1-173

SITE: ALLIED - PRARIE

BREAK: 17.8

THE FOLLOWING DOCUMENT FILED IN ANOTHER BREAK CONTAINS INFORMATION RELEVANT TO THIS SECTION:

BREAK: 17.4

BREAK TITLE:

Site Audio VISUALS

DOCUMENT DESCRIPTION:

MISSISSIPPI Authority Inventory, 6-30-83 (Site maps)

[6560-01-M]

[FRL 1065-1; OPP-42002C]

GEORGIA

State Plan for Certification of Commercial and Private Applicators of Restricted Use Pesticides; Approval Status

Section 4(a)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as amended in 1972, 1975, and 1978 (92 Stat. 819; 7 U.S.C. § 136) and the implementing regulations of 40 C.F.R. Part 171, require each State desiring to certify applicators to submit a plan for such purpose, subject to approval by the Environmental Protection Agency (EPA). On June 16, 1975, the Regional Administrator, EPA, Region IV, approved the Georgia Plan on a contingency basis. Notice of the approval was published in the FEDERAL REGISTER on June 25, 1975 (40 FR 26690). Subsequently, the Georgia Pesticide Control Act of 1976, and the Georgia Pesticide Use and Application Act of 1976 became effective January 1, 1977, and Rules of the Structural Pest Control Act were amended effective February 12, 1979. Having reviewed these regulations and finding all requisite legal authorities required by FIFRA and 40 CFR Part 171 are now enacted and promulgated, the Regional Administrator, EPA, Region IV, gives notice that the Georgia State Plan is now a fully approved State Plan.

Dated: February 20, 1979.

JOHN C. WHITE,
Regional Administrator, Region IV.

[FR Doc. 79-5744 Filed 2-26-79; 8:45 am]

[6560-01-M]

[FRL 1064-3; OPP-62002A]

HERBICIDES: DINITRO TECHNICAL AND ANCRACK HERBICIDE

Extension of Comment Period

By FEDERAL REGISTER notice dated November 1, 1978 (43 FR 50965), the Administrator announced his intent to hold a hearing under section 6(b)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (FIFRA), to determine whether or not the registrations of the herbicides Dinitro Technical, EPA Reg. No. 148-1213, and Ancrack Herbicide, EPA Reg. No. 19713-23,[1] should be cancelled.

The deadline for filing written responses accompanying the notice was December 1, 1978. The deadline for filing such responses is hereby extended to April 1, 1979.

Dated: February 15, 1979.

STEVEN D. JELLINEK,
Assistant Administrator for Toxic Substances.

[FR Doc. 79-5745 Filed 2-26-79; 8:45 am]

[1]Dow Chemical Co., in two petitions dated August 8, 1977, and March 29, 1978, petitioned the Administrator for cancellation of the registrations of the herbicides Dinitro Technical and Ancrack Herbicide, respectively. On January 8, 1979, Dow withdrew its March 29, 1978 petition for cancellation of Ancrack Herbicide.

[6560-01-M]

[FRL 1065-2]

SAFE DRINKING WATER ACT

Review of Variances and Exemptions

Notice is hereby given that pursuant to sections 1415(a)(1)(F) and 1416(d) of the Safe Drinking Water Act, the Environmental Protection Agency, Region I, has completed a comprehensive review of variances and exemptions issued (and schedules prescribed pursuant thereto) during the period June 24, 1977 through June 23, 1978 by the Connecticut Department of Health and the Maine Department of Human Services.

EPA found that all variances and exemptions reviewed were issued under conditions and in a manner no less stringent than the conditions under which variances and exemptions may be granted under Sections 1415 and 1416 of the Safe Drinking Water Act and in no case has either State abused its discretion in the issuance of variances and exemptions during the stated review period. EPA Received no comments concerning variances and/or exemptions during the 30-day comment period.

Dated: February 5, 1979.

REBECCA W. HANMER,
Deputy Regional administrator.

[FR Doc. 79-5796 Filed 2-26-79; 8:45 am]

[6560-01-M]

[FRL 1064-8; OPP-180172F]

USE OF FERRIAMICIDE IN MISSISSIPPI

Supplemental Opinion and Order, Under § 18 of the Federal Insecticide, Fungicide, and Rodenticide Act

The Mississippi Authority for the Control of Fire Ants (Mississippi Authority or Authority) has applied for an emergency exemption under Section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (FIFRA), 7 U.S.C. 136p, to distribute and use an unregistered pesticide called Ferriamicide for the control of imported fire ants in Mississippi. This Opinion and Order [illegible] Agency action by EPA on the Mississippi Authority's application.

I. BACKGROUND

On July 28, 1978, I issued an Opinion and Order (July Order) granting in part and denying in part Mississippi's request for a Section 18 exemption to distribute and use Ferriamicide for the control of imported fire ants.[1] The fire ants pose a serious problem due to their painful bites and the interference their mounds create for agricultural operations. As developed extensively in my July Order, and the earlier March 8, 1978 document,[2] the fire ant problem was exacerbated by the voluntary cancellation of previous formulations of Mirex, which had been used effectively to control fire ants in some situations. The Mississippi Authority developed Ferriamicide, a product whose active ingredient is Mirex, as an alternative which is effective against fire ants but less persistent than Mirex in the environment than previous formulations. My July Order permitted the limited use of Ferriamicide under the following stringent conditions:

1. The bait formulation could contain no more than 0.05 percent Mirex.
2. Ground broadcast was permitted in parks, cemeteries, schoolyards, campgrounds and fairgrounds but only by certified applicators.
3. Mound-to-mound applications were allowed on all other lands (including agricultural lands). Bags of Ferriamicide were to be distributed only to persons who had at least 50 mounds and at least one acre to treat. These persons also were required to read and sign a form containing several warnings before Ferriamicide could be distributed to them.
4. Women of child-bearing age were prohibited from applying Ferriamicide under all circumstances; and certain other conditions were required to be specified on the labeling of the pesticide.
5. Mississippi's request to permit aerial broadcast of the pesticide was denied.

The Environmental Defense Fund (EDF) filed an action in the United States District Court for the District of Columbia asserting that for various reasons the Agency should be enjoined from allowing the Authority to use Ferriamicide. The Court heard oral ar-

[1]The Agency has received requests for Section 18 exemptions to combat the fire ant problem from a number of other Southern states. The Agency is reviewing each application separately and will issue its decisions in due course.

[2]The March 8 document, which authorized the use of Ferriamicide, was not a final order because it left unresolved several issues concerning the terms and conditions under which Ferriamicide could be used.

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gument and received extensive briefing on the issues raised. On September 27, 1978, the Court issued a decision granting summary judgment for the Agency on several issues. 458 F. Supp. 650 (D.D.C. 1978). The Court sustained the Agency finding that the fire ant infestation in Mississippi constituted an "emergency" under Section 18, and granted summary judgment as to the Agency's compliance with the National Environmental Policy Act, 42 U.S.C. 4331 *et seq.*, and EPA's alleged consideration of improper political factors.[3]

However, the Court remanded the case to the Agency after finding the decision procedurally defective because the Agency considered certain documents without making them available for public adversarial comment. This decision was based on the Court's finding that the Ferriamicide decision was informal rulemaking and therefore subject to notice and comment procedures under the Administrative Procedure Act, 5 U.S.C. 553. The Court found that the notice published on December 28, 1977, served to formally close the administrative record as of January 23, 1978, and that documents received after that time, but not made available for public comment, constituted improper *ex parte* communications.

The Court stated that if EPA should wish to consider the Authority's application further, it would have to (1) publish in the FEDERAL REGISTER notice of a new comment period, which need not be longer then 10 days, during which interested persons could comment on the documents received by the EPA since January 23, 1978, and introduce any new information relevant to the issues still remaining open; and (2) establish and maintain a file for public inspection with respect to Mississippi's application, containing all material which had been submitted to the Court by the parties and all information which would be received by the Agency during the new comment period.

Although the Agency does not agree with the Court's determination that actions taken under section 18 of FIFRA are subject to the requirements of 5 U.S.C. 553,[4] it decided that proceeding in accordance with the Court's decision would lead to the most expeditious resolution of the still-open issues. Therefore, on October 17, 1978, EPA published a notice reopening the comment period on Mississippi's application, inviting public inspection of all documents which had been submitted and allowing ten days for receipt of additional comments. 43 FR 47774. Because additional information was received after the closing of the re-opened comment period, the Agency announced in the FEDERAL REGISTER on December 27, 1978 that it was providing an additional opportunity for comment which was to terminate on January 3, 1979. 43 FR 60334.[5]

During the period following my July decision, additional information on alternatives to Ferriamicide, the efficacy of Ferriamicide, and the risks of Ferriamicide use has come to the attention of the Agency. This information will be discussed in detail below.

II. THE LEGAL STANDARD

Section 18 allows the Administrator, "to use his discretion" to exempt any federal or state agency from FIFRA requirements "if he determines that emergency conditions exist which require such exemption." Before awarding a Section 18 exemption, the Administrator must make two findings: first that "emergency conditions exist," and second, that the proposed emergency use would not result in unreasonable adverse effects on the environment. This interpretation of the legal test has the approval of the District Court for the District of Columbia. *EDF* v. *Blum, et. al., supra*, 458 F. Supp. at 657.

III. SUPPLEMENTAL FINDINGS

In my July decision I found that "emergency conditions" exist in areas of Mississippi which are heavily infested with fire ants. As discussed extensively therein, I found that fire ants pose serious health and economic problems in Mississippi and that no effective alternative treatment exists for large and heavily infested areas. The District Court sustained, as having a rational basis, my determination that the fire ant problem created "emergency conditions" in Mississippi, within the meaning of Section 18 of FIFRA.

I further concluded that permitting the use of Ferriamicide subject to stringent conditions would not cause unreasonable adverse effects on the environment. I found that Ferriamicide would prove beneficial against the fire ant problem, since it was both efficacious and practical to apply in areas of heavy and widespread infestation. Since I recognized that the compound posed a risk of oncogenic and teratogenic effects, I endeavored to eliminate the risk to humans from two exposure routes: dietary exposure and animal exposure from mound-to-mound application if use directions were completely ignored. I concluded that the cancer risk was very low and could be held to an acceptable level by, as described *supra*, limiting the areas of permissible application and by placing restrictions on application methods. I reduced the teratogenic risk by barring women of child-bearing age from serving as applicators.

Based on the information contained in my July Order, as well as the information that has come to my attention since the July Order, I reaffirm my conclusion that "emergency conditions" exist in Mississippi areas with heavy fire ant infestation, for the reasons stated in the discussion section which follows.

Concerning the benefits of Ferriamicide, the new information coming to my attention has reinforced my conclusion that Ferriamicide will prove efficacious against fire ants. In addition, I reaffirm my conclusion that Ferriamicide is the only compound which is practical to apply in areas of widespread and heavy infestation.

Concerning the hazards of Ferriamicide use, information has come to my attention indicating that this compound poses a risk of liver toxicity and adverse environmental effects, in addition to the oncogenic and reproductive effects considered in my July decision. I have concluded, for the reasons stated in the discussion section, that these additional toxic effects do not create a problem requiring restrictions beyond those imposed in my July Order to reduce the potential of reproductive and carcinogenic adverse effects.

In addition, the Agency staff has developed reasonable worst-case exposure estimates and quantitative risk estimates for persons frequenting areas where ground broadcast was permitted in my July decision. For the reasons discussed *infra*, I have concluded that the risks from applicator exposure, dietary exposure, and ground broadcast exposure can be brought to an acceptable level by the risk reduction measures directed by my July Order.

Accordingly, I have concluded that permitting the use of Ferriamicide subject to the stringent conditions imposed in the July Order would not cause unreasonable adverse effects to humans and the environment. I

[3] EDF filed a notice of appeal on these issues on September 28, 1978.

[4] For a detailed discussion on the Agency's position on this issue, See, 43 FR 47774 (October 17, 1978). In broad summary, the Agency believes that a section 18 exemption is a license and hence falls into the category of an "order," which is defined in the Administrative Procedures Act as final Agency disposition, "other than rulemaking but including licensing." 5 U.S.C. 551.

[5] Following receipt of a submission from Mississippi during the re-opened comment period the Agency requested Mississippi's underlying supporting data, which Mississippi forwarded to the Agency, with copies to EDF, the public interest group most involved in the proceeding. EDF in turn requested the Agency to re-open the comment period to allow it to respond. Thereafter, EPA gave EDF advance notice by hand delivered mail on December 21 that a second re-opening of the comment period would be announced shortly in the FEDERAL REGISTER.

hereby reaffirm the terms of my July Order in all respects, except that I am reducing the amount of Ferriamicide which can be distributed and used by 20 percent. This reduction reflects the fact that one of the two fire ant treatment periods covered by the one-year exemption approved in my July Order has already passed, leaving only Spring 1979 for fire ant treatment with Ferriamicide. Additionally, I am requiring that the label specify that 50-pound bags of Ferriamicide must not be used more than six weeks after manufacture, in order that the pesticide not become sufficiently rancid that its effectiveness as a pesticide is diminished to the point where the benefits no longer outweigh the risks.

IV. Discussion

A. Alternatives to Ferriamicide

In my July Order I concluded that no effective alternative treatment exists for large, heavily infested areas. Since that time no alternatives have been registered that are feasible for use in areas of heavy infestation, and no commentor has uncovered any feasible registered alternatives that I had overlooked. Mound drenches, for the reasons discussed in my July Order, are not feasible alternatives for areas with heavy infestation.

Several commentors urged the Agency to consider a number of unregistered pesticides as alternatives to Ferriamicide. Most of the materials suggested are, like Ferriamicide, pesticides which are still under development; some of them have shown promise in preliminary testing.* However, in order for any of them to fairly qualify as an alternative, there must be a sound basis for concluding that the material could be made available to deal with the fire ant problem in Mississippi *this spring*. In fact, the record suggests no basis for concluding that any of these materials could be made available.

First, no one has asked, or indicated even an *inclination* to ask for permission to distribute any of these materials on anything but a very limited basis, pursuant to experimental use permits. Since the Agency itself is not a producer of pesticides, the absence of a willing producer is by itself a telling blow to consideration of any of these materials as a Ferriamicide substitute in Mississippi this spring. Second, the information in the Agency's possession about the risks and benefits of these materials is so fragmentary that it is not possible to predict whether the Agency could find that the benefits associated with the use of any of these materials as a substitute for Ferriamicide outweighed the risks associated with the use of the compound. Thirdly, the lead time necessary to obtain required regulatory clearances and produce and distribute a pesticide is sufficiently long that even an open invitation from the Agency to submit applications for permission to distribute one or more of these materials would not, as a practical matter, place an alternative in the hands of users in Mississippi in time to treat for fire ants this spring.

Finally, any implication that the fire ant problem addressed by the exemption granted in my July Order can wait for a solution until one of the suggested alternatives is available simply misses the point—as I stated in my July Order, and reiterate now, use of Ferriamicide to resolve that problem is only acceptable if the risks associated with use of Ferriamicide for this purpose are lower than the benefits. I found in July (and reiterate today) that the benefits are greater than the risks. If I had concluded then or now that the risks associated with Ferriamicide use were greater than the benefits, then it would have been necessary to leave the problem unresolved until another material offering an acceptable balance between risk and benefits became available. However, if Ferriamicide can be used on a limited basis this spring, subject to severe restrictions, and the benefits of this use outweigh its risks, the fact that another less risky compound may be available next year or the year after is simply irrelevant.

B. Efficacy of Ferriamicide

As noted in my July 28 decision, the main benefits of Ferriamicide are its ease of application in large areas of heavy infestation and its anticipated effectiveness. The conclusion in my July Order that Ferriamicide would be effective against fire ants was based primarily on the knowledge that its active ingredient, Mirex, is effective against fire ants. The low Mirex content in Ferriamicide is made more efficacious by the specific formulation and packaging proposed by the Mississippi Authority, which accelerate photodegradation and maintain attractiveness to insects by retarding rancidity. In addition, the resemblance of Ferriamicide bait to ant foodstuff enhances its efficacy. Foraging ants are likely to carry the poison into the mound where the bait may be fed to other members of the colony, including the queen, with the result being the eventual destruction of the mound. During the comment periods, the additional information discussed below pertaining to efficacy was received, but my ultimate conclusion that Ferriamicide is effective against fire ants remains unchanged. Hence, I reaffirm my findings about the efficacy of Ferriamicide.

The United States Department of Agriculture has advised EPA that of all the materials tested to date, Ferriamicide is the most effective replacement for the 4X and 10-5 Mirex formulations for fire ant control. At present no field trial data are available to demonstrate the efficacy of Ferriamicide applied either by mound application or by ground broadcast. However, the Mississippi Authority has reported the results of field trails resulted in a 90 percent mound reduction; the Mississippi field trials resulted in an 67.2 percent mound reduction.

EDF has asserted that the field trials do not support my July Order for three reasons: (1) because the formulation used was an old formulation, that is, one different from the one now proposed for use; (2) because aerial broadcast is prohibited by my July Order; and (3) because the one pound application rate used in the trials is lower than the 2½ pounds per acre permitted by my order. I find EDF's criticisms unpersuasive. Regarding the change in formulation, the new formulation contains the same amount of Mirex, mixed with other chemicals to inhibit degradation to Kepone and rancidity. As a result, the new formulation is expected to be more, not less, efficacious than the old formulation. EDF's criticism of the method of application also misses the mark. Put simply, a study using aerial application to show Ferriamicide is efficacious may fairly be used to show Ferriamicide would be efficacious if applied by a method producing approximately the same distribution of the matterial (ground broadcast) or by a more accurate technique (mound-to-mound application). EDF's third contention, in effect, is that if the field trials are a fair predictor of the efficacy of the current formulation of Ferriamicide applied by ground broadcast, then I have permitted an application rate (2½ lbs/acre) which is 2½ times higher than necessary, because the field trials demonstrated that 1 lb/acre was efficacious. This argument is superficially appealing. However, it overlooks the fact that trials are generally run under specialized conditions. Consequently, the results do not reflect differences in efficacy which can be caused by variation in terrain

*The pesticides currently under development which were suggested included: American Cynamid's AC 217,300, the polymer toxicants Trichlorfon and Dipterex, Ciba-Geigy's insect growth regulator, Eli Lilly's skeletal inhibitors, a pathogenic yeast product, Stouffer's WV-675, fire ant queen pheromone and parasitic mites.

A bait formulation of Dursban was also suggested. I reject this as an alternative because the Agency has declined to register this pesticide due to deficiencies in the required pre-registration studies which make it impossible to evaluate the efficacy and stability of the product.

and ground cover. Accordin it is appropriate to permit somewhat higher *maximum* application rates, to compensate for variations in these factors at application sites. Furthermore, the ground broadcast equipment does not cover one acre evenly when calibrated to distribute one lb/acre. Since even distribution is important, higher application rates are allowed to permit its achievement.[7]

C. HUMAN HEALTH RISKS

As explained in my July Order, there are two key components to a risk assessment: (1) assessment of the *toxicological properties* of a chemical; and (2) assessment of *exposure* to the chenical. The risk assessment itself is a summation of the conclusions in each of these areas. Each component has a key bearing on the conclusion.

For example, a highly toxic chemical may pose low risks if exposure is low; conversely, a compound of low to moderate toxicity may pose high risks if exposure is high. Since the toxic properties of a chemical are rarely alterable, most efforts at chemical regulation involve attempts to control exposure, either by eliminating exposure altogether (by an outright ban on the chemical) or by reducing exposure through regulatory controls short of an outright ban.

The active ingredient in Ferriamicide is Mirex. Ferriamicide, however, differs from previous formulations of Mirex in two key ways, both of which reflect attempts to reduce *exposure* to Mirex, and thereby reduce the risks posed by the pesticide. First, Ferriamicide contains significantly less Mirex than previous bait formulations of Mirex.[8] Second, Ferriamicide contains chemicals (ferrous chloride and propylene glycol) intended to accelerate the degradation of Mirex in the environment. If this can be accomplished, many exposure opportunities can be eliminated. However, as indicated in my July Order, the extent to which Ferriamicide in fact accelerates environmental degradation of Mirex remains an unanswered question.

The Agency's risk assessment of Ferriamicide has focused on Mirex and Kepone, a contaminant or degradation product. If the risk assessment contained in my July Order, I assumed that Ferriamicide was no more toxic than Mirex and that the amount of Kepone involved would not be a threat to the environment. I have found no reason to alter this approach.[9] However, additional information bearing on both toxicity and exposure has come to my attention; this information is discussed and assessed below:

1. Toxicity

In my earlier decision, carcinogenicity and teratogenicity were considered the primary areas of toxicological concern related to Mirex exposure. Since that time, new information has become available which indicates that chronic liver toxicity should also be considered.

(a) Teratogenicity. In my prior decision, I concluded that prenatal exposure to Mirex could result in teratogenicity. New experimental information has become available since then, the weight of which serves to reinforce my earlier finding. The new information showed: (1) Exposure to Mirex during gestation has been shown to result in irregular cardiovascular physiology in rat fetuses, as measured by electrocardiogram analysis. (2) Neonatal exposure to Kepone was found to induce precocious vaginal opening, persistent vaginal estrus and anovulation in rats, indicating estrogenic activity by the pesticide. Mirex did not show similar activity.

The Agency used a study demonstrating the behavorial abnormalities in the offspring of prairie voles fed 0.1 ppm (0.15 mg/kg) as establishing a base line for estimating the teratogenic risk to humans from Mirex exposure. The Mississippi Authority disputed my reliance on the prairie vole study, contending that the study demonstrated no observable effect level (NOEL) at 0.1 ppm for reproductive performance. However, the Authority's argument is invalid, because it ignores the behavorial impairment observed at 0.1 ppm. Accordingly, I believe the Agency properly regarded the 0.1 ppm level as an *effect* level, not a no effect level, for purposes of assessing the teratogenic risk of Mirex. Moreover, the position of the Authority appears to assume that the vole study was the only data supporting the Agency's conclusions regarding teratogenicity. This is incorrect, since the Agency also relied on a recent study on the Swiss mouse which demonstrated significant adverse effects in offspring due to maternal exposure to Mirex.

The possibility of teratogenic effects stemming from male exposure to Mirex was raised by EDF and Rachel Carson Trust. EDF cited a recent article in *Science*,[10] which suggested three possible mechanisms of action for a hypothetical chemical: (1) damage to the sperm itself, (2) transfer to the female system in the semen and (3) as a secondary effect to some other action in the male. The cited article is not an experimental report about a specific compound and only discusses, in a general fashion, a possibility of what the author himself considered a minor contributor to birth defects. While the Mirex data do not definitively rule out the possibility that the fetal effects observed were caused by exposure to the male voles, there is strong evidence to suggest that the effects in fact were caused by maternal exposure, which is of course the typical route of exposure for fetal effects.[11]

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[7] In light of a comment by EDF, I am modifying my order to require that 50-pound bags not be used more than six weeks after manufacture, in order to insure that the product not become rancid to a level where its effectiveness as a fire ant control is decreased. EDF questioned why the 50-pound bag, unlike the one- and five-pound bags, is not required to have oxygen free packaging, since oxygen free packaging increases the shelf life of the product by retarding rancidity. While oxidation is not expected to be a serious problem with the 50-pound bags because they are to be custom manufactured on advance notice, the problem can be minimized by having the bags labeled with an expiration date not to exceed the point at which an unacceptable level of oxidation begins. Based on shelf life studies conducted by USDA, six weeks from date of manufacture seems a reasonable estimate of that point.

[8] There were eight previously registered formulations of Mirex. Of these, seven contained twice as much Mirex as Ferriamicide. The remaining formulation contained 50 percent more Mirex than Ferriamicide. Compare 41 FR 56694, 56697 (December 29, 1976) with 43 FR 47774, 47786 (October 17, 1978).

[9] Since Kepone is one of the degradation products of Mirex, the use of Ferriamicide will result in the introduction of some Kepone into the environment. Whether the Kepone is a degradation product (i.e., produced by decomposition of Mirex in the environment after the use of Ferriamicide) or a contaminant (i.e. produced by decomposition of Mirex before the use of Ferriamicide) makes little difference.

For risk assessment purposes, I have concluded that Kepone's contribution to the overall risk posed by Ferriamicide is negligible. First, the Ferriamicide use which I have authorized will result in only a miniscule amount of Kepone going into the environment. The formulation of Ferriamicide has been adjusted to inhibit degradation to Kepone; data produced by the Authority show that the amount of Kepone produced after degradation of Ferriamicide is 0.5 percent of the amount of Mirex contained in the Ferriamicide sample. Since the total amount of Ferriamicide authorized to be distributed will contain only 168 pounds of Mirex, only a very small amount of Kepone will be introduced into the environment.

Moreover, the toxicity of Kepone is generally comparable to the toxicity of Mirex. Their no observed effect levels for chronic effects other than cancer are comparable; therefore for the same amount of exposure their respective margins of safety are similar. Both chemicals are carcinogenic in rodent test systems. Kepone apparently produced a somewhat stronger positive response; however, for quantitative risk extrapolation purposes both compounds would produce risk estimates which are within the same order of magnitude, assuming comparable exposure.

[10] *Teratogens Acting Through Males*, Science, 202:733 (November 17, 1978).

[11] For example, there is strong evidence from maternal feeding studies that Mirex crosses the placenta, accumulates in fetal

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The fact that the data establish a direct link between maternal exposure and birth defects magnifies, in my judgment, the speculative nature of the hypothesis that there is a secondary cause of birth defects, and permits the Agency to disregard this hypothesis as a basis for regulatory action.

(b) Liver Toxicity. Liver toxicity was not included in the Agency's prior hazard assessment. Since that time, information has become available which indicates that exposure to Mirex could result in chronic liver toxicity. In a mouse feeding study, exposure to Mirex resulted in the development of nodules, hypertrophy (with ground-glass appearance of the cytoplasm), altered histochemistry, ultrastructural changes and cell death. The development of nodules may be particularly significant observation, since the liver is the target organ in Mirex induced carcinogenicity. Some of the effects were observed as early as two months after initiation of exposure. The NOEL for these effects appears to be 1 ppm (150 ug/kg).[12]

(c) Carcinogenicity. In my previous decision, I concluded that the evidence from experimental sutdies was sufficient to show that exposure to Mirex could potentially result in an increased incidence of cancer in man. Since that time, the Mississippi Authority has questioned the carcinogenic potential of Ferriamicide and has submitted information to the Agency which showed that Ferriamicide gave negative results in the Ames test. EDF challenged these results as insufficient to prove that Ferriamicide is not mutagenic or carcinogenic. I have been advised by Agency scientists that it is well known that chlorinated hydrocarbons often give false negatives in the Ames test, while giving postive mutagenic or carcinogenic results in laboratory animals. Accordingly, I conclude that the information submitted by the Authority is not a bsisis for reversing my assessent of carcinogenicity, and I threre fore reaffirm my finding that exposure to Mirex could result in cancer.

2. Exposure

My July Order contained detailed exposure estimates for two routes of exposure to Mirex resulting from the use of Ferriamicide: mound-to-mound application (assuming total disregard of simple use instructions) and in the diet of the general public. During the comment periods, I did not receive information pertaining to these routes of exposure requiring a response.

In my July Order, I concluded that ground broadcast could be permitted in parks, playgrounds, and other locations specified in my decision because exposure from that use pattern would be low. This judgment has been confirmed by a worst-case exposure analysis prepared by the Agency staff covering the general population frequenting areas where ground broadcast is allowed.

In deriving its worst-case estimates of possible exposure to Ferriamicide, the Agency made very conservative assumptions about the ways in which people could become exposed to Ferriamicide and the amount of the pesticide to which people would be exposed. For example, in estimating the exposure of mound-to-mound applicators the Agency assumed that the pesticide would be seriously misused. Since the exposure numbers developed rest on very conservative assumptions, the actual exposure could well be lower than the exposure estimates would indicate. Figures based heavily on hypothesis and modeling, as projected exposure estimates often are, have many uncertainties about them. Nevertheless, they are useful in providing a rough measure of the potential exposure from an emergency pesticide exemption.

The Agency's exposure estimate for ground broadcast application is explained in detail in several memoranda which are part of the administrative record concerning this application. In broad summary, the estimate assumes that with uniform mixing, the concentration of Mirex arising from application of 2½ pounds of Ferriamicide per acre is 3.8 ppb in the top one inch of soil. The Agency then assumed that a person visiting treated grounds would have his skin exposed to about one teaspoon or ten grams of soil per day. If 10% of the toxicant were absorbed into the body, the Agency estimated dermal exposure to Mirex as 3.75 ng per day. The Agency also considered the possibility that some small children would put foreign particles in their mouths. Ingestion of one teaspoon of soil was estimated to result in exposure to 43 ng of Mirex; ingestion of 1 grain of bait directly would result in exposure to 1 ug of Mirex. Thus a child coming into both dermal and oral contact with treated soil would be exposed to 46.75 ng. If a child having dermal exposure to the soil, also ate a grain of bait, his exposure would be 1004 ng.

The Mississippi Authority submitted its own evaluation of dermal exposure to children resulting from ground broadcast application. It estimated that broadcast at 2½ pounds[13] per acre would produce a concentration of 15 granules per square foot, with a total amount of toxicant equal to 12.5 ug per square foot. Assuming that with a single dermal exposure a child might absorb 10 percent of the toxicant from 100 square feet of ground, the resultant exposure estimate was 125 ng.[14] The dermal exposure estimate submitted by the Authority, which is larger than the Agency's dermal estimate by factor of 33,000, represents an improbable situation. In effect, the Authority's model assumes that a child, in a single episode, could expose his skin to every grain of bait in a 100 square foot area; that all of the toxicant in each grain of bait would come into contact with the skin; and that 10 percent of this toxicant would be absorbed through the skin and into the child's system. The Agency worst-case estimates have assumed that 10% of the toxicant coming into contact with the skin would be absorbed and accordingly concurs in Mississippi's apparent use of this factor to represent the efficiency of the skin as an absorption membrane.[14] However, assuming that even a totally naked child could have its skin come into contact with 100% of the bait in a 100 square foot area, and that all the toxicant on the bait would come into contact with the skin is simply absurd. Comparing the Authority's figure with the Agency worst-case estimate for mound-to-mound applicators further demonstrates its improbability. There, the Agency assumed that the applicator did not wear gloves and handled a full pound of Ferriamicide with his bare hands. The amount of Ferriamicide on the treated soil for the child to absorb under the Authority's hypothesis is 175 times less than the amount of Ferriamicide in the one-pound bag handled by the applicator, under the Agency's hypothesis. Nevertheless, the Authority's analysis results in exposure that is one half that of an applicator blatantly violating his instructions.

For these reasons, the Agency has decided not to give credit to the Mississippi Authority dermal exposure estimates. While the Agency is conserva-

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Footnotes continued from last page

tissue and causes fetal abnormalities. See, Khera, K.S. et al., *Mirex: A Teratogenicity, Dominant Lethal and Tissue Distribution Study in Rats*, Fd. Cosmet. Toxicol., 14:25-29 (1976); Gaines, T.B. and R.D. Kimbrough, *Oral Toxicity in Mirex in Adult and Suckling Rats*, Arch. Environ. Health, 21: 7-14 (1970).

[12] Fluffs, Jon et al., *Species Differences in the Hepatic Response to Mirex: Ultrastructural and Histochemical Studies*, Ecotox. and Environ. Safety, 1:327-342 (1977).

[13] The figures submitted by the Authority have been corrected to reflect the maximum allowable application rate. The Authority had assumed that only one pound of bait would be applied per acre. The maximum rate allowed by the agency's order is 2½ pounds per acre.

[14] The Agency has used this 10% as a factor in the past in estimating dermal exposure to applicators of liquid sprays. We regard it as a *conservative* estimate of the efficiency of skin as an absorption membrane for liquids. Necessarily, it is even more conservative an estimate for a *dry* formulation like Ferriamicide bait.

tive in estimating potential exposure, it considers the Authority's estimate to be absurdly unrealistic. The Agency has a responsibility to make sound regulatory decisions. Responsible decision-making cannot be based on risk/benefit analyses which rest on fanciful assumptions.

3. Risk Estimates

Any adverse impact ascribed to the use of Ferriamicide must be tempered by the knowledge that Ferriamicide is authorized for less than a year, and that in most instances exposure will not be on a daily basis. Furthermore, the incremental risks due to the allowed amount of Ferriamicide containing 168 pounds of Mirex are negligible when compared to the baseline risks resulting from the past years of extensive and largely indiscriminate use of Mirex in Mississippi.

In my July Order, estimates were given for the teratogenic and carcinogenic risks to mound-to-mound applicators who would be dermally exposed to Ferriamicide. In addition, the carcinogenic risk to the general population from dietary exposure was given. Since that time, the Agency has developed risk estimates which include oral (non-dietary) and dermal exposure resulting from ground broadcast application.

(a) Teratogenicity. In my July Order, I concluded that there was no real margin of safety of pregnant applicators misusing Ferriamicide, because the estimated exposure was only one-third of the dose which caused adverse effects in the prairie vole offspring. Nothing received during the comment period has made me change my views concerning the teratogenic risk posed by Ferriamicide.

Since my prior decision, I have estimated the dermal exposure received by women exposed to areas treated by ground broadcast. The margin of safety for teratogenicity for such women is 200,000. Assuming the same women received both dermal and dietary exposure, the margin of safety would be 38,000. These margins of safety are more than ample.

(b) Liver Toxicity. Since my July Order, the Agency has addressed the potential risk of liver toxicity which might result from exposure to the Mirex in Ferriamicide. Based on an NOEL derived in a mouse chronic feeding study, the Agency has determined that very ample margins of safety exist with respect to this effect.

I base this conclusion on several factors. First, the experiment in which the NOEL was obtained was a chronic study involving lifetime daily dosing. Even minor effects, such as mild hypertrophy, were not observed until after two months of feeding. This represents approximately eight percent of a mouse's life span, a figure comparable to five and a half years for man, or about ten times longer than Ferriamicide will be available for use. Also, relatively minor hepatic effects are often the first non-specific signs of toxicity in an organism, and are generally considered reversible. Second, mound-to-mound applicators, the group which the Agency projected might have the greatest exposure to Mirex in the Agency's risk assessment scenerios (assuming massive disregard of simple use instructions), would receive a far lower lifetime dose of Mirex than was administered to mice demonstrating only a minor adverse effect. When Ferriamicide is used consistent with the label, the resultant exposure would be significantly less. Third, the population frequenting areas where ground broadcast was permitted would be exposed to a lower dose than the applicators receive and over a smaller proportion of their lifetime than that causing reversible effects in mice. Finally, although the potential human dietary exposure to Mirex most closely resembles the protocol used in the mouse study, the risk involved is not significant because (1) the human daily dose is approximately 50,000 times less than the NOEL observed in the mouse, and (2) the relative shortness of the human dosing period.

(c) Carcinogenicity. Before discussing my cancer risk estimates, I think that it is necessary to comment briefly about quantitative assessment of cancer risk generally, in order to put these estimates in proper perspective. The purpose of quantitative assessments of cancer risk is to provide a crude estimate of the magnitude of the cancer risk as one of the many factors involved in making regulatory decisions. The quantitative risk estimates must be qualified by such factors as inaccuracies in the experimental data, the uncertainties of extrapolating human risk from data on laboratory animals, and the lack of knowledge of the cancer causing mechanisms.[15] It has always been Agency policy to use these estimates with caution, keeping in mind their inherent weaknesses and shortcomings. I have adhered to this approach in my consideration of these estimates in conjunction with this decision.

In my July Order, quantitative cancer risk estimates were developed for two groups: (1) mound-to-mound applicators who cavalierly ignore the directions for use and (2) food consumers, exposed through the diet. Since the July Order, the Agency has developed a quantitative assessment of the cancer risk posed to people entering areas treated by ground broadcast method of application. The Agency's exposure assessment with respect to this group is discussed at page 22 *supra*. In summary, the Agency assumed that adults would have 100 dermal exposure incidents, and that children would have 365 dermal exposure incidents. It was also assumed that a child, in addition to his dermal exposure, would eat ten grains of bait and/or ten teaspoons of treated soil. The estimated lifetime risk of cancer for adults is five in 100 million, for children the estimated lifetime risk of cancer from dermal exposure is three in ten million; from eating the bait, two in one million; and from eating the treated soil, one in ten million. The combined total for a child who has repeated dermal contact, who repeatedly eats treated soil, and who eats ten grains of bait is three in one million. Given the conservativeness of the exposure assumptions, the actual risk of cancer is likely to be much lower than these figures would indicate.

I have also decided to combine totals from different routes of exposure to see whether the cumulative risk is within acceptable limits.[16] For applicators whose exposure is estimated to be for one year, the addition of dermal exposure from visiting treated grounds and dietary exposure makes no significant difference in estimated lifetime risk. The combined figure is 2.3 to 2.8 x 10^{-5}.[17] For adults, the cancer risk of exposure from entering areas treated by ground broadcast plus dietary exposure equals 0.3 to 8 x 10^{-6}. For children, the total estimated lifetime cancer risk due to ground broadcast plus diet equals 5 to 14 x 10^{-6}.

D. *Environmental Risks.* In arriving at the earlier decision to allow emer-

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[15] For a more detailed discussion, see R. E. Albert, R. E. Train, and E. Anderson, *Rationale Developed by the Environmental Protection Agency for the Assessment of Carcinogenic Risks*, Journal of the National Cancer Institute, 58:1537-1541 (1977). See also, *Health Risk and Economic Impact Assessments of Suspected Carcinogens, Interim Procedures and Guidelines*, 41 FR 21402 (May 25, 1976).

[16] I have developed a dietary exposure estimate for both one year and ten years. For the general population, dietary exposure for one year and ten years is estimated to result in 0.031 and 0.81 additional cases of cancer per year, respectively, out of a population of ten million.

The range in the time frame for estimating dietary exposure reflects the uncertainty as to the extent to which Ferriamicide accelerates the degradation of its ingredient Mirex in the environment. The Mississippi Authority estimates the half-life of Mirex to be 14-15 days; degradation would be complete within one year under that assessment. On the other hand, the half-life of Mirex was given as 12 years in the Mirex cancellation hearing, 41 FR 56691 at 56693 (1976).

[17] The estimate given in the July Order was based on women applicators whose risk potential is greater than that for men. Because women applicators were prohibited in the prior Order, this figure is applicable to male exposure.

gency use of Ferriamicide. I concluded that the proposed limited use would not have a significant adverse impact on the environment. Admittedly, Ferriamicide use is of concern because of the persistence, bioaccumulation and toxicity to non-target species of its Mirex component. At the time of my earlier decision, very little experimental data were available specifically relating to Ferriamicide, but what was available indicated that it was less persistent and less toxic to sensitive species than previous Mirex products. Even if one assumed comparable toxicity, the incremental use of Ferriamicide proposed for Mississippi in 1979 is not likely to contribute significantly to the existing environmental levels of Mirex.

During the comment period, one new issue was raised about the impact of Ferriamicide on the total environment. EDF, Friends of the Earth, and the Houston Audubon Society opposed the use of Ferriamicide because of the value of fire ants as effective predators of cotton pests. I find this argument frivolous for several reasons. First, the amount of Ferriamicide covered by the Order is so small, and the period of time it is permitted to be used is so short that its use is highly unlikely to have any effect on the ecological balance of cotton fields, even if all of the Ferriamicide permitted to be used by the Order were used in cotton fields. Second, use of Ferriamicide on agricultural land is limited to mound-to-mound treatment, a most unlikely methodology for the extensive acreages of cotton fields. Consequently, I expect that very little will be used on cotton.

E. *Conclusions Regarding Unreasonable Adverse Effects and Risk Reduction Measures.* The analysis in the foregoing portions of the discussion section and in my previous order establish that the benefits of Ferriamicide are not without their accompanying risks. However, I concluded in my July Order that these risks were lower than the benefits of Ferriamicide use for control of fire ants in large, heavily infested areas, provided that use in such areas was limited in a number of ways to reduce exposure. Accordingly, I concluded that Ferriamicide could be used to respond to the emergency conditions I found to exist in Mississippi without causing unreasonable adverse effects on the environment, provided that the use was severely limited in the ways prescribed in the Order. The supplemental findings on risks and benefits which I am announcing today do not, in my judgment, in any way significantly change the risk or benefit picture. Accordingly, I reaffirm my finding that the severely restricted uses of Ferriamicide permitted by the July Order will not cause unreasonable adverse effects on the environment. I also reaffirm (with the minor exceptions noted below) the risk reduction measures and other conditions imposed by my July Order, since they are integral to my finding that the authorized use of Ferriamicide will not cause unreasonable adverse effects on the environment.

The minor modifications to the terms and conditions of distribution and use which I have decided upon are: (1) The 50-pound bags must contain a label statement prohibiting use more than six weeks after manufacture. (The reasons for this restriction are developed at page 14, above). (2) The total amount of Ferriamicide which may be distributed during what remains of the exemption period is reduced by 20%, to reflect the fact that part of the original exemption period has now elapsed. The amount has not been reduced more, because the period that remains covers the spring of 1979; the spring season is the most active period for fire ant control activities employing bait toxicants, since the ants forage most actively during the spring.

ORDER

In accordance with the Order of July 28, 1978, as modified and amended by the foregoing Opinion, I hereby authorize the Mississippi Authority for the Control of Fire Ants (Mississippi Authority) to distribute and use Ferriamicide bait to control fire ants in Mississippi, subject to the following conditions:

(1) Ferriamicide may be used only to treat actively infested areas. Preventative application is prohibited.

(2) The bait formulation may contain no more than 0.05 percent Mirex.

(3) This authorization expires on June 30, 1979.

(4) The Mississippi Authority, through its county agents, shall be responsible for all distribution of the pesticide product and shall monitor all distribution and use to ensure compliance with the terms of this Order.

(5) The Ferriamicide bait shall be manufactured by the process and with the product composition approved in the July Opinion so as to inhibit the degradation to Kepone and maintain the efficacy of the product (after the package is opened) for at least 10 weeks.

(6) All applications are to be made by either ground broadcast or mound-to-mound application.

(7) Ground broadcasts may be performed in parks, cemeteries, campgrounds and fairgrounds, only by certified applicators using properly calibrated equipment, at a rate of 1 to 2½ pounds of Ferriamicide bait per acre. Rubber or plastic gloves must be worn when applying the product. Applicators shall take care to avoid mouth or eye contact with the pesticide.

(8) Mound-to-mound application must be made at a rate of no more than ¼ ounce of Ferriamicide bait per mound. The measuring spoon which is to be provided with the product shall be used to sprinkle the bait on the mound. The applicator must wear rubber or plastic gloves when applying the product. Applicators must take care to avoid contact of the bait with the mouth or eyes.

(9) Women of child-bearing age are prohibited from applying Ferriamicide.

(10) The Mississippi Authority may not distribute more than 350,000 pounds of Ferriamicide bait for use in Mississippi.

(11) Ferriamicide bait shall be packaged in 1-, 5-, and 50-pound bags. The 5-pound and 50-pound bags are to be made available only to certified applicators for ground broadcast and mound-to-mound application.

(12) The one-pound bags shall be used only for mound-to-mound applications, and may only be distributed to persons who have at least 50 mounds and at least one acre to treat.

(13) Before releasing a one-pound bag, the distributor must ensure that the purchaser reads (or has read to him), fills in and signs the document containing the five cautionary statements as required by the Opinion.

(14) Labels shall contain all provisions necessary to ensure they are consistent with the terms of this Order and Opinion. The labels shall contain the provisions previously approved by EPA, with the following changes:

(a) All labels shall contain the following statement in bold-face type, above the caution statement: "Not to Be Used by Women of Child-bearing Age."

(b) The label of the one-pound package shall state that the product may not be used by any person who has less than one acre and fewer than 50 mounds to treat.

(c) The 50-pound package shall be made up only to order and its label shall include the statement:

"DO NOT USE AFTER———————"

indicating a date not to exceed six weeks after manufacture.

(15) The Mississippi Authority shall submit all reports required by 40 CFR 166.5.

Dated: January 30, 1979.

BARBARA BLUM,
Deputy Administrator,
Environmental Protection Agency.

[FR Doc. 79-5742 Filed 2-26-79; 8:45 am]

[6560-01-M]

[FRL 1065-1; OPP-42002C]

GEORGIA

State Plan for Certification of Commercial and Private Applicators of Restricted Use Pesticides; Approval Status

Section 4(a)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as amended in 1972, 1975, and 1978 (92 Stat. 819; 7 U.S.C. § 136) and the implementing regulations of 40 C.F.R. Part 171, require each State desiring to certify applicators to submit a plan for such purpose, subject to approval by the Environmental Protection Agency (EPA). On June 16, 1975, the Regional Administrator, EPA, Region IV, approved the Georgia Plan on a contingency basis. Notice of the approval was published in the FEDERAL REGISTER on June 25, 1975 (40 FR 26690). Subsequently, the Georgia Pesticide Control Act of 1976, and the Georgia Pesticide Use and Application Act of 1976 became effective January 1, 1977, and Rules of the Structural Pest Control Act were amended effective February 12, 1979. Having reviewed these regulations and finding all requisite legal authorities required by FIFRA and 40 CFR Part 171 are now enacted and promulgated, the Regional Administrator, EPA, Region IV, gives notice that the Georgia State Plan is now a fully approved State Plan.

Dated: February 20, 1979.

JOHN C. WHITE,
Regional Administrator,
Region IV.

[FR Doc. 79-5744 Filed 2-26-79; 8:45 am]

[6560-01-M]

[FRL 1064-3; OPP-62002A]

HERBICIDES: DINITRO TECHNICAL AND ANCRACK HERBICIDE

Extension of Comment Period

By FEDERAL REGISTER notice dated November 1, 1978 (43 FR 50965), the Administrator announced his intent to hold a hearing under section 6(b)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (FIFRA), to determine whether or not the registrations of the herbicides Dinitro Technical, EPA Reg. No. 148-1213, and Ancrack Herbicide, EPA Reg. No. 19713-23,[1] should be cancelled.

The deadline for filing written responses accompanying the notice was December 1, 1978. The deadline for filing such responses is hereby extended to April 1, 1979.

Dated: February 15, 1979.

STEVEN D. JELLINEK,
Assistant Administrator
for Toxic Substances.

[FR Doc. 79-5745 Filed 2-26-79; 8:45 am]

[6560-01-M]

[FRL 1065-2]

SAFE DRINKING WATER ACT

Review of Variances and Exemptions

Notice is hereby given that pursuant to sections 1415(a)(1)(F) and 1416(d) of the Safe Drinking Water Act, the Environmental Protection Agency, Region I, has completed a comprehensive review of variances and exemptions issued (and schedules prescribed pursuant thereto) during the period June 24, 1977 through June 23, 1978 by the Connecticut Department of Health and the Maine Department of Human Services.

EPA found that all variances and exemptions reviewed were issued under conditions and in a manner no less stringent than the conditions under which variances and exemptions may be granted under Sections 1415 and 1416 of the Safe Drinking Water Act and in no case has either State abused its discretion in the issuance of variances and exemptions during the stated review period. EPA Received no comments concerning variances and/or exemptions during the 30-day comment period.

Dated: February 5, 1979.

REBECCA W. HANMER,
Deputy Regional administrator.

[FR Doc. 79-5796 Filed 2-26-79; 8:45 am]

[6560-01-M]

[FRL 1064-8; OPP-180172F]

USE OF FERRIAMICIDE IN MISSISSIPPI

Supplemental Opinion and Order, Under § 18 of the Federal Insecticide, Fungicide, and Rodenticide Act

The Mississippi Authority for the Control of Fire Ants (Mississippi Authority or Authority) has applied for an emergency exemption under Section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (FIFRA), 7 U.S.C. 136p, to distribute and use an unregistered pesticide called Ferriamicide for the control of imported fire ants in Mississippi. This Opinion and Order constitute final Agency action by EPA on the Mississippi Authority's application.

I. BACKGROUND

On July 28, 1978, I issued an Opinion and Order (July Order) granting in part and denying in part Mississippi's request for a Section 18 exemption to distribute and use Ferriamicide for the control of imported fire ants.[2] The fire ants pose a serious problem due to their painful bites and the interference their mounds create for agricultural operations. As developed extensively in my July Order, and the earlier March 8, 1978 document,[2] the fire ant problem was exacerbated by the voluntary cancellation of previous formulations of Mirex, which had been used effectively to control fire ants in some situations. The Mississippi Authority developed Ferriamicide, a product whose active ingredient is Mirex, as an alternative which is effective against fire ants but less persistent than Mirex in the environment than previous formulations. My July Order permitted the limited use of Ferriamicide under the following stringent conditions:

1. The bait formulation could contain no more than 0.05 percent Mirex.
2. Ground broadcast was permitted in parks, cemeteries, schoolyards, campgrounds and fairgrounds but only by certified applicators.
3. Mound-to-mound applications were allowed on all other lands (including agricultural lands). Bags of Ferriamicide were to be distributed only to persons who had at least 50 mounds and at least one acre to treat. These persons also were required to read and sign a form containing several warnings before Ferriamicide could be distributed to them.
4. Women of child-bearing age were prohibited from applying Ferriamicide under all circumstances; and certain other conditions were required to be specified on the labeling of the pesticide.
5. Mississippi's request to permit aerial broadcast of the pesticide was denied.

The Environmental Defense Fund (EDF) filed an action in the United States District Court for the District of Columbia asserting that for various reasons the Agency should be enjoined from allowing the Authority to use Ferriamicide. The Court heard oral ar-

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[1] Dow Chemical Co., in two petitions dated August 8, 1977, and March 29, 1978, petitioned the Administrator for cancellation of the registrations of the herbicides Dinitro Technical and Ancrack Herbicide, respectively. On January 8, 1979, Dow withdrew its March 29, 1978 petition for cancellation of Ancrack Herbicide.

[1] The Agency has received requests for Section 18 exemptions to combat the fire ant problem from a number of other Southern states. The Agency is reviewing each application separately and will issue its decisions in due course.

[2] The March 8 document, which authorized the use of Ferriamicide, was not a final order because it left unresolved several issues concerning the terms and conditions under which Ferriamicide could be used.

Site: Alt Fly
Break: 17.7
Other:

gument and received extensive briefing on the issues raised. On September 27, 1978, the Court issued a decision granting summary judgment for the Agency on several issues. 458 F. Supp. 650 (D.D.C. 1978). The Court sustained the Agency finding that the fire ant infestation in Mississippi constituted an "emergency" under Section 18, and granted summary judgment as to the Agency's compliance with the National Environmental Policy Act, 42 U.S.C. 4331 *et seq.*, and EPA's alleged consideration of improper political factors.[4]

However, the Court remanded the case to the Agency after finding the decision procedurally defective because the Agency considered certain documents without making them available for public adversarial comment. This decision was based on the Court's finding that the Ferriamicide decision was informal rulemaking and therefore subject to notice and comment procedures under the Administrative Procedure Act, 5 U.S.C. 553. The Court found that the notice published on December 28, 1977, served to formally close the administrative record as of January 23, 1978, and that documents received after that time, but not made available for public comment, constituted improper *ex parte* communications.

The Court stated that if EPA should wish to consider the Authority's application further, it would have to (1) publish in the FEDERAL REGISTER notice of a new comment period, which need not be longer then 10 days, during which interested persons could comment on the documents received by the EPA since January 23, 1978, and introduce any new information relevant to the issues still remaining open; and (2) establish and maintain a file for public inspection with respect to Mississippi's application, containing all material which had been submitted to the Court by the parties and all information which would be received by the Agency during the new comment period.

Although the Agency does not agree with the Court's determination that actions taken under section 18 of FIFRA are subject to the requirements of 5 U.S.C. 553,[4] it decided that proceeding in accordance with the Court's decision would lead to the most expeditious resolution of the still-open issues. Therefore, on October 17, 1978, EPA published a notice reopening the comment period on Mississippi's application, inviting public inspection of all documents which had been submitted and allowing ten days for receipt of additional comments. 43 FR 47774. Because additional information was received after the closing of the re-opened comment period, the Agency announced in the FEDERAL REGISTER on December 27, 1978 that it was providing an additional opportunity for comment which was to terminate on January 3, 1979. 43 FR 60534.[5]

During the period following my July decision, additional information on alternatives to Ferriamicide, the efficacy of Ferriamicide, and the risks of Ferriamicide use has come to the attention of the Agency. This information will be discussed in detail below.

II. THE LEGAL STANDARD

Section 18 allows the Administrator, "to use his discretion" to exempt any federal or state agency from FIFRA requirements "if he determines that emergency conditions exist which require such exemption." Before awarding a Section 18 exemption, the Administrator must make two findings: first that "emergency conditions exist," and second, that the proposed emergency use would not result in unreasonable adverse effects on the environment. This interpretation of the legal test has the approval of the District Court for the District of Columbia. *EDF* v. *Blum, et. al., supra*, 458 F. Supp. at 657.

III. SUPPLEMENTAL FINDINGS

In my July decision I found that "emergency conditions" exist in areas of Mississippi which are heavily infested with fire ants. As discussed extensively therein, I found that fire ants pose serious health and economic problems in Mississippi and that no effective alternative treatment exists for large and heavily infested areas. The District Court sustained, as having a rational basis, my determination that the fire ant problem created "emergency conditions" in Mississippi, within the meaning of Section 18 of FIFRA.

I further concluded that permitting the use of Ferriamicide subject to stringent conditions would not cause unreasonable adverse effects on the environment. I found that Ferriamicide would prove beneficial against the fire ant problem since it was both efficacious and practical to apply in areas of heavy and widespread infestation. Since I recognized that the compound posed a risk of carcinogenic and teratogenic effects, I endeavored to eliminate the risk to humans from two exposure routes: dietary exposure and normal exposure from mound-to-mound application if use directions were completely ignored. I concluded that the cancer risk was very low and could be held to an acceptable level by, as described *supra*, limiting the areas of permissible application and by placing restrictions on application methods. I reduced the teratogenic risk by barring women of child-bearing age from serving as applicators.

Based on the information contained in my July Order, as well as the information that has come to my attention since the July Order, I reaffirm my conclusion that "emergency conditions" exist in Mississippi areas with heavy fire ant infestation, for the reasons stated in the discussion section which follows.

Concerning the benefits of Ferriamicide, the new information coming to my attention has reinforced my conclusion that Ferriamicide will prove efficacious against fire ants. In addition, I reaffirm my conclusion that Ferriamicide is the only compound which is practical to apply in areas of widespread and heavy infestation.

Concerning the hazards of Ferriamicide use, information has come to my attention indicating that this compound poses a risk of liver toxicity and adverse environmental effects, in addition to the oncogenic and reproductive effects considered in my July decision. I have concluded, for the reasons stated in the discussion section, that these additional toxic effects do not create a problem requiring restrictions beyond those imposed in my July Order to reduce the potential of reproductive and carcinogenic adverse effects.

In addition, the Agency staff has developed reasonable worst-case exposure estimates and quantitative risk estimates for persons frequenting areas where ground broadcast was permitted in my July decision. For the reasons discussed *infra*, I have concluded that the risks from applicator exposure, dietary exposure, and ground broadcast exposure can be brought to an acceptable level by the risk reduction measures directed by my July Order.

Accordingly, I have concluded that permitting the use of Ferriamicide subject to the stringent conditions imposed in the July Order would not cause unreasonable adverse effects to humans and the environment. I

[3]EDF filed a notice of appeal on these issues on September 28, 1978.

[4]For a detailed discussion on the Agency's position on this issue, See, 43 FR 47774 (October 17, 1978). In broad summary, the Agency believes that a section 18 exemption is a license and hence falls into the category of an "order," which is defined in the Administrative Procedures Act as final Agency disposition, "other than rulemaking but including licensing." 5 U.S.C. 551.

[5]Following receipt of a submission from Mississippi during the re-opened comment period the Agency requested Mississippi's underlying supporting data, which Mississippi forwarded to the Agency, with copies to EDF, the public interest group most involved in the proceeding. EDF in turn requested the Agency to re-open the comment period to allow it to respond. Thereafter, EPA gave EDF advance notice by hand delivered mail on December 21 that a second re-opening of the comment period would be announced shortly in the FEDERAL REGISTER.

hereby reaffirm the terms of my July Order in all respects, except that I am reducing the amount of Ferriamicide which can be distributed and used by 20 percent. This reduction reflects the fact that one of the two fire ant treatment periods covered by the one-year exemption approved in my July Order has already passed, leaving only Spring 1979 for fire ant treatment with Ferriamicide. Additionally, I am requiring that the label specify that 50-pound bags of Ferriamicide must not be used more than six weeks after manufacture, in order that the pesticide not become sufficiently rancid that its effectiveness as a pesticide is diminished to the point where the benefits no longer outweigh the risks.

IV. Discussion

A. Alternatives to Ferriamicide

In my July Order I concluded that no effective alternative treatment exists for large, heavily infested areas. Since that time no alternatives have been registered that are feasible for use in areas of heavy infestation, and no commentor has uncovered any feasible registered alternatives that I had overlooked. Mound drenches, for the reasons discussed in my July Order, are not feasible alternatives for areas with heavy infestation.

Several commentors urged the Agency to consider a number of unregistered pesticides as alternatives to Ferriamicide. Most of the materials suggested are, like Ferriamicide, pesticides which are still under development; some of them have shown promise in preliminary testing.* However, in order for any of them to fairly qualify as an alternative, there must be a sound basis for concluding that the material could be made available to deal with the fire ant problem in Mississippi *this spring*. In fact, the record suggests no basis for concluding that any of these materials could be made available.

First, no one has asked, or indicated even an *inclination* to ask for permission to distribute any of these materials on anything but a very limited basis, pursuant to experimental use permits. Since the Agency itself is not a producer of pesticides, the absence of a willing producer is by itself a telling blow to consideration of any of these materials as a Ferriamicide substitute in Mississippi this spring. Second, the information in the Agency's possession about the risks and benefits of these materials is so inadequate that it is not possible to predict whether the Agency could find that the benefits associated with the use of any of these materials as a substitute for Ferriamicide outweighed the risks associated with the use of the compound. Thirdly, the lead time necessary to obtain required regulatory clearances and produce and distribute a pesticide is sufficiently long that even an open invitation from the Agency to submit applications for permission to distribute one or more of these materials would not, as a practical matter, place an alternative in the hands of users in Mississippi in time to treat for fire ants this spring.

Finally, any implication that the fire ant problem addressed by the exemption granted in my July Order can wait for a solution until one of the suggested alternatives is available simply misses the point—as I stated in my July Order, and reiterate now, use of Ferriamicide to resolve that problem is only acceptable if the risks associated with use of Ferriamicide for this purpose are lower than the benefits. I found in July (and reiterate today) that the benefits are greater than the risks. If I had concluded then or now that the risks associated with Ferriamicide use were greater than the benefits, then it would have been necessary to leave the problem unresolved until another material offering an acceptable balance between risk and benefits became available. However, if Ferriamicide can be used on a limited basis this spring, subject to severe restrictions, and the benefits of this use outweigh its risks, the fact that another less risky compound may be available next year or the year after is simply irrelevant.

B. Efficacy of Ferriamicide

As noted in my July 28 decision, the main benefits of Ferriamicide are its ease of application in large areas of heavy infestation and its anticipated effectiveness. The conclusion in my July Order that Ferriamicide would be effective against fire ants was based primarily on the knowledge that its active ingredient, Mirex, is effective against fire ants. The low Mirex content in Ferriamicide is made more efficacious by the specific formulation and packaging proposed by the Mississippi Authority, which accelerate photodegradation and maintain attractiveness to insects by retarding rancidity. In addition, the resemblance of Ferriamicide bait to ant foodstuff enhances its efficacy. Foraging ants are likely to carry the poison into the mount where the bait may be fed to other members of the colony, including the queen, with the result being the eventual destruction of the mound. During the comment periods, the additional information discussed below pertinent to efficacy was received, but my [illegible] conclusion that Ferriamicide is effective against fire ants remains unchanged. Hence, I reaffirm my findings about the efficacy of Ferriamicide.

The United States Department of Agriculture has advised EPA that of all the materials tested to date, Ferriamicide is the most effective [illegible] for the 4X and 10-5 Mirex formulations for fire ant control. At present no field trial data are available to demonstrate the efficacy of Ferriamicide applied either by mound application or by ground broadcast. However, the Mississippi Authority has reported the results of field trails resulted in a 90 percent mound reduction; the Mississippi field trials resulted in an 87.2 percent mound reduction.

EDF has asserted that the field trials do not support my July Order for three reasons: (1) because the formulation used was an old formulation, that is, one different from the one now proposed for use; (2) because aerial broadcast is prohibited by my July Order; and (3) because the one pound application rate used in the trials is lower than the 2½ pounds per acre permitted by my order. I find EDF's criticisms unpersuasive. Regarding the change in formulation, the new formulation contains the same amount of Mirex, mixed with other chemicals to inhibit degradation to Kepone and rancidity. As a result, the new formulation is expected to be more, not less, efficacious than the old formulation. EDF's criticism of the method of application also misses the mark. Put simply, a study using aerial application to show Ferriamicide is efficacious may fairly be used to show Ferriamicide would be efficacious if applied by a method producing approximately the same distribution of the matterial (ground broadcast) or by a more accurate technique (mound to-mound application). EDF's third contention, in effect, is that if the field trials are a fair predictor of the efficacy of the current formulation of Ferriamicide applied by ground broadcast, then I have permitted an application rate (2½ lbs/acre) which is 2½ times higher than necessary, because the field trials demonstrated that 1 lb/acre was efficacious. This argument is superficially appealing. However, it overlooks the fact that trials are generally run under specialized conditions. Consequently, the results do not reflect differences in efficacy which can be caused by variation in terrain

*The pesticides currently under development which were suggested included: American Cynamid's AC 217,300, the polymer toxicants Trichlorfon and Dipterex, Ciba-Geigy's insect growth regulator, Eli Lilly's skeletal inhibitors, a pathogenic yeast product, Stouffer's WV-675, fire ant queen pheromone and parasitic mites.

A bait formulation of Dursban was also suggested. I reject this as an alternative because the Agency has declined to register this pesticide due to deficiencies in the required pre-registration studies which make it impossible to evaluate the efficacy and stability of the product.

and ground cover. Accordi it is appropriate to permit somewhat higher *maximum* application rates, to compensate for variations in these factors at application sites. Furthermore, the prenat broadcast equipment does not cover one acre evenly when calibrated to distribute one lb/acre. Since even distribution is important, higher application rates are allowed to permit its achievement.[7]

C. HUMAN HEALTH RISKS

As explained in my July Order, there are two key components to a risk assessment: (1) assessment of the *toxicological properties* of a chemical; and (2) assessment of *exposure* to the chemical. The risk assessment itself is a summation of the conclusions in each of these areas. Each component has a key bearing on the conclusion.

For example, a highly toxic chemical may pose low risks if exposure is low; conversely, a compound of low to moderate toxicity may pose high risks if exposure is high. Since the toxic properties of a chemical are rarely alterable, most efforts at chemical regulation involve attempts to control exposure, either by eliminating exposure altogether (by an outright ban on the chemical) or by reducing exposure through regulatory controls short of an outright ban.

The active ingredient in Ferriamicide is Mirex. Ferriamicide, however, differs from previous formulations of Mirex in two key ways, both of which reflect attempts to reduce *exposure* to Mirex, and thereby reduce the risks posed by the pesticide. First, Ferriamicide contains significantly less Mirex than previous bait formulations of Mirex.[8] Second, Ferriamicide contains chemicals (ferrous chloride and propylene glycol) intended to accelerate the degradation of Mirex in the environment. If this can be accomplished, many exposure opportunities can be eliminated. However, as indicated in my July Order, the extent to which Ferriamicide in fact accelerates environmental degradation of Mirex remains an unanswered question.

The Agency's risk assessment of Ferriamicide has focused on Mirex and Kepone, a contaminant or degradation product. In the risk assessment contained in my July Order, I assumed that Ferriamicide was no more toxic than Mirex and that the amount of Kepone involved would not be a threat to the environment. I have found no reason to alter this approach.[9] However, additional information bearing on both toxicity and exposure has come to my attention; this information is discussed and assessed below:

1. Toxicity

In my earlier decision, carcinogenicity and teratogenicity were considered the primary areas of toxicological concern related to Mirex exposure. Since that time, new information has become available which indicates that chronic liver toxicity should also be considered.

(a) Teratogenicity. In my prior decision, I concluded that prenatal exposure to Mirex could result in teratogenicity. New experimental information has become available since then, the weight of which serves to reinforce my earlier finding. The new information showed: (1) Exposure to Mirex during gestation has been shown to result in irregular cardiovascular physiology in rat fetuses, as measured by electrocardiogram analysis. (2) Neonatal exposure to Kepone was found to induce precocious vaginal opening, persistent vaginal estrus and anovulation in rats, indicating estrogenic activity by the pesticide. Mirex did not show similar activity.

The Agency used a study demonstrating the behavorial abnormalities in the offspring of prairie voles fed 0.1 ppm (0.15 mg/kg) as establishing a base line for estimating the teratogenic risk to humans from Mirex exposure. The Mississippi Authority disputed my reliance on the prairie vole study, contending that the study demonstrated no observable effect level (NOEL) at 0.1 ppm for reproductive performance. However, the Authority's argument is invalid, because it ignores the behavorial impairment observed at 0.1 ppm. Accordingly, I believe the Agency properly regarded the 0.1 ppm level as an *effect level*, not a no effect level, for purposes of assessing the teratogenic risk of Mirex. Moreover, the position of the Authority appears to assume that the vole study was the only data supporting the Agency's conclusions regarding teratogenicity. This is incorrect, since the Agency also relied on a recent study on the Swiss mouse which demonstrated significant adverse effects in offspring due to maternal exposure to Mirex.

The possibility of teratogenic effects stemming from male exposure to Mirex was raised by EDF and Rachel Carson Trust. EDF cited a recent article in *Science*,[10] which suggested three possible mechanisms of action for a hypothetical chemical: (1) damage to the sperm itself, (2) transfer to the female system in the semen and (3) as a secondary effect to some other action in the male. The cited article is not an experimental report about a specific compound and only discusses, in a general fashion, a possibility of what the author himself considered a minor contributor to birth defects. While the Mirex data do not definitively rule out the possibility that the fetal effects observed were caused by exposure to the male voles, there is strong evidence to suggest that the effects in fact were caused by maternal exposure, which is of course the typical route of exposure for fetal effects.[11]

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[7] In light of a comment by EDF, I am modifying my order to require that 50-pound bags not be used more than six weeks after manufacture, in order to insure that the product not become rancid to a level where its effectiveness as a fire ant control is decreased. EDF questioned why the 50-pound bag, unlike the one- and five-pound bags, is not required to have oxygen free packaging, since oxygen free packaging increases the shelf life of the product by retarding rancidity. While oxidation is not expected to be a serious problem with the 50-pound bags because they are to be custom manufactured on advance notice, the problem can be minimized by having the bags labeled with an expiration date not to exceed the point at which an unacceptable level of oxidation begins. Based on shelf life studies conducted by USDA, six weeks from date of manufacture seems a reasonable estimate of that point.

[8] There were eight previously registered formulations of Mirex. Of these, seven contained twice as much Mirex as Ferriamicide. The remaining formulation contained 50 percent more Mirex than Ferriamicide. Compare 41 FR 56894, 56897 (December 29, 1976) with 43 FR 47774, 47786 (October 17, 1978).

[9] Since Kepone is one of the degradation products of Mirex, the use of Ferriamicide will result in the introduction of some Kepone into the environment. Whether the Kepone is a degradation product (i.e., produced by decomposition of Mirex in the environment after the use of Ferriamicide) or a contaminant (i.e. produced by decomposition of Mirex before the use of Ferriamicide) makes little difference.

For risk assessment purposes, I have concluded that Kepone's contribution to the overall risk posed by Ferriamicide is negligible. First, the Ferriamicide use which I have authorized will result in only a miniscule amount of Kepone going into the environment. The formulation of Ferriamicide has been adjusted to inhibit degradation to Kepone; data produced by the Authority show that the amount of Kepone produced after degradation of Ferriamicide is 0.5 percent of the amount of Mirex contained in the Ferriamicide sample. Since the total amount of Ferriamicide authorized to be distributed will contain only 168 pounds of Mirex, only a very small amount of Kepone will be introduced into the environment.

Moreover, the toxicity of Kepone is generally comparable to the toxicity of Mirex. Their no observed effect levels for chronic effects other than cancer are comparable; therefore for the same amount of exposure their respective margins of safety are similar. Both chemicals are carcinogenic in rodent test systems. Kepone apparently produced a somewhat stronger positive response; however, for quantitative risk extrapolation purposes both compounds would produce risk estimates which are within the same order of magnitude, assuming comparable exposure.

[10] *Teratogens Acting Through Males*, Science, 202:733 (November 17, 1978).

[11] For example, there is strong evidence from maternal feeding studies that Mirex crosses the placenta, accumulates in fetal

Footnotes continued on next page

The fact that the data establish a direct link between maternal exposure and birth defects magnifies, in my judgment, the speculative nature of the hypothesis that there is a secondary cause of birth defects, and permits the Agency to disregard this hypothesis as a basis for regulatory action.

(b) Liver Toxicity. Liver toxicity was not included in the Agency's prior hazard assessment. Since that time, information has become available which indicates that exposure to Mirex could result in chronic liver toxicity. In a mouse feeding study, exposure to Mirex resulted in the development of nodules, hypertrophy (with ground-glass appearance of the cytoplasm), altered histochemistry, ultrastructural changes and cell death. The development of nodules may be particularly significant observation, since the liver is the target organ in Mirex induced carcinogenicity. Some of the effects were observed as early as two months after initiation of exposure. The NOEL for these effects appears to be 1 ppm (150 ug/kg).[17]

(c) Carcinogenicity. In my previous decision, I concluded that the evidence from experimental sutdies was sufficient to show that exposure to Mirex could potentially result in an increased incidence of cancer in man. Since that time, the Mississippi Authority has questioned the carcinogenic potential of Ferriamicide and has submitted information to the Agency which showed that Ferriamicide gave negative results in the Ames test. EDF challenged these results as insufficient to prove that Ferriamicide is not mutagenic or carcinogenic. I have been advised by Agency scientists that it is well known that chlorinated hydrocarbons often give false negatives in the Ames test, while giving postive mutagenic or carcinogenic results in laboratory animals. Accordingly, I conclude that the information submitted by the Authority is not a bsisis for reversing my assessment of carcinogenicity, and I threre fore reaffirm my finding that exposure to Mirex could result in cancer.

2. Exposure

My July Order contained detailed exposure estimates for two routes of exposure to Mirex resulting from the use of Ferriamicide: mound-to-mound application (assuming total disregard of simple use instructions) and in the diet of the general public. During the comment period, I did not receive information pertaining to these routes of exposure requiring revision.

In my July Order, I concluded that ground broadcast could be permitted in parks, playgrounds, and other locations specified in my decision because exposure from that use pattern would be low. This judgment has been confirmed by a worst-case exposure analysis prepared by the Agency staff covering the general population frequenting areas where ground broadcast is allowed.

In deriving its worst-case estimates of possible exposure to Ferriamicide, the Agency made very conservative assumptions about the ways in which people could become exposed to Ferriamicide and the amount of the pesticide to which people would be exposed. For example, in estimating the exposure of mound-to-mound applicators the Agency assumed that the pesticide would be seriously misused. Since the exposure numbers developed rest on very conservative assumptions, the actual exposure could well be lower than the exposure estimates would indicate. Figures based heavily on hypothesis and modeling, as projected exposure estimates often are, have many uncertainties about them. Nevertheless, they are useful in providing a rough measure of the potential exposure from an emergency pesticide exemption.

The Agency's exposure estimate for ground broadcast application is explained in detail in several memoranda which are part of the administrative record concerning this application. In broad summary, the estimate assumes that with uniform mixing, the concentration of Mirex arising from application of 2½ pounds of Ferriamicide per acre is 3.8 ppb in the top one inch of soil. The Agency then assumed that a person visiting treated grounds would have his skin exposed to about one teaspoon or ten grams of soil per day. If 10% of the toxicant were absorbed into the body, the Agency estimated dermal exposure to Mirex as 3.75 ng per day. The Agency also considered the possibility that some small children would put foreign particles in their mouths. Ingestion of one teaspoon of soil was estimated to result in exposure to 43 ng of Mirex; ingestion of 1 grain of bait directly would result in exposure to 1 ug of Mirex. Thus a child coming into both dermal and oral contact with treated soil would be exposed to 46.75 ng. If a child having dermal exposure to the soil, also ate a grain of bait, his exposure would be 1004 ng.

The Mississippi Authority submitted its own evaluation of dermal exposure to children resulting from ground broadcast application. It estimated that broadcast at 2½ pounds per acre would produce a concentration of 15 granules per square feet, with a total amount of toxicant equal to 12.5 ug per square foot. Assuming that with a single dermal exposure a child might absorb 10 percent of the toxicant from 100 square feet of ground, the resultant exposure estimate was 125 ng.[18] The dermal exposure estimate submitted by the Authority, which is larger than the Agency's dermal estimate by factor of 33,000, represents an improbable situation. In effect, the Authority's model assumes that a child, in a single episode, could expose his skin to every grain of bait in a 100 square foot area; that all of the toxicant in each grain of bait would come into contact with the skin; and that 10 percent of this toxicant would be absorbed through the skin and into the child's system. The Agency worst-case estimates have assumed that 10% of the toxicant coming into contact with the skin would be absorbed and accordingly concurs in Mississippi's apparent use of this factor to represent the efficiency of the skin as an absorption membrane.[19] However, assuming that even a totally naked child could have its skin come into contact with 100% of the bait in a 100 square foot area, and that all the toxicant on the bait would come into contact with the skin is simply absurd. Comparing the Authority's figure with the Agency worst-case estimate for mound-to-mound applicators further demonstrates its improbability. There, the Agency assumed that the applicator did not wear gloves and handled a full pound of Ferriamicide with his bare hands. The amount of Ferriamicide on the treated soil for the child to absorb under the Authority's hypothesis is 175 times less than the amount of Ferriamicide in the one-pound bag handled by the applicator, under the Agency's hypothesis. Nevertheless, the Authority's analysis results in exposure that is one half that of an applicator blatantly violating his instructions.

For these reasons, the Agency has decided not to give credit to the Mississippi Authority dermal exposure estimates. While the Agency is conserva-

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tissue and cuases fetal abnormalities. See, Khera, K.S. et al., *Mirex: A Teratogenicity, Dominant Lethal and Tissue Distribution Study in Rats*, Fd. Cosmet. Toxicol., 14:25-29 (1976); Gaines, T.B. and R.D. Kimbrough, *Oral Toxicity in Mirex in Adult and Suckling Rats*, Arch. Environ. Health, 21: 7-14 (1970).

[17] Fluffs, Jon et al., *Species Differences in the Hepatic Response to Mirex: Ultrastructural and Histochemical Studies*, Ecotox. and Environ. Safety, 1:327-342 (1977).

[18] The figures submitted by the Authority have been corrected to reflect the maximum allowable application rate. The Authority had assumed that only one pound of bait would be applied per acre. The maximum rate allowed by the agency's order is 2½ pounds per acre.

[19] The Agency has used this 10% as a factor in the past in estimating dermal exposure to applicators of liquid sprays. We regard it as a conservative estimate of the efficiency of skin as an absorption membrane for liquids. Necessarily, it is even more conservative an estimate for a dry formulation like Ferriamicide bait.

tive in estimating potential exposure, it considers the Authority's estimate to be absurdly unrealistic. The Agency has a responsibility to make sound regulatory decisions. Responsible decision-making cannot be based on risk/benefit analyses which rest on fanciful assumptions.

3. Risk Estimates

Any adverse impact ascribed to the use of Ferriamicide must be tempered by the knowledge that Ferriamicide is authorized for less than a year, and that in most instances exposure will not be on a daily basis. Furthermore, the incremental risks due to the allowed amount of Ferriamicide containing 108 pounds of Mirex are negligible when compared to the baseline risks resulting from the past years of extensive and largely indiscriminate use of Mirex in Mississippi.

In my July Order, estimates were given for the teratogenic and carcinogenic risks to mound-to-mound applicators who would be dermally exposed to Ferriamicide. In addition, the carcinogenic risk to the general population from dietary exposure was given. Since that time, the Agency has developed risk estimates which include oral (non-dietary) and dermal exposure resulting from ground broadcast application.

(a) Teratogenicity. In my July Order, I concluded that there was no real margin of safety of pregnant applicators misusing Ferriamicide, because the estimated exposure was only one-third of the dose which caused adverse effects in the prairie vole offspring. Nothing received during the comment period has made me change my views concerning the teratogenic risk posed by Ferriamicide.

Since my prior decision, I have estimated the dermal exposure received by women exposed to areas treated by ground broadcast. The margin of safety for teratogenicity for such women is 200,000. Assuming the same women received both dermal and dietary exposure, the margin of safety would be 38,000. These margins of safety are more than ample.

(b) Liver Toxicity. Since my July Order, the Agency has addressed the potential risk of liver toxicity which might result from exposure to the Mirex in Ferriamicide. Based on an NOEL derived in a mouse chronic feeding study, the Agency has determined that very ample margins of safety exist with respect to this effect.

I base this conclusion on several factors. First, the experiment in which the NOEL was obtained was a chronic study involving lifetime daily dosing. Even minor effects, such as mild hypertrophy, were not observed until after two months of feeding. This represents approximately eight percent of a mouse's life span, a figure comparable to five and a half years for man, or about ten times longer than Ferriamicide will be available for use. Also, relatively minor hepatic effects are often the first non-specific signs of toxicity in an organism, and are generally considered reversible. Second, mound-to-mound applicators, the group which the Agency projected might have the greatest exposure to Mirex in the Agency's risk assessment scenerios (assuming massive disregard of simple use instructions), would receive a far lower lifetime dose of Mirex than was administered to mice demonstrating only a minor adverse effect. When Ferriamicide is used consistent with the label, the resultant exposure would be significantly less. Third, the population frequenting areas where ground broadcast was permitted would be exposed to a lower dose than the applicators receive and over a smaller proportion of their lifetime than that causing reversible effects in mice. Finally, although the potential human dietary exposure to Mirex most closely resembles the protocol used in the mouse study, the risk involved is not significant because (1) the human daily dose is approximately 50,000 times less than the NOEL observed in the mouse, and (2) the relative shortness of the human dosing period.

(c) Carcinogenicity. Before discussing my cancer risk estimates, I think that it is necessary to comment briefly about quantitative assessment of cancer risk generally, in order to put these estimates in proper perspective. The purpose of quantitative assessments of cancer risk is to provide a crude estimate of the magnitude of the cancer risk as one of the many factors involved in making regulatory decisions. The quantitative risk estimates must be qualified by such factors as inaccuracies in the experimental data, the uncertainties of extrapolating human risk from data on laboratory animals, and the lack of knowledge of the cancer causing mechanisms.[15] It has always been Agency policy to use these estimates with caution, keeping in mind their inherent weaknesses and shortcomings. I have adhered to this approach in my consideration of these estimates in conjunction with this decision.

In my July Order, quantitative cancer risk estimates were developed for two groups: (1) mound-to-mound applicators who cavalierly ignore the directions for use and (2) food consumers, exposed through the diet. Since the July Order, the Agency has developed a quantitative assessment of the cancer risk posed to people entering areas treated by ground broadcast method of application. The Agency's exposure assessment with respect to this group is discussed at page 12 *supra*. In summary, the Agency assumed that adults would have 365 dermal exposure incidents, and that children would have 365 dermal exposure incidents. It was also assumed that a child, in addition to his dermal exposure, would eat ten grains of bait and/or ten teaspoons of treated soil. The estimated lifetime risk of cancer for adults is five in 100 million. For children the estimated lifetime risk of cancer from dermal exposure is three in ten million; from eating the bait, two in one million; and from eating the treated soil, one in ten million. The combined total for a child who has repeated dermal contact, who repeatedly eats treated soil, and who eats ten grains of bait is three in one million. Given the conservativeness of the exposure assumptions, the actual risk of cancer is likely to be much lower than these figures would indicate.

I have also decided to combine totals from different routes of exposure to see whether the cumulative risk is within acceptable limits.[16] For applicators whose exposure is estimated to be for one year, the addition of dermal exposure from visiting treated grounds and dietary exposure makes no significant difference in estimated lifetime risk. The combined figure is 2.3 to 2.8 x 10^{-6}.[17] For adults, the cancer risk of exposure from entering areas treated by ground broadcast plus dietary exposure equals 0.3 to 8 x 10^{-6}. For children, the total estimated lifetime cancer risk due to ground broadcast plus diet equals 5 to 14 x 10^{-6}.

D. *Environmental Risks.* In arriving at the earlier decision to allow emer-

[15] For a more detailed discussion, see R. E. Albert, R. E. Train, and E. Anderson, *Rationale Developed by the Environmental Protection Agency for the Assessment of Carcinogenic Roles*, Journal of the National Cancer Institute, 58:1537-1541 (1977). See also, *Health Risk and Economic Impact Assessments of Suspected Carcinogens, Interim Procedures and Guidelines*, 41 FR 21402 (May 25, 1976).

[16] I have developed a dietary exposure estimate for both one year and ten years. For the general population, dietary exposure for one year and ten years is estimated to result in 0.081 and 0.81 additional cases of cancer per year, respectively, out of a population of ten million.

The range in the time frame for estimating dietary exposure reflects the uncertainty as to the extent to which Ferriamicide accelerates the degradation of its ingredient Mirex in the environment. The Mississippi Authority estimates the half-life of Mirex to be 14-15 days; degradation would be complete within one year under that assessment. On the other hand, the half-life of Mirex was given as 12 years in the Mirex cancellation hearing, 41 FR 56691 at 56693 (1976).

[17] The estimate given in the July Order was based on women applicators whose risk potential is greater than that for men. Because women applicators were prohibited in the prior Order, this figure is applicable to male exposure.

gency use of Ferriamicide. I concluded that the proposed limited use would not have a significant adverse impact on the environment. Admittedly, Ferriamicide use is of concern because of the persistence, bioaccumulation and toxicity to non-target species of its Mirex component. At the time of my earlier decision, very little experimental data were available specifically relating to Ferriamicide, but what was available indicated that it was less persistent and less toxic to sensitive species than previous Mirex products. Even if one assumed comparable toxicity, the incremental use of Ferriamicide proposed for Mississippi in 1979 is not likely to contribute significantly to the existing environmental levels of Mirex.

During the comment period, one new issue was raised about the impact of Ferriamicide on the total environment. EDF, Friends of the Earth, and the Houston Audubon Society opposed the use of Ferriamicide because of the value of fire ants as effective predators of cotton pests. I find this argument frivolous for several reasons. First, the amount of Ferriamicide covered by the Order is so small, and the period of time it is permitted to be used is so short that its use is highly unlikely to have any effect on the ecological balance of cotton fields, even if all of the Ferriamicide permitted to be used by the Order were used in cotton fields. Second, use of Ferriamicide on agricultural land is limited to mound-to-mound treatment, a most unlikely methodology for the extensive acreages of cotton fields. Consequently, I expect that very little will be used on cotton.

E. *Conclusions Regarding Unreasonable Adverse Effects and Risk Reduction Measures.* The analysis in the foregoing portions of the discussion section and in my previous order establish that the benefits of Ferriamicide are not without their accompanying risks. However, I concluded in my July Order that these risks were lower than the benefits of Ferriamicide use for control of fire ants in large, heavily infested areas, provided that use in such areas was limited in a number of ways to reduce exposure. Accordingly, I concluded that Ferriamicide could be used to respond to the emergency conditions I found to exist in Mississippi without causing unreasonable adverse effects on the environment, provided that the use was severely limited in the ways prescribed in the Order. The supplemental findings on risks and benefits which I am announcing today do not, in my judgment, in any way significantly change the risk or benefit picture. Accordingly, I reaffirm my finding that the severely restricted uses of Ferriamicide permitted by the July Order will not cause unreasonable adverse effects on the environment. I also reaffirm (with the minor exceptions noted below) the risk reduction measures and other conditions imposed by my July Order, since they are integral to my finding that the authorized use of Ferriamicide will not cause unreasonable adverse effects on the environment.

The minor modifications to the terms and conditions of distribution and use which I have decided upon are: (1) The 50-pound bags must contain a label statement prohibiting use more than six weeks after manufacture. (The reasons for this restriction are developed at page 14, above). (2) The total amount of Ferriamicide which may be distributed during what remains of the exemption period is reduced by 20%, to reflect the fact that part of the original exemption period has now elapsed. The amount has not been reduced more, because the period that remains covers the spring of 1979; the spring season is the most active period for fire ant control activities employing bait toxicants, since the ants forage most actively during the spring.

ORDER

In accordance with the Order of July 23, 1978, as modified and amended by the foregoing Opinion, I hereby authorize the Mississippi Authority for the Control of Fire Ants (Mississippi Authority) to distribute and use Ferriamicide bait to control fire ants in Mississippi, subject to the following conditions:

(1) Ferriamicide may be used only to treat actively infested areas. Preventative application is prohibited.

(2) The bait formulation may contain no more than 0.05 percent Mirex.

(3) This authorization expires on June 30, 1979.

(4) The Mississippi Authority, through its county agents, shall be responsible for all distribution of the pesticide product and shall monitor all distribution and use to ensure compliance with the terms of this Order.

(5) The Ferriamicide bait shall be manufactured by the process and with the product composition approved in the July Opinion so as to inhibit the degradation to Kepone and maintain the efficacy of the product (after the package is opened) for at least 10 weeks.

(6) All applications are to be made by either ground broadcast or mound-to-mound application.

(7) Ground broadcasts may be performed in parks, cemeteries, campgrounds and fairgrounds, only by certified applicators using properly calibrated equipment, at a rate of 1 to 2½ pounds of Ferriamicide bait per acre. Rubber or plastic gloves must be worn when applying the product. Applicators shall take care to avoid mouth or eye contact with the pesticide.

(8) Mound-to-mound application must be made at a rate of no more than ¼ ounce of Ferriamicide bait per mound. The measuring spoon which is to be provided with the product shall be used to sprinkle the bait on the mound. The applicator must wear rubber or plastic gloves when applying the product. Applicators must take care to avoid contact of the bait with the mouth or eyes.

(9) Women of child-bearing age are prohibited from applying Ferriamicide.

(10) The Mississippi Authority may not distribute more than 355,000 pounds of Ferriamicide bait for use in Mississippi.

(11) Ferriamicide bait shall be packaged in 1-, 5-, and 50-pound bags. The 5-pound and 50-pound bags are to be made available only to certified applicators for ground broadcast and mound-to-mound application.

(12) The one-pound bags shall be used only for mound-to-mound applications, and may only be distributed to persons who have at least 50 mounds and at least one acre to treat.

(13) Before releasing a one-pound bag, the distributor must ensure that the purchaser reads (or has read to him), fills in and signs the document containing the five cautionary statements as required by the Opinion.

(14) Labels shall contain all provisions necessary to ensure they are consistent with the terms of this Order and Opinion. The labels shall contain the provisions previously approved by EPA, with the following changes:

(a) All labels shall contain the following statement in bold-face type, above the caution statement: "Not to Be Used by Women of Child-bearing Age."

(b) The label of the one-pound package shall state that the product may not be used by any person who has less than one acre and fewer than 50 mounds to treat.

(c) The 50-pound package shall be made up only to order and its label shall include the statement:

"DO NOT USE AFTER————"

indicating a date not to exceed six weeks after manufacture.

(15) The Mississippi Authority shall submit all reports required by 40 CFR 166.5.

Dated: January 30, 1979.

BARBARA BLUM,
Deputy Administrator,
Environmental Protection Agency.

[FR Doc. 79-5742 Filed 2-26-79; 8:45 am]

[6560-01-M]

ENVIRONMENTAL PROTECTION AGENCY

[FRL 989-2; OPP-180172C]

MISSISSIPPI AUTHORITY FOR THE CONTROL OF FIRE ANTS

Proposed Emergency Exemptions for Use of Ferriamicida To Control Fire Ants in Eight States; Comment Period

AGENCY: Environmental Protection Agency, Office of Pesticide Programs (EPA, OPP).

ACTION: Proposed emergency exemption; additional comment period.

SUMMARY: EPA is providing the opportunity for additional public comment on applications for emergency exemptions to permit use of the pesticide Ferriamicide to control fire ants in Alabama, Arkansas, Florida, Georgia, Louisiana, North Carolina, South Carolina, and Texas.

DATE: Comments are due by November 15, 1978.

ADDRESS: Federal Register Section, Program Support Division (TS-757), Office of Pesticide Programs, EPA, Room 401, East Tower, 401 M Street SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Mr. Timothy A. Gardner, Product Manager 15 (PM-15), Registration Division (TS-767), Office of Pesticide Programs, EPA, Room 229, East Tower, 202-426-9426.

SUPPLEMENTARY INFORMATION: In a previous issue of the FEDERAL REGISTER, EPA has published a notice of opportunity for additional public comment on the application of the Mississippi Authority for the Control of Fire Ants (Mississippi Authority) for an exemption under section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) 7 U.S.C. § 136, et seq. EPA is also providing for additional public notice and comment on the similar applications of the following eight States: Alabama, Arkansas, Florida, Georgia, Louisiana, North Carolina, South Carolina, and Texas.

A separate public file, available from the person designated above as the Agency contact, will contain the documents relating to the applications for these States. The Agency will accept additional comments that were not submitted during the initial comment period designated on August 25, 1978 (43 FR 38084). Since additional information will be required from the eight States to support their applications, the comment period will continue through November 15, 1978, to insure public comment on all documents submitted.

The Agency will accept comments submitted after November 15, to the extent possible consistent with orderly decisionmaking.

Dated: October 12, 1978.

STEVEN D. JELLINEK,
Assistant Administrator for Toxic Substances.

[FR Doc. 78-29224 Filed 10-16-78; 8:45 am]

[6560-01-M]

[FRL 989-0]

SCIENCE ADVISORY BOARD HEALTH EFFECTS RESEARCH REVIEW GROUP

Open Meeting

Under Pub. L. 92-463, notice is hereby given that a 2-day meeting of the Health Effects Research Review Group of the Science Advisory Board will be held on November 13 and 14, 1978. The location of this meeting will be Room 3906, 401 M Street SW., Washington, D.C. 20460. The meeting will start at 9 a.m. on November 13, 1978.

The Environmental Research Development and Demonstration Authorization Act of 1978, Pub. L. 95-155, requires a special report to be prepared by the Science Advisory Board. This will be a comprehensive report to the Administrator, the President, and the Congress, concerning (1) the health effects research authorized by this Act and other laws; (2) the procedures generally used in the conduct of such research; (3) the internal and external reporting of the results of such research; (4) the review procedures for such research and results; (5) the procedures by which such results are used in internal and external recommendations on policy, regulations and legislation; and (6) the findings and recommendations of the report to the House Committee on Science and Technology entitled "The Environmental Protection Agency's Research Program with primary emphasis on the Community Health and Environmental Surveillance System (CHESS): An Investigative Report."

The 2-day meeting will be used for discussions with specific Agency staff members, for review of the findings from site visits, and for discussions and draft report writing.

The 2-day meeting will be open to the public. Any member of the public wishing to attend should contact the Secretariat, Science Advisory Board (A-101), U.S. Environmental Protection Agency, Washington, D.C. 20460 by c.o.b. November 8, 1978. Please ask for Mrs. Shirley Smith. The telephone number is 202-755-0263.

Dated: October 10, 1978.

RICHARD M. DOWD,
Staff Director, Science Advisory Board.

[FR Doc. 78-29287 Filed 10-17-78; 8:45 am]

[6712-01-M]

FEDERAL COMMUNICATIONS COMMISSION

BROADCAST BUREAU ACTION

Correction to Transmittal Sheet No. 8 to Volume III

OCTOBER 5, 1978.

There are errors in Transmittal Sheet No. 8 to Volume III of the FCC rules and regulations, August 1976 Edition, issued by the Government Printing Office.

The text of § 73.35 on "Multiple Ownership" of AM broadcast stations was incorrectly deleted. The text should continue to read as set forth on page 2 of this Notice.

The following paragraph (d) was omitted from § 73.1510 on "Experimental authorizations:"

(d) The FCC may request a report of the research, experimentation and results at the conclusion of the experimental operation.

In the Alphabetical Index of Rules Titles—Part 73, listings of "Multiple ownership" and "Ownership, multiple" should read § 73.35 in Subpart A on AM broadcast stations, 73.240 in Subpart B on Commercial FM stations and § 73.636 in Subpart E on TV broadcast stations (instead of § 73.1100 in each Subpart).

FEDERAL COMMUNICATIONS COMMISSION,
WILLIAM J. TRICARICO,
Secretary.

§ 73.35 Multiple ownership.

(a) No license for a standard broadcast station shall be granted to any party (including all parties under common control) if such party directly or indirectly owns, operates, or controls: one or more standard broadcast stations and the grant of such license will result in any overlap of the predicted or measured 1 mV/m groundwave contours of the existing and proposed stations, computed in accordance with § 73.183 or § 73.186; or one or more television broadcast stations and the grant of such license will result in the predicted or measured 2 mV/m groundwave contour of the proposed station, computed in accordance with § 73.183 or § 73.186, encompassing the entire community of license of one of the television broadcast stations or will result in the Grade A contour(s) of the television broadcast station(s), computed in accordance with § 73.684, encompassing the entire community of license of the proposed station; or a daily newspaper and the grant of such license will result in the predicted or measured 2 mV/m contour, computed in accordance with § 73.183 or § 73.186, encompassing the entire community in which such newspaper is published.

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[6560-01-M]

ENVIRONMENTAL PROTECTION AGENCY

[FRL 989-2; OPP-180172C]

MISSISSIPPI AUTHORITY FOR THE CONTROL OF FIRE ANTS

Proposed Emergency Exemptions for Use of Ferriamicida To Control Fire Ants in Eight States; Comment Period

AGENCY: Environmental Protection Agency, Office of Pesticide Programs (EPA, OPP).

ACTION: Proposed emergency exemption; additional comment period.

SUMMARY: EPA is providing the opportunity for additional public comment on applications for emergency exemptions to permit use of the pesticide Ferriamicide to control fire ants in Alabama, Arkansas, Florida, Georgia, Louisiana, North Carolina, South Carolina, and Texas.

DATE: Comments are due by November 15, 1978.

ADDRESS: Federal Register Section, Program Support Division (TS-757), Office of Pesticide Programs, EPA, Room 401, East Tower, 401 M Street SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Mr. Timothy A. Gardner, Product Manager 15 (PM-15), Registration Division (TS-767), Office of Pesticide Programs, EPA, Room 229, East Tower, 202-426-9426.

SUPPLEMENTARY INFORMATION: In a previous issue of the FEDERAL REGISTER, EPA has published a notice of opportunity for additional public comment on the application of the Mississippi Authority for the Control of Fire Ants (Mississippi Authority) for an exemption under section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) 7 U.S.C. § 136, et seq. EPA is also providing for additional public notice and comment on the similar applications of the following eight States: Alabama, Arkansas, Florida, Georgia, Louisiana, North Carolina, South Carolina, and Texas.

A separate public file, available from the person designated above as the Agency contact, will contain the documents relating to the applications for these States. The Agency will accept additional comments that were not submitted during the initial comment period designated on August 25, 1978 (43 FR 38084). Since additional information will be required from the eight States to support their applications, the comment period will continue through November 15, 1978, to insure public comment on all documents submitted.

The Agency will accept comments submitted after November 15, to the extent possible consistent with orderly decisionmaking.

Dated: October 12, 1978.

STEVEN D. JELLINEK,
Assistant Administrator for Toxic Substances.

[FR Doc. 78-29224 Filed 10-16-78; 8:45 am]

[6560-01-M]

[FRL 989-6]

SCIENCE ADVISORY BOARD HEALTH EFFECTS RESEARCH REVIEW GROUP

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The 2-day meeting will be open to the public. Any member of the public wishing to attend should contact the Secretariat, Science Advisory Board (A-101), U.S. Environmental Protection Agency, Washington, D.C. 20460 by c.o.b. November 8, 1978. Please ask for Mrs. Shirley Smith. The telephone number is 202-755-0263.

Dated: October 10, 1978.

RICHARD M. DOWD,
Staff Director, Science Advisory Board.

[FR Doc. 78-29267 Filed 10-17-78; 8:45 am]

[6712-01-M]

FEDERAL COMMUNICATIONS COMMISSION

BROADCAST BUREAU ACTION

Correction to Transmittal Sheet No. 8 to Volume III

OCTOBER 5, 1978.

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[FRL 989-3; OPP-180172B]

MISSISSIPPI AUTHORITY FOR THE CONTROL OF FIRE ANTS

Proposed Emergency Exemption for Use of Ferriamicide To Control Fire Ants; Comment Period

AGENCY: Environmental Protection Agency, Office of Pesticide Programs (EPA, OPP).

ACTION: Proposed emergency exemption; additional comment period.

SUMMARY: As a result of the September 27, 1978, Memorandum Opinion of the U.S. District Court for the District of Columbia in *Environmental Defense Fund v. Blum, et al.*, Civil Action No. 78-0577, EPA is providing additional opportunity for public comment on a proposed emergency exemption to permit use of the pesticide Ferriamicide to control fire ants in Mississippi.

DATE: Comments on Mississippi's application are due ten (10) days after publication of this notice.

ADDRESS: Send comments to the Federal Register Section, Program Support Division (TS-757), Office of Pesticide Programs, EPA, Room 401, East Tower, 401 M Street SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Mr. Timothy A. Gardner, Product Manager 15 (PM 15), Registration Division (TS-767), Office of Pesticide Programs, EPA, Room 229, East Tower, 202-426-9426.

SUPPLEMENTARY INFORMATION:

I. BACKGROUND

On December 16, 1977, the Mississippi Authority for the Control of Fire Ants (Mississippi Authority) submitted to EPA a request for issuance of an exemption under section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136 *et seq.*, to allow the use of Ferriamicide, an unregistered pesticide, to control imported fire ants in Mississippi. On December 23, 1977, EPA published a notice describing the Mississippi Authority's request and soliciting public comment (42 FR 64734). A large number of comments were received, most favoring and some opposing Agency approval of the request. Some 20,000 persons sent brief letters expressing concern about fire ants and in some cases supporting the application. In addition, a number of Federal legislators (most from southern States), State legislators and other State officials urged approval of Mississippi's request. (Officials of several other States have applied under section 18 for permission to buy Ferriamicide bait from the Mississippi Authority for use in their own States.) (See FEDERAL REGISTER of Aug. 25, 1978 (43 FR 38084).)

On the other hand, a smaller number of commenters (including some Federal legislators) opposed the request. The Environmental Defense Fund, Inc. (EDF) submitted extensive comments in opposition to the use of Ferriamicide.

After extensive EPA staff consideration of the issues raised by the Authority's request, Mr. Steven D. Jellinek, the Agency's Assistant Administrator for Toxic Substances sent to Deputy Administrator Barbara Blum, on March 8, 1978 a document containing a series of recommendations on the matter. Deputy Administrator Blum adopted those recommendations on the same day, and so indicated by concurring on the document. (Attachment A to this notice.)

In March 1978, EDF filed an action in the United States District Court for the District of Columbia, saying that for a variety of reasons the Agency should be enjoined from allowing Mississippi to use Ferriamicide. (*EDF v. Blum, et al.*, Civil Action No. 78-0577.)

On June 13, 1978, a hearing was held, at which time the court stated that it appeared the Agency's decision was not yet final or reviewable (because of the certain matters still requiring resolution).[1] The parties then stipulated that the Agency's final decision would be issued on or about July 21, 1978, and that the Court would act in early September (following the filing of briefs by the parties). It was agreed that EPA would not authorize distribution or use of Ferriamicide until a final order was reviewed by the Court. On July 28, 1978, a final order

[1] In its September 27, 1978, Memorandum Opinion, the Court cited as an additional reason for deciding the March 8, 1978, agency memorandum was not a final order the fact that it had not been published in the FEDERAL REGISTER as required by the Agency's regulations (40 CFR 168.10 (1977)). We note that the cited regulation merely requires the Agency to notify the public after an emergency exemption is granted; an exemption is final for purposes of judicial review as of the date of the grant, not the date of publication in the FEDERAL REGISTER.

was issued (attachment B to this notice) which permitted some limited use of Ferriamicide in Mississippi. This order resolved the open issues from the March 8 memorandum as to the precise conditions imposed upon the use of Ferriamicide. This final order also took into account additional health risk data which had come to light since the March 8 action and contained further quantitative risk analyses of the potential cancer and reproductive effects of the pesticide.

Thereafter the court received additional briefs and heard additional oral argument.

On September 27, 1978, the Court issued its decision. The Court sustained the Agency's determination that fire ant infestation in Mississippi constitutes an emergency, and granted summary judgment for EPA as to the Agency's compliance with the National Environmental Policy Act, and as to EPA's alleged consideration of improper political factors. (EDF filed a notice of appeal on these matters on September 28, 1978.)

The Court, however, remanded the case to the Agency after finding the decision to be procedurally defective because the Agency had considered certain documents without making them available for public comment. The Court noted that "substantial and perhaps decisive information relating to efficacy, health effects and the conditions to be placed on the fuse of Ferriamicide]" had not been available for public adversarial comment. This decision was based on the Court's finding that the Ferriamicide decision was rulemaking and therefore subject to notice and comment procedures under the Administrative Procedure Act (5 U.S.C. 553). The Court found that the notice published on December 28, 1977, served to formally close the administrative record as of January 23, 1978, and that documents received after that time, but not made available for public comment, constitute improper *ex parte* communications.

The Court stated that if EPA should wish to pursue its consideration of Mississippi's application further, EPA must: (1) publish in the FEDERAL REGISTER a new notice and comment period, during which interested persons may comment on the documents received by the EPA since January 23, 1978, and introduce any new information relevant to the issues still remaining open; and (2) establish and maintain a file available for public inspection with respect to Mississippi's application, containing all material which has been submitted to the Court by the parties and all information received by the Agency during the new comment period.

2. EPA'S POSITION

EPA does not agree with the Court's determination that Agency actions under section 18 of FIFRA are rules subject to the notice and comment requirements of 5 U.S.C. 553. It is the Agency's position that decisions under section 18 granting an emergency exemption are licenses as the term is defined in 5 U.S.C. 551, which states:

> "license" includes the whole or a part of an Agency permit, certificate, approval, registration, charter, membership, *statutory exemption*, or other form of permission. [Emphasis added.]

Since a section 18 exemption is licensing, it is an "order," which is an Agency final disposition "other than rulemaking but including licensing." (5 U.S.C. 551.)

Although the Agency believes the Court's holding was incorrect, the Agency has decided to provide the opportunity for comment which the Court's decision calls for, because the Agency believes this course will lead to the most expeditious resolution of the still-open issues.

3. NOTICE AND COMMENT

Accordingly, the comment period on the Ferriamicide decision is hereby reopened. The Agency invites comment on its determination that the uses permitted under the specific exemption will not cause unreasonable adverse effects on health or the environment.

The Agency particularly desires comment on its previous decision to permit ground broadcast application in parks, playgrounds, and schoolyards. The Agency will also consider any new information on any other aspects of the Ferriamicide emergency exemption.

Comments are invited on all documents the Agency has placed in the administrative record file which will be available through the Agency contract person designated above. The reading file will contain all documents submitted to the District Court in the Ferriamicide litigation which either the EDF or the EPA has designated as constituting the record in the Ferriamicide action. EPA, in no sense, concedes that all these documents should be designated as part of the administrative record in this proceeding, nor that the Agency should consider all the documents in making its final decision. Many documents are clearly irrelevant to the Agency decision (such as press releases prepared to explain, rather than make, the final Agency determinations); other documents, such as internal Agency drafts, papers indicating internal staff debate on issues, and handwritten notes of Agency staff, are subject to claims of privilege. In order to avoid further disputes on what, at this point, amounts to a procedural issue, however, all documents before the court will be placed in the record.

The comment period on Mississippi's application will remain open for ten (10) days after publication of this notice in the FEDERAL REGISTER. Any comments submitted after the deadline will be considered to the extent possible consistent with orderly Agency decisionmaking.

Dated: October 12, 1978.

STEVEN D. JELLINEK,
Assistant Administrator for Toxic Substances.

ATTACHMENT A

ENVIRONMENTAL PROTECTION AGENCY,

OFFICE OF TOXIC SUBSTANCES

Washington, D.C., March 8, 1978.

Subject: Section 18—Specific Exemption for the Use of Ferriamicide to Control Imported Fire Ants—Action Memorandum.

From: Steven D. Jellinek, Assistant Administrator for Toxic Substances (TS-788).

To: Deputy Administrator (A-101).

Issue.—Should the Agency, pursuant to section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and Part 166 of the FIFRA regulations, issue to the Mississippi Authority for the Control of Fire Ants (hereafter Mississippi Authority or Applicant) an emergency exemption allowing the use in Mississippi of an unregistered pesticide, Ferriamicide, to control imported fire ants, and if so, under what conditions? (If the Agency approves this request eight additional states will probably seek similar exemptions.)

BACKGROUND

A. THE FIRE ANT

Imported fire ants infest approximately 190,000,000 acres in Mississippi and eight other states, in urban, suburban and rural areas. The ants pose a problem for two reasons: (1) the bite of the ant is painful and, in some cases, causes serious reactions in hypersensitive persons; (2) the large mounds built by the ants may interfere with normal agricultural operations such as mowing and harvesting.

B. THE MIREX CANCELLATION

Effective December 1, 1977, pursuant to a Plan submitted by the Mississippi Authority ("Plan") the Administrator cancelled all end-use product registrations of Mirex, an insecticide that has been used to control fire ants since 1962. The Mississippi Authority was the sole remaining registrant of Mirex end-use products. According to

the Plan, existing stocks of one Mirex formulation, 10:5 Bait, may be sold and used for ground broadcast and mound application until June 30, 1978. A discussion of the Administrator's reasons for accepting the Plan, as well as a history of the Mirex proceedings, a summary of evidence, and a discussion of risks and benefits associated with Mirex appears at 41 FR 56694 (December 29, 1976).

Mirex is formulated as a bait that, when properly foraged by the ants, results in reduced ant populations. The pesticide's end-use registrations were voluntarily cancelled, however, following the development of information that Mirex is carcinogenic in rodent test systems and therefore may pose a cancer risk to man. Mirex also exhibits other adverse effects, such as high persistence in the environment, accumulation in living tissue, and high toxicity to aquatic invertebrates (see 41 Fed. Reg. 56698-56700).

C. FERRIAMICIDE

1. *Applicant's request.*—Pursuant to the Plan, the Mississippi Department of Agriculture and Commerce greatly intensified research efforts to develop an alternative to Mirex that would be effective against fire ants but less persistent in the environment. This research has resulted in development of a new formulation of Mirex called Ferriamicide (Mirex plus ferrous chloride and an amine). Under laboratory conditions, the Mirex in Ferriamicide photodegrades considerably faster than Mirex alone.

On December 16, 1977, the Applicant requested a specific exemption to apply Ferriamicide by aerial equipment, ground equipment, or to individual mounds on approximately three million acres of land in Mississippi (see 42 FR 64734). The application requested approval for only a singel aerial application to a given area per year. All aeral and ground broadcast applications would be made by Federal and State applicators who would be certified through state certification programs. Homeowners who have received oral and written guidelines could apply Ferriamicide to individual mounds. Restrictions would apply to aerial applications on aquatic areas, coastral zones, wooded areas, agricultural lands, home sites and developed portions of public areas. Environmental monitoring would continue throughout the affected area. (Application, pp. 34-38.) The application describes the properties of Ferriamicide known at the present time, as well as the efficacy and toxicity tests that have been performed (application pp. 21-32). The Applicant states that it will agree to use no more Mirex than was approved under the original Plan accepted by the Administrator in the Mirex cancellation proceeding (application, exhibit G). This means that no more than 11,800 pounds of Mirex would be used to produce Ferriamicide under an emergency exemption. Applicant proposes to use a Ferriamicide formulation containing .05 percent Mirex.

2. *Available data on Ferriamicide*—a. *Chemistry data.* Under laboratory conditions of continuous light, the Mirex in the ferrous chloride-amine-Mirex complex photodegrades rapidly. Applicant estimates a half life of 14-45 days. No photodepradation studies, however, have been conducted under actual field conditions. Since field persistence would be expected to increase in direct proportion to the amount of shade or darkness, the half-life of Ferriamicide in the field is expected to be considerable longer then the laboratory half-life. Laboratory studies on standard Mirex, in fact, yielded a much shorter half-life (124-173 days) than that which actually occurs under field conditions (730-7300 days). Even assuming that Ferriamicide fairly quickly photodegrades under filed conditions, there would be no advantage to this property if the pesticide bait is more quickly consumed by nontarget species. There is no data on the half-life of Ferriamicide in living matter.

The terminal residues of Mirex have not yet been ascertained; however, nono-, di-, tri-, tetra- and penta-hydro derivatives of Mirex have been identified as intermediate products.

b. *Biological activity.* Preliminary studies indicate that Mirex and its photodegradates may be biodegraded by microorganisms if an additional carbon and energy source is available, but not when Mirex or its photodegradates are used as the sole source of carbon and energy.

Several acute toxicity studies of Mirex and Ferriamicide on crayfish, grass shrimp, blue crab, and microorganisms indicated that undegraded Ferriamicide and bait photodegraded for 3 days exhibited the same toxicity as Mirex. After 10 days of degradation Ferriamicide was somewhat less toxic than Mirex. After 21 days of degradation Ferriamicide was significantly less toxic than Mirex.

c. *Unknown factors.* The following significant characteristics are not known about Ferriamicide or its photodegradates:

(1) Rate of photodegradation under actual field conditions;

(2) Identity under field use conditions of the degradation products;

(3) Toxicity of Ferriamicide and its degradation products to terrestrial organisms under actual field use (acute, subacute and chronic studies have not been conducted);

(4) Residues expected in crops, meat, milk, poultry, or eggs (no residue data has been submitted);

(5) Bioaccumulation properties (residue levels, tissue distribution, loss rates, and concentration factors);

(6) Biomagnification properties;

(7) Toxicity to mammals (no mammalian toxicity studies have been conducted).

In short, very little is known about the properties, toxicity or environmental behavior of either Ferriamicide or its degradation products, although there is considerable knowledge of the characteristics of Mirex, Ferriamicide's active ingredient.

D. COMMENTS ON THE FERRIAMICIDE APPLICATION

EPA has received over 20,000 comments from citizens of Mississippi. The overwhelming majority of the 2,000 examined express general concern about the fire ant problem and the need to have an effective means of control.

The Environmental Defense Fund recommends denial of the emergency exemption request, arguing that (1) there are registered pesticides which could be used to control fire ants; (2) there is insufficient data to support the widespread use of Ferriamicide; (3) the carcinogenicity of Mirex and of Kepone, a degradation product of Ferriamicide, require a risk assessment before the exemption is issued; (4) we do not yet fully understand the population dynamics and biology of fire ants; (5) efficacy data submitted in support of Ferriamicide is not convincing; (6) actual emergency conditions do not exist, since Mirex 10:5 bait may be used until June 30, 1978; and (7) Mirex, itself, has not been effective in controlling fire ants, since the infested acreage has increased even after Mirex use began.

DO EMERGENCY CONDITIONS EXIST?

A. STATUTORY AND REGULATORY CRITERIA

The statutory and regulatory criteria for determining whether to issue an emergency exemption are explained and analyzed in the three attached memoranda, transmitted by the Office of General Counsel on February 16, 1978. In summary, the Agency may allow an unregistered pesticide to be used if it finds that emergency conditions exist and that the benefits of the pesticide use would outweigh the risk of its use. This section discusses the criteria for finding whether emergency conditions exist with respect to Ferriamicide.

Section 18 of FIFRA states:

The Administrator may, at his discretion exempt any Federal or State Agency from any provision of this Act if the determines

that emergency conditions exist which require such exemption.

Part 166 implements section 18; 40 CFR 166.1 states:

An emergency will be deemed to exist when (a) a pest outbreak has or is about to occur and no pesticide registered for the particular use, or alternative method of control, is available to eradicate or control the pest, (b) significant economic or health problems will occur without the use of the pesticide, and (c) the time available from discovery or prediction of the pest outbreak is insufficient for a pesticide to be registered for the particular use. In determining whether an emergency condition exists, the Administrator will also give consideration to such additional facts requiring the use of section 18 as are presented by the applicant.

The criteria of clauses (a), (b), and (c) are not exclusive. EPA may find an emergency exists even if one or more of the conditions are absent.

To find an emergency in the case of Ferriamicide the Agency should first examine three basic issues:

(1) Do fire ants cause significant economic or health problems? (See 40 CFR 166.1 (a) and (b).)

(2) Will feasible non-pesticide methods or feasible methods employing registered pesticides be available to control the fire ant in time to reduce the emergency to an acceptable level? (See 40 CFR 166.1 (a) and (c).)

(3) Will Ferriamicide control fire ants? (See 40 CFR 166.1(b).)

Since the § 166.1 (a), and (b), and (c) criteria are not exclusive, the Agency may consider other pertinent factors such as the risks presented by use of registered pesticides that may be available for use against fire ants.

B. IS THERE AN EMERGENCY?

This section describes my reasoning for determining that emergency conditions exist requiring the use of Ferriamicide.

1. Nature of economic and health problems

The fire ant inflicts a painful sting upon humans. The severity of the problem is magnified by the multiple stings that may result if a person disturbs a mound. The stings may give rise to secondary infections if not properly cleansed and cared for, or may cause other complications for a small number of sensitive persons. A large number of people receive fire ant stings in infested States. (See application p. 18; 28; 41 FR 56701.)

Fire ant mounds physically interfere with agricultural equipment, especially in areas with clay soils. The ants also have caused injury to farm workers and animals, and damage to pasture land and crops. (See application p. 14-17.)

Applicant estimates that throughout the southern part of the United States the ants infest approximately 150,000,000 acres, a considerable portion of which is in Mississippi (see application p. 14-15). Infestation in a given acre can amount to 1 to 200 mounds. According to the application, the imported fire ant is present in all types of locations (other than those covered with water).

From the volume of mail EPA has received it is obvious that citizens in areas infested with these pests are very concerned about having some method of controlling them. The majority of the letters examined express apprehension about the painful stings which the fire ant inflicts.

If no feasible means of fire ant control were available, the problems caused by fire ants could be expected to increase, resulting in even more severe economic and health effects than currently exist. Mirex has been useful in controlling fire ant infestations. As of June 30, 1978, Mirex can no longer be lawfully used. Unless there are available alternative pesticidal or nonpesticidal control measures which will reduce infestations to acceptable levels, the imported fire ant may pose health problems in infested areas where people may disturb the ants and be stung. The ants will also cause some economic damage to farmers.

2. Alternative methods of fire ant control

a. *Nonpesticide alternatives.*—On agricultural lands where the fire ant mounds interfere with farm machinery a heavy beam may be dragged behind a tractor to disperse the mounds. In many cases this will reduce the problem sufficiently.

b. *Pesticide alternatives.*—The following registered pesticides have been considered:*

(a) Chlordane—Numerous currently registered chlordane labels bear use directions for fire ant mound treatment applications. While the use directions and application rates vary widely, it has been assumed that the majority of the application rates fall within the range prescribed by the two labels held by the basic producer, Velsicol Chemical Corp.:

(1) Chlordane 72 percent EC (Reg. No. 876-102)—This emulsifiable concentrate is applied as a 0.5 percent mound drench. Although the actual percentage may vary. For the sake of comparison with alternative products, it is assumed that all applications shall be made at a rate of 100 mounds to the acre. Individual mound size, presumably, would also have to be taken into consideration in determining the dosage rate. The 72.0 percent EC label prescribes rates ranging to "as much as" 5 gallons of drench per mound depending upon size. It therefore, appears that a range of from 4 to 25 lbs. active ingredient per acre (A.I./A.) is prescribed. The 100-mound parameter could, however, be expected to result in an application rate of approximately 10 lb. A.I./acre.

(2) Chlordane 25 percent G (Reg. No. 876-39)—This granular formulation, according to the label, is applied at the rate of 0.8 to 1.6 cups of formulation per mound without the subsequent application of water. Using the same parameters as above, the possible application rates would result in the distribution of 7 to 14 lb. A.I./A. Again, 10 lbs. A.I./A is a likely application rate.

(b) Heptachlor—See also the chlordane discussion (heptachlor and chlordane are closely related compounds). Heptachlor 5 percent G (Reg. No. 876-187) and 10 percent G (Reg. No. 876-188)—The application directions for the heptachlor granular products provide for the placement of 2 to 4 cups and 1 to 2 cups per mound, respectively, for the 5 percent and 10 percent products. Using the 100-mound-per-acre parameter, the possible application range for both products is from 3.5 to 7.5 lb. A.I./A. A rate on the order of 5.0 lb. A.I./A is expected to be applied.

(c) Propoxur (Baygon)—Only one propoxur product is currently registered for use against fire ants and only for mound application. This product is the recently registered Boyle Midway 2 percent ant trap. Each ant trap consists of a bait formuation housed in a small metal canister. The current use directions limit appliction to the mound site. The Application of this product is further restricted to "* * * home use only." The application of this product to a 100-mound acre would result in the distribution of 0.002625 lb. A.I./A.

(d) Chlorpyrifos (Dursban)—As in the case of propoxur, only a single recently registered product exits. This product is a 6.7 percent emulsifiable concentrate labeled by the Occidental Chemical Corp. Additional distributor labels are anticipated with the Zoecon Corp. providing the major distribution channels. This product is applied as a 0.2 percent mound drench in 1 gallon of water. Again applying the 100-mound-per-acre parameter, the total application would result 0.78125 lb. A.I./A.

*Applications for registration to control fire ant are pending for the following pesticides: Diazinon—four separate formulations. Carbaryl—40.38 percent formulation (Reg. No. 1016-68). 1,1,1 Trichloroethane—95.5 percent formulation. These pesticides are not yet registered, nor are they expected to be available in time to control fire ants for the summer and fall seasons. They may, however, be available in the future.

(c) Lindane—(C.25 percent); Naled (0.5 percent) (Reg. No. 239-907)—This formulation is a pressurized spray primarily intended for indoor use.

The Ferriamicide bait is a 0.05 percent active ingredient granular formulation. If it is assumed that in mound applications Ferriamicide bait is applied at the rate of 0.25 oz. of formulation per mound site (see 42 FR 6473), a 100-mound acre would receive 0.00078125 lb. A.I./A, or less than one third of a gram.

c. *Evaluation of alternatives.*—(a) Nonpesticidal methods—Mechanical means of mound control are somewhat effective on agricultural lands, but only as a means of eliminating interference with farm equipment. Prevention of other injuries (stings) on farm land will require use of a pesticide.

(b) Chlordane and Heptachlor—The consensus of those researchers recently contacted has been that chlordane and heptachlor provide a reasonable degree of mound reduction and population suppression. There is, however, some reason to question the efficacy of chlordane and heptachlor, because at the time they were registered information gaps existed with respect to fire ant testing methodology. As a result, there exists doubt as to whether chlordane and heptachlor provide total mound kill or promote mound migration. In the past few years much new information has come to light on fire ant movement. For example, the mound is now observed for a longer period to time after application of a pesticide.

It is generally believed that heptachlor is more active against ants than is chlordane, a premise reflected by the currently registered application rates, which require less heptachlor for use on a mound.

Chlordane and heptachlor, like Mirex, have been the subject of litigation because of the hazard which they pose to the environment. They present problems similar to those posed by Mirex.*

Chlordane, when used to control Imported Fire Ants, requires a dosage approximately 20,000 times that required when Mirex is used in the Ferriamicide bait formulation. Heptachlor requires a dosage approximately 5,000 times the Ferriamicide dosage.

(c) Propoxur (BAYGON)—is registered only for use around the home. The compound has not been tested under field conditions. While the efficacy data submitted in support of the registration of this product indicated substantial mound mortality, large scale field testing was not required due to the proposed label restrictions. Efficacy is therefore questionable under field conditions.

(d) Chlorpyrifos (DURSBAN)- Both the data provided for registration support and that made available by USDA researchers indicate very acceptable product performance (average mound reduction rate 90 percent as determined by field test data). This pesticide would not be practical, however, in widespread field use because of the large amount of water required. The dosage required would be about 1,000 times that required for Mirex in the Ferriamicide bait formulation.

Chlorpyrifos would be a practical alternative in some areas where the infestation of fire ants is relatively light. When the infestation is heavy or widespread, large amounts of water would have to be transported in order to use the mound drench. To treat fire ant mounds over a relatively large area it would, in most cases, be impractical to carry more than 5 gallons of water unless the applicator has special equipment. This is especially apparent when one considers that to apply Ferriamicide mound-to-mound all one must carry is a small container and hand dipper to apply approximately one teaspoonful of the formulated pesticide per mound.

(e) Lindane-Naled—This formulation would not be effective for mound control because there would be an insufficient quantity of finished product to saturate the mound.

(f) Ferriamicide—Efficacy testing of Ferriamicide has so far been inconclusive (application pp. 27-32). According to the Applicant, the combination of a very cold winter followed by a very dry early summer caused the fire ant populations to be very unstable, reducing foraging to the point that even proven baits were not effective. In many cases 40-50 percent of the control colonies did not survive for the duration of the test. This made efficacy testing difficult to conduct. (Application p. 30.)

The U.S Department of Agriculture has advised EPA that of materials filed tested up to this time Ferriamicide is the most effective replacement for 6x or 10.5 Mirex bait.

The document entitled "Summary of Evidence and Other Information and Statement of Reasons", published in conjunction with the acceptance of the Plan for the voluntary cancellation of Mirex, concluded that when Mirex, the active ingredient in Ferriamicide, is applied "in adequate amounts near fire ant mounds and properly forged, the population of fire ants in the mound is severely reduced." (41 FR 56791). Although reinfestation might occur, control at the site is achieved. The efficacy of its active ingredient provides adequate support, for purposes of a Section 18 exemption, to conclude that Ferriamicide will effectively reduce fire ant populations and, thereby, significantly reduce the problems resulting from fire ants.

3. Conclusion regarding whether emergency conditions exist

a. *Areas where an emergency exists.*—(1) *Noncrop areas.* After June 30, 1978, an emergency will exist in Mississippi in noncrop areas where fire ant infestation occurs. This determination is based on the following factors:

(1) the widespread prevalence of fire ants in Mississippi,

(2) injury to humans from insect stings,

(3) the great public concern expressed for the need to control fire ants,

(4) lack of practical, available pesticides to control fire ants in all but areas of relatively light infestation,

(5) lack of available nonpesticide control methods that would be efficacious for noncrop lands.

(6) the expectation that no pesticide currently proposed for registration for fire ant control will be available by June 30, 1978, and

(7) the fact that Mirex may not be used after June 30, 1978.

(2) *Agricultural areas.* No pesticides are registered for fire ant control that are feasible for agricultural uses. Items 1 through 3, 6, and 7 relating to noncrop uses also apply to the determination of an emergency on agricultural lands. In addition, the economic damage on agricultural land could be considerable. In view of the foregoing it is my opinion, that an emergency will exist on agricultural lands after June 30, 1978

To some extent the economic emergency may be alleviated by nonpesticidal methods used to knock down and disperse mounds. No evidence has been presented, however, to indicate that mechanical methods of control, alone, could reduce the adverse effects of fire ants to an acceptable level.

b. *Areas for which feasible alternative are available.*- Chlorpyrifos and Propoxur, registered pesticides for control of fire ants in noncrop areas, are expected to be reasonably available after June 30, 1978. In areas where infestation is not particularly heavy it appears that they would control fire ants. Based upon the § 18(a)(1)(a), (b), and (c) criteria, I cannot recommend finding that an emergency exists in those areas where Chlorpyrifos or Propoxur may be used practically.

* According to the terms of the Administrator's May 6, 1978, order in Velsicol Chemical Corporation, et al., FIFRA Docket No. 336 et al., there will be available no more than 350,000 pounds of technical chlordane for general use on imported fire ants.

SHOULD AN EMERGENCY EXEMPTION BE ISSUED?

A. DISCUSSION OF OPTIONS FOR ISSUING AN EXEMPTION

This section states my opinion and describes my reasons for determining that a conditional emergency exemption should be issued.

1. Emergency conditions

Once it has been determined that emergency conditions exist, the risks and benefits of issuing an exemption for the pesticide must be evaluated to determine whether such exemption should issue and what restrictions, if any, should be impose.

Section 18 of FIFRA authorizes the Agency to grant an exemption if "emergency conditions exist which require such exemption." For the reasons stated above, it is my opinion that emergency conditions exist in those areas of generally heavy infestation, but do not exist in areas of relatively light infestation where practical alternatives are available. There is, however, no practical way for the Agency to distinguish between these areas. In this particular case, the Agency could not effectively segregate the areas where Ferriamicide is needed, unless a survey of infested land were conducted and a study were made to decide where one pesticide would be practicle as opposed to another. I do not believe that such an undertaking is practical or that it could be accomplished before the onset of the expected June 30, 1978, emergency.

2. Health effects

Based on the information we have on the efficacy of Ferriamicide, it is likely that the pesticide will achieve site control of fire ants. Ferriamicide, however, contains Mirex, a substance which may pose a risk of cancer to man. The advantage of Ferriamicide is that the Mirex in it may be expected to photodegrade more rapidly than the Mirex in other formulations. One would expect, therefore, that the hazard from Ferriamicide would be less than the hazard from Mirex alone.

However, the photodegradates of Ferriamicide have not been completely identified and their toxic qualities are not known. No subchronic or chronic toxicity tests have been conducted, while acute toxicity testing has been extremely limited. No mammalian studies have been conducted, and no residue data are available.

It has not, furthermore, been verified that Ferriamicide under field conditions photodegrades as rapidly as is claimed. Mirex, itself, is less persistent in the laboratory than in the field.

Although Ferriamicide is related to Mirex and there is much we do not know about it, the amount proposed to be used in the Ferriamicide formulation is minimal, particularly if the use is restricted to limited ground broadcast and mound-to-mound applications. Assuming mound-to-mound application to a 100-mound acre, no more than one-third gram of Mirex per acre will be applied.

3. Options

The Administrator has four basic options to consider in this matter:

Option A: Grant the exemption as requested by Applicant but only for use after June 30, 1978.

Pro: Will make available an efficacious pesticide for the most economically feasible and efficient method of application.

Con: Leads to the most significant exposure potential to Mirex.

Option B: Deny the exemption in toto.

Pro: Reduces exposure to Mirex to the lowest possible level.

Con: Would leave no feasible means of controlling a pest that causes significant economic and health problems.

Option C: Grant the exemption in part by restricting use to those areas for which practical alternatives are not available, and by imposing restrictions on the method of application. Use will begin only after June 30, 1978.

Pro: Will enable the Administrator to make the pesticide available while keeping exposure low enough to be consistent with avoiding unnecessary health or environmental problems.

Con: (1) Puts the Agency in a position of imposing an unenforceable restriction, e.g., a label which permits use only in areas where infestation is more than, for example, five mounds per acre.

(2) May prevent use of Ferriamicide in areas where it may be needed, e.g., an area where there are ten mounds spread over two or three acres such that large amounts of water would have to be transported were DURSBAN to be used.

Option D: Grant the exemption in part by imposing restrictions on the method of application but permit use of Ferriamicide even in areas where a practical alternative will be available. Use will begin only after June 30, 1978.

Pro: (1) Eliminates the problem of an unenforceable label.

(2) Will insure that Ferriamicide may be used in any area where it is needed.

(3) Additional health or environmental effects will not be significantly increased because of the small amounts of pesticide that will be used.

Con: Would permit Ferriamicide to be used where a registered alternative is available.

B. RECOMMENDATION

Since there will be a need to control the fire ant after June 30, 1978, and minimal amounts of Mirex will be used, I recommend Option D. This will permit the Agency to make Ferriamicide available without causing unreasonable adverse effects to health or the environment. In arriving at this recommendation I have considered the following factors:

(1) Too many significant characteristics of Ferriamicide are unknown;

(2) Ferriamicide contains Mirex, which may pose a risk of cancer to man;

(3) Food residue should be kept as low as possible, since that is the most likely route of exposure to man;

(4) Direct exposure to humans and nontarget organisms should be minimized.

WHAT RESTRICTIONS SHOULD APPLY?

A. DISCUSSION OF OPTIONS FOR RESTRICTING USE

Option E: Authorize a single aerial, ground or mound application of Ferriamicide.

Pro: Aerial and ground broadcast methods are the only way to treat large areas economically.

Con: (1) The possibility of exposure to humans and nontarget organisms is high compared to other methods of application.

(2) Residues of Mirex or its degradates are likely to occur in the food chain.

(3) The Agency would be approving additional aerial application of Mirex, a practice which terminated under the Mississippi Plan on December 1, 1977.

(4) Aerial application could put at risk at least one endangered species—the Red Cockaded Woodpecker.

Option F: Permit limited ground broadcast—only in parks and cemeteries.

Pro: (1) Permits economical treatment in areas where people frequently come into contact with fire ants.

(2) Does not appreciably increase direct human exposure to the pesticide.

(3) Has no effect on food residues.

(4) Number of applicators exposed will be reduced.

Con: (1) There is significant probability that runoff into the water supply will occur.

(2) This option will result in greater exposure to nontarget (mammalian) species.

Option G: Permit mound-to-mound application.

Pro: (1) Minimizes environmental contamination—in a 100-mound acre

less than one-third of a gram of parent compound, Mirex, would be applied.

(2) Provides control of fire ants in areas where the threat to man and livestock is greatest.

Con: (1) Some exposure to the applicator occurs (more applicators required than for ground broadcast).

(2) Uneconomical in widespread infestation because it is too labor intensive.

B. EVALUATION OF OPTIONS FOR RESTRICTING USE

The following paragraphs state my opinion on the relative merits of the options for restricting use.

1. *Aerial and wide-scale ground broadcast*

Mirex, the parent compound of Ferriamicide, presents significant toxicity problems, and we know too little about the toxicity of Ferriamicide and its photodegradates. Therefore, the possibility of broad exposure from Ferriamicide to the environment and to nontarget organisms that would occur from aerial or wide scale ground broadcast application would pose unreasonable risks of adverse effects.

2. *Limited ground broadcast*

a. *Agricultural lands.*—The fact that ground broadcast increases (over mound-to-mound application) the possibility of food residues of unknown toxicity makes ground broadcast unacceptable for agricultural uses.

b. *Noncrop areas (parks and cemeteries).*—On the other hand, in certain noncrop areas, specifically cemeteries and parks, where humans are subject to contact with heavy infestations over a broad area, ground broadcast provides a practical means of controlling the fire ant while not materially increasing human exposure over mound-to-mound treatment. There is somewhat less applicator exposure, since less applicators are required than for mound-to-mound treatment. In my opinion, therefore, it would be reasonable to permit ground broadcast in cemeteries and parks.

Since ground broadcast does present high possibilities for exposure to nontarget species and entry of the chemical into the environment, it would not be reasonable to permit such application for wide-scale use on other noncrop lands.

3. *Mound-to-mound application*

a. *Agricultural lands.*—Use of mound-to-mound application will pose the least likelihood of food residues of Mirex or the Ferriamicide degradation products. This application method, when used in with the mechanical methods available for mound dispersion, would provide a means to reduce both the economic damage and the health problems (possibility of stings) caused by fire ants.

b. *Noncrop lands.*—Although a greater number of applicators may be needed for mound-to-mound application than for ground broadcast, the area-wide environmental exposure from the mound-to-mound application would be extremely limited. Whatever threats Ferriamicide may pose to health or the environment will be kept to acceptable limits since the amount of toxicant to be applied is minimal, and the bait formulation applied to a mound would have almost no direct effect on nontarget organisms. Furthermore, Ferriamicide can be expected to control the mound populations and reduce infestation by this method in those areas where humans will be most likely exposed to the threat of fire ant stings.

C. CONCLUSION

I recommend, accordingly, that the exemption allow the following uses:

(1) ground broadcast for cemeteries and parks (Options F); and

(2) mound-to-mound application for all uses (Option G).

CONDITIONS TO BE IMPOSED UPON THE EXEMPTION

A. In order to insure that the Applicant continues to proceed with good faith efforts to obtain data to register Ferriamicide or another alternative pesticide for control of fire ants, I recommend that the following conditions be imposed on the emergency exemption.

(1) The exemption will be granted beginning July 1, 1978, and continue for only one year thereafter; and

(2) Granting of any further exemption will depend upon Applicant's good faith efforts to continue research to find an alternative for Mirex to control fire ants (assuming all other conditions required for granting an emergency exemption exist).

B. Before final authorization is issued and any distribution of Ferriamicide is permitted under the authority of a section 18 exemption, I recommend that the Applicant be contacted and that the items stated below be resolved consistent with the recommendations made above in order to reduce the likelihood of adverse effects from application of Ferriamicide:

1. Applicant should agree to commence further appropriate testing to ensure Applicant's continued good faith efforts to develop alternatives to control fire ants. EPA will offer assistance and use of its facilities where appropriate;

2. Applicant should furnish manufacturing process and product composition information, and data demonstrating satisfactory shelf-life of the product;

3. Agreement should be reached on the amount of product to be manufactured for use under this exemption and any other exemptions that may be issued, as well as the time period within which incremental amounts of product will be manufactured;*

4. Package sizes of the manufactured Ferriamicide bait should be such that the different user groups will receive packages of appropriate sizes;

5. We need to know which categories of persons will be authorized to apply Ferriamicide bait, by which methods and what applicator certification training requirements will be imposed;

6. The labeling must be consistent with the terms of the exemption, and must include appropriate use instructions and precautionary language;

7. Applicant should describe the authorized channels of distribution.

Conditions addressing the items contained in paragraph B could be dictated by EPA, but the resulting conditions may not be feasible under the circumstances existing in the State of Mississippi. Since EPA has not adopted the Mississippi proposal, it is appropriate to afford the State an opportunity to submit additional information on these matters, so that the most appropriate conditions and restrictions can be fashioned.

RECOMMENDATION

I recommend granting a specific exemption for use of Ferriamicide for mound-to-mound application and limited ground broadcast application, as discussed in Options D, F, and G, subject to the restrictions stated above, and subject to such further conditions as are determined to be appropriate after the Agency and the Applicant has resolved the outstanding matters discussed in paragraph B of the section titled "Conditions to be Imposed on the Exemption."

Approved in accordance with the reasoning stated here.

Dated: March 8, 1978.

BARBARA D. BLUM.

ATTACHMENT B

OPINION AND ORDER, UNDER § 18 OF THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT, REGARDING USE OF FERRIAMICIDE IN MISSISSIPPI

The Mississippi Authority for the Control of Fire Ants ("Mississippi Authority") has requested, under § 18 of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended ("FIFRA"), 7 U.S.C. 136p, that the Environmental Protection Agency

* The total amount of Ferriamicide produced for the entire period of product development may not contain more than 11,800 pounds of Mirex.

("EPA" or "Agency") issue an exemption from the other provisions of FIFRA to allow the use of an unregistered pesticide called Ferriamicide for the control of imported fire ants in Mississippi.

This Opinion and Order constitute final Agency action by EPA on the Mississippi Authority's application.

I. BACKGROUND

A. THE FIRE ANT PROBLEM

Imported fire ants are small ants which were accidentally introduced into this country early in this century and which now thrive in many areas of the Southern United States. They are now found in some 180,000,000 acres in Mississippi and eight other States in the South. They build mounds which can become as high as 1½ feet. When the mound is disturbed, the ants tend to attack the source of disturbance in large numbers. Their bites are very painful, and some persons who are hypersensitive to the ant venom suffer serious reactions to the bites. In addition, the large ant mounds can interfere with certain agricultural operations, such as mowing and combining.

Fire ants generally are most active above ground (and thus most troublesome) in the spring and fall, during warm, moist periods. During hot, dry summers, they tend to remain deep inside their mounds where moisture is available.

B. THE MIREX CANCELLATION

Mirex is a pesticide that has proven to be successful in controlling fire ant infestations. It is a relatively slow-acting insecticide which affects the ant's central nervous system when ingested. Because of its slow action, foraging worker ants will carry Mirex-treated bait into the mound, where it is consumed by other ants, including the queen, often resulting in the death of the entire colony of ants.

For many years Mirex bait formulations were applied widely (by aerial and ground broadcast methods) over large areas of the South, at a rate of approximately 1.5 grams active ingredient/acre.

Mirex is considered desirable for use against fire ants because it is relatively easy to apply, because comparatively small amounts of the active ingredient (when properly formulated and applied) are needed on a per-acre basis, and because it provides relatively inexpensive control.

However, Mirex is also very persistent in the environment, and causes harm to many nontarget species, especially aquatic species, even at low dosages. Test results (while not unambiguous) tend to show it induces cancerous lesions in rodent test species, and it causes a variety of other toxic effects in mammals as well.

Because of these concerns, the Agency in 1973-76 held a hearing to determine whether Mirex registrations should be canceled. This hearing ended when the Mississippi Authority, by then the only Mirex end-use registrant, proposed that the Agency accept a plan providing for the voluntary cancellation of all Mirex end-use registrations. The Administrator accepted this plan in December 1976. Under the plan, Mirex bait could be sold and used for ground-broadcast and mound-to-mound application until June 30, 1978. A discussion of the Administrator's reasons for accepting the plan, with a history of the Mirex proceedings, a summary of evidence presented, and a discussion of the risks and benefits of Mirex appears at 41 FR 56004 et seq. (December 29, 1976).

C. FERRIAMICIDE

The Mississippi Authority has conducted extensive research aimed at developing a pesticide that would be effective against fire ants in much the same manner as Mirex, but would be less persistent in the environment. The Authority has developed a product called Ferriamicide, the active ingredient of which is Mirex in combination with ferrous chloride and an amine. Laboratory tests have shown that the Mirex in Ferriamicide photodegrades (degrades by virtue of a chemical reaction caused when the Ferriamicide "absorbs" energy in the form of light) considerably faster than does Mirex alone.

The bait formulation the Authority proposes to use contains only 0.05 percent Mirex. The remainder of the product consists of inert ingredients, principally ground corncobs and soybean oil.

D. THE AUTHORITY'S SECTION 18 APPLICATION

Much of the testing required for registration of a pesticide under FIFRA section 3 has not yet been performed on Ferriamicide. However, although the voluntary cancellation plan provided that old-style Mirex bait was not to be available for sale or use after June 30, 1978, there was no reason to believe that the fire ants would cease their troublesome activity as of that date.

Accordingly, on December 16, 1977, the Mississippi authority submitted to EPA a request for the issuance of an exemption (under FIFRA section 18) allowing the use of Ferriamicide under certain circumstances even though it could not yet be registered. The Authority sought permission to apply Ferriamicide bait by aerial broadcast and ground broadcast methods over wide areas of Mississippi; these applications were to be made only by trained, certified pesticide applicators. The Authority also asked permission to sell Ferriamicide bait to homeowners and other persons for so-called "mound-to-mound" application (sprinkling the bait directly on the ant mounds). Various limitations and conditions were proposed in the application.

E. PRIOR EPA ACTION ON THE AUTHORITY'S REQUEST

On December 28, 1977, EPA published a notice describing the Authority's request and soliciting public comments.[1] A large number of comments were received, some favoring and some opposing Agency approval of the request. Some 20,000 Mississippi residents sent brief letters expressing concern about fire ants and in some cases supporting the application. In addition, a number of Federal legislators (most from Southern States), State legislators, and other State officials urged approval of Mississippi's request. (Officials of several other States planned to apply under section 18 for permission to buy Ferriamicide bait from the Mississippi Authority for use in their own States, if EPA approved the Mississippi request.)

On the other hand, a smaller number of commentors (including some Federal legislators) opposed the request. The Environmental Defense Fund, Inc. (EDF) submitted extensive comments in opposition to use of Ferriamicide.

After extensive EPA staff consideration of the issues raised by the Authority's request, Mr. Steven D. Jellinek, the Agency's Assistant Administrator for Toxic Substances sent to me, on March 8, 1978, a document containing a series of recommendations on the matter. I adopted those recommendations on the same day, and so indicated by concurring on the document [attached as Attachment A to this Opinion and Order].

Mr. Jellinek's recommended conclusions, which I adopted, in essence were these:

1. Fire ant infestation in Mississippi is a serious pest problem, which will become more serious once Mirex cannot be used.

2. There are alternative non-pesticidal treatments that provide some degree of relief in avoiding economic damage. There are also registered pesticide that in some circumstances can provide effective control.

3. However, in areas with widespread or heavy infestation, there is no practical method of treatment (other than Ferriamicide). In those areas, an "emergency" exists for purposes of FIFRA section 18.

4. Some of the registered alternative pesticides (notably heptachlor and

[1] 42 FR 64734.

chlordane) are known to pose serious environmental hazards.

5. Mirex is very effective against fire ants, and Ferriamicide bait, which contains Mirex, can also be expected to work well.

6. Although the Agency's knowledge of the properties and effects of Ferriamicide is incomplete, we do have a wide range of data on its active ingredient, Mirex.

7. The risks of Ferriamicide use can be kept very low by keeping exposure of humans to Ferriamicide at very low levels (both dietary residues and applicator exposure should be considered).

8. Aerial broadcasting and most ground broadcasting should not be allowed, because of the need to keep exposure levels low. Mound-to-mound application should be allowed primarily because it will pose very little, if, any risk of dietary exposure, yet will allow treatment of those areas where the need is greatest.

9. Practical considerations (primarily the difficulty of defining "heavy infestation" and of enforcing label restrictions) require allowing mound-to-mound treatments of Ferriamicide even where an alternative pesticide (such as chlorpyrifos) could be used.

10. A number of details remained to be resolved by agreement between the Authority and the Agency before final authorization for Ferriamicide use in Mississippi could be granted. Among other things, we needed to decide on the categories of persons who will be allowed to use the pesticide, the training requirements to be imposed, the use instructions and precautions to appear on the labeling, and the channels of distribution to be employed.

11. The exemption would be for one year, and at most could authorize use of 11,800 pounds of technical-grade Mirex for formulation into Ferriamicide.[2]

F. THE ENVIRONMENTAL DEFENSE FUND'S COURT CHALLENGE

In March 1978, EDF filed an action[3] in the United States District Court for the District of Columbia, saying that for a variety of reasons the Agency should be enjoined from allowing Mississippi to use Ferriamicide.

On June 16, 1978, a hearing was held, at which time the Court stated that it appeared the Agency's decision was not yet final or reviewable (because of the matters still requiring resolution). The parties then stipulated that the Agency's final decision would be issued on or about July 21, 1978, and that the Court would act in early September (following the filing of briefs by the parties).

II. FINDINGS

A. THE FIRE ANT INFESTATION IN MISSISSIPPI CONSTITUTES "EMERGENCY CONDITIONS" WITHIN THE MEANING OF FIFRA § 18

I find that "emergency conditions", within the meaning of FIFRA section 18, exist in those areas of Mississippi which are heavily infested with fire ants, for the reasons set forth on pages 7-12 of Attachment A. I adopt the "Conclusions regarding whether emergency conditions exist," set forth at pages 12-13 of Attachment A, as a part of this finding. The following paragraphs will serve to further explain this finding.

1. *Fire Ants Pose Serious Health and Economic Problems in Mississippi*

The nature of the harm fire ants cause is adequately explained in Attachment A and in the "Background" section of this Opinion, *supra*. Mirex, which has been useful in controlling infestations, can no longer be used in the formerly-registered formulations. The unavailability of Mirex can be expected to increase the degree of the problem where alternative control methods are not available.

2. *Alternatives for Fire Ant Control*

In areas heavily infested with fire ants there are no feasible registered pesicidal or non-pesticidal methods of control that are both safe for use and sufficiently effective to alleviate the emergency. Some pesticides are the subject of pending registration applications, but only for limited use near the home. Attachment A substantially dealt with the alternative methods for fire ant control (pp. 7-12).

The alternatives available for fire ant control fall into three classes.

In the first class of pesticides we have products like chlordane and EDC, both of which are carcinogens. However, these products under current label directions require far greater amounts of active ingredient to perform the same job as Ferriamicide. Chlordane requires 10,000 times the amount of active ingredient (Attachment A); EDC requires 1,000 times the active ingredient. (Attachment B). Methyl Bromide is a mound fumigant that could pose a greater acute hazard than Ferriamicide (Attachment C).

In the second class of pesticides are the many products tested by the USDA but not found to be effective as a fire ant bait. In addition other researchers have examined different pesticides, but found them ineffective (Attachments D and E).

The third class of methods of control have utility, but only in some circumstances. The most effective product in this class appears to be chlorpyrifos (Dursban). Available data indicate that chlorpyrifos works well, and is relatively low in toxicity. The dosage required would be about 1,000 times as much active ingredient as that in the Ferriamicide bait formulation.

Chlorpyrifos would be a practical alternative in some areas where the infestation of fire ants is relatively light. When the infestation is heavy or widespread, large amounts of water would have to be transported to the mounds. (The pesticide must be mixed with water, and one gallon of the mixture is applied per mound.)

In addition, there are other products for which registration applications are pending which might prove practical for use in relatively lightly infested areas around the home, even though their efficacy may not yet have been demonstrated (Attachment E).

3. *Efficacy of Ferriamicide*

It is expected that Ferriamicide will prove effective, based on the efficacy of its active ingredient, Mirex. (See Attachment A, pp. 11-12). There have been some problems to be solved regarding rancidification of the soybean oil in the Ferriamicide bait. When the oil rancidifies, it is no longer attractive to the ants and the product will not be effective for control. The addition of ferrous chloride to the bait not only facilitates the photodegradation of Mirex but could, in the presence of oxygen, cause the soybean oil to rancidify. The manner in which the Ferriamicide bait is formulated has been shown to influence the speed with which rancidification takes place, as does the availability of oxygen.

Mississippi has developed a "cold mix" manufacturing process and a formulation which uses, in addition to the original Ferriamicide formulation, citric acid and propylene glycol (Attachment A). The citric acid acts as an antioxidant, thereby inhibiting rancidification of the soybean oil. Shelf life tests conducted by the USDA facility at Gulfport, Mississippi indicate that the revised formulation maintained satisfactory acceptance by the fire ant (Attachment F). Mississippi has further addressed the shelf-life problem by packaging the one (1) and five (5)

[2] On August 31, 1976, the Mississippi Authority submitted a plan to the Administrator providing among other things, for the suspension of Mirex cancellation hearings which were then in progress, the phase-out of production and use of Mirex, and the voluntary cancellation of Mirex registrations. The Administrator accepted the Plan (See discussion at page 3 of this Opinion). EDF, which was a party to the Mirex proceeding, supported approval of the plan. Under the plan, 35,600 pounds of Mirex could be utilized during the phase-out period to produce Mirex products. However, only 23,200 pounds were in fact used. The maximum amount of Mirex that may be formulated into Ferriamicide is the remaining 11,800 pounds.

[3] *EDF v. Blum* et al., Civil Action No. 78-0577 (USDC, D.D.C.).

pound packages in airtight film bags. They will exhaust all oxygen from the bags and replace it with nitrogen at the time Ferriamicide is packaged. By this process the rancidification of the soybean oil cannot begin until the package is opened (Attachment G).

Once the package is opened, tests indicate the bait may be expected to lose its attractiveness to the ants in about 10 weeks (Attachment F). This will be sufficient to maintain usefulness of the product through the fall or spring treatment seasons, when the fire ants are most active. Homeowner purchasers will be informed of this when they buy the product.

Shortly after Attachment A was signed, Mississippi became aware that the way in which Ferriamicide was formulated influenced the amount of Kepone which was formed from the decomposition of Mirex.

The inclusion of propylene glycol and the adoption of the cold mix manufacturing process has reduced the amount of Kepone produced to less than 0.5 percent of the Mirex in the Ferriamicide (Attachment H). Since the Ferriamicide bait itself contains only 0.65 percent Mirex, the level of Kepone introduced into the environment would be at detection limits and should present very little threat to the environment.

B. PERMITTING LIMITED USE OF FERRIAMICIDE SUBJECT TO STRINGENT CONDITIONS WILL NOT CAUSE UNREASONABLE ADVERSE EFFECTS TO THE ENVIRONMENT

The extent to which a use of a pesticide will pose a hazard to humans depends not only on the inherent toxicity of the pesticide, but also on the degree to which humans will be exposed to the pesticide. If exposure can be kept very low, the hazard also will be very low even if the toxicity is high.

We know that Mirex causes various serious toxic effects in test species. Although Ferriamicide is designed to photodegrade rapidly, we do not know how much less inherently toxic than Mirex it is. Accordingly, it is prudent to proceed as if Ferriamicide were as toxic as Mirex. There is no reason to assume it has a higher degree of toxicity than Mirex.

The Agency's approach to the Authority's request for permission to use Ferriamicide has thus centered on the question whether exposure to Ferriamicide could be kept low enough so that the hazard posed by its use would be very small, and would be outweighed by the benefits its use would bring about.

1. *Aerial and ground broadcast application.* In my March 8 decision, I found that because of exposure considerations, it would not be reasonable to allow aerial application of Ferriamicide, nor to allow general ground broadcast application of the pesticide. I now reaffirm those findings, for the reasons stated on page 16 of Attachment A. I also found that ground broadcast application could be permitted in parks and cemeteries, because exposure to humans from that use pattern would be very low. I now reaffirm that finding also, as stated on pages 18-19 of Attachment A.

Mississippi has requested that it be permitted to apply Ferriamicide by ground broadcast on campgrounds, fairgrounds, schoolyards, playgrounds, and levees. I find that the same rationale for permitting this application method in parks and cemeteries applies to all these other areas except levees. Ground broadcast will not be permitted on levees because it is not uncommon for livestock to graze on or near them. Levees are, therefore, more appropriately considered in the same light as agricultural lands.

Ground broadcast rates shall be 1 to 2½ pounds per acre. These rates are derived from the calibrations on existing equipment. The largest amount that may be applied per acre, 2½ pounds, is the equivalent of mound-to-mound application on an acre infested with approximately 150 mounds. The maximum amount of Mirex that will be placed on any acre will be about ½ gram. In many cases the amount of Mirex will be considerable less. In view of the small amounts of Mirex and the fact that there will be no exposure through the food chain in the areas where ground broadcast will be permitted, and the benefits to be obtained by controlling fire ants in areas of widespread human exposure, I do not find the ground broadcast rates to be unreasonable.[4]

2. *Mound-to-mound application.* The remaining question is the extent to which the Agency should permit mound-to-mound application of Ferriamicide bait. Since the March 8 decision, new information has come to EPA's attention that affects my decision on that matter,[5] and further staff analysis has been performed.

The data availabe to the Agency indicate that there are two kinds of toxic effects in humans that we must be especially concerned with in evaluating the Mississippi Authority's request: Carcinogenicity and teratogenic effects. Our analysis indicates that there are only two possible routes of human exposure to Ferriamicide that require serious evaluation: Dietary exposure (from residues in or on food) and dermal absorption exposure of persons who may apply Ferriamicide.

a. *Reproductive (Teratogenic) effects.* One study which has recently come to the Agency's attention studied the effects of Mirex on reproductive performance and offspring development in the prairie vole, *Microtus Ochrogaster.*[6] Statistically significant adverse effects on the behavior of offspring were found when the prairie voles were dosed at 0.1 ppm of the diet, the lowest level tested. This effect level is estimated to be equal to 0.015 mg/kg bw/day, which translates in a 50 kg human to an effect level of 0.75 mg/day (Attachment I). Another recent study on the Swiss mouse[7] has shown serious physiological and behavioral effects in offspring when much higher doses were administered.

Although these tests involved repeated dosages, our analysis has used the conservative assumption that any one of the daily doses might have caused the observed effect in the offspring.

From the available residue data it seems likely that the present human dietary intake of Mirex (resulting from Mirex use in prior years) is no more than about 1 microgram per day (.001 mg/day).[8] That figure resulted from extensive prior aerial application to croplands and other areas at higher dosage rates. Many more pounds of Mirex were applied annually, and many more acres treated annually, than would be the case if mound-to-mound application of Ferriamicide were authorized for 1 year. Accordingly, I find that any dietary exposure that might result from mound-to-mound application of Ferriamicide for

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[4] It has been determined to produce Ferriamicide in 1, 5, and 50 lb bags. The 1 lb bags are for homeowner use and will be marketed for mound-to-mound application only to those persons who can justify the need for the product. The 5 lb bag will be available only to certified applicators for small scale ground broadcast in parks, cemeteries, and for mound-to-mound application for especially large acreage. The 50 lb bags will be available only to certified applicators for large scale ground broadcast.

[5] *Kepone (Mirex) Hexachlorocyclopentadiene: An Environmental Assessment.* National Academy of Sciences. (1978), at 1-2 (hereafter NAS study). (Attachment D). The NAS study is one of three studies that have recently come to the Agency's attention and have been key documents in the exposure analysis. None of these studies were available when Mirex was canceled on October 1976.

The other two studies are on the reproductive effects of Mirex:

(1) Shannon, V. C., *The Effects of Mirex on the Reproductive Performance and Behavioral Development of the Prairie Vole Microtus Ochrogaster* (doctoral dissertation, Iowa State University, Ames, Iowa; 1976) (unpublished). (Attachment J). Only the abstract is attached. The 320 pp. study will be available on request.

(2) Holevinski and Massaro, *The Effects of Gestational Exposure to Mirex on Offspring of the Mouse* (Dept. Biochemistry, SUNY School of Medicine, Buffalo, NY.) (available only in abstract) (March 1978) (Attachment K).

[6] See footnote 5 supra.

[7] See footnote 5 supra.

[8] See, NAS study at 34; Attachment M.

1 year will be so low as to pose no appreciable risk of teratogenic or other reproductive effects in humans.

When the possible reproductive/teratogenic effects arising from exposure to Mirex of persons who actually apply the Ferriamicide bait is considered, however, there is more cause for concern.

As already noted, if a pregnant woman were to ingest or otherwise be exposed to 0.75 mg of Mirex in a day, she would have received a daily dose equivalent (on a diet-to-body weight basis) to the dose which cause adverse reproductive effects and offspring behavior abnormalities in the prairie vole.

The Agency's staff has prepared an estimate (Attachment N), using a presumed worst-case approach, of the amount of Mirex that might enter the body by dermal absorbtion if a woman were to apply a 1-pound bag of Ferriamicide bait by using her hands (not wearing gloves or using the measuring spoon, and thus violating the use instructions in two ways). If 1 percent of the Mirex content were to come in contact with her skin, and if 10 percent of that 1 percent were to be absorbed dermally, the resulting Mirex "dose" would be about 0.23 mg (0.0046 mg/kg for a 50 kg woman).

This estimated exposure is only one-third of the dose which caused adverse effects in prairie vole offspring. The estimate probably far exceeds the average actual exposure to applicators, since use of gloves and measuring spoons would reduce dermal contact with the bait to practically zero. But it can be expected that some persons will not take these precautions, and for them our estimates show there is no real margin of safety, since the calculated exposure is so close to an observed effect level.

Oral ingestion of 1.5 grams of the bait would also yield the same exposure level that caused prairie vole effects, but it appears that the dermal exposure route is of more concern, since it can be expected that almost everyone will guard against oral ingestion of the pesticide.

I find that the risk of reproductive/teratogenic adverse effects resulting from applicator exposure is serious enough to warrant steps to reduce exposure.

b. Oncogenic effects. Tests of the cancer-causing potential of Mirex have yielded results that have been interpreted in various ways.[5] However, for present purposes, Mirex is presumed to be carcinogenic.

The Agency has performed worst-case analysis[6] of the possible cancer risk to humans from two exposure routes: dietary and applicator dermal contact. This analysis has been reviewed by the Agency's Carcinogen Assessment Group (CAG).

The dietary exposure worst-case estimate concludes that in a hypothetical population of 10,000,000 about 0.681 additional cases of cancer per year would result on the average from the incremental use of 3,000 pounds of Mirex. (Attachment Q.) It is very likely that the actual number of cancer incidences would be even lower, because of the very conservative assumptions employed in the analysis.

The applicator dermal exposure analysis was based on the worst-case dermal absorption assumptions described above. It concluded that if one million persons apply the Ferriamicide, and if all of them fail to wear the prescribed rubber gloves and use the measuring spoon, no more than 30 of them would develop cancer as a result.

c. Exposure-reduction measures to be imposed. While the worst-case hazard estimates set forth above probably grossly overestimate the actual risks of Ferriamicide use, they do indicate that the benefits that Ferriamicide use might provide are not without their accompanying hazards. It is this Agency's duty to insure to the extent possible that no particular use of a pesticide creates risks that are unnecessarily or unreasonably great, when weighed against the benefits.

The main benefit of Ferriamicide is that the nature of its formulation and the small quantities required to make it easy to apply in areas of heavy and widespread infestation. Although treatment of a mound with chlorpyrifos will probably yield adequate results, chlorpyrifos treatment requires transportation of one gallon of water to each mound to be treated.

It is thus necessary to weigh the greater convenience of Ferriamicide against the hazards that its use presents. I find that in areas where chlorpyrifos can be used with only a modicum of inconvenience or extra work, it would be unreasonable to allow Ferriamicide use.

Although it is not easy to define the areas in which Ferriamicide may be used, it is necessary to draw the boundary somewhere. Accordingly, I find that chlorpyrifos can be used without serious inconvenience whenever there is less than 1 acre, or less than 50 mounds, to be treated. Where a person certifies in writing that he needs to treat more than 50 mounds and 1 acre or more, he will be permitted to purchase Ferriamicide bait from the Mississippi authority.

In arriving at this conclusion, I have taken into account that fact that most (if not all) small plots of land will be relatively close to a water source, that few small residential plots are likely to now have heavy fire ant infestations; and that the 50-mound minimum will result in prompt use of most or all of a 1-pound bag, thus lessening the likelihood of opened bags being stored in or around homes.

I also find it necessary to require that the labels on all sizes of Ferriamicide must bear the following statement (in bold-face type, immediately below the CAUTION caption): "NOT TO BE APPLIED BY WOMEN OF CHILD-BEARING AGE."

I do not find it unreasonable to permit homeowners and other persons with severe infestations (over 50 mounds) and large acreages (over 1 acre) to use Ferriamicide in view of the extreme need for the product. While most homeowners at risk will be eliminated by the 1 acre, 50 mound restriction, the warning on the label should sufficiently warn the women of child-bearing age who live on the larger acreages.

Since the one pound package will be available to persons who are not certified, trained applicators, it is necessary to ensure that they are adequately informed of the dangers from use of the product. Mississippi will institute television and newspaper campaigns to inform the citizens about Ferriamicide and to instruct them in the proper way to use it. In addition, before being allowed to purchase the one pound bag, a person must read (or have read to him) and sign a paper stating several cautions about the pesticide. That paper must contain the following statements:

1. Ferriamicide is not to be applied by women of child-bearing age. Tests on laboratory animals have shown if a pregnant female is exposed to the active ingredient, harm to offspring may result.

2. Ferriamicide contains Mirex, which has caused tumors in rodent tests and may pose a risk of cancer to man; Mirex is also hazardous to fish and shellfish.

Precautions must be taken to ensure that the product does not come into contact with the skin; therefore wear rubber or plastic gloves when applying, and follow all other label directions.

3. This product is worthless unless approximately ten weeks after the package is opened. [illegible] will not be effective against fire ants.

5. The one-pound container will treat approximately 50 fire ant mounds. If you do not have a need for that much pesticide within the ten week period after opening, then purchase another pesticide instead.

In addition, the paper must contain the following statement to be signed by the purchaser: "I have read the above statements. I have approximate-

[5] See Ulland, et al., *A Carcinogenicity Assay of Mirex in Charles River CD Rats*, J. Natl. Cancer. 58:133 143, 1977. (Attachment O).

[6] See Attachments P and Q.

ly fire ant mounds to treat on approximately acres."

For the foregoing reasons, I find that the benefits of the use permitted under this Opinion and Order will outweigh the associated risks, in light of the restrictions imposed. In other words, use of Ferriamicide under these circumstances will not cause unreasonable adverse effects on the environment.

IV. Open Conditions in the March 8 Document

This section states the resolution of the conditions that were left open in the March 8 decision (Attachment A, pages 20-21).

1. *Applicant should agree to commence further appropriate testing to assure Applicant's good faith efforts to develop alternatives to control fire ants.*

This condition is designed to prevent repeated annual applications for emergency exemptions based on special data and to assure that diligent efforts are made to find alternatives to control fire ants.

Mississippi is proceeding on two fronts. The State is obtaining funding from EPA in order to conduct research in alternatives other than Ferriamicide, and has initiated an alternative program to test Ferriamicide.

In a letter to EPA dated May 15, 1973 (Attachment B), Mississippi informed the Agency of a proposed research program to develop alternatives to pesticides other than Ferriamicide for fire ant control. Mississippi has a cytologist and a biology faculty for testing newly developed pesticides will be established. In addition there will be a team of chemists, zoologists, toxicologists, ecologists and other scientists engaged in parallel research. All of these investigations will be integrated into a single large program of synthesis, biology and toxicology.

The program is submitted to Congress for approval and an extensive testing program with the expected size of materials, resources for Ferriamicide (Attachment B) has submitted to EPA suggestions for the final stages of the testing program (See Attachments B). In addition Mississippi has supplied the documentation in support of its testing program (Attachment B). At this point I am inclined to find that Mississippi has exhibited good faith efforts to continue to seek an alternative method to control fire ants. Since in a relatively short period of time Mississippi has developed a testing program on Ferriamicide and appears to be pursuing research into alternatives, I tentatively determined in the March 8, 1973, Action Memorandum that any Ferriamicide emergency exemptions requested when this exemption expires will depend very heavily on Mississippi's pursuing the appropriate testing programs.

2. *Applicant should furnish manufacturing process and product composition information and data demonstrating satisfactory shelf-life of the product.* This item is considered in the section of this Opinion concerning the efficacy of Ferriamicide.

3. *Agreement should be reached on the amount of product to be manufactured for use under this exemption and any other exemptions that may be issued, as well as the time period within which incremental amounts of product will be manufactured.* The March 8, 1973, Action Memorandum expressed my decision which I hereby reaffirm, to limit the total amount of Mirex used in the entire Ferriamicide development program to no more than 11,200 pounds.

The authority has requested permission to distribute, for use in Mississippi, 500,000 pounds of Ferriamicide bait (That amount would require 156 pounds of Mirex). (See Attachment C) That request, however, contemplated some ground bait use, which was not permitted under this Opinion and Order. The Authority's figures indicate that the following amounts of Ferriamicide bait will be needed for permitted uses:

Mound-to-mound application by citizens: 13,333 pounds (number based on pest reports from citizens for Mirex bait).

Mound-to-mound application for levees: 13,333 pounds (there are some 20,000 acres to be treated at 50 mounds per acre, one pound per acre would be needed).

Mound-to-mound applications by State employees on other sites, at request of citizens: 31,667 pounds.

Ground broadcast application on parks, fairgrounds, campgrounds, schoolgrounds, and cemeteries: 2,000 pounds (2 pounds per acre on 1,000 acres, including 4,000 acres of schoolgrounds).

Accordingly, it is my determination that not more than 60,000 pounds of Ferriamicide bait may be distributed by the Authority for use in Mississippi (this will require use of 210 pounds of Mirex, and will allow treatment of some 450,000 acres).

The amount of Ferriamicide bait that the Authority may sell for distribution and use in other States will be considered separately in connection with evaluation of the applications filed by the other States.

4. *Package size of the manufactured Ferriamicide bait should be such that the different user groups will receive packages of appropriate size.*

5. *We need to know which categories of persons will be authorized to apply Ferriamicide bait, by which method, and what applicator certification training requirements will be imposed.* These two factors were considered in the hazard assessment section.

6. *The labeling must be consistent with the terms of the exemption and must include appropriate use instructions and precautionary language.* The language has been approved for the different Ferriamicide containers. These labels contain appropriate precautions for the different uses. The one pound package label is especially explicit in that it specifically prohibits use of the contents for aerial or ground broadcast use and states that an individual requiring less than one pound may not purchase the product.

All labels contain warnings as to the necessary precautions to avoid harm to humans, domestic animals and aquatic organisms. Instructions require that rubber gloves be worn when applying the pesticide to lessen dermal exposure.

Since Mirex is toxic to aquatic organisms, a special precaution concerns relating to keeping the product out of aquatic areas. Ferriamicide, after photodegradation, has exhibited no toxic effects on certain aquatic animals, but the precaution will appear as an added safety factor.

7. *Applicants should describe the authorized channels of distribution.* The Mississippi Authority for the control of the Fire Ant is responsible for the manufacture, packaging and distribution of Ferriamicide bait. Within the State of Mississippi they also will control the distribution of Ferriamicide bait.

The State Department of Agriculture and Commerce and the County Extension Service will act as points for end use distribution within the State of Mississippi.

These agencies will facilitate monitoring of the exemption, since distribution will only take place through state facilities.

V. Ancillary Matters

A. Environmental Impact Statement

Among FEA's allegations in its second action is that EPA has failed to prepare an Environmental Impact Statement as required by the National Environmental Policy Act of 1969 (NEPA). While not conceding that EPA is required to file a NEPA statement with its action in exemption, I believe EPA has prepared the substantive equivalent.

Attachment A shows how the Agency considered the environmental impacts of using Ferriamicide. The memorandum actually considers carefully everything known at the time about Ferriamicide in relation to the product Mirex. Based on this, it concluded the alternative to Ferriamicide bait did not indicate acceptable in areas of heavy infestation.

Attachment A and this document clearly constitute the "substantial equivalent" of an environmental impact statement. Admittedly much data concerning the environmental impact of Ferriamicide is lacking, but more will be obtained as we learn more from the experimental programs currently being conducted. The Agency has authorized an experimental use permit for Ferriamicide and is assisting, through the EPA Office of Pesticide Programs, in a research and development program being conducted by Mississippi and the United States Department of Agriculture. (40 CFR § 6.608(c)(5), which requires EPA to prepare environmental impact statements for certain actions involving field testing undertaken by the Office of Research and Development (ORD), does not apply in the case of the Ferriamicide research program, which is funded by the Office of Pesticide Programs.)

B. EDF'S "POLITICAL INFLUENCE" ALLEGATIONS

EDF, in its court challenge, has alleged that the Agency's decision to permit some use of Ferriamicide was reached because EPA was concerned solely or primarily with pleasing the southern Congressional delegation and the governors of southern states. This charge appears to be based mainly on the fact that EPA received and considered comments from Federal legislators and from citizens of Mississippi during the process of reaching its decision.

I wish to state for the record that I do not believe there was anything improper about the manner in which the decision was reached. The Agency certainly did take into account the fact that fire ant control is widely desired by citizens of Mississippi and other southern states. The degree of public concern about a pest problem is certainly relevant to the issue of whether "emergency conditions" exist, although a number of other factors are also relevant. After all, fire ants are a problem largely because of their proximity to people and their tendency to interfere with everyday human activity; if citizens were not bothered by fire ants, it is unlikely that we would have received the § 18 request in the first place.)

It was in this light that the letters from Mississippi citizens and from Congressmen and Senators representing infested southern states were considered. I do not believe that these communications constituted an intrusion into the normal decision-making process of the Agency.

As for the idea that EPA's decision was somehow calculated to please the southern Congressional delegation, it should be pointed out that many of the letters from Congressmen specifically supported the request for approval of aerial application of Ferriamicide. The Agency's complete denial of that request should, it seems to me, indicate that the Agency's decision was not designed to show fawning responsiveness to whatever requests legislators have made.

ORDER

In accordance with the foregoing Opinion, I hereby authorize the Mississippi Authority for the Control of Fire Ants ("Mississippi Authority") to distribute and use Ferriamicide bait to control fire ants in Mississippi, subject to the following conditions:

(1) The bait formulation may contain no more than 0.05 percent active ingredient.

(2) This authorization expires on June 30, 1979.

(3) The Mississippi Authority, through its county agents, shall be responsible for all distribution of the pesticide product and shall monitor all distribution and use to ensure compliance with the terms of this Order.

(4) The Ferriamicide bait shall be manufactured by the process and with the product composition approved in the foregoing Opinion so as to inhibit the degradation to kepone and maintain the efficacy of the product after the package is opened) for at least 10 weeks.

(5) All applications are to be made by either ground broadcast or mound-to-mound application.

(6) Ground broadcast may be performed only in parks, cemeteries, schoolyards, campgrounds, and fairgrounds, only by certified applicators using properly calibrated equipment, at a rate of 1 to 2½ pounds of Ferriamicide bait per acre, and only on infested acreage. Rubber or plastic gloves must be worn when applying the product. Applicators shall take care to avoid mouth or eye contact with the pesticide.

(7) Mound-to-mound application must be made at a rate of no more than ¼ ounce of Ferriamicide bait per mound. The measuring spoon which is to be provided with the product shall be used to sprinkle the bait on the mound. The applicator must wear rubber or plastic gloves when applying the product. Applicators must take care to avoid contact of the bait with the mouth or eyes.

(8) Women of child-bearing age are prohibited from applying Ferriamicide.

(9) The Mississippi Authority may not distribute more than 450,000 pounds of Ferriamicide bait for use in Mississippi.

(10) Ferriamicide bait shall be packaged in 1, 5, and 50-pound bags. The 5-pound and 50-pound bags are to be made available only to certified applicators for ground broadcast and mound-to-mound application.

(11) The one-pound bags shall be used only for mound-to-mound applications, and may only be distributed to persons who have at least 50 mounds, and at least one acre, to treat.

(12) Before releasing a one-pound bag, the distributor must ensure that the purchaser reads (or has read to him), fills in, and signs the document containing the five cautionary statements as required by the Opinion.

(13) Labels shall contain all provisions necessary to ensure they are consistent with the terms of this Order and Opinion. The labels shall contain the provisions previously approved by EPA, with the following changes:

(a) All labels shall contain the following statement in boldface type above the Caution statement: "Not to be Used by Women of Child Bearing Age."

(b) The one-pound package's label shall state that the product may not be used by any person who has less than one acre, or less than 50 mounds, to treat.

(14) The Mississippi Authority shall submit all reports required by 40 CFR 166.5.

(15) This order shall not authorize the actual distribution or use of Ferriamicide bait until the Mississippi Authority is notified by the EPA Deputy Assistant Administrator for Pesticide Programs that distribution and use may commence.

Dated: July 23, 1978.

BARBARA BLUM,
Deputy Administrator,
Environmental Protection Agency.

[FR Doc. 78-29221 Filed 10-16-78; 8:45 am]

Site: _____
Break: 17.7
Other: _____

Mirex Decision

PESTICIDE PROGRAMS

[FRL 662-5; OPP—62001]

Administrator's Decision To Accept Plan of Mississippi Authority and Order Suspending Hearing for the Pesticide Chemical Mirex

On October 20, 1976, the Administrator of the Environmental Protection Agency (EPA) issued an order accepting a Plan submitted by the Mississippi Authority for the Control of Fire Ants (the holder of all registrations for Mirex end-use products) for the gradual phase-out of its Mirex registrations and the suspension of the pending hearing under section 6(b)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act. The following is a compilation of documents that are germane to this action, including (1) the Administrator's order; (2) a letter to Mr. John R. Quarles, Jr. from Mr. Jim Buck Ross which, with its attachments, constitutes the Plan submitted by the Mississippi Authority to the EPA; and (3) a staff-prepared "Summary of Evidence and Other Information and Statement of Reasons" setting forth the Agency's reasons for accepting the Plan. References and Appendices to the "Summary of Evidence and Other Information and Statement of Reasons" are available for inspection in the office of the FEDERAL REGISTER Section, Technical Services Division (WH-569), Office of Pesticide Programs, Rm. 401, East Tower, 401 M St. S.W., Washington, D.C. 20460 from 8 a.m. to 4:30 p.m. during normal working days.

Dated: December 21, 1976.

EDWIN L. JOHNSON,
Deputy Assistant Administrator for Pesticide Programs.

UNITED STATES OF AMERICA, ENVIRONMENTAL PROTECTION AGENCY, BEFORE THE ADMINISTRATOR

In Re: Public Hearing to Determine Whether or not the Registrations of Mirex Should be Cancelled or Amended.
FIFRA Docket No. 293.

ADMINISTRATOR'S DECISION TO ACCEPT PLAN OF MISSISSIPPI AUTHORITY AND ORDER SUSPENDING HEARING

On September 23, 1976, the Agency's Acting Judicial Officer issued a "Notice of Receipt of Request to Cancel Mirex Registrations and Request for Comments" to all of the parties to this proceeding. After reviewing the proposed "Summary of Evidence and Statement of Reasons" submitted by EPA staff, the comments submitted by the other parties to this proceeding, and the Agency's staff's response to these comments, I have decided to approve the Plan submitted by the Mississippi Authority for the Control of Fire Ants, and adopt the "Summary of Evidence and Statement of Reasons" submitted by the Agency staff, with minor corrections. Accordingly, I hereby direct the Agency staff to take such action as is necessary to implement the Plan in accordance with its terms. Since the only Mirex product whose registration is not cancelled pursuant to the Plan is a technical or manufacturing use only product that can only be used in formulating other end-use products will be cancelled under the Plan, I have determined that it is no longer in the public interest to continue this Public Hearing to Determine Whether or Not the Registrations of Mirex should be Cancelled or Amended.

Accordingly it is ordered that this hearing is hereby suspended.

Dated: October 20, 1976.

RUSSELL E. TRAIN,
Administrator.

THE STATE OF MISSISSIPPI,
DEPARTMENT OF AGRICULTURE AND COMMERCE,
Jackson, August 31, 1976.

Mr. JOHN R. QUARLES, Jr.,
Deputy Administrator, Environmental Protection Agency, Room 1213 West Tower, 401 M Street, S.W., Washington, D.C.

DEAR MR. QUARLES: Pursuant to our recent conversation regarding the continued use of mirex, we are submitting the following plan for your consideration. The responsible agencies of the nine states infested with the imported fire ant recognize that their immediate responsibility to the people of their respective states is two-fold: to provide an effective means of controlling the imported fire ant while concurrently preventing undue damage to the environment. As there is a question as to the long-range effect that mirex may have on the environment, it is obvious that the best way to minimize this potential danger is to reduce the amount of technical mirex placed in it. Therefore, the Mississippi Authority for the Control of Fire Ants ("Mississippi Authority") has designed the following plan ("Plan") to minimize the amount of mirex to be used; to reduce the size of contiguous areas treated, and to phase-out gradually the current mirex registrations with the objective of replacing current mirex registrations with an unquestionably safe registered material as quickly as possible. The plan shall become effective immediately upon notification by EPA to the Mississippi Authority that the plan is acceptable to EPA.

The plan has the following elements:

I. CANCELLATION OF MIREX REGISTRATIONS

The Mississippi Authority for the Control of Fire Ants requests that the Environmental Protection Agency cancel all of its mirex registrations under Section 6(a)(1) of the Federal Insecticide, Fungicide and Rodenticide Act in accordance with the attached suggested cancellation notice. (Attachment A.) The Mississippi Authority hereby waives its right under Section 6(a)(1) to request within 30 days after issuance of such notice that the registrations be continued in effect. The Mississippi Authority also states that it will not give its concurrence to any other person to request that the registrations be continued in effect.

II. SUSPENSION OF THE PENDING MIREX HEARING

The Mississippi Authority for the Control of Fire Ants proposes that upon publication of the attached cancellation notice, the pending hearing under Section 6(b)(2) of the Federal Insecticide, Fungicide and Rodenticide Act should be suspended. It is understood that after publishing its Section 6(a)(1) cancellation notice and after suspending the ongoing Section 6(b)(2) hearings, the Environmental Protection Agency would publish a Statement of Reasons for taking this action. This Statement of Reasons will include a summary of evidence in the

record developed at the Section 6(b)(2) hearing and other information not included in the record bearing on the risks and benefits of mirex use and the merits of this proposal of the Mississippi Authority.

III. RESEARCH

A program to find a suitable alternative chemical to replace mirex has been implemented through the "Cooperative Interagency Agreement for the Study of Alternative Chemicals to Mirex." (See Attachment B). Additionally, the USDA Agricultural Research Service has an ongoing program to screen alternatives to mirex for control of imported fire ants. It is our understanding that Congress has appropriated additional funds to expand this research. The Mississippi Authority for the Control of Fire Ants will make every effort to have this program incorporated into the Cooperative Interagency Agreement.

IV. REQUEST FOR AMENDMENT

The Mississippi Authority for the Control of Fire Ants requests that its mirex 10:5 bait registration (EPA Reg. No. 38962-3) be amended to permit in addition to the methods now provided the packaging of mirex 10:5 bait in five pound bags for ground broadcast or mound-to-mound application by persons affected by the Imported Fire Ant or under the supervision of authorized state or federal personnel. Labels on such five pound bags should specify that the contents may not be applied aerially.

The Mississippi Authority for the Control of Fire Ants feels that the above plan will achieve both of its goals and should receive the support of all affected persons. The Authority urges that you give this proposal very careful consideration.

Sincerely yours,

JIM BUCK ROSS,
Chairman, The Mississippi Authority for Control of Fire Ants.

ATTACHMENT A.—PROPOSED FEDERAL REGISTER NOTICE REQUESTING CANCELLATION OF REGISTRATION OF PESTICIDE PRODUCTS CONTAINING MIREX

Pursuant to Section 6(a)(1) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended (86 Stat. 973, 89 Stat. 751, 7 U.S.C. 136(a) *et seq.*) the Environmental Protection Agency (EPA) has notified the Mississippi Authority for the Control of Fire Ants, PO Box 1609, Jackson MS 39205, of its intention to cancel, in accordance with the following conditions, the registrations of all these products containing the active ingredient Mirex:

Registered products—Mirex

Registrant	EPA registration No.	Product
Mississippi authority for control of fire ants	38962-1	Fire Ant Bait.
Do	38962-2	Fire Ant Bait "150".
Do	38962-3	Granular Bait 2x now 10:5.
Do	38962-4	Granular Bait 4x.
Do	38962-5	Harvester Bait 300.
Do	38962-6	Mirex Special Concentrate (25 percent).
Do	38962-7	Mirex Technical Concentrate (80 percent).
Do	38962-8	Mirex Pelleted Bait 450.
Do	38962-9	A-C Mirex Pelleted Bait 450.
Do	38962-10	Yellowjacket Stopper.

A. PRODUCTION LIMITATIONS AND END DATES FOR USE OF CURRENT-REGISTERED PRODUCTS.

1. *Number of Aerial Applications.* No single acre will be treated aerially with Mirex bait on more than one occasion between July 1, 1976 and December 31, 1977.

2. *Mirex 4x Bait.* The effective date of cancellation for Mirex 4x Bait (EPA Reg. No. 218-565) shall be December 1, 1976. Between July 1, 1976 and December 1, 1976 not more than 45,000 pounds of technical Mirex shall be formulated into Mirex 4x Bait. Stocks of Mirex 4x Bait existing as of December 1, 1976 may be used only through December 31, 1976; provided that 1,000 pounds of Mirex 4x Bait may be utilized for research as a control in experiments to determine the efficacy of alternative materials until June 30, 1978.

3. *Mirex 10:5 Bait.* EPA shall amend the Mirex 10:5 Bait registration (EPA Reg. No. 38962-3) to add to that registration by permitting the packaging of Mirex 10:5 Bait in five pound bags for ground broadcast or mound-to-mound application by persons affected by the imported fire ant, or under the supervision of authorized state or federal personnel.

The effective date of cancellation for Mirex 10:5 Bait (EPA Reg. No. 38962-3) shall be December 1, 1977. Between September 1, 1976 and December 1, 1977, not more than 20,000 pounds of technical Mirex shall be formulated into Mirex 10:5 Bait. *Provided,* That, if less Mirex 4x Bait is produced than can be produced with the 45,000 pounds of technical Mirex provided for in paragraph A)(2) above, up to 15,000 pounds of the amount of technical Mirex not utilized from this 45,000 pound limitation shall be added to the 20,000 pound production limitation for Mirex 10:5 Bait. Stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be applied aerially only through December 31, 1977. Stocks of Mirex 10:5 Bait in five pound bags existing as of December 1, 1977 may be sold, distributed, and used in ground broadcast and mound application until June 30, 1978. Other stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be packaged by the Registrant into five pound bags for sale, distribution, and use in ground broadcast and mound application until June 30, 1978.

4. *Mirex Technical.* The effective date of cancellation for Technical Mirex (EPA Reg. No. 218-585) shall be December 1, 1977. No stocks of Technical Mirex existing as of December 1, 1977 shall be distributed, sold, or used.

5. *Mirex Harvester Ant Bait 300.* The cancellation of the registration for Mirex Harvester Ant Bait 300 (EPA Reg. No. 38962-5) shall be effective immediately for all uses other than for the control of the pheidole ant, the Argentine ant, and the fire ant on pineapples in Hawaii. Presently existing stocks of Mirex Harvester Ant Bait 300 may be distributed, sold, and used for all uses until December 31, 1976. The effective date of cancellation for Mirex Harvester Ant Bait 300 for the control of the said ants on pineapples in Hawaii shall be December 1, 1977. Stocks of Mirex Harvester Ant Bait 300 existing on December 1, 1977 may not be applied aerially for the control of the said ants on pineapples in Hawaii after December 31, 1977, but may be distributed, sold, and used (other than aerially) for this use indefinitely.

6. *Other Mirex Registrations.* The cancellation of all other Mirex registrations shall be effective immediately. Presently existing stocks of materials formulated according to all other EPA Mirex registrations may be distributed, sold, and used until December 31, 1977.

B. ADDITIONAL RESTRICTIONS

1. *Coastal Zones.* Because of the recognized limitations of the coastal county restrictions which were based on political boundaries, and in view of the need to protect embryonic and juvenile marine and aquatic life which is dependent on shallow coastal and estuarine areas, aerial treatment will be precluded within the coastal zone as determined as follows:

The coastal zone shall be determined so as to bring within the zone all of the following areas:

(a) the area between the coastline and a parallel line twelve miles from the coastline; the coastline shall include the shores of any bays or estuaries which are contiguous to the sea;

(b) the area within twelve miles from the furthest inland edge of any coastal, saline marsh; coastal marshes are defined as those areas represented on U.S. Geological Survey maps by the standard marsh symbol with a white background;

(c) the area around major rivers which are subject to a tidal influence which area may be, based on hydrologic and geologic factors, from one-quarter mile to five miles in circumference as measured from the point of tidal influence; a major river is defined as any river which drains an area in excess of 150 square miles. The point of tidal influence is defined as the point at which the mean discharge of the river no longer affects its stage at a mean high tide.

Whenever practicable coastal zone boundaries shall be along topographical features which are easily recognizable by air, such as highways, railroad beds, and rivers.

States that desire relief from the current label restriction against aerial Mirex application in coastal counties may develop a plan in accordance with the criteria contained herein and additional guidelines as found necessary, and may submit the plan to the Office of Pesticide Programs for review and approval. Such plan must be submitted to EPA for approval at least 45 days prior to application. The Office of Pesticide Programs may, by approving the plan in whole or in part, grant relief from the label prohibition against aerial Mirex application in any coastal county to the extent that such aerial application is performed consistently with the plan and any conditions imposed by EPA Office of Pesticide Programs in conjunction with approving the plan. The current coastal county restrictions shall remain in effect for each county for which an acceptable coastal zone plan is not submitted.

2. *Type of Aerial Application.* From July 1, 1976 through December 31, 1976, aerial application shall be made in accordance with current label restrictions except where the restrictions set forth in paragraphs 3 and 4 of these additional restrictions supersede. From January 1, 1977 through December 31, 1977, aerial application shall be made only with helicopters and single-engine aircraft flying at an altitude of no greater than 150 feet and at a speed of no greater than 150 miles per hour; provided that these conditions shall in no way supersede regulations of other agencies, including the Federal Aviation Administration, governing the aerial application of pesticides.

3. *Requests for Non-Treatment.* Prior to any aerial application of Mirex, prominent notice shall be published in local newspapers, at least 20 days but not more than 30 days prior to application, stating what area will be treated and giving any resident of such areas the right to prevent application upon his land. *Provided,* That until December 1,

elements of the Plan of the Mississippi Authority (a copy of the Plan itself is also attached). Finally, Part V presents the Agency's decision to accept the Plan, and its rationale for that decision.

The scope and purpose of the various parts of this document are, for the most part, self-explanatory. However, some elaboration is necessary with respect to Part III, which presents a summary of available information concerning the risks and benefits of the use of Mirex for its currently registered uses. The information which is summarized is, for the most part, contained in the hearing record of the Mirex litigation. To some extent, however, information is included which has recently come to light that has not yet been incorporated in the hearing record. As as indicated in more detail below, the summary does not represent the Agency's findings of fact at the conclusion of the Mirex litigation. Rather, it represents an attempt to summarize available information with respect to the risks and benefits of Mirex use in order to provide a basis upon which to make a responsible decision concerning whether or not to accept the Plan of the Mississippi Authority. Obviously, no such decision can be made without reaching conclusions concerning the risks and associated benefits of Mirex use, because the Plan provides for continued production and use of some currently-registered end-use Mirex products during the phase-out period provided for. The Agency cannot assess whether this solution is consistent with the public interest, without some consideration of available information concerning risks and benefits of Mirex use.

II. History

On March 18, 1971, this Agency issued a notice of intent to cancel registrations of pesticide products containing Mirex. The reason for issuing the notice was that evidence concerning the effects of Mirex on humans and other animals raised a substantial question about the safety of continued use of pesticide products containing Mirex. Allied Chemical Corporation, holder of ten of the eleven Mirex registrations, elected to challenge the notice by petitioning, on April 16, 1971, for referral of the matter to a Scientific Advisory Committee pursuant to 7 U.S.C. 135b(c).[2] In its report, submitted with revisions on March 1, 1972, the committee made recommendations which can be summarized as follows:

(1) Mirex registrations should be continued with labeling restrictions to minimize environmental contamination; (2) publicly supported control programs should be limited to infested areas where the imported fire ant is a problem because of proximity to people or interference with agricultural operations; (3) where publicly sponsored programs are unavailable, nonaerial broadcast treatment of lawns, pastures, schoolgrounds, parks, and similar areas by individuals is recommended instead of mound treatment; (4) more information should be obtained in order to establish economic or nuisance threshold levels requiring Mirex treatment, including information regarding rates of reinfestation and population recovery in areas receiving a single bait treatment; and (5) more research should be conducted on the possible hazards of Mirex to man and his environment.

In an order filed May 3, 1972, published in the Federal Register on June 1, 1972 (37 FR 10987), Administrator Ruckelshaus accepted the findings of the Committee and made additional findings of his own. He found that although Mirex is capable of being stored in human adipose tissue, the data regarding Mirex residues in human tissue was extremely fragmentary and inconclusive. He also found that, while one study had clearly shown that Mirex was tumorigenic in mice, the Committee had refrained from labeling Mirex as carcinogenic, because only one species was involved.

Administrator Ruckelshaus concluded that, while at that time the evidence of a threat to human health was not strong, there was a distinct threat to the aquatic environment based upon fish and wildlife residue data as well as laboratory toxicity studies. Consequently, he banned application of Mirex to all heavily forested and aquatic areas and prohibited aerial application in all coastal counties or parishes. In a subsequent order, dated June 30, 1972 and published in the Federal Register on July 6, 1972 (37 FR 13299), Administrator Ruckelshaus reinstated all Mirex registrations and permitted ground broadcast of Mirex if ground application equipment which could be calibrated to deliver the recommended label dosages were utilized. In still another order, dated March 28, 1973 and published in the Federal Register on April 4, 1973 (38 FR 8615), the total ban on application to aquatic areas was modified to exclude intermittent streams and farm ponds not used primarily for human consumption.

Finally in order to resolve the issues still surrounding the use of Mirex, the Administrator issued notice of his intent to hold a hearing pursuant to section 6(b)(2) of FIFRA, to determine whether or not the registrations of Mirex should be cancelled or amended (38 FR 8616, April 4, 1973). On July 11, 1973 public hearings commenced pursuant to section 6(b)(2) of FIFRA. The hearings continued unabated until March 28, 1975, when settlement negotiations commenced. These negotiations continued until July 14, 1975, when the registrant, Allied Chemical Corporation, formally announced that, because a settlement could not be reached on terms acceptable to the United States Department of Agriculture, Allied would no longer actively participate in the proceedings. Moreover, Allied announced that it was ceasing production of Mirex until some viable solution was reached. The hearings then resumed and proceeded intermittently until February 12, 1976, when Allied Chemical Company stated its intention not to resume formulation of Mirex bait in the future. On February 26, 1976, at the request of the parties, the hearings were temporarily suspended, and on May 10, 1976, the Mississippi Authority announced that Allied Chemical Company had transferred its Mirex registrations to the Authority. Since that time the hearings have remained dormant while the Mississippi Authority's counsel have reviewed the case.

III. Summary of Relevant Information Concerning Risks and Benefits of Mirex

As indicated above, a hearing has been in progress under section 6(b)(2) of FIFRA since July 11, 1973, to determine whether or not the registrations of pesticide products containing Mirex should be cancelled or amended. The hearing record now consists of over 13,000 pages of transcript, over 200 exhibits, and includes the testimony of more than 100 witnesses. In addition to the information in the hearing record, information has recently become available on the health effects of Mirex, including some extremely significant information concerning human exposure to Mirex.

Set forth below is a brief summary of the significant available information.[3] It is emphasized that this summary does not purport to serve the function of the findings of fact required at the conclusion of the FIFRA section 6(b)(2) hearing. Rather, it is an attempt to develop a body of information upon which to base a responsible decision concerning whether or not the Plan of the Mississippi Authority should be accepted or rejected. Available information concerning the cancer risk to man resulting from Mirex use is discussed in some detail. This is because the Plan provides for continued production and use of currently-registered Mirex products during the specified phase-out period. In order to assess whether this aspect of the Plan is acceptable to the Agency, it is necessary to assess in some manner the risks to which exposed members of the public will be subjected during this phase-out period. If these risks appeared unreasonable, the Agency would have rejected the Plan and attempted to implement some other solution involving less exposure through the FIFRA hearing process. Indeed, because the question before the Agency is whether the hearings should be terminated short of findings, evidence indicating carcinogenic risk of Mirex must be given special significance. Finally, this summary differs from findings of fact in one other significant respect, i.e. in some instances the information which is summarized is not part of the hearing record, and therefore has not been subjected to cross-examination by other parties to the proceeding.

A. Mirex: Identification and Nomenclature.

"Mirex" is the common name given to a chlorocarbon compound with a chemical formula of C10 C12 and a technical nomenclature of dodecachlorooctahydro - 1,3,4,-metheno-2H-cyclobuta[cd] pentalene; the systematic name of this compound is dodecachloropentacyclo ($5.3.0.0^{2,6}.0^{3,9}.0^{4,8}$) decane. The term "Mirex" also is used in reference to a bait which is comprised of corncob grits, soybean oil, and the chlorocarbon compound identified above.

B. Current Registrations

There are currently eleven registered products containing Mirex. One, held by Hooker Chemical Company, is a technical product used only in formulating other products (EPA Reg. No. 935-27). All of the rest of the registrations are held by the Mississippi Authority for the Control of Fire Ants. Two of these are used only in formulating other products (EPA Reg. No. 38962-7; EPA Reg. No. 38962-6). One contains 0.5% Mirex formulated into a bait for control of yellowjackets (EPA Reg. No. 38962-10). Two contain 0.450% Mirex formulated into a bait for controlling Texas leaf cuting ants, harvester ants, and fire ants (EPA Reg. No. 38962-8; EPA Reg. No. 38962-9). One contains 0.3% Mirex formulated into a bait for control of western harvester ants, pheidole ants in Hawaii, and assorted other ants (EPA Reg. No. 38962-5). One contains 0.3% Mirex for controlling fire ants in the federal-state cooperative program for imported fire ant suppression (EPA Reg. No. 38962-4). One contains 0.1% Mirex for controlling fire ants in the federal-state cooperative program for imported fire ant suppression (EPA Reg. No. 38962-3). One contains 0.15% Mirex for control of fire ants through ground broadcast and mound treatment (EPA Reg. No. 38962-2). One contains 0.075% Mirex for controlling fire ants through ground broadcast and mound treat-

[2] Prior to the 1972 Amendments, a registrant could challenge a Notice of Intent to Cancel either by requesting a hearing or by requesting referral to a Scientific Advisory Committee.

[3] Citations to Testimony in this document refer to testimony presented in FIFRA 293. Citations to "References" refer to the list of "References" at the end of this document. Citations to "Appendices" refer to the documents appended to this document.

1976 the required notice may be published at least 10 days, but not more than 30 days prior to application.

4. *Area Limitations Applicable to Aerial Applications.* (a) *Wooded Areas.* Wooded areas are defined as those areas which have trees and which are not used for agricultural purposes. Tree farms or commercial forests shall not be considered areas used for agricultural purposes; however, groves and orchards shall be considered used for agricultural purposes. There shall be no aerial application in contiguous wooded areas except for a 100 yard swath contiguous to treated areas and cleared areas within the wooded area.

(b) *Aquatic Areas.* From July 1, 1976 through December 31, 1976 there shall be no aerial application to any aquatic areas, except for intermittent streams where there is no flow and except for man-made or natural impoundments of water which do not exceed two acres in size and are not commercially fished. However, even these exempted waters should be avoided where possible. After December 31, 1976, there shall be no aerial application of Mirex to any aquatic areas, except for intermittent streams where there is no flow. Intermittent streams are defined as those streams having continuous flow during periods of heavy run-off and no flow during the remainder of the year. Man-made or natural impoundments of water are defined as such impoundments of water occurring on farms that are utilized for purposes such as irrigation, stock watering, and recreation. Aquatic areas are defined to include without limitation estuaries, rivers, streams, wetlands, lakes, ponds, and other bodies of water. The term "wetlands" means those land and water areas subject to inundation by tidal, riverine, or lacustrine floods. Generally included are inland navigable waters, including inland and coastal shallows, marshes, mudflats, estuaries, swamps, and similar areas in coastal and inland navigable waters. There shall be no aerial application where run-off or flooding will contaminate aquatic areas.

(c) *Idle Lands.* Cut-over lands and brush fields that, when left untreated, will not increase infestation exposure to treated lands shall not be treated.

(d) *Other Areas.* Aerial application is permitted (subject to paragraph 3 above) in areas other than those outlined (even though some trees are present), such as agricultural lands, home sites, and developed portions of public areas; provided that an appropriate state official certifies in writing before each application that he or his employees have inspected the area and there is at least one imported fire ant mound for each one-quarter section to be treated. Certification shall be available for inspection upon EPA request.

5. *Ground Application.* Ground application, whether broadcast by properly calibrated equipment or individually mound treated, is permitted in all areas of infestation; provided that there shall be no ground application to aquatic and heavily forested areas or areas where run-off or flooding will contaminate such areas. Ground broadcast and mound treatment shall be confined to areas where the imported fire ants are causing significant problems.

6. *Revised Labeling.* Revised labeling in accordance with this notice shall be prepared and submitted by the Mississippi Authority for the Control of Fire Ants for determination by EPA that such labeling conforms to this notice and other provisions of the Act.

7. *Monitoring.* It is understood that a program for human, environmental, and application monitoring of the application of Mirex bait is essential to this agreement. The users will have primary responsibility for application monitoring, subject to EPA oversight.

C. Substitution of Less Toxic Mirex Formulations for *Mirex 10:5 Bait.*

When presented with adequate efficacy data, EPA shall promptly permit substitution of Mirex bait formulations providing for the application of less actual toxicant per acre for Mirex 10:5 Bait (EPA Reg. No. 38962-3). The production limitations, end dates, and other restrictions provided for in this notice shall remain in effect for such substituted formulation.

The Agency has discussed this cancellation action with representatives of the Mississippi Authority for the Control of Fire Ants who have indicated concurrence with the intended cancellation. Moreover, the Mississippi Authority for the Control of Fire Ants has waived its right to request, within 30 days, that the registrations be continued in effect, and has further stated that it will not give its concurrence to any other person to request that the registrations be continued in effect. Accordingly, these registrations are hereby cancelled, effective on the effective dates specified herein.

[ATTACHMENT B]

AMENDMENT NO. 1

The cooperative agreement between the Mississippi Department of Agriculture, Imported Fire Ant Division, the United States Department of Agriculture, Animal and Plant Health Inspection Service, and United States Environmental Protection Agency, Office of Pesticide Programs, for the performance of laboratory and field evaluations of chemicals which can serve as alternatives to mirex in the control of imported fire ants, signed by the parties thereto on October 29, 1975, October 30, 1975, and September 11, 1975, respectively, is hereby amended as follows:

(1) Paragraph IV, Duration of Agreement, is amended as follows: This agreement will cover the period from September 1, 1975, to January 1, 1979.

(2) Paragraph VIII, General Provisions, is inserted as follows: The cost of the work to be performed by the Mississippi Department of Agriculture and Commerce is estimated at $100,000. In its performance the Mississippi Department of Agriculture and Commerce shall comply with the attached General Provisions for Use in Cost Reimbursement Contracts with Educational and Other Nonprofit Institutions, EPA Form 1900-28 Oct. 1973 as amended by the alterations thereto, EPA Form 1900-28 (Revised Mar. 1975) February 27, 1976.

(3) Paragraph VII, Funds, Personnel, and Facilities, seventh paragraph is amended as follows:

EPA will pay the Mississippi Department of Agriculture and Commerce for actual costs incurred in the performance of the services agreed to herein in an amount not to exceed $100,000. The Mississippi Department of Agriculture and Commerce will submit an itemized bill for payment to:

Environmental Protection Agency, Financial Management Division (PM-226), 401 M Street, S.W., Washington, D.C. 20460.

The itemized bill should be submitted quarterly. It should cite the number of this agreement and the following accounting data:

Appropriation	68X0107
Account No.	644932C99C
Document Control No.	K00049

Except as herein expressly provided, all other terms and conditions of the agreement shall remain in full force and effect.

Dated: May 13, 1976.

EDWIN L. JOHNSON,
Deputy Assistant Administrator for Pesticide Programs, EPA.

Dated: _____

HARRY C. MUSSMAN,
Acting Administrator for Animal and Plant Health Inspection Service, U.S.D.A.

Dated: May 13, 1976.

J. B. ROSS,
Commissioner, Mississippi Department of Agriculture and Commerce.

SUMMARY OF EVIDENCE AND OTHER INFORMATION AND STATEMENT OF REASONS

I. INTRODUCTION

The Environmental Protection Agency has been conducting a hearing under section 6(b)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, since July 11, 1973, to determine whether registrations for pesticide products containing Mirex should be cancelled or amended. Information adduced at this hearing, and other information which has recently come to light, has prompted the Mississippi Authority for the Control of Fire Ants (Mississippi Authority), the sole registrant of end-use Mirex products, to submit to the Agency a plan (Plan) for the cancellation of its Mirex registrations and a gradual phase-out of Mirex use.

The plan prescribes the ultimate fate of all currently-registered end-use Mirex products. As indicated above, this is the same matter which would be resolved in the FIFRA section 6(b)(2) hearing currently in progress, should that hearing be allowed to continue to a conclusion. Accordingly, the Plan represents the offer of the sole registrant and producer of end-use Mirex products to end this litigation at this point in time on prescribed terms and conditions.[1] This is acknowledged in the Plan itself, in that one of its provisions calls for immediate cessation of the hearing.

The Agency therefore must decide whether to accept the Plan, and suspend the hearings, or reject the Plan and continue the hearings with the objective of implementing some other solution to the question of the ultimate fate of Mirex through the hearing process. This document sets forth the Agency's decision on the question whether to accept or reject the Plan of the Mississippi Authority. As indicated below, the Agency's decision is to accept the Plan.

This document consists of five parts. Part I is this introduction. Part II is a brief procedural history of the Mirex litigation. Part III is a brief summary of available information concerning the risks and benefits of the use of Mirex for its currently registered uses. Part IV is a brief summary of the significant

[1] In essence, the sole producer of the products in question is stating in the Plan that it will no longer produce the products after a set period of time. Accordingly, it follows that no person who desires to use pesticides which would be produced *after* these end dates can complain of these cancellations, because FIFRA does not create any obligation upon a producer to continue to produce a pesticide.

ment (EPA Reg. No. 38962-1). (See Appendix A).

C. CHEMICAL AND BIOLOGICAL CHARACTERISTICS OF MIREX

1. *Impurities and Degradation Products.* Very recent screening analyses of formulated Mirex bait at the Mississippi Authority's formulating plant in Aberdeen, Mississippi, have shown that Kepone is present in Mirex bait at levels up to 0.25 ppm and in technical Mirex at levels up to 2.58 ppm.

Recent research conducted by the United States Department of Agriculture and others has shown that as much as 10% of Mirex applied in the environment either begins as Kepone or is degraded into Kepone over periods of five and twelve years. (Appendix C). Laboratory studies have shown that Mirex can degrade photolyticly into Kepone. (Reference 2).

2. *Persistence.* Because of its unique chemical structure, Mirex is more resistant to chemical attack than other chlorinated hydrocarbons such as DDT, Aldrin/Dieldrin, and Heptachlor. (Alley Testimony at 4). Mirex therefore will likely remain in nonliving (and living) matter for longer periods of time than would such chlorinated hydrocarbon pesticides as DDT, Aldrin/Dieldrin, and Heptachlor. (Alley Testimony at 4). Research performed by USDA and others has shown that as much as 50% of the original Mirex that was applied in 1962 was recovered from soil residues twelve years after treatment. (Appendix C).

3. *Bioconcentration.* Unlike most chemical compounds (Livingston Testimony [II] at 1), Mirex continues to accumulate to higher and higher levels in the brain, muscle, liver, skin, and subcutaneous tissues of mammals to which it is fed as a constant increment of the diet, apparently without reaching a plateau. There appears to be an unlimited capacity for accumulation of Mirex in some animal tissues, and Mirex can accumulate in vertebrate animals to extremely high levels. (Gibson Testimony at 3; Gibson TR 157, 165, 168).

Moreover, Mirex bioaccumulates in wildlife and the food of wildlife, including *Crustaceans* (Lowe Testimony at 6; Tagatz Testimony at 4; Bookhout Testimony at 10; Bookhout TR 1989), *Ciliate protozoa* (Cooley Testimony at 2-3; Cooley TR at 8905-8), and *algae* (Hollister Testimony at 3). At even the most primary trophic levels in the environment the bioconcentration of Mirex has been demonstrated, often at levels thousands of times that found in aquatic media.

In addition, Mirex is highly resistant to metabolic attack, and as a consequence is apparently not eliminated from vertebrate bodies as a result of metabolic conversion (Gibson Testimony at 50), nor is it readily excreted through normal excretory channels. (Reference 3). However, Mirex can be excreted through special mechanisms, such as lactation and via egg yolks. (Reference 4 at 5-7; Kimbrough Testimony at 9). The sigficance of these special pathways of Mirex elimination is two-fold. First, man is a consumer of products which are the vehicles of such special elimination in other species. Second, since it has been shown that cows will eliminate significant quantities of Mirex in their milk, it is reasonable to expect that Mirex will also be excreted in the milk of female human beings and thus transmitted to their offspring via breast feeding. (Gibson Testimony at 6).

Mirex is transferred through the placenta in rates. The placenta constitutes a barrier between the fetus and the mother which is designed to protect the fetus. Dr. Renate Kimbrough characterized the finding in rats as a "warning signal" that it may also take place in human beings. (Kimbrough Testimony at 12).

4. *Biomagnification.* Mirex biomagnifies in higher-level organisms as it moves up the food chain to man (Livingston Testimony [II] at 2-3; Cowley TR 8926). Mirex's great persistence in the environment and its propensity to bioaccumulate and biomagnify mean that even though it is applied at relatively small application rates, it will be available for consumption by humans, wildlife, and marine and aquatic organisms for long periods of time. (Alley Testimony at 4; Plapp Testimony at 10-11).

D. MIREX TOXICITY TO HUMANS.

1. *Carcinogenicity.* Two experiments have been performed to date concerning the carcinogenicity of Mirex. The first was a bioassay in mice completed by Bionetics Research Laboratories, Inc. in 1969 under a contract with the National Cancer Institute. Mirex was tested in this bioassay (hereinafter referred to as First Bionetics) along with 120 other industrial chemicals in an effort to screen out and identify those compounds which were carcinogenic. Both sexes of two hybrid strains of mice were administered Mirex, with 18 animals in each sex-strain subgroup given Mirex orally and other mice of the same strain receiving subcutaneous injections. Oral administration of Mirex commenced by stomach tube when test mice were 7 days of age, and after 4 weeks the mice were weaned and given 26 ppm of Mirex in their diet, a dose which had earlier been calculated to be the maximum tolerated dose. Administration of Mirex continued in this fashion for the life time of the test animals. Negative control animals—those not exposed to Mirex at any time during their lifetime—were kept in the same room with Mirex-exposed animals, and positive control animals were exposed to seven known carcinogenic agents to assure that a carcinogenic reaction would be produced in the strains under test. Only the results of the oral administration of Mirex were reported thereafter (Reference 5) and reviewed in testimony presented in FIFRA 293.

A second carcinogenesis bioassay of Mirex (hereinafter referred to as Second Bionetics) was conducted with Charles River caesarean derived (CD) rats exposed to a calculated maximum tolerated dose of 100 ppm and also to one-half that amount, 50 ppm. Control animals were kept under identical conditions as exposed rats. Mirex was administered for 18 months, with the surviving rats being held for an additional six-month observation period before being killed for necropsy. This bioassay, which was performed simultaneously with tests on 16 other compounds, was completed and reported by Litton-Bionetics, Inc. in 1973. The National Cancer Institute has very recently issued a final report on this experiment.[4]

(a) *The first bionetics experiment (mice).* The results of the First Bionetics Experiment were published in the *Journal of the National Cancer Institute* in 1969. (Reference 11) That report stated that Mirex induced a highly statistically significant (P less than 0.01) increase of liver hepatomas in both sexes of both strains of mice in which it was tested. The Mirex-induced response roughly equalled that of the response induced by the seven positive-control chemicals. Because of this strong response, the Report listed Mirex among eleven of the 120 compounds judged to be "clearly tumorigenic" for the strains of mice used at the dose levels tested.[5]

The word "hepatoma" was used in the report to denote both benign and malignant tumors. In fact, in the opinion of the pathologists who collaborated in the report, it seemed more reasonable to conclude that the great majority of the tumors observed had malignant potentiality. (Reference 11 at 1114.) Dr Paul Kotin, who designed the experiment, testified that he had personally examined some of the slides taken from this experiment with the chief pathologist, J. R. M. Innes, and had observed liver cancers (hepatocellular carcinomas) which Innes, later reported as hepatomas. There was no basis, therefore, for distinguishing between "hepatomas" and "carcinomas." (Kotin TR 1692-3). Independent pathological diagnoses of the First Bionetics slides by Dr. Melvin D. Reuber, one of the most experienced and imminent researchers into the process of carcinogenesis in test animals, and statistical analyses of the diagnoses by Dr. Adrian Gross, Assistant Director for Scientific Coordination in the Office of Pharmaceutical Research and Testing of the Bureau of Drugs of the Food and Drug Administration, demonstrated that Mirex induced a highly statistically significant increase in liver cancers (hepatocellular carcinomas) in both strains and both sexes of test animals as compared with the control animals in this experiment. (Reuber Testimony at 11; Gross Testimony at 11.)

However, Dr. Paul Newberne, another well qualified pathologist, has prepared testimony for the Mirex hearing that disagrees with both Dr. Reuber and the pathologists who participated in the report of the First Bionetics Experiment. In his opinion, none of the lesions induced in the test animals could be classified as hepatocellular carcinoma. (Newberne Prepared Testimony at 9). He observed a number of hyperplastic nodules, but these represented to him only one of the several ways that liver cells respond to Mirex.

The Advisory Panel on the Carcinogenicity of Pesticides of the Commission on Pesticides and their Relationship to Environmental Health, appointed by the Secretary of Health Education and Welfare in April 1969, placed Mirex in a group judged "positive for tumorigenicity" on the basis of the First Bionetics report (Reference 6 at 461.) The Report of the Mirex Advisory Committee of the National Academy of Sciences concluded that in this experiment "Mirex is very close to being equal in carcinogenic potency to the seven known carcinogenic compounds." How-

[4] In addition to these two bioassay experiments, there have been two very recent experiments performed on mice and rhesus monkeys by the Center of Experimental Pathology and Toxicology of Albany Medical College for Allied Chemical Corporation. In the monkey experiment a total of eight monkeys were exposed to different doses of Mirex for periods ranging from one year, five months to three years, one month. No carcinogenic effect was reported. However, because of the small number of animals employed and the short durations of exposure, the significance of this study is highly questionable.

In the other experiment Mirex was fed to mice at 0.2 ppm for twenty months. The tissue slides from this experiment have been analyzed by only one pathologist and no statistical analysis has been performed on that diagnoses. A disturbing aspect of the experiment is that Mirex was found in the tissues of the control animals. Until further analysis is made of this study, its significance is unclear.

[5] All of the Mirex exposed mice died before the conclusion of the experiment. It is reasonable to conclude that some of the treated mice that died without tumors likely would have formed such tumors by the end of the experiment had they lived to the end of the experiment. (Reuber Testimony at 13; Gart Testimony at 9.)

ever, the Advisory Committee was of the opinion that carcinogenic activity in mice alone had no particular significance for human health. Nevertheless, the Advisory Committee "urgently desired" that Mirex be tested for carcinogenicity in other species.

(b) *The second bionetics experiment (rats).* In September, 1973, Dr. Melvin Reuber examined the tissue slides taken from the Second Bionetics experiment. Dr. Reuber determined that none of the 20 female and 20 male control rats developed either hyperplastic nodules or carcinomas of the liver. He further determined that 2 out of 26 males and 1 out of 26 female rats fed 50 ppm and 7 out of 26 males and 2 out of 26 females fed 100 ppm developed liver cancer. (Reuber Testimony at 12.) Dr. Adrian Gross statistically analyzed Dr. Reuber's diagnoses and determined that there was a highly statistically significant increase in liver cancers in males fed 100 ppm and in combined males and females fed 100 ppm over the control animals. (Gross Testimony, Table 2.)

In addition to carcinomas, Dr. Reuber also diagnosed a very high incidence of hyperplastic nodules of the liver in both sexes of rats at both 50 ppm and 100 ppm feeding levels. (Reuber Testimony at 12.) Dr. Gross statistically analyzed Dr. Reuber's diagnoses and determined that Mirex induced a highly statistically significant increase in hyperplastic nodules in both sexes of rats at both feeding levels. (Gross Testimony (IV), Table 2.) Dr. Reuber testified that he defined hyperplastic nodules as nodules that have reached the stage where they are no longer dependent upon continued exposure to the chemical stimulus. If the chemical is discontinued, these nodules will continue to progress and become carcinomas. (Reuber Testimony at 3.)

Dr. Newberne prepared testimony for the hearing in which he disagreed with Dr. Reuber's diagnoses. Dr. Newberne stated that he observed no hepatocellular carcinomas in the Mirex-exposed rats; and the hyperplastic nodules he observed did not pose a carcinogenic threat to the animals. Dr. Newberne felt that the hyperplastic nodules he observed were only of "academic interest in a safety evaluation of a substance." (Newberne Prepared Testimony at 35). He was of the opinion that "hyperplastic nodules definitely do not all progress and become carcinomas."

The National Cancer Institute had not published a final report on the Second Bionetics Experiment at the time the witnesses testified in the hearing. However, Dr. Robert Squire, who was at the time Expert Consultant to the National Cancer Institute, Carcinogenesis, Division of Cancer Cause and Prevention, testified that he had examined the slides from the Second Bionetics Experiment and had concluded that Mirex is carcinogenic in rats. (Squire Offer of Testimony at 5–7.) Dr. Squire further testified that the nodular hyperplasia that he observed was precarcinogenic. He testified that "there is evidence that given sufficient time and exposure, liver cancer would develop in a substantial percentage of the hyperplastic instances such as I have observed here." (Squire Offer of Testimony at 4.) [6] Dr. Newberne's testimony did not take issue with Dr. Squire's diagnoses.

Dr. Umberto Saffiotti, who was at the time Associate Director for Carcinogenesis, Division of Cancer Cause and Prevention, National Cancer Institute, testified that it was his understanding that the NCI reevaluation of the tissue slides led to the recognition of a significant induction of liver tumors in the test animals by Mirex. (Saffiotti Testimony at 2.)

In April, 1976, Dr. Norbert P. Page, Chief, Carcinogen Bioassay and Program Resources Branch, Carcinogenesis Program, National Cancer Institute, provided EPA with NCI verified slide-by-slide diagnoses of the Second Bionetics Experiment. These diagnoses were statistically analyzed by Dr. Todd Thorslund, an EPA statistician. His analysis revealed that Mirex caused by a highly statistically significant increase in carcinomas in male rats, and a highly statistically significant increase in "neoplastic nodules" [7] in both sexes. (Appendix D.)

The very recent National Cancer Institute Report on the Second Bionetics Experiment, which has not yet been published, sets forth the opinions of NCI personnel on the Second Bionetics experiment. (Appendix G) The incidence of cancerous and pre-cancerous lesions diagnosed by the NCI pathologists corresponds rather closely to the incidence observed by Dr. Reuber. No carcinomas or neoplastic nodules were observed in any of the control animals. One low dose male, four high dose males, and one high dose female had liver cancers (hepatocellular carcinoma). In addition, two low dose males, four low dose females, seven high dose males and four high dose females had neoplastic nodules. About the neoplastic nodules the paper reported that:

"It has been shown by several workers that this type of lesion has, under appropriate circumstances, a high probability of progressing to hepatocellular carcinoma. Furthermore, neoplastic lesions or carcinomas rarely occur in rats as was true in these control animals, and also in the pooled control population and such neoplastic lesions are characteristic of the early response to known carcinogens. It therefore is inadequate to call such nodules merely hyperplastic which belies their neoplastic nature and malignant potential."

The paper finally concludes that: "The spectrum of lesions observed in the liver of the various groups at risk suggest carcinogenic activity."

c. *Implications for Man.* The First and Second Bionetics Experiments provide substantial evidence that Mirex is a human carginogen. The EPA's "Interim Cancer Assessment Procedures" (41 FR 21402; May 25, 1976) provide:

"*General Principles Concerning the Assessment of Carcinogenesis Data.* The central purpose of the health risk assessment is to provide a judgment concerning the weight of evidence that an agent is a potential human carcinogen and, if so, how great an impact it is likely to have on public health.

"Judgments about the weight of evidence involve considerations of the quality and adequacy of the data and the kinds of responses induced by the suspect carcinogen. The best evidence that an agent is a human carcinogen comes from epidemiological studies in conjunction with confirmatory animal tests. *Substantial evidence is provided by animal tests that demonstrate the induction of malignant tumors in one or more species including benign tumors that are generally recognized as early stages of malignancies.* Suggestive evidence includes the induction of only those nonlife-shortening benign tumors which are generally accepted as not progressing to malignancy, and indirect tests of tumorigenic activity, such as mutagenicity, in-vitro cell transformation and initiation-promotion skin tests in mice." [Italics added.]

This approach to the problem of identifying substances which pose a carcinogenic risk to man is generally supported by the final report of the National Cancer Institute's National Cancer Advisory Board Subcommittee on Environmental Carcinogenesis entitled "General Criteria for Assessing the Evidence for Carcinogenicity of Chemical Substances." That report states:

"The carcinogenicity of a substance is established when the administration to groups of animals in adequately designed and conducted experiments results in increases in the incidence of one or more types of malignant neoplasms (or a combination of benign and malignant neoplasms) in the treated groups as compared to control groups maintained under identical conditions but not given the test compound. The increased incidence of neoplasms in one or more of the experimental groups should be evaluated statistically for significance, and the only major experimental variable between the control and the experimental group should be the absence or presence of the single test agent. Such increases may be regarded with greater confidence if positive results are observed in more than one group of animals or in different laboratories. The demonstration that the occurrence of neoplasms follows a dose-dependent relationship provides additional evidence of a positive result.

"The occurrence of benign neoplasms raises the strong possibility that the agent in question is also carcinogenic since compounds that induce benign neoplasms frequently induce malignant neoplasms. In addition, benign neoplasms may be an early state in a multi-step carcinogenic process and they may progress to malignant neoplasms; also, benign neoplasms may themselves jeopardize the health and life of the host. For these reasons, if a substance is found to induce benign neoplasms in experimental animals it should be considered a potential human health hazard which requires further evaluation. In experiments where the increased incidence of malignant neoplasms in the treated group is of questionable significance, a parallel increase in incidence of benign tumors in the same tissue adds weight to the evidence for carcinogenicity of the test substance."

Dr. Reuber provided further support for this approach in his testimony in FIFRA 293. He testified that carcinogenesis in man can be detected or reliably predicted in either of two ways. The first is by valid epidemiological evidence, i.e., by the observation of groups of human beings, one of which has been exposed to the compound in question and the other of which has not. Tumor incidence is then compared among individuals of both groups according to age, sex and other characteristics. (Reuber Testimony at 20). The second is by examining the effects of a particular substance on mammalian

[6] On August 20, 1976, Dr. Squire sent a memorandum to EPA's Cancer Assessment Group summarizing his evaluation of the Second Bionetics Experiment. In that memorandum Dr. Squire stated that "there is a marginally significant result for hepatocellular carcinomas in male rats; however the high dose response itself is not significantly higher than the control response. Neoplastic nodules in male rats show a significant response when comparing high dose with controls. The test among females was not significant * * *. Although the results indicate there may be a hepatocarcinogenic effect, the small animal group sizes and the small number of animals with inver neoplasma do not permit a firm determination." (Appendix E.)

[7] Between 1973 and 1976 the nomenclature for rat tumors changed among many pathologists from "hyperplastic nodule" to "neoplastic nodule."

species other than man. (Reuber Testimony at 19–20).

With many variables inherent in such experiments, it is extremely difficult to obtain valid epidemiological data for chemical carcinogens in human beings. (Reuber Testimony at 10–20; see also Reference 6 at 463; Reference 7 at 27). It is all the more difficult when the compound under test is a pesticide which is found widely in the environment and for which suitable control groups may therefore be difficult or impossible to establish. (Reuber TR 8,696). For Mirex there is as yet no epidemiological data. (Reuber Testimony at 20). Therefore the carcinogenic risk to man posed by Mirex must be determined by examining its effects on species other than man.

The formation and occurrence of tumors in man and in such test animals as hamsters, mice, and rats is very similar. Kotin TR 1,629). Hyperplastic lesions are found in both man and test animals, and morphologic features of tumors are the same, both grossly and microscopically. Reuber Testimony at 19–20). Carcinogens in all mammalian systems are characterized by irreversibility of effect. Upon the transformation of a cell from its normal condition to a neoplastic state, that cell will reproduce, as will the cells it produces; this process may be initiated by only a small quantity of a carcinogenic agent, and only a small number of neoplastic cells may be required to keep this process of carcinogenesis alive. (Reuber Testimony at 18; see also Reference 7 at 32). Beyond a certain point in this process, moreover, the carcinogenic stimulus can be removed and the progression toward carcinomas will continue. (Reuber Testimony at 18). That point is reached when hyperplastic nodules are observed. (Reuber Testimony at 3).

The First and Second Bionetics Experiments demonstrate that Mirex induces malignant tumors (hepatocellular carcinomas) in mice and rats including benign tumors that are generally recognized as early stages of malignancies ("hyperplastic nodules" or "neoplastic nodules"). Therefore, under the "Interim Cancer Assessment Procedures", substantial evidence exists that Mirex is a human carcinogen. The weight of this evidence may be reduced slightly by Dr. Newberne's apparent disagreement with Drs. Innes, Reuber, and Kotin with regard to the First Bionetics Experiment and with Drs. Reuber and Squire with regard to the Second Bionetics Experiment. However, the evidence is certainly strong enough to support a holding that Mirex is a potential human carcinogen. The carcinogenic risk that Mirex poses to man therefore depends on the extent of human exposure to Mirex.

E. EFFECTS OF MIREX ON WILDLIFE

1. *Avian Species.* The lethal toxicity of Mirex to most birds is low and there is little potential for lethality at current levels of Mirex field applications. (Lincer Testimony at 9–10). At these levels of application no perceptible reproductive effects would be caused in avian species that have been tested thus far. (Lincer Testimony at 11).

2. *Fish.* Although Mirex is not directly lethal to fish at environmentally realistic levels of exposure (Reference 8 at 75), Mirex has the potential for causing widespread change in populations and communities of aquatic ecosystems. (Livingston Testimony at 5).

3. *Crustaceans.* Laboratory experiments have demonstrated that Mirex is highly toxic to crustaceans, often at miniscule levels of exposure. Effects arising from exposure to Mirex range from short-term lethality to more prolonged and subtle consequences for the development of these organisms. (Lowe Testimony; Ludke/Finley Testimony).

4. *Non-target Insects.* Tests have shown that one application of 0.018 pounds of technical Mirex per acre reduces the population of carabid and staphylinid beetles by 60 percent and 67 percent respectively. (Hensley Testimony at 3; Reference 10; Hensley TR 2,727). These insects are among the natural predators of the sugarcane borer. (Hensley Testimony at 3).

F. TRANSPORT OF MIREX

Mirex leaches from Mirex bait into sea water. (Tagatz Testimony at 5; Reference 11 at 4). Mirex can be leached from Mirex bait by fresh water, and it can thereafter enter a salt water environment. (Tagatz Testimony at 5). Studies have shown that Mirex residues in water resulting from fresh water runoff after application of Mirex in the watershed range from 0.1 to 1.0 parts per trillion in fresh runoff waters. (Alley Testimony at 7–8). Mirex is transported into aquatic organisms, including edible fish, from nearby treated lands. (Duke Testimony at 7, Duke TR 1,901).

G. RESIDUES OF MIREX IN THE ENVIRONMENT

Mirex is chemically identical to the compounds known as "Dechlorane" and "C10 Cl_{12}." "Dechlorane" was marketed from 1959–72 as a fire retardant in plastics and polymers. "C10 Cl_{12}" has been marketed for only a short period of time for limited pyrotechnical usage. (Alley Testimony at 12). Dechlorane cannot escape from the plastics and polymers in which it is used until they degrade. Many of these plastics and polymers are, however, non-degradable by environmental action. (Alley Testimony at 12). Since Mirex residues generally exist only in areas treated with Mirex, it is safe to assume that residues observable in the environment are due to application of the pesticide Mirex. (Alley Testimony at 12–13; Alley TR 4,292, 4,293–8; Enos Testimony [II] at 1; Lincer TR 8,972–74; Puma TR 5,215–24).[5]

1. *Mirex Residues in Human Beings.* Dr. F. W. Kutz presented the results of the EPA's National Human Monitoring Program (NHMP) up to the time he testified in the hearing. Samples were taken after that time but not yet completely analyzed as of the date of Dr. Kutz's appearance. A total of 1,400 samples had been collected nationwide and analyzed at the time Dr. Kutz testified. Only since 1970 have NHMP analytical techniques been geared to detect Mirex in particular (Kutz TR 5,456), and the incidence of Mirex residues in human beings, as presented in the testimony of Dr. Kutz, was based on samples taken up to only April, 1972. (Kutz TR 5,470). Dr. Kutz testified that Mirex had been found in nine samples of human adipose tissue, all of which came from states that receive Mirex treatment. The nine positive samples were found in a total of 329 samples taken by the NHMP in eight states. Dr. Kutz stressed, however, that in reporting these NHMP results he could draw no conclusions concerning the statistical incidence of Mirex residues in human beings residing in these eight states. (Kutz Testimony [II] at 4, Kutz TR 5,450).

Recognizing a need to obtain a better indication of the extent of Mirex residues in human beings in Mirex treated states, EPA began a monitoring study early in Fiscal Year 1976 that, except for some control samples, limited itself to the states in which Mirex is applied as a pesticide. More than 40 collecting sites were recruited in addition to the ones already collecting for the national program. Although the collecting and analysis is not yet completed, the results so far show that Mirex is present in the adipose tissue of from 21 percent of the human beings in the states where Mirex is applied. The percentages are much higher in states that receive heavy Mirex treatment. (Appendix F). The average residue of Mirex in the positive samples analyzed to date is 0.38 ppm with a range from trace to 1.32 ppm. Five of the positive samples have been verified by mass spectrographic methods to eliminate any possible confusion with other compounds that could result from gas-liquid chromatograph analysis. These results represent a significant addition to the Agency's information about human exposure to Mirex.

2. *Mirex Residues in Human Foods.* Mirex residues are not observed with any great frequency in the national food monitoring programs conducted by FDA and USDA. (Puma Testimony at 6–7). However, these programs are not entirely adequate for determining human exposure to Mirex via the diet. (Puma Testimony at 13–15). All three programs (FDA Total Diet Survey, FDA Pesticide Program, and USDA Animal and Plant Health Inspection Service) are national programs that do not focus on areas of Mirex application. (Puma Testimony at 13). The multi-residue analysis techniques used in these programs are less sensitive than more specialized investigations. (Puma Testimony at 14, Puma TR 5,277). Even after multiple extractions, a reported residue in the FDA programs will represent only about 70 percent of Mirex actually present in an analyzed sample, while the USDA reported residue will represent only about 50 percent. (Puma Testimony at 16, Puma TR 5,230). More sensitive surveys directed toward Mirex treated areas detect Mirex residues in animals which could be consumed by man, including fish (Reference 12; Reference 13 at Table 22); crayfish (Reference 14 at 13); salt water crustacea (Reference 12); fowl (Reference 13 at 17–20); deer (Reference 13 at 16) and beef (Reference 15; Reference 13 at 16). No evidence was presented in the hearing to indicate whether the species sampled were eaten by humans. Mirex has also been detected in three samples of cow's milk (Reference 13 at 21).

3. *Human Exposure to Mirex.* Dr. Kutz's recent data make it very clear that human beings in the South are being exposed to Mirex. The average level of Mirex that is present in those human beings is of considerable concern. This is not surprising given the readiness with which mammalian fatty tissue absorbs Mirex.

The route of human exposure to Mirex is unclear, but the high incidence of detection of Mirex in animals that are consumed by humans indicates that one of the routes of Mirex exposure is via the diet. The average daily intake of Mirex is also unknown. Extrapolation from levels present in adipose tissue is virtually impossible. However, since many humans (21 percent of the samples analyzed) are exposed to this potential human carcinogen, it is clear that Mirex use in the South according to its current registrations poses a carcinogenic risk to man.

H. BENEFITS OF MIREX

1. *Southern United States.* (a) *Description of the Fire Ant and its Habitat.* Fire ants presently infest parts of nine states in the Southeastern United States: Texas, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina. (Holloway Testimony, Figure 5). Whether the fire ant is likely to spread beyond the present

[5] The possibility still remains that some of the observed exposure is occupational. The Agency is presently conducing an inquiry into this possibility.

areas of infestation is subject to dispute. The peripheral boundary of fire ant infestation has not changed significantly since 1959, indicating that the fire ant has reached the extent of its ecological range. (Holloway Testimony at 25; Buren Testimony at 5). Several experts have testified that the fire ant could potentially infest large areas of the United States that are presently uninfested. (Markin Testimony at 9; Glancey Testimony at 23). However, there is no evidence that Mirex application has prevented the spread of the fire ant into areas where it is not otherwise limited by ecological factors. Thus, Mirex application is not necessary to prevent the spread of the fire ant beyond its current ecological range. (Holloway Testimony at 25).

(b) *Harm to Humans from Fire Ants.* The fire ant inflicts a painful sting upon humans. However, compared to many large tropical ants, wasps, or honeybees, the sting is comparatively mild. To a normal person who experiences a normal reaction, a sting is only a brief but painful incident, the effects of which disappear in a few minutes, although within 24 hours a small pustule is formed which can leave a scar. (Martin Testimony at 20–21). The fire ant is different from other stinging insects in its aggressiveness: if a person disturbs a fire ant mound he can be stung many times. (Martin Testimony at 21). Fire ant stings can give rise to secondary infections if not properly cleaned and cared for. (Triplett Testimony at 6–8). In a very small number of very sensitive persons fire ant stings, like other venomous insect stings, can result in anaphylactic shock, which is accompanied by difficulty in breathing and decrease in blood pressure. (Triplett Testimony at 9; Rhodes Testimony at 16). In very rare cases this requires special therapy. (Rhodes Testimony at 13). Hyposensitization treatment can be employed by doctors to build up immunity to fire ant stings in persons who are likely to experience anaphylactic shock from fire ant stings. (Rhodes Testimony at 17).

Fire ants are generally very easy for human beings to avoid, because their mounds are easily detected. (Yelderman Testimony at 3; Tschinkel Testimony at 43). Nevertheless, a large number of people receive fire ant stings yearly in infested states. Still, several experts have testified that as a human pest, the fire ant ranks well below many other biting insects such as wasps, chiggers, horse flies, mosquitoes, bees, sand flies, and stable flies. (Tschinkel Testimony at 44; Appendix H; Ferguson Offer of Testimony at 12).

In fact, fire ants may have some beneficial impacts on human health. Fire ants prey upon control harmful insects, such as lone star ticks. (Yelderman Testimony at 3; Holloway Testimony at 70; Hensley Testimony at 9). Ticks can cause serious illnesses including tularemia, Rocky Mountain Spotted Fever, and Relapsin Tick Fever. (Yelderman Testimony at 3).

(c) *Harm to Agriculture from Fire Ants.* Fire ants can interfere with hand harvesting of citrus, cotton, strawberries, tung nuts, and pecans in fields that are infested with fire ants. (Brown Testimony at 2–3; Ueltshey Testimony at 3; Block Testimony at 3). Additionally, fire ant mounds can interfere with harvesting machinery. (Bruer Testimony at 9; Senn Testimony at 4–5; Carlton Testimony at 2). But this only occurs in areas with clay soils. (Buren Testimony at 3). There have been reports of injury to livestock, farm animals, hay, pasture land, soybeans, and other crops due to fire ants.

Despite these reports, many experts testified that fire ants present an insignificant of harm to agriculture. (Yelderman Testimony at 3; Ferguson Offer of Testimony at 12; Tschinkel Testimony at 43–44; Holloway Testimony at 67–68). In fact, fire ants prey upon and help control several kinds of insects that are harmful to agriculture, including the sugarcane borer. (Holloway Testimony at 71; Hensley Testimony at 3; Reference 16).

(d) *Efficacy of Mirex.* When Mirex is applied in adequate amounts near fire ant mounds and properly foraged, the population of fire ants in the mound is severely reduced. (Lincoln Testimony at 5; Holloway Testimony at 52–53; Markin Testimony at 28). This can result in elimination of the entire colony. (Holloway Testimony at 53). If, however, Mirex bait is not foraged within one or two days after application, it can become rancid and unattractive to the ants. (Holloway Testimony at 54; Markin Testimony at 28).

When fire ants reinfest an area that has been treated with Mirex, they come back in even greater numbers than the pre-existing concentration. (Tschinkel Testimony at 44; Holloway Testimony at 10). Competition for food and territory gradually forces the fire ant population down to the pre-existing equilibrium after approximately 2–3 years. (Tschinkel Testimony at 41; Holloway Testimony at 9–10).

2. *Hawaii.* The pineapple mealybug wilt disease is a disease caused by the feeding of pineapple mealybugs, which leave toxic saliva in the pineapple plant. From the effect of the toxic saliva the root system of the pineapple plant completely collapses in a short time. (Sakimura Testimony at 2). Large numbers of mealybugs must feed for an extended time on the pineapple plant before the plant is affected. Lightly infested plants may not show the disease symptoms. Therefore, Hawaii is able to keep the pineapple plants free from disease as long as the mealybug infestation level is kept low by control measures. Mealybug wilt disease will cause affected plants not to produce any marketable fruit. If no control measure is applied against the mealybug, the disease spreads rapidly and extensively. Ants carry mealybugs to and from pineapple plants and protect or attend the mealybug colonies on pineapple plants. (Sakimura Testimony at 3, 5). Ants transport mealybugs from old pineapple plants to new succulent plants which provide a better supply of honeydew. Ants also attend mealybugs by removing excretions harmful to mealybugs and protecting mealybugs from attacks by predators or parasites. (Sakimura Testimony at 6). Ants are, therefore, largely responsible for moving the mealybugs and spreading incidence of the wilt disease. With absence of ants in the fields, there will be little spread of the disease. An annual application of Mirex Harvester Ant Bait "300" at a rate of two and one-half pounds of formulated product per acre (applied by fixed wing aircraft) with supplemental Heptachlor applications, where necessary, has been shown to be effective in controlling the ant population in Hawaiian pineapple fields to a low level. (Terry Testimony at 5).

I. ALTERNATIVES TO MIREX

1. *Southern United States.* Chlordane is the only registered alternative to Mirex for the control of fire ants in the southern United States. Chlordane is presently the subject of an ongoing cancellation hearing. For this use Chlordane is applied at a rate of two pounds per acre. Other unregistered alternatives, such as diazinon, dimethoate, and juvenile hormones show some promise, but have not been adequately tested.

2. *Hawaii.* Heptachlor is registered for control of ants in Hawaii. Mealybugs can be controlled by diazinon, parathion, and malathion. However, there was testimony that these pesticides are not adequate to control subterranean mealybug infestations. (Sakimura Testimony at 6.)

IV. THE MISSISSIPPI AUTHORITY'S PLAN

On August 31, 1976 the Mississippi Authority for the Control of Fire Ants, the current holder of ten of the eleven Mirex registrations, submitted to the Deputy Administrator of the Environmental Protection Agency a plan "to minimize the amount of Mirex to be used; to reduce the size of the contiguous areas treated, and to phase-out gradually the current Mirex registrations with the objective of replacing current Mirex registrations with an unquestionably safe registered material as quickly as possible." The Plan has several important elements.

A. PRODUCTION LIMITATIONS AND END DATES FOR USE OF CURRENT REGISTERED PRODUCTS

Assuming the Plan is adopted, the Mississippi Authority requested pursuant to section 6(a)(1) of FIFRA, that the Mississippi Authority's Mirex registrations be voluntarily cancelled in accordance with a prescribed phase-out schedule and certain production limitations.

1. *Mirex 4X Bait.* Mirex 4X bait is the bait currently used in the Joint Federal/State Fire Ant Program aerial application. Mirex 10:5 bait is a new Mirex formulation that calls for the application of approximately 70% less pure Mirex per acre than Mirex 4X bait. The effective date of cancellation for Mirex 4X bait is December 1, 1976, with use of existing stocks through December 31, 1976. Not more than 45,000 pounds of technical Mirex may be formulated into Mirex 4X bait between July 1, 1976 and December 1, 1976, when the cancellation will become effective. If less than 45,000 pounds of pure Mirex are utilized prior to December 1, 1976 for formulation into Mirex 4X bait, up to 15,000 pounds of pure Mirex may be carried over for formulation into Mirex 10:5 bait during 1977. The 45,000 pound limitation will allow for a somewhat larger Mirex Program this fall than has been carried out in the past. During this fall, aerial application Mirex may be applied from multi-engine aircraft as has been the case in the past.

2. *Mirex 10:5 Bait.* Under the Plan, the effective date of cancellation for Mirex 10:5 bait is December 1, 1977. Stocks of Mirex 10:5 bait may be applied aerially through December 31, 1977. Remaining stocks of Mirex 10:5 bait existing as of December 1, 1977 may be packaged into five pound bags [10] for sale, distribution and use in ground broadcast and mound application until June 30, 1978. If 45,000 pounds of technical Mirex is formulated into Mirex 4X bait during the Fall of 1976, only 20,000 pounds of technical Mirex may be formulated into Mirex 10:5 bait during 1977. However, depending upon the amount of technical Mirex fromulated into Mirex 4X bait in Fall, 1976, as much as 35,000 pounds of technical Mirex can be formulated into 10:5 bait. This will allow for treatment of a much larger total acreage than has been treated in past years, but of course less actual Mirex will be applied per acre, and less total Mirex will be applied. Moreover, aerial application during 1977 will be allowed only from single engine aircraft and helicopters

[9] An additional 1,000 pounds of Mirex bait could be used for research purposes as a control to determine the efficacy of alternative materials until June 30, 1978.

[10] Under the Plan the Mississippi Authority requests that its Mirex 10:5 bait registration be amended to permit packaging into five pound bags for ground broadcast and mound, but not aerial, application. I am instructing the Office of Pesticide Programs to take the steps necessary to implement the Plan, including granting this request.

flying at an altitude of no greater than 150 feet and at a speed of no greater than 150 miles per hour. This restriction should ensure that application is much more accurate than it has been in the past.

3. *Mirex Harvester Ant Bait 300 for Use in Hawaii.* The Plan calls for immediate cancellation of Mirex Harvester Ant Bait 300 for all uses other than for the control of ants on pineapples in Hawaii. The effective date of cancellation for that use is December 1, 1977. Stocks existing as of that date may be applied aerially until December 31, 1977, and they may be distributed, sold, and used for ground application until they run out.

4. *Other Mirex Registrations.* The effective date for cancellation for the Mississippi Authority's registrations for technical Mirex is December 1, 1977.[12] This will allow for use of technical Mirex for only so long as is necessary to comply with the production limitations and end dates for the formulated products. All other Mirex registrations are cancelled immediately under the Plan. Presently existing stocks of materials formulated under these registrations may be distributed, sold, and used until December 31, 1977.

B. OTHER RESTRICTIONS ON MIREX APPLICATION.

1. *Number of Aerial Applications.* Other than the poundage limitations, the most important provision of the Plan is that it provides that no single acre of land may be treated aerially with Mirex bait of any kind between July 1, 1976 and December 31, 1977. Thus, any given land owner will receive at most only one more aerial application of Mirex bait.

2. *Request for Non-Treatment.* The Plan provides for notifying residents prior to aerial Mirex application to provide every resident an opportunity to prevent aerial Mirex application upon his land.

3. *Coastal Zone Restrictions.* The Plan calls for lifting certain presently-existing restrictions against applying Mirex in coastal counties. Rather than relying on political boundaries for determining how close to marine areas Mirex will be applied, as has been done in the past, the Plan relies on hydrological and geographical factors. Under the Plan, Mirex may not be applied in the "coastal zone," which consists of areas within twelve miles of coastlines, estuarine areas, and saline marshes, and areas around major rivers which are subject to tidal influence. Mirex may only be applied in coastal counties of a state if the state develops a plan of its own in accordance with the general criteria set forth in the Plan which is acceptable to EPA.

4. *Other Area limitations Applicable to Aerial Applications.* Under the Plan, Mirex may not be applied to "wooded areas" as defined in the Plan. Neither may Mirex be applied to aquatic areas as defined in the Plan, except for intermittent streams where there is no flow, and during the Fall of 1976 (when multi-engine aircraft will be allowed) except for man-made or natural impoundments which do not exceed two acres in size and which are not commercially fished. The intent of this provision is to keep Mirex out of areas which might result in exposure of aquatic organisms and areas in which exposure to human water supplies might result. The Plan will not allow Mirex application to idle lands that when left untreated will not increase infestation exposure to treated lands. Other areas will be aerially treated only if an appropriate state official certifies in writing before each application that he or his employees have inspected the area and found that there is at least one imported fire ant mound for each one-quarter section to be treated. This last restriction is included to ensure that no land is treated that is not infested with fire ants.

C. ADDITIONAL PROVISIONS

The Plan imposes several obligations upon the Agency.

1. *Suspension of the Pending Mirex Hearing.* Pursuant to the Plan, I am immediately terminating the pending hearing under section 6(b)(2) of FIFRA.

2. *Substitution of Less Toxic Formulation for Mirex 10:5 Bait.* When presented with adequate efficacy data, EPA will, under the Plan, be obligated to permit substitution of Mirex bait formulations providing for application of less actual toxicants per acre than Mirex 10:5 bait. The production limitations, end dates and other restrictions otherwise provided for will still remain in effect for the substituted formulation. Since the poundage limitations will not change, this provision will allow more acres to be treated with the reduced toxicant formulation.

3. *Research.* EPA will continue to carry out its obligations set forth in the "Cooperative Interagency Agreement for the Study of Alternative Chemicals to Mirex," as amended. (See Attachment B to the Plan).

V. STATEMENT OF REASONS FOR ACCEPTING THE MISSISSIPPI AUTHORITY PLAN

The Agency has decided to accept the Plan submitted by the Mississippi Authority. Because the Mississippi Authority is the sole registrant of end-use Mirex products, and the Plan proposed by it provides for the final cancellation of all of its Mirex registrations,[13] the primary consideration affecting the decision to accept or reject the Plan is whether the phase-out period specified in the Plan for certain Mirex registrations is consistent with applicable statutory standards and the public interest in general. In the event that the Agency had determined that this or any other aspect of the Plan as unacceptable, its only option would have been to continue the FIFRA section 6(b)(2) hearing, with the objective of implementing some other solution through the hearing process.

The Agency has decided that the phase-out period provided for in the Plan is in the public interest, for essentially the following reasons:

A. FALL 1976 APPLICATIONS

The Plan calls for allowing a slightly expanded program for applying Mirex 4X bait in the Fall of 1976. The present Mirex hearings would probably not be completed before November. The Administrative Law Judge and the Administrator would then have a combined total of ninety days to render a decision whether or not to cancel. A suspension hearing could consume an equivalent amount of time. The bulk of the Fall application program would be over by late November. Thus, it seems clear that the Fall 1976 application would proceed in any event.[14]

B. APPLICATIONS IN 1977 AND 1978

It would probably be possible to secure an order cancelling Mirex registrations prior to the Spring and Fall 1977 applications, although it is possible that such an order would be stayed pending appeal in a U.S. Court of Appeals. Given the dispute over some of the facts and over the weight to be given to the risks and benefits of Mirex use, as well as the possibility for procedural error inherent in formal adjudicatory proceedings, an appeal to the courts of such an order could result in Mirex use for a period of time longer than the Mississippi Authority's Plan calls for.

Moreover, pursuing the present hearings to their conclusion, including a possible appeal in a U.S. Court of Appeals, would consume large amounts of valuable Agency resources, both in the Office of General Counsel and in the Office of Pesticide Programs. The Office of Special Pesticide Reviews in the Office of Pesticide Programs is intensively engaged in evaluating a large number of pesticides, all of which may pose risks to man and the environment equal to or greater the risks posed by Mirex. The Office of General Counsel is actively supporting this effort, which will undoubtedly give rise to litigation in the near future. The limited resources of both Offices are urgently needed for these efforts. Finally, in this regard, the acceptance of the Plan will permit senior agency officials, including the Administrator, and the Administrative Law Judge assigned to the hearing, to devote their limited time to other matters.

In return for the elimination of litigative risks and preservation of Agency resources, the Agency is essentially yielding one year of aerial or ground application of up to 35,000 pounds of technical Mirex subject to stringent environmental constraints, and one-half year of ground broadcast and mound application of any of the 35,000 pounds that remains after December 31, 1977.[15] The Plan calls for application only from single engine aircraft during 1977 and only to land that is demonstrably infested with fire ants. Aquatic and marine areas are protected. During the entire remaining time allowed for aerial Mirex application no single acre may be aerially treated on more than one occasion. With

[12] Hooker Chemical Company has one other registration for a technical Mirex product. That registration is unaffected by the Plan. However, since Mirex produced under this registration may only be used in the formulation of other products, the registration will be useless after December 1, 1977, unless the Agency issues fresh registrations for Mirex formulated products at some time in the future.

[13] Because of this aspect of the Plan, the question whether Mirex registrations should be cancelled is not presented for decision. In this regard, however, the Agency notes that there is a high likelihood that the FIFRA section 6(b)(2) hearings would have concluded with a final order cancelling Mirex registrations for use against the fire ant. Essentially, this judgment is based upon the evidence that Mirex poses a cancer risk to man, coupled with the available evidence pertaining to its persistence in the environment. All of this evidence is summarized in Part III. The fate of the pineapple use of Mirex should the hearing have continued is less clear; however, with respect to this use as well, cancellation was a likely result. Even if this use had not been cancelled, it is unlikely that the registrant would have continued to produce the small quantities involved, if the fire ant uses had in fact been cancelled.

[14] We have received information that Hooker Chemical Company, the sole producer of technical Mirex is presently refusing to sell Mirex to the Mississippi Authority unless the Authority provides for indemnification for losses in potential civil litigation. Of course, if Hooker refuses to sell any further technical Mirex, the whole question of the risks and benefits of further Mirex use becomes moot.

[15] The Plan also calls for slight reductions and additions to the coastal zone restrictions from the Administrator's May 3, 1972 order. Under the Plan, relief could be obtained from the present label restriction against application in coastal counties, pursuant to a coastal zone plan submitted to and approved by the Agency. Criteria are included to grow in the development of such coastal zone plans.

these restrictions an additional 35,000 pounds Mirex should not add significantly to the already existing environmental burden of Mirex.

A further positive aspect of the Plan is the provision requiring that if Mirex is to be used for fire ant control after January 1, 1977, it must be the 10:5 formulation (instead of the 4X formulation, which has been extensively utilized in the past). On a per acre basis, Mirex 10:5 application results in the application of approximately 70% less actual toxicant per acre. More acres can be treated with the amount of 10:5 bait that can be produced within the production limitation provided for in 1977 than would be the case if 4X bait were produced. Nevertheless, the Agency is of the view that additional acreage coupled with reduced exposure per care is preferable to less acreage with increased exposure per acre, particularly where treatment in or near populated areas is concerned.

Moreover, allowing use of Mirex, subject to the restrictions set forth in the Plan, will provide relief to the people in the South from fire ants for a reasonable period of time during which an alternative can be made available. Indeed, the assurance of a large market for an alternative pesticide to control fire ants should significantly stimulate research. Similarly, the specified phase-out period for the Hawaiian pineapple use for fire ants should permit the pineapple industry to avail itself of the benefits of any research which is conducted to develop an alternative for fire ant control, and to conduct any pesticide product development program they themselves may deem appropriate. Finally in this regard, the Plan eliminates uncertainty concerning the ultimate fate of Mirex registrations. Obviously, as long as uncertainty continued, it had some discouraging effect on public or private institutions to conduct research to develop alternatives to Mirex for ant control. This uncertainty, and any related disincentive on research efforts, are eliminated by approving the Plan.

Finally, acceptance of the Plan does not preclude the Agency from taking emergency action (including an emergency order of suspension), should any additional information come to its attention indicating that any use of Mirex provided for in the plan has given use to an imminent hazard to human health.

LIST OF REFERENCES

1. E. G. Alley, The Use of Mirex in Control of the Imported Fire Ant, J. Environ. Quality, 2:52–61, 1973.

2. G. W. Ivie, et al., 225 Agr. Food Chem., 933, 1974.

3. H. M. Mehendale, et al. Fate of Mirex—14 C in the Rat and Plants. Bull. Environ. Cont. Toxicol., 8:200–207, 1972.

4. H. W. Dorough, Chemistry and Degradation of Mirex in Animals: A Status Report, U.S.D.A. Cooperative Agreement No. 12–14–100–10,947(33.), 1972.

5. J. R. M. Innes, et al. Bioassay of Pesticides and Industrial Chemicals for Tumorigenicity in Mice: A Preliminary Note, J.N.C.I., 42:1101–1114, 1969.

6. Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health (Mrak Report), D. HEW, 459–506, 1969.

7. U. Saffiotti, The Laboratory Approach to the Identification of Environmental Carcinogens, Proc. Ninth Canadian Cancer Res. Conf., 23–36, 1971.

8. H. L. Collins, et al., Residues of Mirex in Channel Cat fish and Other Aquatic Organisms, Bull. Environ. Cont. Toxicol., 10:73–77, 1973.

9. J. I. Lowe, et al., Effects of Mirex on Selected Estuarine Organisms, Trans. N. Am. Wildlife Nat. Res. Conf., 171–186, 1971.

10. T. E. Reagan, et al., Effects of Mirex on the Arthropod Fauna of a Louisiana Sugarcane Field. Environ. Ent., 1:588–591, 1972.

11. M. E. Tagatz, et al., Mirex—Gravity-Flow Column Studies, Gulf Breeze Environ. Res. Lab., (Unpublished data), 1973.

12. P. W. Borthwick, et al., Residues in Fish, Wildlife, and Estuaries. Pest. Monit. J., 7:6–26, 1973.

13. K. P. Baetcke, et al., Residues in Fish, Wildlife, and Estuaries, Pest. Monit. J., 6:14–22, 1972.

14. D. Cotton and J. Herring, A Survey of Mirex Residues in Fish and Wildlife from Two Areas in Mississippi, D.O.I., Mississippi Game and Fish Commission, Completion Report FW–8–1, 1972.

15. J. H. Ford, et al., Residues in Food and Feed, Pest. Monit. J., 7:87–94, 1973.

16. W. G. Harris and E. C. Burns, Predation on the Lone Star Tick by the Imported Fire Ant, Environ. Ent., 1:362–365, 1972.

[FR Doc.76–38105 Filed 12–28–76;8:45 am]

[FRL 662–T; OPP–66022]

PESTICIDE PROGRAMS

Cancellation of Registration of Pesticide Products Containing Mirex

Pursuant to section 6(a)(1) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended (86 Stat. 973, 89 Stat. 751, 7 U.S.C. 136(a) *et seq.*) the Environmental Protection Agency (EPA) has notified the Mississippi Authority for the Control of Fire Ants, PO Box 1609, Jackson MS 39205, of its intention to cancel, in accordance with the following conditions, the registrations of all these products containing the active ingredient Mirex:

Registered products—Mirex

Registrant	EPA registration No.	Product
Mississippi authority for control of fire ants	38962–1	Fire Ant Bait.
Do	38962–2	Fire Ant Bait "150".
Do	38962–3	Granular Bait 2x now 10:5.
Do	38962–4	Granular Bait 4x.
Do	38962–5	Harvester Bait 300.
Do	38962–6	Mirex Special Concentrate (25 percent).
Do	38962–7	Mirex Technical Concentrate (50 percent).
Do	38962–8	Mirex Pelleted Bait 450.
Do	38962–9	A–C Mirex Pelleted Bait 450.
Do	38962–10	Yellowjacket Stopper.

A. PRODUCTION LIMITATIONS AND END DATES FOR USE OF CURRENT-REGISTERED PRODUCTS

1. *Number of Aerial Applications.* No single acre will be treated aerially with Mirex bait on more than one occasion between July 1, 1976 and December 31, 1977.

2. *Mirex 4x Bait.* The effective date of cancellation for Mirex 4x Bait (EPA Reg. No. 218–565) shall be December 1, 1976. Between July 1, 1976 and December 1, 1976 not more than 45,000 pounds of technical Mirex shall be formulated into Mirex 4x Bait. Stocks of Mirex 4x Bait existing as of December 1, 1976, may be used only through December 31, 1976; *provided* that 1,000 pounds of Mirex 4x Bait may be utilized for research as a control in experiments to determine the efficacy of alternative materials until June 30, 1978.

3. *Mirex 10:5 Bait.* EPA shall amend the Mirex 10:5 Bait registration (EPA Reg. No. 38962–3) to add to that registration by permitting the packaging of Mirex 10:5 Bait in five pound bags for ground broadcast or mound-to-mound application by persons affected by the imported fire ant, or under the supervision of authorized state or federal personnel.

The effective date of cancellation for Mirex 10:5 Bait (EPA Reg. No. 38962–3) shall be December 1, 1977. Between September 1, 1976 and December 1, 1977, not more than 20,000 pounds of technical Mirex shall be formulated into Mirex 10:5 Bait. *Provided that,* if less Mirex 4x Bait is produced than can be produced with the 45,000 pounds of technical Mirex provided for in paragraph (A)(2) above, up to 15,000 pounds of the amount of technical Mirex not utilized from this 45,000 pound limitation shall be added to the 20,000 pound production limitation for Mirex 10:5 Bait. Stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be applied aerially only through December 31, 1977. Stocks of Mirex 10:5 Bait in five pound bags existing as of December 1, 1977 may be sold, distributed, and used in ground broadcast and mound application until June 30, 1978. Other stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be packaged by the Registrant into five pound bags for sale, distribution, and use in ground broadcast and mound application until June 30, 1978.

4. *Mirex Technical.* The effective date of cancellation for Technical Mirex (EPA Reg. No. 218–585) shall be December 1, 1977. No stocks of Technical Mirex existing as of December 1, 1977 shall be distributed, sold, or used.

5. *Mirex Harvester Ant Bait 300.* The cancellation of the registration for Mirex Harvester Ant Bait 300 (EPA Reg. No. 38962–5) shall be effective immediately for all uses other than for the control of the pheidole ant, the Argentine ant, and the fire ant on pineapples in Hawaii. Presently existing stocks of Mirex Harvester Ant Bait 300 may be distributed, sold, and used for all uses until December 31, 1976. The effective date of cancellation for Mirex Harvester Ant Bait 300 for the control of the said ants on pineapples in Hawaii shall be Decem-

ber 1, 1977. Stocks of Mirex Harvester Ant Bait 300 existing on December 1, 1977 may not be applied aerially for the control of the said ants on pineapples in Hawaii after December 31, 1977, but may be distributed, sold, and used (other than aerially) for this use indefinitely.

6. *Other Mirex Registrations.* The cancellation of all other Mirex registrations shall be effective immediately. Presently existing stocks of materials formulated according to all other EPA Mirex registrations may be distributed, sold, and used until December 31, 1977.

B. ADDITIONAL RESTRICTIONS

1. *Coastal Zones.* Because of the recognized limitations of the coastal county restrictions which were based on political boundaries, and in view of the need to protect embryonic and juvenile marine and aquatic life which is dependent on shallow coastal and estuarine areas, aerial treatment will be precluded within the coastal zone as determined as follows:

The coastal zone shall be determined so as to bring within the zone all of the following areas:

(a) The area between the coastline and a parallel line twelve miles from the coastline; the coastline shall include the shores of any bays or estuaries which are contiguous to the sea;

(b) The area within twelve miles from the furthest inland edge of any coastal, saline marsh; coastal marshes are defined as those areas represented on U.S. Geological Survey maps by the standard marsh symbol with a white background;

(c) The area around major rivers which are subject to a tidal influence which area may be, based on hydrologic and geologic factors, from one-quarter mile to five miles in circumference as measured from the point of tidal influence; a major river is defined as any river which drains an area in excess of 150 square miles. The point of tidal influence is defined as the point at which the mean discharge of the river no longer affects its stage at a mean high tide.

Whenever practicable coastal zone boundaries shall be along topographical features which are easily recognizable by air, such as highways, railroad beds, and rivers.

States that desire relief from the current label restriction against aerial Mirex application in coastal counties may develop a plan in accordance with the criteria contained herein and additional guidelines as found necessary, and may submit the plan to the Office of Pesticide Programs for review and approval. Such plan must be submitted to EPA for approval at least 45 days prior to application. The Office of Pesticide Programs may, by approving the plan in whole or in part, grant relief from the label prohibition against aerial Mirex application in any coastal county to the extent that such aerial application is performed consistently with the plan and any conditions imposed by EPA Office of Pesticide Programs in conjunction with approving the plan. The current coastal county restrictions shall remain in effect for each county for which an acceptable coastal zone plan is not submitted.

2. *Type of Aerial Application.* From July 1, 1976 through December 31, 1976, aerial application shall be made in accordance with current label restrictions except where the restrictions set forth in paragraphs 3 and 4 of these additional restrictions supersede. From January 1, 1977 through December 31, 1977, aerial application shall be made only with helicopters and single-engine aircraft flying at an altitude of no greater than 150 feet and at a speed of no greater than 150 miles per hour; *provided* that these conditions shall in no way supersede regulations of other agencies, including the Federal Aviation Administration, governing the aerial application of pesticides.

3. *Requests for Non-Treatment.* Prior to any aerial application of Mirex, prominent notice shall be published in local newspapers, at least 20 days but not more than 30 days prior to application, stating what areas will be treated and giving any resident of such areas the right to prevent application upon his land. *Provided* that until December 1, 1976 the required notice may be published at least 10 days, but not more than 30 days prior to application.

4. *Area Limitations Applicable to Aerial Applications.* a. *Wooded Areas.* Wooded areas are defined as those areas which have trees and which are not used for agricultural purposes. Tree farms or commercial forests shall not be considered areas used for agricultural purposes; however, groves and orchards shall be considered used for agricultural purposes. There shall be no aerial application is contiguous wooded areas except for a 100 yard swath contiguous to treated areas and cleared areas within the wooded area.

b. *Aquatic Areas.* From July 1, 1976 through December 31, 1976 there shall be no aerial application to any aquatic areas, except for intermittent streams where there is no flow and except for manmade or natural impoundments of water which do not exceed two acres in size and are not commercially fished. However, even these exempted waters should be avoided where possible. After December 31, 1976, there shall be no aerial application of Mirex to any aquatic areas, except for intermittent streams where there is no flow. Intermittent streams are defined as those streams having continuous flow during periods of heavy run-off and no flow during the remainder of the year. Manmade or natural impoundments of water are defined as such impoundments of water occurring on farms that are utilized for purposes such as irrigation, stock watering, and recreation. Aquatic areas are defined to include without limitation estuaries, rivers, streams, wetlands, lakes, ponds, and other bodies of water. The term "wetlands" means those land and water areas subject to inundation by tidal, riverine, or lacustrine flowage. Generally included are inland navigable waters, including inland and coastal shallows, marshes, mudflats, estuaries, swamps, and similar areas in coastal and inland navigable waters. There shall be no aerial application where run-off or flooding will contaminate aquatic areas.

c. *Idle Lands.* Cut-over lands and brush fields that, when left untreated, will not increase infestation exposure to treated lands shall not be treated.

d. *Other Areas.* Aerial application is permitted (subject to paragraph 3 above) in areas other than those outlined above (even though some trees are present), such as agricultural lands, home sites, and developed portions of public areas; *provided* that an appropriate state official certifies in writing before each application that he or his employees have inspected the area and there is at least one imported fire ant mound for each one-quarter section to be treated. Certification shall be available for inspection upon EPA request.

5. *Ground Application.* Ground application, whether broadcast by properly calibrated equipment or individually mound treated, is permitted in all areas of infestation; *provided* that there shall be no ground application to aquatic and heavily forested areas or areas where run-off or flooding will contaminate such areas. Ground broadcast and mound treatment shall be confined to areas where the imported fire ants are causing significant problems.

6. *Revised labeling.* Revised labeling in accordance with this notice shall be prepared and submitted by the Mississippi Authority for the Control of Fire Ants for determination by EPA that such labeling conforms to this notice and other provisions of the Act.

7. *Monitoring.* It is understood that a program for human, environmental, and application monitoring of the application of Mirex bait is essential to this agreement. The users will have primary responsibility for application monitoring, subject to EPA oversight.

C. SUBSTITUTION OF LESS TOXIC MIREX FORMULATIONS FOR MIREX 10:5 BAIT

When presented with adequate efficacy data, EPA shall promptly permit substitution of Mirex bait formulations providing for the application of less actual toxicant per acre for Mirex 10:5 Bait (EPA Reg. No. 38962-3). The production limitations, end dates, and other restrictions provided for in this notice shall remain in effect for such substituted formulation.

The Agency has discussed this cancellation action with repersentatives of the Mississippi Authority for the Control of Fire Ants who have indicated concurrence with the intended cancellation. Moreover, the Mississippi Authority for the Control of Fire Ants has waived its right to request, within 30 days, that the registrations be continued in effect, and has further stated that it will not give its concurrence to any other person to request that the registrations be continued in effect. Accordingly, these registrations are hereby cancelled, effective on the effective dates specified herein.

Dated: December 21, 1976.

EDWIN L. JOHNSON,
Deputy Assistant Administrator for Pesticide Programs.

[FR Doc.76-38103 Filed 12-28-76;8:45 am]

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Mirex Decision

PESTICIDE PROGRAMS

[FRL 662-5; OPP—62001]

Administrator's Decision To Accept Plan of Mississippi Authority and Order Suspending Hearing for the Pesticide Chemical Mirex

On October 20, 1976, the Administrator of the Environmental Protection Agency (EPA) issued an order accepting a Plan submitted by the Mississippi Authority for the Control of Fire Ants (the holder of all registrations for Mirex end-use products) for the gradual phase-out of its Mirex registrations and the suspension of the pending hearing under section 6(b)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act. The following is a compilation of documents that are germane to this action, including (1) the Administrator's order; (2) a letter to Mr. John R. Quarles, Jr. from Mr. Jim Buck Ross which, with its attachments, constitutes the Plan submitted by the Mississippi Authority to the EPA; and (3) a staff-prepared "Summary of Evidence and Other Information and Statement of Reasons" setting forth the Agency's reasons for accepting the Plan. References and Appendices to the "Summary of Evidence and Other Information and Statement of Reasons" are available for inspection in the office of the FEDERAL REGISTER Section, Technical Services Division (WH-569), Office of Pesticide Programs, Rm. 401, East Tower, 401 M St. S.W., Washington, D.C. 20460 from 8 a.m. to 4:30 p.m. during normal working days.

Dated: December 21, 1976.

EDWIN L. JOHNSON,
Deputy Assistant Administrator for Pesticide Programs.

UNITED STATES OF AMERICA, ENVIRONMENTAL PROTECTION AGENCY, BEFORE THE ADMINISTRATOR

In Re: Public Hearing to Determine Whether or not the Registrations of Mirex Should be Cancelled or Amended.
FIFRA Docket No. 293.

ADMINISTRATOR'S DECISION TO ACCEPT PLAN OF MISSISSIPPI AUTHORITY AND ORDER SUSPENDING HEARING

On September 23, 1976, the Agency's Acting Judicial Officer issued a "Notice of Receipt of Request to Cancel Mirex Registrations and Request for Comments" to all of the parties to this proceeding. After reviewing the proposed "Summary of Evidence and Statement of Reasons" submitted by EPA staff, the comments submitted by the other parties to this proceeding, and the Agency's staff's response to these comments, [redacted] by [redacted] of [redacted] adopt the [redacted] of Evidence and [redacted] submitted by the Agency staff with minor [redacted] sions. Accordingly, I hereby direct the Agency staff to take such action as is necessary to implement the Plan in accordance with its terms. Since the only Mirex product whose registration is not cancelled pursuant to the Plan is a technical or manufacturing use only product that can only be used in formulating other end-use products will be cancelled under the Plan, I have determined that it is no longer in the public interest to continue this Public Hearing to Determine Whether or Not the Registrations of Mirex should be Cancelled or Amended.

Accordingly, it is ordered that this hearing is hereby suspended.

Dated: October 20, 1976.

RUSSELL E. TRAIN,
Administrator.

THE STATE OF MISSISSIPPI,
DEPARTMENT OF AGRICULTURE AND COMMERCE,
Jackson, August 31, 1976.

Mr. JOHN R. QUARLES, Jr.,
Deputy Administrator, Environmental Protection Agency, Room 1213 West Tower, 401 M Street, S.W., Washington, D.C.

DEAR MR. QUARLES: Pursuant to our recent conversation regarding the continued use of mirex, we are submitting the following plan for your consideration. The responsible agencies of the nine states infested with the imported fire ant recognize that their immediate responsibility to the people of their respective states is two-fold: to provide an effective means of controlling the imported fire ant while concurrently preventing undue damage to the environment. As there is a question as to the long-range effect that mirex may have on the environment, it is obvious that the best way to minimize this potential danger is to reduce the amount of technical mirex placed in it. Therefore, the Mississippi Authority for the Control of Fire Ants ("Mississippi Authority") has designed the following plan ("Plan") to minimize the amount of mirex to be used; to reduce the size of contiguous areas treated, and to phase-out gradually the current mirex registrations with the objective of replacing current mirex registrations with an unquestionably safe registered material as quickly as possible. The plan shall become effective immediately upon notification by EPA to the Mississippi Authority that the plan is acceptable to EPA.

The plan has the following elements:

I. CANCELLATION OF MIREX REGISTRATIONS

The Mississippi Authority for the Control of Fire Ants requests that the Environmental Protection Agency cancel all of its mirex registrations under Section 6(a)(1) of the Federal Insecticide, Fungicide and Rodenticide Act in accordance with the attached suggested cancellation notice. (Attachment A.) The Mississippi Authority hereby waives its right under Section 6(a)(1) to request within 30 days after issuance of such notice that the registrations be continued in effect. The Mississippi Authority also states that it will not give its concurrence to any other person to request that the registrations be continued in effect.

II. SUSPENSION OF THE PENDING MIREX HEARING

The Mississippi Authority for the Control of Fire Ants proposes that upon publication of the attached cancellation notice, the pending hearing under Section 6(b)(2) of the Federal Insecticide, Fungicide and Rodenticide Act should be suspended. It is understood that after publishing its Section 6(a)(1) cancellation notice and after suspending the ongoing Section 6(b)(2) hearings, the Environmental Protection Agency would publish a Statement of Reasons for taking this action. This Statement of Reasons will include a summary of evidence in the

record developed at the Section 6(b)(2) hearing and other information not included in the record bearing on the risks and benefits of mirex use and the merits of this proposal of the Mississippi Authority.

III. Research

A program to find a suitable alternative chemical to replace mirex has been implemented through the "Cooperative Interagency Agreement for the Study of Alternative Chemicals to Mirex." (See Attachment B). Additionally, the USDA Agricultural Research Service has an ongoing program to screen alternatives to mirex for control of imported fire ants. It is our understanding that Congress has appropriated additional funds to expand this research. The Mississippi Authority for the Control of Fire Ants will make every effort to have this program incorporated into the Cooperative Interagency Agreement.

IV. Request for Amendment

The Mississippi Authority for the Control of Fire Ants requests that its mirex 10:5 bait registration (EPA Reg. No. 38962-3) be amended to permit in addition to the methods now provided the packaging of mirex 10:5 bait in five pound bags for ground broadcast or mound-to-mound application by persons affected by the Imported Fire Ant or under the supervision of authorized state or federal personnel. L[redacted]ound [redacted]y [redacted]ially.

The Mississippi Authority for the Control of Fire Ants feels that the above plan will achieve both of its goals and should receive the support of all affected persons. The Authority urges that you give this proposal very careful consideration.

Sincerely yours,

Jim Buck Ross,
Chairman, The Mississippi Authority for Control of Fire Ants.

Attachment A.—Proposed Federal Register Notice Requesting Cancellation of Registration of Pesticide Products Containing Mirex

Pursuant to Section 6(a)(1) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended (86 Stat. 973, 89 Stat. 751, 7 U.S.C. 136(a) *et seq.*) the Environmental Protection Agency (EPA) has notified the Mississippi Authority for the Control of Fire Ants, PO Box 1609, Jackson MS 39205, of its intention to cancel, in accordance with the following conditions, the registrations of all these products containing the active ingredient Mirex:

Registered products—Mirex

Registrant	EPA registration No.	Product
Mississippi authority for control of fire ants	38962-1	Fire Ant Bait.
Do	38962-2	Fire Ant Bait "150".
Do	38962-3	Granular Bait 2x now 10:5.
Do	38962-4	Granular Bait 4x.
Do	38962-5	Harvester Bait 300.
Do	38962-6	Mirex Special Concentrate (25 percent).
Do	38962-7	Mirex Technical Concentrate (80 percent).
Do	38962-8	Mirex Pelleted Bait 450.
Do	38962-9	A-C Mirex Pelleted Bait 450.
Do	38962-10	Yellowjacket Stopper.

A. Production Limitations and End Dates for Use of Current-Registered Products.

1. *Number of* [redacted]. No single acre will be treated aerially with Mirex bait on more than one occasion between July 1, 1976 and December 31, 1977.

2. *Mirex 4x Bait.* The effective date of cancellation for Mirex 4x Bait (EPA Reg. No. 218-565) shall be December 1, 1976. Between July 1, 1976 and December 1, 1976 not more than 45,000 pounds of technical Mirex shall be formulated into Mirex 4x Bait. Stocks of Mirex 4x Bait existing as of December 1, 1976 may be used only through December 31, 1976; provided that 1,000 pounds of Mirex 4x Bait may be utilized for research as a control in experiments to determine the efficacy of alternative materials until June 30, 1978.

3. *Mirex 10:5 Bait.* EPA shall amend the Mirex 10:5 Bait registration (EPA Reg. No. 38962-3) to add to that registration by permitting the packaging of Mirex 10:5 Bait in five pound bags for ground broadcast or mound-to-mound application by persons affected by the imported fire ant, or under the supervision of authorized state or federal personnel.

The effective date of cancellation for Mirex 10:5 Bait (EPA Reg. No. 38962-3) shall be December 1, 1977. Between September 1, 1976 and December 1, 1977, not more than 20,000 pounds of technical Mirex shall be formulated into Mirex 10:5 Bait. *Provided,* That, if less Mirex 4x Bait is produced than can be produced with the 45,000 pounds of technical Mirex provided for in paragraph A)(2) above, up to 15,000 pounds of the amount of technical Mirex not utilized from this 45,000 pound limitation shall be added to the 20,000 pound production limitation for Mirex 10:5 Bait. Stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be applied aerially only through December 31, 1977. Stocks of Mirex 10:5 Bait in five pound bags existing as of December 1, 1977 may be sold, distributed, and used in ground broadcast and mound application until June 30, 1978. Other stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be packaged by the Registrant into five pound bags for sale, distribution, and use in ground broadcast and mound application until June 30, 1978.

[redacted]

3. *Mirex Harvester Ant Bait 300.* The cancellation of the registration for Mirex Harvester Ant Bait 300 (EPA Reg. No. 38962-5) shall be effective immediately for all uses other than for the control of the pheidole ant, the Argentine ant, and the fire ant on pineapples in Hawaii. Presently existing stocks of Mirex Harvester Ant Bait 300 may be distributed, sold, and used for all uses until December 31, 1976. The effective date of cancellation for Mirex Harvester Ant Bait 300 for the control of the said ants on pineapples in Hawaii shall be December 1, 1977. Stocks of Mirex Harvester Ant Bait 300 existing on December 1, 1977 may not be applied aerially for the control of the said ants on pineapples in Hawaii after December 31, 1977, but may be distributed, sold, and used (other than aerially) for this use indefinitely.

6. *Other Mirex Registrations.* The cancellation of all other Mirex registrations shall be effective immediately. Presently existing stocks of materials formulated according to all other EPA Mirex registrations may be distributed, sold, and used until December 31, 1977.

B. Additional Restrictions

1. *Coastal Zones.* Because of the recognized limitations of the coastal county restrictions which were based on political boundaries, and in view of the need to protect embryonic and juvenile marine and aquatic life which is dependent on shallow coastal and estuarine areas, aerial treatment will be precluded within the coastal zone as determined as follows:

The coastal zone shall be determined so as to bring within the zone all of the following areas:

(a) the area between the coastline and a parallel line twelve miles from the coastline; the coastline shall include the shores of any bays or estuaries which are contiguous to the sea;

(b) the area within twelve miles from the furthest inland edge of any coastal, saline marsh; coastal marshes are defined as those areas represented on U.S. Geological Survey maps by the standard marsh symbol with a white background;

(c) the area around major rivers which are subject to a tidal influence which area may be, based on hydrologic and geologic factors, from one-quarter mile to five miles in circumference as measured from the point of tidal influence; a major river is defined as any river which drains an area in excess of 150 square miles. The point of tidal influence is defined as the point at which the mean discharge of the river no longer affects its stage at a mean high tide.

Whenever practicable coastal zone boundaries shall be along topographical features which are easily recognizable by air, such as highways, railroad beds, and rivers.

States that desire relief from the current label restriction against aerial Mirex application in coastal counties may develop a plan in accordance with the criteria contained herein and additional guidelines as found necessary, and may submit the plan to the Office of Pesticide Programs for review and approval. Such plan must be submitted to EPA for approval at least 45 days prior to application. The Office of Pesticide Programs may, by approving the plan in whole or in part, grant relief from the label prohibition against aerial Mirex application in any coastal county to the extent that such aerial application is performed consistently with the plan and any conditions imposed by EPA Office of Pesticide Programs in conjunction with approving the plan. The current coastal county restrictions shall remain in effect for each county for which an acceptable coastal zone plan is not submitted.

2. *Type of Aerial Application.* From July 1, 1976 through December 31, 1976, aerial application shall be made in accordance with current label restrictions except where the restrictions set forth in paragraphs 3 and 4 of these additional restrictions supersede. From January 1, 1977 through December 31, 1977, aerial application shall be made only with helicopters and single-engine aircraft flying at an altitude of no greater than 150 feet and at a speed of no greater than 150 miles per hour; provided that these conditions shall in no way supersede regulations of other agencies, including the Federal Aviation Administration, governing the aerial application of pesticides.

3. *Requests for Non-Treatment.* Prior to any aerial application of Mirex, prominent notice shall be published in local newspapers, at least 20 days but not more than 30 days prior to application, stating what area will be treated and giving any resident of such areas the right to prevent application upon his land. *Provided,* That until December 1,

1976 the required notice may be published at least 10 days, but not more than 30 days prior to application.

4. *Area Limitations Applicable to Aerial Applications.* (a) *Wooded Areas.* Wooded areas are defined as those areas which have trees and which are not used for agricultural purposes. Tree farms or commercial forests shall not be considered areas used for agricultural purposes; however, groves and orchards shall be considered used for agricultural purposes. There shall be no aerial application in contiguous wooded areas except for a 100 yard swath contiguous to treated areas and cleared areas within the wooded area.

(b) *Aquatic Areas.* From July 1, 1976 through December 31, 1976 there shall be no aerial application to any aquatic areas, except for intermittent streams where there is no flow and except for man-made or natural impoundments of water which do not exceed two acres in size and are not commercially fished. However, even these exempted waters should be avoided where possible. After December 31, 1976, there shall be no aerial application of Mirex to any aquatic areas, except for intermittent streams where there is no flow. Intermittent streams are defined as those streams having continuous flow during periods of heavy run-off and no flow during the remainder of the year. Man-made or natural impoundments of water are defined as such impoundments of water occurring on farms that are utilized for purposes such as irrigation, stock watering, and recreation. Aquatic areas are defined to include without limitation estuaries, rivers, streams, wetlands, lakes, ponds, and other bodies of water. The term "wetlands" means those land and water areas subject to inundation by tidal, riverine, or lacustrine flooge. Generally included are inland navigable waters, including inland and coastal shallows, marshes, mudflats, estuaries, swamps, and similar areas in coastal and inland navigable waters. There shall be no aerial application where run-off or flooding will contaminate aquatic areas.

(c) *Idle Lands.* Cut-over lands and brush fields that, when left untreated, will not increase infestation exposure to treated lands shall not be treated.

(d) *Other Areas.* Aerial application is permitted (subject to paragraph 3 above) in areas other than those outlined (even though some trees are present), such as agricultural lands, home sites, and devloped portions of public areas; provided that an appropriate state official certifies in writing before each application that he or his employees have inspected the area and there is at least one imported fire ant mound for each one-quarter section to be treated. Certification shall be available for inspection upon EPA request.

5. *Ground Application.* Ground application, whether broadcast by properly calibrated equipment or individually mound treated, is permitted in all areas of infestation; provided that there shall be no ground application to aquatic and heavily forested areas or areas where run-off or flooding will contaminate such areas. Ground broadcast and mound treatment shall be confined to areas where the imported fire ants are causing significant problems.

6. *Revised Labeling.* Revised labeling in accordance with this notice shall be prepared and submitted by the Mississippi Authority for the Control of Fire Ants for determination by EPA that such labeling conforms to this notice and other provisions of the Act.

7. *Monitoring.* It is understood that a program for human, environmental, and application monitoring of the application of Mirex bait is essential to this agreement. The users will have primary responsibility for application monitoring, subject to EPA oversight.

C. Substitution of Less Toxic Mirex Formulations *for Mirex 10:5 Bait.*

When presented with adequate efficacy data, EPA shall promptly permit substitution of Mirex bait formulations providing for the application of less actual toxicant per acre for Mirex 10:5 Bait (EPA Reg. No. 38962-3). The production limitations, end dates, and other restrictions provided for in this notice shall remain in effect for such substituted formulation.

The Agency has discussed this cancellation action with representatives of the Mississippi Authority for the Control of Fire Ants who have indicated concurrence with the intended cancellation. Moreover, the Mississippi Authority for the Control of Fire Ants has waived its right to request, within 30 days, that the registrations be continued in effect, and has further stated that it will not give its concurrence to any other person to request that the registrations be continued in effect. Accordingly, these registrations are hereby cancelled, effective on the effective dates specified herein.

[ATTACHMENT B]

AMENDMENT NO. 1

The cooperative agreement between the Mississippi Department of Agriculture, Imported Fire Ant Division, the United States Department of Agriculture, Animal and Plant Health Inspection Service, and United States Environmental Protection Agency, Office of Pesticide Programs, for the performance of laboratory and field evaluations of chemicals which can serve as alternatives to mirex in the control of imported fire ants, signed by the parties thereto on October 29, 1975, October 30, 1975, and September 11, 1975, respectively, is hereby amended as follows:

(1) Paragraph IV, Duration of Agreement, is amended as follows: This agreement will cover the period from September 1, 1975, to January 1, 1978.

(2) Paragraph VIII, General Provisions, is inserted as follows: The cost of the work to be performed by the Mississippi Department of Agriculture and Commerce is estimated at $100,000. In its performance the Mississippi Department of Agriculture and Commerce shall comply with the attached General Provisions for Use in Cost Reimbursement Contracts with Educational and Other Nonprofit Institutions, EPA Form 1900-28 Oct. 1973 as amended by the alterations thereto, EPA Form 1900-28 (Revised Mar. 1975) February 27, 1976.

(3) Paragraph VII, Funds, Personnel, and Facilities, seventh paragraph is amended as follows:

EPA will pay the Mississippi Department of Agriculture and Commerce for actual costs incurred in the performance of the services agreed to herein in an amount not to exceed $100,000. The Mississippi Department of Agriculture and Commerce will submit an itemized bill for payment to:

Environmental Protection Agency, Financial Management Division (PM-226), 401 M Street, S.W., Washington, D.C. 20460.

The itemized bill should be submitted quarterly. It should cite the number of this agreement and the following accounting data:

Appropriation	68X0107
Account No.	644932C99C
Document Control No.	K00049

Except as herein expressly provided, all other terms and conditions of the agreement shall remain in full force and effect.

Dated: May 13, 1976.

EDWIN L. JOHNSON,
Deputy Assistant Administrator for Pesticide Programs, EPA.

Dated: _____

HARRY C. MUSSMAN,
Acting Administrator for Animal and Plant Health Inspection Service, U.S.D.A.

Dated: May 13, 1976.

J. B. ROSS,
Commissioner, Mississippi Department of Agriculture and Commerce.

SUMMARY OF EVIDENCE AND OTHER INFORMATION AND STATEMENT OF REASONS

I. INTRODUCTION

The Environmental Protection Agency has been conducting a hearing under section 6(b)(2) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, since July 11, 1973, to determine whether registrations for pesticide products containing Mirex should be cancelled or amended. Information adduced at this hearing, and other information which has recently come to light, has prompted the Mississippi Authority for the Control of Fire Ants (Mississippi Authority), the sole registrant of end-use Mirex products, to submit to the Agency a plan (Plan) for the cancellation of its Mirex registrations and a gradual phase-out of Mirex use.

The plan prescribes the ultimate fate of all currently-registered end-use Mirex products. As indicated above, this is the same matter which would be resolved in the FIFRA section 6(b)(2) hearing currently in progress, should that hearing be allowed to continue to a conclusion. Accordingly, the Plan represents the offer of the sole registrant and producer of end-use Mirex products to end this litigation at this point in time on prescribed terms and conditions.[1] This is acknowledged in the Plan itself, in that one of its provisions calls for immediate cessation of the hearing.

The Agency therefore must decide whether to accept the Plan, and suspend the hearings, or reject the Plan and continue the hearings with the objective of implementing some other solution to the question of the ultimate fate of Mirex through the hearing process. This document sets forth the Agency's decision on the question whether to accept or reject the Plan of the Mississippi Authority. As indicated below, the Agency's decision is to accept the Plan.

This document consists of five parts. Part I is this introduction. Part II is a brief procedural history of the Mirex litigation. Part III is a brief summary of available information concerning the risks and benefits of the use of Mirex for its currently registered uses. Part IV is a brief summary of the significant

[1] In essence, the sole producer of the products in question is stating in the Plan that it will no longer produce the products after a set period of time. Accordingly, it follows that no person who desires to use pesticides which would be produced *after* these end dates can complain of these cancellations, because FIFRA does not create any obligation upon a producer to continue to produce a pesticide.

elements of the Plan of the Mississippi Authority (a copy of the Plan itself is also attached). Finally, Part V presents the Agency's decision to accept the Plan, and its rationale for that decision.

The scope and purpose of the various parts of this document are, for the most part, self-explanatory. However, some elaboration is necessary with respect to Part III, which presents a summary of available information concerning the risks and benefits of the use of Mirex for its currently registered uses. The information which is summarized is, for the most part, contained in the hearing record of the Mirex litigation. To some extent, however, information is included which has recently come to light that has not yet been incorporated in the hearing record. As as indicated in more detail below, the summary does not represent the Agency's findings of fact at the conclusion of the Mirex litigation. Rather, it represents an attempt to summarize available information with respect to the risks and benefits of Mirex use in order to provide a basis upon which to make a responsible decision concerning whether or not to accept the Plan of the Mississippi Authority. Obviously, no such decision can be made without reaching conclusions concerning the risks and associated benefits of Mirex use, because the Plan provides for continued production and use of some currently-registered end-use Mirex products during the phase-out period provided for. The Agency cannot assess whether this solution is consistent with the public interest, without some consideration of available information concerning risks and benefits of Mirex use.

II. HISTORY

On March 18, 1971, this Agency issued a notice of intent to cancel registrations of pesticide products containing Mirex. The reason for issuing the notice was that evidence concerning the effects of Mirex on humans and other animals raised a substantial question about the safety of continued use of pesticide products containing Mirex. [redacted] elected to challenge the notice by petitioning, on April 16, 1971, for referral of the matter to a Scientific Advisory Committee pursuant to 7 U.S.C. 135b(c).[2] In its report, submitted with revisions on March 1, 1972, the committee made recommendations which can be summarized as follows:

(1) Mirex registrations should be continued with labeling restrictions to minimize environmental contamination; (2) publicly supported control programs should be limited to infested areas where the imported fire ant is a problem because of proximity to people or interference with agricultural operations; (3) where publicly sponsored programs are unavailable, nonaerial broadcast treatment of lawns, pastures, schoolgrounds, parks, and similar areas by individuals is recommended instead of mound treatment; (4) more information should be obtained in order to establish economic or nuisance threshold levels requiring Mirex treatment, including information regarding rates of reinfestation and population recovery in areas receiving a single bait treatment; and (5) more research should be conducted on the possible hazards of Mirex to man and his environment.

In an order filed May 3, 1972, published in the FEDERAL REGISTER on June 1, 1972 (37 FR 10987), Administrator Ruckelshaus accepted the findings of the Committee and made additional findings of his own. He found that although [redacted] the data regarding Mirex residues in human tissue was extremely fragmentary and inconclusive. He also found that, while one study had clearly shown that Mirex was tumorigenic in mice, the [redacted] one [redacted].

Administrator Ruckelshaus concluded that, while at that time the [redacted] In a subsequent order, dated June 30, 1972 and published in the FEDERAL REGISTER on July 6, 1972 (37 FR 13299), Administrator Ruckelshaus reinstated all Mirex registrations and permitted ground broadcast of Mirex if ground application equipment which could be calibrated to deliver the recommended label dosages were utilized. In still another order, dated March 28, 1973 and published in the FEDERAL REGISTER on April 4, 1973 (38 FR 8615), the total ban on application to aquatic areas was modified to exclude intermittent streams and farm ponds not used primarily for human consumption.

Finally in order to resolve the issues still surrounding the use of Mirex, the Administrator issued notice of his intent to hold a hearing pursuant to section 6(b)(2) of FIFRA, to determine whether or not the registrations of Mirex should be cancelled or amended (38 FR 8616, April 4, 1973). On July 11, 1973 public hearings commenced pursuant to section 6(b)(2) of FIFRA. The hearings continued unabated until March 28, 1975, when settlement negotiations commenced. These negotiations continued until July 14, 1975, when the registrant, Allied Chemical Corporation, formally announced that, because a settlement could not be reached on terms acceptable to the United States Department of Agriculture, Allied would no longer actively participate in the proceedings. Moreover, Allied announced that it was ceasing production of Mirex until some viable solution was reached. The hearings then resumed and proceeded intermittently until February 12, 1976, when Allied Chemical Company stated its intention not to resume formulation of Mirex bait in the future. On February 26, 1976, at the request of the parties, the hearings were temporarily suspended, and on May 10, 1976, the Mississippi Authority announced that Allied Chemical Company had transferred its Mirex registrations to the Authority. Since that time the hearings have remained dormant while the Mississippi Authority's counsel have reviewed the case.

III. SUMMARY OF RELEVANT INFORMATION CONCERNING RISKS AND BENEFITS OF MIREX

As indicated above, a hearing has been in progress under section 6(b)(2) of FIFRA since July 11, 1973, to determine whether or not the registrations of pesticide products containing Mirex should be cancelled or amended. The hearing record now consists of over 13,000 pages of transcript, over 200 exhibits, and includes the testimony of more than 100 witnesses. In addition to the information in the hearing record, information has recently become available on the health effects of Mirex, including some extremely significant information concerning human exposure to Mirex.

Set forth below is a brief summary of the significant available information.[3] It is emphasized that this summary does not purport to serve the function of the findings of fact required at the conclusion of the FIFRA section 6(b)(2) hearing. Rather, it is an attempt to develop a body of information upon which to base a responsible decision concerning whether or not the Plan of the Mississippi Authority should be accepted or rejected. Available information concerning the cancer risk to man resulting from Mirex use is discussed in some detail. This is because the Plan provides for continued production and use of currently-registered Mirex products during the specified phase-out period. In order to assess whether this aspect of the Plan is acceptable to the Agency, it is necessary to assess in some manner the risks to which exposed members of the public will be subjected during this phase-out period. If these risks appeared unreasonable, the Agency would have rejected the Plan and attempted to implement some other solution involving less exposure through the FIFRA hearing process. Indeed, because the question before the Agency is whether the hearings should be terminated short of findings, evidence indicating carcinogenic risk of Mirex must be given special significance. Finally, this summary differs from findings of fact in one other significant respect, i.e. in some instances the information which is summarized is not part of the hearing record, and therefore has not been subjected to cross-examination by other parties to the proceeding.

A. MIREX: IDENTIFICATION AND NOMENCLATURE.

"Mirex" is the common name given to a chlorocarbon compound with a chemical formula of C10 C12 and a technical nomenclature of dodecachlorooctahydro - 1,3,4,-metheno-2H-cyclobuta[cd] pentalene; the systematic name of this compound is dodecachloropentacyclo (5.3.0.0^{2,6}.0^{3,9}.0^{4,8}) decane. The term "Mirex" also is used in reference to a bait which is comprised of corncob grits, soybean oil, and the chlorocarbon compound identified above.

B. CURRENT REGISTRATIONS

There are currently eleven registered products containing Mirex. One, held by Hooker Chemical Company, is a technical product used only in formulating other products (EPA Reg. No. 935-27). All of the rest of the registrations are held by the Mississippi Authority for the Control of Fire Ants. Two of these are used only in formulating other products (EPA Reg. No. 38962-7; EPA Reg. No. 38962-6). One contains 0.5% Mirex formulated into a bait for control of yellowjackets (EPA Reg. No. 38962-10). Two contain 0.450% Mirex formulated into a bait for controlling Texas leaf cutting ants, harvester ants, and fire ants (EPA Reg. No. 38962-8; EPA Reg. No. 38962-9). One contains 0.3% Mirex formulated into a bait for control of western harvester ants, pheidole ants in Hawaii, and assorted other ants (EPA Reg. No. 38962-5). One contains 0.3% Mirex for controlling fire ants in the federal-state cooperative program for imported fire ant suppression (EPA Reg. No. 38962-4). One contains 0.1% Mirex for controlling fire ants in the federal-state cooperative program for imported fire ant suppression (EPA Reg. No. 38962-3). One contains 0.15% Mirex for control of fire ants through ground broadcast and mound treatment (EPA Reg. No. 38962-2). One contains 0.075% Mirex for controlling fire ants through ground broadcast and mound treat-

[2] Prior to the 1972 Amendments, a registrant could challenge a Notice of Intent to Cancel either by requesting a hearing or by requesting referral to a Scientific Advisory Committee.

[3] Citations to Testimony in this document refer to testimony presented in FIFRA 293. Citations to "References" refer to the list of "References" at the end of this document. Citations to "Appendices" refer to the documents appended to this document.

ment (EPA Reg. No. 38962-1). (See Appendix A).

C. CHEMICAL AND BIOLOGICAL CHARACTERISTICS OF MIREX

1. *Impurities and Degradation Products.* Very recent screening analyses of formulated Mirex bait at the Mississippi Authority's formulating plant in Aberdeen, Mississippi, have shown that Kepone is present in Mirex bait at levels up to 0.25 ppm and in technical Mirex at levels up to 2.58 ppm.

Recent research conducted by the United States Department of Agriculture and others has shown that as much as 10% of Mirex applied in the environment either begins as Kepone or is degraded into Kepone over periods of five and twelve years. (Appendix C). Laboratory studies have shown that Mirex can degrade photolyticly into Kepone. (Reference 2).

2. *Persistence.* Because of its unique chemical structure, [redacted] to [redacted] than other chlo[redacted]. (Alley Testimony at 4). Mirex therefore will likely remain in nonliving (and living) matter for longer periods of time than would such chlorinated hydrocarbon pesticides as DDT, Aldrin/Dieldrin, and Heptachlor. (Alley Testimony at 4). Research performed by USDA and others has shown that as much as 50% of the original Mirex that was applied in 1962 was recovered from soil residues twelve years after treatment. (Appendix C).

3. *Bioconcentration.* [redacted] (Livingston Testimony [II] at 1), [redacted] and subcutaneous tissues of mammals to which it is fed as a constant increment of the diet, apparently without reaching a plateau. There appears to be an unlimited capacity for accumulation of Mirex in some animal tissues, and Mirex can accumulate in vertebrate animals to extremely high levels. (Gibson Testimony at 3; Gibson TR 157, 165, 168).

Moreover, Mirex bioaccumulates in wildlife and the food of wildlife, including *Crustaceans* (Lowe Testimony at 6; Tagatz Testimony at 4; Bookhout Testimony at 10; Bookhout TR 1989), *Ciliate protozoa* (Cooley Testimony at 2-3; Cooley TR at 8905-8), and *algae* (Hollister Testimony at 3). At even the most primary trophic levels in the environment the bioconcentration of Mirex has been demonstrated, often at levels thousands of times that found in aquatic media.

[redacted] to [redacted] (Gibson Testimony at 50), [redacted] (Reference [redacted]). However, Mirex can be excreted through special mechanisms, such as lactation and via egg yolks. (Reference 4 at 5-7; Kimbrough Testimony at 9). The sigficance of these special pathways of Mirex elimination is two-fold. First, man is a consumer of products which are the vehicles of such special elimination in other species. Second, since it has been shown that cows will eliminate significant quantities of Mirex in their milk, it is reasonable to expect that Mirex will also be excreted in the milk of female human beings and thus transmitted to their offspring via breast feeding. (Gibson Testimony at 6).

Mirex is transferred through the placenta in rates. The placenta constitutes a barrier between the fetus and the mother which is designed to protect the fetus. Dr. Renate Kimbrough characterized the finding in rats as a "warning signal" that it may also take place in human beings. (Kimbrough Testimony at 12).

4. *Biomagnification.* Mirex biomagnifies in higher-level organisms as it moves up the food chain to man (Livingston Testimony [II] at 2-3; Cowley TR 8926). Mirex's great persistence in the environment and its propensity to bioaccumulate and biomagnify mean that even though it is applied at relatively small application rates, it will be available for consumption by humans, wildlife, and marine and aquatic organisms for long periods of time. (Alley Testimony at 4; Plapp Testimony at 10-11).

D. MIREX TOXICITY TO HUMANS.

1. *Carcinogenicity.* Two experiments have been performed to date concerning the carcinogenicity of Mirex. The first was bioassay in mice completed by Bionetics Research Laboratories, Inc. in 1969 under a contract with the National Cancer Institute. Mirex was tested in this bioassay (hereinafter referred to as First Bionetics) along with 120 other industrial chemicals in an effort to screen out and identify those compounds which were carcinogenic. Both sexes of two hybrid strains of mice were administered Mirex, with 18 animals in each sex-strain subgroup given Mirex orally and other mice of the same strain receiving subcutaneous injections. Oral administration of Mirex commenced by stomach tube when test mice were 7 days of age, and after 4 weeks the mice were weaned and given 26 ppm of Mirex in their diet, a dose which had earlier been calculated to be the maximum tolerated dose. Administration of Mirex continued in this fashion for the life time of the test animals. Negative control animals—those not exposed to Mirex at any time during their lifetime—were kept in the same room with Mirex-exposed animals, and positive control animals were exposed to seven known carcinogenic agents to assure that a carcinogenic reaction would be produced in the strains under test. Only the results of the oral administration of Mirex were reported thereafter (Reference 5) and reviewed in testimony presented in FIFRA 293.

A second carcinogenesis bioassay of Mirex (hereinafter referred to as Second Bionetics) was conducted with Charles River caesarean derived (CD) rats exposed to a calculated maximum tolerated dose of 100 ppm and also to one-half that amount, 50 ppm. Control animals were kept under identical conditions as exposed rats. Mirex was administered for 18 months, with the surviving rats being held for an additional six-month observation period before being killed for necropsy. This bioassay, which was performed simultaneously with tests on 16 other compounds, was completed and reported by Litton-Bionetics, Inc. in 1973. The National Cancer Institute has very recently issued a final report on this experiment.[4]

(a) *The first bionetics experiment (mice).* The results of the First Bionetics Experiment were published in the Journal of the National Cancer Institute in 1969. (Reference 11) That report stated that Mirex induced a highly statistically significant (P less than 0.01) increase of liver hepatomas in both sexes of both strains of mice in which it was tested. The Mirex-induced response roughly equalled that of the response induced by the seven positive-control chemicals. Because of this strong response, the Report listed Mirex among eleven of the 120 compounds judged to be "clearly tumorigenic" for the strains of mice used at the dose levels tested.[5]

The word "hepatoma" was used in the report to denote both benign and malignant tumors. In fact, in the opinion of the pathologists who collaborated in the report, it seemed more reasonable to conclude that the great majority of the tumors observed had malignant potentiality. (Reference 11 at 1114.) Dr Paul Kotin, who designed the experiment, testified that he had personally examined some of the slides taken from this experiment with the chief pathologist, J. R. M. Innes, and had observed liver cancers (hepatocellular carcinomas) which Innes, later reported as hepatomas. There was no basis, therefore, for distinguishing between "hepatomas" and "carcinomas." (Kotin TR 1692-3). Independent pathological diagnoses of the First Bionetics slides by Dr. Melvin D. Reuber, one of the most experienced and imminent researchers into the process of carcinogenesis in test animals, and statistical analyses of the diagnoses by Dr. Adrian Gross, Assistant Director for Scientific Coordination in the Office of Pharmaceutical Research and Testing of the Bureau of Drugs of the Food and Drug Administration, demonstrated that Mirex induced a highly statistically significant increase in liver cancers (hepatocellular carcinomas) in both strains and both sexes of test animals as compared with the control animals in this experiment. (Reuber Testimony at 11; Gross Testimony at 11.)

However, Dr. Paul Newberne, another well qualified pathologist, has prepared testimony for the Mirex hearing that disagrees with both Dr. Reuber and the pathologists who participated in the report of the First Bionetics Experiment. In his opinion, none of the lesions induced in the test animals could be classified as hepatocellular carcinoma. (Newberne Prepared Testimony at 9). He observed a number of hyperplastic nodules, but these represented to him only one of the several ways that liver cells respond to Mirex.

The Advisory Panel on the Carcinogenicity of Pesticides of the Commission on Pesticides and their Relationship to Environmental Health, appointed by the Secretary of Health Education and Welfare in April 1969, placed Mirex in a group judged "positive for tumorigenicity" on the basis of the First Bionetics report (Reference 6 at 461.) The Report of the Mirex Advisory Committee of the National Academy of Sciences concluded that in this experiment "Mirex is very close to being equal in carcinogenic potency to the seven known carcinogenic compounds." How-

[4] In addition to these two bioassay experiments, there have been two very recent experiments performed on mice and rhesus monkeys by the Center of Experimental Pathology and Toxicology of Albany Medical College for Allied Chemical Corporation. In the monkey experiment a total of eight monkeys were exposed to different doses of Mirex for periods ranging from one year, five months to three years, one month. No carcinogenic effect was reported. However, because of the small number of animals employed and the short durations of exposure, the significance of this study is highly questionable.

In the other experiment Mirex was fed to mice at 0.2 ppm for twenty months. The tissue slides from this experiment have been analyzed by only one pathologist and no statistical analysis has been performed on that diagnoses. A disturbing aspect of the experiment is that Mirex was found in the tissues of the control animals. Until further analysis is made of this study, its significance is unclear.

[5] All of the Mirex exposed mice died before the conclusion of the experiment. It is reasonable to conclude that some of the treated mice that died without tumors likely would have formed such tumors by the end of the experiment had they lived to the end of the experiment. (Reuber Testimony at 13; Gart Testimony at 9.)

ever, the Advisory Committee was of the opinion that carcinogenic activity in mice alone had no particular significance for human health. Nevertheless, the Advisory Committee "urgently desired" that Mirex be tested for carcinogenicity in other species.

(b) *The second Bionetics experiment (rats).* In September, 1973, Dr. Melvin Reuber examined the tissue slides taken from the Second Bionetics experiment. Dr. Reuber determined that none of the 20 female and 20 male control rats developed either hyperplastic nodules or carcinomas of the liver. He further determined that 2 out of 26 males and 1 out of 26 female rats fed 50 ppm and 7 out of 26 males and 2 out of 26 females fed 100 ppm developed liver cancer. (Reuber Testimony at 12.) Dr. Adrian Gross statistically analyzed Dr. Reuber's diagnoses and determined that there was a highly statistically significant increase in liver cancers in males fed 100 ppm and in combined males and females fed 100 ppm over the control animals. (Gross Testimony, Table 2.)

In addition to carcinomas, Dr. Reuber also diagnosed a very high incidence of hyperplastic nodules of the liver in both sexes of rats at both 50 ppm and 100 ppm feeding levels. (Reuber Testimony at 12.) Dr. Gross statistically analyzed Dr. Reuber's diagnoses and determined that Mirex induced a highly statistically significant increase in hyperplastic nodules in both sexes of rats at both feeding levels. (Gross Testimony (IV), Table 2.) Dr. Reuber testified that he defined hyperplastic nodules as nodules that have reached the stage where they are no longer dependent upon continued exposure to the chemical stimulus. If the chemical is discontinued, these nodules will continue to progress and become carcinomas. (Reuber Testimony at 3.)

Dr. Newberne prepared testimony for the hearing in which he disagreed with Dr. Reuber's diagnoses. Dr. Newberne stated that he observed no hepatocellular carcinomas in the Mirex-exposed rats; and the hyperplastic nodules he observed did not pose a carcinogenic threat to the animals. Dr. Newberne felt that the hyperplastic nodules he observed were only of "academic interest in a safety evaluation of a substance." (Newberne Prepared Testimony at 35). He was of the opinion that "hyperplastic nodules definitely do not all progress and become carcinomas."

The National Cancer Institute had not published a final report on the Second Bionetics Experiment at the time the witnesses testified in the hearing. However, Dr. Robert Squire, who was at the time Expert Consultant to the National Cancer Institute, Carcinogenesis, Division of Cancer Cause and Prevention, testified that he had examined the slides from the Second Bionetics Experiment and had concluded that Mirex is carcinogenic in rats. (Squire Offer of Testimony at 5–7.) Dr. Squire further testified that the nodular hyperplasia that he observed was precarcinogenic. He testified that "there is evidence that given sufficient time and exposure, liver cancer would develop in a substantial percentage of the hyperplastic instances such as I have observed here." (Squire Offer of Testimony at 4.) [6] Dr. Newberne's testimony did not take issue with Dr. Squire's diagnoses.

Dr. Umberto Saffiotti, who was at the time Associate Director for Carcinogenesis, Division of Cancer Cause and Prevention, National Cancer Institute, testified that it was his understanding that the NCI reevaluation of the tissue slides led to the recognition of a significant induction of liver tumors in the test animals by Mirex. (Saffiotti Testimony at 2.)

In April, 1976, Dr. Norbert P. Page, Chief, Carcinogen Bioassay and Program Resources Branch, Carcinogenesis Program, National Cancer Institute, provided EPA with NCI verified slide-by-slide diagnoses of the Second Bionetics Experiment. These diagnoses were statistically analyzed by Dr. Todd Thorslund, an EPA statistician. His analysis revealed that Mirex caused by a highly statistically significant increase in carcinomas in male rats, and a highly statistically significant increase in "neoplastic nodules"[7] in both sexes. (Appendix D.)

The very recent National Cancer Institute Report on the Second Bionetics Experiment, which has not yet been published, sets forth the opinions of NCI personnel on the Second Bionetics experiment. (Appendix G) The incidence of cancerous and pre-cancerous lesions diagnosed by the NCI pathologists corresponds rather closely to the incidence observed by Dr. Reuber. No carcinomas or neoplastic nodules were observed in any of the control animals. One low dose male, four high dose males, and one high dose female had liver cancers (hepatocellular carcinoma) In addition, two low dose males, four low dose females, seven high dose males and four high dose females had neoplastic nodules. About the neoplastic nodules the paper reported that:

"It has been shown by several workers that this type of lesion has, under appropriate circumstances, a high probability of progressing to hepatocellular carcinoma. Furthermore, neoplastic lesions or carcinomas rarely occur in rats as was true in these control animals, and also in the pooled control population and such neoplastic lesions are characteristic of the early response to known carcinogens. It therefore is inadequate to call such nodules merely hyperplastic which belies their neoplastic nature and malignant potential."

The paper finally concludes that: "The spectrum of lesions observed in the liver of the various groups at risk suggest carcinogenic activity."

c. *Implications for Man.* The First and Second Bionetics Experiments provide substantial evidence that Mirex is a human carginogen. The EPA's "Interim Cancer Assessment Procedures" (41 FR 21402; May 25, 1976) provide:

"*General Principles Concerning the Assessment of Carcinogenesis Data.* The central purpose of the health risk assessment is to provide a judgment concerning the weight of evidence that an agent is a potential human carcinogen and, if so, how great an impact it is likely to have on public health.

"Judgments about the weight of evidence involve considerations of the quality and adequacy of the data and the kinds of responses induced by the suspect carcinogen. The best evidence that an agent is a human carcinogen comes from epidemiological studies in conjunction with confirmatory animal tests. *Substantial evidence is provided by animal tests that demonstrate the induction of malignant tumors in one or more species including benign tumors that are generally recognized as early stages of malignancies.* Suggestive evidence includes the induction of only those nonlife-shortening benign tumors which are generally accepted as not progressing to malignancy, and indirect tests of tumorigenic activity, such as mutagenicity, in-vitro cell transformation and initiation-promotion skin tests in mice." [Italics added.]

This approach to the problem of identifying substances which pose a carcinogenic risk to man is generally supported by the final report of the National Cancer Institute's National Cancer Advisory Board Subcommittee on Environmental Carcinogenesis entitled "General Criteria for Assessing the Evidence for Carcinogenicity of Chemical Substances." That report states:

"The carcinogenicity of a substance is established when the administration to groups of animals in adequately designed and conducted experiments results in increases in the incidence of one or more types of malignant neoplasms [or a combination of benign and malignant neoplasms] in the treated groups as compared to control groups maintained under identical conditions but not given the test compound. The increased incidence of neoplasms in one or more of the experimental groups should be evaluated statistically for significance, and the only major experimental variable between the control and the experimental group should be the absence or presence of the single test agent. Such increases may be regarded with greater confidence if positive results are observed in more than one group of animals or in different laboratories. The demonstration that the occurrence of neoplasms follows a dose-dependent relationship provides additional evidence of a positive result.

"The occurrence of benign neoplasms raises the strong possibility that the agent in question is also carcinogenic since compounds that induce benign neoplasms frequently induce malignant neoplasms. In addition, benign neoplasms may be an early state in a multi-step carcinogenic process and they may progress to malignant neoplasms; also, benign neoplasms may themselves jeopardize the health and life of the host. For these reasons, if a substance is found to induce benign neoplasms in experimental animals it should be considered a potential human health hazard which requires further evaluation. In experiments where the increased incidence of malignant neoplasms in the treated group is of questionable significance, a parallel increase in incidence of benign tumors in the same tissue adds weight to the evidence for carcinogenicity of the test substance."

Dr. Reuber provided further support for this approach in his testimony in FIFRA 293. He testified that carcinogenesis in man can be detected or reliably predicted in either of two ways. The first is by valid epidemiological evidence, i.e., by the observation of groups of human beings, one of which has been exposed to the compound in question and the other of which has not. Tumor incidence is then compared among individuals of both groups according to age, sex and other characteristics. (Reuber Testimony at 20). The second is by examining the effects of a particular substance on mammalian

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[6] On August 20, 1976, Dr. Squire sent a memorandum to EPA's Cancer Assessment Group summarizing his evaluation of the Second Bionetics Experiment. In that memorandum Dr. Squire stated that "there is a marginally significant result for hepatocellular carcinomas in male rats; however the high dose response itself is not significantly higher than the control response. Neoplastic nodules in male rats show a significant response when comparing high dose with controls. The test among females was not significant * * *. Although the results indicate there may be a hepatocarcinogenic effect, the small animal group sizes and the small number of animals with liver neoplasms do not permit a firm determination." (Appendix E.)

[7] Between 1973 and 1976 the nomenclature for rat tumors changed among many pathologists from "hyperplastic nodule" to "neoplastic nodule."

species other than man. (Reuber Testimony at 19–20).

With many variables inherent in such experiments, it is extremely difficult to obtain valid epidemiological data for chemical carcinogens in human beings. (Reuber Testimony at 10–20; see also Reference 6 at 463; Reference 7 at 27). It is all the more difficult when the compound under test is a pesticide which is found widely in the environment and for which suitable control groups may therefore be difficult or impossible to establish. (Reuber TR 8,696). For Mirex there is as yet no epidemiological data. (Reuber Testimony at 20). Therefore the carcinogenic risk to man posed by Mirex must be determined by examining its effects on species other than man.

The formation and occurrence of tumors in man and in such test animals as hamsters, mice, and rats is very similar. Kotin TR 1,629). Hyperplastic lesions are found in both man and test animals, and morphologic features of tumors are the same, both grossly and microscopically. Reuber Testimony at 19–20). Carcinogens in all mammalian systems are characterized by irreversibility of effect. Upon the transformation of a cell from its normal condition to a neoplastic state, that cell will reproduce, as will the cells it produces; this process may be initiated by only a small quantity of a carcinogenic agent, and only a small number of neoplastic cells may be required to keep this process of carcinogenesis alive. (Reuber Testimony at 18; see also Reference 7 at 32). Beyond a certain point in this process, moreover, the carcinogenic stimulus can be removed and the progression toward carcinomas will continue. (Reuber Testimony at 18). That point is reached when hyperplastic nodules are observed. (Reuber Testimony at 3).

The First and Second Bionetics Experiments demonstrate that Mirex induces malignant tumors (hepatocellular carcinomas) in mice and rats including benign tumors that are generally recognized as early stages of malignancies ("hyperplastic nodules" or "neoplastic nodules"). Therefore, under the "Interim Cancer Assessment Procedures", substantial evidence exists that Mirex is a human carcinogen. The weight of this evidence may be reduced slightly by Dr. Newberne's apparent disagreement with Drs. Innes, Reuber, and Kotin with regard to the First Bionetics Experiment and with Drs. Reuber and Squire with regard to the Second Bionetics Experiment. However, the evidence is certainly strong enough to support a holding that Mirex is a potential human carcinogen. The carcinogenic risk that Mirex poses to man therefore depends on the extent of human exposure to Mirex.

E. EFFECTS OF MIREX ON WILDLIFE

1. *Avian Species.* [redacted] little [redacted] of [redacted] (Lincer Testimony at 9–10). At these levels of application no perceptible reproductive effects would be caused in avian species that have been tested thus far. (Lincer Testimony at 11).

2. *Fish.* [redacted] (Reference 8 at 75), Mirex has the potential for causing widespread change in populations and communities of aquatic ecosystems. (Livingston Testimony at 5).

3. *Crustaceans.* [redacted] Effects arising from exposure to Mirex range from short-term lethality to more prolonged and subtle consequences for the development of these organisms. (Lowe Testimony; Ludke/Finley Testimony).

4. *Non-target Insects.* Tests have shown that one application of 0.018 pounds of technical Mirex per acre reduces the population of carabid and staphylinid beetles by 60 percent and 67 percent respectively. (Hensley Testimony at 3; Reference 10; Hensley TR 2,727). These insects are among the natural predators of the sugarcane borer. (Hensley Testimony at 3).

F. TRANSPORT OF MIREX

[redacted] Mirex bait into sea [redacted] (Tagatz Testimony at 5; Reference 11 at 4). [redacted] Mirex [redacted] after [redacted] environment. (Tagatz Testimony at 5). Studies have shown that Mirex residues in water resulting from fresh water runoff after application of Mirex in the watershed range from 0.1 to 1.0 parts per trillion in fresh runoff waters. (Alley Testimony at 7–8). Mirex is transported into aquatic organisms, including edible fish, from nearby treated lands. (Duke Testimony at 7, Duke TR 1,901).

G. RESIDUES OF MIREX IN THE ENVIRONMENT

Mirex is chemically identical to the compounds known as "Dechlorane" and "C10 $C1^{12}$." "Dechlorane" was marketed from 1959–72 as a fire retardant in plastics and polymers. "C10 $C1^{12}$" has been marketed for only a short period of time for limited pyrotechnical usage. (Alley Testimony at 12). Dechlorane cannot escape from the plastics and polymers in which it is used until they degrade. Many of these plastics and polymers are, however, non-degradable by environmental action. (Alley Testimony at 12). Since Mirex residues generally exist only in areas treated with Mirex, it is safe to assume that residues observable in the environment are due to application of the pesticide Mirex. (Alley Testimony at 12–13; Alley TR 4,292, 4,293–6; Enoe Testimony [II] at 1; Lincer TR 8,972–74; Puma TR 5,215–24).[3]

1. *Mirex Residues in Human Beings.* Dr. F. W. Kutz presented the results of the EPA's National Human Monitoring Program (NHMP) up to the time he testified in the hearing. Samples were taken after that time but not yet completely analyzed as of the date of Dr. Kutz's appearance. A total of 1,400 samples had been collected nationwide and analyzed at the time Dr. Kutz testified. Only since 1970 have NHMP analytical techniques been geared to detect Mirex in particular (Kutz TR 5,456), and the incidence of Mirex residues in human beings, as presented in the testimony of Dr. Kutz, was based on samples taken up to only April, 1972. (Kutz TR 5,470). Dr. Kutz testified that Mirex had been found in nine samples of human adipose tissue, all of which came from states that receive Mirex treatment. The nine positive samples were found in a total of 329 samples taken by the NHMP in eight states. Dr. Kutz stressed, however, that in reporting these NHMP results [redacted] (Kutz Testimony [II] at 4, Kutz TR 5,450).

Recognizing a need to obtain a better indication of the extent of Mirex residues in human beings in Mirex treated states, EPA began a monitoring study early in Fiscal Year 1976 that, except for some control samples, limited itself to the states in which Mirex is applied as a pesticide. More than 40 collecting sites were recruited in addition to the ones already collecting for the national program. Although the collecting and analysis is not yet completed, the results so far show that Mirex is present in the adipose tissue of from 21 percent of the human beings in the states where Mirex is applied. The percentages are much higher in states that receive heavy Mirex treatment. (Appendix F). [redacted] Five of the positive samples have been verified by mass spectrographic methods to eliminate any possible confusion with other compounds that could result from gas-liquid chromatograph analysis. These results represent a significant addition to the Agency's information about human exposure to Mirex.

2. *Mirex Residues in Human Foods.* Mirex residues are not observed with any great frequency in the national food monitoring programs conducted by FDA and USDA. (Puma Testimony at 6–7). However, these programs are not entirely adequate for determining human exposure to Mirex via the diet. (Puma Testimony at 13–15). All three programs (FDA Total Diet Survey, FDA Pesticide Program, and USDA Animal and Plant Health Inspection Service) are national programs that do not focus on areas of Mirex application. (Puma Testimony at 13). The multi-residue analysis techniques used in these programs are less sensitive than more specialized investigations. (Puma Testimony at 14, Puma TR 5,277). Even after multiple extractions, a reported residue in the FDA programs will represent only about 70 percent of Mirex actually present in an analyzed sample, while the USDA reported residue will represent only about 50 percent. (Puma Testimony at 16, Puma TR 5,230). More sensitive surveys directed toward Mirex treated areas detect Mirex residues in animals which could be consumed by man, including fish (Reference 12; Reference 13 at Table 22); crayfish (Reference 14 at 13); salt water crustacea (Reference 12); fowl (Reference 13 at 17–20); deer (Reference 13 at 16) and beef (Reference 15; Reference 13 at 16). No evidence was presented in the hearing to indicate whether the species sampled were eaten by humans. [redacted] (Reference 13 at 21).

3. *Human Exposure to Mirex.* Dr. Kutz's recent data make it very clear that human beings in the South are being exposed to Mirex. The average level of Mirex that is present in those human beings is of considerable concern. This is not surprising given [redacted] lian [redacted] x.

The route of human exposure to Mirex is unclear, but the high incidence of detection of Mirex in animals that are consumed by humans indicates that one of the routes of Mirex exposure is via the diet. The average daily intake of Mirex is also unknown. Extrapolation from levels present in adipose tissue is virtually impossible. However, since many humans (21 percent of the samples analyzed) are exposed to this potential human carcinogen, it is clear that Mirex use in the South according to its current registrations poses a carcinogenic risk to man.

H. BENEFITS OF MIREX

1. *Southern United States.* (a) *Description of the Fire Ant and its Habitat.* Fire ants presently infest parts of nine states in the Southeastern United States: Texas, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina. (Holloway Testimony, Figure 5). Whether the fire ant is likely to spread beyond the present

[3] The possibility still remains that some of the observed exposure is occupational. The Agency is presently conducing an inquiry into this possibility.

reas of infestation is subject to dispute. The ripheral boundary of fire ant infestation as not changed significantly since 1959, indicating that the fire ant has reached the extent of its ecological range. (Holloway Testimony at 25; Buren Testimony at 5). Several experts have testified that the fire ant could potentially infest large areas of the United States that are presently uninfested. (Markin Testimony at 9; Glancey Testimony at 23). However, there is no evidence that Mirex application has prevented the spread of the fire ant into areas where it is not otherwise limited by ecological factors. Thus, Mirex application is not necessary to prevent the spread of the fire ant beyond its current ecological range. (Holloway Testimony at 25).

(b) *Harm to Humans from Fire Ants.* The fire ant inflicts a painful sting upon humans. However, compared to many large tropical ants, wasps, or honeybees, the sting is comparatively mild. To a normal person who experiences a normal reaction, a sting is only a brief but painful incident, the effects of which disappear in a few minutes, although within 24 hours a small pustule is formed which can leave a scar. (Martin Testimony at 20–21). The fire ant is different from other stinging insects in its aggressiveness: if a person disturbs a fire ant mound he can be stung many times. (Martin Testimony at 21). Fire ant stings can give rise to secondary infections if not properly cleaned and cared for. (Triplett Testimony at 6–8). In a very small number of very sensitive persons fire ant stings, like other venomous insect stings, can result in anaphylactic shock, which is accompanied by difficulty in breathing and decrease in blood pressure. (Triplett Testimony at 9; Rhodes Testimony at 16). In very rare cases this requires special therapy. (Rhodes Testimony at 13). Hyposensitization treatment can be employed by doctors build up immunity to fire ant stings in persons who are likely to experience anaphylactic shock from fire ant stings. (Rhodes Testimony at 17).

Fire ants are generally very easy for human beings to avoid, because their mounds are easily detected. (Yelderman Testimony at 3; Tschinkel Testimony at 43). Nevertheless, a large number of people receive fire ant stings yearly in infested states. Still, several experts have testified that as a human pest, the fire ant ranks well below many other biting insects such as wasps, chiggers, horse flies, mosquitoes, bees, sand flies, and stable flies. (Tschinkel Testimony at 44; Appendix H; Ferguson Offer of Testimony at 12).

In fact, fire ants may have some beneficial impacts on human health. Fire ants prey upon control harmful insects, such as lone star ticks. (Yelderman Testimony at 3; Holloway Testimony at 70; Hensley Testimony at 9). Ticks can cause serious illnesses including tularemia, Rocky Mountain Spotted Fever, and Relapsin Tick Fever. (Yelderman Testimony at 3).

(c) *Harm to Agriculture from Fire Ants.* Fire ants can interfere with hand harvesting of citrus, cotton, strawberries, tung nuts, and pecans in fields that are infested with fire ants. (Brown Testimony at 2–3; Ueltshey Testimony at 3; Block Testimony at 3). Additionally, fire ant mounds can interfere with harvesting machinery. (Bruer Testimony at 9; Senn Testimony at 4–5; Carlton Testimony at 2). But this only occurs in areas with clay soils. (Buren Testimony at 3). There have been reports of injury to livestock, farm animals, hay, pasture land, soybeans, and other crops due to fire ants.

Despite these reports, many experts testi- that fire ants present an insignificant of harm to agriculture. (Yelderman Testimony at 3; Ferguson Offer of Testimony at 12; Tschinkel Testimony at 43–44; Holloway Testimony at 67–68). In fact, fire ants prey upon and help control several kinds of insects that are harmful to agriculture, including the sugarcane borer. (Holloway Testimony at 71; Hensley Testimony at 3; Reference 16).

(d) *Efficacy of Mirex.* When Mirex is applied in adequate amounts near fire ant mounds and properly foraged, the population of fire ants in the mound is severely reduced. (Lincoln Testimony at 5; Holloway Testimony at 52–53; Markin Testimony at 28). This can result in elimination of the entire colony. (Holloway Testimony at 53). If, however, Mirex bait is not foraged within one or two days after application, it can become rancid and unattractive to the ants. (Holloway Testimony at 54; Markin Testimony at 28).

When fire ants reinfest an area that has been treated with Mirex, they come back in even greater numbers than the pre-existing concentration. (Tschinkel Testimony at 44; Holloway Testimony at 10). Competition for food and territory gradually forces the fire ant population down to the pre-existing equilibrium after approximately 2–3 years. (Tschinkel Testimony at 41; Holloway Testimony at 9–10).

2. *Hawaii.* The pineapple mealybug wilt disease is a disease caused by the feeding of pineapple mealybugs, which leave toxic saliva in the pieapple plant. From the effect of the toxic saliva the root system of the pineapple plant completely collapses in a short time. (Sakimura Testimony at 2). Large numbers of mealybugs must feed for an extended time on the pineapple plant before the plant is affected. Lightly infested plants may not show the disease symptoms. Therefore, Hawaii is able to keep the pineapple plants free from disease as long as the mealybug infestation level is kept low by control measures. Mealybug wilt disease will cause affected plants not to produce any marketable fruit. If no control measure is applied against the mealybug, the disease spreads rapidly and extensively. Ants carry mealybugs to and from pineapple plants and protect or attend the mealybug colonies on pineapple plants. (Sakimura Testimony at 3, 5). Ants transport mealybugs from old pineapple plants to new succulent plants which provide a better supply of honeydew. Ants also attend mealybugs by removing excretions harmful to mealybugs and protecting mealybugs from attacks by predators or parasites. (Sakimura Testimony at 6). Ants are, therefore, largely responsible for moving the mealybugs and spreading incidence of the wilt disease. With absence of ants in the fields, there will be little spread of the disease. An annual application of Mirex Harvester Ant Bait "300" at a rate of two and one-half pounds of formulated product per acre (applied by fixed wing aircraft) with supplemental Heptachlor applications, where necessary, has been shown to be effective in controlling the ant population in Hawaiian pineapple fields to a low level. (Terry Testimony at 5).

I. ALTERNATIVES TO MIREX

1. *Southern United States.* Chlordane is the only registered alternative to Mirex for the control of fire ants in the southern United States. Chlordane is presently the subject of an ongoing cancellation hearing. For this use Chlordane is applied at a rate of two pounds per acre. Other unregistered alternatives, such as diazinon, dimethoate, and juvenile hormones show some promise, but have not been adequately tested.

2. *Hawaii.* Heptachlor is registered for control of ants in Hawaii. Mealybugs can be controlled by diazinon, parathion, and malathion. However, there was testimony that these pesticides are not adequate to control subterranean mealybug infestations. (Sakimura Testimony at 6.)

IV. THE MISSISSIPPI AUTHORITY'S PLAN

On August 31, 1976 the Mississippi Authority for the Control of Fire Ants, the current holder of ten of the eleven Mirex registrations, submitted to the Deputy Administrator of the Environmental Protection Agency a plan "to minimize the amount of Mirex to be used; to reduce the size of the contiguous areas treated, and to phase-out gradually the current Mirex registrations with the objective of replacing current Mirex registrations with an unquestionably safe registered material as quickly as possible." The Plan has several important elements.

A. PRODUCTION LIMITATIONS AND END DATES FOR USE OF CURRENT REGISTERED PRODUCTS

Assuming the Plan is adopted, the Mississippi Authority requested pursuant to section 6(a)(1) of FIFRA, that the Mississippi Authority's Mirex registrations be voluntarily cancelled in accordance with a prescribed phase-out schedule and certain production limitations.

1. *Mirex 4X Bait.* Mirex 4X bait is the bait currently used in the Joint Federal/State Fire Ant Program aerial application. Mirex 10:5 bait is a new Mirex formulation that calls for the application of approximately 70% less pure Mirex per acre than Mirex 4X bait. The effective date of cancellation for Mirex 4X bait is December 1, 1976, with use of existing stocks through December 31, 1976. Not more than 45,000 pounds of technical Mirex may be formulated into Mirex 4X bait between July 1, 1976 and December 1, 1976, when the cancellation will become effective.[9] If less than 45,000 pounds of pure Mirex are utilized prior to December 1, 1976 for formulation into Mirex 4X bait, up to 15,000 pounds of pure Mirex may be carried over for formulation into Mirex 10:5 bait during 1977. The 45,000 pound limitation will allow for a somewhat larger Mirex Program this fall than has been carried out in the past. During this fall, aerial application Mirex may be applied from multi-engine aircraft as has been the case in the past.

2. *Mirex 10:5 Bait.* Under the Plan, the effective date of cancellation for Mirex 10:5 bait is December 1, 1977. Stocks of Mirex 10:5 bait may be applied aerially through December 31, 1977. Remaining stocks of Mirex 10:5 bait existing as of December 1, 1977 may be packaged into five pound bags[10] for sale, distribution and use in ground broadcast and mound application until June 30, 1978. If 45,000 pounds of technical Mirex is formulated into Mirex 4X bait during the Fall of 1976, only 20,000 pounds of technical Mirex may be formulated into Mirex 10:5 bait during 1977. However, depending upon the amount of technical Mirex fromulated into Mirex 4X bait in Fall, 1976, as much as 35,000 pounds of technical Mirex can be formulated into 10:5 bait. This will allow for treatment of a much larger total acreage than has been treated in past years, but of course less actual Mirex will be applied per acre, and less total Mirex will be applied. Moreover, aerial application during 1977 will be allowed only from single engine aircraft and helicopters

[9] An additional 1,000 pounds of Mirex bait could be used for research purposes as a control to determine the efficacy of alternative materials until June 30, 1978.

[10] Under the Plan the Mississippi Authority requests that its Mirex 10:5 bait registration be amended to permit packaging into five pound bags for ground broadcast and mound, but not aerial, application. I am instructing the Office of Pesticide Programs to take the steps necessary to implement the Plan, including granting this request.

flying at an altitude of no greater than 150 feet and at a speed of no greater than 150 miles per hour. This restriction should ensure that application is much more accurate than it has been in the past.

3. *Mirex Harvester Ant Bait 300 for Use in Hawaii.* The Plan calls for immediate cancellation of Mirex Harvester Ant Bait 300 for all uses other than for the control of ants on pineapples in Hawaii. The effective date of cancellation for that use is December 1, 1977. Stocks existing as of that date may be applied aerially until December 31, 1977, and they may be distributed, sold, and used for ground application until they run out.

4. *Other Mirex Registrations.* The effective date for cancellation for the Mississippi Authority's registrations for technical Mirex is December 1, 1977.[11] This will allow for use of technical Mirex for only so long as is necessary to comply with the production limitations and end dates for the formulated products. All other Mirex registrations are cancelled immediately under the Plan. Presently existing stocks of materials formulated under these registrations may be distributed, sold, and used until December 31, 1977.

B. OTHER RESTRICTIONS ON MIREX APPLICATION.

1. *Number of Aerial Applications.* Other than the poundage limitations, the most important provision of the Plan is that it provides that no single acre of land may be treated aerially with Mirex bait of any kind between July 1, 1976 and December 31, 1977. Thus, any given land owner will receive at most only one more aerial application of Mirex bait.

2. *Request for Non-Treatment.* The Plan provides for notifying residents prior to aerial Mirex application to provide every resident an opportunity to prevent aerial Mirex application upon his land.

3. *Coastal Zone Restrictions.* The Plan calls for lifting certain presently-existing restrictions against applying Mirex in coastal counties. Rather than relying on political boundaries for determining how close to marine areas Mirex will be applied, as has been done in the past, the Plan relies on hydrological and geographical factors. Under the Plan, Mirex may not be applied in the "coastal zone," which consists of areas within twelve miles of coastlines, estuarine areas, and saline marshes, and areas around major rivers which are subject to tidal influence. Mirex may only be applied in coastal counties of a state if the state develops a plan of its own in accordance with the general criteria set forth in the Plan which is acceptable to EPA.

4. *Other Area limitations Applicable to Aerial Applications.* Under the Plan, Mirex may not be applied to "wooded areas" as defined in the Plan. Neither may Mirex be applied to aquatic areas as defined in the Plan, except for intermittent streams where there is no flow, and during the Fall of 1976 (when multi-engine aircraft will be allowed) except for man-made or natural impoundments which do not exceed two acres in size and which are not commercially fished. The intent of this provision is to keep Mirex out of areas which might result in exposure of aquatic organisms and areas in which exposure to human water supplies might result. The Plan will not allow Mirex application to idle lands that when left untreated will not increase infestation exposure to treated lands. Other areas will be aerially treated only if an appropriate state official certifies in writing before each application that he or his employees have inspected the area and found that there is at least one imported fire ant mound for each one-quarter section to be treated. This last restriction is included to ensure that no land is treated that is not infested with fire ants.

C. ADDITIONAL PROVISIONS

The Plan imposes several obligations upon the Agency.

1. *Suspension of the Pending Mirex Hearing.* Pursuant to the Plan, I am immediately terminating the pending hearing under section 6(b)(2) of FIFRA.

2. *Substitution of Less Toxic Formulation for Mirex 10:5 Bait.* When presented with adequate efficacy data, EPA will, under the Plan, be obligated to permit substitution of Mirex bait formulations providing for application of less actual toxicants per acre than Mirex 10:5 bait. The production limitations, end dates and other restrictions otherwise provided for will still remain in effect for the substituted formulation. Since the poundage limitations will not change, this provision will allow more acres to be treated with the reduced toxicant formulation.

3. *Research.* EPA will continue to carry out its obligations set forth in the "Cooperative Interagency Agreement for the Study of Alternative Chemicals to Mirex," as amended. (See Attachment B to the Plan).

V. STATEMENT OF REASONS FOR ACCEPTING THE MISSISSIPPI AUTHORITY PLAN

The Agency has decided to accept the Plan submitted by the Mississippi Authority. Because the Mississippi Authority is the sole registrant of end-use Mirex products, and the Plan proposed by it provides for the final cancellation of all of its Mirex registrations,[12] the primary consideration affecting the decision to accept or reject the Plan is whether the phase-out period specified in the Plan for certain Mirex registrations is consistent with applicable statutory standards and the public interest in general. In the event that the Agency had determined that this or any other aspect of the Plan as unacceptable, its only option would have been to continue the FIFRA section 6(b)(2) hearing, with the objective of implementing some other solution through the hearing process.

The Agency has decided that the phase-out period provided for in the Plan is in the public interest, for essentially the following reasons:

A. FALL 1976 APPLICATIONS

The Plan calls for allowing a slightly expanded program for applying Mirex 4X bait in the Fall of 1976. The present Mirex hearings would probably not be completed before November. The Administrative Law Judge and the Administrator would then have a combined total of ninety days to render a decision whether or not to cancel. A suspension hearing could consume an equivalent amount of time. The bulk of the Fall application program would be over by late November. Thus, it seems clear that the Fall 1976 application would proceed in any event.[13]

B. APPLICATIONS IN 1977 AND 1978.

It would probably be possible to secure an order cancelling Mirex registrations prior to the Spring and Fall 1977 applications, although it is possible that such an order would be stayed pending appeal in a U.S. Court of Appeals. Given the dispute over some of the facts and over the weight to be given to the risks and benefits of Mirex use, as well as the possibility for procedural error inherent in formal adjudicatory proceedings, an appeal to the courts of such an order could result in Mirex use for a period of time longer than the Mississippi Authority's Plan calls for.

Moreover, pursuing the present hearings to their conclusion, including a possible appeal in a U.S. Court of Appeals, would consume large amounts of valuable Agency resources, both in the Office of General Counsel and in the Office of Pesticide Programs. The Office of Special Pesticide Reviews in the Office of Pesticide Programs is intensively engaged in evaluating a large number of pesticides, all of which may pose risks to man and the environment equal to or greater the risks posed by Mirex. The Office of General Counsel is actively supporting this effort, which will undoubtedly give rise to litigation in the near future. The limited resources of both Offices are urgently needed for these efforts. Finally, in this regard, the acceptance of the Plan will permit senior agency officials, including the Administrator, and the Administrative Law Judge assigned to the hearing, to devote their limited time to other matters.

In return for the elimination of litigative risks and preservation of Agency resources, the Agency is essentially yielding one year of aerial or ground application of up to 35,000 pounds of technical Mirex subject to stringent environmental constraints, and one-half year of ground broadcast and mound application of any of the 35,000 pounds that remains after December 31, 1977.[14] The Plan calls for application only from single engine aircraft during 1977 and only to land that is demonstrably infested with fire ants. Aquatic and marine areas are protected. During the entire remaining time allowed for aerial Mirex application no single acre may be aerially treated on more than one occasion. With

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[11] Hooker Chemical Company has one other registration for a technical Mirex product. That registration is unaffected by the Plan. However, since Mirex produced under this registration may only be used in the formulation of other products, the registration will be useless after December 1, 1977, unless the Agency issues fresh registrations for Mirex formulated products at some time in the future.

[12] Because of this aspect of the Plan, the question whether Mirex registrations should be cancelled is not presented for decision. In this regard, however, the Agency notes that there is a high likelihood that the FIFRA section 6(b)(2) hearings would have concluded with a final order cancelling Mirex registrations for use against the fire ant. Essentially, this judgment is based upon the evidence that Mirex poses a cancer risk to man, coupled with the available evidence pertaining to its persistence in the environment. All of this evidence is summarized in Part III. The fate of the pineapple use of Mirex should the hearing have continued is less clear; however, with respect to this use as well, cancellation was a likely result. Even if this use had not been cancelled, it is unlikely that the registrant would have continued to produce the small quantities involved, if the fire ant uses had in fact been cancelled.

[13] We have received information that Hooker Chemical Company, the sole producer of technical Mirex is presently refusing to sell Mirex to the Mississippi Authority unless the Authority provides for indemnification for losses in potential civil litigation. Of course, if Hooker refuses to sell any further technical Mirex, the whole question of the risks and benefits of further Mirex use becomes moot.

[14] The Plan also calls for slight reductions and additions to the coastal zone restrictions from the Administrator's May 3, 1972 order. Under the Plan, relief could be obtained from the present label restriction against application in coastal counties, pursuant to a coastal zone plan submitted to and approved by the Agency. Criteria are included to grow in the development of such coastal zone plans.

these restrictions an additional 35,000 pounds Mirex should not add significantly to the already existing environmental burden of Mirex.

A further positive aspect of the Plan is the provision requiring that if Mirex is to be used for fire ant control after January 1, 1977, it must be the 10:5 formulation (instead of the 4X formulation, which has been extensively utilized in the past). On a per acre basis, Mirex 10:5 application results in the application of approximately 70% less actual toxicant per acre. More acres can be treated with the amount of 10:5 bait that can be produced within the production limitation provided for in 1977 than would be the case if 4X bait were produced. Nevertheless, the Agency is of the view that additional acreage coupled with reduced exposure per care is preferable to less acreage with increased exposure per acre, particularly where treatment in or near populated areas is concerned.

Moreover, allowing use of Mirex, subject to the restrictions set forth in the Plan, will provide relief to the people in the South from fire ants for a reasonable period of time during which an alternative can be made available. Indeed, the assurance of a large market for an alternative pesticide to control fire ants should significantly stimulate research. Similarly, the specified phase-out period for the Hawaiian pineapple use for fire ants should permit the pineapple industry to avail itself of the benefits of any research which is conducted to develop an alternative for fire ant control, and to conduct any pesticide product development program they themselves may deem appropriate. Finally in this regard, the Plan eliminates uncertainty concerning the ultimate fate of Mirex registrations. Obviously, as long as uncertainty continued, it had some discouraging effect on public or private institutions to conduct research to develop alternatives to Mirex for ant control. This uncertainty, and any related disincentive on research efforts, are eliminated by approving the Plan.

Finally, acceptance of the Plan does not preclude the Agency from taking emergency action (including an emergency order of suspension), should any additional information come to its attention indicating that any use of Mirex provided for in the plan has given use to an imminent hazard to human health.

LIST OF REFERENCES

1. E. G. Alley, The Use of Mirex in Control of the Imported Fire Ant, J. Environ. Quality, 2:52–61, 1973.

2. G. W. Ivie, et al., 225 Agr. Food Chem., 933, 1974.

3. H. M. Mehendale, et al. Fate of Mirex—14 C in the Rat and Plants. Bull. Environ. Cont. Toxicol., 8:200–207, 1972.

4. H. W. Dorough, Chemistry and Degradation of Mirex in Animals: A Status Report, U.S.D.A. Cooperative Agreement No. 12-14-100-10,947(33.), 1972.

5. J. R. M. Innes, et al. Bioassay of Pesticides and Industrial Chemicals for Tumorigenicity in Mice: A Preliminary Note, J.N.C.I., 42:1101–1114, 1969.

6. Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health (Mrak Report), D. HEW, 459–506, 1969.

7. U. Saffiotti, The Laboratory Approach to the Identification of Environmental Carcinogens, Proc. Ninth Canadian Cancer Res. Conf., 23–36, 1971.

8. H. L. Collins, et al., Residues of Mirex in Channel Cat fish and Other Aquatic Organisms, Bull. Environ. Cont. Toxicol., 10:73–77, 1973.

9. J. I. Lowe, et al., Effects of Mirex on Selected Estuarine Organisms, Trans. N. Am. Wildlife Nat. Res. Conf., 171–186, 1971.

10. T. E. Reagan, et al., Effects of Mirex on the Arthropod Fauna of a Louisiana Sugarcane Field. Environ. Ent., 1:588–591, 1972.

11. M. E. Tagatz, et al., Mirex—Gravity-Flow Column Studies, Gulf Breeze Environ. Res. Lab., (Unpublished data), 1973.

12. P. W. Borthwick, et al., Residues in Fish, Wildlife, and Estuaries. Pest. Monit. J., 7:6–26, 1973.

13. K. P. Baetcke, et al., Residues in Fish, Wildlife, and Estuaries, Pest. Monit. J., 6:14–22, 1972.

14. D. Cotton and J. Herring, A Survey of Mirex Residues in Fish and Wildlife from Two Areas in Mississippi, D.O.I., Mississippi Game and Fish Commission, Completion Report FW-8-1, 1972.

15. J. H. Ford, et al., Residues in Food and Feed, Pest. Monit. J., 7:87–94, 1973.

16. W. G. Harris and E. C. Burns, Predation on the Lone Star Tick by the Imported Fire Ant, Environ. Ent., 1:362–365, 1972.

[FR Doc.76-38105 Filed 12-28-76;8:45 am]

[FRL 662-T; OPP-66022]

PESTICIDE PROGRAMS

Cancellation of Registration of Pesticide Products Containing Mirex

Pursuant to section 6(a)(1) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended (86 Stat. 973, 89 Stat. 751, 7 U.S.C. 136(a) *et seq.*) the Environmental Protection Agency (EPA) has notified the Mississippi Authority for the Control of Fire Ants, PO Box 1609, Jackson MS 39205, of its intention to cancel, in accordance with the following conditions, the registrations of all these products containing the active ingredient Mirex:

Registered products—Mirex

Registrant	EPA registration No.	Product
Mississippi authority for control of fire ants	38962-1	Fire Ant Bait.
Do	38962-2	Fire Ant Bait "150".
Do	38962-3	Granular Bait 2x now 10:5.
Do	38962-4	Granular Bait 4x.
Do	38962-5	Harvester Bait 300.
Do	38962-6	Mirex Special Concentrate (25 percent).
Do	38962-7	Mirex Technical Concentrate (80 percent).
Do	38962-8	Mirex Pelleted Bait 450.
Do	38962-9	A-C Mirex Pelleted Bait 450.
Do	38962-10	Yellowjacket Stopper.

A. PRODUCTION LIMITATIONS AND END DATES FOR USE OF CURRENT-REGISTERED PRODUCTS

1. *Number of Aerial Applications.* No single acre will be treated aerially with Mirex bait on more than one occasion between July 1, 1976 and December 31, 1977.

2. *Mirex 4x Bait.* The effective date of cancellation for Mirex 4x Bait (EPA Reg. No. 218-565) shall be December 1, 1976. Between July 1, 1976 and December 1, 1976 not more than 45,000 pounds of technical Mirex shall be formulated into Mirex 4x Bait. Stocks of Mirex 4x Bait existing as of December 1, 1976, may be used only through December 31, 1976; *provided* that 1,000 pounds of Mirex 4x Bait may be utilized for research as a control in experiments to determine the efficacy of alternative materials until June 30, 1978.

3. *Mirex 10:5 Bait.* EPA shall amend the Mirex 10:5 Bait registration (EPA Reg. No. 38962-3) to add to that registration by permitting the packaging of Mirex 10:5 Bait in five pound bags for ground broadcast or mound-to-mound application by persons affected by the imported fire ant, or under the supervision of authorized state or federal personnel.

The effective date of cancellation for Mirex 10:5 Bait (EPA Reg. No. 38962-3) shall be December 1, 1977. Between September 1, 1976 and December 1, 1977, not more than 20,000 pounds of technical Mirex shall be formulated into Mirex 10:5 Bait. *Provided that*, if less Mirex 4x Bait is produced than can be produced with the 45,000 pounds of technical Mirex provided for in paragraph (A)(2) above, up to 15,000 pounds of the amount of technical Mirex not utilized from this 45,000 pound limitation shall be added to the 20,000 pound production limitation for Mirex 10:5 Bait. Stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be applied aerially only through December 31, 1977. Stocks of Mirex 10:5 Bait in five pound bags existing as of December 1, 1977 may be sold, distributed, and used in ground broadcast and mound application until June 30, 1978. Other stocks of Mirex 10:5 Bait existing as of December 1, 1977 may be packaged by the Registrant into five pound bags for sale, distribution, and use in ground broadcast and mound application until June 30, 1978.

4. *Mirex Technical.* The effective date of cancellation for Technical Mirex (EPA Reg. No. 218-585) shall be December 1, 1977. No stocks of Technical Mirex existing as of December 1, 1977 shall be distributed, sold, or used.

5. *Mirex Harvester Ant Bait 300.* The cancellation of the registration for Mirex Harvester Ant Bait 300 (EPA Reg. No. 38962-5) shall be effective immediately for all uses other than for the control of the pheidole ant, the Argentine ant, and the fire ant on pineapples in Hawaii. Presently existing stocks of Mirex Harvester Ant Bait 300 may be distributed, sold, and used for all uses until December 31, 1976. The effective date of cancellation for Mirex Harvester Ant Bait 300 for the control of the said ants on pineapples in Hawaii shall be Decem-

ber 1, 1977. Stocks of Mirex Harvester Ant Bait 300 existing on December 1, 1977 may not be applied aerially for the control of the said ants on pineapples in Hawaii after December 31, 1977, but may be distributed, sold, and used (other than aerially) for this use indefinitely.

6. *Other Mirex Registrations.* The cancellation of all other Mirex registrations shall be effective immediately. Presently existing stocks of materials formulated according to all other EPA Mirex registrations may be distributed, sold, and used until December 31, 1977.

B. ADDITIONAL RESTRICTIONS

1. *Coastal Zones.* Because of the recognized limitations of the coastal county restrictions which were based on political boundaries, and in view of the need to protect embryonic and juvenile marine and aquatic life which is dependent on shallow coastal and estuarine areas, aerial treatment will be precluded within the coastal zone as determined as follows:

The coastal zone shall be determined so as to bring within the zone all of the following areas:

(a) The area between the coastline and a parallel line twelve miles from the coastline; the coastline shall include the shores of any bays or estuaries which are contiguous to the sea;

(b) The area within twelve miles from the furthest inland edge of any coastal, saline marsh; coastal marshes are defined as those areas represented on U.S. Geological Survey maps by the standard marsh symbol with a white background;

(c) The area around major rivers which are subject to a tidal influence which area may be, based on hydrologic and geologic factors, from one-quarter mile to five miles in circumference as measured from the point of tidal influence; a major river is defined as any river which drains an area in excess of 150 square miles. The point of tidal influence is defined as the point at which the mean discharge of the river no longer affects its stage at a mean high tide.

Whenever practicable coastal zone boundaries shall be along topographical features which are easily recognizable by air, such as highways, railroad beds, and rivers.

States that desire relief from the current label restriction against aerial Mirex application in coastal counties may develop a plan in accordance with the criteria contained herein and additional guidelines as found necessary, and may submit the plan to the Office of Pesticide Programs for review and approval. Such plan must be submitted to EPA for approval at least 45 days prior to application. The Office of Pesticide Programs may, by approving the plan in whole or in part, grant relief from the label prohibition against aerial Mirex application in any coastal county to the extent that such aerial application is performed consistently with the plan and any conditions imposed by EPA Office of Pesticide Programs in conjunction with approving the plan. The current coastal county restrictions shall remain in effect for each county for which an acceptable coastal zone plan is not submitted.

2. *Type of Aerial Application.* From July 1, 1976 through December 31, 1976, aerial application shall be made in accordance with current label restrictions except where the restrictions set forth in paragraphs 3 and 4 of these additional restrictions supersede. From January 1, 1977 through December 31, 1977, aerial application shall be made only with helicopters and single-engine aircraft flying at an altitude of no greater than 150 feet and at a speed of no greater than 150 miles per hour; *provided* that these conditions shall in no way supersede regulations of other agencies, including the Federal Aviation Administration, governing the aerial application of pesticides.

3. *Requests for Non-Treatment.* Prior to any aerial application of Mirex, prominent notice shall be published in local newspapers, at least 20 days but not more than 30 days prior to application, stating what areas will be treated and giving any resident of such areas the right to prevent application upon his land. *Provided* that until December 1, 1976 the required notice may be published at least 10 days, but not more than 30 days prior to application.

4. *Area Limitations Applicable to Aerial Applications.* a. *Wooded Areas.* Wooded areas are defined as those areas which have trees and which are not used for agricultural purposes. Tree farms or commercial forests shall not be considered areas used for agricultural purposes; however, groves and orchards shall be considered used for agricultural purposes. There shall be no aerial application is contiguous wooded areas except for a 100 yard swath contiguous to treated areas and cleared areas within the wooded area.

b. *Aquatic Areas.* From July 1, 1976 through December 31, 1976 there shall be no aerial application to any aquatic areas, except for intermittent streams where there is no flow and except for manmade or natural impoundments of water which do not exceed two acres in size and are not commercially fished. However, even these exempted waters should be avoided where possible. After December 31, 1976, there shall be no aerial application of Mirex to any aquatic areas, except for intermittent streams where there is no flow. Intermittent streams are defined as those streams having continuous flow during periods of heavy run-off and no flow during the remainder of the year. Manmade or natural impoundments of water are defined as such impoundments of water occurring on farms that are utilized for purposes such as irrigation, stock watering, and recreation. Aquatic areas are defined to include without limitation estuaries, rivers, streams, wetlands, lakes, ponds, and other bodies of water. The term "wetlands" means those land and water areas subject to inundation by tidal, riverine, or lacustrine flowage. Generally included are inland navigable waters, including inland and coastal shallows, marshes, mudflats, estuaries, swamps, and similar areas in coastal and inland navigable waters. There shall be no aerial application where run-off or flooding will contaminate aquatic areas.

c. *Idle Lands.* Cut-over lands and brush fields that, when left untreated, will not increase infestation exposure to treated lands shall not be treated.

d. *Other Areas.* Aerial application is permitted (subject to paragraph 3 above) in areas other than those outlined above (even though some trees are present), such as agricultural lands, home sites, and developed portions of public areas; *provided* that an appropriate state official certifies in writing before each application that he or his employees have inspected the area and there is at least one imported fire ant mound for each one-quarter section to be treated. Certification shall be available for inspection upon EPA request.

5. *Ground Application.* Ground application, whether broadcast by properly calibrated equipment or individually mound treated, is permitted in all areas of infestation; *provided* that there shall be no ground application to aquatic and heavily forested areas or areas where run-off or flooding will contaminate such areas. Ground broadcast and mound treatment shall be confined to areas where the imported fire ants are causing significant problems.

6. *Revised labeling.* Revised labeling in accordance with this notice shall be prepared and submitted by the Mississippi Authority for the Control of Fire Ants for determination by EPA that such labeling conforms to this notice and other provisions of the Act.

7. *Monitoring.* It is understood that a program for human, environmental, and application monitoring of the application of Mirex bait is essential to this agreement. The users will have primary responsibility for application monitoring, subject to EPA oversight.

C. SUBSTITUTION OF LESS TOXIC MIREX FORMULATIONS FOR MIREX 10:5 BAIT

When presented with adequate efficacy data, EPA shall promptly permit substitution of Mirex bait formulations providing for the application of less actual toxicant per acre for Mirex 10:5 Bait (EPA Reg. No. 38962-3). The production limitations, end dates, and other restrictions provided for in this notice shall remain in effect for such substituted formulation.

The Agency has discussed this cancellation action with repersentatives of the Mississippi Authority for the Control of Fire Ants who have indicated concurrence with the intended cancellation. Moreover, the Mississippi Authority for the Control of Fire Ants has waived its right to request, within 30 days, that the registrations be continued in effect, and has further stated that it will not give its concurrence to any other person to request that the registrations be continued in effect. Accordingly, these registrations are hereby cancelled, effective on the effective dates specified herein.

Dated: December 21, 1976.

EDWIN L. JOHNSON,
Deputy Assistant Administrator for Pesticide Programs.

[FR Doc.76-38103 Filed 12-28-76;8:45 am]

Subj: Allied Prairie
Date: 17.7

[FRL 989-3; OPP-180172B]

MISSISSIPPI AUTHORITY FOR THE CONTROL OF FIRE ANTS

Proposed Emergency Exemption for Use of Ferriamicide To Control Fire Ants; Comment Period

AGENCY: Environmental Protection Agency, Office of Pesticide Programs (EPA, OPP).

ACTION: Proposed emergency exemption; additional comment period.

SUMMARY: As a result of the September 27, 1978, Memorandum Opinion of the U.S. District Court for the District of Columbia in *Environmental Defense Fund* v. *Blum, et al.*, Civil Action No. 78-0577, EPA is providing additional opportunity for public comment on a proposed emergency exemption to permit use of the pesticide Ferriamicide to control fire ants in Mississippi.

DATE: Comments on Mississippi's application are due ten (10) days after publication of this notice.

ADDRESS: Send comments to the Federal Register Section, Program Support Division (TS-757), Office of Pesticide Programs, EPA, Room 401, East Tower, 401 M Street SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Mr. Timothy A. Gardner, Product Manager 15 (PM 15), Registration Division (TS-767), Office of Pesticide Programs, EPA, Room 229, East Tower, 202-426-9426.

SUPPLEMENTARY INFORMATION:

1. Background

On December 16, 1977, the Mississippi Authority for the Control of Fire Ants (Mississippi Authority) submitted to EPA a request for issuance of an exemption under section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136 *et seq.*, to allow the use of Ferriamicide, an unregistered pesticide, to control imported fire ants in Mississippi. On December 28, 1977, EPA published a notice describing the Mississippi Authority's request and soliciting public comment (42 FR 64734). A large number of comments were received, most favoring and some opposing Agency approval of the request. Some 20,000 persons sent brief letters expressing concern about fire ants and in some cases supporting the application. In addition, a number of Federal legislators (most from southern States), State legislators, and other State officials urged approval of Mississippi's request. (Officials of several other States have applied under section 18 for permission to buy Ferriamicide bait from the Mississippi Authority for use in their own States.) (See Federal Register of Aug. 25, 1978 (43 FR 38084).)

On the other hand, a smaller number of commenters (including some Federal legislators) opposed the request. The Environmental Defense Fund, Inc. (EDF) submitted extensive comments in opposition to the use of Ferriamicide.

After extensive EPA staff consideration of the issues raised by the Authority's request, Mr. Steven D. Jellinek, the Agency's Assistant Administrator for Toxic Substances sent to Deputy Administrator Barbara Blum, on March 8, 1978, a document containing a series of recommendations on the matter. Deputy Administrator Blum adopted those recommendations on the same day, and so indicated by concurring on the document. (Attachment A to this notice.)

In March 1978, EDF filed an action in the United States District Court for the District of Columbia, saying that for a variety of reasons the Agency should be enjoined from allowing Mississippi to use Ferriamicide. (*EDF* v. *Blum, et al.*, Civil Action No. 78-0577.)

On June 16, 1978, a hearing was held, at which time the court stated that it appeared the Agency's decision was not yet final or reviewable (because of the certain matters still requiring resolution).[1] The parties then stipulated that the Agency's final decision would be issued on or about July 21, 1978, and that the Court would act in early September (following the filing of briefs by the parties). It was agreed that EPA would not authorize distribution or use of Ferriamicide until a final order was reviewed by the Court. On July 28, 1978, a final order

[1] In its September 27, 1978, Memorandum Opinion, the Court cited as an additional reason for deciding the March 8, 1978, agency memorandum was not a final order the fact that it had not been published in the Federal Register as required by the Agency's regulations (40 CFR §166.10 (1977)). We note that the cited regulation merely requires the Agency to notify the public after an emergency exemption is granted; an exemption is final for purposes of judicial review as of the date of the grant, not the date of publication in the Federal Register.

was issued (attachment B to this notice) which permitted some limited use of Ferriamicide in Mississippi. This order resolved the open issues from the March 8 memorandum as to the precise conditions imposed upon the use of Ferriamicide. This final order also took into account additional health risk data which had come to light since the March 8 action and contained further quantitative risk analyses of the potential cancer and reproductive effects of the pesticide.

Thereafter the court received additional briefs and heard additional oral argument.

On September 27, 1978, the Court issued its decision. The Court sustained the Agency's determination that fire ant infestation in Mississippi constitutes an emergency, and granted summary judgment for EPA as to the Agency's compliance with the National Environmental Policy Act, and as to EPA's alleged consideration of improper political factors. (EDF filed a notice of appeal on these matters on September 28, 1978.)

The Court, however, remanded the case to the Agency after finding the decision to be procedurally defective because the Agency had considered certain documents without making them available for public comment. The Court noted that "substantial and perhaps decisive information relating to efficacy, health effects and the conditions to be placed on the [use of Ferriamicide]" had not been available for public adversarial comment. This decision was based on the Court's finding that the Ferriamicide decision was rulemaking and therefore subject to notice and comment procedures under the Administrative Procedure Act (5 U.S.C. 553). The Court found that the notice published on December 28, 1977, served to formally close the administrative record as of January 23, 1978, and that documents received after that time, but not made available for public comment, constitute improper *ex parte* communications.

The Court stated that if EPA should wish to pursue its consideration of Mississippi's application further, EPA must: (1) publish in the FEDERAL REGISTER a new notice and comment period, during which interested persons may comment on the documents received by the EPA since January 23, 1978, and introduce any new information relevant to the issues still remaining open; and (2) establish and maintain a file available for public inspection with respect to Mississippi's application, containing all material which has been submitted to the Court by the parties and all information received by the Agency during the new comment period.

2. EPA's POSITION

EPA does not agree with the Court's determination that Agency actions under section 18 of FIFRA are rules subject to the notice and comment requirements of 5 U.S.C. 553. It is the Agency's position that decisions under section 18 granting an emergency exemption are licenses as the term is defined in 5 U.S.C. 551, which states:

> "license" includes the whole or a part of an Agency permit, certificate, approval, registration, charter, membership, *statutory exemption*, or other form of permission. (Emphasis added.)

Since a section 18 exemption is licensing, it is an "order," which is an Agency final disposition "other than rulemaking but including licensing." (5 U.S.C. 551.)

Although the Agency believes the Court's holding was incorrect, the Agency has decided to provide the opportunity for comment which the Court's decision calls for, because the Agency believes this course will lead to the most expeditious resolution of the still-open issues.

3. NOTICE AND COMMENT

Accordingly, the comment period on the Ferriamicide decision is hereby reopened. The Agency invites comment on its determination that the uses permitted under the specific exemption will not cause unreasonable adverse effects on health or the environment.

The Agency particularly desires comment on its previous decision to permit ground broadcast application in parks, playgrounds, and schoolyards. The Agency will also consider any new information on any other aspects of the Ferriamicide emergency exemption.

Comments are invited on all documents the Agency has placed in the administrative record file which will be available through the Agency contract person designated above. The reading file will contain all documents submitted to the District Court in the Ferriamicide litigation which either the EDF or the EPA has designated as constituting the record in the Ferriamicide action. EPA, in no sense, concedes that all these documents should be designated as part of the administrative record in this proceeding, nor that the Agency should consider all the documents in making its final decision. Many documents are clearly irrelevant to the Agency decision (such as press releases prepared to explain, rather than make, the final Agency determinations); other documents, such as internal Agency drafts, papers indicating internal staff debate on issues, and handwritten notes of Agency staff, are subject to claims of privilege. In order to avoid further disputes on what, at this point, amounts to a procedural issue, however, all documents before the court will be placed in the record.

The comment period on Mississippi's application will remain open for ten (10) days after publication of this notice in the FEDERAL REGISTER. Any comments submitted after the deadline will be considered to the extent possible consistent with orderly Agency decisionmaking.

Dated: October 12, 1978.

STEVEN D. JELLINEK,
Assistant Administrator for Toxic Substances.

ATTACHMENT A

ENVIRONMENTAL PROTECTION AGENCY,

OFFICE OF TOXIC SUBSTANCES

Washington, D.C., March 8, 1978.

Subject: Section 18—Specific Exemption for the Use of Ferriamicide to Control Imported Fire Ants—Action Memorandum.

From: Steven D. Jellinek, Assistant Administrator for Toxic Substances (TS-788).

To: Deputy Administrator (A-101).

Issue.—Should the Agency, pursuant to section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and Part 166 of the FIFRA regulations, issue to the Mississippi Authority for the Control of Fire Ants (hereafter Mississippi Authority or Applicant) an emergency exemption allowing the use in Mississippi of an unregistered pesticide, Ferriamicide, to control imported fire ants, and if so, under what conditions? (If the Agency approves this request eight additional states will probably seek similar exemptions.)

BACKGROUND

A. THE FIRE ANT

Imported fire ants infest approximately 190,000,000 acres in Mississippi and eight other states, in urban, suburban and rural areas. The ants pose a problem for two reasons: (1) the bite of the ant is painful and, in some cases, causes serious reactions in hypersensitive persons; (2) the large mounds built by the ants may interfere with normal agricultural operations such as mowing and harvesting.

B. THE MIREX CANCELLATION

Effective December 1, 1977, pursuant to a Plan submitted by the Mississippi Authority ("Plan") the Administrator cancelled all end-use product registrations of Mirex, an insecticide that has been used to control fire ants since 1962. The Mississippi Authority was the sole remaining registrant of Mirex end-use products. According to

the Plan, existing stocks of one Mirex formulation, 10:5 Bait, may be sold and used for ground broadcast and mound application until June 30, 1978. A discussion of the Administrator's reasons for accepting the Plan, as well as a history of the Mirex proceedings, a summary of evidence, and a discussion of risks and benefits associated with Mirex appears at 41 FR 56694 (December 29, 1976).

Mirex is formulated as a bait that, when properly foraged by the ants, results in reduced ant populations. The pesticide's end-use registrations were voluntarily cancelled, however, following the development of information that Mirex is carcinogenic in rodent test systems and therefore may pose a cancer risk to man. Mirex also exhibits other adverse effects, such as high persistence in the environment, accumulation in living tissue, and high toxicity to aquatic invertebrates (see 41 Fed. Reg. 56698-56700).

C. FERRIAMICIDE

1. *Applicant's request.*—Pursuant to the Plan, the Mississippi Department of Agriculture and Commerce greatly intensified research efforts to develop an alternative to Mirex that would be effective against fire ants but less persistent in the environment. This research has resulted in development of a [redacted] Mirex [redacted].

On December 16, 1977, the Applicant requested a specific exemption to apply Ferriamicide by aerial equipment, ground equipment, or to individual mounds on approximately three million acres of land in Mississippi (see 42 FR 64734). The application requested approval for only a singel aerial application to a given area per year. All aeral and ground broadcast applications would be made by Federal and State applicators who would be certified through state certification programs. Homeowners who have received oral and written guidelines could apply Ferriamicide to individual mounds. Restrictions would apply to aerial applications on aquatic areas, coastral zones, wooded areas, agricultural lands, home sites and developed portions of public areas. Environmental monitoring would continue throughout the affected area. (Application, pp. 34-33.) The application describes the properties of Ferriamicide known at the present time, as well as the efficacy and toxicity tests that have been performed (application pp. 21-32). The Applicant states that it will agree to use no more Mirex than was approved under the original Plan accepted by the Administrator in the Mirex cancellation procedding (application, exhibit G). This means that no more than 11,800 pounds of Mirex would be used to produce Ferriamicide under an emergency exemption. Applicant proposes to use a Ferriamicide formulation containing .05 percent Mirex.

2. *Available data on Ferriamicide*—a. *Chemistry data.* Under laboratory conditions of continuous light, the Mirex in the ferrous chloride-amine-Mirex complex photodegrades rapidly. Applicant estimates a half life of 14-45 days. No photodepradation studies, however, have been conducted under actual field conditions. Since field persistence would be expected to increase in direct proportion to the amount of shade or darkness, the half-life of Ferriamicide in the field is expected to be considerable longer then the laboratory half-life. Laboratory studies on standard Mirex, in fact, yielded a much shorter half-life (124-173 days) than that which actually occurs under field conditions (730-7300 days). Even assuming that Ferriamicide fairly quickly photodegrades under filed conditions, there would be no advantage to this property if the pesticide bait is more quickly consumed by nontarget species. There is no data on the half-life of Ferriamicide in living matter.

The terminal residues of Mirex have not yet been ascertained; however, nono-, di-, tri-, tetra- and penta-hydro derivatives of Mirex have been identified as intermediate products.

b. *Biological activity.* Preliminary studies indicate that Mirex and its photodegradates may be biodegraded by microorganisms if an additional carbon and energy source is available, but not when Mirex or its photodegradates are used as the sole source of carbon and energy.

Several acute toxicity studies of Mirex and Ferriamicide on crayfish, grass shrimp, blue crab, and microorganisms indicated that undegraded Ferriamicide and bait photodegraded for 3 days exhibited the same toxicity as Mirex. [redacted]

c. *Unknown factors.* The following significant characteristics are not known about Ferriamicide or its photodegradates:

(1) Rate of photodegradation under actual field conditions;

(2) Identity under field use conditions of the degradation products;

(3) Toxicity of Ferriamicide and its degradation products to terrestrial organisms under actual field use (acute, subacute and chronic studies have not been conducted);

(4) Residues expected in crops, meat, milk, poultry, or eggs (no residue data has been submitted);

(5) Bioaccumulation properties (residue levels, tissue distribution, loss rates, and concentration factors)'

(6) Biomagnification properties;

(7) Toxicity to mammals (no mammalian toxicity studies have been conducted).

In short, very little is known about the properties, toxicity or environmental behavior of either Ferriamicide or its degradation products, although there is considerable knowledge of the characteristics of Mirex, Ferriamicide's active ingredient.

D. COMMENTS ON THE FERRIAMICIDE APPLICATION

EPA has received over 20,000 comments from citizens of Mississippi. The overwhelming majority of the 3,000 examined express general concern about the fire ant problem and the need to have an effective means of control.

The Environmental Defense Fund recommends denial of the emergency exemption request, arguing that (1) there are registered pesticides which could be used to control fire ants; (2) there is insufficient data to support the widespread use of Ferriamicide; (3) the carcinogenicity of Mirex and of Kepone, a degradation product of Ferriamicide, require a risk assessment before the exemption is issued; (4) we do not yet fully understand the population dynamics and biology of fire ants; (5) efficacy data submitted in support of Ferriamicide is not convincing; (6) actual emergency conditions do not exist, since Mirex 10:5 bait may be used until June 30, 1978; and (7) Mirex, itself, has not been effective in controlling fire ants, since the infested acreage has increased even after Mirex use began.

DO EMERGENCY CONDITIONS EXIST?

A. STATUTORY AND REGULATORY CRITERIA

The statutory and regulatory criteria for determining whether to issue an emergency exemption are explained and analyzed in the three attached memoranda, transmitted by the Office of General Counsel on February 16, 1978. In summary, the Agency may allow an unregistered pesticide to be used if it finds that emergency conditions exist and that the benefits of the pesticide use would outweigh the risk of its use. This section discusses the criteria for finding whether emergency conditions exist with respect to Ferriamicide.

Section 18 of FIFRA states:

The Administrator may, at his discretion, exempt any Federal or State Agency from any provision of this Act if the determines

that emergency conditions exist which require such exemption.

Part 166 implements section 18; 40 CFR 166.1 states:

An emergency will be deemed to exist when (a) a pest outbreak has or is about to occur and no pesticide registered for the particular use, or alternative method of control, is available to eradicate or control the pest, (b) significant economic or health problems will occur without the use of the pesticide, and (c) the time available from discovery or prediction of the pest outbreak is insufficient for a pesticide to be registered for the particular use. In determining whether an emergeny condition exists, the Administrator will also give consideration to such additional facts requiring the use of section 18 as are presented by the applicant.

The criteria of clauses (a), (b), and (c) are not exclusive. EPA may find an emergency exists even if one or more of the conditions are absent.

To find an emergency in the case of Ferriamicide the Agency should first examine three basic issues:

(1) Do fire ants cause significant economic or health problems? (See 40 CFR 166.1 (a) and (b).)

(2) Will feasible non-pesticide methods or feasible methods employing registered pesticides be available to control the fire ant in time to reduce the emergency to an acceptable level? (See 40 CFR 166.1 (a) and (c).)

(3) Will Ferriamicide control fire ants? (See 40 CFR 166.1(b).)

Since the § 166.1 (a), and (b), and (c) criteria are not exclusive, the Agency may consider other pertinent factors such as the risks presented by use of registered pesticides that may be available for use against fire ants.

B. IT THERE AN EMERGENCY?

This section describes my reasoning for determining that emergency conditions exist requiring the use of Ferriamicide.

1. Nature of economic and health problems

The fire ant inflicts a painful sting upon humans. The severity of the problem is magnified by the multiple stings that may result if a person disturbs a mound. The stings may give rise to secondary infections if not properly cleansed and cared for, or may cause other complications for a small number of sensitive persons. A large number of people receive fire ant stings in infested States. (See application p. 18-20; 41 FR 56701.)

Fire ant mounds physically interfere with agricultural equipment, especially in areas with clay soils. The ants also have caused injury to farm workers and animals, and damage to pasture land and crops. (See application p. 14-17.)

Applicant estimates that throughout the southern part of the Unite States the ants infest approximately 190,000,000 acres, a considerable portion of which is in Mississippi (see application p. 14-15). Infestation in a given acre can amount to 1 to 200 mounds. According to the application, the imported fire ant is present in all types of locations (other than those covered with water).

From the volume of mail EPA has received it is obvious that citizens in areas infested with these pests are very concerned about having some method of controlling them. The majority of the letters examined express apprehension about the painful stings which the fire ant inflicts.

If no feasible means of fire ant control were available, the problems caused by fire ants could be expected to increase, resulting in even more severe economic and health effects than currently exist. Mirex has been useful in controlling fire ant infestations. As of June 30, 1978, Mirex can no longer be lawfully used. Unless there are available alternative pesticidal or nonpesticidal control measures which will reduce infestations to acceptable levels, the imported fire ant may pose health problems in infested areas where people may disturb the ants and be stung. The ants will also cause some economic damage to farmers.

2. Alternative methods of fire ant control

a. *Nonpesticide alternatives.*—On agricultrual lands where the fire ant mounds interfere with farm machinery a heavy beam may be dragged behind a tractor to disperse the mounds. In many cases this will reduce the problem sufficiently.

b. *Pesticide alternatives.*—The following registered pesticides have been considered:*

(a) Chlordane—Numerous currently registered chlordane labels bear use directions for fire ant mound treatment applications. While the use directions and application rates vary widely, it has been assumed that the majority of the application rates fall within the range prescribed by the two labels held by the basic producer, Velsicol Chemical Corp.:

(1) Chlordane 72 percent EC (Reg. No. 876-102)—This emulsifiable concentrate is applied as a 0.5 percent mound drench. Although the actual percentage may vary. For the sake of comparison with alternative products, it is assumed that all applications shall be made at a rate of 100 mounds to the acre. Individual mound size, presumably, would also have to be taken into consideration in determining the dosage rate. The 72.0 percent EC label prescribes rates ranging to "as much as" 5 gallons of drench per mound depending upon size. It therefore, appears that a range of from 4 to 25 lbs. active ingredient per acre (A.I./A.) is prescribed. The 100-mound parameter could, however, be expected to result in an application rate of approximately 10 lb. A.I./acre.

(2) Chlordane 25 percent G (Reg. No. 876-39)—This granular formulation, according to the label, is applied at the rate of 0.8 to 1.6 cups of formulation per mound without the subsequent application of water. Using the same parameters as above, the possible application rates would result in the distribution of 7 to 14 lb. A.I./A. Again, 10 lbs. A.I./A is a likely application rate.

(b) Heptachlor—See also the chlordane discussion (heptachlor and chlordane are closely related compounds). Heptachlor 5 percent G (Reg. No. 876-187) and 10 percent G (Reg. No. 876-188)—The application directions for the heptachlor granular products provide for the placement of 2 to 4 cups and 1 to 2 cups per mound, respectively, for the 5 percent and 10 percent products. Using the 100-mound-per-acre parameter, the possible application range for both products is from 3.5 to 7.5 lb. A.I./A. A rate on the order of 5.0 lb. A.I./A is expected to be applied.

(c) Propoxur (Baygon)—Only one propoxur product is currently registered for use against fire ants and only for mound application. This product is the recently registered Boyle Midway 2 percent ant trap. Each ant trap consists of a bait formuation housed in a small metal canister. The current use directions limit appliction to the mound site. The Application of this product is further restricted to "* * * home use only." The application of this product to a 100-mound acre would result in the distribution of 0.002625 lb. A.I./A.

(d) Chlorpyrifos (Dursban)—As in the case of propoxur, only a single recently registered product exits. This product is a 6.7 percent emulsifiable concentrate labeled by the Occidental Chemical Corp. Additional distributor labels are anticipated with the Zoecon Corp. providing the major distribution channels. This product is applied as a 0.2 percent mound drench in 1 gallon of water. Again applying the 100-mound-per-acre parameter, the total application would result 0.78125 lb. A.I./A.

*Applications for registration to control fire ants are pending for the following pesticides: Diazinon—four separate formulations. Carbaryl—40.38 percent formulation (Reg. No. 1016-68). 1,1,1 Trichloroethane—94.5 percent formulation. These pesticides are not yet registered, nor are they expected to be available in time to control fire ants for the summer and fall seasons. They may, however, be available in the future.

(e) Lindane—(C.25 percent)+Naled (0.5 percent) (Reg. No. 239-907)—This formulation is a pressurized spray primarily intended for indoor use.

The Ferriamicide bait is a 0.05 percent active ingredient granular formulation. If it is assumed that in mound applications Ferriamicide bait is applied at the rate of 0.25 oz. of formulation per mound site (see 42 FR 6473), a 100-mound acre would receive 0.00078125 lb. A.I./A, or less than one third of a gram.

c. *Evaluation of alternatives.*—(a) Nonpesticidal methods—Mechanical means of mound control are somewhat effective on agricultural lands, but only as a means of eliminating interference with farm equipment. Prevention of other injuries (stings) on farm land will require use of a pesticide.

(b) Chlordane and Heptachlor—The consensus of those researchers recently contacted has been that chlordane and heptachlor provide a reasonable degree of mound reduction and population suppression. There is, however, some reason to question the efficacy of chlordane and heptachlor, because at the time they were registered information gaps existed with respect to fire ant testing methodology. As a result, there exists doubt as to whether chlordane and heptachlor provide total mound kill or promote mound migration. In the past few years much new information has come to light on fire ant movement. For example, the mound is now observed for a longer period to time after application of a pesticide.

It is generally believed that heptachlor is more active against ants than is chlordane, a premise reflected by the currently registered application rates, which require less heptachlor for use on a mound.

Chlordane and heptachlor, like Mirex, have been the subject of litigation because of the hazard which they pose to the environment. They present problems similar to those posed by Mirex.*

Chlordane, when used to control Imported Fire Ants, requires a dosage approximately 10,000 times that required when Mirex is used in the Ferriamicide bait formulation. Heptachlor requires a dosage approximately 5,000 times the Ferriamicide dosage.

(c) Propoxur (BAYGON)—is registered only for use around the home. The compound has not been tested under field conditions. While the efficacy data submitted in support of the registration of this product indicated substantial mound mortality, large scale field testing was not required due to the proposed label restrictions. Efficacy is therefore questionable under field conditions.

(d) Chlorpyrifos (DURSBAN)—Both the data provided for registration support and that made available by USDA researchers indicate very acceptable product performance (average mound reduction rate 90 percent as determined by field test data). This pesticide would not be practical, however, in widespread field use because of the large amount of water required. The dosage required would be about 1,000 times that required for Mirex in the Ferriamicide bait formulation.

Chlorpyrifos would be a practical alternative in some areas where the infestation of fire ants is relatively light. When the infestation is heavy or widespread, large amounts of water would have to be transported in order to use the mound drench. To treat fire ant mounds over a relatively large area it would, in most cases, be impractical to carry more than 5 gallons of water unless the applicator has special equipment. This is especially apparent when one considers that to apply Ferriamicide mound-to-mound all one must carry is a small container and hand dipper to apply approximately one teaspoonful of the formulated pesticide per mound.

(e) Lindane+Naled—This formulation would not be effective for mound control because there would be an insufficient quantity of finished product to saturate the mound.

(f) Ferriamicide—Efficacy testing of Ferriamicide has so far been inconclusive (application pp. 27-32). According to the Applicant, the combination of a very cold winter followed by a very dry early summer caused the fire ant populations to be very unstable, reducing foraging to the point that even proven baits were not effective. In many cases 40-50 percent of the control colonies did not survive for the duration of the test. This made efficacy testing difficult to conduct. (Application p. 30.)

The U.S Department of Agriculture has advised EPA that of materials filed tested up to this time Ferriamicide is the most effective replacement for 4x or 10:5 Mirex bait.

The document entitled "Summary of Evidence and Other Information and Statement of Reasons", published in conjuction with the acceptance of the Plan for the voluntary cancellation of Mirex, concluded that when Mirex, the active ingredient in Ferriamicide, is applied "in adequate amounts near fire ant mounds and properly foraged, the population of fire ants in the mound is severely reduced." (41 FR 56701). Although reinfestation might occur, control at the site is achieved. The efficacy of its active ingredient provides adequate support, for purposes of a Section 18 exemption, to conclude that Ferriamicide will effectively reduce fire ant populations and, thereby, significantly reduce the problems resulting from fire ants.

3. Conclusion regarding whether emergency conditions exist

a. *Areas where an emergency exists.*—(1) *Noncrop areas.* After June 30, 1978, an emergency will exist in Mississippi in noncrop areas where fire ant infestation occurs. This determination is based on the following factors;

(1) the widespread prevalence of fire ants in Mississippi,

(2) injury to humans from insect stings,

(3) the great public concern expressed for the need to control fire ants,

(4) lack of practical, available pesticides to control fire ants in all but areas of relatively light infestation,

(5) lack of available nonpesticide control methods that would be efficacious for noncrop lands.

(6) the expectation that no pesticide currently proposed for registration for fire ant control will be available by June 30, 1978, and

(7) the fact that Mirex may not be used after June 30, 1978.

(2) *Agricultural areas.* No pesticides are registered for fire ant control that are feasible for agricultural uses. Items 1 through 3, 6, and 7 relating to noncrop uses also apply to the determination of an emergency on agricultural lands. In addition, the economic damage on agricultural land could be considerable. In view of the foregoing it is my opinion, that an emergency will exist on agricultural lands after June 30, 1978

To some extent the economic emergency may be alleviated by nonpesticidal methods used to knock down and disperse mounds. No evidence has been presented, however, to indicate that mechanical methods of control, alone, could reduce the adverse effects of fire ants to an acceptable level.

b. *Areas for which feasible alternative are available.*—Chlorpyrifos and Propoxur, registered pesticides for control of fire ants in noncrop areas, are expected to be reasonably available after June 30, 1978. In areas where infestation is not particularly heavy it appears that they would control fire ants. Based upon the § 166.1 (a), (b), and (c) criteria, I cannot recommend finding that an emergency exists in those areas where Chlorpyrifos or Propoxur may be used practically.

* According to the terms of the Administrator's Mar. 6, 1978, order in Velsicol Chemical Corporation, et al., FIFRA Docket No. 336 et al., there will be available no more than 350,000 pounds of technical chlordane for general use on imported fire ants.

SHOULD AN EMERGENCY EXEMPTION BE ISSUED?

A. DISCUSSION OF OPTIONS FOR ISSUING AN EXEMPTION

This section states my opinion and describes my reasons for determining that a conditional emergency exemption should be issued.

1. Emergency conditions

Once it has been determined that emergency conditions exist, the risks and benefits of issuing an exemption for the pesticide must be evaluated to determine whether such exemption should issue and what restrictions, if any, should be impose.

Section 18 of FIFRA authorizes the Agency to grant an exemption if "emergency conditions exist which require such exemption." For the reasons stated above, it is my opinion that emergency conditions exist in those areas of generally heavy infestation, but do not exist in areas of relatively light infestation where practical alternatives are available. There is, however, no practical way for the Agency to distinguish between these areas. In this particular case, the Agency could not effectively segregate the areas where Ferriamicide is needed, unless a survey of infested land were conducted and a study were made to decide where one pesticide would be practicle as opposed to another. I do not believe that such an undertaking is practical or that it could be accomplished before the onset of the expected June 30, 1978, emergency.

2. Health effects

Based on the information we have on the efficacy of Ferriamicide, it is likely that the pesticide will achieve site control of fire ants. Ferriamicide, however, contains Mirex, a substance which may pose a risk of cancer to man. The advantage of Ferriamicide is that the Mirex in it may be expected to photodegrade more rapidly than the Mirex in other formulations. One would expect, therefore, that the hazard from Ferriamicide would be less than the hazard from Mirex alone.

However, the photodegradates of Ferriamicide have not been completely identified and their toxic qualities are not known. No subchronic or chronic toxicity tests have been conducted, while acute toxicity testing has been extremely limited. No mammalian studies have been conducted, and no residue data are available.

It has not, furthermore, been verified that Ferriamicide under field conditions photodegrades as rapidly as is claimed. Mirex, itself, is less persistent in the laboratory than in the field.

Although Ferriamicide is related to Mirex and there is much we do not know about it, the amount proposed to be used in the Ferriamicide formulation is minimal, particularly if the use is restricted to limited ground broadcast and mound-to-mound applications. Assuming mound-to-mound application to a 100-mound acre, no more than one-third gram of Mirex per acre will be applied.

3. Options

The Administrator has four basic options to consider in this matter:

Option A: Grant the exemption as requested by Applicant but only for use after June 30, 1978.

Pro: Will make available an efficacious pesticide for the most economically feasible and efficient method of application.

Con: Leads to the most significant exposure potential to Mirex.

Option B: Deny the exemption in *toto*.

Pro: Reduces exposure to Mirex to the lowest possible level.

Con: Would leave no feasible means of controlling a pest that causes significant economic and health problems.

Option C: Grant the exemption in part by restricting use to those areas for which practical alternatives are not available, and by imposing restrictions on the method of application. Use will begin only after June 30, 1978.

Pro: Will enable the Administrator to make the pesticide available while keeping exposure low enough to be consistent with avoiding unnecessary health or environmental problems.

Con: (1) Puts the Agency in a position of imposing an unenforceable restriction, e.g., a label which permits use only in areas where infestation is more than, for example, five mounds per acre.

(2) May prevent use of Ferriamicide in areas where it may be needed, e.g., an area where there are ten mounds spread over two or three acres such that large amounts of water would have to be transported were DURSBAN to be used.

Option D: Grant the exemption in part by imposing restrictions on the method of application but permit use of Ferriamicide even in areas where a practical alternative will be available. Use will begin only after June 30, 1978.

Pro: (1) Eliminates the problem of an unenforceable label.

(2) Will insure that Ferriamicide may be used in any area where it is needed.

(3) Additional health or environmental effects will not be significantly increased because of the small amounts of pesticide that will be used.

Con: Would permit Ferriamicide to be used where a registered alternative is available.

B. RECOMMENDATION

Since there will be a need to control the fire ant after June 30, 1978, and minimal amounts of Mirex will be used, I recommend Option D. This will permit the Agency to make Ferriamicide available without causing unreasonable adverse effects to health or the environment. In arriving at this recommendation I have considered the following factors:

(1) Too many significant characteristics of Ferriamicide are unknown;

(2) Ferriamicide contains Mirex, which may pose a risk of cancer to man;

(3) Food residue should be kept as low as possible, since that is the most likely route of exposure to man;

(4) Direct exposure to humans and nontarget organisms should be minimized.

WHAT RESTRICTIONS SHOULD APPLY?

A. DISCUSSION OF OPTIONS FOR RESTRICTING USE

Option E: Authorize a single aerial, ground or mound application of Ferriamicide.

Pro: Aerial and ground broadcast methods are the only way to treat large areas economically.

Con: (1) The possibility of exposure to humans and nontarget organisms is high compared to other methods of application.

(2) Residues of Mirex or its degradates are likely to occur in the food chain.

(3) The Agency would be approving additional aerial application of Mirex, a practice which terminated under the Mississippi Plan on December 1, 1977.

(4) Aerial application could put at risk at least one endangered species—the Red Cockaded Woodpecker.

Option F: Permit limited ground broadcast—only in parks and cemeteries.

Pro: (1) Permits economical treatment in areas where people frequently come into contact with fire ants.

(2) Does not appreciably increase direct human exposure to the pesticide.

(3) Has no effect on food residues.

(4) Number of applicators exposed will be reduced.

Con: (1) There is significant probability that runoff into the water supply will occur.

(2) This option will result in greater exposure to nontarget (mammalian) species.

Option G: Permit mound-to-mound application.

Pro: (1) Minimizes environmental contamination—in a 100-mound acre

less than one-third of a gram of parent compound, Mirex, would be applied.

(2) Provides control of fire ants in areas where the threat to man and livestock is greatest.

Con: (1) Some exposure to the applicator occurs (more applicators required than for ground broadcast).

(2) Uneconomical in widespread infestation because it is too labor intensive.

B. EVALUATION OF OPTIONS FOR RESTRICTING USE

The following paragraphs state my opinion on the relative merits of the options for restricting use.

1. *Aerial and wide-scale ground broadcast*

Mirex, the parent compound of Ferriamicide, presents significant toxicity problems, and we know far too little about the toxicity of Ferriamicide and its photodegradates. Therefore, the possibility of broad exposure from Ferriamicide to the environment and to nontarget organisms that would occur from aerial or wide scale ground broadcast application would pose unreasonable risks of adverse effects.

2. *Limited ground broadcast*

a. *Agricultural lands.*—The fact that ground broadcast increases (over mound-to-mound application) the possibility of food residues of unknown toxicity makes ground broadcast unacceptable for agricultural uses.

b. *Noncrop areas (parks and cemeteries).*—On the other hand, in certain noncrop areas, specifically cemeteries and parks, where humans are subject to contact with heavy infestations over a broad area, ground broadcast provides a practical means of controlling the fire ant while not materially increasing human exposure over mound-to-mound treatment. There is somewhat less applicator exposure, since less applicators are required than for mound-to-mound treatment. In my opinion, therefore, it would be reasonable to permit ground broadcast in cemeteries and parks.

Since ground broadcast does present high possibilities for exposure to nontarget species and entry of the chemical into the environment, it would not be reasonable to permit such application for wide-scale use on other noncrop lands.

3. *Mound-to-mound application*

a. *Agricultural lands.*—Use of mound-to-mound application will pose the least likelihood of food residues of Mirex or the Ferriamicide degradation products. This application method, when used in with the mechanical methods available for mound dispersion, would provide a means to reduce both the economic damage and the health problems (possibility of stings) caused by fire ants.

b. *Noncrop lands.*—Although a greater number of applicators may be needed for mound-to-mound application than for ground broadcast, the area-wide environmental exposure from the mound-to-mound application would be extremely limited. Whatever threats Ferriamicide may pose to health or the environment will be kept to acceptable limits since the amount of toxicant to be applied is minimal, and the bait formulation applied to a mound would have almost no direct effect on nontarget organisms. Furthermore, Ferriamicide can be expected to control the mound populations and reduce infestation by this method in those areas where humans will be most likely exposed to the threat of fire ant stings.

C. CONCLUSION

I recommend, accordingly, that the exemption allow the following uses:

(1) ground broadcast for cemeteries and parks (Options F); and

(2) mound-to-mound application for all uses (Option G).

CONDITIONS TO BE IMPOSED UPON THE EXEMPTION

A. In order to insure that the Applicant continues to proceed with good faith efforts to obtain data to register Ferriamicide or another alternative pesticide for control of fire ants, I recommend that the following conditions be imposed on the emergency exemption.

(1) The exemption will be granted beginning July 1, 1978, and continue for only one year thereafter; and

(2) Granting of any further exemption will depend upon Applicant's good faith efforts to continue research to find an alternative for Mirex to control fire ants (assuming all other conditions required for granting an emergency exemption exist).

B. Before final authorization is issued and any distribution of Ferriamicide is permitted under the authority of a section 18 exemption, I recommend that the Applicant be contacted and that the items stated below be resolved consistent with the recommendations made above in order to reduce the likelihood of adverse effects from application of Ferriamicide:

1. Applicant should agree to commence further appropriate testing to ensure Applicant's continued good faith efforts to develop alternatives to control fire ants. EPA will offer assistance and use of its facilities where appropriate;

2. Applicant should furnish manufacturing process and product composition information, and data demonstrating satisfactory shelf-life of the product;

3. Agreement should be reached on the amount of product to be manufactured for use under this exemption and any other exemptions that may be issued, as well as the time period within which incremental amounts of product will be manufactured;*

4. Package sizes of the manufactured Ferriamicide bait should be such that the different user groups will receive packages of appropriate sizes;

5. We need to know which categories of persons will be authorized to apply Ferriamicide bait, by which methods and what applicator certification training requirements will be imposed;

6. The labeling must be consistent with the terms of the exemption, and must include appropriate use instructions and precautionary language;

7. Applicant should describe the authorized channels of distribution.

Conditions addressing the items contained in paragraph B could be dictated by EPA, but the resulting conditions may not be feasible under the circumstances existing in the State of Mississippi. Since EPA has not adopted the Mississippi proposal, it is appropriate to afford the State an opportunity to submit additional information on these matters, so that the most appropriate conditions and restrictions can be fashioned.

RECOMMENDATION

I recommend granting a specific exemption for use of Ferriamicide for mound-to-mound application and limited ground broadcast application, as discussed in Options D, F, and G, subject to the restrictions stated above, and subject to such further conditions as are determined to be appropriate after the Agency and the Applicant has resolved the outstanding matters discussed in paragraph B of the section titled "Conditions to be Imposed on the Exemption."

Approved in accordance with the reasoning stated here.

Dated: March 8, 1978.

BARBARA D. BLUM.

ATTACHMENT B

OPINION AND ORDER, UNDER § 18 OF THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT, REGARDING USE OF FERRIAMICIDE IN MISSISSIPPI

The Mississippi Authority for the Control of Fire Ants ("Mississippi Authority") has requested, under § 18 of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended ("FIFRA"), 7 U.S.C. 136p, that the Environmental Protection Agency

* The total amount of Ferriamicide produced for the entire period of product development may not contain more than 11,600 pounds of Mirex.

("EPA" or "Agency") issue an exemption from the other provisions of FIFRA to allow the use of an unregistered pesticide called Ferriamicide for the control of imported fire ants in Mississippi.

This Opinion and Order constitute final Agency action by EPA on the Mississippi Authority's application.

I. BACKGROUND

A. THE FIRE ANT PROBLEM

Imported fire ants are small ants which were accidentally introduced into this country early in this century and which now thrive in many areas of the Southern United States. They are now found in some 190,000,000 acres in Mississippi and eight other States in the South. They build mounds which can become as high as 1½ feet. When the mound is disturbed, the ants tend to attack the source of disturbance in large numbers. Their bites are very painful, and some persons who are hypersensitive to the ant venom suffer serious reactions to the bites. In addition, the large ant mounds can interfere with certain agricultural operations, such as mowing and combining.

Fire ants generally are most active above ground (and thus most troublesome) in the spring and fall, during warm, moist periods. During hot, dry summers, they tend to remain deep inside their mounds where moisture is available.

B. THE MIREX CANCELLATION

Mirex is a pesticide that has proven to be successful in controlling fire ant infestations. It is a relatively slow-acting insecticide which affects the ant's central nervous system when ingested. Because of its slow action, foraging worker ants will carry Mirex-treated bait into the mound, where it is consumed by other ants, including the queen, often resulting in the death of the entire colony of ants.

For may years Mirex bait formulations were applied widely (by aerial and ground broadcast methods) over large areas of the South, at a rate of approximately 1.7 grams active ingredient/acre.

Mirex is considered desirable for use against fire ants because it is relatively easy to apply, because comparatively small amounts of the active ingredient (when properly formulated and applied) are needed on a per-acre basis, and because it provides relatively inexpensive control.

However, Mirex is also very persistent in the environment, and causes harm to many nontarget species, especially aquatic species, even at low dosages. Test results (while not unambiguous) tend to show it induces cancerous lesions in rodent test species, and it causes a variety of other toxic effects in mammals as well.

Because of these concerns, the Agency in 1973-76 held a hearing to determine whether Mirex registrations should be canceled. This hearing ended when the Mississippi Authority, by then the only Mirex end-use registrant, proposed that the Agency accept a plan providing for the voluntary cancellation of all Mirex end-use registrations. The Administrator accepted this plan in December 1976. Under the plan, Mirex bait could be sold and used for ground-broadcast and mound-to-mound application until June 30, 1978. A discussion of the Administrator's reasons for accepting the plan, with a history of the Mirex proceedings, a summary of evidence presented, and a discussion of the risks and benefits of Mirex appears at 41 FR 56694 et seq. (December 29, 1976).

C. FERRIAMICIDE

The Mississippi Authority has conducted extensive research aimed at developing a pesticide that would be effective against fire ants in much the same manner as Mirex, but would be less persistent in the environment. The Authority has developed a product called Ferriamicide, the active ingredient of which is Mirex in combination with ferrous chloride and an amine. Laboratory tests have shown that the Mirex in Ferriamicide photodegrades (degrades by virtue of a chemical reaction caused when the Ferriamicide "absorbs" energy in the form of light) considerably faster than does Mirex alone.

The bait formulation the Authority proposes to use contains only 0.05 percent Mirex. The remainder of the product consists of inert ingredients, principally ground corncobs and soybean oil.

D. THE AUTHORITY'S SECTION 18 APPLICATION

Much of the testing required for registration of a pesticide under FIFRA section 3 has not yet been performed on Ferriamicide. However, although the voluntary cancellation plan provided that old-style Mirex bait was not to be available for sale or use after June 30, 1978, there was no reason to believe that the fire ants would cease their troublesome activity as of that date.

Accordingly, on December 16, 1977, the Mississippi authority submitted to EPA a request for the issuance of an exemption (under FIFRA section 18) allowing the use of Ferriamicide under certain circumstances even though it could not yet be registered. The Authority sought permission to apply Ferriamicide bait by aerial broadcast and ground broadcast methods over wide areas of Mississippi; these applications were to be made only by trained, certified pesticide applicators. The Authority also asked permission to sell Ferriamicide bait to homeowners and other persons for so-called "mound-to-mound" application (sprinkling the bait directly on the ant mounds). Various limitations and conditions were proposed in the application.

E. PRIOR EPA ACTION ON THE AUTHORITY'S REQUEST

On December 28, 1977, EPA published a notice describing the Authority's request and soliciting public comments.[1] A large number of comments were received, some favoring and some opposing Agency approval of the request. Some 20,000 Mississippi residents sent brief letters expressing concern about fire ants and in some cases supporting the application. In addition, a number of Federal legislators (most from Southern States), State legislators, and other State officials urged approval of Mississippi's request. (Officials of several other States planned to apply under section 18 for permission to buy Ferriamicide bait from the Mississippi Authority for use in their own States, if EPA approved the Mississippi request.)

On the other hand, a smaller number of commentors (including some Federal legislators) opposed the request. The Environmental Defense Fund, Inc. (EDF) submitted extensive comments in opposition to use of Ferriamicide.

After extensive EPA staff consideration of the issues raised by the Authority's request, Mr. Steven D. Jellinek, the Agency's Assistant Administrator for Toxic Substances sent to me, on March 8, 1978, a document containing a series of recommendations on the matter. I adopted those recommendations on the same day, and so indicated by concurring on the document [attached as Attachment A to this Opinion and Order].

Mr. Jellinek's recommended conclusions, which I adopted, in essence were these:

1. Fire ant infestation in Mississippi is a serious pest problem, which will become more serious once Mirex cannot be used.

2. There are alternative non-pesticidal treatments that provide some degree of relief in avoiding economic damage. There are also registered pesticide that in some circumstances can provide effective control.

3. However, in areas with widespread or heavy infestation, there is no practical method of treatment (other than Ferriamicide). In those areas, an "emergency" exists for purposes of FIFRA section 18.

4. Some of the registered alternative pesticides (notably heptachlor and

[1] 42 FR 64734.

chlordane) are known to pose serious environment hazards.

5. Mirex is very effective against fire ants, and Ferriamicide bait, which contains Mirex, can also be expected to work well.

6. Although the Agency's knowledge of the properties and effects of Ferriamicide is incomplete, we do have a wide range of data on its active ingredient, Mirex.

7. The risks of Ferriamicide use can be kept very low by keeping exposure of humans to Ferriamicide at very low levels (both dietary residues and applicator exposure should be considered).

8. Aerial broadcasting and most ground broadcasting should not be allowed, because of the need to keep exposure levels low. Mound-to-mound application should be allowed primarily because it will pose very little, if, any risk of dietary exposure, yet will allow treatment of those areas where the need is greatest.

9. Practical considerations (primarily the difficulty of defining "heavy infestation" and of enforcing label restrictions) require allowing mound-to-mound treatments of Ferriamicide even where an alternative pesticide (such as chlorpyrifos) could be used.

10. A number of details remained to be resolved by agreement between the Authority and the Agency before final authorization for Ferriamicide use in Mississippi could be granted. Among other things, we needed to decide on the categories of persons who will be allowed to use the pesticide, the training requirements to be imposed, the use instructions and precautions to appear on the labeling, and the channels of distribution to be employed.

11. The exemption would be for one year, and at most could authorize use of 11,800 pounds of technical-grade Mirex for formulation into Feriamicide.[2]

F. THE ENVIRONMENTAL DEFENSE FUND'S COURT CHALLENGE

In March 1978, EDF filed an action[3] in the United States District Court for the District of Columbia, saying that for a variety of reasons the Agency should be enjoined from allowing Mississippi to use Ferriamicide.

On June 16, 1978, a hearing was held, at which time the Court stated that it appeared the Agency's decision was not yet final or reviewable (because of the matters still requiring resolution). The parties then stipulated that the Agency's final decision would be issued on or about July 21, 1978, and that the Court would act in early September (following the filing of briefs by the parties).

II. FINDINGS

A. THE FIRE ANT INFESTATION IN MISSISSIPPI CONSTITUTES "EMERGENCY CONDITIONS" WITHIN THE MEANING OF FIFRA § 18

I find that "emergency conditions", within the meaning of FIFRA section 18, exist in those areas of Mississippi which are heavily infested with fire ants, for the reasons set forth on pages 7-12 of Attachment A. I adopt the "Conclusions regarding whether emergency conditions exist," set forth at pages 12-13 of Attachment A, as a part of this finding. The following paragraphs will serve to further explain this finding.

1. *Fire Ants Pose Serious Health and Economic Problems in Mississippi*

The nature of the harm fire ants cause is adequately explained in Attachment A and in the "Background" section of this Opinion, *supra*. Mirex, which has been useful in controlling infestations, can no longer be used in the formerly-registered formulations. The unavailability of Mirex can be expected to increase the degree of the problem where alternative control methods are not available.

2. *Alternatives for Fire Ant Control*

In areas heavily infested with fire ants there are no feasible registered pesicidal or non-pesticidal methods of control that are both safe for use and sufficiently effective to alleviate the emergency. Some pesticides are the subject of pending registration applications, but only for limited use near the home. Attachment A substantially dealt with the alternative methods for fire ant control (pp. 7-12).

The alternatives available for fire ant control fall into three classes.

In the first class of pesticides we have products like chlordane and EDC, both of which are carcinogens. However, these products under current label directions require far greater amounts of active ingredient to perform the same job as Ferriamicide. Chlordane requires 10,000 times the amount of active ingredient (Attachment A); EDC requires 1,000 times the active ingredient. (Attachment B). Methyl Bromide is a mound fumigant that could pose a greater acute hazard than Ferriamicide (Attachment C).

In the second class of pesticides are the many products tested by the USDA but not found to be effective as a fire ant bait. In addition other researchers have examined different pesticides, but found them ineffective (Attachments D and E).

The third class of methods of control have utility, but only in some circumstances. The most effective product in this class appears to be chlorpyrifos (Dursban). Available data indicate that chlorpyrifos works well, and is relatively low in toxicity. The dosage required would be about 1,000 times as much active ingredient as that in the Ferriamicide bait formulation.

Chlorpyrifos would be a practical alternative in some areas where the infestation of fire ants is relatively light. When the infestation is heavy or widespread, large amounts of water would have to be transported to the mounds. (The pesticide must be mixed with water, and one gallon of the mixture is applied per mound.)

In addition, there are other products for which registration applications are pending which might prove practical for use in relatively lightly infested areas around the home, even though their efficacy may not yet have been demonstrated (Attachment E).

3. *Efficacy of Ferriamicide*

It is expected that Ferriamicide will prove effective, based on the efficacy of its active ingredient, Mirex. (See Attachment A, pp. 11-12). There have been some problems to be solved regarding rancidification of the soybean oil in the Ferriamicide bait. When the oil rancidifies, it is no longer attractive to the ants and the product will not be effective for control. The addition of ferrous chloride to the bait not only facilitates the photodegradation of Mirex but could, in the presence of oxygen, cause the soybean oil to rancidify. The manner in which the Ferriamicide bait is formulated has been shown to influence the speed with which rancidification takes place, as does the availability of oxygen.

Mississippi has developed a "cold mix" manufacturing process and a formulation which uses, in addition to the original Ferriamicide formulation, citric acid and propylene glycol (Attachment A). The citric acid acts as an antioxidant, thereby inhibiting rancidification of the soybean oil. Shelf life tests conducted by the USDA facility at Gulfport, Mississippi indicate that the revised formulation maintained satisfactory acceptance by the fire ant (Attachment F). Mississippi has further addressed the shelf-life problem by packaging the one (1) and five (5)

[2] On August 31, 1976, the Mississippi Authority submitted a plan to the Administrator providing among other things, for the suspension of Mirex cancellation hearings which were then in progress, the phase-out of production and use of Mirex, and the voluntary cancellation of Mirex registrations. The Administrator accepted the Plan (See discussion at page 3 of this Opinion). EDF, which was a party to the Mirex proceeding, supported approval of the plan. Under the plan, 35,000 pounds of Mirex could be utilized during the phase-out period to produce Mirex products. However, only 23,200 pounds were in fact used. The maximum amount of Mirex that may be formulated into Ferriamicide is the remaining 11,800 pounds.

[3] *EDF v. Blum* et al., Civil Action No. 78-0577 (USDC, D.D.C.).

pound packages in airtight film bags. They will exhaust all oxygen from the bags and replace it with nitrogen at the time Ferriamicide is packaged. By this process the rancidification of the soyben oil cannot begin until the package is opened (Attchment G).

Once the package is opened, tests indicate the bait may be expected to lose its attractiveness to the ants in about 10 weeks (Attachment F). This will be sufficient to maintain usefulness of the product through the fall or spring treatment seasons, when the fire ants are most active. Homeowner purchasers will be informed of this when they buy the product.

Shortly after Attachment A was signed, Mississippi became aware that the way in which Ferriamicide was formulated influenced the amount of Kepone which was formed from the decomposition of Mirex.

The inclusion of propylene glycol and the adoption of the cold mix manufacturing process has reduced the amount of Kepone produced to less than 0.5 percent of the Mirex in the Ferriamicide (Attachment H). Since the Ferriamicide bait itself contains only 0.05 percent Mirex, the level of Kepone introduced into the environment would be at detection limits and should present very little threat to the environment.

B. PERMITTING LIMITED USE OF FERRIAMICIDE SUBJECT TO STRINGENT CONDITIONS WILL NOT CAUSE UNREASONABLE ADVERSE EFFECTS TO THE ENVIRONMENT

The extent to which a use of a pesticide will pose a hazard to humans depends not only on the inherent toxicity of the pesticide, but also on the degree to which humans will be exposed to the pesticide. If exposure can be kept very low, the hazard also will be very low even if the toxicity is high.

We know that Mirex causes various serious toxic effects in test species. Although Ferriamicide is designed to photodegrade rapidly, we do not know how much less inherently toxic than Mirex it is. Accordingly, it is prudent to proceed as if Ferriamicide were as toxic as Mirex. There is no reason to assume it has a higher degree of toxicity then Mirex.

The Agency's approach to the Authority's request for permission to use Ferriamicide has thus centered on the question whether exposure to Ferriamicide could be kept low enough so that the hazard posed by its use would be very small, and would be outweighed by the benefits its use would bring about.

1. *Aerial and ground broadcast application.* In my March 8 decision, I found that because of exposure considerations, it would not be reasonable to allow aerial application of Ferriamicide, nor to allow general ground broadcast application of the pesticide. I now reaffirm those findings, for the reasons stated on page 18 of Attachment A. I also found that ground broadcast application could be permitted in parks and cemeteries, because exposure to humans from that use pattern would be very low. I now reaffirm that finding also, as stated on pages 18-19 of Attachment A.

Mississippi has requested that it be permitted to apply Ferriamicide by ground broadcast on campgrounds, fairgrounds, schoolyards, playgrounds, and levees. I find that the same rationale for permitting this application method in parks and cemeteries applies to all these other areas except levees. Ground broadcast will not be permitted on levees because it is not uncommon for livestock to graze on or near them. Levees are, therefore, more appropriately considered in the same light as agricultural lands.

Ground broadcast rates shall be 1 to 2½ pounds per acre. These rates are derived from the calibrations on existing equipment. The largest amount that may be applied per acre, 2½ pounds, is the equivalent of mound-to-mound application on an acre infested with approximately 150 mounds. The maximum amount of Mirex that will be placed on any acre will be about ½ gram. In many cases the amount of Mirex will be considerable less. In view of the small amounts of Mirex and the fact that there will be no exposure through the food chain in the areas where ground broadcast will be permitted, and the benefits to be obtained by controlling fire ants in areas of widespread human exposure, I do not find the ground broadcast rates to be unreasonable.[4]

2. *Mound-to-mound application.* The remaining question is the extent to which the Agency should permit mound-to-mound application of Ferriamicide bait. Since the March 8 decision, new information has come to EPA's attention that affects my decision on that matter,[5] and further staff analysis has been performed.

The data availabe to the Agency indicate that there are two kinds of toxic effects in humans that we must be especially concerned with in evaluating the Mississippi Authority's request: Carcinogenicity and teratogenic effects. Our analysis indicates that there are only two possible routes of human exposure to Ferriamicide that require serious evaluation: Dietary exposure (from residues in or on food) and dermal absorption exposure of persons who may apply Ferriamicide.

a. *Reproductive (Teratogenic) effects.* One study which has recently come to the Agency's attention studied the effects of Mirex on reproductive performance and offspring development in the prairie vole, *Microtus Ochrogaster.*[6] Statistically significant adverse effects on the behavior of offspring were found when the prairie voles were dosed at 0.1 ppm of the diet, the lowest level tested. This effect level is estimated to be equal to 0.015 mg/kg bw/day, which translates in a 50 kg human to an effect level of 0.75 mg/day (Attachment L). Another recent study on the Swiss mouse[7] has shown serious physiological and behavioral effects in offspring when much higher doses were administered.

Although these tests involved repeated dosages, our analysis has used the conservative assumption that any one of the daily doses might have caused the observed effect in the offspring.

From the available residue data it seems likely that the present human dietary intake of Mirex (resulting from Mirex use in prior years) is no more than about 1 microgram per day (.001 mg/day).[8] That figure resulted from extensive prior aerial application to croplands and other areas at higher dosage rates. Many more pounds of Mirex were applied annually, and many more acres treated annually, than would be the case if mound-to-mound application of Ferriamicide were authorized for 1 year. Accordingly, I find that any dietary exposure that might result from mound-to-mound application of Ferriamicide for

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[4] It has been determined to produce Ferriamicide in 1, 5, and 50 lb bags. The 1 lb bags are for homeowner use and will be marketed for mound-to-mound application only to those persons who can justify the need for the product. The 5 lb bag will be available only to certified applicators for small scale ground broadcast in parks, cemeteries, and for mound-to-mound application for especially large acreage. The 50 lb bags will be available only to certified applicators for large scale ground broadcast.

[5] *Kepone /Mirex/ Hexachlorocyclopentadiene: An Environmental Assessment.* National Academy of Sciences, (1978), at 1-2 [hereafter NAS study]. (Attachment I). The NAS study is one of three studies that have recently come to the Agency's attention and have been key documents in the exposure analysis. None of these studies were available when Mirex was canceled on October 1976. The other two studies are on the reproductive effects of Mirex:

(1) Shannon, V. C., *The Effects of Mirex on the Reproductive Performance and Behavioral Development of the Prairie Vole Microtus Ochrogaster* (doctoral dissertation, Iowa State University, Ames, Iowa; 1976) (unpublished). (Attachment J). Only the abstract is attached. The 320 pp. study will be available on request.

(2) Holevinski and Massaro, *The Effects of Gestational Exposure to Mirex on Offspring of the Mouse* (Dept. Biochemistry, SUNY School of Medicine, Buffalo, NY.) (available only in abstract) (March 1978) (Attachment K).

[6] See footnote 5 supra.

[7] See footnote 5 supra.

[8] See, NAS study at 34; Attachment M.

1 year will be so low as to pose no appreciable risk of teratogenic or other reproductive effects in humans.

When the possible reproductive/teratogenic effects arising from exposure to Mirex of persons who actually apply the Ferriamicide bait is considered, however, there is more cause for concern.

As already noted, if a pregnant woman were to ingest or otherwise be exposed to 0.75 mg of Mirex in a day, she would have received a daily dose equivalent (on a diet-to-body-weight basis) to the dose which cause adverse reproductive effects and offspring behavior abnormalities in the praire vole.

The Agency's staff has prepared an estimate (Attachment N), using a presumed worst-case approach, of the amount of Mirex that might enter the body by dermal absorbtion if a woman were to apply a 1-pound bag of Ferriamicide bait by using her hands (not wearing gloves or using the measuring spoon, and thus violating the use instructions in two ways). If 1 percent of the Mirex content were to come in contact with her skin, and if 10 percent of that 1 percent were to be absorbed dermally, the resulting Mirex "dose" would be about 0.23 mg (0.0046 mg/kg for a 50 kg woman).

This estimated exposure is only one-third of the dose which caused adverse effect in prairie vole offspring. The estimate probably far exceeds the average actual exposure to applicators, since use of gloves and measuring spoons would reduce dermal contact with the bait to practically zero. But it can be expected that some persons will not take these precautions, and for them our estimates show there is no real margin of safety, since the calculated exposure is so close to an observed effect level.

Oral ingestion of 1.5 grams of the bait would also yield the same exposure level that caused prairie vole effects, but it appears that the dermal exposure route is of more concern, since it can be expected that almost everyone will guard against oral ingestion of the pesticide.

I find that the risk of reproductive/teratogenic adverse effects resulting from applicator exposure is serious enough to warrant steps to reduce exposure.

b. *Oncogenic effects.* Tests of the cancer-causing potential of Mirex have yielded results that have been interpreted in various ways.[9] However, for present purposes, Mirex is presumed to be carcinogenic.

The Agency has performed worst-case analysis[10] of the possible cancer risk to humans from two exposure routes: dietary and applicator dermal contact. This analysis has been reviewed by the Agency's Carcinogen Assessment Group (CAG).

The dietary exposure worst-case estimate concludes that in a hypothetical population of 10,000,000 about 0.081 additional cases of cancer per year would result on the average from the incremental use of 3,000 pounds of Mirex. (Attachment Q.) It is very likely that the actual number of cancer incidences would be even lower, because of the very conservative assumptions employed in the analysis.

The applicator dermal exposure analysis was based on the worst-case dermal absorption assumptions described above. It concluded that if one million persons apply the Ferriamicide, and if all of them fail to wear the prescribed rubber gloves and use the measuring spoon, no more than 30 of them would develop cancer as a result.

c. *Exposure-reduction measures to be imposed.* While the worst-case hazard estimates set forth above probably grossly overestimate the actual risks of Ferriamicide use, they do indicate that the benefits that Ferriamicide use might provide are not without their accompanying hazards. It is this Agency's duty to insure to the extent possible that no particular use of a pesticide creates risks that are unnecessarily or unreasonably great, when weighed against the benefits.

The main benefit of Ferriamicide is that the nature of its formulation and the small quantities required to make it easy to apply in areas of heavy and widespread infestation. Although treatment of a mound with chlorpyrifos will probably yield adequate results, chlorpyrifos treatment requires transportation of one gallon of water to each mound to be treated.

It is thus necessary to weigh the greater convenience of Ferriamicide against the hazards that its use presents. I find that in areas where chlorpyrifos can be used with only a medium of inconvenience or extra work, it would be unreasonable to allow Ferriamicide use.

Although it is not easy to define the areas in which Ferriamicide may be used, it is necessary to draw the boundary somewhere. Accordingly, I find that chlorpyrifos can be used without serious inconvenience whenever there is less than 1 acre, or less than 50 mounds, to be treated. Where a person certifies in writing that he needs to treat more than 50 mounds and 1 acre or more, he will be permitted to purchase Ferriamicide bait from the Mississippi Authority.

In arriving at this conclusion, I have taken into account that fact that most (if not all) small plots of land will be relatively close to a water source; that few small residential plots are likely to now have heavy fire ant infestations; and that the 50-mound minimum will result in prompt use of most or all of a 1-pound bag, thus lessening the likelihood of opened bags being stored in or around homes.

I also find it necessary to require that the labels on all sizes of Ferriamicide must bear the following statement (in bold-face type, immediately below the CAUTION caption): "NOT TO BE APPLIED BY WOMEN OF CHILD-BEARING AGE."

I do not find it unreasonable to permit homeowners and other persons with severe infestations (over 50 mounds) and large acreages (over 1 acre) to use Ferriamicide in view of the extreme need for the product. While most homeowners at risk will be eliminated by the 1 acre, 50 mound restriction, the warning on the label should sufficiently warn the women of child-bearing age who live on the larger acreages.

Since the one pound package will be available to persons who are not certified, trained applicators, it is necessary to ensure that they are adequately informed of the dangers from use of the product. Mississippi will institute television and newspaper campaigns to inform the citizens about Ferriamicide and to instruct them in the proper way to use it. In addition, before being allowed to purchase the one pound bag, a person must read (or have for him) and sign a paper stating several cautions about the pesticide. That paper must contain the following statements:

1. Ferriamicide is not to be applied by women of child-bearing age. Tests on laboratory animals have shown if a pregnant femal is exposed to the active ingredient, harm to offspring may result.

2. Ferriamicide contains Mirex which has caused tumors in rodent tests and may pose a risk of cancer in man; Mirex is also hazardous to fish and shellfish.

Precautions must be taken to ensure that the product does not come in contact with the skin. Therefore, wear rubber or plastic gloves when applying, and follow all other label directions.

4. This product may become rancid approximately ten weeks after the package is opened, and, if so, will not be effective against fire ants.

5. The one-pound container will treat approximately 50 fire ant mounds. If you do not have a need for this much pesticide within the ten week period after opening the bag, purchase another pesticide instead.

In addition, the paper must contain the following statement to be completed by the purchaser: "I have read the above statements. I have approximately

[9] See Uliand, et al., *A Carcinogenicity Assay of Mirex in Charles River CD Rats*, J. Natl. Cancer 58:133-140, 1977. (Attachment O).

[10] See Attachments P and Q.

ly fire ant mounds to treat on approximately acres."

For the foregoing reasons, I find that the benefits of the uses permitted under this Opinion and Order will outweigh the associated risks, in light of the restrictions imposed. In other words, use of Ferriamicide under these circumstances will not cause unreasonable adverse effects on the environment.

IV. Open Conditions in the March 8 Document

This section states the resolution of the conditions that were left open in the March 8 decision (Attachment A, pages 20-21).

1. *Applicant should agree to commence further appropriate testing to ensure Applicant's good faith efforts to develop alternatives to control fire ants.*

This condition is designed to prevent repeated annual applications for emergency exemptions based on sparse data and to ensure that diligent efforts are made to find safe alternatives to control fire ants.

Mississippi is proceeding on two fronts. The State is obtaining funding from EPA in order to conduct research into alternatives other than Ferriamicide, and has initiated an extensive program to test Ferriamicide.

In a letter to EPA dated May 15, 1978 (Attachment R), Mississippi informed the Agency of a proposed research program to develop alternative pesticides other than Ferriamicide for fire ant control. Compounds are to be synthesized and a bioassay facility for testing newly developed pesticides will be established. In addition, there will be a team of chemists, zoologists, toxicologists, microbiologists and entomologists engaged in parrallel research. All of these investigations will be integrated into a single large program of synthesis, bioassay and toxicology.

Mississippi has submitted laboratory test protocols and an extensive testing program with the eventual aim of obtaining registration for Ferriamicide (Attachment S). EPA has submitted to Mississippi comments on the adequacy of the testing program (See Attachments T). In response, Mississippi has supplemented the documentation in support of its testing program (Attachment U). At this point I am prepared to find that Mississippi has exhibited good faith efforts to continue to find an alternative method to control fire ants, since in a relatively short period of time Mississippi has developed a testing program on Ferriamicide and appears to be pursuing research into alternatives. I restate my determination in the March 8, 1978, Action Memorandum that any Ferriamicide emergency exemptions requested when this exemption expires will depend very heavily on Mississippi's pursuing the appropriate testing programs.

2. *Applicant should furnish manufacturing process and product composition information and data demonstrating satisfactory shelf-life of the product.* This item is considered in the section of this Opinion concerning the efficacy of Ferriamicide.

3. *Agreement should be reached on the amount of product to be manufactured for use under this exemption and any other exemptions that may be issued, as well as the time period within which incremental amounts of product will be manufactured.* The March 8, 1978, Action Memorandum expressed my decision, which I hereby reaffirm, to limit the total amount of Mirex used in the entire Ferriamicide development program to no more than 11,000 pounds.

The authority has requested permission to distribute, for use in Mississippi, 500,000 pounds of Ferriamicide bait (that amount would require 250 pounds of Mirex). (See Attachment V) That request, however, contemplated some ground broadcast uses not permitted under this Opinion and Order. The Authority's figures indicate that the following amounts of Ferriamicide bait will be needed for permitted uses:

Mound-to-mound application by citizens: 120,000 pounds (number based on past requests from citizens for Mirex bait).

Mound-to-mound application for levees: 20,000 pounds (there are some 20,000 acres to be treated; at 50 mounds per acre, one pound per acre would be needed).

Mound-to-mound application by State employees on other sites, at request of citizens: 21,000 pounds.

Ground broadcast application on parks, fairgrounds, campgrounds, schoolgrounds, and cemeteries: 249,000 pounds (2 pounds per acre on 124,500 acres, including 4,500 acres of schoolgrounds).

Accordingly, it is my determination that not more than 420,000 pounds of Ferriamicide bait may be distributed by the Authority for use in Mississippi (this will require use of 210 pounds of Mirex, and will allow treatment of some 450,000 acres).

The amount of Ferriamicide bait that the Authority may sell for distribution and use in other States will be considered separately in connection with evaluation of the applications filed by the other States.

4. *Package sizes of the manufactured Ferriamicide bait should be such that the different user groups will receive packages of appropriate sizes; and*

5. *We need to know which categories of persons will be authorized to apply Ferriamicide bait, by which method, and what applicator certification training requirements will be imposed.* These two factors were considered in the hazard assessment section.

6. *The labeling must be consistent with the terms of the exemption and must include appropriate use instructions and precautionary language.* The language has been approved for the different Ferriamicide containers. These labels contain appropriate precautions for the different uses. The one pound package label is especially explicit in that it specifically prohibits use of the contents for aerial or ground broadcast use and states that an individual requiring less than one pound may not purchase the product.

All labels contain warnings as to the necessary precautions to avoid harm to humans, domestic animals and aquatic organisms. Instructions require that rubber gloves be worn when applying the pesticide to lessen dermal exposure.

Since Mirex is toxic to aquatic organisms, a special precaution appears relating to keeping the product out of any aquatic areas. Ferriamicide, after photodegradation, has exhibited no toxic effects on certain aquatic animals, but the precaution will appear as an added safety factor.

7. *Applicants should describe the authorized channels of distribution.* The Mississippi Authority for the Control of the Fire Ants is responsible for the manufacture, packaging and labeling of Ferriamicide bait. Within the State of Mississippi, they also will oversee the distribution of Ferriamicide bait.

The State Department of Agriculture and Commerce and the County Extension Services will act as points for end use distribution within the State of Mississippi.

These restrictions will facilitate monitoring of the exemption, since distribution will only take place through state facilities.

V. Ancillary Matters

A. Environmental Impact Statement

Among EDF's allegations in its court action is that EPA has failed to prepare an Environmental Impact Statement as required by the National Environmental Policy Act of 1969 (NEPA). While not conceding that EPA is required to file a NEPA statement with its section 18 exemption, I believe EPA has prepared the substantial equivalent.

Attachment A shows how the Agency considered the environmental impacts of using Ferriamicide. The memorandum actually considered virtually everything known at the time about Ferriamicide, including its relationship to the pesticide Mirex. In addition, it considered the alternatives to Ferriamicide and did not find any acceptable in areas of heavy infestation.

Attachment A and this document clearly constitute the "substantial equivalent" of an environmental impact statement. Admittedly much data concerning the environmental impact of Ferriamicide is lacking, but more will be obtained as we learn more from the experimental programs currently being conducted. The Agency has authorized an experimental use permit for Ferriamicide and is assisting, through the EPA Office of Pesticide Programs, in a research and development program being conducted by Mississippi and the United States Department of Agriculture. (40 CFR § 6.608(a)(5), which requires EPA to prepare environmental impact statements for certain actions involving field testing undertaken by the Office of Research and Development (ORD), does not apply in the case of the Ferriamicide research program, which is funded by the Office of Pesticide Programs.)

B. EDF'S "POLITICAL INFLUENCE" ALLEGATIONS

EDF, in its court challenge, has alleged that the Agency's decision to permit some use of Ferriamicide was reached because EPA was concerned solely or primarily with pleasing the southern Congressional delegation and the residents of southern states. This charge appears to be based mainly on the fact that EPA received and considered communications from Federal legislators and from citizens of Mississippi during the process of reaching its decision.

I wish to state for the record that I do not believe there was anything improper about the manner in which the decision was reached. The Agency certainly did take into account the fact that fire ant control is widely desired by citizens of Mississippi and other southern states. The degree of public concern about a pest problem is certainly relevant to the issue of whether "emergency conditions" exist, although a number of other factors are also relevant. (After all, fire ants are a problem largely because of their proximity to people and their tendency to interfere with everyday human activity; if citizens were not bothered by fire ants, it is unlikely that we would have received the § 13 request in the first place.)

It was in this light that the letters from Mississippi citizens, and from Congressmen and Senators representing infested southern states, were considered. I do not believe that these communications constituted an intrusion into the normal decision-making process of the Agency.

As for the idea that EPA's decision was somehow calculated to please the southern Congressional delegation, it should be pointed out that many of the letters from Congressmen specifically supported the request for approval of aerial application of Ferriamicide. The Agency's complete denial of that request should, it seems to me, indicate that the Agency's decision was not designed to show fawning responsiveness to whatever requests legislators have made.

ORDER

In accordance with the foregoing Opinion, I hereby authorize the Mississippi Authority for the Control of Fire Ants ("Mississippi Authority") to distribute and use Ferriamicide bait to control fire ants in Mississippi, subject to the following conditions:

(1) The bait formulation may contain no more than 0.05 percent Mirex.

(2) This authorization expires on June 30, 1979.

(3) The Mississippi Authority, through its county agents, shall be responsible for all distribution of the pesticide product and shall monitor all distribution and use to ensure compliance with the terms of this Order.

(4) The Ferriamicide bait shall be manufactured by the process and with the product composition approved in the foregoing Opinion so as to inhibit the degradation to kepone and maintain the efficacy of the product (after the package is opened) for at least 10 weeks.

(5) All applications are to be made by either ground broadcast or mound-to-mound application.

(6) Ground broadcast may be performed only in parks, cemeteries, schoolyards, campgrounds, and fairgrounds, only by certified applicators using properly calibrated equipment, at a rate of 1 to 2½ pounds of Ferriamicide bait per acre, and only on infested acreage. Rubber or plastic gloves must be worn when applying the product. Applicators shall take care to avoid mouth or eye contact with the pesticide.

(7) Mound-to-mound application must be made at a rate of no more than ¼ ounce of Ferriamicide bait per mound. The measuring spoon which is to be provided with the product shall be used to sprinkle the bait on the mound. The applicator must wear rubber or plastic gloves when applying the product. Applicators must take care to avoid contact of the bait with the mouth or eyes.

(8) Women of child-bearing age are prohibited from applying Ferriamicide.

(9) The Mississippi Authority may not distribute more than 420,000 pounds of Ferriamicide bait for use in Mississippi.

(10) Ferriamicide bait shall be packaged in 1, 5, and 50-pound bags. The 5-pound and 50-pound bags are to be made available only to certified applicators for ground broadcast and mound-to-mound application.

(11) The one-pound bags shall be used only for mound-to-mound applications, and may only be distributed to persons who have at least 50 mounds, and at least one acre, to treat.

(12) Before releasing a one-pound bag, the distributor must ensure that the purchaser reads (or has read to him), fills in, and signs the document containing the five cautionary statements as required by the Opinion.

(13) Labels shall contain all provisions necessary to ensure they are consistent with the terms of this Order and Opinion. The lables shall contain the provisions previously approved by EPA, with the following changes:

(a) All labels shall contain the following statement in bold-face type, above the Caution statement: "Not to be Used by Women of Child-bearing Age."

(b) The one-pound package's label shall state that the product may not be used by any person who has less than one acre, or less than 50 mounds, to treat.

(14) The Mississippi Authority shall submit all reports required by 40 CFR 166.5.

(15) This order shall not authorize the actual distribution or use of Ferriamicide bait until the Mississippi Authority is notified by the EPA Deputy Assistant Administrator for Pesticide Programs that distribution and use may commence.

Dated: July 23, 1978.

BARBARA BLUM,
Deputy Administrator,
Environmental Protection Agency.

[FR Doc. 78-29223 Filed 10-16-78; 8:45 am]

Allied Prove
147

Control of the Imported Fire Ant

Problems

- Fire ants have been a problem in the United States for over forty years since they were accidentally introduced from South America. They have spread through nine southern states and continue to spread southwest through Texas at about 25 miles per year.

- Fire ants infest urban, suburban and rural areas. They inflict a painful sting to which some people are allergic. They build mounds which damage farm machinery and interfere with harvesting.

- Some of the specific pesticides used in past control programs have prompted concern about long term effects. Mirex, which was used for over 10 years, was voluntarily cancelled in 1976 because of such concerns. A new pesticide, Amdro, was conditionally registered in 1980, and the Agency expects to receive shortly additional studies supporting full registration.

Current Situation

- EPA is taking a fresh look at the fire ant problem, prompted by a recent application from the State of Mississippi to conditionally register ferriamicide.

- Ferriamicide is a formulation of mirex designed to degrade faster. An emergency exemption for ferriamicide was temporarily blocked on procedural grounds by a court challenge in 1978; the emergency exemption never took effect because of the need to evaluate new data.

- After reviewing the application, EPA has concluded there are several issues which preclude favorable action on ferriamicide at this time:

  - Scientifically - there are questions concerning the toxic properties and environmental fate of the breakdown products of ferriamicide.

  - Legally - because of its relationship to mirex, there is a question as to whether the Agency can act on a ferriamicide registration without holding formal hearings.

Symposium

- It is clear the Agency needs to approach the complex fire ant problem as a whole, and not limit our focus to a particular chemical. A hasty decision would be quite inappropriate in addressing a problem which has defied solution for decades.

- USDA and EPA will jointly convene a symposium, probably by June 1982, to bring together appropriate experts to consider the full range of issues. States, the scientific community and other interested parties will be invited to participate.

- The symposium will address overall control strategies as well as risk and benefit issues of particular chemicals such as ferriamicide, (including a review of new studies completed by the State of Mississippi), Amdro, several promising new materials and of biological control.

- The symposium will also examine the scope of the health and economic problems posed by fire ants, and the resurgence problem - the theory that chemical treatment favors the spread of fire ants by wiping out competition.

- Conditions for possible emergency exemption for ferriamicide use will be specifically explored at that time.

In the Meantime

- EPA should have results of the additional studies on Amdro before the symposium, so the future of that product will be better understood.

- Two new products are under consideration:

  - Elanco has applied for an expanded Experimental Use Permit (EUP) for their product EL-468. The product is now authorized for 4600 acres, and will be expanded to 10,000 acres. The company may apply for conditional registration this fall.

  - Stauffer Chemical has applied for an EUP for MV-678, a juvenile hormone product; it may be conditionally registered by fall.

- Other currently registered chemicals may continue to be used by homeowners and others for individual mound treatments only. These chemicals are carbaryl, diazinon, dursban, baygon, 1,1,1,trichloroethane methyl bromide, and acephate.

- Research on fire ant biology and various biorational controls will continue at Texas Tech, Texas A&M and the Universities of Florida and Georgia.

Site: Alice Pond
Break: 1.7
Other:

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Site: Allied-Proviso
Break: 17 8
Other: Diagrams

MISSISSIPPI AUTHORITY INVENTORY

6-30-83

SOYBEAN OIL - @ $.2278 #

Holding Tank	41,453 #
Mix Tank (mixed with Mirex)	15,153 #
Total	56,608 #

CORNCOB GRIT - @ $.082684 # (average)

West Bin	624,060 #
East Bin	263,510 #
Total	887,570 #

TECHNICAL MIREX @ $17.50 #

5 drums less 4# for research	546 #
Mixed in oil in mix tank	183 #
Total	729 #

AMINE - @ $2.29 #

456 # loss because of leaking tank
39 drums & a partial drum — 14,160 #

PROPLYNE GLYCOL @ $.425 #

2 drums and a partial drum — 1,290 #

ANTIOXIDANT - @ $.7233 #

10 drums and a partial drum — 4,897.5 #

CYCLE I - 221,543 # @ $.08525

90.51% corn cob grit
8.52% soy bean oil
.97% antioxidant

FERRIAMICIDE - 69,600 pounds @ $334.02 per ton

BAGS

3 ply printed	11,100 @ $200.00m
5 ply plain	600 @ $230.75m

These bags are now 6 years old

FILM FOR FORM, FILL, SEAL MACHINE

21" 16 oz 13½ rolls (34,897 impressions) @ $102.25m
18" 8 oz 49 rolls (204,232 impressions) @ $43.92m

MIREX

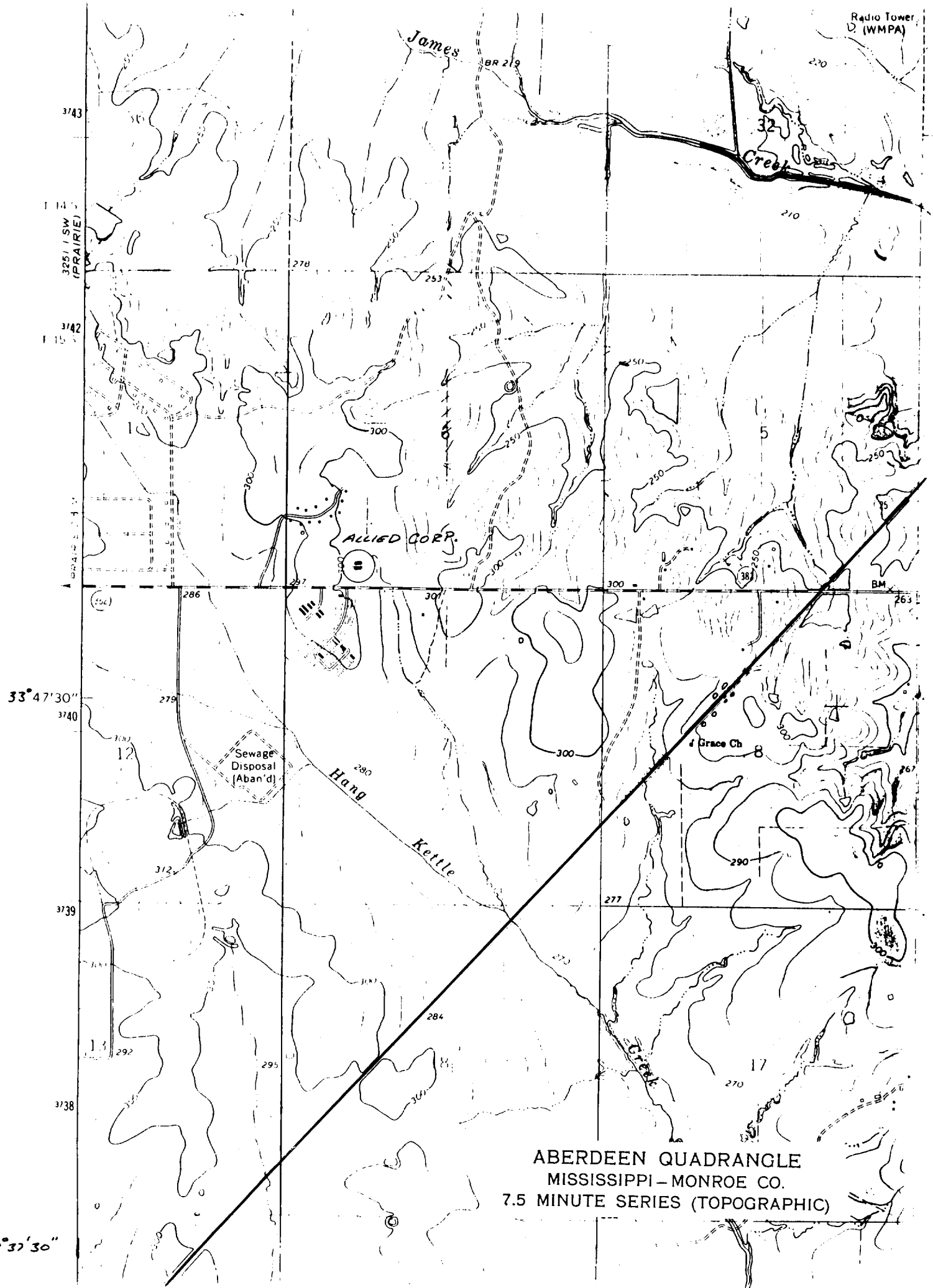
PCB2250. 1,3,4-METHENO-1H-CYCLOBUTA(cd)PENTALENE, 1,1a,2,2,3,3a,4,5,5,5a,5b,6-DODECACHLOROOCTAHYDRO-
CAS: 002385855 MW: 545.50 MOLFM: C10 Cl12
WLN: L545 B4 C5 D 4ABCE JTJ-/G 1 2
SYN: CYCLOPENTADIENE, HEXACHLORO-, DIMER • DECHLORANE • DODECACHLOROOCTAHYDRO-1,3,4-METHENO-2H-CYCLOBUTA(c,d)PENTALENE • DODECACHLOROPENTACYCLODECANE • DODECACHLOROPENTACYCLO(3,3,2,0(sup 2,6),0(sup 3,9),0(sup 7,10))DECANE • ENT 25,719 • GC 1283 • HEXACHLOROCYCLOPENTADIENE DIMER • HRS 1276 • 1,3,4-METHENO-1H-CYCLOBUTA(cd)PENTALENE, DODECACHLOROOCTAHYDRO- • MIREX • PERCHLOROPENTACYCLO(5,2,1,0(sup 2,6),0(sup 3,9),0(sup 5,8))DECANE •
TXDS: orl-rat LDLo:306 mg/kg PCOC** 7,761,66
orl-mus TDLo:2222 mg/kg/58WC TFX:CAR JNCIAM 42,1101,69
REVIEW: Carcinogenesis Review - 6 references IARC** 5,209,74

ANTIOXIDANT

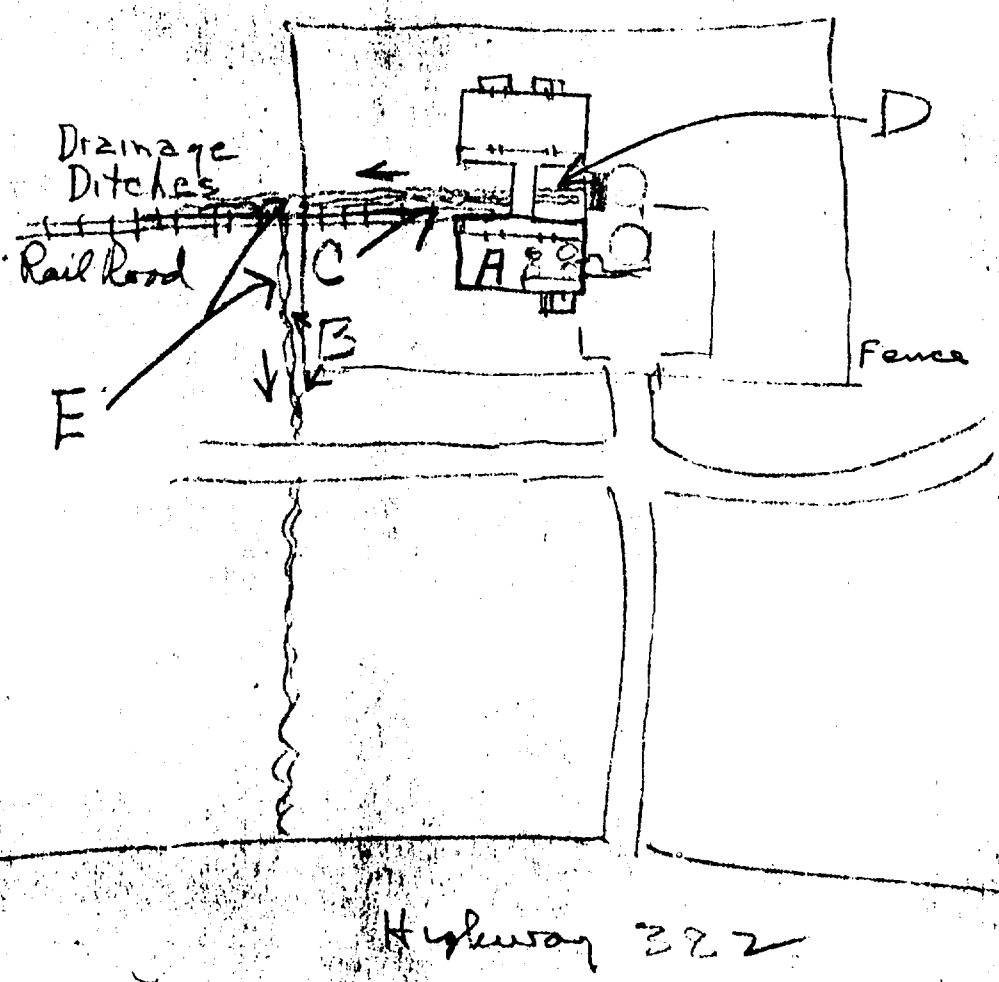
TT20000. 1,2-PROPANEDIOL
CAS: 000057556 MW: 76.11 MOLFM: O2-C3-H8
WLN: QY1Q
SYN: 1,2-DIHYDROXYPROPANE • METHYLETHYLENE GLYCOL • METHYL GLYCOL • MONOPROPYLENE GLYCOL • PG 12 • PROPANE-1,2-DIOL • PROPYLENE GLYCOL • alpha-PROPYLENEGLYCOL • 1,2-PROPYLENE GLYCOL • SIRLENE • TRIMETHYL GLYCOL •
AQTX WQCHM* 4,-4
1,2-PROPANEDIOL, 1-ACRYLATE see: AT19250 ACRYLIC ACID, 2-HYDROXYPROPYL ESTER
1,2-PROPANEDIOL, ALLYL ETHER see UA49000 PROPANOL, ALLOX-

GE73500. CITRIC ACID
CAS: 000077929 MW: 192.14 MOLFM: O7-C6-H8
WLN: QV1XQVQ1VQ
SYN: ANHYDROUS CITRIC ACID • CITRIC ACID, ANHYDRO • 2-HYDROXY-1,2,3-PROPANETRICARBOXYLIC ACID beta-HYDROXYTRICARBALLYLIC ACID • 1,2,3-PROPANETRICARBOXYLIC ACID 2-HYDROXY •
TXDS: ipr-rat LD50:884 mg/kg JPETAB 99,65,48
ipr-mus LD50:961 mg/kg JPETAB 99,65,48
ivn-mus LD50:42 mg/kg JPETAB 99,65,48
ivn-rbt LD50:330 mg/kg JPETAB 99,65,48
AQTX
CITRIC ACID,ACETYL TRIETHYL ESTER see GE82250 CITRIC ACID, TRIETHYL ESTER, ACETATE
CITRIC ACID, ANHYDROUS see: GE73500 CITRIC ACID

N054000. IRON(II) CHLORIDE (1:2)
CAS: 007758943 MW: 126.75 MOLFM: Cl2 Fe
WLN: FE G2
SYN: FERROUS CHLORIDE • IRON DICHLORIDE • IRON PROTOCHLORIDE •
TXDS: ipr-mus LD50:59 mg/kg AEPPAE 244,17,62


Radio Tower
(WMPA)
James
Creek
BR 219
3743
3742
3740
3739
3738
3251 I SW
(PRAIRIE)
ALLIED CORP.
Sewage
Disposal
(Aban'd)
Hang
Kettle
Creek
Grace Ch
BM
33°47'30"
88°37'30"
ABERDEEN QUADRANGLE
MISSISSIPPI – MONROE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

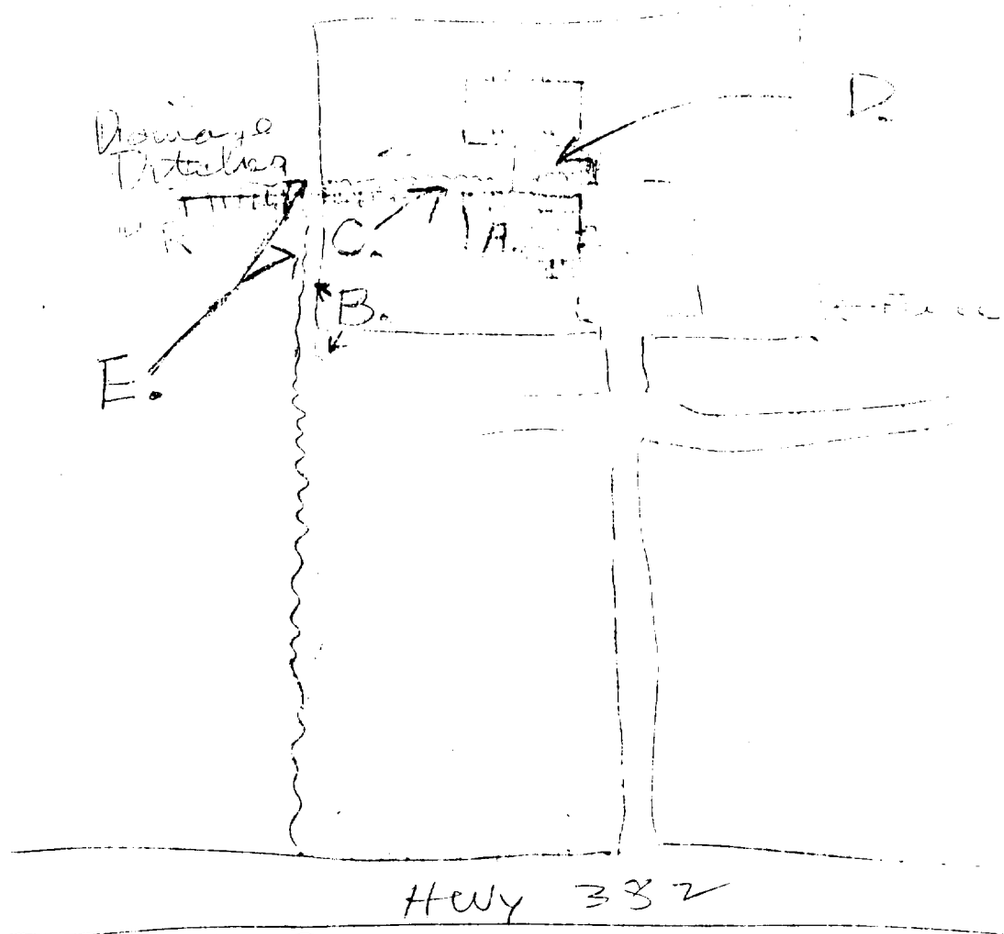
MDA FA BAIT PLANT
Prairie, Mo.



A. Bait Plant
SOIL SAMPLES Above water level in ditch

MDA - FA BAIT PLANT
Prairie MS

Site: Allied-Prairie
No.: 17.8



A Bait Plant
SOIL Samples Above water level in ditch
B " " " " " "
C " " " " "
D " " " " "
Water Samples in ditches at Point Shown
E

G.C. Analysis
A - N/A
B - 15 ppm
4.5 ppm
C - 12.3 ppm
220. ppm
400 ppm
41.8 ppm
D 440 ppm
193 ppm
E < 4 PPM

* All Samples of water in ditch showing pesticides < 4 ppm

[illegible]

United States
Environmental Protection
Agency

Press Office (A-107)
Washington DC 20460

Carline
2

EPA

Environmental News

Site: Allied Bulk
Brs: 137

FOR RELEASE: FRIDAY, FEBRUARY 26, 1982

EPA, AGRICULTURE
SET SYMPOSIUM ON
FIRE ANT CONTROL

Heier (202) 755-0344

The U.S. Environmental Protection Agency today announced that a symposium on the issue of fire ants and their control will be convened by the EPA and the U.S. Department of Agriculture.

The decision was prompted by the state of Mississippi's application for conditional registration of an insecticide called Ferriamicide to control fire ants in that state.

"It has become clear to me that we cannot evaluate the Ferriamicide application in isolation from all the many issues surrounding the control of the fire ant, which has infested nine southern states and Puerto Rico," said Dr. John A. Todhunter, EPA's Assistant Administrator for Pesticides and Toxic Substances.

"The control of fire ants has been a difficulty for decades and has raised a number of significant scientific issues. In that light, a hasty decision to either grant or deny the application of Mississippi would be inappropriate at this time," he added.

(more)

The symposium, tentatively set for June, will consider the full range of fire ant issues, including the resurgence of ants following treatment control techniques now being used, the benefits and risks of existing chemicals and new chemicals now being developed. In addition to EPA and USDA, the symposium will include scientists and other experts from the public and private sector.

Fire ants, which were accidentally introduced into the United States from South America about 1918, are combative pests that inflict painful stings on both people and livestock. In some cases, they cause serious allergic reations to those who are hypersensitive. The ants are found not only in rural areas but in urban back yards, recreation areas, parks, and cemeteries. They build mounds that interfere with normal farming operations, such as mowing and harvesting, and inhibit farm laborers from working in infested fields.

Over 230 million acres in the South are now infested with fire ants, including parts of Mississippi, Arkansas, Texas, Alabama, Florida, Georgia, Louisiana, North Carolina, South Carolina, and Puerto Rico

Other currently registered chemicals that can be used on fire ant mounds are Amdro, carbaryl, diazinon, dursban, baygon, 1,1,1, trichloroethane methyl bromide and acephate.

# # #

Environmental Protection Agency Washington D.C. 20460

Environmental News

Allied-PRARIC 13-7

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Over 230 million acres in the South are now infested with fire ants, including parts of Mississippi, Arkansas, Texas, Alabama, Florida, Georgia, Louisiana, North Carolina, South Carolina, and Puerto Rico

Other currently registered chemicals that can be used on fire ant mounds are Amdro, carbaryl, diazinon, dursban, baygon, 1,1,1, trichloroethane methyl bromide and acephate.

# # #

Site: Allied-Prairie
Break: 1.1
Other:

4/89

According to Robert McCarty of Miss DA, Pesticides Reg. Branch, Jackson, Ms. (601-325-3390):

- Marion Ueltschey, who now works at the Jackson Farmers Market, Jackson, Miss, was once involved with the old Allied Corp./Prairie Works plant site, Aberdeen, Miss. Mr. Ueltschey could give information as to how clean the site now is. His phone no. is 601-354-6573.

TELEPHONE/CONVERSATION SUMMARY
Ecology & Environment, Inc.
Region IV-Atlanta

(2)

Allied Chem Abandon Site

DATE 3-17-82 TIME 11:10 AM

NAME MR. Marion UELTFSHEY (Pronounced ULCHEE) POSITION 11-9

COMPANY Ms. Dept. of Agriculture - Miss. Authority For The Control of Firearms

ADDRESS Jackson, Ms.

PHONE # (601) 354-6552 (Secretary)

E&E PERSONNEL Jeff Hundley

DISCUSSION

statement was incorrect

→ Said Facility is still operating. ~~They've applied for Interim Status under RCRA.~~ He didn't even know what Superfund was and hadn't notified under Superfund for Aberdeen plant.

→ Their interim status request is to make another pesticide called "Ferriamicide(?)" which is similar to Mirex but not as persistant.

→ He said they've had a cleanup operation going on for ≈ 2 years(?) to get rid of the Mirex contamination. They've been getting rid of insulation, etc. that's contaminated by Mirex. Some drums (?) were taken to Monroe County Landfill (?) Some stuff was sent to Rollins Environmental Services in Louisiana for incineration.

→ They now have a baggage handling system to prevent spills. (EVO)

→ The don't have wells on site (on water syst.), but soil sample/analysis has shown Mirex contaminated soil around the site

→ Dept. of Agr. has never had a major spill, but some matl. is spilled during daily handling (Allied said same thing).

→ Said Mirex is very persistent and also bonds to soil and doesn't migrate easily. Sampling in drainage ditches around site don't show contamination.

→ His assistant (or co-worker) Mr. Dick Whitehead would know a good bit about site

* Should probably visit Dept. of Agr. in Jackson to dig thru files and should also visit Aberdeen site.

TELEPHONE/CONVERSATION SUMMARY
Ecology & Environment, Inc.
Region IV-Atlanta

(2)

Allied Corp
Aberdeen Site

Allied Corp
Date 11-1
Orders

DATE 3-17-82 TIME 11:10 AM

NAME MR. Marion UELTFSHEY (Pronounced ULCHEE) POSITION

COMPANY Ms. Dept. of Agriculture - Miss. Authority For The Control of Fireants

ADDRESS Jackson, Ms.

PHONE # (601) 354-6552 (Jackson)

E&E PERSONNEL Jeff Hundley

DISCUSSION

statement was incorrect

→ Said Facility is still operating. ~~They've applied for Interim Status under RCRA.~~ He didn't even know what Superfund was and hadn't notified under Superfund for Aberdeen plant.

→ Their interim status request is to make another pesticide called "Ferriamicite(?)" which is similar to Mirex but not as persistant.

→ He said they've had a [redacted] (?) to get rid of the Mirex contamination. They've been getting rid of insulation, etc. that's contaminated by Mirex. Some [redacted] (?) [redacted] (?) Some stuff was sent to Rollins Environmental Services in Louisiana for incineration.

→ They now have a baggage handling system to prevent spills.

(over)

→ The don't have wells on site (on water syst.), but soil sample/analysis has shown Mirex contaminated soil around the site

→ Dept. of Agr. has never had a major spill, but some mat'l. is spilled during daily handling (Allied said same thing).

→ Said Mirex is very persistent and also bonds to soil and doesn't migrate easily. ~~[illegible] in drainage ditches around site don't show contamination~~

→ His assistant (or co-worker) Mr. Dick Whitehead would know a good bit about site

* Should probably visit Dept. of Agr. in Jackson to dig thru files and should also visit Aberdeen site.

TELEPHONE/CONVERSATION SU RY
Ecology & Environment, Inc.
Region IV-Atlanta

(2)

11-9

DATE 3/17/82 TIME 3:00 PM

NAME MR. UELTFSHEY (ULCHEE) POSITION

COMPANY Ms. Dept of Agriculture

ADDRESS Jackson, Ms.

PHONE # (601) 354-6552

E&E PERSONNEL Jeff Hundley

DISCUSSION

- I went to EPA to check out the Dept. of Agr. RCRA application file. Ron Joyner and I looked all thru RCRA files and found nothing whatsoever on the Aberdeen facility.

→ I called Mr. Uchee back up at 3:00 to ask him about it since he earlier told me they were registered under RCRA. This time he said he must of misunderstood me because he doesn't know what RCRA is all about they've never filed.

→ He also said the quit producing mirex on Dec. 1, 1977 (per EPA instructions) and the last shipment was June 30, 78 (also per EPA's instruct). He said they do have some Mirex stored at the facility now. ∴ they are a RCRA STORER and definitely come under the Superfund coverage.

TELEPHONE/CONVERSATION SU ARY
Ecology & Environment, Inc.
Region IV-Atlanta

(2)

Site: Number: 119 Other:

DATE 3/17/82 TIME 3:00 PM

NAME MR. UELTFSHEY (ULCHEE) POSITION

COMPANY Ms. Dept of Agriculture

ADDRESS Jackson, Ms.

PHONE # (601) 354-6552

E&E PERSONNEL Jeff Hundley

DISCUSSION

- I went to EPA to check out the Dept. of Ags. RCRA application file. Ron Joyner and I looked all thru RCRA files and found nothing whatsoever on the Aberdeen facility.

→ I called Mr. Ulchee back up at 3:00 to ask him about it since he earlier told me they were registered under RCRA. This time he said he must of misunderstood me because he doesn't know what RCRA is all about they've never filed.

→ He also said the quit producing mirex on Dec. 1, 1977 (per EPA instructions) and the last shipment was June 30, 78 (also per EPA's instruct. He said they do have ~~some mirex stored at the facility now~~ ∴ they are a RCRA STORER and definitely come under the Superfund coverage.

TELEPHONE/CONVERSATION SUMMARY
Ecology & Environment, Inc.
Region IV-Atlanta

Allied/Prairie 11-9

(2)

DATE 3-17-82 TIME 10:00 AM

NAME GEORGE BALCH (Pronounced BALSH) POSITION CORP. MANAGER OF POLLUTION CONTROL

COMPANY ALLIED CORP. / Prairie Works Site in Aberdeen, Ms.

ADDRESS Morrist

PHONE # (201) 455-4947 (NJ)

E&E PERSONNEL Jeff Hundley

DISCUSSION

→ Allied sold this facility to The Mississippi Dept of Agriculture - Ms. Authority For The Control Of Fireants. Facility was sold to state in 1976-1977. Allied sold the Mirex production facility because they wanted to get out of Mirex business because it was very controversial pesticide at the time. They got burned earlier on Kepone issue, so they didn't want anything to do with Mirex just in case.

→ He couldn't recall what kinds or quantities of wastes were produced at the facility. He thinks most everything was recycled into the production of Mirex

→ Never had any significant spills; they notified because they wanted to be conscientious with regs.

(over)

→ They have some files on the facility somewhere in their old closed files, but didn't have anything handy. He said if I need more details, he'll see if he can dig out the files. ~~and~~

Per Jim Hardage of Ms DNR → State operated it until 1111EX was banned in '79 or '80. Now he thinks facility is closed.

TELEPHONE/CONVERSATION SUMMARY
Ecology & Environment, Inc.
Region IV-Atlanta

(2)

Site: Allied/Prairie
Date: 11-1

DATE 3-17-82 TIME 10:00 AM

NAME GEORGE BALCH (Pronounced BALSH) POSITION CORP. MANAGER OF POLLUTION CONTROL

COMPANY ALLIED CORP. / Prairie Works Site in Aberdeen, Ms.

ADDRESS Morrist

PHONE # (201) 455-4947 (NJ)

E&E PERSONNEL Jeff Hundley

DISCUSSION

→ Allied sold this facility to The Mississippi Dept of Agriculture - Ms. Authority For The Control OF Fireants. Facility was sold to state in 1976-1977. Allied sold the Mirex production facility because they wanted to get out of Mirex business because it was very controversial pesticide at the time. They got burned earlier on Kepone issue, so they didn't want anything to do with Mirex just in case.

→ He couldn't recall what kinds or quantities of wastes were produced at the facility. He thinks most everything was recycled into the production of Mirex

→ Never had any significant spills; they notifie because they wanted to be conscientious with regs.

(over)

→ They have some files on the facility somewhere in their <u>old</u> closed files, but didn't have anything handy. He said if I need more details, he'll see if he can dig out the files. ~~and~~

Per Jim Hardage of Ms DNR → State operated it until MIREX was banned in '79 or '80. Now he thinks facility is closed.

EPA Notification of Hazardous Waste Site

(2)

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

Site:
Break: 10.1
Other:

MSS 000001476

A Person Required to [redacted]

Enter the name and address of the person or organization required to notify.

Name [redacted]

Street Box 2332R

City [redacted] Zip Code 07960

[redacted]

Enter the common name (if known) and actual location of the site.

MSD 007035249

[redacted] Code 39730

C [redacted]

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) MR. GEORGE BALCH [redacted]

Phone New Jersey [redacted] (455-4947)

[redacted]

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

[redacted] Allied sold the Facility to State of Mississippi Dept. of Agriculture

E Waste Type: Choose the option you prefer to complete

Option I: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

[redacted]

Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. [redacted]
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

[redacted]

Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown

[redacted]

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

RECEIVED
EPA/REGION IV
JUN 9 3 25 PM '81
ENFORCEMENT DIVISION

000604

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

Notification of Hazardous Waste Site — Side Two

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) See Item I

Total Facility Waste Amount

cubic feet See Item I

gallons

Total Facility Area

square feet

acres

G Known, Suspected or Likely [redacted]:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ None [redacted]

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

None attached

I [redacted]: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

[redacted]

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name William Reiter

Street Box 2332R

City Morristown State N J Zip Code 07960

Signature William M. Reiter Date 6/4/81

☐ Owner, Present

[redacted]

☐ Transporter

☐ Operator, Present

[redacted]

☐ Other

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

10.1

MSS 000001760

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Allied Corporation

Street: Box 2332R

City: Morristown State: N J Zip Code: 07960

B Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site: Prairie Works

Street: Aberdeen-Prairie Industrial Complex

City: Aberdeen County: Monroe State: Miss Zip Code: 39730

MSD 007035249

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): MR. GEORGE BALCH
Reiter, William, Corporate Director, Pollution Control

Phone: New Jersey (201) 455-6159 (455-4947)

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1962 To (Year): 1976

← Allied [illegible] to [illegible] Agric[illegible]

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☒ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) pesticide blending plant

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

RECEIVED EPA/REGION IV JUN 9 1 05 PM '81 ENFORCEMENT DIVISION

000604

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) See Item I

Total Facility Waste Amount

cubic feet See Item I

gallons

Total Facility Area

square feet

acres

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ None

Unknown

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

None attached

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

While there is no indication that hazardous wastes were disposed on site at this former Mirex fire-ant bait plant, some products may have been spilled on-site incidental to operations.

J Signature and Title:

The person or authorized representative such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name William Reiter

Street Box 2332R

City Morristown State N J Zip Code 07960

Signature William M. Reiter Date 6/4/81

☐ Owner, Present
☒ Owner, Past
☐ Transporter
☐ Operator, Present
☒ Operator, Past
☐ Other

EPA Notification of Hazardous Waste Site

(A) 3/14/83

820920

United States Environmental Protection Agency
Washington DC 20460

Admendment

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

MSS 000001060

~~MSD 980729863~~

Site:
Block: 10.1
Other:

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Allied Corporation
Street: Box 2332R
City: Morristown State: N J Zip Code: 07960

(A B) 3/14/83

B Site Location:

Enter the common name (if known) and actual location of the site.

MSD 007035249

~~MSD 980729863~~

Name of Site: Prairie Works
Street: Aberdeen-Prairie Industrial Complex
City: Aberdeen County: Monroe State: Miss Zip Code: 39730

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Reiter, William, Corporate Director, Pollutic Control
Phone: (201) 455-6159

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1962 To (Year): 1976

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☒ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify)
    pesticide
    blending plant

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site located.

SEP 20 1982

Form Approved
OMB No. 2000-0138
EPA Form 8900-1

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) See Item I

Total Facility Waste Amount

cubic feet See Item I

gallons

Total Facility Area

square feet

acres

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ Non Unknown

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessir hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

While there is no indication that hazardous wastes were disposed on site at this former Mirex fire-ant bait plant, some products may have been spilled on-site incidental to operations.

SEP 20 1982

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name William Reiter

Street Box 2332R

City Morristown State N J Zip Code 07960

Signature William M. Reiter Date 6/4/81

☐ Owner, Present
☒ Owner, Past
☐ Transporter
☐ Operator, Present
☒ Operator, Past
☐ Other

Allied Electronic Components

P.O. Box 1013R
Morristown, New Jersey 07960

~~AL SMITH~~

10.1

September 3, 1982

U.S. EPA Region 4
Sites Notification
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Sirs:

By letter dated January 8, 1981, Allied Corporation submitted site notifications for present and former plants of the Corporation and its wholly-owned subsidiaries as required by Section 103(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 for plants located in your Region. A copy of our June 8, 1981 submittal is attached. I have recently received information, which had previously been unknown to me, from our Prestolite Wire facility in Jackson, Kentucky, and which prompts our submittal of the attached site notification.

Very truly yours,

E. A. Giebel

E. A. Giebel

EAG:dfv

Attachment

cc: Kentucky Dept. of Natural Resources
and Environmental Protection
Century Plaza
U. S. 127 South
Frankfort, Kentucky 40601

SEP 20 1982

Allied Chemical

Corporate Environmental Affairs
P.O. Box 2332R
Morristown, New Jersey 07960

June 8, 1981

US EPA Region 4
Sites Notification
345 Courtland St., N. E.
Atlanta, GA 30365

RE: Superfund §103 (c) Site Notifications

Dear Sirs:

Enclosed are site notifications for present and former plants of Allied Corporation and its wholly-owned subsidiaries as required by §103 (c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980. Such plants are located in your region.

The information forwarded herewith and to other EPA regions represents the end product of 4,000 manhours of time by dozens of persons reviewing literally thousands of files and other records. However, because Allied Corporation is very large, having approximately 150 operating facilities in about 35 different states and many more throughout the world, over 46,000 employees, and countless files and records dealing with current or former facilities, it is impossible to assure that the information contained in the site notifications is all the information in Allied's possession or otherwise available to it.

Note that as an accommodation, the enclosed site notifications contain information concerning substances that are or were recycled and reused. By including such information we are by no means admitting that recycled and reused materials are subject to the Resource, Conservation and Recovery Act. In this connection, please refer to Shell Oil v. EPA and consolidated cases, (D.C. Cir. -- No. 80-1532).

If additional relevant information responsive to the EPA site notification requirements is subsequently discovered, it will be submitted to you.

Very truly yours,

William M. Reiter
Corporate Director
Pollution Control

SEP 20 1982

WMR/pab

CC: Appropriate State Agencies

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609 Site: Rank: 10.1 Order:

MSS 000001060

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Allied Corporation

Street: Box 2332R

City: Morristown State: N J Zip Code: 07960

B Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site: Prairie Works

Street: Aberdeen-Prairie Industrial Complex

City: Aberdeen County: Monroe State: Miss Zip Code: 39730

MSD 007035249

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Reiter, William, Corporate Director, Pollution Control

Phone: (201) 455-6159

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1962 To (Year): 1976

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☒ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

Source of Waste: Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) pesticide blending plant

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste: EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

RECEIVED EPA/REGION IV JUN 3 ENFORCEMENT DIVISION

000604

Form Approved OMB No. 2000-0138

EPA Form 8900-1

Notification of Hazardous Waste Site — Side Two

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) See Item I

Total Facility Waste Amount

cubic feet See Item I

gallons

Total Facility Area

square feet

acres

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ None
Unknown

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

While there is no indication that hazardous wastes were disposed on site at this former Mirex fire-ant bait plant, some products may have been spilled on-site incidental to operations.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name William Reiter

Street Box 2332R

City Morristown State N J Zip Code 07960

Signature William M. Reiter Date 6/4/81

☐ Owner, Present
☒ Owner, Past
☐ Transporter
☐ Operator, Present
☒ Operator, Past
☐ Other

Site ②

ENVIRONMENTAL PROTECTION AGENCY
NOTIS DATA MANAGEMENT SYSTEM

Allied-Prairie
10/

NOTIS REPORT 04

LISTING BY FACILITY
REGION: 04 STATE: MS

REPORT DATE: 11/06/81

NOTIFICATION ID NO.	SITE NAME SITE STREET SITE CITY SITE COUNTY EPA SITE ID NO.	REQUIRED NOTIFIER NAME REQUIRED NOTIFIER STREET REQUIRED NOTIFIER CITY (CONTACT NAME/TITLE) (CONTACT PHONE)	STATE	ZIP	NOTIFIER STATUS (PRES OWN, PAST OWN PRES OP, PAST OP TRANSPORTER, VOLUNTEER)
MSS000091000	ALLIED CORP/PRAIRIE WORKS ABERDEEN-PRAIRIE IND. COMPLEX ABERDEEN MONROE MSD007035249	ALLIED CORP BOX 2332R MORRISTOWN (REITER, MR., CORP DIR/POLL CON) (201-455-6159)	NJ	07960	PAST OWN PAST OP

RELEASES TO THE ENVIRONMENT:

DATES OF WASTE HANDLING: 1962 TO 1976

WASTE AMOUNT: C AREA: U MAP PRESENT: NO FORM TYPE: 8900-1

NOTIF. POSTMARKED DATE: 81/06/09 SIGNATURE PRESENT: YES DATE OF LAST UPDATE: 81/10/14

TYPE OF FACILITY	TYPES OF WASTES	SOURCES OF WASTE
OTHER-(SEE COMMENTS)	PESTICIDES	OTHER-(SEE COMMENTS)

COMMENTS	SEQ NO.
SEE FILE	1
PESTICIDE BLENDING PLANT	400
SEE FILE	600

No RCRA Part A file on this.

10.7

NOTIS REPORT

NOTIS SITE ANALYSIS-NOTIFICATIONS
BY NOTIS ID NUMBER
SITE STATE = MS

REPORT DATE 81/08/13

NOTIS ID NO. MSS000001060 EPA SITE ID NO... SITE COUNTY... MONROE

SITE NAME... ALLIED CORP/PRAIRIE WORKS NOTIFIER NAME... ALLIED CORP

SITE STR.... ABERDEEN-PRAIRIE IND. COMPLEX NOTIFIER STR.... BOX 2332R

SITE CITY... ABERDEEN ST MS ZIP 39730 NOTIFIER CITY... MORRISTOWN ST NJ ZIP 07960

CONTACT NAME/TITLE... BETTER, WM., CORP DIR/POLL CON CONTACT PHONE... 2014556159

REQUIRED NOTIFIER STATUS

PRES OWN	PAST OWN	PRES OPR	PAST OPR	VOLUNTEER	TRANSPORTER
	X		X		

FORM TYPE	DATES OF WASTE HANDLING	RELEASES TO THE ENVIRONMENT KNOWN	SUSPECTED	LIKELY	NONE	MAP	SIGNATURE
8900-1	1962 TO 1978						

Allied - Prairie
1-9

NFA
KWR 7/03/84

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
ALLIED CORP. / PRAIRIE WORKS	ABERDEEN-PRAIRIE INDUSTRIAL PARK

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
ABERDEEN	MS	39756	MONROE	48	02

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
		☐ A. PRIVATE ☐ B. FEDERAL ☑ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
5 / 30 / 84 (MONTH DAY YEAR)	☐ ACTIVE ☑ INACTIVE	1962 / ____ (BEGINNING YEAR / ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR _____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☑ E. STATE ☑ F. STATE CONTRACTOR EPS (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
JIM HARDAGE	CHEMIST	MS-BOPC	(601) 961-5171

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
DR. W. WARREN	ASSOC. DIRECTOR OF ENGINEERING	EPS	(601) 922-8242
STEVEN HORNUNG	ENVIRONMENTAL ENGINEER	EPS	(601) 922-8242
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
MR. RICHARD WHITEHEAD	CONSULTANT FOR DEPT. OF AGRICULTURE	P.O. BOX 1609 JACKSON, MS 39205	(601) 354-6571
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☑ PERMISSION ☐ WARRANT	9:30 A.M.	WINDY, CLEAR, COOL ~50°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
JIM HARDAGE	MS BOPC	(601) 961-5171

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
STEVEN M. HORNUNG		EPS	(601) 922-8242	6 / 1 / 84 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [x] A. SOLID
- [x] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER (Specify)
- [ ] E. SLURRY
- [x] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS
CUBIC YARDS
NO. OF DRUMS

03 WASTE CHARACTERISTICS (Check all that apply)

- [x] A. TOXIC
- [ ] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [ ] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [ ] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES	35.2	TN	TECHNICAL MIREX " " MIXED IN OIL
OCC	OTHER ORGANIC CHEMICALS	7.1	TN	FATTY DIMETHYL TERTIARY AMINE
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
PSD	TECHNICAL MIREX	999	FIBER DRUMS / DR	UNKNOWN	
PSD	TECHNICAL MIREX MIXED IN OIL	999	TK	UNKNOWN	
OCC	FATTY DIMETHYL TERTIARY AMINE	999	DR	"	

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE FILES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [✓] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [✓] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

VERY LOW POTENTIAL, PLANT AND PROPERTY ARE VISUALLY CLEAN. AT ONE TIME, BEFORE THE STATE TOOK OVER OPERATION, THE SITE WAS VERY CONTAMINATED WITH MIREX. THE STATE DID EXTENSIVE CLEAN UP.

01 [✓] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [✓] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

LOW POTENTIAL, PLANT AND PROPERTY ARE VISUALLY CLEAN. AT ONE TIME, BEFORE THE STATE TOOK OVER OPERATION, THE SITE WAS VERY CONTAMINATED WITH MIREX. THE STATE DID EXTENSIVE CLEAN UP. SLIGHT MIGRATION FROM SOIL DETECTED IN 1981.

01 [ ] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [✓] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE: _____) — [✓] POTENTIAL — [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: < 5 (Acres) — 04 NARRATIVE DESCRIPTION

LOW POTENTIAL, PLANT AND PROPERTY ARE VISUALLY CLEAN. SOIL BEHIND PLANT WAS CONTAMINATED WITH MIREX AT THE TIME THE STATE TOOK OVER OPERATION FROM ALLIED. SAMPLES TAKEN IN 1981 INDICATED THAT THERE WAS SOME MIREX IN THE SOIL BEHIND THE PLANT. THERE APPEARS TO BE MINIMAL MIGRATION.

01 [✓] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [✓] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

VERY LOW POTENTIAL. THERE ARE NO WELLS NEAR SITE. MIREX IS NOT KNOWN TO MIGRATE IN SOIL.

01 [✓] H. WORKER EXPOSURE/~~INJURY~~ — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ~12 — 04 NARRATIVE DESCRIPTION

WORKERS SHOWED ELEVATED BLOOD LEVELS OF MIREX. THE STATE AG. DEPT. MONITORED WORKERS. NONE OF THE WORKERS SHOWED ANY SIDE EFFECTS.

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035248

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 [ ] J. DAMAGE TO FLORA — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

01 [ ] K. DAMAGE TO FAUNA — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

01 [ ] L. CONTAMINATION OF FOOD CHAIN — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

01 [ ] M. UNSTABLE CONTAINMENT OF WASTES *(Spills, Runoff, Standing liquids, Leaking drums)* — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] N. DAMAGE TO OFFSITE PROPERTY — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

01 [ ] O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

01 [ ] P. ILLEGAL/UNAUTHORIZED DUMPING — 02 [ ] OBSERVED (DATE: _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: UNKNOWN

IV. COMMENTS

SITE IS VERY CLEAN. SOME MIREX AND FORMULA ARE BEING STORED. RAW MATERIALS ALSO. THE STATE DID A MAJOR CLEAN-UP WHEN THEY TOOK OVER OPERATION FROM ALLIED.

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

STATE FILES
VISUAL OBSERVATION - SITE INSPECTION, 5-30-84
CONVERSATION WITH MR. RICHARD WHITEHEAD.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
[ ] A. NPDES				
[ ] B. UIC				
[✓] C. AIR				
[ ] D. RCRA				
[ ] E. RCRA INTERIM STATUS				
[ ] F. SPCC PLAN				
[ ] G. STATE (Specify)				
[ ] H. LOCAL (Specify)				
[ ] I. OTHER (Specify)				
[ ] J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
[ ] A. SURFACE IMPOUNDMENT		
[ ] B. PILES		
[✓] C. DRUMS, ABOVE GROUND		
[ ] D. TANK, ABOVE GROUND		
[ ] E. TANK, BELOW GROUND		
[ ] F. LANDFILL		
[ ] G. LANDFARM		
[ ] H. OPEN DUMP		
[✓] I. OTHER BAGS (Specify)		

04 TREATMENT (Check all that apply)

- [ ] A. INCENERATION
- [ ] B. UNDERGROUND INJECTION
- [ ] C. CHEMICAL/PHYSICAL
- [ ] D. BIOLOGICAL
- [ ] E. WASTE OIL PROCESSING
- [ ] F. SOLVENT RECOVERY
- [ ] G. OTHER RECYCLING/RECOVERY
- [ ] H. OTHER _____ (Specify)

05 OTHER

- [✓] A. BUILDINGS ON SITE

06 AREA OF SITE

< 5 (Acres)

07 COMMENTS

THE SITE CONSISTS OF TWO LARGE BUILDINGS. THE ONE IS EMPTY AND CONTAINS NO PROCCESING EQUIPMENT. THE OTHER CONTAINS THE MANUFACTURING PORTION OF THE PLANT AND THE STORAGE AREA WHERE THE REMAINING CHEMICALS ARE KEPT.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

[✓] A. ADEQUATE, SECURE [ ] B. MODERATE [ ] C. INADEQUATE, POOR [ ] D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE [ ] YES [✓] NO

02 COMMENTS

THE MIREX IS LOCKED IN STORAGE AREA IN PLANT. OTHER CHEMICALS ARE IN LOCKED PLANT. PLANT IS FENCED.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

VISUAL OBSERVATION - SITE INSPECTION, 5-30-84
STATE FILE

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS	ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. ☐	B. ☑		A. ☐	B. ☐	C. ☐	A. 1 (mi)
NON-COMMUNITY	C. ☐	D. ☑		D. ☐	E. ☐	F. ☐	B. (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☑ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER < 5000

03 DISTANCE TO NEAREST DRINKING WATER WELL 1 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
200 (ft)	SOUTH WEST	200 (ft)	< 1.1X10^6 (gpd)	☑ YES ☐ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

CITY WELLS, ~ 580' DEEP

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☑ NO	COMMENTS	☐ YES ☑ NO	COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☑ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
HANG KETTLE CREEK	☐	1.5 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. EST. 25 NO. OF PERSONS	B. EST. 50 NO. OF PERSONS	C. EST. 100 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION ~200 Ft ~~(mi)~~

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE: UNKNOWN

04 DISTANCE TO NEAREST OFF-SITE BUILDING: 50 Ft. ~~(mi)~~

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

VERY RURAL, SPARSELY POPULATED AREA. CARETAKER OF INDUSTRIAL PARK LIVES APPROX. 200 Ft. FROM BUILDINGS. NEXT CLOSEST POPULATION IS OVER A HALF A MILE DISTANCE.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

[✓] A. $10^{-6} - 10^{-8}$ cm/sec [ ] B. $10^{-4} - 10^{-6}$ cm/sec [ ] C. $10^{-4} - 10^{-3}$ cm/sec [ ] D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

[✓] A. IMPERMEABLE (Less than 10^{-6} cm/sec) [ ] B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) [ ] C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) [ ] D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
EST. 1200 (ft)	UNKNOWN (ft)	UNKNOWN

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
(in)	(in)	1 %	SOUTH WEST	1 %

09 FLOOD POTENTIAL

SITE IS IN ____ YEAR FLOODPLAIN

10 [ ] SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. ____ (mi)

OTHER: B. ____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

____ (mi)

ENDANGERED SPECIES: ____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0 (mi)	B. ____ (mi)	C. 0.5 (mi)	D. ____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

SITE AND SURROUNDING AREA IS VERY FLAT. SITE IS LOCATED IN INDUSTRIAL PARK. REST OF SURROUNDING LAND IS USED FOR GRAZING OR FARMING.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

"CHARACTERIZATION OF AQUIFERS DESIGNATED AS POTENTIAL DRINKING-WATER SOURCES IN MISSISSIPPI." U.S.G.S. OPEN-FILE REPORT 81-550.

VISUAL OBSERVATION - SITE INSPECTION, 5-30-84

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. SAMPLES TAKEN NONE

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN NONE

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ✓ GROUND ☐ AERIAL

02 IN CUSTODY OF MS - BOPC (Name of organization or individual)

03 MAPS ✓ YES ☐ NO

04 LOCATION OF MAPS ATTACHED

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VISUAL OBSERVATIONS, ESTIMATES OF AREAS, AND DISTANCES.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

VISUAL OBSERVATIONS - SITE INSPECTION, 5-30-84
U.S.G.S. TOPOGRAPHIC MAP.
STATE FILE.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
MS. DEPT. OF AGRICULTURE AUTHORITY FOR THE CONTROL OF FIRE ANTS		P.O. BOX 1609		JACKSON, MS	MS	39205

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
ALLIED CORPORATION		BOX 2332 R		MORRISTOWN	NJ	07960

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
CITY OF ABERDEEN & MONROE CO.		P.O. BOX 96		ABERDEEN	MS	39730

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE FILES
MR. RALPH BYARS - ABERDEEN CITY MANAGER

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035249

II. CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER				

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)			PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035249

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035249

II. PAST RESPONSE ACTIVITIES

01 [ ] A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035249

II PAST RESPONSE ACTIVITIES *(Continued)*

01 [ ] R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 [ ] 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035249

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION [ ] YES [ ] NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

1.8 Site (2)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MSS	000001060
MSD	007035249

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): Allied Corp. / Prairie Works

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Aberdeen-Prairie Indust. Complex

03 CITY: Aberdeen

04 STATE: Ms. | 05 ZIP CODE: 39730 | 06 COUNTY: Monroe | 07 COUNTY CODE | 08 CONG DIST

09 COORDINATES LATITUDE: ___ ___ ___.___ LONGITUDE: ___ ___ ___.___

10 DIRECTIONS TO SITE (Starting from nearest public road):

III. RESPONSIBLE PARTIES

01 OWNER (If known): Ms. Dept. of Agriculture, Authority For The Control of Fire Ants

02 STREET (Business, mailing, residential): P.O. Box 1609 in Farmers' Market by stadium

03 CITY: Jackson, Ms.

04 STATE: Ms. | 05 ZIP CODE: 39205 | 06 TELEPHONE NUMBER: (601) 354-6552 | Mr. Dick Whitehead

07 OPERATOR (If known and different from owner): Ms. Dept. of Agriculture, Authority For the Control of Fireants

08 STREET (Business, mailing, residential): Aberdeen-Prairie Industrial Complex

09 CITY: Aberdeen

10 STATE: Ms. | 11 ZIP CODE: 39730 | 12 TELEPHONE NUMBER: ( ) ?

13 TYPE OF OWNERSHIP (Check one)
☐ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☒ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☒ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: 6/3/81 (MONTH DAY YEAR) ☐ C. NONE
(From Past Owner)

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☐ YES DATE __/__/__ (MONTH DAY YEAR)
☒ NO

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1962 (BEGINNING YEAR) | in 1978 they quit producing and shipping the Mirex (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Used to be a MIREX production plant (made bait). Mirex was banned by EPA in 1977/78 and they presently use "AMDROL" for fireant bait.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
When MIREX was being used to make the Fireant bait, the Mirex powder was spread all around plant during day to day operations. The DoAg. spent 2 years cleaning up facility. Very little mirex there now.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Ron Joyner	EPA Region 4	(404) 881-2234

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Jeff Hundley	FIT Contractor	E&E, Inc.	(404) 288-7711	4/8/82 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☒ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER _____ (Specify)
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

Removed NO. OF DRUMS 235

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☒ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS		55 Gal.	
PSD	PESTICIDES	235	drums	Taken to Rollins Env. Services in Louisiana where drums full of Mirex waste were incinerated.
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
	MIREX		Incineration		

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Interviews with Ms. Dept. of Agriculture and Ms. Dept. of Natural Resources.

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 PORULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) 04 NARRATIVE DESCRIPTION

there still exists a small amount of mirex contamination in building and soil around plant.

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

The Dept. of Agr. spent about 2 years cleaning up the Mirex contamination around the plant. Plant area generally clean now.

V. SOURCES OF INFORMATION *(Cite specific references, e. g., state files, sample analysis, reports)*

alias 1.8

Site (2)

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

EPA

I. IDENTIFICATION

01 STATE: MSS 02 SITE NUMBER: 000001060
MSD 007035249

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): Allied Corp. / Prairie Works

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Aberdeen-Prairie Indust. Complex

03 CITY: Aberdeen | 04 STATE: Ms. | 05 ZIP CODE: 39730 | 06 COUNTY: Monroe | 07 COUNTY CODE | 08 CONG DIST

09 COORDINATES LATITUDE: ___ ___ ___.___ LONGITUDE: ___ ___ ___.___

10 DIRECTIONS TO SITE (Starting from nearest public road):

III. RESPONSIBLE PARTIES

01 OWNER (If known): Ms. Dept. of Agriculture, Authority For The Control of Fire Ants

02 STREET (Business, mailing, residential): P.O. Box 1609 in Farmers' Market by stadium

03 CITY: Jackson, Ms. | 04 STATE: Ms. | 05 ZIP CODE: 39205 | 06 TELEPHONE NUMBER: (601) 354-6552 | Mr. Dick Whitehead

07 OPERATOR (If known and different from owner): Ms. Dept. of Agriculture, Authority For the Control of Fireants

08 STREET (Business, mailing, residential): Aberdeen-Prairie Industrial Complex

09 CITY: Aberdeen | 10 STATE: Ms. | 11 ZIP CODE: 39730 | 12 TELEPHONE NUMBER: ( ) ?

13 TYPE OF OWNERSHIP (Check one)
☐ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☒ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☒ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) (From Past Owner) DATE RECEIVED: 6 3 81 (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☐ YES DATE ___/___/___ (MONTH DAY YEAR)
☒ NO

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION: 1962 (BEGINNING YEAR) in 1978 they quit producing and shipping the Mirex (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Used to be a MIREX production plant (made bait). Mirex was banned by EPA in 1977/78 and they presently use "AMDROL" for fireant bait.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
When MIREX was being used to make the Fireant bait, the Mirex powder was spread all around plant during day to day operations. The Dang. spent 2 years cleaning up facility. Very little mirex there now.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT: Ron Joyner | 02 OF (Agency/Organization): EPA Region 4 | 03 TELEPHONE NUMBER: (404) 881-2234

04 PERSON RESPONSIBLE FOR ASSESSMENT: Jeff Hundley | 05 AGENCY: FIT Contractor | 06 ORGANIZATION: E&E, Inc. | 07 TELEPHONE NUMBER: (404) 288-7711 | 08 DATE: 4 8 82 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☒ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER _____ (Specify)
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

Removed

NO. OF DRUMS 235

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☒ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS		55 Gal.	
PSD	PESTICIDES	235	drums	Taken to Rollins Env. Services in Louisiana where drums full of Mirex waste were incinerated.
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
	MIREX		Incineration		

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Interviews with Ms. Dept. of Agriculture and Ms. Dept. of Natural Resources.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
03 PORULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: _____ (Acres)
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

There still exists a small amount of mirex contamination in building and soil around plant.

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

the Dept. of Agr. spent about 2 years cleaning up the Mirex contamination around the plant. Plant area generally clean now.

V. SOURCES OF INFORMATION *(Cite specific references, e. g., state files, sample analysis, reports)*

Continued From Page 2

V. WASTE RELATED INFORMATION *(continued)*

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE *(place in descending order of hazard)*.

Mirex

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD *(mark 'X')*	C. ALLEGED INCIDENT *(mark 'X')*	D. DATE OF INCIDENT *(mo., day, yr.)*	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL	X			
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER *(specify)*:				

 Continue On Reverse

Continued From Front

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

- [ ] 1. NPDES PERMIT
- [ ] 2. SPCC PLAN
- [ ] 3. STATE PERMIT *(specify)*: _____
- [ ] 4. AIR PERMITS
- [ ] 5. LOCAL PERMIT
- [ ] 6. RCRA TRANSPORTER
- [x] 7. RCRA STORER
- [ ] 8. RCRA TREATER
- [ ] 9. RCRA DISPOSER
- [ ] 10. OTHER *(specify)*: _____

B. IN COMPLIANCE?

- [ ] 1. YES
- [ ] 2. NO
- [ ] 3. UNKNOWN
- 4. WITH RESPECT TO *(list regulation name & number)*: _____

VIII. PAST REGULATORY ACTIONS

- [ ] A. NONE
- [ ] B. YES *(summarize below)*

IX. INSPECTION ACTIVITY *(past or on-going)*

- [ ] A. NONE
- [ ] B. YES *(complete items 1,2,3, & 4 below)*

1. TYPE OF ACTIVITY	2 DATE OF PAST ACTION *(mo., day, & yr.)*	3 PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

X. REMEDIAL ACTIVITY *(past or on-going)*

- [ ] A. NONE
- [ ] B. YES *(complete items 1, 2, 3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION *(mo., day, & yr.)*	3. PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment *(Section II)* information on the first page of this form.

Site: Allied-Prairie
Screen: 1.8
Other: Undated

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-III

SITE INSPECTION NARRATIVE SHEET

1. Site Identification:

Site number: MSD007035249

Site name: Allied Corp./Prairie Works

Site county: Monroe

2. Industrial Narrative Summary:

Company Name: MS Department of Agriculture

Address: P. O. Box 1609
Jackson, MS 39205

Telephone No.: (601) 354-6571

Contact: Mr. Dick Whitehead

Contact:

Discussion: The plant in the Aberdeen-Prairie Industrial Park was operated by Allied Corp. from 1962 until May, 1976. The facility produced mirex fire ant bait. The Mississippi Dept. of Agriculture acquired the plant in May, 1976. The State Dept. performed extensive cleanup operations and installed new, safer material handling equipment between May and July, 1976. Mirex fire ant bait was produced at the plant until December, 1977. The requirement to stop production came from EPA, however, an emergency request to produce mirex was granted by EPA and the state produced mirex bait until January, 1979. In January, 1979, the state produced ferriamicide (a degradable form of mirex containing bait) until March, 1979. This was due to a shut down notice from EPA. The plant reopened in September, 1982, and produced ferriamicide until October, 1982. For a period of time between August, 1980, and December, 1981, the plant was used to package amdro for American Cyanamid.

During the extensive cleanup in 1976, large amounts of waste material was cleaned from the plant and outside area. This was sent to Rollins Environmental Services in Louisianna for

incineration.

The plant is currently not being used. Material is still being stored at the plant. (see attached inventory sheet). The plant facility and grounds are very clean looking. Samples were taken of the outside area in 1981. Mirex was detected in soil behind the plant and slight migration in surface water. Mirex is not known to migrate much. Very low potential of environmental pollution present.

3. Disposition:

No further action needed.

4. Comments:

PROJECT MANAGEMENT SUMMARY

Site: Allied-Prairie
Number: 1.1

Site Name: ALLIED CORP./PRAIRIE WORKS

Site Number: MSD007035249

Owner:

Site Status: ☐ Active ☒ Inactive ☐ Unknown

Priority: ☐ High ☐ Medium ☐ Low ☒ None

3. FINAL DISPOSITION

I. EPS Final Review - Date: 6/5/84 LMW

Comments:

ADD. Inspection Required ☐ Yes ☒ No

II. MS BOPC Review - Date:

Comments: 6/22/84 [illegible]

Follow-up Action Required ☐ Yes ☐ No

III. Final Disposition:

Review & revise Date:

Edited & correct Date:

Transmitted Date:

File close-out Date:

ADDITIONAL COMMENTS (ONGOING & FINAL)

Allied-Plastic 1.4 CMW

September 8, 1978

Mr. Dick Whitehead
U.S. Dept. of Agriculture
P.O. Box 1609
Jackson, MS 39205

Dear Mr. Whitehead:

This letter certifies that Rollins Environmental Services did dispose of, in accordance with all applicable laws of both the Federal and State governments, 27 drums of BR-2898 (Myrex Waste) at our facility located at 13351 Scenic Highway, Baton Rouge, LA, for the Department of Agriculture, P.O. Box 1609, Jackson, MS.

Very truly yours,

Dave Denison
Sales Manager

DD:cl

March 15, 1978

Mr. R. Whitehead, Industrial Hygienist
Dept. of Agriculture
MDAC - Fire Ant Control Plant
P.O. Box 1609
Jackson, MS 39205

Dear Mr. Whitehead:

Myrex fiber drums and liners (208 drums) were received on March 14, 1978. These drums have been incinerated per our original agreement.

We appreciate your interest in Rollins. If we can be of further service please contact us.

Sincerely,

C. G. McCubbin

C.G. McCubbin
Technical Manager

CGM:cll

(2)

TELEPHONE/CONVERSATION SUMMARY
Ecology & Environment, Inc.
Region IV-Atlanta

1.1

DATE 3-22-82 TIME 3:30

NAME Mr. Whitehead POSITION Consultant for Dept. of Agriculture

COMPANY Dept. of Agric. / Fire ant Control

ADDRESS Jackson, Ms.

PHONE # 601-354-6552

E&E PERSONNEL Jeff Hundley

DISCUSSION

→ Whitehead can't meet w/us Monday 3/29. He'll be out of town. However, he will talk to Ulches this week and put together as much info. as he thinks will be applicable.

→ Whitehead said they did a big cleanup of plant when they took over. He indicated that Allied was kind of sloppy when they operated the plant. Dept. of Agriculture replaced all kinds of equipment, added proper ventilation, added worker safety procedures, cleaned up grounds and containerized waste. Waste sent to Baton Rouge for incineration

→ He said facility is very clean now.

NEED TO: ① Detailed info on cleanup procedures.
② Site maps and layouts of facility.
③ Extent of present contamination & health hazard.

TELEPHONE/CONVERSATION SUMMARY
Ecology & Environment, Inc.
Region IV-Atlanta

(2)

Allied-Prime

DATE 3-22-82 TIME 3:30

NAME Mr. Whitehead POSITION Consultant for Dept. of Agriculture

COMPANY Dept. of Agric. / Fireant Control

ADDRESS Jackson, Ms.

PHONE # 601-354-6552

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NEED TO: ① Detailed info on cleanup procedures.
② Site maps and layouts of facility.
③ Extent of present contamination & health hazard

Aberdeen, Ms. Mirex Facility Site (2)
(owned by Ms. Dept. of Agric. - Pineant ~~Division~~)

Site:
Break: 1.1
OSC:

Meeting 3/29/82 @ 8:00 AM in Dept. of Agri.'s Jackson office.

Attendees: Jeff Hundley, Mac Carman, Ron Joyner, Jim Hardage, Mr. Ulshee

- Whitehead initiated cleanup of Mirex plant after MS. Dof Agr. took over the plant.
- When Allied owned plant, workers moved Mirex around by shoveling. (Lots of spillage).
  Ms. Dof A uses a vaccum handling facility.
- Sludge in mixing tank drummed, floor sweepings, etc. was sent to Rollins for incineration.
- Only thing landfilled was the "bags" that used to have bait in it. The drums that had "technical" Mirex went to Rollins
- They made ferramacide under instructions from EPA. Ms. State Univ. did study that said breakdown product of ferramicide was more toxic than Mirex. This knocks out both products.
- They're trying to get some other type of pesticide that plant can make now to control ants.

- Mirex super persistant chemical. Easy to pick up. Bonds to soil and doesn't migrate easily.
- Sketch of runoff ditch to other property shows not much Mirex moves off property (< 4 ppm).
- Their goal inside bldg was <0.1 ppm mirex contam. He says they've reached this goal. Said there is a certain amount of mirex in soil and when soil dries out, dust carries minor mirex contamination inside bldg. EPA hasn't given them a level of tolerance that's acceptable.

- Technical grade Mirex came in fiber drums. Some of these drums were taken home by ~~with~~ employees and used to store things in their house

Need to:

- Ask Allied if

- Get documentation on how long and how much clean up matl. was taken to Rollins.

27 drums of waste (Mirex) sent to Rollins in 1978

208 drums

Dept. of Agri. did the cleanup operation themselves; didn't contract it out to anyone.

~~208 drums (?)~~
~~3 or 4 loads~~

* 7 - 50 Kilo drums of Mirex Technical material is stored in Jackson (Not in Aberdeen)

(They took left-over Mirex technical stuff down to Jackson, none left in Aberdeen anymore.

The Aberdeen plant is presently (actively) producing an American Cyanamid pesticide that controls fireant.

Androl is new product.

Site: All Ed. PRARIE
Break: L.1
Other:

Aberdeen, Ms. Mirex Facility Site (2)
(owned by Ms. Dept. of Agric. - Fireant Division)

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Attendees: Jeff Hundley, Mac Carman, Ron Joyner, Jim Hardage, Mr. Ulshee

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Androl is new product.

STATE OF MISSISSIPPI

DEPARTMENT OF ENVIRONMENTAL QUALITY

RAY MABUS
GOVERNOR

August 10, 1990

Approved
WRAP
BAA
10/2/90

Mr. Brian Farrier
Site Investigation & Support Barnch
Waste Management Division
U.S. EPA Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Screening Site Inspection, Phase 1
Allied Corporation/Traffic Works
Aberdeen, Monroe County, Mississippi
EPA ID No. MSD0[redacted]5249
TDD No. F4-8909-54

Dear Mr. Farrier:

Earlier this year, EPA tasked this Office to review and, if necessary, revise or rewrite the above referenced NUS Report due to a possible conflict of interest, i.e., the site was previously owned by Allied Corporation, a major NUS client.

We have completed our review and we concur with NUS's recommendation. Enclosed is a supplemental report that we feel enhances the NUS Report. Also enclosed is a revised preliminary HRS Score.

Please contact Michael Slack at (601) 961-5217 if you have any questions or comments.

Sincerely,

Jim Hardage

Jim Hardage
Hazardous Waste Division

JH:MS:mes
MS=42

Enclosure

A
PRELIMINARY ASSESSMENT REASSESSMENT (PAR)
REPORT FOR
ALLIED CORPORATION/PRAIRIE WORKS
MSD007035249
ABERDEEN, MISSISSIPPI

PREPARED FOR:

Brian Farrier
Site Investigation and Support Branch
Waste Management Division - Region IV
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, GA 30365

PREPARED BY:

Michael Slack
Hazardous Waste Division
Mississippi Office of Pollution Control (OPC)
P. O. Box 10385
Jackson, Mississippi 39289

REVIEWED AND EDITED BY:

Jim Hardage (OPC) JH

August 10, 1990

This Preliminary Assessment Reassessment (PAR) Report Includes:

1. Introduction
2. Waste Description/Containment
3. Geology/Hydrology
4. Surface Water
5. Sensitive Environments/Exposure Pathway
6. Conclusions
7. Appendix

   References

Introduction

The following information concerns the Allied Corporation/Prairie Works facility in Aberdeen, Mississippi. This information is supplemental to the Screening Site Inspection, Phase 1, report by NUS Corporation, dated January 5, 1990.

County Code:	95
Congressional District:	02
Location:	SE1/4 SE 1/4 Section/3 T15S R6E
Coordinates:	Latitude: 33° 48' 00" Longitude: 88° 39' 12"
Directions to Facility:	The Allied Corporation/Prairie Works facility may be reached by traveling southwest of Aberdeen, Mississippi on Highway 25. Travel about 2 miles southwest of Aberdeen and turn right onto Highway 382. Travel west approximately 4 miles and turn right into the Aberdeen-Prairie Industrial Complex. The Allied Corporation/Prairie Works facility is located adjacent to the access road on the right side, approximately 1/4 of a mile north of Highway 382.
Contact Official:	Dick Whitehead Mississippi Department of Agriculture and Commerce P. O. Box 1609 Jackson, Mississippi 39205 Telephone: (601) 354-6552
Facility Status:	Inactive

Waste Description/Containment

The hazardous substance of concern at the facility is Mirex, which is a highly persistent and moderately toxic insecticide belonging to the class of compounds known as aliphatic chlorinated hydrocarbons. Mirex has numerous synonyms, one of which is Hexachlorocyclopentadiene Dimer. Technical Mirex consists of white, odorless crystals that are insoluble in water (References 1 and 6).

During clean-up operations conducted by the State in 1976, waste materials such as floor sweepings and sludge from the mixing tank were removed from the facility and taken to Rollins Environmental Services in Louisiana for incineration.

Some surplus materials remained in storage in one of two buildings at the facility until 1985, at which time they were disposed of at Cecos International in Louisiana (References 1 and 4).

There may still be some residual Mirex in the soil and drainage ditch at the facility.

Geology/Hydrology

The stratigraphic units below the facility, in descending order, are as follows:

> Surficial Deposits, Selma Group, Eutaw-McShan Formation, Gordo Formation, and Coker Formation (Tuscaloosa Aquifer System), Lower Cretaceous Beds, and the Paleozoic Rock.

The surficial sediments, which consist mainly of gumbo clay, with some sand, extend to approximately 10 to 20 feet below the land surface. The Selma Group, approximately 150 feet thick, consists of lime, clay, sands, and chalks. The Mooreville Chalk of the Selma Group directly overlies and confines the underlying Eutaw-McShan Formation (References 1, 9, 10, and 11).

The Eutaw-McShan Aquifer (the aquifer of concern) consists of the Eutaw and the McShan Formations. The aquifer consists of fine to medium glauconitic sand interbedded with shale and clay. The upper part of the aquifer is the Tombigbee Sand Member of the Eutaw Formation, commonly a massive glauconitic sand. The sand in the lower part of the Eutaw Formation is less glauconitic and more permeable than the sand in the Tombigbee Sand Member. The McShan Formation, the basal part of the Eutaw-McShan aquifer, commonly consists of layers of sand and clay. Based on four (4) aquifer tests in the Aberdeen-Prairie area, transmissivity in the Eutaw Formation ranged from 8,000 to 14,000 gpd per foot, with an average coefficient of storage of 0.0002. The Eutaw-McShan Formation is approximately 350 feet thick in the study area (References 1, 10, and 11).

The Tuscaloosa Aquifer System consists of the Gordo and Coker Formations of the Tuscaloosa Group of Late Cretaceous Age and the uppermost sands of the Lower Cretaceous rocks. The Gordo Formation is composed of an upper clay unit and a lower sand or gravel. The Coker consists of an upper unnamed member of mixed clay, sand, and gravel, and a basal massive sand that may be indistinguishable in places from the sand in the underlying Lower Cretaceous. The upper clay of the Gordo Formation serves to separate it somewhat from the overlying Eutaw-McShan Aquifer. This upper clay of the Gordo, i.e., the top of the Gordo Formation, occurs approximately 200 feet below sea level at the facility. The base of the Tuscaloosa Aquifer System occurs approximately 700 to 800 feet below sea level. This is the approximate base of the freshwater bearing unit in the study area (References 10, 11, and 12).

The Aquifer of Concern

The chalk of the Selma Group, which occurs in the unsaturated zone, is the least permeable continuous layer between any possible deposited waste at the facility and the Eutaw-McShan Aquifer (i.e., AOC). The average hydraulic conductivity of the unsaturated zone is approximately 1×10^{-6} cm/s. The depth to the water-bearing unit of the AOC is in excess of 160 feet below the ground surface (References 7, 9, and 12).

All the water wells that occur within the three-mile radius of the facility are completed in the AOC. Ten (10) water supply wells for the city of Aberdeen are located in the AOC. Five of these wells are located within the three-mile radius and range in depth from approximately 480 to 510 feet below the land surface (Reference 14). Water from all the city wells is mixed into one distribution system and serves approximately 13,300 people (References 2 and 13). No other alternate, unthreatened water supply source is presently available (References 2 and 13).

Surface Water

The terrain in this area is characterized as generally hilly with an elevation of approximately 320 feet above sea level at the facility. Elevations of surrounding land range from 250 to about 340 feet above sea level (Reference 3).

Run-off from the facility drains into a ditch located next to the facility on the west side. Analysis of samples taken from this ditch in August of 1981 indicated the presence of Mirex. The ditch flows intermittently in a southerly direction through the industrial park for approximately 1,200 stream feet before entering Fuller Creek. Fuller Creek is located on the south side of Highway 382 and flows intermittently in a southeasterly direction. The three-mile migration pathway ends in Fuller Creek approximately 2.8 stream miles southeast of the intersection of the ditch and Fuller Creek. Fuller Creek becomes perennial approximately 2,800 feet downstream from the end of the three-mile migration pathway (References 1, 3, and 4).

According to the Mississippi Bureau of Land and Water Resources, Jackson, Mississippi, there are no surface water intakes along Fuller Creek, i.e., no current use (Reference 14).

The facility slope and the intervening terrain slope is less than 1% (Reference 3).

According to the topographic maps of the facility and surrounding area, there are no wetlands along the three-mile migration pathway (References 1 and 3).

Sensitive Environments/Exposure Pathway

There are no national wildlife refuges, critical habitats of federal endangered species, or wetlands within one-mile of the facility along the surface water migration pathway (Reference 5).

According to the topographic maps of the facility and the surrounding area, there is a school, Aberdeen-Prairie School, located approximately 450 feet south of the facility (Reference 3).

Conclusions

The Office of Pollution Control (OPC) recommends that no further remedial action be planned for this facility.

REFERENCES

1. Screening Site Inspection, Phase 1, Allied Corporation/Prairie Works, Aberdeen, Mississippi, Monroe County, EPA ID No. MSD007035249, NUS Corporation, January 5, 1990 (i.e., References of Report Not Included).

2. Printout from U.S. Geological Survey Data Base of Water Wells within a Three-mile Radius and Four-mile Radius of the Allied Corporation/ Prairie Works Facility, Aberdeen, Mississippi.

3. Topographic Maps of the Allied Corporation/Prairie Works Facility:

   Prairie, Miss. Quadrangle, 7.5 Minute Series.

4. Information on the Allied Corporation/Prairie Works Facility, Aberdeen, Mississippi from Mississippi Bureau of Pollution Control (BPC), Hazardous Waste Division (HWD) Files.

5. U.S. Fish and Wildlife Service, Vicksburg Office, Species List; U. S. Fish and Wildlife Service, Jackson Office, Topographic Maps Indicating Sensitive Environment.

6. Dangerous Properties of Industrial Materials, Seventh Edition, Volume II, N. Irving Sax, Richard J. Lewis, Sr., Copyright(c) 1989, p. 2419.

7. EPA Hazard Ranking System (HRS) Guidance Manual.

8. Integrated Risk Information System (IRIS).

9. Geophysical Logs from Area Water Wells Near the Allied Corporation/Prairie Works Facility, Aberdeen, Mississippi.

10. Sources for Water Supplies in Mississippi, by B.E. Wasson, Hydrologist, U.S. Geological Survey, Revised 1986, Jackson, Mississippi, pp. 86-101.

11. Water for Industrial Development in Clay, Lowndes, Monroe, and Oktibbeha Counties, Mississippi, by B.E. Wasson, H.G. Golden, and M.W. Gaydos; Prepared by Water Resources Division, U.S. Geological Survey, 1965, pp. 16-20, 22, 25, and 27.

12. Characterization of Aquifers Designated as Potential Drinking-Water Sources in Mississippi, U.S. Geological Survey Water Resources Investigations Open-File Report 81-550, by L.A. Gandl, Jackson, Mississippi, 1982, pp. 65-73, Plate 1.

13. Information on Public Water Supply Wells in Aberdeen, Mississippi from the Water Supply Division, Mississippi State Department of Health.

14. Information on Groundwater and Surface Water Use from the Mississippi Bureau of Land and Water Resources, Jackson, Mississippi.

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

ALLIED CORPORATION/PRAIRIE WORKS
EPA SITE NUMBER MSD007035249
ABERDEEN
MONROE COUNTY, MS
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY MICHAEL T SLACK
OF MS BPC
ON 07/18/90

DATE OF THIS REPORT: 07/18/90
DATE OF LAST MODIFICATION: 07/18/90

GROUND WATER ROUTE SCORE :	29.49
SURFACE WATER ROUTE SCORE:	0.00
AIR ROUTE SCORE :	0.00
MIGRATION SCORE :	17.05

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	160 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	154 FEET	0	0
PRECIPITATION	52.0 INCHES		
EVAPORATION	41.5 INCHES		
NET PRECIPITATION	10.5 INCHES	2	2
PERMEABILITY	1.0X10-6 CM/SEC	1	1
PHYSICAL STATE		2	2
TOTAL ROUTE CHARACTERISTICS SCORE:			5
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:ASSIGNED VALUE,15			15
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			23
5. TARGETS			
GROUND WATER USE		3	9
DISTANCE TO NEAREST WELL	1200 FEET		
AND	MATRIX VALUE	40	40
TOTAL POPULATION SERVED	13300 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	3500		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			49

GROUND WATER ROUTE SCORE (Sgw) = 39.49

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER	NO		
SITE WITHIN CLOSED BASIN	NO		
FACILITY SLOPE	0.9 %		
INTERVENING SLOPE	0.9 %	0	0
24-HOUR RAINFALL	3.4 INCHES	3	3
DISTANCE TO DOWN-SLOPE WATER	18784 FEET	0	0
PHYSICAL STATE	2		2
TOTAL ROUTE CHARACTERISTICS SCORE:			5
3. CONTAINMENT	3		3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:ASSIGNED VALUE,15			15
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			23
5. TARGETS			
SURFACE WATER USE		0	0
DISTANCE TO SENSITIVE ENVIRONMENTS		0	0
COASTAL WETLANDS	NONE		
FRESH-WATER WETLANDS	NONE		
CRITICAL HABITAT	NONE		
DISTANCE TO STATIC WATER	> 3 MILES		
DISTANCE TO WATER SUPPLY INTAKE	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			0

SURFACE WATER ROUTE SCORE (Ssw) = 0.00

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
0 to 0.25 mile
0 to 0.50 mile
0 to 1.0 mile
0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
COASTAL WETLANDS
FRESH-WATER WETLANDS
CRITICAL HABITAT

DISTANCE TO LAND USES
COMMERCIAL/INDUSTRIAL
PARK/FOREST/RESIDENTIAL
AGRICULTURAL LAND
PRIME FARMLAND
HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (3a) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: ALLIED CORPORATION/PRAIRIE WORKS
AS OF 07/18/90

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		5
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	23
TARGETS	X	49

= 16905 /57,330 X 100 = 29.49 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		5
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	23
TARGETS	X	0

= 0 /64,350 X 100 = 0.00 = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	29.49	869.66
SURFACE WATER ROUTE SCORE (S_{sw})	0.00	0.00
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		869.66
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		29.49
$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		17.05

APPENDIX

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

C-586-1-0-21

January 5, 1990

Mr. A. R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Date: _____
Site Disposition: _____
EPA Project Manager: _____

Subject: Screening Site Inspection, Phase I
Allied Corporation/Prairie Works
Aberdeen, Monroe County, Mississippi
EPA No. MSD007035249
TDD No. F4-8909-65

Dear Mr. Hanke:

FIT 4 conducted a Screening Site Inspection, Phase I, of the Allied Corporation/Prairie Works facility in Aberdeen, Monroe County, Mississippi. The inspection included a review of EPA and state file material, completion of a target survey, and a drive-by reconnaissance of the facility.

Allied Corporation was a manufacturer of Mirex fire-ant bait (Ref. 1). The facility is located off Highway 382 in an industrial park in which most of the buildings in the park are no longer in use. The property is approximately 3 acres or less in size. The area around the facility is rural and the plant is principally surrounded by fields and woods (Ref. 2).

The facility was operated by Allied Corporation from 1962 until 1976, when the Mississippi Department of Agriculture acquired the plant. During the daily operations of producing the fire-ant bait, Mirex powder was spilled all around the plant property (Ref. 3). The state conducted a 2-year extensive clean-up operation at the facility, beginning in 1976, and installed safer material-handling equipment (Refs. 1, 3). The state continued producing Mirex fire-ant bait until December 1977, when EPA requested that they stop production. However, the state made an emergency request to EPA to continue manufacturing the fire-ant bait and was allowed to do so until January 1979. The plant then switched production from Mirex to ferriamicide until March 1979, when EPA once more shut down production. The state produced ferriamicide again from September 1982 until October 1982. During the period between August 1980 and December 1981, the plant was used by American Cyanamid to package Amdro (Ref. 1).

During the clean-up operations conducted by the state, large amounts of waste material was removed from inside and outside the plant and taken to Rollins Environmental Services in Louisiana for incineration. All of the remaining Mirex was removed from the Aberdeen Plant and taken to Jackson, Mississippi. In 1981, analysis of samples taken outside the plant detected Mirex in the soil and in the wet-weather ditch along the west side of the facility (Refs. 1,3). Allied Corporation/Prairie Works submitted a Notification of Hazardous Waste Site form in June 1981 (Ref. 4).

The facility is situated near the northern edge of the Gulf Coastal Plain Physiographic Province. Monroe County lies within part of the Tombigbee River Hills or Fall Line Hills division of the Black Prairie belt. The surface area is generally hilly with relief of 200 feet in the northeastern corner of the county (Ref. 5, p. 15). The net annual precipitation is 10.5 inches and the 1-year, 24-hour rainfall is 3.4 inches (Refs. 6; 7).

The facility is underlain by approximately 20-30 feet of residuum, which is not a surficial aquifer. These sediments are underlain, in descending order, by the Selma Group, the Eutaw Formation, and the Tuscaloosa Formation, all of which are Cretaceous aged (Refs. 8, pp. 35-39; 9; 10). In the area around the facility, the Selma Group is approximately 150 feet thick. It consists of chalks and sand and acts as a semi-confining layer to the Eutaw aquifer below. Water is encountered beneath the Selma Group in the Eutaw Formation at approximately 170-180 feet below land surface. Beneath the Mooreville Chalk of the Selma Group lies the Eutaw Formation (Ref. 10). The Eutaw consists predominantly of sand, but there are clay beds in the lower part of the formation. The Eutaw Formation is the aquifer of concern in this area, and is approximately 350 feet thick around the facility (Refs. 10; 11, p. 59; Figure 46). The Eutaw Formation dips in a westward direction (Ref. 5, p. 26).

Underlying the Eutaw is a 50-foot chalk layer, which separates the Eutaw from the underlying Tuscaloosa Formation. The chalk layer has been perforated to such a large extent, however, that the Eutaw and Tuscaloosa formations act as one aquifer (Ref. 10). The Tuscaloosa aquifer consists of the Gordo and Coker formations, and is primarily comprised of sand, gravel, and clay beds. The formations dip and thicken to the southwest (Ref. 11, p. 65).

Surface water runoff flows east overland approximately 1600 feet where it enters Hang Kettle Creek. After 14.8 miles Hang Kettle Creek enters Town Creek (Ref. 12). Since Hang Kettle Creek is intermittent for 2 more miles along the probable migration pathway, the surface water pathway is not considered viable.

The Aberdeen water company serves almost all of the areas west of the Tombigbee River near Aberdeen to the county line and south of Highway 8 to the county line. The water company has 10 wells, which range in depth from 150 to 485 feet and are all completed in the Eutaw Formation. The Aberdeen water company serves approximately 3250 connections and has an emergency tie-in with the Coontail water company, which serves approximately 350 connections. Five of the Aberdeen water company's wells are within 1 mile of the facility and are 450-485 feet deep (Refs. 2, 12). Municipal water is available throughout the study area although a few houses may not be connected (Ref. 2). The nearest well, one of those owned by the city of Aberdeen, is approximately 1200 feet southeast of the facility. The nearest resident is located approximately 0.8 mile west of the site and uses municipal water. During the site reconnaissance, no workers were on site. There was a fence around the property, but the front gate was open (Refs. 2, 12).

There are no critical habitats designated for Monroe County; however, there are several endangered and threatened species listed for the entire state. These include the Florida panther (felis concolor coryi), bald eagle (haliaeetus leucocephalus), Arctic peregrine falcon (falco peregrinus tundrius), Bachman's warbler (vermivora bachmanii), and red-cockaded woodpecker (picoides borealis) (Ref. 13).

Based on the results of this evaluation and the above referenced material, FIT 4 recommends that no further remedial action be planned at the Allied Corporation/Prairie Works facility.

Very truly yours,

Sheri Panabaker
Project Manager

Approved:

SP/dwf

Enclosures

cc: Brian Farrier

REFERENCES

1. Potential Hazardous Waste Site, Identification and Preliminary Assessment (EPA Form 2070-12) for Allied Corporation/Prairie Works, Aberdeen, Monroe County, Mississippi. Prepared by Steven M. Hornung, June 1, 1984.

2. NUS Field Logbook No. F4-1737 for Allied Corporation/Prairie Works, TDD No. F4-8909-65. Documentation of facility reconnaissance, October 11, 1989.

3. Potential Hazardous Waste Site, Identification and Preliminary Assessment (EPA Form 2070-12) for Allied Corporation/Prairie Works, Aberdeen, Monroe County, Mississippi. Prepared by Ron Joyner, April 8, 1982.

4. Notification of Hazardous Waste Site (EPA Form 8900-1) for Allied Corporation/Prairie Works, Aberdeen, Monroe County, Mississippi, prepared by William Reiter, June 4, 1981.

5. F. Vestal, Monroe County Mineral Resources, Bulletin 57, (University, Mississippi: Mississippi State Geological Survey, 1943), pp. 15-28.

6. U.S. Dept. of Commerce, Climatic Atlas of the United States (Washington, D.C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration, pp. 43, 63.

7. U.S.Dept. of Commerce, Rainfall Frequency Atlas of the United States Technical Paper No. 40, (Washington, D.C.: GPO, 1961, p. 93).

8. Donald M. Keady, Geologic Study Along Highway 45 from Tennessee Line to Meridian, Mississippi, Bulletin 94 (Mississippi Geologic Survey, 1962), pp. 35-41, plate 2.

9. Geologic Map of Mississippi, compiled by Alvin Bicker (Mississippi Geologic Survey, 1969), scale 1:500,000.

10. Cecil Webb, Webb and Son Well Drillers, telephone conversation with Sheri Panabaker, NUS Corporation, November 16, 1989. Subject: Geology around Amory and Aberdeen, Mississippi.

11. L.A. Gandl, Characterization of Aquifers Designated as Potential Drinking Water Sources in Mississippi, (U.S. Geological Survey, Mississippi Department of Natural Resources, Bureau of Pollution Control, 1982), p. 59.

12. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Mississippi: Aberdeen 1966 (Photorevised 1982), Prairie 1966 (Photorevised 1982), and Muldon 1987, scale 1:24,000.

13. U.S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States, (Atlanta, Georgia: 1988).

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

ALLIED CORPORATION / PRAIRIE WORKS
EPA SITE NUMBER MSD007035249
ABERDEEN
MONROE COUNTY, MS
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY SHERI PANABAKER
OF NUS CORPORATION
ON 12/21/89

DATE OF THIS REPORT: 01/02/90
DATE OF LAST MODIFICATION: 01/02/90

GROUND WATER ROUTE SCORE	:	40.00
SURFACE WATER ROUTE SCORE	:	0.00
AIR ROUTE SCORE	:	0.00
MIGRATION SCORE	:	23.12

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	170 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	164 FEET	0	0
PRECIPITATION	52.0 INCHES		
EVAPORATION	41.5 INCHES		
NET PRECIPITATION	10.5 INCHES	2	2
PERMEABILITY	1.0X10-4 CM/SEC	2	2
PHYSICAL STATE		2	2
TOTAL ROUTE CHARACTERISTICS SCORE:			6
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:HEXACHLOROCYCLOPENTADIENE			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
GROUND WATER USE		3	9
DISTANCE TO NEAREST WELL	1200 FEET		
AND	MATRIX VALUE	40	40
TOTAL POPULATION SERVED	13680 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	3600		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			49

GROUND WATER ROUTE SCORE (Sgw) = 40.00

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	ROUTE NOT SCORED		N/A
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER			
SITE WITHIN CLOSED BASIN			
FACILITY SLOPE			
INTERVENING SLOPE			
24-HOUR RAINFALL			
DISTANCE TO DOWN-SLOPE WATER			
PHYSICAL STATE			
TOTAL ROUTE CHARACTERISTICS SCORE:			N/A
3. CONTAINMENT			N/A
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:			
WASTE QUANTITY	CUBIC YDS		
	DRUMS		
	GALLONS		
	TONS		
	TOTAL		
TOTAL WASTE CHARACTERISTICS SCORE:			N/A
5. TARGETS			
SURFACE WATER USE			
DISTANCE TO SENSITIVE ENVIRONMENT			
COASTAL WETLANDS			
FRESH-WATER WETLANDS			
CRITICAL HABITAT			
DISTANCE TO STATIC WATER			
DISTANCE TO WATER SUPPLY INTAKE			
AND		MATRIX VALUE	
TOTAL POPULATION SERVED			
NUMBER OF HOUSES			
NUMBER OF PERSONS			
NUMBER OF CONNECTIONS			
NUMBER OF IRRIGATED ACRES			
TOTAL TARGETS SCORE:			N/A

SURFACE WATER ROUTE SCORE (Ssw) = 0.00

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
- 0 to 0.25 mile
- 0 to 0.50 mile
- 0 to 1.0 mile
- 0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
- COASTAL WETLANDS
- FRESH-WATER WETLANDS
- CRITICAL HABITAT

DISTANCE TO LAND USES
- COMMERCIAL/INDUSTRIAL
- PARK/FOREST/RESIDENTIAL
- AGRICULTURAL LAND
- PRIME FARMLAND
- HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (Sa) = 0.00

P9999
.NULL.
^001^001
1DATE: 07/11/90 WATER WELLS ON RECORD W/THIN 2 MILE RADIUS OF A LIST CORPORATE WELLS PAGE 1

LOCAL WELL NUMBER	LAND-NET LOCATION	[illegible]	[illegible]	[illegible]	DEPTH	[illegible]	[illegible]	[illegible]
0059 O A MCMILLIAN	NWNE821T15SR06E	[illegible]	[illegible]	H	[illegible]	[illegible]	[illegible]	[illegible]
0023 H CUNNINGHAM	SESE817T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0055 WILL HATTEN	SWSW813T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	41.0	[illegible]	[illegible]
0022 A MCCLLLOUGH	SESE814T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0030 WILLIE BLANCHARD	SESE817T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0064 ENSEARCH EXP	NWSE816T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	214	[illegible]	25.0
0035 JAMES F HARDY	NENW813T15SR06E	[illegible]	[illegible]	[illegible]	340	[illegible]	[illegible]	[illegible]
0042 LARRY JACKSON	----813T15SR06E	[illegible]	[illegible]	[illegible]	346	20.0	[illegible]	[illegible]
0058 JOHN THOMAS	NWNW814T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0041 WILLIE B COX	NENW815T15SR06E	[illegible]	[illegible]	[illegible]	334	[illegible]	[illegible]	[illegible]
0019 SHIRLEY ADAMS	NWNE814T15SR06E	[illegible]	[illegible]	[illegible]	360	[illegible]	[illegible]	[illegible]
0027 CO-OP HOME BUIL	NWNE815T15SR06E	[illegible]	[illegible]	[illegible]	360	[illegible]	[illegible]	[illegible]
0040 WILLIAM HILL	SESW808T16SR06E	[illegible]	[illegible]	[illegible]	340	[illegible]	[illegible]	[illegible]
0013 F A CRAIGE	SENE809T15SR06E	[illegible]	[illegible]	[illegible]	360	---	[illegible]	[illegible]
0043 FRED MORGAN	----812T16SR06W	[illegible]	[illegible]	[illegible]	200	30.0	[illegible]	[illegible]
F047 CARL GRIFFIN	SWSW812T03SR06E	[illegible]	[illegible]	[illegible]	240	91.0	[illegible]	5.00
F048 JAMES GARTH	SWSW812T03SR06E	[illegible]	[illegible]	[illegible]	[illegible]	20.0	[illegible]	[illegible]
0007 ABERDEEN	NESE811T15SR06E	[illegible]	[illegible]	[illegible]	181	[illegible]	[illegible]	[illegible]
0044 FORTINBERR DRLG	NWNW808T16SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---
0005 ABERDEEN	NENE810T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0029 RICHARD DUNCAN	NWNE817T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0004 ABERDEEN	SESE808T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0006 ABERDEEN	SESE808T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0001 ABERDEEN	SWSE808T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0017 MS V F HASTINGS	SESE804T15SR06E	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
0039 CHURCH OF GOD	----804T15SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0046 W C MORGAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0002 ABERDEEN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0101 H A CRAIGE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0014 U S SYKES	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K082 PRUET PRODUCTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K004 GEORGE DAIN	NENE832T15SR06E	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
K076 LOUISIANA LAND & EX	SESE820T14SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K081 TXO PROD	-- S27T14SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	75.0
K057 BILL SATES	NWSW827T14SR06E	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
K013 W B WATKINS	SWSW827T14SR06E	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]
C036 E A WATSON	SESE814T14SR06E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0015 CRAIG	SENE816T14SR06E	[illegible]	[illegible]	[illegible]	[illegible]	10.0	[illegible]	---
D071 PATRICK OIL CORP	SWNE808T15SR07E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0061 PAK EXPLORATION	SWNE805T15SR06E	[illegible]	[illegible]		[illegible]		[illegible]	30.0

1DATE: 07/11/90 WATER WELLS ON RECORD W/THIN 2 MILE RADIUS OF A LIST CORPORATE WELLS PAGE 2

LOCAL WELL NUMBER	LAND NET LOCATION	LAT (DEGREES)	LONG (DEGREES)	USE OF WATER	DEPTH (FEET)	TOTAL INTERVAL (FEET)	AQUIFER CODE	DISCHARGE (GPM)
C003 J R VAUGHN	NENE6G3T155R06E	[illegible]	[illegible]	I	101	--	[illegible]	-
K080 SPOONER DET	NESWS32T148R06E	[illegible]	[illegible]	I	463	441	211MCSN	75.0
L034 SOUTHERN NAT GAS	SENWS27T155R06E	[illegible]	[illegible]	U	[illegible]	[illegible]	[illegible]	[illegible]

LOCATIONS HAVE NOT BEEN FIELD VERIFIED
BOTTOM

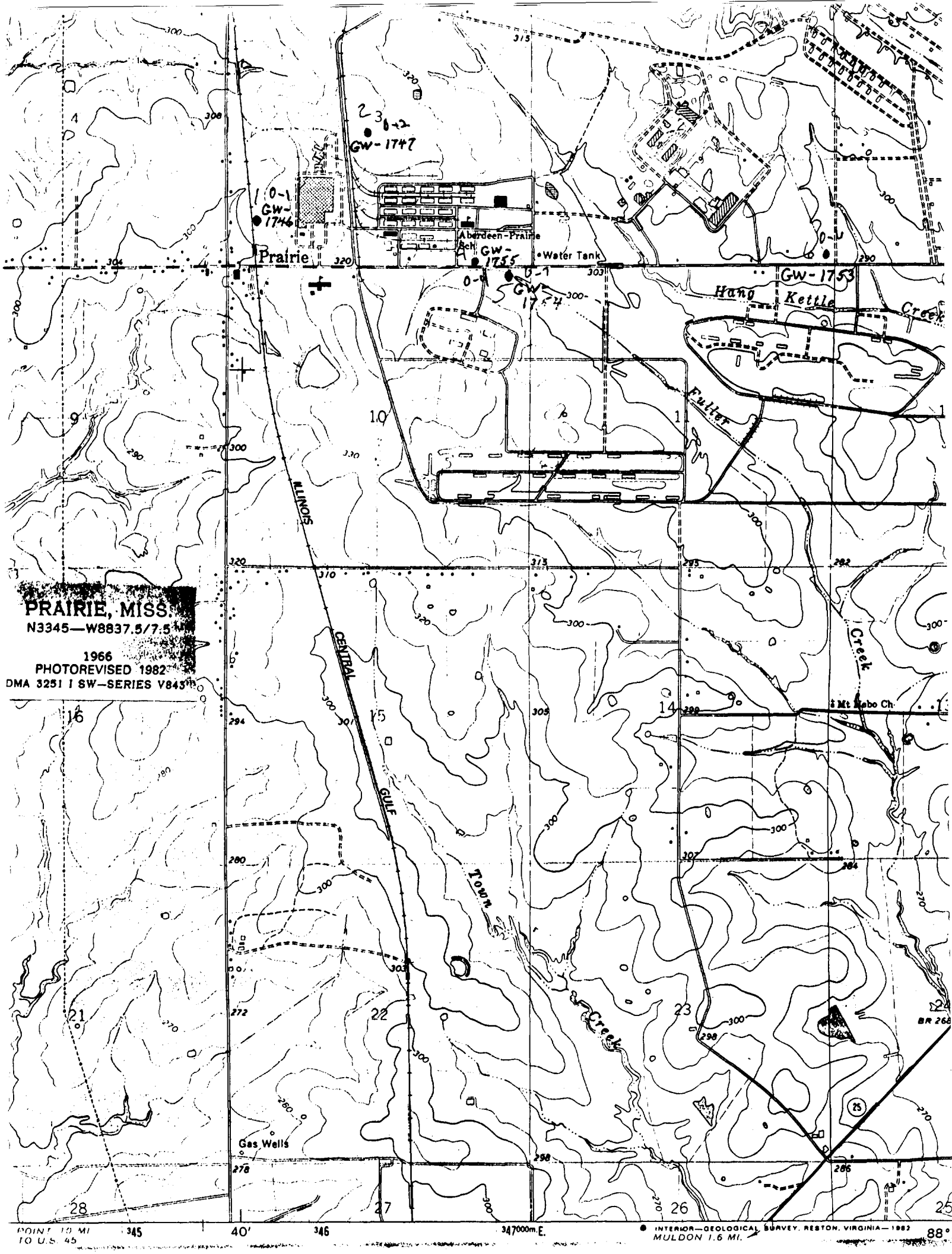
P9999
.NULL.
^001^001
1DATE: 07/11/90 WATER WELLS ON RECORD WITH IN 4 MILE RADIUS OF ALLEN CORP/PRAIRIE WORKS

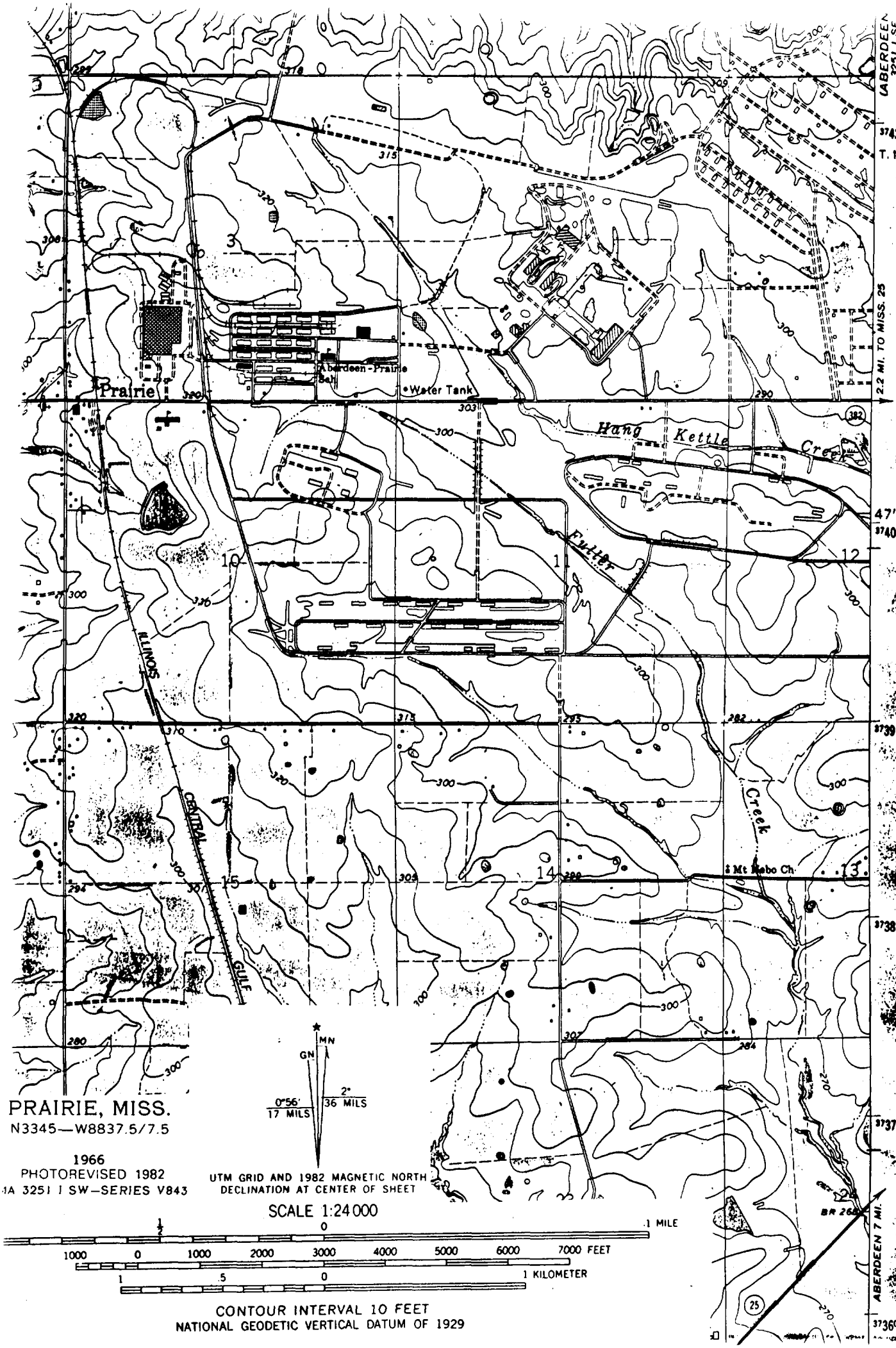
LOCAL WELL NUMBER	LAND-NET LOCATION	LAT TUDE (DD MMSS)	LONGITUDE (DDDMMSS)	TRUNCATED OR ALL WATER	DEPTH OF WELL (FEET)	TOP OF OPEN INTERVAL (FEET)	AQUIFER CODE	DISCHARGE (GPM)
0038 J T SOMERS	----SE7T15SR04E	344412	0322012	[illegible]	[illegible]	26.0	--	10.0
0032 SOU NATURAL GAS	NWSEC27T15SR04E	344454	0321401	H	400	365	--	--
0048 MRS WHIT LENOIR	SESSEC27T15SR04E	344510	0321000	H	375	-	211EUTW	--
0059 O A MCMILLIAN	NWNESE21T15SR04E	344547	0320[illegible]	H	400	[illegible]	211EUTW	--
0023 F CUNNINGHAM	SESESE17T15SR04E	344607	0320[illegible]	H	400	31.0	211EUTW	
0055 WILL HATTEN	SWSWS14T15SR04E	344612	0[illegible]	H	340	44.0	211EUTW	3.00
0022 A MCCULLOUGH	SESE14T15SR04E	344619	0320604	H	400	21.0	211EUTW	5.00
0033 WILLIE BLANCHARD	SESE14T15SR04E	344621	0320704	H	400	25.0	211EUTW	5.00
0064 INDTARCH LXP	NWSE14T15SR04E	344628	0320[illegible]	L	457	218	211EUTW	775.0
0035 JAMES E HARDY	NESW13T15SR04E	344630	0313[illegible]	H	340	22.0	211EUTW	5.00
0042 LARRY JACKSON	----S13T15SR04E	344130	0313727	H	340	25.0	211EUTW	5.00
0050 JOHN THOMAS	NWNWS14T15SR04E	344650	0323357	H	360	21.0	211EUTW	5.00
0041 WILLIE R COX	NENWS15T15SR04E	344730	0323910	H	320	21.0	211EUTW	5.00
0019 SHIRLEY ADAMS	NWNES14T15SR04E	344652	0323035	H	300	10.0	211EUTW	5.00
0027 CO-OP HOME INTL	NWNE[illegible]T15SR04E	[illegible]	[illegible]	H	320	21.0	211EUTW	5.00
P065 AL JORDAN	SESES34T15SR07E	[illegible]	0810560	H	200	105	211EUTW	7.00
0040 WILLIAM HILL	NESWS27T14SR04E	[illegible]	[illegible]	H	360	37.0	211EUTW	[illegible]
0017 H A CRAIGE	SESESE27T15SR04E	[illegible]	0320[illegible]	H	410	-	211EUTW	--
0031 FRED MORGAN	----S27T15SR04E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0047 CARL GRIFFIN	[illegible]	[illegible]	[illegible]	H	[illegible]	[illegible]	[illegible]	5.00
0048 DANCA GARTH	[illegible]	[illegible]	[illegible]	H	[illegible]	[illegible]	[illegible]	[illegible]
0007 ABERDEEN	NESW[illegible]T15SR04E	[illegible]	[illegible]	H	[illegible]	780	[illegible]	780
P010 SAM KING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0044 FORTENBERR DRLG	NWNWS01T [illegible]SR04E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0005 AIRPORTN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0029 RICHARD DUNCAN	[illegible]T15SR04E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0004 ABERDEEN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0006 ABERDEEN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0001 ABERDEEN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0017 MS V E DAWINGS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0045 TONNY R ANDHARD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0039 CHURCH OF GOD	----S04T15SR04E	[illegible]	[illegible]	H	[illegible]	[illegible]	[illegible]	[illegible]
0046 H L MURPHY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0002 ABERDEEN	NESWS07T15SR04E	[illegible]	[illegible]	P	[illegible]	[illegible]	[illegible]	540
0101 H A CRAIGE	NWNWS07T15SR04E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0014 U S BYKES	NWNWS07.T15SR04E	[illegible]	[illegible]	H	[illegible]	[illegible]	[illegible]	--
K073 WILLY GATHINGS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K017 CALVIN CLOPTON	NESWS11T14SR04E	[illegible]	[illegible]	H	[illegible]	[illegible]	[illegible]	[illegible]
K082 PRUET PRODUCTION	SWNES32T14SR04E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
L306 PRUET PRODUCTION	SWNWS32T14SR07E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-

1DATE: 07/11/90 WATER WELLS ON RECORD WITHIN 4 MILE RADIUS OF ALLEN CORP/PRAIRIE WORKS

LOCAL WELL NUMBER	LAND-NET LOCATION	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	USE OF WATER	DEPTH TO WELL (FEET)	DEPTH TO WATER (FEET)	AQUIFER CODE	DISCHARGE (GPM)
L083 PRUET PRODUCTION	NWNWS32T14SR07E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
L082 PRUET PROD	NWNES31T14SR07E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K004 GEORGE DAIN	NENE6S2T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
L044 C E HENLEY	SENWS30T14SR07E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
X07E LOUISIANA LAND & EX	SESW875T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
L011 L H HARRINGTON	SWNES30T14SR07E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K081 TXO PROD	[illegible]	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
L081 LOUISIANA LD & EXP	NWNWS30T14SR07E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K006 W R WATKINS	NWNW875T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K055 MACK ROWE	NENES30T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K057 BILL GATES	SWSWS27T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K013 W B WATKINS	SWSWS22T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
L080 LOUISIANA LAND & EX	[illegible]	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K011 ALBERT HERNDON	SESES20T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K033 WALTER D ANCHAR	SWSW[illegible]24T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K075 SWISS AMERICAN	SWSWS22T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K020 B MERRYWEATHER	SWSES[illegible]T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
G016 E A WATSON	SESE[illegible]T14S16SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
G037 ERSKIN HARR	SWSW8[illegible]T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
G033 SOU NATURAL GAS	SENWS27T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K011 LEE HARRINGTON	SENWS30T14SR07E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K012 W E MELLINGER	NENES27T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K064 FRANK STLEBRITE	NENWS21T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
G032 SOU NATURAL GAS	[illegible]	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
G015 GRAIG	[illegible]	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D071 PATRICK OIL CORP	SWSES[illegible]T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D061 PAR EXPLORATION	SENWSULTIPROP	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]
D013 J R VAUGHN	NEISW[illegible]T14SR06E	3[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D010 SPOONER LET	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D014 SOUTHERN NAT GAS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
K07V PAR EXPLORATION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

LOCATIONS HAVE NOT BEEN FIELD VERIFIED
BOTTOM


PRAIRIE, MISS.
N3345—W8837.5/7.5
1966
PHOTOREVISED 1982
DMA 3251 I SW—SERIES V843
Prairie
Aberdeen-Prairie Sch
Water Tank
GW-1747
GW-1746
GW-1755
GW-1754
GW-1753
Hang Kettle Creek
Fuller
Creek
ILLINOIS CENTRAL GULF
Town Creek
Mt Nebo Ch
Gas Wells
POINT 10 MI TO U.S. 45
MULDON 1.6 MI.
347000m.E.
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1982



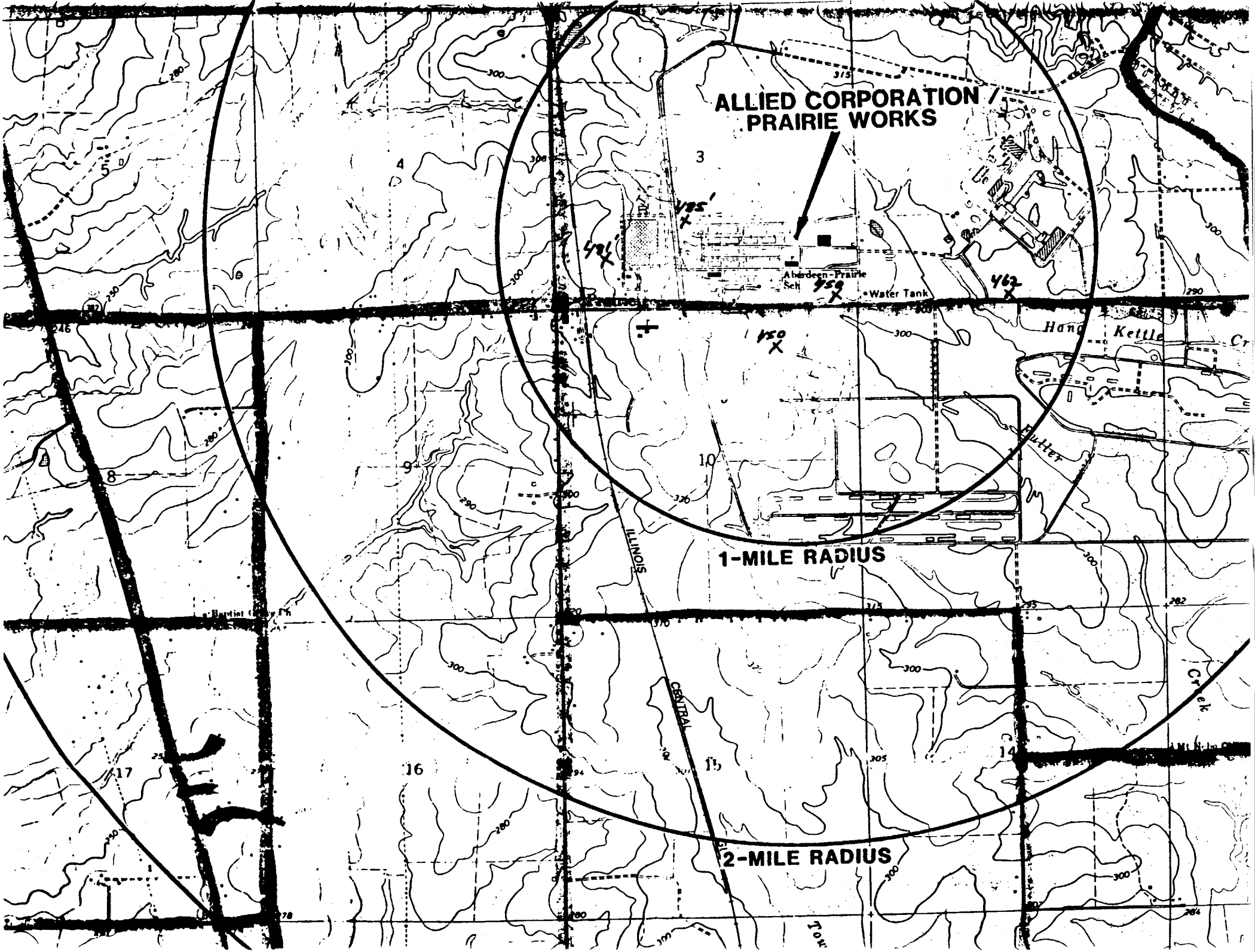
PRAIRIE, MISS.
N3345—W8837.5/7.5

1966
PHOTOREVISED 1982
ABERDEEN 3251 I SW—SERIES V843

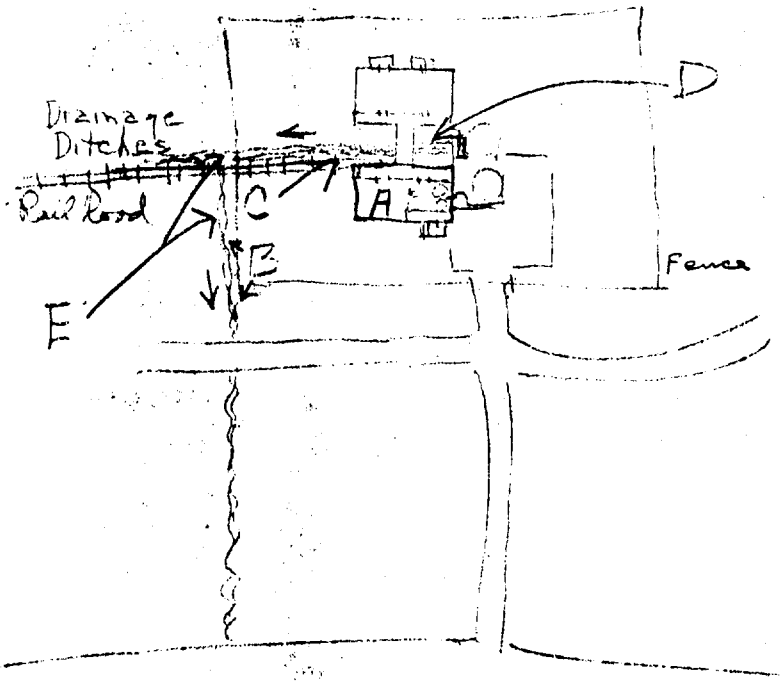
UTM GRID AND 1982 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929


ALLIED CORPORATION / PRAIRIE WORKS
1-MILE RADIUS
2-MILE RADIUS
Aberdeen-Prairie Sch
Water Tank
ILLINOIS CENTRAL
Kettle
Creek
Hutter
3
4
5
8
9
10
14
15
16
17
495'
491
450
459
462

MDA FA BAIT PLANT
Prairie, Mo



Highway 322

A Bait Plant
SOIL SAMPLES Above water level in ditch
B. " " " " " " "
C " " " " " " "
D " " " " " " "
Water Samples in ditch at Point Shown
E

G.C. Analysis
A - N/A
B - 15 ppm
4.5 ppm
C - 12.3 ppm
220. ppm
400 ppm
41.8 ppm
D 140 ppm
193 ppm
E < 4 ppm

* All samples of water in ditch leaving premises < 4 ppm.

MISSISSIPPI AUTHORITY INVENTORY

June 1, 1985

SOYBEAN OIL - @ $.2278 #		$12,895.30
Holding Tank	41,453 #	
Mix Tank (mixed with Mirex)	15,153 #	
TECHNICAL MIREX @ $17.50 #		$12,757.50
5 drums less 4# for research	546 #	
PROPLYNE GLYCOL @ $.425 #		$ 548.25
2 drums and a partial drum	1,290 #	
ANTIOXIDANT - @ $.7233 #		$ 3,542.36
10 drums and a partial drum	4,897.5 #	
Ferric chloride ; Citric Acid ; Propy Gl[illegible]		
FERRIAMICIDE - 69,600 pounds @ $334.02 per ton		$11,623.90
in 50 lb. bags.		

U130 ~~hexachlorocyclohexane~~
→ hexachlorocyclopentadiene - active ingredient in Mirex

Dick Whitehead 992-9853
Dept Agri. & Commerce 354-6571 office
Box 1609
Jxn MS 39205

DIVISION OF SOLID WASTE

REVIEWED BY J.H.

DATE 2/4/86

COMMENTS Manifests were submitted on or around Jan. 31, 1986, as previously requested.

NON-HAZARDOUS WASTE

...ER COMMISSION
...3087, Capitol Station
... Texas 78711-3087

...ase print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSTMP0050011645 — Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
MS. DEPARTMENT of AGRICULTURE
P.O. Box 1609, JACKSON, MS. 39205

4. Generator's Phone (601) 354-6552

A. State Manifest Document Number: NO 00 187258

B. State Generator's ID: 9992B

5. Transporter 1 Company Name: PETERSON MARITIME SERVICES

6. US EPA ID Number: LLAD059112117

C. State Transporter's ID

D. Transporter's Phone: 504-277-3600

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CECOS INTERNATIONAL
2407 EAST MURPHY ROAD
ODESSA, TEXAS 79762

10. US EPA ID Number: TXD091127001

G. State Facility's ID

H. Facility's Phone: (915) 333-2826

GENERATOR

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NON-HAZARDOUS LIQUID, N.O.S.	11	TT	12300	G	118540
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
SOY BEAN OIL CONTAMINATED WITH LESS THAN 1.2% MIREX: DODECACHLOROOCTAHYDRO 1,3,4-METHANO-2H-CYCLOBUTA[C,D] PENTALENE

K. Handling Codes for Wastes Listed Above
32002

15. Special Handling Instructions and Additional Information
DIKE SPILLED MATERIAL TO AVOID RUNOFF TO SEWERS OR WATERWAYS
FIGHT FIRE WITH DRY CHEMICAL, CO_2, FOAM OR WATER SPRAY

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of processing, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name: H.S. THOMPSON — Signature — Month Day Year: 1 1 1 9 8 5

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year: 1 1 1 9 8 5

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Year

EPA Form 8700-22 (Rev. 4-85) Previous edition is obsolete. White-Original Pink-TSD Facility Yellow-Transporter Green-Generator's first copy
TWC-0311 (Rev. 09-01-85)

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P. O. BOX 44066
BATON ROUGE, LOUISIANA 70804 - 4066

NON-HAZARDOUS WASTE

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM [redacted] WASTE MANIFEST

1. Generator's US EPA ID No. MSTMP000104 8 Manifest Document No. 10484

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
MS DEPARTMENT OF AGRICULTURE
P.O. Box 1609, Jackson, MS 39205

4. Generator's Phone (601) 354-6552

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Peterson Maritime Services

6. US EPA ID Number: LAD059121715

C. State Transporter's ID

D. Transporter's Phone: (504) 254-3600

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CECOS International
2407 East Murphy Road
Odessa, Texas 79763

10. US EPA ID Number: TXD091270017

G. State Facility's ID

H. Facility's Phone: (915) 333-2826

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol.	I. Waste No.
a. Non-Hazardous Liquid, N.O.S. Non-Hazardous Liquid	1	TT	2300	G	
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above: Soy Bean Oil contaminated with less than 1.2% mirex: dodecachlorooctahydro 1,3,4-methano-2H-cyclobuta [C,D] pentalene / Dike spilled material to avoid runoff to sewers or waterways. Fight fire with dry chemical, CO_2 or foam or water spray.

K. Handling Codes for Wastes Listed Above: 32002

15. Special Handling Instructions and Additional Information
Dike spilled material to avoid runoff to sewers or waterways. Fight fire with dry chemical, CO_2, foam or water spray.

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international, national, and state governmental regulations.

Printed/Typed Name: H. S. Thompson | Signature: H. S. Thompson | Date: Month 11 Day 19 Year 85

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Dale E. Evans | Signature: Dale E. Evans | Date: Month 11 Day 19 Year 85

18. Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Date: Month Day Year

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P. O. BOX 44066
BATON ROUGE, LOUISIANA 70804 - 4066

NON-HAZARDOUS WASTE

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404 Expires 7-31-86

UNIFORM ~~HAZARDOUS~~ WASTE MANIFEST

1. Generator's US EPA ID No. MSTM P0001 0483 — Manifest Document No. 7048 3
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
MS DEPARTMENT OF AGRICULTURE
P.O. BOX 1609, JACKSON, MS 39205

A. State Manifest Document Number

B. State Generator's ID

4. Generator's Phone (601) 354-6552

5. Transporter 1 Company Name: Peterson Maritime Services
6. US EPA ID Number: LAD059121715

C. State Transporter's ID

D. Transporter's Phone (504) 254-3600

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CECOS International
LA 63 AT I-12
Livingston, Louisiana
10. US EPA ID Number: LAD000618298

G. State Facility's ID

H. Facility's Phone (504) 686-7252

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol.	I. Waste No.
a. NON-HAZARDOUS Solid	760	BA	38000	P	NOT RCRA REGULATED
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above: Ferrimicide (Fire Ant Bait) 80% CRUSHED CORN; 15% Soybean Oil; 3% Antioxidant 2% mirex: dodecachloroctahydro 1,3,4-methano-2H-cyclobuta[c,d] pentalene / Avoid skin contact, wear protective clothing, Fight Fires using conventional methods.

K. Handling Codes for Wastes Listed Above: 32005

WEIGHED 0636 Nov 19

15. Special Handling Instructions and Additional Information
Avoid skin contact, wear protective clothing, fight fires using conventional methods

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international, national, and state governmental regulations.

GENERATOR

Printed/Typed Name: Claude L. Hutchinson — Signature: Claude L. Hutchinson — Date (Month Day Year): 11 18 85

17. Transporter 1 Acknowledgement of Receipt of Materials

TRANSPORTER

Printed/Typed Name: Brady C Camp — Signature: Brady C Camp — Date (Month Day Year): 11 18 85

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date (Month Day Year):

19. Discrepancy Indication Space

FACILITY

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: JERRY RAYMOND — Signature — Date (Month Day Year): 11 19 85

Generator's 2nd, Yellow-Disposer, Pink-Transporter, Gold-Generator 1st

DEQ FORM HW-3 (R 9/84)

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
~~HAZARDOUS~~ WASTE DIVISION
P. O. BOX 44066
BATON ROUGE, LOUISIANA 70804-4066

NON-HAZARDOUS WASTE
71-502581

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM ~~HAZARDOUS~~ WASTE MANIFEST

1. Generator's US EPA ID No.: MST210001045 | Manifest Document No.: 10455

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: MS Department of Agriculture, P.O. Box 1609, Jackson, MS 39205

4. Generator's Phone: (601) 354-6557

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Petroleum Logistics Services | 6. US EPA ID Number: LAD059171715

C. State Transporter's ID

D. Transporter's Phone: (504) 354-3600

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address: Cecos International, LA 63 at I-12, Livingston, Louisiana | 10. US EPA ID Number: LAD000604545

G. State Facility's ID

H. Facility's Phone: (504) 686-7252

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Non-Hazardous Solid	760	BA	38000	P	
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above: Fertilizer (Fire Ant Bait) 50% crushed corn, 15% soybean oil, 3% insecticide, 32% mirex: dodecachlorohydrocyclobutadiene, 3,5-methano-1H-cyclobuta[cd]pentalene. Avoid skin contact, wear protective clothing. Fight fires using conventional methods

K. Handling Codes for Wastes Listed Above: 32005

06 35 HCX

15. Special Handling Instructions and Additional Information: Avoid skin contact, wear protective clothing, fight fires using conventional methods

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international, national, and state governmental regulations.

Printed/Typed Name: Claude L. Hutchinson | Signature: [signature] | Date: Month 11 Day 18 Year 85

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Brady C. Cary | Signature: [signature] | Date: Month 11 Day 18 Year 85

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Jerry Brady | Signature: [signature] | Date: Month 11 Day 19 Year 85

EPA Form 8700-22 (3-84) Original Green-Generator's 2nd, Yellow-Disposer, Pink-Transporter, Gold-Generator 1st ... DEQ FORM HW-3 (R 9/84)

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P. O. BOX 44066
BATON ROUGE, LOUISIANA 70804 - 4066

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MST MP 0 0 0 1 0 4 8
Manifest Document No.: 1 0 4 8 2
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
MS DEPT OF AGRICULTURE
P.O. Box 1609, JACKSON, MS 39205
4. Generator's Phone (601) 354-6552

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: Peterson Maritime Services
6. US EPA ID Number: L A D 0 5 9 1 2 1 7 1 5
C. State Transporter's ID
D. Transporter's Phone: (504) 254-3600

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
Cecos International
Willow Springs Road
North West Lake, LA 70669
10. US EPA ID Number: L A D 0 0 0 0 6 1 8 2 5 6
G. State Facility's ID
H. Facility's Phone: (318) 527-6857

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Corrosive Liquid N.O.S.-UN 1760- Corrosive Liquid	11	DM	5672 605	P G	D002
b. Non-Hazardous Liquid	3	DM	1508 165	P G	
c.					
d.					

J. Additional Descriptions for Materials Listed Above
A) Corrosive Liquid N.O.S. (Antioxidant): 11% citric Acid, 88% Propylene Glycol, 1% Ferric Chloride
B) 100% propylene glycol / Avoid skin contact, WEAR protective GEAR appropriate FOR HANDLING Acidic Liquids

K. Handling Codes for Wastes Listed Above
A) 32003
B) 32004

15. Special Handling Instructions and Additional Information
Avoid skin contact, WEAR protective gear appropriate For handling acidic (ph=1.0) Liquids

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international, national, and state governmental regulations.

Printed/Typed Name: A W Thompson
Signature: A W Thompson
Date (Month Day Year): 11 12 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES MULLANIX
Signature: James Mullanix
Date (Month Day Year): 11 11 85

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date (Month Day Year):

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Donald Moore
Signature: Donald Moore
Date (Month Day Year): 11 18 85

GENERATOR
TRANSPORTER
FACILITY

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAZARDOUS WASTE DIVISION
P. O. BOX 44066
BATON ROUGE, LOUISIANA 70804 - 4066

NON-HAZARDOUS WASTE

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM WASTE MANIFEST

1. Generator's US EPA ID No. MSTMP0000104848 — Manifest Document No. 102481

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
MS Department of Agriculture
P.O. Box 1609 Jackson, MS 39205

4. Generator's Phone (601) 354-6552

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: Peterson Maritime Services
6. US EPA ID Number: LAD059121715

C. State Transporter's ID

D. Transporter's Phone (504) 254-3600

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Cecos International
LA 63 at I-12
Livingston, Louisiana
10. US EPA ID Number: LAD000061828

G. State Facility's ID

H. Facility's Phone (504) 686-7252

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol.	I. Waste No.
a. Non-Hazardous Solid	600	BA	30300	P	CECRA NON HAZARDOUS
b.					
c.					
d.					

RECEIVED 15-88 NOV

J. Additional Descriptions for Materials Listed Above
Fire Ant Bait (Ferriamicin) 80% Crushed Corn; 15% Soybean Oil; 3% Antioxidant; 2% Mirex: dodecachloro octahydro 1,3,4-methano-2H-cyclobuta [C,D] Pentalene / Avoid skin contact, wear protective gear, fight fire with conventional methods

K. Handling Codes for Wastes Listed Above
32005

15. Special Handling Instructions and Additional Information
Avoid skin contact; wear protective overclothing; fight fire with conventional methods

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international, national, and state governmental regulations.

Printed/Typed Name: H.G. Thompson — Signature: [signature] — Date: Month 11 Day 17 Year 85

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: James Mullanix — Signature: James Mullanix — Date: Month 11 Day 17 Year 85

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: Kirby Gordon — Signature: [signature] — Date: Month 11 Day 18 Year 85

GENERATOR — TRANSPORTER — FACILITY

EPA Form 8700-22 (3-84) Original-DEQ, Green-Generator's 2nd, Yellow-Disposer, Pink-Transporter, Gold-Generator 1st

DEQ FORM HW-3 (R 9/84)

CHEMICAL WASTE SYSTEMS

EPA Generator Id. No. MSTMP 000104B

WASTE CHARACTERIZATION DATA

General Directions: In order for us to determine whether we can lawfully and safely transport, treat, and dispose of your waste material, we must obtain certain information about the chemical and physical properties of the waste and its chemical composition. Please be complete in your answers; if your response is "none" or "not available", so indicate. Answers must be printed in ink or typewritten and the completed form must be signed. Please make a copy of this form for your records. PLEASE PRESS HARD. THIS IS A FIVE PART NCR FORM.

(1.) Generator Name: MS. Dept of Agriculture % Pesticide Board Date 11/October/1985

(2.) Generating Facility Complete Address P.O. Box 1609 Jackson, MS 39205

(3.) Authorized Company Representative: Dick B. Whitehead Title:

(4.) Phone Number: 601 354 6552

(5.) Emergency Contact W. Wilson McCauley Title Branch Manager Phone Number: 601 946 2123

(6.) General Description of The Waste Antioxidant used in Fire Ant Control Program

(7.) Process Generating Waste Fire Ant Control Production Unit (10.5 drums)

(8.) Anticipated volume 490 lb. | | Gallons | | Tons | | Cubic Yards | | Drums, or |X| Other Pounds

Per: | | Day | | Week | | Month | | Year, or |X| Other ONE TIME ONLY

(9.) Waste Properties:

(a.) Vapor pressure (in mm of Hg @ 25°C) N/A

(b.) Flash Point >140 |X| °F | | °C | | Closed Cup | | Open Cup

(c.) Phases/layers: |X| Single | | Bilayered | | Multilayer

(d.) Physical State @ 20 °C | | Solid |X| Liquid | | Semi-Solid | | Powder | | Other

(e.) Solubility (g/100g H_2O) @ 20 °C. <0.01 in H2O (f.) pH 1.0

(g.) Density 8.6 | | lb./ft.³ | | lb./yd.³ |X| lb./gal | | g/cc

(h.) Odor: | | Strong |X| Mild | | None

(i.) Reactivity

Hydrophobic | | Yes |X| No Autopolymerizable | | Yes |X| No Shock Sensitive | | Yes |X| No

Pyrophoric | | Yes |X| No Thermally Sensitive | | Yes |X| No Explosive | | Yes |X| No

(10.) Complete waste composition (with ranges - indicate % or ppm) Attach Additional Pages if Necessary

ORGANIC	INORGANIC
88% Propylene Glycol	1% Ferric Chloride
11% Citric Acid	

(11.) Sample Included |X| (SENT w/GREGORY)

(12.) Manifest Information

Proper USDOT Shipping Name	USDOT Hazard Class	UN or NA No.	USEPA Haz. Code	USEPA Haz. Waste No. (Type)
Corrosive Liquid N.O.S.	Corrosive	UN1760	C	D002

(13.) This waste contains

Biological Materials | | Yes |X| No Pathogens | | Yes |X| No Toxological Agents | | Yes |X| No

Radioactive Materials | | Yes |X| No PCB's | | Yes |X| No Dioxin | | Yes |X| No

If yes, specify type (if applicable) and concentration:

(14.) Have you obtained toxicity studies of this waste material? No If so, please attach a copy of the results.

(15.) Required personnel protective equipment & procedures Avoid Skin Contact (pH: 1.0) wear protective apparel appropriate for handling acidic liquids.

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine, that no deliberate or willful omissions of composition or properties exists, and that all known or suspected hazards have been disclosed.

Generator's Authorized Signatory

Title Branch Manager Date 12 Oct 85

Confidentiality Agreement As consideration for the Generator's release of the above information and any other supplemental data, the undersigned agrees to treat such information as confidential property and will not disclose such information except as is required by law, and in such circumstances only after first giving notice to the Generator.

NOV 8 1985 HOUSTON LAB

By

Name BFI Representative Title

BFI Houston Lab Distributes:

11/12 15:31 8308003 #17

11-12-85 TUE 15:32:49 G3 ** **** NO. 17

CHEMICAL WASTE SYSTEMS

EPA Generator Id. No 23/ MT [illegible]

WASTE CHARACTERIZATION DATA

General Directions: In order for us to determine whether we can lawfully and safely transport, treat, and dispose of your waste material, we must obtain certain information about the chemical and physical properties of the waste and its chemical composition. Please be complete in your answers; if your response is "none", or "not available", so indicate. Answers must be printed in ink or typewritten and the completed form must be signed. Please make a copy of this form for your records. PLEASE PRESS HARD, THIS IS A FIVE PART NCR FORM.

(1.) Generator Name: MS Department of Agriculture / Pest Control Date 11 October

(2.) Generating Facility Complete Address P.O. Box 1609 Jackson, MS 39205

(3.) Authorized Company Representative: Dick B. Whitehead Title:

(4.) Phone Number: (601) 354-6552

→ (5.) Emergency Contact Woody McCurley Title Branch Mgr. Phone Number. (601) 948-2183

(6.) General Description of The Waste: Fertiliz/Pesticide

(7.) Process Generating Waste: Fire Ant Control Program

(8.) Anticipated volume 69,600 [ ] Gallons [ ] Tons [ ] Cubic Yards [ ] Drums, or [X] Other Pouch/50lb bags

Per: [ ] Day [ ] Week [ ] Month [ ] Year, or [X] Other One Time

(9.) Waste Properties:

(a.) Vapor pressure (in mm of Hg @ 25°C) N/A

(b.) Flash Point 7140 [X] °F [ ] °C [ ] Closed Cup [ ] Open Cup

(c.) Phases/layers: [X] Single [ ] Bilayered [ ] Multilayer

(d.) Physical State @ 20 °C: [X] Solid [ ] Liquid [ ] Semi-Solid [ ] Powder [ ] Other

(e.) Solubility (g/100g H_2O) @ 20 °C. Insoluble (f.) pH ~4.5

(g.) Density ~25 [X] lb./ft.^{3} [ ] lb/yd^3 [ ] lb/gal [ ] g/cc

(h.) Odor [ ] Strong [X] Mild [ ] None

(i.) Reactivity:

Hydrophoric [ ] Yes [X] No Autopolymerizable [ ] Yes [X] No Shock Sensitive [ ] Yes [X] No

Pyrophoric [ ] Yes [X] No Thermally Sensitive [ ] Yes [X] No Explosive [ ] Yes [X] No

(10.) Complete waste composition (with ranges - indicate % or ppm) Attach Additional Pages if Necessary

ORGANIC	INORGANIC
Corn Grits	80%
Soy Bean Oil	15%
Mirex	~2%
Anti-Oxidant	~3%

(11.) Sample Included [X] (Sent w/ Greg Owens)

(12.) Manifest Information

Proper USDOT Shipping Name	USDOT Hazard Class	UN or NA No.	USEPA Haz. Code	USEPA Haz. Waste No. (Type)
NON-HAZARDOUS Solid	—	—	—	—

(13.) This waste contains

Biological Materials [ ] Yes [✓] No Pathogens [ ] Yes [✓] No Etiological Agents [ ] Yes [✓] No

Radioactive Materials [ ] Yes [✓] No PCB's [ ] Yes [✓] No Dioxin [ ] Yes [✓] No

If yes, specify type (if applicable) and concentration

(14.) Have you obtained toxicity studies of this waste material? NO If so, please attach a copy of the results.

(15.) Required personnel protective equipment & procedures N/A

Received NOV 8 1985 HOUSTON LAB

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine, that no deliberate or willful omissions of composition or properties exists, and that all known or suspected hazards have been disclosed.

Generator's Authorized Signatory [signature] Title Branch Manager Date 12 Oct 85

Confidentiality Agreement: As consideration for the Generator's release of the above information and any other supplemental data, the undersigned agrees to treat such information as confidential property and will not disclose such information to others except as is required by law, and in such circumstances only after first giving notice to the Generator.

By _____ Name BFI Representative Title

BFI Houston Lab Distributes:

11/12 15:51 8308003 #29

11-12-85 TUE 15:52:39 G3 ** **** NO.29

TUE 15:50:54 G3 ** **** NO.28

CHEMICAL WASTE STORE

EPA Generator Id. No. MSD 980 616 940

WASTE CHARACTERIZATION DATA

General Directions: In order for us to determine whether we can lawfully and safely transport, treat, and dispose of your waste material, we must obtain certain information about the chemical and physical properties of the waste and its chemical composition. Please be complete in your answers; if your response is "none" or "not available", so indicate. Answers must be printed in ink or typewritten and the completed form must be signed. Please make a copy of this form for your records. PLEASE PRESS HARD. THIS IS A FIVE PART NCR FORM.

(1.) Generator Name: MS Department of Agriculture / Pest Control Date: 11 October 1985

(2.) Generating Facility Complete Address: P.O. Box 1609 Jackson, MS 39205

(3.) Authorized Company Representative: Dick B. Whitehead Title:

(4.) Phone Number: (601) 354-6552

(5.) Emergency Contact: Woody McCurley Title: Branch Mgr. Phone Number: (601) 948-3125

(6.) General Description of The Waste: TECHNICAL MIREX

(7.) Process Generating Waste: Fire Ant Control Program

(8.) Anticipated volume: 546 | | Gallons | | Tons | | Cubic Yards | | Drums, or |X| Other Pounds

Per: | | Day | | Week | | Month | | Year, or |X| Other ONE TIME

(9.) Waste Properties

(a.) Vapor pressure (in mm of Hg @ 25°C): N/A

(b.) Flash Point: 214°F |X| °F | | °C | | Closed Cup | | Open Cup

(c.) Phase/layers: |X| Single | | Bilayered | | Multilayer

(d.) Physical State @ 20 °C: |X| Solid | | Liquid | | Semi-Solid | | Powder | | Other

(e.) Solubility (g/100g H_2O) @ 20 °C: 2.01 (f.) pH:

(g.) Density: | | lb./ft.^{3} | | lb/yd^3 | | lb/gal | | g/cc

(h.) Odor: | | Strong |X| Mild | | None

(i.) Reactivity

Hydrophobic | | Yes |X| No Autopolymerizable | | Yes |X| No Shock Sensitive | | Yes |X| No

Pyrophoric | | Yes |X| No Thermally Sensitive | | Yes |X| No Explosive | | Yes |X| No

RECEIVED NOV 8 1985 HOUSTON LAB

(10.) Complete waste composition (with ranges - indicate % or ppm.) Attach Additional Pages If Necessary

ORGANIC INORGANIC

>98% MIREX

(11.) Sample Included |X| (SENT w/ Greg Owens)

(12.) Manifest Information

Proper USDOT Shipping Name	USDOT Hazard Class	UN or NA No.	USEPA Haz. Code	USEPA Haz. Waste No. (Type)
Non Hazardous Solid				

(13.) This waste contains

Biological Materials | | Yes |X| No Pathogens | | Yes | | No Etiological Agents | | Yes | | No

Radioactive Materials | | Yes |X| No PCB's | | Yes | | No Dioxin | | Yes | | No

If yes, specify type (if applicable) and concentration

(14.) Have you obtained toxicity studies of this waste material? NO If so, please attach a copy of the results.

(15.) Required personnel protective equipment & procedures: Gloves & Dust respirator - Avoid SKIN CONTACT

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine, that no deliberate or willful omissions of composition or properties exists, and that all known or suspected hazards have been disclosed.

Generator's Authorized Signatory: D. Dikon McCurley Title: Branch Manager Date: 12 Oct 85

Confidentiality Agreement: As consideration for the Generator's release of the above information and any other supplemental data, the undersigned agrees to treat such information as confidential property and will not disclose such information to others except as is required by law, and in such circumstances only after first giving notice to the Generator.

By _____ Name BFI Representative Title

BFI Houston Lab Distribution:

DISPOSAL SITE - white copy TRANSPORTATION - green copy LAB - pink copy REGIONAL OFFICE - yellow copy SALES OFFICE - gold copy

11/12 16:03 8308003 #06

11-12-85 TUE 16:04:15 G3 ** **** NO.06

BROWNING-FERRIS INDUSTRIES
CHEMICAL WASTE SYSTEMS

BFI Waste Code No/ [illegible]

EPA Generator Id. No. MSFM F000 1048

WASTE CHARACTERIZATION DATA

General Directions In order for us to determine whether we can lawfully and safely transport, treat, and dispose of your waste material, we must obtain certain information about the chemical and physical properties of the waste and its chemical composition. Please be complete in your answers; if your response is "none" or "not available", so indicate. Answers must be printed in ink or typewritten and the completed form must be signed. Please make a copy of this form for your records. PLEASE PRESS HARD, THIS IS A FIVE PART NCR FORM.

(1.) Generator Name MS Department of Agriculture / Ag Petroleum Date 11 October 1985

(2.) Generating Facility Complete Address P.O. Box 1609 Jackson MS 39205

(3.) Authorized Company Representative: Dick B. Whitehead Title:

(4.) Phone Number: (601) 354-6552

(5.) Emergency Contact Woody McCurley Title Branch Mgr. Phone Number: (601) 948-2183

(6.) General Description of The Waste 98.8% Soybean Oil 1.2% Mirex (mixing tank)

(7.) Process Generating Waste Fire Ant Control Program

(8.) Anticipated volume 15,153 [ ] Gallons [ ] Tons [ ] Cubic Yards [ ] Drums, or [X] Other Pounds
Per: [ ] Day [ ] Week [ ] Month [ ] Year, or [X] Other ONE TIME

(9.) Waste Properties
(a.) Vapor pressure (in mm of Hg @ 25°C) N/A
(b.) Flash Point 540 [X] °F [ ] °C [ ] Closed Cup [ ] Open Cup
(c.) Phases layers. [X] Single [ ] Bilayered [ ] Multilayer
(d.) Physical State @ 20 °C: [ ] Solid [X] Liquid [ ] Semi-Solid [ ] Powder [ ] Other
(e.) Solubility (g/100g H_2O) @ 20 °C: 4.91% (f.) pH 7.0
(g.) Density .985 [ ] lb./ft³ [ ] lb/yd³ [ ] lb/gal [X] g/cc
(h.) Odor [ ] Strong [X] Mild [ ] None
(i.) Reactivity:
Hydrophoric [ ] Yes [Y] No Autopolymerizable [ ] Yes [X] No Shock Sensitive [ ] Yes [X] No
Pyrophoric [ ] Yes [X] No Thermally Sensitive [ ] Yes [X] No Explosive [ ] Yes [X] No

(10.) Complete waste composition (with ranges - indicate % or ppm.) Attach Additional Pages if Necessary

ORGANIC	INORGANIC
98.8% Soy Bean Oil	
1.2% Mirex	

(11.) Sample included [X] (Sent w/ Greg Owens)

(12.) Manifest Information

Proper USDOT Shipping Name	USDOT Hazard Class	UN or NA No.	USEPA Haz. Code	USEPA Haz. Waste No. (Type)
Non-Hazardous Liquid	—		—	

(13.) This waste contains
Biologic of Material [ ] Yes [X] No Pathogens [ ] Yes [X] No Pharmacyal Agents [ ] Yes [X] No
Radioactive Materials [ ] Yes [X] No PCB's [ ] Yes [X] No Dioxin [ ] Yes [X] No
If yes, specify type (if applicable) and concentration

(14.) Have you obtained toxicity studies of this waste material? NO If so, please attach a copy of the results.

(15.) Required personnel protective equipment & procedures N/A

RECEIVED NOV 8 1985 HOUSTON LAB

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine, that no deliberate or willful omissions of composition or properties exists, and that all known or suspected hazards have been disclosed.

Generator's Authorized Signatory [signature] Title Branch Manager Date 12 Oct 85

Confidentiality Agreement As consideration for the Generator's release of the above information and any other supplemental data, the undersigned agrees to treat such information as confidential property and will not disclose such information to others except as is required by law, and in such circumstances only after first giving notice to the Generator.

By _____ Name BFI Representative Title

BFI Houston Lab Distributes:
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U.S. Fish and Wildlife Service
Vicksburg Office

SPECIES LIST BY COUNTY

E - Endangered Species
T - Threatened Species
P - Proposed Species
C - Candidate Species
CA - Conservation Agreement
CH - Critical Habitat

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MISSISSIPPI

Amite	E - Red-cockaded woodpecker (Picoides borealis)
Bolivar	E - Pondberry
Claiborne	T - Bayou darter (Etheostoma rubrum)
Clark	C - Yellowblotched sawback - Graptemys flavimaculata
Copiah	T - Bayou darter (Etheostoma rubrum) T - Ringed sawback turtle (Graptemys oculifera)
Covington	T - Gopher tortoise (Gopherus polyphemus)
Forrest	E - Red-cockaded woodpecker (Picoides borealis) T - Gopher tortoise (Gopherus polyphemus) C - Yellowblotched sawback - Graptemys flavimaculata
Franklin	E - Red-cockaded woodpecker (Picoides borealis)
George	E - Red-cockaded woodpecker (Picoides borealis) T - Gopher tortoise (Gopherus polyphemus) C - Maureen's symnocthebius minute moss beetle C - Yellowblotched sawback - Graptemys flavimaculata
Greene	E - Red-cockaded woodpecker (Picoides borealis) T - Gopher tortoise (Gopherus polyphemus) C - Yellowblotched sawback - Graptemys flavimaculata
Hancock	E - Brown pelican (Pelecanus occidentalis) T - Gopher tortoise (Gopherus polyphemus)
Harrison	E - Red-cockaded woodpecker (Picoides borealis) E - Bald eagle (Haliaeetus leucocephalus) E - Eastern indigo snake (Drymarchon corais couperi) E - Brown pelican (Pelecanus occidentalis) T - Gopher tortoise (Gopherus polyphemus)
Hinds	T - Bayou darter (Etheostoma rubrum) T - Ringed sawback turtle (Graptemys oculifera)
Itawamba	E - Curtus' mussel (Pleurobema curtum) E - Penitent shell mussel (Epioblasma penita) E - Judge Tait's mussel (Pleurobema taitianum) C - Southern clubshell Pleurobema decisum
Jackson	E - Brown pelican (Pelecanus occidentalis) E - Red-cockaded woodpecker (Picoides borealis) E - Mississippi sandhill crane (CH) (Grus canadensis pulla) T - Gopher tortoise (Gopherus polyphemus) C - Yellowblotched sawback - Graptemys flavimaculata

Jasper	E - Red-cockaded woodpecker (Picoides borealis)
Jones	E - Red-cockaded woodpecker (Picoides borealis) T - Gopher tortoise (Gopherus polyphemus) C - Yellowblotched sawback - Graptemys flavimaculata
Lawrence	T - Ringed sawback turtle (Graptemys oculifera)
Lamar	T - Gopher tortoise (Gopherus polyphemus)
Leake	T - Ringed sawback turtle (Graptemys oculifera)
Lowndes	E - Judge Tait's mussel (Pleurobema taitianum) E - Penitent shell mussel (Pleurobema penita)
Madison	T - Ringed sawback turtle (Graptemys oculifera)
Marion	T - Ringed sawback turtle (Graptemys oculifera) T - Gopher tortoise (Gopherus polyphemus)
Monroe	E - Curtus' mussel (Pleurobema curtum) E - Penitent shell mussel (Epioblasma penita) E - Judge Tait's mussel (Pleurobema taitianum) C - Southern clubshell Pleurobema decisum
Neshoba	T - Ringed sawback turtle (Graptemys oculifera)
Noxubee	E - Red-cockaded woodpecker (Picoides borealis)
Oktibbeha	E - Red-cockaded woodpecker (Picoides borealis)
Pearl River	T - Ringed sawback turtle (Graptemys oculifera) T - Gopher tortoise (Gopherus polyphemus)
Perry	E - Red-cockaded woodpecker (Picoides borealis) T - Gopher tortoise (Gopherus polyphemus) C - Yellowblotched sawback - Graptemys flavimaculata
Rankin	T - Ringed sawback turtle (Graptemys oculifera)
Scott	E - Red-cockaded woodpecker (Picoides borealis) T - Ringed sawback turtle (Graptemys oculifera)
Simpson	T - Ringed sawback turtle (Graptemys oculifera)
Smith	E - Red-cockaded woodpecker (Picoides borealis)
Stone	E - Red-cockaded woodpecker (Picoides borealis) E - Eastern indigo snake (Drymarchon corais couperi) T - Gopher tortoise (Gopherus polyphemus)
Sharkey	E - Pondberry (Lindera melissifolia)
Sunflower	E - Pondberry (Lindera melissifolia)

Wayne	E - Red-cockaded woodpecker (*Picoides borealis*) T - Gopher tortoise (*Gopherus polyphemus*) C - Yellowblotched sawback - *Graptemys flavimaculata*
Wilkinson	E - Red-cockaded woodpecker (*Picoides borealis*)
Winston	E - Red-cockaded woodpecker (*Picoides borealis*)

DANGEROUS PROPERTIES of INDUSTRIAL MATERIALS

Seventh Edition

N. Irving Sax
Richard J. Lewis, Sr.

Dangerous Properties of Industrial Materials

Seventh Edition

Volume III

N. IRVING SAX

and

RICHARD J. LEWIS, SR.

VAN NOSTRAND REINHOLD
NEW YORK

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604.7—dc19 88-5677

PROP: Bright yellow-orange, amorphous solid.

SYNS:

CL 59806	MINOCYCLIN
7-DIMETHYLAMINO-6-DEMETHYL-6-DEOXYTETRACYCLINE	

TOXICITY DATA:	CODEN:
dni-hmn:lym 3750 μg/L	BCPHBM 16,127,83
orl-wmn TDLo:100 mg/kg:KID	BMJOAE 1,524,79
orl-mus LD50:3100 mg/kg	85ERAY 1,501,78
ipr-mus LD50:310 mg/kg	85ERAY 1,501,78
ivn-mus LD50:140 mg/kg	85ERAY 1,501,78
ice-mus LD50:38 mg/kg	NKRZAZ 26,196,80

THR: Poison by intraperitoneal, intravenous and intracerebral routes. Moderately toxic by ingestion. Human systemic effects by ingestion: interstitial nephritis, proteinuris and hematuris. Human mutagenic data. When heated to decomposition it emits toxic fumes of NO_x.

MQW500 *HR: 3*
MIREX

CAS: 2385-85-5 NIOSH: PC 8225000

mf: $C_{10}Cl_{12}$ mw: 545.50

PROP: Very white, odorless crystals. Water-insol, sol in dioxane and benzene, decomp @ 485°.

SYNS:

BICHLORENDO	ENT 25,719
CG-1283	FERRIAMICIDE
DECHLORANE 4070	HEXACHLOROCYCLOPENTADIENEDIMER
DODECACHLOROOCTAHYDRO-1,3,4-METHENO-2H-CYCLOBUTA(c,d)PENTALENE	1,2,3,4,5,5-HEXACHLORO-1,3-CYCLOPENTADIENE DIMER
1,1a,2,2,3,3a,4,5,5,5a,5b,6-DODECACHLOROOCTAHYDRO-1,3,4-METHENO-1H-CYCLOBUTA(c,d)PENTALENE	HRS 1276
	NCI-C06428
	PERCHLORODIHOMOCUBANE
DODECACHLOROPENTACYCLODECANE	PERCHLOROPENTACYCLODECANE
DODECACHLOROPENTACYCLO-(3,2,2,$0^{2,6}$,$0^{3,9}$,$0^{5,10}$)DECANE	PERCHLOROPENTACYCLO-(5.2.1.$0^{2,6}$.$0^{3,9}$.$0^{5,8}$)DECANE

TOXICITY DATA:	CODEN:
oms-rat-orl 100 mg/kg	TOLED5 23,127,84
orl-rat TDLo:50 mg/kg (5-9D preg):TER	TJADAB 27,401,83
orl-rat TDLo:23750 μg/kg (4-22D preg):REP	TJADAB 27,401,83
orl-rat TDLo:56 mg/kg (8-15D preg):TER	TJADAB 22,167,80
orl-rat TDLo:2340 mg/kg/56W-C:ETA	EXMPA6 38,271,83
orl-mus TDLo:2222 mg/kg/58W-C:CAR	JNCIAM 42,1101,69
orl-rat LD50:235 mg/kg	SPEADM 78-1,14,78
skn-rbt LD50:800 mg/kg	FMCHA2 -,C159,83
orl-ham LD50:125 mg/kg	TXAPA9 48,A192,79
orl-dck LD50:2400 mg/kg	ENVRAL 14,212,77
ihl-brd LC50:1400 ppm	ENVRAL 14,212,77

IARC Cancer Review: Human Limited Evidence IMEMDT 20,283,79; Animal Sufficient Evidence IMEMDT 20,-283,79; IMEMDT 5,203,74. EPA Genetic Toxicology Program.

THR: Poison by ingestion. Moderately toxic by inhalation and skin contact. A possible human carcinogen. An experimental carcinogen, tumorigen and teratogen. Experimental reproductive effects. Mutagenic data. A persistent insecticide which is toxic to non-target species. It can bioaccumulate. See also CHLORINATED HYDROCARBONS, ALIPHATIC. For further information, see Vol. 7, No. 5 of *DPIM Report*.

MQW525 *HR: 3*
MISTLETOE (AMERICAN)

PROP: Parasitic plants which grow on the trunks and branches of trees. They have thick, leathery leaves and white or pink berries. *P. rubrum* grows only on mahogany trees in southern Florida and the West Indies. *P. serotinum* grows on deciduous trees in the region bounded by New Jersey, Florida, Texas and Illinois. It is commonly sold as a mistletoe plant at Christmas. *P. tomentosum* grows in the region bounded by Kansas, Louisiana and Mexico.

SYNS:

CEPA CABALLERO (CUBA)	PHORADENDRON RUBRUM
FALSE MISTLETOE	PHORADENDRON SEROTINUM
INJERTO (TEXAS, MEXICO)	PHORADENDRON TOMENTOSUM

THR: The leaves, stems and berries contain the poisonous lectin phoratoxin (a toxalbumin). Ingestion of these plant parts may cause after a delay period of several hours: severe vomiting, abdominal cramps, and diarrhea. Deaths have been reported from ingestion of the berries. See also ABRIN as an example toxalbumin.

MQW750 *HR: 3*
MITHRAMYCIN

CAS: 18378-89-7 NIOSH: PZ 2800000

mf: $C_{52}H_{76}O_{24}$ mw: 1085.28

PROP: Antibiotic substance isolated from the fermentation broth of three strains of an unidentified *Streptomyces* species (ANTCAO 3,1218,53).

SYNS:

A-2371	MITHRAMYCIN A
ANTIBIOTIC LA 7017	MITRAMYCIN
AUREOLIC ACID	NSC 24559
AURLELIC ACID	PA 144
MITHRACIN	

TOXICITY DATA:	CODEN:
dnd-hmn:hla 1 mg/L	CNREA8 45,2813,85
msc-hmn:hla 40 μg/L	CNREA8 45,2813,85
msc-mus:emb 15 mg/L	CNREA8 45,2813,85
dnd-ham:ovr 20 mg/L	CNREA8 45,2813,85
msc-ham:ovr 1500 μg/L	CNREA8 45,2813,85
unr-rat TDLo:2 mg/kg (11D preg):TER	85DJA5 -,95,71

HAZARD RANKING SYSTEM

DATA COLLECTION AND DOCUMENTATION TECHNIQUES FOR HRS SCORING OF HAZARDOUS WASTE SITES

MARCH, 1987

Prepared By

NUS Corporation
Superfund Division

In Cooperation With

U.S. Environmental Protection Agency
Investigations and Compliance Unit
Region IV

READ 1

Mirex; CASRN 2385-85-5 (03/01/88)

Health risk assessment information on a chemical is included in IRIS only after a comprehensive review of chronic toxicity data by work groups composed of U.S. EPA scientists from several Program Offices. The summaries presented in Sections I and II represent a consensus reached in the review process. The other sections contain U.S. EPA information which is specific to a particular EPA program and has been subject to review procedures prescribed by that Program Office. The regulatory actions in Section IV may not be based on the most current risk assessment, or may be based on a current, but unreviewed, risk assessment, and may take into account factors other than health effects (e.g., treatment technology). When considering the use of regulatory action data for a particular situation, note the date of the regulatory action, the date of the most recent risk assessment relating to that action, and whether technological factors were considered. Background information and explanations of the methods used to derive the values given in IRIS are provided in the five Background Documents in Service Code 5, which correspond to Sections I through V of the chemical files.

STATUS OF DATA FOR Mirex

File On-Line 09/30/87

Category (section)	Status	Last Revised
Oral RfD Assessment (I.A.)	on-line	03/01/88
Inhalation RfD Assessment (I.B.)	no data	
Carcinogenicity Assessment (II.)	pending	
Drinking Water Health Advisories (III.A.)	no data	
U.S. EPA Regulatory Actions (IV.)	on-line	03/01/88
Supplementary Data (V.)	no data	

==========

_I. CHRONIC HEALTH HAZARD ASSESSMENT FOR NONCARCINOGENIC EFFECTS

Substance Name -- Mirex
CASRN -- 2385-85-5
Last Revised -- 03/01/88

The Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cellular necrosis, but may not exist for other toxic effects such as carcinogenicity. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Please refer to Background Document 1 in Service Code 5 for an elaboration of these

concepts. RfDs can also be derived [illegible] noncancer [illegible] health effects of compounds which are also carcinogens. Therefore, it is essential to refer to other sources of information concerning the carcinogenicity of this substance. If the U.S. EPA has evaluated this substance for potential human carcinogenicity, a summary of that evaluation will be contained in Section II of this file when a review of that evaluation is completed.

<<< Mirex >>>

I.A. REFERENCE DOSE FOR CHRONIC ORAL EXPOSURE (RfDo)

I.A.1. ORAL RfD SUMMARY

Critical Effect	Experimental Doses*	UF	MF	RfD
Decreased pup survival	NOEL: none	10,000	1	2E-6 mg/kg/day
Multi-Generation Vole Reproduction Study	LEL: 0.1 ppm (0.015 mg/kg/day)			
Shannon, 1976				

*Dose Conversion Factors & Assumptions: Dose in mg/kg/day reported by author

<<< Mirex >>>

I.A.2. PRINCIPAL AND SUPPORTING STUDIES (ORAL RfD)

Shannon, V.C. 1976. The effects of mirex on the reproductive performance and behavioral development in the prairie vole (Microtus ochrogaster). Ph.D. Dissertation, Iowa State University, Ames, IA.

Multigeneration, continuous exposure study in which prairie voles (Microtus ochrogaster) were exposed in the diet to mirex at 0.1 and 0.5 ppm. A control group was included. At 0.1 ppm (LEL, LDT), there were statistically significant decreases in survival of pups to 21 days and an increase in pup mortality.

I.A.3. UNCERTAINTY AND MODIFYING FACTORS (ORAL RfD)

UF =10,000. An uncertainty factor of 100 was used to account for intra- and interspecies differences. An additional factor of 100 was used to account for the facts that a NOEL in the vole reproduction study has not been reached, the data are not of chronic duration, and the data base is insufficient for determining the most sensitive toxicologic endpoint.

MF = 1

<<< Mirex >>>

I.A.4. ADDITIONAL COMMENTS (ORAL RfD)

Studies in the open literature reported fetotoxic effects for rats (cataracts, edema, EKG effects).

Data Considered for Establishing the RfD:

1) Reproduction - vole: Principal study - see previous description; no core grade
2) 90-Day Feeding - dog: NOEL=20 ppm (0.5 mg/kg/day); LEL=100 ppm (2.5 mg/kg/day) (increased mortality, increased SAP, enlarged liver, and

decrease in spleen size); no core grade

3) One-Generation Reproduction - rat: NOEL=none; LEL=5 ppm (0.125 mg/kg/day) (decreased litter size; cataracts in pups; histologic effects in liver thyroid); no core grade

Data Gap(s): Major studies were not done according to Guideline Procedures. Published studies are of limited value.

<<< Mirex >>>

___I.A.5. CONFIDENCE IN THE ORAL RfD

Study: Low
Data Base: Low
RfD: Low

The principal study appears to be of fair quality, but a NOEL was not reached; therefore, the study is given a low to medium rating. Since the data base on chronic toxicity is incomplete and consists of studies that are not core graded, the data base is given a low confidence rating. Low confidence in the RfD follows.

___I.A.6. EPA DOCUMENTATION AND REVIEW OF THE ORAL RfD

Pesticide Registration Files

Agency RfD Work Group Review: 06/24/86, 04/15/87

Verification Date: 04/15/87

___I.A.7. EPA CONTACTS (ORAL RfD)

Reto Engler / OPP -- (703)557-7491 / FTS 557-7491

George Ghali / OPP -- (703)557-7490 / FTS 557-7490

------<<< Mirex >>>------

__I.B. REFERENCE DOSE FOR CHRONIC INHALATION EXPOSURE (RfDi)

Not available at this time

==========

_II. CARCINOGENICITY ASSESSMENT FOR LIFETIME EXPOSURE

Substance Name -- Mirex
CASRN -- 2385-85-5

This chemical is among those substances evaluated by the U.S. EPA for evidence of human carcinogenic potential. This does not imply that this chemical is necessarily a carcinogen. The evaluation for this chemical is under review by an inter-office Agency work group. A risk assessment summary will be included on IRIS when the review has been completed.

==========

III. HEALTH HAZARD ASSESSMENTS FOR VARIED EXPOSURE DURATIONS

Substance Name -- Mirex
CASRN -- 2385-85-5

Not available at this time

==========

IV. U.S. EPA REGULATORY ACTIONS

Substance Name -- Mirex
CASRN -- 2385-85-5
Last Revised -- 03/01/88

EPA risk assessments may be updated as new data are published and as assessment methodologies evolve. Regulatory actions are frequently not updated at the same time. Compare the dates for the regulatory actions in this section with the verification dates for the risk assessments in sections I and II, as this may explain inconsistencies. Also note that some regulatory actions consider factors not related to health risk, such as technical or economic feasibility. Such considerations are indicated for each action. In addition, not all of the regulatory actions listed in this section involve enforceable federal standards. Please direct any questions you may have concerning these regulatory actions to the U.S. EPA contact listed for that particular action. Users are strongly urged to read the background information on each regulatory action in Background Document 4 in Service Code 5.

IV.A. CLEAN AIR ACT (CAA)

No data available

------<<< Mirex >>>------

IV.B. SAFE DRINKING WATER ACT (SDWA)

No data available

------<<< Mirex >>>------

IV.C. CLEAN WATER ACT (CWA)

IV.C.1. AMBIENT WATER QUALITY CRITERIA, Human Health

None

IV.C.2. AMBIENT WATER QUALITY CRITERIA, Aquatic Organisms

Freshwater: 1.0E-3 ug/L (at any time)

Marine: 1.0E-3 ug/L (at any time)

Considers technological or economic feasibility? -- NO

Discussion -- The criterion is based on the effects of mirex on fresh and salt water invertebrates, using an application factor of 0.01.

Reference -- Quality Criteria for Water, EPA 440/9-76-023 (07/76)

EPA Contact -- Criteria and Standards Division, OWRS
(202)475-7315 / FTS 475-7315

------<<< Mirex >>>------

__IV.D. FEDERAL INSECTICIDE AND RODENTICIDE ACT (FIFRA)

___IV.D.1. PESTICIDE ACTIVE INGREDIENT, Registration Standard

None

___IV.D.2. PESTICIDE ACTIVE INGREDIENT, Special Review

Action -- Registration cancelled (1976)

Considers technological or economic feasibility? -- YES

Summary of regulatory action -- Administrative Law Hearing FIFRA Docket No. 293 (All registered products containing mirex were effectively cancelled on December 1, 1977.)

Reference -- 41 FR 56703 (12/29/76)

EPA Contact -- Special Review Branch, OPP / (703)557-7400 / FTS 557-7400

------<<< Mirex >>>------

__IV.E. TOXIC SUBSTANCES CONTROL ACT (TSCA)

No data available

------<<< Mirex >>>------

__IV.F. RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

No data available

------<<< Mirex >>>------

__IV.G. SUPERFUND (CERCLA)

No data available

==========

_V. SUPPLEMENTAL DATA

Substance Name -- Mirex
CASRN -- 2385-85-5

Not available at this time

==========

_VI. REFERENCES

Substance Name -- Mirex
CASRN -- 2385-85-5

Not available at this time

==========

SYNONYMS: 1,3,4-METHENO-1H-CYCLOBUTA(cd)PENTALENE, 1,1a,2,2,3,3a,4,5,5,5a,5b,6-DODECACHLOROOCTAHYDRO-; BICHLORENDO; CG-1283; CYCLOPENTADIENE, HEXACHLORO-, DIMER; DECANE,PERCHLOROPENTACYCLO-; DECHLORANE; DECHLORANE 4070; DODECACHLOROOCTAHYDRO-1,3,4-METHENO-2H-CYCLOBUTA (c,d)PENTALENE; 1,1a,2,2,3,3a,4,5,5,5a,5b,6-DODECACHLOROOCTAHYDRO-1,3,4-METHENO-1H-CYCLOBUTA(cd)PENTALENE; DODECACHLOROPENTACYCLODECANE; DODECACHLOROPENTACYCLO(3.2.2.0(sup 2,6).0(sup 3,9).0(sup 5,10))DECANE; ENT 25,719; FERRIAMICIDE; GC 1283; HEXACHLOROCYCLOPENTADIENE DIMER; 1,2,3,4,5,5-HEXACHLORO-1,3-CYCLOPENTADIENE DIMER; HRS 1276; 1,3,4-METHENO-1H-CYCLOBUTA(cd)PENTALENE, DODECACHLOROOCTAHYDRO-; MIREX; NCI-C06428; PERCHLORODIHOMOCUBANE; PERCHLOROPENTACYCLODECANE; PERCHLOROPENTACYCLO(5.2.1.0(sup 2,6).0(sup 3,9).0(sup 5,8))DECANE

Enter keywords or Read or Scan or Mail
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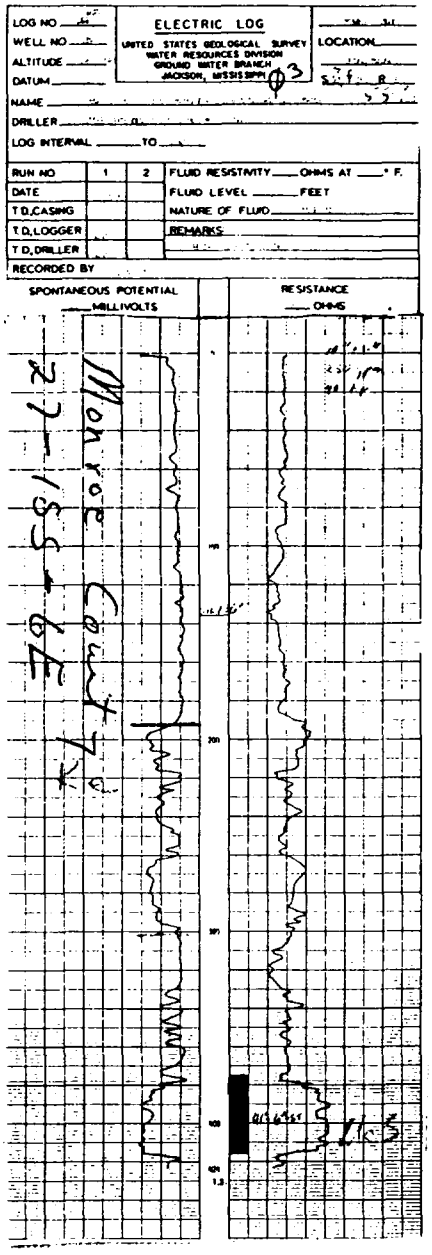
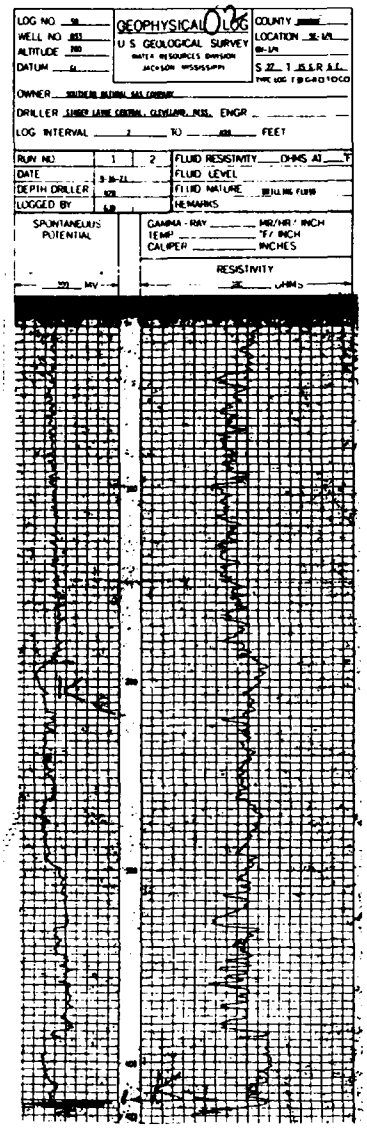
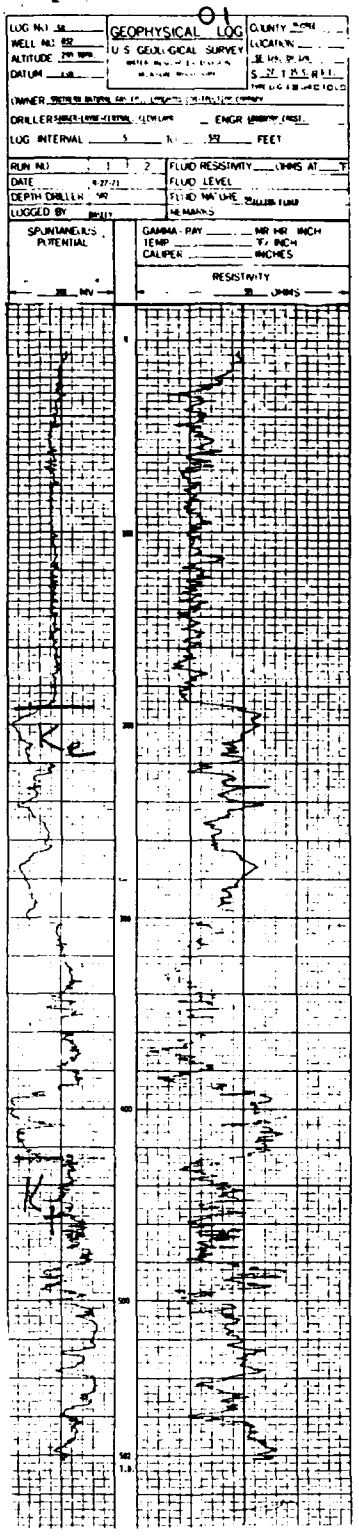
GEOPHYSICAL LOGS FROM WATER WELLS LOCATED IN SEC. 27 T 15S R 6E - APPROXIMATELY THREE (3) LINEAR MILES SOUTH OF THE ALLIED CORPORATION/ PRAIRIE WORKS FACILITY, ABERDEEN, MISSISSIPPI







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SOURCES FOR WATER SUPPLIES IN MISSISSIPPI

A COOPERATIVE STUDY
by Geologists

Mississippi Research

Coker Aquifer *(Continued)*

Water-Quality Data

Dissolved-solids concentrations generally increase down the dip of the Coker aquifer (fig. 51). The outcrop of the aquifer is to the east in Alabama. The distance from the outcrop area to the downdip limit of freshwater is about 50 miles in the southeastern part of the aquifer.

Chemical quality of water in narrow zone of the aquifer along the 100-, 200-, 500-, and 1,000-mg/L lines of dissolved solids shown on the facing map is represented by typical chemical analyses in the following table:

Well, County	Depth (feet)	Date of collection	Silica	Iron	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Sulfate	Chloride	Fluoride	Dissolved solids (residue on evaporation at 180°C)	Hardness as $CaCO_3$: Calcium, Magnesium	Specific conductance (micromhos at 25°C)	pH	Color
100-mg/L dissolved-solids zone																	
C18, Noxubee	1,288	7/70	13	0.13	5.5	1.5	24	3.7	84	3.4	3.7	0.2	99	20	149	8.1	5
200-mg/L dissolved-solids zone																	
H30, Noxubee	1,857	7/76	13	.00	13	1.8	32	3.8	103	1.6	23	.2	144	40	220	8.0	0
500-mg/L dissolved-solids zone																	
L2, Calhoun	1,975	6/54	6.2	1.00	20	4.3	165	5.1	135	1.2	210	.0	500	68	934	8.5	4
1,000-mg/L dissolved-solids zone																	
J1, Calhoun	2,384	3/67	16	.56	23	2.6	300	3.7	196	.4	418	.4	881	68	1,650	7.7	5

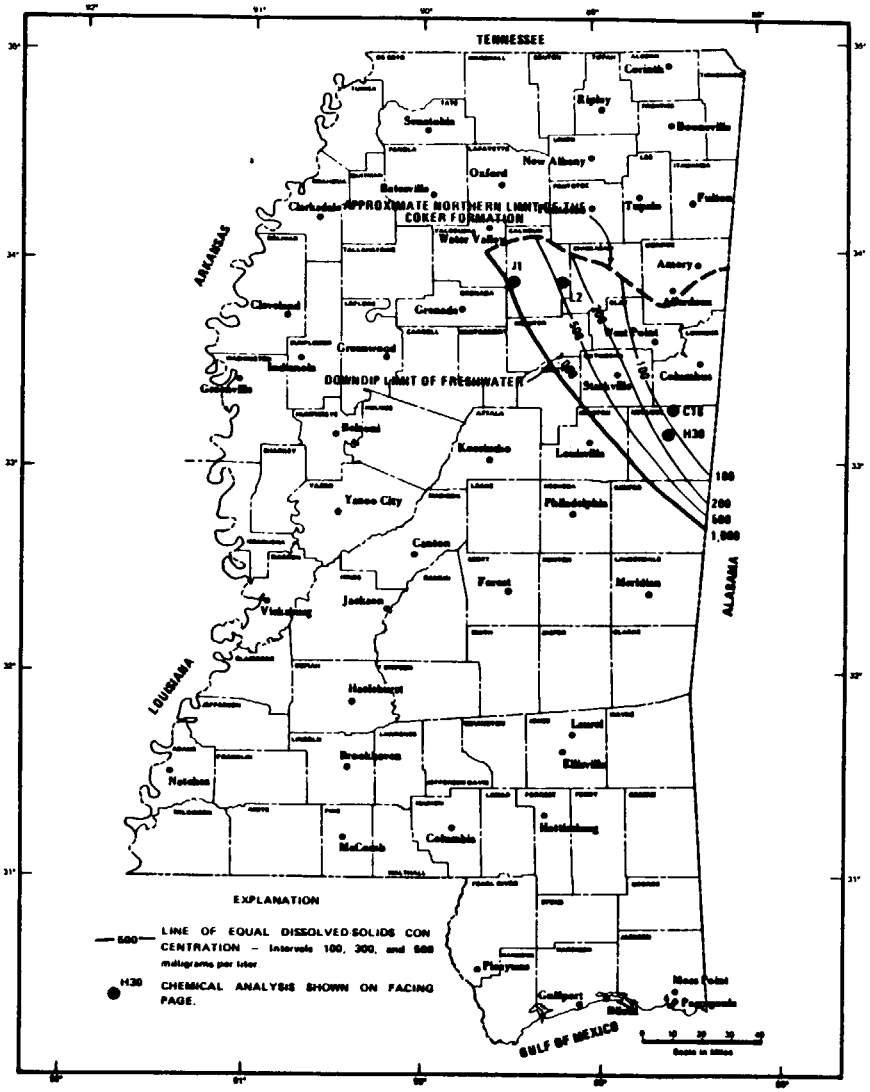


Figure 51. – Dissolved-solids concentrations of water in the Coker aquifer.

Coker Aquifer *(Continued)*

Hydrologic Data

Transmissivity: Increases from good in the northern part of the area where the aquifer is thin to excellent in the downdip part of the aquifer (fig. 50). The map is based on a few aquifer tests and on sand thicknesses shown on representative electrical logs.

Largest well yield: 1,800 gallons per minute in Lowndes County.

Large pumping center: The Columbus area in Lowndes County pumps about 10 Mgal/d from the Coker aquifer.

Water use in 1980: About 13 Mgal/d (Boswell, 1978 and Callahan, 1983).

Potential sustained yield of confined part of aquifer: 30 to 60 Mgal/d (based on data in table 3 and in figure 50). This aquifer is capable of yielding large quantities of water to wells, but potential for recharge of water to the aquifer may be poor.

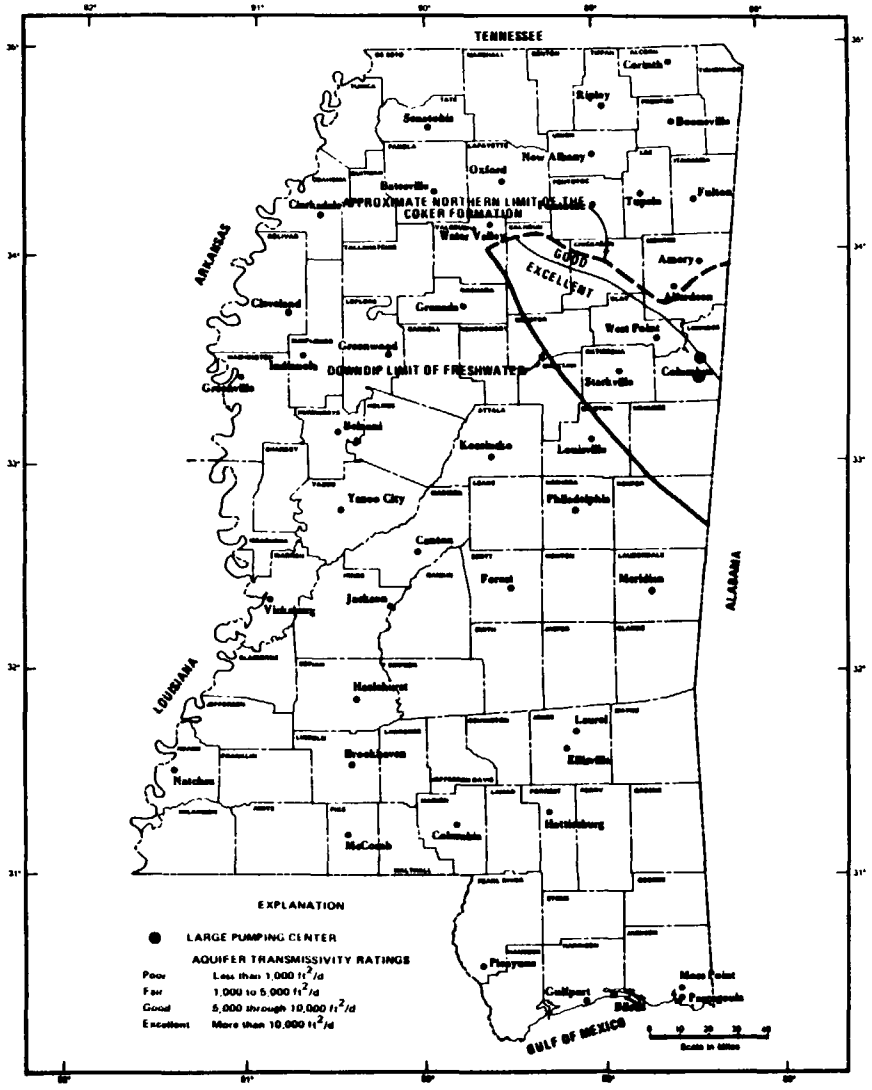


Figure 50. -- Transmissivity of the Coker aquifer.

Coker Aquifer

Geologic Data

Structure: The base of the Coker Formation slopes generally to the southwest (fig. 49). Structure contours are generalized from Boswell (1978).

Outcrop area: The Coker Formation does not crop out in Mississippi but does crop out to the east in Alabama.

Area of freshwater occurrence: About 4,400 square miles.

Lithologic character: The upper part of the Coker Formation is composed of clay and irregular beds of sand. The lower part of the formation is composed of clay, sand, and gravel. The Coker aquifer, as used in this report, also includes Lower Cretaceous deposits where they contain freshwater. The Lower Cretaceous deposits include thick beds of sand or sand and gravel in the southern part of the area (Boswell, 1978).

Thickness: In the extreme northern part of the area the combined units are less than 50 feet thick and increase to more than 1,500 feet in the southern part of the area. In the southern part, the Coker Formation is more than 500 feet thick and the Lower Cretaceous deposits are more than 1,000 feet thick.

Confining beds:

Overlying bed: The upper part of the Coker Formation commonly is a thick clay that tends to separate the Coker aquifer from the overlying Gordo aquifer.

Underlying bed: The Coker aquifer is underlain by Paleozoic rock and sediments of Early Cretaceous age.

Hydrologic atlas describing aquifer: The Tuscaloosa aquifer system in Mississippi (Boswell, 1978).

Areal water-resources reports: See map showing areas covered by reports (fig. 1) and selected references.

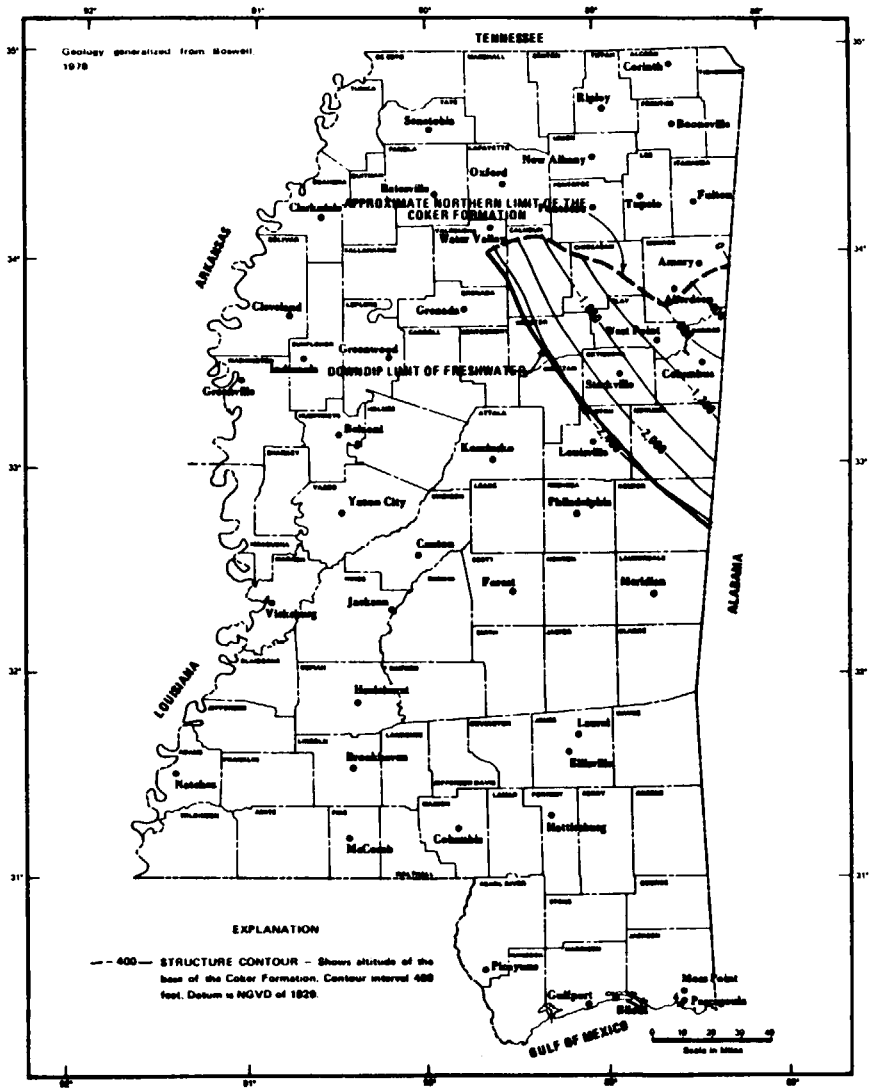


Figure 49. – Configuration of the base of the Coker Formation.

Gordo Aquifer *(Continued)*

Water-Quality Data

Dissolved-solids concentrations generally increase down the dip of the Gordo aquifer (fig. 48). The distance from the outcrop area to the downdip extent of freshwater is 50 to 80 miles.

Chemical quality of water in narrow zones of the aquifer along the 100-, 200-, 500-, and 1,000-mg/L lines of dissolved solids shown on the facing map is represented by typical chemical analyses in the following table:

Well, County	Depth (feet)	Date of collection	Silica	Iron	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Sulfate	Chloride	Fluoride	Dissolved solids (residue on evaporation at 180°C)	Hardness as $CaCO_3$: Calcium, Magnesium	Specific conductance (microhmos at 25°C)	pH	Color
100-mg/L dissolved-solids zone																	
H46, Clay	810	7/62	7.9	12	12	2.4	14	5.6	78	5.2	5.9	.2	92	40	159	6.2	5
200-mg/L dissolved-solids zone																	
G21, Oktibbeha	1,460	5/51	24	.09	6.6	2.0	33	2.4	106	1.6	9.8	.1	133	25	194	7.6	5
500-mg/L dissolved-solids zone																	
F22, Oktibbeha	1,759	4/64	14	1.4	14	2.2	207	5.5	152	.2	275	.2	594	44	1,100	7.6	5
1,000-mg/L dissolved-solids zone																	
J5, Oktibbeha	2,075	11/54	9.9	.29	7.9	1.6	292	4.4	248	2.5	315	.9	772	26	1,390	7.7	5

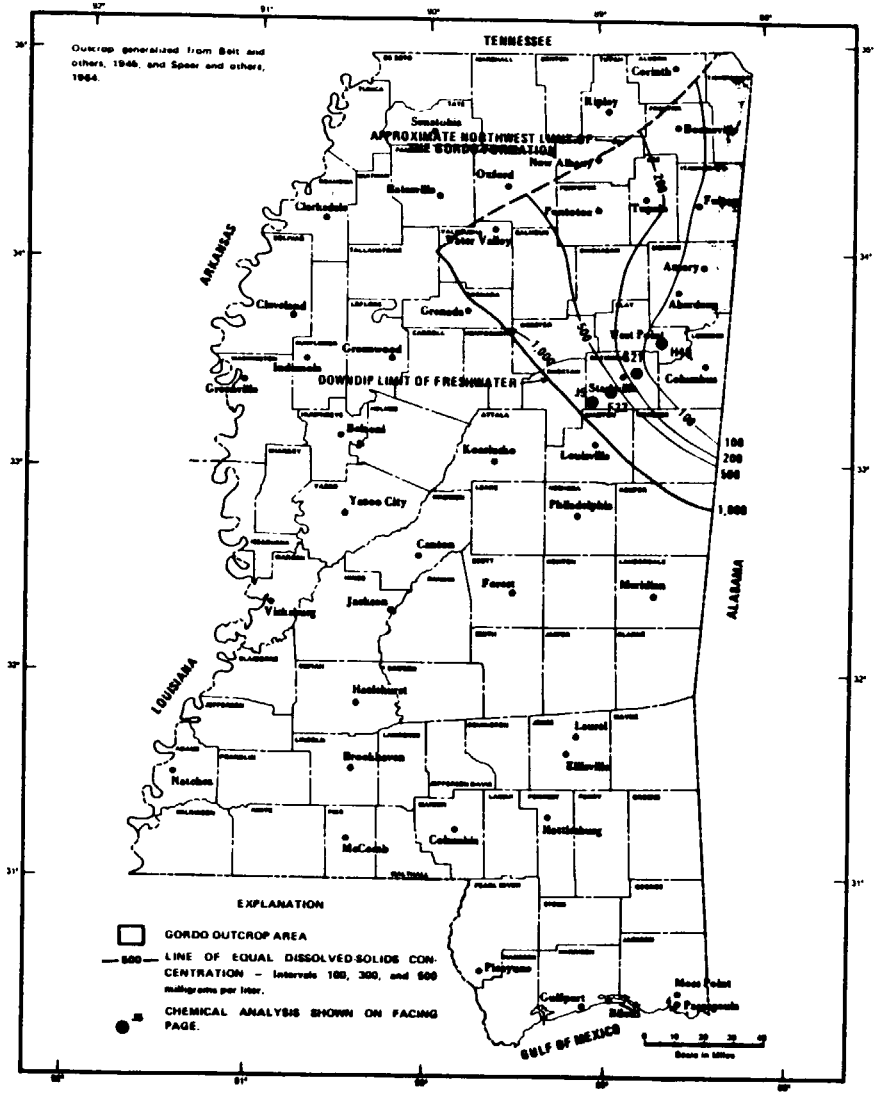


Figure 48. -- Dissolved-solids concentrations of water in the Gordo aquifer.

Gordo Aquifer *(Continued)*

Hydrologic Data

Transmissivity: Increases from poor to excellent in a short distance from northwest to southeast (fig. 47) as the thickness of the aquifer increases. The transmissivity map is based on several aquifer tests and on sand thicknesses shown on representative geophysical logs. Transmissivity based on 13 aquifer tests ranged from 535 to 21,400 ft^2/d (Boswell, 1978).

Largest well yield: 1,200 gallons per minute in Monroe County.

Large pumping centers: More than 10 Mgal/d is pumped from the Gordo aquifer in Monroe and Lowndes counties. In other counties, more than 1 Mgal/d is pumped at or near each of the following towns: Starkville, Tupelo, West Point, Pontotoc, and Fulton.

Water use in 1980: About 50 Mgal/d (Boswell, 1978 and Callahan, 1983).

Potential sustained yield of confined part of aquifer: 100 to 200 Mgal/d (based on data in table 3 and in figure 47).

Potentiometric maps: 1978 (Wasson, 1980c) and 1982 (Darden, 1984b).

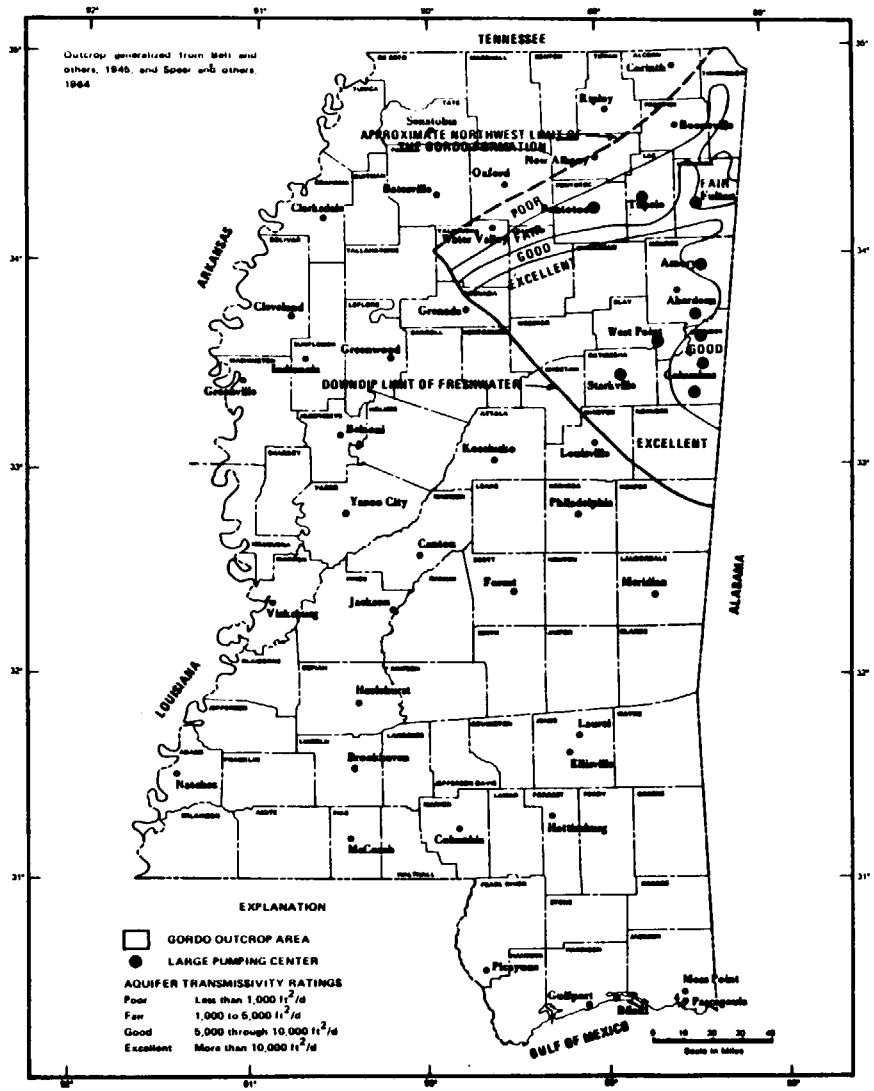


Figure 47. -- Transmissivity of the Gordo aquifer.

Gordo Aquifer

Geologic Data

Structure: The base of the Gordo Formation slopes generally to the southwest (fig. 46). Structure contours are generalized from Boswell (1978).

Outcrop area: Generalized from Belt and others (1945) and Speer, Golden, and Patterson (1964).

Area of freshwater occurrence: About 8,000 square miles.

Lithologic character: In much of the study area the Gordo can be subdivided into an upper clay unit and a lower sand and gravel unit (Boswell, 1978).

Thickness: Thickness of the Gordo aquifer increases from less than 50 feet in the northwestern part of the area to about 400 feet in the southern part of the study area.

Confining beds:

Overlying bed: Beds of clay in the upper part of the Gordo Formation separate the underlying Gordo aquifer from the overlying Eutaw-McShan aquifer.

Underlying bed: Commonly a thick bed of clay occurs in the upper part of the Coker Formation that separates the Gordo aquifer from the underlying Coker aquifer.

Hydrologic atlas describing aquifer: The Tuscaloosa Aquifer System in Mississippi (Boswell, 1978).

Areal water-resources reports: See map showing areas covered by reports (fig. 1) and selected references.

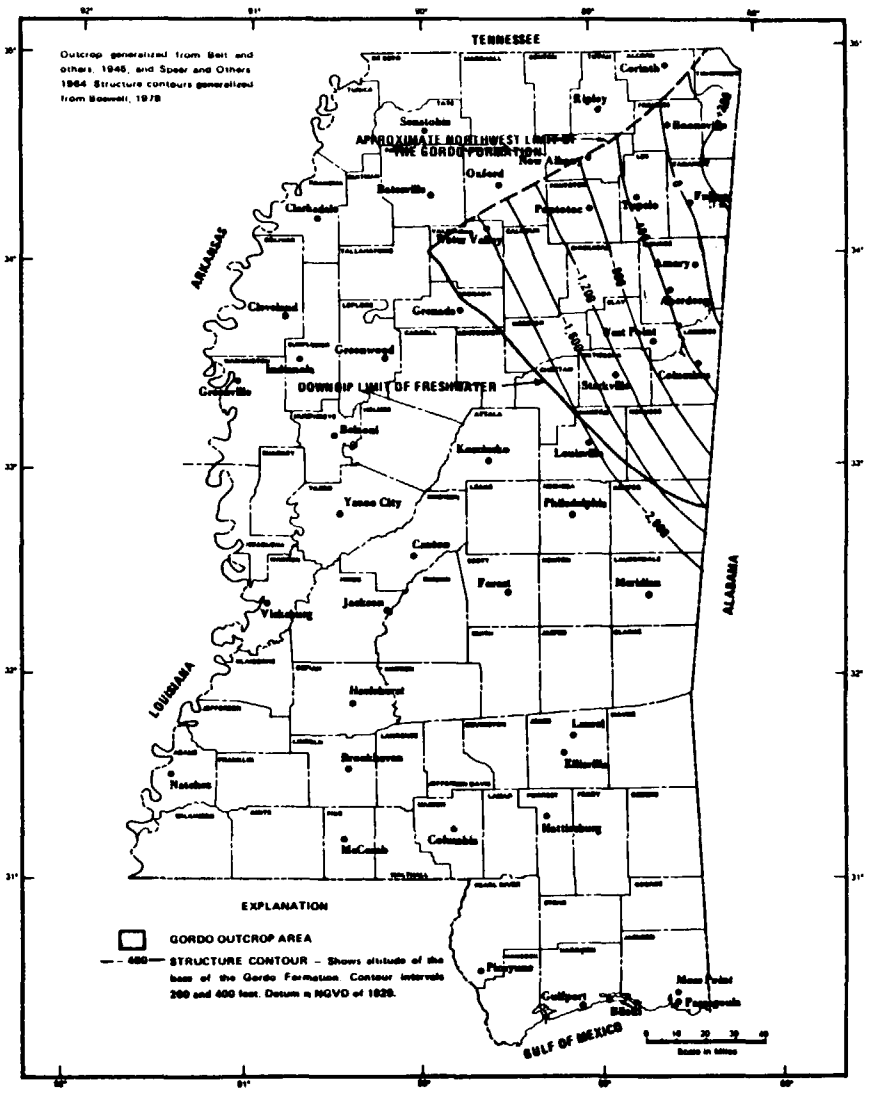


Figure 46. – Configuration of the base of the Gordo Formation.

Eutaw-McShan Aquifer *(Continued)*

Water-Quality Data

Dissolved-solids concentrations increase generally down the dip of the Eutaw-McShan aquifer (fig. 45). The distance from the outcrop area to the downdip limit of freshwater is about 20 miles near the Alabama line and about 80 miles in north-central Mississippi.

Chemical quality of water in narrow zones of the aquifer along the 100-, 200-, 500-, and 1,000-mg/L lines of dissolved solids shown on the facing map is represented by typical chemical analyses in the following table:

Well, County	Depth (feet)	Date of collection	Silica	Iron	Calcium	Magnesium	Sodium	Potassium	Bicarbonate	Sulfate	Chloride	Fluoride	Dissolved solids (residue on evaporation at 180°C)	Hardness as $CaCO_3$, Calcium, Magnesium	Specific conductance (microhms at 25°C)	pH	Color
100-mg/L dissolved-solids zone																	
L79, Monroe	150	9/77	13	0.02	18	3.8	20	5.0	120	1.0	4.9	0.1	127	61	195	7.7	0
200-mg/L dissolved-solids zone																	
Ø15, Lee	282	6/58	20	.11	50	6.8	13	6.0	176	34	4.0	.0	217	153	362	7.4	--
500-mg/L dissolved-solids zone																	
N1, Lowndes	757	4/64	11	.27	9.0	.4	244	3.9	452	.4	130	.3	622	22	1,060	7.8	5
1,000-mg/L dissolved-solids zone																	
K5, Kemper	1,218	11/54	7.8	.30	2.6	1.1	383	4.7	366	1.2	370	2.0	959	11	1,710	8.1	5

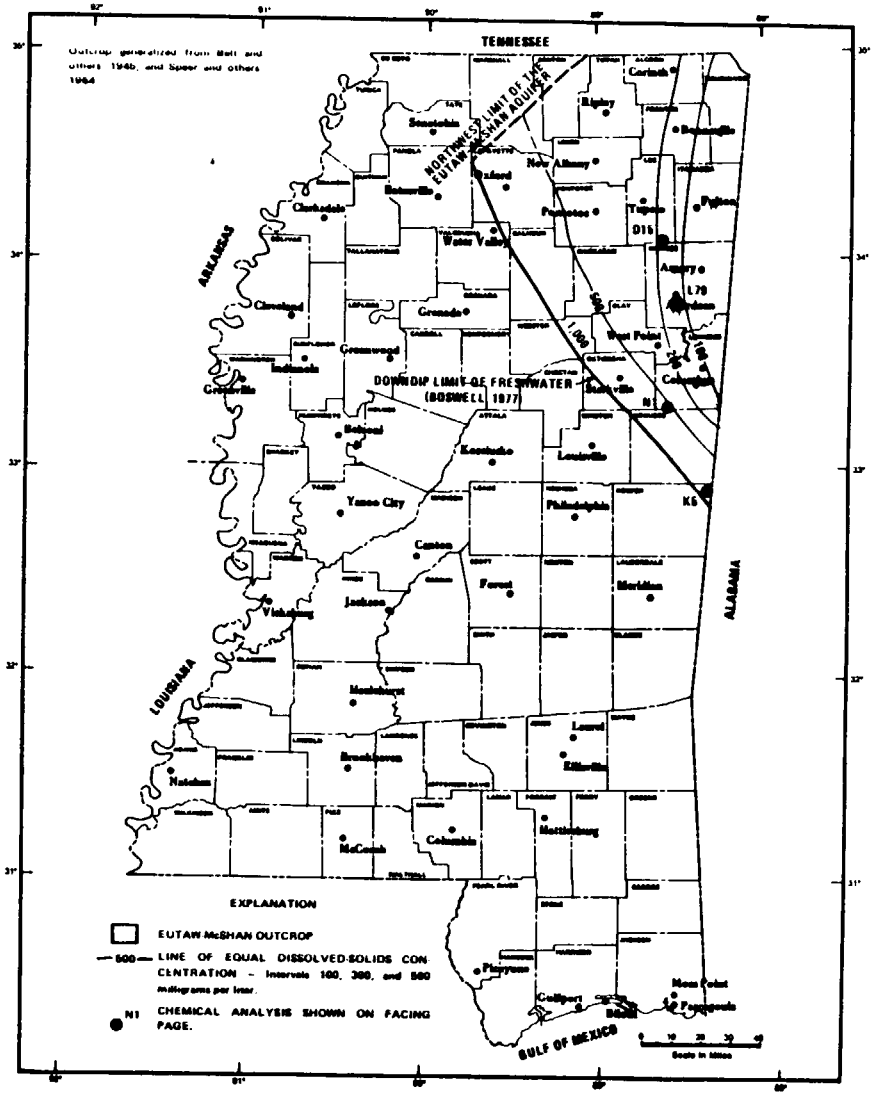


Figure 45. -- Dissolved-solids concentrations of water in the Eutaw-McShan aquifer.

Eutaw-McShan Aquifer *(Continued)*

Hydrologic Data

Transmissivity: Hydraulic characteristics of the Eutaw-McShan aquifer are relatively uniform over a large area of the downdip part of the aquifer. Transmissivity increases from poor in the outcrop area to fair down the dip as the thickness of the aquifer approaches about 100 feet. In the northwestern part of the aquifer, transmissivity also increases from poor to fair as the thickness of the aquifer approaches about 100 feet. The transmissivity map (fig. 44) is based on aquifer tests and interpretation of geophysical logs. Transmissivity based on 41 aquifer tests ranged from 200 to 4,900 ft^2/d (Boswell, 1977).

Largest well yields: A few public water-supply wells in the area yield about 600 gallons per minute.

Large pumping centers: Tupelo pumps about 7 Mgal/d. Pumpage from the Eutaw-McShan aquifer is about 3 Mgal/d at West Point and Aberdeen, and more than 1 Mgal/d at New Albany (Callahan, 1983).

Water use in 1980: About 27 Mgal/d (Callahan, 1983).

Potential sustained yield of the confined part of aquifer: 20 to 100 Mgal/d (based on data in table 3 and in figure 44). Boswell (1977) assumed specific conditions to calculate a potential yield of 40 Mgal/d.

Potentiometric maps: 1978 (Wasson, 1980a) and 1982 (Darden, 1985b).

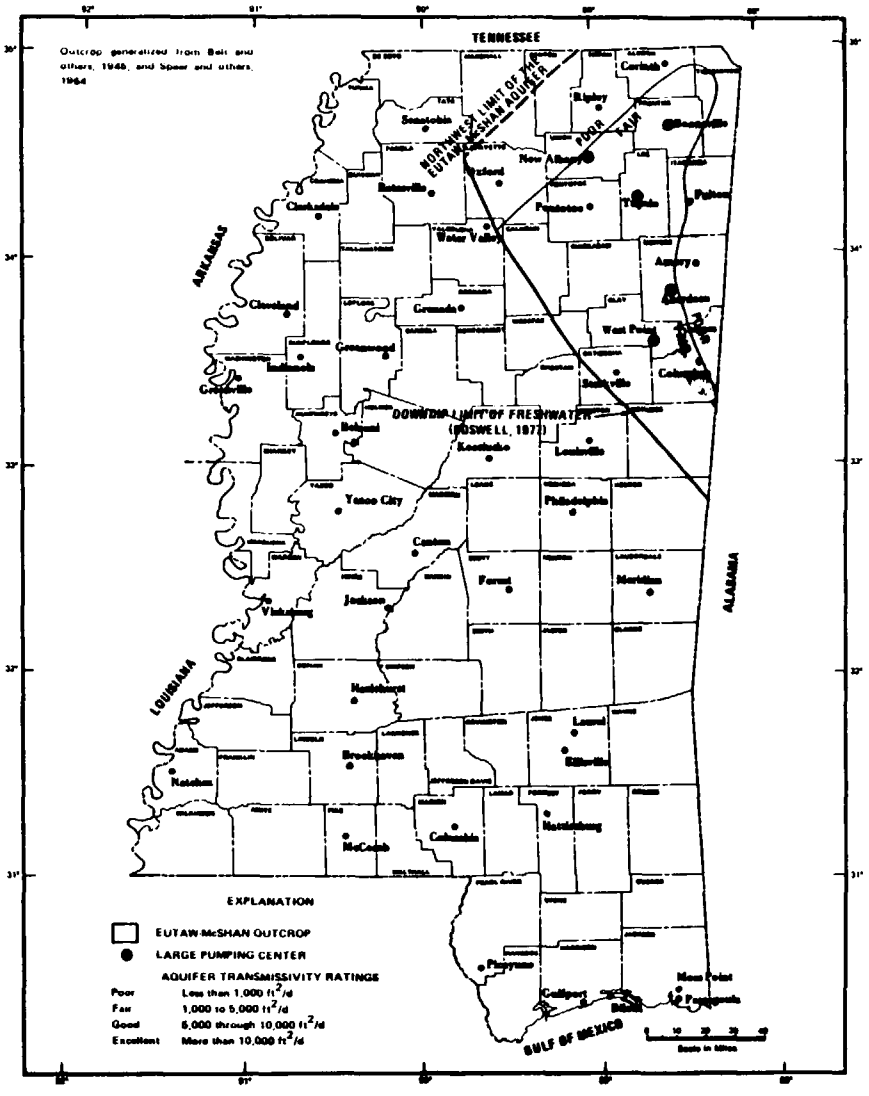
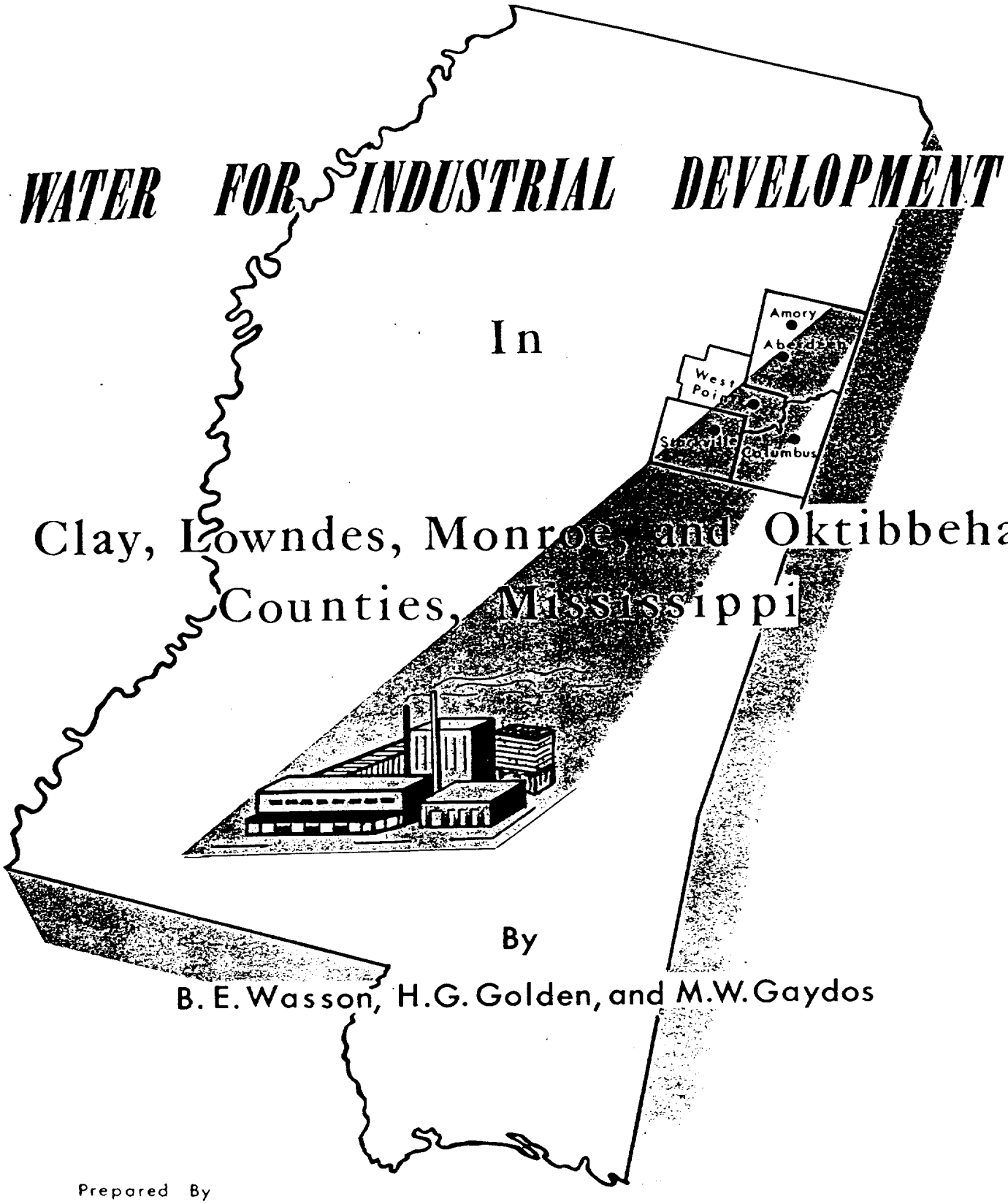


Figure 44. -- Transmissivity of the Eutaw-McShan aquifer.

WATER FOR INDUSTRIAL DEVELOPMENT

In

Clay, Lowndes, Monroe, and Oktibbeha Counties, Mississippi



By

B. E. Wasson, H. G. Golden, and M. W. Gaydos

Prepared By
WATER RESOURCES DIVISION
U. S. GEOLOGICAL SURVEY
1965

AVAILABLE WATER

FOR

INDUSTRY

Clay, Lowndes, Monroe, and Oktibbeha Counties, Mississippi

A COOPERATIVE STUDY SPONSORED JOINTLY BY
WATER RESOURCES DIVISION, U. S. GEOLOGICAL SURVEY
and

Mississippi Research and Development Center

JACKSON, MISSISSIPPI

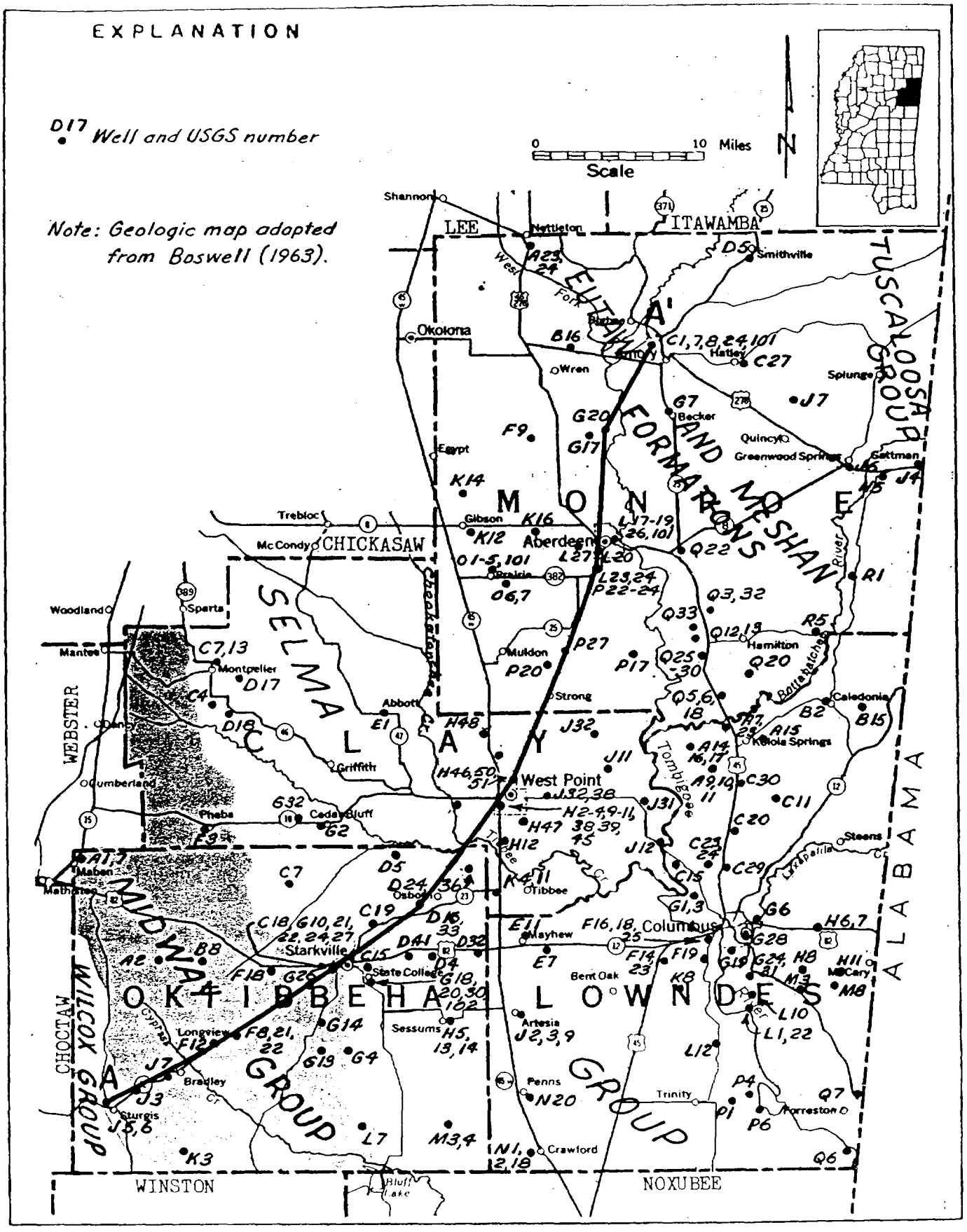


Figure 6.—Map showing formation outcrops, section A-A', and selected wells.

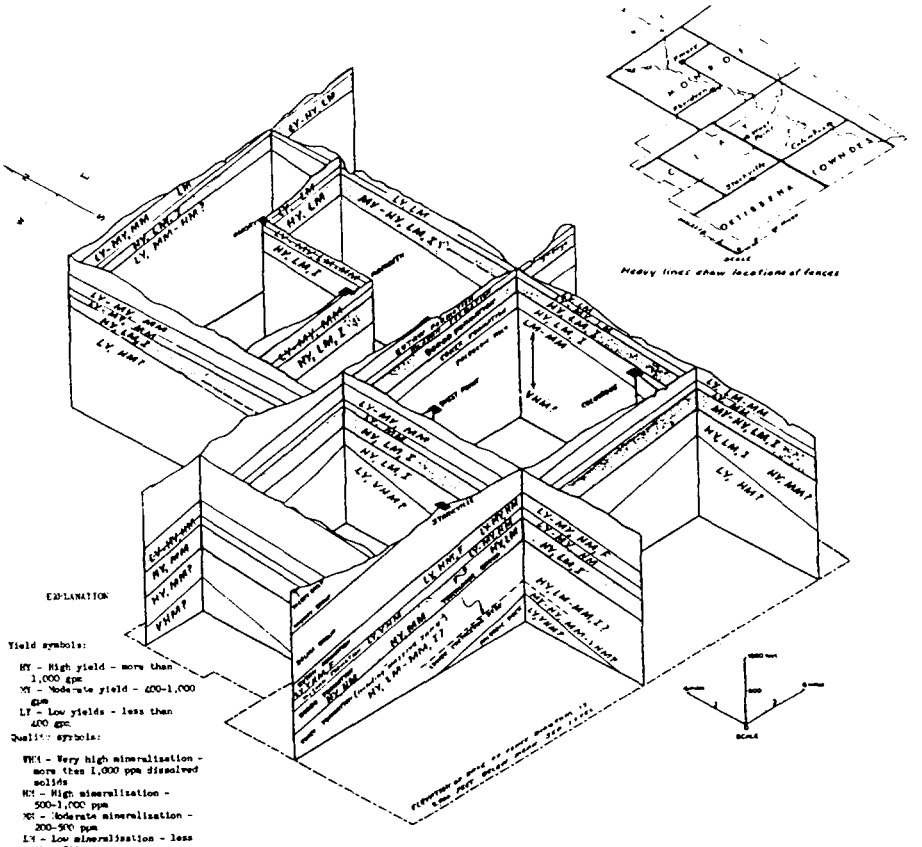


Figure 7.—Geohydrologic fence diagram.

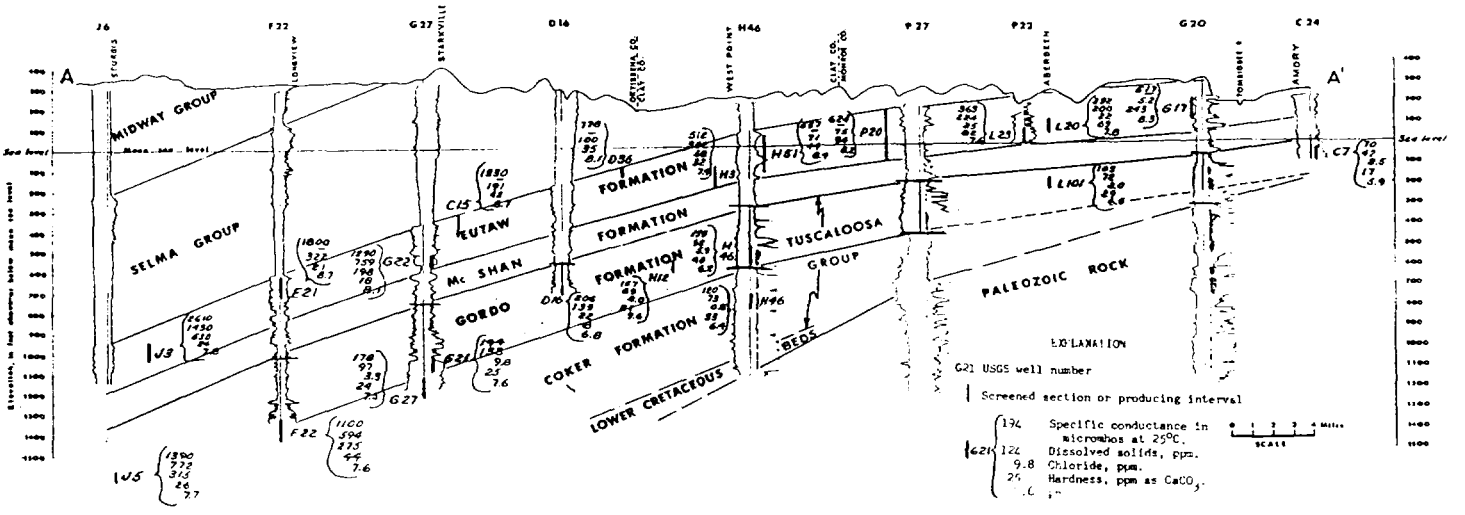


Figure 8.—Geohydrologic section A-A'.

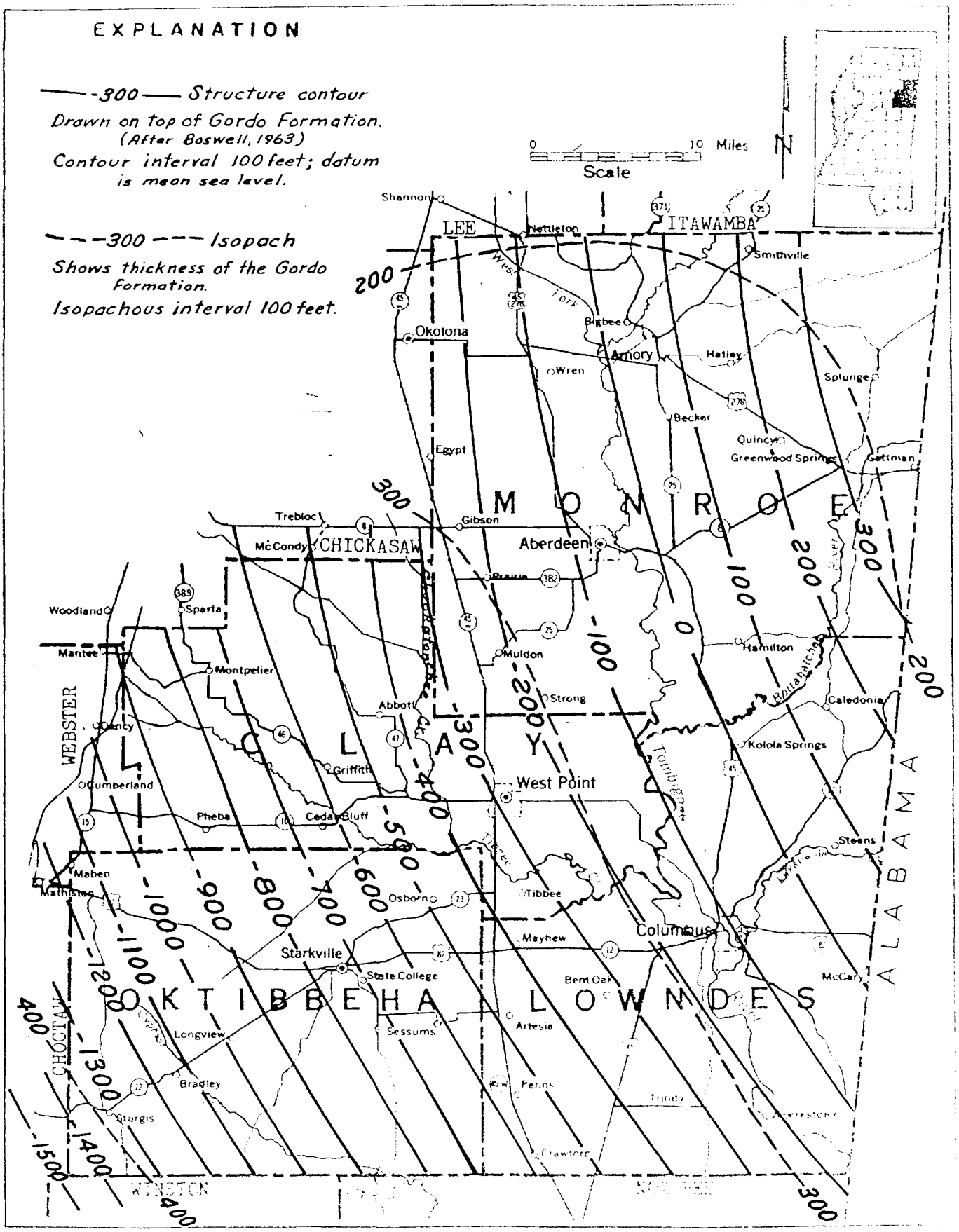


Figure 9.—Structure countour-isopachous map of the Gordo Formation.

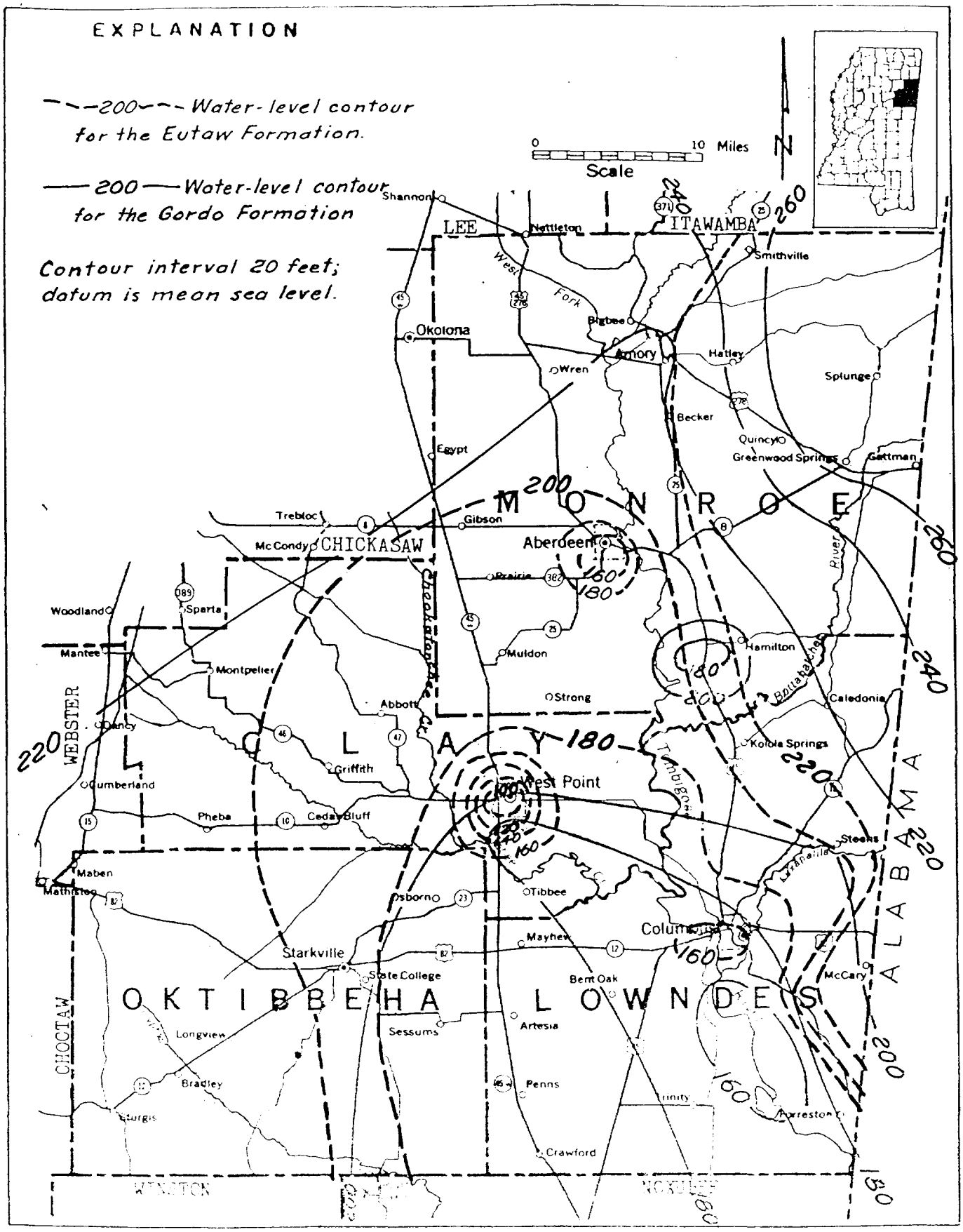


Figure 10.—Map showing water-level contours for the Eutaw and Gordo Formations.

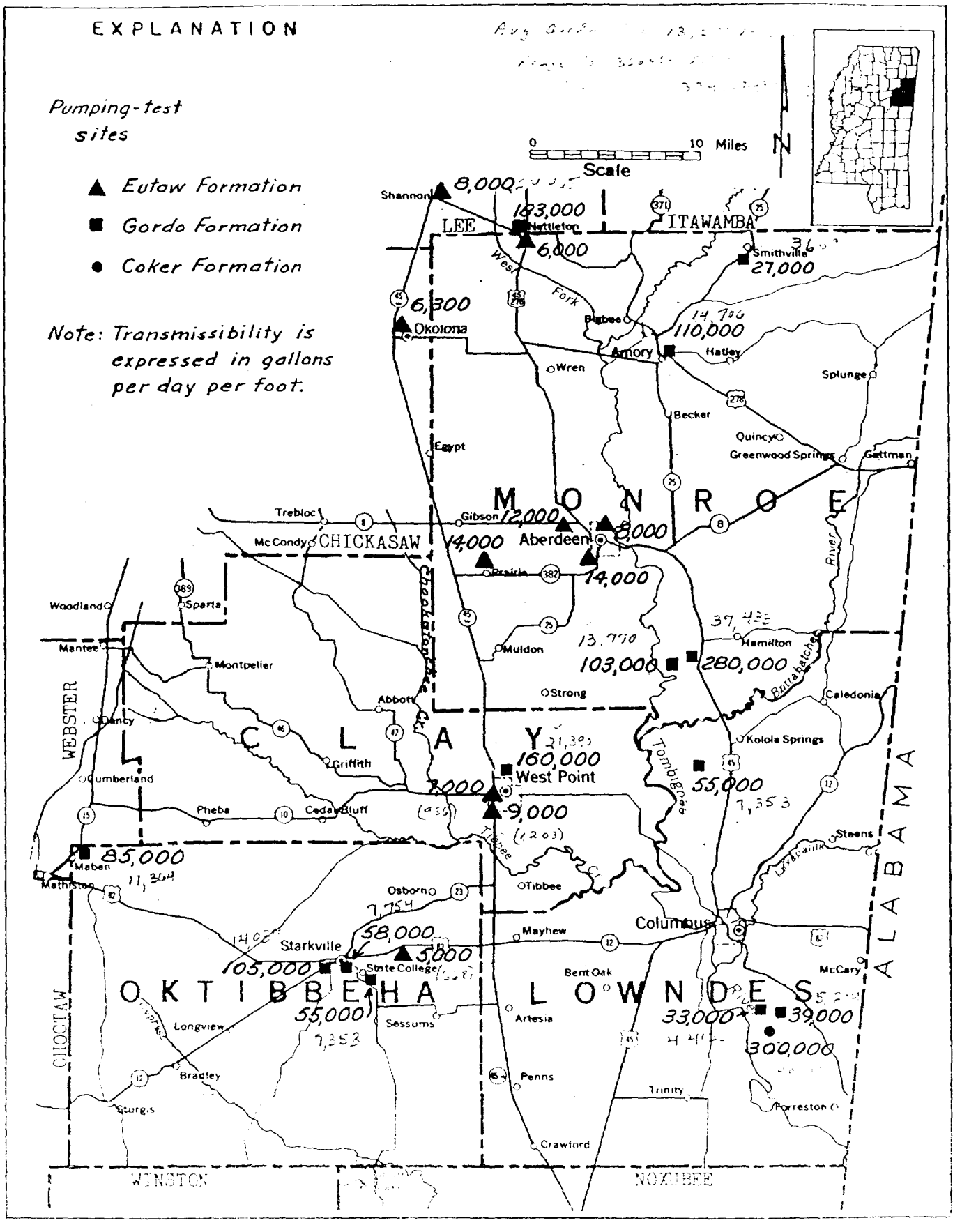


Figure 12.—Map showing pumping-test sites and aquifer tranmissibility values.

WATER SUPPLY POTENTIAL AT SELECTED LOCALITIES

COLUMBUS

Aquifers in the Tombigbee River alluvium, Pleistocene terraces, Eutaw Formation, and McShan Formation are tapped by low-yielding wells in the Columbus area. Water in these shallow units—less than 350 feet deep—is good and has low dissolved-solids concentrations—less than 200 ppm. None of these aquifers is capable of yielding more than 3 mgd of water continuously from a well field.

Large-capacity wells in the Gordo and Coker Formations in the vicinity of Columbus range in depth from 400 to 1,200 feet and yield as much as 2,000 gpm each. Well fields north and south of Columbus yield about 8 mgd each, and well fields of greater yield can be constructed. Water in the Gordo and Coker is of good quality except for its high iron content. Water levels in the aquifers will decline more rapidly as withdrawals are increased.

The Tombigbee River at Columbus will have a sustained flow of 90 mgd during a 50-year drought. The water is soft, and the dissolved-solids content is less than 100 ppm. Luxapalila Creek during a 50-year drought will have a flow of 20 mgd. The water is soft, and dissolved solids are less than 60 ppm; occasionally the color is high, 50 to 60 units. Thus the total surface supply available in the Columbus area will exceed 100 mgd during severe droughts and the water generally will be of good quality. Present pumpage (1964) by the city of Columbus is 3 mgd from Luxapalila Creek.

ABERDEEN

Ground-water conditions at Aberdeen are about the same as for Columbus, except that the Coker Formation is not as thick at Aberdeen. Most of the 1964 usage at Aberdeen is from the Eutaw Formation. Water levels in the Eutaw at Aberdeen are so low that major additional water systems should not be located within 2 miles. Water from the Eutaw is of excellent quality. Water from the much higher yielding and deeper Gordo and Coker Formations contains excessive iron for some uses.

At Aberdeen, the Tombigbee River will have a sustained flow of 35 mgd during a 50-year drought. The water is soft, and the dissolved-solids content is less than 100 ppm.

AMORY

Shallow ground-water conditions at Amory are similar to those at Columbus and Aberdeen, except for a much thinner section of Eutaw. The total thickness of the Gordo and Coker Formations is less than 200 feet at Amory, but the beds consist of highly permeable sand and gravel which supply water for present municipal needs and are capable of much higher yields. Water from the Gordo and Coker at Amory contains excessive iron and requires treatment for most uses.

At Amory, the East Fork Tombigbee River will have a sustained flow of 25 mgd during a 50-year drought. Low flow in the Tombigbee River is only slightly higher than in the East Fork because of the small contribution from the West Fork. East Fork water is soft, and the dissolved-solids content is less than 100 ppm. Tombigbee River water is similar to that in East Fork but slightly reduced in quality, owing to the inflow of the more mineralized West Fork water.

WEST POINT

Municipal wells and most domestic wells in the vicinity of West Point are about 400 feet deep and completed in the Eutaw Formation. The water is of excellent quality. Municipal pumpage (slightly more than 1 mgd) has caused considerable water-level decline and interference between wells at West Point. No major industrial usage of water from the Eutaw should be made at West Point.

Both the Gordo and Coker Formations are capable of high yields at West Point, but the water has a high iron concentration that would require treatment of the water for many uses. The base of the Gordo is about 800 feet deep and the base of the Coker Formation is at about 1,300 feet.

The Tombigbee River, 7 miles east of West Point, has a sustained flow of 80 mgd during a 50-year drought. The water is soft, and the dissolved-solids content is less than 100 ppm. Tibbee Creek, 2 miles to the south, is often dry. A 64,000 acre-foot storage reservoir on Tibbee Creek could supply a sustained flow of 100 mgd during a 20-year drought. The feasibility of such a structure would involve consideration of many factors beyond the scope of this report. The dissolved-solids content of water in Tibbee Creek ranges from 60 to 300 ppm, and impoundment would reduce the variation in mineral concentration.

Lower Cretaceous beds are thin or absent in the northern part of the area and are deeply buried in the southern part. No water wells tap these beds but in the southern part of the area they contain large quantities of water. They do not crop out in the area, and therefore recharge comes from adjacent beds.

At most places multiple-aquifer well fields can be developed—that is, more than one aquifer can be tapped at any one site. Quality of water, pumping levels, and other factors determine the best pumping rates from the various aquifers. Either surface water or ground water can be used as alternate or supplemental sources for a water system.

Maximum development of ground water would lower the water table and thus would tend to reduce the sustained flows of streams in the area. However, because most industrial uses are nonconsumptive, much of the ground-water withdrawal would be added to streams and the net result might be higher sustained flows than those occurring under natural conditions.

SELECTED BIBLIOGRAPHY

Belt, W. E., and others, 1945, Geologic map of Mississippi: Mississippi Geol. Soc., Jackson, Miss.

Boswell, Ernest H., 1963, Cretaceous aquifers of northeastern Mississippi: Mississippi Board of Water Comm. Bull. 63-10, 202 p.

Boswell, E. H., and Lang, J. W., 1957, Ground-water conditions in the Aberdeen-Columbus area, Mississippi: U. S. Geol. Survey open-file report, 14 p., 2 figs.

Drennen, C. W., 1953, Stratigraphy and structure of outcropping pre-Selma Coastal Plain beds of Fayette and Lamar Counties, Alabama; U. S. Geol. Survey Circ. 267, 9 p.

Golden, H. G., 1962, Low-flow characteristics, Tombigbee River basin, Mississippi: Mississippi Board of Water Comm. Bull. 62-2, 32 p.

Kohler, M. A., Nordenson, T. J., and Fox, W. E., 1959, Evaporation maps for the United States: U. S. Weather Bur. Tech. Paper no. 37, pls. 2, 4.

Lang, J. W., and Boswell, E. H., 1960, Public and industrial water supplies in a part of northern Mississippi: Mississippi Geol. Survey Bull. 90, 104 p.

Moore, E. W., 1940, Progress report of the committee on quality tolerances of water for industrial uses: New England Water Works Assoc. Jour., v. 54, p. 271.

Rainwater, F. H., 1962, Stream compositions of the conterminous United States: U. S. Geol. Survey Hydrol. Inv. Atlas HA-61.

Sanders, Ralph, 1959, Climate of the states, Mississippi: U. S. Weather Bur., 15 p.

Stephenson, L. W., Logan, W. N. and Waring, G. A., 1928, Ground-water resources of Mississippi, with discussions of the chemical character of the waters, by C. S. Howard: U. S. Geol. Survey Water-Supply Paper 576, 515 p.

Stephenson, L. W., and Monroe, W. H., 1940, The Upper Cretaceous deposits; Mississippi State Geol. Survey Bull. 40, 296 p.

U. S. Army Corps of Engineers, 1962, Tennessee-Tombigbee Waterway, Design Memorandum No. 1, Mobile, Ala.: U. S. Army Engr. District.

U. S. Public Health Service, 1962, Public Health Service drinking water standards: Public Health Service Publication no. 956, p. 7-8.

Wilson, K. V., and Trotter, I. L., Jr., 1961, Floods in Mississippi, magnitude and frequency: Mississippi State Highway Dept. publication, 326 p.

PROPERTY OF MICHAEL T. SLACK

CHARACTERIZATION OF AQUIFERS DESIGNATED AS POTENTIAL DRINKING-WATER SOURCES IN MISSISSIPPI

U. S. GEOLOGICAL SURVEY
WATER RESOURCES INVESTIGATIONS
OPEN-FILE REPORT 81-550

Prepared in cooperation with the
MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
BUREAU OF POLLUTION CONTROL

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CHARACTERIZATION OF AQUIFERS DESIGNATED AS POTENTIAL DRINKING WATER SOURCES IN MISSISSIPPI

by L. A. Gandl

Water-Resources Investigations
Open-File Report 81-550

Prepared in cooperation with the

Mississippi Department of Natural Resources,
Bureau of Pollution Control

Jackson, Mississippi
1982

Transmissivities determined from 41 aquifer tests range from 200 to 4,900 ft^2/d. Hydraulic conductivities average 13.4 ft/d and specific capacities average 3.3 (gal/min)/ft of drawdown (Boswell, 1977).

Large municipal wells in the Eutaw-McShan aquifer pump as much as 770 gal/min, but some produce under 100 gal/min. Continued development of the aquifers by large water users can be expected, but such development near areas of heavy pumpage such as Tupelo and West Point will aggravate the declining water-level problem in those areas. Large quantities of water are available where the underlying Tuscaloosa aquifers occur and these aquifers are frequently utilized rather than the Eutaw-McShan aquifer.

Water in the outcrop area is a hard, calcium-bicarbonate type having excessive iron. Further downdip the water becomes a sodium-bicarbonate type. Fluoride is prevalent throughout the aquifer. The downdip limits of fresh, slightly saline, and moderately saline water are shown in figure 44.

Bentonite, glauconite, and lignite are present in the outcrop area, and downdip from the 10,000 mg/L dissolved-solids zone some oil and gas is found.

The Eutaw-McShan aquifer is used to dispose of oil-field wastes downdip of the 10,000 mg/L dissolved-solids zone.

Tuscaloosa Aquifer System

The Tuscaloosa aquifer system consists of the Gordo and Coker Formations of the Tuscaloosa Group of Late Cretaceous age and the uppermost sands of the Lower Cretaceous rocks. The Gordo crops out along the eastern border of north Mississippi (fig. 48) and in northwest Alabama. The Coker crops out in northwestern Alabama. Structure contours on the base and top of the Gordo and the Coker aquifers are shown in figures 48 to 51. The formations dip to the southwest, steepening and thickening downdip (figs. 52 and 53). The Lower Cretaceous sands are as much as 200 feet thick in the southern part of the area. The formations thin and pinch out to the north, the deeper units disappearing first. The Coker pinches out to the north several miles before the Gordo pinches out.

The Gordo Formation is composed of an upper clay unit and a lower sand and gravel unit. The Coker consists of an upper unnamed member of mixed clay, sand, and gravel, and a basal massive sand that may be indistinguishable in places from the sand in the underlying Lower Cretaceous. The upper clay of the Gordo Formation serves to separate it somewhat from the overlying Eutaw-McShan aquifer, but the sands of the Lower Cretaceous may be in contact with Paleozoic aquifers.

The potentiometric surface of the Gordo aquifer (fig. 54) is similar to that of the Eutaw-McShan aquifer (fig. 47), because there is some leakage between the aquifers and because pumpage from the aquifers is similar. The water levels in the Tuscaloosa aquifer system are declining at about 2 ft/yr in much of the area with larger declines near Tupelo and Columbus. Water levels in the Coker are similar, but drawdowns have not been as large because the Coker is not heavily used.

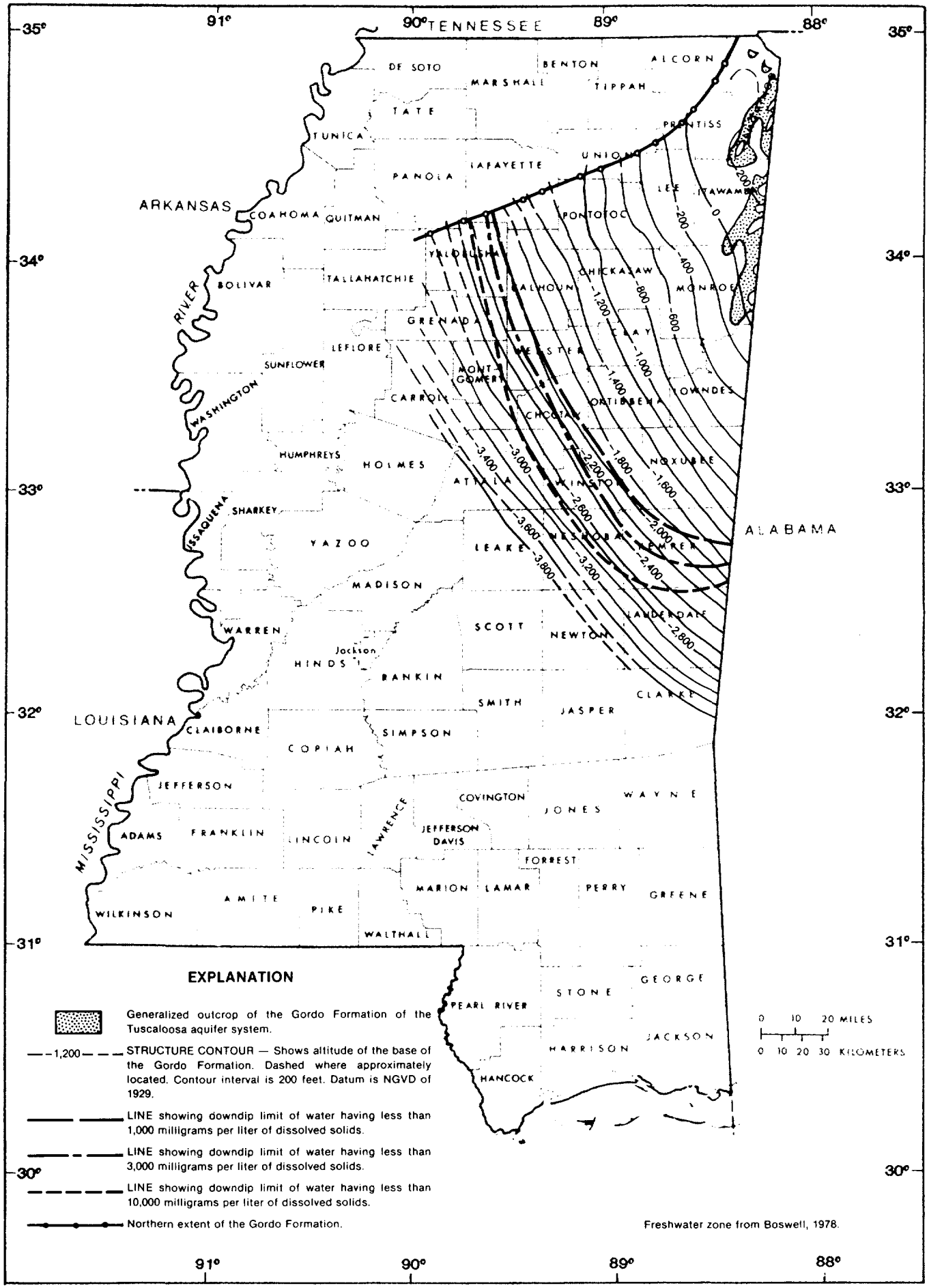


Figure 48. — Configuration of the base of the Gordo Formation of the Tuscaloosa aquifer system.

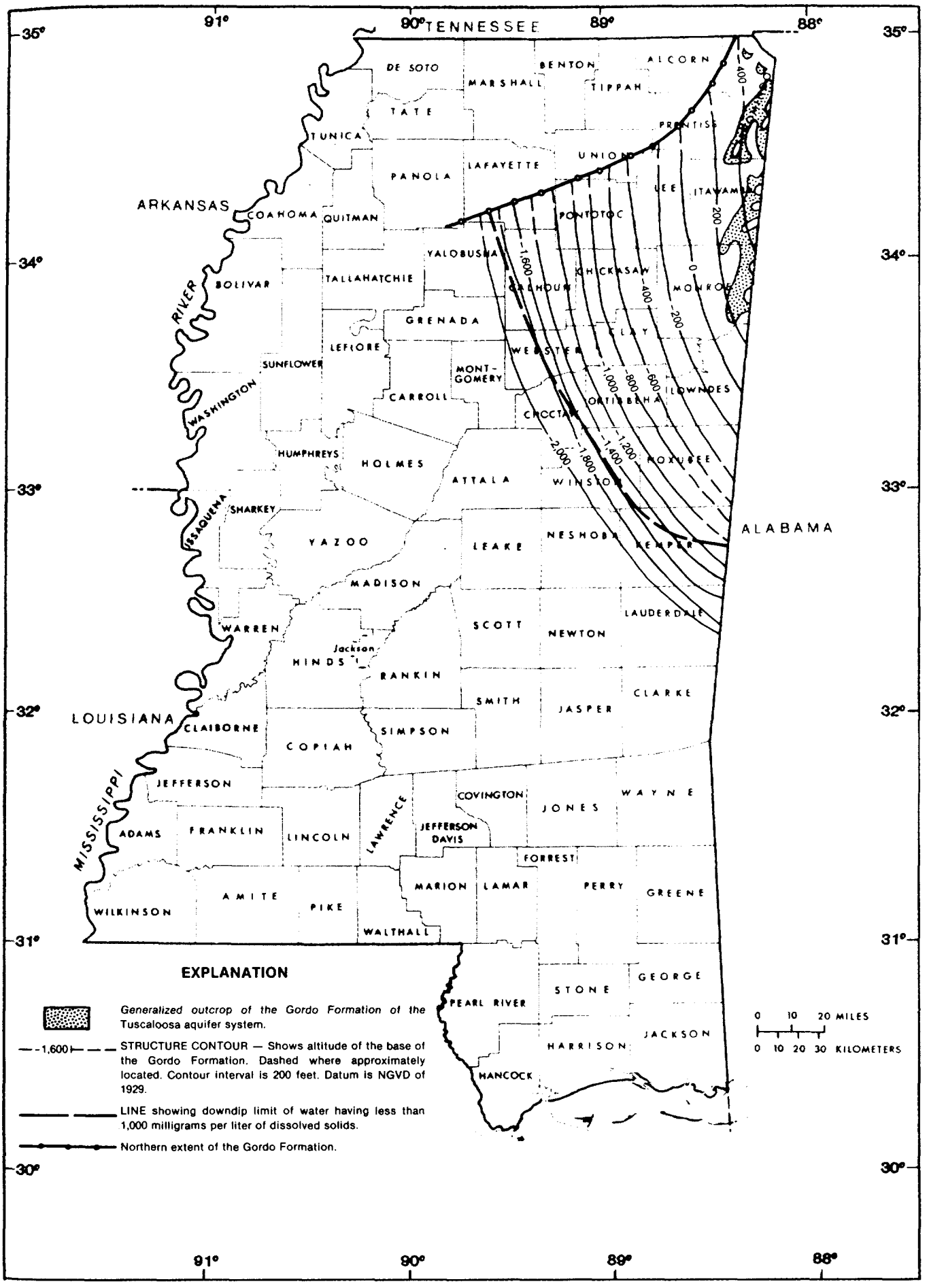


Figure 49. — Configuration of the top of the Gordo Formation of the Tuscaloosa aquifer system.

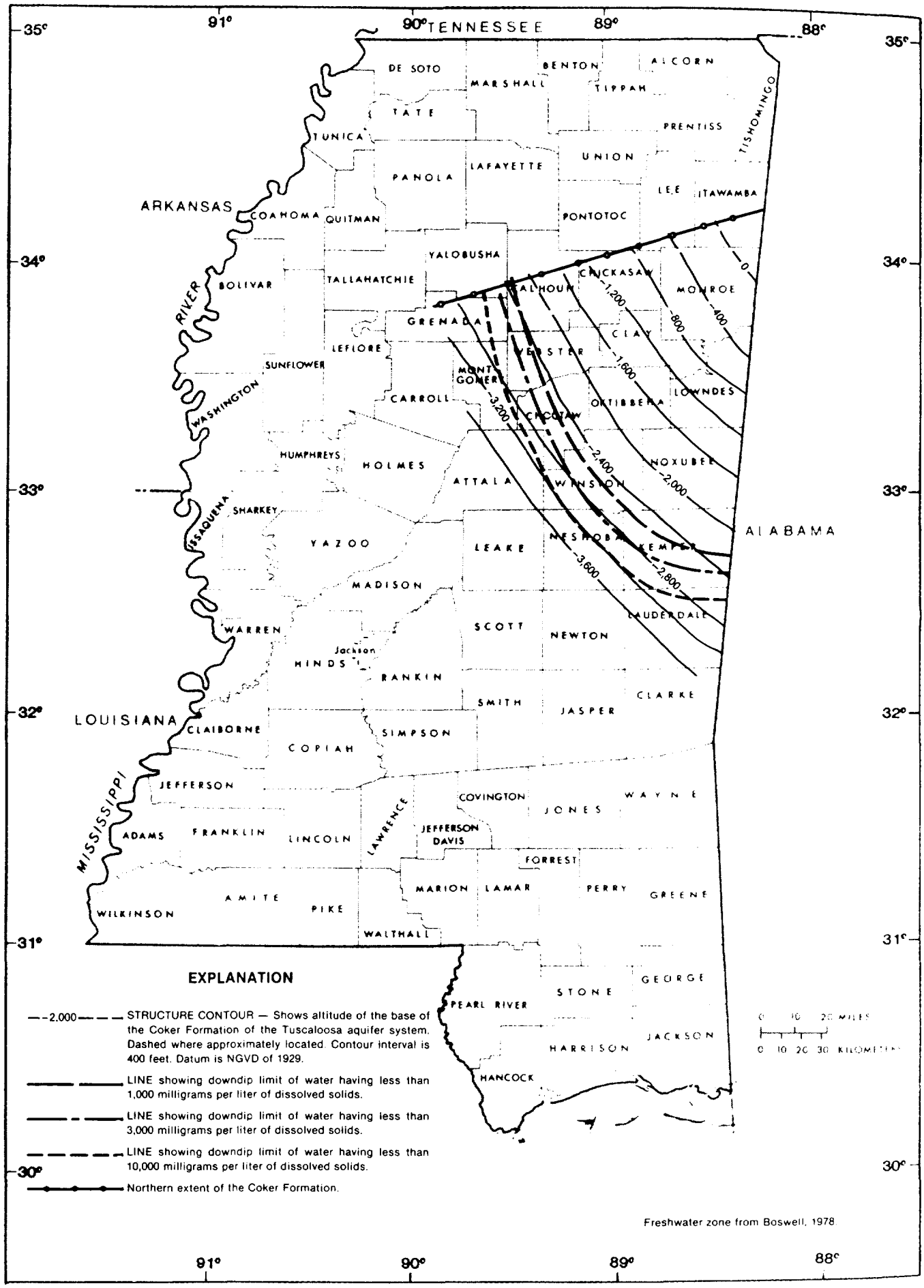


Figure 50. — Configuration of the base of the Coker Formation of the Tuscaloosa aquifer system.

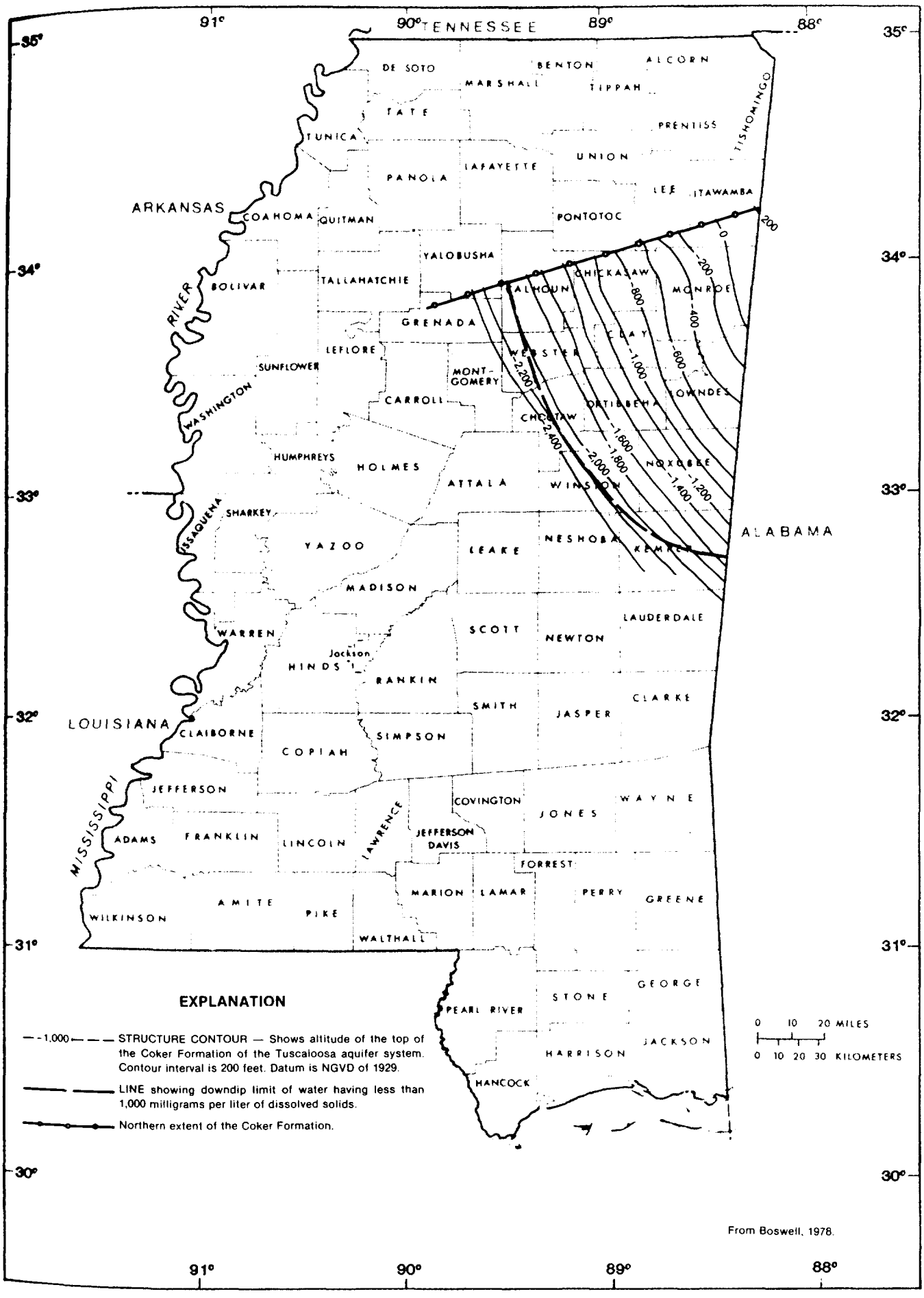


Figure 51. — Configuration of the top of the Coker Formation of the Tuscaloosa aquifer system.

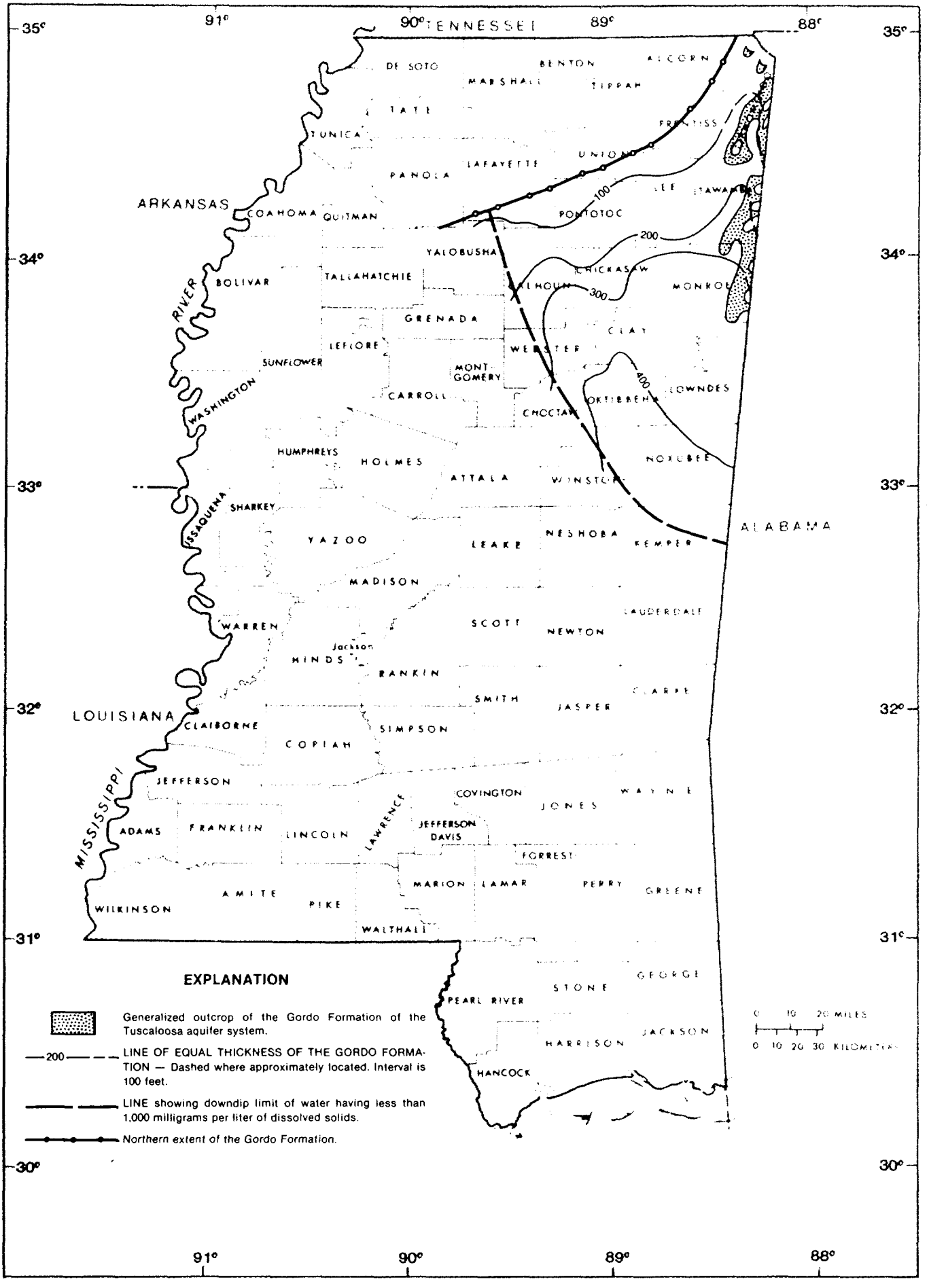


Figure 52. — Thickness of the Gordo Formation of the Tuscaloosa aquifer system.

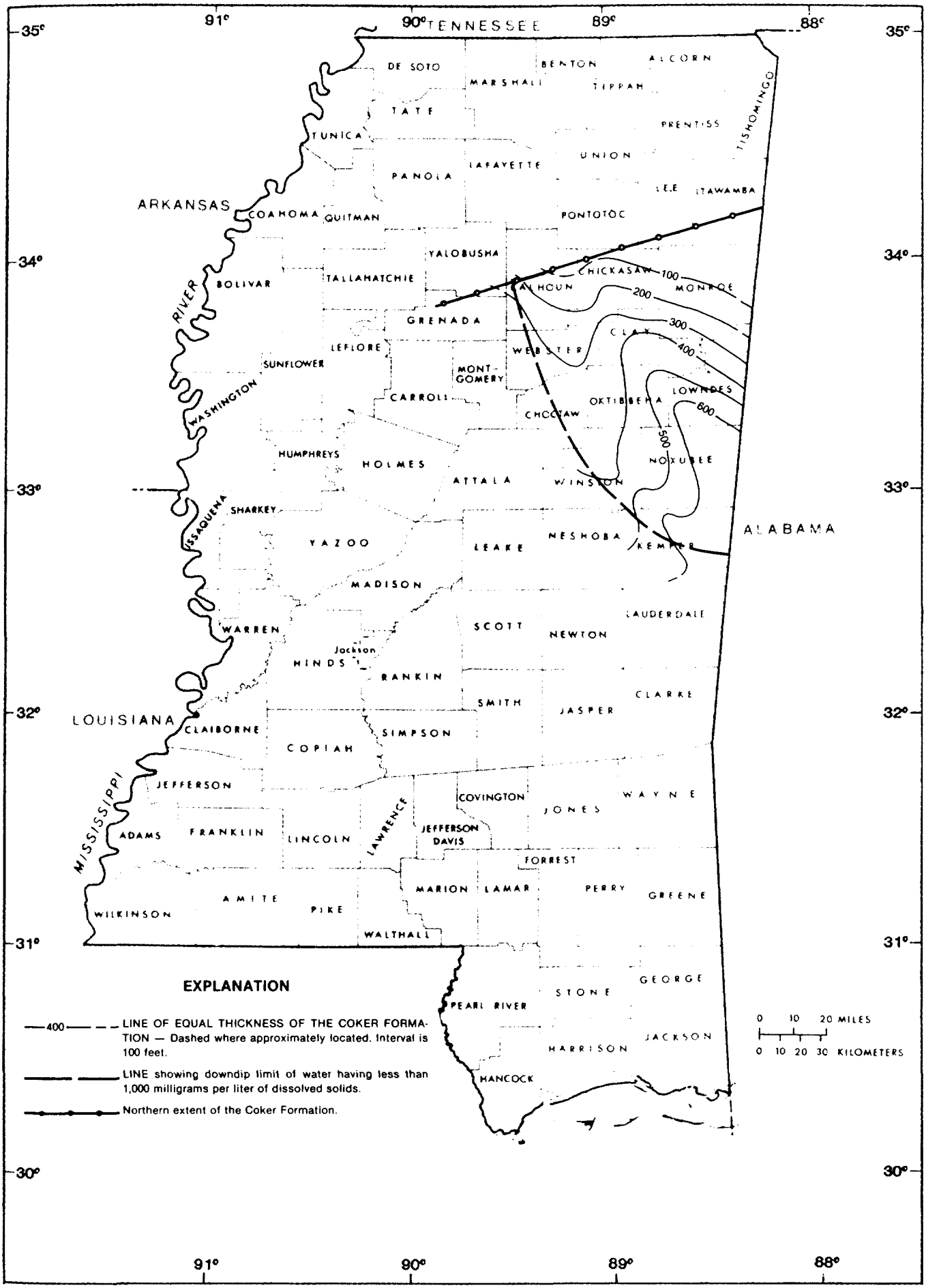


Figure 53. — Thickness of the Coker Formation of the Tuscaloosa aquifer system.

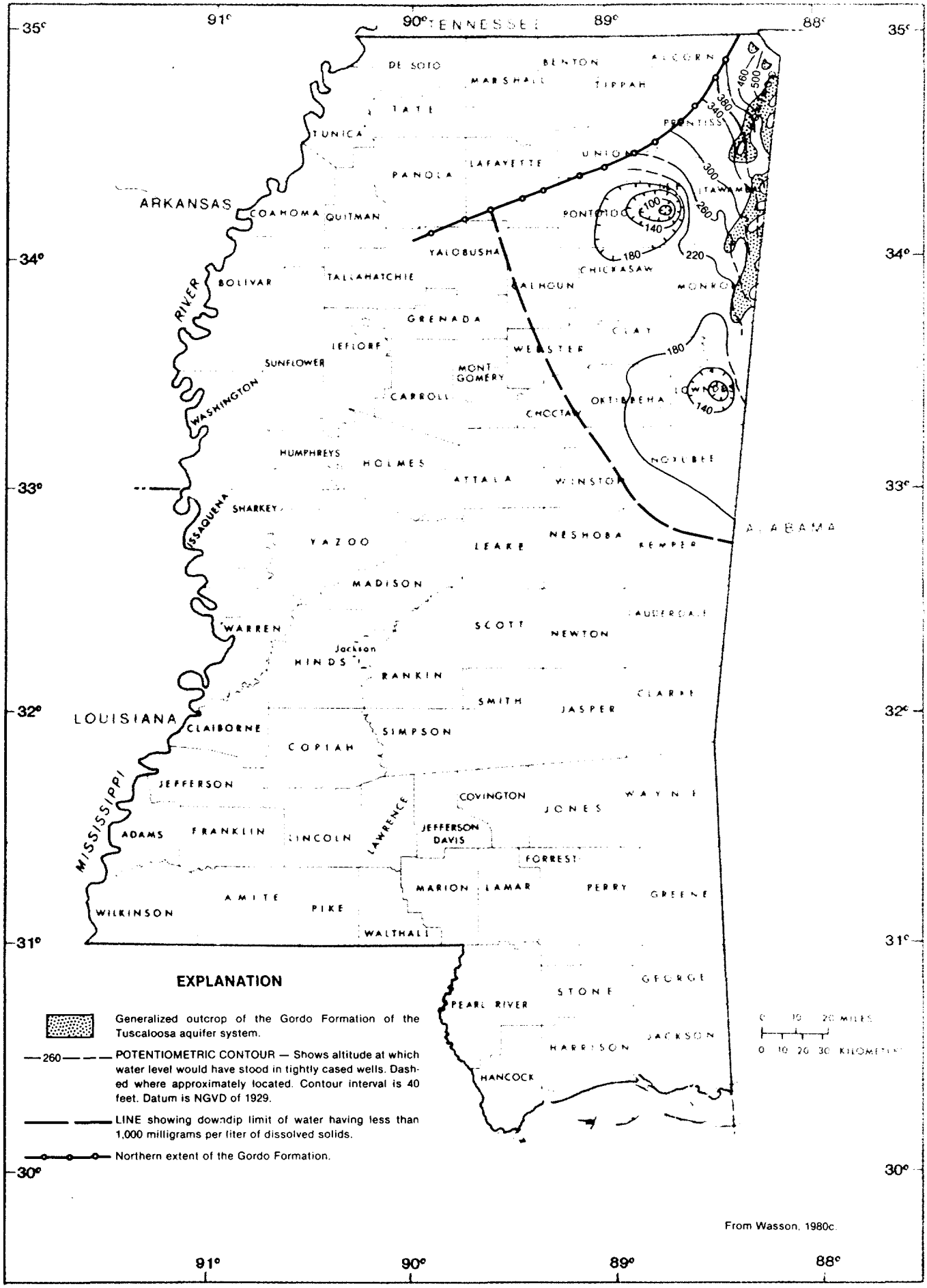


Figure 54. — Potentiometric surface of the Gordo Formation of the Tuscaloosa aquifer system.

Recharge to the aquifers is from rainfall on the outcrop and infiltration from adjacent aquifers. Water movement is generally to the southwest, but is somewhat affected by pumpage.

Thirteen aquifer tests in the Gordo Formation indicate transmissivities of 535 to 21,400 ft^2/d and an average hydraulic conductivity of 42.8 ft/d. Four aquifer tests in the Coker Formation indicate transmissivities ranging from 762 to 80,200 ft^2/d (Boswell, 1978).

Large diameter wells in the Gordo commonly produce 500 to 1,000 gal/min and large wells in the Coker produce 1,500 to 1,800 gal/min. The Gordo Formation is more frequently utilized simply because it is shallower. Increased use of both formations can be expected in the future because water levels are high in most areas and well yields are large. The Coker may be used more extensively in the future in areas where the Gordo and the overlying Eutaw-McShan aquifer are being drawn down excessively.

Near the outcrops, water from the Tuscaloosa aquifers is clear, acidic, soft-to-slightly hard, low in dissolved-solids concentrations, and high in iron. The downdip limits of fresh, slightly saline, and moderately saline water are shown in figures 48 and 50.

Sand and gravel are mined from the outcrops of the Tuscaloosa aquifers, and lignite is found in the area. Oil and gas are produced in Clarke, Jasper, and Smith Counties and the area to the south and southwest of these counties.

Some oil field wastes are disposed of in the Tuscaloosa aquifers downdip from the 10,000 mg/L dissolved-solids limit.

Paleozoic Aquifer

The Paleozoic aquifer in northeastern Mississippi consists of the upper weathered zone of the Paleozoic rocks (fig. 55). The zone commonly is about 100 feet thick and was weathered prior to deposition of the overlying Cretaceous rocks. The weathered zone consists principally of limestone, chert, and sandstone. This zone varies in age across the aquifer, because the dip of the beds at 30 ft/mi is steeper than the dip of the weathered surface which dips at 17 to 30 ft/mi. The aquifer is not isolated from overlying Cretaceous aquifers.

The potentiometric surface of the Paleozoic aquifer (fig. 56) is similar to that of the overlying Eutaw-McShan (fig. 47) and Tuscaloosa aquifers (fig. 54). Near the outcrop, water levels are relatively stable. In the confined part of the aquifer, water-levels are lower and in some areas as much as 100 feet lower than that in the overlying aquifer. Water-level declines generally are greater than in the overlying aquifers. Near Corinth, the water level has declined at a rate of 9 to 15 ft/yr since 1962; elsewhere, the decline has been about 1 ft/yr. At current rates of withdrawal, it has been predicted by Wasson and Tharpe (1975) that water levels in the Corinth area will be drawn down to the top of the aquifer by 1987.

Data Sheet Report Summary
Mississippi State Department of Health
Division of Water Supply

PWS ID	Name of System	Wells	Connections	Consecutive
0470011	CAYCE MEADOWS SUBDIVISION	1	12	N
0470012	HOLIDAY ESTATES SUBDIVISION	2	45	N
0470013	EAST BARTON WATER SUPPLY	1	30	N
0470018	BETHLEHEM COMMUNITY W/A	1	17	N
0470019	CEDAR OAKS WATER ASSOCIATION	1	30	N
0470021	COLLIERVILLE & BYHALIA FARMS	2	34	N
0470024	CUMMINGS TRAILER PARK	1	15	N
0470027	GORDON LAKE SUBDIVISION	2	52	N
0470034	LEE WOOD SUBDIVISION	1	50	N
0470040	OLIVE BRANCH (EAST FARNS)	1	27	N
0470047	SCENIC HILLS SUBDIVISION	1	18	N
0470051	VICTORIA BABY FARMS	1	30	N
0470054	VICTORIA MEADOWS-PHASE I	1	45	N
0470061	WATSON FARMS PHASE II	1	14	N
0470062	WHALEY ACRES SUBDIVISION	1	15	N
0470069	SOUTH VICTORIA	2	59	N
0470070	WARSAW WATER SYSTEM	3	47	N
0470071	OAK FOREST SUBDIVISION	1	15	N
0470103	COUNTRY VIEW FARMS	3	2	N
** County Code: 48				
0480001	TOWN OF ABERDEEN	10	3500	N
0480002	CITY OF AMORY WATER DEPT.	6	3654	N
0480003	CASON WATER ASSOCIATION #1	1	174	N
0480004	COONTAIL WATER ASSOCIATION	~~1~~ 2	360	N
0480005	VILLAGE OF GATTMAN	2	271	N
0480007	HAMILTON WATER DISTRICT	2	751	N
0480008	TOWN OF HATLEY	2	436	N
0480011	QUINCY WATER ASSOCIATION #1	3	346	N
0480012	TOWN OF SMITHVILLE	3	621	N
0480013	WREN W/A #1-SOUTH	3	610	N
0480015	QUINCY WATER ASSN #2-ATHENS	0	239	Y
0480016	QUINCY WATER ASSOCIATION #3	3	304	N
0480017	GAINES-TRACE WATER ASSOCIATION	0	186	Y
0480019	CASON WATER ASSOCIATION #2	2	927	N
0480020	WREN W/A #2-NORTH	1	101	N
** County Code: 49				
0490001	51-55 WATER ASSOCIATION	0	150	Y
0490002	DUCK HILL WATER DEPARTMENT	2	322	N
0490003	ESKRIDGE-ROSE HILL W/A	1	85	N
0490004	HAYS CREEK W/A-MISSON ROAD	1	20	Y
0490005	TOWN OF KILMICHAEL	2	525	N
0490006	NORTH DISTRICT 1 WATER ASSN.	1	200	N
0490007	POPLAR CREEK WATER ASSOCIATION	1	125	N
0490008	SOUTH WINONA WATER ASSOCIATION	1	144	N
0490009	STEWART WATER ASSOCIATION	2	241	N
0490010	WINONA PUBLIC UTILITY	3	2085	N
0490016	HAYS CREEK W/A-NINERVA	1	229	N

MISSISSIPPI BUREAU OF POLLUTION CONTROL
HAZARDOUS WASTE DIVISION
RECORD OF TELEPHONE CONVERSATION

Name: MISSISSIPPI STATE DEPARTMENT OF HEALTH, DIVISION OF WATER SUPPLY

Address: STATE DEPT. OF HEALTH BLD.
JACKSON, MS

Contact: McDOWELL Phone: (601) 960-7518

ON JULY 17, 1990, I SPOKE WITH THE ABOVE REFERENCED CONTACT CONCERNING PUBLIC WATER SUPPLY WELLS IN THE ABERDEEN/PRAIRIE, MISSISSIPPI, AREA LOCATED IN MONROE COUNTY.

MR. McDOWELL INFORMED ME THAT THE CITY OF ABERDEEN CURRENTLY IS BEING SUPPLIED BY 10 WATER SUPPLY WELLS. FIVE WELLS ARE LOCATED AT PRAIRIE (I.E., WITHIN A THREE-MILE RADIUS OF THE ALLIED CORPORATION/PRAIRIE WORKS FACILITY; THE OTHER FIVE WELLS ARE LOCATED AT ABERDEEN (I.E., LOCATED OUTSIDE THE THREE-MILE RADIUS FROM THE FACILITY). ~~THE~~ INA. WATER FROM ALL THE CITY WELLS IS MIXED INTO ONE DISTRIBUTION SYSTEM AND SERVES APPROXIMATELY 13,300 PEOPLE (3500 CONNECTIONS). NO ALTERNATE, UNTHREATENED WATER SUPPLY SOURCE IS PRESENTLY AVAILABLE.

Signature: [illegible] Date: 7/17/90

FORM BLW-NC-1

RETURN COMPLETED FORM TO:

Bureau of Land and Water Resources
P.O. Box 10631
Jackson, Mississippi 39209
Telephone (601) 961-5200

RECEIVED
FEB 13 1986
Department of Natural Resources
Bureau of Land & Water Resources

For Office Use Only:	
County:	Monroe
Date Received:	2-13-86
Permit No:	US-GW-0175.3
Quad Map:	Prairie
Water Management Dist:	
Hydrologic River Basin:	03160101

NOTICE OF CLAIM FOR CONTINUED USE OF SURFACE/GROUND WATERS FOR BENEFICIAL USE

Pursuant to the laws of the State of Mississippi, namely §51-3-5 (2) or (3), as amended, I, the landowner,

City of Aberdeen (Name) 64-0000001 (S/S or Tax ID No.)

P.O. Box 96 (Address), Aberdeen (City or Town), MS. 39730 (State and Zip)

(601) 369-4164 (Telephone Number), do hereby file claim for the continued use of: (circle one)

surface water **ground water** for the following beneficial use: (circle one or more)

municipal; irrigation; recreation; livestock water; fish culture; industrial;

Other _____ (Specify)

1 Name & Address of agent or applicant if different from landowner.

_____ (Name), _____ (S/S or Tax ID No.), _____ (Address)

_____ (City or Town), _____ (State and Zip), ( ) _____ (Telephone Number)

2 Location of point of diversion/withdrawal (include location map with claim)

SW ¼ of SE ¼ of Section 2, Township 15S, Range 6E, County Monroe Prairie # 6

3 Volume of water diverted/withdrawn:

(1) _____ acre feet per year, diverted/withdrawn at a maximum rate of _____ gallons per minute; or

(2) 576,000 gallons per day, diverted/withdrawn at a maximum rate of 400 gallons per minute.

4 Description of lands on which water will be used:

(a) Copy legal description of property upon which water is to be used (may be copied word for word from your deed).

Attach separate sheet if necessary _____

(b) Has the above described land any water right or source of water supply other than that herein applied for?

(Water Rights Number(s) _____) Describe the nature and amount of any additional supply _____

SECTION A (to be completed if source of water is from surface supply)

1 Prior water rights permit/license number _____, dated _____

2 Source of supply is _____ which drains into _____

_____ which drains into _____

3 Description of diversion works:

(a) Water obtained directly from stream: _____ (Name)

Pump _____ (Size and type) Power Unit _____ (Size and type)

Lift _____ ft. Maximum capacity _____ gpm

(b) Storage reservoir _____ (Name)

Height of dam _____ feet. Surface area at normal pool _____ acres

Storage capacity at normal pool _____ acre feet

SECTION B (to be completed if source of water is from underground supply)

1. Source of supply: Eutaw aquifer(s)
2. Description of water well:

(a) **Well data:**
(1) Date well completed 1942
(2) Depth drilled 486 feet
(3) Type of completion gravel pack
(4) Surface elevation _____ feet

(b) **Screen data:**
(1) Depth to bottom 486 feet
(2) Length n/a feet
(3) Diameter 6" OD inches
(4) Type n/a
(5) Slot n/a inches

(c) **Casing data:**
(1) Length(s) 300 approximate feet; Diameter(s) 12 inches
(2) Type steel

(d) **Pump data:**
(1) Type & Size oil lube turbine
(2) Capacity 400 gpm
(3) No. stages 16
(4) Setting depth 290 feet

Well Driller _____
(Name of Company)

WATER USE DATA

1. IRRIGATION use: (a) Show number of acres to be irrigated by 40-acre blocks:

TOWN-SHIP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

(b) List the acres to be irrigated: Rice_____; Cotton_____; Corn_____; Pasture_____; Truck_____;
Other crops (_____) _____ acres.

2. If for MUNICIPAL use: (a) Present population _____, (based on 19____ Census)
(b) Estimated average daily consumption during periods of maximum use at the end of each five-year period in next twenty years:
_____19____; _____19____; _____19____; _____19____.

3. *If for INDUSTRIAL use: (a) If water is to be released into a watercourse, indicate: Amount released each year* _____;
rate of release_____; location of release point in reference to diversion point _____
(show location on map)
(b) Explain any change in quality of water to be released: _____

4. If for RECREATIONAL use: Explain how water will be used _____

5. If for FISH CULTURE use: (a) Explain in detail how water will be used _____
(b) Number of times reservoir will be emptied and filled annually: _____

6. If for ANY OTHER use: (a) Explain in detail _____

REMARKS _____

List below the name and address of person to be contacted for additional information, if required.

Robert Ashley
(Name)
P.O. Box 96, Aberdeen, Ms. 39730
(Address)
City of Aberdeen, Mississippi

The accompanying map is hereby declared a part of this application.

Robert Ashley
(Signature)

Subscribed and sworn to before me this 11 day of February 19 86, at 1pm,
County of Monroe, Mississippi. My commission expires March 14, 1986

Susan W. Honeycutt Notary Public
Susan W. Honeycutt

FORM BLW-NC-1

RETURN COMPLETED FORM TO:

Bureau of Land and Water Resources
P.O. Box 10631
Jackson, Mississippi 39209
Telephone (601) 961-5200

RECEIVED
FEB 13 1986
Department of Natural Resources
Bureau of Land & Water Resources

For Office Use Only:
County: Monroe
Date Received: 2-13-86
Permit No: MS-GW-01754
Quad Map: Prairie
Water Management Dist:
Hydrologic River Basin: 03160101

NOTICE OF CLAIM FOR CONTINUED USE OF SURFACE/GROUND WATERS FOR BENEFICIAL USE

Pursuant to the laws of the State of Mississippi, namely §51-3-5 (2) or (3), as amended, I, the landowner, _____

City of Aberdeen (Name) 64-0000001 (S/S or Tax ID No.)

P.O. Box 96 (Address), Aberdeen (City or Town), MS. 39730 (State and Zip)

(601) 369-4164 (Telephone Number), do hereby file claim for the continued use of: (circle one)

surface water **ground water** for the following beneficial use: (circle one or more)

municipal; irrigation; recreation; livestock water; fish culture; industrial;

Other _____ (Specify)

1 Name & Address of agent or applicant if different from landowner.

_____ (Name), _____ (S/S or Tax ID No.), _____ (Address)

_____ (City or Town), _____ (State and Zip), ( ) _____ (Telephone Number)

2 Location of point of diversion/withdrawal (include location map with claim)

~~NE~~ NW ¼ of ~~SE~~ NW ¼ of Section 11, Township 15S, Range 6E, County Monroe Prairie # 5

3 Volume of water diverted/withdrawn:

(1) _____ acre feet per year, diverted/withdrawn at a maximum rate of _____ gallons per minute; or

(2) 410,400 ~~average~~ gallons per day, diverted/withdrawn at a maximum rate of 285 gallons per minute.

4 Description of lands on which water will be used:

(a) Copy legal description of property upon which water is to be used (may be copied word for word from your deed).

Attach separate sheet if necessary _____

(b) Has the above described land any water right or source of water supply other than that herein applied for?

(Water Rights Number(s) _____) Describe the nature and amount of any additional supply _____

SECTION A (to be completed if source of water is from surface supply)

1 Prior water rights permit/license number _____, dated _____

2 Source of supply is _____ which drains into _____

_____ which drains into _____

3 Description of diversion works:

(a) Water obtained directly from stream: _____ (Name)

Pump _____ (Size and type) Power Unit _____ (Size and type)

Lift _____ ft. Maximum capacity _____ gpm

(b) Storage reservoir _____ (Name)

Height of dam _____ feet. Surface area at normal pool _____ acres

Storage capacity at normal pool _____ acre feet

SECTION B (to be completed if source of water is from underground supply)

1. Source of supply: Eutaw aquifer(s)
2. Description of water well:

(a) **Well data:**
(1) Date well completed 1942
(2) Depth drilled 511 feet
(3) Type of completion gravel pack
(4) Surface elevation _____ feet

(b) **Screen data:**
(1) Depth to bottom 511 feet
(2) Length n/a feet
(3) Diameter 6" OD inches
(4) Type n/a
(5) Slot n/a inches

(c) **Casing data:**
(1) Length(s) 300 approximate feet; Diameter(s) 12 inches
(2) Type steel

(d) **Pump data:**
(1) Type & Size sub turbine
(2) Capacity 285 gpm
(3) No. stages n/a
(4) Setting depth 290 feet

Well Driller _____ (Name of Company)

WATER USE DATA

1. IRRIGATION use: (a) Show number of acres to be irrigated by 40-acre blocks:

TOWNSHIP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

(b) List the acres to be irrigated: Rice_____; Cotton_____; Corn_____; Pasture_____; Truck_____;
Other crops (_____) _____ acres.

2. If for MUNICIPAL use: (a) Present population _____, (based on 19____ Census)
(b) Estimated average daily consumption during periods of maximum use at the end of each five-year period in next twenty years:
_____19____; _____19____; _____19____; _____19____.

3. If for INDUSTRIAL use: (a) If water is to be released into a watercourse, indicate: Amount released each year _____; rate of release_____; location of release point in reference to diversion point _____ (show location on map)
(b) Explain any change in quality of water to be released: _____

4. If for RECREATIONAL use: Explain how water will be used _____

5. If for FISH CULTURE use: (a) Explain in detail how water will be used _____
(b) Number of times reservoir will be emptied and filled annually: _____

6. If for ANY OTHER use: (a) Explain in detail _____

REMARKS _____

List below the name and address of person to be contacted for additional information, if required.

Robert Ashley
(Name)
P.O. Box 96, Aberdeen, Ms. 39730
(Address)
City of Aberdeen, Mississippi

The accompanying map is hereby declared a part of this application.

Robert Ashley
(Signature)

Subscribed and sworn to before me this 11 day of February 19, 86, at 1pm,
County of Monroe, Mississippi. My commission expires March 14, 1986

Susan W. Honeycutt Notary Public
Susan W. Honeycutt

FORM BLW-NC-1

RETURN COMPLETED FORM TO:

Bureau of Land and Water Resources
P.O. Box 10631
Jackson, Mississippi 39209
Telephone (601) 961-5200

FEB 13 1986
Department of Natural Resources
Bureau of Land & Water Resources

For Office Use Only:
County: Monroe
Date Received: 2-13-86
Permit No: MS-CW-01755
Quad Map: Prairie
Water Management Dist:
Hydrologic River Basin: 03160101

NOTICE OF CLAIM FOR CONTINUED USE OF SURFACE/GROUND WATERS FOR BENEFICIAL USE

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P.O. Box 96 (Address), Aberdeen (City or Town), MS. 39730 (State and Zip)

(601) 369-4164 (Telephone Number), do hereby file claim for the continued use of: (circle one)

surface water **ground water** for the following beneficial use: (circle one or more)

municipal; irrigation; recreation; livestock water; fish culture; industrial;

Other _____ (Specify)

1 Name & Address of agent or applicant if different from landowner.

_____ (Name), _____ (S/S or Tax ID No.), _____ (Address)

_____ (City or Town), _____ (State and Zip), ( ) _____ (Telephone Number)

2 Location of point of diversion/withdrawal (include location map with claim)

SE ¼ of SE ¼ of Section 3, Township 15S, Range 6E, County Monroe Prairie # 4

3 Volume of water diverted/withdrawn:

(1) _____ acre feet per year, diverted/withdrawn at a maximum rate of _____ gallons per minute; or

(2) 561,600 gallons per day, diverted/withdrawn at a maximum rate of 390 gallons per minute.

4 Description of lands on which water will be used:

(a) Copy legal description of property upon which water is to be used (may be copied word for word from your deed).

Attach separate sheet if necessary _____

(b) Has the above described land any water right or source of water supply other than that herein applied for?

(Water Rights Number(s) _____) Describe the nature and amount of any additional supply _____

SECTION A (to be completed if source of water is from surface supply)

1 Prior water rights permit/license number _____, dated _____

2 Source of supply is _____ which drains into _____

_____ which drains into _____

3 Description of diversion works:

(a) Water obtained directly from stream: _____ (Name)

Pump _____ (Size and type) Power Unit _____ (Size and type)

Lift _____ ft. Maximum capacity _____ gpm

(b) Storage reservoir _____ (Name)

Height of dam _____ feet. Surface area at normal pool _____ acres

Storage capacity at normal pool _____ acre feet

SECTION B (to be completed if source of water is from underground supply)

1. Source of supply: Eutaw aquifer(s)
2. Description of water well:

(a) **Well data:**
(1) Date well completed 1942
(2) Depth drilled 496 feet
(3) Type of completion gravel pack
(4) Surface elevation _____ feet

(b) **Screen data:**
(1) Depth to bottom 496 feet
(2) Length n/a feet
(3) Diameter 6" OD inches
(4) Type n/a
(5) Slot n/a inches

(c) **Casing data:**
(1) Length(s) 300 Approximate feet; Diameter(s) 12 inches
(2) Type steel

(d) **Pump data:**
(1) Type & Size oil lube turbine
(2) Capacity 390 gpm
(3) No. stages 16
(4) Setting depth 290 feet

Well Driller _____
(Name of Company)

WATER USE DATA

1. IRRIGATION use: (a) Show number of acres to be irrigated by 40-acre blocks:

TOWNSHIP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

(b) List the acres to be irrigated: Rice_____; Cotton_____; Corn_____; Pasture_____; Truck_____;
Other crops (_____) _____ acres.

2. If for MUNICIPAL use: (a) Present population _____, (based on 19____ Census)
(b) Estimated average daily consumption during periods of maximum use at the end of each five-year period in next twenty years:
_____19____; _____19____; _____19____; _____19____.

3. *If for INDUSTRIAL use: (a) If water is to be released into a watercourse, indicate: Amount released each year* _____;
rate of release_____; location of release point in reference to diversion point _____
(show location on map)
(b) Explain any change in quality of water to be released: _____

4. If for RECREATIONAL use: Explain how water will be used _____

5. If for FISH CULTURE use: (a) Explain in detail how water will be used _____
(b) Number of times reservoir will be emptied and filled annually: _____

6. If for ANY OTHER use: (a) Explain in detail _____

REMARKS _____

List below the name and address of person to be contacted for additional information, if required.

Robert Ashley
(Name)
P.O. Box 96, Aberdeen, Ms. 39730
(Address)
City of Aberdeen, Mississippi

The accompanying map is hereby declared a part of this application.

Robert Ashley
(Signature)

Subscribed and sworn to before me this 11 day of February 19 86, at 1pm,
County of Monroe, Mississippi. My commission expires March 14, 1986

Susan W. Honeycutt
Susan W. Honeycutt Notary Public

FORM BLW-NC-1

RETURN COMPLETED FORM TO:

Bureau of Land and Water Resources
P.O. Box 10631
Jackson, Mississippi 39209
Telephone (601) 961-5200

RECEIVED FEB 13 1986 Department of Natural Resources Bureau of Land & Water Resources

For Office Use Only:	
County:	Monroe
Date Received:	2-13-86
Permit No:	MC-GW-01746
Quad Map:	Prairie
Water Management Dist:	
Hydrologic River Basin:	03160101

NOTICE OF CLAIM FOR CONTINUED USE OF SURFACE/GROUND WATERS FOR BENEFICIAL USE

Pursuant to the laws of the State of Mississippi, namely §51-3-5 (2) or (3), as amended, I, the landowner, _____

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P.O. Box 96 (Address), Aberdeen (City or Town), MS. 39730 (State and Zip)

(601) 369-4164 (Telephone Number), do hereby file claim for the continued use of: (circle one)

surface water **(ground water)** for the following beneficial use: (circle one or more)

(municipal;) *irrigation; recreation; livestock water; fish culture; industrial;*

Other _____ (Specify)

1. Name & Address of agent or applicant if different from landowner.

_____ (Name), _____ (S/S or Tax ID No.), _____ (Address)

_____ (City or Town), _____ (State and Zip), ( ) _____ (Telephone Number)

2. Location of point of diversion/withdrawal (include location map with claim)

SW ¼ of SW ¼ of Section 3, Township 15S, Range 6E, County Monroe Prairie # 1

3. Volume of water diverted/withdrawn:

(1) _____ acre feet per year, diverted/withdrawn at a maximum rate of _____ gallons per minute; or

(2) 414,720 gallons per day, diverted/withdrawn at a maximum rate of 288 gallons per minute.

4. Description of lands on which water will be used:

(a) Copy legal description of property upon which water is to be used (may be copied word for word from your deed).

Attach separate sheet if necessary _____

(b) Has the above described land any water right or source of water supply other than that herein applied for?

(Water Rights Number(s) _____) Describe the nature and amount of any additional supply _____

SECTION A (to be completed if source of water is from surface supply)

1. *Prior water rights permit/license number* _____, *dated* _____

2. Source of supply is _____ which drains into _____

_____ which drains into _____

3. Description of diversion works:

(a) Water obtained directly from stream: _____ (Name)

Pump _____ (Size and type) Power Unit _____ (Size and type)

Lift _____ ft. Maximum capacity _____ gpm

(b) Storage reservoir _____ (Name)

Height of dam _____ *feet. Surface area at normal pool* _____ **acres**

Storage capacity at normal pool _____ **acre feet**

SECTION B (to be completed if source of water is from underground supply)

1. Source of supply: Eutaw aquifer(s)
2. Description of water well:

(a) **Well data:**
(1) Date well completed 1942
(2) Depth drilled 480 feet
(3) Type of completion gravel pack
(4) Surface elevation _____ feet

(b) **Screen data:**
(1) Depth to bottom 480 feet
(2) Length n/a feet
(3) Diameter 6" OD inches
(4) Type n/a
(5) Slot n/a inches

(c) **Casing data:**
(1) Length(s) 300 approximate feet; Diameter(s) 12 inches
(2) Type steel

(d) **Pump data:**
(1) Type & Size sub turbine
(2) Capacity 288 gpm
(3) No. stages n/a
(4) Setting depth 292 feet

Well Driller _____ (Name of Company)

WATER USE DATA

1. IRRIGATION use: (a) Show number of acres to be irrigated by 40-acre blocks:

TOWNSHIP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

(b) List the acres to be irrigated: Rice_____; Cotton_____; Corn_____; Pasture_____; Truck_____;
Other crops (_____) _____ acres.

2. If for MUNICIPAL use: (a) Present population _____, (based on 19____ Census)
(b) Estimated average daily consumption during periods of maximum use at the end of each five-year period in next twenty years:
_____19____; _____19____; _____19____; _____19____.

3. If for INDUSTRIAL use: (a) If water is to be released into a watercourse, indicate: Amount released each year _____;
rate of release_____; location of release point in reference to diversion point _____ (show location on map)
(b) Explain any change in quality of water to be released: _____

4. If for RECREATIONAL use: Explain how water will be used _____

5. If for FISH CULTURE use: (a) Explain in detail how water will be used _____
(b) Number of times reservoir will be emptied and filled annually: _____

6. If for ANY OTHER use: (a) Explain in detail _____

REMARKS _____

List below the name and address of person to be contacted for additional information, if required.

Robert Ashley (Name)
P.O. Box 96, Aberdeen, Ms. 39730 (Address)
City of Aberdeen, Mississippi

The accompanying map is hereby declared a part of this application.

Robert Ashley (Signature)

Subscribed and sworn to before me this 11 day of February 19 86, at 1pm,
County of Monroe, Mississippi. My commission expires March 14, 1986

Susan W. Honeycutt Notary Public
Susan W. Honeycutt

FORM BLW-NC-1

RETURN COMPLETED FORM TO:

Bureau of Land and Water Resources
P.O. Box 10631
Jackson, Mississippi 39209
Telephone (601) 961-5200

RECEIVED
FEB 13 1986
Bureau of Land & Water Resources, Mississippi Department of Natural Resources

For Office Use Only:	
County:	Monroe
Date Received:	2-13-86
Permit No:	115-64-01747
Quad Map:	Prairie
Water Management Dist:	
Hydrologic River Basin:	03160101

NOTICE OF CLAIM FOR CONTINUED USE OF SURFACE/GROUND WATERS FOR BENEFICIAL USE

Pursuant to the laws of the State of Mississippi, namely §51-3-5 (2) or (3), as amended, I, the landowner, _____

City of Aberdeen (Name) 64-0000001 (S/S or Tax ID No.)

P.O. Box 96 (Address), Aberdeen (City or Town), MS. 39730 (State and Zip)

(601) 369-4164 (Telephone Number), do hereby file claim for the continued use of: (circle one)

surface water **(ground water)** for the following beneficial use: (circle one or more)

(municipal;) irrigation; recreation; livestock water; fish culture; industrial;

Other _____ (Specify)

1 Name & Address of agent or applicant if different from landowner.

_____ (Name), _____ (S/S or Tax ID No.), _____ (Address)

_____ (City or Town), _____ (State and Zip), ( ) _____ (Telephone Number)

2 Location of point of diversion/withdrawal (include location map with claim)

NE ¼ of SW ¼ of Section 3, Township 155, Range 6E, County Monroe Prairie # 2

3. Volume of water diverted/withdrawn:

(1) _____ acre feet per year, diverted/withdrawn at a maximum rate of _____ gallons per minute; or

(2) 413,280 gallons per day, diverted/withdrawn at a maximum rate of 287 gallons per minute.

4 Description of lands on which water will be used:

(a) Copy legal description of property upon which water is to be used (may be copied word for word from your deed).

Attach separate sheet if necessary _____

(b) Has the above described land any water right or source of water supply other than that herein applied for?

(Water Rights Number(s) _____) Describe the nature and amount of any additional supply _____

SECTION A (to be completed if source of water is from surface supply)

1. Prior water rights permit/license number _____, dated _____

2. Source of supply is _____ which drains into _____

_____ which drains into _____

3. Description of diversion works:

(a) Water obtained directly from stream: _____ (Name)

Pump _____ (Size and type) Power Unit _____ (Size and type)

Lift _____ ft. Maximum capacity _____ gpm

(b) Storage reservoir _____ (Name)

Height of dam _____ feet. Surface area at normal pool _____ acres

Storage capacity at normal pool _____ acre feet

SECTION B (to be completed if source of water is from underground supply)

1. Source of supply: Eutaw aquifer(s)
2. Description of water well:

(a) **Well data:**
(1) Date well completed 1942
(2) Depth drilled 485 feet
(3) Type of completion gravel pack
(4) Surface elevation _____ feet

(b) **Screen data:**
(1) Depth to bottom 485 feet
(2) Length n/a feet
(3) Diameter 60D inches
(4) Type n/a
(5) Slot n/a inches

(c) **Casing data:**
(1) Length(s) 300 approximate feet; Diameter(s) 12 inches
(2) Type steel

(d) **Pump data:**
(1) Type & Size sub turbine
(2) Capacity 287 gpm
(3) No. stages n/a
(4) Setting depth 290 feet

Well Driller _____ (Name of Company)

WATER USE DATA

1. IRRIGATION use: (a) Show number of acres to be irrigated by 40-acre blocks:

TOWNSHIP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

(b) List the acres to be irrigated: Rice_____; Cotton_____; Corn_____; Pasture_____; Truck_____;
Other crops (_____) _____ acres.

2. If for MUNICIPAL use: (a) Present population _____, (based on 19____ Census)
(b) Estimated average daily consumption during periods of maximum use at the end of each five-year period in next twenty years:
_____ 19____; _____ 19____; _____ 19____; _____ 19____.

3. If for INDUSTRIAL use: (a) If water is to be released into a watercourse, indicate: Amount released each year _____;
rate of release_____; location of release point in reference to diversion point _____ (show location on map)
(b) Explain any change in quality of water to be released: _____

4. If for RECREATIONAL use: Explain how water will be used _____

5. If for FISH CULTURE use: (a) Explain in detail how water will be used _____
(b) Number of times reservoir will be emptied and filled annually: _____

6. If for ANY OTHER use: (a) Explain in detail _____

REMARKS _____

List below the name and address of person to be contacted *for additional information, if required.*

Robert Ashley
(Name)
P.O. Box 96, Aberdeen, Ms. 39730
(Address)
City of Aberdeen, Mississippi

The accompanying map is hereby declared a part of this application.

Robert Ashley
(Signature)

Subscribed and sworn to before me this 11 day of February 19, 86, at 1pm,
County of Monroe, Mississippi. My commission expires March 14, 1986

Susan W. Honeycutt Notary Public
Susan W. Honeycutt

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

Mr. Jim Hardage
Mississippi Dept. of Natural Resources
Dept. of Environmental Quality
Bureau of Pollution Control
P.O. Box 10385
Jackson, Ms. 39209

January 30, 1990

Allied Corp. / Prairie Works

Dear Mr. Hardage:

As we recently discussed, the two Allied sites in Aberdeen and Redwood have been assigned to Mississippi for PAR. These sites have been evaluated by FIT IV. However, due to potential conflict of interest, they have removed themselves from these sites.

Please review FIT IV's reports (attached) and let me know if the state of Mississippi concurs with the NFRAP recommendations.

If you have any questions, please call me at (404) 347-5065.

Sincerely,

Brian G. Farrier

cc: Narindar Kumar

NUS CORPORATION
1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

SISB/SAS
RECEIVED
JAN 09 1990
EPA - REGION IV
ATLANTA, GA.

January 5, 1990

Mr. A.R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Subject: Screening Site Inspection, Phase I
Allied Corporation/Prairie Works
Aberdeen, Monroe County, Mississippi
EPA ID No. MSD007035249
TDD No. F4-8909-54

Dear Mr. Hanke:

Allied Corporation/Prairie Works site in Monroe County, Mississippi was assigned to us in August 1989, as a part of a long list of sites needing SSI, Phase I studies. We should have notified you that this site could have represented a possible conflict of interest, since it was previously owned by Allied Corporation, a major NUS client. This was one of two sites in Mississippi that "fell through the crack", and you were not notified. By the time we realized this, the Phase I study was substantially complete. The Phase I report is attached.

In view of the possible conflict of interest, I instructed Jerri Higgins, our HRS/Pre-Score Section Leader, to do a special review on the application of the HRS to this site. Her review has assured me that no information found during our investigation could have resulted in a higher HRS migration score than we computed, and that the score we computed is conservatively high. The four hours Ms. Higgins spent on this review were not charged to the EPA.

We suggest that you carefully review our report and recommendations. Also, we do apologize for any inconvenience our oversight might have cause. We have taken steps to intensify our surveillance of assigned sites for possible conflict of interest situations.

Very truly yours,

Murray Warner, P.E.
FIT 4 Office Manager

MW/jec

Enclosure

cc: Narindar Kumar
Brian Farrier
Paul Clay

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

C-586-1-0-21

January 5, 1990

Mr. A. R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Date: _____
Site Disposition: _____
EPA Project Manager: _____

Subject: Screening Site Inspection, Phase I
Allied Corporation/Prairie Works
Aberdeen, Monroe County, Mississippi
EPA No. MSD007035249
TDD No. F4-8909-65

Dear Mr. Hanke:

FIT 4 conducted a Screening Site Inspection, Phase I, of the Allied Corporation/Prairie Works facility in Aberdeen, Monroe County, Mississippi. The inspection included a review of EPA and state file material, completion of a target survey, and a drive-by reconnaissance of the facility.

Allied Corporation was a manufacturer of Mirex fire-ant bait (Ref. 1). The facility is located off Highway 382 in an industrial park in which most of the buildings in the park are no longer in use. The property is approximately 3 acres or less in size. The area around the facility is rural and the plant is principally surrounded by fields and woods (Ref. 2).

The facility was operated by Allied Corporation from 1962 until 1976, when the Mississippi Department of Agriculture acquired the plant. During the daily operations of producing the fire-ant bait, Mirex powder was spilled all around the plant property (Ref. 3). The state conducted a 2-year extensive clean-up operation at the facility, beginning in 1976, and installed safer material-handling equipment (Refs. 1, 3). The state continued producing Mirex fire-ant bait until December 1977, when EPA requested that they stop production. However, the state made an emergency request to EPA to continue manufacturing the fire-ant bait and was allowed to do so until January 1979. The plant then switched production from Mirex to ferriamicide until March 1979, when EPA once more shut down production. The state produced ferriamicide again from September 1982 until October 1982. During the period between August 1980 and December 1981, the plant was used by American Cyanamid to package Amdro (Ref. 1).

During the clean-up operations conducted by the state, large amounts of waste material was removed from inside and outside the plant and taken to Rollins Environmental Services in Louisiana for incineration. All of the remaining Mirex was removed from the Aberdeen Plant and taken to Jackson, Mississippi. In 1981, analysis of samples taken outside the plant detected Mirex in the soil and in the wet-weather ditch along the west side of the facility (Refs. 1,3). Allied Corporation/Prairie Works submitted a Notification of Hazardous Waste Site form in June 1981 (Ref. 4).

The facility is situated near the northern edge of the Gulf Coastal Plain Physiographic Province. Monroe County lies within part of the Tombigbee River Hills or Fall Line Hills division of the Black Prairie belt. The surface area is generally hilly with relief of 200 feet in the northeastern corner of the county (Ref. 5, p. 15). The net annual precipitation is 10.5 inches and the 1-year, 24-hour rainfall is 3.4 inches (Refs. 6; 7).

The facility is underlain by approximately 20-30 feet of residuum, which is not a surficial aquifer. These sediments are underlain, in descending order, by the Selma Group, the Eutaw Formation, and the Tuscaloosa Formation, all of which are Cretaceous aged (Refs. 8, pp. 35-39; 9; 10). In the area around the facility, the Selma Group is approximately 150 feet thick. It consists of chalks and sand and acts as a semi-confining layer to the Eutaw aquifer below. Water is encountered beneath the Selma Group in the Eutaw Formation at approximately 170-180 feet below land surface. Beneath the Mooreville Chalk of the Selma Group lies the Eutaw Formation (Ref. 10). The Eutaw consists predominantly of sand, but there are clay beds in the lower part of the formation. The Eutaw Formation is the aquifer of concern in this area, and is approximately 350 feet thick around the facility (Refs. 10; 11, p. 59; Figure 46). The Eutaw Formation dips in a westward direction (Ref. 5, p. 26).

Underlying the Eutaw is a 50-foot chalk layer, which separates the Eutaw from the underlying Tuscaloosa Formation. The chalk layer has been perforated to such a large extent, however, that the Eutaw and Tuscaloosa formations act as one aquifer (Ref. 10). The Tuscaloosa aquifer consists of the Gordo and Coker formations, and is primarily comprised of sand, gravel, and clay beds. The formations dip and thicken to the southwest (Ref. 11, p. 65).

Surface water runoff flows east overland approximately 1600 feet where it enters Hang Kettle Creek. After 14.8 miles Hang Kettle Creek enters Town Creek (Ref. 12). Since Hang Kettle Creek is intermittent for 2 more miles along the probable migration pathway, the surface water pathway is not considered viable.

The Aberdeen water company serves almost all of the areas west of the Tombigbee River near Aberdeen to the county line and south of Highway 8 to the county line. The water company has 10 wells, which range in depth from 150 to 485 feet and are all completed in the Eutaw Formation. The Aberdeen water company serves approximately 3250 connections and has an emergency tie-in with the Coontail water company, which serves approximately 350 connections. Five of the Aberdeen water company's wells are within 1 mile of the facility and are 450-485 feet deep (Refs. 2, 12). Municipal water is available throughout the study area although a few houses may not be connected (Ref. 2). The nearest well, one of those owned by the city of Aberdeen, is approximately 1200 feet southeast of the facility. The nearest resident is located approximately 0.8 mile west of the site and uses municipal water. During the site reconnaissance, no workers were on site. There was a fence around the property, but the front gate was open (Refs. 2, 12).

There are no critical habitats designated for Monroe County; however, there are several endangered and threatened species listed for the entire state. These include the Florida panther (felis concolor coryi), bald eagle (haliaeetus leucocephalus), Arctic peregrine falcon (falco peregrinus tundrius), Bachman's warbler (vermivora bachmanii), and red-cockaded woodpecker (picoides borealis) (Ref. 13).

Based on the results of this evaluation and the above referenced material, FIT 4 recommends that no further remedial action be planned at the Allied Corporation/Prairie Works facility.

Very truly yours,

Sheri Panabaker
Project Manager

Approved:

SP/dwf

Enclosures

cc: Brian Farrier

REFERENCES

1. Potential Hazardous Waste Site, Identification and Preliminary Assessment (EPA Form 2070-12) for Allied Corporation/Prairie Works, Aberdeen, Monroe County, Mississippi. Prepared by Steven M. Hornung, June 1, 1984.

2. NUS Field Logbook No. F4-1737 for Allied Corporation/Prairie Works, TDD No. F4-8909-65. Documentation of facility reconnaissance, October 11, 1989.

3. Potential Hazardous Waste Site, Identification and Preliminary Assessment (EPA Form 2070-12) for Allied Corporation/Prairie Works, Aberdeen, Monroe County, Mississippi. Prepared by Ron Joyner, April 8, 1982.

4. Notification of Hazardous Waste Site (EPA Form 8900-1) for Allied Corporation/Prairie Works, Aberdeen, Monroe County, Mississippi, prepared by William Reiter, June 4, 1981.

5. F. Vestal, Monroe County Mineral Resources, Bulletin 57, (University, Mississippi: Mississippi State Geological Survey, 1943), pp. 15-28.

6. U.S. Dept. of Commerce, Climatic Atlas of the United States (Washington, D.C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration, pp. 43, 63.

7. U.S.Dept. of Commerce, Rainfall Frequency Atlas of the United States Technical Paper No. 40, (Washington, D.C.: GPO, 1961, p. 93).

8. Donald M. Keady, Geologic Study Along Highway 45 from Tennessee Line to Meridian, Mississippi, Bulletin 94 (Mississippi Geologic Survey, 1962), pp. 35-41, plate 2.

9. Geologic Map of Mississippi, compiled by Alvin Bicker (Mississippi Geologic Survey, 1969), scale 1:500,000.

10. Cecil Webb, Webb and Son Well Drillers, telephone conversation with Sheri Panabaker, NUS Corporation, November 16, 1989. Subject: Geology around Amory and Aberdeen, Mississippi.

11. L.A. Gandl, Characterization of Aquifers Designated as Potential Drinking Water Sources in Mississippi, (U.S. Geological Survey, Mississippi Department of Natural Resources, Bureau of Pollution Control, 1982), p. 59.

12. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Mississippi: Aberdeen 1966 (Photorevised 1982), Prairie 1966 (Photorevised 1982), and Muldon 1987, scale 1:24,000.

13. U.S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States, (Atlanta, Georgia: 1988).

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

ALLIED CORPORATION / PRAIRIE WORKS
EPA SITE NUMBER MSD007035249
ABERDEEN
MONROE COUNTY, MS
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY SHERI PANABAKER
OF NUS CORPORATION
ON 12/21/89

DATE OF THIS REPORT: 01/02/90
DATE OF LAST MODIFICATION: 01/02/90

GROUND WATER ROUTE SCORE	:	40.00
SURFACE WATER ROUTE SCORE	:	0.00
AIR ROUTE SCORE	:	0.00
MIGRATION SCORE	:	23.12

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	170 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	164 FEET	0	0
PRECIPITATION	52.0 INCHES		
EVAPORATION	41.5 INCHES		
NET PRECIPITATION	10.5 INCHES	2	2
PERMEABILITY	1.0X10-4 CM/SEC	2	2
PHYSICAL STATE		2	2
TOTAL ROUTE CHARACTERISTICS SCORE:			6
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:HEXACHLOROCYCLOPENTADIENE			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
GROUND WATER USE		3	9
DISTANCE TO NEAREST WELL	1200 FEET		
AND	MATRIX VALUE	40	40
TOTAL POPULATION SERVED	13680 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	3600		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			49

GROUND WATER ROUTE SCORE (Sgw) = 40.00

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	ROUTE NOT SCORED		N/A
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER			
SITE WITHIN CLOSED BASIN			
FACILITY SLOPE			
INTERVENING SLOPE			
24-HOUR RAINFALL			
DISTANCE TO DOWN-SLOPE WATER			
PHYSICAL STATE			
TOTAL ROUTE CHARACTERISTICS SCORE:			N/A
3. CONTAINMENT			N/A
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:			
WASTE QUANTITY	CUBIC YDS		
	DRUMS		
	GALLONS		
	TONS		
	TOTAL		
TOTAL WASTE CHARACTERISTICS SCORE:			N/A
5. TARGETS			
SURFACE WATER USE			
DISTANCE TO SENSITIVE ENVIRONMENT			
COASTAL WETLANDS			
FRESH-WATER WETLANDS			
CRITICAL HABITAT			
DISTANCE TO STATIC WATER			
DISTANCE TO WATER SUPPLY INTAKE			
AND		MATRIX VALUE	
TOTAL POPULATION SERVED			
NUMBER OF HOUSES			
NUMBER OF PERSONS			
NUMBER OF CONNECTIONS			
NUMBER OF IRRIGATED ACRES			
TOTAL TARGETS SCORE:			N/A

SURFACE WATER ROUTE SCORE (Ssw) = 0.00

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
- 0 to 0.25 mile
- 0 to 0.50 mile
- 0 to 1.0 mile
- 0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
- COASTAL WETLANDS
- FRESH-WATER WETLANDS
- CRITICAL HABITAT

DISTANCE TO LAND USES
- COMMERCIAL/INDUSTRIAL
- PARK/FOREST/RESIDENTIAL
- AGRICULTURAL LAND
- PRIME FARMLAND
- HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: ALLIED CORPORATION / PRAIRIE WORKS
AS OF 01/02/90

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		6
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	49

= 22932 /57,330 X 100 = 40.00 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		0
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	0
TARGETS	X	0

= 0 /64,350 X 100 = 0.00 = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	40.00	1600.00
SURFACE WATER ROUTE SCORE (S_{sw})	0.00	0.00
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		1600.00
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		40.00
$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		23.12

CERCLA ELIGIBILITY QUESTIONNAIRE

Site Name: Allied Corporation

City: Aberdeen State: Mississippi

EPA I.D. Number: MSD007035249

I. CERCLA ELIGIBILITY	YES	NO
Did the facility cease operations prior to November 19, 1980?	___	X

If answer YES, STOP, facility is probably a CERCLA site
If answer NO, Continue to Part II

II. RCRA ELIGIBILITY	YES	NO
Did the facility file a RCRA Part A application?	___	X
If YES:		
1) Does the facility currently have interim status?	___	___
2) Did the facility withdraw its Part A application?	___	___
3) Is the facility a known or possible protective filer? (facility filed in error)	___	___
4) Type of facility: Generator___ Transporter___ Recycler___ TSD (Treatment/Storage/Disposal)___		
Does the facility have a RCRA operating or post closure permit?	___	X
Is the facility a late (after 11/19/80) or non-filer that has been identified by the EPA or the State? (facility did not know it needed to file under RCRA)	___	X

If all answers to questions in Part II are NO, STOP, the facility is a CERCLA eligible site.

If answer to #2 or #3 is YES, STOP, the facility is a CERCLA eligible site.

If #2 and #3 are NO and any OTHER answer is YES, site is RCRA, continue to Part III.

III: RCRA SITES ELIGIBLE FOR NPL	YES	NO
Has the facility owner filed for bankruptcy under federal or state laws?	___	___
Has the facility lost RCRA authorization to operate or shown probable unwillingness to carry out corrective action?	___	___
Is the facility a TSD that converted to a generator, transporter or recycler facility after November 19, 1980?	___	___

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site Name: Allied Corporation / Prairie Works
City, County, State: Aberdeen, Monroe County, Mississippi
EPA ID No.: MSD007035249
Person responsible for form: Sheri Panabaker
Date: November 16, 1989

Air Pathway

Describe any potential air emission sources onsite: None

Identify any sensitive environments within 4 miles: None

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): workers at the company just east of the facility.

Groundwater Pathway

Identify any areas of karst terrain: None

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: None

Do significant targets exist between 3 and 4 miles from the site? NO

Is the AOC a sole source aquifer according to Safe Drinking Water Act? (i.e. is the site located in Dade, Broward, Volusia, Putnam, or Flagler County, Florida): NO

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway? NO

Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? NO

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher? YES

Is the site accessible to non-employees (workers do not count)? yes. There is a fence, but the gate is ope

Are there residences, schools, or day care centers onsite or in close proximity? NO

Are there barriers to travel (e.g., a river) within one mile? Interminant Creeks

Site Inspection Report

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MSD	007035249

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Allied Corporation / Prairie Works	Highway 382

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST.
Aberdeen	MS	39756	Monroe		

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
— — — — — . —	— — — — — . —	☐ A. PRIVATE ☐ B. FEDERAL ____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
10 11 89 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	1962 (BEGINNING YEAR) 1982 (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☒ B. EPA CONTRACTOR NUS Corporation (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ____ (Name of firm)
☐ E. STATE ☐ F. STATE CONTRACTOR ____ (Name of firm) ☐ G. OTHER ____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
Sheri Panabaker	FIT Team	Region 4	(404) 938-7710

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO
Margo Westmoreland	FIT Team	Region 4	(404) 938-7710
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
			( )
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☐ PERMISSION ☐ WARRANT	1500	Sunny, ≈80°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO
Gena Townsend	EPA - Region 4	(404) 347-5065

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Sheri Panabaker	FIT 4	NUS Corp.	404-938-7710	12 4 89 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MSD	007035249

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- A SOLID
- X B POWDER, FINES
- C SLUDGE
- D OTHER _____ (Specify)
- E SLURRY
- F LIQUID
- G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS _____
- CUBIC YARDS _____
- Removed NO. OF DRUMS 235

03 WASTE CHARACTERISTICS (Check all that apply)

- X A TOXIC
- B CORROSIVE
- C RADIOACTIVE
- X D PERSISTENT
- E SOLUBLE
- F INFECTIOUS
- G FLAMMABLE
- H IGNITABLE
- I HIGHLY VOLATILE
- J EXPLOSIVE
- K REACTIVE
- L INCOMPATIBLE
- M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES	235	55gal drum	Taken to Rollins Env. Services
OCC	OTHER ORGANIC CHEMICALS			in Louisiana, waste incinerated
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
PSD	Mirex				

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT Files

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MSD	007035249

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED _____ (Acres)
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

There still exists a small amount of mirex contamination in building and soil around plant

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE INJURY
03 WORKERS POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MSD	007035249

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT Files

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MD	007035249

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
A NPDES				
B UIC				
X C AIR				
D RCRA				
E RCRA INTERIM STATUS				
F SPCC PLAN				
G STATE (Specify)				
H LOCAL (Specify)				
I OTHER (Specify)				
J NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
A SURFACE IMPOUNDMENT		
B PILES		
X C DRUMS, ABOVE GROUND (removed)	235	55-gal drum
D TANK, ABOVE GROUND		
E TANK, BELOW GROUND		
F LANDFILL		
G LANDFARM		
H OPEN DUMP		
X I OTHER (Specify) bags		

04 TREATMENT (Check all that apply)
- X A. INCENERATION
- B. UNDERGROUND INJECTION
- C. CHEMICAL/PHYSICAL
- D. BIOLOGICAL
- E. WASTE OIL PROCESSING
- F. SOLVENT RECOVERY
- G. OTHER RECYCLING/RECOVERY
- H. OTHER (Specify)

05 OTHER
- X A. BUILDINGS ON SITE

06 AREA OF SITE: <1.5 acres

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

A. ADEQUATE, SECURE | B. MODERATE | C. INADEQUATE, POOR | D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

The state excavated 235, 55-gal. drums, worth of contaminated soil & sent it to Louisiana for incineration.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ☐ NO

02 COMMENTS

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

EPA, State, FIT files

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MSD	007035249

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A ☐	B ☒
NON-COMMUNITY	C ☐	D ☐

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. ☐	B ☐	C ☐
D. ☐	E. ☐	F ☐

03 DISTANCE TO SITE

A 1200 ~~mi~~ ft

B _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☒ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 3250

03 DISTANCE TO NEAREST DRINKING WATER WELL 1200 ~~mi~~ ft

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
150-160 (ft)	west	_____ (ft)	_____ (gpd)	☐ YES ☐ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

There are 5 municipal wells within 1 mile of the site. The five wells are 450-485 feet deep.

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☐ NO	COMMENTS	☐ YES ☐ NO	COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☒ D. NOT CURRENTLY USED

02 AFFECTED POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
Hang Kettle Creek	☐	1600 ~~mi~~ ft
	☐	_____ (mi)
	☐	_____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE A _____ NO. OF PERSONS

TWO (2) MILES OF SITE B. _____ NO. OF PERSONS

THREE (3) MILES OF SITE C _____ NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.8 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____

04 DISTANCE TO NEAREST OFF-SITE BUILDING _____ (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The area around the facility is mostly used for grazing of cattle. The town of Prairie is within a mile of the site, but there are only a few residents there.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MSD	007035249

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

X A. 10^{-1} – 10^{-4} cm/sec B. 10^{-4} – 10^{-6} cm/sec C. 10^{-4} – 10^{-3} cm/sec D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

X A. IMPERMEABLE (Less than 10^{-6} cm/sec) B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
Est. 1200 (ft)	(ft)	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
10.5 (in)	3.5 (in)	1 %	East	1 %

09 FLOOD POTENTIAL	10
SITE IS IN ____ YEAR FLOODPLAIN	☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A ____ (mi) OTHER: B ____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

____ (mi)

ENDANGERED SPECIES: ____

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A ≈ 5 (mi)	B. 0.5 (mi)	C. ____ (mi)	D. ____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site is surrounded by land used for grazing and some farming. The town of Prairie is approximately 0.5 mile from the site, but it is just the intersection of two roads with a few houses along them. The area is rural and sparsely populated. The facility is located in an abandoned industrial park.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MD	007035249

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF NUS Corporation
Name of organization or individual

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS FIT Files

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT Files

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MSD	007035249

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
Ms Dept. of Agriculture Authority for the control of fire ants	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
P.O. Box 1609	

05 CITY	06 STATE	07 ZIP CODE
Jackson	MS	39205

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
Allied Corporation	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
Box 2332 R	

05 CITY	06 STATE	07 ZIP CODE
Morristown	NJ	07960

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER
City of Aberdeen & Monroe Co.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
Box 96	

05 CITY	06 STATE	07 ZIP CODE
Aberdeen	MS	39730

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT Files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MSD	00 703 5249

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	14 CITY / 15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER		

OPERATOR'S PARENT COMPANY (if applicable)

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

PREVIOUS OPERATORS' PARENT COMPANIES (if applicable)

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	14 CITY / 15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	14 CITY / 15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	14 CITY / 15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MSD	007035249

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT File

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MSD	007035249

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☒ E. CONTAMINATED SOIL REMOVED — 02 DATE May 1976 — 03 AGENCY State of Mississippi
04 DESCRIPTION
235, 55-gallon drums removed

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☒ G. WASTE DISPOSED ELSEWHERE — 02 DATE May 1976 — 03 AGENCY State of Mississippi
04 DESCRIPTION Waste removed to Rollins Env. Services in Louisiana & incinerated.

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MID	007035249

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ S CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ T BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 1 ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2 POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3 OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA, State, FIT files

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	007035249

II. ENFORCEMENT INFORMATION None Known

01 PAST REGULATORY ENFORCEMENT ACTION YES NO

02 DESCRIPTION OF FEDERAL STATE LOCAL REGULATORY ENFORCEMENT ACTION

III. SOURCES OF INFORMATION *Cite specific references, e.g. state files, sample analysis, reports)*

EPA, State, FIT Files

EPA FORM 2070-13 (7-81)

APPENDIX

I. FEEDSTOCKS

CAS Number	Chemical Name
1. 7664-41-7	Ammonia
2. 7440-36-0	Antimony
3. 1309-64-4	Antimony Trioxide
4. 7440-38-2	Arsenic
5. 1327-53-3	Arsenic Trioxide
6. 21109-95-5	Barium Sulfide
7. 7726-95-6	Bromine
8. 106-99-0	Butadiene
9. 7440-43-9	Cadmium
10. 7782-50-5	Chlorine
11. 12737-27-8	Chromite
12. 7440-47-3	Chromium
13. 7440-48-4	Cobalt
14. 1317-38-0	Cupric Oxide
15. 7758-98-7	Cupric Sulfate
16. 1317-39-1	Cuprous Oxide
17. 74-85-1	Ethylene
18. 7647-01-0	Hydrochloric Acid
19. 7664-39-3	Hydrogen Fluoride
20. 1335-25-7	Lead Oxide
21. 7439-97-6	Mercury
22. 74-82-8	Methane
23. 91-20-3	Napthalene
24. 7440-02-0	Nickel
25. 7697-37-2	Nitric Acid
26. 7723-14-0	Phosphorus
27. 7778-50-9	Potassium Dichromate
28. 1310-58-3	Potassium Hydroxide
29. 115-07-1	Propylene
30. 10588-01-9	Sodium Dichromate
31. 1310-73-2	Sodium Hydroxide
32. 7646-78-8	Stannic Chloride
33. 7772-99-8	Stannous Chloride
34. 7664-93-9	Sulfuric Acid
35. 108-88-3	Toluene
36. 1330-20-7	Xylene
37. 7646-85-7	Zinc Chloride
38. 7733-02-0	Zinc Sulfate

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
1. 75-07-0	Acetaldehyde
2. 64-19-7	Acetic Acid
3. 108-24-7	Acetic Anhydride
4. 75-86-5	Acetone Cyanohydrin
5. 506-96-7	Acetyl Bromide
6. 75-36-5	Acetyl Chloride
7. 107-02-8	Acrolein
8. 107-13-1	Acrylonitrile
9. 124-04-9	Adipic Acid
10. 309-00-2	Aldrin
11. 10043-01-3	Aluminum Sulfate
12. 107-18-6	Allyl Alcohol
13. 107-05-1	Allyl Chloride
14. 7664-41-7	Ammonia
15. 631-61-8	Ammonium Acetate
16. 1863-63-4	Ammonium Benzoate
17. 1066-33-7	Ammonium Bicarbonate
18. 7789-09-5	Ammonium Bichromate
19. 1341-49-7	Ammonium Bifluoride
20. 10192-30-0	Ammonium Bisulfite
21. 1111-78-0	Ammonium Carbamate
22. 12125-02-9	Ammonium Chloride
23. 7788-98-9	Ammonium Chromate
24. 3012-65-5	Ammonium Citrate, Dibasic
25. 13826-83-0	Ammonium Fluoborate
26. 12125-01-8	Ammonium Fluoride
27. 1336-21-6	Ammonium Hydroxide
28. 6009-70-7	Ammonium Oxalate
29. 16919-19-0	Ammonium Silicofluoride
30. 7773-06-0	Ammonium Sulfamate
31. 12135-76-1	Ammonium Sulfide
32. 10196-04-0	Ammonium Sulfite
33. 14307-43-8	Ammonium Tartrate
34. 1762-95-4	Ammonium Thiocyanate
35. 7783-18-8	Ammonium Thiosulfate
36. 628-63-7	Amyl Acetate
37. 62-53-3	Aniline
38. 7647-18-9	Antimony Pentachloride
39. 7789-61-9	Antimony Tribromide
40. 10025-91-9	Antimony Trichloride
41. 7783-56-4	Antimony Trifluoride
42. 1309-64-4	Antimony Trioxide
43. 1303-32-8	Arsenic Disulfide
44. 1303-28-2	Arsenic Pentoxide
45. 7784-34-1	Arsenic Trichloride
46. 1327-53-3	Arsenic Trioxide
47. 1303-33-9	Arsenic Trisulfide
48. 542-62-1	Barium Cyanide
49. 71-43-2	Benzene
50. 65-85-0	Benzoic Acid
51. 100-47-0	Benzonitrile
52. 98-88-4	Benzoyl Chloride
53. 100-44-7	Benzyl Chloride
54. 7440-41-7	Beryllium
55. 7787-47-5	Beryllium Chloride
56. 7787-49-7	Beryllium Fluoride
57. 13597-99-4	Beryllium Nitrate
58. 123-86-4	Butyl Acetate
59. 84-74-2	n-Butyl Phthalate
60. 109-73-9	Butylamine
61. 107-92-6	Butyric Acid
62. 543-90-8	Cadimium Acetate
63. 7789-42-6	Cadmium Bromide
64. 10108-64-2	Cadmium Chloride
65. 7778-44-1	Calcium Arsenate
66. 52740-16-6	Calcium Arsenite
67. 75-20-7	Calcium Carbide
68. 13765-19-0	Calcium Chromate
69. 592-01-8	Calcium Cyanide
70. 26264-06-2	Calcium Dodecylbenzene Sulfonate
71. 7778-54-3	Calcium Hypochlorite
72. 133-06-2	Captan
73. 63-25-2	Carbaryl
74. 1563-66-2	Carbofuran
75. 75-15-0	Carbon Disulfide
76. 56-23-5	Carbon Tetrachloride
77. 57-74-9	Chlordane
78. 7782-50-5	Chlorine
79. 108-90-7	Chlorobenzene
80. 67-66-3	Chloroform
81. 7790-94-5	Chlorosulfonic Acid
82. 2921-88-2	Chlorpyrifos
83. 1066-30-4	Chromic Acetate
84. 7738-94-5	Chromic Acid
85. 10101-53-8	Chromic Sulfate
86. 10049-05-5	Chromous Chloride
87. 544-18-3	Cobaltous Formate
88. 14017-41-5	Cobaltous Sulfamate
89. 56-72-4	Coumaphos
90. 1319-77-3	Cresol
91. 4170-30-3	Crotonaldehyde
92. 142-71-2	Cupric Acetate
93. 12002-03-8	Cupric Acetoarsenite
94. 7447-39-4	Cupric Chloride
95. 3251-23-8	Cupric Nitrate
96. 5893-66-3	Cupric Oxalate
97. 7758-98-7	Cupric Sulfate
98. 10380-29-7	Cupric Sulfate Ammoniated
99. 815-82-7	Cupric Tartrate
100. 506-77-4	Cyanogen Chloride
101. 110-82-7	Cyclohexane
102. 94-75-7	2,4-D Acid
103. 94-11-1	2,4-D Esters
104. 50-29-3	DDT
105. 333-41-5	Diazinon
106. 1918-00-9	Dicamba
107. 1194-65-6	Dichlobenil
108. 117-80-6	Dichlone
109. 25321-22-6	Dichlorobenzene (all isomers)
110. 266-38-19-7	Dichloropropane (all isomers)
111. 26952-23-8	Dichloropropene (all isomers)
112. 8003-19-8	Dichloropropene-Dichloropropane Mixture
113. 75-99-0	2-2-Dichloropropionic Acid
114. 62-73-7	Dichlorvos
115. 60-57-1	Dieldrin
116. 109-89-7	Diethylamine
117. 124-40-3	Dimethylamine
118. 25154-54-5	Dinitrobenzene (all isomers)
119. 51-28-5	Dinitrophenol
120. 25321-14-6	Dinitrotoluene (all isomers)
121. 85-00-7	Diquat
122. 298-04-4	Disulfoton
123. 330-54-1	Diuron
124. 27176-87-0	Dodecylbenzenesulfonic Acid
125. 115-29-7	Endosulfan (all isomers)
126. 72-20-8	Endrin and Metabolites
127. 106-89-8	Epichlorohydrin
128. 563-12-2	Ethion
129. 100-41-4	Ethyl Benzene
130. 107-15-3	Ethylenediamine
131. 106-93-4	Ethylene Dibromide
132. 107-06-2	Ethylene Dichloride
133. 60-00-4	EDTA
134. 1185-57-5	Ferric Ammonium Citrate
135. 2944-67-4	Ferric Ammonium Oxalate
136. 7705-08-0	Ferric Chloride

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
137. 7783-50-8	Ferric Fluoride
138. 10421-48-4	Ferric Nitrate
139. 10028-22-5	Ferric Sulfate
140. 10045-89-3	Ferrous Ammonium Sulfate
141. 7758-94-3	Ferrous Chloride
142. 7720-78-7	Ferrous Sulfate
143. 206-44-0	Fluoranthene
144. 50-00-0	Formaldehyde
145. 64-18-6	Formic Acid
146. 110-17-8	Fumaric Acid
147. 98-01-1	Furfural
148. 86-50-0	Guthion
149. 76-44-8	Heptachlor
150. 118-74-1	Hexachlorobenzene
151. 87-68-3	Hexachlorobutadiene
152. 67-72-1	Hexachloroethane
153. 70-30-4	Hexachlorophene
154. 77-47-4	Hexachlorocyclopentadiene
155. 7647-01-0	Hydrochloric Acid (Hydrogen Chloride)
156. 7664-39-3	Hydrofluoric Acid (Hydrogen Fluoride)
157. 74-90-8	Hydrogen Cyanide
158. 7783-06-4	Hydrogen Sulfide
159. 78-79-5	Isoprene
160. 42504-46-1	Isopropanolamine Dodecylbenzenesulfonate
161. 115-32-2	Kelthane
162. 143-50-0	Kepone
163. 301-04-2	Lead Acetate
164. 3687-31-8	Lead Arsenate
165. 7758-95-4	Lead Chloride
166. 13814-96-5	Lead Fluoborate
167. 7783-46-2	Lead Fluoride
168. 10101-63-0	Lead Iodide
169. 18256-98-9	Lead Nitrate
170. 7428-48-0	Lead Stearate
171. 15739-80-7	Lead Sulfate
172. 1314-87-0	Lead Sulfide
173. 592-87-0	Lead Thiocyanate
174. 58-89-9	Lindane
175. 14307-35-8	Lithium Chromate
176. 121-75-5	Malthion
177. 110-16-7	Maleic Acid
178. 108-31-6	Maleic Anhydride
179. 2032-65-7	Mercaptodimethur
180. 592-04-1	Mercuric Cyanide
181. 10045-94-0	Mercuric Nitrate
182. 7783-35-9	Mercuric Sulfate
183. 592-85-8	Mercuric Thiocyanate
184. 10415-75-5	Mercurous Nitrate
185. 72-43-5	Methoxychlor
186. 74-93-1	Methyl Mercaptan
187. 80-62-6	Methyl Methacrylate
188. 298-00-0	Methyl Parathion
189. 7786-34-7	Mevinphos
190. 315-18-4	Mexacarbate
191. 75-04-7	Monoethylamine
192. 74-89-5	Monomethylamine
193. 300-76-5	Naled
194. 91-20-3	Naphthalene
195. 1338-24-5	Naphthenic Acid
196. 7440-02-0	Nickel
197. 15699-18-0	Nickel Ammonium Sulfate
198. 37211-05-5	Nickel Chloride
199. 12054-48-7	Nickel Hydroxide
200. 14216-75-2	Nickel Nitrate
201. 7786-81-4	Nickel Sulfate
202. 7697-37-2	Nitric Acid
203. 98-95-3	Nitrobenzene
204. 10102-44-0	Nitrogen Dioxide
205. 25154-55-6	Nitrophenol (all isomers)
206. 1321-12-6	Nitrotoluene
207. 30525-89-4	Paraformaldehyde
208. 56-38-2	Parathion
209. 608-93-5	Pentachlorobenzene
210. 87-86-5	Pentachlorophenol
211. 85-01-8	Phenanthrene
212. 108-95-2	Phenol
213. 75-44-5	Phosgene
214. 7664-38-2	Phosphoric Acid
215. 7723-14-0	Phosphorus
216. 10025-87-3	Phosphorus Oxychloride
217. 1314-80-3	Phosphorus Pentasulfide
218. 7719-12-2	Phosphorus Trichloride
219. 7784-41-0	Potassium Arsenate
220. 10124-50-2	Potassium Arsenite
221. 7778-50-9	Potassium Bichromate
222. 7789-00-6	Potassium Chromate
223. 7722-64-7	Potassium Permanganate
224. 2312-35-8	Propargite
225. 79-09-4	Propionic Acid
226. 123-62-6	Propionic Anhydride
227. 1336-36-3	Polychlorinated Biphenyls
228. 151-50-8	Potassium Cyanide
229. 1310-58-3	Potassium Hydroxide
230. 75-56-9	Propylene Oxide
231. 121-29-9	Pyrethrins
232. 91-22-5	Quinoline
233. 108-46-3	Resorcinol
234. 7446-08-4	Selenium Oxide
235. 7761-88-8	Silver Nitrate
236. 7631-89-2	Sodium Arsenate
237. 7784-46-5	Sodium Arsenite
238. 10588-01-9	Sodium Bichromate
239. 1333-83-1	Sodium Bifluoride
240. 7631-90-5	Sodium Bisulfite
241. 7775-11-3	Sodium Chromate
242. 143-33-9	Sodium Cyanide
243. 25155-30-0	Sodium Dodecylbenzene Sulfonate
244. 7681-49-4	Sodium Fluoride
245. 16721-80-5	Sodium Hydrosulfide
246. 1310-73-2	Sodium Hydroxide
247. 7681-52-9	Sodium Hypochlorite
248. 124-41-4	Sodium Methylate
249. 7632-00-0	Sodium Nitrate
250. 7558-79-4	Sodium Phosphate, Dibasic
251. 7601-54-9	Sodium Phosphate, Tribasic
252. 10102-18-8	Sodium Selenite
253. 7789-06-2	Strontium Chromate
254. 57-24-9	Strychnine and Salts
255. 100-420-5	Styrene
256. 12771-08-3	Sulfur Monochloride
257. 7664-93-9	Sulfuric Acid
258. 93-76-5	2,4,5-T Acid
259. 2008-46-0	2,4,5-T Amines
260. 93-79-8	2,4,5-T Esters
261. 13560-99-1	2,4,5-T Salts
262. 93-72-1	2,4,5-TP Acid
263. 32534-95-5	2,4,5-TP Acid Esters
264. 72-54-8	TDE
265. 95-94-3	Tetrachlorobenzene
266. 127-18-4	Tetrachloroethane
267. 78-00-2	Tetraethyl Lead
268. 107-49-3	Tetraethyl Pyrophosphate
269. 7446-18-6	Thallium (I) Sulfate
270. 108-88-3	Toluene
271. 8001-35-2	Toxaphene
272. 12002-48-1	Trichlorobenzene (all isomers)
273. 52-68-6	Trichlorfon
274. 25323-89-1	Trichloroethane (all isomers)
275. 79-01-6	Trichloroethylene
276. 25167-82-2	Trichlorophenol (all isomers)
277. 27323-41-7	Triethanolamine Dodecylbenzenesulfonate
278. 121-44-8	Triethylamine
279. 75-50-3	Trimethylamine
280. 541-09-3	Uranyl Acetate
281. 10102-06-4	Uranyl Nitrate
282. 1314-62-1	Vanadium Pentoxide
283. 27774-13-6	Vanadyl Sulfate
284. 108-05-4	Vinyl Acetate
285. 75-35-4	Vinylidene Chloride
286. 1300-71-6	Xylenol
287. 557-34-6	Zinc Acetate
288. 52628-25-8	Zinc Ammonium Chloride
289. 1332-07-6	Zinc Borate
290. 7699-45-8	Zinc Bromide
291. 3486-35-9	Zinc Carbonate
292. 7646-85-7	Zinc Chloride
293. 557-21-1	Zinc Cyanide
294. 7783-49-3	Zinc Fluoride
295. 557-41-5	Zinc Formate
296. 7779-86-4	Zinc Hydrosulfite
297. 7779-88-6	Zinc Nitrate
298. 127-82-2	Zinc Phenolsulfonate
299. 1314-84-7	Zinc Phosphide
300. 16871-71-9	Zinc Silicofluoride
301. 7733-02-0	Zinc Sulfate
302. 13746-89-9	Zirconium Nitrate
303. 16923-95-8	Zirconium Potassium Fluoride
304. 14644-61-2	Zirconium Sulfate
305. 10026-11-6	Zirconium Tetrachloride

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
ALLIED CORP. / PRAIRIE WORKS	ABERDEEN-PRAIRIE INDUSTRIAL PARK

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
ABERDEEN	MS	39756	MONROE	48	02

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
— — — — — —	— — — — — —	☐ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
5 / 30 / 84 (MONTH DAY YEAR)	☐ ACTIVE ☑ INACTIVE	1962 / ____ (BEGINNING YEAR / ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ____ (Name of firm)
☑ E. STATE ☑ F. STATE CONTRACTOR EPS (Name of firm) ☐ G. OTHER ____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
JIM HARDAGE	CHEMIST	MS-BOPC	(601) 961-5171
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO**
DR. W. WARREN	ASSOC. DIRECTOR OF ENGINEERING	EPS	(601) 922-8242
STEVEN HORNUNG	ENVIRONMENTAL ENGINEER	EPS	(601) 922-8242
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
MR. RICHARD WHITEHEAD	CONSULTANT FOR DEPT. OF AGRICULTURE	P.O. BOX 1609 JACKSON, MS 39205	(601) 354-6571
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
✓ PERMISSION WARRANT	9:30 A.M.	WINDY, CLEAR, COOL ~50°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO
JIM HARDAGE	MS BOPC	(601) 961-5171

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
STEVEN M. HORNUNG		EPS	(601) 922-8242	6 / 1 / 84 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035249

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☑ A GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☑ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
VERY LOW POTENTIAL, PLANT AND PROPERTY ARE VISUALLY CLEAN. AT ONE TIME, BEFORE THE STATE TOOK OVER OPERATION, THE SITE WAS VERY CONTAMINATED WITH MIREX. THE STATE DID EXTENSIVE CLEAN UP.

01 ☑ B SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☑ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
LOW POTENTIAL, PLANT AND PROPERTY ARE VISUALLY CLEAN. AT ONE TIME, BEFORE THE STATE TOOK OVER OPERATION, THE SITE WAS VERY CONTAMINATED WITH MIREX. THE STATE DID EXTENSIVE CLEAN UP. SLIGHT MIGRATION FROM SOIL DETECTED IN 1981.

01 ☐ C CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ D FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ E DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☑ F CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) — ☑ POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: < 5 (Acres) — 04 NARRATIVE DESCRIPTION
LOW POTENTIAL, PLANT AND PROPERTY ARE VISUALLY CLEAN. SOIL BEHIND PLANT WAS CONTAMINATED WITH MIREX AT THE TIME THE STATE TOOK OVER OPERATION FROM ALLIED. SAMPLES TAKEN IN 1981 INDICATED THAT THERE WAS SOME MIREX IN THE SOIL BEHIND THE PLANT. THERE APPEARS TO BE MINIMAL MIGRATION.

01 ☑ G DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☑ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
VERY LOW POTENTIAL. THERE ARE NO WELLS NEAR SITE. MIREX IS NOT KNOWN TO MIGRATE IN SOIL.

01 ☑ H WORKER ~~EXPOSURE/INJURY~~ — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ~12 — 04 NARRATIVE DESCRIPTION
WORKERS SHOWED ELEVATED BLOOD LEVELS OF MIREX. THE STATE AG. DEPT. MONITORED WORKERS. NONE OF THE WORKERS SHOWED ANY SIDE EFFECTS.

01 ☐ I POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A NPDES				
☐ B UIC				
☑ C AIR				
☐ D RCRA				
☐ E RCRA INTERIM STATUS				
☐ F SPCC PLAN				
☐ G STATE (Specify)				
☐ H LOCAL (Specify)				
☐ I OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A SURFACE IMPOUNDMENT		
☐ B PILES		
☑ C DRUMS, ABOVE GROUND		
☐ D TANK, ABOVE GROUND		
☐ E TANK, BELOW GROUND		
☐ F LANDFILL		
☐ G LANDFARM		
☐ H OPEN DUMP		
☑ I OTHER BAGS (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER _____ (Specify)

05 OTHER

- ☑ A. BUILDINGS ON SITE

06 AREA OF SITE

< 5 (Acres)

07 COMMENTS

THE SITE CONSISTS OF TWO LARGE BUILDINGS. THE ONE IS EMPTY AND CONTAINS NO PROCCESING EQUIPMENT. THE OTHER CONTAINS THE MANUFACTURING PORTION OF THE PLANT AND THE STORAGE AREA WHERE THE REMAINING CHEMICALS ARE KEPT.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☑ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ☑ NO

02 COMMENTS

THE MIREX IS LOCKED IN STORAGE AREA IN PLANT. OTHER CHEMICALS ARE IN LOCKED PLANT. PLANT IS FENCED.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

VISUAL OBSERVATION - SITE INSPECTION, 5-30-84
STATE FILE

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	D007035249

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☑ A $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☑ A IMPERMEABLE (Less than 10^{-6} cm sec) ☐ B RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
EST. 1200 (ft)	UNKNOWN (ft)	UNKNOWN

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
(in)	(in)	1 %	SOUTH WEST	1 %

09 FLOOD POTENTIAL

SITE IS IN _____ YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A _____ (mi)

OTHER: B _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES _____

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A 0 (mi)	B _____ (mi)	C 0.5 (mi)	D _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

SITE AND SURROUNDING AREA IS VERY FLAT. SITE IS LOCATED IN INDUSTRIAL PARK. REST OF SURROUNDING LAND IS USED FOR GRAZING OR FARMING.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

"CHARACTERIZATION OF AQUIFERS DESIGNATED AS POTENTIAL DRINKING-WATER SOURCES IN MISSISSIPPI." U.S.G.S. OPEN-FILE REPORT 81-550.

VISUAL OBSERVATION - SITE INSPECTION, 5-30-84

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MS	0007035249

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
MS. DEPT. OF AGRICULTURE AUTHORITY FOR THE CONTROL OF FIRE ANTS		P.O. BOX 1609		JACKSON, MS	MS	39205

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
ALLIED CORPORATION		BOX 2332 R		MORRISTOWN	NJ	07960

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
CITY OF ABERDEEN & MONROE CO.		P.O. BOX 96		ABERDEEN	MS	39730

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE FILES
MR. RALPH BYARS - ABERDEEN CITY MANAGER

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	D007035249

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MS	0007035249

II PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

MISSISSIPPI AUTHORITY INVENTORY

6-30-83

SOYBEAN OIL - @ $.2278 #

Holding Tank	41,453 #
Mix Tank (mixed with Mirex)	15,153 #
Total	56,608 #

CORNCOB GRIT - @ $.082684 # (average)

West Bin	624,060 #
East Bin	263,510 #
Total	887,570 #

TECHNICAL MIREX @ $17.50 #

5 drums less 4# for research	546 #
Mixed in oil in mix tank	183 #
Total	729 #

AMINE - @ $2.29 #

456 # loss because of leaking tank

39 drums & a partial drum	14,160 #

PROPLYNE GLYCOL @ $.425 #

2 drums and a partial drum	1,290 #

ANTIOXIDANT - @ $.7233 #

10 drums and a partial drum	4,897.5 #

CYCLE I - 221,543 # @ $.08525

90.51% corn cob grit
8.52% soy bean oil
.97% antioxidant

FERRIAMICIDE - 69,600 pounds @ $334.02 per ton

BAGS

3 ply printed	11,100 @ $200.00m
5 ply plain	600 @ $230.75m

These bags are now 6 years old

FILM FOR FORM, FILL, SEAL MACHINE

21" 16 oz 13½ rolls (34,897 impressions) @ $102.25m
18" 8 oz 49 rolls (204,232 impressions) @ $43.92m

MIREX

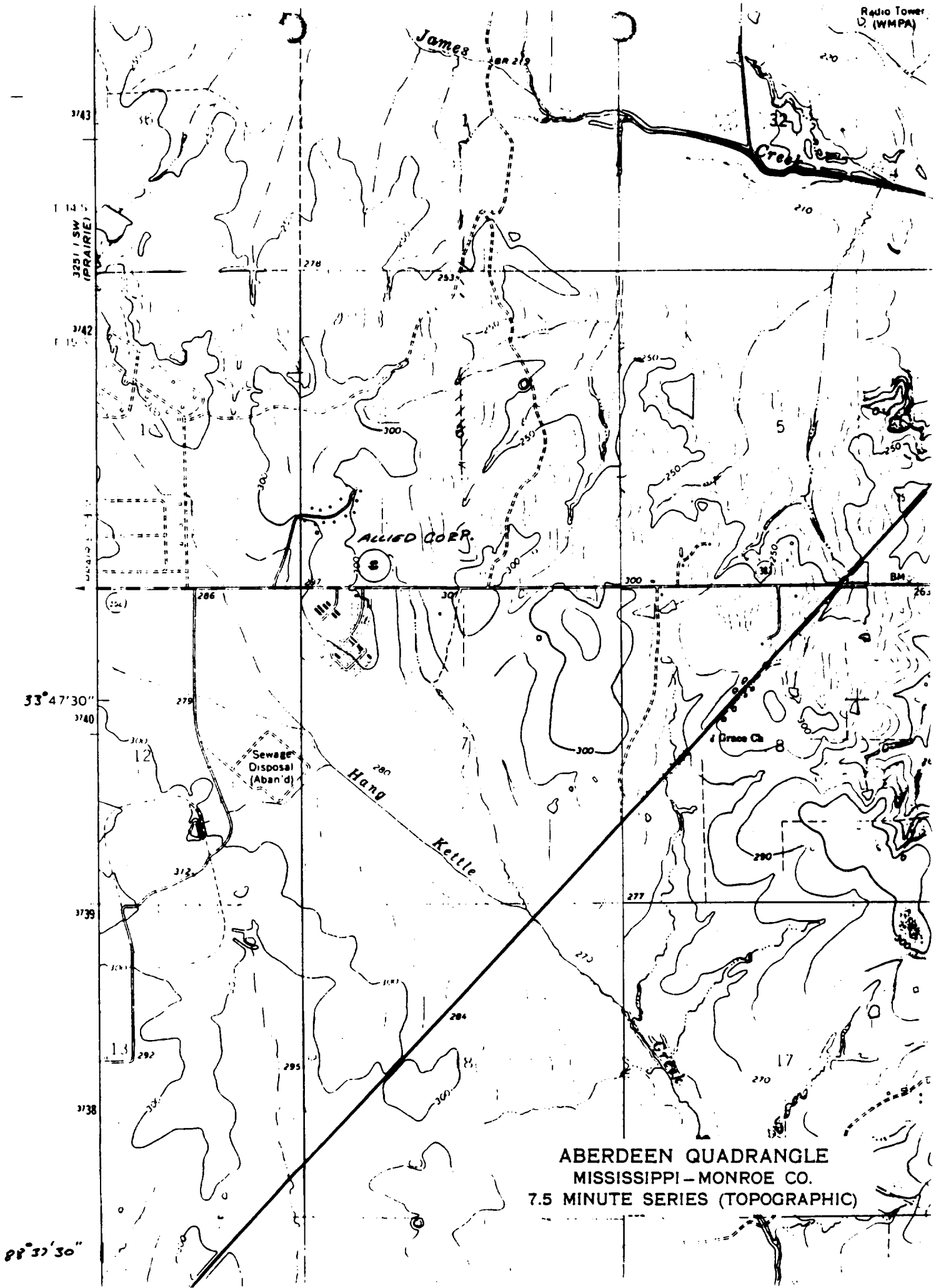
PC82250. 1,3,4-METHENO-1H-CYCLOBUTA(cd)PENTALENE, 1,1a,2,2,3,3a,4,5,5a,5b,6-DODECACHLOROOCTAHYDRO-
CAS: 007385855 MW: 545.50 MOLFM: C11Z C10
WLN: L545 B4 C5 D 4ABCE JTJ-/G 1 2
SYN: CYCLOPENTADIENE, HEXACHLORO-, DIMER * DECHLORA * DODECACHLOROOCTAHYDRO-1,3,4-METHENO-2H-CYCLOBUTA(c,d)PENTALENE * DODECACHLOROPENTACYCLODECANE * DODECACHLOROPENTACYCLO(3,3,2,0(sup 2,6),0(sup 3,9),0(sup 7,10))DECANE * ENT 25,719 GC 17 * HEXACHLOROCYCLOPENTADIENE DIMER * HRS 1276 * 1,3,4-METHENO-1H-CYCLOBUTA(cd)PENTALENE, DODECACHLOROOCTAHYDRO- * MIREX * PERCHLOROPENTACYCLO(5,2,1,0(sup 2,6),0(sup 3,9),0(sup 5,8))DECANE *
TXDS: ori-rat LDLo:306 mg/kg PCOC** 1,761.66
ori-mus TDLo:2222 mg/kg/58WC JNCIAM 42,1101,69
TFX:CAR
REVIEW: Carcinogenesis Review - 6 references IARC** 5,209,74

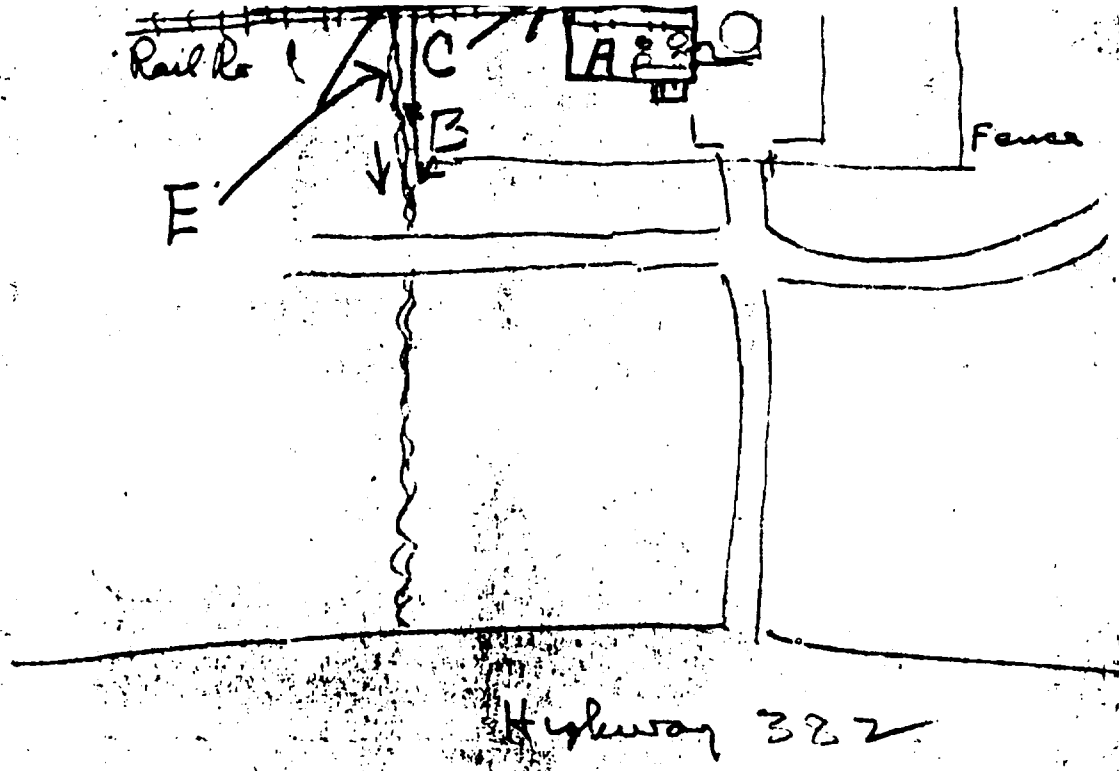
ANTIOXIDANT

TY20000. 1,2-PROPANEDIOL
CAS: 000057556 MW: 76.11 MOLFM: 02-C3-H8
WLN: QY10
SYN: 1,2-DIHYDROXYPROPANE * METHYLETHYLENE GLYCOL * METHYL GLYCOL * MONOPROPYLENE GLYCOL * PG 12 * PROPANE-1,2-DIOL * PROPYLENE GL * alpha-PROPYLENEGLYCOL * 1,2-PROPYLENE GL * SIRLENE * TRIMETHYL GLYCOL *
AQTX: WQCHM* 4.
1,2-PROPANEDIOL, 1-ACETYLATE see: AT19250 ACRYLIC ACID, 2-HYDROXYPROPYL ESTER
1,2-PROPANEDIOL, ALLYL ETHER see: UA49000 PROPANOL, ALLO.

GE73500. CITRIC ACID
CAS: 000077929 MW: 192.14 MOLFM: 07-C6-H8
WLN: QV1XQVQ1VQ
SYN: ANHYDROUS CITRIC ACID * CITRIC ACID, ANHYDR * 2-HYDROXY-1,2,3-PROPANETRICARBOXYLIC ACID beta-HYDROXYTRICARBALLYLIC ACID * 1,2,3-PROPANETRICARBOXYLIC ACID 2-HYDROXY *
TXDS: ipr-rat LD50 884 mg/kg JPETAB 99,65,48
ipr-mus LD50 961 mg/kg JPETAB 99,65,48
ivn-mus LD50 42 mg/kg JPETAB 99,65,48
ivn-rbt LD50 330 mg/kg JPETAB 99,65,48
AQTX:
CITRIC ACID,ACETYL TRIETHYL ESTER see: GE82250 CITRIC ACID TRIETHYL ESTER, ACETATE
CITRIC ACID, ANHYDROUS see: GE73500 CITRIC ACID

HB54000. IRON(II) CHLORIDE (1:2)
CAS: 007758943 MW: 126.75 MOLFM: Cl2 Fe
WLN: FE G2
SYN: FERROUS CHLORIDE * IRON DICHLORIDE * IRON PROTOCHLORIDE *
TXDS: ipr-mus LD50 59 mg/kg AEPPAE 244,17,62

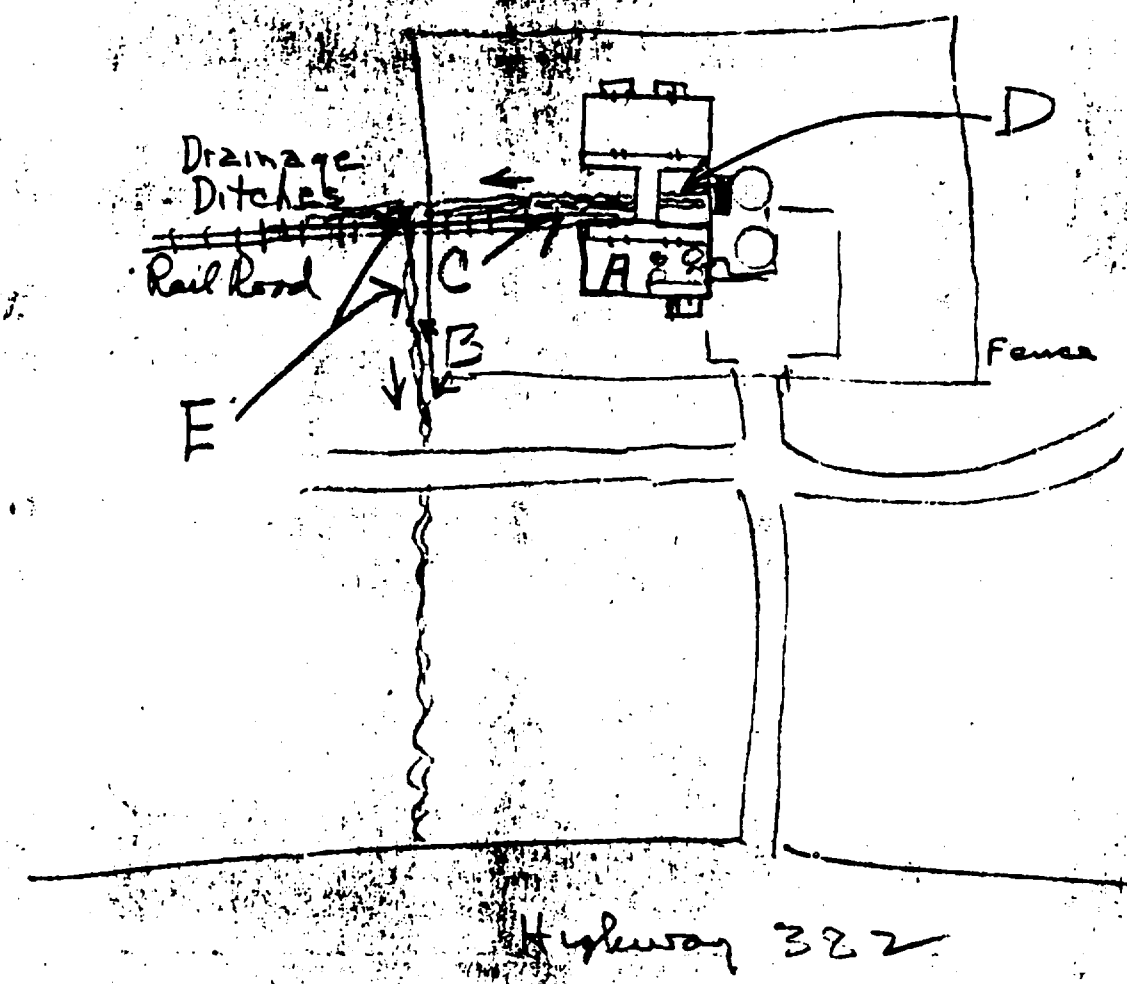

Radio Tower (WMPA)
James
Creek
3251 I SW (PRAIRIE)
ALLIED CORP.
Sewage Disposal (Aban'd)
Hang Kettle
Creek
33°47'30"
88°37'30"
ABERDEEN QUADRANGLE
MISSISSIPPI – MONROE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



A. Bait Plant
SOIL SAMPLES above water level in di
B. " " " " " " "
C " " " " " " "
D " " " " " " "
Water Samples in ditch at Point Sho
E

G.C. Analysis
A - N/A
B - 15 ppm
4.5 ppm
C - 12.3 ppm
220. ppm
400 ppm
41.8 ppm
D 140. ppm
193 ppm
* E < 4 ppm

* All samples of water in ditch leaving premises < 4 ppm



A. Bait Plant
SOIL Samples above water level in dit
B. " " " " " " "
C " " " " " " "
D " " " " " " "
Water Samples in ditch at Point Sho
E

G.C. Analyses
A - N/A
B - 15 ppm
4.5 ppm
C - 12.3 ppm
220. ppm
400 ppm

* All samples of water in ditch leaving premises < 1.4 ppm.

PROJECT MANAGEMENT SUMMARY

Site Name: ALLIED CORP./PRAIRIE WORKS

Site Number: MSD007035249

Owner:

Site Status: ☐ Active ☒ Inactive ☐ Unknown

Priority: ☐ High ☐ Medium ☐ Low ☒ None

3. FINAL DISPOSITION

I. EPS Final Review - Date: 6/5/84

Comments:

ADD. Inspection Required ☐ Yes ☒ No

II. MS BOPC Review - Date:

Comments: 6/22/84

Follow-up Action Required ☐ Yes ☐ No

III. Final Disposition:

Review & revise Date:

Edited & correct Date:

Transmitted Date:

File close-out Date:

ADDITIONAL COMMENTS (ONGOING & FINAL)

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-III

SITE INSPECTION NARRATIVE SHEET

1. Site Identification:

Site number: MSD007035249

Site name: Allied Corp./Prairie Works

Site county: Monroe

2. Industrial Narrative Summary:

Company Name: MS Department of Agriculture

Address: P. O. Box 1609
Jackson, MS 39205

Telephone No.: (601) 354-6571

Contact: Mr. Dick Whitehead

Contact:

Discussion: The plant in the Aberdeen-Prairie Industrial Park was operated by Allied Corp. from 1962 until May, 1976. The facility produced mirex fire ant bait. The Mississippi Dept. of Agriculture acquired the plant in May, 1976. The State Dept. performed extensive cleanup operations and installed new, safer material handling equipment between May and July, 1976. Mirex fire ant bait was produced at the plant until December, 1977. The requirement to stop production came from EPA, however, an emergency request to produce mirex was granted by EPA and the state produced mirex bait until January, 1979. In January, 1979, the state produced ferriamicide (a degradable form of mirex containing bait) until March, 1979. This was due to a shut down notice from EPA. The plant reopened in September, 1982, and produced ferriamicide until October, 1982. For a period of time between August, 1980, and December, 1981, the plant was used to package amdro for American Cyanamid.

During the extensive cleanup in 1976, large amounts of waste material was cleaned from the plant and outside area. This was sent to Rollins Environmental Services in Louisianna for

incineration.

The plant is currently not being used. Material is still being stored at the plant. (see attached inventory sheet). The plant facility and grounds are very clean looking. Samples were taken of the outside area in 1981. Mirex was detected in soil behind the plant and slight migration in surface water. Mirex is not known to migrate much. Very low potential of environmental pollution present.

3. Disposition:

No further action needed.

4. Comments:

Reference No. 2

"Rite in the Rain"

ALL-WEATHER

LEVEL

Notebook No. 311

F4-1737

Allied Corp. / Prairie Chemical
F4-8909-65
Aberdeen, Monroe Cty, Miss.
Sheri Panabaker
Recon

[redacted]

[redacted]: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager.
2. All entries are made using ink. Draw a single line through errors. Initial and date corrections.
3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team members' signatures.
4. Record weather conditions and general site information.
5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.
6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite.
7. Provide reference to Sampling Field Sheets for detailed sampling information.
8. Describe sampling locations in detail and document all changes from project planning documents.
9. Provide a site sketch with sample locations and photo locations.
10. [redacted] log by completing the stamped information at [redacted] the logbook.
11. If no site representative is on hand to accept the receipt for samples, an entry to that effect must be placed in the logbook.
12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete [redacted] information in the [redacted]

the work plan has been read and understood by the following:

Sheri Panabaker

Sheri Panabaker 10/11/89

Margo Westmoreland

Margo E. Westmoreland

000001

10/11/87

Sunny, ≈ 80°F

1500 Arrived at site. In an industrial area in which most ~~all~~ of the companies have closed. Rest of area is fields & woods.

Bldg. has fence, but front gate open.

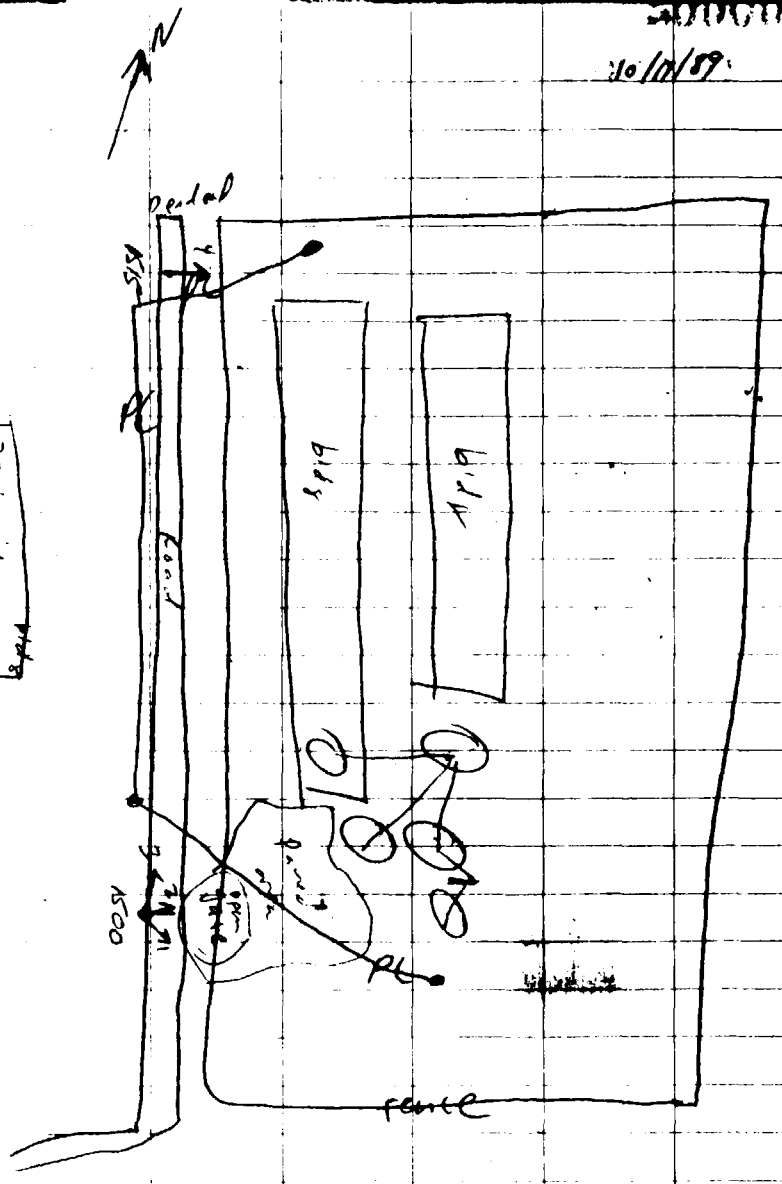
2 bluedings on site area grown up w/ waist high ~~waste~~ weeds.

fence appears to surround property

Signs on fence: no trespassing
Miss. Dept. of Agri
and commerce Grain Inspection

Sign on Bldg: Mississippi Authority for the control of Fire Ants
Prairie Plant

Shi Pan



Shi Pan

10/11/89

North on 382 ≈ 1/4 mi. is
the Miss State University
Prairie Research Unit
(MAFES).

The nearest residents are
approximately .8 mile
from the facility. Non
municipal water

There are no daycares or
schools or churches nearby
the facility.

The property appears to be approx.
1-2 acres in size

Sherri Pounds

10/12/89

0800 Met with Robert Ashley
of the city of Aberdeen
Water Department. This
water company also covers
the city of Prairie and
the surrounding area.
The company serves 3750
connections. Mr. Ashley drew
onto our topo maps the
areas the water company
serves. The water company has
10 wells that are from
150 - 500 feet deep and
all are located in the
Butaw formation. They
have an emergency tie-in
with the Coon-Tail water
system which has 350
connections. The [redacted] serves
most of the county east +
south of Aberdeen

Sherri Pounds

10/12/89

Mr. Ashley said that there is not any fishing or intakes in Hank Kettle Creek any where along it. He said there is recreational fishing in the Tombigbee River, but no intakes. Also there is fishing in Chugwatanchee Creek.

Steve Parr

Reference No. 3 — Site (2)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: MSS — 02 SITE NUMBER: 000001060
MSD 007035249

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): Allied Corp. / Prairie Works
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Aberdeen-Prairie Indust. Complex
03 CITY: Aberdeen
04 STATE: Ms. 05 ZIP CODE: 39730 06 COUNTY: Monroe 07 COUNTY CODE 08 CONG DIST
09 COORDINATES LATITUDE: __ __ __.__ LONGITUDE: ___ __ __.__
10 DIRECTIONS TO SITE (Starting from nearest public road):

III. RESPONSIBLE PARTIES

01 OWNER (If known): Ms. Dept. of Agriculture, Authority For The Control of Fire Ants
02 STREET (Business, mailing, residential): P.O. Box 1609 in Farmers' Market by stadium
03 CITY: Jackson, Ms.
04 STATE: Ms. 05 ZIP CODE: 39205 06 TELEPHONE NUMBER: (601) 354-6552 Mr. Dick Whitehead
07 OPERATOR (If known and different from owner): Ms. Dept. of Agriculture, Authority For the Control of Fireants
08 STREET (Business, mailing, residential): Aberdeen-Prairie Industrial Complex
09 CITY: Aberdeen
10 STATE: Ms. 11 ZIP CODE: 39730 12 TELEPHONE NUMBER: ( ) ?
13 TYPE OF OWNERSHIP (Check one): ☐ A. PRIVATE ☐ B. FEDERAL. _____ (Agency name) ☒ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply): ☐ A. RCRA 3001 DATE RECEIVED: ___ (Month Day Year) ☒ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) (From Past Owner) DATE RECEIVED: 6 3 81 (Month Day Year) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION: ☐ YES ☒ NO DATE ___ (Month Day Year)
BY (Check all that apply): ☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR ☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): _____
02 SITE STATUS (Check one): ☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN
03 YEARS OF OPERATION: 1962 (Beginning Year) in 1978 they quit producing and shipping the Mirex (Ending Year) ☐ UNKNOWN
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Used to be a MIREX production plant (made bait). Mirex was banned by EPA in 1977/78 and they presently use "AMDROL" for fireant bait.
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
When MIREX was being used to make the Fireant bait, the Mirex powder was spread all around plant during day to day operations. The Dang. spent 2 years cleaning up facility. Very little mirex there now.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents): ☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT: Ron Joyner
02 OF (Agency/Organization): EPA Region 4
03 TELEPHONE NUMBER: (404) 881-2234
04 PERSON RESPONSIBLE FOR ASSESSMENT: Jeff Hundley
05 AGENCY: FIT Contractor
06 ORGANIZATION: E&E, Inc.
07 TELEPHONE NUMBER: (404) 288-7711
08 DATE: 4 8 82 (Month Day Year)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: _____ (Acres)
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

There still exists a small amount of mirex contamination in building and soil around plant.

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

JES

MAR 31 '83

EPA POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION	SITE NUMBER (to be assigned by Hq)
IV	MSD 007035249

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II *(Preliminary Assessment)*. File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force *(EN-335)*; 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME: Allied Corporation/Prairie Works

B. STREET *(or other identifier)*: Aberdeen - Prairie Ind Complex

C. CITY: Aberdeen

D. STATE: MS

E. ZIP CODE:

F. COUNTY NAME:

G. OWNER/OPERATOR *(if known)*
1. NAME: MS Dept of Agriculture Authority for the Control of Fire Ants
2. TELEPHONE NUMBER: 601/354-6552

H. TYPE OF OWNERSHIP
☐ 1. FEDERAL ☒ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION
Manufacturing facility (activity stopped mid-[illegible]) of Mirex, the fire ant powder. [illegible] Dept of Ag. [illegible] site [illegible] little Mirex there now.

J. HOW IDENTIFIED *(i.e., citizen's complaints, OSHA citations, etc.)*: CERCLA Notifier

K. DATE IDENTIFIED *(mo., day, & yr.)*: [redacted] 6-8-81

L. PRINCIPAL STATE CONTACT
1. NAME: Jim Hardage
2. TELEPHONE NUMBER: [redacted] 601/961-5065

II. PRELIMINARY ASSESSMENT *(complete this section last)*

A. APPARENT SERIOUSNESS OF PROBLEM
☐ 1. HIGH ☐ 2. MEDIUM ☑ 3. LOW ☐ 4. NONE ☐ 5. UNKNOWN

B. RECOMMENDATION
[redacted] 1. NO ACTION NEEDED *(no hazard)*
☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:
☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:
☑ 4. SITE INSPECTION NEEDED *(low priority)*

C. PREPARER INFORMATION
1. NAME: Ron Jeffries
2. TELEPHONE NUMBER: FTS 257-2234
3. DATE *(mo., day, & yr.)*: 4-8-82

III. SITE INFORMATION

A. SITE STATUS
☑ 1. ACTIVE *(Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)*
☐ 2. INACTIVE *(Those sites which no longer receive wastes.)*
☐ 3. OTHER *(specify)*: *(Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)*

B. IS GENERATOR ON SITE?
☐ 1. NO ☑ 2. YES *(specify generator's four-digit SIC Code)*:

C. AREA OF SITE *(in acres)*: 25-10

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES
1. LATITUDE *(deg.-min.-sec.)*:
2. LONGITUDE *(deg.-min.-sec.)*:

E. ARE THERE BUILDINGS ON THE SITE?
☐ 1. NO ☑ 2. YES *(specify)*: manufacturing bldgs & storage

T2070-2 (10-79)

Continue On Reverse

Continued From Page 2

V. WASTE RELATED INFORMATION *(continued)*

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE *(place in descending order of hazard)*.

Wreck

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD *(mark 'X')*	C. ALLEGED INCIDENT *(mark 'X')*	D. DATE OF INCIDENT *(mo., day, yr.)*	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL	X			
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER *(specify)*:				

Continue On Reverse

Aberdeen, Ms. Minex Facility Site (2)
(owned by Ms. Dept. of Agric. - Pineant Division)

Meeting 3/29/82 @ 8:00 AM in Dept. of Agri.'s Jackson office.
Attendees: Jeff Hundley, Mac Carman, Ron Joyner, Jim Hardage, Mr. Ulshee

- Whitehead initiated cleanup of Minex plant [illegible] MS Dept. of Ag. [illegible]
- When Allied owned plant, workers moved Minex around by shoveling. (Lots of spillage). Ms. Dept A uses a vacuum handling facility.
- Sludge in mixing tank drummed, floor sweepings, etc. was sent to Rollins for incineration.
- Only thing landfilled was the "bags" that used to have bait in it. The drums that had "technical" Minex went to Rollins
- They made Ferramacide under instructions from EPA. Ms. State Univ. did study that said breakdown product of ferramicide was more toxic than Minex. This knocks out both products.
- They're trying to get some other type of pesticide that plant can make now to control ants.

- Minex super persistant chemical. Easy to pick up. Bonds to soil and doesn't migrate easily.
- Sketch of runoff ditch to other property shows not much Minex moves off property (< 4 ppm).
- Their goal inside bldg was <0.1 ppm minex contam. He says they've reached this goal. Said there is a certain amount of minex in soil and when soil dries out, dust carries minor minex contamination inside bldg. EPA hasn't given them a level of tolerance that's acceptable.

- Technical grade Minex came in fiber drums. Some of these drums were taken home by employees and used to store things in their house

Need to:

- Ask Allied if

Get documentation on how long and how much clean up mati. was taken to Rollins.

21 drums of basic (Mirex) sent to Rollins in 1978

208 drums

Dept. of Agri. did the cleanup operation themselves; didn't contract it out to anyone.

~~[illegible]~~

* 7 - 50 Kilo drums of Mirex Technical material is stored in Jackson (Not in Aberdeen)

(They took left-over Mirex technical stuff down to Jackson, none left in Aberdeen anymore.

The Aberdeen plant is presently (actively) producing an American Cyanamid pesticide that controls fireant. Androl is new product.

EPA Notificatio-

Reference No. 4

United States Environmental Protectic Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

MSS 000001016

A Person Required to [redacted]

Enter the name and address of the person or organization required to notify.

Name [redacted]

Street Box 2332R

City [redacted] Zip Code 07960

[redacted]

Enter the common name (if known) and actual location of the site.

MSD 007035249

[redacted] Code 39730

C [redacted]

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) MR. GEORGE BALCH [redacted]

Phone New Jersey [redacted] (455-4947)

[redacted]

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

[redacted] Allied sold the facility to State of Mississippi Dept. of Agriculture

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

[redacted]

Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. [redacted]
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

[redacted]

Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown

[redacted]

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous wast listed in the regulations under Section 3001 of RCRA. Enter th appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site located.

RECEIVED
EPA/REGION IV
JUN 3 3 25 PM '81
ENFORCEMENT DIVISION

000604

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) See Item I

Total Facility Waste Amount

cubic feet See Item I

gallons

Total Facility Area

square feet

acres

G Known, Suspected or Likely [redacted]:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ Not [redacted]

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessi hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

None attached

I [redacted]: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

[redacted]

J Signature and Title:

The person or authorized representative such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required

Name William Reiter

Street Box 2332R

City Morristown State N J Zip Code 07960

Signature William M. Reiter 6/14/81

☐ Owner, Present [redacted]

☐ Transporter

☐ Operator, Presen [redacted]

☐ Other

Reference No. 5

MISSISSIPPI
STATE GEOLOGICAL SURVEY

WILLIAM CLIFFORD MORSE, Ph. D.
DIRECTOR

BULLETIN 57

MONROE COUNTY MINERAL RESOURCES

GEOLOGY
By
FRANKLIN EARL VESTAL, M. S.

TESTS
By
THOMAS EDWIN McCUTCHEON, B. S., Cer. Engr.

Prepared in cooperation with the Monroe County citizens
and the WPA as a report on O. P. 65-1-62-137

UNIVERSITY, MISSISSIPPI
1943

MONROE COUNTY MINERAL RESOURCES

GEOLOGY

FRANKLIN EARL VESTAL, M.S.

INTRODUCTION

Monroe County is bounded on the north by Itawamba and Lee Counties, on the west by Clay and Chickasaw, and on the south by Lowndes and Clay; it is bounded on the east by Lamar County of Alabama (Figure 1). All boundaries are straight except for a part of the southern, which follows Buttahatchie and Tombigbee Rivers. The northern boundary is about 29.5 miles long, the eastern 24.0 miles, and the western 28.0 miles; the width of the county, due east-

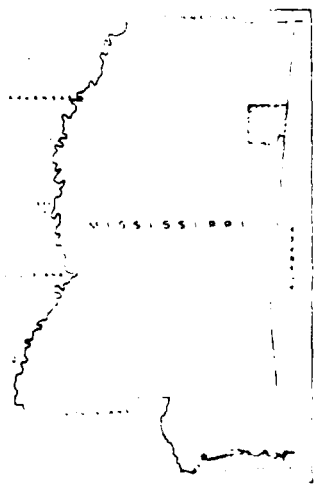


Figure 1.—Location of Monroe County.

west along the Clay County line and its eastward extension, is about 26.5 miles. The area is 769 square miles, making Monroe the eighth of the counties of the state in area. The population numbered 37,648 by the 1940 census, of whom 8,473 were classed as "urban." Probably more than 75 percent of the population are engaged in some form of agriculture. Cotton is the leading crop, especially in the lime region west of Tombigbee River, the prairie belt, but corn and hay and different sorts of cover crops are grown extensively.

are east of the Tombigbee River where they roughly follow Mississippi State Highways 25 and 6, but branches extend in various directions.

PHYSIOGRAPHY

PROVINCES, TOPOGRAPHY, AND RELIEF

Monroe County is near the inner or landward edge of the Gulf Coastal Plain which includes all Mississippi except the northeastern corner. It lies within part of the Tombigbee River Hills' or Fall Line Hills' physiographic province, and part of the Black Prairie belt, the western edge of the hills division being coincident with the western limit of the outcrop area of the Tombigbee Sand member of the Eutaw formation, roughly paralleling Tombigbee River a little west of the river (Plate 1).

The Tombigbee River Hills region is, in general, highest in the northeastern corner of the county, where a maximum elevation of about 500 feet above mean Gulf level is reached, and slopes west, south and southwest to a lowest point at the mouth of the Buttahatchie, where the elevation is not more than 150 feet. The maximum relief of the county is, then, 350 feet or more. The hills region is cut into sections by the deep Sipsey-Buttahatchie trenches, and to a lesser degree by Weaver and Splunge Creeks valleys and the valleys of smaller streams. The larger topographic features are these valleys and a series of north-south or northeast-southwest ridges between the valleys, but of course the ridges are in turn dissected by minor streams into more or less rounded hills. As a whole the topography may be said to have reached early maturity: little of the upland surface is flat-lying, and convex-upward profiles predominate; but in many places, notably near the heads of valleys, slopes are steep and ridges narrow. As described in one report:[4] "In northeastern Mississippi, in the area underlain by the predominantly sandy strata of the Tuscaloosa and Eutaw formations . . . the surface is generally hilly and ranges from low smoothly rounded hills of 40 or 50 feet relief, with broad intervening valleys, to hills and ridges of 200 feet relief, with steep slopes, narrow crests, and narrow separating valleys." Foster[1] distinguishes a "rugged phase" farther east and a "rolling phase" farther west. Stephenson and Monroe[2] distinguish between the Tuscaloosa type of topography and the Eutaw type, the topography of the Tuscaloosa outcrop area being "characterized by steep slopes and more or less conical but rounded hills, in general not as high as those underlain by the Eutaw forma-

tion farther west," and the topography of the Eutaw outcrop area showing in the east an upland featured by deep, steep-walled valleys and many relatively flat-topped hills, and in the west, where the Tombigbee sand member is at the surface, "irregular ridges and sharp conical peaks."

Along the larger stream valleys, particularly along Tombigbee River valley, terraces are conspicuous. The terrace belt along the eastern side of Tombigbee River in Monroe County is 4 to 5 miles wide in places. Stephenson and Monroe[8] found as many as five terrace plains of irregular width, in this belt. The terrace plains are said to slope gently upstream and to appear to merge with the present flood-plains of the main headwater branches of Tombigbee River in Monroe, Itawamba, and Lee Counties. A good example of terrace topography is the area a little north of McKinley Creek. A mile to 1.5 miles above the mouth of the creek the top of the river channel bank is 25 feet above low water; east of this, across a dry slough bed, the elevation is 7 to 8 feet greater; 1.7 miles by road still farther east is the face of a terrace composed of sand with a little gravel. This terrace rises sharply 30 to 35 feet above the river flat, and maintains its summit level eastwards to Highway 45 E, some 3 miles.[8]

The Black Prairie surface is undulating or rolling as a whole and of relatively slight relief, averaging 10 to 15 feet, and the maximum being not more than 40 feet. The topographic features are wide flat-bottomed valleys and low rounded hills having gentle slopes.[4,6] No flat upland remains, and steep slopes are present only in places along streams where lateral planation has been effective, or at the heads of valleys. The surface slopes at a low angle towards the river and southwards. Narrow terraces have been left along some of the larger streams.[8]

DRAINAGE

All Monroe County lies within the drainage basin of Tombigbee River. The main river, designated on some maps East Fork of Tombigbee River, crosses the northern boundary of the county in Section 35, Township 11 South, Range 8 East, about 16.5 miles from the western boundary and 13.0 miles from the eastern. From this point its course is southwest 9 to 10 miles to its junction with Old Town Creek, or West Fork of Tombigbee River, from the northwest. From the confluence the river flows south to Aberdeen, and a little east of south to its junction with the Buttahatchie at the southern boundary of the county. Below the junction of the two forks in the northern part of the county the river describes a series of large bends and several hairpin loops; it is extremely crooked in detail, but in general follows the strike of the rock beds near the contact of the typical lower Eutaw formation with the Tombigbee sand member, cutting its channel in the Tombigbee sand for the most part. The average fall is between 2.0 and 2.5 feet to the mile. The largest tributary from the west is Old Town Creek, or West Fork of Tombigbee River, but others are Matubby Creek, which has numerous branches; James Creek; and in the southwestern corner of the county several southward-flowing branches of Town Creek which joins the river in Clay County. All these streams trend southeast in general. From the east the Tombigbee receives Buttahatchie River, McKinley Creek, Halfway Creek, and Weaver Creek, besides numerous smaller streams. The Buttahatchie rises in Alabama, enters Monroe County in Section 33, Township 13 South, Range 16 West, a little north of Gattman, and flows in general west, southwest, south, and southwest. It forms the Monroe County-Lowndes County boundary for 15 miles or so. Although somewhat winding, its course is noticeably less meandering than that of the Tombigbee, a condition due chiefly to the higher gradient of the Buttahatchie. The chief tributary of Buttahatchie River is Sipsey Creek, which joins its main about 1.5 miles southeast of Greenwood Springs and 0.3 mile south of Mississippi State Highway 6. Sipsey Creek and its largest tributary, Splunge Creek, drain the northeastern corner of the county.

Some peculiarities of stream pattern are noticeable. On the east side of the river the tributaries flow in general almost west or only a little south of west, and join the river at a high angle; on the west side they take a south by east or a sharp southeast course and make a much lower angle with the river. Possibly these features are due in part to the down-dip lateral cutting of the Tombigbee.

The volume of water carried by the stream channels varies widely. The average annual rainfall is about 47 inches.[8] East of the Tombigbee a large proportion of this precipitation is absorbed by the sands and gravels, but west of the river the run-off is greater. Hard downpours of rain are not uncommon, flooding the stream channels, but the water runs off rapidly and unless the rains are continuous or essentially so for a considerable time, many of the smaller stream channels are dry for weeks. The Sipsey and the But-

Eutaw formation

The Eutaw formation consists of two units: the typical Eutaw below, and the Tombigbee member above. The Eutaw proper is dominantly sand, locally cemented into masses of ferruginous sandstone, but clay layers and laminae, commonly lignitic, are interbedded with the sand. Small lenses and stringers of small pebbles are a part of the formation, also, and the basal zone may be chiefly cross-bedded glauconitic sand cemented in places into hard tubular and corrugated sandstone, and associated with a bed of small subangular chert gravel. Some bentonite deposits are included, also. The Lower Eutaw grades upwards into the Tombigbee sand, which is massive, glauconitic, and somewhat calcareous, and includes irregular indurated layers. The typical Eutaw is very sparingly fossiliferous, but the upper part of the Tombigbee member contains many fossils 300-350

Unconformity

Tuscaloosa formation

Sand, sandstone, clay, clay shale, gravel, conglomerate, lignite. The sand, which is the dominant component of the Tuscaloosa formation in Monroe County, is generally fine, commonly ferruginous and micaceous, gray to greenish-gray or variegated, and locally cemented to sandstone. It is aggregated as thinly laminated beds or lenses, or disseminated through the other materials. The clays are compact, commonly dark-gray or brown and lignitic in the lower part of the formation, lighter colored in the upper part, mostly somewhat sandy, but some very pure; they are in the form of beds or lenses. Some bentonite is part of the uppermost Tuscaloosa. The clay shales are commonly dark, compact, sandy beds. The gravel consists of light-colored chert pebbles, in irregular accumulations chiefly in the lower part of the formation; locally and at various levels it is cemented into conglomerate. The lignite is very subordinate, and in general impure. The Tuscaloosa is characterized by irregular structure 600

Great unconformity

THE TUSCALOOSA FORMATION

The Tuscaloosa,[illegible] oldest of the formations which crop out in Monroe County, lies unconformably on the Paleozoic beds, and dips west by south at an average angle said to be 30 to 32 feet a mile[illegible], although the dip varies and may range from 20 to 32 feet a mile or even more widely because of local flexures or other irregularities of structure. Due to the irregularity of the old Paleozoic surface on which it rests, the lack of uniformity of original deposition of the component materials, and differential erosion since its accumulation, the Tuscaloosa varies considerably in thickness from place to place

Stephenson and Monroe state that the greatest thickness recorded in Mississippi was about 600 feet, in the P. J. MacAlpine Rye No. 1 well, southeastern Monroe County, and that thicknesses of 193 feet, 133 feet, and 167 feet were found in the Cowart well, the city well at Amory, and the Bourland well, respectively. Approximate thicknesses penetrated in other wells are indicated in Plate 4. Well records show that the formation thickens southwards. The outcrop belt of the Tuscaloosa borders on the west and southwest the Paleozoic upland, and in Mississippi varies in width between 5 and 15 miles;[7] its maximum width in Monroe County is about 13 miles according to Stephenson and Monroe, who show it on their map extending westwards along the northern border of the county to Tombigbee River.[8]

The Tuscaloosa formation is made up of sand, gravel, ferruginous sandstone, conglomerate, clay, clay shale, lignite, clay ironstone, and small percentages of other materials.

The Tuscaloosa sand is commonly coarse to fine, loose, almost invariably ferruginous, and of variegated colors: light drab and gray to dark green or gray, deep red, yellow, or banded and splotched with a confusion of colors. Locally it has been cemented into ferruginous sandstone. Mica is very common, and in some layers abundant; marcasite and carbonized or lignitized wood are mixed with the sand in places.

Gravel is very abundant in the formation as a whole. It consists very largely of angular to subangular light-colored coarse chert, probably derived chiefly from the Mississippian strata. Quartz pebbles are few, small, and smoothly rounded. The gravel is chiefly in the basal beds near the basement rocks, probably most of it in the basal 175 feet of the formation, but in some places it is well represented in the middle parts of the formation. In many places, and at various levels, the gravel has been cemented into an extremely tenacious conglomerate, the cementing material being iron oxide, or silica, or both. Gravel does not have such a prominent place in the Tuscaloosa of Monroe County; the gravel beds are chiefly in the extreme eastern and northeastern parts, especially east of Splunge Creek and Sipsey Creek.[8]

The Tuscaloosa clays are of varying degrees of purity and of several colors. In Mississippi the clays of the lower part of the formation are compact, dark gray, brown, and lignitic, in thin beds; those of the upper part are of lighter color, in general: they may

show white, pink, red, yellow, mottled, or other solid colors or combinations of colors. Much of this upper clay is sufficiently pure for use in the manufacture of stoneware and pottery; it may be low in iron and contains only a very little fine sand. The lignitic clays may contain leaf impressions. Beds of very compact sandy clays, particularly in the lower part of the formation, may be considered clay shale. In some places seams of clay ironstone have been formed by cementation of the clay along certain horizons by iron oxide precipitated from circulating ground waters. Some bentonite may be in the uppermost strata of the Tuscaloosa.[6]

The lignite of the Tuscaloosa is not of great consequence: it is present as well-defined seams no more than 2 to 3 feet in thickness, or as scattered lignitized logs and small pieces. Much of it is impure; it may be dense and black like coal, and contain a little yellowish-brown fossil resin and in places a noticeable content of iron sulphide, chiefly marcasite.

None of the types of rock material described from the Tuscaloosa is confined to any certain part of the formation, or has any fixed relation to any one or other of the other kinds of materials. Many lenses or beds of clay contain considerable sand, and even pebbles; the predominantly sand units may, and in most cases do, contain clay or a little gravel; in fact, in the sand strata clay lenses and discontinuous clay beds are numerous, and in places much chert gravel is associated with the sand. Likewise, the gravel may hold a mixture of sand and clay, and includes lenses or lentils of sand. Beds or lenses of almost pure clay, or sand, or gravel, are present, but any one of these may be low down in the formation, or up towards the top, or may occupy an intermediate position; and the clay may be interbedded with gravel, or sand, or enclosed by both. Several lenses or lentils of white clay were found between layers of gravel or ferruginous sandstone.[7]

The irregularity of the structure of the Tuscaloosa formation is one of its most striking characteristics. Cross-bedding of sand and gravel is the rule; contemporaneous erosion surfaces are common; a body of any kind of material may pass laterally into another kind in a short distance—for example, there are many cases of lateral gradation from clay to sand in a few rods. Consolidated sheets or seams may cut the mass of the unconsolidated rock material at almost any angle, and, as has been said, the different units may have almost

any sort of relation to each other—if there is any system in their arrangement it is not conspicuous. Perhaps in general the formation is more sandy and gravelly towards the base and more clayey above. In short, a conspicuous feature of the Tuscaloosa seems to be heterogeneity of materials and of arrangement of materials, both of the units themselves with relation to each other, and of the parts of each unit. This seems to be evidence that the formation was deposited from fresh waters, probably much of it in the form of huge alluvial fans, piedmont alluvial plains, and stream plains on low lands bordering the coast or on wide stream flats, or, farther south and southwest, in the margin of the shallow sea. Naturally both large and small streams carried the rock waste, and these were at times in floods, swift and turbulent, and at other times small and slow moving. Alternating swamp and shallow water conditions no doubt existed on the deposition areas—bays, lagoons, marshes, and the deltas of debouching streams.

Stephenson and Monroe[4] state that the Tuscaloosa deposits were laid down in a sea which transgressed from west-central Alabama northwestwards through Mississippi. Apparently they do not recognize any land or fresh-water part of the formation.

In Monroe County the Tuscaloosa outcrop belt does not extend farther westwards than the western limit of Range 17 West, except along the northern boundary of the county. This north-south strip includes only about one-fifth of the total width of the Tuscaloosa outcrop belt in this latitude, which means that the Monroe County Tuscaloosa is only the upper part of the formation. And even this part shows only along and near the larger valleys—the valleys of Buttahatchie River, Sipsey Creek, Splunge Creek, and Weaver Creek. It appears that the lithology of the Tuscaloosa of Monroe County differs somewhat from that of the formation farther east and farther north, chiefly in the predominance of the sand and clay, particularly the sand, over the gravel. Stephenson and Monroe[4] state: "The formation consists in general of thinly laminated very fine micaceous sand and light-colored clay, but east of Sipsey Creek some poorly assorted gravel crops out beneath the sand and clay." They mention also "a fairly persistent bed of bentonite . . . near the top of the formation," and "lenses and layers of lignite." The Charles Cox bentonite (Sec. 10, T. 12 S., R. 17 W.) and a deposit 1.5 miles north of Greenwood Springs are assigned to the Tuscaloosa, although the admission is made that the stratigraphic position of the Greenwood Springs deposit with respect to the Tuscaloosa-Eutaw contact was not determined.

Figure 2.—Tuscaloosa-Eutaw unconformable contact, west wall of Buttahatchie River valley, on a local road about 10 miles southeast of Aberdeen. Photo by F. F. Mellen, March 30, 1937.

The same writers[4] refer to two exposures of the Tuscaloosa-Eutaw unconformable contact in Monroe County: Johnsons Hill (NW. 1/4, Sec. 1, T. 12 S., R. 9 E.) 4.5 miles east of Smithville; and a local road on the southeastward-facing slope of Buttahatchie River valley, about 10 miles southeast of Aberdeen (Figure 2). Tuscaloosa outcrops below the contact were observed on the lower slopes of the hills west of Buttahatchie River in the southeastern part of the county.

A description of the Johnsons Hill section, as determined by the present survey, follows:

SECTION OF NORTH WALL OF CUT FOR THE SMITHVILLE-PIKEVILLE ROAD, WEST SLOPE OF JOHNSONS HILL, SEC. 2, T. 11 S., R. 9 E.

	Feet	Feet
Psychozoic group, Holocene system		
Recent series and formation		1.5
Mantle rock, including gray and brown sandy loam soil and brown clayey sand subsoil, to summit of steeper slope	1.5	

Mesozoic group, Cretaceous system

Gulf series, Eutaw formation	50.0
Sand, cross-laminated red-brown micaceous; streaked with dull white or light-yellow; contains much small chert gravel and tubular ferruginous sandstone towards the base, and crusts of ferruginous standstone at various levels	50.0
Interformational unconformity, 60 feet above the bed of the creek under the bridge at the foot of the hill	
Gulf series, Tuscaloosa formation	60.0
Clay, lignitic sandy; clay, whitish, and clay, purplish-gray: three intervals, but the individual beds were not measured	23.4
Clay, light-blue, and sand, brown, in thin layers	5.0
Sand, brown loosely consolidated; interlaminated with light-gray clay	1.0
Clay, light bluish-gray sandy micaceous; containing lentils of brown sand and friable sandstone, and platy sandstone at various levels	8.0
Sand and friable sandstone, yellow and brown fine micaceous; thinner towards the east; a lentil in a dominantly clay terrane	2.3
Clay, light-gray jointed compacted somewhat iron-stained slightly sandy; interbedded with brown sand or platy sand rock, especially towards the base; 0.5-foot of brown sand near the middle of the interval	5.5
Sandstone and clay: Sandstone brown friable to indurated micaceous, platy in part, interlaminated with bluish-gray silty micaceous clay	1.5
Clay and sand laminae: Clay light-gray, interlaminated with fine brown angular micaceous sand; more clayey towards the top	3.3
Covered, to level of creek floor under bridge	10.0

THE EUTAW FORMATION

The Eutaw[4,6,7] is a dominantly marine shallow water formation which in Mississippi rests unconformably on the Tuscaloosa as far as has been determined. The contact zone is marked by a band of more or less lignitic and carbonaceous clay 15 to 20 feet thick, containing thin layers of glauconitic sand; the contact itself is immediately above this dark band. The Eutaw consists of two units—the lower, or typical Eutaw, and the upper, or Tombigbee sand member; the contact between the two is gradational, the transitional zone being cross-bedded and laminated clay. The lower unit of the Eutaw has a thickness of 200 to 250 feet, and the Tombigbee sand an average thickness of 100 feet or less.[8] Variation of the thickness of the Eutaw formation is shown by well records. For examples: The municipal water plant well at Amory, located below the Tombigbee sand member, passed through 220 feet of typical Eutaw beds,[4] and the Bourland No. 1 well, only a mile or so farther south, found 222 feet of Eutaw,[4] according to the logs; but of the strata penetrated by the Compress well at Aberdeen, which is located on the Tombigbee sand outcrop, only 175 feet were assigned to the Eutaw.[4] The Moses Williams water well, near Strongs, some 8 miles south by west of Aberdeen, is said to have penetrated 315 feet of Eutaw, but did not reach the bottom of the formation.[4] Thicknesses discovered by wells drilled for oil and gas are indicated by Plate 4. Many of these recorded thicknesses seem inconsistent with the rather uniform thickness commonly characteristic of a marine formation, and some of them may be erroneous, due to incorrect identification of strata. No considerable unconformity is involved, and elevation differences among the three water wells mentioned above do not exceed 31 feet. The Eutaw belt of outcrop, some 24 miles wide in Monroe County and including approximately the eastern three-fifths of the county, adjoins the Tuscaloosa belt on the west, and maintains an approximately uniform width north-south across the county.

The Eutaw is predominantly fine-grained to medium-grained micaceous glauconitic sand, but contains considerable clay, which is chiefly in the lower member. The Lower Eutaw is composed of sands interstratified with laminated layers, thin laminae, and some more massive layers of clay, most of which is dark gray to nearly black (Figure 3). Plant fragments and pieces of lignite are common in these clays. Other features are small lenses and stringers of small pebbles, especially in the lower part of the formation. A bed of small subangular chert gravel is a common feature of the base of the formation (Figure 2); almost everywhere it is associated with cross-bedded glauconitic sand, which may be cemented by limonite into hard tubular and corrugated sandstone. Fresh sands of the Eutaw may be white, but commonly are gray to greenish gray; the weathered facies are deep reddish to brownish due to the oxidation of the iron-bearing constituents, and in many places are cemented

into platy layers, sandy oxidized concretions, and even huge masses of ferruginous sandstone. The Tombigbee sand member is massive glauconitic somewhat calcareous sand, some layers of which are indurated and contain concretionary masses, especially in the upper part of the member (Figure 4).

Figure 3.—Lamination and cross-lamination of Lower Eutaw beds. Face of northeast wall of cut for State Highway 6 in west wall of Buttahatchie River valley about 1 mile northwest of Greenwood Springs. August 14, 1941.

The Lower Eutaw is sparingly fossiliferous; plant fossils are noticeable in places. The upper part of the Tombigbee sand contains many fossils of marine invertebrates and vertebrates; but so far as has been determined, a large part of the member is not fossiliferous.

Aside from the dip, averaging about 30 feet to the mile' a little south of west in Monroe County, no larger structural features are evident, although some minor flexures may disturb the uniformity of dip; but smaller structures, such as cross-lamination and other irregularities of bedding which are so prominent in the Tuscaloosa, are common and conspicuous in the Lower Eutaw (Figure 5). Joints are rather prominent in a few places, especially in fresh outcrops; no fault traces were observed.

The characteristics referred to above—materials chiefly fine to medium micaceous glauconitic sand, containing thin clay beds, very irregular structure, consisting of lamination, cross-bedding, contemporaneous erosion surfaces, lensing—suggest deposition in shallow marine waters, where currents had considerable play; the lignite fragments indicate a deposit near a low shore, and the glauconite and the fossils of the Tombigbee sand point to deeper marine shore waters. Finely cross-bedded small irregular lenses are thought to have been formed by waves near the lower limit of their action, and the small lenses and stringers of small pebbles are believed to mark places where the present inner margin of the formation is relatively near the ancient shore line of the Eutaw sea.

The characteristics of the Eutaw formation are well illustrated in a number of places in Monroe County. Stephenson and Monroe[4] describe several sections at places separated sufficiently to be fairly representative of the entire formation. The outstanding features of the sections are: the presence of the fossil *Halymenites major* Lesquereux in the sands of the Lower Eutaw 8 miles east of Amory on the Splunge road; the Lower Eutaw-Tombigbee sand contact in two sections of the Tombigbee River channel walls near Aberdeen; the Eutaw-Selma contact in a road cut 8 miles north of Aberdeen and in a road 4 miles west of Amory and a mile and a half west of Cotton Gin Port.

The thickness of the formation (Eutaw) of Monroe County ranges from 300 to 400 feet, as determined from well logs.

Strata belonging to the Tombigbee sand member of the Eutaw formation are well exposed in a number of places along the bluffs of Tombigbee River, especially on the outsides of the numerous bends of the river, where the water has undercut the banks, causing slides and landslips which, in conjunction with the work of the river, have shaped the terrane into vertical and subvertical cliffs. These are especially conspicuous on the west side of the river, where the erosion is down dip. An excellent example is Blue Bluff[4] (Figure 4), about 0.5 mile north of Aberdeen (SE. cor. NE. 1/4, NW. 1/4, Sec. 26, T. 14 S., R. 7 E.). Blue Bluff is the wall of the river channel at the northwest end of a big hairpin bend; its summit is 115 feet above low water level of the river, and at least 70 to 75 feet of the wall is a vertical-faced cliff. At the bottom is a

Figure 4.—Blue Bluff, west wall of Tombigbee River channel about 2 miles north of Aberdeen, showing Tombigbee glauconitic sand. Contact between Lower Eutaw and Tombigbee Sand member slightly above water-level in lower right corner. Photo by F. F. Mellen, March 30, 1937.

somewhat indurated greenish sand, black to rusty on the weathered surface, tending to weather and split into thin layers similar to shale; this sand crops out just above water level for considerable distances up and down stream. This interval probably belongs to the uppermost Lower Eutaw. Immediately overlying this is a massive green sand containing protruding indurated layers and large concretions, masses and blocks of which have fallen to the base of the cliff and lie tumbled about in the sand. Some of these concretions are almost spherical, extremely tenacious, and range in size from very small up to a foot and a half in diameter. Above the massive green sand interval are at least 20 to 25 feet of laminated light-yellow

sand, and above it darker yellow sand. Large fossil oyster shells (*Exogyra ponderosa* chiefly) show here and there in the vertical face of the cliff, but no definite shell layer was noted.

Another bluff of the same type as that just described is Black Bluff,[4] about 5 miles south by east of Aberdeen in a straight line, but at least 10 miles by river. The top of the bluff is here 143 feet above normal water level. The river, in making a right-angle bend, swings over against its channel bank, forming a steep bluff as at Blue Bluff and a number of other places.

THE SELMA CHALK

The Selma chalk,[5] called by earlier geologists the "Rotten Limestone," crops out as a crescent-shaped belt of which the inner

Figure 5.—Lower shaly clay below a contemporaneous erosion surface and laminated sand above it; ferruginous sandstone at the base of the sand. Face of north wall of cut for new State Highway 6, about 6 miles southeast of Amory. August 27, 1941.

edge is the Eutaw-Selma contact. This outcrop belt has a maximum width of 24 miles or more a little west of the Alabama-Mississippi state line,[6] but narrows northwards and eastwards. The formation as it was originally delimited, including the whole body of lime, has a maximum thickness of 1,000 feet more or less, and dips west, southwest, and south 30 to 32 feet a mile.[7] In Monroe County the

thickness of the Selma probably is not greater than 350 feet. The formation lies unconformably on the Tombigbee sand member of the Eutaw, the contact being marked by a basal conglomerate consisting of phosphatic nodules, phosphatic molds of fossils, and oyster shells of which some were reworked from the Tombigbee sand.

The chalk varies from a soft argillaceous or sandy limestone to hard layers of nearly pure limestone; the $CaCO_3$ content ranges from 95 to 98 percent in a few places to practically nothing in oth-

Figure 6.—Gullying in fossiliferous Selma Chalk showing miniature "mesas" formed by thin indurated layer of calcareous sand (line in center foreground). Near head of tributary of Old Town Creek, 0.5 mile east of U. S. Highway 45 E. (Sec. 13, T.12 S., R.7 E.). October 13, 1941.

ers. In general the chalk of northern Mississippi is more sandy and clayey than the typical chalk farther south. Almost pure sand or sandstone is interbedded with limy sand or sandy lime here and there, and the clay content is so considerable in certain beds and in certain areas that unlined cisterns in the chalk will hold water for long periods. So slowly does the material yield up its contained water that it is considered non-water-bearing, and serves as an excellent cover for the Eutaw aquifers from which abundant water is obtained through artesian wells in the Selma area. Widely scattered in the chalk, but much more abundant in the harder layers, concretionary nodules of marcasite are common, and at least three

phosphatic layers have been found. The rock is dark bluish gray in fresh exposures, but dries to light gray and white, and may be yellowed somewhat by iron on weathered exposures and along joint planes. The Selma chalk areas are featured by "bald" spots of glaring white outcrops, especially along the walls of the stream channels and on hill slopes (Figure 6). Some horizons are very fossiliferous.

Lowe states that there are three more or less distinct phases of the Selma: Sandy basal portions, highly calcareous; middle bodies of a tough, clayey, blue limestone called "blue rock," nearly impervious, which act as an artesian cover; and an upper, nearly pure limestone.[7] Lowe's classification holds only in a general way. His upper division is now considered a separate formation, the Prairie Bluff chalk.[8]

The chalk is massive of structure, commonly, but bedding is distinct in places, especially where the rock has a considerable clay or sand content, or where weathered products are removed promptly so that lithologic and hardness differences, even where slight, can be brought out, as in the faces of bluffs. Jointing is conspicuous in numbers of places, notably in the more firmly consolidated facies, and to a certain extent is noticeable in nearly all outcrops of the chalk. Along the Selma-Tertiary contact are a few small faults.

Although the Selma chalk is a relatively thick formation, it has not been subdivided except for the recognition of the uppermost 80 feet or so as the Prairie Bluff formation, and of a very pure layer or two some 200 to 265 feet above the base of the Selma as the Arcola limestone member.

That the chalk probably was deposited in a sea less than 600 feet deep or even less than 300 feet deep, is indicated by beds composed in great part of large Ostreidae shells. The lime which composes the chalk appears to have been derived chiefly from the calcareous remains of minute flagellate algae (coccolithophores) and only very subordinately from calcareous remains of foraminifera and other marine organisms.[8]

Stephenson and Monroe say of the Arcola limestone: "Within the Selma chalk, and ranging above its base from 200 feet near Mooreville to 265 feet in Noxubee County, is a persistent bed of hard fairly pure limestone a foot or more thick . . . It forms an excellent key bed and is useful in studying the geologic structure of the gen-

erally featureless chalk . . . In Mississippi the Arcola member apparently consists of only one limestone bed about a foot thick." They state that "phosphatic nodules and molds have been observed above the limestone . . . near Gibson and on a branch of Mattubby Creek, Monroe County." The Arcola limestone is underlain and overlain by the typical impure Selma chalk. The original description of this limestone apparently was written by E. A. Smith, who as quoted by Stephenson and Monroe, describes the rock as " . . . a stratum of undetermined thickness of a tolerably pure limestone of light yellow color, filled with concretionary lumps, cylinders, etc., of clay. When the clay washes out it leaves the limestone perforated in every direction, which circumstance is referred to in the name 'bored rock' ". Smith noted that the stratum had a tendency to break into large cubical blocks, and formed a rocky ridge at surface exposures. Stephenson found the Arcola to consist at Hatchs Bluff on Warrior River in Alabama of two two-foot beds separated by a two-foot bed of chalk.

In Monroe County the Selma chalk is the uppermost formation, except for the mantle of rock waste, of approximately the western third of the county. In general the chalk is very sandy and clayey. The unconformable contact with the underlying Tombigbee sand member of the Eutaw is exposed in a few places, notably in a cut for the old highway from Aberdeen to Cotton Gin Port, some 8 miles north of Aberdeen (NW. Cor. Sec. 22, T. 13 S., R. 7 E.), and in a road cut a mile and a half west of Cotton Gin Port, and 4 miles west of Amory (Sec. 9, T. 13 S., R. 7 E. ?). The Arcola limestone, according to Stephenson and Monroe, lies 220 to 240 feet above the base of the Selma in Monroe County, and trends rather irregularly north-south in the western tier of townships (Plate 1). Several outcrops are mentioned, the southernmost being in a ditch at the intersection of Mississippi Highway 8 and a north-south road 1.5 miles east of Gibson and the northernmost at the site of old Camargo (SE. 1/4, Sec. 3, T. 12 S., R. 6 E.), in the northwestern corner of the county. The same writers list seven localities where fossils are abundant.

During the survey covered by the present report a general reconnaissance over the Selma area of the county was made, and numerous outcrops visited, including those already mentioned, and others described in the parts of this report relating to agricultural

PLEISTOCENE AND RECENT FORMATIONS

The Pleistocene system* and possibly the Pliocene are represented in Monroe County by terrace loams, sands, and gravels (Figure 7). In the eastern part, especially along Buttahatchie River, these materials rest unconformably on Tuscaloosa beds; in an area 5 to 7 miles wide bordering Tombigbee River on the east they lie on the Eutaw eroded surface; in a few places west of the river, they are in contact with the Selma. The cutting of the terrace plains has

Figure 7.—Pleistocene terrace loam, sand, and gravel; 15 to 20 foot face of wall of gravel pit in second-bottom terrace of Tombigbee River about 0.5 mile west of Amory on the north side of U. S. Highway 41. December 16, 1941.

been assigned chiefly to Pleistocene and Recent times, but the terrace-forming processes may have affected this region in the Pliocene period, or even earlier. A series of terraces was formed, the highest reaching an elevation of 175 feet above the river. According to Stephenson and Monroe, at Aberdeen the top of the lowest terrace is 35 to 40 feet above low water level of the river, and the next higher plain, on which the town stands, is some 60 feet above the same datum. The uppermost interval of the lower terrace is 15 feet of Pleistocene greenish-gray and yellowish sandy clay, stratified in the lower portion; the section described is in the right bank

highway bridge south of Aberdeen the uppermost interval, considered Pleistocene alluvium, is 16 feet of fine gray sand; and in a gully some 10 miles east of Aberdeen the Pleistocene terrace deposit member is a deep-red ferruginous sand, containing stringers and small lenses of pebbles in the lower 4 feet. From these examples the thickness of the Pleistocene materials seems to range from a film up to perhaps 20 feet.

Thicknesses of Pleistocene deposits passed through by water wells of the county range from 16 to 40 feet.[4] In general the logs of the wells bored for oil and gas do not classify the strata according to geologic age; for this reason not much can be learned from them. However, the Bourland well was said to have penetrated 87 feet of Recent and Pleistocene material.[5] Obviously this figure is not conspicuously consistent with the 20-foot and 22-foot thicknesses recorded for the Pleistocene found by the Amory water wells[4] near by; probably most of it is Eutaw.

Recent deposits include soil and subsoil, described in a separate section of this report, colluvium, and stream alluvium, especially channel waste. No exact figures are available for the thickness of channel or flood-plain material along any of the main streams, but certain data at hand are of indirect value as a basis for estimates. Excavations for gravel and sand have gone to depths of at least 25 to 30 feet. As part of the survey for the proposed Tennessee River-Tombigbee River waterway, the U. S. Engineers[7a] made numerous borings along the Tombigbee, most of them located on the flood-plain or adjoining terraces. Twenty-four of these holes are in the Monroe County part of the waterway route. The elevations range from 249.4 feet to 172.8 feet above mean sea-level, and the depths from 21.0 to 62.5 feet. The logs of these borings do not indicate whether or not the bottom of the Recent or Pleistocene alluvium was reached, but they describe the materials passed through as sands, silts, gravel, and clay, the feature being an unusually high proportion of silt. The prevailing colors are tan, gray, blue, and brown. Presumably the top of the Eutaw was reached by few if any of these holes; they suggest, therefore, that the flood-plain material along the Tombigbee is not less than 50 to 60 feet thick in most places.

Along in 1923-24 all gravel was dredged out of the Tombigbee for a quarter of a mile or so in the vicinity of State Highway 6 bridge northwest of Amory, but in a comparatively short time that section of the channel had been refilled with the usual types of alluvium-gravel, sand, silt, and clay.[7b]

THE PALEOZOIC FLOOR

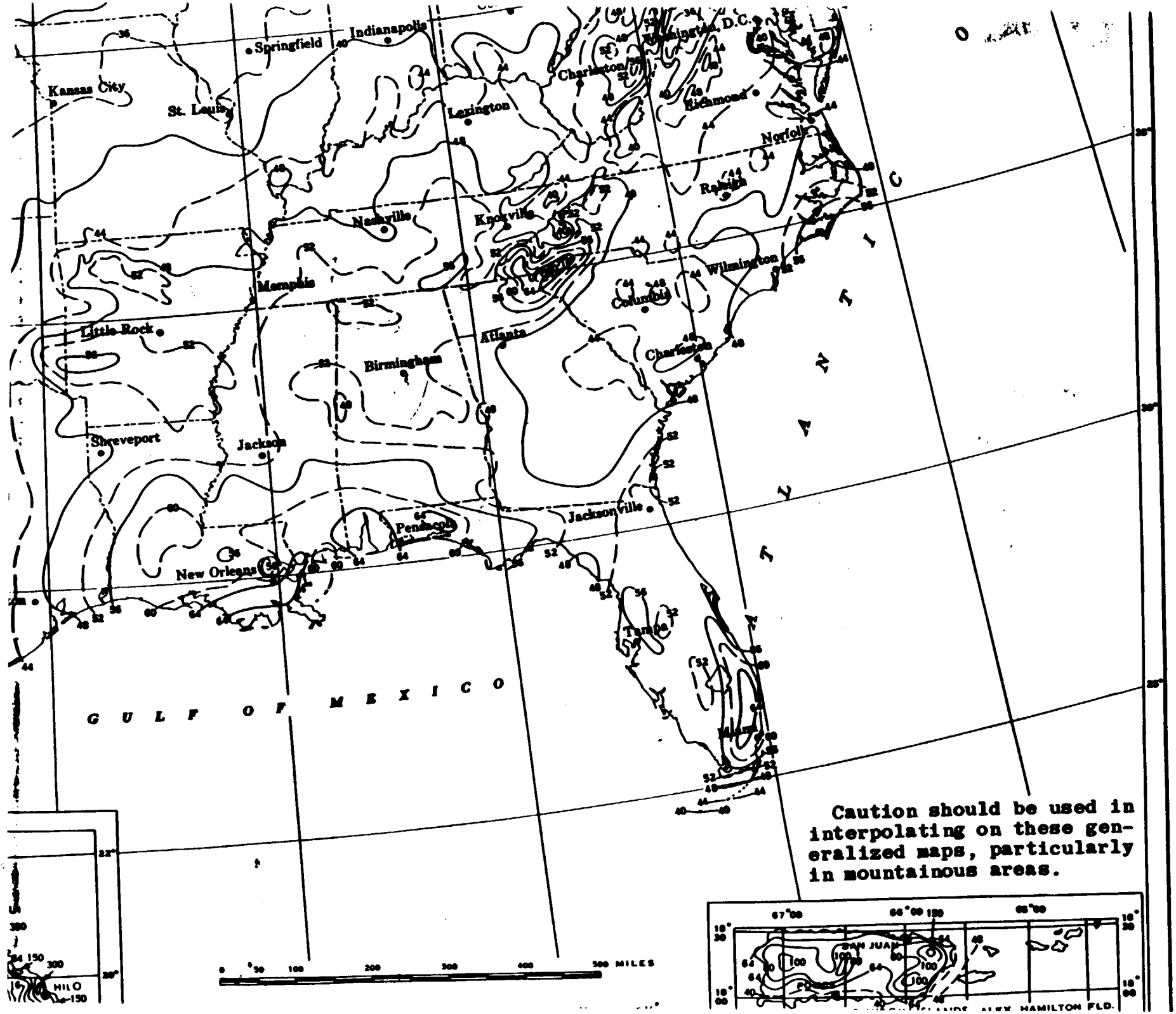
At the close of the Pottsville epoch of the Pennsylvanian period the Alabama-Mississippi region was land which extended farther south than it does today,[7] and from that time till the present a large part of it has remained land, affected by all the geologic processes which operate above sea-level. The broad regional uplift and the folding, faulting, and metamorphosing of the Appalachian belt which began far back in the Pennsylvanian period and continued through the Permian to a climax which closed the Paleozoic era,[8] gave the slowly widening land a relatively great elevation, and a large part of it has maintained a considerable elevation down to the present, in spite of the work of degradational forces. Lesser disturbances during post-Paleozoic time, including warping, faulting, and igneous activity, retarded the lowering of the land. Through an immensely long time, three quarters of the Pennsylvanian period, and the entire Permian, Triassic, Jurassic, and Comanchean (Lower Cretaceous) periods and the time represented by included unconformities, the terrane which is now Monroe County, Mississippi, was land, exposing the Paleozoic rocks, before the first beds of the Tuscaloosa (Upper Cretaceous) were laid down there. During this time the old rocks here and to the east were subject to deep weathering and erosion; stream systems developed, huge quantities of rock waste were shifted toward the sea, and the entire surface brought lower; the sea crept northward and spread both east and west while it was receiving debris from the land, until at the beginning of Upper Cretaceous deposition in this region the water was approaching its maximum extent. The coast-line in the Monroe County area was then somewhere east of the present Tuscaloosa-Eutaw contact, unless the subsequent Eutaw sea advanced in places beyond the farthest edge of the Tuscaloosa sea.

The Pottsville outcrop area in Alabama, at least the part of it some distance back from the edge of the Tuscaloosa, either has never been covered by younger rock or the younger rock which may have been there has been entirely removed by erosion. Probably the Pottsville of this region has been the uppermost rock unit of a land mass ever since its deposition. If so, its present topography is the final result, the end product, of all physiographic processes which have affected it since the close of Pottsville time. This surface should, then, be suggestive of the appearance of the Paleozoic floor buried beneath the Cretaceous formations of Monroe County; the buried

CLIMATIC ATLAS OF THE UNITED STATES

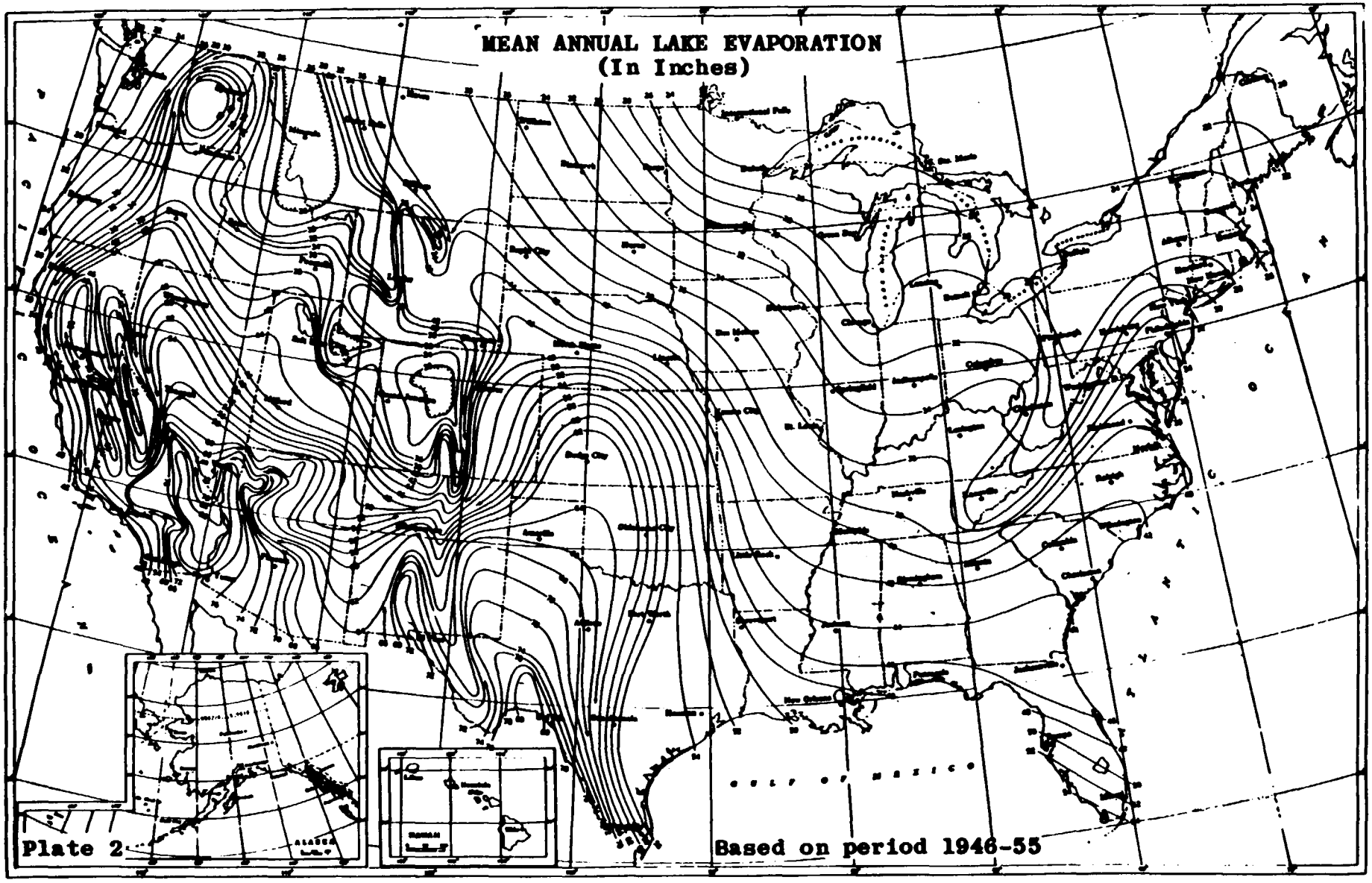
Reference No. 6

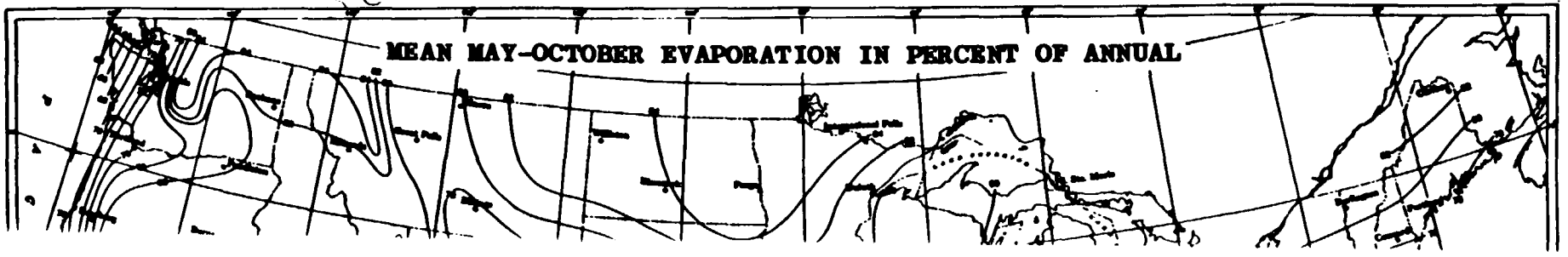
onmental Science Services Administration . Environmental Data Service



Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.

LAKE EVAPORATION





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TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

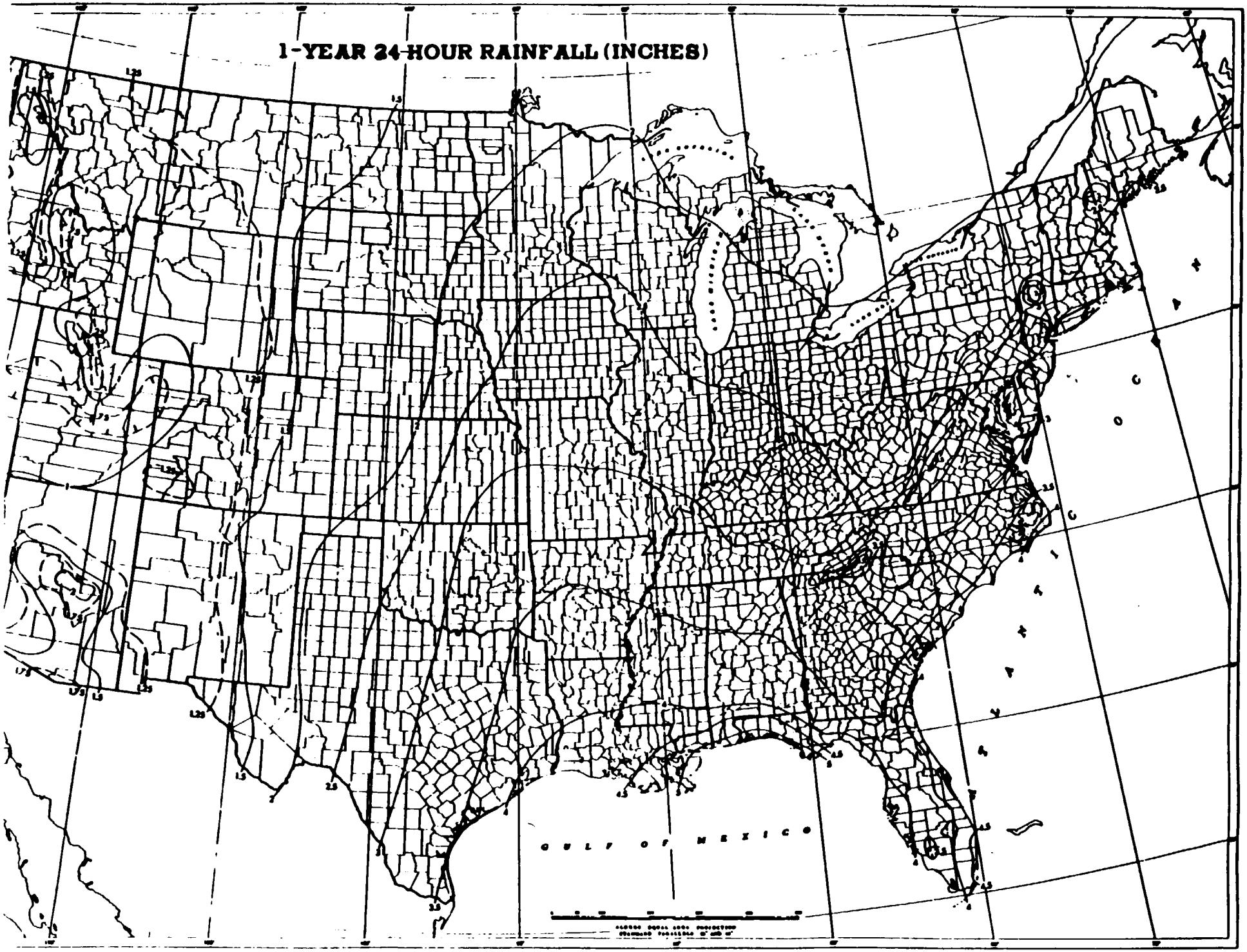
for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

Reference No. 7

PROPERTY C
FIT IV

1-YEAR 24-HOUR RAINFALL (INCHES)



Reference No. 8

Geologic Study Along Highway 45 From Tennessee Line to Meridian, Mississippi

DONALD M. READY

Prepared in cooperation with the Mississippi State Highway Department

BULLETIN 94

MISSISSIPPI GEOLOGICAL SURVEY
TRACY WALLACE LUSK
DIRECTOR AND STATE GEOLOGIST
UNIVERSITY, MISSISSIPPI
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stratigraphic divisions of the formation have been made. The lower unit is composed of fine- to medium-grained, micaceous, glauconitic sand, with interbedded clay, and commonly containing lignitized plant fragments. The upper 100 feet or so of the formation is a massive, fine-grained, glauconitic sand, which is fossiliferous at its top. This upper unit has been named the Tombigbee member, and is prominent in outcrops along the Tombigbee River in Lowndes, Clay, and Monroe Counties.

Although Highway 45 crosses the western part of the Eutaw outcrop belt for a long distance from Aberdeen to Columbus, the lower division of the Eutaw is not well exposed due to a thick cover of alluvium and terrace deposits associated with the Tombigbee River and its tributaries. However, the Tombigbee sand is well exposed at several localities along the highway.

At the Tombigbee River bridge on Highway 45 just south of Aberdeen (mile 90.6), the river has cut into lower Eutaw. Stephenson and Monroe (1940, p. 78) describe 6 feet of thin-bedded, gray sand and clay of the lower division of the Eutaw overlain by 12 feet of fine, glauconitic sand which they assign to the Tombigbee. From this locality southward the bedrock is lower Eutaw, but it is effectively covered, and the lithology shown on Plate 2 is highly generalized.

Tombigbee Member. — Important outcrops of the Tombigbee along Highway 45 are in the vicinity of Aberdeen where both the top and base of the member are exposed. The base of the member, mentioned previously, is at mile 90.6. The top few feet of the member can be observed in a road cut on the south valley wall of Mattubby Creek (mile 24.7). In this exposure the Tombigbee consists of fine-grained, bluish- to greenish-gray, glauconitic, micaceous sand, containing numerous fossils, chiefly *Exogyra ponderosa*, which form a reef near the contact between the Tombigbee and Mooreville. The thickness of the Tombigbee in the Aberdeen area appears to be about 200 feet, which is twice the normal thickness. Two methods were used to determine the thickness, projection along the profile, and calculation from an areal geologic map. On the areal geologic map the thickening appears as a bulge in the normal outcrop pattern. One possible explanation for the excessive thickness is faulting, but little other evidence is available to substantiate this.

North of Columbus the Tombigbee sands are exposed in hills isolated from the main outcrop area by floodplain deposits. The member in this area is similar to previous descriptions, except that the sands weather to a reddish-brown color. Drill Hole 9 was augered to examine the sand in the subsurface and to determine the contact with the lower division of the Eutaw. The latter was unsuccessful due to augering difficulties.

West of Columbus, the Tombigbee sands are covered by alluvium, and Drill Hole 10 was augered to locate the top of the member. The Mooreville-Tombigbee contact is difficult to determine in augering, apparently because of a blend of marl and sand at this contact. A prominent shell bed, which could be the reef containing a preponderance of *Exogyra ponderosa*, was chosen as the contact.

The sands of the Tombigbee member furnish good topping material, and apparently the sands form a good foundation for bridges.

SELMA GROUP

There is a considerable amount of confusion in stratigraphic terminology of the Cretaceous beds in Mississippi. As stratigraphic studies continue, the status of formation and member names change, and previous nomenclature becomes obsolete, although the stratigraphy of the beds remain the same. The term "Selma" was originally introduced as a formational term, and a number of members and tongues were named as parts of the formation. Subsequent studies showed that the members were equivalent to formations and should be raised to that rank, necessitating the elevation of the Selma to group rank.

The Selma was raised to group rank in 1945 as a result of geologic studies which culminated in a new geologic map for the State. The Selma group was defined to include all the upper Cretaceous formations above the Eutaw. Presently accepted units contained in the Selma group in ascending order are the Mooreville formation, with the Arcola member at its top; the Demopolis formation, with the Bluffport member at its top; the Ripley formation; and the Prairie Bluff formation. In northern Mississippi the Coffee formation is the equivalent of the Mooreville and the lower part of the Demopolis; the Ripley contains the thick Mc-

Nairy member, the Coon Creek tongue, and the Chiwapa member; and the Prairie Bluff merges into the Owl Creek formation.

Highway 45 crosses a complete section of the Selma group from Columbus to northern Kemper County (Plate 3), but from Aberdeen northward to the Tennessee line the highway crosses only few of the formations—Eutaw, Mooreville, lower and middle Demopolis, and upper Coffee. In the southern part of the outcrop belt the formations of the Selma are closely related, consisting of carbonate facies—chalk, marl, calcareous clay, and sandy chalk; in the northern part of the belt, sand and clay facies are dominant.

The chalks and marls of the Selma group are fossiliferous, and major faunal zones have been established. The *Exogyra ponderosa* zone extends from within the Tombigbee to about 100 feet below the top of the Demopolis. The *Exogyra costata* zone ranges from the top of the *E. ponderosa* zone to the top of the Cretaceous. Within the basal 100 feet of the *E. costata* zone lies the *Exogyra cancellata* subzone. Although the characterizing fossil for each zone is wide ranging, it commonly is most abundant near lithologic changes, where reef-like accumulations exist. The prominent reef at the Coffee-Demopolis contact has been pointed out on Plate 1; other horizons are noted at the Tombigbee-Mooreville contact and the contact between the chalky facies of the Demopolis and the Bluffport marl.

A thin but important zone in the Demopolis is the *Diploschiza cretacea* zone, which is shown on Plate 3, where the thickness of the zone is about 45 feet. Traced northward this zone thins and disappears south of Tupelo, apparently affected by the change in facies to Coffee sand.

During this study a very thin reef-like accumulation of *Gryphaea convexa* was found at mile 134.7, Plate 3. *Gryphaea* and *Exogyra* appear to have a close relationship and commonly are together in reefs. The occurrence of reefs of *G. convexa* has been pointed out by Mellen (1958) in Lee County, and Parks (1960) in Prentiss County; in these areas there are numerous reef-like accumulations in the Demopolis. The single bed found in Noxubee County was traced through Lowndes and Oktibbeha Counties and is a mappable bed in the chalk. Such mappable beds are of value in dividing the thick chalk and marl beds into smaller workable units.

Other reefs mentioned in the literature include those containing principally the genus *Ostrea*. Much further work is needed in the study of these oyster reefs, for perhaps the answer to unravelling the stratigraphy of the Cretaceous beds lies therein.

MOOREVILLE FORMATION

The Mooreville formation, the basal unit of the Selma group, consists of marl, sandy marl, calcareous clay, and a thin limestone at the top. The Mooreville varies in composition along strike, becoming less marly northward where it merges with sands and clays of the Coffee. Most of this change takes place in eastern Lee County.

The route of Highway 45 is such that the Mooreville is crossed three times—once partically, and twice completely. The exposures along the highway are generally rather poor, due to the fact that the marls weather deeply to clay, forming a thick soil cover. In deep cuts the marl is generally exposed near the base of the cuts and in ditches.

On Plate 2, the top portion of the Mooreville forms the bedrock from mile 65.9 to mile 72.5. Most of the bedrock is covered by alluvium and terrace deposits, but the south valley wall of Town Creek (mile 72.5) exposes a good section of the upper half of the formation. Here the marls of the Mooreville are interbedded with calcareous clays and thin streaks of sand.

From mile 75.5 to mile 83.0 the highway crosses the Mooreville from top to base, but throughout the length, the formation is mantled by residuum. The base of the formation and the contact with the underlying Tombigbee are well exposed at mile 83.0. About 40 feet of basal Mooreville marl can be observed in the cut, and at this locality a complete gradation from relatively unweathered marl to blocky, montmorillonitic clay to residuum is present.

On Plate 3, the Mooreville is crossed from miles 119.7 to 128.5, but the exposures are poor. Neither the base nor the top of the formation are exposed, and Drill Holes 10 and 11 were augered to determine these contacts. Although the Mooreville is poorly exposed along the highway, there are two complete stratigraphic sections along streams nearby. One of these streams, Cedar Creek, heads near the highway at mile 130.5 and flows easterly across

the Mooreville outcrop belt, exposing a complete section. Dinkins (1960) studied the section and provided insoluble residue analyses for 18 samples ranging from the top of the Tombigbee, through the Mooreville, into the Demopolis. His findings show that the Mooreville is chiefly a marl, but that there are thin beds of bentonite within the formation. Another complete section is found along Tibbee Creek, which forms part of the boundary between Lowndes and Clay Counties. This section was studied in detail by O'Quinn (1961), who presented insoluble residue analyses and a study of the foraminifera. These two stratigraphic studies provide a good base for further work on the Mooreville in this area. Apparent thickness of the Mooreville ranges from 230 feet as indicated on Plate 3 to 160 feet as indicated on Plate 2.

Arcola Member. — The Arcola member of the Mooreville formation consists of one or more beds of nearly pure limestone, each about one foot thick, at the top of the Mooreville. At mile 65.9 a fair exposure is in a ditch along a side road. At mile 72.5 the Arcola is well exposed in a road cut and may also be found along a number of local roads in the vicinity. Here the Arcola contains at least two limestone beds, separated by about five feet of marl. The lower bed is cobbly, whereas the upper bed is dense and bored. At mile 128.5 the Arcola is covered by alluvium, but along a side road east (mile 128.2), there are a number of good exposures of a single bed of limestone.

The Mooreville presents a problem to the highway engineer. The marls contain considerable amounts of clay intimately mixed with calcium carbonate, but during weathering the calcium carbonate is leached out leaving a soil or residuum enriched in clay, which contains montmorillonite as its chief clay mineral. These clays are active and highly susceptible to moisture changes, which causes them to swell and contract. Further research is needed to determine the extent of these conditions and the seriousness of the problem in highway construction.

DEMOPOLIS FORMATION

The Demopolis formation is a thick unit composed chiefly of chalk and impure chalk, and some marl. A portion of the unit was discussed under Stratigraphy of Plate 1. As shown on Plate 2 the Demopolis is crossed from Verona, mile 58.3 to mile 65.9, and the basal few feet are crossed from miles 72.5 to 75.0. Plate 3 illustrates a complete section of the Demopolis along the highway from miles 128.5 to 151.3, a distance of 22.8 miles.

The lithology of the Demopolis is not as homogeneous as might be concluded at a glance, and the formation can be divided into informal units, based partly on fossil zones and partly on lithology. These divisions are best displayed on Plate 3.

The basal unit ranges from the bottom of the Demopolis to the *Diploschiza cretacea* zone (miles 128.5 to 129.6) and is about 105 feet thick. The litology consists of impure chalk and marl, which weather deeply to form an extensive cover of Black Prairie soil. It has been suggested by Mellen (1958, p. 36, Fig. 21) that this part of the Demopolis is probably the continental slope depositional equivalent of the Coffee sand.

The *Diploschiza cretacea* zone (miles 128.5 to 131.9) consists of about 45 feet of impure chalk and marl that is characterized by the presence of two small fossils, *Diploschiza cretacea* and *Terebratulina filosa*. The unit is not well exposed along the highway due to a thick soil cover, but there is an excellent outcrop about a mile west of the highway along a side road at mile 129.8.

Above the *Diploschiza cretacea* zone is a thick unit composed chiefly of chalk (miles 131.9 to 151.2) with a thickness of about 242 feet. This thick unit can be traced northward to the Mississippi-Tennessee line, and throughout the outcrop belt it is characterized by nearly pure chalk. The State Lime Plant pit at mile 144.8 obtains chalk containing over 80 percent calcium carbonate from this unit. Some aspects of the lithology of this unit and part of the *Diploschiza cretacea* zone are presented by Carson (1961) in a study of the Demopolis in the Artesia quadrangle, which the highway crosses in the southeastern part. Samples were taken at 10-foot intervals and insoluble residue studies were made. He found that the average chalk contains 81.6 percent calcium carbonate, 17.0 percent clay, and 1.4 percent sand and silt. However, the average seems to be influenced by at least two distinct types of chalk: one is dense, hard, light-gray to white, and contains from 80 to 90 percent calcium carbonate; the other is softer, darker, and contains from 73 to 79 percent calcium carbonate. The dominant clay minerals in the insoluble residue are montmorillonite, illite, and kaolinite in order of abundance.

Bluffport Member.—Overlying the chalk unit is about 55 feet of marl, which has been formally designated the Bluffport member of the Demopolis (miles 151.2 to 151.3). Along the highway a nearly complete section can be seen in road cuts and gullies on the south wall of the Noxubee River valley. The section along the highway and ten other stratigraphic sections of the Bluffport in Noxubee County were studied by Harper (1959), who showed that the average carbonate content of the Bluffport marl varies from 70 percent near the base to 45 percent at the top. He also mentions a reef containing *Exogyra cancellata* and *Gryphaea mutabilis* at the chalk-marl contact at a number of localities. The base of the Bluffport is not exposed at the locality on Highway 45, and Drill Hole 12 was augered at the bottom of the bluff to attempt to locate the reef, but apparently it is weathered. East along the bluff the reef is prominent where the base is exposed. The top of the Bluffport grades into the overlying Ripley.

The total apparent thickness of the Demopolis formation along Highway 45 shown on Plate 3 is about 447 feet.

The engineering properties of the Demopolis are varied. Many of the marls weather in a similar manner to the Mooreville marls and cause foundation difficulties due to the high content of montmorillonite. An example of these conditions is along Mississippi Highway 14 east of Macon. Near the Alabama line the underlying bedrock is marl of the lower part of the Demopolis, that is deeply weathered forming an active soil mantle. In recent repair programs and reconstruction, the soil has been treated with hydrated lime to stabilize the active clays. Highway failure along other parts of the marl belts may be a result of similar conditions.

The chalk of the Demopolis does not present many problems to the engineer; on the contrary its properties are such that so few problems arise that little is known of the engineering characteristics. A study by Vodrazka (1962) presents some engineering data on chalk that may be considered typical: Failure under unconfined compression ranges from 28.9 to 89.2 tons per square foot, with most test results in the range from 50 to 60 TSF; failure at low values is attributed to the presence of large shells in the test specimen. Failure under tension averaged 9.5 TSF. Cohesion is 11.2 TSF and the angle of internal friction is 43 degrees. Modulus of elasticity ranges from 27,000 to 30,000 PSI, and consolidation tests show that the chalk is virtually incompressible up to 20 TSF. Permeability is low—coefficient of permeability was found to be 4.46×10^{-8} cm. per second using a falling head permeameter; and porosity is high—calculated to be 30 percent. Unit dry weight ranges from 96 to 106 pounds per cubic foot with moisture content ranging from 19.5 to 24 percent. From the engineering data Vodrazka concludes that there are no special problems with foundations or embankments. One problem in road cuts is that the exposed chalk "gullies" badly, and it is difficult to grow a cover on the bare chalk. This condition may be combatted by expensive sodding, or the less expensive emulsion spray to protect the bank until grass can be established.

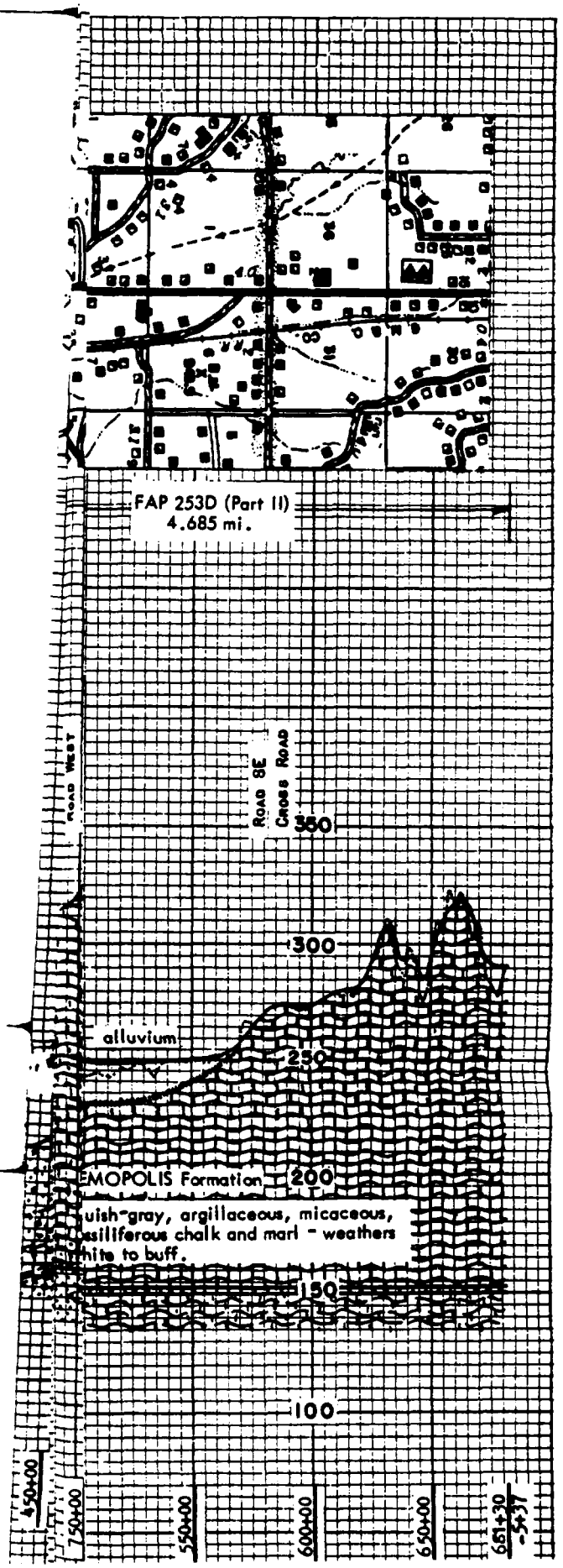
RIPLEY FORMATION

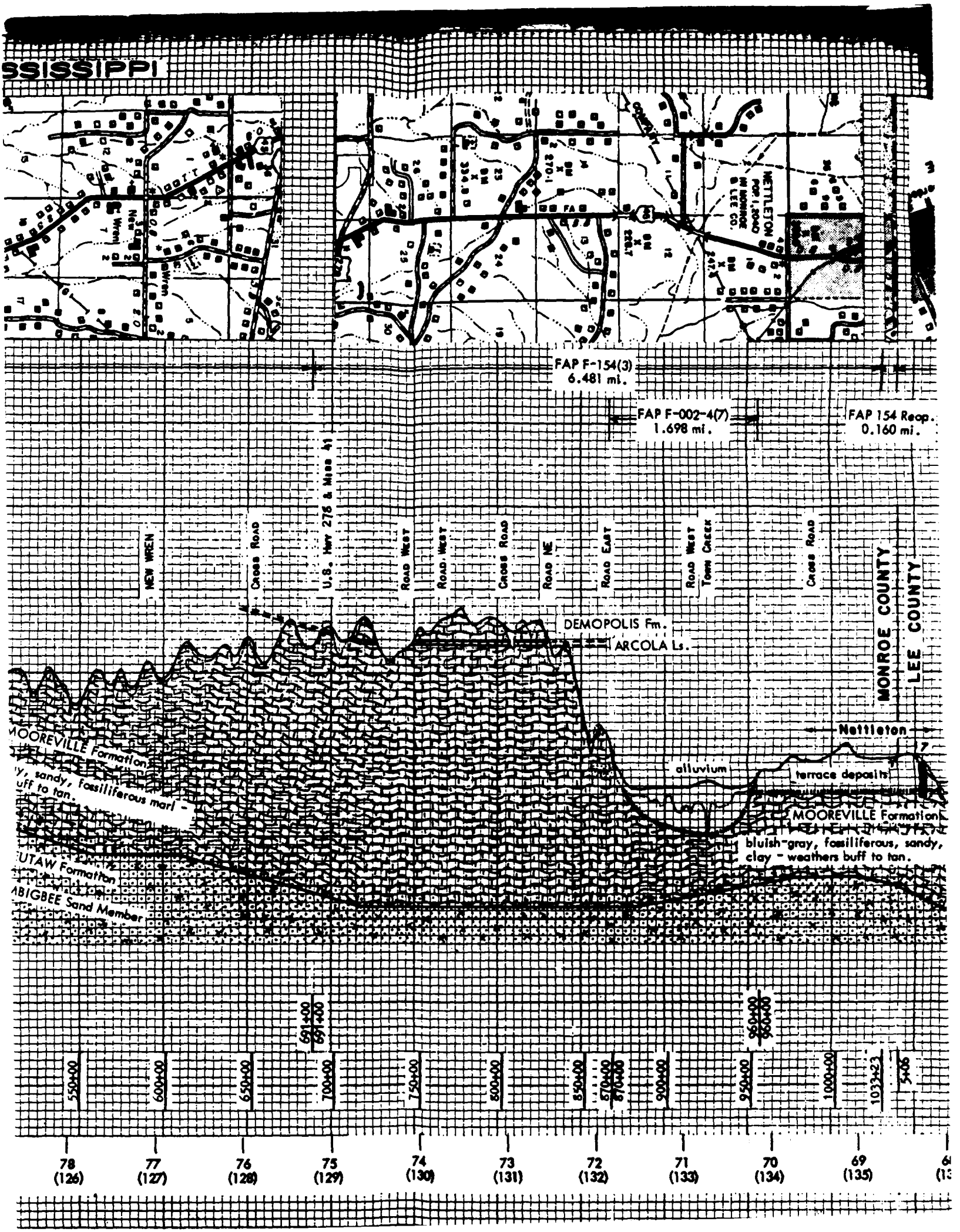
The Ripley formation is crossed only once by Highway 45 and is shown on Plate 3 from mile 151.3 to mile 155.9. The Ripley in this area is composed of marl and calcareous clay somewhat similar to the underlying Bluffport, but contains more sand, abundant mica, and a different fossil assemblage. In weathered exposures the Ripley has a "bedded" appearance.

A complete section of Ripley is exposed along the highway and in nearby gullies at mile 151.6. The base of the Ripley is gradational with the Bluffport, and the top of the Ripley is some what gradational with the Prairie Bluff; however, the top of the Ripley can be determined fairly closely due to the contrast in lithology above and below the contact zone.

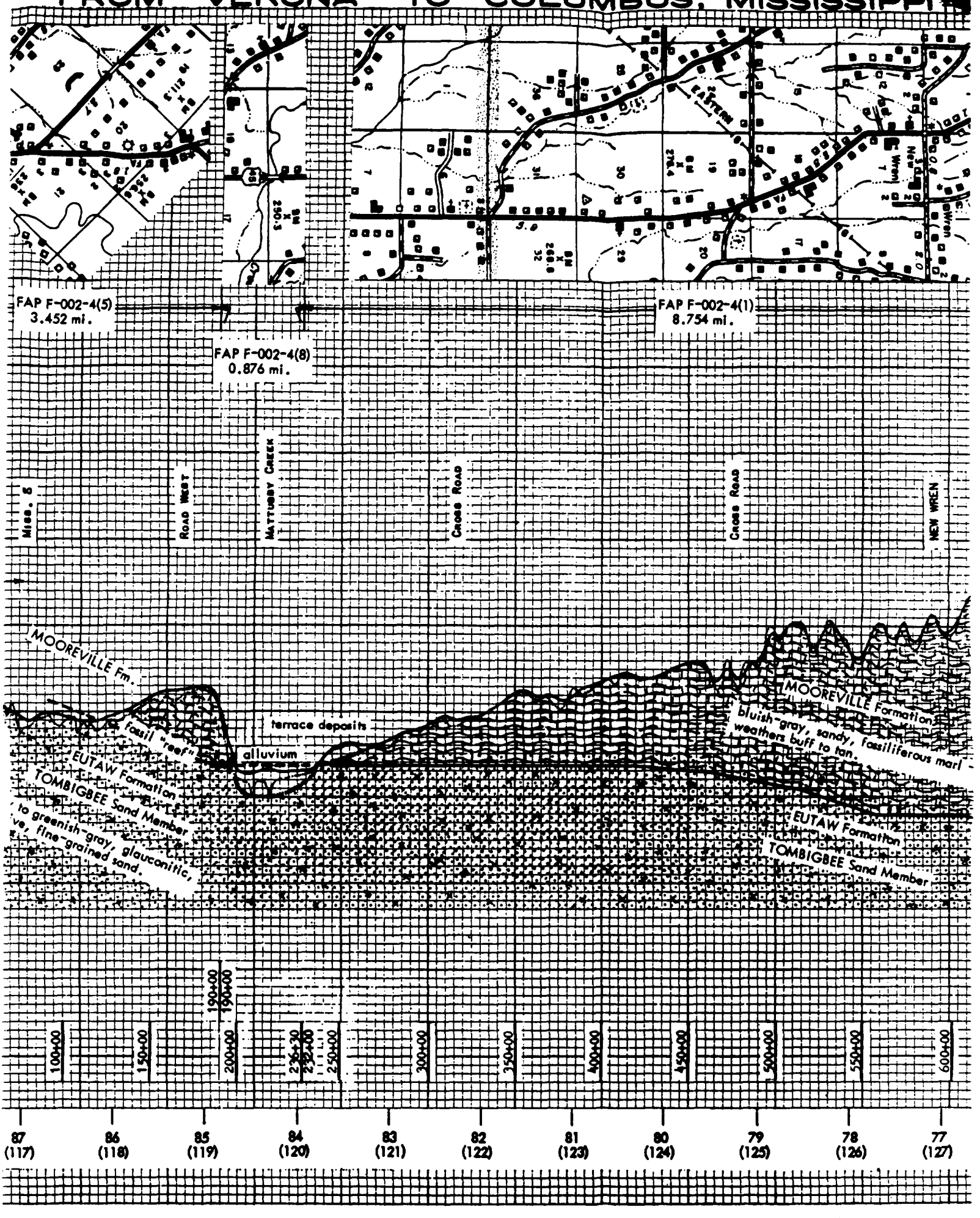
A thickness of 28 feet is assigned to the Ripley; however, the lower contact is difficult to determine with any precision and the thickness shown may be too small. Hughes (1958, p. 62) gives an average thickness of 40 feet for the Ripley in nearby Kemper County, but he further states that the thickness is variable.

From mile 151.6 to mile 155.9 the highway descends along a part of the dip slope of the Ripley, which is capped in several places by Prairie Bluff and terrace deposits. Exposures of Ripley are poor along this segment. Drill Hole 13 was augered to locate the Ripley-Bluffport contact downdip, but the auger samples showed little variation through the contact zone. At mile 155.9 the Ripley-Prairie Bluff contact is covered by alluvium, and the contact shown is projected.

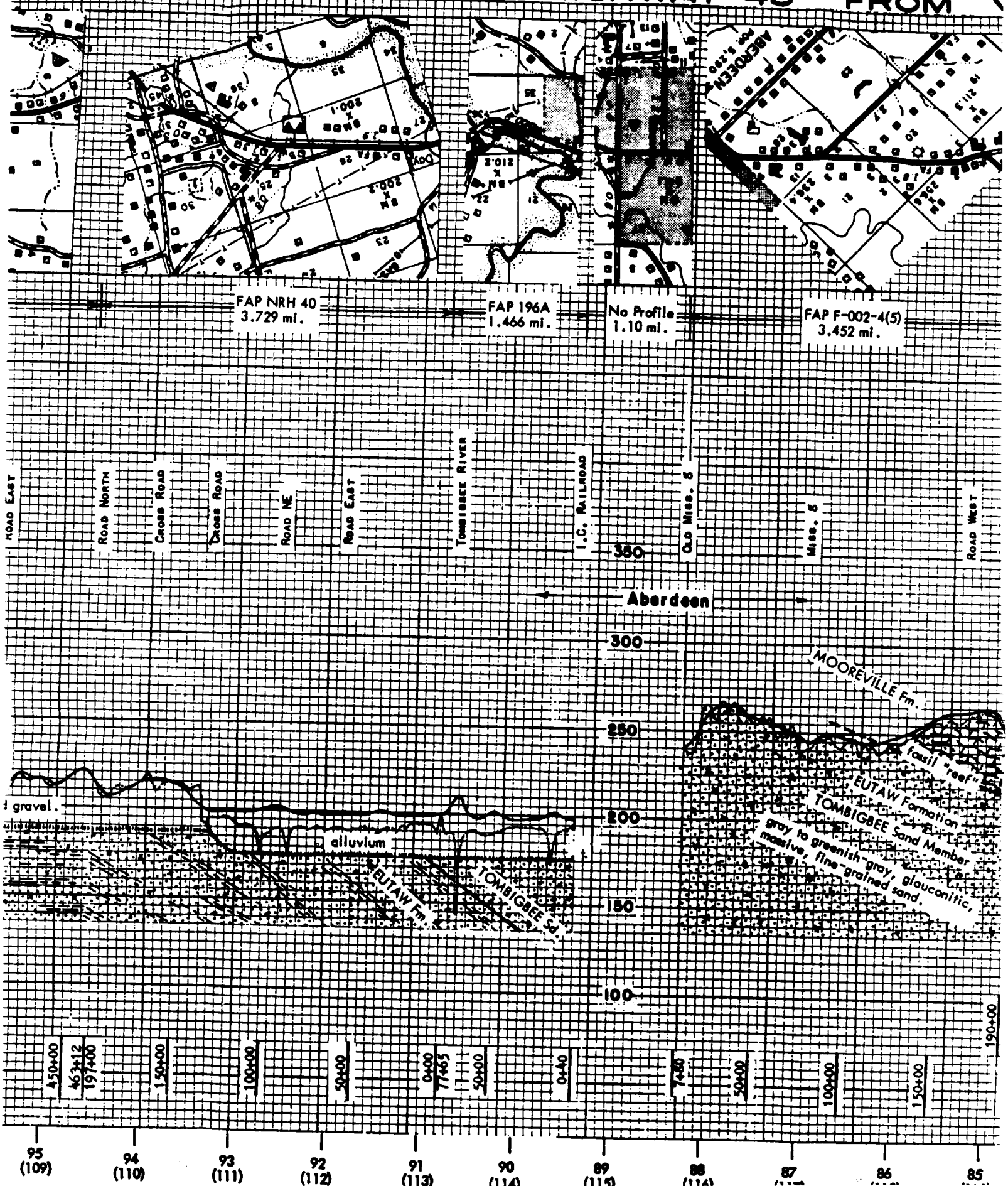

FAP 253D (Part II)
4.685 mi.
ROAD WEST
ROAD SE
CROSS ROAD
350
300
alluvium
250
EMOPOLIS Formation
200
uish-gray, argillaceous, micaceous,
ossiliferous chalk and marl - weathers
hite to buff.
150
100
450+00
750+00
550+00
600+00
650+00
651+30
-5+37


SSISSIPPI
FAP F-154(3)
6.481 mi.
FAP F-002-4(7)
1.698 mi.
FAP 154 Reop.
0.160 mi.
NEW WREN
CROSS ROAD
U.S. HWY 278 & MISS 41
ROAD WEST
ROAD WEST
CROSS ROAD
ROAD NE
ROAD EAST
ROAD WEST
TOWN CREEK
CROSS ROAD
MONROE COUNTY
LEE COUNTY
DEMOPOLIS Fm.
ARCOLA Ls.
Nettleton
alluvium
terrace deposits
MOOREVILLE Formation
bluish-gray, fossiliferous, sandy, clay - weathers buff to tan.
MOOREVILLE Formation
y, sandy, fossiliferous marl -
uff to tan.
UTAW Formation
ABIGBEE Sand Member
550+00
600+00
650+00
700+00
750+00
800+00
850+00
870+00
900+00
950+00
1000+00
1033+23
78 (126)
77 (127)
76 (128)
75 (129)
74 (130)
73 (131)
72 (132)
71 (133)
70 (134)
69 (135)

FROM VERONA TO COLUMBUS, MISSISSIPPI



PROFILE ALONG U.S. HIGHWAY 45 FROM



LEGEND

Profile After Mississippi State Highway Department

Geology By Donald M. Keady

GENERAL SYMBOLS

Highway profile

Topographic profile

5

Drill hole

Definite unit contact

Indefinite unit contact

Contact between bedrock and prominent surficial deposits

BASIC LITHOLOGIC SYMBOLS

Gravel

Sand, coarse-grained

Sand, medium-grained

Sand, fine-grained

Silt

Clay

Limestone

Chalk

Marl

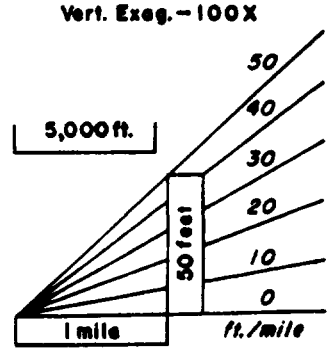
Fossil "Reef"

Glauconite

Lignite

SCALE & RATE OF DIP

Vert. Exag. – 100X



NUS CORPORATION A Reference No. 10 **TELECON NOTE**

CONTROL NO. F4-8909-67	**DATE:** November 16, 1989	**TIME:** 0900

DISTRIBUTION: File Material - True Temper Sports

BETWEEN: Cecil Webb	**OF:** Webb & Son Well Drillers	**PHONE:** (601) 844-1132

AND: Sheri Panabaker, NUS Corporation

DISCUSSION:

I asked Mr. Webb about the geology around Amory, west and southwest of Aberdeen. Around Amory, near the town, he said there is surficial sediments which primarily consist of sand and gravel with a very little amount of Selma Chalk. He said these surficial sediments are no more than 10 feet thick and are usually less. Beneath the surficial sediments is the Eutaw Formation which outcrops around Amory. He said near the town, the Eutaw is about 35 feet thick. The Eutaw Formation begins around the Amory area. Beneath the Eutaw, Mr. Webb said there is a 50 foot chalk layer. However, it does not act as a confining unit because it has been perforated a lot. Beneath this chalk layer is the Gordo member of the Tuscaloosa Formation. Amory wells are screened in the Gordo. He said that water is encountered around Amory at about 15 feet below land surface. He also said that the Eutaw and the Gordo act essentially as one aquifer.

Around Aberdeen, to the west and the southwest of the town, he said there is about 20-30 feet of surficial sediments; mostly the Gumbo clay, though in a few places, there is some sand. He said underneath the surficial sediments is about 150 feet of the Selma Chalk. The chalk acts as a confining unit over the Eutaw Formation which lies directly beneath the chalk. The Eutaw Formation is between 80-100 feet thick. Beneath the Eutaw Formation is about 50 feet of a very perforated chalk layer which is followed by the Gordo member of the Tuscaloosa Formation. He said water is not encountered until about 170-180 feet below land surface beneath the Selma Group west and southwest of Aberdeen. Mr Webb also said that most private wells in the area are about 450 feet deep.

Reference No. 11

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CHARACTERIZATION OF AQUIFERS DESIGNATED AS POTENTIAL DRINKING WATER SOURCES IN MISSISSIPPI

by L. A. Gandl

Water-Resources Investigations
Open-File Report 81-550

Prepared in cooperation with the

Mississippi Department of Natural Resources,
Bureau of Pollution Control

Jackson, Mississippi
1982

Water levels in the Coffee Sand have not changed significantly during the period of record and are highest in the northern end of the outcrop (fig. 43). Recharge is from precipitation on the outcrop and water moves downdip. Some water may move into the underlying Eutaw-McShan aquifer.

Five aquifer tests in sands of the Coffee aquifer indicate transmissivities from 930 to 1,200 ft^2/d and hydraulic conductivities of 9 to 20 ft/d. Specific capacities are usually around 1 (gal/min)/ft, but as much as 15 (gal/min)/ft drawdown has been recorded.

Most wells in the Coffee Sand are low-yield domestic wells, although the yields of several public and industrial wells range from 50 to 600 gal/min. Increased use of the aquifer is feasible only on a small scale with low-yield wells.

Water in the Coffee Sand aquifer is a hard, calcium-magnesium-bicarbonate type near the outcrop. To the south and west of the outcrop, the water becomes a soft sodium-bicarbonate type. It is slightly alkaline and nearly colorless throughout. Figure 40 shows the downdip limits of fresh, slightly saline, and moderately saline water in the aquifer.

Eutaw-McShan Aquifer

The Eutaw-McShan aquifer crops out from Tishomingo to Lowndes County and dips westward at 30 ft/mi. It is composed of many thick to thin beds of sand, clay, and shale in the Eutaw and McShan Formations of Late Cretaceous Age. Figures 44 and 45 show the outcrop area and structure contours on the top and base of the aquifer. The aquifer is thickest in the south, exceeding 400 feet (fig. 46), and thins to the north, eventually disappearing. The Tombigbee Sand member of the Eutaw Formation is a massive, fine-grained, glauconitic, calcareous sand. The lower unnamed member of the Eutaw Formation and the McShan Formation are composed of thin irregular beds of fine-to-medium sized glauconitic sand and gray clay. The lower sand beds are the most permeable in the Eutaw-McShan aquifer. The Eutaw-McShan is hydraulically separated from the overlying Coffee Sand aquifer in some locations by the Mooreville Chalk. It is connected in some areas to the underlying Gordo aquifer although water movement is somewhat restricted by upper clay beds of the Gordo.

Water levels are highest at the northern end of the outcrop, and they have been lowered drastically in areas of heavy pumping, particularly at Tupelo in Lee County and at West Point in Clay County (fig. 47). Water levels are lower along the Tombigbee River, which runs north to south along the west edge of the outcrop.

Recharge is primarily from rainfall on the outcrop although some infiltration from the overlying Coffee Sand may occur in the northern part of the area. Water movement is downdip from the outcrop. In the confined part of the aquifer, water moves towards the center of two depressions in the potentiometric surface at Tupelo and West Point (fig. 47).

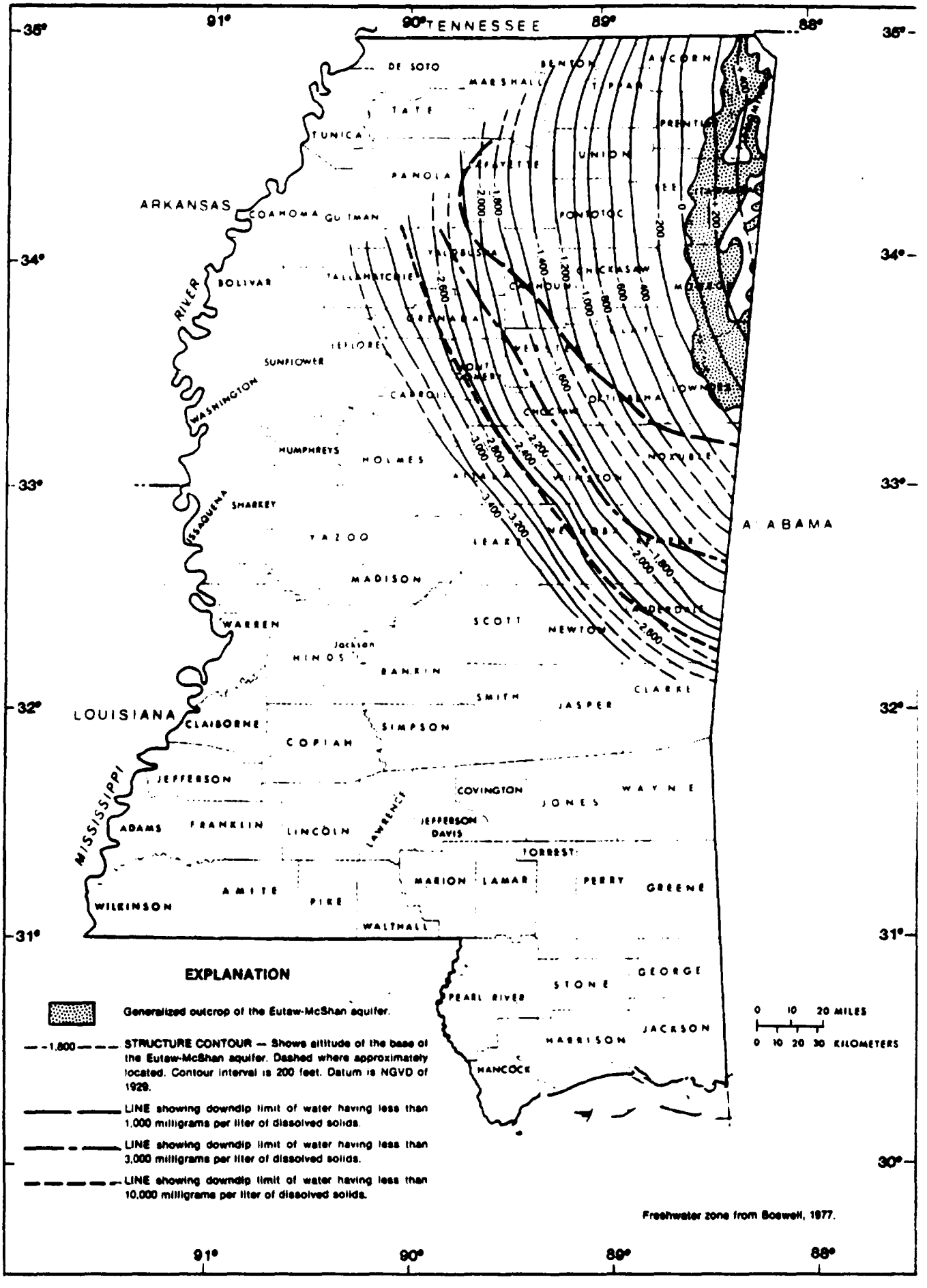


Figure 44. — Configuration of the base of the Eutaw-McShan aquifer.

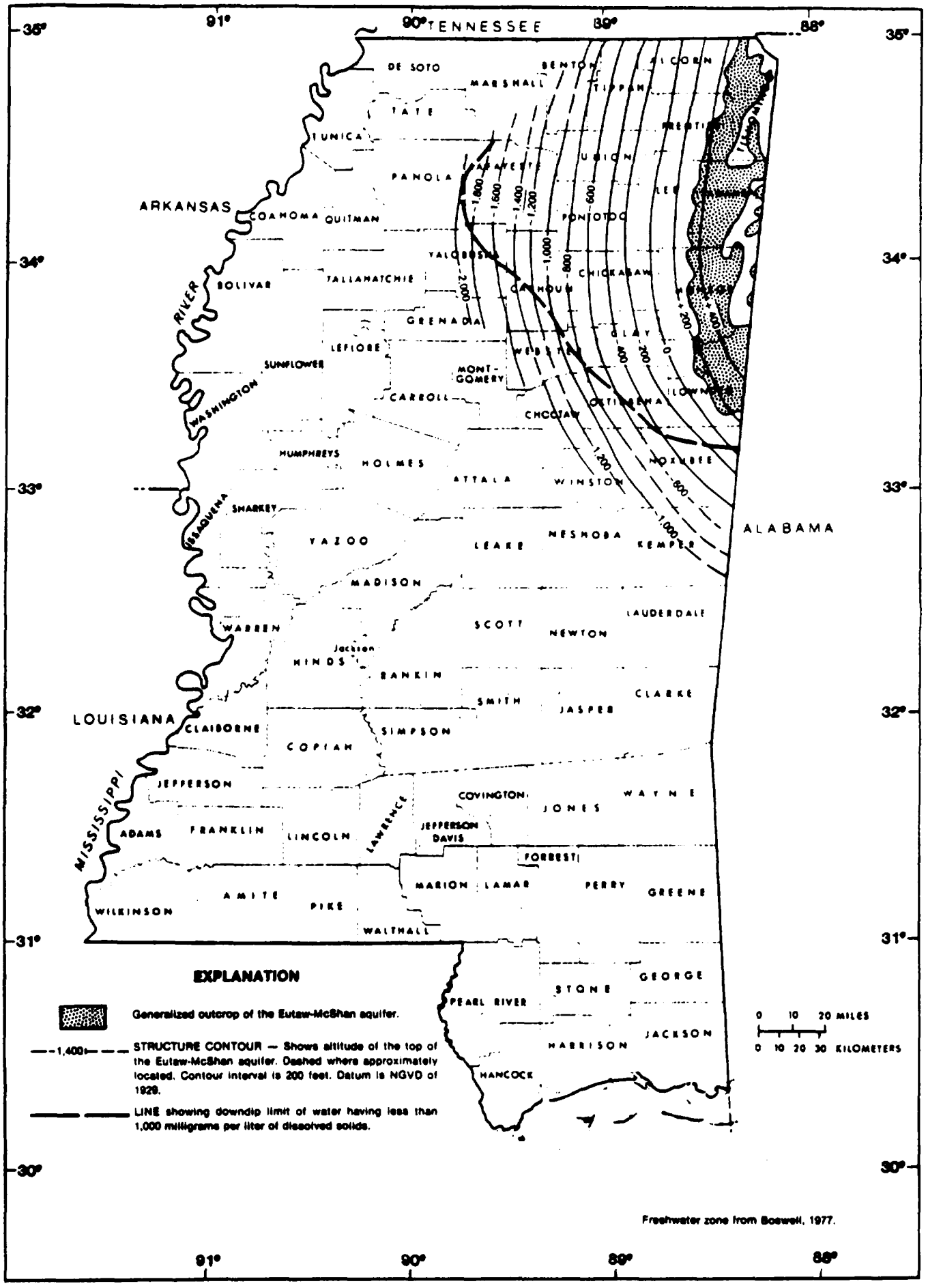


Figure 45. — Configuration of the top of the Eutaw-McShan aquifer.

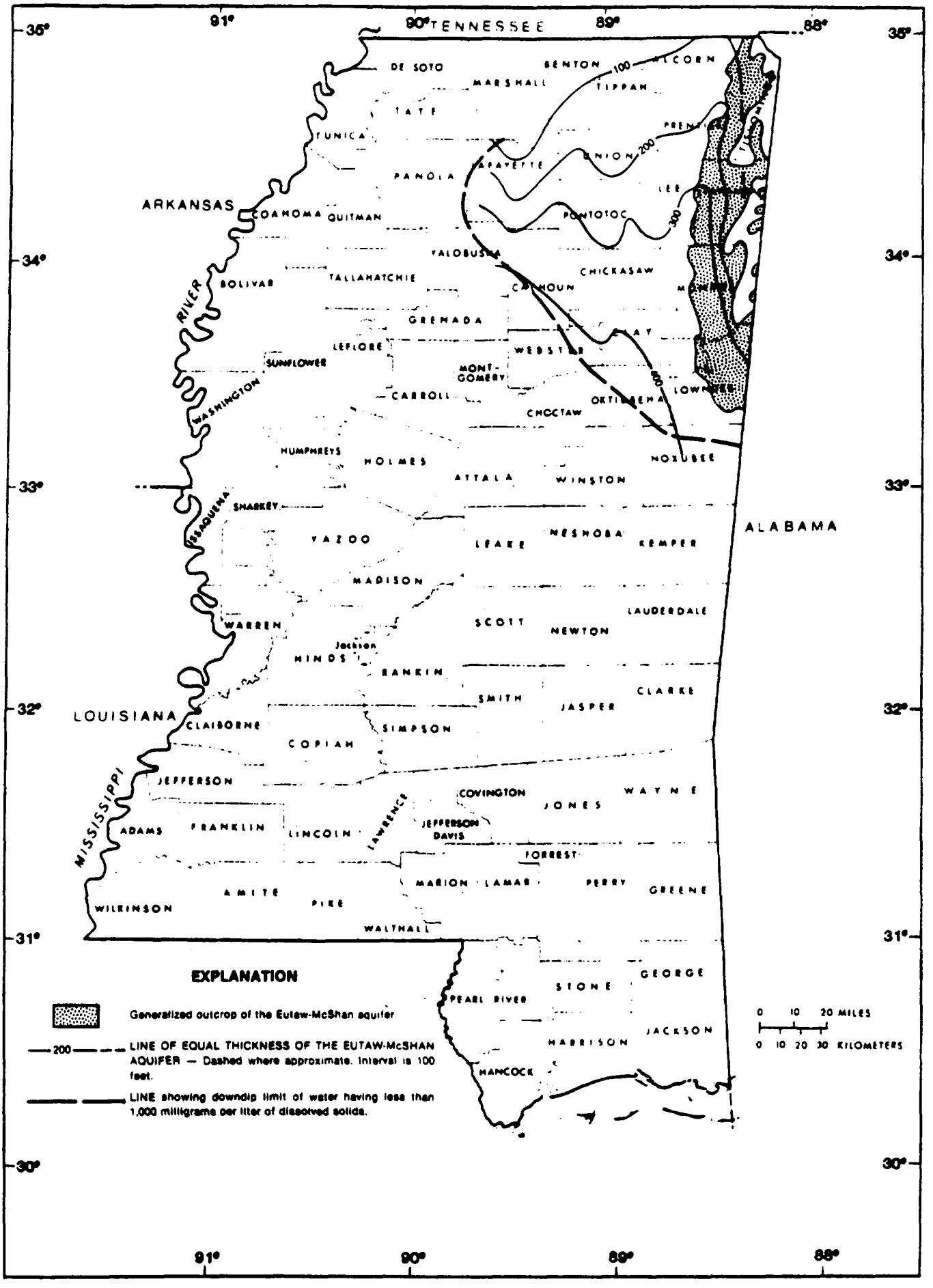


Figure 46. — Thickness of the Eutaw-McShan aquifer.

Transmissivities determined from 41 aquifer tests range from 200 to 4,900 ft^2/d. Hydraulic conductivities average 13.4 ft/d and specific capacities average 3.3 (gal/min)/ft of drawdown (Boswell, 1977).

Large municipal wells in the Eutaw-McShan aquifer pump as much as 770 gal/min, but some produce under 100 gal/min. Continued development of the aquifers by large water users can be expected, but such development near areas of heavy pumpage such as Tupelo and West Point will aggravate the declining water-level problem in those areas. Large quantities of water are available where the underlying Tuscaloosa aquifers occur and these aquifers are frequently utilized rather than the Eutaw-McShan aquifer.

Water in the outcrop area is a hard, calcium-bicarbonate type having excessive iron. Further downdip the water becomes a sodium-bicarbonate type. Fluoride is prevalent throughout the aquifer. The downdip limits of fresh, slightly saline, and moderately saline water are shown in figure 44.

Bentonite, glauconite, and lignite are present in the outcrop area, and downdip from the 10,000 mg/L dissolved-solids zone some oil and gas is found.

The Eutaw-McShan aquifer is used to dispose of oil-field wastes downdip of the 10,000 mg/L dissolved-solids zone.

Tuscaloosa Aquifer System

The Tuscaloosa aquifer system consists of the Gordo and Coker Formations of the Tuscaloosa Group of Late Cretaceous age and the uppermost sands of the Lower Cretaceous rocks. The Gordo crops out along the eastern border of north Mississippi (fig. 48) and in northwest Alabama. The Coker crops out in northwestern Alabama. Structure contours on the base and top of the Gordo and the Coker aquifers are shown in figures 48 to 51. The formations dip to the southwest, steepening and thickening downdip (figs. 52 and 53). The Lower Cretaceous sands are as much as 200 feet thick in the southern part of the area. The formations thin and pinch out to the north, the deeper units disappearing first. The Coker pinches out to the north several miles before the Gordo pinches out.

The Gordo Formation is composed of an upper clay unit and a lower sand and gravel unit. The Coker consists of an upper unnamed member of mixed clay, sand, and gravel, and a basal massive sand that may be indistinguishable in places from the sand in the underlying Lower Cretaceous. The upper clay of the Gordo Formation serves to separate it somewhat from the overlying Eutaw-McShan aquifer, but the sands of the Lower Cretaceous may be in contact with Paleozoic aquifers.

The potentiometric surface of the Gordo aquifer (fig. 54) is similar to that of the Eutaw-McShan aquifer (fig. 47), because there is some leakage between the aquifers and because pumpage from the aquifers is similar. The water levels in the Tuscaloosa aquifer system are declining at about 2 ft/yr in much of the area with larger declines near Tupelo and Columbus. Water levels in the Coker are similar, but drawdowns have not been as large because the Coker is not heavily used.

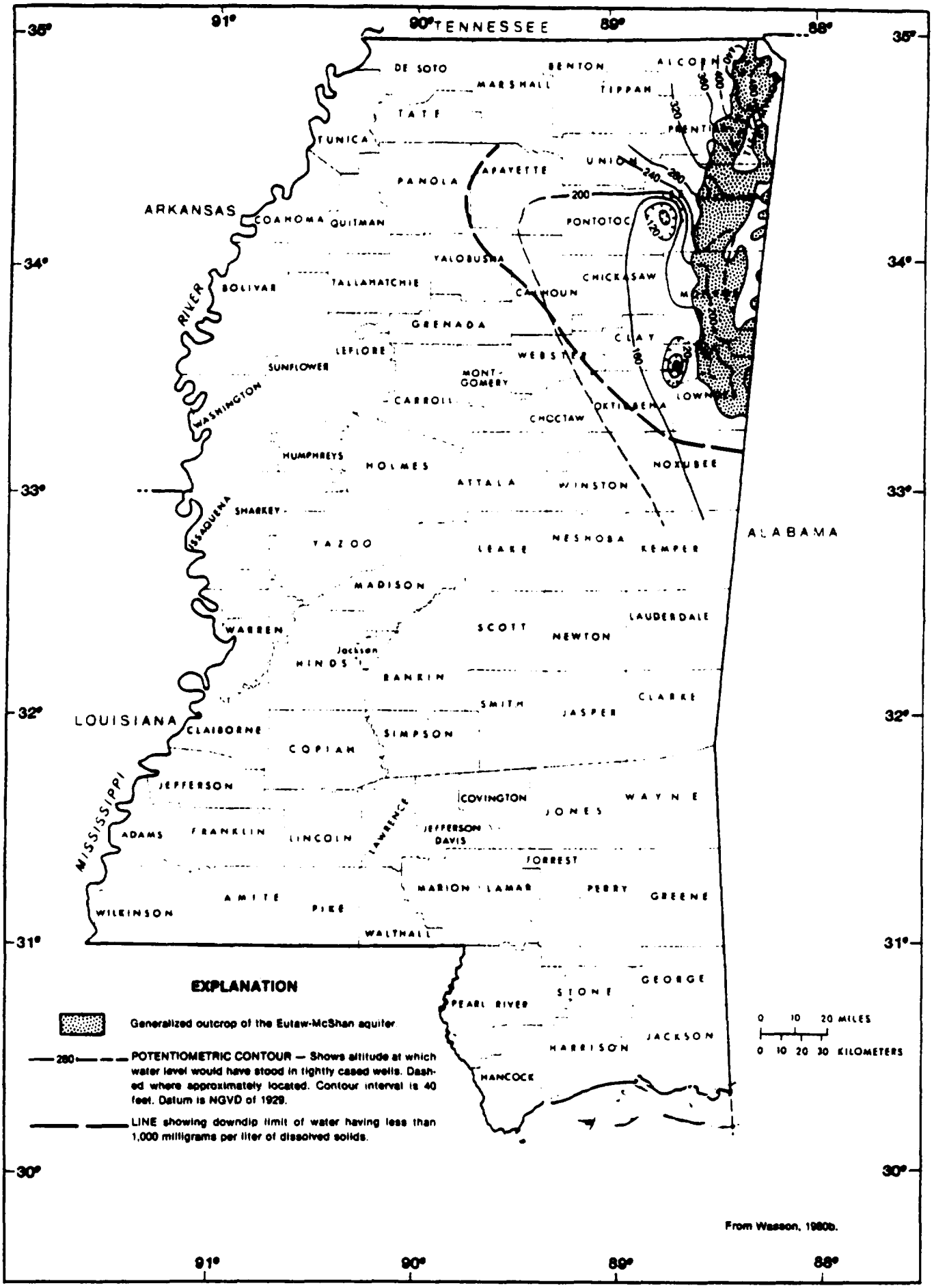


Figure 47. — Potentiometric surface of the Eutaw-McShan aquifer.

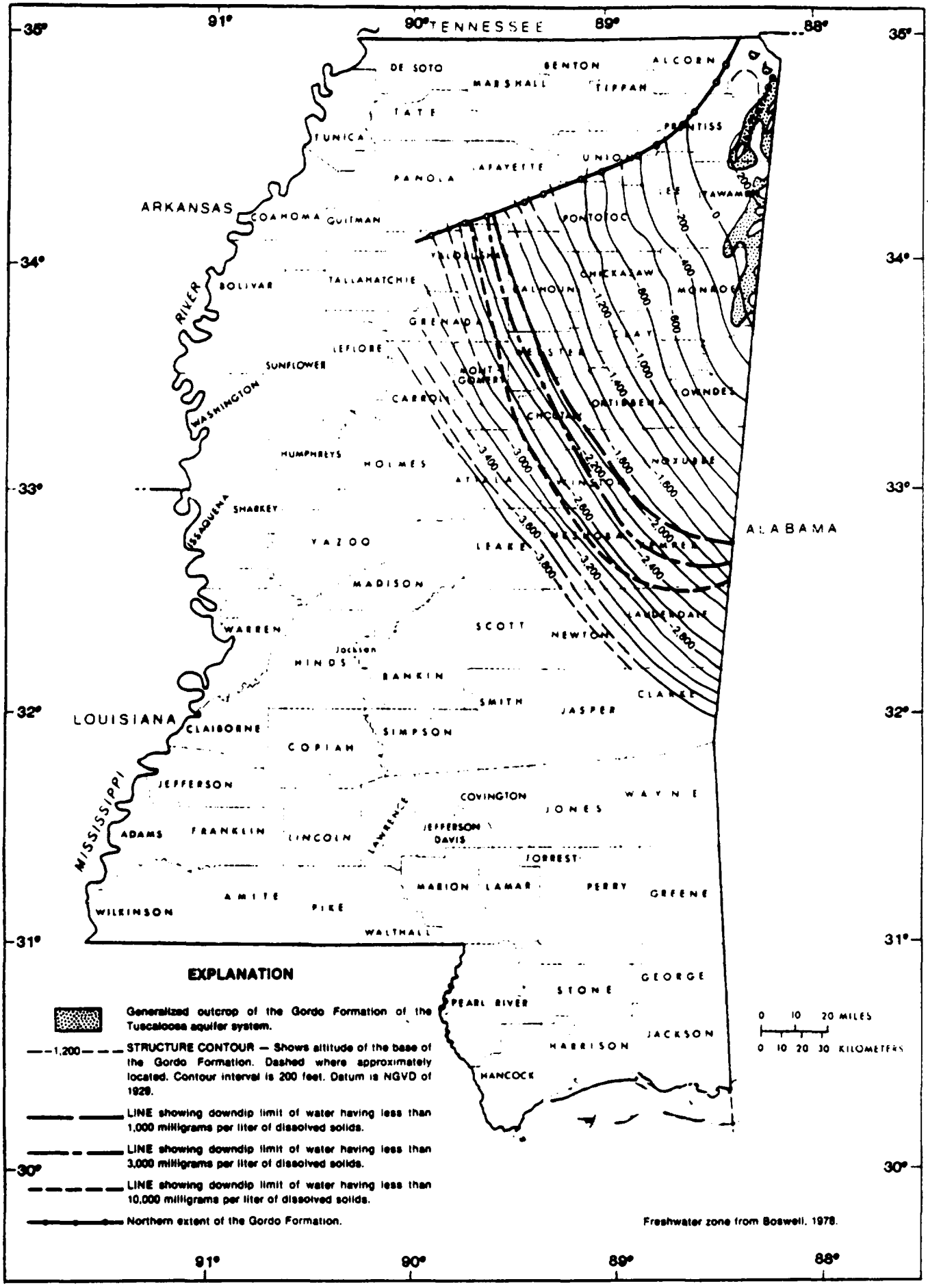


Figure 48. — Configuration of the base of the Gordo Formation of the Tuscaloosa aquifer system.

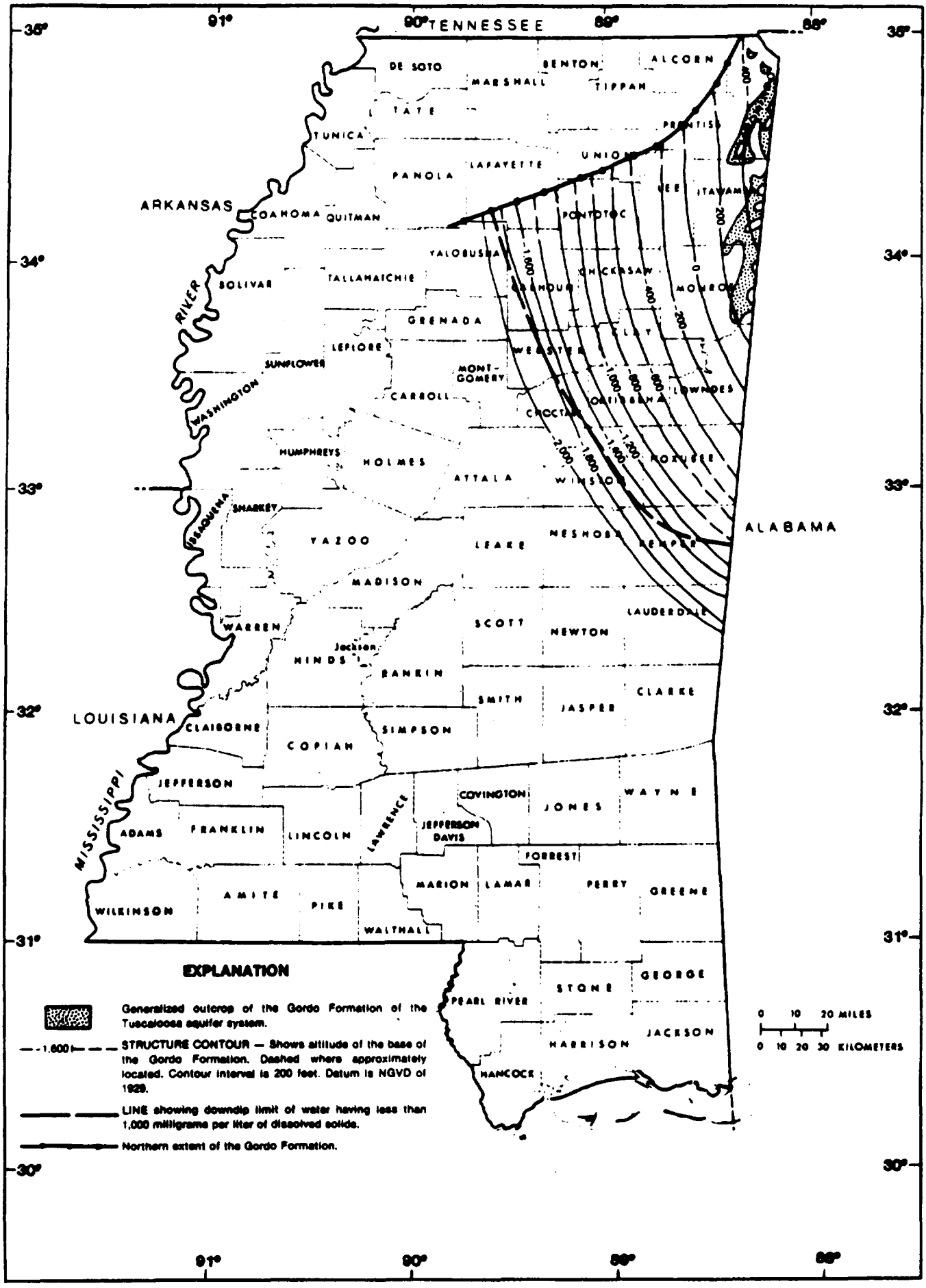


Figure 49. — Configuration of the top of the Gordo Formation of the Tuscaloosa aquifer system.

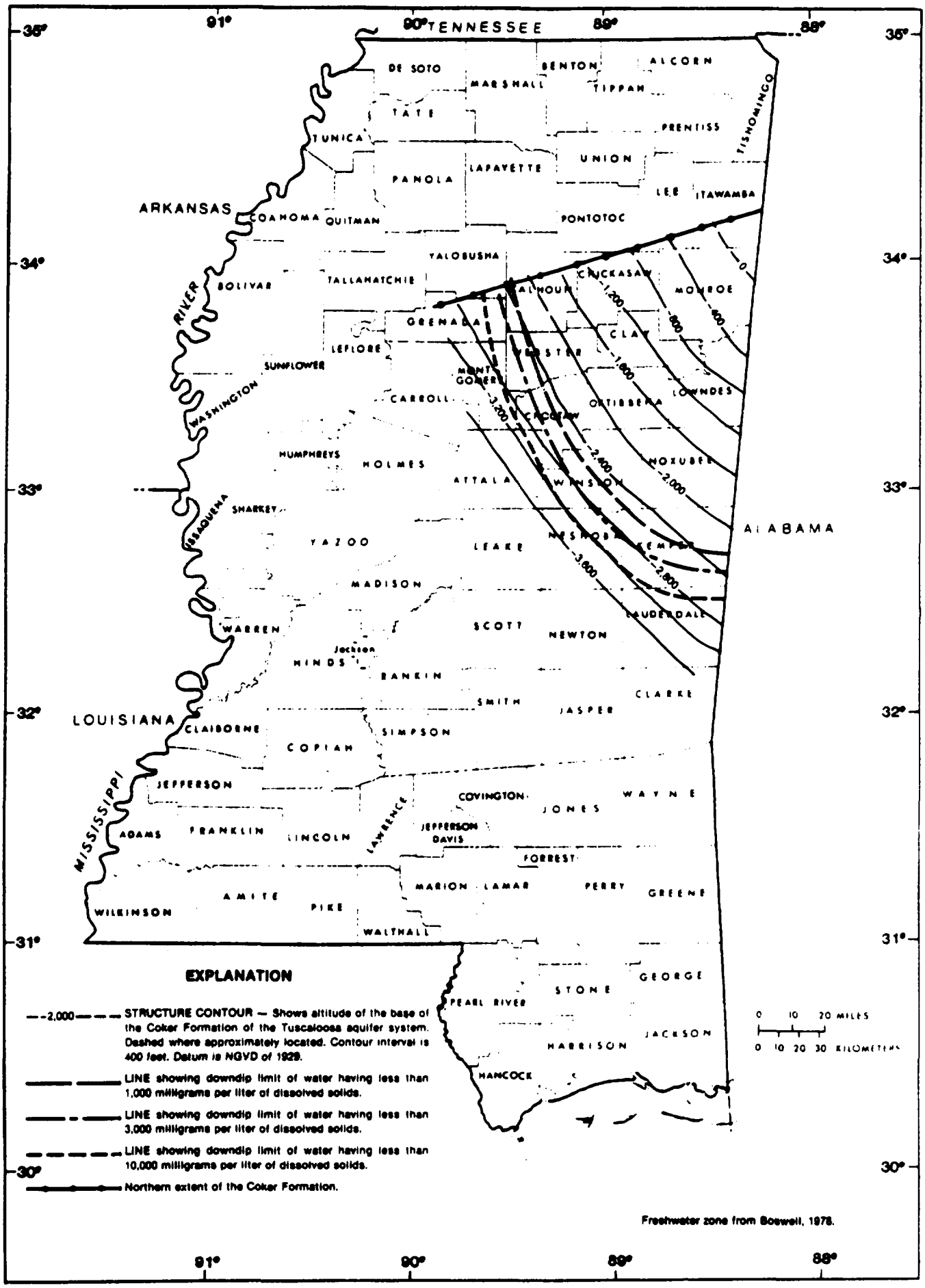


Figure 50. — Configuration of the base of the Coker Formation of the Tuscaloosa aquifer system.

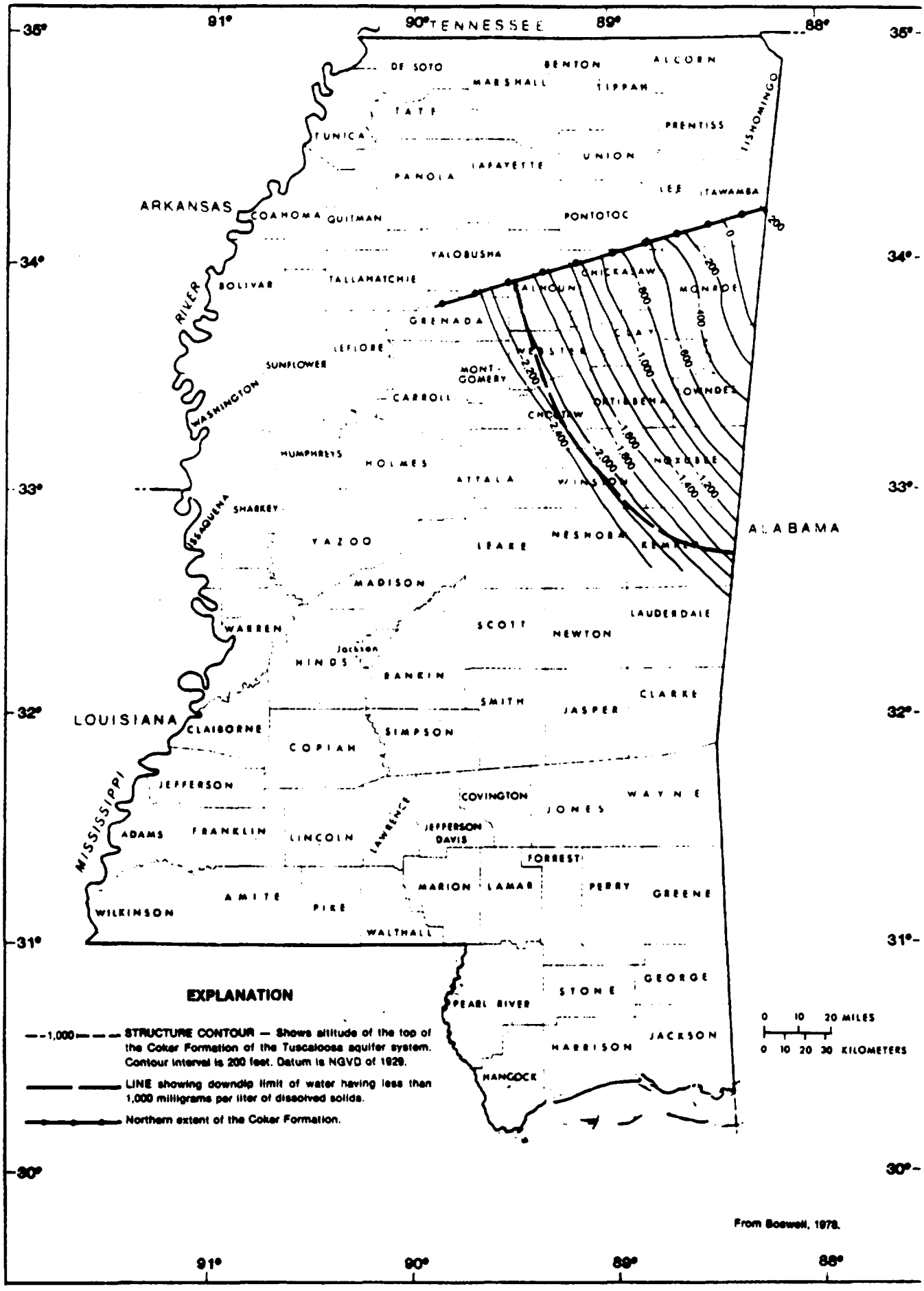


Figure 51. — Configuration of the top of the Coker Formation of the Tuscaloosa aquifer system.

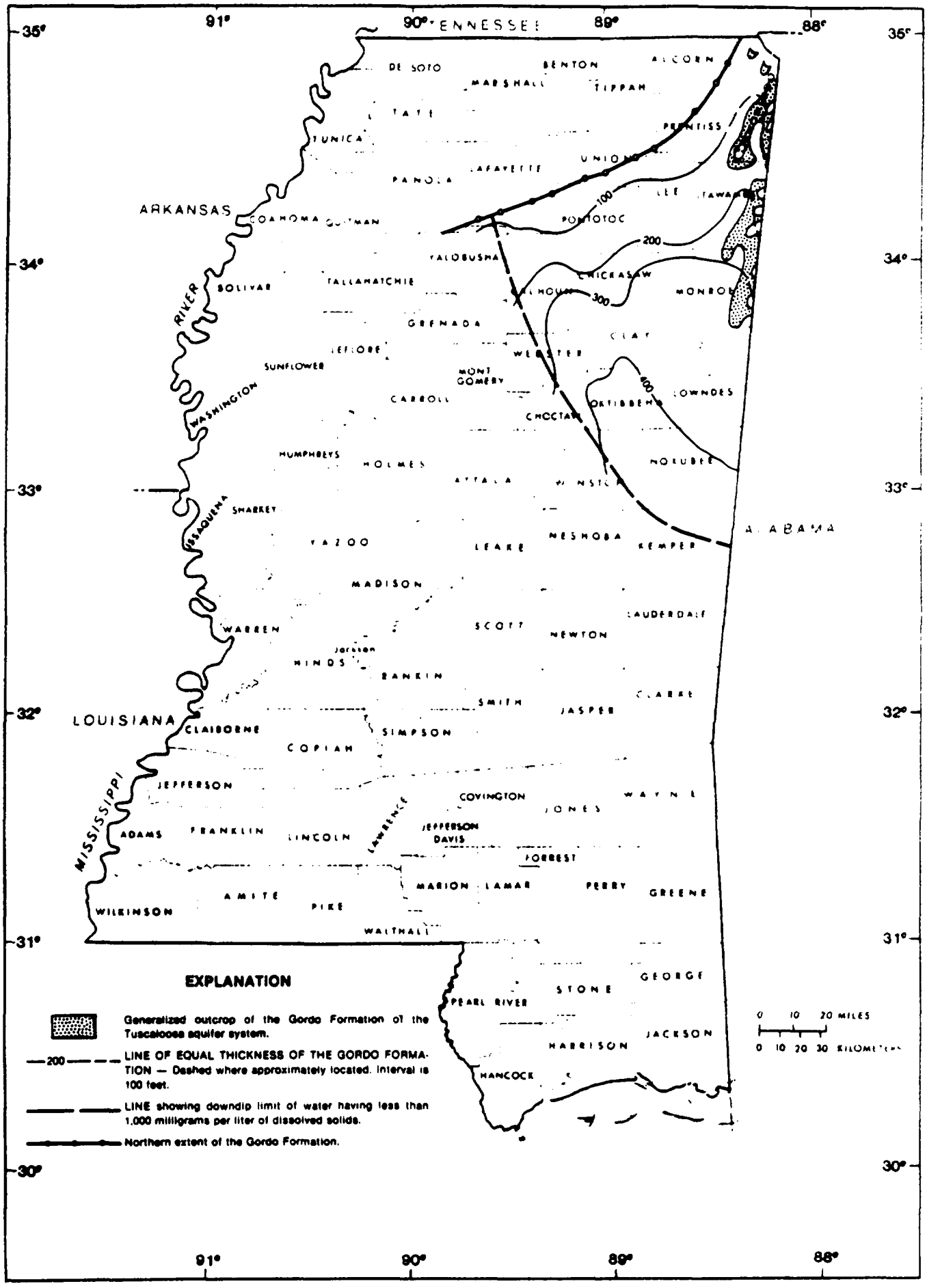


Figure 52. — Thickness of the Gordo Formation of the Tuscaloosa aquifer system.

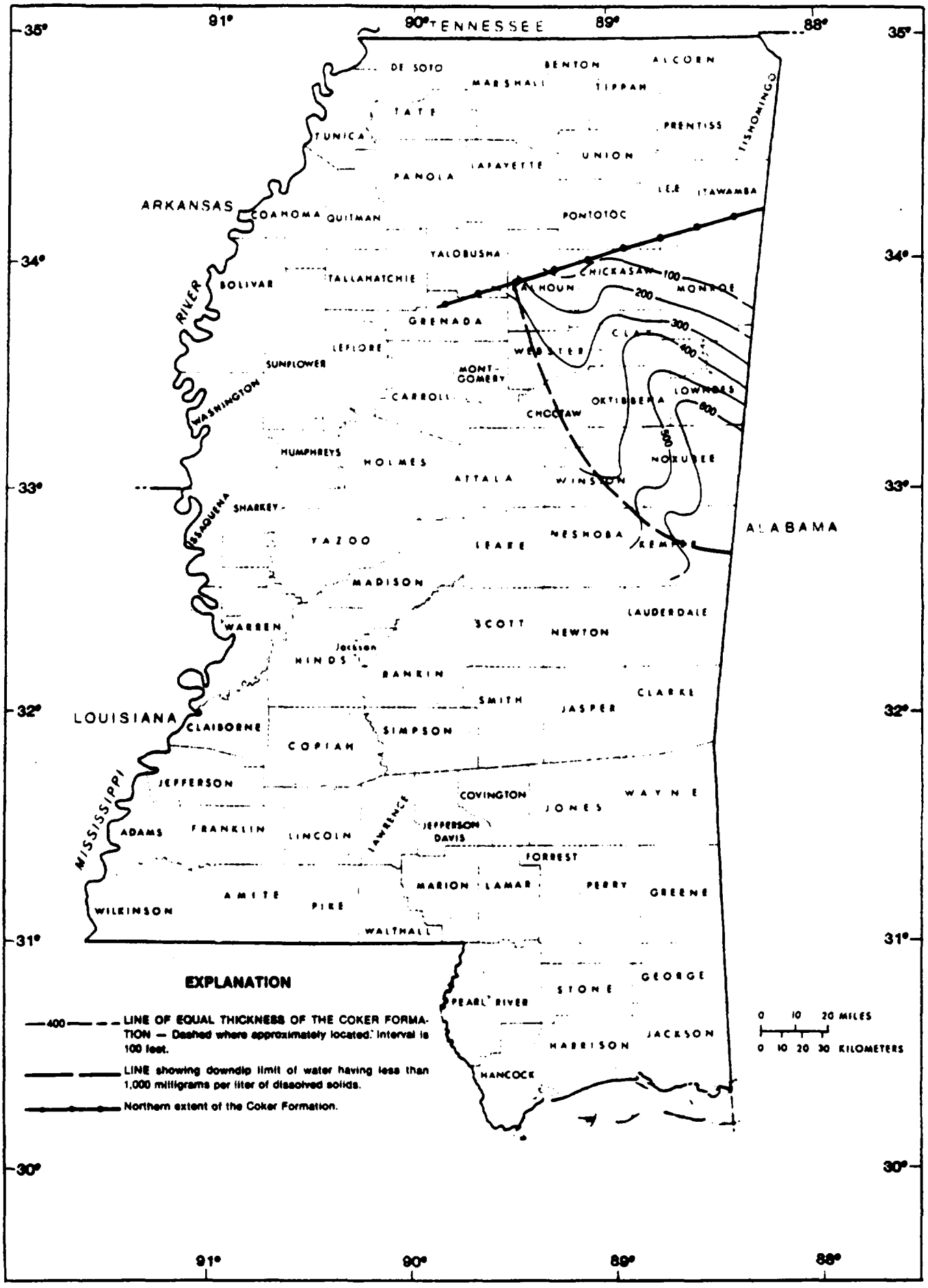


Figure 53. — Thickness of the Coker Formation of the Tuscaloosa aquifer system.

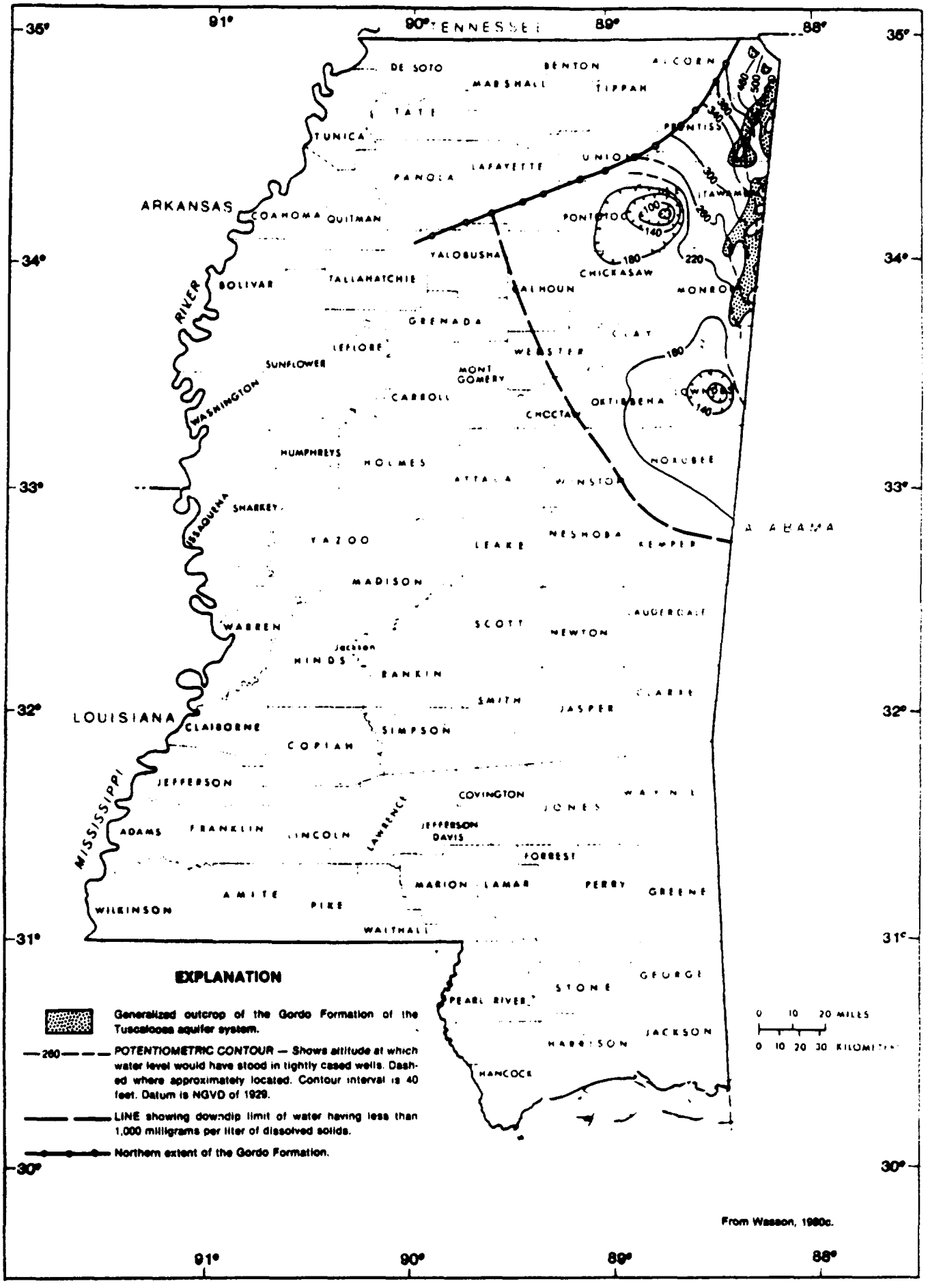


Figure 54. — Potentiometric surface of the Gordo Formation of the Tuscaloosa aquifer system.

Recharge to the aquifers is from rainfall on the outcrop and infiltration from adjacent aquifers. Water movement is generally to the southwest, but is somewhat affected by pumpage.

Thirteen aquifer tests in the Gordo Formation indicate transmissivities of 535 to 21,400 ft^2/d and an average hydraulic conductivity of 42.8 ft/d. Four aquifer tests in the Coker Formation indicate transmissivities ranging from 762 to 80,200 ft^2/d (Boswell, 1978).

Large diameter wells in the Gordo commonly produce 500 to 1,000 gal/min and large wells in the Coker produce 1,500 to 1,800 gal/min. The Gordo Formation is more frequently utilized simply because it is shallower. Increased use of both formations can be expected in the future because water levels are high in most areas and well yields are large. The Coker may be used more extensively in the future in areas where the Gordo and the overlying Eutaw-McShan aquifer are being drawn down excessively.

Near the outcrops, water from the Tuscaloosa aquifers is clear, acidic, soft-to-slightly hard, low in dissolved-solids concentrations, and high in iron. The downdip limits of fresh, slightly saline, and moderately saline water are shown in figures 48 and 50.

Sand and gravel are mined from the outcrops of the Tuscaloosa aquifers, and lignite is found in the area. Oil and gas are produced in Clarke, Jasper, and Smith Counties and the area to the south and southwest of these counties.

Some oil field wastes are disposed of in the Tuscaloosa aquifers downdip from the 10,000 mg/L dissolved-solids limit.

Paleozoic Aquifer

The Paleozoic aquifer in northeastern Mississippi consists of the upper weathered zone of the Paleozoic rocks (fig. 55). The zone commonly is about 100 feet thick and was weathered prior to deposition of the overlying Cretaceous rocks. The weathered zone consists principally of limestone, chert, and sandstone. This zone varies in age across the aquifer, because the dip of the beds at 30 ft/mi is steeper than the dip of the weathered surface which dips at 17 to 30 ft/mi. The aquifer is not isolated from overlying Cretaceous aquifers.

The potentiometric surface of the Paleozoic aquifer (fig. 56) is similar to that of the overlying Eutaw-McShan (fig. 47) and Tuscaloosa aquifers (fig. 54). Near the outcrop, water levels are relatively stable. In the confined part of the aquifer, water-levels are lower and in some areas as much as 100 feet lower than that in the overlying aquifer. Water-level declines generally are greater than in the overlying aquifers. Near Corinth, the water level has declined at a rate of 9 to 15 ft/yr since 1962; elsewhere, the decline has been about 1 ft/yr. At current rates of withdrawal, it has been predicted by Wasson and Tharpe (1975) that water levels in the Corinth area will be drawn down to the top of the aquifer by 1987.

Table 2.--Summary by county of large water wells in use in Mississippi, 1980.--Continued

Aquifer	Number of wells	Range in depth (feet)	Range in yield (gallons per minute)
LAMAR COUNTY			
Citronelle	1	200	171
Miocene	32	165-975	150-2000
LAUDERDALE COUNTY			
Middle Wilcox	5	258-408	100-300
Lower Wilcox	32	168-1195	110-1007
LAWRENCE COUNTY			
Citronelle	2	207-214	326-350
Miocene	13	208-917	100-500
LEAKE COUNTY			
Sparta	4	246-510	100-310
Meridian-upper Wilcox	5	611-776	136-750
Middle Wilcox	1	849	157
Lower Wilcox	3	1272-1659	300-847
LEE COUNTY			
Coffee	1	580	250
Eutaw-McShan	41	282-655	100-585
Gordo	15	535-729	200-726
LEFLORE COUNTY			
Mississippi River valley	18	90-187	1300-2675
Sparta	1	252	600
Winona-Tallahatta	1	811	300
Meridian-upper Wilcox	21	640-1200	100-1900
LINCOLN COUNTY			
Citronelle	5	160-185	120-440
Miocene	9	168-1200	224-500
LOWNDES COUNTY			
Gordo	25	323-1255	110-700
Coker	8	895-1300	1455-1865
MADISON COUNTY			
Cockfield	10	564-720	150-650
Sparta	20	594-1404	100-1100
Meridian-upper Wilcox	1	1500	102
MARION COUNTY			
Miocene	29	103-960	100-1000
MARSHALL COUNTY			
Meridian-upper Wilcox	6	338-371	108-900
Ripley	3	729-1640	200-450
MONROE COUNTY			
Eutaw-McShan	24	124-511	110-800
Gordo	21	198-444	125-1600
MONTGOMERY COUNTY			
Meridian-upper Wilcox	5	288-480	162-500
Middle Wilcox	4	486-617	105-200
Lower Wilcox	1	580	125

OVERSIZED

DOCUMENT

MAPS
Ref. # 12

Reference No. 13

ENDANGERED AND THREATENED SPECIES

U.S. FISH AND WILDLIFE SERVICE

REGION 4 - ATLANTA

Federally Listed Species by State

MISSISSIPPI

(E=Endangered; T=Threatened; CH=Critical Habitat determined)

Mammals	General Distribution
Panther, Florida (*Felis concolor coryi*) - E	Entire state
Whale, right (*Eubalaena glacialis*) - E	Coastal waters
Whale, finback (*Balaenoptera physalus*) - E	Coastal waters
Whale, humpback (*Megaptera novaeangliae*) - E	Coastal waters
Whale, sei (*Balaenoptera borealis*) - E	Coastal waters
Whale, sperm (*Physeter catodon*) - E	Coastal waters
Birds	
Crane, Mississippi sandhill (*Grus canadensis pulla*) - E,CH	Southern Jackson County
Eagle, bald (*Haliaeetus leucocephalus*) - E	Entire state
Falcon, Arctic peregrine (*Falco peregrinus tundrius*) - T	Entire state
Pelican, brown (*Pelecanus occidentalis*) - E	Coast
Plover, piping (*Charadrius melodus*) - T	Coast
Tern, least (*Sterna antillarum*); interior population - E	Mississippi River
Warbler, Bachman's (*Vermivora bachmanii*) - E	Entire state
Woodpecker, ivory-billed (*Campephilus principalis*) - E	West, South, East Central
Woodpecker, red-cockaded (*Picoides* (=*Dendrocopos*) *borealis*) - E	Entire state
Reptiles	
Alligator, American (*Alligator mississippiensis*) - T (S/A)*	South and West
Snake, eastern indigo (*Drymarchon corais couperi*) - T	South
Tortoise, gopher (*Gopherus polyphemus*) - T	Lower Gulf Coastal Plain (14 counties)
Turtle, Kemp's (Atlantic) ridley (*Lepidochelys kempii*) - E	Coastal waters
Turtle, green (*Chelonia mydas*) - T	Coastal waters

MISSISSIPPI (cont'd)

	General Distribution
Turtle, hawksbill (*Eretmochelys imbricata*) - E	Coastal waters
Turtle, loggerhead (*Caretta caretta*) - T	Coastal waters
Turtle, ringed sawback (*Graptemys oculifera*) - T	Pearl River
Fishes	
Darter, bayou (*Etheostoma rubrum*) - T	Bayou Pierre drainage
Mollusks	
Mussel, Curtus' (*Pleurobema curtum*) - E	East Fork Tombigbee River
Mussel, Judge Tait's (*Pleurobema taitianum*) - E	East Fork Tombigbee River and Buttahatchie River
Mussel, penitent (*Epioblasma* [=*Dysnomia*] *penita*) - E	East Fork Tombigbee River
Plants	
Lindera melissifolia (Pondberry) - E	Sharkey and Sunflower Counties

*Alligators are biologically neither endangered nor threatened. For law enforcement purposes they are classified as "Threatened due to Similarity of Appearance." Alligator hunting is regulated in accordance with State law.