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December 19, 2005

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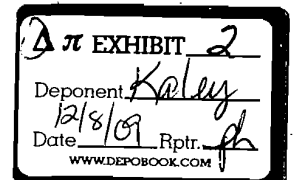
Mr. Michael Sparks
U.S. Environmental Protection Agency
Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303

Re: Response to NewFields Companies, LLC Comments and Memorandum in Support of the Proposed Section 122 Administrative Agreement and Order on Consent for Removal Action, Anniston Lead and PCB Superfund Sites

Dear Mr. Sparks:

Pursuant to the United States Environmental Protection Agency's ("EPA's") notice in the Federal Register on Friday, September 2, 2005, this letter and Exhibits represent Pharmacia Corporation's and Solutia Inc.'s (collectively "P/S's") Second Supplemental Comments to the proposed Administrative Agreement and Order on Consent for Removal Action ("Lead Site AOC"), as between the United States and certain Defendants sued by P/S in Solutia Inc., et al. v. McWane, Inc., et al. (the "Foundries").

After P/S's Initial Comments were timely filed on October 11, 2005, P/S had an unexpected opportunity to conduct limited sampling at the Union Foundry facility in Anniston, which revealed PCBs in substantial concentrations. This was discussed in P/S's Supplemental Comments, dated October 28, 2005. Subsequently, P/S obtained a copy of the NewFields Companies, LLC's Memorandum and Exhibits, authored by 2218187 - Second Supp Comments.doc



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Shahrokh Rouhani, Ph.D., P.E., dated October 11, 2005 (the "NewFields Memo"), and submitted on behalf of the Foothills Community Partnership in support of the Foundries.

After review of this Memo, it is apparent that there are so many significant factual inaccuracies, scientific mistakes, and possible misrepresentations, that P/S is compelled to submit this responsive Comment prior to the EPA's currently planned January 6, 2005, effective date of the Lead Site AOC.¹ This Comment explains the deficiencies in the NewFields Memo, and why the Memo cannot reasonably be relied upon to support the Foundries' contentions about sources of Anniston contamination, including that they were not *de minimis* contributors of PCBs.²

The pending decision by the EPA regarding whether to consent to the current form of the AOC is too important and too far-reaching in its consequences, to be based upon the technically incorrect and biased NewFields Memo and related analyses (see footnote No. 2). Thus, consistent with the EPA's reservation of all rights to provide

¹ Letter from Beverly H. Banister, EPA Acting Director, Waste Management Division, dated November 21, 2005, to AOC Respondents.

² The NewFields Memo also refers to a prior submittal to the EPA "regarding their facilities' possession and use of electrical or other equipment containing PCBs, as a demonstration, on a volume basis, of the total amount of PCBs capable of being released into the environment, compared to the documented volume of PCBs actually released into the environment by the former Monsanto facility." See NewFields Memo, p.10, Section VI (emphasis original). This reference suggests that this is an important document because it addresses the source issues which are also the subject of P/Ss Comments herein. P/S has submitted a FOIA requesting this submission; however, the EPA is processing this request and P/S has yet to receive a copy, although it is mentioned in the Comments. Given the significant deficiencies in the NewFields Memo, it is reasonable to anticipate that this prior submittal by the Foundries is similarly flawed. P/S needs to be provided, and hereby requests, a reasonable opportunity to review and comment on this prior submittal by the Foundries BEFORE the EPA issues a final decision on consenting to the Lead Site AOC.

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further written notice to either withhold consent from the AOC or to seek to modify it (see footnote No. 1), P/S requests, again, that the EPA withhold consent and *not* finalize the proposed Lead Site AOC with a *de minimis* designation, arguably resulting in contribution protection for the Foundries for their PCB discharges. P/S requests time to conduct further investigation and on-site sampling of the Foundry facilities, to better characterize the type and volume of PCB and other contaminants associated with their historical activities.

**NEWFIELDS MEMORANDUM – SIGNIFICANT FACTUAL INACCURACIES,
SCIENTIFIC MISTAKES, AND POSSIBLE MISREPRESENTATIONS**

- I. The NewFields Memo is replete with errors and inaccuracies, demonstrating their lack of knowledge of PCBs themselves and of Monsanto's production of PCBs.**

Early in the NewField Memo (Section III, page 3), it parrots the story that the "12" in the name of Aroclor products indicates the number of chlorines in the biphenyl molecule. However, persons knowledgeable about Monsanto's Aroclor products know that they also included polychlorinated terphenyls (known as PCTs or solid Aroclors) and that they had 18 carbons in their hydrocarbon backbone. These products were not designated with an "18" in their name, but rather with a "54." It is obvious that there is no association of the product number of a given Aroclor mixture with the number of carbons in the molecule.

This lack of understanding of the Monsanto Aroclor product line also contributes to NewFields' misinterpretation and erroneous conclusion at the bottom of page 7 (NewFields Memo, subsection E, 4th bullet). NewFields erroneously interprets a statement in a Monsanto memorandum about the limited manufacture of "Liquid Aroclors" in 1970, to suggest that increased levels of Aroclor 1268 were being produced. In reality, the relatively high levels of production of solid Aroclors referred to the polychlorinated terphenyls (PCTs) mentioned above, which were being produced to substitute for PCBs in a number of products as Monsanto implemented its voluntary

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removal of PCBs from open applications. It is also likely that NO Aroclor 1268 was being produced during this period.

In addition, on the same page (2nd bullet of subsection E), NewFields speculates that air pollution control equipment was installed on the Aroclor process by 1971. This speculation is incorrect. In the first place, the PCB manufacturing process was essentially totally enclosed, so there was no "air pollution" to control. The vapors from the manufacturing process were discharged through a scrubber to recover muriatic acid, a useful product in its own right, but there were no other vapor emissions. It is faulty reasoning to base conclusions about potential PCB air emissions on an incorrect understanding of the PCB manufacturing process.

The faulty conclusion compounds NewFields' misunderstanding of the discharges referred to in the 1st bullet of the NewFields Memo, subsection (E). The measurements which NewFields tries to extrapolate to air discharges of PCBs to the greater Anniston community were not measurements of the air leaving the facility. They were, in fact, mostly measurements at discreet spots in the process where the PCBs were present at elevated temperatures. And, because of the physical properties of PCBs (low volatility at ambient temperatures), essentially all of the PCBs discharged from leaks or vents in the process would condense close by in the manufacturing facility itself. They certainly would not reach the plant fence line and contribute to PCB levels in the surrounding community. The measurements also were almost all taken during the manufacture and handling of Aroclor 1242, the most volatile (although still relatively non-volatile) of all the Aroclor products. Thus, it is scientifically inappropriate to even try to extrapolate these results to the manufacture of other Aroclor products, especially to Aroclor 1268, the least volatile of all of the Aroclor PCB products, which is the focus of the NewFields Memo.

II. The NewFields Memo referenced yards that contained foundry fill to establish the "Monsanto fingerprint," thereby undercutting all its conclusions stemming therefrom.

The underlying basis for many of the NewFields opinions is a "Monsanto fingerprint," allegedly indicative of Monsanto PCB waste. However, this basis is invalid. Using the results of sampling that NewFields believes reflect PCBs discharged from the Monsanto facility, NewFields creates a PCB profile and calls it a "fingerprint" of Monsanto-specific PCB waste. NewFields compares the "Monsanto fingerprint" with the results from samples taken on other residential yards in Anniston and concludes that the fingerprints

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match and, therefore, the PCBs in Anniston are from Monsanto discharges. However, the samples used to create the alleged "Monsanto fingerprint" are taken from yards containing significant amounts of foundry fill. (see Attachment A – maps identifying locations of sample results, of Zone D yards, of former Monsanto and foundry facilities in relation to these yards; and, photos of foundry fill in these yards). Thus, the PCBs NewFields used to create the Monsanto fingerprint likely consisted of all or some portion of PCBs in foundry fill, indicative of foundry sources.

III. NewFields ignores the scientific necessity of acquiring a "foundry fingerprint" to compare to its so-called "Monsanto fingerprint."

NewFields has not bothered to adequately characterize the foundry waste that is found throughout residential areas in Anniston, including Area D that was used, instead, to erroneously create a "Monsanto fingerprint." Without characterizing the "foundry fingerprint," NewFields cannot determine the quantity, scope, or significance of the foundries' impacts or exclude the foundries as sources of the PCBs it identifies that resemble Aroclor 1268 in the analytical results. Through discovery it has become evident that the foundries are a potential source of highly chlorinated PCBs. In fact, NewFields acknowledges that Aroclor 1268 was used in tars and paints, but their report fails to disclose that the foundries used large quantities of tars and paints to treat their products. The waste tars and paints were mixed with spent foundry sand and disposed of throughout Anniston, including in yards in Area D. Further evidence that the foundries are the source of these highly chlorinated PCBs is provided by the presence of other materials, such as polycyclic aromatic hydrocarbons (PAHs), specifically dibenz (a,h) anthracene, being co-located with the PCBs. These PAHs are commonly found in tars and oil-based coatings used by the foundries.

IV. NewFields' alleged "Monsanto fingerprint" does not appear in the storm water pathways leading from the former PCB manufacturing facility.

If there were to be a "Monsanto fingerprint," it would be associated with sedimentary material found in the storm water discharge pathways from the former PCB manufacturing facility. However, the lab results from hundreds of samples in those pathways clearly indicate that the predominant Aroclor products reported resemble Aroclors 1254 and 1260, not in samples that appear to be Aroclor 1268. As shown on the attached map (see Attachment B), the reports of Aroclor 1268 are predominantly outside of the storm water pathways. Indeed, taken to its logical conclusion, the NewFields argument actually indicates that Monsanto is not responsible for the PCBs in the storm

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water pathways, because the “fingerprint” that NewFields alleges to be associated with Monsanto is not present in the sediments in the storm water pathway. Because the NewFields analysis is based on the false premise that the data representing Monsanto discharges represent the Monsanto “fingerprint,” all analyses that stem from that premise fail.

V. NewFields’ reliance on anonymous reports of fill from the former Monsanto facility undercuts its own arguments.

The presence of foundry wastes in residential yards is attested to in numerous reports made under oath from residents who accepted and used the fill, and by the presence of materials such as slag, refractory materials, and other wastes clearly associated with foundry discharges. In contrast, NewFields attaches reports by certain anonymous persons that red clay from the former Monsanto facility was used as fill. These anonymous affidavits merely accentuate the differences between foundry waste and native Alabama red-clay soils. The NewFields Memo simply declares this red clay “Monsanto wastes.” This assertion is clearly without sufficient or scientific foundation, and is inaccurate. The wastes from the former PCB manufacturing facility have been well-characterized as dark materials, which are clearly distinguishable from red Alabama native clay, and clearly are not suitable or desirable as fill for residential areas. And, even assuming the source of the material was the former Monsanto plant, which is highly questionable, it does not mean it was process waste; it could have been something as meaningless as spoils from digging fence post holes or from a construction project. Regardless, NewFields provides no sampling or analysis to confirm the allegations of the fill containing PCBs, or that the alleged “fill” is from the Monsanto facility. The reason is clear – such fill was not used in Anniston.³

VI. NewFields erroneously contends, in section III.F of the Memo, that prior to the late 1960s the former Monsanto facility had a storm-water runoff conduit from the northwest end of its facility “to areas leading to the 9th Street/Eulaton Road Ditch and, therefore, contamination released from the former Monsanto facility through storm-water runoff was clearly a source of elevated levels of contaminants measured in the 9th Street/Eulaton Road Ditch.”

³ If NewFields had provided any of the addresses for these locations, in consideration of all the existing residential soil data, P/S would be able to confirm if the locations had red clay and were contaminated. However, the addresses were redacted from the NewFields Memo.

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After reviewing the information provided by NewFields in support of this contention (primarily in Attachment No. 5 of their Memo, which is a Phase 1 Environmental Site Assessment of the United Defense property prepared by Dames & Moore), it is evident that the contention has no basis in fact -- none -- and is, instead, based on incomplete information and a patently incorrect interpretation of the evidence provided.

The Attachment 5 report by Dames and Moore was assessed for evidence that such a discharge could really tie into any subsurface drains that led to the United Defense property. We also relied upon two personal site inspections of this area in search of possible old ditches or underground pipes, culverts or other conduits that may have at one time led from the former Monsanto property to the United Defense property. We also inspected historical aerial photos of the location in question (see Attachment C -- aerial photos dating from 1937 through a high resolution fly-over in 2004; highlighting relevant properties and ditches), to determine if there was any evidence of such a connection prior to the late 1960s, or whether routing flow in this direction under two sets of railroad tracks makes any sense; i.e., could gravity flow have followed such a route, and if so, how deep would the culvert and subsurface drain on the United Defense site have been? All of these analyses, as explained below, lead to a conclusion that the NewFields opinions about historical contamination of the 9th Street Ditch from the former Monsanto facility are erroneous.

The NewFields Memo, Attachment 5 is about the United Defense Foundry and Forge, not about Monsanto. Monsanto is treated only in as much as its presence affects conditions at the two sites, so the analysis of aerial photos and maps focused on these two sites, not on changes at the former Monsanto facility. There are no analyses or conclusions about Monsanto and its surroundings. The only alleged "evidence" for the subsurface drainage is word-of-mouth, that, "according to FMC personnel, a storm water sewer from the Monsanto plant historically discharged in the subsurface on the foundry property" (NewFields Memo, p. 29), and "according to Messrs. Turner and Gaubin, storm water from the Monsanto property had historically been released at a subsurface location on the foundry site" (NewFields Memo, p. 17). However, the only support for this contention is a statement taken from a response of Solutia Inc. to a CERCLA Section 104(e) request for information relating to the Anniston site, which reads as follows:

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In or about the late 1960s, trenching was constructed on the west side of the plant property to prevent storm water run on to the west side of the plant's manufacturing area. That collected storm water was channeled to the drainage ditch north of the plant site that was then channeled through a culvert under the railroad tracks north of the plant site. Prior to construction of this trenching, surface water flowed to surface drains connected to the storm water sewer that routed the surface water to the drainage ditch that was channeled through a culvert under the railroad tracks north of the plant.

There are several errors and incorrect interpretations in the logic presented in the NewFields Memo stemming from this statement and information:⁴

- A. The NewFields Memo notes that Monsanto is topographically up-gradient of the United Defense site, and they present a coarse resolution topo map to support that statement. However, the map is too coarse to show that the actual local topographic gradient leads surface flow from the ditch along the west boundary of the former Monsanto facility to the east (see Attachment C - high resolution contour maps). Actually there are two ditches on either side of the railroad tracks north of the Solutia site, one on the south side of the railroad tracks (leading into the 10th Street Ditch) and one the north side of the railroad tracks, which is essentially the origin of the 11th Street Ditch.
- B. The above 104(e) statement by Solutia that they "channeled through a culvert under the railroad tracks north of the plant site" was actually conveying water from the 10th Street Ditch to the 11th Street Ditch, both of which drain to the east, not to the north-west toward United Defense and Huron Valley Steel Corp. The tracks referred to by Solutia are not the same tracks that the NewFields report references, and the culvert was dug under to get to the drain south of their facility. NewFields is mistaking the tracks north of the Solutia site for the tracks running

⁴ Only some supporting documentation is offered in these Comments to try to keep it from getting too lengthy; additional maps and data will be provided to support these statements, upon request.
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southwest to northeast, and east of the United Defense site.⁵

- C. In reality, to build a conveyance from the drainage ditch on the west boundary of the former Monsanto facility to the drain south of United Defense, the pipe would have to go under two sets of tracks, across about 500 feet of the triangle-shaped property formed by the two tracks, and actually dug with a slope to counter the slope of the property, which is from west to east. Even the NewFields report states, counter to their claim that Monsanto is up-gradient, that the "ground surface at the foundry site declines gently from west to east." Also, the Ground Penetrating Radar report that ADEM commissioned to locate such an underground pipe was shown to be inconclusive in finding any such conveyance (Jones, 2001; cited at end of section). It is telling that the NewFields report does not even mention this ADEM report.
- D. Storm water draining the Huron Valley site, west of the point that the railroad tracks split, flows toward the east. The topography here is such that water draining at this point could diverge either toward the 11th Street Ditch or toward the north to the 9th Street Ditch. The slope in this area is even greater than it is further to the east. Thus, NewFields' conclusion does not make sense: Why would anyone try to force water from the former Monsanto facility west boundary ditch to flow uphill to drain into the 9th Street Ditch?

Reference

Jones, V.S. 2001. *A Ground Penetrating Radar Survey of Suspected Pipe Locations in the City of Anniston, Calhoun County, Alabama*. Report prepared for the Alabama Department of Environmental Management by the University of Alabama Museums, Office of Archeological Services, Moundville, AL. 15 pp.

VII. NewFields argues that the consistent presence of the unique former Monsanto facility Aroclor profile, dominated by PCBs that resemble the heavy Aroclor 1268, indicates that detected PCBs throughout the Anniston Area are associated with former Monsanto operations. NewFields also states that the former Monsanto facility is the source of the detected soil and sediment PCBs in and around the facility. These conclusions are based on circular logic that is erroneous in multiple respects.

⁵ Upon request, P/S will supplement this Comment with maps identifying the areas and structures mentioned herein, to support these statements.

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This logic is based only on proximity and does not consider other mechanisms by which the PCBs would have arrived at the sampled locations. Essentially, what NewFields has assumed is that PCBs in soils near Monsanto must come from Monsanto and, therefore, the "unique Aroclor signature" from these PCBs must be associated with Monsanto. This circular argument ignores the fact that soil samples taken in the vicinity of Monsanto (i.e., in Zone D) reflect materials taken from the foundries as indicated by the prevalence of foundry fill (see Attachment A for examples). Further, these same soils are in the vicinity of the foundries, and in many cases are closer to foundries than they are to the former Monsanto facility. In fact, foundries are located between many of the residences and the Monsanto facility. Thus, if proximity alone was the criterion for establishing a fingerprint, then it must be presumed that the foundries are sources of this fingerprint.

In addition, Figures 4 through 7 of the NewFields Memorandum all indicate that a PCB mixture with a dominant Aroclor 1268-like pattern not only exists in the soils near the former Monsanto facility, but also in soils elsewhere in Anniston. However, NewFields fails to reconcile this persistent pattern with distance from the former Monsanto facility. It should be obvious that "proximity" is not a reliable criterion; it should also be obvious that other factors can be, and are, determinative of source.

NewFields fails to consider a related, and once again, obvious and critical question: How could a pattern apparently dominated by a 1268-like pattern come to be so widespread in soils in and out of the floodplains in Anniston? As stated elsewhere in this Comment, and acknowledged by NewFields, highly-chlorinated PCBs are heavy. Therefore, they would not be preferentially transported with distance through the air. And, the consistent pattern of the PCB mixture with distance can not be explained by air transport. The opinions of Gale Hoffnagle submitted in P/S's earlier comments support the view that atmospheric deposition of PCBs from the former Monsanto facility would not result in the observed spatial pattern seen in Anniston.

Instead, mechanical placement of PCB-contaminated material in residential yards is the likely mechanism that could result in a consistent sporadic pattern (i.e., the similarities among NewFields' Figures 4 through 7). As discussed in the Comments by Dr. Menzie, mechanical placement rather than air transport would explain the patchy distribution of PCBs.

This raises another critical question not considered by NewFields: What material has been placed in residential soils throughout Anniston and who placed it there? As is

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common knowledge to Anniston residents and the EPA, and as discussed in the prior Comments by Dr. Menzie, foundry fill materials are known to have been widely used in large volume over many years as fill in residential yards and for municipal purposes. There appears to be no dispute on this point. Thus, the foundries are clearly -- at the very least -- candidates for the widespread distribution of any contamination associated with the fill.

In contrast, our information indicates that off-site removal of the former Monsanto fill was extremely limited, and there is no evidence of PCB-contaminated wastes being taken off site. There was no wide-spread, large-volume distribution of fill material as is known to have occurred with the foundries. The only evidence that NewFields offers to support their claim that any PCB wastes from Monsanto were taken to Anniston yards is based on the memories of two children who say their fathers transported red dirt to their yards. It is also not good scientific practice to draw scientific conclusions based on anonymous, unsubstantiated reports from two children.

As shown above, "proximity" is not a reliable indicator of a source pattern. And, NewFields offers little else to establish the basis for this pattern, and they make no attempt to discriminate the pattern seen in soils from a foundry PCB pattern. In fact, NewFields acknowledges that 1268 was used in materials that would have been used at the foundries (tars and paints), but then fails to disclose that the foundries used large quantities of tars and paints. Tars were extensively used by foundries for dipping pipe to prevent corrosion.

VIII. NewFields argues that the former Monsanto facility is the common source of lead and PCBs in Anniston, and contamination from the former Monsanto facility occurred as a result of air, storm water, and physical offsite disposal (see NewFields Memo, p. 2). Again, these conclusions are inaccurate for multiple reasons.

The NewFields Memo identified air and physical placement of contaminated material from the former Monsanto facility onto residential and other property as the source of this contamination (storm water was identified by NewFields as a source to water bodies). If this were true, then there would be some relationship between elevated lead and PCBs in the soils of Anniston. However, this is not the case. To the contrary, lead is associated with the presence of other metals and chemicals associated with the foundries.

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A. Lack of Relationship between Lead and PCBs

Figure #1 below is a scatter plot of the lead and PCB data in soils. As can be seen on the scatter plot, lead concentrations are not correlated with PCBs. Instead, elevated lead levels occur throughout the range of observed PCB concentrations. If lead and PCBs had a single common source, a type of waste stream generated by a single source, some correlation would be expected and the scatter plot would look something like a straight line, as is seen in Figure 2 below. Also, as noted in the prior Comments of Dr. Charles Menzie, PCBs in residential yards are associated with the presence of foundry fill. The NewFields completely ignores the fact that foundry fill is the one physical material that has been distributed to residences and municipal properties throughout Anniston.

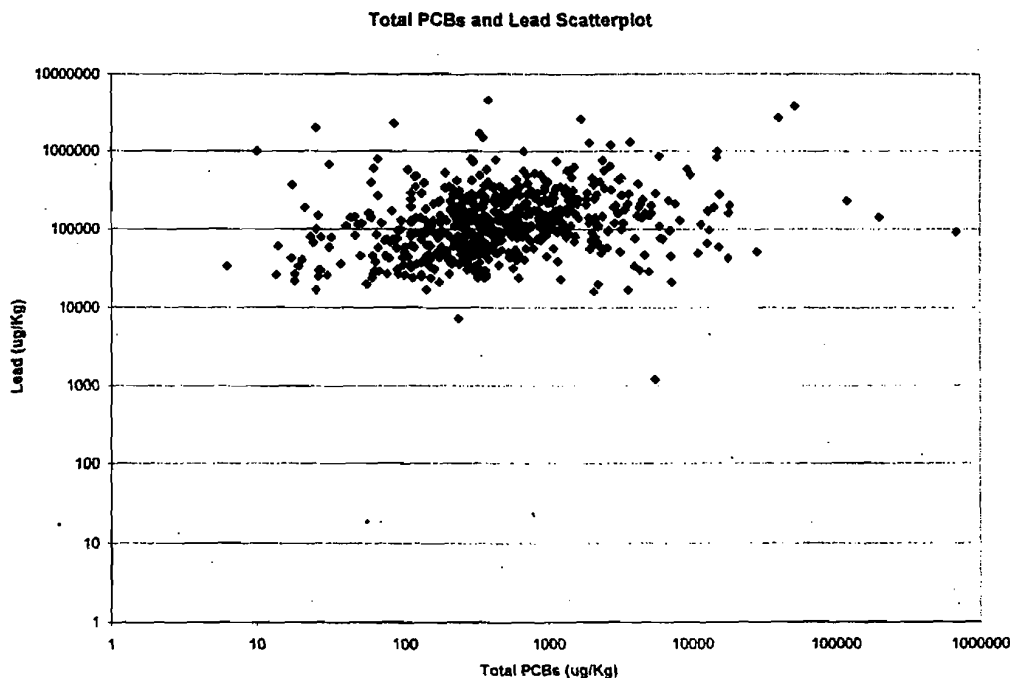


Figure 1. Scatter plot – Lead concentrations versus PCB concentrations
in Anniston Soils (EPA and Golder Datasets)

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B. Correlation of Lead to Other Metals

Elevated concentrations of lead and other metals occur at the foundries, but they occur independently of PCBs. For example, high levels of lead (4,227 ppm) and zinc (17,989 ppm) are reported in the site investigation for Huron Valley Steel.⁶ These and other metals are associated with the manufacture of product. The prior Comments of James Patterson further document the presence of metals. The significance of the foundries as a source of lead and other metals can be seen in scatter plots such as the one shown below in Figure 2 for lead and zinc. Similar correlations occur with other metals such as cadmium. The blue color shows soils for Anniston residences while the violet color is background. As noted above and in the opinion of Dr. James Patterson, which is confirmed in Anniston data, lead and zinc are elevated at foundries and tend to be correlated.

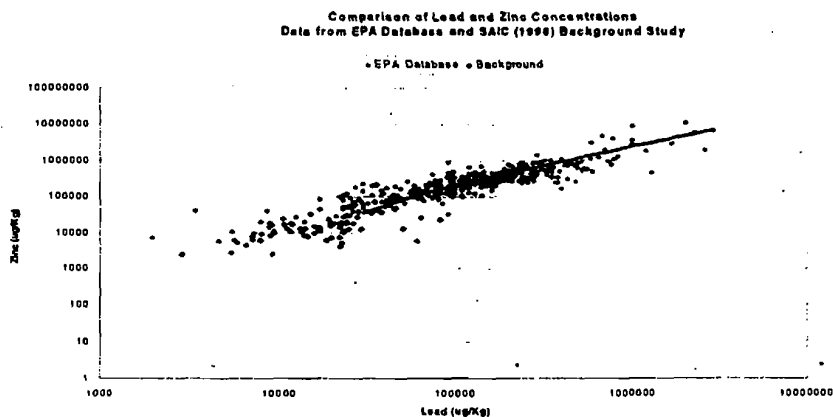


Figure 2. Relationship between lead and zinc in Anniston yards (blue) and in background soils (violet). The relationship between lead and zinc in Anniston yards is similar to what has been seen for the foundries.

⁶ W.Z. Baumgartner & Associates, Inc. 1994. Environmental site evaluation for Huron Valley Steel Corporation, Anniston, Alabama.
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C. Presence of Other Contaminants

NewFields also ignores information on the widespread distribution of foundry fill as well as information on other contaminants present in soils. As discussed in the prior Comments of Dr. Menzie, one class of other contaminants is polycyclic aromatic hydrocarbons (PAHs). These chemicals are in sufficient levels on residential properties to warrant further evaluation. Like PCBs and lead, elevated concentrations of these chemicals in residential yards can only occur as a result of physical placement or release at these locations. Furthermore, a potentially important source of PAHs is tar, a product used at foundries. Some of the foundries had tar pits which were used for dipping and coating pipe. Not unexpectedly, elevated levels of PAHs still exist at foundries such as at U.S. Pipe.⁷ Any of the foundries that had pipe-dipping operations would be candidates for the disposal of PAHs. (See Attachment A; includes aerials of yards in Zone D that contain foundry fill (908 and 912 Duncan), illustrating the proximity of residences in Zone D to the foundries, their relative positions between a foundry and Monsanto; and, there are photos of the foundry material in these yards. These are just examples -- there are multiple other properties located near the various foundries that have PCBs and large amounts of foundry fill.)

IX. There are several critical flaws in NewFields' analysis of the former Monsanto facility's alleged unique Aroclor Signature Profile (see NewFields Memo, pp. 5-6).

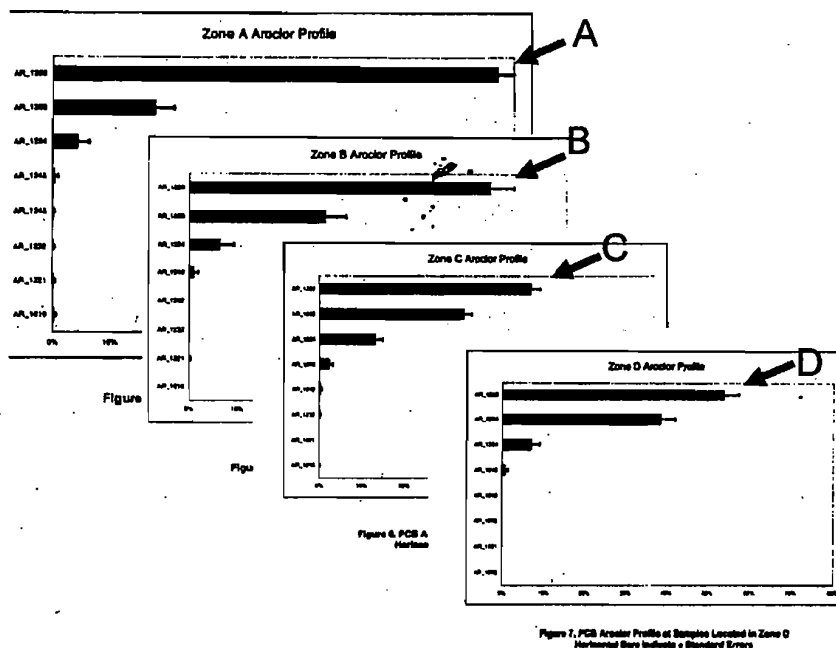
- A. Using the existing data, NewFields computed Aroclor profiles for all the Anniston Area soil and sediment samples where detectable levels of Aroclors were present. NewFields grouped and averaged the sample-specific profiles according to their spatial locations in Zones A, B, C, and D, as shown on Figures 4 through 7 of the NewFields memo, respectively. These figures indicated the presence of a consistent, yet unique Aroclor profile throughout the Anniston Area. The key NewFields observations from this analysis are:
 - 1. The dominant Aroclor measured around the former Monsanto facility is Aroclor 1268. Aroclor 1260 was the next most prevalent Aroclor, followed by Aroclor 1254, and Aroclor 1248 (see Zone D Aroclor Profile, NewFields Figure 7). Other Aroclors are observed only at trace levels.

⁷ See prior Comments of Dr. Charles Menzie for U.S. Pipe as source of tar.
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The former Monsanto facility is the source of the detected soil and sediment PCBs in and around the facility. Thus, this distinct Aroclor compositional pattern⁸ is clearly representative of PCBs released from the former Monsanto facility. We will refer to this Aroclor profile as the "former Monsanto facility Aroclor Profile."

NewFields' Figures 4-7 are reproduced below in a stacked format:



However, this analysis is seriously flawed.⁹ Beginning at page 6, the analysis states that, "NewFields computed Aroclor profiles for all the Anniston Area soil/sediment samples where detectable levels of Aroclors were present..." This is scientifically invalid because NewFields' data analysis methods are neither described nor referenced. The plots in Figures 4-7 are ambiguous and are not intelligible: What do the "%" values in the x-axis

⁸ NewFields' footnote: "High measured concentrations of Aroclor 1268, followed by Aroclor 1260, Aroclor 1254, and Aroclor 1248, in a descending order."

⁹ The ability to identify Aroclors using the analytical methods is flawed. Scientific references to this effect, supporting the statements in this paragraph, will be provided upon request.
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represent?; How was the standard error calculated?; and, How were the values represented by the bars calculated? These flaws do not represent mere nit-picking over graphic presentations or statistical calculations; P/S's experts are not able to develop plots from the EPA dataset that even remotely resemble the NewFields plots. A scientifically valid presentation would present the mathematical equations used in the calculations, document whether any data were adjusted (e.g., what was their treatment of qualified data?), and explain whether and why any data were censored ("detectable levels" may indicate that non-detected samples were simply ignored in their analysis). NewFields should also have documented their quality assurance review of the original laboratory data to confirm that the secondary tables with Aroclor identifications are correct. Common scientific practice requires that results be documented, verifiable, and reproducible. NewFields fails to meet all three of these minimal criteria.

NewFields also fails to recognize that the EPA's analytical method 8082 used to collect the data upon which NewFields relies cannot provide a true identification of any Aroclor product, including Aroclor 1268. The method recognizes peaks on a gas chromatogram that have retention times at or near the retention times of a few arbitrarily selected components of each Aroclor product, some of which occur in a number of those products. The objective of Method 8082 is to identify PCBs based on retention time and then quantitate the mixture based on a few selected peaks from Aroclor standards. The method does not compare relative peak heights or areas to confirm that the peaks the computer identifies as a particular Aroclor really correspond to that material. In fact, a careful review of EPA's data indicated that many of the chromatograms for which an Aroclor is "identified" clearly show the presence of PCBs identifiable as other Aroclors. These also indicate that there are inconsistent identification decisions, computer and/or analyst suppression of peaks, and other problems that invalidate the use of Aroclor identifications as environmentally diagnostic results. The identification of a particular Aroclor on a chromatogram is an analytical tool, not a true identification.

Since NewFields failed to present a scientifically valid argument on the topic of "Aroclor profiles for all the Anniston Area soil and sediment samples," detailed rebuttal is impossible. For example, Monsanto can neither accept nor interpret NewFields' assertion that "the dominant Aroclor measured around the former Monsanto facility is Aroclor 1268" based simply on NewFields undocumented, not-reproducible and, therefore, invalid plots.

Without acceding to the validity of NewFields' data or its interpretation, if one visually examines NewFields' Figures 4-7 in relation to the Zone definitions used by NewFields,

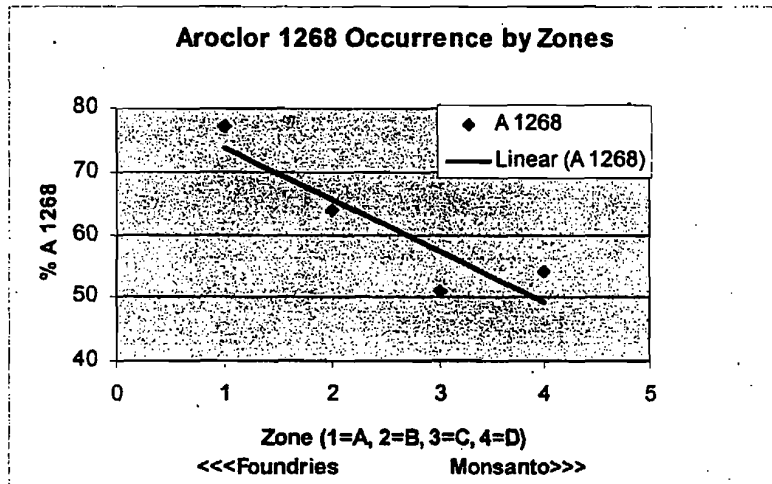
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it is clear that the predominance of PCBs resembling Aroclor 1268 is linked to proximity to the foundries. A simple plot of the "% Aroclor 1268" derived from visual inspection of the values in Figures 4-7 yields a clear slope of the "% Aroclor 1268" toward the foundries - the foundries are associated with Aroclor 1268, not Monsanto's plant site (Zone D). This plot, following NewFields' simplistic and undocumented approach, clearly indicates a trend of the higher-chlorinated PCB mixtures to increase in samples collected closer to the foundries that is consistent with the foundries being the source of PCBs that resemble Aroclor 1268, and these are inconsistent with the former Monsanto facility as the source of these PCBs.

Aroclor 1268 Occurrence by Zones

Zone	% A 1268
A	77
B	64
C	51
D	54



The values in this chart were visually read from the NewFields report and are illustrative, not quantitatively accurate.

1. The NewFields memo argues that the dominant Aroclor 1268 in Zone D is a white to off-white powder that was used as a plasticizer, resin additive, and wax

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extender. As described above, this heavy Aroclor was not used in transformers or capacitors. There are no documented applications of Aroclor 1268 by NewFields at the Anniston area foundry sites.

In response, the lack of documentation of Aroclor 1268 in the Anniston foundries does not equate to mean that Aroclor 1268 was neither used nor emitted from the foundries. Records of both foundry-specific and general use of Aroclor 1268 are nearly non-existent. Monsanto had neither control over, nor knowledge of, the "hundreds of industrial and commercial applications"¹⁰ of their various Aroclor products.

However, Aroclor 1268 was used in various building materials as a fire retardant.¹¹ This and other uses, such as the wax extender or coating plasticizer including tars, as mentioned in the NewFields report, could have caused Aroclor 1268 to be used in one or more Anniston foundries. Even if there were complete historic records, the foundries' purchase, construction, and operational documentation would not likely record the use of Aroclor 1268 or other PCBs at a foundry, because these were incorporated into other products. Thus, the absence of documented uses of Aroclor 1268 is not a sufficient basis upon which to eliminate the foundries as potential sources.

2. The NewFields memo argues that in fact, the commercial and industrial applications for Aroclor 1268 were quite limited. When found, distributions of Aroclor 1268 are not associated with widespread industrial use but are often traceable to a single facility point source even in chemically complex urban settings.

In response, Monsanto agrees with NewFields that "the commercial and industrial applications for Aroclor 1268 were quite limited" only when expressed in production quantities. In fact, Aroclor 1268 was always a small volume chemical relative to other Aroclors. Anniston production has been characterized as "short runs on a few days per year" (per Jerry Brown, 30 Nov. 2004). Hansen and Nisbet cite¹² Anniston Aroclor "production rates during the 1960s were in the range of 1.1-2.2 10⁷ kg yr⁻¹, with an approximate breakdown:"

¹⁰ NewFields admits there are many other applications besides transformers and capacitors at p. 2 of their October 11, 2005 report.

¹¹ Erickson, Mitchell D., *Analytical Chemistry of PCBs*, Second Edition, CRC Press/Lewis Publishers, Boca Raton, FL 667 pp. (1997). Chapter 2

¹² "PCB Congener Comparisons...." *Fresenius' Env. Bull.* 12, No. 2a, pp. 1-10 (2003); Hansen Exhibit 36 4-17-03; referenced to Nisbet's trial testimony in Abernathy, Exhibit 1040.

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Anniston Aroclor Production

Aroclor	%
1221	2
1242	67
1248	4
1254	16
1260	7
1262	3
1268	<1
Total	100

This table, which was used by plaintiffs in prior cases against Monsanto, demonstrates that less than about 1% of the Aroclor production at Anniston was Aroclor 1268. Given the production volume, production processes, and known or alleged environmental emissions of PCBs from the Anniston, former Monsanto plant, any environmental contamination of PCBs via air, water, blowing dust, animal conveyance or other hypothetical environmental pathway would have an Aroclor profile roughly similar to the production percentages listed in the table immediately above. However, this is not the profile that NewFields has described. Even accounting for severe weathering that could have eliminated lower-chlorinated PCB homologs, it is not physically, chemically, and biologically feasible for selective weathering of the higher concentration Aroclor 1254 and 1260 components to be less dominant than Aroclor 1268. Instead, profiles heavily weighted with PCBs that resemble Aroclor 1268 are indicative of a specific source not related to emissions from the ongoing manufacturing process that occurred during approximately 44 years of production. Furthermore, the erratic profiles observed are not consistent with emissions from Monsanto's ongoing Aroclor production.

- B. NewFields also asserts that "the commercial and industrial applications for Aroclor 1268 were quite limited when expressed in terms of the applications. In response, as discussed above, Monsanto had neither control over, nor inventory of, the "hundreds of industrial and commercial applications"¹³ of their various Aroclor products. Thus, Monsanto, NewFields, nor anyone else definitively

¹³ NewFields admits there are many other applications besides transformers and capacitors at p. 2 of their October 11, 2005 report.
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knows how many products incorporated Aroclor 1268 and cannot validly state that they were "quite limited."

C. The second sentence where NewFields asserts that "... Aroclor 1268...are often traceable to a single facility..." is vague and not referenced. Monsanto cannot comment on the assertion or its relevance to this case; the continued use of unsubstantiated, uncorroborated, statements without any scientific or technical support is inappropriate for any scientific Memo which attempts to infer otherwise.

D. NewFields asserts that:

1. The former Monsanto facility Aroclor Profile persists downstream of the former Monsanto facility (see Zone C Aroclor Profile, NewFields Figure 6) indicating a likely waterborne contaminant pathway; and
2. Soils and sediments from the surrounding areas (see Zone A Aroclor Profile, NewFields Figure 4 and Zone B Aroclor Profile, Figure 5) also exhibit profiles similar to the unique former Monsanto facility Aroclor Profile. The PCB mixtures in Zone A and B locations are clearly attributable to multiple dispersal mechanisms and not solely Solutia's storm-water runoff hypothesis.

P/S responds by noting that NewFields is correct in that the PCBs found in Zones A and B (and also in Zones C and D) "are clearly attributable to multiple dispersal mechanisms...." Specifically the predominant dispersal mechanism that explains the PCBs found throughout Anniston is mechanical transport; i.e., the PCBs were placed at sites remote from their source through disposal of foundry waste materials that were trucked and dumped in multiple and various locations. Any dispersal mechanism that relies solely on environmental routes (air, water, blowing dust, animal conveyance or other hypothetical environmental pathway) cannot account for the observed irregularities in concentrations and PCB composition. Only a mechanical transport mechanism provides a plausible explanation for the data. In addition, by ignoring a very well documented transport source pathway, a pathway which is objectively and predominantly responsible for the creation of the Anniston Lead Site, NewFields again demonstrates a lack of scientific rigor and a selective use of facts to support an otherwise unsupportable argument.

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X. NewFields argues that there was a “large amount of PCB losses to the atmosphere.” This statement is erroneous and the subsequent calculations and conclusions are, therefore, erroneous.¹⁴

The error comes from a memo dated January 18, 1971, from a retired employee of former Monsanto, Mr. E.G. Wright. Mr. Wright was complying with a request to estimate PCB emissions in terms of pounds per day from the various operations. Mr. Wright did not show his calculation of pounds/day, but such a calculation was not possible from the measurements; they presumably came from another document. In fact, another memo from W.B. Papageorge explained to Mr. Wright why the calculation he pursued could not be done. Mr. Wright apparently did the calculation despite Mr. Papageorge's warning. To state another way, the measurements by Mr. Wright are concentrations in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Those measurements do not state a time period over which the concentration was valued, nor does the memo state the number of cubic meters of air sampled. In order to calculate pounds per hour, one needs to know the cubic meters of air being sent to the atmosphere over an hour's time. There would have been no way for Mr. Wright to know the cubic meters per hour unless a stack testing analysis was performed. No such measurements have been discovered in the records.

Thus, the analyses of pounds/hour or pounds/day emission rates are not correct and are merely hypothetical. Mr. Wright's calculation is that the emission rate was about 0.001 lbs./day for the measured concentrations at 3 million pounds/year production rate. He then provides a second analysis at the production capacity of the PCB unit, which he shows as 53 million pounds/year. The extrapolation from 3 to 53 million pounds/year would be 17.7 times higher; there is, however, no reason to believe that concentrations at the measured locations would change or increase if production rates were higher. In addition, 17.7 times 0.001 lbs./day would be the estimate of the emission rate applied to the maximum production rate, equaling 0.018 lbs./day, nowhere near the 12.76 lbs./day rate shown in the NewFields Memo, a rate that is unexplainable and incorrect. In the Memo, if one calculates the sources and adds the column items individually, it results in 2.618 lbs./day, based almost solely on 2.6 lbs./day from the HCI scrubber stack, which was not measured. Where did Mr. Wright get this value? As a result of this faulty analysis, it is clear that the 12.76 lbs./day discussed in the NewFields Memo is unsupported by the

¹⁴ Several documents are cited in this section which will be provided upon request.
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measured data or appropriate calculation methods. Thus, the extrapolations to a year, or 35 years, provided by NewFields are also flawed by the same original errors in methodology and arithmetic.

XI. NewFields contends that air pollution control equipment was added prior to the measurements and evaluations of emissions. However, the calculations were done on drumming and tank car loading, which are not subject to easy controls, and there is no reference to controls on these sources.

The HCI scrubber used in the emissions calculation was in the original design of the process and not an add-on control. It is also clear that the 1971 effort was the first such effort to estimate emissions. Such activity would be the first step in considering controls, not a post-control analyses; and, there is no indication that the estimate of emissions is low compared to earlier years because of the application of air pollution controls.

XII. NewFields extrapolates the erroneous 1971 emission estimate to 35 years' worth of emissions. Such extrapolation is not appropriate given the erroneous 1971 emissions determination.

It is important to note that NewFields does not relate such emissions to what could be expected in residential soils. In the prior Monsanto Comments, Gale Hoffnagle carefully laid out the case for the fact that any emissions of PCB's from the former Monsanto facility would have resulted in a uniform pattern of PCB's decreasing with downwind distance from the facility. Because such a pattern does not exist, the issue of PCB emissions to the air from the former Monsanto facility is moot.

NewFields also presents "historical photographs" of the former Monsanto facility which allegedly show plumes from the facility. (See NewFields Memo, p.9, top paragraph, referencing its Attachment 4 with aerials of plumes). The manufacturing area from which these plumes begin is NOT from the Aroclor plant; rather, they are from the parathion warehouse and other parts of the former Monsanto plant, possibly from the organic residue incinerator which serves the parathion plant. Because these plumes do not come from the Aroclor plant, they cannot, as NewFields suggests, contain PCBs. Therefore, NewFields' conclusion is erroneous. This is further demonstrated by the plant plot plans which NewFields provides.

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Finally, in its limited opportunities to sample on Foundry properties or foundry material, P/S has identified PCBs.¹⁵ P/S cannot state strongly enough, that such an opportunity to thoroughly sample on site is not only critical to its case, but is a necessary and essential activity to prove the extent of the Foundries' contribution of PCBs in the Anniston area. P/S has repeatedly informed the EPA that PCBs were used in multiple forms in typical foundry applications. We have now found historical samples of investment casting wax from Anniston retirees that contain more than 1% PCBs. These same waxes are located in landfills well outside the boundary of the former PCB manufacturing facility, but adjacent to Snow Creek. Access for sampling at the current and former foundry facilities, will only confirm the information previously provided by P/S to EPA. The PCB issue in Anniston residential areas is not one of volume, but distribution. to obtain contribution protection in its Lead-Site AOC.

DETAILED RATIONALE FOR SAMPLING FOUNDRY SITES AND OTHER ANNISTON-AREA SITES

Soil and sediment contamination by PCBs and related industrial pollutants is widespread in Anniston. Although there has been an EPA perception over many years that all PCBs found in the Anniston area came from the former Monsanto facility via

¹⁵ PCBs at concentrations over 600 ppm were identified in two samples taken from M&H Valve; PCBs up to about 3.9 ppm were identified in recent samples from the Union Foundry scrap pile area; PCBs were identified in the Union Foundry settling pond; and PCBs were identified at 12,000 ppm from pieces of investment casting wax taken from the Southern Tool facility.

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environmental transport pathways, in reality, there are many other significant sources of PCBs in Anniston. Multiple Anniston industries, including cast iron foundries, used this class of chemical in a variety of ways, including as an insulator and coolant in electrical transformers and capacitors, and as a fluid in hydraulic and thermal equipment. As a result, Solutia Inc., and Pharmacia Corp., formerly known as Monsanto Company, maintain that these industries represent significant sources of PCBs in the Anniston area via both mechanical transport of foundry waste (including used as fill throughout the Anniston area), and as surface water discharge of PCBs via wastewater effluent, intentional and unintentional spills that enter receiving waters through runoff from the sites, and erosion and runoff of foundry storage yards and waste disposal areas.

P/S maintain that the trucking of foundry solid waste has significantly contributed to the sporadic PCB contamination of residential and commercial properties throughout the Anniston area where this material has been deposited for landfill. But P/S also maintain that the foundry discharge of PCBs to the surface water network has contributed to significant contamination of sediment, floodplain soil, and dredged material disposal areas throughout the 9th Street Ditch, Snow Creek, Choccolocco Creek, and the Lake Logan Martin surface water system. Although regulators speculate that the contribution of PCBs from Anniston foundries and other area industries is small relative to the former Monsanto facility, Solutia maintains that the following key facts refute this belief:

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- A. The volume of foundry waste generated is enormous; therefore, low average PCB concentration in foundry waste is not a valid rationale for contending that the foundry contribution of PCBs mass is *de minimus*;
- B. Significant concentrations of PCB contamination have already been detected at some Anniston foundries as a consequence of limited, sampling (see footnote 13);
- C. Trucking of foundry waste sand commingled with foundry-derived PCBs is logically the primary mechanism for the sporadic distribution of PCB-contaminated soils in properties outside the floodplain of the surface water network in the Anniston area (although, in at least one instance, a foundry did stockpile drummed liquid PCBs on a residential property, and the drums subsequently leaked)¹⁶; and
- D. The only logical source of PCB contamination in property soils, creek sediments, floodplain soils, and dredged material disposal piles upstream of the confluence of the 11th Street Ditch with Snow Creek (henceforth referred to as the "confluence point") could be industries located above the confluence point or those that have

¹⁶ The disposal of waste oils contaminated with PCBs, solvents, and other contaminants was common. For example, Dresser Industries gave away drums of oil, some containing in excess of 10,000 ppm of PCBs, to an Anniston resident. Contents of the drums leaked onto the residents' yard, contaminating the underlying soil (Gonsoulin, 1985). The drums reportedly contained drained transformer oil, and had been disposed on the residents' property in about 1975 (Gonsoulin, 1984). Gonsoulin, G. J., 1984, Interoffice Correspondence, November 29, Bates Nos. DII 00834-00835; Gonsoulin, G. J., 1985, EME Letter to T. Sonnenborn, Dresser Industries, Inc., May 20, Bates Nos. DII 00817-00826.

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trucked PCB-contaminated waste to areas above the confluence point.

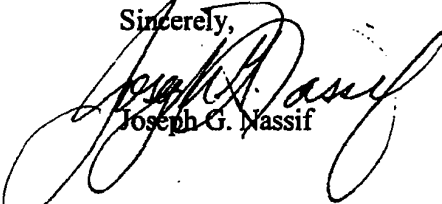
The P/S plaintiffs in the contribution case are in the process of carrying out major sampling programs aimed at proving the above assertion. To accomplish this we are sampling and analyzing PCB-contaminated areas throughout Anniston and Snow and Choccolocco Creeks and all the way to Lake Logan Martin. We are also sampling areas in Anniston that are likely to contain no PCB contamination above Anniston-area background levels, because they are areas that could not have received PCBs via surface water transport or mechanical landfill delivery (they are in the potential air shed of Anniston and could have received atmospheric deposition of PCBs from a variety of industrial sources). In the off-site sampling so far, including soils and sediments just below the outfalls of foundries, we have found PCB contamination above background levels and considerable evidence of what we strongly believe to be foundry waste; and we expect to find that same evidence in the future off-site sampling with the exception of the reference sites. It is essential to our case that we be allowed the time and opportunity to adequately characterize (both physically and chemically) foundry waste by sampling ON foundry facilities and by characterizing the physical and chemical nature of soils and waste disposal areas on those foundry facilities to compare with the characteristics of sediments and soils we collect off-site. This will provide a profile of foundry waste that will distinguish it from the former Monsanto discharges and from our reference sites, thus

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demonstrating that the foundry contribution of PCBs has been significant and widespread. There is no logical reason, now that the foundries are finally removing lead contaminated soil, for the EPA to make its decisions without the best technical evidence in hand. The only undisputed technical fact that exists today is that the PCB contamination of residential areas is sporadic. No theory regarding discharges from the former Monsanto facility can readily explain that pattern. However, sampling to date of foundry fill and foundry facilities does.

Sincerely,



Joseph G. Nassif

cc: Valerie Nowell, Esq.
Richard Leahy, Esq.
Michael Stephenson, Esq.
William Weinischke

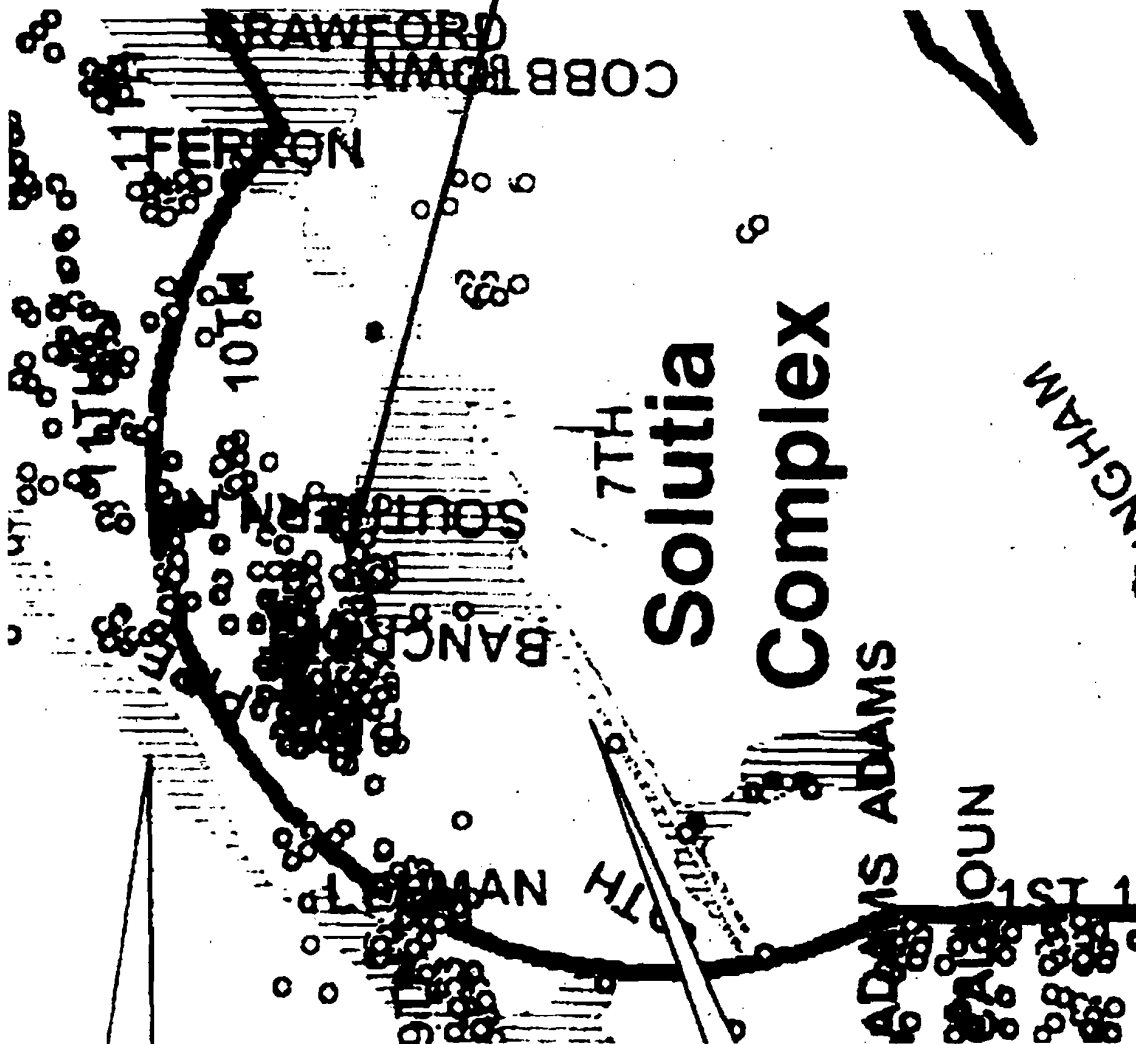
Attachment A



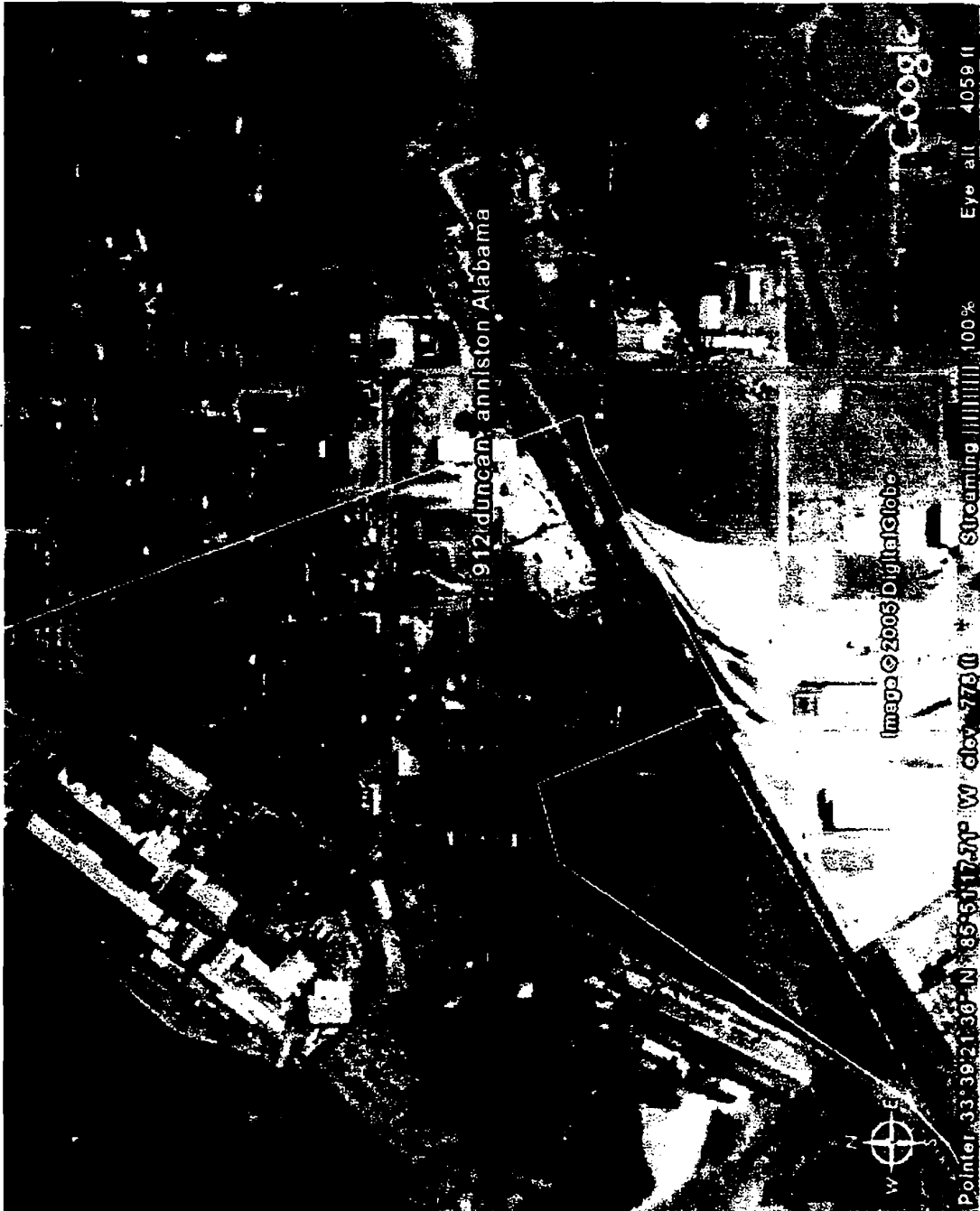
Many of the yards in
Zone D contain
foundry fill.

Two Examples:

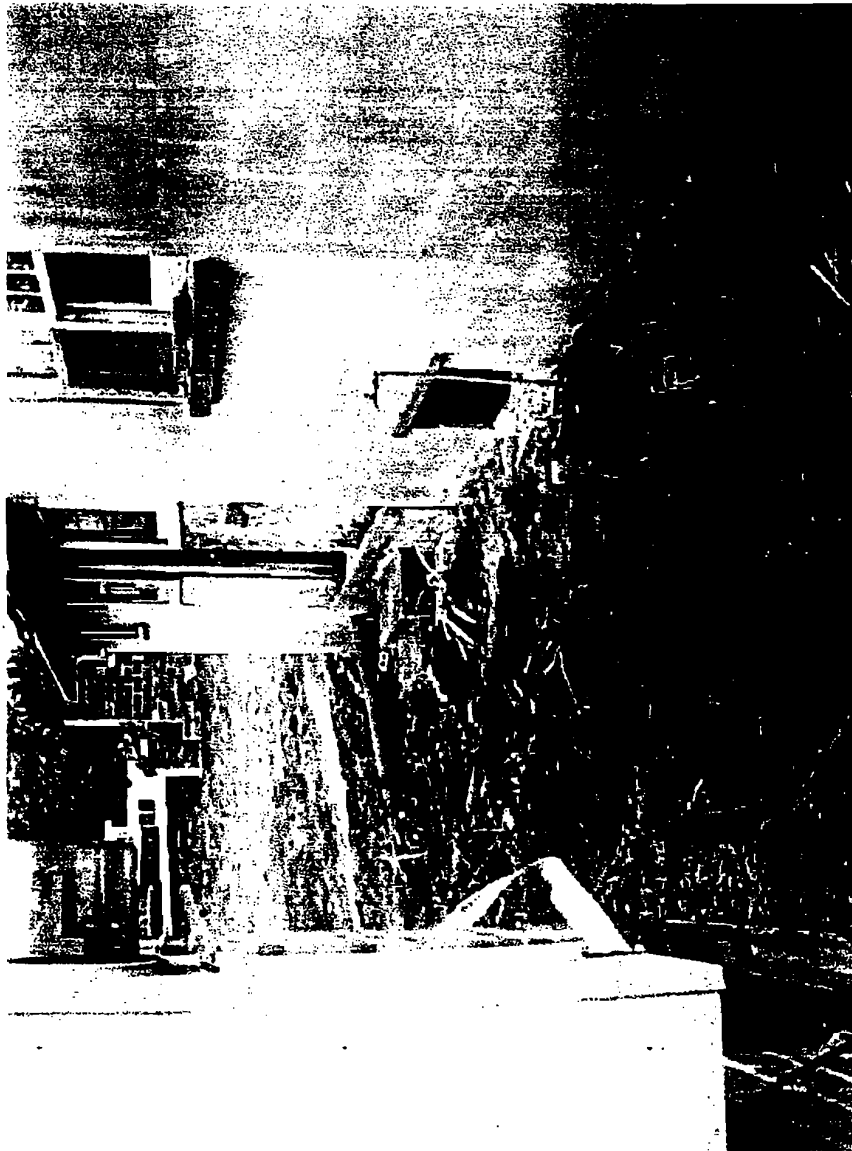
908 Duncan
912 Duncan







912 Duncan

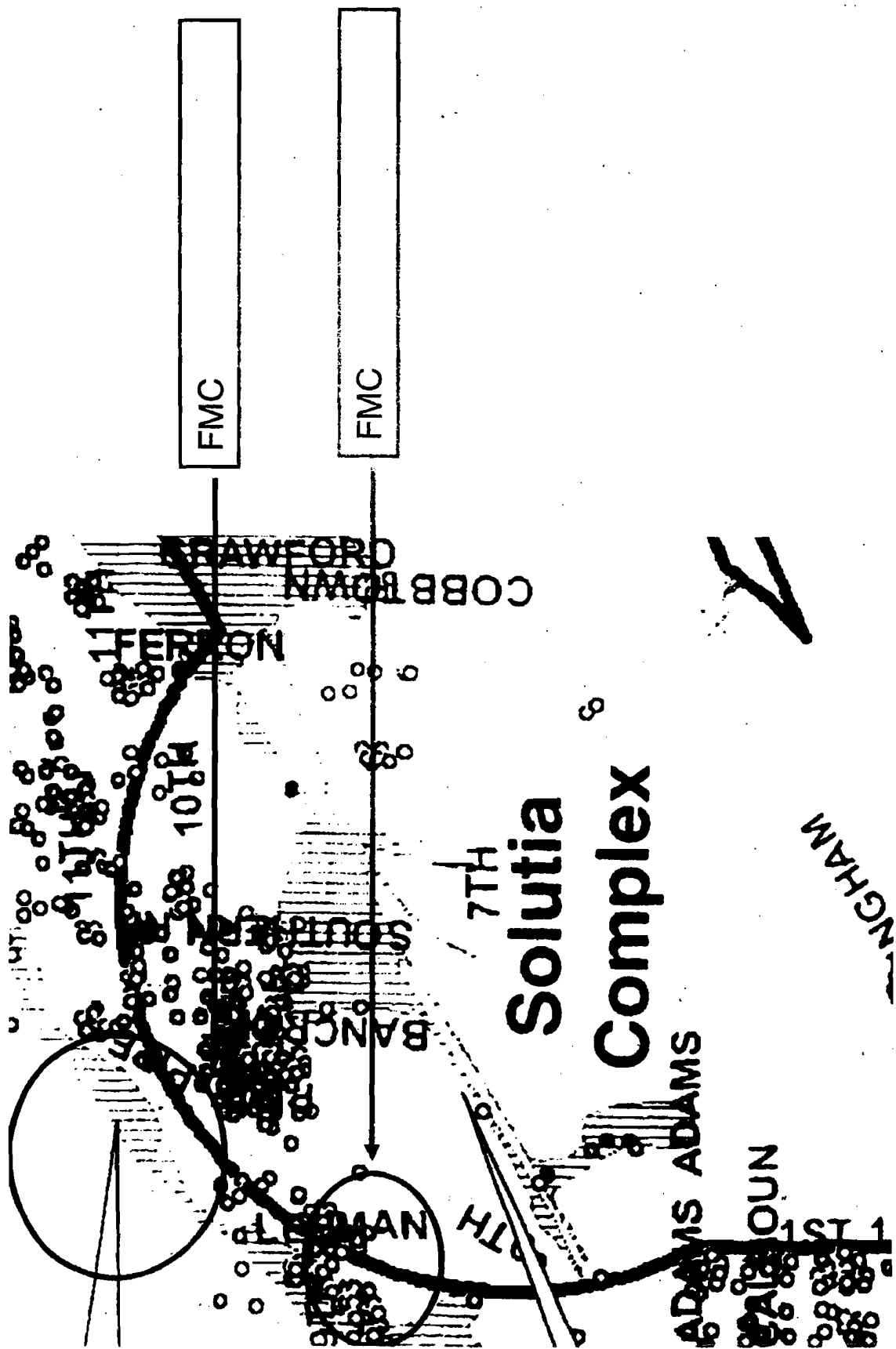


912 Duncan



908 Duncan

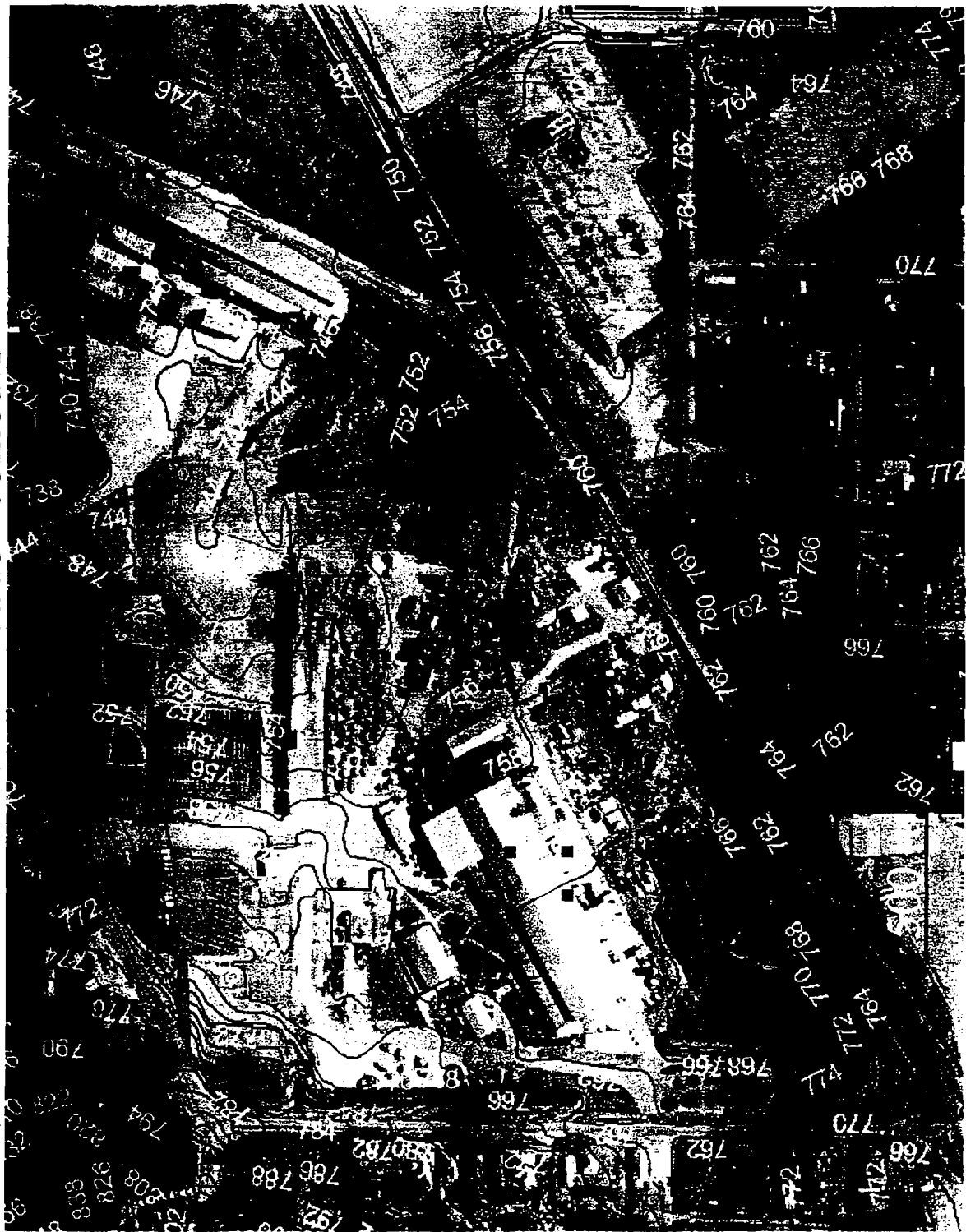




Newfields does not show the location of the Settling Defendants

Attachment B

2004 with elevation contours



1937



1940



1944



1949



1954



1956



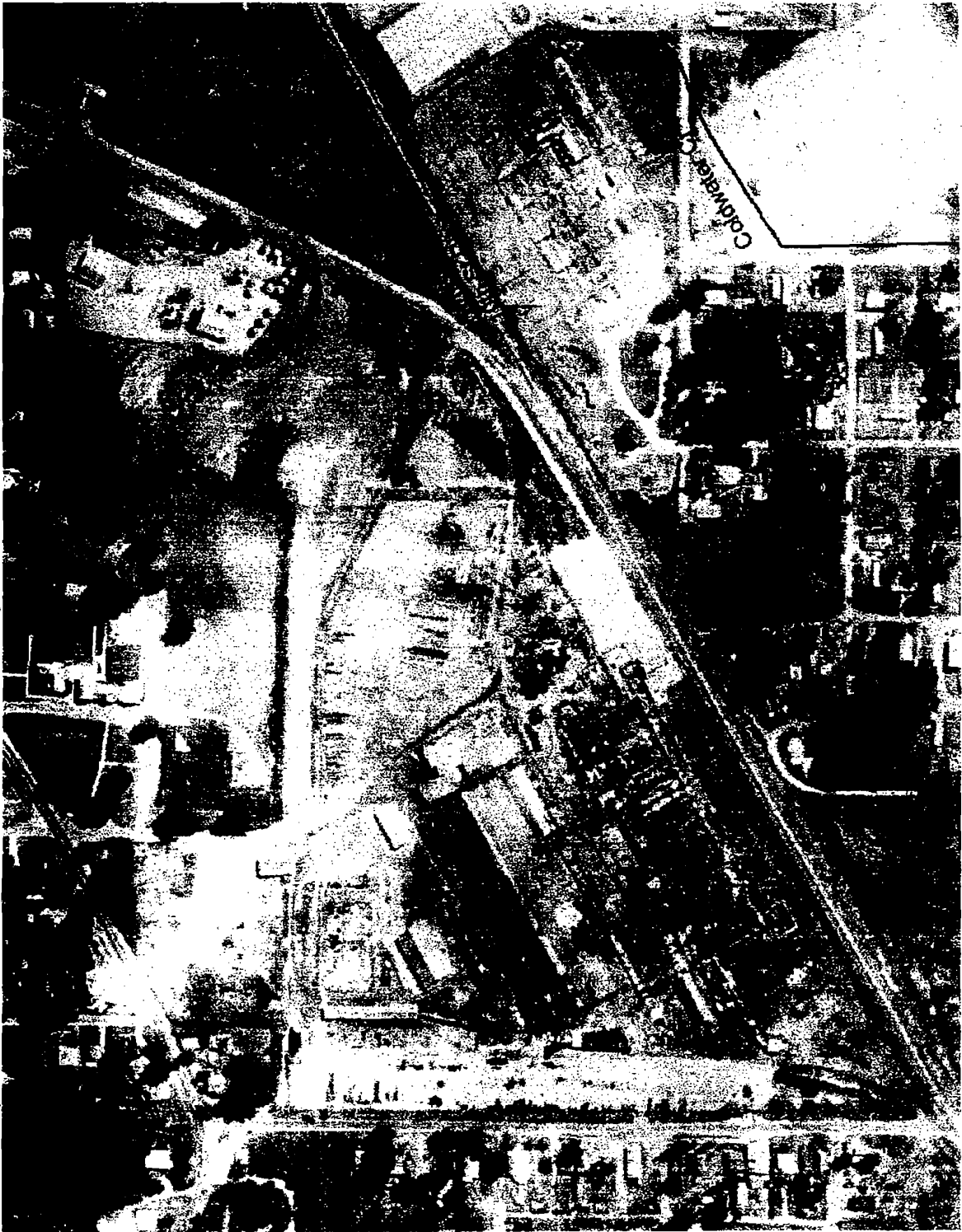
1964



1969



1974



1977



1983



1987



1992



1997



2004

