2.87 E-07	<1.92 E-07
Beans-Background (BFVCTRL)	95	1.97 ± 1.01 E−05	2.93 ± 0.28 E-07	3.51 ±0.70 E-05	<4.13 E-07	<2.89 E-07
Tomatoes - Near-site (BFVNEAR)	97	<1.25 E-05	5.10 ± 1.38 E−08	5.40 ± 0.84 E-05	<3.97E-07	<2.64 E-07
Tomatoes-Background (BFVCTRL)	97	<1.27 E-05	4.73 ± 1.46 E−08	6.21 ± 1.10 E-05	<4.38E-07	<2.03 E-07
Corn - Near-site (BFVNEAR)	76	<2.45 E-06	2.80 ± 1.66 E−09	4.77 ± 1.90 E-06	<2.69E-07	<1.53 E-07
Corn-Background (BFVCTRL)	93	<1.02 E-05	9.30 ± 8.34 E−09	5.53 ± 1.40 E-05	<1.06E-06	<5.22 E-07
Hay-Near-site (BFHNEAR)	N/A	N/A	4.08±0.87E-08	2.96±0.54E-05	<3.24E-07	<1.78E-07
Hay-Background (BFHCTLS)	N/A	N/A	2.76±0.44E-08	1.20±0.26E-05	<2.18E-07	<1.47E-07

Table C - 3. 4

Radioactivity Concentrations in Fish from Cattaraugus Creek (μCi/g -Dry) - 1989

Cattaraugus Creek (BFFCATC) above Springville Dam 2nd Quarter (Flesh)

	Sr-90	Cs-134	Cs-137
Median	6.35 E-08	< 1.72 E-07	< 2.00 E-07
Geometric Deviation (Avg)	2.74	1.40	1.38
Maximum	2.04 E-07	< 2.7 E-07	< 3.0 E-07
Minimum	2.05 E-08	< 1.1 E-07	< 1.3 E-07
Moisture (Average %)	79.1		

Cattaraugus Creek (BFFCATC) 3rd Quarter (Flesh)

	Sr-90	Cs-134	Cs-137
Median	< 2.90 E-08	< 5.00 E-07	< 5.20 E-07
Geometric Deviation (Avg)	1.59	1.75	1.67
Maximum	4.32 E-08	< 7.9 E-07	< 7.9 E-07
Minimum	< 1.3 E-08	< 2.4 E-07	< 2.5 E-07
Moisture (Average %)	80.0		

Cattaraugus Creek (BFFCTRL) Background 2nd Quarter(Flesh)

	Sr-90	Cs-134	Cs-137
Median	2.05 E-08	< 1.34 E-07	< 1.45 E-07
Geometric Deviation (Avg)	2.02	1.78	1.68
Maximum	5.75 E-07	< 2.0 E-07	3.79 E-07
Minimum	< 1.3 E-08	< 4.7 E-08	< 9.4 E-08
Moisture (Average %)	76.9		

Cattaraugus Creek (BFFCTRL) Background 3rd Quarter(Flesh)

	Sr-90	Cs-134	Cs-137
Median	< 1.90 E-08	< 3.10 E-07	< 3.25 E-07
Geometric Deviation (Avg)	1.77	1.68	1.60
Maximum	< 3.3 E-08	< 4.6 E-07	< 5.6 E-07
Minimum	< 7.6 E-09	< 1.4 E-07	< 1.7 E-07
Moisture (Average %)	79.7		

Cattaraugus Creek (BFFCATD) Below Springville Dam 2nd Quarter (Flesh)

	Sr-90	Cs-134	Cs-137
Median	5.20 E-08	< 1.01 E-07	< 1.26 E-07
Geometric Deviation (Avg)	4.32	1.84	1.80
Maximum	3.35 E-07	< 2.2 E-07	3.33 E-07
Minimum	< 9.7 E-09	< 5.0 E-08	< 6.1 E-08
Moisture (Average %)	79.1		

Cattaraugus Creek (BFFCATD) 3rd Quarter (Flesh)

	Sr-90	Cs-134	Cs-137
Median	< 2.75 E-08	< 3.00 E-07	< 3.25 E-07
Geometric Deviation (Avg)	6.08	2.88	2.58
Maximum	1.88 E-07	< 8.2 E-07	< 9.2 E-07
Minimum	< 2.0 E-09	< 7.2 E-08	< 1.1 E-07
Moisture (Average %)	81.8		

CHANGING A PERIMETER TLD

APPENDIX C - 4

SUMMARY OF DIRECT RADIATION MONITORING DATA

Table C - 4. 1

Summary of Quarterly Averages of TLD Measurements for 1989 *(in roentgen ± 3 St. Dev./quarter)*

Location	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Location Average
1	.018 ± .002	.020 ± .002	.022 ± .006	.020 ± .003	.020 ± .003
2	.018 ± .004	.019 ± .002	.021 ± .004	.018 ± .004	.019 ± .004
3	.016 ± .002	.017 ± .004	.021 ± .003	.018 ± .005	.018 ± .004
4	.018 ± .002	.017 ± .004	.021 ± .004	.018 ± .004	.019 ± .003
5	.018 ± .003	.019 ± .002	.023 ± .002	.020 ± .008	.020 ± .004
6	.017 ± .004	.030 ± .019	.020 ± .001	.019 ± .005	.021 ± .007
7	.017 ± .003	.017 ± .004	.021 ± .003	.017 ± .004	.018 ± .003
8	.017 ± .003	.017 ± .002	.022 ± .004	.018 ± .009	.019 ± .005
9	.017 ± .003	.017 ± .005	.021 ± .003	.018 ± .004	.018 ± .004
10	.018 ± .004	.017 ± .003	.025 ± .015	.019 ± .008	.020 ± .008
11	.020 ± .002	.020 ± .006	.024 ± .004	.021 ± .005	.021 ± .004
12	.017 ± .002	.016 ± .003	.024 ± .004	.017 ± .004	.019 ± .003
13	.019 ± .003	.019 ± .004	.026 ± .006	.020 ± .004	.021 ± .004
14	.019 ± .002	.018 ± .005	.024 ± .004	.019 ± .005	.020 ± .004
15	.018 ± .004	***	.022 ± .002	.019 ± .004	.020 ± .003
16	.018 ± .004	.018 ± .003	.024 ± .004	.019 ± .005	.020 ± .004
17	.020 ± .002	.018 ± .009	.023 ± .002	.021 ± .006	.021 ± .005
18**	.026 ± .004	.026 ± .003	.037 ± .005	.034 ± .011	.031 ± .005
19**	.021 ± .004	.020 ± .005	.027 ± .004	.022 ± .009	.023 ± .006
20	.017 ± .004	.017 ± .004	.024 ± .003	.019 ± .005	.019 ± .004
21	.018 ± .004	.018 ± .004	.023 ± .003	.018 ± .006	.019 ± .004
22	.018 ± .004	.017 ± .003	.023 ± .006	.017 ± .007	.019 ± .005
23	.015 ± .002	.016 ± .004	.023 ± .003	.016 ± .004	.017 ± .003
24**	1.446 ± .325	1.353 ± .393	1.484 ± .300	1.449 ± .226	1.433 ± .311
25	.032 ± .002	.032 ± .007	.040 ± .007	.032 ± .007	.034 ± .006
26	.030 ± .007	.029 ± .003	.039 ± .004	.029 ± .011	.032 ± .006
27	.021 ± .002	.020 ± .005	.028 ± .004	.018 ± .006	.022 ± .004
28	.019 ± .002	.020 ± .005	.027 ± .004	.020 ± .006	.021 ± .004
29	.022 ± .004	.024 ± .005	.033 ± .008	.024 ± .005	.026 ± .005
30	.029 ± .005	.029 ± .010	.038 ± .006	.031 ± .003	.032 ± .006
31	.019 ± .003	.018 ± .004	.024 ± .002	.019 ± .007	.020 ± .004
32	.020 ± .005	.020 ± .003	.031 ± .007	.025 ± .004	.024 ± .005
33	.021 ± .003	.021 ± .005	.030 ± .005	.026 ± .010	.024 ± .006
34	.026 ± .004	.029 ± .005	.049 ± .010	.041 ± .005	.036 ± .006
35	.027 ± .004	.029 ± .008	.046 ± .007	.046 ± .012	.037 ± .008
36	.034 ± .006	.037 ± .008	.056 ± .006	.055 ± .009	.045 ± .007
37	.017 ± .003	.015 ± .002	.023 ± .010	.017 ± .004	.018 ± .005
38**	.042 ± .007	.042 ± .011	.051 ± .011	.043 ± .007	.045 ± .009
39**	.085 ± .012	.085 ± .009	.099 ± .015	.090 ± .008	.090 ± .011
40**	.200 ± .031	.183 ± .046	.203 ± .038	.211 ± .032	.199 ± .037
41			.020 ± .003	.016 ± .004	.018 ± .010
Quarterly Average**	.020 ± .003	.021 ± .005	.027 ± .005	.022 ± .006	.023 ± .005

* Locations are shown in Figures A-7, A-8, and A-9. TLD 41 put in place third quarter.

** TLDs 18, 19, 24, 38, 39, and 40 are not included in the quarterly average. *** TLD package missing

Figure C-4. 1

Average Quarterly Gamma Exposure Rates (μR/hr) around the West Valley Demonstration Project — 1989

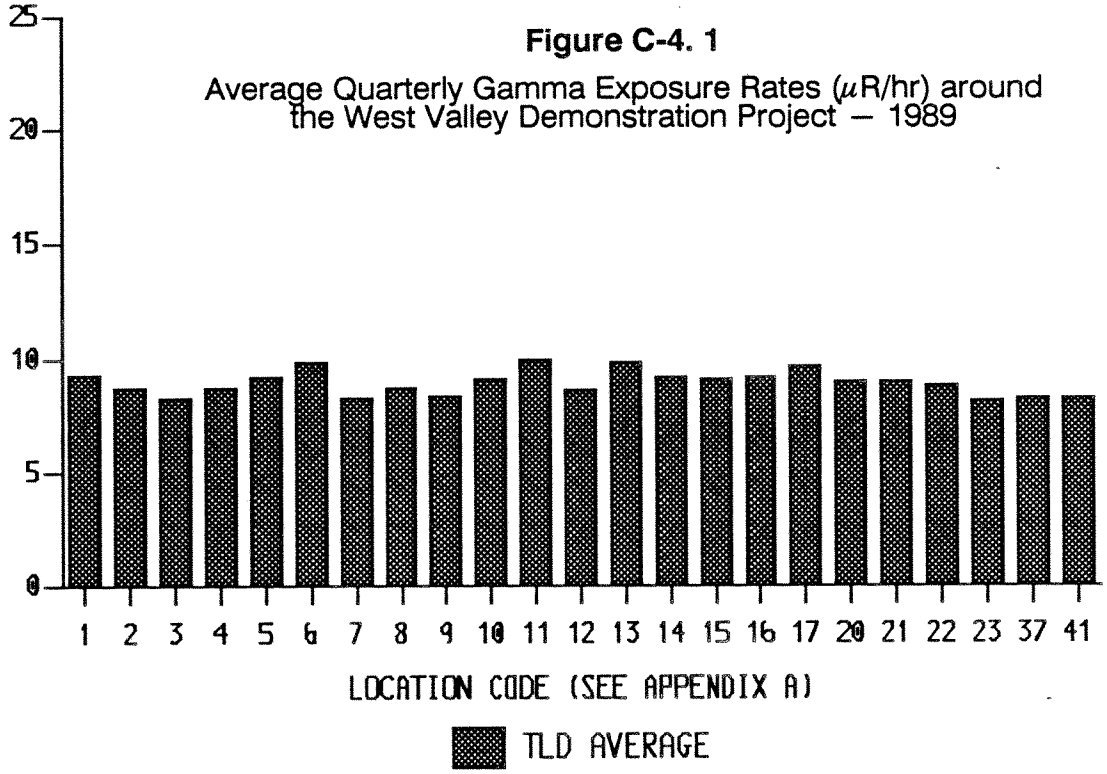
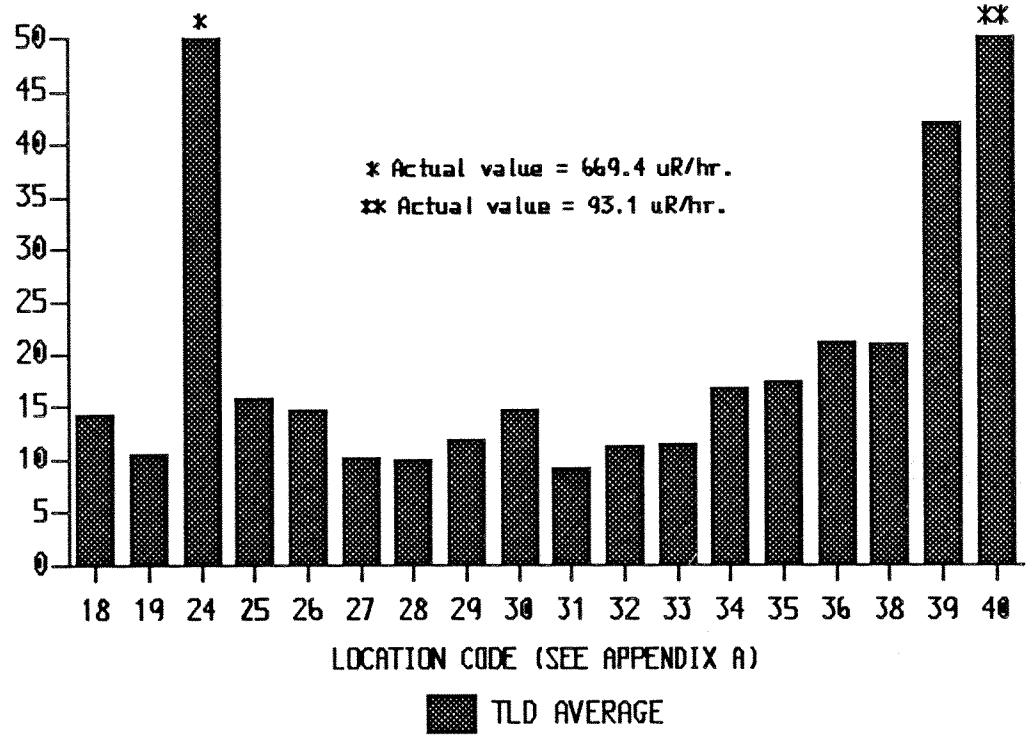


Figure C- 4. 2

Average Quarterly Gamma Exposure Rates On-Site — 1989

μR/hr