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Completion Report: Arkansas State Plant Board Pesticide Ground Water Monitoring Project - Phase VI

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COMPLETION REPORT:
ARKANSAS STATE PLANT BOARD
PESTICIDE GROUND WATER MONITORING PROJECT
PHASE VI

T. Nichols, P. Vendrell, K. Steele[1], H. D. Scott[2], C. Armstrong[3]

I. Summary

During Phase VI 45 samples were drawn from forty wells in eight counties. Thirty one of these samples were from new wells including 15 in Clay County, 6 in Greene County, 3 in Mississippi County, 2 in Poinsett County and 5 in Randolph county. The rest of the samples were resamples, including 3 in Clay County that were collected to verify detections. This gives a total, to date, of 303 samples collected from 262 wells. Table 1 shows a listing of all counties which have been monitored and the number of wells sampled in each county.

All samples collected were analyzed for 63 pesticides and nitrate-nitrogen. A listing of all the analytes can be found in the Quality Assurance Report (QAR) which is attached as an appendix. The QAR also includes detection limits for all analytes as well as quality control (QC) data and data proving initial competence.

There were numerous pesticide detections during Phase VI, resulting mainly from resamples of wells known to be contaminated. Table 2 lists all the pesticide detections for all phases of monitoring. All detections from Phase VI appear in bold type in Table 2.

Three new wells, all in Clay County, were found to be contaminated with at least one pesticide. A small amount of bromacil, 1.66 ug/L, was detected in Clay #2. The Arkansas State Plant Board (ASPB) laboratory could not confirm a bromacil detection this low, but another sample of the well taken two months later again showed bromacil, 1.85 ug/L. Clay #7 was found to contain a small amount of aciflurofen, 1.70 ug/L. Again this amount was below the ASPB detection limit but a second sample verified aciflurofen at 0.95 ug/L. Dacthal was found in Clay #9 at 36.9 ug/L. and a second sample showed 21.57 ug/L. However, in both cases, the ASPB laboratory found a trash peak eluting near where dacthal was expected, but no dacthal. As the ASPB uses GC/MS which does not depend on elution time to identify a peak, the dacthal detection is suspect and is not being reported.

All the wells sampled during Phase VI which were previously known to be contaminated again showed detectable levels of the pesticides reported before. Table 2 clearly illustrates the changes that have occurred in these wells over the years. From this

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Table 1. Areas Monitored During Phases I-VI

County	Number of Wells	Number of Samples
Ashley	16	21
Chicot	6	6
Drew	1	2
Mississippi	18	19
Craighead	12	13
Poinsett	13	14
Woodruff	60	81
Pulaski	19	22
Lonoke	12	12
Lee	11	11
Crittenden	1	1
Jackson	26	26
Lawrence	12	12
Monroe	30	34
Clay	15	18
Greene	6	6
Randolph	5	5
	----	----
Total	262	303

group, only Monroe #1 was found to have any additional pesticides, A new pesticide, barban at 7.29 ug/L, was detected along with aciflurofen and bentazon when the well was sampled in June. The ASPB laboratory could not confirm the detection as it was below detection limit. However, in this case, the well was sampled again and barban was not found. Being neither confirmed nor verified, it was concluded that this was a false positive and the barban detection for Monroe #1 is not being reported.

Nitrate-nitrogen was analyzed in all 45 samples collected. All but 6 of the analyses showed detectable levels of nitrate. Only two wells, Clay #10 and Clay #14 had nitrate concentrations above the Maximum Contaminant Level, 10 mg/L

II. Background

In 1990 the U. S. Environmental Protection Agency (EPA) released its first report on its National Pesticide Survey. The report made it clear that ground water contamination by pesticides is a wide-spread problem in the U. S. In response the EPA initiated its "Pesticides in Ground-Water Strategy" which included the State Management Plan (SMP) concept (EPA,1991). Arkansas completed its generic SMP--The Arkansas Agricultural Chemical Ground-Water Management Plan--in 1992. The SMP called

Table 2. Pesticide Detections during Phases I-VI.*

Well ID#	Date(s) Sampled	Chemical	Conc. (µg/L)
Drew #1	Apr. 22, 1993	Metolachlor	0.7
	May 20, 1993	no detection	
Miss #4	Nov. 2, 1993	Bentazon	2.5
	closed		
Miss #5	Nov. 2, 1993	Bentazon	0.3
	Mar. 29, 1994	no detection	
CH #4	Nov. 22, 1993	Fluometuron	0.5
	Mar. 29, 1994	no detection	
Poin #1	Dec. 6, 1993	Bentazon	0.2
	Mar. 29, 1994	no detection	
Wood #7	May 23, 1994	Bentazon	55
	June 29, 1994	Bentazon	66
		Fluometuron	0.4
	July 27, 1994		
	inside	Bentazon	78
	outside	Bentazon	69
	May 15, 1995	Bentazon	21
	Oct. 12, 1995	Bentazon	38
	Jan. 12, 1998	**Bentazon**	**11.35**
	Apr. 23, 1998	**Bentazon**	**16.50**
Wood #9	May 24, 1994	Bentazon	25
		Acifluorfen	1.7
		Fluometuron	0.9
	June 29, 1994	Bentazon	88
		Acifluorfen	8.6
		Fluometuron	0.8
	May 15, 1995	Bentazon	37
		Acifluorfen	6.8
		Fluometuron	0.4
	Oct. 12, 1995	Bentazon	26
		Acifluorfen	4
	Sep. 27, 1997	**Bentazon**	**2.73**
		Aciflurofen	**1.58**
Wood #11	Jul. 26, 1994	Metolachlor	13
	Feb. 20, 1995	Metolachlor	11.5
	July 10, 1996	Metolachlor	7.1
	Sep. 25, 1998	**Metolachlor**	**4.42**

Table 2. Pesticide Detections during Phases I-V (continued).*

Wood #25	Sep. 15, 1994	Bentazon	4.4
	Feb. 20, 1995	Bentazon	1.9
	June 18, 1997	**Bentazon**	**0.34**
Wood #26	Sep. 15, 1994	Bentazon	1.5
	Feb. 20, 1995	Bentazon	0.9
	June 18, 1997	**Bentazon**	**0.55**
Wood #29	Sep. 29, 1994	Metribuzin	0.4
	Feb. 20, 1995	Metribuzin	0.4
	closed		
Wood #34(PB)	Feb. 20, 1995	Alachlor	1.5
	May 15, 1995	Bentazon	1.5
		Acifluorfen	0.5
Pulaski #14	Jun. 19, 1995	Acifluorfen	27
		Bentazon	135
		Fluometuron	24
		Metribuzin	4
	Sep. 28, 1995	Acifluorfen	11
		Bentazon	57
		Fluometuron	19
		Metribuzin	2
	Feb. 18, 1996	Acifluorfen	9.3
		Bentazon	58
		Metribuzin	1.3
	June 18, 1997	**Aciflurofen**	**30.0**
		Bentazon	**92.3**
Monroe #1	Mar. 28, 1996	Acifluorfen	148
		Bentazon	97
	Apr. 17, 1996	Acifluorfen	180
		Bentazon	103
	June 17, 1996	Acifluorfen	374
		Bentazon	145
	Jan 12, 1998	**Aciflurofen**	**58.8**
		Bentazon	**152**
	May 8, 1998	**Aciflurofen**	**14.3**
		Bentazon	**137**
Clay #2	**July 29, 1997**	**Bromacil**	**1.66**
	Sep. 23, 1997	**Bromacil**	**1.85**
Clay #7	**Aug. 13, 1997**	**Aciflurofen**	**1.70**
	Sep. 24, 1997	**Aciflurofen**	**0.95**

*Phase VI detections shown in bold face type.

for monitoring of ground water for pesticides in those areas of the state found to be most vulnerable.

To identify the areas where the ground water is vulnerable, a vulnerability map for the Arkansas Delta was developed using a combination of pesticide DRASTIC and pesticide use information. DRASTIC (Aller, et al., 1987) is a method for determining areas sensitive to ground-water contamination developed for EPA.

DRASTIC determines ground-water sensitivity to contamination based on seven factors:

Depth to Ground Water
net **R**echarge
Aquifer media
Soil media
Topography
Impact of the vadose zone, and
hydraulic **C**onductivity

The Arkansas Soil and Water Conservation Commission (ASWCC) coordinated development of the vulnerability map for Arkansas (Fugitt, 1992). For this purpose estimates of pesticide use in the various counties was provided by the Arkansas Cooperative Extension Service (CES).

With the Arkansas State Plant Board (ASPB) as lead agency, monitoring under the SMP began in September, 1992. Five phases of monitoring have been carried out, prior to this phase. As Table 2 shows, 14 of the 231 wells tested prior to Phase VI were found to be contaminated. With completion of Phase VI the number has risen to 16 contaminated wells.

III. The Study Area.

Thirty-one new wells were sampled during Phase VI. These were collected in five counties. Two of these counties, Mississippi and Poinsett, had been sampled during Phase II, but at that time the detailed vulnerability maps now in use were not available. For this reason, several "hot spots" in Mississippi County and one larger "hot spot" in Poinsett County had not been sampled before. Three new samples were collected in Mississippi County near the Mississippi River. All three of these "hot spots" turned out to be areas where very few shallow wells were available for testing. As a whole very few people live in these areas and most who do live there have rural water. Nonetheless, it was possible to get samples either within or very near all three areas. The area in Poinsett County surrounded the small town of Truman. For Phase VI, one

sample was drawn just southeast of Truman and a second came from just west of Truman.

Clay County was the location of 15 of the wells sampled. Clay County is in northeastern Arkansas, adjacent to Missouri on both its northern and eastern boundaries. The county is cut from north to south by Crowley's Ridge with farm land on both sides. The most vulnerable areas of the county lie between Crowley's ridge and the St. Francis River, the state line between Arkansas and Missouri. All the Clay County samples were taken in this area. Rice and soybeans are the two largest crops in Clay County followed by corn and cotton. The farm land is typical of the Delta region with most of the population living in small towns while farm and rent houses are widely scattered.

Just south of Clay County is Greene County. It also borders the Missouri boot heel and is quite similar in geography and cropping to Clay County. Five of the six samples collected in Greene County came from the area between Crowley's Ridge and the St. Francis River. One sample was drawn from a well in the western part of the county which contains a small area of vulnerability. On the whole there are fewer acres of highly vulnerable land in Greene County than in Clay County.

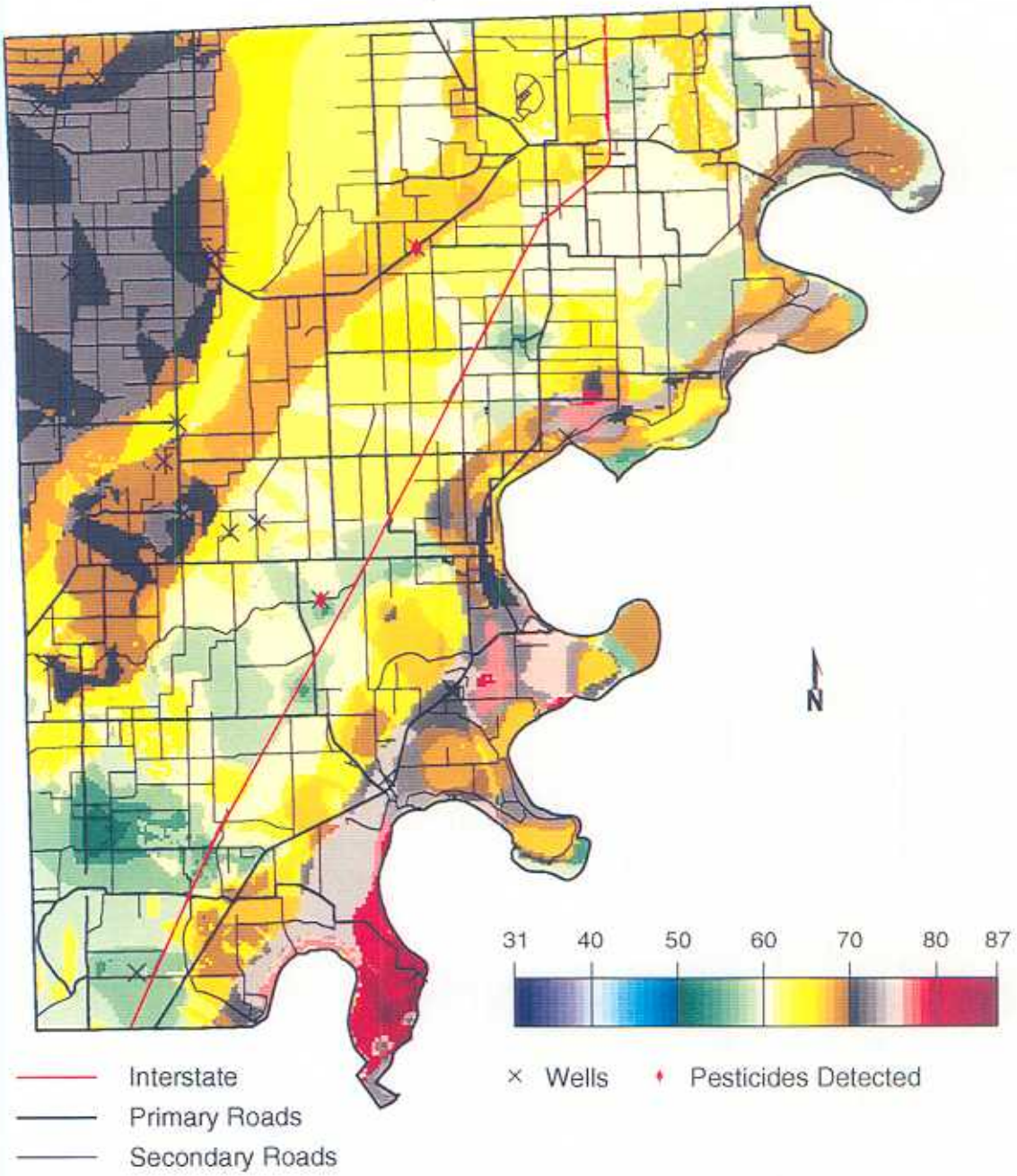
Randolph County lies just of the west of Clay and Greene Counties. Once again rice and soybeans are the major crops. Slightly less than half of Randolph County is farm land. The western part of the county rises up into the Ozark Highlands. The farm land is divided from northeast to southwest by the Current River and the Black River runs across the south end of the county before turning south into Lawrence County.. Five wells were sampled in Randolph County all in the vicinity of the Black and Current Rivers.

Figures 1 and 2 show the locations of wells sampled and detections in Mississippi and Poinsett, Counties respectively. These maps include samples taken during Phase VI and during earlier phases. Figures 3, 4 and 5 show the same information for Clay, Greene and Randolph Counties. All of these samples are new.

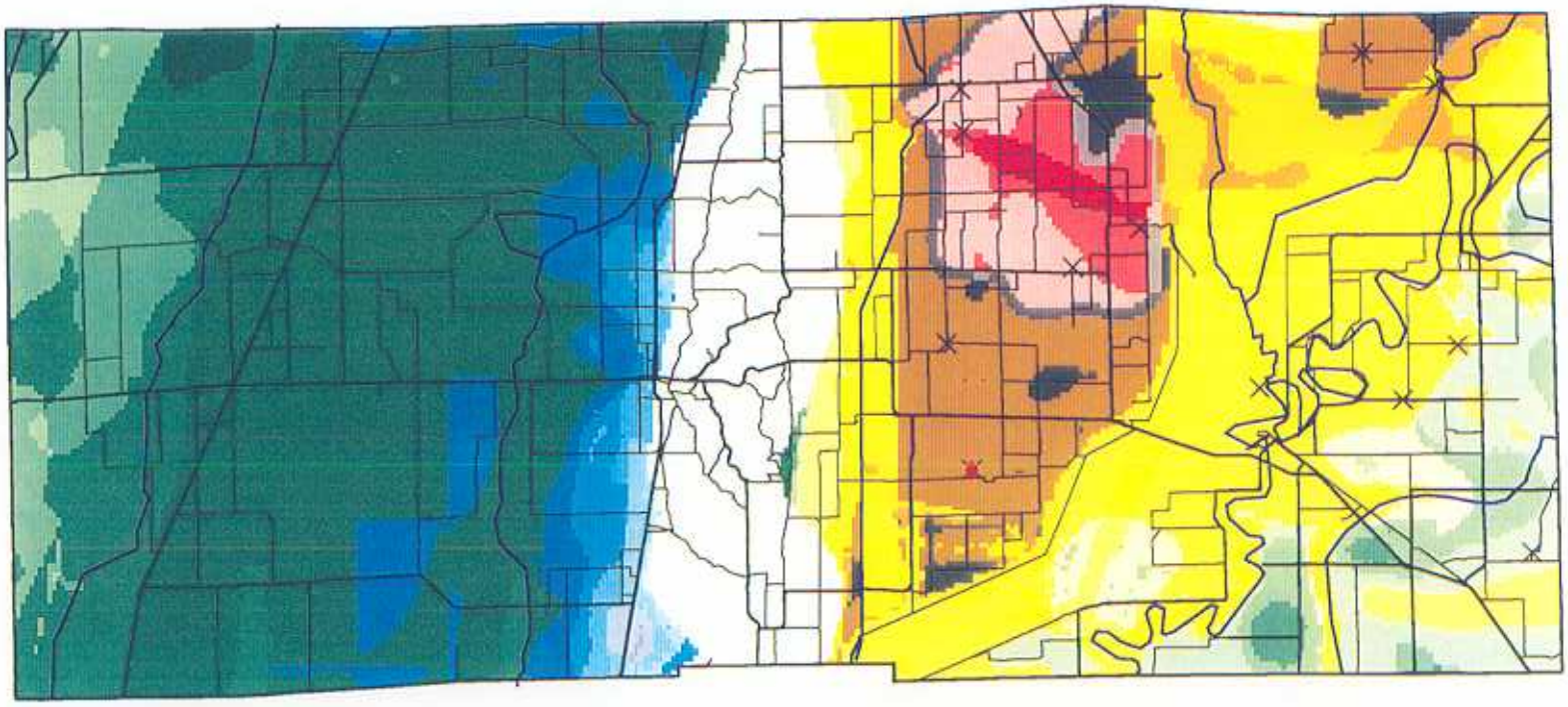
IV. Monitoring Results

Table 3 gives general information about all the wells sampled in Phase VI and results for pH, conductivity, temperature and nitrate-nitrogen. It also indicates whether or not pesticides were detected. Table 4 is a listing of all the wells in which pesticides were detected at the WQL. One column shows the concentration of the pesticide. The next column indicates if the results were confirmed at the ASPB laboratory. For new pesticide detections, the table also indicates if the detection has been verified by the analysis of a second sample from the same well and what the official reporting status is for the detection.

Mississippi County



Poinsett County

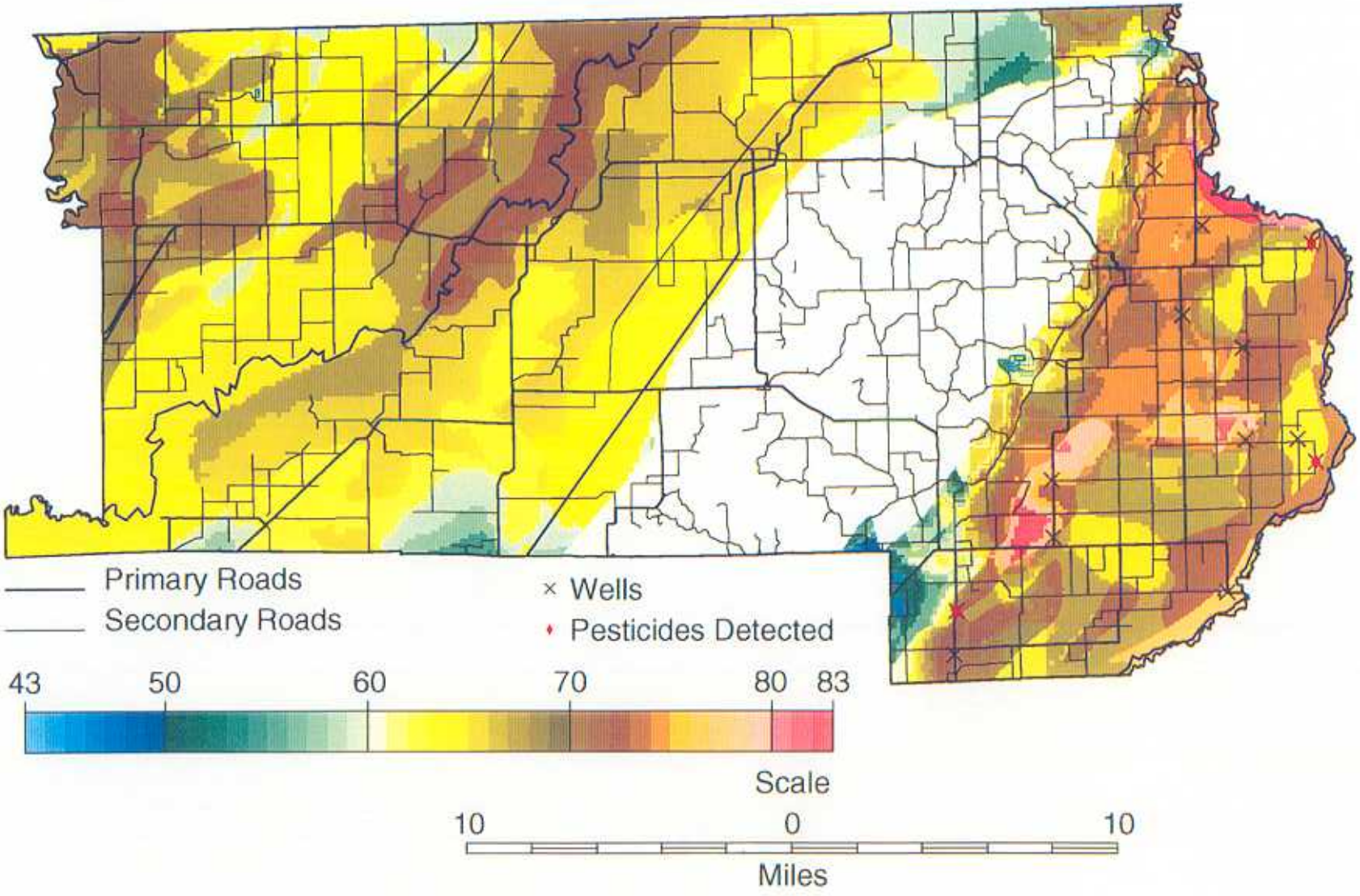


Primary Roads
Secondary Roads
Wells
Pesticides Detected

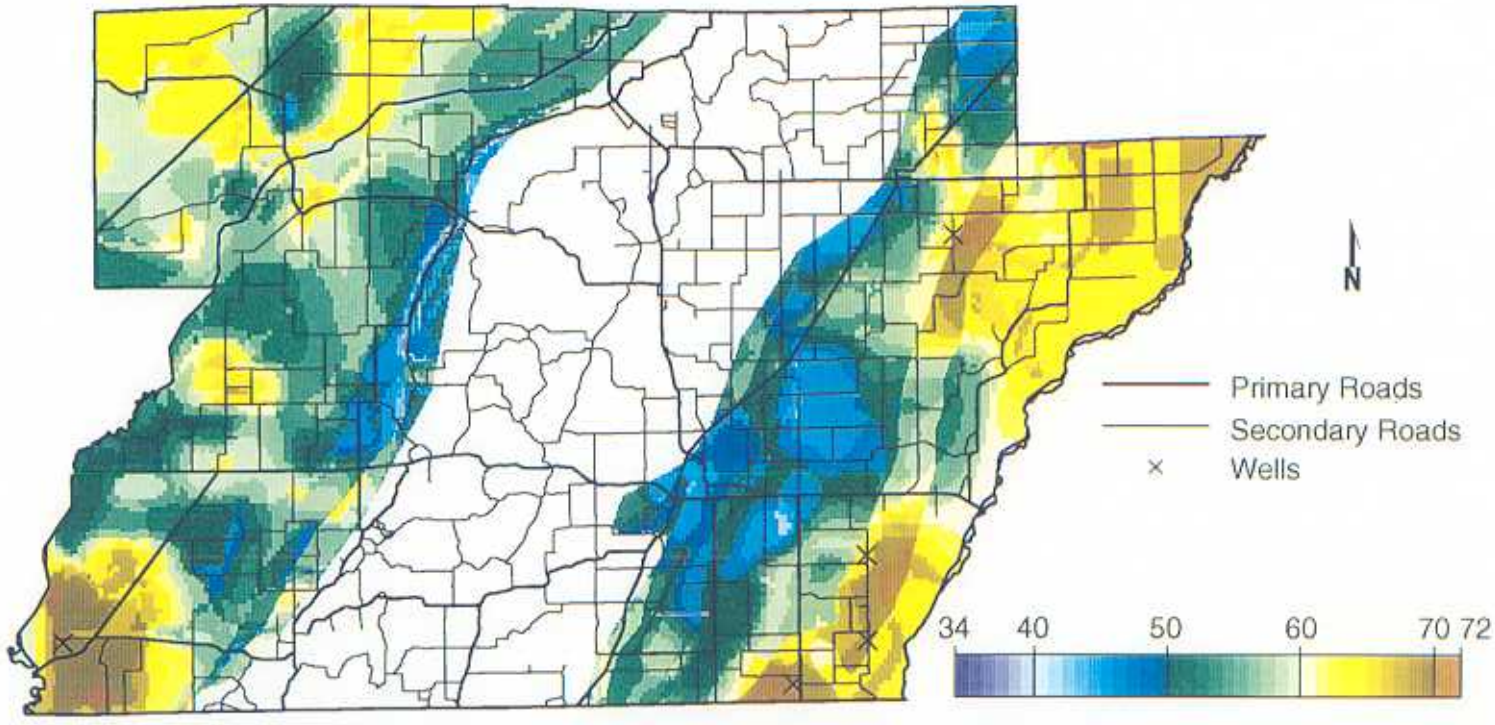
37 40 50 60 70 79

Scale
10 0 10
Miles

Clay County


Primary Roads
Secondary Roads
Wells
Pesticides Detected
43
50
60
70
80
83
Scale
10
0
10
Miles

Greene County



Eastern Randolph County

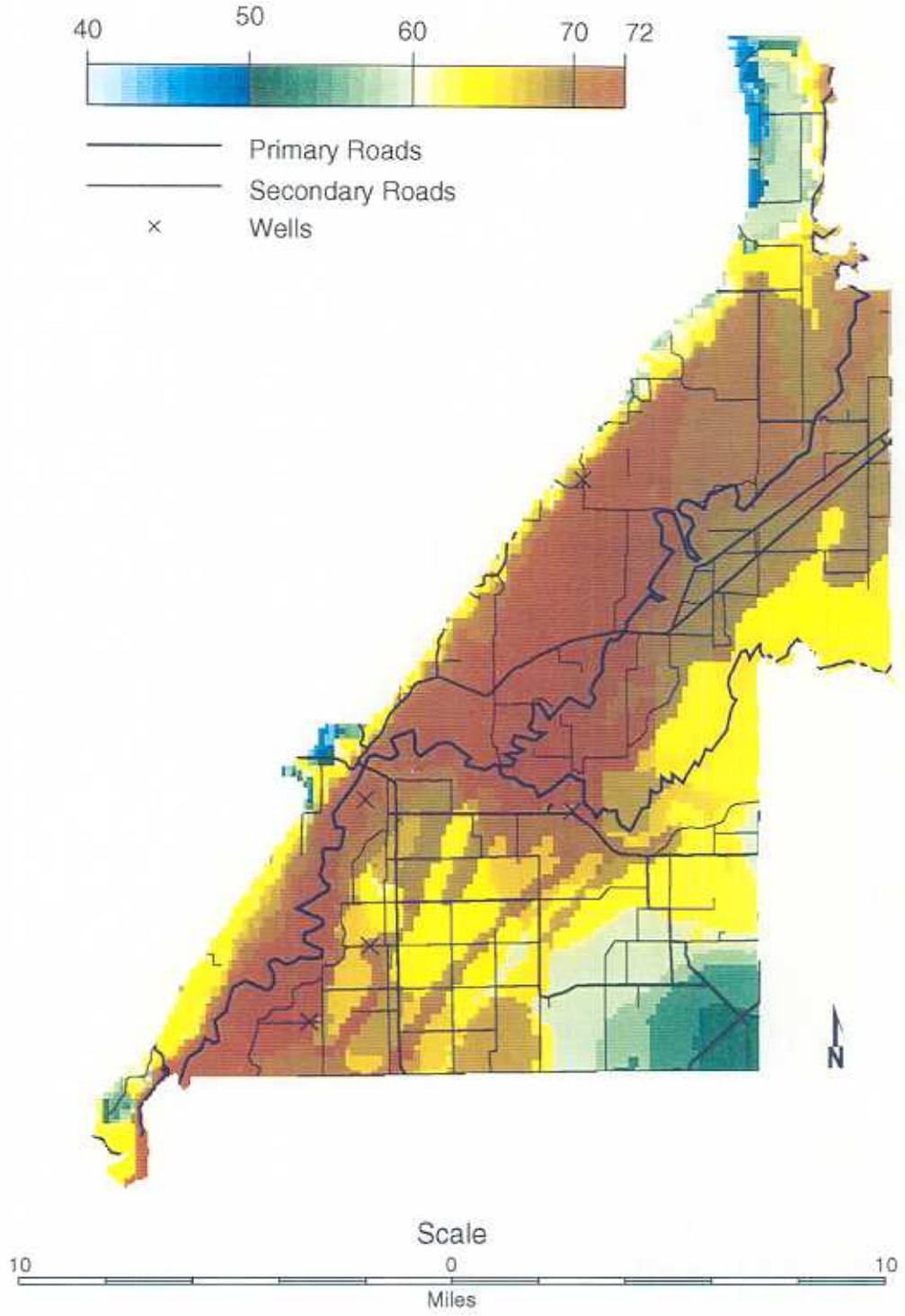


TABLE 3 - SAMPLES ANALYZED AT WQL - PHASE VI

TRIP #	SITE	DATE COLLECTED	LAB #	PEST. DETECT?	LAT.	LONG.	pH	cond.	temp.	nitrate	depth(ft)
Trip #1	Wood. #25 R2	6/18/97	4000	Yes			6.1	190	19.1	1.940	45
Trip #1	Wood. #26 R2	6/18/97	4010	Yes			6.5	594	18.8	1.280	60
Trip #1	Wood. #34 R2	6/18/97	4020	No			6.8	148	18.5	5.063	120
Trip #1	Pul. #14 R3	6/18/97	4030	Yes			7.0	684	20.8	2.435	30
Trip #1	Monroe #4 R1	6/18/97	4040	No			7.6	172	17.2	1.279	?shallow
Trip #2	Clay #1	7/29/97	4100	No	36 °12' 45"	90° 17' 08"	6.6	276	18.1	8.390	?shallow
Trip #2	Clay #2	7/29/97	4110	Yes	36 °13' 55"	90° 17' 02"	7.5	477	17.0	0.920	20-40
Trip #2	Clay #3	7/29/97	4120	No	36 °15' 48"	90° 13' 48"	8.1	211	16.7	1.470	45
Trip #2	Clay #4	7/29/97	4130	No	36 °17' 19"	90° 13' 48"	7.8	449	17.2	0.470	70
Trip #2	Clay #5	7/29/97	4140	No	36 °18' 15"	90° 07' 26"	8.1	319	17.3	2.210	24
Trip #2	Clay #6	7/29/97	4150	No	36 °18' 14"	90° 05' 43"	8.2	194	18.9	4.350	30
Trip #2	Clay #7	7/29/97	4160	Yes	36 °17' 37"	90° 05' 08"	8.2	157	19.4	4.930	35
Trip #2	Clay #8	7/29/97	4170	No	36 °14' 13"	90° 08' 09"	7.9	303	18.8	1.030	18
Trip #3	Clay #9	8/13/97	4200	Yes	36 °23' 24"	90° 05' 05"	6.7	998	21.8	1.485	35
Trip #3	Clay #10	8/13/97	4210	No	36 °21' 38"	90° 09' 23"	7.8	1062	17.9	10.502	41
Trip #3	Clay #11	8/14/97	4220	No	36 °27' 13"	90° 10' 31"	7.0	131	21.8	0.825	40
Trip #3	Clay #12	8/14/97	4230	No	36 °25' 31"	90° 10' 10"	7.3	341	23.6*	0.208	40
Trip #3	Clay #13	8/14/97	4240	No	36 °24' 00"	90° 08' 40"	7.3	507	17.7	<0.004	120
Trip #3	Clay #14	8/14/97	4250	No	36 °20' 43"	90° 07' 26"	7.3	526	17.3	11.904	30-50
Trip #4	Clay #2 R1	9/23/97	4300	Yes			7.6	485	17.3	0.874	20-40
Trip #4	Clay #9 R1	9/23/97	4310	Yes			6.8	980	21.8	1.748	35

TABLE 3 - SAMPLES ANALYZED AT WQL - PHASE VI (CONTINUED)

TRIP #	SITE	DATE COLLECTED	LAB #	PEST. DETECT?	LAT.	LONG.	pH	cond.	temp.	nitrate	depth(ft)
Trip #4	Clay #7 R1	9/24/97	4320	Yes			6.5	150	19.0	1.751	35
Trip #4	Clay #15	9/24/97	4330	No	36 °19' 08"	90° 06' 15"	6.3	161	17.5	4.198	<50
Trip #4	Poinsett #12	9/24/97	4340	No	35 °37' 08"	90° 29' 11"	6.5	102	18.1	3.988	15
Trip #4	Poinsett #13	9/24/97	4350	No	35 °39' 32"	90° 34' 15"	6.8	383	17.7	<0.004	30-40
Trip #4	Wood. #11 R3	9/25/97	4360	Yes			6.7	145	18.6	5.177	35
Trip #4	Wood. #9 R4	9/25/97	4370	Yes			6.6	186	19.0	0.043	60
Trip #5	Wood. #7 R5	1/12/98	4500	Yes			6.1	156	15.5	0.009	? deep
Trip #5	Monroe #1 R3	1/12/98	4510	Yes			5.8	400	16.5	8.049	?shallow
Trip #6	Greene #1	2/26/98	4600	No	35 °59' 52"	90° 49' 51"	6.9	870	15.1	0.010	35
Trip #6	Greene #2	2/27/98	4610	No	36 °09'47"	90° 21' 21"	7.2	585	14.9	0.013	35
Trip #6	Greene #3	2/27/98	4620	No	34 °09' 46"	90° 21' 10"	6.9	615	15.2	<0.004	40
Trip #6	Greene #4	2/27/98	4630	No	36 °01' 36"	90° 24' 20"	6.4	229	15.0	<0.004	50
Trip #6	Greene #5	2/27/98	4640	No	35 °59' 24"	90° 24' 22"	6.9	615	14.8	3.900	40
Trip #6	Greene #6	2/27/98	4650	No	35 °58' 20"	90° 26' 44"	6.0	220	15.0	7.651	30
Trip #7	Rand #1	4/21/98	4700	No	36 °14' 36"	90° 58' 14"	6.7	304	16.0	<0.004	50
Trip #7	Rand #2	4/21/98	4710	No	36° 11' 39"	90° 58' 12"	6.2	160	15.5	0.031	50
Trip #7	Rand #3	4/22/98	4720	No	36° 20' 59"	90° 52' 39"	6.8	720	15.0	0.067	?shallow
Trip #7	Rand #4	4/22/98	4730	No	36° 14' 18"	90° 53' 05"	6.3	396	15.0	5.971	?shallow
Trip #7	Rand #5	4/22/98	4740	No	36° 10' 09"	90° 59' 44"	6.8	622	14.5	<0.004	?shallow
Trip #7	Wood. #7R6	4/23/98	4750	Yes			6.3	149	16.0	<0.004	? deep
Trip #8	Monroe #1R4	5/8/98	4800	Yes			5.9	376	17.0	5.463	?shallow
Trip #8	Miss #16	5/8/98	4810	No	35° 27' 14"	90° 01' 11"	6.9	722	17.0	0.008	45
Trip #8	Miss #17	5/9/98	4820	No	35° 40' 38"	89° 54' 10"	7.3	582	17.0	0.006	65
Trip #8	Miss #18	5/9/98	4830	No	35° 36' 57"	89° 36' 57"	7.1	679	17.5	0.593	65

TABLE 4 - DETECTIONS, PHASE VI

SITE	DATE COLLECTED	ANALYTE FOUND	CONC. (ug/L)	CONFIRMED	NEW DETECTIONS VERIFICATION	NEW DETECTIONS ACTION STATUS
Woodruff #25 R2	6/18/97	Bentazon	0.34	Yes		
Woodruff #26 R2	6/18/97	Bentazon	0.55	Yes		
Pulaski #14 R3	6/18/97	Metribuzin	1.95	No, Not Found		
Rulaski #14 R3	6/18/97	Acifluorfen	25.94	No, Below ASPB DL.		
Pulaski #14 R3	6/18/97	Bentazon	92.30	Yes		
Clay #2	7/29/97	Bromacil	1.66	No, Below ASPB DL.	positive	report
Clay #7	7/29/97	Acifluorfen	1.70	No, Below ASPB DL.	positive	report
Clay #9	8/13/97	Dacthal	36.90	No, Not Found	positive	no action
Clay #2 R1	9/23/97	Bromacil	1.85	No, Below ASPB DL.		
Clay #9 R1	9/23/97	Dacthal	21.57	No, Not Found		
Clay #7 R1	9/24/97	Acifluorfen	0.95	No, Below ASPB DL.		
Woodruff #11 R3	9/25/97	Metolachlor	4.42	Yes		
Woodruff #9 R4	9/25/97	Acifluorfen	1.58	No, Below ASPB DL.		
Woodruff #9 R4	9/25/97	Bentazon	2.73	Yes		
Monroe #1 R3	1/12/98	Bentazon	152.05	Yes		
Monroe #1 R3	1/12/98	Acifluorfen	58.82	No, Below ASPB DL.		
Monroe #1 R3	1/12/98	Barban	7.29*	No, Below ASPB DL.	negative	no action
Woodruff #7 R5	1/12/98	Bentazon	11.35	Yes		
Greene #6	3/2/98	Aldicarb	0.55	No, not found	pending	no action
Woodruff #7R6	4/23/98	Bentazon	16.50	Yes		
Monroe #1R4	5/8/98	Bentazon	137.40	Yes		
Monroe #1R4	5/8/98	Acifluorfen	14.30	No, Below ASPB DL.		

*Estimate - Interference with Internal Standard made it impossible to determine exact concentration.

Seven wells where pesticides were detected, confirmed and verified during previous monitoring phases were resampled during Phase VI. Generally, the concentrations of pesticides in these wells are decreasing. The concentration of bentazon in Wood #9 showed a marked decrease, 26 ug/L down to 2.73 ug/L, and aciflurofen in the same well decreased from 4 ug/L to 1.58 ug/L. The metolachlor concentration in Wood #11 continued its slow decline, down from an original concentration of 13 ug/L in 1994 to 4.4 ug/L in the Phase VI sample. Slight declines in bentazon concentrations were found in both Wood #25 and Wood #26.

While the bentazon concentration is declining in Wood #7, the decline is not steady. Twice in the past, the bentazon concentration has fluctuated. In 1994 the concentration seemed to be increasing slowly, from a low 0f 55ug/l to a high of 78 ug/L. In May, 1995 the concentration had dropped to 21 ug/L but rebounded in October, 1995 to 38 ug/L. In April of this year the concentration was down again to 11.4 ug/L, but by April it had rebounded slightly to 16.5 ug/L.

Samples collected from Pulaski #14 in June, 1997 also showed increased concentrations of both bentazon and aciflurofen since February, 1996. In 1996 the bentazon and aciflurofen concentrations were 58 and 9.3 ug/L respectively, while the Phase VI sample resulted in 92.3 and 30 ug/L. The bentazon concentration is higher than any time since June, 1995 and the aciflurofen concentration is the highest ever. There was a substantial rain (over 2 inches) in the Little Rock area two days before this sample was taken. This may indicate that pesticides in the soil are flushing into the well. Unfortunately, WQL was unable to obtain further samples from this well. The owner refused, both on the telephone and in person, to let us take additional samples.. He is an elderly man in bad health and his wife died recently. It seems unlikely that he will change his mind.

In the past, analysis of samples from Monroe #1 indicated rising concentrations of both bentazon and aciflurofen. This well was sampled twice during Phase VI. The sample taken in January, 1998 showed a marked decline in the aciflurofen concentration, down to 58.8 ug/L from 374 in June, 1996. The bentazon concentration was 152 ug/L, about the same or slightly higher. When the well was sampled in May, 1998, aciflurofen had continued to decline, 14.3 ug/L, and the bentazon concentration also showed a slight decline, 137 ug/L. When this well was sampled in January, 1998, barban was detected at the WQL However, the ASPBL was unable to confirm this detection and no barban was found in the second sample taken. Barban is not being officially reported. The Arkansas Soil and Water Conservation Commission's 319 ground water project is planning to investigate this well.

Of the 31 new wells sampled, only three had detectable levels of pesticide. Of these only two are reported here as official detections. Analysis of the sample taken from Clay #2 on July 29, 1998 resulted in the detection of a small amount, 1.66 ug/L , of bromacil, a pre and postemergence hebicide used on non-crop areas. Bromacil is listed for regulation, but at the moment has no maximum contaminant level (MCL). The

bromacil lifetime health advisory for an adult is 0.3mg/L or 300 ug/L The ASPB laboratory (ASPBL) was unable to confirm this detection as 1.66 ug/L is below the laboratory's detection limit for bromacil. However, a second sample was taken from the well in September, 1997 and the analysis showed 1.85 ug/L of bromacil. The bromacil detection is being reported as an official detection. The amount of bromacil reported, however, is so small that additional monitoring should be postponed for several years at least.

Clay #7 was also sampled in July, 1997. Results of the analysis showed 1.70 ug/L. of aciflurofen. This amount is too low for the ASPBL to confirm. A second sample was taken from this well in September, 1997 which also showed aciflurofen at 0.95 ug/L. In all previous cases when the WQL detected aciflurofen at high enough levels, ASPBL confirmed the WQL identification. For this reason and because the pesticide was detected in two separate samples, the aciflurofen detection is being reported as an official detection

Clay #9 was the third well in Clay County to show detectable levels of a pesticide. The WQL detected what was identified as dacthal in two different samples from this well. The concentrations detected were 36.9 and 21.6 ug/L. However, neither of these detections was confirmed by the ASPBL. In both cases the ASPBL did find peaks eluting at approximately the time dacthal was expected to elute; but, with the much greater certainty resulting from the use of GC/MS, the ASPBL was able to determine that it was not dacthal. Therefore, this detection is not being reported as an official detection and requires no action from the ASPB under the State Management Plan.

Table 5. Nitrate Distribution.

Concentration (mg/L, NO_3-N)	**Number of Wells**
less than 0.004 (below detection limit)	7
0.004 to 0.99	12
1.0 to 4.99	13
5.0 to 9.99	6
10.0 or more	2
Total	40

Table 5 shows the distribution of nitrate in the 40 wells tested during Phase VI. The MCL for nitrate in drinking water is 10 mg/L. Two wells, Clay #11 and Clay #14, exceeded the MCL with 10.5 and 11.9 mg NO_3-N/L, respectively. A total of 21 wells, or 52.5%, had nitrate levels above 1 mg/L. This is a higher percentage than obtained in the previous phases where about 30% of wells had elevated (greater than 1 mg/L) nitrate concentrations

V. Conclusions

During this monitoring phase, 2 wells out of 31 new wells, 6.5%, had detectable levels of pesticides. This percentage is comparable to previous phases of monitoring where 6% of the wells tested had detectable levels of pesticides. Both of these detections were at low levels, less than 2 ug/L. Neither of these detections requires the ASBP to take any action under the SMP, other than to schedule these wells for monitoring again at some point in the future. There is nothing in these results to indicate wide-spread pesticide contamination and no wells with severe levels of contamination were found.

With the addition of these 31 wells to the list of wells tested during the monitoring program, the total number of wells tested is 262 with 16 of them, 6.1%, showing detectable levels of pesticides. Four of the 16 wells had negative verifications leaving only 12 wells, 4.6%, with persistent contamination. As the monitoring program continues, no evidence has been found to indicate that contamination resulting from normal use of pesticides has occurred.

Twenty-one wells out of forty tested, 52%, had elevated nitrate-nitrogen levels. Sixty-seven of 228 wells, 30%, for which nitrate data were reported previously had nitrate levels in excess of 1 mg/L. Even without applying statistical tests, this is obviously a significantly higher proportion of wells with elevated nitrate. However, seven of the nine wells which were retested during this phase had elevated levels of nitrate-nitrogen. Looking at just the 31 wells which were tested for the first time, 14 of them had elevated nitrate. In this case the percentage is reduced to 45%, still markedly higher than earlier phases. No explanation can be offered at this time for why this higher percentage occurred. Septic tanks and the normal use of commercial fertilizers are the most likely sources of this contamination. It is not possible to distinguish between these two sources and the locations of most of the wells relative to septic tanks is unknown. In some of the areas monitored, native nitrate may also be a factor. From the data in hand, there is no way to determine which sources are causing the elevated nitrate levels.

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APPENDIX A

DATA QUALITY ASSURANCE REPORT

ARKANSAS STATE PLANT BOARD

PESTICIDE GROUND WATER MONITORING PROJECT

FOR MOST VULNERABLE AREAS OF ARKANSAS

PHASE VI

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DATA QUALITY ASSURANCE REPORT
ARKANSAS STATE PLANT BOARD
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PHASE VI

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Introduction

This appendix presents a summary of the pesticide and nitrate data collected during Phase VI monitoring and all the associated quality assurance data including detection limit studies, competency results and all quality control checks. Figure 1 is a listing of all the pesticides (and nitrate-nitrogen) analyzed in this project. Each analyte is listed with the method of analysis and the Water Quality laboratory's detection limit for the pesticide. Data to support the detection limits are presented on pages A110-119 of this report. Many of the pesticides in Figure 1 are new this year. Therefore, the data establishing initial competence for these chemicals are also tabulated and reported here, pages A101-109.

Phase VI monitoring for pesticides was conducted as a series of eight distinct batches or trips ("trip" refers to a sample collection trip). Samples for each trip were collected over a period of one or two days. Separate aliquots of sample water were collected for each of five methods of pesticide analysis and for one nitrate-nitrogen method. Sample aliquots for each method were extracted and analyzed as a group. Quality control checks were done separately for each method for each trip. Thus the data and quality assurance information in this report are presented one trip at a time, with each trip subdivided by method. Data and quality control information are listed by trip and by method beginning on page A11. A brief summary of the monitoring data is given in the following section.

Data Summary

Table 1 is a listing of all the sites sampled during this phase. For each site, along with identifying information, results are given for pH, specific conductance, temperature, and nitrate. There is also a column indicating if pesticides were or were not found in the well. Table 2 is a listing of all the wells in which pesticides were detected at the WQL. One column shows the concentration of the pesticide. The next column indicates if the results were confirmed at the ASPB laboratory. For new pesticide detections a further column indicates if the detection has been verified by the analysis of another sample from the same well. These data are also in the main body of the Completion Report . They are included here for those who might only read this appendix.

Figure 1. Methods, analytes and detection limits.

Method	Analyte	WQL_DL (ug/L)
EPA507	Alachlor	0.452
	Ametryn	0.208
	Atraton	0.381
	Atrazine	0.199
	Bromacil	0.543
	Butachlor	0.655
	Butylate	0.257
	Carboxin	0.491
	Chlorpropham	0.332
	Cycloate	3.016
	Diazinon	0.093
	Dichlorvos	0.560
	Diphenamid	0.201
	Disulfoton	1.160
	EPTC	0.348
	Ethoprop (Prophos)	0.255
	Fenarimol	4.301
	Hexazinone (Velpar)	0.482
	Merphos	0.359
	Metolachlor	1.025
	Metribuzin	0.594
	Mevinphos (Phosdrin)	0.190
	MGK 264	0.844
	Molinate	0.401
	Napropamide (Devrinol)	1.359
	Norflurazon	0.523
	Pebulate	0.466
	Phenamiphos	0.445
	Prometon	0.261
	Prometryn	0.211
	Propazine	0.200
	Simazine	0.122
	Simetryn	0.861
	Tetrachlorvinphos (Stirofos)	0.736
	Tebuthiuron	0.916
	Terbacil	3.874
	Terbufos	0.012
	Terbutryn	0.168
	Triademefon	0.201
	Vernolate	0.888

Figure 1. Methods, analytes and detection limits (continued).

Method	Analyte	WQL_DL (ug/L)
EPA515.	Acifluorfen	0.228
	Bentazon	1.048
	2,4-D	0.145
	2,4-DB	0.814
	DCPA(Dacthal)	0.104
	Dicamba	0.376
	3,5-Dichlorobenzoic acid	0.494
	Dichlorprop	5.302
	Dinoseb	0.184
	Pentachlorophenol (PCP)	0.085
	Picloram	0.284
	2,4,5-T	0.116
	2,4,5-TP (Silvex)	0.059
NPS4	Barban	0.329
	Cyanazine	0.329
	Diuron	0.089
	Fluometuron	0.104
	Linuron	0.141
	Propanil	0.090
	Propham	0.712
	Swep	0.436
IMMUNOASSAY	Aldicarb	0.200
	Carbofuran	0.050
EPA300	nitrate-nitrogen	0.004 (mg/L)

TABLE 1 - SAMPLES ANALYZED AT WQL - PHASE VI

TRIP #	SITE	DATE COLLECTED	LAB #	PEST. DETECT?	LAT.	LONG.	pH	cond.	temp.	nitrate	depth(ft
Trip #1	Wood. #25 R2	6/18/97	4000	Yes			6.1	190	19.1	1.940	45
Trip #1	Wood. #26 R2	6/18/97	4010	Yes			6.5	594	18.8	1.280	60
Trip #1	Wood. #34 R2	6/18/97	4020	No			6.8	148	18.5	5.063	120
Trip #1	Pul. #14 R3	6/18/97	4030	Yes			7.0	684	20.8	2.435	30
Trip #1	Monroe #4 R1	6/18/97	4040	No			7.6	172	17.2	1.279	?shallow
Trip #2	Clay #1	7/29/97	4100	No	36 °12' 45"	90° 17' 08"	6.6	276	18.1	8.390	?shallow
Trip #2	Clay #2	7/29/97	4110	Yes	36 °13' 55"	90° 17' 02"	7.5	477	17.0	0.920	20-40
Trip #2	Clay #3	7/29/97	4120	No	36 °15' 48"	90° 13' 48"	8.1	211	16.7	1.470	45
Trip #2	Clay #4	7/29/97	4130	No	36 °17' 19"	90° 13' 48"	7.8	449	17.2	0.470	70
Trip #2	Clay #5	7/29/97	4140	No	36 °18' 15"	90° 07' 26"	8.1	319	17.3	2.210	24
Trip #2	Clay #6	7/29/97	4150	No	36 °18' 14"	90° 05' 43"	8.2	194	18.9	4.350	30
Trip #2	Clay #7	7/29/97	4160	Yes	36 °17' 37"	90° 05' 08"	8.2	157	19.4	4.930	35
Trip #2	Clay #8	7/29/97	4170	No	36 °14' 13"	90° 08' 09"	7.9	303	18.8	1.030	18
Trip #3	Clay #9	8/13/97	4200	Yes	36 °23' 24"	90° 05' 05"	6.7	998	21.8	1.485	35
Trip #3	Clay #10	8/13/97	4210	No	36 °21' 38"	90° 09' 23"	7.8	1062	17.9	10.502	41
Trip #3	Clay #11	8/14/97	4220	No	36 °27' 13"	90° 10' 31"	7.0	131	21.8	0.825	40
Trip #3	Clay #12	8/14/97	4230	No	36 °25' 31"	90° 10' 10"	7.3	341	23.6*	0.208	40
Trip #3	Clay #13	8/14/97	4240	No	36 °24' 00"	90° 08' 40"	7.3	507	17.7	<0.004	120
Trip #3	Clay #14	8/14/97	4250	No	36 °20' 43"	90° 07' 26"	7.3	526	17.3	11.904	30-50
Trip #4	Clay #2 R1	9/23/97	4300	Yes			7.6	485	17.3	0.874	20-40
Trip #4	Clay #9 R1	9/23/97	4310	Yes			6.8	980	21.8	1.748	35

TABLE 1 - SAMPLES ANALYZED AT WQL - PHASE VI (CONTINUED)

TRIP #	SITE	DATE COLLECTED	LAB #	PEST. DETECT?	LAT.	LONG.	pH	cond.	temp.	nitrate	depth(ft
Trip #4	Clay #7 R1	9/24/97	4320	Yes			6.5	150	19.0	1.751	35
Trip #4	Clay #15	9/24/97	4330	No	36 °19' 08"	90° 06' 15"	6.3	161	17.5	4.198	<50
Trip #4	Poinsett #12	9/24/97	4340	No	35 °37' 08"	90° 29' 11"	6.5	102	18.1	3.988	15
Trip #4	Poinsett #13	9/24/97	4350	No	35 °39' 32"	90° 34' 15"	6.8	383	17.7	<0.004	30-40
Trip #4	Wood. #11 R3	9/25/97	4360	Yes			6.7	145	18.6	5.177	35
Trip #4	Wood. #9 R4	9/25/97	4370	Yes			6.6	186	19.0	0.043	60
Trip #5	Wood. #7 R5	1/12/98	4500	Yes			6.1	156	15.5	0.009	? deep
Trip #5	Monroe #1 R3	1/12/98	4510	Yes			5.8	400	16.5	8.049	?shallow
Trip #6	Greene #1	2/26/98	4600	No	35 °59' 52"	90° 49' 51"	6.9	870	15.1	0.010	35
Trip #6	Greene #2	2/27/98	4610	No	36 °09'47"	90° 21' 21"	7.2	585	14.9	0.013	35
Trip #6	Greene #3	2/27/98	4620	No	34 °09' 46"	90° 21' 10"	6.9	615	15.2	<0.004	40
Trip #6	Greene #4	2/27/98	4630	No	36 °01' 36"	90° 24' 20"	6.4	229	15.0	<0.004	50
Trip #6	Greene #5	2/27/98	4640	No	35 °59' 24"	90° 24' 22"	6.9	615	14.8	3.900	40
Trip #6	Greene #6	2/27/98	4650	No	35 °58' 20"	90° 26' 44"	6.0	220	15.0	7.651	30
Trip #7	Rand #1	4/21/98	4700	No	36 °14' 36"	90° 58' 14"	6.7	304	16.0	0.003	50
Trip #7	Rand #2	4/21/98	4710	No	36° 11' 39"	90° 58' 12"	6.2	160	15.5	0.031	50
Trip #7	Rand #3	4/22/98	4720	No	36° 20' 59"	90° 52' 39"	6.8	720	15.0	0.067	?shallow
Trip #7	Rand #4	4/22/98	4730	No	36° 14' 18"	90° 53' 05"	6.3	396	15.0	5.971	?shallow
Trip #7	Rand #5	4/22/98	4740	No	36° 10' 09"	90° 59' 44"	6.8	622	14.5	<0.004	?shallow
Trip #7	Wood. #7R6	4/23/98	4750	Yes			6.3	149	16.0	<0.004	? deep
Trip #8	Monroe #1R4	5/8/98	4800	Yes			5.9	376	17.0	5.463	?shallow
Trip #8	Miss #16	5/8/98	4810	No	35° 27' 14"	90° 01' 11"	6.9	722	17.0	0.008	45
Trip #8	Miss #17	5/9/98	4820	No	35° 40' 38"	89° 54' 10"	7.3	582	17.0	0.006	65
Trip #8	Miss #18	5/9/98	4830	No	35° 36' 57"	89° 36' 57"	7.1	679	17.5	0.593	65

TABLE 2 - DETECTIONS, PHASE VI

SITE	DATE COLLECTED	ANALYTE FOUND	CONC. (ug/L)	CONFIRMED	NEW DETECTIONS VERIFICATION	NEW DETECTIONS ACTION STATUS
Woodruff #25 R2	6/18/97	Bentazon	0.34	Yes		
Woodruff #26 R2	6/18/97	Bentazon	0.55	Yes		
Pulaski #14 R3	6/18/97	Metribuzin	1.95	No, Not Found		
Rulaski #14 R3	6/18/97	Acifluorfen	25.94	No, Below ASPB DL.		
Pulaski #14 R3	6/18/97	Bentazon	92.30	Yes		
Clay #2	7/29/97	Bromacil	1.66	No, Below ASPB DL.	positive	report
Clay #7	7/29/97	Acifluorfen	1.70	No, Below ASPB DL.	positive	report
Clay #9	8/13/97	Dacthal	36.90	No, Not Found	positive	no action
Clay #2 R1	9/23/97	Bromacil	1.85	No, Below ASPB DL.		
Clay #9 R1	9/23/97	Dacthal	21.57	No, Not Found		
Clay #7 R1	9/24/97	Acifluorfen	0.95	No, Below ASPB DL.		
Woodruff #11 R3	9/25/97	Metolachlor	4.42	Yes		
Woodruff #9 R4	9/25/97	Acifluorfen	1.58	No, Below ASPB DL.		
Woodruff #9 R4	9/25/97	Bentazon	2.73	Yes		
Monroe #1 R3	1/12/98	Bentazon	152.05	Yes		
Monroe #1 R3	1/12/98	Acifluorfen	58.82	No, Below ASPB DL.		
Monroe #1 R3	1/12/98	Barban	7.29*	No, Below ASPB DL.	negative	no action
Woodruff #7 R5	1/12/98	Bentazon	11.35	Yes		
Greene #6	3/2/98	Aldicarb	0.55	No, not found	pending	no action
Woodruff #7R6	4/23/98	Bentazon	16.50	Yes		
Monroe #1R4	5/8/98	Bentazon	137.40	Yes		
Monroe #1R4	5/8/98	Acifluorfen	14.30	No, Below ASPB DL.		

*Estimate - Interference with Internal Standard made it impossible to determine exact concentration.

Explanation of Quality Control Data

The major QA/QC concern of this study is to demonstrate an ongoing ability to detect small amounts of pesticides in various ground waters. For this it is necessary to demonstrate that the methods are "in control." For each of the three major methods, EPA507, EPA515 and NPS4, one or more lab fortified blanks (LFB) for each batch was run along with the samples. For each LFB, a known amount of a surrogate compound was added before extraction and a known amount of an internal standard was added after extraction was complete. For a LFB to pass QC it had to show acceptable recoveries for the surrogate and internal standard as well as for the analytes with which it was fortified. If acceptable recoveries are not obtained for any of the analytes in a LFB, everything must stop and the problems must be corrected. An acceptable lab fortified blank must be obtained before analyzing the samples of a current batch. Figure 2 shows acceptable recoveries for surrogates, internal standards and analytes as specified in the methods.

For each trip, at least one Lab Fortified Sample Matrix (LFM) was analyzed for each method. This is a check for matrix interference. Assuming the process is in control as indicated by good recoveries on an LFB and if the recovery for one or more analytes in an LFM is outside the acceptable range, then the results for those analytes in unfortified samples from the same matrix are labeled suspect/matrix, indicating the result is suspect due to matrix interference.

The non-fortified samples for pesticide analysis are also required to pass QC checks for surrogate and internal standard recovery. All results reported are reported with percent recoveries for both the surrogate and internal standard. Any result associated with low recoveries on either the surrogate or the internal standard are reported as suspect due to matrix interference.

In addition, at least one Lab Blank (LB) was analyzed for each method for each trip. All results on the LBs are reported as part of the "trip" QC. To be acceptable LBs must have good surrogate and internal standard recoveries with no analytes detected. Results for field and machine duplicates are also reported

Two pesticides, aldicarb and carbofuran, were analyzed using immunoassay kits from Strategic Diagnostics Inc. (SDI). SDI recommended quality control checks were used for these analyses. Four standards are run in duplicate. Each pair of standards must have a coefficient of variation (CV) less than 10%. A control is run with each batch which must show a recovery between 80 and 120%. In addition to SDI recommendations we also run a LFM which should show recovery between 70 and 130%. In some cases a duplicate LFM was also analyzed. In these cases, the CV between the duplicates should be less than 10%.

Figure 2. Required recoveries for methods to be in control.

Method	Surrogate Recov. %	Int. Std. Recov. %	Analyte Recovs. %
EPA507	70-130	70-130	70-130
EPA515	60-140	70-130	60-140
NPS4	70-130	70-130	70-130

QC for nitrate-nitrogen results for each trip are reported with estimates of accuracy and precision in the form of percent recovery for a lab spike (90 to 110% required) and percent relative standard deviation (%RSD<10% required) for two duplicates analyzed with the batch.

Summary of QA/QC

Sampling procedures set out in the QAPP for this project were followed on all sample collection trips, with one exception. (Clay # 12 well was not completely purged due to a large pressure tank and the owner's request to conserve water). Sample bottles were thoroughly cleaned before use and appropriate preservatives were pipeted into the bottles in the lab prior to each sampling trip. Samples were iced immediately and kept iced until delivered to the lab. Sample custody forms were maintained through sample delivery and are on file with the records of this project. EPA holding times for samples and extracts were met and samples and extracts were held in the lab at 4°C, or below, at all times. No detectable levels of pesticide were found in any of the laboratory "blanks."

The following paragraphs summarize the QA data on a trip by trip basis. Data points which are reported as suspect for any reason, are itemized and discussed in these trip summaries.

Trip 1. All the data for Trip 1 have acceptable QA data. The LFB for EPA507 had an internal standard recovery of 131% (130% required), but all the analyte recoveries were well within acceptable limits. The high level of bentazon in the Pulaski 14 sample in EPA515 required that the sample extract be diluted and reanalyzed. Dilution's were made at two levels, 1 in 5 and 1 in 10. When these dilutions were analyzed the surrogate recoveries were too high (156 and 183%), but the surrogate recovery on the original, full-strength extract was fine (103%). In the carbofuran analysis for this trip, duplicates spikes were run for the first time. The CV between the duplicate spikes was 12.86%, slightly higher than the required 10%. However, duplicate samples were also run for carbofuran which resulted in a CV of 0.0%. On this basis, data for the whole run was deemed acceptable.

Trip 2. For EPA507 the field duplicates had a high (19.29%) field duplicate. This does not require the data to be reported as suspect as variation between two field duplicates

could indicate real differences in the matrix water. Two of the EPA515 non-fortified samples had high surrogate recoveries (Clay 2 =144% and Clay 4 =165%). Theoretically all the analytes for EPA515 should be reported as suspect, however, both of these wells are non-detects for all the EPA515 analytes. A high surrogate indicates that we might have reported the results too high; obviously these results are not too high. In the QA data for Carbofuran, the %CV for the spikes is too high (18.61%), however, recoveries for both spikes were fine as was the recovery of the control sample. No carbofuran was detected in any of the samples. I would worry about reporting a carbofuran concentration with this glitch in the QC but the non-detects are real. The matrix spike was omitted during the Ion chromatograph for nitrate. However, a LFB was run with good recoveries indicating that the process was under control when the samples were run. Trip 2 QA data are judged acceptable and none of the results is reported as suspect.

Trip 3. During the EPA515 analysis for Trip 3, Clay #10 was found to have a large, unidentifiable peak that interfered with the surrogate peak. This resulted in reported surrogate recoveries of 9108% for the spike and 2367% for the non-fortified sample. However, all the analytes in the spike had good recoveries and the results reported for Clay #12 are considered acceptable. A similar problem was found in the analysis for Clay #13 (surrogate recovery =435%), but lacking any other data to help with the decision all EPA 515 analytes for Clay #13 are reported as suspect due to matrix interference. There were no detections in either of these wells. During the analysis for aldicarb, an out-of-range CV for the two spikes was reported (19.25%). All the rest of the QC points for this analysis were quite good and there were no aldicarb detections. I believe the aldicarb data for Trip 3 are acceptable as are the data for EPA507, carbofuran and nitrate-nitrogen all of which had perfect QC.

Trip 4. The EPA507 analysis for this trip was marred by high recoveries for all the mix 1 analytes. All four analytes in the mix had recoveries near 150%. Probably this was a result of an incorrect spike. The LFBs for two of the mixes show that the process is in control. There were no detections of any of the analytes in question. This particular QC problem does not raise suspicions that we might have missed a detection. All of the QC for all of the other methods was perfect. All the trip four data are reported as acceptable.

Trip 5. The QC for Trip 5 was all fine except for one LFM in method NPS4. One of two LFMs for mix 2 had consistently high recoveries for all analytes. However, four LFBs and two other LFMs were run with this batch with good results, all the surrogate recoveries were good for the non-fortified samples and the results for the well in question were all non-detects. I believe that these four data points should be accepted, as should all the other data from Trip 5

Trip 6. Trip 6 also had one QC problem. During the analysis for carbofuran, the reported CV for the duplicate field spikes was 13.94% (limit = 10%). This is not a required QC point. The required QC for this analysis is fine, the carbofuran data is

acceptable. In any case there were no carbofuran detections. However, this is the third incident of not getting good comparability between field spikes on an immunoassay test. This QC point was added to beef-up the QC beyond the manufacturer's criteria and no data is available for determining what is "acceptable." Perhaps with the immunoassays a CV of 20% or less for spike duplicates might be a more reasonable cutoff point.

Trip 7. All the QC data for Trip 7 are acceptable

Trip 8. For EPA507, the percent recovery for phosdrin in the LFM was 162%. As the LFB indicated the method was under control, only the phosdrin result for Miss #16 is reported as suspect due to matrix interference. QC for all the other Trip 8 data is fine

Overview. For all of Phase VI, 2772 items of pesticide data are reported. Of these, 14 data points (all 13 analytes for EPA515 in Clay #13 and phosdrin in Miss #16) are reported as suspect due to matrix interference Over 99% of the pesticide data are acceptable. As all the suspect data are non-detects, I personally do not believe any data was lost. 100% of the 45 nitrate-nitrogen results are acceptable.

PHASE VI QC DATA TABLES

(TRIP BY TRIP)

PESTICIDE MONITORING PHASEVI, TRIP 1 - JULY 1997

METHOD 507

WELLS:
WOOD #25R2
WOOD #26R2
WOOD #34R2
PULASKI #14R3

DETECTIONS:	PULASKI #14	Metribuzin	1.845 ug/L
			2.046 ug/L
		reported =	1.946 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 1 - JULY 1997

PERCENT RECOVERIES **EPA METHOD 507**

LAB FORTIFIED SAMPLES

	Spike	Int. Std	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos					
PUL #14	mix 1	89	83	106	106	112	108					
	Spike			EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
PUL #14	mix 2	101	92	89	101	101	103	101	103	103	102	103
	Spike			Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon		
WOOD #25	mix 3	96	95	86	97	92	92	92	90	110		
	Spike			Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar	
WOOD #26	mix 4	117	110	85	90	91	104	93	100	93	99	
	Spike			Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol		
WOOD #34	mix 5	115	122	86	92	117	117	102	102	99		

LAB FORTIFIED BLANKS

		Int. Std	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
p4056	mix 2	131	90	88	82	86	109	111	104	101	106	106

NON-FORTIFIED SAMPLES

		Int. Std	Surrogate
WOOD #25	p4005	112	119
WOOD #26	p4013	99	77
WOOD #34	p4023	102	99
PUL #14	p4033	102	89

METHOD 507 - PHASE VI TRIP 1

LAB BLANKS

mix 1		Int. Std	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	p4055	96	58	0	0	0	0
	p4069	124	155	0	0	0	0
	p4070	119	129	0	0	0	0

mix 2			Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
	p4055	96	58	0	0	0	0	0	0	0	0	0
	p4069	124	155	0	0	0	0	0	0	0	0	0
	p4070	119	129	0	0	0	0	0	0	0	0	0

mix 3			Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	p4055	96	58	0	0	0	0	0	0	0
	p4069	124	155	0	0	0	0	0	0	0
	p4070	119	129	0	0	0	0	0	0	0

mix 4			Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
	p4055	96	58	0	0	0	0	0	0	0	0
	p4069	124	155	0	0	0	0	0	0	0	0
	p4070	119	129	0	0	0	0	0	0	0	0

mix 5			Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
	p4055	96	58	0	0	0	0	0	0	0
	p4069	124	155	0	0	0	0	0	0	0
	p4070	119	129	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4023	p4025	%RSD
39694	36563	2.70

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4013	2ND RUN p4013	%RSD
30085	29989	0.11

PESTICIDE MONITORING PHASEVI, TRIP 1 - JULY 1997

METHOD 515

WELLS:
WOOD #25R2
WOOD #26R2
WOOD #34R2
PULASKI #14R3

DETECTIONS:	WOOD #25	Bentazon	0.336 ug/L
	WOOD #26	Bentazon	0.537 ug/L
			0.570 ug/L
		reported =	0.553ug/L
	PULASKI #14	Bentazon	86.48 ug/L
			95.18 ug/L
			95.24 ug/L
		reported =	92.30 ug/L
		Aciflurofen	24.41 ug/L
			26.72 ug/L
			27.00 ug/L
		reported =	25.94 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 1 - JULY 1997

PERCENT RECOVERIES EPA METHOD 515

		Internal. St. DBOB	Surrogate DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Aciflur
LAB FORTIFIED SAMPLES																
WOOD#25	p4007a	99	98	90	75	93	93	96	32							
LAB FORTIFIED BLANKS																
	p4065	107	124	98	104	96	108	108	61							
	p4066	100	91							94	87	100	103	99	90	11
	p4068	113	113	101	108	97	114	111	50							
NON-FORTIFIED SAMPLES																
		Average	Average													
WOOD #25	p4008a	99	100													
WOOD #26	p4018a	92	95													
WOOD #34	p4028a	93	80													
PULASKI #14	p4038a	90	103													
PULASKI #14	p4038a 1:4	111	156													
PULASKI #14	p4038a 1:9	119	183													
MONROE #4R1	p4040a	95	100													
LAB BLANKS																
		Average	Average													
	p4064	103	96	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4067	132	129	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4018a	p4019a	%RSD
151202	128264	5.33

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

machine duplicate ommitted by mistake

PESTICIDE MONITORING PHASEVI, TRIP 1 - JULY 1997

METHOD NPS4

WELLS:	WOOD #25R2
	WOOD #26R2
	WOOD #34R2
	PULASKI #14R3
DETECTIONS:	none

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 1 - JULY 1997

PERCENT RECOVERIES **METHOD NPS4**

		Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Propanil	Swep	Barban
LAB FORTIFIED SAMPLES											
WOOD #25	p4002	104	85	94	95	95	94				
LAB FORTIFIED BLANKS											
	p4051	97	90	103	103	101	100				
	p4052	99	94					91	93	92	94
	p4062	95	88					96	94	92	96
NON-FORTIFIED SAMPLES		(average)	(average)								
WOOD #25	p4004	102	91								
WOOD #26	p4014	103	84								
WOOD #34	p4024	105	91								
PULASKI #14	p4039	92	88								
LAB BLANKS		(average)	(average)								
	p4050	96	95	0	0	0	0	0	0	0	0
	p4053	98	94	0	0	0	0	0	0	0	0
	p4061	105	92	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4014	p4016	%RSD
65710	69995	2.13

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4004	2ND RUN p4166	%RSD
72284	73426	0.52

ALDICARB results for: Phase 6-Trip 1 analysis date: 7/7/97

STANDARDS

	absorb.
std= 0 (1)	1.041
std = 0 (2)	1.049
std = 1 (1)	0.792
std = 1 (2)	0.773
std= 5 (1)	0.524
std= 5 (2)	0.513
std=10 (1)	0.27
std=10 (2)	0.243

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.045	
std = 1	0.783	74.88
std = 5	0.519	49.62
std = 10	0.257	24.55

DATA

sample ID	absorb.	x/b(0)	ug/L
WOOD 25	1.022	97.80	<0.2
WOOD 26	0.892	85.36	<0.2
WOOD 34	1.083	103.64	<0.2
PULASKI 14	1.131	108.23	<0.2

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.617	59.04	4.2	4-6	(+/- 20%)
WOOD 25 DUP	1.029	98.47	<.02		
WOOD 26 SPK	0.67	64.11	2.7	2.63-4.88	(+/- 30%)

%CV for dups= 0.00 (10% accept.)

%CV for standards= (10% accept.)

std = 0	0.54
std = 1	1.72
std = 5	1.50
std = 10	7.44

CARBOFURAN results for: Phase 6-Trip 1 **analysis date:** 7/8/97

STANDARDS

	absorb.
std= 0 (1)	1.344
std = 0 (2)	1.438
std =.1 (1)	1.204
std =.1 (2)	1.216
std= 1 (1)	0.767
std= 1 (2)	0.792
std= 5 (1)	0.394
std= 5 (2)	0.398

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.391	
std =.1	1.210	86.99
std = 1	0.780	56.04
std = 5	0.396	28.47

DATA

sample ID	absorb.	x/b(0)	ug/L
WOOD 25	1.531	110.06	<0.05
WOOD 26	1.438	103.38	<0.05
WOOD 34	1.453	104.46	<0.05
PULASKI 14	1.477	106.18	<0.05

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.597	42.92	2.4	1.6-2.4	(+/- 20%)
WOOD 25 dup	1.434	103.09	<0.05		
WOOD 34 spk	0.420	30.19	4	2.8-5.2	(+/- 30%)
WOOD 34 spkdup	0.407	29.26	4.8		

%CV for spks= 12.86 (10% accept.)
dups = 0.0

%CV for standards= (10% accept.)

std = 0	4.78
std =.1	0.70
std = 1	2.27
std = 5	0.71

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 1

Lab Number	Sample ID	NO3-N mg/L
Received: 6/19/97	Date Analyzed:	6/23/97
972523	WOOD 25R2	1.942
972524	WOOD 26R2	1.283
972525	WOOD 34(PB)R2	5.063
972526	PUL 14R3	2.435
972527	MON 4R1	1.279

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
972523	1.942
972523 S	2.874
Spike	1.000
%Recovery	93.21%
DUPLICATE COMPARISON	
972523S	2.874
972523 SD	2.823
%RSD	-1.80%

PESTICIDE MONITORING PHASE VI TRIP 2 - AUGUST 1997

METHOD 507

WELLS:
CLAY # 1
CLAY # 2
CLAY # 3
CLAY # 4
CLAY # 5
CLAY # 6
CLAY # 7
CLAY # 8

DETECTIONS: CLAY # 2 Bromazil: 1.524 ug in 920 mL

reported = 1.657 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 2 - AUGUST 1997

PERCENT RECOVERIES EPA METHOD 507

LAB FORTIFIED SAMPLES

	Spike	Int. Std.	Surrogate *	Prometon	Ametryne	Phenamiphos	Tributylphos
CLAY #1	mix 1	82	87	106	105	122	117

	Spike	Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphe
CLAY #2	mix 2	95	99	79	95	89	93	93	95	95	92	9

	Spike	Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
CLAY #3	mix 3	95	72	70	90	94	92	94	90	97

	Spike	Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
CLAY #4	mix 4	116	129	101	103	96	106	94	99	103	95

	Spike	Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
CLAY #5	mix 5	107	93	80	75	92	83	85	87	87

LAB FORTIFIED BLANKS

		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphe
p4185	mix 2	93	83	70	91	95	83	83	84	85	83	8

		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
p4187	mix 4	107	91	81	83	83	96	87	94	102	94

NON-FORTIFIED SAMPLES

		Int. Std.	Surrogate
CLAY #1	p4103	105	129
CLAY #2	p4113	105	126
CLAY #3	p4123	101	103
CLAY #4	p4133	99	81
CLAY #5	p4143	98	101
CLAY #6	p4153	99	107
CLAY #7	p4163	101	120
CLAY #8	p4173	96	76

METHOD 507 - PHASE VI TRIP 2

LAB BLANKS

mix 1		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	p4180	87	116	0	0	0	0
	p4186	84	85	0	0	0	0

mix 2		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphe
	p4180	103	116	0	0	0	0	0	0	0	0	
	p4186	99	85	0	0	0	0	0	0	0	0	

mix 3		Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	p4180	101	116	0	0	0	0	0	0	0
	p4186	97	85	0	0	0	0	0	0	0

mix 4		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
	p4180	105	116	0	0	0	0	0	0	0	0
	p4186	100	85	0	0	0	0	0	0	0	0

mix 5		Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
	p4180	108	116	0	0	0	0	0	0	0
	p4186	104	85	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4173	p4175	%RSD
29014	49824	19.29

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4153	2ND RUN p4153	%RSD
42152	41244	0.72

* All internal standard and surrogate values calculated from mean RF value for mixes 1-5

PESTICIDE MONITORING PHASE VI TRIP 2 - AUGUST 1997

METHOD 515

WELLS:	CLAY #1			
	CLAY #2			
	CLAY #3			
	CLAY #4			
	CLAY #5			
	CLAY #6			
	CLAY #7			
	CLAY #8			
DETECTIONS:	CLAY #7	Acifluorfen:	3 runs	1.679 ug/L
				1.723 ug/L
				1.682 ug/L
			reported=	1.695 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 2 - AUGUST 1997

PERCENT RECOVERIES EPA METHOD 515

		Internal.St DBOB	Surrogate DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Aciflurofen
LAB FORTIFIED SAMPLES																
CLAY #8	p4177	107	101	86	93	89	88	88	47							
CLAY #1	p4107	94	97							102	100	101	102	102	83	103
LAB FORTIFIED BLANKS																
	p4191	113	93	90	89	85	91	89	50							
	p4192	96	102							99	101	99	100	100	89	105
NON-FORTIFIED SAMPLES																
		Average	Average													
CLAY #1	p4108	106	91													
CLAY #2	p4118	101	144													
CLAY #3	p4128	111	88													
CLAY #4	p4138	99	165													
CLAY #5	p4148	95	115													
CLAY #6	p4158	98	108													
CLAY #7	p4168	99	111													
CLAY #8	p4178	104	111													
LAB BLANKS																
		Average	Average													
	p4189	113	84	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4190	98	106	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4193	98	99	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4128	p4129	%RSD
142139	150323	1.88

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4148	2ND RUN p4148	%RSD
157573	160162	0.54

PVIT215Q.

PESTICIDE MONITORING PHASE VI TRIP 2 - AUGUST 1997

METHOD NPS4

WELLS:	CLAY # 1
	CLAY # 2
	CLAY # 3
	CLAY # 4
	CLAY # 5
	CLAY # 6
	CLAY # 7
	CLAY # 8
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 2 - AUGUST 1997

PERCENT RECOVERIES **METHOD NPS4**

		Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Propanil	Swep	Barban
LAB FORTIFIED SAMPLES											
CLAY #6	p4152	107	91	89	96	93	92				
CLAY #7	p4166	94	82					109	113	112	109
LAB FORTIFIED BLANKS											
	p4183	105	98	89	99	102	99				
	p4184	102	96					96	100	100	88
NON-FORTIFIED SAMPLES		(average)	(average)								
CLAY #1	p4104	99	95								
CLAY #2	p4114	99	78								
CLAY #3	p4124	106	86								
CLAY #4	p4134	104	91								
CLAY #5	p4144	95	100								
CLAY #6	p4154	105	90								
CLAY #7	p4164	103	96								
CLAY #8	p4174	103	87								
LAB BLANKS		(average)	(average)								
	p4181	105	91	0	0	0	0	0	0	0	0
	p4182	109	90	0	0	0	0	0	0	0	0
	p4188	107	92	0	0	0	0	0	0	0	0
	p4194	99	93	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4014	p4016	%RSD
73178	74070	0.40

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4166	2ND RUN p4166	%RSD
81393	82365	0.40

ALDICARB results for: Phase 6-Trip 2 analysis date: 8/11/97

STANDARDS

	absorb.
std= 0 (1)	1.071
std = 0 (2)	1.059
std = 1 (1)	0.837
std = 1 (2)	0.761
std= 5 (1)	0.555
std= 5 (2)	0.493
std=10 (1)	0.265
std=10 (2)	0.235

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.065	
std = 1	0.799	75.02
std = 5	0.524	49.20
std = 10	0.250	23.47

DATA

sample ID	absorb.	x/b(0)	ug/L
CLAY 1	1.054	98.97	<0.2
CLAY 2	1.067	100.19	<0.2
CLAY 3	1.055	99.06	<0.2
CLAY 4	1.113	104.51	<0.2
CLAY 5	1.032	96.90	<0.2
CLAY 6	1.096	102.91	<0.2
CLAY 7	1.024	96.15	<0.2
CLAY 8	1.045	98.12	<0.2

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries
control	0.619	58.12	4.7	4-6 (+/- 20%)
CLAY 8 SPK	0.661	62.07	3.3	2.63-4.88 (+/- 30%)
CLAY 8 SPK DUP	0.623	58.50	4.3	

%CV for spks= 18.61 (10% accept.)

%CV for standards= (10% accept.)

std = 0	0.80
std = 1	6.73
std = 5	8.37
std = 10	8.49

CARBOFURAN results for: Phase 6-Trip 2 analysis date: 8/5/97

STANDARDS

	absorb.
std= 0 (1)	1.549
std = 0 (2)	1.593
std =.1 (1)	1.406
std =.1 (2)	1.348
std= 1 (1)	0.841
std= 1 (2)	0.852
std= 5 (1)	0.438
std= 5 (2)	0.416

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.571	
std =.1	1.377	87.65
std = 1	0.847	53.88
std = 5	0.427	27.18

DATA

sample ID	absorb.	x/b(0)	ug/L
Clay 1	1.596	101.59	<0.05
Clay 2	1.55	98.66	<0.05
Clay 3	1.571	100.00	<0.05
Clay 4	1.551	98.73	<0.05
Clay 5	1.559	99.24	<0.05
Clay 6	1.544	98.28	<0.05
Clay 7	1.522	96.88	<0.05
Clay 8	1.543	98.22	<0.05

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.651	41.44	2	1.6-2.4	(+/- 20%)
CLAY 8 spk	0.423	26.93	4.6	2.8-5.2	(+/- 30%)
CLAY 8 spkdup	0.413	26.29	4.8		

%CV for spks= 3.01 (10% accept.)

%CV for standards= (10% accept.)

std = 0	1.98
std =.1	2.98
std = 1	0.92
std = 5	3.64

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 2

Lab Number	Sample ID	NO3-N mg/L
Received: 7/31/97	Date Analyzed:	8/5/97
980284	Clay #1	8.393
980285	Clay #2	0.922
980286	Clay #3	1.470
980287	Clay #4	0.472
980288	Clay #5	2.206
980289	Clay #6	4.346
980290	Clay #7	4.925
980291	Clay #8	1.029

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
980284	OMITTED
980284 S	BY ERROR
Spike	
%Recovery	
DUPLICATE COMPARISON	
980284	<0.004
980284	<0.004
%RSD	NC

PESTICIDE MONITORING PHASE VI TRIP 3 - AUGUST 1997

METHOD 507

WELLS:	CLAY # 9
	CLAY #10
	CLAY #11
	CLAY #12
	CLAY #13
	CLAY #14
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 3 - AUGUST 1997

PERCENT RECOVERIES **EPA METHOD 507**

LAB FORTIFIED SAMPLES

	Spike	Int. Std. *	Surrogate *	Prometon	Ametryne	Phenamiphos	Tributylphos
CLAY #9	mix 1	85	79	100	100	105	82

	Spike	Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphen
CLAY #10	mix 2	104	77	74	87	90	90	90	91	92	93	94

	Spike	Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
CLAY #11	mix 3	94	73	72	86	83	85	85	84	88

	Spike	Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
CLAY #12	mix 4	101	78	76	78	78	93	91	92	88	93

	Spike	Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
CLAY #13	mix 5	85	84	82	78	93	92	94	95	97

LAB FORTIFIED BLANKS

		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphen
p4271	mix 2	101	74	66	82	81	86	86	87	88	88	86

		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
p4273	mix 4	99	75	67	75	74	85	87	91	97	93

NON-FORTIFIED SAMPLES

		Int. Std.	Surrogate
CLAY #9	p4203	89	80
CLAY #10	p4216	98	77
CLAY #11	p4223	87	69
CLAY #12	p4233	86	77
CLAY #13	p4243	89	70
CLAY #14	p4253	88	70

METHOD 507 - PHASE VI TRIP 3

LAB BLANKS

mix 1		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	p4265	97	72	0	0	0	0
	p4267	90	71	0	0	0	0
	p4274	98	71	0	0	0	0

mix 2		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphena
	p4265	97	72	0	0	0	0	0	0	0	0	0
	p4267	90	71	0	0	0	0	0	0	0	0	0
	p4274	98	71	0	0	0	0	0	0	0	0	0

mix 3		Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	p4265	97	72	0	0	0	0	0	0	0
	p4267	90	71	0	0	0	0	0	0	0
	p4274	98	71	0	0	0	0	0	0	0

mix 4		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
	p4265	97	72	0	0	0	0	0	0	0	0
	p4267	90	71	0	0	0	0	0	0	0	0
	p4274	98	71	0	0	0	0	0	0	0	0

mix 5		Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
	p4265	97	72	0	0	0	0	0	0	0
	p4267	90	71	0	0	0	0	0	0	0
	p4274	98	71	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4233	p4235	%RSD
79342	71427	3.44

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4233	2ND RUN p4233	%RSD
72280	70585	0.79

* All internal standard and surrogate values calculated from mean RF value for mixes 1-5

PVIT307Q)

PESTICIDE MONITORING PHASE VI TRIP 3 - AUGUST 1997

METHOD 515

WELLS:
CLAY #9
CLAY #10
CLAY #11
CLAY #12
CLAY #13
CLAY #14

DECTECTIONS: CLAY #9 Dacthal: 2 runs 37.003 ug/L
36.792 ug/L

reported = 36.898 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 3 - AUGUST 1997

PERCENT RECOVERIES EPA METHOD 515

		Internal.St DBOB	Surrogate DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Aciflurofen
LAB FORTIFIED SAMPLES																
CLAY #10	p4219	94	9108	106	105	100	98	118	95							
CLAY #11	p4229	99	112							100	91	98	102	101	75	96
LAB FORTIFIED BLANKS																
	p4263	86	117	115	118	92	110	115	94							
	p4264	92	110							108	100	110	112	111	84	112
NON-FORTIFIED SAMPLES																
		Average	Average													
CLAY #9	p4208	100	111													
CLAY #10	p4218	109	2367													
CLAY #11	p4228	112	99													
CLAY #12	p4238	106	111													
CLAY #13	p4248	112	435													
CLAY #14	p4258	107	96													
LAB BLANKS																
		Average	Average													
	p4260	97	97	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4261	110	95	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4266	95	117	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4258	p4259	%RSD
65969	72558	3.22

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4238	2ND RUN p4238	%RSD
75729	75449	0.12

PESTICIDE MONITORING PHASE VI TRIP 3 - AUGUST 1997

METHOD NPS4

WELLS:	CLAY # 9
	CLAY # 10
	CLAY # 11
	CLAY # 12
	CLAY # 13
	CLAY # 14
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 3 - AUGUST 1997

PERCENT RECOVERIES **METHOD NPS4**

		Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Propanil	Swep	Barban
LAB FORTIFIED SAMPLES											
CLAY #14	p4252	102	98	91	104	92	91				
CLAY #9	p4202	98	97					93	99	96	93
LAB FORTIFIED BLANKS											
	p4272	92	112	105	108	108	106				
	p4273	98	99					103	103	101	98
NON-FORTIFIED SAMPLES		(average)	(average)								
CLAY #9	p4204	100	98								
CLAY #10	p4214	99	93								
CLAY #11	p4224	91	103								
CLAY #12	p4234	102	93								
CLAY #13	p4244	102	89								
CLAY #14	p4254	103	96								
LAB BLANKS		(average)	(average)								
	p4262	100	98	0	0	0	0	0	0	0	0
	p4271	102	98	0	0	0	0	0	0	0	0
	p4274	95	104	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4254	p4256	%RSD
74712	72172	1.15

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4234	2ND RUN p4234	%RSD
71452	71188	0.12

ALDICARB results for: Phase 6-Trip 3 **analysis date:** 9/24/97

STANDARDS

	absorb.
std= 0 (1)	0.949
std = 0 (2)	0.988
std = 1 (1)	0.743
std = 1 (2)	0.738
std= 10 (1)	0.433
std= 10 (2)	0.426
std=100 (1)	0.217
std=100 (2)	0.213

CALIBRATION

	mean absorb.	x/b(0)
std = 0	0.969	
std = 1	0.741	76.46
std = 10	0.430	44.35
std = 100	0.215	22.20

DATA

sample ID	absorb.	x/b(0)	ug/L
CLAY 9	1.068	110.27	<0.2
CLAY 10	1.033	106.66	<0.2
CLAY 11	1.037	107.07	<0.2
CLAY 12	1.013	104.59	<0.2
CLAY 13	1.111	114.71	<0.2
CLAY 14	0.989	102.12	<0.2

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.513	52.97	6	4-6	(+/- 20%)
CLAY 14 spk	0.567	58.54	3.65	2.63-4.88	(+/- 30%)
CLAY 14 spkdup	0.541	55.86	4.8		

%CV for spks= 19.25 (10% accept.)

%CV for standards= (10% accept.)

std = 0	2.85
std = 1	0.48
std = 10	1.15
std = 100	1.32

CARBOFURAN results for: Phase 6-Trip 3 analysis date: 9/5/97

STANDARDS

	absorb.
std = 0 (1)	2.021
std = 0 (2)	1.780
std = .1 (1)	1.595
std = .1 (2)	1.600
std = 1 (1)	0.995
std = 1 (2)	0.935
std = 5 (1)	0.568
std = 5 (2)	0.550

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.901	
std = .1	1.598	84.06
std = 1	0.965	50.78
std = 5	0.559	29.41

DATA

sample ID	absorb.	x/b(0)	ug/L
Clay 9	1.854	97.55	<0.05
Clay 10	1.754	92.29	<0.05
Clay 11	1.779	93.61	<0.05
Clay 12	1.742	91.66	<0.05
Clay 13	1.780	93.66	<0.05
Clay 14	**1.776**	**93.45**	**<0.05**

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.751	39.52	2.15	1.6-2.4	(+/- 20%)
Clay 14 spk	0.558	29.36	4.6	2.8-5.2	(+/- 30%)
Clay 14 spkdup	0.523	27.52	5		

%CV for spks = 5.89 (10% accept.)

%CV for standards = (10% accept.)

std = 0	8.97
std = .1	0.22
std = 1	4.40
std = 5	2.28

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 3

Lab Number	Sample ID	NO3-N mg/L
Received: 8/15/97	Date Analyzed:	8/15/97
980433	Clay #9	1.485
980434	Clay #10	10.502
980435	Clay #11	0.825
980436	Clay #12	0.208
980437	Clay #13	<0.004
980438	Clay #14	11.904

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
980433	1.485
980433 S	2.415
Spike	1.000
%Recovery	93.00%
DUPLICATE COMPARISON	
980433S	2.415
980433 SD	2.379
%RSD	-1.51%

PESTICIDE MONITORING PHASE VI TRIP 4 - SEPTEMBER/OCTOBER 1997

METHOD 507

WELLS:
CLAY #2R1
CLAY #9R1
CLAY #7R1
CLAY #15
POIN #12
POIN #13
WOOD #11 R3
WOOD #9 R4

DETECTIONS:

CLAY #2R1	Bromazil:	2 runs	1.841 ug/L
			1.863 ug/L
		reported =	1.852 ug/L
WOOD #11	Metolachlor:	2 runs	4.378 ug/L
			4.46 ug/L
		reported =	4.419 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 4 - SEPTEMBER/OCTOBER 1997

PERCENT RECOVERIES EPA METHOD 507

LAB FORTIFIED SAMPLES

	Spike	Int. Std. *	Surrogate *	Prometon	Ametryne	Phenamiphos	Tributylphos
CLAY #2R1	mix 1	119	87	154	148	137	149

	Spike	Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphena
CLAY #9R1	mix 2	102	91	90	100	91	94	94	94	97	96	96

	Spike	Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
CLAY #7R1	mix 3	95	111	105	114	113	111	106	108	131

	Spike	Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
CLAY #15	mix 4	96	106	89	98	77	106	91	96	63	105

	Spike	Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
POIN #12	mix 5	97	92	69	92	99	96	108	107	103

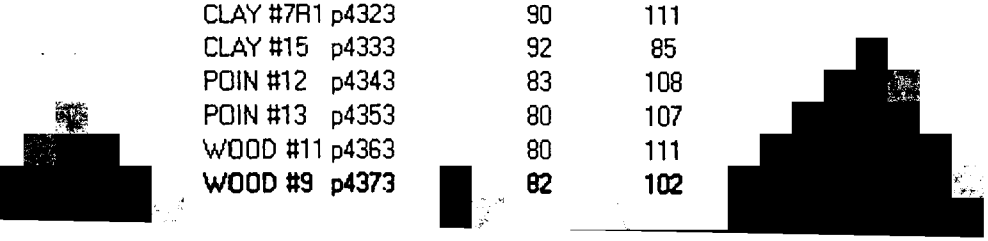
LAB FORTIFIED BLANKS

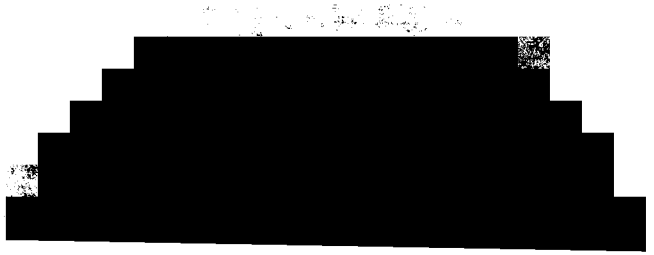
		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphena
p4393	mix 2	79	99	88	91	93	90	90	89	90	88	88

		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
p4394	mix 4	82	88	72	80	64	90	78	91	67	89
p4410	mix 4	100	75	76	84	79	100	96	96	96	103
p4411	mix 4	102	83	78	88	84	105	100	104	96	107
p4412	mix 4	102	86	80	92	83	103	100	101	94	103
p4413	mix 4	97	83	83	92	85	101	100	98	98	106
p4414	mix 4	97	82	78	89	84	100	99	98	96	105
p4415	mix 4	94	74	76	86	82	102	98	99	98	104

NON-FORTIFIED SAMPLES

		Int. Std.	Surrogate
CLAY #2R1	p4303	94	116
CLAY #9R1	p4313	93	110
CLAY #7R1	p4323	90	111
CLAY #15	p4333	92	85
POIN #12	p4343	83	108
POIN #13	p4353	80	107
WOOD #11	p4363	80	111
WOOD #9	**p4373**	**82**	**102**





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METHOD 507 - PHASE VI TRIP 4

LAB BLANKS

mix 1		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	p4391	96	111	0	0	0	0
	p4392	81	106	0	0	0	0
	p4395	85	95	0	0	0	0

mix 2		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphena
	p4391	96	111	0	0	0	0	0	0	0	0	0
	p4392	81	106	0	0	0	0	0	0	0	0	0
	p4395	85	95	0	0	0	0	0	0	0	0	0

mix 3		Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	p4391	96	111	0	0	0	0	0	0	0
	p4392	81	106	0	0	0	0	0	0	0
	p4395	85	95	0	0	0	0	0	0	0

mix 4		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
	p4391	96	111	0	0	0	0	0	0	0	0
	p4392	81	106	0	0	0	0	0	0	0	0
	p4395	85	95	0	0	0	0	0	0	0	0

mix 5		Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
	p4391	96	111	0	0	0	0	0	0	0
	p4392	81	106	0	0	0	0	0	0	0
	p4395	85	95	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4363	p4365	%RSD
45330	41973	2.53

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4303	2ND RUN p4303	%RSD
55867	56761	0.53

* All internal standard and surrogate values calculated from mean RF value for mixes 1-5

P6T407ZQ3

PESTICIDE MONITORING PHASE VI TRIP 4 - SEPTEMBER/OCTOBER 1997

METHOD 515

WELLS:
CLAY #2R1
CLAY #9R1
CLAY #7R1
CLAY #15
POIN #12
POIN #13
WOOD #11 R3
WOOD #9 R4

DETECTIONS:

CLAY #9R1 Dacthal: 3 runs 21.649 ug/L
21.805 ug/L
21.257 ug/L
reported = 21.570 ug/L

CLAY #7R1 Dacthal: 1 run
reported = 0.079 ug/L - below detection limit (not reported)

Acifluorfen: 1 run
reported = 0.949 ug/L

WOOD #9 Acifluorfen: 1 run
reported = 1.576 ug/L

Bentazon: 1 run
reported = 2.726 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 4 - SEPTEMBER/OCTOBER 1997

PERCENT RECOVERIES EPA METHOD 515

		Internal.St DBOB	Surrogate DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Aciflurofen
LAB FORTIFIED SAMPLES																
WOOD #9	p4378	96	85	87	87	87	94	95	78							
CLAY #2R1	p4308	115	106							84	82	86	92	88	110	97
LAB FORTIFIED BLANKS																
	p4386 - 10x	104	74	81	87	69	92	90	79							
	p4388 - 10x	119	88							89	90	92	94	93	95	99
	p4390 - 2x	110	98	86	75	89	104	107	103							
NON-FORTIFIED SAMPLES																
		Average	Average													
CLAY #2R1	p4309	104	104													
CLAY #9R1	p4319	106	113													
CLAY #9R1	p4319 1:4	119	106													
CLAY #7R1	p4329	102	114													
CLAY #15	p4339	115	108													
POIN #12	p4349	104	114													
POIN #13	p4359	109	101													
WOOD #11	p4369	107	114													
WOOD #9	p4379	105	107													
LAB BLANKS		Average	Average													
	p4385	111	86	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4387	105	106	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4389	112	100	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4339	p4330	%RSD
65073	59253	3.07

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4309	2ND RUN p4309	%RSD
56634	64310	4.32

PESTICIDE MONITORING PHASE VI TRIP 4 - SEPTEMBER/OCTOBER 1997

METHOD NPS4

WELLS:	CLAY #2R1
	CLAY #9R1
	CLAY #7R1
	CLAY #15
	POIN #12
	POIN #13
	WOOD #11
	WOOD #9
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 4 - SEPTEMBER/OCTOBER 1997

PERCENT RECOVERIES METHOD NPS4

		Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Propanil	Swep	Barban
LAB FORTIFIED SAMPLES											
POIN #13	p4352	99	82	94	95	96	88				
WOOD #11	p4362	100	86					85	98	96	89
LAB FORTIFIED BLANKS											
	p4382	100	87	96	93	96	88				
	p4383	109	83					86	93	91	97
	p4419	111	85	88	86	87	87				
NON-FORTIFIED SAMPLES		(average)	(average)								
CLAY #2R1	p4306	108	82								
CLAY #9R1	p4314	107	82								
CLAY #7R1	p4326	108	91								
CLAY #15	p4332	103	91								
POIN #12	p4344	100	85								
POIN #13	p4354	105	82								
WOOD #11	p4360	111	87								
WOOD #9	p4378	102	97								
LAB BLANKS		(average)	(average)								
	p4380	106	84	0	0	0	0	0	0	0	0
	p4381	96	95	0	0	0	0	0	0	0	0
	p4384	109	78	0	0	0	0	0	0	0	0
	p4420	111	80	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4354	p4356	%RSD
72952	71209	0.80

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4306	2ND RUN p4306	%RSD
76022	77163	0.50

ALDICARB results for: Phase 6-Trip 4 analysis date: 10/7/97

STANDARDS

	absorb.
std= 0 (1)	1.852
std = 0 (2)	1.858
std = 1 (1)	1.444
std = 1 (2)	1.492
std= 10 (1)	0.873
std= 10 (2)	0.879
std=100 (1)	0.368
std=100 (2)	0.372

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.855	
std = 1	1.468	79.14
std = 10	0.876	47.22
std = 100	0.370	19.95

DATA

sample ID	absorb.	x/b(0)	ug/L
CLAY 2 R1	1.912	103.07	<0.2
CLAY 7 R1	1.876	101.13	<0.2
CLAY 9 R1	1.870	100.81	<0.2
CLAY 15	1.838	99.08	<0.2
POIN 12	1.840	99.19	<0.2
POIN 13	1.878	101.24	<0.2
WOOD 9	1.881	101.40	<0.2
WOOD 11	1.828	98.54	<0.2

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries
control	1.046	56.39	5.45	4-6 (+/- 20%)
WOOD 11 spk	1.071	57.74	5	2.63-4.88 (+/- 30%)
WOOD 11 spkdup	1.060	57.14	5.1	

%CV for spks= 1.40 (10% accept.)

%CV for standards= (10% accept.)

std = 0	0.23
std = 1	2.31
std = 10	0.48
std = 100	0.76

CARBOFURAN results for: Phase 6-Trip 4 **analysis date:** 10/7/97

STANDARDS

	absorb.
std= 0 (1)	1.663
std = 0 (2)	1.694
std =.1 (1)	1.471
std =.1 (2)	1.392
std= 1 (1)	0.814
std= 1 (2)	0.777
std= 5 (1)	0.395
std= 5 (2)	0.396

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.679	
std =.1	1.432	85.28
std = 1	0.796	47.39
std = 5	0.396	23.56

DATA

sample ID	absorb.	x/b(0)	ug/L
CLAY 2 R1	1.763	105.03	<0.05
CLAY 7 R1	1.698	101.16	<0.05
CLAY 9 R1	1.664	99.14	<0.05
CLAY 15	1.628	96.99	<0.05
POIN 12	1.693	100.86	<0.05
POIN 13	1.586	94.49	<0.05
WOOD 9	1.672	99.61	<0.05
WOOD 11	1.573	93.71	<0.05

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.585	34.85	2.25	1.6-2.4	(+/- 20%)
WOOD 11 spk	0.420	25.02	4.4	2.8-5.2	(+/- 30%)
WOOD 11spkdup	0.404	24.07	4.8		

%CV for spks= 6.15 (10% accept)

%CV for standards= (10% accept)

std = 0	1.31
std =.1	3.90
std = 1	3.29
std = 5	0.18

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 4

Lab Number	Sample ID	NO3-N mg/L
Received: 7/24/97	Date Analyzed:	10/1/97
980722	Clay 2R1	0.874
980723	Clay 9R1	1.748
980724	Clay 7R1	1.751
980725	Clay 15	4.198
980726	Poin 12	3.988
980727	Poin 13	0.685
980728	Wood 11R3	0.001
980729	Wood 9R4	5.177

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
980722	0.874
980722 S	1.819
Spike	0.980
%Recovery	96.41%
DUPLICATE COMPARISON	
980722 S	1.819
980722 SD	1.816
%RSD	-0.17%

PESTICIDE MONITORING PHASE VI TRIP 5 - JANUARY 1998

METHOD 507

WELLS: WOOD #7 R5
MON #1R3

DETECTIONS: NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 5 - JANUARY 1998

PERCENT RECOVERIES EPA METHOD 507

LAB FORTIFIED SAMPLES

	Spike	Int. Std. *	Surrogate *	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenar
MON #1	mix 2	93	102	103	110	99	98	98	97	99	100	100

	Spike	Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
WOOD #7	mix 4	89	107	94	99	98	106	100	103	105	107

LAB FORTIFIED BLANKS

		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
p4582	mix 1	98	99	95	93	94	95

		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphena
p4580	mix 2	96	110	109	115	101	101	101	100	101	103	100

		Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
p4583	mix 3	92	106	89	84	92	93	87	94	109

		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
p4579	mix 4	93	87	91	98	95	102	98	102	105	106

		Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
p4584	mix 5	94	106	107	103	104	110	102	105	104

NON-FORTIFIED SAMPLES

		Int. Std.	Surrogate
WOOD #7	p4503	94	75
MON #1	p4513	95	81

PVIT507Q.>

METHOD 507 - PHASE VI TRIP 5

LAB BLANKS

mix 1		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	p4581	95	111	0	0	0	0
	p4585	94	101	0	0	0	0

mix 2		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne
	p4581	95	111	0	0	0	0	0	0	0
	p4585	94	101	0	0	0	0	0	0	0

mix 3		Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	p4581	95	111	0	0	0	0	0	0	0
	p4585	94	101	0	0	0	0	0	0	0

mix 4		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos
	p4581	95	111	0	0	0	0	0	0	0
	p4585	94	101	0	0	0	0	0	0	0

mix 5		Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
	p4581	95	111	0	0	0	0	0	0	0
	p4585	94	101	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4501	p4505	%RSD
298079	247507	5.99

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4584	2ND RUN p4584	%RSD
310071	311846	0.19

* All internal standard and surrogate values calculated from mean RF value for mixes 1-5

PVIT507QX

PESTICIDE MONITORING PHASE VI TRIP 5 - JANUARY 1998

METHOD 515

WELLS:	WOOD #7 R5 MON #1 R3			
DETECTIONS:	WOOD #7 R5	Bentazon:	3 runs	10.819 ug/L 12.115 ug/L 11.101 ug/L
			reported =	11.345 ug/L
	MON #1 R3	Bentazon:	4 runs	150.51 ug/L 152.465 ug/L 152.675 ug/L 152.565 ug/L
			reported =	152.05 ug/L
		Acifluorfen:	4 runs	61.702 ug/L 58.933 ug/L 58.258 ug/L 56.368 ug/L
			reported =	58.82 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 5 - JANUARY 1998

PERCENT RECOVERIES EPA METHOD 515

		Internal.St	Surrogate													
		DBOB	DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Aciflurofen
LAB FORTIFIED SAMPLES																
MON #1	p4518	95	107	88	98	92	92	98	74							
WOOD #7	p4508	110	86							78	75	77	75	120	74	84
LAB FORTIFIED BLANKS																
	p4560	98	113	91	102	91	96	96	87							
	p4562	119	90							83	86	85	85	81	84	84

NON-FORTIFIED SAMPLES

		Average	Average
WOOD #7	p4509	112	98
MON #1	p4519	112	97

LAB BLANKS		Average	Average													
	p4561	112	102	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4563	118	90	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4575	98	93	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4508	p4508 dup	%RSD
103848	111486	2.39

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4519 1:5 rex	2ND RUN p4519 1:5 rex	%RSD
152827	145770	1.56

PESTICIDE MONITORING PHASE VI TRIP 5 - JANUARY 1998

METHOD NPS4

WELLS: WOOD #7
MON #1

DETECTIONS: MON #1 Barban: 3 runs 5.76 ug/L
7.27 ug/L
8.85 ug/L

reported = 7.29 ug/L

Note: MON #1 interference due to an unresolved peak affecting the internal standard

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 5 - JANUARY 1998

PERCENT RECOVERIES METHOD NPS4

		Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Propanil	Swep	Barban
LAB FORTIFIED SAMPLES											
MON #1	p4512	78	138	124	130	125	119				
WOOD #7	p4502	99	91					80	86	83	83
MON #1	p4516	76	128					134	129	128	201
LAB FORTIFIED BLANKS											
	p4577	104	97	96	98	102	96				
	p4590	106	88	93	92	92	90				
	p4576	105	93					86	96	93	105
	p4591	111	85					84	89	88	84

NON-FORTIFIED SAMPLES

		(average)	(average)
WOOD #7	p4504	97	81
MON #1	p4514	75	129

LAB BLANKS

		(average)	(average)								
	p4578	103	96	0	0	0	0	0	0	0	0
	p4592	107	89	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4502	p4506	%RSD
68055	72981	2.36

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4506	2ND RUN p4506	%RSD
72981	73179	0.09

PVIT5S4Q.XLS

ALDICARB results for: Phase 6-Trip 5 **analysis date:** 1\26\98

STANDARDS

	absorb.
std= 0 (1)	1.182
std = 0 (2)	1.275
std = 1 (1)	0.994
std = 1 (2)	1.028
std= 10 (1)	0.550
std= 10 (2)	0.535
std=100 (1)	0.243
std=100 (2)	0.241

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.229	
std = 1	1.011	82.30
std = 10	0.543	44.16
std = 100	0.242	19.70

DATA

sample ID	absorb.	x/b(0)	ug/L
WOOD 7	1.337	108.83	<0.2
MONROE 1	1.342	109.24	<0.2

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.678	55.19	6	4-6	(+/- 20%)
WOOD 7 spk	0.742	60.40	4.15	2.63-4.88	(+/- 30%)
WOOD 7 spkdup	0.756	61.54	3.8		

%CV for spks= 6.23 (10% accept.)

%CV for standards= (10% accept.)

std = 0	5.35
std = 1	2.38
std = 10	1.96
std = 100	0.58

CARBOFURAN results for: Phase 6-Trip 5 analysis date: 1/23/98

STANDARDS

	absorb.
std= 0 (1)	1.132
std = 0 (2)	1.125
std =.1 (1)	0.990
std =.1 (2)	0.922
std= 1 (1)	0.521
std= 1 (2)	0.501
std= 5 (1)	0.265
std= 5 (2)	0.273

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.129	
std =.1	0.956	84.71
std = 1	0.511	45.28
std = 5	0.269	23.84

DATA

sample ID	absorb.	x/b(0)	ug/L
WOOD 7	1.162	102.97	<0.05
MONROE 1	1.048	92.87	<0.05

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.382	33.85	2.24	1.6-2.4	(+/- 20%)
WOOD 7 spk	0.297	26.32	3.67	2.8-5.2	(+/- 30%)
WOOD 7 spkdup	0.297	26.32	3.67		

%CV for spks= 0.00 (10% accept.)

%CV for standards= (10% accept.)

std = 0	0.44
std =.1	5.03
std = 1	2.77
std = 5	2.10

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 5

Lab Number	Sample ID	NO3-N mg/L
Received: 1/13/98	Date Analyzed:	1/22/98
981807	Wood 7R5	0.009
981808	Monroe 1R3	8.049

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
981807	0.009
981807 S	0.998
Spike	0.980
%Recovery	100.95%
DUPLICATE COMPARISON	
981807 S	0.998
981807 SD	0.922
%RSD	-7.91%

PESTICIDE MONITORING PHASE VI TRIP 6 - FEBRUARY\MARCH 1998

METHOD 507

WELLS:	GREENE #1
	GREENE #2
	GREENE #3
	GREENE #4
	GREENE #5
	GREENE #6
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 6 - FEBRUARY\MARCH 1998

PERCENT RECOVERIES EPA METHOD 507

LAB FORTIFIED SAMPLES

	Spike	Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
GREENE #1	mix 1	107	106	108	109	97	89

	Spike	Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
GREENE #2	mix 2	104	112	110	102	105	109	108	107	108	106	103

	Spike	Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
GREENE #3	mix 3	98	115	110	104	100	98	96	106	114

	Spike	Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
GREENE #4	mix 4	96	104	97	104	103	105	101	102	101	104

	Spike	Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarmol
GREENE #5	mix 5	98	96	92	96	97	103	101	98	96

LAB FORTIFIED BLANKS

		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
p4672	mix 2	87	87	92	104	101	102	102	100	100	101	95

		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
p4674	mix 4	84	84	86	93	89	95	89	93	102	98

NON-FORTIFIED SAMPLES

	Int. Std.	Surrogate
GREENE #1 p4603	92	106
GREENE #2 p4613	90	101
GREENE #3 p4623	88	78
GREENE #4 p4633	91	90
GREENE #5 p4643	86	88
GREENE #6 p4653	83	78

METHOD 507 - PHASE VI TRIP 6

LAB BLANKS

mix 1		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	p4671	96	100	0	0	0	0
	p4673	89	84	0	0	0	0
	p4675	81	92	0	0	0	0

mix 2		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenami
	p4671	96	100	0	0	0	0	0	0	0	0	0
	p4673	89	84	0	0	0	0	0	0	0	0	0
	p4675	81	92	0	0	0	0	0	0	0	0	0

mix 3		Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	p4671	96	100	0	0	0	0	0	0	0
	p4673	89	84	0	0	0	0	0	0	0
	p4675	81	92	0	0	0	0	0	0	0

mix 4		Int. Std.	Surrogate	Butylate	Molinate	Chlorprophsm	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
	p4671	96	100	0	0	0	0	0	0	0	0
	p4673	89	84	0	0	0	0	0	0	0	0
	p4675	81	92	0	0	0	0	0	0	0	0

mix 5		Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
	p4671	96	100	0	0	0	0	0	0	0
	p4673	89	84	0	0	0	0	0	0	0
	p4675	81	92	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4624	p4625	%RSD
593622	376022	13.92

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4603	2ND RUN p4603	%RSD
511015	477523	2.23

* All internal standard and surrogate values calculated from mean RF value for mixes 1-5

PESTICIDE MONITORING PHASE VI TRIP 6 - FEBRUARY\MARCH 1998

METHOD 515

WELLS:	GREENE #1
	GREENE #2
	GREENE #3
	GREENE #4
	GREENE #5
	GREENE #6
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 6 - FEBRUARY\MARCH 1998

PERCENT RECOVERIES EPA METHOD 515

		Internal.St	Surrogate													
		DBOB	DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Acifluorofen
LAB FORTIFIED SAMPLES																
GREENE #2	p4618	95	116	100	106	101	100	120	78							
GREENE #3	p4628	99	97							96	89	91	92	94	75	92
LAB FORTIFIED BLANKS																
	p4665	100	99	96	104	82	100	117	90							
	p4666	106	98							85	85	85	86	87	83	86
NON-FORTIFIED SAMPLES																
		Average	Average													
GREENE #1	p4609	97	99													
GREENE #2	p4619	96	94													
GREENE #3	p4629	98	103													
GREENE #4	p4639	104	94													
GREENE #5	p4649	102	96													
GREENE #6	p4659	105	91													
LAB BLANKS		Average	Average													
	p4664	100	97	0	0	0	0	0	0	0	0	0	0	0	0	0
	p4667	109	97	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

	sample	duplicate	%RSD
p4618	166992	185310	3.53
p4628	144955	140348	1.07

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4609	2ND RUN p4609	%RSD
145323	149295	0.90

PESTICIDE MONITORING PHASE VI TRIP 6 - FEBRUARY\MARCH 1998

METHOD NPS4

WELLS:	GREENE #1
	GREENE #2
	GREENE #3
	GREENE #4
	GREENE #5
	GREENE #6
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 6 - FEBRUARY\MARCH 1998

PERCENT RECOVERIES METHOD NPS4

	Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Propanil	Swep	Barban
LAB FORTIFIED SAMPLES										
GREENE #6 p4652	98	97	93	98	102	99				
GREENE #1 p4602	93	94					95	101	95	97
LAB FORTIFIED BLANKS										
p4658	102	96	100	101	102	99				
p4659	98	94					90	99	97	93
NON-FORTIFIED SAMPLES	(average)	(average)								
GREENE #1 p4604	99	96								
GREENE #2 p4616	107	89								
GREENE #3 p4624	106	80								
GREENE #4 p4636	97	89								
GREENE #5 p4644	104	87								
GREENE #6 p4655	98	102								
LAB BLANKS	(average)	(average)								
p4660	100	98	0	0	0	0	0	0	0	0
p4663	100	96	0	0	0	0	0	0	0	0
p4670	106	93	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4652	p4656	%RSD
70992	73292	1.07

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4604	2ND RUN p4604	%RSD
71889	72097	0.10

ALDICARB results for: Phase 6-Trip 6 analysis date: 3/10/98

STANDARDS

	absorb.
std= 0 (1)	1.139
std = 0 (2)	1.142
std = 1 (1)	0.908
std = 1 (2)	0.906
std= 10 (1)	0.625
std= 10 (2)	0.624
std=100 (1)	0.246
std=100 (2)	0.249

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.141	
std = 1	0.907	79.53
std = 10	0.625	54.76
std = 100	0.248	21.70

DATA

sample ID	absorb.	x/b(0)	ug/L
GREENE 1	1.323	116.00	<0.2
GREENE 2	1.242	108.90	<0.2
GREENE 3	1.252	109.78	<0.2
GREENE 4	1.157	101.45	<0.2
GREENE 5	1.175	103.02	<0.2
GREENE 6	1.010	88.56	0.55

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.630	55.24	8.5	4-6	(+/- 20%)
GREENE 4 spk	0.699	61.29	5.2	2.63-4.88	(+/- 30%)
GREENE 4 spkdup	0.694	60.85	5.6		

%CV for spks= 5.24 (10% accept.)

%CV for standards= (10% accept.)

std = 0	0.19
std = 1	0.16
std = 10	0.11
std = 100	0.86

CARBOFURAN results for: Phase 6-Trip 6 **analysis date:** 3/10/98

STANDARDS

	absorb.
std= 0 (1)	1.098
std = 0 (2)	0.999
std =.1 (1)	0.918
std =.1 (2)	0.867
std= 1 (1)	0.504
std= 1 (2)	0.485
std= 5 (1)	0.255
std= 5 (2)	0.248

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.049	
std =.1	0.893	85.12
std = 1	0.495	47.16
std = 5	0.252	23.99

DATA

sample ID	absorb.	x/b(0)	ug/L
GREENE 1	1.059	101.00	<0.05
GREENE 2	1.083	103.29	<0.05
GREENE 3	1.021	97.38	<0.05
GREENE 4	1.021	97.38	<0.05
GREENE 5	1.056	100.72	<0.05
GREENE 6	1.031	98.33	<0.05

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.384	36.62	1.97	1.6-2.4	(+/- 20%)
GREENE 5 spk	0.270	25.75	3.9	2.8-5.2	(+/- 30%)
GREENE 5 spkdup	0.305	29.09	3.2		

%CV for spks= 13.94 (10% accept.)

%CV for standards= (10% accept.)

std = 0	6.68
std =.1	4.04
std = 1	2.72
std = 5	1.97

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 6

Lab Number	Sample ID	NO3-N mg/L
Received:	Date Analyzed:	3/4/98
982397	Greene 1	0.010
982398	Greene2	0.013
982399	Greene 3	<0.004
982400	Greene 4	<0.004
982401	Greene 5	3.900
982402	Greene 6	7.651

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
982397	0.010
982397 S	0.918
Spike	0.980
%Recovery	92.65%
DUPLICATE COMPARISON	
982397 S	0.918
982397 SD	0.918
%RSD	0.00%

PESTICIDE MONITORING PHASE VI TRIP 7 - APRIL 1998

METHOD 507

WELLS:	RAND #1
	RAND #2
	RAND #3
	RAND #4
	RAND #5
	WOOD #7 R6
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 7 - APRIL 1998

PERCENT RECOVERIES EPA METHOD 507

LAB FORTIFIED SAMPLES

	Spike	Int. Std.	Surrogate	Prometon	Ametryne	Phenamphos	Tributylphos					
RAND #1	mix 1	86	104	120	113	116	87					
	Spike	Int. Std	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
RAND #2	mix 2	93	90	87	88	114	94	94	94	94	93	92
	Spike	Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon		
RAND #3	mix 3	99	110	92	97	87	93	86	87	101		
	Spike	Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromacil	Tetrachlorvinphos	Velpar	
RAND #4	mix 4	92	117	96	99	95	100	96	98	101	96	
	Spike	Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol		
RAND #5	mix 5	91	88	90	93	95	92	97	94	97		

LAB FORTIFIED BLANKS

		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
p4767	mix 2	83	120	104	101	123	96	96	96	95	95	90
		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromacil	Tetrachlorvinphos	Velpar	
p4765	mix 4	85	111	94	94	86	91	87	88	105	91	

NON-FORTIFIED SAMPLES

		Int. Std.	Surrogate
RAND #1	p4703	87	122
RAND #2	p4713	93	87
RAND #3	p4723	82	80
RAND #4	p4735	84	114
RAND #5	p4743	85	74
WOOD #7R6	p4753	84	79

METHOD 507 - PHASE VI TRIP 7

LAB BLANKS

mix 1		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	p4766	90	87	0	0	0	0
	p4768	85	129	0	0	0	0
	p4770	83	112	0	0	0	0

mix 2		Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
	p4766	90	87	0	0	0	0	0	0	0	0	0
	p4768	85	129	0	0	0	0	0	0	0	0	0
	p4770	83	112	0	0	0	0	0	0	0	0	0

mix 3		Int. Std.	Surrogate	Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	p4766	90	87	0	0	0	0	0	0	0
	p4768	85	129	0	0	0	0	0	0	0
	p4770	83	112	0	0	0	0	0	0	0

mix 4		Int. Std.	Surrogate	Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromacil	Tetrachlorvinphos	Velpar
	p4766	90	87	0	0	0	0	0	0	0	0
	p4768	85	129	0	0	0	0	0	0	0	0
	p4770	83	112	0	0	0	0	0	0	0	0

mix 5		Int. Std.	Surrogate	Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Deviinol	Fenarimol
	p4766	90	87	0	0	0	0	0	0	0
	p4768	85	129	0	0	0	0	0	0	0
	p4770	83	112	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4701	p4705	%RSD
390611	404741	1.19

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4703	2ND RUN p4703	%RSD
468119	455177	0.93

* All internal standard and surrogate values calculated from mean RF value for mixes 1-5

PESTICIDE MONITORING PHASE V1 TRIP 7 - APRIL, 1998

METHOD 515

WELLS: RAND #1
RAND #2
RAND #3
RAND #4
RAND #5
WOOD #7R5S

DETECTIONS: WOOD #7R8
BENTAZON 16.5 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 7 - MAY1998

PERCENT RECOVERIES EPA METHOD 515

		Internal St DSOB	Surrogate DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Acifluorfen
LAB FORTIFIED SAMPLES																
RANDOLPH #3	p4728	70	125	74	84	74	77	75	69							
WOOD #7R6	p4758	95	93							101	89	98	113	89	96	102
LAB FORTIFIED BLANKS																
	p4764	129	91	82	86	67	68	81	76							
	p4765	104	102							93	109	100	104	101	101	102
NON-FORTIFIED SAMPLES																
		Average	Average													
RANDOLPH #1	P4708	125	90													
RANDOLPH #2	P4718	137	75													
RANDOLPH #3	P4729	127	84													
RANDOLPH #4	P4739	109	101													
RANDOLPH #5	P4748	117	93													
WOOD #7R6	P4759	115	95													
LAB BLANKS		Average	Average													
	P4763	91	110	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

	sample	duplicate	%RSD
P4728	155348	172319	3.51

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4708	2ND RUN p4708	%RSD
155403	164105	1.83

PESTICIDE MONITORING PHASE VI TRIP 7 - APRIL 1998

METHOD NPS4

WELLS:	RAND #1
	RAND #2
	RAND #3
	RAND #4
	RAND #5
	WOOD #7 R6
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 7 - APRIL 1998

PERCENT RECOVERIES METHOD NPS4

		Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Proparil	Swep	Barban
LAB FORTIFIED SAMPLES											
RAND #1	p4702	98	87	88	85	89	86				
RAND #2	p4712	105	99					87	94	88	93
LAB FORTIFIED BLANKS											
	p4761	96	102	98	99	102	100				
	p4762	106	100					89	96	95	93
NON-FORTIFIED SAMPLES		(average)	(average)								
RAND #1	p4704	102	95								
RAND #2	p4714	102	97								
RAND #3	p4724	103	88								
RAND #4	p4734	98	86								
RAND #5	p4744	99	89								
WOOD #7R6	p4754	100	101								
LAB BLANKS		(average)	(average)								
	p4760	102	86	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4702	p4706	%RSD
66634	69775	1.55

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4704	2ND RUN p4704	%RSD
73530	73791	0.10

ALDICARB results for: Phase 6-Trip 7 **analysis date:** 5/7/98

STANDARDS

	absorb.
std= 0 (1)	1.466
std = 0 (2)	1.506
std = 1 (1)	1.172
std = 1 (2)	1.188
std= 10 (1)	0.691
std= 10 (2)	0.681
std=100 (1)	0.302
std=100 (2)	0.293

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.486	
std = 1	1.180	79.41
std = 10	0.686	46.16
std = 100	0.298	20.02

DATA

sample ID	absorb.	x/b(0)	ug/L
RAND 1	1.516	102.02	<0.25
RAND 2	1.438	96.77	<0.25
RAND 3	1.507	101.41	<0.25
RAND 4	1.425	95.90	<0.25
RAND 5	1.495	100.61	<0.25
WOOD 7 R6	1.447	97.38	<0.25

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries
control	0.828	55.72	5.7	4-6 (+/- 20%)
RAND 1 spk	0.854	57.47	4.7	2.63-4.88 (+/- 30%)
RAND 1 spkdup	0.884	59.49	4.1	

%CV for spks= 9.64 (10% accept.)

%CV for standards= (10% accept.)

std = 0	1.90
std = 1	0.96
std = 10	1.03
std = 100	2.14

CARBOFURAN results for: Phase 6-Trip 7 analysis date: 5/13/98

STANDARDS

	absorb.
std= 0 (1)	1.448
std = 0 (2)	1.288
std =.1 (1)	1.159
std =.1 (2)	1.113
std= 1 (1)	0.643
std= 1 (2)	0.636
std= 5 (1)	0.334
std= 5 (2)	0.307

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.368	
std =.1	1.136	83.04
std = 1	0.640	46.75
std = 5	0.321	23.43

DATA

sample ID	absorb.	x/b(0)	ug/L
RAND 1	1.275	93.20	<0.05
RAND 2	1.245	91.01	<0.05
RAND 3	1.255	91.74	<0.05
RAND 4	1.265	92.47	<0.05
RAND 5	1.278	93.42	<0.05
WOOD 7	1.283	93.79	<0.05

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.493	36.04	2.1	1.6-2.4	(+/- 20%)
MONROE 1 spk	0.370	27.05	3.7	2.8-5.2	(+/- 30%)
MONROE 1 spkdup	0.348	25.44	4.1		

%CV for spks= 7.25 (10% accept.)

%CV for standards= (10% accept.)

std = 0	8.27
std =.1	2.86
std = 1	0.77
std = 5	5.96

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 7

Lab Number	Sample ID	NO3-N mg/L
Received: 4/24/98	Date Analyzed:	4/24-5/4/98
983064	Rand 1	<0.004
983065	Rand 2	0.031
983066	Rand 3	0.067
983067	Rand 4	5.971
983068	Rand 5	<0.004
983069	WOOD 7R6	<0.004

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
983064	0.003
983064 S	0.930
Spike	0.980
%Recovery	94.53%
DUPLICATE COMPARISON	
983064 S	0.930
983064 SD	0.945
%RSD	1.67%

PESTICIDE MONITORING PHASE VI - TRIP 8 - MAY, 1998

METHOD 507

WELLS: MONROE 1R4
MISS 16
MISS 17
MISS 18

DETECTIONS: NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 8- MAY 1998

PERCENT RECOVERIES **EPA METHOD 507**

LAB FORTIFIED SAMPLES

	Spike	Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
MISS # 16	mix 2	121	94	127	162	107	114	114	128	97	115	116

LAB FORTIFIED BLANKS

	Spike	Int. Std.	Surrogate	EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
P4849	mix 2	94	95	105	115	108	98	99	111	85	100	101

NON-FORTIFIED SAMPLES

	lab no.	Int. Std.	Surrogate
MON #1R4	p4803	91	105
MISS # 16	p4813	98	140
MISS # 17	p4823	97	132
MISS # 18	p4833	99	89

LAB BLANKS

mix 1		Int. Std.	Surrogate	Prometon	Ametryne	Phenamiphos	Tributylphos
	P4848	93	92	0	0	0	0
	P4851	94	107	0	0	0	0

mix 2		EPTC	Phosdrin	Prophos	Atrazine	Propazine	Prometryne	Terbutryne	Triadimefon	Diphenamid
	P4848	0	0	0	0	0	0	0	0	0
	P4851	0	0	0	0	0	0	0	0	0

mix 3		Vernolate	Metribuzin	Metolachlor	MGK 264	Butachlor	Carboxin	Norflurazon
	P4848	0	0	0	0	0	0	0
	P4851	0	0	0	0	0	0	0

mix 4		Butylate	Molinate	Chlorpropham	Atraton	Alachlor	Bromazil	Tetrachlorvinphos	Velpar
	P4848	0	0	0	0	0	0	0	0
	P4851	0	0	0	0	0	0	0	0

mix 5		Dichlorvos	Pebulate	Tebuthiuron	Simazine	Simetryne	Devrinol	Fenarimol
	P4848	0	0	0	0	0	0	0
	P4851	0	0	0	0	0	0	0

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 8- MAY 1998

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

P4811	P4815	%RSD
448326	268998	15.38

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4803	2ND RUN p4803	%RSD
299338	275485	2.73

* All internal standard and surrogate values calculated from mean RF value for mixes 1-5

PESTICIDE MONITORING PHASE VI TRIP 8-MAY 1998

METHOD 515

WELLS: MONROE 1R4
MISS 16
MISS 17
MISS 18

DETECTIONS: MONROE 1R4
BENTAZON 137.4 ug/L
ACIFLUROFEN 14.3 ug/L

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 8 - MAY1998

PERCENT RECOVERIES EPA METHOD 515

		Internal.St	Surrogate													
		DBOB	DCAA	3,5-D	Dichlorprop	Pentachlorophenol	2,4,5-T	Dinoseb	Dacthal	Dicamba	2,4-D	Silvex	2,4-DB	Bentazon	Picloram	Aciflurofen
LAB FORTIFIED SAMPLES																
MONROE #1R4	P4808	99	93							98	93	93	95	82	86	81
LAB FORTIFIED BLANKS																
	P4842	94	102	103	103	101	105	109	87							
	P4840	101	96	99	97					99	97	97	99	100	99	99

NON-FORTIFIED SAMPLES		Average	Average
MONROE #1R4	P4809	95	103
MISS 16	P4819	88	105
MISS17	P4829	97	98
MISS18	P4839	98	103

LAB BLANKS		Average	Average													
	P4841	97	98	0	0	0	0	0	0	0	0	0	0	0	0	0
	P4843	96	96	0	0	0	0	0	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

	sample	duplicate	%RSD
P4808	176475	190964	2.68

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4809	2ND RUN p4809	%RSD
184071	196158	2.14

PVIT815Q.XLS

PESTICIDE MONITORING PHASE VI TRIP 8 - MAY 1998

METHOD NPS4

WELLS:	MONROE #1 R4
	MISS #16
	MISS #17
	MISS #18
DETECTIONS:	NONE

QUALITY CONTROL DATA FOR PESTICIDE MONITORING: PHASE VI TRIP 8 - MAY 1998

PERCENT RECOVERIES **METHOD NPS4**

		Internal St. Ethylbenzene	Surrogate Carbazole	Cyanazine	Fluometuron	Diuron	Linuron	Propham	Propanil	Swep	Barban
LAB FORTIFIED SAMPLES											
MISS #18	p4832	103	84	89	84	88	85				
LAB FORTIFIED BLANKS											
	p4844	110	91	91	90	91	91				
	p4846	102	88					89	93	91	94
NON-FORTIFIED SAMPLES		(average)	(average)								
MON #1R4	p4804	117	7[illegible]								
MISS #16	p4816	101	8[illegible]								
MISS #17	p4824	108	9[illegible]								
MISS #18	p4834	105	7[illegible]								
LAB BLANKS		(average)	(average)								
	p4848	106	8[illegible]	0	0	0	0	0	0	0	0
	p4847	111	8[illegible]	0	0	0	0	0	0	0	0

DUPLICATE ANALYSIS

FIELD DUPLICATE - SURROGATE AREA COMPARISON

p4832	p4836	%RSD
66831	63406	1.75

MACHINE DUPLICATE - SURROGATE AREA COMPARISON

1ST RUN p4804	2ND RUN p4804	%RSD
72713	72983	0.12

ALDICARB results for: Phase 6-Trip 8 **analysis date:** 5/14/98

STANDARDS

	absorb.
std= 0 (1)	1.146
std = 0 (2)	1.259
std = 1 (1)	0.984
std = 1 (2)	0.958
std= 10 (1)	0.550
std= 10 (2)	0.530
std=100 (1)	0.268
std=100 (2)	0.261

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.203	
std = 1	0.971	80.75
std = 10	0.540	44.91
std = 100	0.265	22.00

DATA

sample ID	absorb.	x/b(0)	ug/L
MONROE 1	1.235	102.70	<0.2
MISS 16	1.254	104.28	<0.2
MISS 17	1.249	103.87	<0.2
MISS 18	1.264	105.11	<0.2

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries
control	0.680	56.55	4.9	4-6 (+/- 20%)
MONROE 1 spk	0.706	58.71	4	2.63-4.88 (+/- 30%)
MONROE 1 spkdup	0.696	57.88	4.1	

%CV for spks= 1.75 (10% accept.)

%CV for standards= (10% accept.)

std = 0	6.64
std = 1	1.89
std = 10	2.62
std = 100	1.87

CARBOFURAN results for: Phase 6-Trip 8 **analysis date:** 5/13/98

STANDARDS

	absorb.
std= 0 (1)	1.448
std = 0 (2)	1.288
std =.1 (1)	1.159
std =.1 (2)	1.113
std= 1 (1)	0.643
std= 1 (2)	0.636
std= 5 (1)	0.334
std= 5 (2)	0.307

CALIBRATION

	mean absorb.	x/b(0)
std = 0	1.368	
std =.1	1.136	83.04
std = 1	0.640	46.75
std = 5	0.321	23.43

DATA

sample ID	absorb.	x/b(0)	ug/L
MONROE 1	1.336	97.66	<0.05
MISS 16	1.276	93.27	<0.05
MISS 17	1.286	94.01	<0.05
MISS 18	1.269	92.76	<0.05

QUALITY ASSURANCE

	absorb.	x/b(0)	ug/L	accept. recoveries	
control	0.493	36.04	2.1	1.6-2.4	(+/- 20%)
MONROE 1 spk	0.370	27.05	3.7	2.8-5.2	(+/- 30%)
MONROE 1 spkdup	0.348	25.44	4.1		

%CV for spks= 7.25 (10% accept.)

%CV for standards= (10% accept.)

std = 0	8.27
std =.1	2.86
std = 1	0.77
std = 5	5.96

ARKANSAS STATE PLANT BOARD
NITRATE-NITROGEN
PHASE IV - TRIP 8

Lab Number	Sample ID	NO3-N mg/L
Received: 5/11/98	Date Analyzed:	5/12/98
983279	Monroe #1R4	5.463
983280	Miss # 16	0.008
983281	Miss #17	0.006
983282	Miss #18	0.593

QUALITY CONTROL

Lab Number	NO3-N mg/L
SPIKE RECOVERY	
983279	5.463
983279 S	6.540
Spike	0.980
%Recovery	109.86%
DUPLICATE COMPARISON	
983279 S	6.540
983279 SD	6.552
%RSD	0.19%

DATA FOR INITIAL COMPETENCE

competence

			Method 507 Mix 1 Long Method									
		% recovery of compounds - internal standard										
Extract #	1-3	1-4	1-5	1-6	1-7	1-8	** 1-9	1-10	1-11	1-12		
Ic code	507gt3l.003	507gt4l.014	507gt4l.015	07gt5.001	07gt5.002	07gt5.003	07gt5.004	07gt5.005	07gt5.006			
Extr. date	5/2/97	5/12/97	5/12/97	5/19/97	5/19/97	5/19/97	5/19/97	5/19/97	5/19/97		mean	sd
Surr-Nitro	71.9	69	70	77	81	90	51	71	83		73.77	10.42
Cycloate (a)	81.9	117.2	112.4	158.9	133.7	145.3	175.6	109.2	136.6		130.09	26.72
Prometon	94.5	90.8	91.1	115.1	106.3	112	102.2	94.7	104.3		101.22	8.46
~~Disulfoton *~~	~~53.7~~	~~74.6~~	~~75.9~~	~~69.1~~	~~68.4~~	~~70~~	~~0~~	~~0~~	~~0~~		~~45.74~~	~~32.88~~
Ametryne	91.5	88.3	92.6	113.5	106.3	110.1	104	96	106.6		100.99	8.53
Phenamiphos	103.9	93	94.9	109.4	108.7	107.5	111.6	103.6	112.2		104.98	6.53
~~Tributylphos *~~	~~67.9~~	~~55.8~~	~~58.1~~	~~92.4~~	~~71.8~~	~~71.5~~	~~73.3~~	~~68.1~~	~~74.7~~		~~70.18~~	~~10.24~~
IS-TPP	89.1	97	93	111.5	98.8	100.7	96.7	95.5	88.7		96.78	6.47
IS % of std												
* Only qualitatively analysed b y NPS												
** Over concentrated during extraction												
(a) concentrations may be affected by impurity in blank												
Status as of 5/21/97		Prometon		OK								
		Ametryne		OK								
		Phenamiphos		OK								
		Disulfoton		qualitative only								
		Tributylphos		marginal								
		Cycloate		see blank								

COMPETENCE

			Method 507 Mix 2 Long Method									
			% recovery of compounds - internal standard									
Extract #	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10		
Ic code	507gtl.004	507gtl.014	07gt3l.005	507gt4l.008	507gt4l.009	507gt4l.010	507gt4l.01	507gt4l.01	507gt4l.013			
Extr. date	4/28/97	4/29/97	5/2/97	5/8/97	5/8/97	5/8/97	5/8/97	5/8/97	5/8/97		mean	sd
Surr-Nitro	72	69.8	68.2	73	66	91	76	70	90		75.11	8.65
S-edpthiocarb	77.1	72.8	67.9	78.3	74.2	93.3	77.5	74.7	90.3		78.46	7.74
Phosdrin	81.8	76.3	80.6	92.1	90.1	110.3	90	92.2	101.7		90.57	9.99
Prophos	81.5	76.7	73.6	94.7	65.2	106.3	93.7	93.8	99.8		87.26	12.81
Atrazine	96.9	84	91.2	97.2	98.8	110.5	95.9	94.5	104.6		97.07	7.10
Propazine	96.5	83.6	91.1	97.7	99.4	110.7	96.4	95.1	105		97.28	7.27
Prometryne	94.4	83.3	88.9	98.6	101	113	95.7	97	104.1		97.33	8.07
Terbutryne	91.9	81	90.2	98.2	99.8	112.2	94.5	96.7	103.4		96.43	8.25
Triadimefon	97.2	83.8	89.8	98.1	100.3	112.9	94.8	97.2	103.9		97.56	7.75
Diphenamid	97	85	89.9	99.3	101.2	114.1	95.9	97.5	104.6		98.28	7.85
IS-TPP	97.8	101.8	93	97	93.4	89.8	96.2	93.2	95.3		95.28	3.26
IS % of std												
Status as of 5/21/97		SURROGATE		TOO LOW								
		S-edpthiocarb		2-3 too low								
		Phosdrin		OK								
		Prophos		2-5 too low								
		Atrazine		OK								
		Propazine		OK								
		Prometryne		OK								
		Terbutryne		OK								
		Triadimefon		OK								
		Diphenamid		OK								
NB: Short method gives insufficient resolution												

COMPETENCE

			Method 507 Mix 3 Long Method									
		% recovery of compounds - internal standard										
Extract #	3-1	3-3	3-4	3-5	3-6	3-7	3-8	3-9				
Ic code	507gtl.006	07gt3l.007	507gt4l.002	507gt4l.003	507gt4l.004	507gt4l.005	507gt4l.00(	507gt4l.007				
Extr. date	4/28/97	5/2/97	5/9/97	5/9/97	5/9/97	5/9/97	5/9/97	5/9/97			mean	sd
Surr-Nitro	105.2	81.3	84	86	89	78	76	97			87.06	9.22
Vernolate	106.1	81.1	87.9	91.8	89.7	84.6	80.3	94.6			89.51	7.82
~~Terbufos * (a)~~	~~2.25~~	~~0~~	~~1.2~~	~~1.5~~	~~1.3~~	103	~~1.2~~	~~1.1~~			13.94	33.67
~~Diazinon * (a)~~	~~0~~	~~0~~	~~8.9~~	~~12.7~~	~~15.9~~	~~0~~	~~0~~	~~0~~			~~4.69~~	~~6.30~~
Metribuzin	106.6	98.1	103	105.5	105.4	101.2	99.1	102.5			102.68	2.89
Metolachlor	122.8	106.6	106.1	108.7	106.3	104.6	101.4	106.4			107.86	5.97
MGK 264	113	92.2	102.3	103.3	112.1	112.9	98.3	114.4			106.06	7.71
Butachlor	115.2	98.9	107.3	110.9	108.1	109.1	104.3	109			107.85	4.46
Carboxin	104.9	96.3	100	100.3	101.9	98.2	93.8	98.6			99.25	3.17
Norflurazon	133.1	187.3	113.7	115.3	116.9	119.2	109.4	114.8			126.21	23.99
IS-TPP	?	?	92.7	87.6	93.1	91.3	87.2	90.4			90.38	2.29
IS % of std												
* Only qualitatively analyzed by NPS												
(a) unstable in water												
Status as of 5/21/97		Surrogate		OK								
		Vernolate		OK								
		Terbufos		qualitative only								
		Diazinon		qualitative only								
		Metribuzin		OK								
		Metolachlor		OK								
		MGK 264		OK								
		Butachlor		OK								
		Carboxin		OK								
		Norflurazon		OK								
NB: Short method gives insufficient resolution												

COMPETENCE

			Method 507 Mix 4 Long Method									
		% recovery of compounds - internal standard										
Extract #	4-1	4-3	4-4	4-5	4-6	4-7	4-8	4-9				
lc code	507gtl.008	07gt3l.008	507gt4l.016	507gt4l.017	507gt7.003	507gt7.004	507gt7.005					
Extr. date	4/28/97	5/2/97	5/12/97	5/12/97	5/22/97	5/22/97	5/22/97				mean	sd
Surr-Nitro	107.4	86.1	83	69	80	80	83				84.07	10.76
Butylate	91.1	81.9	78.6	70.7	80.6	75.5	74.8	78.3			79.03	6.05
Molinate	97	87.7	85.1	78.5	89.6	87.7	82.3	83.5			86.84	5.42
Chlorpropham	105.5	113.5	96	88.3	101.7	107.6	97.4	98.7			101.43	7.73
Atraton	25	95.3	78.3	89.9	98.7	102.1	92.9	93.0			83.17	24.77
Propyzamide	* (a) 0	0	0	0	0	0	0	0			0.00	0.00
Alachlor	101.2	91.7	78.1	83	91.4	93.9	80.7	89.8			88.57	7.64
Bromazil	92.4	94.8	90.8	88.8	105.5	108.1	94.3	97.5			96.39	6.88
Tetrachlorvinpl	98.4	102.7	82.7	79.4	101	108.4	97.3	84.5			95.70	9.88
Beam	97.7	102.6	71.7	83.8	126.2	150.1	131.2	92.3			109.04	25.84
Velpar	102.9	102.6	91.3	95.7	114.1	117.3	102.9	116.3			103.83	8.56
IS-TPP	?	96.9	101.4	96	116	111.4	107.5	84.9			104.87	7.39
IS % of std												
* Only qualitatively analyzed by NPS												
(a) unstable in water												
Status as of 5/21/97		Surrogate		4-5 low								
		Butylate		OK								
		Molinate		OK								
		Chlorphropham		OK								
		Atraton		OK								
		Propyzamide		no recovery								
		Alachlor		OK								
		Bromazil		OK								
		Tetrachlorvinphos		OK								
		Beam		too high 4-7, 4-8, very small peak on std								
		Velpar		OK								
NB: Short method gives insufficient resolution												

COMPETENCE

			Method 507 Mix 5 Long Method									
		% recovery of compounds - internal standard										
Extract #	5-3	5-4	5-5	5-6	5-7	5-8	5-9	5-10	5-11	5-12		
Ic code	07gt3l.011	507gt4l.018	507gt4l.019	507gt6.003	507gt6.004	507gt6.005	507gt6.006	507gt6.007				
Extr. date	5/2/97	5/12/97	5/12/97	5/20/97	5/20/97	5/20/97	5/20/97	5/20/97			mean	sd
Surr-Nitro	72.4	78	63	77	69	70	73	66			71.05	4.81
Dichlorvos	87.2	81.7	68.4	85.3	79.3	81.6	88.6	79.8			81.49	5.88
Perbulate	78.2	83.4	69.1	88.4	77.3	78	82.7	76.3			79.18	5.37
Tebuthiuron	0	82.4	72.8	95	87.2	85	89.1	85			74.56	28.79
Simazine	102.3	105.2	94.8	105.25	101.75	99.8	105.3	68			97.80	11.74
Terbacil	163.6	105	95	169.6	156.7	148	155	150.9			142.98	25.74
Simetryne	92.1	93.4	84.9	96.5	93.7	92.9	95.6	86.6			91.96	3.85
Devrinol	102.7	101.3	93.7	100.6	98.7	97.8	100.6	99.6			99.38	2.57
Fenarimol	102.96	101.9	95.3	104.2	100.4	97.4	101.2	83.8			98.49	6.15
Sonar	148	79.9	67	182.7	155.5	148.7	158.2	139.8			134.98	37.54
IS-TPP	92.9	90.4	94.5	112.5	110.9	101.3	100.4	103.3			100.78	7.55
IS % of std												
Status as of 5/21/97		SURROGATE		TOO LOW								
		Dichlorvos		5-5 too low								
		Perbulate		5-5 too low								
		Tebuthiuron		OK								
		Simazine		5-10 too low								
		Terbacil		recoveries too high								
		Simetryne		OK								
		Devrinol		OK								
		Fenarimol		OK								
		Sonar		recoveries too high and small peak								
NB: Short method no peaks resolved for fenarimol or sonar.												

COMPETENCE
515 MIX 1

Method 515 Mix 1 concentrations recovered - external standard

Extract #	1-12	1-13	1-14	1-15	1-16	1-17	1-18	1-19	1-20	1-21	1-22	1-23
lc code	515gt3.022	515gt3.023	515gt3.024	515gt4.005	515gt4.006	515gt4.007	515gt5.003	515gt5.004	515gt5.005	515gt5.006	515gt5.007	515gt5.008
Extr. date	5/27/97	5/27/97	5/27/97	6/2/97	6/2/97	6/2/97	6/3/97	6/3/97	6/3/97	6/3/97	6/3/97	6/3/97
Conc.	250	250	250	250	250	250	100	100	100	100	100	100
DCAA-Surr	0.967	0.934	0.992	0.907	0.955	1.043	0.943	0.897	0.888	0.918	0.881	1.076
3,5-D	9.074	8.876	9.366	8.58	8.98	10.239	3.861	3.635	3.546	3.649	3.524	4.19
Dichlorprop	1.913	1.848	1.991	2.683	1.876	2.043	5.21	3.312	0.791	0.773	1.178	1.977
Pentachlorop.	1.85	1.776	1.883	1.716	1.814	1.971	0.772	0.729	0.715	0.726	0.714	0.814
2,4,5-T	1.948	1.81	1.957	1.79	1.898	2.029	0.813	0.767	0.746	0.768	0.785	0.865
Dinoseb	3.603	3.353	3.713	3.293	3.487	3.719	1.563	1.476	1.445	1.449	1.477	1.628
Dacthal	1.786	1.714	1.783	1.8	1.815	1.968	0.825	0.764	0.76	0.756	0.78	0.856

Method 515 Mix 1 %recoveries - external standard

Extract #	1-12	1-13	1-14	1-15	1-16	1-17	1-18	1-19	1-20	1-21	1-22	1-23
lc code	515gt3.022	515gt3.023	515gt3.024	515gt4.005	515gt4.006	515gt4.007	515gt5.003	515gt5.004	515gt5.005	515gt5.006	515gt5.007	515gt5.008
Extr. date	5/27/97	5/27/97	5/27/97	6/2/97	6/2/97	6/2/97	6/3/97	6/3/97	6/3/97	6/3/97	6/3/97	6/3/97
Conc.	250	250	250	250	250	250	100	100	100	100	100	100
DCAA-Surr	96.7	93.4	99.2	90.7	95.5	104.3	94.3	89.7	88.8	91.8	88.1	107.6
3,5-D	90.74	88.76	93.66	85.8	89.8	102.39	96.525	90.875	88.65	91.225	88.1	104.75
Dichlorprop	95.65	92.4	99.55	134.15	93.8	102.15	651.25	414	98.875	96.625	147.25	247.125
Pentachlorop.	92.5	88.8	94.15	85.8	90.7	98.55	96.5	91.125	89.375	90.75	89.25	101.75
2,4,5-T	97.4	90.5	97.85	89.5	94.9	101.45	101.625	95.875	93.25	96	98.125	108.125
Dinoseb	90.075	83.825	92.825	82.325	87.175	92.975	97.6875	92.25	90.3125	90.5625	92.3125	101.75
Dacthal	89.3	85.7	89.15	90	90.75	98.4	103.125	95.5	95	94.5	97.5	107
IS-DBOB	84.53	88.90	87.37	96.53	87.43	103.14	99.30	91.81	93.60	95.47	88.02	98.67
IS % of std												

Extract #	2-18	2-19	2-20	2-21	2-22	2-23
lc code	515gt5.011	515gt5.016	515gt4.017	515gt4.018	515gt4.019	515gt4.020
Extr. date	6/2/97	6/2/97	6/2/97	6/2/97	6/2/97	6/2/97
Conc.	100	100	100	100	100	100
DCAA-Surr	1.003	1.038	1.045	0.975	0.937	0.997
Dicamba	2.329	1.982	2.122	2.041	2.007	2.086
2,4-D	0.779	0.665	0.7	0.646	0.656	0.692
Silvex	0.769	0.655	0.703	0.674	0.691	0.698
2,4-DB	7.545	6.696	7.252	6.978	6.656	7.183
Bentazon	7.752	6.81	7.181	6.839	6.924	7.1
Picloram	2.294	2.31	2.224	2.14	2.391	2.377
Acifluorfen	1.626	1.416	1.495	1.432	1.451	1.461

515
MIX 2
COMPETENCE

Extract #	2-18	2-19	2-20	2-21	2-22	2-23
lc code	515gt5.011	515gt5.016	515gt4.017	515gt4.018	515gt4.019	515gt4.020
Extr. date	6/2/97	6/2/97	6/2/97	6/2/97	6/2/97	6/2/97
Conc.	100	100	100	100	100	100
DCAA-Surr	100.3	103.8	104.5	97.5	93.7	99.7
Dicamba	97.042	82.583	88.417	85.042	83.625	86.917
2,4-D	97.375	83.125	87.500	80.750	82.000	86.500
Silvex	96.125	81.875	87.875	84.250	86.375	87.250
2,4-DB	94.313	83.700	90.650	87.225	83.200	89.788
Bentazon	96.900	85.125	89.763	85.488	86.550	88.750
Picloram	95.583	96.250	92.667	89.167	99.625	99.042
Acifluorfen	101.625	88.500	93.438	89.500	90.688	91.313

% RECOVERY

COMPETENCE NPS4 MIX1 + MIX2

Method NPS4 Mix1

% recovery of compounds - internal standard new column)

Extract #	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	
Conc.	10x	10x	10x	10x	10x	10x	2x	2x	2x	2x	2x	2x	
lc code	npsgt3a.006	npsgt3a.007	npsgt3a.008	npsgt3a.009	npsgt3a.010	npsgt3a.011	npsgt4.006	npsgt4.007	npsgt4.008	npsgt4.009	npsgt4.010	npsgt4.011	
Cyanazine	89.6	95.8	92.4	93.6	94.3	83.6	105.4	95.3	118.6	117	112.4	110	
Fluometuron	96.5	94.4	91.5	94.4	93.4	80.2	119.7	102.1	119.7	133.8	112.6	133.8	
Diuron	89.1	95.8	91.3	92	93.3	83.3	106.3	100	114.6	116.7	112.5	112.5	
Linuron	90.1	92.8	91.3	93.9	95.1	81.4	105.8	97.1	115.9	114.9	110.1	110.1	
Carbazole	93	87	87	92	92	80	98	105	109	110	105	106	
Ethylbenzene	106.2	98.2	104.2	102.2	100.6	104.6	92.2	93.8	82.6	82	85.7	85.7	
IS % of std													

COMPETENCE

Method NPS4 Mix2 (no neburon)

% recovery of compounds - internal standard

Extract #	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-11	2-12	2-13	2-14	2-15	2-16
Conc.	10x	10x	10x	10x	10x	10x	10x	2x	2x	2x	2x	2x	2x
lc code	npsgt3a.013	npsgt3a.014	npsgt3a.015	npsgt3a.016	npsgt3a.017	npsgt3a.018	npsgt3a.019	npsgt4.016	npsgt4.017	npsgt4.018	npsgt4.019	npsgt4.020	npsgt4.021
Propham	98.4	93.7	97.9	97.4	97.2	93.2	88.5	84.7	71.7	97.7	68.4	77.5	108.2
Propanil	100.8	95.7	97.6	99.6	98.3	93.8	87.3	86.8	77.2	96.5	74	70.7	86.8
Swep	100.4	95.3	97.9	99.4	98.1	94.5	88.4	84.2	76.5	95.2	73.3	71.4	88.7
Barban	101.2	100.2	98.7	100.6	98.6	95	88.6	88.4	82.1	96	80.7	78.8	92.8
Carbazole	98	97	95	100	92	91	85	86	81	92	74	79	86
Ethylbenzene	88.2	85.4	85.2	91.6	91.2	93.7	97.8	106.3	110.8	92.8	97.9	101.1	94.6
IS % of std													

DATA FOR DETECTION LIMIT DETERMINATIONS

507 METHOD

SHEET FOR CALCULATING METHOD DETECTION LIMITS

507 DETECTION LIMITS MIX 1 June 13,1997 Gail training

SAMPLE ID		CYCLOATE	PROMETON	DISULFOTON	AMETRYNE	PHENAMIPHOS	TRIBUTYLPHOS
gt1-13	1	4.210	2.020	0.520	2.040	2.210	1.660
gt1-14	2	5.440	1.910	0.540	1.920	1.810	1.360
gt1-15	3	3.350	2.090	0.570	2.070	1.960	1.480
gt1-16	4	2.930	2.110	1.260	2.070	1.880	1.360
gt1-17	5	2.730	2.150	1.260	2.110	2.050	1.370
gt1-18	6	3.300	2.000	1.270	1.980	2.110	1.520
n		6	6	6	6	6	6
mean		3.660	2.047	0.903	2.032	2.003	1.458
theoretical mean		2.000	2.000	2.000	2.000	2.000	2.000
standard deviation		1.009	0.087	0.388	0.070	0.149	0.120
method detection limit		3.016	0.261	1.160	0.208	0.445	0.359
EPA estimated det. lim.		0.25	0.3	0.3	2.0	1.0	0.25

507 METHOD

SHEET FOR CALCULATING METHOD DETECTION LIMITS

507 DETECTION LIMITS MIX 2 June 3,1997 Gail training

SAMPLE ID		S-EDPTHIO (EPTU)	PHOSDRIN	PROPHOS	ATRAZINE	PROPAZINE	PROMETRYNI	TERBUTRYN	TRIADIMEFON	DIPHENAMID
gt2-11	1	1.370	1.710	1.820	1.840	1.830	1.880	1.870	1.860	1.83
gt2-12	2	1.380	1.710	2.010	1.850	1.830	1.850	1.850	1.830	1.85
gt2-13	3	1.660	1.870	2.050	1.950	1.910	1.910	1.920	1.910	1.91
gt2-14	4	1.550	1.820	1.850	1.890	1.890	1.880	1.870	1.850	1.86
gt2-15	5	1.440	1.780	1.890	1.830	1.810	1.850	1.840	1.860	1.86
gt2-16	6	1.390	1.750	1.900	1.750	1.720	1.710	1.750	1.710	1.71
n		6	6	6	6	6	6	6	6	6
mean		1.465	1.773	1.920	1.852	1.832	1.847	1.850	1.837	1.837
theoretical mean		2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
standard deviation		0.116	0.063	0.085	0.066	0.067	0.071	0.056	0.067	0.067
method detection limit		0.348	0.190	0.255	0.199	0.200	0.211	0.168	0.201	0.201
EPA estimated det. lim.		0.25	5	0.19	0.13	0.13	0.19	0.25	0.65	0.6

507 METHOD

SHEET FOR CALCULATING METHOD DETECTION LIMITS
507 DETECTION LIMITS MB June 3,1997 Gail training

SAMPLE ID		VERNOLATE	TERBU	DIAZIN(	METRIBUZIN	METOLACHLOR	MGK 264	BUTACHLOR	CARBOXIN	NORFLURAZON
gt3-12	1	3.340	0.030	0.040	3.630	4.400	3.820	3.870	3.890	4.46
gt3-13	2	2.980	0.030	0.070	3.430	4.240	3.670	3.650	3.760	4.51
gt3-14	3	3.740	0.040	0.060	3.830	4.730	3.910	3.980	4.110	4.33
gt3-15	4	3.370	0.030	0.120	3.620	4.220	3.600	3.750	3.900	4.79
gt3-16	5	3.400	0.030	0.130	3.690	4.060	3.580	3.720	4.000	4.51
gt3-17	6	2.940	0.030	0.080	3.270	3.700	3.100	3.340	3.650	4.74
n		6	6	6	6	6	6	6	6	6
mean		3.295	0.032	0.083	3.578	4.225	3.613	3.718	3.885	4.557
theoretical mean		4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
standard deviation		0.297	0.004	0.031	0.199	0.343	0.282	0.219	0.164	0.175
method detection limit		0.888	0.012	0.093	0.594	1.025	0.844	0.655	0.491	0.523
EPA estimated det. lim.		0.13	0.5	0.25	0.15	0.75	0.5	0.38	0.6	0.5

507 METHOD MIX 4

SHEET FOR CALCULATING METHOD DETECTION LIMITS

507 MIX 4 DETECTION LIMITS June 23,1997 Gail training

SAMPLE ID		Butylate	Molinate	Chlorpropham	Atraton	Propyzamide	Alachlor	Bromazil	Tetrachlorvinphc	Beam	Velpar
gt4-10	1	2.650	2.970	3.270	3.480	0.000	3.410	3.620	3.180	3.460	3.76
gt4-11	2	2.720	3.130	3.280	3.600	0.000	3.590	3.720	2.960	3.130	3.89
gt4-12	3	2.730	3.130	3.320	3.620	0.000	3.520	3.760	3.370	3.480	3.88
gt4-13	4	2.690	2.950	3.140	3.430	0.000	3.340	3.420	3.390	3.220	3.54
gt4-14	5	2.610	2.890	3.190	3.510	0.000	3.310	3.400	2.770	3.100	4.01
gt4-15	6	2.500	2.790	3.020	3.270	0.000	3.170	3.330	2.990	3.000	3.75
	8										
n		6	6	6	6	6	6	6	6	6	6
mean		2.650	2.977	3.203	3.485	0.000	3.390	3.542	3.110	3.232	3.805
theoretical mean		4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
standard deviation		0.086	0.134	0.111	0.128	0.000	0.151	0.182	0.246	0.198	0.161
method detection limit		0.257	0.401	0.332	0.381	0.000	0.452	0.543	0.736	0.591	0.482
EPA estimated det. lim.		0.15	0.15	0.5	0.6	0.76	0.38	2.5	0.76	1	0.76

507 METHOD MIX 5

SHEET FOR CALCULATING METHOD DETECTION LIMITS

507 MIX 5 DETECTION LIMITS June 23,1997 Gail training

SAMPLE ID		Dichlorvos	Perbulate	Tebuthiuron	Simazine	Terbacil	Simetryne	Devrinol	Fenarimol	Sonar
gt5-12	1	2.990	3.080	3.520	0.150	4.200	3.860	5.200	3.920	4.190
gt5-13	2	3.210	3.280	3.750	0.160	4.300	3.980	5.690	4.070	4.390
gt5-14	3	2.780	3.060	3.470	0.140	3.970	3.770	4.640	3.840	3.540
gt5-15	4	3.300	3.120	3.500	0.150	3.950	3.730	4.720	3.760	3.340
gt5-16	5	3.030	2.930	3.330	0.140	3.700	3.530	4.710	3.570	3.090
gt5-17	6	3.180	2.830	2.840	0.050	0.890	3.170	4.470	0.330	2.090
	8									
n		6	6	6	6	6	6	6	6	6
mean		3.082	3.050	3.402	0.132	3.502	3.673	4.905	3.248	3.440
theoretical mean		4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
standard deviation		0.188	0.156	0.307	0.041	1.297	0.288	0.455	1.439	0.828
method detection limit		0.560	0.466	0.916	0.122	3.874	0.861	1.359	4.301	2.475
EPA estimated det. lim.		2.5	0.13	1.3	0.075	4.5	0.25	0.25	0.38	3.8

515 METHOD

SHEET FOR CALCULATING METHOD DETECTION LIMITS

515 DETECTION LIMITS June 3,1997 Gail training MIX 1

SAMPLE ID		3,5-D	DICHLORPROP	PENTACHLC	2,4,5-T	DINOSEB	DACTHAL
gt1-18	1	3.888	5.246	0.777	0.819	1.574	0.831
gt1-19	2	3.959	3.608	0.794	0.836	1.608	0.832
gt1-20	3	3.789	0.845	0.764	0.797	1.544	0.812
gt1-21	4	3.822	0.810	0.760	0.805	1.518	0.792
gt1-22	5	4.003	1.338	0.811	0.892	1.678	0.887
gt1-23	6	4.246	2.003	0.825	0.877	1.650	0.867
	8						
n		6	6	5	6	6	6
mean		3.951	2.308	0.791	0.838	1.595	0.837
theoretical mean		4.000	0.8	0.8	0.8	1.6	0.8
standard deviation		0.165	1.774	0.029	0.039	0.062	0.035
method detection limit		0.494	5.302	0.085	0.116	0.184	0.104
EPA estimated det. lim.		1.23	0.13	0.16	0.16	0.28	0.13

515 METHOD

Mix 2

SHEET FOR CALCULATING METHOD DETECTION LIMITS
515 DETECTION LIMITS June 3,1997 Gail training

SAMPLE ID		DICAMBA	2,4-D	SILVEX	2,4-DB	BENTAZON	PICLORAM	ACIFLUORFEN	DCAA
gt2-18	1	2.329	0.779	0.769	.7.545	7.752	2.294	1.626	1.003
gt2-19	2	1.982	0.665	0.655	6.696	6.810	2.310	1.416	1.038
gt2-20	3	2.122	0.700	0.703	7.252	7.181	2.224	1.495	1.045
gt2-21	4	2.041	0.646	0.674	6.978	6.839	2.140	1.432	0.975
gt2-22	5	2.007	0.656	0.691	6.656	6.924	2.391	1.451	0.937
gt2-23	6	2.086	0.692	0.698	7.183	7.100	2.377	1.461	0.997
	8								
n		6	6	5	6	6	6	6	6.000
mean		2.095	0.690	0.684	6.953	7.101	2.289	1.480	0.999
theoretical mean		2.000	0.8	0.8	8	8	2.4	1.6	
standard deviation		0.126	0.048	0.020	0.273	0.351	0.095	0.076	0.040
method detection lir		0.376	0.145	0.059	0.814	1.048	0.284	0.228	0.120
EPA estimated det. lim.		0.28	0.28	0.06	0.72	0.63	0.35	0.25	

1
0.75

NPS METHOD 4

SHEET FOR CALCULATING METHOD DETECTION LIMITS
ASHLEY NPS4 DETECTION LIMITS June 2,1997 Gail training

mix 1

"DETLIMG-1"

"D

SAMPLE ID		CYANAZINE	FLUOMETURON	DIURON	LINURON
gt1-7	1	1.360	0.340	0.510	0.730
gt1-8	2	1.230	0.290	0.480	0.670
gt1-9	3	1.530	0.340	0.550	0.800
gt1-10	4	1.510	0.380	0.560	0.790
gt1-11	5	1.450	0.320	0.540	0.760
gt1-12	6	1.420	0.380	0.540	0.760
	8				
n		6	6	6	6
mean		1.417	0.342	0.530	0.752
theoretical mean		1.294	0.284	0.69	0.48
standard deviation		0.110	0.035	0.030	0.047
method detection limit		0.329	0.104	0.089	0.141
EPA estimated det. lim.		0.15	0.13	0.15	0.38

NPS METHOD 4

SHEET FOR CALCULATING METHOD DETECTION LIMITS

ASHLEY NPS4 DETECTION LIMITS June 2,1997 Gail training

mix 2

"DETLIMG2"

SAMPLE ID	PROPHAM	PROPANIL	SWEP	BARBAN
gt2-11	1.300	0.270	1.310	1.390
gt2-12	1.100	0.240	1.190	1.290
gt2-13	1.500	0.300	1.480	1.510
gt2-14	1.050	0.230	1.140	1.270
gt2-15	1.190	0.220	1.110	1.240
gt2-16	1.660	0.270	1.380	1.460
n	6	6	6	6
mean	1.300	0.255	1.268	1.360
theoretical mean	1.535	0.3114	1.555	1.1048
standard deviation	1.238	0.030	0.146	0.110
methoddetection limit	1.12	0.090	0.436	0.329
EPA estimated det. lim.	0.15	0.13	0.15	0.38