#080808

MEMORANDUM: January 21, 1997

SUBJECT: Review of surface water exposure portions of Griffin Corporation's response to the propazine Grassley-Allen letter and a supporting study (**D224188**)

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1. INTRODUCTION

This review is of the portions of Griffin Corporation's September 27, 1995 response to the propazine Grassley-Allen letter and a supporting study that are relevant to surface water contamination:

Section B.2. Propazine has lower potential to runoff in surface water

Section E. Drinking water hazards do not merit special review

To support their positions, Griffin Corporation refers to the following study report:

Supporting Study: Williams WM, Cheplick JM, Witkin DB, Hutton III JV, and Umbaugh III DB. 1995. The potential for off-target movement of propazine to surface and ground water associated with the use of MILO-PRO on sorghum. Performed by Waterborne Environmental, Inc. and funded/submitted by Griffin Corporation. (No MRID # provided).

The study includes computer model estimates of propazine concentrations in edge-of-the-field ponds.

2. RECOMMENDATIONS

The following recommendations are based upon the conclusions listed in Section 3 of this memorandum.

1) The SWS/EFGFWB/EFED recommends that any reasons for including propazine in the triazine special review pertaining to surface water contamination be re-evaluated. However, that is not to

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suggest that the SWS/EFGWB/EFED does not have concerns over propazine in surface water. Like a number of pesticides currently undergoing reregistration, thought should be given to possible mitigation and monitoring requirements for propazine, particularly within the coastal areas of Texas.

2) Any re-evaluation of the placement of propazine into Special Review should take into account the multiple pesticide exposure and risk assessment requirements of the FQPA. Even though propazine appears to be less of a potential problem than atrazine or cyanazine on a single chemical basis, there may be some regions such as coastal Texas where it contributes substantially to the overall exposure to triazines.

3) The above recommendations are based in part upon the registrant's contention that current uses of propazine will not be expanded in terms of crops or geographical areas.

3. CONCLUSIONS

The following conclusions are based upon discussions in Sections 4 through 8 of this memorandum.

1) The SWS/EFGWB/EFED supported placing atrazine and cyanazine in Special Review primarily because of drinking water concerns. A relatively large volume of mostly seasonal surface water monitoring data exists for atrazine and cyanazine in areas where they are heavily used. Such data suggested a potential for somewhat frequent as well as widespread exceedence of the atrazine MCL (3 ug/l) and the cyanazine MCLG (1 ug/L) by annual average concentrations in surface water source drinking water supply systems. Such data also suggested some potential for widespread ecological effects though they were not cited in the PD 1 as reasons for placing atrazine and cyanazine in Special Review.

Although propazine exhibits persistence and mobility characteristics comparable to atrazine, the SWS/EFGWB/EFED currently has no data to suggest a potential for frequent and widespread exceedence of the propazine lifetime drinking water HAL of 10 ug/L by annual average concentrations in surface water source drinking water supply systems. Likewise, there is no data to suggest widespread ecological effects. Although there is a lack of validated data for areas of high propazine runoff potential such as the coastal areas of Texas, extensive Texas listings in STORET and modeling of the Texas coastal region have failed to show any significant drinking water or ecological concerns.

2) Although some annual average computer EECs did exceed the propazine HAL of 10 ug/L and some annual maximum instantaneous EECs exceeded acute EC50s for sensitive species, exceedences were relatively small (risk quotients no more than approximately 2X to 3X). The risk quotients are not very high given the highly

conservative nature of edge of the field pond EECs which probably typically exceed actual concentrations in surface water and surface water source drinking water supply systems by 1-2 orders of magnitude. Small increases in the EECs due to a decrease in the K_{oc} input and an increase in the soil degradation half-life input (see review of modeling) are unlikely to change this conclusion.

3) Even if annual average propazine concentrations occasionally exceed the HAL in a small number of supply systems or peak concentrations occasionally exceed acute toxic thresholds for sensitive aquatic species, the potential for widespread problems should be small compared to atrazine. The resason is because the number of propazine market sorghum acres is much less than the number of corn acres. Also, providing that semi-arid propazine market regions are not over irrigated to reduce soil salinity, the overall runoff potential for propazine should be less than for atrazine due to a greater percentage of overall use in semi-arid regions.

4. RUNOFF POTENTIAL

4.1 Griffin's Position: Griffin contends that propazine has a relatively low runoff potential (in general and when compared to the corn triazines atrazine and cyanazine). Presumably because the persistence and mobility of propazine is comparable to that of atrazine, Griffin bases their contention primarily on seasonal rainfall and the hydrologic characteristics of soils within the major propazine market area. According to Griffin, almost all of the current and future propazine use will be on sorghum within the shaded regions in Figure 1 (Figure 1 of the Williams, etal 1995 report).

With the exception of the central to north coastal plain of Texas and a small area in eastern Oklahoma, Griffin contends that the other major propazine market areas have relatively low runoff potential based upon seasonal rainfall and the infiltration characteristics of predominant soils. They also indicate that in addition to the number of sorghum acres in propazine market areas being much lower than the number of total sorghum acres and the number of corn acres, the percentage of total sorghum/propazine market acres in > 15 inch seasonal rainfall areas is also lower than the percentage of total sorghum acres and the percentage of corn acres in such areas.

Seasonal rainfall (rainfall within 120 days post-application) less than 15 inches, between 15 and 20 inches and greater than 20 inches on "propazine market areas" are presented in Figure 2 (Figure 6 of the Williams, etal 1995 report). No propazine market areas had seasonal rainfall > 20 inches. Of the 4 hydrologic soil groupings (A, B, C, D), D soils followed by C soils have the lowest infiltration rates and therefore the highest potential for runoff. Counties within the propazine market area with > 75% of sorghum acres grown in predominately D soils are shown in Figure 3 (altered black and white version of color Figure 7 of the Williams etal. 1995 report shows > 75% D soil areas in dark blue or black). Counties within the propazine market area with > 75% of sorghum acres grown in predominately C and D soils (excluding counties with > 75% D soils) are shown in Figure 4 (altered black and white version of color Figure 7 of the Williams etal. 1995 report shows >75% C and D soil areas in dark blue/black - excluding > 75% D soil areas).

Figure 5 (Figure 10 of the Williams etal. 1995 report) shows counties within the propazine market area that receive 15-20 inches of seasonal rainfall and have > 75% of sorghum acres grown in predominately D soils. Figure 5 is an overlay of the 15-20 inch seasonal rainfall portion of Figure 2 (Figure 6 of the Williams, etal 1995 report) and the >75% D soil portion of Figure 3 (altered black and white version of color Figure 7 of the Williams etal. 1995 report shows > 75% D soil areas in dark blue/black). With the exception of 4 counties in eastern Oklahoma, the counties are located primarily within the central to northern coastal plain of Texas. Pointing out that none of the propazine market area had seasonal rainfall > 20 inches, Griffin contends that these counties with 15-20 inches seasonal rainfall and predominately D soils represent the highest runoff potential in the propazine market area.

Griffin contends that the number of sorghum acres in the propazine market/sorghum area are substantially smaller than the total number of sorghum acres and represent an even smaller fraction of total corn acres. Furthermore, Griffin contends that overall, the propazine market/sorghum area is more arid than the larger total sorghum and corn growing areas. Figure 6 (Figure 17 of the Williams etal, 1995 report) shows the number of acres of sorghum in the propazine market area compared to the total number of sorghum and corn acres in regions receiving < 10 inches, 10 to < 15 inches, 15 to < 20 inches, and > 20 inches seasonal rainfall and also shows the percentage of the total represented by each.

In semi-arid regions receiving < 10 inches of seasonal rainfall, the number of total sorghum acres and number of corn acres are slightly larger than the number of propazine market/sorghum acres, but are somewhat comparable (4-6 million acres). However, the percentage of propazine market/sorghum acres in < 10 inch seasonal rainfall areas (46.8%) is much greater than the percentage of total sorghum acres (28.2%), and percentage of total corn acres (7.1%) in such regions. In regions receiving 10 to < 15 inches of seasonal rainfall the number of corn acres (45 million) is much larger than either the total number of sorghum acres (approximately 5.5 million acres) or the number of propazine market/sorghum acres (approximately 4 million acres). However, the percentages represented by each are somewhat more comparable (54.9% of corn; 37.3 % of total sorghum; 42.9% of propazine market area/sorghum).

In regions receiving 15 to < 20 inches of rain, the number of corn acres (approximately 32 million acres) and the number of total sorghum acres (approximately 5.5 million acres) are both substantially greater than the number of propazine market area/sorghum acres (approximately 1 million acres) as are the percentages they represent (38% of corn and 34.5% of total sorghum compared to 10.4% of propazine market area/sorghum). Although the propazine market area does not include any regions receiving > 20 inches seasonal rainfall, the percentage of corn acres (0.03%) and percentage of total sorghum acres (0.02%) in such regions are very small.

4.2 Surface Water Section/EFGWB/EFED/OPP Response:

1) We concur with Griffin that counties receiving 15 to 20 inches seasonal rainfall and with > 75% sorghum acres grown in predominantly D soils) as presented in Figure 5 (Figure 10 of the Williams etal, 1995 report) probably represent areas with the highest propazine runoff potential.

2) Although the GIS work performed by the contractor supplied useful information, the use of a greater number of bins for both the seasonal rainfall and the hydrological soil groupings could have supplied a substantial amount of additional useful information. For example, the < 15 inch seasonal rainfall bin for Figure 2 (Figure 6 of the Williams, etal 1995 report) could have been further divided into < 10 inch and 10 to < 15 inch seasonal rainfall bins like they were for Figure 6 (Figure 17 of the Williams etal, 1995 report). The > 75% D soil and > 75% C and D soil (excluding > 75% D soil) bins could have been supplemented by 50 to 75% D soil and 50 to 75% C and D soil bins.

3) The overlay of additional portions of Figure 2 (Figure 6 of the Williams, etal 1995 report) and Figure 7 of the Williams etal. 1995 report could have also provided additional useful information. For example, the an overlay of the 15 to 20 inch seasonal rainfall portion of Figure 2 with the >75% C and D soil (not including areas with > 75% D soils) presented in Figure 4 would have resulted in regions with the second highest propazine runoff potential.

4) Inherent in the failure to use a greater number of bins and/or to produce additional overlays may be the contention by Griffin that only regions receiving 15 to 20 inches of seasonal rainfall and with greater than 75% of sorghum grown in predominantly D soils as represented by Figure 5 (Figure 10 of the Williams, etal 1995 report) represent significant runoff potential. Although the counties in Figure 5 probably represent areas with the highest propazine runoff potential, they do not necessarily represent the only areas with significant propazine runoff potential. For example regions with 15-20 inches of seasonal rainfall and > 75% C and D soils (excluding > 75% D soils), 50%-75% D soils or 50-75% C and D soils may also be of concern.

We know from surface water monitoring data as well as modeling that such soils can also have substantial runoff potential. A good example of that is atrazine in Illinois. Most of the surface water source supply systems out of compliance with the Safe Drinking Water Act at least once with respect to atrazine are located in Illinois. As shown from Figure 7 (taken from the PRZM Modeling Manual) C soils predominate in Illinois. As can be seen from Figure 8 (Figure 15 of the Williams etal, 1995 report), Illinois is split almost evenly between regions receiving 15 to 20 inches and 10-15 inches of seasonal rainfall.

5) Based on Figure 6 (Figure 17 of the Williams etal, 1995 report), we concur with Griffin that:

(a) the number of propazine market/sorghum acres is substantially less than the total number of sorghum acres.

(b) the number of propazine market/sorghum acres is much less than the total number of corn acres.

(c) the percentage of propazine market/sorghum acres in > 15 inch seasonal rainfall regions (10.4%) is substantially less than the percentage of total sorghum acres (34.5%), and the percentage of corn acres (38.0%) in such regions; but see next comment.

6) Runoff from California agricultural areas is common due to deliberate over irrigation to reduce soil salinity. The report did not include information on whether such deliberate over irrigation to reduce soil salinity occurs in any of the semi-arid regions of the propazine market area. If so, C and D soils could also be of concern in those semi-arid regions of the propazine market area.

5. MODEL ESTIMATES OF PROPAZINE IN EDGE OF THE FIELD PONDS

5.1 Modeling Methodology: Williams, etal 1995 used the runoff model PRZM-2.3 coupled to the surface water model EXAMS II (version 2.95) to estimate propazine concentrations in 1 ha by 2 meter deep edge of the field ponds draining propazine treated 10 ha fields. Each of 6 agricultural/application method scenarios were modeled over 21 or 36 years of weather thereby corresponding to Tier 2 of an OPP aquatic exposure assessment.

The three agricultural scenarios selected for modeling reportedly represent high, moderate and low propazine runoff potentials based upon a combination of seasonal rainfall and soil characteristics affecting runoff and the adsorption of propazine to soil. The selection process as described in the Williams, etal 1995 report appears to be valid. The three agricultural scenarios modeled are listed in Table 1 (Table 6 of the Williams etal 1995 report). Average seasonal rainfalls for the 3 MLRAs represented are 18.0 inches (MRLA 150A), 13.7 inches (MRLA 75), and 9.8 inches (MRLA 77).

Each of the three agricultural scenarios were modeled assuming aerial application and then separately ground application to give a total of 6 agricultural/application method scenarios. All scenarios were modeled at the reported maximum application rate of once per sorghum crop year at 1.5 lbs ai/acre. A three year rotation of one year sorghum followed by two years cotton was assumed. The following assumptions were made concerning deposition on the target field (75% of application rate for aerial application; 95% of application rate for ground application) and on the edge of the field pond (5% of applied for aerial application; 1% of applied for ground application).

The K_d inputs for different soil horizons were computed from the product of the average organic carbon fraction in the horizon times an assumed K_{oc} value of 154 L/kg which was the value reported in the EFGWB fate one-liner database. The soil degradation half-life assumed for all of the soil horizons was 128 days which is the mid-point of a half-life range for an aerobic soil metabolism study reported in the EFGWB fate one-liner.

Each of the six modeling scenarios and three possible crop rotation orders (1st yr - sorghum, 2nd yr - cotton, 3rd yr - cotton, 4th yr - sorghum....; 1st yr - cotton, 2nd yr - sorghum, 3rd yr - cotton, 4th yr - cotton,....; 1st yr - cotton, 2nd yr - cotton, 3rd yr - sorghum, 4th yr - cotton,....) were modeled over 21 years (2 high runoff scenario) or 36 years (4 low and moderate runoff scenarios). Aerial and ground applications are referred to as application methods A and B, respectively.

For each year and assumed crop rotation simulated (year-rotation), the annual maximum initial, 96-hour, and 21-day average concentrations in the edge of the field pond were computed as well as an annual average concentration. For each of the 6 agricultural/application method scenarios, the results of the three possible rotation orders were combined into the same distribution. For example, the high runoff/aerial application and high runoff/ground application scenarios were each simulated over 21 years. Each year was simulated three times each representing a different assumed rotation order. Consequently, each high runoff scenario (aerial and ground) has a total distribution of 21 X 3 = 62 year-rotations for each assumed application method. The moderate and low runoff scenarios were each simulated over 36 years with each year again simulated three times to represent different assumed rotation orders. Consequently, the moderate and low runoff scenarios each have a total distribution of 36 X 3 = 108 year-rotations for each assumed application method (A-aerial and B-ground).

5.2 Modeling Results:

Distributions of annual average concentrations and annual maximum initial, 96-hour and 21-day average concentrations are tabularly and graphically presented in:

Table 2	and Figure 9	(high runoff scenario/aerial app. A)
Table 3	and Figure 10	(high runoff scenario/ground app. B)
Table 4	and Figure 11	(moderate runoff scenario/aerial app. A)
Table 5	and Figure 12	(moderate runoff scenario/ground app. B)
Table 6	and Figure 13	(low runoff scenario/aerial app. A)
Table 7		(low runoff scenario/ground app. B)

The tables and graphs are taken from Appendix G of the study reports. Each year is repeated three times in each table with a designation of run 1, 2, or 3 corresponding to the 3 different rotation orders. The graphs are Weibel cumulative frequency plots of annual mean concentrations and of annual maximum initial, 96-hour average, and 21-day average concentrations versus the percent of year-rotations with equal or greater values.

The graphs in the Appendix were slightly altered to show a propazine EC50 for a sensitive aquatic species and the propazine lifetime drinking water Health Advisory Level (HAL) as horizontal lines. The intersection of those lines with the distributions of EECs will be used later in discussing potential ecological and drinking water concerns for propazine.

One in ten year (upper 10th percentile or 90th percentile) annual maximum initial, 96-hour average, and 21-day average concentrations for the six combinations of 3 runoff scenarios and 2 assumed application methods are listed in Table 8 (Page 12 of the Williams, etal 1995 report). Unfortunately, one in ten year annual average concentrations are not listed. Instead, values of "long term average" concentrations are listed which are means of annual average concentrations across every year-rotation in the distribution.

No comparisons of the distributions or one in ten year values were made to the acute and chronic aquatic toxicity thresholds. The long term average values (but not the distributions or one in ten year annual average concentrations) were compared to the lifetime drinking water Health Advisory Level (HAL) for propazine of 10 ug/L.

5.3 Surface Water Section/EFGWB/EFED/OPP Review of Modeling

1) The report was well written and documented. The scenario selection process appeared to be valid and most of the input to the models appears to be appropriate. Nevertheless, there are some problems as discussed below.

2) The assumed 3 year rotation of sorghum with cotton is appropriate for the high runoff scenario in Southeast Texas and possibly for the moderate runoff scenario in the Southern High

Plains. However, the absence of cotton in Kansas makes it inappropriate for the low runoff scenario in central Kansas.

3) The environmental fate input into the models was not entirely consistence with OPP guidance for input. A degradation in soil half-life of 128 days was used for all of the horizons. This value was approximately the middle of the range given for the aerobic single soil metabolism study. As stated by the authors, this may have been conservative for the lower horizons with respect to OPP guidance since the reported anaerobic soil metabolism was approximately 8 weeks. However, for the surface horizon, it was less than conservative. With only one aerobic soil metabolism half-life, OPP guidance at that time was to use 3 times that value for the surface horizon (3 X 128 = 384 days). Using linear regression on the aerobic soil metabolism data, OPP calculated a slightly lower half-life of 107 days which corresponds to a model input of 3 X 107 = 321 days.

More recently, we have allowed the use of terrestrial field dissipation half-lives as well as aerobic soil metabolism half-lives in computing the model input providing the terrestrial half-lives are multiplied by a factor of 1.25 to account for non-degradative losses such as leaching, runoff, and volatilization. OPP calculated terrestrial field dissipation half-lives of 220 and 160 days for studies on a sandy loam in Columbia, NY and a silt loam soil in York, NE. Multiplying those values by 1.25 and averaging them with the OPP calculated half-life for the aerobic soil metabolism study of 107 days gives a mean of 194 days with a standard deviation of 84.1 days. Adding on the upper bound 90th percentile confidence limit as specified by OPP guidance gives a model input of 286 days.

4) A K_{oc} of 154 was used for input to the model. Although OPP guidance specifies an average K_{oc} as input to the models for neutral organics, 154 represents the average of organic normalized Freundlich binding constants, not organic carbon normalized K_d values (K_{oc} values). If the Freundlich exponents were close to one, the Freundlich binding constants would approximate K_d values. However, the Freundlich binding exponents were all substantially less than one (0.775, 0.795, 0.797, 0.693). In such cases, K_d values vary depending upon the position on the isotherm.

OPP used a method suggested by R. David Jones to compute K_d values at environmentally relevant concentrations. The method involves

(a) Computing an initial concentration in soil from an assumed application rate and incorporation depth

(b) Assuming x amount of the chemical would desorb into solution when soil and water were mixed at the soil/water ratio used in the batch adsorption study.

(c) Solving the non-linear Freundlich equation for x and calculating the resulting K_d value.

(d) Dividing the K_d values by the organic carbon fractions and averaging the resulting K_{oc} values.

Based on this method, OPP calculated an average K_{oc} of 108 for propazine.

5) Increasing the aerobic soil degradation half-life input from 128 days to OPP calculated inputs of 321 days or 286 days, and decreasing the K_{oc} input from 154 to the OPP calculated input of 108 would increase the estimated EECs.

6) The model estimated EECs may be somewhat comparable to concentrations likely to be found in edge of the field ponds, but are probably much larger than concentrations likely to be found in lakes and ponds farther away and in flowing water. Consequently, the EECs should serve only as a screen for most surface water.

6. SURFACE WATER MONITORING AND STORET

Although Griffin and the Williams, etal 1995 report discusses ground water monitoring, they do not discuss surface water monitoring.

Relatively extensive sampling and analyses of mid-western corn belt surface waters by the USGS at various periods from 1989-1995 have included propazine as an analyte.

The USGS conducted reconnaissance studies on numerous streams within 10 states comprising the midwestern corn belt in 1989, 1990, 1994, and 1995. In 1989, a pre-application sample, a post-application sample and a Fall sample were collected from most of 127 streams. In 1990 and 1994, a pre-application and post-application sample were collected and in 1995 only a post-application sample was collected from a smaller subset (50) of the streams.

The results of the analyses of the post-application samples for propazine are summarized in Table 9. The percentage of detections above the propazine detection limit of 0.05 ug/L in post-application samples (129/306 = 42.1% over all states and years sampled) is surprisingly high given that only Kansas and southern Nebraska lay within the primary propazine market area. However, only 2 of the detections are above 1 ug/L (3.8 ug/L in OH and 1.4 ug/L in IL). Of 301 samples collected pre-application in 1989, 1990, and 1994, and in the Fall 1989, there were only 3 propazine detections above the detection limit of 0.05 ug/L: 0.23 ug/L in NE, 0.08 ug/L in KS, and 0.07 ug/L in MO.

The USGS also conducted a reconnaissance study on 76 reservoirs and lakes with the midwestern corn belt from April 1992 through September 1993. Samples were collected approximately once every two months and analyzed for several herbicides including propazine.

The results of the analyses for propazine are listed in Table 19. Propazine was detected above a detection limit of 0.05 ug/L in 24 of 646 samples = 3.7% over all states and systems sampled. The highest detection was less than 1 ug/L (0.69 ug/L).

Although the USGS reconnaissance studies provide useful information, Kansas and southern Nebraska were the only areas in the primary propazine market area covered by the studies. Furthermore, multiple pesticide residue studies not designed specifically for propazine may include many sampling stations outside of propazine use areas even within Kansas and southern Nebraska.

A summary of data in STORET on propazine in surface water is listed in Table 11. STORET listed a total of 8518 samples collected from 34 states of which ≤ 479 had detections at detection limits ranging from 0.05 ug/L to several ug/L. With the possible exception of Kansas (see next paragraph), only a few concentrations exceeded 1 ug/L and concentrations exceeded 10 ug/L only once (13 ug/L in PA).

The STORET data listed for Kansas was difficult to interpret. In STORET, the remark code "K" is suppose to mean "actual value is known to be less than value given." Consequently, the remark code "K" generally accompanies a detection limit. In the case of Kansas, there were a substantial number of concentrations exceeding 1 ug/L and a few exceeding 10 ug/L that were given the remark code "K". The values were higher than most detection limits and were not repeated as frequently as is the case for most detection limits. Consequently, is was difficult to determine if they were detections or detection limits. Therefore, Table 11 lists Kansas twice. For Kansas (1), no values accompanied by the remark code "K" were treated as detects. For Kansas (2), values exceeding 1.2 ug/L accompanied by the remark code "K" were treated as detects. However, as discussed below, the inclusion of these values as detects still do not indicate high potential risks.

7. AQUATIC RISK QUOTIENTS

Griffin did not compare the EEC distributions or one in ten year EECs to the acute and chronic aquatic toxicity thresholds. Consequently, EFGWB/OPP made those comparisons despite some reservations about the modeling.

Acute and chronic aquatic risk quotients are listed in Tables 12 and 13, respectively. Acute risk quotients were obtained by EFGWB by dividing the upper 10th percentile (one in ten year) annual maximum instantaneous EEC for each of the six runoff/application scenarios by Griffin supplied acute LC50s and EC50s for 9 species. Chronic risk quotients were obtained by EFGWB by dividing the upper 10th percentile (one in ten year) annual maximum 21-day average EEC for each of the six runoff/application scenarios by Griffin supplied chronic MATCs for 4 species.

Acute aquatic risk quotients exceeded one for 3 of the 9 species for which Griffin supplied data (Selenastrum, Skeletonema costatum, Navicula pelliculosa) based on EECs from 2 of the 6 scenarios (high runoff potential/aerial application and high runoff potential/ground application), but the maximum acute aquatic risk quotient was only 2.23. Considering the entire distributions of the EECs, the percentage of the year-rotations with annual maximum instantaneous EECs equal to or greater than the EC50 for the most sensitive species for which Griffin supplied data (24 ug/L for N. pelliculosa) were approximately:

(1) 20% for the high runoff/aerial application scenario (Figure 9),
(2) 25% for the high runoff/ground application scenario (Figure 10)
(3) 3% for the medium runoff/aerial application scenario (Figure 11)
(4) 3% for the medium runoff/ground application scenario (Figure12)
(5) 0% for the low runoff/aerial or ground scenarios (Figure 13)

As can be seen from Figure 14, only 2 of the 201 Kansas (2) detects (worst case assumption) exceeded the EC50 for the most sensitive species for which Griffin supplied data (24 ug/L for N. pelliculosa).

None of the chronic aquatic risk quotients (based on the 4 species for which Griffin supplied data and EECs from six scenarios) exceeded one. The maximum chronic risk quotient was 0.20 for Daphnia magna and the high runoff/ground application scenario. Considering the entire distributions of the EECs, none of the year-rotations for any of the six scenarios had an annual maximum 21-day average EEC equal to or greater than the MATC for the most sensitive species for which Griffin supplied data (250 ug/L for Daphnia magna).

8. DRINKING WATER

Griffin did compare multiple year "long term" averages of estimated annual average concentrations to the lifetime drinking water Health Advisory Level (HAL) for propazine of 10 ug/L. The highest multiple year averages (9.94 ug/L for the high runoff/ground app. scenario and 8.56 ug/L for the high runoff/aerial app. scenario) were slightly below but comparable to the HAL. Multiple year averages for the other scenarios were substantially lower.

Although Griffin is scientifically correct in comparing multiple year "long term" averages to the lifetime HAL, the lifetime HAL generally becomes the MCL to which USEPA compares annual average concentrations for regulatory purposes. Therefore, they should have also compared annual average concentrations to the lifetime HAL.

Drinking water risk quotients are listed in Table 14. Drinking water risk quotients were obtained by EFGWB by dividing the upper 10th percentile (one in ten year) annual average EEC for each of the six runoff/application scenarios by the lifetime drinking water Health Advisory Level (HAL) for propazine of 10 ug/L.

Drinking water risk quotients exceeded one for two of the 6 scenarios modeled (2.0 for the high runoff/aerial application scenario and 2.4 for the high runoff/ground application). However, they are relatively low and are based on EECs that are likely to be much higher than annual average concentrations in actual surface water supply systems.

Considering the entire distributions of the EECs, the percentage of the year-rotations with annual average EECs equal to or greater than the lifetime drinking water Health Advisory Level (HAL) for propazine of 10 ug were approximately:

(1) 28% for the high runoff/aerial application scenario (Figure 9),
(2) 38% for the high runoff/ground application scenario (Figure 10)
(3) 3% for the medium runoff/aerial application scenario (Figure11)
(4) 4% for the medium runoff/ground application scenario (Figure12)
(5) 0% for the low runoff/aerial or ground scenarios (Figure 13).

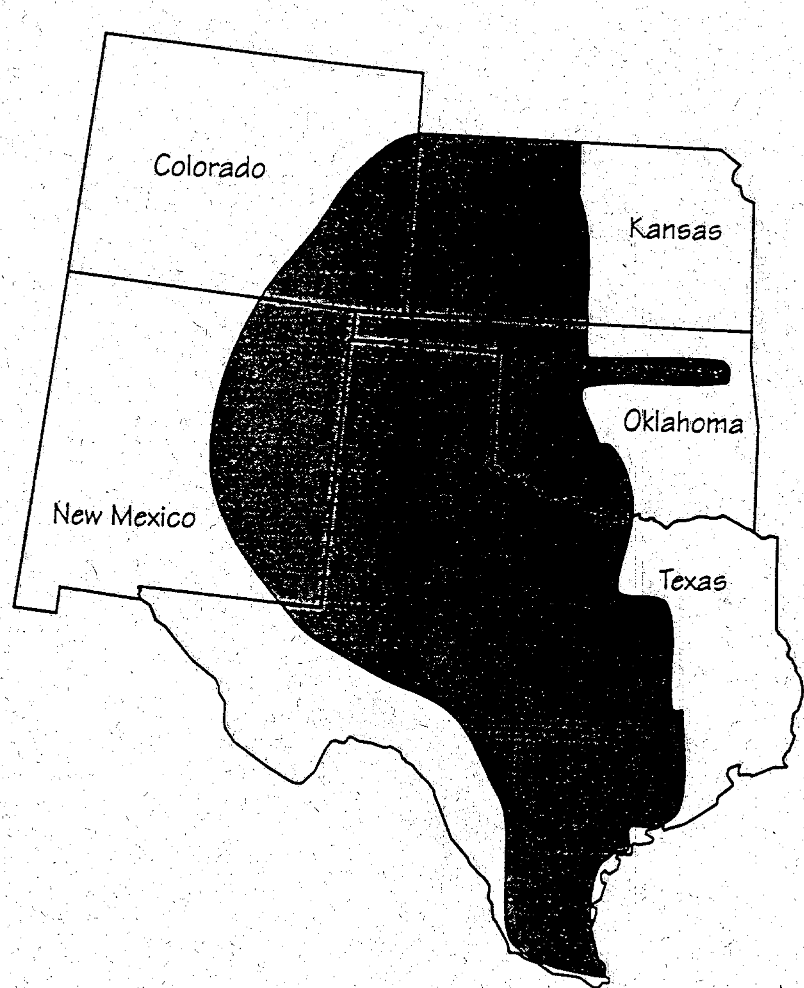


FIGURE 1. Sorghum Production Area where Propazine is Needed

FIGURE ~~6~~ 2
Seasonal Rainfall in Propazine Market Areas

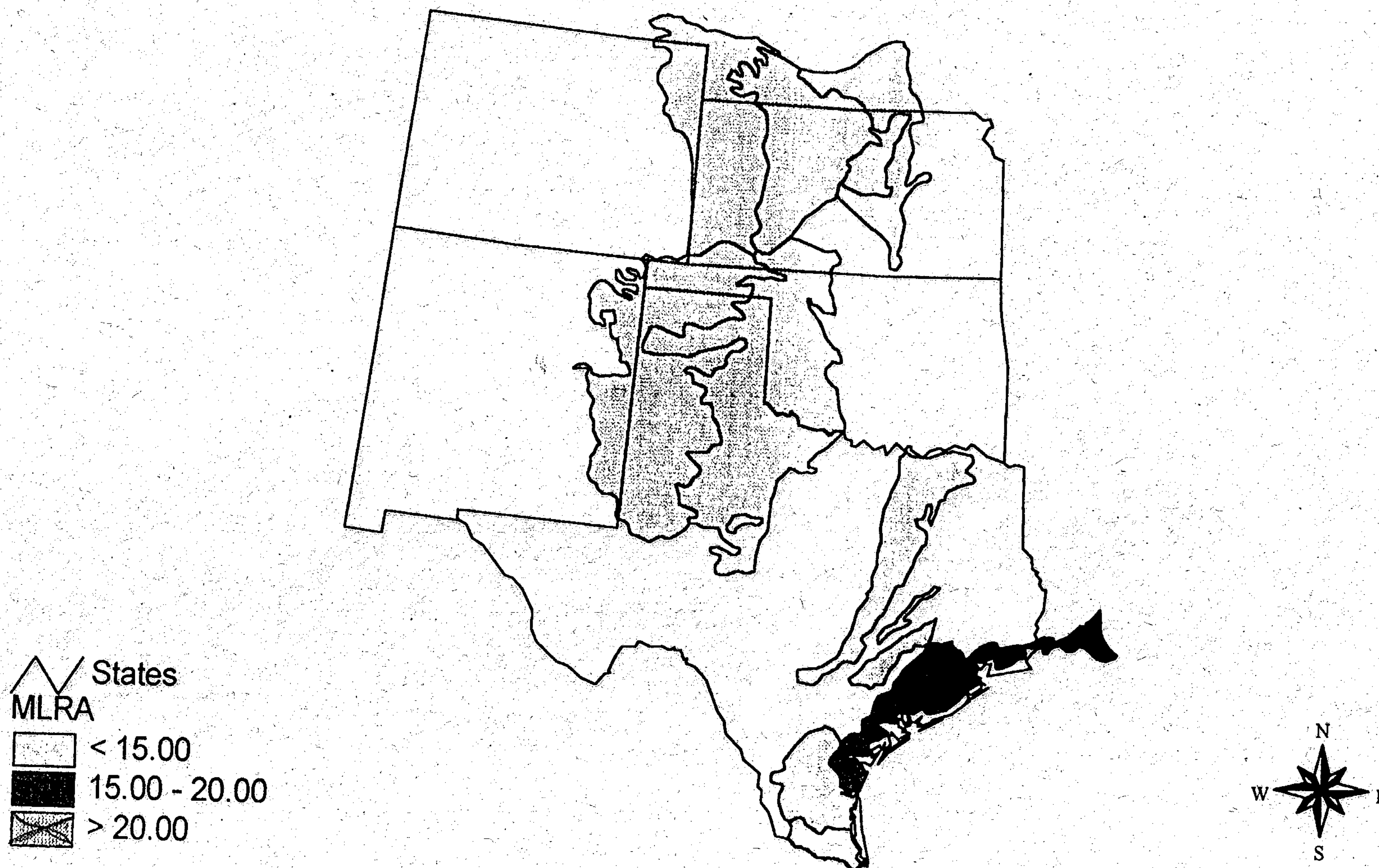
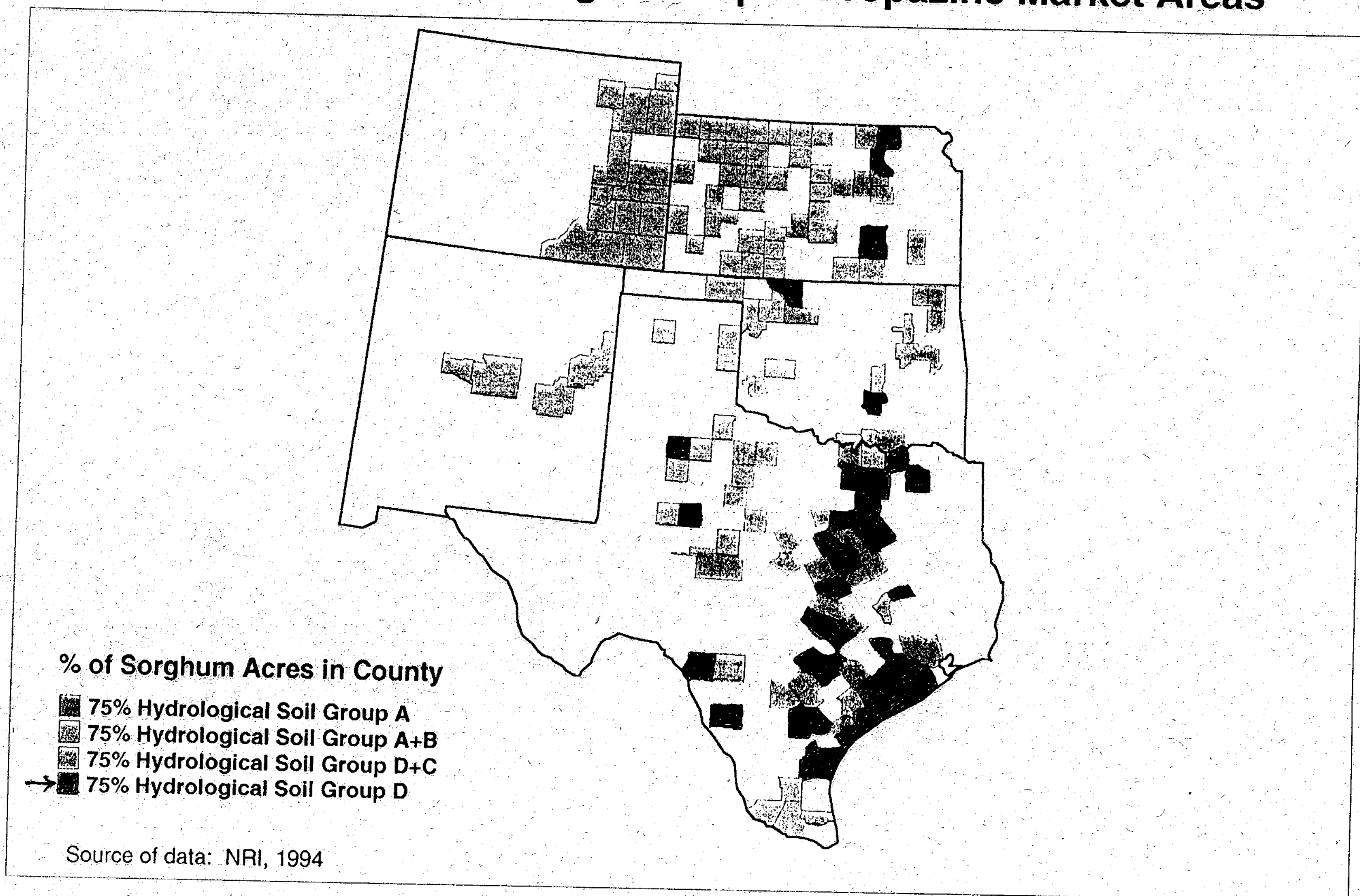


FIGURE 3
Dominate Soil Hydrologic Group in Propazine Market Areas



Source of data: NRI, 1994

FIGURE 4
Dominate Soil Hydrologic Group in Propazine Market Areas

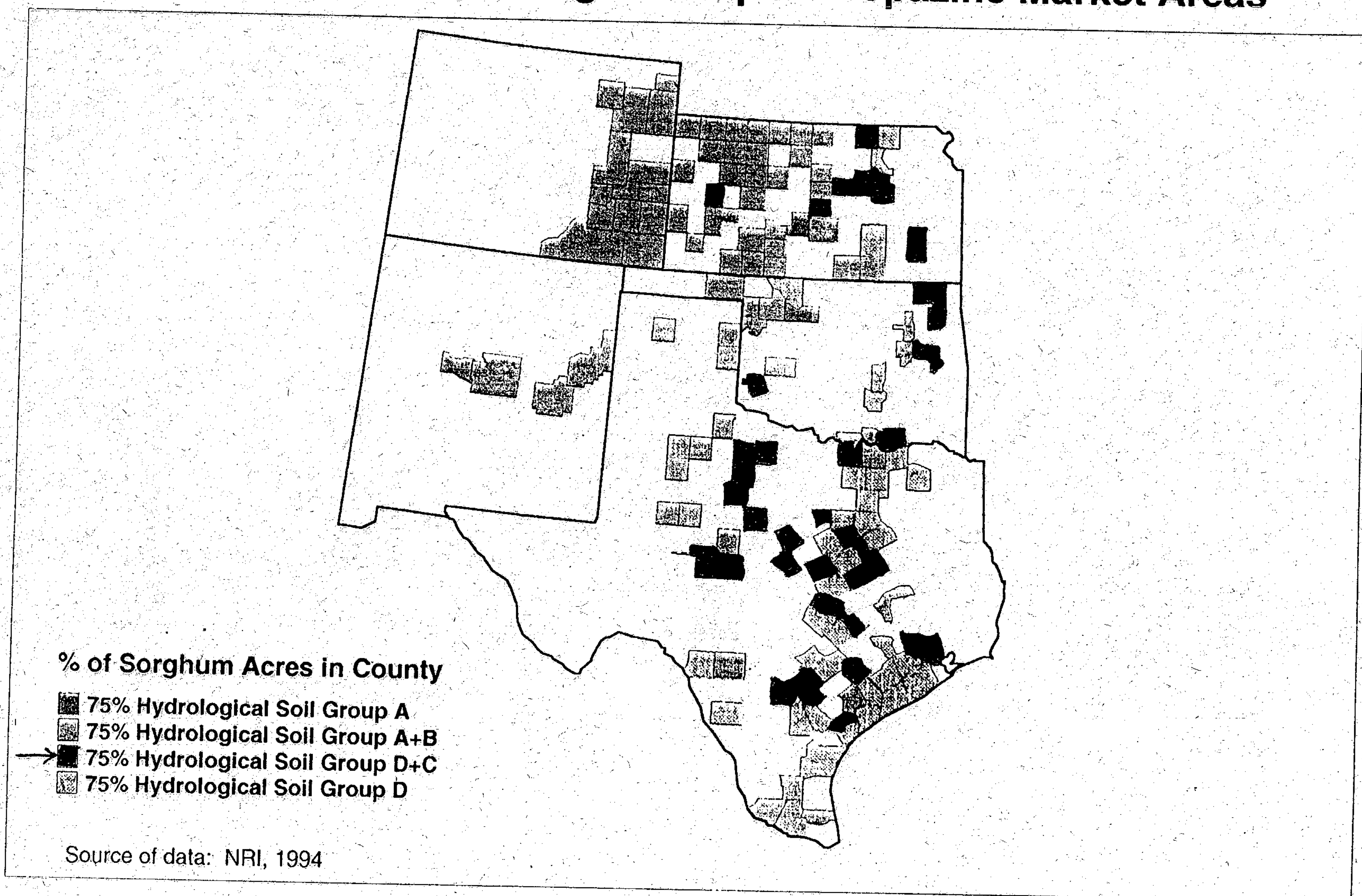


FIGURE ~~10~~ 5

Sorghum Producing Areas with High Runoff Potential Soils with High to Moderate Critical Season Rainfall

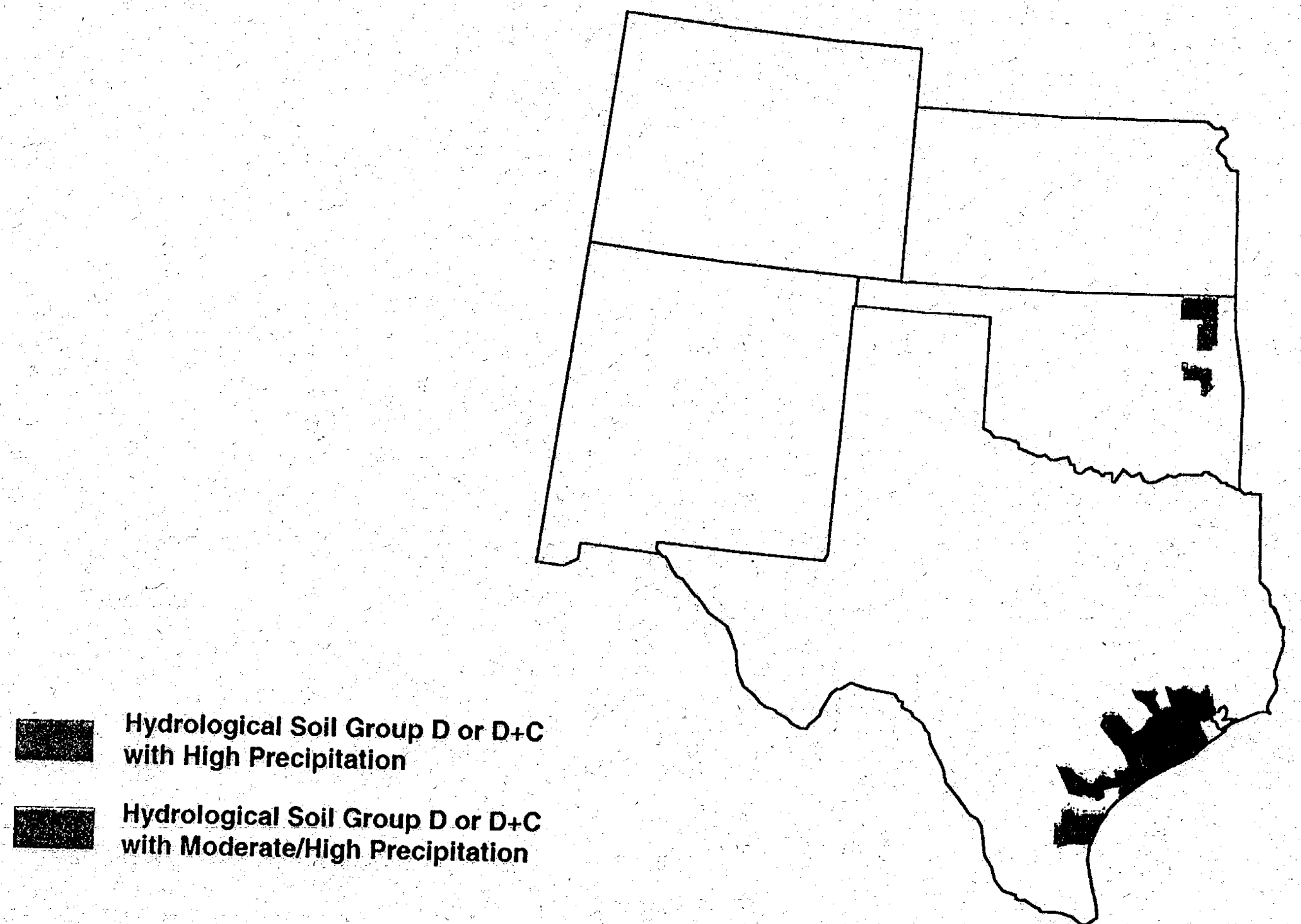
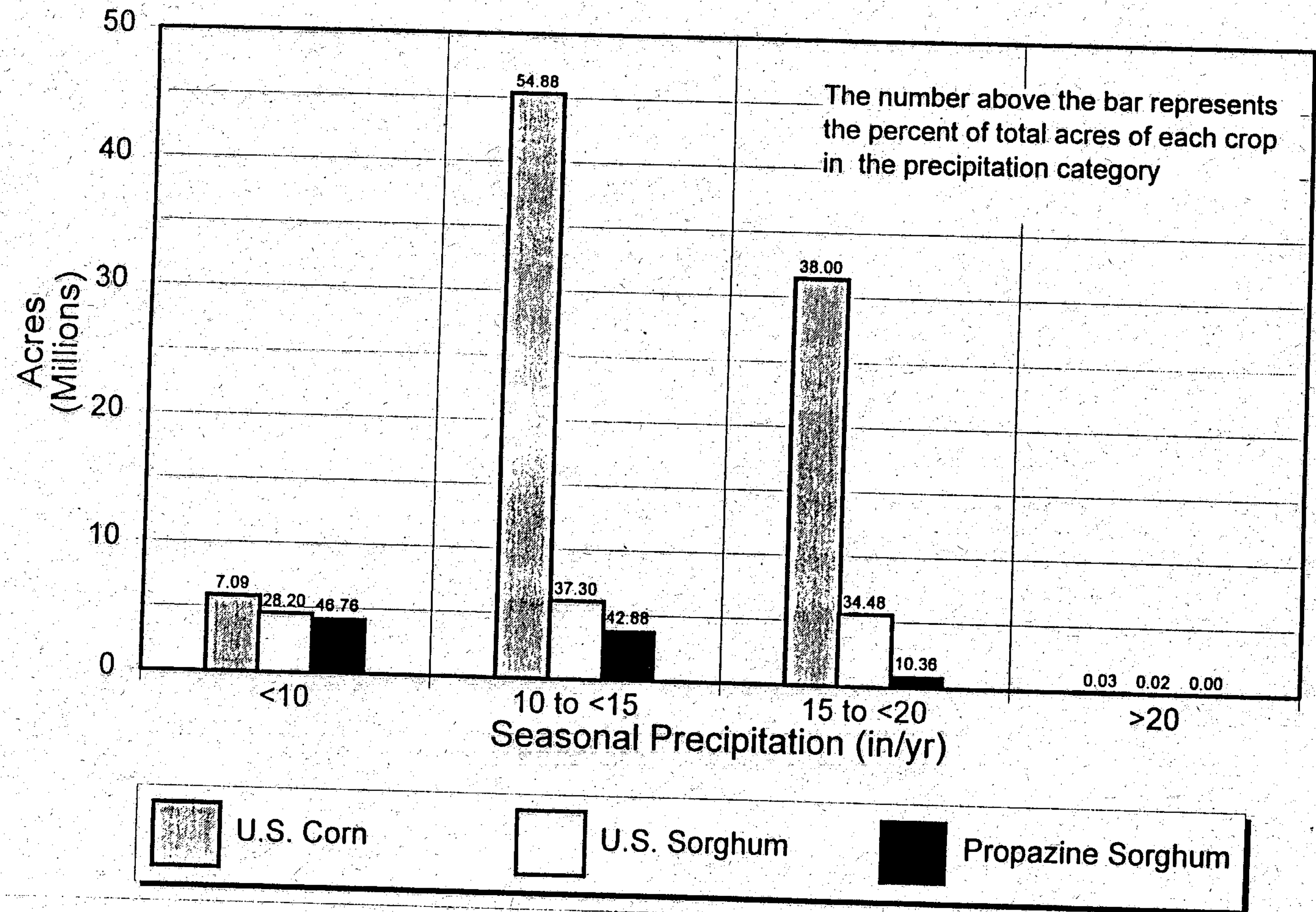


FIGURE ~~17~~ 6

Seasonal Rainfall Comparison
U.S. Corn, U.S. Sorghum, and Propazine Market-Area Sorghum



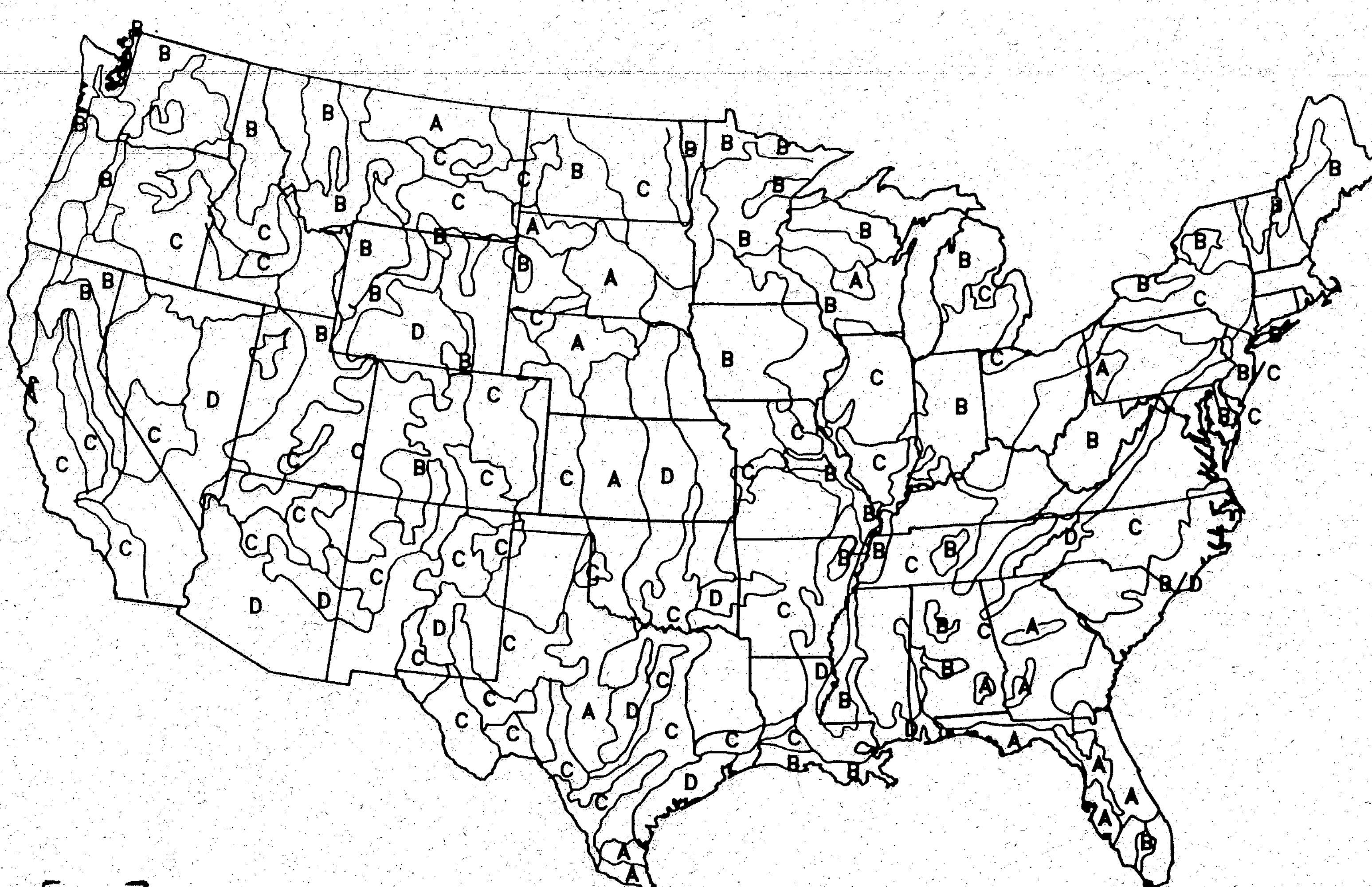


FIG. 7

Figure 7. Diagram for estimating Soil Conservation Service soil hydrologic groups. (From EPA Field Guide for Scientific Support Activities Associated with Superfund Emergency Response. U.S. Environmental Protection Agency, Corvallis OR, EPA-600/8-82-025).

FIGURE ~~15~~ 8
Seasonal Precipitation in Corn Producing Major Land Resource Areas (MLRA's)

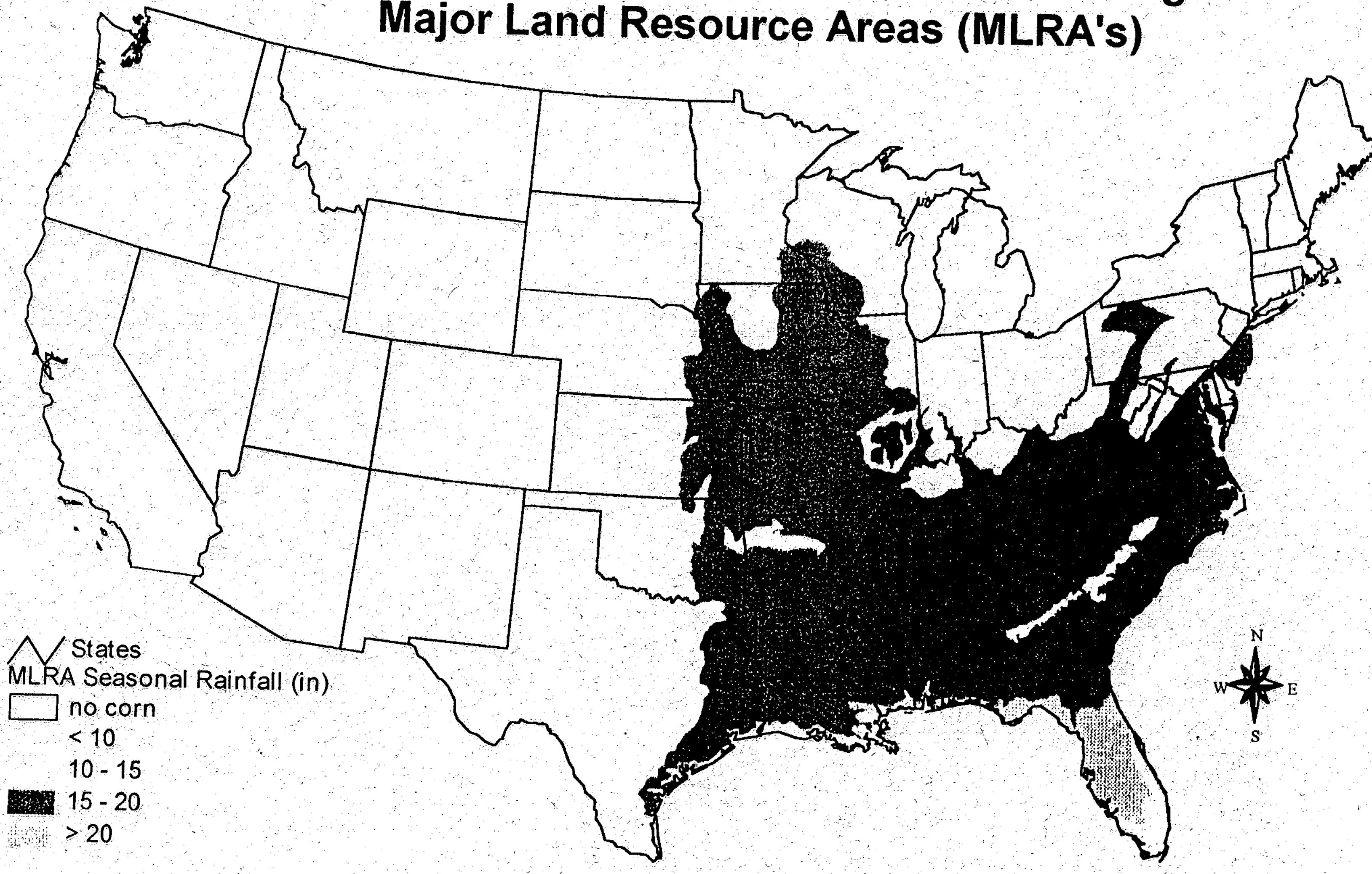


Fig 9

**PRZM-2.3. Sorghum. High Runoff Potential. Application Scenario A
Eastern Texas: Gulf Coast Prairies (MLRA 150A)**

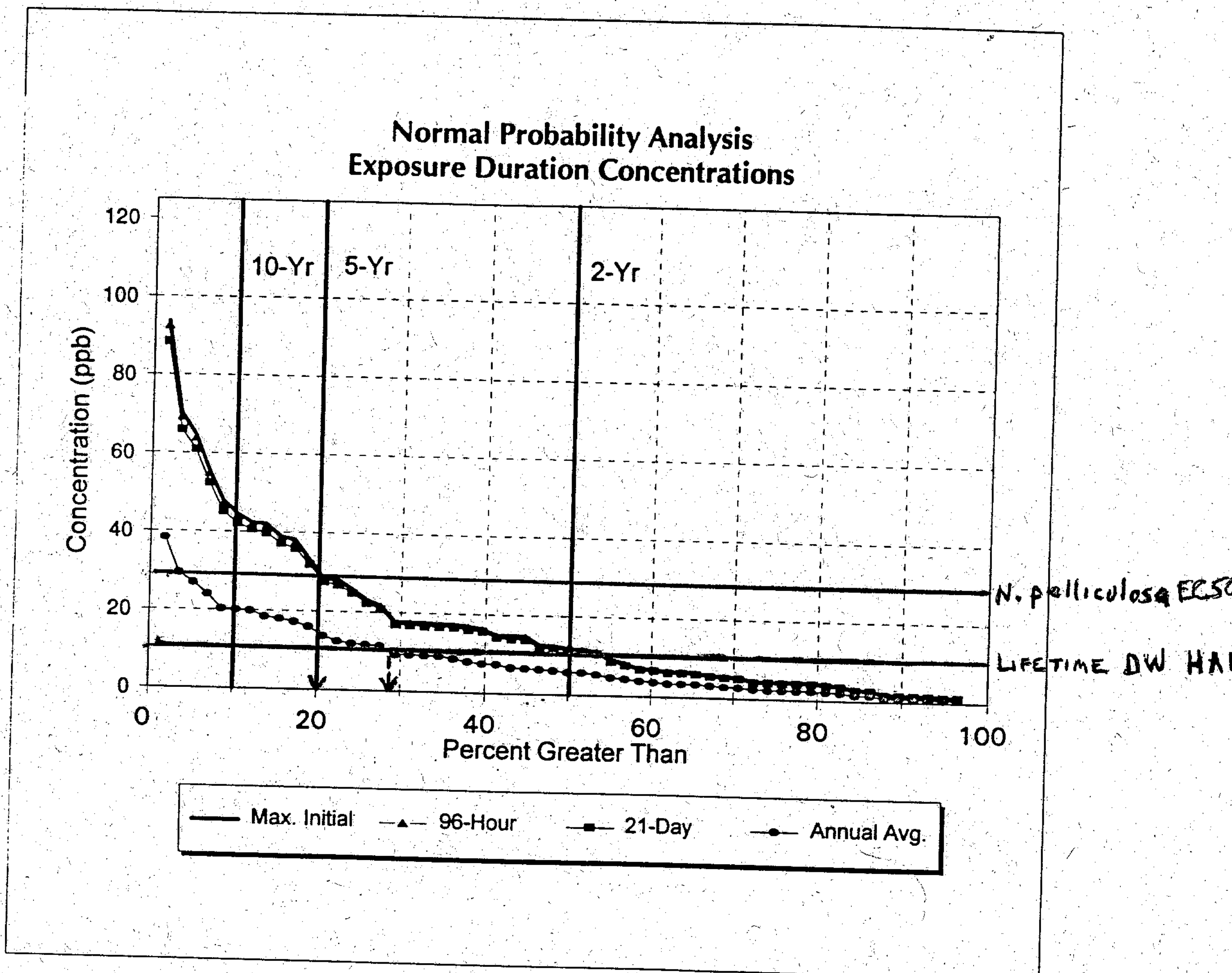


FIGURE 10

PRZM-2.3. Sorghum. High Runoff Potential. Application Scenario B
Eastern Texas: Gulf Coast Prairies (MLRA 150A)

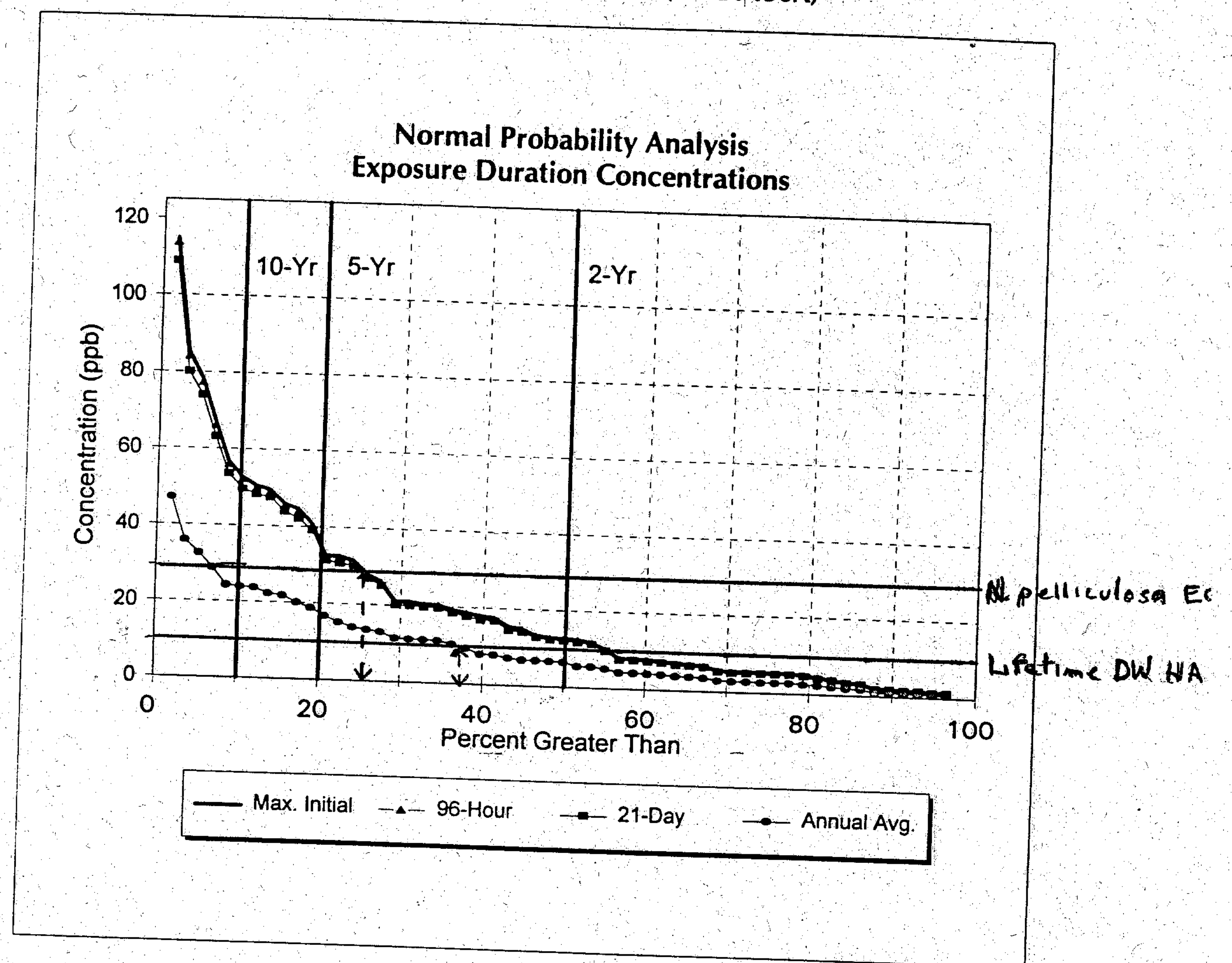


FIGURE 11

PRZM-2.3. Sorghum. Moderate Runoff Potential. Application Scenario A
Central Kansas: Central Loess Plains (MLRA 75)

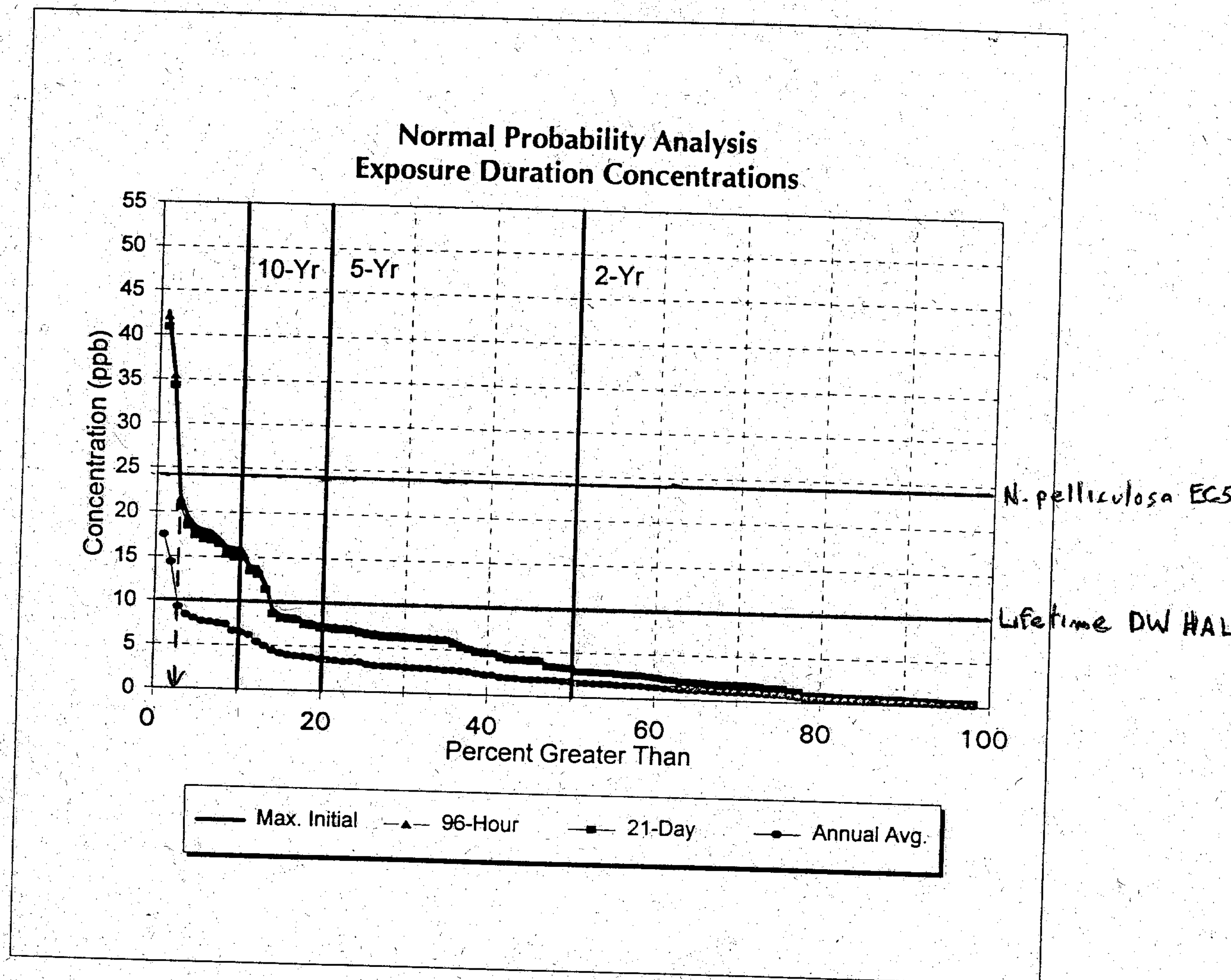


FIGURE 12

PRZM-2.3. Sorghum. Moderate Runoff Potential. Application Scenario B
Central Kansas: Central Loess Plains (MLRA 75)

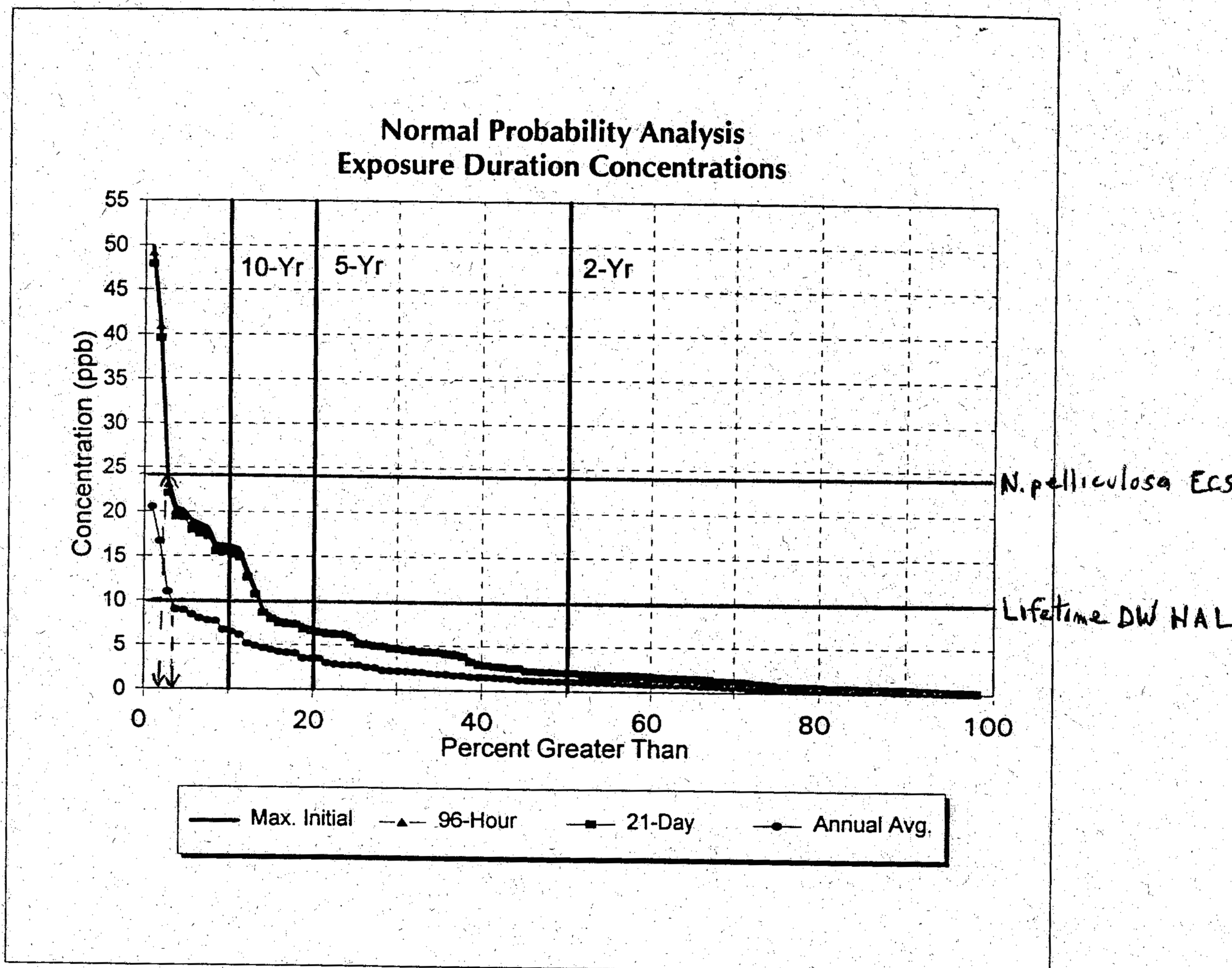


FIGURE 13

PRZM-2.3. Sorghum. Low Runoff Potential. Application Scenario A
New Mexico, Oklahoma, Texas: Southern High Plains (MLRA 77)

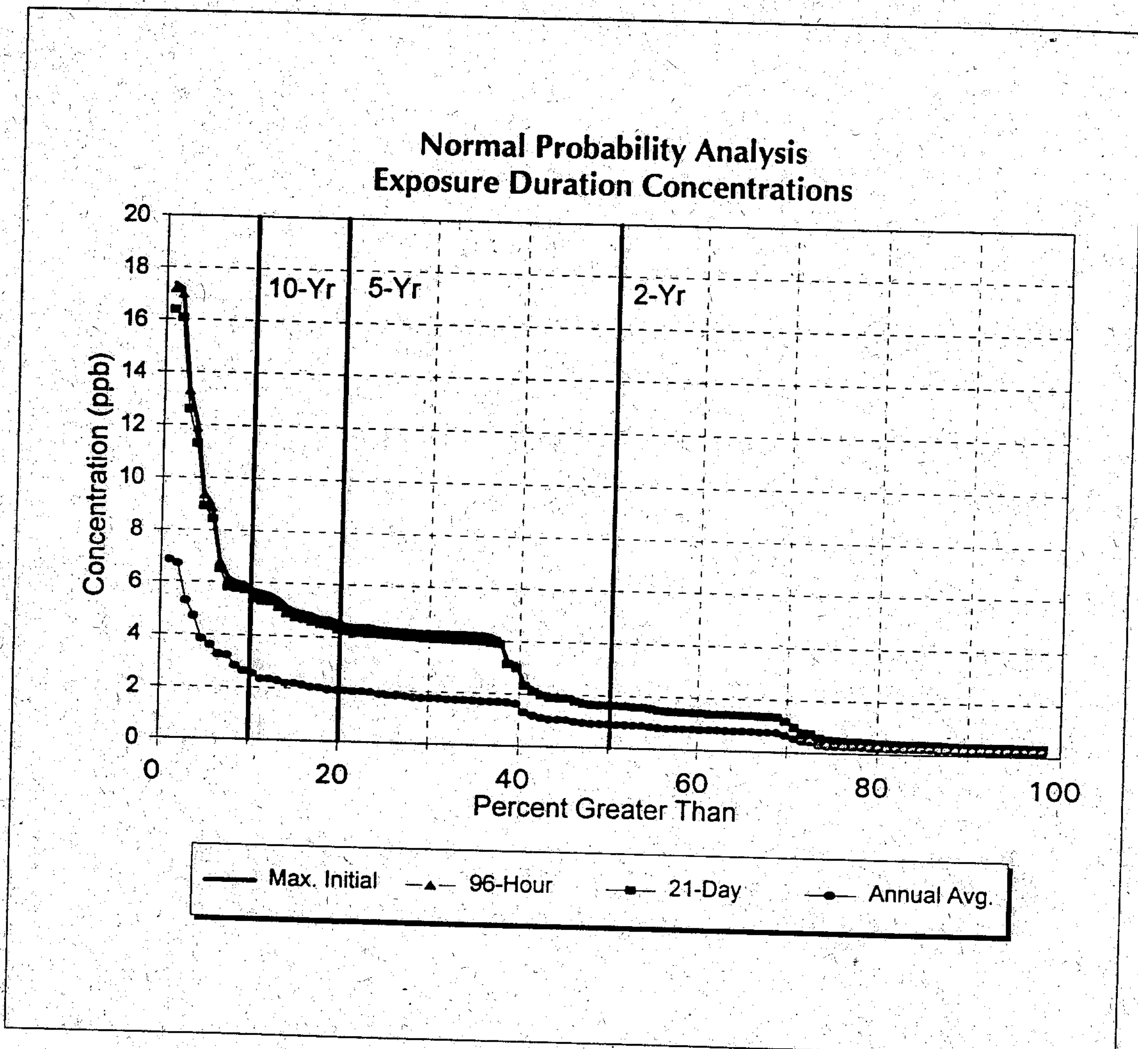


FIG. 14

Kansas SW Detects in STORET

(Including some "K", but not highest)

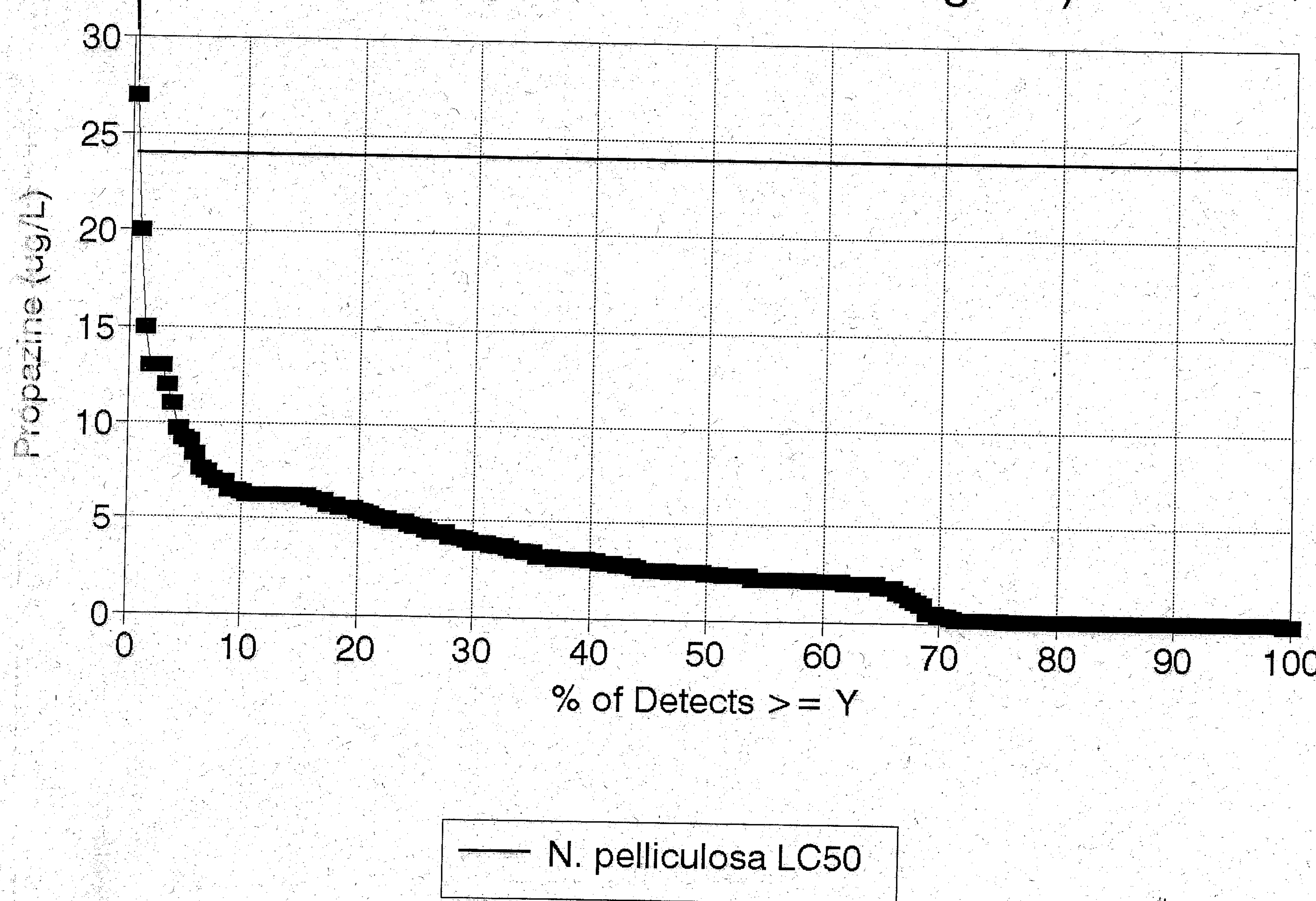


TABLE ~~8~~ 1
Soils Selected for Model Scenarios

Region	MLRA	Runoff Category	Series Name	Texture	Hydrologic Soil Group
Gulf Coast Prairies: Southeast Texas	150A	High	Lake Charles	Clay	D
Central Loess Plains: Central Kansas	75	Moderate	Crete	Silt Loam	C
Southern High Plains: East New Mexico, Northwest Texas, West Oklahoma, and Southwest Kansas	77	Low	Dalhart	Loamy Sand	B

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TABLE 2

PRZM-2.3. Sorghum. High Runoff Potential. Application Scenario A
Eastern Texas: Gulf Coast Prairies (MLRA 150A)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1971	2	93.70	1971	2	92.60	1971	2	88.50	1971	2	38.50	1	1.72	58.0
1974	1	70.20	1974	1	69.30	1974	1	66.00	1974	1	29.60	2	3.45	29.0
1968	1	64.80	1968	1	64.00	1968	1	61.10	1968	1	27.10	3	5.17	19.3
1980	3	55.60	1980	3	55.00	1980	3	52.50	1980	3	24.10	4	6.90	14.5
1965	2	48.00	1965	2	47.40	1965	2	45.20	1965	2	20.50	5	8.62	11.6
1977	3	44.70	1977	3	44.20	1977	3	42.20	1980	2	20.30	6	10.34	9.7
1977	1	42.40	1977	1	41.90	1980	2	40.80	1977	3	20.10	7	12.07	8.3
1980	2	42.10	1980	2	41.70	1977	1	39.90	1974	2	18.60	8	13.79	7.3
1974	2	39.00	1974	2	38.60	1974	2	37.30	1972	2	18.20	9	15.52	6.4
1980	1	38.20	1980	1	37.80	1980	1	36.00	1977	1	17.40	10	17.24	5.8
1972	2	33.30	1972	2	33.00	1972	2	32.00	1980	1	16.20	11	18.97	5.3
1968	3	28.50	1968	3	28.20	1968	3	27.60	1975	1	13.90	12	20.69	4.8
1971	3	28.20	1971	3	27.90	1971	3	26.80	1969	1	12.60	13	22.41	4.5
1975	1	25.80	1975	1	25.60	1975	1	24.80	1968	3	12.00	14	24.14	4.1
1969	1	23.20	1969	1	23.10	1969	1	22.30	1981	3	11.70	15	25.86	3.9
1981	3	21.70	1981	3	21.60	1981	3	20.90	1971	3	11.60	16	27.59	3.6
1966	2	17.80	1966	2	17.60	1966	2	17.10	1966	2	9.56	17	29.31	3.4
1978	1	17.70	1978	1	17.60	1978	1	17.00	1978	1	9.52	18	31.03	3.2
1977	2	17.70	1977	2	17.40	1977	2	16.70	1978	3	9.40	19	32.76	3.1
1978	3	17.40	1978	3	17.30	1978	3	16.70	1981	2	9.37	20	34.48	2.9
1981	2	17.40	1981	2	17.20	1981	2	16.70	1975	2	8.81	21	36.21	2.8
1968	2	17.00	1968	2	16.80	1968	2	16.10	1981	1	8.06	22	37.93	2.6
1975	2	16.40	1975	2	16.30	1975	2	15.80	1968	2	7.70	23	39.66	2.5
1965	3	14.90	1981	1	14.80	1981	1	14.40	1977	2	7.59	24	41.38	2.4
1981	1	14.90	1965	3	14.70	1965	3	14.00	1983	1	6.76	25	43.10	2.3
1962	3	14.80	1962	3	14.60	1962	3	13.90	1965	3	6.70	26	44.83	2.2
1983	1	12.60	1983	1	12.40	1983	1	11.90	1962	3	6.52	27	46.55	2.1
1962	2	12.40	1962	2	12.20	1962	2	11.70	1972	3	6.27	28	48.28	2.1
1971	1	11.90	1971	1	11.80	1971	1	11.50	1969	3	5.94	29	50.00	2.0
1972	3	11.60	1972	3	11.50	1972	3	11.20	1971	1	5.87	30	51.72	1.9
1969	3	11.20	1969	3	11.10	1969	3	10.70	1962	2	5.50	31	53.45	1.9
1974	3	9.34	1974	3	9.24	1974	3	8.87	1974	3	4.82	32	55.17	1.8
1973	2	8.33	1973	2	8.27	1973	2	8.01	1973	2	4.52	33	56.90	1.8
1978	2	7.23	1978	2	7.17	1978	2	6.95	1978	2	3.99	34	58.62	1.7
1969	2	7.03	1969	2	6.97	1969	2	6.75	1969	2	3.84	35	60.34	1.7
1963	3	6.58	1963	3	6.53	1963	3	6.32	1976	1	3.54	36	62.07	1.6
1976	1	6.50	1976	1	6.45	1976	1	6,25	1963	3	3.53	37	63.79	1.6
1966	3	6.37	1966	3	6.33	1966	3	6.12	1966	3	3.47	38	65.52	1.5
1970	1	5.84	1970	1	5.80	1970	1	5.62	1970	1	3.17	39	67.24	1.5
1963	2	5.54	1963	2	5.50	1963	2	5.32	1963	2	2.99	40	68.97	1.5
1972	1	5.37	1972	1	5.33	1972	1	5.16	1972	1	2.89	41	70.69	1.4
1967	2	4.47	1967	2	4.43	1967	2	4.29	1967	2	2.48	42	72.41	1.4
1979	1	4.44	1979	1	4.41	1979	1	4.27	1979	1	2.47	43	74.14	1.3
1979	3	4.38	1979	3	4.34	1979	3	4.21	1979	3	2.40	44	75.86	1.3
1982	2	4.37	1982	2	4.33	1982	2	4.20	1982	2	2.39	45	77.59	1.3
1975	3	4.28	1975	3	4.25	1975	3	4.11	1975	3	2.34	46	79.31	1.3
1976	2	4.12	1976	2	4.09	1976	2	3.96	1976	2	2.23	47	81.03	1.2
1982	1	3.76	1982	1	3.73	1982	1	3.61	1982	1	2.05	48	82.76	1.2
1973	3	2.91	1973	3	2.88	1973	3	2.79	1973	3	1.58	49	84.48	1.2
1970	3	2.80	1970	3	2.78	1970	3	2.70	1970	3	1.54	50	86.21	1.2
1979	2	1.81	1979	2	1.80	1979	2	1.75	1979	2	0.99	51	87.93	1.1
1970	2	1.77	1970	2	1.75	1970	2	1.70	1970	2	0.96	52	89.66	1.1
1964	3	1.65	1964	3	1.64	1964	3	1.59	1964	3	0.91	53	91.38	1.1
1967	3	1.60	1967	3	1.59	1967	3	1.54	1967	3	0.87	54	93.10	1.1
1964	2	1.39	1964	2	1.38	1964	2	1.34	1964	2	0.76	55	94.83	1.1
1973	1	1.34	1973	1	1.33	1973	1	1.29	1973	1	0.73	56	96.55	1.0
1976	3	1.08	1976	3	1.07	1976	3	1.03	1976	3	0.58	57	98.28	1.0

TABLE 3

PRZM-2.3. Sorghum. High Runoff Potential. Application Scenario B
Eastern Texas: Gulf Coast Prairies (MLRA 150A)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1972	2	115.00	1972	2	114.00	1972	2	109.00	1972	2	47.30	1	1.72	58.0
1974	1	85.30	1974	1	84.20	1974	1	80.20	1974	1	36.00	2	3.45	29.0
1968	1	78.50	1968	1	77.50	1968	1	74.10	1968	1	32.70	3	5.17	19.3
1982	3	67.10	1982	3	66.30	1982	3	63.30	1982	3	28.90	4	6.90	14.5
1966	2	56.80	1966	2	56.10	1966	2	53.60	1966	2	24.40	5	8.62	11.6
1979	3	52.80	1979	3	52.20	1979	3	49.80	1981	2	24.00	6	10.34	9.7
1977	1	50.60	1977	1	50.00	1981	2	48.30	1979	3	23.80	7	12.07	8.3
1981	2	49.60	1981	2	49.00	1977	1	47.60	1973	2	22.40	8	13.79	7.3
1975	2	46.00	1975	2	45.50	1975	2	44.00	1975	2	21.90	9	15.52	6.4
1980	1	44.70	1980	1	44.20	1980	1	42.10	1977	1	20.30	10	17.24	5.8
1973	2	40.90	1973	2	40.60	1973	2	39.30	1980	1	18.90	11	18.97	5.3
1970	3	32.60	1970	3	32.20	1970	3	31.40	1975	1	16.90	12	20.69	4.8
1973	3	32.50	1973	3	32.20	1973	3	30.80	1969	1	15.30	13	22.41	4.5
1975	1	31.40	1975	1	31.20	1975	1	30.20	1983	3	14.10	14	24.14	4.1
1969	1	28.10	1969	1	27.90	1969	1	27.00	1970	3	13.50	15	25.86	3.9
1983	3	26.20	1983	3	26.00	1983	3	25.20	1973	3	13.00	16	27.59	3.6
1967	2	21.10	1967	2	21.00	1967	2	20.30	1967	2	11.40	17	29.31	3.4
1978	1	21.10	1978	1	20.90	1978	1	20.20	1978	1	11.30	18	31.03	3.2
1980	3	20.70	1982	2	20.50	1980	3	19.90	1980	3	11.20	19	32.76	3.1
1982	2	20.60	1980	3	20.50	1982	2	19.80	1982	2	11.10	20	34.48	2.9
1976	2	19.40	1976	2	19.30	1976	2	18.60	1976	2	10.40	21	36.21	2.8
1978	2	18.80	1978	2	18.60	1978	2	17.80	1981	1	9.47	22	37.93	2.6
1969	2	18.00	1969	2	17.80	1969	2	17.00	1969	2	8.00	23	39.66	2.5
1981	1	17.60	1981	1	17.40	1981	1	16.90	1978	2	7.83	24	41.38	2.4
1964	3	15.40	1964	3	15.20	1964	3	14.50	1974	3	7.18	25	43.10	2.3
1967	3	14.90	1967	3	14.80	1967	3	14.10	1983	1	6.77	26	44.83	2.2
1974	3	13.30	1974	3	13.20	1974	3	12.80	1971	3	6.77	27	46.55	2.1
1983	1	12.80	1983	1	12.70	1983	1	12.30	1967	3	6.71	28	48.28	2.1
1971	3	12.70	1971	3	12.60	1971	3	12.20	1964	3	6.54	29	50.00	2.0
1963	2	12.50	1963	2	12.40	1963	2	11.80	1971	1	5.83	30	51.72	1.9
1971	1	11.80	1971	1	11.70	1971	1	11.40	1974	2	5.57	31	53.45	1.9
1974	2	10.30	1974	2	10.20	1974	2	9.86	1963	2	5.23	32	55.17	1.8
1976	3	7.99	1976	3	7.91	1976	3	7.69	1976	1	4.31	33	56.90	1.8
1976	1	7.91	1976	1	7.85	1976	1	7.60	1976	3	4.28	34	58.62	1.7
1979	2	7.70	1979	2	7.64	1979	2	7.39	1979	2	4.25	35	60.34	1.7
1970	2	7.44	1970	2	7.38	1970	2	7.15	1970	2	4.07	36	62.07	1.6
1970	1	7.08	1970	1	7.02	1970	1	6.80	1970	1	3.84	37	63.79	1.6
1965	3	6.89	1965	3	6.84	1965	3	6.62	1965	3	3.70	38	65.52	1.5
1968	3	6.61	1968	3	6.55	1968	3	6.35	1968	3	3.60	39	67.24	1.5
1964	2	5.56	1964	2	5.52	1964	2	5.34	1964	2	3.00	40	68.97	1.5
1968	2	5.32	1968	2	5.28	1968	2	5.11	1968	2	2.96	41	70.69	1.4
1972	1	5.32	1972	1	5.28	1972	1	5.11	1979	1	2.94	42	72.41	1.4
1979	1	5.28	1979	1	5.24	1979	1	5.08	1972	1	2.87	43	74.14	1.3
1981	3	5.20	1981	3	5.17	1981	3	5.00	1983	2	2.85	44	75.86	1.3
1983	2	5.19	1983	2	5.15	1983	2	4.99	1981	3	2.85	45	77.59	1.3
1977	2	4.88	1977	2	4.84	1977	2	4.69	1977	2	2.64	46	79.31	1.3
1982	1	4.41	1982	1	4.38	1982	1	4.24	1982	1	2.41	47	81.03	1.2
1977	3	3.93	1977	3	3.90	1977	3	3.78	1977	3	2.15	48	82.76	1.2
1975	3	3.33	1975	3	3.30	1975	3	3.20	1975	3	1.81	49	84.48	1.2
1972	3	3.20	1972	3	3.17	1972	3	3.07	1972	3	1.75	50	86.21	1.2
1980	2	1.93	1980	2	1.92	1980	2	1.86	1980	2	1.05	51	87.93	1.1
1971	2	1.87	1971	2	1.86	1971	2	1.80	1971	2	1.02	52	89.66	1.1
1966	3	1.73	1966	3	1.72	1966	3	1.66	1966	3	0.96	53	91.38	1.1
1969	3	1.66	1969	3	1.64	1969	3	1.59	1969	3	0.90	54	93.10	1.1
1965	2	1.40	1965	2	1.38	1965	2	1.34	1965	2	0.77	55	94.83	1.1
1973	1	1.33	1973	1	1.32	1973	1	1.28	1973	1	0.72	56	96.55	1.0
1978	3	0.99	1978	3	0.98	1978	3	0.95	1978	3	0.54	57	98.28	1.0

TABLE 4

PRZM-2.3. Sorghum. Moderate Runoff Potential. Application Scenario A
Central Kansas: Central Loess Plains (MLRA 75)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1961	2	42.60	1961	2	42.10	1961	2	40.90	1961	2	17.50	1	0.94	106.0
1982	2	35.90	1982	2	35.50	1982	2	34.30	1982	2	14.40	2	1.89	53.0
1973	2	21.90	1973	2	21.60	1973	2	20.60	1962	2	9.30	3	2.83	35.3
1965	3	19.60	1965	3	19.40	1965	3	18.50	1973	2	8.43	4	3.77	26.5
1976	2	18.50	1976	2	18.30	1976	2	17.40	1965	3	8.02	5	4.72	21.2
1948	1	18.00	1948	1	17.80	1948	1	17.00	1983	2	7.69	6	5.66	17.7
1969	1	17.90	1969	1	17.70	1969	1	16.90	1976	2	7.63	7	6.60	15.1
1962	2	17.10	1962	2	17.00	1962	2	16.50	1969	1	7.48	8	7.55	13.3
1977	3	16.20	1977	3	16.10	1977	3	15.30	1948	1	7.38	9	8.49	11.8
1980	3	16.00	1980	3	15.80	1952	2	15.00	1977	3	6.66	10	9.43	10.6
1952	2	15.90	1952	2	15.70	1980	3	15.00	1952	2	6.48	11	10.38	9.6
1983	2	14.00	1983	2	13.90	1983	2	13.50	1980	3	6.20	12	11.32	8.8
1951	1	13.90	1951	1	13.80	1951	1	13.10	1951	1	5.45	13	12.26	8.2
1949	2	12.00	1949	2	11.90	1949	2	11.40	1949	2	5.00	14	13.21	7.6
1972	1	9.16	1972	1	9.06	1972	1	8.65	1974	2	4.53	15	14.15	7.1
1955	2	8.51	1955	2	8.41	1955	2	8.11	1966	3	4.20	16	15.09	6.6
1975	1	8.39	1975	1	8.31	1975	1	8.03	1977	2	4.02	17	16.04	6.2
1974	2	8.34	1974	2	8.28	1974	2	8.02	1949	1	3.96	18	16.98	5.9
1968	3	7.78	1966	3	7.72	1966	3	7.48	1970	1	3.91	19	17.92	5.6
1966	3	7.78	1968	3	7.71	1968	3	7.37	1972	1	3.75	20	18.87	5.3
1966	1	7.45	1977	2	7.38	1977	2	7.14	1955	2	3.62	21	19.81	5.0
1977	2	7.44	1966	1	7.36	1967	2	7.08	1975	1	3.60	22	20.75	4.8
1967	2	7.33	1967	2	7.30	1966	1	7.01	1978	3	3.50	23	21.70	4.6
1949	1	7.28	1949	1	7.23	1949	1	7.00	1953	2	3.44	24	22.64	4.4
1970	1	7.24	1970	1	7.18	1970	1	6.95	1981	3	3.43	25	23.58	4.2
1956	3	7.03	1956	3	6.95	1956	3	6.66	1968	3	3.42	26	24.53	4.1
1950	3	6.83	1950	3	6.79	1950	3	6.51	1967	2	3.15	27	25.47	3.9
1970	2	6.78	1970	2	6.70	1970	2	6.38	1964	2	3.07	28	26.42	3.8
1954	1	6.63	1954	1	6.56	1983	3	6.28	1950	3	3.03	29	27.36	3.7
1957	1	6.61	1957	1	6.53	1954	1	6.25	1966	1	3.02	30	28.30	3.5
1983	3	6.60	1983	3	6.52	1953	3	6.24	1956	3	2.99	31	29.25	3.4
1971	3	6.51	1971	3	6.44	1957	1	6.22	1970	2	2.95	32	30.19	3.3
1953	3	6.48	1953	3	6.39	1978	3	6.19	1952	1	2.88	33	31.13	3.2
1964	2	6.45	1978	3	6.39	1971	3	6.15	1954	1	2.86	34	32.08	3.1
1978	3	6.44	1964	2	6.38	1981	3	6.12	1983	3	2.85	35	33.02	3.0
1981	3	6.36	1981	3	6.32	1964	2	6.10	1971	3	2.83	36	33.96	2.9
1953	2	6.34	1953	2	6.30	1953	2	6.10	1957	1	2.72	37	34.91	2.9
1959	3	6.10	1959	3	6.02	1959	3	5.74	1953	3	2.72	38	35.85	2.8
1979	2	5.65	1979	2	5.58	1979	2	5.32	1950	2	2.66	39	36.79	2.7
1952	1	5.31	1952	1	5.27	1952	1	5.11	1959	3	2.62	40	37.74	2.7
1963	1	5.10	1963	1	5.04	1963	1	4.84	1979	2	2.47	41	38.68	2.6
1958	2	5.03	1958	2	4.97	1958	2	4.75	1963	2	2.35	42	39.62	2.5
1950	2	4.90	1950	2	4.87	1950	2	4.71	1958	2	2.33	43	40.57	2.5
1974	3	4.59	1974	3	4.54	1974	3	4.33	1963	1	2.11	44	41.51	2.4
1962	3	4.36	1962	3	4.30	1963	2	4.14	1981	1	2.04	45	42.45	2.4
1978	1	4.34	1963	2	4.28	1962	3	4.08	1978	1	2.01	46	43.40	2.3
1963	2	4.31	1978	1	4.28	1978	1	4.06	1976	1	1.96	47	44.34	2.3
1960	1	4.31	1960	1	4.25	1960	1	4.05	1974	3	1.94	48	45.28	2.2
1981	1	4.28	1981	1	4.22	1981	1	4.01	1962	3	1.92	49	46.23	2.2
1976	1	3.61	1976	1	3.59	1976	1	3.47	1973	1	1.92	50	47.17	2.1
1973	1	3.52	1973	1	3.49	1973	1	3.38	1956	2	1.89	51	48.11	2.1
1956	2	3.48	1956	2	3.46	1956	2	3.35	1960	1	1.84	52	49.06	2.0
1969	3	3.38	1969	3	3.35	1969	3	3.25	1969	3	1.84	53	50.00	2.0
1951	3	3.07	1951	3	3.04	1951	3	2.95	1967	1	1.66	54	50.94	2.0
1967	1	3.06	1967	1	3.03	1967	1	2.94	1951	3	1.66	55	51.89	1.9
1968	2	3.00	1968	2	2.98	1968	2	2.89	1971	2	1.62	56	52.83	1.9
1957	3	2.99	1957	3	2.96	1957	3	2.87	1957	3	1.62	57	53.77	1.9
1971	2	2.98	1971	2	2.96	1971	2	2.86	1968	2	1.62	58	54.72	1.8
1972	3	2.89	1972	3	2.87	1972	3	2.78	1972	3	1.56	59	55.66	1.8
1955	1	2.81	1955	1	2.79	1955	1	2.70	1955	1	1.53	60	56.60	1.8
1965	2	2.80	1965	2	2.78	1965	2	2.69	1965	2	1.51	61	57.55	1.7
1958	1	2.74	1958	1	2.72	1958	1	2.64	1958	1	1.49	62	58.49	1.7
1954	3	2.60	1954	3	2.58	1954	3	2.50	1954	3	1.40	63	59.43	1.7
1960	3	2.52	1960	3	2.50	1960	3	2.42	1960	3	1.37	64	60.38	1.7
1980	2	2.35	1980	2	2.33	1980	2	2.26	1980	2	1.28	65	61.32	1.6
1959	2	2.28	1959	2	2.26	1959	2	2.19	1959	2	1.24	66	62.26	1.6
1975	2	2.10	1982	1	2.08	1975	2	2.02	1975	2	1.15	67	63.21	1.6
1982	1	2.09	1975	2	2.08	1982	1	2.01	1982	1	1.14	68	64.15	1.6

TABLE 4 - CONTINUED

PRZM-2.3. Sorghum. Moderate Runoff Potential. Application Scenario A
Central Kansas: Central Loess Plains (MLRA 75)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1964	1	2.05	1964	1	2.03	1964	1	1.97	1964	1	1.11	69	65.09	1.5
1979	1	2.01	1979	1	1.99	1979	1	1.93	1979	1	1.09	70	66.04	1.5
1967	3	1.95	1967	3	1.93	1967	3	1.87	1967	3	1.06	71	66.98	1.5
1975	3	1.87	1975	3	1.86	1975	3	1.80	1975	3	1.02	72	67.92	1.5
1978	2	1.86	1963	3	1.85	1978	2	1.79	1978	2	1.01	73	68.87	1.5
1963	3	1.86	1978	2	1.85	1963	3	1.79	1963	3	1.01	74	69.81	1.4
1950	1	1.83	1950	1	1.82	1950	1	1.76	1950	1	1.00	75	70.75	1.4
1971	1	1.82	1971	1	1.81	1971	1	1.75	1971	1	1.00	76	71.70	1.4
1961	1	1.74	1961	1	1.72	1961	1	1.67	1961	1	0.94	77	72.64	1.4
1979	3	1.61	1979	3	1.60	1979	3	1.55	1979	3	0.88	78	73.58	1.4
1982	3	1.60	1982	3	1.59	1982	3	1.54	1982	3	0.87	79	74.53	1.3
1954	2	1.59	1954	2	1.58	1954	2	1.53	1954	2	0.87	80	75.47	1.3
1953	1	1.33	1953	1	1.32	1953	1	1.28	1953	1	0.73	81	76.42	1.3
1951	2	1.23	1951	2	1.22	1951	2	1.18	1951	2	0.67	82	77.36	1.3
1977	1	0.90	1977	1	0.90	1977	1	0.87	1977	1	0.49	83	78.30	1.3
1974	1	0.88	1974	1	0.88	1974	1	0.85	1974	1	0.48	84	79.25	1.3
1957	2	0.88	1957	2	0.87	1957	2	0.84	1957	2	0.48	85	80.19	1.2
1970	3	0.85	1970	3	0.84	1970	3	0.82	1970	3	0.46	86	81.13	1.2
1952	3	0.77	1952	3	0.77	1952	3	0.74	1952	3	0.42	87	82.08	1.2
1968	1	0.77	1968	1	0.76	1968	1	0.74	1968	1	0.42	88	83.02	1.2
1969	2	0.76	1969	2	0.75	1969	2	0.73	1958	3	0.41	89	83.96	1.2
1958	3	0.75	1958	3	0.75	1958	3	0.72	1969	2	0.41	90	84.91	1.2
1972	2	0.75	1972	2	0.74	1972	2	0.72	1972	2	0.41	91	85.85	1.2
1973	3	0.73	1973	3	0.72	1973	3	0.70	1973	3	0.40	92	86.79	1.2
1956	1	0.71	1956	1	0.70	1956	1	0.68	1956	1	0.38	93	87.74	1.1
1966	2	0.70	1966	2	0.70	1966	2	0.67	1966	2	0.38	94	88.68	1.1
1959	1	0.69	1959	1	0.68	1959	1	0.66	1959	1	0.38	95	89.62	1.1
1955	3	0.65	1955	3	0.65	1955	3	0.63	1955	3	0.36	96	90.57	1.1
1961	3	0.63	1961	3	0.63	1961	3	0.61	1961	3	0.34	97	91.51	1.1
1981	2	0.59	1981	2	0.59	1981	2	0.57	1981	2	0.32	98	92.45	1.1
1960	2	0.57	1960	2	0.57	1960	2	0.55	1960	2	0.31	99	93.40	1.1
1983	1	0.53	1983	1	0.52	1983	1	0.51	1983	1	0.29	100	94.34	1.1
1965	1	0.51	1965	1	0.51	1965	1	0.49	1965	1	0.28	101	95.28	1.0
1980	1	0.50	1980	1	0.50	1980	1	0.48	1980	1	0.27	102	96.23	1.0
1976	3	0.47	1976	3	0.47	1976	3	0.45	1976	3	0.26	103	97.17	1.0
1964	3	0.47	1964	3	0.46	1964	3	0.45	1964	3	0.25	104	98.11	1.0
1962	1	0.44	1962	1	0.43	1962	1	0.42	1962	1	0.24	105	99.06	1.0

TABLE 5

PRZM-2.3. Sorghum. Moderate Runoff Potential. Application Scenario B
Central Kansas: Central Loess Plains (MLRA 75)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1961	2	49.80	1961	2	49.20	1961	2	47.90	1961	2	20.60	1	0.94	106.0
1982	2	41.40	1982	2	41.00	1982	2	39.60	1982	2	16.70	2	1.89	53.0
1973	2	23.50	1973	2	23.20	1973	2	22.10	1962	2	11.00	3	2.83	35.3
1965	3	20.60	1965	3	20.30	1965	3	19.50	1973	2	9.01	4	3.77	26.5
1962	2	20.20	1962	2	20.10	1962	2	19.40	1983	2	8.91	5	4.72	21.2
1976	2	19.10	1976	2	18.90	1976	2	18.00	1965	3	8.45	6	5.66	17.7
1948	1	18.70	1948	1	18.50	1948	1	17.60	1976	2	8.00	7	6.60	15.1
1969	1	18.30	1969	1	18.10	1969	1	17.30	1969	1	7.78	8	7.55	13.3
1977	3	16.40	1977	3	16.20	1983	2	15.60	1948	1	7.69	9	8.49	11.8
1983	2	16.30	1983	2	16.10	1977	3	15.50	1977	3	6.72	10	9.43	10.6
1980	3	16.20	1980	3	16.00	1980	3	15.20	1952	2	6.51	11	10.38	9.6
1952	2	15.90	1952	2	15.70	1952	2	14.90	1980	3	6.16	12	11.32	8.8
1951	1	13.50	1951	1	13.30	1951	1	12.60	1951	1	5.19	13	12.26	8.2
1949	2	11.30	1949	2	11.20	1949	2	10.70	1974	2	4.89	14	13.21	7.6
1974	2	9.00	1974	2	8.93	1974	2	8.65	1949	2	4.68	15	14.15	7.1
1966	3	8.28	1966	3	8.22	1966	3	7.95	1966	3	4.47	16	15.09	6.6
1977	2	7.84	1977	2	7.78	1977	2	7.53	1977	2	4.24	17	16.04	6.2
1949	1	7.67	1949	1	7.61	1949	1	7.37	1949	1	4.17	18	16.98	5.9
1970	1	7.58	1970	1	7.53	1970	1	7.29	1970	1	4.10	19	17.92	5.6
1972	1	7.17	1972	1	7.10	1972	1	6.80	1978	3	3.57	20	18.87	5.3
1975	1	6.91	1975	1	6.83	1975	1	6.60	1953	2	3.49	21	19.81	5.0
1955	2	6.66	1955	2	6.59	1955	2	6.41	1981	3	3.49	22	20.75	4.8
1978	3	6.57	1978	3	6.52	1978	3	6.31	1972	1	3.01	23	21.70	4.6
1981	3	6.47	1981	3	6.42	1981	3	6.22	1955	2	2.84	24	22.64	4.4
1953	2	6.45	1953	2	6.40	1953	2	6.19	1975	1	2.82	25	23.58	4.2
1968	3	6.20	1968	3	6.14	1968	3	5.85	1952	1	2.78	26	24.53	4.1
1966	1	5.42	1966	1	5.35	1967	2	5.13	1963	2	2.77	27	25.47	3.9
1967	2	5.32	1967	2	5.29	1966	1	5.09	1968	3	2.57	28	26.42	3.8
1952	1	5.13	1952	1	5.09	1952	1	4.93	1950	2	2.52	29	27.36	3.7
1963	2	5.09	1963	2	5.05	1963	2	4.89	1967	2	2.20	30	28.30	3.5
1950	3	4.87	1950	3	4.83	1950	3	4.63	1950	3	2.14	31	29.25	3.4
1956	3	4.84	1956	3	4.79	1956	3	4.60	1964	2	2.14	32	30.19	3.3
1971	3	4.67	1971	3	4.61	1950	2	4.45	1966	1	2.10	33	31.13	3.2
1950	2	4.63	1950	2	4.60	1971	3	4.40	1956	3	2.06	34	32.08	3.1
1954	1	4.58	1954	1	4.53	1983	3	4.34	1970	2	2.01	35	33.02	3.0
1957	1	4.53	1983	3	4.48	1954	1	4.31	1954	1	1.88	36	33.96	2.9
1983	3	4.53	1957	1	4.47	1957	1	4.25	1983	3	1.87	37	34.91	2.9
1970	2	4.33	1970	2	4.28	1970	2	4.08	1971	3	1.86	38	35.85	2.8
1964	2	4.28	1964	2	4.23	1964	2	4.04	1953	3	1.70	39	36.79	2.7
1953	3	4.04	1953	3	3.99	1953	3	3.83	1957	1	1.70	40	37.74	2.7
1959	3	3.45	1959	3	3.41	1959	3	3.25	1976	1	1.61	41	38.68	2.6
1979	2	3.13	1979	2	3.10	1979	2	2.95	1959	3	1.56	42	39.62	2.5
1976	1	2.96	1976	1	2.93	1976	1	2.84	1973	1	1.55	43	40.57	2.5
1973	1	2.83	1973	1	2.81	1973	1	2.72	1956	2	1.51	44	41.51	2.4
1956	2	2.79	1956	2	2.77	1956	2	2.68	1969	3	1.45	45	42.45	2.4
1969	3	2.66	1969	3	2.63	1969	3	2.55	1979	2	1.40	46	43.40	2.3
1958	2	2.65	1958	2	2.63	1958	2	2.53	1975	2	1.24	47	44.34	2.3
1963	1	2.36	1963	1	2.33	1963	1	2.25	1951	3	1.24	48	45.28	2.2
1951	3	2.29	1951	3	2.27	1951	3	2.20	1967	1	1.22	49	46.23	2.2
1975	2	2.26	1975	2	2.25	1975	2	2.17	1958	2	1.20	50	47.17	2.1
1967	1	2.25	1967	1	2.23	1967	1	2.16	1957	3	1.17	51	48.11	2.1
1968	2	2.18	1968	2	2.16	1968	2	2.09	1968	2	1.17	52	49.06	2.0
1957	3	2.16	1957	3	2.14	1957	3	2.07	1971	2	1.17	53	50.00	2.0
1971	2	2.15	1971	2	2.13	1971	2	2.06	1967	3	1.13	54	50.94	2.0
1967	3	2.07	1967	3	2.06	1967	3	1.99	1972	3	1.10	55	51.89	1.9
1972	3	2.04	1972	3	2.02	1972	3	1.96	1978	2	1.07	56	52.83	1.9
1981	1	2.00	1981	1	1.97	1981	1	1.89	1950	1	1.05	57	53.77	1.9
1978	2	1.96	1978	2	1.95	1978	2	1.89	1955	1	1.05	58	54.72	1.8
1955	1	1.94	1955	1	1.92	1955	1	1.86	1965	2	1.04	59	55.66	1.8
1950	1	1.93	1950	1	1.91	1950	1	1.85	1971	1	1.04	60	56.60	1.8
1965	2	1.92	1965	2	1.90	1965	2	1.84	1958	1	1.00	61	57.55	1.7
1971	1	1.91	1971	1	1.89	1971	1	1.83	1963	1	0.93	62	58.49	1.7
1958	1	1.85	1958	1	1.83	1958	1	1.78	1954	3	0.90	63	59.43	1.7
1974	3	1.79	1974	3	1.77	1974	3	1.68	1979	3	0.90	64	60.38	1.7
1978	1	1.72	1978	1	1.70	1978	1	1.63	1982	3	0.89	65	61.32	1.6
1954	3	1.67	1954	3	1.65	1954	3	1.60	1954	2	0.88	66	62.26	1.6
1979	3	1.64	1979	3	1.63	1979	3	1.58	1981	1	0.85	67	63.21	1.6
1982	3	1.63	1982	3	1.61	1982	3	1.56	1960	3	0.85	68	64.15	1.6

TABLE 5 - CONTINUED

PRZM-2.3. Sorghum. Moderate Runoff Potential. Application Scenario B
Central Kansas: Central Loess Plains (MLRA 75)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1954	2	1.61	1954	2	1.60	1954	2	1.55	1978	1	0.81	69	65.09	1.5
1960	3	1.56	1960	3	1.54	1960	3	1.50	1974	3	0.73	70	66.04	1.5
1962	3	1.54	1962	3	1.52	1962	3	1.48	1980	2	0.73	71	66.98	1.5
1980	2	1.35	1980	2	1.34	1980	2	1.29	1953	1	0.70	72	67.92	1.5
1953	1	1.28	1953	1	1.27	1953	1	1.23	1962	3	0.69	73	68.87	1.5
1960	1	1.25	1959	2	1.24	1959	2	1.20	1959	2	0.68	74	69.81	1.4
1959	2	1.25	1960	1	1.23	1960	1	1.19	1951	2	0.64	75	70.75	1.4
1951	2	1.16	1951	2	1.16	1951	2	1.12	1960	1	0.58	76	71.70	1.4
1982	1	1.02	1982	1	1.01	1982	1	0.98	1982	1	0.55	77	72.64	1.4
1964	1	0.96	1964	1	0.95	1964	1	0.92	1964	1	0.52	78	73.58	1.4
1979	1	0.90	1979	1	0.90	1979	1	0.87	1979	1	0.49	79	74.53	1.3
1977	1	0.74	1977	1	0.73	1977	1	0.71	1977	1	0.40	80	75.47	1.3
1975	3	0.73	1975	3	0.73	1975	3	0.70	1975	3	0.40	81	76.42	1.3
1963	3	0.72	1963	3	0.71	1963	3	0.69	1963	3	0.39	82	77.36	1.3
1974	1	0.71	1974	1	0.71	1974	1	0.68	1974	1	0.39	83	78.30	1.3
1957	2	0.70	1957	2	0.70	1957	2	0.68	1957	2	0.38	84	79.25	1.3
1970	3	0.67	1970	3	0.66	1970	3	0.64	1970	3	0.36	85	80.19	1.2
1952	3	0.57	1952	3	0.57	1952	3	0.55	1952	3	0.31	86	81.13	1.2
1968	1	0.56	1968	1	0.56	1968	1	0.54	1968	1	0.31	87	82.08	1.2
1961	1	0.56	1961	1	0.56	1961	1	0.54	1961	1	0.30	88	83.02	1.2
1969	2	0.55	1969	2	0.54	1969	2	0.53	1969	2	0.30	89	83.96	1.2
1958	3	0.54	1958	3	0.54	1958	3	0.52	1958	3	0.30	90	84.91	1.2
1972	2	0.54	1972	2	0.53	1972	2	0.52	1972	2	0.29	91	85.85	1.2
1973	3	0.51	1973	3	0.51	1973	3	0.49	1973	3	0.28	92	86.79	1.2
1956	1	0.49	1956	1	0.48	1956	1	0.47	1956	1	0.26	93	87.74	1.1
1966	2	0.48	1966	2	0.48	1966	2	0.46	1966	2	0.26	94	88.68	1.1
1959	1	0.46	1959	1	0.46	1959	1	0.45	1959	1	0.25	95	89.62	1.1
1955	3	0.42	1955	3	0.41	1955	3	0.40	1955	3	0.23	96	90.57	1.1
1961	3	0.39	1961	3	0.39	1961	3	0.38	1961	3	0.21	97	91.51	1.1
1981	2	0.34	1981	2	0.34	1981	2	0.33	1981	2	0.18	98	92.45	1.1
1960	2	0.31	1960	2	0.31	1960	2	0.30	1960	2	0.17	99	93.40	1.1
1983	1	0.26	1983	1	0.25	1983	1	0.25	1983	1	0.14	100	94.34	1.1
1965	1	0.24	1965	1	0.24	1965	1	0.23	1965	1	0.13	101	95.28	1.0
1980	1	0.23	1980	1	0.23	1980	1	0.22	1980	1	0.12	102	96.23	1.0
1976	3	0.18	1976	3	0.18	1976	3	0.18	1976	3	0.10	103	97.17	1.0
1964	3	0.18	1964	3	0.18	1964	3	0.17	1964	3	0.10	104	98.11	1.0
1962	1	0.14	1962	1	0.14	1962	1	0.14	1962	1	0.08	105	99.06	1.0

TABLE 6

PRZM-2.3. Sorghum. Low Runoff Potential. Application Scenario A
New Mexico, Oklahoma, Texas: Southern High Plains (MLRA 77)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1949	2	17.40	1949	2	17.20	1949	2	16.40	1949	2	6.87	1	0.94	106.0
1970	2	17.20	1970	2	17.00	1970	2	16.10	1970	2	6.72	2	1.89	53.0
1979	2	13.40	1979	2	13.30	1979	2	12.60	1979	2	5.31	3	2.83	35.3
1978	1	12.10	1978	1	11.90	1978	1	11.30	1978	1	4.73	4	3.77	26.5
1972	1	9.48	1972	1	9.38	1972	1	8.95	1972	1	3.86	5	4.72	21.2
1958	2	8.98	1958	2	8.86	1958	2	8.45	1958	2	3.62	6	5.66	17.7
1963	1	6.91	1963	1	6.82	1963	1	6.53	1971	2	3.27	7	6.60	15.1
1954	1	6.21	1954	1	6.14	1954	1	5.84	1950	2	3.24	8	7.55	13.3
1971	2	6.03	1971	2	5.98	1971	2	5.79	1963	1	2.85	9	8.49	11.8
1950	2	5.99	1950	2	5.94	1950	2	5.75	1980	2	2.66	10	9.43	10.6
1969	1	5.75	1969	1	5.68	1969	1	5.40	1954	1	2.56	11	10.38	9.6
1980	3	5.66	1980	3	5.59	1980	3	5.32	1980	3	2.36	12	11.32	8.8
1955	2	5.58	1955	2	5.51	1955	2	5.31	1969	1	2.35	13	12.26	8.2
1950	3	5.43	1950	3	5.36	1950	3	5.09	1955	2	2.31	14	13.21	7.6
1957	1	5.16	1957	1	5.09	1957	1	4.86	1979	1	2.21	15	14.15	7.1
1982	2	4.98	1982	2	4.91	1980	2	4.73	1950	3	2.21	16	15.09	6.6
1980	2	4.92	1980	2	4.88	1982	2	4.67	1957	1	2.17	17	16.04	6.2
1964	2	4.85	1964	2	4.79	1964	2	4.56	1982	2	2.08	18	16.98	5.9
1968	3	4.71	1968	3	4.66	1968	3	4.48	1964	2	2.07	19	17.92	5.6
1959	3	4.71	1959	3	4.65	1959	3	4.42	1976	2	2.00	20	18.87	5.3
1974	3	4.60	1974	3	4.54	1974	3	4.31	1968	3	1.99	21	19.81	5.0
1951	1	4.49	1951	1	4.43	1951	1	4.22	1967	2	1.98	22	20.75	4.8
1973	2	4.45	1973	2	4.39	1973	2	4.17	1971	3	1.96	23	21.70	4.6
1952	2	4.45	1952	2	4.39	1952	2	4.17	1959	3	1.96	24	22.64	4.4
1956	3	4.44	1956	3	4.38	1956	3	4.16	1951	1	1.94	25	23.58	4.2
1953	3	4.38	1953	3	4.32	1953	3	4.14	1953	3	1.88	26	24.53	4.1
1981	1	4.37	1981	1	4.31	1967	2	4.12	1952	2	1.85	27	25.47	3.9
1975	1	4.34	1975	1	4.28	1981	1	4.09	1973	2	1.84	28	26.42	3.8
1961	2	4.33	1961	2	4.27	1961	2	4.06	1974	3	1.83	29	27.36	3.7
1966	1	4.30	1966	1	4.25	1975	1	4.06	1981	1	1.79	30	28.30	3.5
1983	3	4.29	1967	2	4.24	1971	3	4.04	1973	1	1.77	31	29.25	3.4
1960	1	4.28	1983	3	4.23	1966	1	4.03	1961	2	1.76	32	30.19	3.3
1967	2	4.28	1971	3	4.23	1983	3	4.01	1956	3	1.76	33	31.13	3.2
1971	3	4.28	1960	1	4.22	1960	1	4.01	1975	1	1.75	34	32.08	3.1
1976	2	4.27	1962	3	4.22	1962	3	4.00	1960	1	1.74	35	33.02	3.0
1977	3	4.27	1977	3	4.21	1976	2	4.00	1966	1	1.73	36	33.96	2.9
1962	3	4.27	1965	3	4.21	1977	3	3.99	1977	3	1.72	37	34.91	2.9
1965	3	4.26	1976	2	4.21	1965	3	3.99	1962	3	1.70	38	35.85	2.8
1948	1	4.20	1948	1	4.15	1948	1	3.93	1959	2	1.70	39	36.79	2.7
1979	1	4.06	1979	1	4.03	1979	1	3.90	1983	3	1.70	40	37.74	2.7
1973	1	3.27	1973	1	3.25	1973	1	3.14	1965	3	1.69	41	38.68	2.6
1959	2	3.13	1959	2	3.11	1959	2	3.01	1948	1	1.64	42	39.62	2.5
1964	1	2.44	1964	1	2.42	1964	1	2.34	1964	1	1.32	43	40.57	2.5
1955	1	2.20	1955	1	2.19	1955	1	2.12	1955	1	1.19	44	41.51	2.4
1981	3	2.05	1981	3	2.03	1981	3	1.97	1981	3	1.11	45	42.45	2.4
1970	1	1.98	1970	1	1.97	1970	1	1.90	1956	2	1.07	46	43.40	2.3
1956	2	1.96	1956	2	1.95	1956	2	1.88	1970	1	1.07	47	44.34	2.3
1951	3	1.94	1951	3	1.92	1951	3	1.86	1951	3	1.05	48	45.28	2.2
1958	1	1.84	1958	1	1.82	1958	1	1.77	1958	1	1.00	49	46.23	2.2
1965	2	1.76	1965	2	1.75	1965	2	1.69	1965	2	0.95	50	47.17	2.1
1977	2	1.72	1977	2	1.71	1977	2	1.65	1977	2	0.93	51	48.11	2.1
1968	2	1.70	1968	2	1.69	1968	2	1.64	1983	2	0.92	52	49.06	2.0
1983	2	1.70	1983	2	1.69	1983	2	1.64	1968	2	0.92	53	50.00	2.0
1972	3	1.69	1972	3	1.68	1972	3	1.62	1972	3	0.92	54	50.94	2.0
1969	3	1.68	1969	3	1.67	1969	3	1.62	1969	3	0.91	55	51.89	1.9
1952	1	1.65	1952	1	1.64	1952	1	1.59	1952	1	0.90	56	52.83	1.9
1960	3	1.65	1960	3	1.64	1960	3	1.59	1960	3	0.90	57	53.77	1.9
1954	3	1.60	1954	3	1.59	1954	3	1.54	1954	3	0.87	58	54.72	1.8
1975	3	1.54	1975	3	1.53	1975	3	1.48	1975	3	0.84	59	55.66	1.8
1951	2	1.51	1951	2	1.50	1972	2	1.46	1972	2	0.82	60	56.60	1.8
1972	2	1.51	1972	2	1.50	1951	2	1.45	1951	2	0.82	61	57.55	1.7
1953	2	1.50	1953	2	1.49	1953	2	1.44	1974	2	0.81	62	58.49	1.7
1974	2	1.50	1974	2	1.49	1974	2	1.44	1953	2	0.81	63	59.43	1.7
1957	3	1.49	1957	3	1.48	1957	3	1.43	1957	3	0.81	64	60.38	1.7
1982	1	1.47	1982	1	1.46	1982	1	1.41	1982	1	0.80	65	61.32	1.6
1976	1	1.46	1961	1	1.45	1961	1	1.41	1962	2	0.79	66	62.26	1.6
1962	2	1.46	1962	2	1.45	1962	2	1.41	1961	1	0.79	67	63.21	1.6
1961	1	1.46	1976	1	1.44	1976	1	1.40	1976	1	0.79	68	64.15	1.6

TABLE 6 - CONTINUED

PRZM-2.3. Sorghum. Low Runoff Potential. Application Scenario A
New Mexico, Oklahoma, Texas: Southern High Plains (MLRA 77)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1978	3	1.44	1978	3	1.43	1978	3	1.39	1967	1	0.79	69	65.09	1.5
1967	1	1.44	1967	1	1.43	1967	1	1.39	1978	3	0.78	70	66.04	1.5
1963	3	1.43	1963	3	1.42	1963	3	1.37	1963	3	0.78	71	66.98	1.5
1966	3	1.43	1966	3	1.41	1966	3	1.37	1966	3	0.77	72	67.92	1.5
1949	1	1.40	1949	1	1.39	1949	1	1.35	1949	1	0.77	73	68.87	1.5
1981	2	1.24	1981	2	1.23	1981	2	1.19	1981	2	0.67	74	69.81	1.4
1980	1	1.02	1980	1	1.01	1980	1	0.98	1980	1	0.55	75	70.75	1.4
1974	1	0.82	1974	1	0.82	1974	1	0.79	1974	1	0.45	76	71.70	1.4
1960	2	0.79	1960	2	0.78	1960	2	0.76	1960	2	0.43	77	72.64	1.4
1965	1	0.61	1965	1	0.61	1965	1	0.59	1965	1	0.33	78	73.58	1.4
1956	1	0.55	1956	1	0.55	1956	1	0.53	1956	1	0.30	79	74.53	1.3
1982	3	0.52	1982	3	0.51	1982	3	0.50	1982	3	0.28	80	75.47	1.3
1971	1	0.50	1971	1	0.50	1971	1	0.48	1971	1	0.27	81	76.42	1.3
1957	2	0.49	1957	2	0.49	1957	2	0.47	1957	2	0.27	82	77.36	1.3
1952	3	0.49	1952	3	0.48	1952	3	0.47	1952	3	0.27	83	78.30	1.3
1959	1	0.46	1959	1	0.46	1959	1	0.44	1959	1	0.25	84	79.25	1.3
1966	2	0.44	1966	2	0.44	1966	2	0.43	1966	2	0.24	85	80.19	1.2
1978	2	0.43	1978	2	0.43	1978	2	0.42	1978	2	0.23	86	81.13	1.2
1969	2	0.43	1969	2	0.43	1969	2	0.41	1969	2	0.23	87	82.08	1.2
1973	3	0.43	1973	3	0.42	1973	3	0.41	1973	3	0.23	88	83.02	1.2
1970	3	0.42	1970	3	0.42	1970	3	0.41	1970	3	0.23	89	83.96	1.2
1961	3	0.42	1961	3	0.41	1961	3	0.40	1961	3	0.23	90	84.91	1.2
1953	1	0.41	1953	1	0.41	1953	1	0.40	1953	1	0.23	91	85.85	1.2
1955	3	0.40	1955	3	0.40	1955	3	0.39	1955	3	0.22	92	86.79	1.2
1976	3	0.39	1976	3	0.39	1976	3	0.37	1976	3	0.21	93	87.74	1.1
1975	2	0.38	1975	2	0.38	1975	2	0.36	1975	2	0.21	94	88.68	1.1
1954	2	0.38	1954	2	0.37	1954	2	0.36	1954	2	0.20	95	89.62	1.1
1958	3	0.37	1958	3	0.37	1958	3	0.36	1958	3	0.20	96	90.57	1.1
1983	1	0.37	1983	1	0.37	1983	1	0.36	1963	2	0.20	97	91.51	1.1
1963	2	0.37	1963	2	0.37	1963	2	0.35	1983	1	0.20	98	92.45	1.1
1962	1	0.37	1962	1	0.37	1962	1	0.35	1962	1	0.20	99	93.40	1.1
1977	1	0.37	1977	1	0.36	1977	1	0.35	1977	1	0.20	100	94.34	1.1
1968	1	0.36	1968	1	0.36	1968	1	0.35	1968	1	0.20	101	95.28	1.0
1979	3	0.36	1979	3	0.36	1979	3	0.35	1979	3	0.20	102	96.23	1.0
1964	3	0.36	1964	3	0.36	1964	3	0.35	1964	3	0.20	103	97.17	1.0
1967	3	0.36	1967	3	0.36	1967	3	0.34	1967	3	0.19	104	98.11	1.0
1950	1	0.35	1950	1	0.35	1950	1	0.34	1950	1	0.19	105	99.06	1.0

TABLE 7

PRZM-2.3. Sorghum. Low Runoff Potential. Application Scenario B
New Mexico, Oklahoma, Texas: Southern High Plains (MLRA 77)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average				Weibull	Recurrence
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Plotting Position	Interval (Years)
1949	2	17.90	1949	2	17.70	1949	2	16.80	1949	2	6.98	1	0.94	106.0
1970	2	17.70	1970	2	17.40	1970	2	16.60	1970	2	6.76	2	1.89	53.0
1979	2	13.10	1979	2	12.90	1979	2	12.30	1979	2	4.95	3	2.83	35.3
1978	1	10.90	1978	1	10.70	1978	1	10.20	1978	1	4.22	4	3.77	26.5
1972	1	7.66	1972	1	7.57	1972	1	7.24	1971	2	3.35	5	4.72	21.2
1958	2	7.08	1958	2	6.99	1958	2	6.68	1950	2	3.33	6	5.66	17.7
1971	2	6.16	1971	2	6.11	1971	2	5.92	1972	1	3.08	7	6.60	15.1
1950	2	6.14	1950	2	6.09	1950	2	5.90	1958	2	2.79	8	7.55	13.3
1980	2	4.74	1980	2	4.71	1980	2	4.56	1980	2	2.57	9	8.49	11.8
1963	1	4.35	1963	1	4.30	1963	1	4.14	1979	1	1.98	10	9.43	10.6
1979	1	3.65	1979	1	3.62	1979	1	3.51	1963	1	1.80	11	10.38	9.6
1954	1	3.63	1954	1	3.58	1954	1	3.41	1954	1	1.44	12	11.32	8.8
1980	3	3.02	1980	3	2.98	1980	3	2.83	1973	1	1.43	13	12.26	8.2
1969	1	2.91	1969	1	2.87	1969	1	2.72	1959	2	1.34	14	13.21	7.6
1955	2	2.77	1955	2	2.73	1955	2	2.60	1980	3	1.19	15	14.15	7.1
1950	3	2.74	1950	3	2.70	1950	3	2.56	1969	1	1.16	16	15.09	6.6
1973	1	2.64	1973	1	2.62	1973	1	2.54	1955	2	1.12	17	16.04	6.2
1959	2	2.46	1959	2	2.44	1959	2	2.37	1950	3	1.06	18	16.98	5.9
1957	1	2.28	1957	1	2.25	1957	1	2.16	1957	1	0.94	19	17.92	5.6
1964	2	1.99	1964	2	1.97	1964	2	1.87	1964	1	0.85	20	18.87	5.3
1982	2	1.86	1982	2	1.83	1982	2	1.74	1972	2	0.84	21	19.81	5.0
1968	3	1.71	1968	3	1.69	1968	3	1.62	1951	2	0.84	22	20.75	4.8
1976	2	1.65	1976	2	1.63	1967	2	1.56	1982	2	0.82	23	21.70	4.6
1967	2	1.64	1967	2	1.62	1976	2	1.55	1964	2	0.81	24	22.64	4.4
1959	3	1.63	1959	3	1.61	1959	3	1.53	1976	2	0.71	25	23.58	4.2
1971	3	1.62	1971	3	1.60	1971	3	1.52	1968	3	0.70	26	24.53	4.1
1951	1	1.58	1964	1	1.57	1964	1	1.51	1967	2	0.70	27	25.47	3.9
1964	1	1.58	1951	1	1.56	1972	2	1.49	1955	1	0.69	28	26.42	3.8
1972	2	1.55	1972	2	1.54	1951	1	1.48	1971	3	0.68	29	27.36	3.7
1951	2	1.54	1951	2	1.53	1951	2	1.48	1959	3	0.67	30	28.30	3.5
1953	3	1.41	1953	3	1.39	1953	3	1.33	1951	1	0.65	31	29.25	3.4
1974	3	1.29	1955	1	1.27	1955	1	1.23	1981	2	0.65	32	30.19	3.3
1955	1	1.28	1974	3	1.27	1974	3	1.20	1953	3	0.59	33	31.13	3.2
1981	2	1.19	1981	2	1.18	1981	2	1.15	1981	3	0.59	34	32.08	3.1
1973	2	1.09	1981	3	1.07	1981	3	1.03	1973	2	0.54	35	33.02	3.0
1952	2	1.09	1973	2	1.07	1952	2	1.02	1952	2	0.54	36	33.96	2.9
1956	3	1.08	1952	2	1.07	1973	2	1.02	1970	1	0.54	37	34.91	2.9
1981	3	1.08	1956	3	1.06	1956	3	1.01	1956	2	0.53	38	35.85	2.8
1970	1	1.00	1970	1	0.99	1970	1	0.96	1951	3	0.52	39	36.79	2.7
1981	1	0.99	1981	1	0.97	1956	2	0.93	1974	3	0.52	40	37.74	2.7
1956	2	0.97	1956	2	0.96	1951	3	0.93	1980	1	0.50	41	38.68	2.6
1951	3	0.97	1951	3	0.96	1981	1	0.93	1981	1	0.45	42	39.62	2.5
1975	1	0.95	1975	1	0.94	1975	1	0.89	1958	1	0.44	43	40.57	2.5
1961	2	0.94	1961	2	0.93	1980	1	0.88	1956	3	0.43	44	41.51	2.4
1980	1	0.92	1980	1	0.91	1961	2	0.88	1961	2	0.43	45	42.45	2.4
1966	1	0.90	1966	1	0.89	1966	1	0.85	1975	1	0.42	46	43.40	2.3
1983	3	0.88	1983	3	0.87	1983	3	0.83	1960	1	0.39	47	44.34	2.3
1960	1	0.87	1960	1	0.86	1960	1	0.82	1965	2	0.39	48	45.28	2.2
1962	3	0.86	1962	3	0.85	1962	3	0.81	1966	1	0.39	49	46.23	2.2
1977	3	0.86	1977	3	0.85	1977	3	0.80	1977	3	0.36	50	47.17	2.1
1965	3	0.85	1965	3	0.84	1965	3	0.80	1983	3	0.36	51	48.11	2.1
1948	1	0.84	1948	1	0.83	1948	1	0.79	1974	1	0.36	52	49.06	2.0
1958	1	0.81	1958	1	0.81	1958	1	0.78	1977	2	0.36	53	50.00	2.0
1965	2	0.72	1965	2	0.71	1965	2	0.69	1968	2	0.35	54	50.94	2.0
1974	1	0.66	1974	1	0.66	1974	1	0.64	1962	3	0.35	55	51.89	1.9
1977	2	0.66	1977	2	0.66	1977	2	0.64	1983	2	0.35	56	52.83	1.9
1983	2	0.64	1983	2	0.64	1983	2	0.62	1965	3	0.34	57	53.77	1.9
1968	2	0.64	1968	2	0.64	1968	2	0.62	1972	3	0.34	58	54.72	1.8
1972	3	0.62	1972	3	0.62	1972	3	0.60	1960	2	0.34	59	55.66	1.8
1960	2	0.62	1960	2	0.62	1960	2	0.60	1969	3	0.33	60	56.60	1.8
1969	3	0.61	1969	3	0.61	1969	3	0.59	1948	1	0.33	61	57.55	1.7
1960	3	0.58	1952	1	0.57	1952	1	0.55	1960	3	0.31	62	58.49	1.7
1952	1	0.58	1960	3	0.57	1960	3	0.55	1952	1	0.31	63	59.43	1.7
1954	3	0.51	1954	3	0.51	1954	3	0.49	1954	3	0.28	64	60.38	1.7
1975	3	0.43	1975	3	0.43	1975	3	0.42	1975	3	0.24	65	61.32	1.6
1965	1	0.40	1965	1	0.39	1965	1	0.38	1965	1	0.21	66	62.26	1.6
1974	2	0.38	1974	2	0.38	1974	2	0.37	1974	2	0.21	67	63.21	1.6
1953	2	0.38	1953	2	0.38	1953	2	0.37	1953	2	0.21	68	64.15	1.6

TABLE 7 - CONTINUED

PRZM-2.3. Sorghum. Low Runoff Potential. Application Scenario B
New Mexico, Oklahoma, Texas: Southern High Plains (MLRA 77)
Normal Probability Analysis of Exposure Duration Concentrations

Instantaneous			96-Hour Acute			21-Day Chronic			Annual Average					
Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Year	Run	Conc. (ppb)	Rank	Weibull Plotting Position	Recurrence Interval (Years)
1957	3	0.36	1957	3	0.36	1957	3	0.35	1957	3	0.20	69	65.09	1.5
1982	1	0.34	1982	1	0.34	1982	1	0.33	1982	1	0.18	70	66.04	1.5
1962	2	0.33	1962	2	0.33	1962	2	0.32	1962	2	0.18	71	66.98	1.5
1961	1	0.33	1961	1	0.33	1961	1	0.32	1961	1	0.18	72	67.92	1.5
1976	1	0.32	1976	1	0.32	1976	1	0.31	1976	1	0.18	73	68.87	1.5
1956	1	0.32	1956	1	0.32	1956	1	0.31	1956	1	0.17	74	69.81	1.4
1967	1	0.31	1967	1	0.31	1967	1	0.30	1967	1	0.17	75	70.75	1.4
1978	3	0.31	1978	3	0.31	1978	3	0.30	1978	3	0.17	76	71.70	1.4
1963	3	0.29	1963	3	0.29	1963	3	0.28	1963	3	0.16	77	72.64	1.4
1966	3	0.29	1966	3	0.28	1966	3	0.27	1949	1	0.15	78	73.58	1.4
1949	1	0.28	1949	1	0.28	1949	1	0.27	1966	3	0.15	79	74.53	1.3
1982	3	0.27	1982	3	0.27	1982	3	0.26	1982	3	0.15	80	75.47	1.3
1971	1	0.25	1971	1	0.25	1971	1	0.24	1971	1	0.14	81	76.42	1.3
1957	2	0.24	1957	2	0.24	1957	2	0.23	1957	2	0.13	82	77.36	1.3
1952	3	0.24	1952	3	0.24	1952	3	0.23	1952	3	0.13	83	78.30	1.3
1959	1	0.20	1959	1	0.20	1959	1	0.20	1959	1	0.11	84	79.25	1.3
1966	2	0.18	1966	2	0.18	1966	2	0.17	1966	2	0.10	85	80.19	1.2
1978	2	0.17	1978	2	0.17	1978	2	0.16	1978	2	0.09	86	81.13	1.2
1969	2	0.16	1969	2	0.16	1969	2	0.16	1969	2	0.09	87	82.08	1.2
1973	3	0.16	1973	3	0.16	1973	3	0.15	1973	3	0.08	88	83.02	1.2
1970	3	0.15	1970	3	0.15	1970	3	0.15	1970	3	0.08	89	83.96	1.2
1961	3	0.15	1961	3	0.14	1953	1	0.14	1961	3	0.08	90	84.91	1.2
1953	1	0.14	1953	1	0.14	1961	3	0.14	1953	1	0.08	91	85.85	1.2
1955	3	0.13	1955	3	0.13	1955	3	0.12	1955	3	0.07	92	86.79	1.2
1976	3	0.11	1976	3	0.11	1976	3	0.11	1976	3	0.06	93	87.74	1.1
1975	2	0.10	1975	2	0.10	1975	2	0.09	1975	2	0.05	94	88.68	1.1
1954	2	0.10	1954	2	0.09	1954	2	0.09	1954	2	0.05	95	89.62	1.1
1958	3	0.09	1958	3	0.09	1958	3	0.09	1958	3	0.05	96	90.57	1.1
1983	1	0.09	1983	1	0.08	1983	1	0.08	1983	1	0.05	97	91.51	1.1
1963	2	0.08	1963	2	0.08	1963	2	0.08	1963	2	0.05	98	92.45	1.1
1962	1	0.08	1962	1	0.08	1962	1	0.08	1962	1	0.05	99	93.40	1.1
1977	1	0.08	1977	1	0.08	1977	1	0.08	1977	1	0.04	100	94.34	1.1
1968	1	0.08	1968	1	0.08	1968	1	0.07	1968	1	0.04	101	95.28	1.0
1979	3	0.08	1979	3	0.08	1979	3	0.07	1979	3	0.04	102	96.23	1.0
1964	3	0.07	1964	3	0.07	1964	3	0.07	1964	3	0.04	103	97.17	1.0
1967	3	0.07	1967	3	0.07	1967	3	0.07	1967	3	0.04	104	98.11	1.0
1950	1	0.07	1950	1	0.07	1950	1	0.07	1950	1	0.04	105	99.06	1.0

TABLE 8

Aquatic Exposure Concentrations Derived from Probability Analyses

Aerial Application *Single application of 1.682 kg a.i./ha (16.82 kg for 10 ha) with an application efficiency of 75% and drift load of 5%*							
Major Land Resource Area (MLRA)	Runoff Scenario	Critical Season Precip. (in)	Soil Series (Hydrologic Soil Group)	Instan-taneous (ppb)	96-Hour (ppb)	21-Day (ppb)	Long Term Average (ppb)
Gulf Coast Prairies (150A)	High	18.01	Lake Charles clay (D)	45.36	44.84	42.80	8.56
Central Loess Plains (75)	Moderate	13.73	Crete silt loam (C)	15.94	15.74	15.00	2.60
Southern High Plains (77)	Low	9.83	Dalhart loamy sand (B)	5.85	5.78	5.54	1.35

Ground Application *Single application of 1.682 kg a.i./ha (16.82 kg for 10 ha) with an application efficiency of 95% and drift load of 1%*							
Major Land Resource Area (MLRA)	Runoff Scenario	Critical Season Precip. (in)	Soil Series (Hydrologic Soil Group)	Instan-taneous (ppb)	96-Hour (ppb)	21-Day (ppb)	Long Term Average (ppb)
Gulf Coast Prairies (150A)	High	18.01	Lake Charles clay (D)	53.60	52.98	50.56	9.94
Central Loess Plains (75)	Moderate	13.73	Crete silt loam (C)	16.24	16.04	15.32	2.35
Southern High Plains (77)	Low	9.83	Dalhart loamy sand (B)	3.93	3.89	3.76	0.75

Note: Concentrations are 10th-percentile probability values with the exception of the long-term average, defined herein as the average concentration over a 57- to 104-year simulation period.

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Table 9. Summary of USGS Reconnaisance studies on numerous midwestern corn belt streams. (Post-application samples with propazine detection limit of 0.05 ug/l).

STATE	1989 PostApp Detects Samples	1990 PostApp Detects Samples	1994 PostApp Detects Samples	1995 PostApp Detects Samples	3 Highest Propazine Detections (ug/L)
IA	10/20	8/19	0/10	5/10	0.64, 0.51, 0.51
IL	6/28	5/10	3/9	6/8	1.4, 0.94, 0.75
IN	15/21	8/8	1/8	2/8	0.37, 0.27, 0.25
KS	3/4	1/1	1/2	2/2	0.17, 0.15, 0.14
MN	1/14	0/5	1/3	0/3	0.21, 0.13
MO	1/6	0/1	1/1	-	0.23, 0.07
NE	10/15	4/7	5/6	5/6	0.58, 0.47, 0.35
OH	8/13	10/10	2/9	4/9	3.8, 0.83, 0.57
SD	0/8	0/1	-	-	None
WI	1/9	0/4	0/4	0/4	0.37
Total	55/138 (39.9%)	36/66 (54.5%)	14/52 (26.9%)	24/50 (48.0%)	3 highest were 3.8, 1.4, 0.94

Note: Of 301 samples collected pre-application 1989, 1990, and 1994 and Fall 1989 from the 10 states, there were only 3 propazine detections (0.23 ug/L in NE, 0.08 ug/L in KS, and 0.07 ug/L in MO). No pre-application samples were collected in 1995 and no Fall samples were collected in 1990, 1994, or 1995.

Table 10. Summary of USGS reconnaisance study on 67 midwestern corn belt lakes and reservoirs April 1993 through September 1993.

State	# Systems Sampled	Detects/ Samples	% Detects DL = 0.05	3 Highest Propazine Detections (ug/L)
IL	8	1/76	1.3%	0.69
IN	11	13/114	11.4%	0.15, 0.13, 0.11
IA	5	0/53	0.0%	None
KS	9	7/90	7.8%	0.19, 0.18, 0.17
MN	8	0/65	0.0%	None
MO	7	0/75	0.0%	None
NE	10	0/92	0.0%	None
ND	1	0/10	0.0%	None
OH	7	3/63	4.8%	0.14, 0.07, 0.06
SD	1	0/8	0.0%	None
Total	67	24/646	3.7%	0.69, 0.18, 0.17

Table 11. Propazine STORET Data

STATE	PROPAZINE DETECTS/SAMPLE	PROPAZINE DETECTION LIMITS (ug/L)	MAXIMUM PROPAZINE DETECTIONS (ug/L)
Arkansas	0/243 (0.0%)	0.01	None
California	2/153 (1.3%)	0.1	0.1, 0.1
Colorado	0/42 (0.0%)	0.1	None
Connecticut	0/64 (0.0%)	0.05, 0.1	None
Delaware	2/47 (4.3%)	0.05	0.22, 0.11
Georgia	0/8 (0.0%)	0.05, 0.1	None
Hawaii	0/3 (0.0%)	0.1	None
Iowa	0/32 (0.0%)	0.05, 20, 25	None
Idaho	0/5 (0.0%)	0	None
Illinois	26/228 (11.4%)	0.05, 0.1	0.29, 0.2, 0.2
Indiana	6/43 (13.9%)	0.05, 0.1	0.11, 0.1, 0.1
Kansas (1)	70/3505 (2.0%)	0.05, 0.1, 0.3, 1.2	5.6, 4.9, 2.6, 1.8, 1.3, 1.1
Kansas (2)	201/3505(5.7%)	0.05, 0.1, 0.3, 1.2	105, 27, 20, 15, 13, 13, 13, 12, 11, 9.7, 9.2, 9.1
Kentucky	0/63 (0.0%)	0.1	None
Louisiana	0/243 (0.0%)	0.05, 0.1	None
Maryland	5/188 (2.7%)	0.05, 0.1	0.1, 0.09
Missouri	9/160 (5.6%)	0.05, 0.1, 0.3, 1.2	1.9, 0.8, 0.3
Mississippi	2/98 (2.0%)	0.10	0.1, 0.1
Montana	0/3 (0.0%)	0.10	None
North Carolina	0/60 (0.0%)	0.05, 0.10	None
North Dakota	0/38 (0.0%)	0.10	None
Nebraska	129/853(15.1%)	0.05, 0.1, 0.3, 3.4, 20	3.9, 3.4, 1.1, 0.65, 0.63
New Mexico	0/21 (0.0%)	0.10	None

TABLE 11 - CONTINUED

STATE	PROPAZINE DETECTS/SAMPLE	PROPAZINE DETECTION LIMITS (ug/L)	MAXIMUM PROPAZINE DETECTIONS (ug/L)
Ohio	13/50 (26.0%)	0.05	0.57, 0.42, 0.23
Oklahoma	3/111 (2.7%)	0.05, 0.1, 0.3	0.1, 0.1, 0.1
Oregon	0/42 (0.0%)	0.1	None
Pennsylvania	68/1114 (6.1%)	0.05, 0.1, 0.2, 1	13, 2.6, 2.4, 2.3, 2.3, 2.0
South Carolina	0/5 (0.0%)	0.05	None
South Dakota	0/131 (0.0%)	0.1	None
Tennessee	0/6 (0.0%)	0.1	None
Texas	12/633 (1.9%)	0.1	2.1, 1.3, 0.4
Utah	0/6 (0.0%)	0.1	None
Virginia	0/67 (0.0%)	0.1	None
Washington	0/82 (0.0%)	0.1, 0.2, 0.25	None
Wisconsin	1/171 (0.6%)	0.05, 0.1	0.1
TOTAL (3)	479/8518 (5.6%)	-	-

(1) KS (1): Excluding all "K" designations from detects
(2) KS (2): Including as detects those "K" designations that may not be detection limits.
(3) Total computed KS (2) instead of KS (1).

Table 12. Acute aquatic risk quotients.

Test Species	LC50 or EC50 (ug/L)	HRP AerAp RQ	HRP GrApp RQ	MRP AerAp RQ	MRP GrApp RQ	LRP AerAp RQ	LRP GrApp RQ
Dapnia magna	5320	0.01	0.01	0.00	0.00	0.00	0.00
Bluegill	4500	0.01	0.01	0.00	0.00	0.00	0.00
Mysid shrimp	4200	0.01	0.01	0.00	0.00	0.00	0.00
Eastern oyster	3720	0.01	0.01	0.00	0.00	0.00	0.00
Anabaena flosaquae	180	0.25	0.30	0.09	0.09	0.03	0.02
Lemma gibba	100	0.45	0.54	0.16	0.16	0.06	0.04
Selenastrum	29	1.56	1.85	0.55	0.56	0.20	0.14
Skeletonema costatu	25	1.81	2.14	0.64	0.65	0.23	0.16
Navicula pelliculosa	24	1.89	2.23	0.66	0.68	0.24	0.16

Table 13. Chronic aquatic risk quotients.

Test Species	GM-MATC (ug/L)	HRP AerAp RQ	HRP GrApp RQ	MRP AerAp RQ	MRP GrApp RQ	LRP AerAp RQ	LRP GrApp RQ
Sheepshead minnow	3690	0.01	0.01	0.00	0.00	0.00	0.00
Fathead minnow	940	0.05	0.05	0.00	0.00	0.00	0.00
Mysid shrimp	440	0.10	0.11	0.00	0.00	0.00	0.00
Daphnia magna	250	0.17	0.20	0.00	0.00	0.00	0.00

Table 14. Drinking water risk quotients.

Scenario	Lifetime DW HAL (ug/L)	Upper 10th % Ann.Avg. (ug/L)	Risk Quotient	% Years-rotations Ann.Avg. DW HAL
High Runoff; Aer.App	10	20.3	2.03	28
High Runoff; Gr.App	10	24	2.4	38
Med Runoff; Aer.App	10	6.5	0.65	3
Med Runoff; Gr.App	10	6.5	0.65	4
Low Runoff; Aer.App	10	2.6	0.26	0
Low Runoff; Gr. App	10	1.8	0.18	0