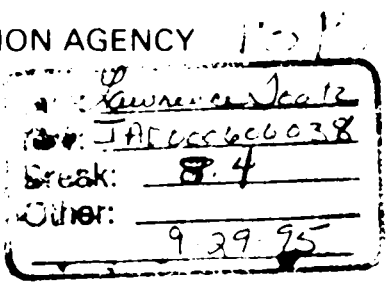
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101



MEMORANDUM

SUBJECT: Submittal of Five-Year Review for the DuPont/Todtz Site

FROM: Nancy J. Swyers, P.E.
Iowa/Nebraska Branch

TO: Michael J. Sanderson, Director
Superfund Division

THRU: Glenn Curtis, Chief
Iowa/Nebraska Branch

Attached is the Five-Year Report for the DuPont/Todtz site. This report concludes that the remedy selected at the time of the Record of Decision (ROD) is still protective of human health and the environment. Therefore, we recommend your approval of this report.

However, we do recommend that the semiannual monitoring conducted to date continue on the same schedule. According to the current provisions of the ROD and Consent Decree (CD), semiannual monitoring would revert to annual monitoring next year.

If you have any questions concerning this Five-Year Review Report, please feel free to contact me at x7703.

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IA/NE	CNSL	IA/NE
Swyers	Braeckel 9/28/95	Curtis 9-29-95

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FIVE-YEAR REVIEW

DUPONT/TODTZ SITE
CAMANCHE, IOWA

Prepared by:

U.S. Environmental Protection Agency

Region 7

Kansas City, Kansas

Carl Gothus Jr

Michael J. Sanderson
Superfund Division Director

9/29/95

Date

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1.0 INTRODUCTION

This report documents the five-year review conducted by the U.S. Environmental Protection Agency (EPA) at the DuPont/Todtz Site in Camanche, Iowa, to determine if the remedial response actions at that site remain protective of human health, welfare, and the environment. Section 121° of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) require that periodic (at least once every five years) reviews be conducted for sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use or unrestricted exposure following the completion of all remedial actions for the site. The purpose of these reviews is to determine the continued adequacy of the implemented remedial actions in providing protection of human health, welfare, and the environment.

The five-year review is to be conducted by the lead agency, which is the EPA at the DuPont/Todtz Site. In general, five-year reviews are to be started within four to five years of the initiation of site cleanup.

The EPA has established three levels of review. Level III requires the most in-depth review and would be appropriate for sites where there is the greatest likelihood that the remedial actions implemented for the site are no longer protective. Level II is a less intensive review, and Level I is appropriate for sites where it is least likely that the remedial actions are no longer protective. This review of the DuPont/Todtz Site is a Level I review because it is unlikely that the response actions implemented at the site are no longer protective of human health, welfare, and the environment.

2.0 SITE BACKGROUND

2.1 Site Location and History

The 12 acre site is a former gravel pit that is located on the 120 acre Todtz family farm. The site is located approximately 1 1/4 miles from the City of Camanche, Iowa. Camanche is located along the Mississippi River about 2 miles south of Clinton, Iowa. Refer to Figures 1-1 and 1-2 for site location maps.

From approximately 1958-1975, the 12 acre site was used by the City of Camanche for disposal of their municipal refuse. In the early 1970s, E.I. DuPont de Nemours and Co., Inc. (DuPont) constructed an unlined 2.6 acre impoundment in the northwest

corner of the site for disposal of waste from their cellophane manufacturing plant in Clinton, Iowa. An estimated 4,300 tons of wet end cellophane process wastes from the Clinton plant were subsequently disposed of in the DuPont impoundment from 1971 until its closure in 1975.

The site was identified as a potential uncontrolled hazardous waste site in 1979 and added to the final National Priorities List (NPL) in June 1986.

On April 4, 1988, a CERCLA 104/122 Consent Order was signed by both EPA and DuPont which finalized the agreement for DuPont to conduct a Remedial Investigation/Feasibility Study (RI/FS), which focused on their impoundment. As a result of the RI/FS, EPA signed a Record of Decision (ROD) on November 5, 1988. The remedy specified in the ROD includes a 2-foot soil cover over the impoundment, a fence around the impoundment, deed restrictions, installation of the Bark residence drinking water well in the deeper bedrock aquifer, an expanded groundwater monitoring system, and further remedial actions which will be required if action levels of target compounds are exceeded.

DuPont conducted the Remedial Design/Remedial Action (RD/RA) required by the ROD pursuant to a Consent Decree (CD) which was signed by EPA and DuPont on September 28, 1989 and lodged by the Department of Justice (DOJ) on December 28, 1989. After the public comment period, the CD was entered by the Judge on November 6, 1990.

2.2 Community Relations Activities

This site is located within a mile of the Chemplex Site, which is another Superfund site, and Arcadian (formerly Hawkeye Chemical), a fertilizer plant. There are also numerous industries and resulting pollution from these industries in the nearby Cities of Clinton and Camanche. As a result of public concern for the two Superfund sites and industrial pollution, several environmental groups including the Coalition Against Pollution (CAP) and Ducks Unlimited organized in the area.

A community relations plan was prepared by EPA during the RI/FS. As part of the ROD process, the public was given an opportunity to comment on EPA's preferred remedy in the Proposed Plan and to request a public meeting. The public did not request a public meeting or comment on the proposed remedy.

The public, including environmental groups, became very active in environmental issues during the public comment period for the CD which commenced on December 28, 1989 and ended on February 28, 1990. Three public meetings were held during this time to discuss this site and other environmental issues in the community. The United States received fourteen comment letters

regarding the proposed CD. The comments were addressed prior to the entry of the CD.

An EPA Fact Sheet was issued to concerned citizens, environmental groups, and the media prior to commencement of construction of the soil cover and groundwater monitoring system.

2.3 Site Characteristics

The upper groundwater aquifer at the site generally flows in a southeast direction with the majority of the groundwater recharge occurring upgradient of the site. The impoundment wastes are periodically in direct contact with the groundwater. The bedrock aquifer is separated from the upper aquifer by a thick sequence of low permeable clays and silts that appear to behave as an aquitard.

Sampling and analysis of soil and shallow groundwater conducted prior to and during the RI/FS concluded that concentrations of carbon disulfide, toluene, tetrahydrofuran (THF), arsenic, lead and benzene were present in the impoundment above background concentrations. The location of monitoring wells is as indicated on Figure 1-3. The maximum concentrations identified in the groundwater in the vicinity of the berm area immediately downgradient of the Dupont impoundment (in monitoring wells now referred to as DU-08-S, DU-09-S, and DU-10-S) prior to initiation of the remedial action (RI/FS, 1988), are as follows: Concentrations are reported in ug/l or ppb.

-	carbon disulfide	4,250
-	toluene	8,400
-	THF	95,500
-	arsenic	1,600
-	lead	400
-	benzene	209

Except for arsenic and benzene, these compounds are among those reported by DuPont as being used at the Clinton cellophane plant and were disposed in the DuPont impoundment.

In the monitoring wells located in the hydraulically downgradient south and southeastern direction from the impoundment berm and the municipal landfill (in monitoring wells DU-02-S, DU-03-S, DU-04-S, DU-05-S, DU-06-S, and DU-07-S), the groundwater concentrations of organic and inorganic compounds have in general been slightly above background but not above health-based levels. The exception is the groundwater from piezometer PZ-03 (PZ-03 was replaced by monitoring well DU-02-S during the Remedial Action) which contained concentrations of arsenic at approximately 80 and 60 ug/l in March of 1988 which exceeds the Maximum Contaminant Level (MCL) for arsenic of 50 ug/l.

2.4 Site Risks

The Endangerment Assessment (EA) is included in the RI report and presents an evaluation of the existing and potential future impacts of contamination at the DuPont impoundment on human health and the environment. One of the major objectives of the assessment was to assist in identification of the principal routes of human and environmental exposure to site contaminants in order to focus the FS on remedial alternatives that would most effectively prevent or preclude adverse impacts.

The following conclusions were reached based on the exposure scenarios evaluated in the EA.

1. Risks to human health or the environment associated with direct contact and ingestion of surface soils or surface water downgradient of the impoundment appear to be below those used by EPA in determining whether human health or the environment are protected.

2. There would be an unacceptable risk to human health or the environment through ingestion of ground water within the impoundment and at the impoundment berm.

3. Risks to human health or the environment through ingestion or direct contact with ground water from the shallow aquifer at or near the southern or southeastern boundaries of the Site perimeter, which is several hundred feet downgradient from the DuPont impoundment, appear to be below those used by EPA in determining whether human health or the environment are protected. Concentrations of 60 and 80 ug/l of arsenic have been detected at PZ-03 on the eastern boundary of the landfill. These concentrations exceed the MCL of 50 ug/l. However, risks to human health or the environment in this portion of the Site would appear to be acceptable because the aquifer would not be considered a viable drinking water supply at this location.

The findings of the RI and the EA indicate that the DuPont impoundment is the source of contamination for the Site.

3.0 REMEDIAL ACTION OBJECTIVES

Based on the findings of the RI and EA, the following are the remedial action objectives established in the 1988 FS for the DuPont impoundment:

- Subsurface Soil and Waste
  "Protect human health and the environment by preventing direct contact with and future releases of the contaminated subsurface soil and waste within the impoundment."

- Groundwater
  "Protect human health and the environment by preventing direct contact with or ingestion of contaminated groundwater, minimizing further releases of groundwater contaminated with DuPont-related constituents at levels that present an unacceptable hazard to human health and the environment beyond the perimeter of the Todtz Farm Landfill."

Based on these objectives, the focus of the FS was on the development of cost-effective remedial actions for controlling the potential release of waste constituents from the impoundment.

Remedial alternatives were screened based on effectiveness, implementability, operation and maintenance efforts and costs, and capital costs. Excavation of the impoundment wastes and disposal at a RCRA landfill or treatment onsite using incineration, stabilization or in-situ treatment technologies were eliminated since they were not cost-effective based on the relatively low risk to public health and the environment and the large capital cost.

EPA evaluated four basic alternatives and two variations for remediation of the DuPont impoundment. These alternatives were 1) no action, 2) soil cover, 3) geomembrane multilayer cap, and 4) geomembrane-clay multilayer cap with bentonite slurry wall. The alternative selected includes the following major components:

- A 2-foot soil cover over the DuPont impoundment;
- Access restrictions which include deed limitations and site fencing;
- Site maintenance which includes mowing the vegetative cover and repairing the fence;
- A groundwater monitoring system which includes implementation of further remedial actions if certain chemical specific action levels are exceeded;
- Replacement of the Bark residence drinking water well in the deeper bedrock aquifer.

4.0 SUMMARY OF RESPONSE ACTIONS

4.1 Non-Contingent Remedial Construction Activities

At the request of the Bark residents, DuPont replaced their drinking water well prior to finalization of the CD. The well

was installed in September 1989 pursuant to a design that was approved by EPA.

DuPont commenced construction of the 2-foot soil cover and groundwater monitoring system in April 1991 and completed construction on July 29, 1991. The final inspection was conducted on July 31, 1991. Representatives of EPA and DuPont were present during the inspection.

4.2 Post-Construction Activities

In addition to the construction activities summarized in Section 4.1, the Remedial Action includes an extensive groundwater monitoring program to ensure protection of human health and the environment with chemical-specific action levels that trigger further remedial actions if any action levels are met or exceeded. Maintenance of the soil cover, fence, and monitoring well network is also required. DuPont is in the process of conducting these activities pursuant to the CD with EPA oversight.

4.2.1 Groundwater Monitoring Program Requirements

Monitoring of both the shallow and deep bedrock aquifer is required pursuant to the CD. The location of the monitoring wells is as indicated on Figure 1-3. The list of analytes is summarized on Table 4-2. The specific monitoring requirements are as follows:

The deep monitoring wells (including the James Bark residential well) are required to be sampled semiannually for two years following the completion of non-contingent remedial actions in July 1991. If no DuPont-impoundment related constituents are detected above background concentrations during this period, the wells were to be sampled every five years thereafter. Because no contaminants were detected in deep wells during the two years from July 1991 to April 1993, the deep wells are not required to be sampled again until April 1998.

All shallow monitoring wells are required to be sampled at least semiannually for the first five years and annually thereafter for thirty years. The need to continue monitoring beyond this point will be evaluated at that time and at the corresponding statutory five year review. Sampling of the shallow wells began in July 1991 and is continuing. According to the CD, the semiannual sampling will continue until April 1996. After that time frame, annual sampling will continue for thirty years.

4.2.2 Contingent Further Remedial Action Requirements

Further remedial actions will be triggered in the event that an Action Level concentration for one or more trigger compounds at specific shallow monitoring wells (specified in Table 4-3 and in Figure 1-3) is met or exceeded (which will be verified by statistical analysis). If any of the Table 1 Action Level concentrations are met or exceeded, further remediation of the impoundment will be performed. If any of the Table 2 Action Levels are met or exceeded, remediation of the groundwater will be performed. Once groundwater remediation is triggered, groundwater cleanup levels will consist of all applicable State or Federal cleanup standards for all DuPont-related constituents listed in Table 4-4. If the impoundment remediation has not been triggered at the time the Table 2 Action Level concentrations are met or exceeded, both the remediation of the impoundment and remediation of the groundwater will be performed at the same time.

Intermediate trigger levels were also established in the CD in order to provide a mechanism for conducting the planning and design functions prior to an Action Level exceedance. For example, if 50% of any Table 1 Action Level is met or exceeded, quarterly monitoring (as opposed to the required semiannual or annual monitoring) for that particular compound at the exceeded well will be conducted. If 80% of any Table 1 Action Level is met or exceeded, DuPont is required to submit a Treatment Evaluation Study (TES) to evaluate remedial options consisting of a slurry wall around the impoundment as compared to treatment remedies. After completion of the TES, EPA is to decide whether the remedy will be a slurry wall or a treatment remedy. The schedule in the CD provides for the pre-design of the selected remedy in order for it to be complete prior to a 100% Action Level exceedance.

4.3 Groundwater Monitoring Results

Groundwater monitoring pursuant to the CD has been conducted by DuPont with EPA oversight since July 1991. Monitoring was also conducted prior to 1991 during the RI/FS in 1988, and in 1989 and 1990. All of the analytical results from DuPont and EPA groundwater samples are included in the Appendix. Some exceedances of 50% and 80% of the THF Action Level have occurred in at least one trigger well and the discussion of these exceedances are as follows:

THF was detected at a concentration of 42 ppb in monitoring well DU-05-S during a routine semiannual groundwater sampling event conducted in April 1993. This value constituted an 80% exceedance of the Table 1 Action Level for THF which is 50 ppb. Pursuant to the CD, verification of the 80% exceedance is the next required step. The verification process consists of

obtaining quadruplicate samples from any wells that exceed 80% of a Table 1 Action Level. The samples are to be collected as soon as practicable after realizing that the previous event yielded data that exceeded any established trigger levels.

The 80% value of the 50 ppb THF Table 1 Action Level is 40 ppb, thus the April 1993 value of 42 ppb exceeded the 80% trigger level. DuPont conducted the 80% verification sampling in June 1993 and obtained the following quadruplicate results: 91 ppb; 93 ppb; 110 ppb; and 110 ppb. The average value of the quadruplicate data was 101 ppb. The June 1993 sampling data conclusively verified the 80% exceedance of the Table 1 Action Level for THF but also satisfied the 100% exceedance criteria. The 100% exceedance value is the actual trigger level which is 50 ppb, thus an average of quadruplicate samples yielding 101 ppb clearly surpasses the 100% exceedance but did not verify the 100% exceedance. After obtaining an initial exceedance of a different larger percentage exceedance, the verification process must be repeated in order to verify the new larger percentage of exceedance.

DuPont collected quadruplicate samples in August 1993 in order to verify the initial 100% exceedance of THF observed during the June 1993 event. As mentioned previously, the June 1993 event clearly verified the 80% exceedance but indicated that the exceedance might actually be in the 100% range. The DuPont quadruplicate THF results for the August 1993 sampling event consisted of the following: 48 ppb; 50 ppb; 51 ppb; and 51 ppb. The average value of the quadruplicate data was 50 ppb. The August 1993 sample results indicated that the initial 100% exceedance was verified and that an 80% THF exceedance was verified for a second time.

EPA split samples were obtained by a contractor during the August 1993 sampling event. The EPA samples were analyzed by the Region VII Laboratory and yielded the following THF results: 10 ppb; and 15 ppb. The average value for the two EPA split samples was 12.5 ppb. The EPA split samples did not confirm the 100% THF exceedance nor the initial 80% exceedance. The average EPA THF value of 12.5 ppb was substantially less than the average DuPont concentration of 50 ppb. The two data sets were statistically evaluated and it was determined that the two sets of values were statistically different, or not from the same population. The large data differences indicated that either the DuPont or EPA results were not valid. The incompatibility of the DuPont and EPA data for the August 1993 event, as well as the incompatibility of the DuPont data when compared to June 1993 DuPont results, clearly indicated that all data were erratic. The June 1993 DuPont data represented a two fold increase over the prior April and subsequent August 1993 results.

The erratic nature of the data, coupled with the fact that only one well (DU-05-S) was yielding elevated results, led to the decision to again collect EPA split samples during an upcoming routine semiannual sampling event in October 1993. Additionally, the observed exceedances occurred during the time period of the regional midwestern flooding events of 1993. A large portion of the DuPont/Todtz Site was flooded and certain wells, including monitoring well DU-05-S, were only accessible by boat. Since the site is located on terrace and floodplain deposits and is in close proximity to the Mississippi River, the wells in low lying areas had been constructed on artificial soil berms in order to avoid overtopping during a flood event. An additional factor in the decision to obtain more information by evaluating the October 1993 sampling event, included the position of the static water level in well DU-05-S. This was the only on-site monitoring well which had a water level that directly corresponded to the elevation of the surrounding ponded water. This fact indicates a more direct hydraulic relationship of this well to the shallow subsurface, which is in direct hydraulic communication with any ponded or surface water. This situation is most likely due to the position of the DU-05-S well screen being located at a very shallow depth. However, the shallow well screen depth would also be capable of more readily detecting any surface water influences since surface water has a direct affect on, and is in hydraulic communication with, shallow groundwater.

DuPont conducted a semiannual groundwater sampling event in October 1993 which included quadruplicate sampling at well DU-05-S. EPA personnel collected groundwater split samples which included a sample from monitoring well DU-05-S. The THF values for the quadruplicate DuPont samples and the EPA split sample for well DU-05-S were all at non-detect levels. The DuPont and EPA data for the October 1993 event, including the comparison of data from the other split samples from different wells, were in agreement. The October 1993 data indicated that there was no groundwater exceedance for any Action Level value mandated by the CD.

Pursuant to the CD, DuPont was required to sample DU-05-S on a quarterly basis for THF because there was an exceedance of at least 50%. The monitoring frequency for THF in that well will revert back to a semiannual basis only after four consecutive quarterly samples from that well indicate that no Table 1 compound is being found at 50% of the Table 1 Action Level concentrations.

During the January 1994 sampling event, THF was again non-detect in DU-05-S. However, in April 1994, THF was detected at concentrations of 34, 37, 38, and 42 ppb according to DuPont's results and at concentrations of 57 and 63 ppb according to EPA's results. These results indicated an 80% exceedance. However, when the verification sampling took place in June 1994, THF was

detected in DU-05-S at concentrations of 6.8, 8.1, 9.3, and 12 ppb according to DuPont's results and at concentrations of 14 and 15 ppb according to EPA's results. In October 1994, THF was not detected in DU-05-S according to DuPont's results and EPA's sample result of 31 ppb was probably cross-contaminated and should be considered unreliable. In January 1995, both DuPont's and EPA's results for THF in DU-05-S were non-detect. On April 25, 1995 another semiannual sampling event was conducted. Both EPA's and DuPont's results were again non-detect for THF. Since four consecutive quarterly samples from DU-05-S indicate that no Table 1 compound is being found at 50% of the Table 1 Action Level concentrations, the monitoring frequency for this well can revert to semiannually.

4.4 Further Actions

Due to the verified 80% exceedance of THF in monitoring well DU-05-S in June 1993, DuPont was required by the Consent Decree to provide a draft TES. The TES was submitted to EPA on September 22, 1993. EPA provided comments to DuPont dated October 22, 1993. DuPont submitted a revised TES on December 6, 1993. Since the elevated THF levels did not reoccur during the October 1993 and January 1994 sampling events, EPA halted the schedule that included finalization of the TES and predesign activities. However, when elevated levels of THF recurred in April 1994, EPA decided that these activities should resume. In a letter to DuPont dated October 21, 1994, EPA requested that DuPont submit a Draft Project Operations Plan for Pre-Design Study. In a letter to EPA dated December 2, 1994, DuPont agreed to submit the Draft Project Operations Plan. The Plan was submitted to EPA on April 12, 1995. EPA submitted comments on the plan to DuPont dated May 17, 1995. According to the schedule in the CD, DuPont will conduct the predesign but will not be required to conduct the design or implement the remedy until there is a verified 100% exceedance of a Table 1 Action Level.

5.0 ARARS REVIEW

5.1 Background

The Five Year Review includes a review of newly promulgated or modified requirements of Federal and State environmental laws. These new laws are evaluated to determine whether they are applicable or relevant and appropriate requirements (ARARs) and whether they call into question the protectiveness of the response action selected in the Record of Decision (ROD). The intent of the review is to evaluate whether the selected remedy remains protective of human health and the environment. Although ARARs are usually considered frozen as of the date of the ROD, if an evaluation in the light of the new laws concludes that the remedy is no longer protective of human health and the

environment, it would be necessary to change the remedy to meet the new ARAR standards. The NCP provides:

> Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment. NCP 40 CFR § 300.430(f)(1)(ii)(B)(1).

In the DuPont/Todtz Site ROD, the selected remedy included replacement of a residential drinking water well, an impoundment cover, monitoring, and two contingent operable units, one involving further impoundment containment and the other involving groundwater cleanup remediation. The two contingent operable units could be triggered by certain chemical concentration action levels of any of four designated trigger compounds found in monitoring well samples: arsenic, chromium VI, THF and carbon disulfide. The ROD also specified the cleanup levels to be attained for the four compounds in the event that groundwater remediation is ever implemented. Since the groundwater cleanup remediation has so far not been triggered and is not being implemented, it may seem premature to review cleanup levels which establish chemical concentrations at which groundwater extraction and treatment could be considered complete and terminated, if ever implemented. However, such numerical levels were defined in the DuPont/Todtz Site ROD.

A Consent Decree was negotiated for the performance of the remedial action at the site. The Consent Decree established cleanup levels for other chemical constituents in addition to the four that had been specifically mentioned in the ROD. The Consent Decree did not freeze the cleanup levels but recognized that MCLs and other cleanup standards might change in the future and allowed for the changed standards to be used as future cleanup levels.

The Consent Decree established MCLs as the cleanup levels to be attained in the event groundwater remediation is triggered. The Consent Decree also provided "Settling Defendants shall extract ground water until such time when all applicable State or Federal cleanup standards are met for DuPont impoundment-related constituents as listed in Table 3. In the absence of any other applicable cleanup standards, the work shall achieve compliance with all primary Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act. MCLs include the primary MCLs currently established at 40 C.F.R. Part 151, Subpart B and Part 143. The parties recognize that the MCLs established at the time of entry of this Decree may be changed in the future and that such future primary MCLs will constitute the clean up level." ROD, at pp. 12 & 13". The five year review does not need to revisit and conduct an ARAR analysis for the additional requirements in the Consent Decree. It is the remedy as stated

in the ROD which the five year review is required by statute and regulation to address.

5.2 New Laws Since the ROD

After the ROD was signed on November 4, 1988, the Iowa Environmental Protection Commission adopted "Rules for Determining Cleanup Actions and Responsible Parties" (Iowa Rules) (Iowa Admin. Code, Chapter 133) and the U.S. EPA adopted a number of new or modified Maximum Contaminant Levels (MCLs). These new laws are evaluated in relation to the remedy selected in the ROD in this ARARs section of the Five-Year Review.

On August 16, 1989, the Iowa Environmental Protection Commission adopted the Chapter 133 Iowa Rules which provide, in pertinent part, as follows:

> Groundwater. The goal of groundwater cleanup is use of best available technology and best management practices as long as it reasonable and practical to remove all contaminants, and in any event until water contamination remains below the action level for any contaminant, and the department determines that the contamination is not likely to increase and no longer presents a significant risk. Where site conditions and available technology are such that attainment of these goals would be impractical, the department may establish an alternative cleanup level or levels, including such other conditions as will adequately protect the public health, safety, environment, and quality of life. Iowa Admin. Code §133.4(3)b.1.

The term "Action Level" is defined by the Iowa Rules as "the HAL, if one exists; if there is no HAL, then the NRL, if one exists; if there is no HAL or NRL, then the MCL...." A "HAL" is a "lifetime health advisory level for a contaminant, established by the United States Environmental Protection Agency...." A "NRL" is the "negligible risk level for carcinogens established by the EPA...." If there is no HAL, NRL, or MCL, an action level may be established by the department based on current technical literature and recommended guidelines of EPA and recognized experts, on a case-by-case basis. Iowa Admin. Code § 133.2.

The Iowa "Action Levels" and Iowa Rules should probably be considered ARARs particularly for the groundwater cleanup levels part of the remedy selected in the DuPont/Todtz Site ROD. The Iowa "Action Levels" which are cleanup standards would probably not be considered ARARs for purposes of reevaluating the protectiveness of the DuPont/Todtz Site trigger levels.

Also, after signature of the DuPont/Todtz Site ROD, the EPA promulgated new or modified MCLs for a variety of contaminants. The MCL for total chromium changed; the MCL for arsenic remained the same. Generally, MCLs are considered ARARs in setting

cleanup standards for groundwater that is usable for human consumption. MCLs would probably not be considered ARARs for purposes of reevaluating the protectiveness of the DuPont/Todtz Site trigger levels.

The Table 3 list of DuPont impoundment-related constituents agreed upon by the parties to the Consent Decree is attached to this Five-Year Review Report as Table 4-4. Since its preparation for the Consent Decree in 1989, some of the values quoted in that table have changed. For example, the MCL for chromium is now 100 ppb instead of 50, the MCL for toluene is now 1,000 ppb instead of 2,000, and the MCL for barium is now 2,000 ppb instead of 1,000. Antimony now has a MCL of 6 ppb instead of a RfD of 14, beryllium now as a MCL of 4 ppb instead of a RfD of 175, nickel now has a MCL of 100 ppb instead of a RfD of 700, and lead now has an Action Level at the tap of 15 ppb instead of a MCL of 50.

The Consent Decree requires that MCLs promulgated or modified after ROD signature shall be attained as cleanup standards in the event that groundwater remediation is triggered. The Consent Decree Performance Standards also sets out an elaborate hierarchy of potential sources of cleanup levels in order to assure that some appropriate contemporary standard will be available in the future. The numeric concentration values will be determined by whatever of the identified standards are in effect at the time. This moots the need to update the Consent Decree cleanup standards by means of an ARAR analysis.

5.3 Analysis of the Four Compounds Specified in the ROD

Out of the four compounds, only arsenic had an established MCL at the time of the ROD. The DuPont/Todtz Site ROD considered the MCL an ARAR for determining completion of groundwater cleanup but not for setting action levels that would trigger the commencement of groundwater remediation, particularly in the causeway area of the site. In the event groundwater remediation is triggered, the arsenic MCL of 50 ug/l would be the cleanup level. ROD, at p. 20. The ROD determined that the arsenic MCL was not applicable or relevant and appropriate in setting the arsenic action levels for the causeway between the municipal landfill of the DuPont/Todtz Site and Murphy's Lake because the groundwater monitored there was not considered a viable water supply. The arsenic MCL is presently under review but it has not changed since the ROD. The MCL for arsenic remains at 50 ppb. The Iowa Rule set up a hierarchy of sources for establishing cleanup levels in the definition of "Action Level". The Iowa Rules would use a HAL or a NRL as a cleanup level before it would use an MCL. The HAL and the NRL for arsenic may be concentrations that are lower than the MCL of 50 ppb and consequently more protective. However, neither the statute nor the National Contingency Plan require that the EPA in its five-

year review, adopt a subsequently enacted ARAR that is the "more protective" or "most protective" as long as the original remedy is itself protective. The EPA considers MCLs, by definition, to be protective of human health and the environment. Since there has not been a change in MCL status, there is no reason to change the cleanup or trigger levels for arsenic.

For chromium (VI), at the time of the ROD there was no MCL specifically for chromium (VI) but there was an MCL of 50 ppb for total chromium which includes chromium (VI). The ROD used the total chromium MCL of 50 ppb both as the trigger level for chromium (VI) and as the chromium cleanup level. ROD, pp. 19 & 20. The Consent Decree stated that the cleanup level for chromium (VI) shall be the MCL. CD, p. 13. The Consent Decree Table 3, "DuPont impoundment related constituents to meet specified cleanup criteria upon completion of ground water operable unit remediation" lists simply "chromium" rather than chromium (VI) as the constituent to be cleaned up to the MCL which at the time was 50 ppb. So, in the Consent Decree, the trigger levels are stated in terms of chromium (VI) and the cleanup level is stated in terms of total chromium. An analytical level for total chromium includes both hexavalent and trivalent chromium. So the use of a total chromium level as a cleanup standard would assure that not only hexavalent chromium but also all types of chromium together are below the total chromium cleanup level.

Since the ROD, the MCL for total chromium has been increased from 50 ppb to 100 ppb. The protectiveness of a cleanup level which was 50 ppb at the time of the ROD is not called into question by an increase to the present MCL of 100 ppb. Consequently, there is no requirement to lower the ROD cleanup level or action level during the Five-Year Review in order to assure protectiveness of the remedy. The Consent Decree reaffirmed that the cleanup level would be the MCL and also allowed for future fluctuation of the value of the MCL such as the increase from 50 ppb to 100 ppb.

For carbon disulfide and THF, there have not been MCLs established. However, health based standards in groundwater of 3,500 and 700 ppb, respectively, were established for these compounds during the EA. The health based standards developed during the EA were based on ingestion of the reference doses (RfDs) for these compounds. The reference dose is defined as an estimate of a daily exposure to the human population that is unlikely to result in appreciable risk of deleterious effects during a lifetime. The trigger levels set by the ROD for THF varied from 50 ppb to 700 ppb, depending on the location of the monitoring well and the operable unit involved. The trigger levels set for carbon disulfide varied similarly from 250 ppb to 3,500.

For carbon disulfide and THF, there have still not been any MCLs established. The definition of "Action Level" in the Iowa rules includes not only MCLs but also "HALs" and "NRLs" as cleanup standards. However, the EPA has not established either a HAL or a NRL for either carbon disulfide or THF. The Iowa Rules would then revert to a case-by-case determination which is how the ROD and Consent Decree levels were set for these two compounds.

The health based levels established during the EA were based on the reference doses for these two compounds. The reference dose for carbon disulfide has not changed. The reference dose for THF is currently under review, but so far there has been no change in the reference dose. Since there have not been any laws, regulations or other ARARs promulgated that call into question the protectiveness of the remedy, there is no need to reduce the cleanup or action levels for carbon disulfide or THF.

6.0 SUMMARY OF SITE VISITS

Pursuant to the CD, DuPont is required to maintain the soil cover, fence and monitoring wells. Oversight and inspections of Potentially Responsible Parties (PRP)-lead site activities have been conducted by EPA or EPA contractors since DuPont took the lead on these activities during the 1988 RI/FS. Oversight was conducted during the Remedial Action and the final inspection in 1991. Since the completion of the Remedial Action, EPA and/or EPA contractors have conducted oversight and collected split samples from every sampling event and have inspected the integrity of the soil cover.

The last inspection and semiannual sampling event was conducted on April 25, 1995. Photographs were taken during the inspection and are included as an Appendix to this report. At that time, the soil cover was observed to be in good shape with an adequate vegetative cover. During the previous semiannual sampling event and inspection in October 1994, some slight erosion in several places around the fence area was observed. DuPont has repaired, reseeded and mulched these areas. DuPont also conducts drive-through inspections of the soil cover, fence, and monitoring wells on a monthly basis, thorough inspections on a semiannual basis and has the grass mowed about three times per year. EPA's observation during the April 25, 1995 inspection is that DuPont is meeting the terms of the CD in regard to all operation and maintenance activities. EPA plans to continue the inspections and collection of groundwater split samples in the future.

7.0 AREAS OF NON-COMPLIANCE

Based on this review, EPA finds that there are no areas of non-compliance.

8.0 STATEMENT OF PROTECTIVENESS

8.1 Monitoring conducted by DuPont and EPA

The discussion in Section 4.2 illustrates the erratic nature of the THF data for monitoring well DU-05-S. An evaluation of additional constituents of concern that have been detected at different monitoring wells during the course of the monitoring program also indicate a somewhat erratic nature of the data in most instances. Some clear trends are evident but the majority of the data has no clear pattern.

The most significant trend includes the continued elevated levels of arsenic and THF in the berm wells with increasing concentrations of both compounds in DU-08-S. These monitoring wells are installed in the actual bermed wall of the impoundment and thus indicate that constituents are migrating through the berm and are most likely present in the area of the municipal landfill. Monitoring wells were not installed in the actual municipal landfill area due to the obvious hazards associated with directly drilling through a landfill. However, the levels of constituents in the berm wells are significant and thus indicate that it would be a reasonable assumption that the municipal landfill contains constituents from the DuPont impoundment.

The trigger wells established in the CD are positioned hydraulically downgradient of the municipal landfill and are thus capable of detecting any releases from the DuPont impoundment that would migrate through the municipal landfill. Monitoring wells installed downgradient of the municipal landfill also include deep wells that are installed in the upper bedrock zone in order to detect any vertical migration of constituents and evaluate the effectiveness of the intervening clay unit. All bedrock wells have yielded non-detect data for all hazardous constituents of concern. The monitoring system envisioned and designated by the CD is currently evaluated as being fully capable of detecting any releases from the DuPont impoundment. The manner in which releases occur may prove to differ from the original assumptions of the CD.

The CD envisioned a typical migrating groundwater plume scenario in which levels of constituents would steadily increase in concentration over time. The different trigger levels, and values assigned to them, were intended to provide an early warning system for a migrating plume. The early warning system would then allow sufficient time for the design and implementation of a remedy prior to experiencing substantial off-site releases. The situation of ever increasing concentrations over time has been observed at the impoundment berm wells, as discussed above, with respect to arsenic. However, this

situation has not been observed at the trigger wells which are located downgradient of the municipal landfill. These wells have experienced erratic, relatively low levels of constituents of concern followed by non-detect data. All of the previous detections, with the exception of the recent THF value at well DU-05-S, have not exceeded a trigger value at a specified trigger well as mandated by the CD. The occasional low level detections of constituents at the trigger wells may be an indication that releases are periodically occurring due to some type of physical processes, may simply represent the leading edge of a migrating plume, or may continue to consist of infrequent low level releases that do not constitute a significant problem.

8.2 University of Iowa Hygienics Monitoring Data

In addition to monitoring conducted by EPA and DuPont, the University of Iowa Hygienics Laboratory has conducted monitoring of the residential wells adjacent to both the DuPont/Todtz and Chemplex Sites since 1990. Monitoring of the residential wells was originally on a quarterly basis but as of 1994, the samples are now collected on a semiannual basis in the spring and fall. Table 8 lists the compounds that are routinely analyzed for. In addition, nitrates are monitored on an annual basis. The location of the residential wells is as indicated on Figure 8.

In general, there have been no exceedances of compounds above human health criteria that can be conclusively attributed to the DuPont/Todtz Site. Nitrates have been detected in most of the residential wells. However, this compound is not a contaminant of concern at the DuPont/Todtz Site. The nitrates are believed to be attributable to either agricultural practices or the Arcadian facility. Radon has also been detected in a number of the residential wells and this contaminant is also believed to not be attributable to the DuPont/Todtz Site. Bis (2-ethylhexyl) phthalate is a contaminant that has been detected sporadically in two of the residential wells. While this contaminant was believed to have been used in DuPont's process, it also is a common plasticizer that is widely used and sometimes is detected as a laboratory contaminant. This contaminant was detected in two residential wells at concentrations of 150 ug/l and at 530 ug/l. However, when both wells were resampled, this contaminant was not detected. It is unknown at this time whether this contaminant is really present and if so, what the source is. At EPA's request, DuPont agreed to analyze for this contaminant during the April 25, 1995 semiannual monitoring event. It was not found so the Site is not thought to be the source of this contaminant.

EPA's evaluation of the DuPont/Todtz Site indicates the following facts:

* The existing groundwater monitoring system continues to be capable of detecting any future releases from the DuPont impoundment. The current Remedial Action remains protective of human health and the environment.

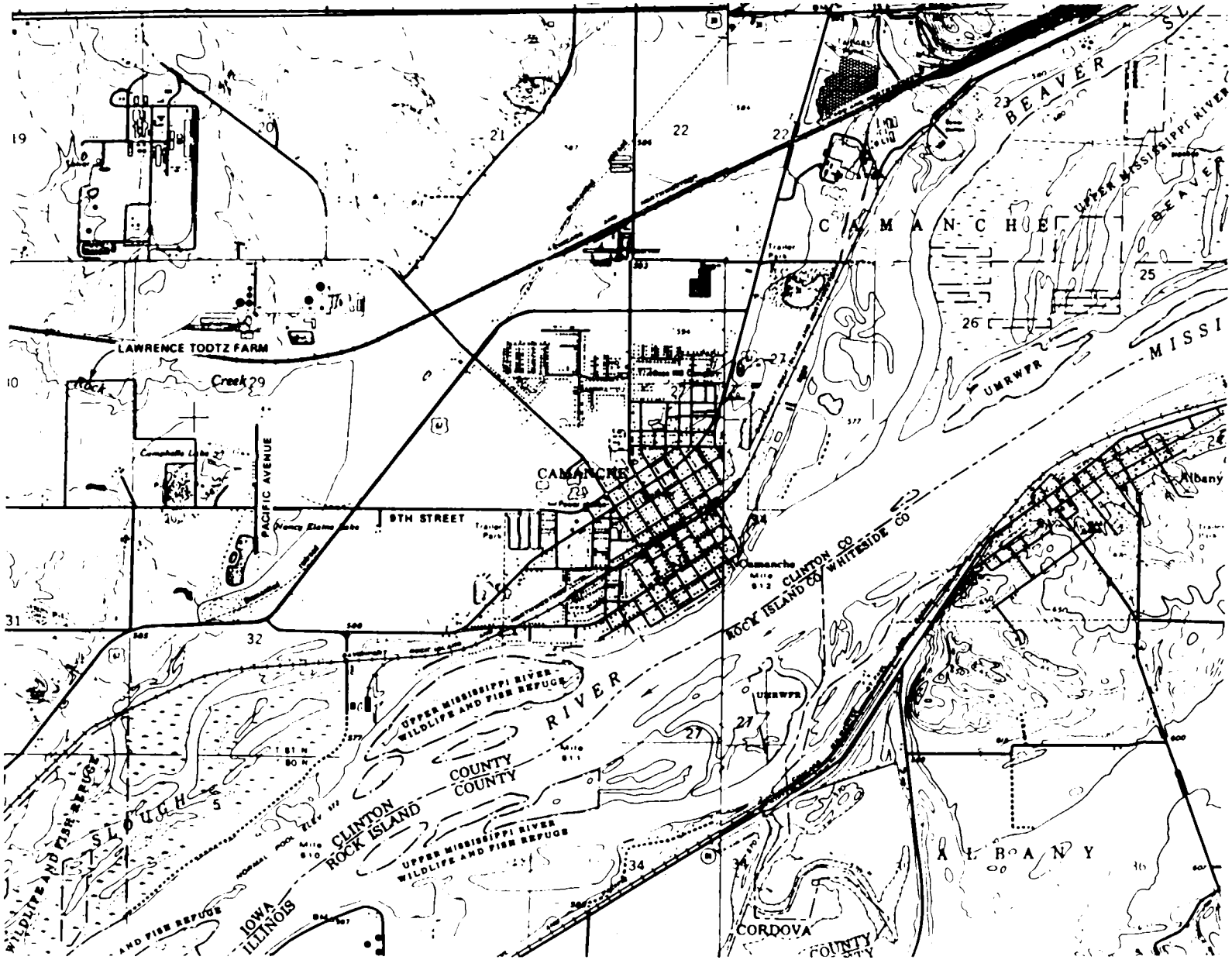
* In order to more reliably ensure protectiveness by early detection of any future releases from the impoundment, the semiannual monitoring that has been conducted for the past five years should continue.

9.0 RECOMMENDATIONS

The overall recommendation resulting from the evaluation of the DuPont site consists of continuing the monitoring program and pre-design, as specified in the CD with one exception. Since there have been incidences of elevated THF concentrations at monitoring well DU-05-S and the concentrations of some contaminants at the berm wells have been increasing, it is recommended that the semiannual monitoring requirement continue. According to the existing requirements, the semiannual sampling would revert to annual sampling in April 1996. The semiannual sampling will provide a mechanism to more accurately detect any releases from the Site.

10.0 NEXT REVIEW

Since hazardous substances, pollutants or contaminants remain at the site at levels above the cleanup standards established for this remedial action and which will not allow for unlimited use or restricted exposure, the EPA will conduct additional Five-Year Reviews. According to guidance from EPA headquarters, this statutory Five-Year Review should have been conducted in September 1994 since the beginning of the Remedial Action was installation of the Bark residential well in September 1989. EPA Region VII has chosen to conduct this review within five years of the initiation of the on-site Remedial Action which began with the construction of the 2-foot soil cover and groundwater monitoring system since the CD was not entered until November 1990 and thus the Bark well installation was prior to this. However, EPA Region VII will follow the guidance for the schedule of the next review which will be completed five years after September 1994, that is in September 1999.



SOURCE USGS CLINTON AND CAMANCHE 7 5 MINUTE QUADRANGLE MAPS

FIGURE 1-1
SITE LOCATION MAP
DUPONT IMPOUNDMENT RD/RA
TODTZ FARM LANDFILL SITE

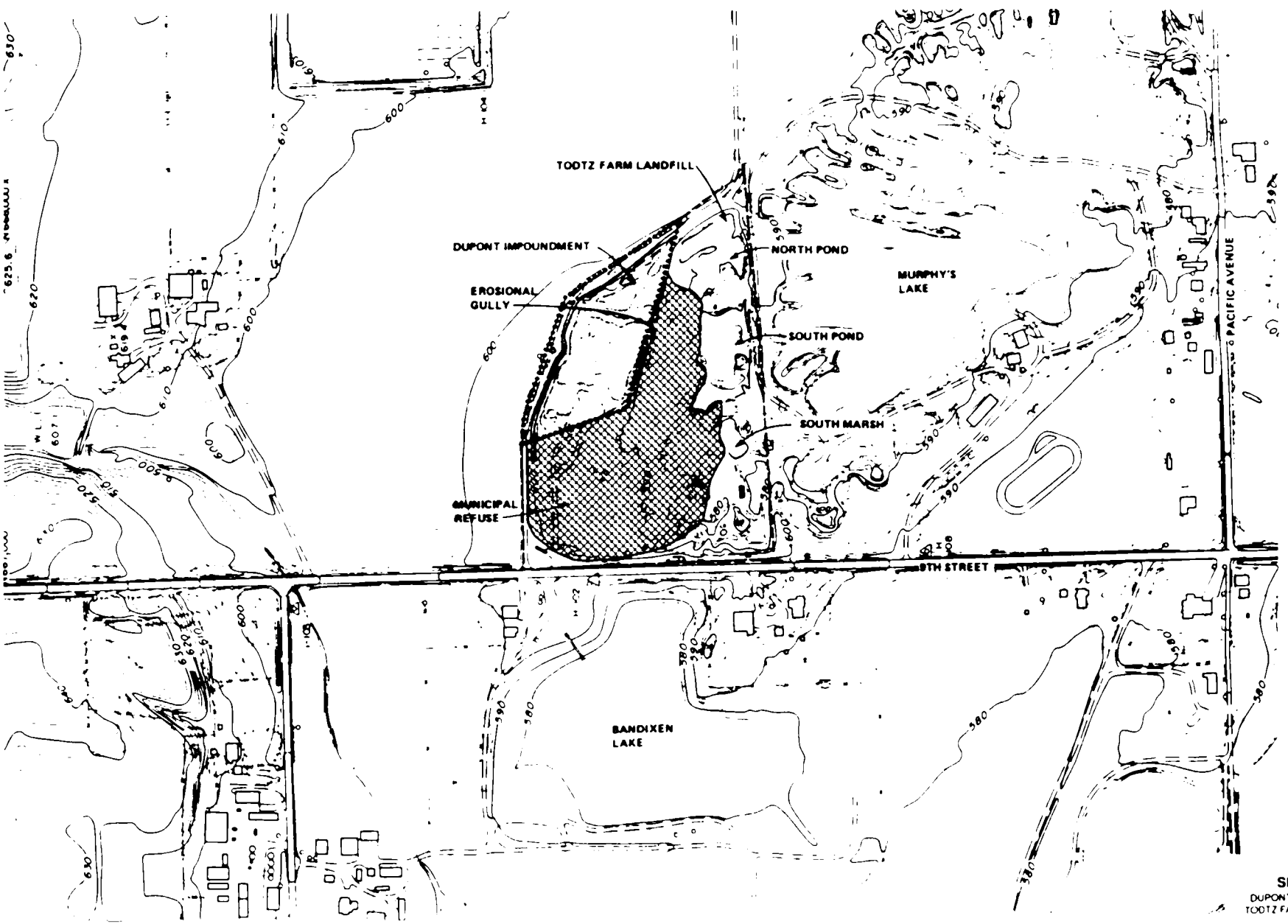


FIGURE 1-2
SITE VICINITY MAP
DUPONT IMPOUNDMENT RD/RA
TODTZ FARM LANDFILL NPL SITE

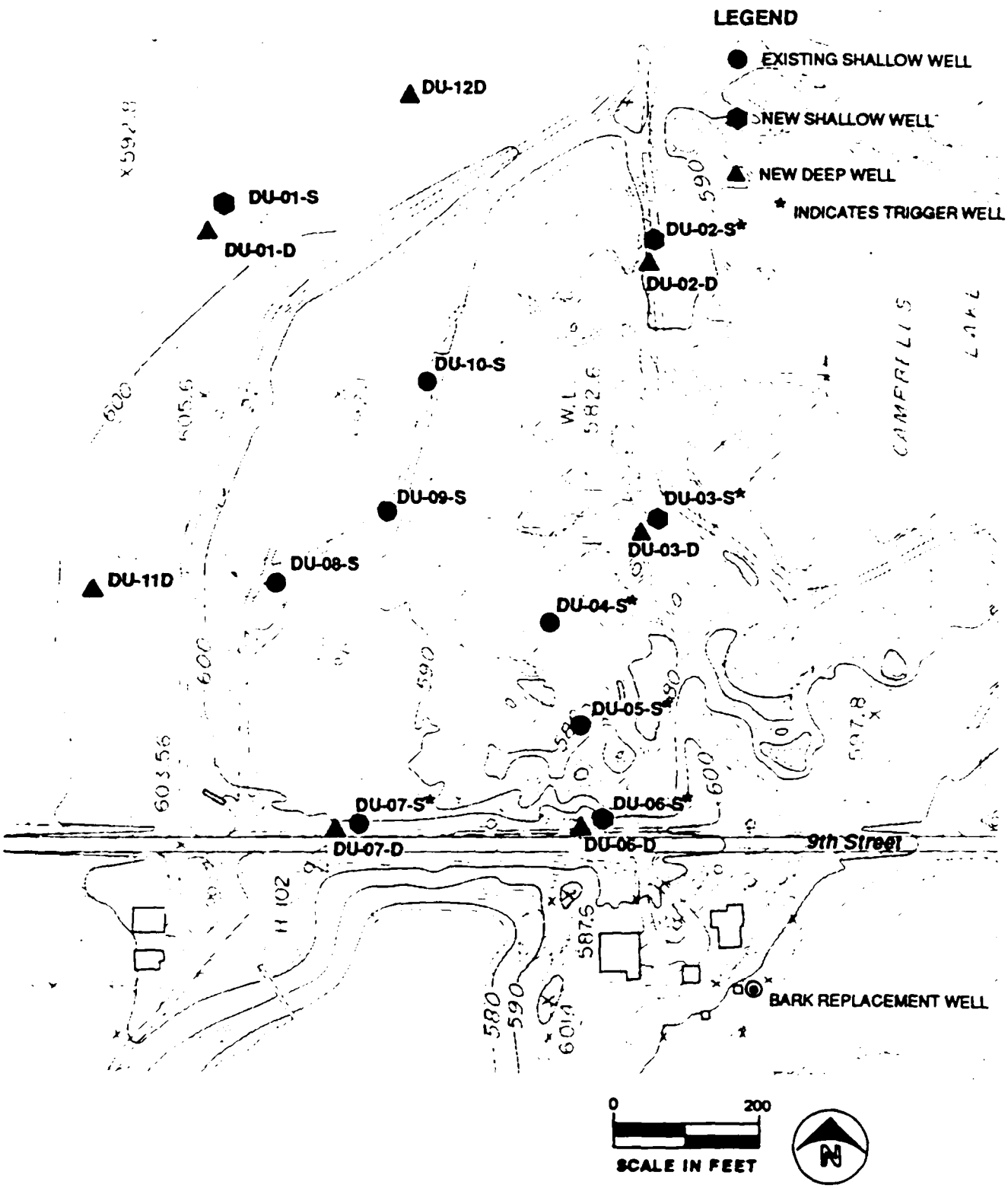


FIGURE 1-3
MONITORING WELL LOCATIONS
DUPONT IMPOUNDMENT RD/RA
TODTZ FARM LANDFILL SITE

TABLE 4-2
DuPont/Todtz Site

MONITORING PROGRAM

Volatile Organic Compounds	Semi-Volatile Organic Compounds	Miscellaneous Water Quality Parameters
Tetrahydrofuran	Total Phenol (See Note 4)	Sulfate
Chloromethane		Sulfide
Bromoethane		Chloride
Vinyl Chloride	Inorganic Compounds	Total Organic Carbon
Chloroethane		Total Organic Halogen
Methylene Chloride	Aluminum	
Acetone	Antimony	Field Parameters
Carbon Disulfide	Arsenic	
1,1-Dichloroethene	Barium	Temperature
1,1-Dichloroethane	Baryllium	Conductivity
Trans-1,2-Dichloroethene	Cadmium	pH
Chloroform	Calcium	
1,2-Dichloroethane	Chromium	
2-Butanone	Cobalt	
1,1,1-Trichloroethane	Copper	
Carbon Tetrachloride	Iron	
Vinyl Acetate	Lead	
Bromodichloromethane	Magnesium	
1,2-Dichloropropane	Manganese	
Trans-1,3-Dichloropropene	Mercury	
Trichloroethene	Molybdenum	
Dibromochloromethane	Nickel	
1,1,2-Trichloroethane	Potassium	
Benzene	Selanium	
Cis-1,3-Dichloropropene	Silver	
2-Chloroethylvinylether	Sodium	
Bromoform	Thallium	
4-Methyl-2-Pentanone	Titanium	
2-Hexanone	Vanadium	
Tetrachloroethene	Zinc	
1,1,2,2-Tetrachloroethane		
Toluene		
Chlorobenzene		
Ethylbenzene		
Styrene		
Total Xylenes		

[1] Shallow wells to be sampled on semi-annual basis for first five years, annually thereafter for 30 years, and reevaluated on a five year basis.

[2] Bedrock wells to be sampled semi-annually for first two years and once every five years thereafter unless on exceedance above background is detected.

[3] Exceedance of 50% of a trigger level will result in quarterly monitoring.

[4] Exceedance of 80% of a level two (2) trigger level will result in monitoring of shallow wells for U.S. EPA Target Compound List semi-volatile organic compounds.

TABLE 4-3

Table 1
ACTION LEVEL 1 CONCENTRATION LIMITS
TODTZ FARM LANDFILL NFL SITE

Action Level 1 Compounds	Action Level 1 Concentration Limits (ug/l) DU-04-S	Perimeter Wells (*)
Carbon Disulfide	500	250
Tetrahydrofuran	100	50
Chromium (VI)	100	50
	DU-02-S/DU-03-S	DU-06-S/DU-07-S
Arsenic	125	50

* DU-02-S, DU-03-S, DU-05-S, DU-06-S, DU-07-S

Table 2
ACTION LEVEL 2: CONCENTRATION LIMITS
TODTZ FARM LANDFILL NPL SITE

Action Level 2 Compounds	Action Level 2 Concentration Limits (ug/l) DU-04-S	Perimeter Wells (*)
Carbon Disulfide	3,500	1,750
Tetrahydrofuran	700	350
Chromium (VI)	-----	50
	DU-02-S/DU-03-S	DU-06-S/DU-07-S
Arsenic	250	75

* DU-02-S, DU-03-S, DU-05-S, DU-06-S, DU-07-S

TABLE 4-4

DUPONT IMPOUNDMENT RELATED CONSTITUENTS
TO MEET SPECIFIED CLEANUP CRITERIA
UPON COMPLETION OF GROUND WATER OPERABLE UNIT REMEDIATION

VOLATILE ORGANIC COMPOUNDS	Health Based Standard (ug/l)	Standard Type	Source	Note
Benzene	5	MCL	SDWA	(1)
Ethylbenzene	700	MCL	SDWA	(2)
Tetrachloroethylene	5	MCL	SDWA	(2)
Toluene	2000	MCL	SDWA	(2)
Carbon disulfide	3500	RfD	IRIS	(3)
2-Butanone (MEK)	1750	RfD	IRIS	(3)
Vinyl acetate	-	-	-	-
2-Hexanone	-	-	-	-
4-Methyl-2-pentanone (M1BK)	17500	RfD	IRIS	(3)
Xylenes	10000	MCL	SDWA	(2)
Tetrahydrofuran	700	RfD	IRIS	(3)
ACID EXTRACTABLE PARAMETERS				
Phenol	1400	RfD	IRIS	(3)
2-Methylphenol	17500	RfD	IRIS	(3)
4-Methylphenol	17500	RfD	IRIS	(3)
Benzoic Acid	140000	RfD	IRIS	(3)
METALS				
Antimony	14	RfD	IRIS	(3)
Arsenic	50	MCL	SDWA	(1)
Barium	1000	MCL	SDWA	(1)
Beryllium	175	RfD	IRIS	(3)
Chromium	50	MCL	SDWA	(1)
Cobalt	-	-	-	-
Lead	50	MCL	SDWA	(1)
Nickel	700	RfD	IRIS	(3)
Vanadium	245	RfD	HEAST	(4)

NOTES:
(1) - Final Maximum Contaminant Level for drinking water as established by the Safe Drinking Water Act
(2) - Proposed Maximum Contaminant Level for drinking water as established by the Safe Drinking Water Act
(3) - Risk based concentrations based on verified reference doses (RfDs) deriv from toxicity values listed on U.S. EPA's Integrated Risk Information Sy (IRIS)
(4) - Risk based concentrations based on verified reference doses (RfDs) deriv from toxicity values listed on U.S. EPA's Office of Research and Develop Health Effects Assessment Summary Tables (HEAST)

TABLE 8
UNIVERSITY OF IOWA HYGIENIC LABORATORY
ANALYTICAL PARAMETERS

GC/MS VOLATILES

ANALYTE	DETECTION LIMIT - ug/L
Acetone	5
Carbon disulfide	5
Methyl ethyl ketone	5
Tetrahydrofuran	5

VOLATILE ORGANIC ANALYSIS

ANALYTE	DETECTION LIMIT - ug/L
Benzene	0.5
Toluene	0.5
Ethylbenzene	0.5
Total Xylenes	0.5
Methylene chloride	0.5
1,1-Dichloroethylene	0.5
Trichloroethylene	0.5
Tetrachloroethylene	0.5

GC/MS EXTRACTABLES

ANALYTE	DETECTION LIMIT - ug/L
Phenol	5
4-Methylphenol	5
bis(2-Ethylhexyl)phthalate	10

TABLE 8 (cont.)

RADIOCHEMISTRY

ANALYTE	UNITS IN pCi/L
Radon-222	

INORGANIC CHEMISTRY

ANALYTE	UNITS
Laboratory pH	pH Units
Specific Conductance	umhos/cm
Total Alkalinity	mg/L as CaCO3
Total Hardness	mg/L as CaCO3
Total Disolved Solids	mg/L
Sodium	mg/L
Chloride	mg/L

INORGANIC CHEMISTRY

ANALYTE	DETECTION LIMIT - mg/L
Total Organic Carbon	1 mg/L
Arsenic	.01 mg/L
Beryllium	.02 mg/L
Chromium	.01 mg/L
Lead	.01 mg/L

Description of units used within this report

ug/L - Micrograms per Liter
pCi/L - PicoCuries per Liter
mg/L as CaCO3 - Milligrams per Liter as Calcium Carbonate
mg/L - Milligrams per Liter
pH Units - pH Units
umhos/cm - Micromhos per Centimeter
Detection Limit - Lowest concentration reliably measured

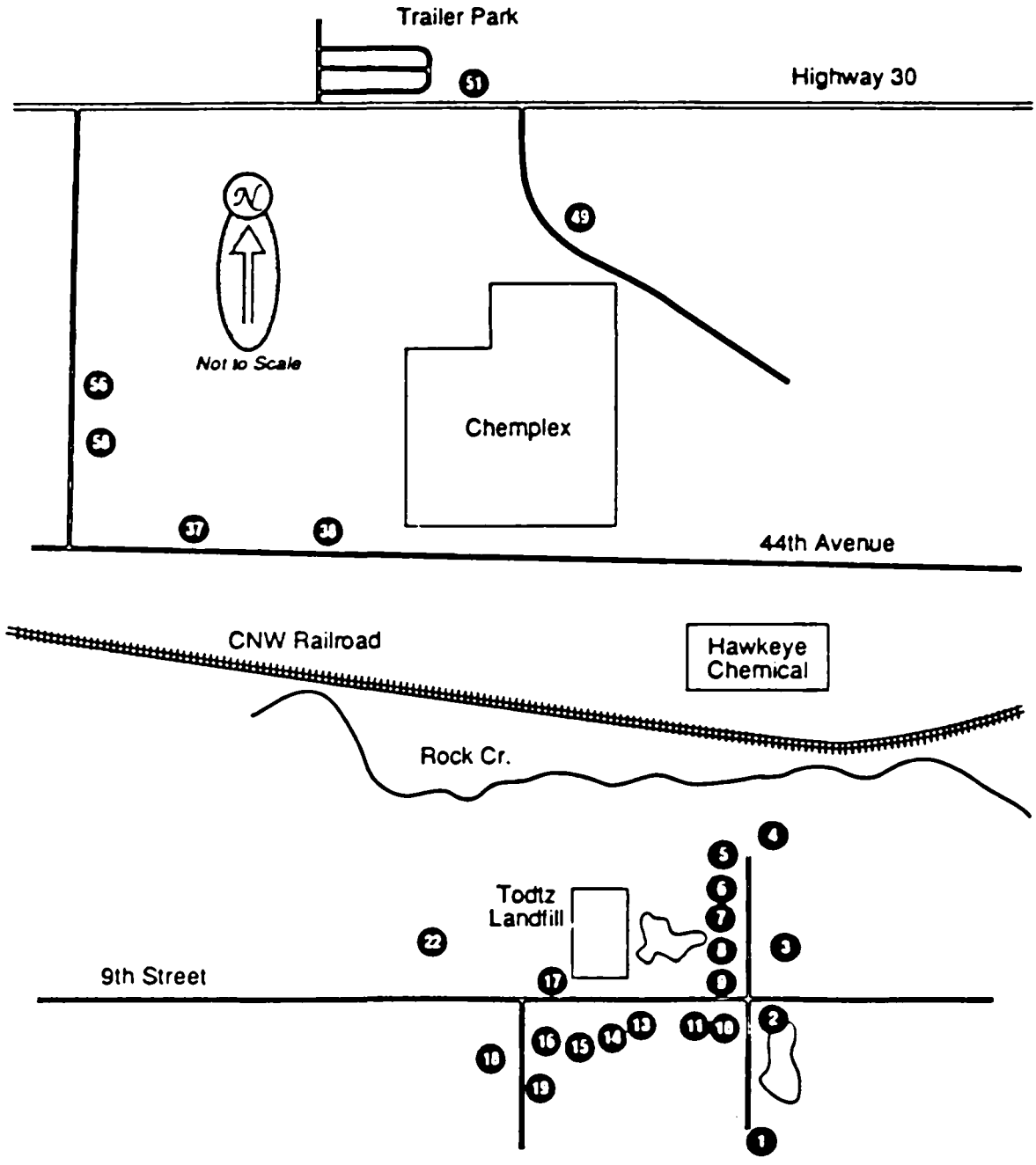


Figure 8. Sampling Locations

UHL/graphics

APPENDIX 1

DuPont and EPA Analytical Results

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
(Page 1 of 4)

Sample Number / Date Sampled / Detected Analytes	Unit	DU-01-S 3/8/88 Value Q	DU-01-S 3/29/88 Value Q	DU-01-S01 7/30/91 Value Q	DU-01-S02 7/30/91 Value Q	DU-01-S03 7/30/91 Value Q	DU-01-S 1/29/92 Value Q	DU-01-SFR 1/29/92 Value Q	DU-01-S 7/29/92 Value Q	DU-01-S 04/26/93 Value Q	DU-01-S 10/12/93 Value Q	DU-01-S 4/25/94 Value Q	DU-01-S 10/4/94 Value Q	DU-01-S 4/25/95 Value Q
Aluminum, Total	µg/l	170 J	940	2600	410		[illegible]	8800	991	128 LT	805	107 LT	8070 J	135 LT
Antimony, Total	µg/l						21 J				36.7 J			
ARSENIC, Total	µg/l			2.2 LT		33		5.5 J	1.31 LT		3.9 LT		4.6 LT	
Barium, Total	µg/l	130 J	140	95 LT	98 LT	88 LT	99 J	250	118 LT	78.3 LT	105 LT	43.9 LT	166 LT	64.2 LT
Beryllium, Total	µg/l												0.37 LT	
Cadmium, Total	µg/l													
Calcium, Total	µg/l	74000	90300	35000 J	43000 J	44000 J	56600	60000	55000	39800	36800	24700	52700	33900
Chromium, Total	µg/l							30	4 LT			3	11.2	
CHROMIUM (VI), Total	µg/l													
Cobalt, Total	µg/l							11 J					10.1 LT	3.9 LT
Copper, Total	µg/l	19 J	4 J	27	16 LT	19 LT		27	5.72 LT	1.8 LT	5 LT	2 LT	18 LT	2.2 LT
Iron, Total	µg/l		990	3300	820	450	430	18100	1630	175	1560	219	14300	214
Lead, Total	µg/l			17	22	8.8		11	1.42 LT		2.3 LT		7.3 J	
Magnesium, Total	µg/l	26500	32500	12000	14000	15000	18000	20000	17500	13100	12200	8170	19900	11000
Manganese, Total	µg/l	854	15300	140 J	81 J	44 J	16	1610	81.9	8.2 LT	169	6.5 LT	802	11.2 LT
Mercury, Total	µg/l			0.14 LT				5.1						
Nickel, Total	µg/l	34 J	26 J					46	6.26 LT	7.4 LT				
Potassium, Total	µg/l	2500 J	2400	2600 LT	2400 LT	2500 LT	1500 J	3100 J	1870 LT		1710 LT		2910 LT	
Selenium, Total	µg/l									2.4 LT	1.9 LT	1.5 LT		3.6 LT
Silver, Total	µg/l													2.5 LT
Sodium, Total	µg/l	20900	23400	5100	6400	6400	[illegible] LT	3800 LT	7640 J	3450 LT	4640 LT	3350 LT	8610	3790 LT
Thallium, Total	µg/l													
Vanadium, Total	µg/l							24 J					9.5 LT	
Zinc, Total	µg/l	29	49	190	140	140		32	16.1 LT	2.2 LT	6.3 LT		2.67	
Aluminum, Soluble	µg/l			330						29.4 LT	NA	NA	NA	NA
Antimony, Soluble	µg/l						[illegible]				NA	NA	NA	NA
ARSENIC, Soluble	µg/l										NA	NA	NA	NA
Barium, Soluble	µg/l			64 LT	69 LT	72 LT	10 J	110 J	92.3 LT	74.2 LT	NA	NA	NA	NA
Beryllium, Soluble	µg/l										NA	NA	NA	NA
Calcium, Soluble	µg/l			12000	47000	50000	55000	54000	48800 J	40000	NA	NA	NA	NA
Chromium, Soluble	µg/l						3 J				NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/l										NA	NA	NA	NA
Cobalt, Soluble	µg/l										NA	NA	NA	NA
Copper, Soluble	µg/l			19 LT	14 LT	11 LT				2.6 LT	NA	NA	NA	NA
Iron, Soluble	µg/l			470		28 LT	32 J	44 J	24.2 LT		NA	NA	NA	NA
Lead, Soluble	µg/l			3.3	2.5 LT	2 LT			9.03		NA	NA	NA	NA
Magnesium, Soluble	µg/l			14000	16000	17000	18000	18000	15600 J	12500	NA	NA	NA	NA
Manganese, Soluble	µg/l			28	6 LT	8.1 LT					NA	NA	NA	NA
Mercury, Soluble	µg/l			0.14 LT		0.14 LT					NA	NA	NA	NA
Nickel, Soluble	µg/l								5.88 LT	10 LT	NA	NA	NA	NA
Potassium, Soluble	µg/l			3000 LT	3000 LT	3000 LT	1700 J	1600 J	1460 LT	1640 LT	NA	NA	NA	NA
Selenium, Soluble	µg/l									2.8 LT	NA	NA	NA	NA
Silver, Soluble	µg/l										NA	NA	NA	NA
Sodium, Soluble	µg/l			4900 LT	5700	6200	4400 J	4300 J	4760 LT	3310 LT	NA	NA	NA	NA
Thallium, Soluble	µg/l										NA	NA	NA	NA
Vanadium, Soluble	µg/l										NA	NA	NA	NA
Zinc, Soluble	µg/l					6.9 LT	17 J	7.1 J	32.5	2.6 LT	NA	NA	NA	NA
1,1,1 Trichloroethane	µg/l			2.4 J										
1,1,2,2 Tetrachloroethane	µg/l													
2 Butanone	µg/l													
2 Hexanone	µg/l													
4 Methyl 2 Pentanone	µg/l													
Acetone	µg/l		192											
Benzene	µg/l													
Bromoform	µg/l													
CARBON DISULFIDE	µg/l													
Chlorobenzene	µg/l													
Dibromochloromethane	µg/l													
Ethylbenzene	µg/l													
Methyl iso butyl ketone	µg/l													
Methylene chloride	µg/l		612 J				6.5 B		2 B		1 B		1.5 B	
Styrene	µg/l													
Tetrachloroethene	µg/l													
TETRAHYDROFURAN	µg/l													
Toluene	µg/l		20.9 J				2.8 J							
Xylene (total)	µg/l													
Chloride	mg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/l													
Sulfide as S	mg/l	0.23	0.42							[illegible]	42			
Sulfate as SO4	mg/l	[illegible]	140	[illegible]	[illegible]	53.1	20.1	48.1	31.1	[illegible]	12	[illegible]	15	[illegible]
Total Organic Carbon	mg/l	9.3	16	[illegible]	[illegible]	[illegible]	1.7	1.9	2	1.3	13	[illegible]		
Total Organic Halides (TOX)	µg/l			23	14.5	12	10	16	19	12	12	[illegible]		

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Sample Number		DU-02-S	DU-02-S	DU-02-S	DU-02-S	DU-02-S	DU-02-S01	DU-02-S02	DU-02-S03	DU-02-S	DU-02-S-FR	DU-02-S	DU-02-S	DU-02-S	DU-02-S	DU-02-S	DU-02-S-FR	DU-02-S	DU-02-S	DU-02-S-FR	DU-02-S
Date Sampled		3/8/88	3/28/88	6/30/89	6/28/89	10/2/90	7/30/91	7/30/91	7/30/91	1/28/92	1/28/92	7/28/92	04/27/93	10/12/93	1/26/94	4/25/94	4/25/94	6/29/94	10/4/94	10/4/94	4/25/95
Detected Analytes		Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q
Aluminum, Total	µg/L	800	810			1030							57.2 LT								43.7 LT
Antimony, Total	µg/L																		49.7 J	28.4 J	
ARSENIC, Total	µg/L	84	60	50	50	41.3	34	41	34	29	26	28.8	29	27.2	27.2	24.5	22.8	34.5 J	52.6	52.2	33.4
Barium, Total	µg/L	169 J	230			118	280	200	270	180 J	180 J	218	184 LT	103 LT	238	234	227	286	556	555	507
Beryllium, Total	µg/L													1.5 LT							
Cadmium, Total	µg/L																				
Calcium, Total	µg/L	3800 J	3100			21900	33000 J	24000 J	33000 J	33000	31000	27700	32300	28900	51600	36200	35400	35100	43600	42500	44600
Chromium, Total	µg/L					9.1 J															
CHROMIUM (VI), Total	µg/L														NA						
Cobalt, Total	µg/L																				
Copper, Total	µg/L	17 J	6 J			11.1 J	16 LT	12 LT	10 LT					1.4 LT							
Iron, Total	µg/L	6300	7000	360	19000	8640	400	280	380	610	540	693	1180	378	3830	2960	2800	2310	2200	2140	2780
Lead, Total	µg/L		39 J			3.6	14	21	18						1 LT						
Magnesium, Total	µg/L	760 J	740 J			10600	23000	16000	22000	20000	19000	20800	21000	19300	27600	24900	24400	24400	28000	27600	25700
Manganese, Total	µg/L	130	180	280	1450	971	870 J	610 J	860 J	560	520	623	357	150	2120	2370	2290	1860	1800	1770	2150
Mercury, Total	µg/L																				
Nickel, Total	µg/L	29 J	18 J			12.2			8.2 LT												
Potassium, Total	µg/L	560 J	66			917 J	2000 LT	1600 LT	1900 LT	1100 J	1200 J	1480 LT	957 LT	1680 LT	1390			1030 LT	1470 LT	1470 LT	
Selenium, Total	µg/L																				
Silver, Total	µg/L						2 LT		2.3 LT					2.7 LT							
Sodium, Total	µg/L	329000	295000	364000	298000	77500	130000	94000	130000	140000 LT	140000 LT	116000 J	96600	70300	69000	34400	34000	61200	81900	81000	28500
Thallium, Total	µg/L																				
Vanadium, Total	µg/L	23 J	12 J			6.2 J												16.5 LT			
Zinc, Total	µg/L	54	49			35.4	170	130	110			3.6 LT	1.3 LT								
Aluminum, Soluble	µg/L					32 J								NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC, Soluble	µg/L					20.4	23	28 J	30 J	28	28 LT	18.6	22.9	NA	NA	NA	NA	NA	NA	NA	NA
Barium, Soluble	µg/L					67.1 J	240	250	270	170 J	160 J	202	174 LT	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Soluble	µg/L					19100	34000	35000	36000	29000	29000	26700 J	31900	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
Cobalt, Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
Copper, Soluble	µg/L					11.5 J								NA	NA	NA	NA	NA	NA	NA	NA
Iron, Soluble	µg/L					105	260	210	170	170	230	263	333	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Soluble	µg/L					10.3		0.8 LT	1.3 LT	1.5 J	4.4	8.61		NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Soluble	µg/L					8880	23000	23000	24000	19000	19000	19800 J	20200	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Soluble	µg/L					652	770	850	920	480	470	595	357	NA	NA	NA	NA	NA	NA	NA	NA
Mercury, Soluble	µg/L						0.14 LT	0.14 LT						NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Soluble	µg/L					881	2700 LT	2500 LT	2100 LT	1300 J	1300 J	1410 LT	854 LT	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Soluble	µg/L												1.6 LT	NA	NA	NA	NA	NA	NA	NA	NA
Silver, Soluble	µg/L									2 J	2 J			NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Soluble	µg/L					71600	140000	140000	140000	140000	140000	109000 J	92200	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
Vanadium, Soluble	µg/L													NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Soluble	µg/L					41.4				5.7 J		40		NA	NA	NA	NA	NA	NA	NA	NA
1,1,1 Trichloroethane	µg/L																				
1,1,2,2 Tetrachloroethane	µg/L																				
2 Butanone	µg/L																				
2 Hexanone	µg/L																				
4 Methyl 2 Pentanone	µg/L																				
Acetone	µg/L																	2.8 B			
Benzene	µg/L																				
Bromoform	µg/L																				
CARBON DISULFIDE	µg/L													1 J					5.8	4.5	
Chlorobenzene	µg/L																				
Dibromochloromethane	µg/L																				
Ethylbenzene	µg/L																				
Methyl iso butyl ketone	µg/L																				
Methylene chloride	µg/L									[illegible] B	[illegible] B	[illegible] B							1.4 B	1.6 B	
Styrene	µg/L																				
Tetrachloroethene	µg/L																				
TETRAHYDROFURAN	µg/L							14.5	9.35											4 [illegible]	
Toluene	µg/L										1.06 J										
Xylene (total)	µg/L										1.38 J										
Chloride	mg/L	138	136			51	12.2	11.5	11.3	8.1	5	9.8	7.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.4	7.7	[illegible]
Phenolics, Total	mg/L																				
Sulfide as S	mg/L	2.2	5.5			0.72							34 J	49				[illegible]			
Sulfate as SO4	mg/L	39	100			8.7	64.9	67.8	57.7	55.8	67.1	35.5	14	6.1	35.1	17.6	18.7		5.3		
Total Organic Carbon	mg/L	9.3	7.7			3.6	4.85	8.15	12.1	5.9	6.4	4.95	2.4	31	2	1.5	1.5	[illegible]	3.4	3.4	
Total Organic Halides (TOX)	µg/L					30	30	19	20.5	12	11	13	6.6	6.5		9.7					

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Detected Analytes	Units	DU-03-S 6/20/89 Value Q	DU-03-S 10/2/90 Value Q	DU-03-S01 7/30/91 Value Q	DU-03-S02 7/30/91 Value Q	DU-03-S03 7/30/91 Value Q	DU-03-S 1/28/92 Value Q	DU-03-S01 3/18/92 Value Q	DU-03-S02 3/18/92 Value Q	DU-03-S03 3/18/92 Value Q	DU-03-S04 3/18/92 Value Q	DU-03-S 7/28/92 Value Q	DU-03-S FR 7/28/92 Value Q	DU-03-S 04/27/93 Value Q	DU-03-S-FR 04/27/93 Value Q	DU-03-S 10/12/93 Value Q	DU-03-S 1/26/94 Value Q	DU-03-S 4/25/94 Value Q	DU-03-S 6/29/94 Value Q	DU-03-S 10/4/94 Value Q	DU-03-S 4/25/95 Value Q	DU-03S-FR 4/25/95 Value Q
Aluminum, Total	µg/L		23600											63 LT	62.4 LT					13.1 J		
Antimony, Total	µg/L																					
ARSENIC, Total	µg/L	40	34.8	30	37	42	20					30.1	30.5	16	15.2	17.9	17.6	22.1	36.0	42.6	25.3	25.9
Barium, Total	µg/L		204	210	210	210	190 J					252	245	180 LT	178 LT	198 LT	224	178 LT	362	272	210	216
Beryllium, Total	µg/L																					
Cadmium, Total	µg/L																					
Calcium, Total	µg/L		115000	39000 J	40000 J	39000 J	31000					39100	38100	38100	38000	38400	40200	35800	64500	45200	33100	33500
Chromium, Total	µg/L		48.4																			
CHROMIUM (VI), Total	µg/L																NA					
Cobalt, Total	µg/L		16.9 J																			
Copper, Total	µg/L		65.8	8.5 LT	13 LT	17 LT																
Iron, Total	µg/L	150	30600	2200	2100	2100	2700					2180	2220	3090	3160	2880	1760	2880	5410	3840	3290	3270
Lead, Total	µg/L		19.9	19	16	14	[illegible] J										1.1 LT					
Magnesium, Total	µg/L		51000	24000	25000	25000	21000					24700	24600	21900	21800	20200	22500	18500	21900	22600	18100	18500
Manganese, Total	µg/L	26	1040	1670 J	1760 J	1610 J	1560					1300	1260	1460	1450	1400	915	1710	2850	1740	1740	1780
Mercury, Total	µg/L					0.27													0.08 J			
Nickel, Total	µg/L		46.5		10 LT	9.5 LT								6.3 LT								
Potassium, Total	µg/L		5410	3600 LT	3700 LT	3800 LT	2500 J					3870 LT	3760 LT	2200 LT	1400 LT	2580 LT	1150 LT	1950 LT	2290 LT	[illegible] LT	2170 LT	2150 LT
Selenium, Total	µg/L																		1.0 J			
Silver, Total	µg/L				3.3 LT	3.2 LT																
Sodium, Total	µg/L	569000	193000	210000	240000	270000	210000 LT					218000 J	218000 J	95700	95400	99600	36500	70500	117000	202000	129000	133000
Thallium, Total	µg/L																					
Vanadium, Total	µg/L		72.9																19.3 LT	7.6 LT		
Zinc, Total	µg/L		111	120	160	170								5.4 LT	5.4 LT							
Aluminum, Soluble	µg/L		264													NA	NA	NA	NA	NA	NA	NA
Antimony, Soluble	µg/L		35.3				13 J									NA	NA	NA	NA	NA	NA	NA
ARSENIC, Soluble	µg/L			26	30 J	34 J	29 J					26	28.6	15.3	16.3	NA	NA	NA	NA	NA	NA	NA
Barium, Soluble	µg/L		31.4 J	190 LT	190 LT	190 LT	190 LT					239	246	173 LT	178 LT	NA	NA	NA	NA	NA	NA	NA
Beryllium, Soluble	µg/L															NA	NA	NA	NA	NA	NA	NA
Calcium, Soluble	µg/L		6920	40000	42000	41000	33000					37500 J	38300 J	37900	37500	NA	NA	NA	NA	NA	NA	NA
Chromium, Soluble	µg/L															NA	NA	NA	NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/L															NA	NA	NA	NA	NA	NA	NA
Cobalt, Soluble	µg/L															NA	NA	NA	NA	NA	NA	NA
Copper, Soluble	µg/L		17.8 J									2020	2100			NA	NA	NA	NA	NA	NA	NA
Iron, Soluble	µg/L		290	2000	2200	2300	2500							2830	2870	NA	NA	NA	NA	NA	NA	NA
Lead, Soluble	µg/L		8.4		0.97 LT	0.8 LT						7.21	10.7			NA	NA	NA	NA	NA	NA	NA
Magnesium, Soluble	µg/L		3560 J	24000	26000	26000	22000					23700 J	24300 J	20800	20800	NA	NA	NA	NA	NA	NA	NA
Manganese, Soluble	µg/L		53.5	1710	1830	1820	1570					1330	1280	1400	1420	NA	NA	NA	NA	NA	NA	NA
Mercury, Soluble	µg/L				0.14 LT											NA	NA	NA	NA	NA	NA	NA
Nickel, Soluble	µg/L													7.8 LT	10.1 LT	NA	NA	NA	NA	NA	NA	NA
Potassium, Soluble	µg/L		1430	3700 LT	3900 LT	4000 LT	2700 J					3690 LT	3840 LT	1980 LT	2730 LT	NA	NA	NA	NA	NA	NA	NA
Selenium, Soluble	µg/L													1.8 LT	1.3 LT	NA	NA	NA	NA	NA	NA	NA
Silver, Soluble	µg/L															NA	NA	NA	NA	NA	NA	NA
Sodium, Soluble	µg/L		224000	230000	260000	260000	210000 J					218000 J	229000 J	94700	93000	NA	NA	NA	NA	NA	NA	NA
Thallium, Soluble	µg/L															NA	NA	NA	NA	NA	NA	NA
Vanadium, Soluble	µg/L		15.1 J									2.34 LT		15.4 LT		NA	NA	NA	NA	NA	NA	NA
Zinc, Soluble	µg/L		24.5				9.6 J					36.4	28.2			NA	NA	NA	NA	NA	NA	NA
1,1,1 Trichloroethane	µg/l																					
1,1,2,2 Tetrachloroethane	µg/l																					
2 Butanone	µg/l																					
2 Hexanone	µg/l		10																			
4 Methyl 2 Pentanone	µg/l																					
Acetone	µg/l		15										6 B						18 B			
Benzene	µg/l												2 J									
Bromoform	µg/l																					
CARBON DISULFIDE	µg/l		3 J						[illegible] J	8												
Chlorobenzene	µg/l												9									
Dibromochloromethane	µg/l																					
Ethylbenzene	µg/l																					
Methyl iso-butyl ketone	µg/l		8 J																			
Methylene chloride	µg/l						8 B	4 B		4 B	[illegible] B	[illegible] B	1 B						[illegible] B	[illegible] B		
Styrene	µg/l																					
Tetrachloroethene	µg/l																				0.3 J	
TETRAHYDROFURAN	µg/l		15				[illegible]	[illegible]	[illegible]	1	[illegible]									[illegible]	[illegible]	[illegible]
Toluene	µg/l																					
Xylene (total)	µg/l																				0.4 J	
Chloride	mg/l		[illegible]	16.4	[illegible]	[illegible]	16					[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/l														0.28							
Sulfide as S	mg/l		0.24											[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
Sulfate as SO4	mg/l		[illegible]	36	81.1	106	136					47.8	50.4	38	42	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Organic Carbon	mg/l		11.8	14.6	16.5	20.8	[illegible]					16.3	[illegible]	4.4	4.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Organic Halides (TOX)	µg/l		14	31	45	24	24					35	44	14	14		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

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Detected Analytes	Sample Number / Date Sampled	DU-04-S 3/28/88 Value	Q	DU-04-S 6/20/89 Value	Q	DU-04-S 10/2/90 Value	Q	DU-04-S01 7/31/91 Value	Q	DU-04-S 1/28/92 Value	Q	DU-04-S 7/29/92 Value	Q	DU-04-S 04/27/93 Value	Q	DU-04-S 0/13/93 Value	Q	DU-04-S 1/26/94 Value	Q	DU-04-S 4/25/94 Value	Q	DU-04-S 6/29/94 Value	Q	DU-04-S-FR 6/29/94 Value	Q	DU-04-S 10/4/94 Value	Q	DU-04-S 4/25/95 Value	Q
Aluminum, Total	µg/l	45	J			498				58	J			88	LT											109	J	47.5	LT
Antimony, Total	µg/l																									21.5	LT		
ARSENIC, Total	µg/l	1	J	2		5.8	J	6.1	LT	4.7	J	3.16	LT	3.8	LT	7.4	LT	3.8	LT	3.1	LT	2.1	J	2.5	LT	5.1	LT	2.7	LT
Barium, Total	µg/l	150				310		300		340		251		229		246		276		241		305		283		348		399	
Beryllium, Total	µg/l											0.21	LT																
Cadmium, Total	µg/l									1	J																		
Calcium, Total	µg/l	50300				110000		170000	J	180000		145000		101000		122000		112000		107000		107000		105000		123000		154000	
Chromium, Total	µg/l					13.4		6.2	LT			5.63	LT			13.6		4.9	LT	3.8	LT			3.1	LT	4.6	LT		
CHROMIUM (VI), Total	µg/l																	NA											
Cobalt, Total	µg/l																											7.8	LT
Copper, Total	µg/l	6	J			10.9	J	13	LT	16	J	5.37	LT	3.2	LT	3	LT							1.9	LT	8.9	LT	9.3	LT
Iron, Total	µg/l	8100		1380		1280		440		19700		1400		11200		1960		3840		6770		1850	J	653	J	1910		14000	
Lead, Total	µg/l	13				14.9				5.8		17.2	J	2.7	LT			1	LT							3.2	J	7.1	
Magnesium, Total	µg/l	19600				36600		61000	J	65000		53200		44500		50300		48300		46100		42900		43400		51600		60500	
Manganese, Total	µg/l	740		2730		935		1200		2080		886		860		706		674		597		634	J	453	J	392		1100	
Mercury, Total	µg/l																					0.08	J	0.07	J				
Nickel, Total	µg/l	20	J			23.6	J																					10.6	LT
Potassium, Total	µg/l	7300				9270		13000		9500		9510		7940		6120		6050		4140	LT	8360	J	6390	J	6640		7370	
Selenium, Total	µg/l																	1	LT									2	LT
Silver, Total	µg/l																												
Sodium, Total	µg/l	191000		194000		197000		210000	J	160000	LT	159000	J	143000		133000		119000		100000		114000		110000		181000		104000	
Thallium, Total	µg/l																												
Vanadium, Total	µg/l					14	J					4.83	LT	7.4	LT	13.1	LT					22.2	LT	24.3	LT	13.5	LT		
Zinc, Total	µg/l	32				35.5		38		11	J	5.52	LT	7.7	LT	4.4	LT											68.2	
Aluminum, Soluble	µg/l													60.2	LT		NA		NA		NA		NA		NA	NA			NA
Antimony, Soluble	µg/l																NA		NA		NA		NA		NA	NA			NA
ARSENIC, Soluble	µg/l					4.4	J	2.3	LT	3.5	LT	2.71	LT	2.8	LT		NA		NA		NA		NA		NA	NA			NA
Barium, Soluble	µg/l					272		150	LT	240		212		198	LT		NA		NA		NA		NA		NA	NA			NA
Beryllium, Soluble	µg/l																NA		NA		NA		NA		NA	NA			NA
Calcium, Soluble	µg/l					102000		99000		160000		141000	J	96900			NA		NA		NA		NA		NA	NA			NA
Chromium, Soluble	µg/l											4.07	LT				NA		NA		NA		NA		NA	NA			NA
CHROMIUM (VI), Soluble	µg/l																NA		NA		NA		NA		NA	NA			NA
Cobalt, Soluble	µg/l																NA		NA		NA		NA		NA	NA			NA
Copper, Soluble	µg/l					9.3	J	8.2	LT			5.78	LT	1.9	LT		NA		NA		NA		NA		NA	NA			NA
Iron, Soluble	µg/l					65.2	J	31	LT	5300		519		4790			NA		NA		NA		NA		NA	NA			NA
Lead, Soluble	µg/l					9.1		2.6	LT	1.5	J	9.78					NA		NA		NA		NA		NA	NA			NA
Magnesium, Soluble	µg/l					35200		38000		61000		52500	J	40400			NA		NA		NA		NA		NA	NA			NA
Manganese, Soluble	µg/l					931		510		1200		622		674			NA		NA		NA		NA		NA	NA			NA
Mercury, Soluble	µg/l																NA		NA		NA		NA		NA	NA			NA
Nickel, Soluble	µg/l					17.2	J										NA		NA		NA		NA		NA	NA			NA
Potassium, Soluble	µg/l					9670		6200		5500		6680		7310			NA		NA		NA		NA		NA	NA			NA
Selenium, Soluble	µg/l																NA		NA		NA		NA		NA	NA			NA
Silver, Soluble	µg/l									2.8	J						NA		NA		NA		NA		NA	NA			NA
Sodium, Soluble	µg/l					204000		120000		140000		139000	J	118000			NA		NA		NA		NA		NA	NA			NA
Thallium, Soluble	µg/l																NA		NA		NA		NA		NA	NA			NA
Vanadium, Soluble	µg/l					9	J					7.04	LT	17.1	LT		NA		NA		NA		NA		NA	NA			NA
Zinc, Soluble	µg/l					34.6				4.9	J	31		3.6	LT		NA		NA		NA		NA		NA	NA			NA
1,1,1 Trichloroethane	µg/l																							1.1	J				
1,1,2,2 Tetrachloroethane	µg/l																												
2 Butanone	µg/l																												
2 Hexanone	µg/l																												
4 Methyl 2 Pentanone	µg/l																												
Acetone	µg/l											6	B					12	B	3.5	J			40	B	8.7 B; 5.0 B; 7.8 B		6.4	B
Benzene	µg/l																												
Bromoform	µg/l																												
CARBON DISULFIDE	µg/l																												
Chlorobenzene	µg/l																												
Dibromochloromethane	µg/l																												
Ethylbenzene	µg/l																												
Methyl iso butyl ketone	µg/l																												
Methylene chloride	µg/l									6.98	B	1	B			0.8	B									[illegible] B; 1.8 B; 1.7 B; [illegible] B			
Styrene	µg/l																												
Tetrachloroethene	µg/l																												
TETRAHYDROFURAN	µg/l											11	B									[illegible]		[illegible]		5.1 J; [illegible]		1	
Toluene	µg/l																												
Xylene (total)	µg/l																												
Chloride	mg/l	[illegible]				[illegible]		44.9		[illegible]		[illegible]		19		[illegible]		[illegible]		[illegible]		[illegible]		17.8		44		[illegible]	
Phenolics, Total	mg/l																												
Sulfide as S	mg/l	0.14												5.4	J			[illegible]						0.0516					
Sulfate as SO4	mg/l	62				13.4		44.7		311		54.4		25		12		11				8.0		11.5		[illegible]		[illegible]	
Total Organic Carbon	mg/l	18.8				34.8		66.85		38		30.4		25		190		18.1		[illegible]		17.5		17.0		[illegible]		[illegible]	
Total Organic Halides (TOX)	µg/L					162		152		70		86.5		30		18		59		28		62		61.5		24		18	

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Detected Analytes	Units	DU-05-S 3/29/88 Value Q	DU-05-S 6/20/89 Value Q	DU-05-S 10/2/90 Value Q	DU-05-S 7/31/91 Value Q	DU-05-S 1/28/92 Value Q	DU-05-S 7/29/92 Value Q	DU-05-S 04/27/93 Value Q	DU-05-S 6/8/93 Value Q	DU-05-S 8/18/93 Value Q	DU-05-S 10/12/93 Value Q	DU-05-S 1/26/94 Value Q	DU-05-S 4/25/94 Value Q	DU-05-S 6/29/94 Value Q	DU-05-S 10/4/94 Value Q	DU-05-S 4/25/95 Value Q
Aluminum, Total	µg/l							40.9 LT	NA	NA	55.5 J				18.6 J	
Antimony, Total	µg/l								NA	NA	27.3 J					
ARSENIC, Total	µg/l	2		1.6 J	2.7 LT				NA	NA	2.5 LT	2 LT				
Barium, Total	µg/l	310		270	230	160 J	138 LT	85.4 LT	NA	NA	97.9 LT	161 LT	147 LT	171 LT	146 LT	174 LT
Beryllium, Total	µg/l			0.2 J					NA	NA						
Cadmium, Total	µg/l			2.9 J					NA	NA						
Calcium, Total	µg/l	129000		194000	120000 J	240000	90700	81300	NA	NA	70800	104000	94300	79200	63000	165000
Chromium, Total	µg/l					5.4 J			NA	NA						
CHROMIUM (VI), Total	µg/l								NA	NA		NA				
Cobalt, Total	µg/l			18.1 J					NA	NA			9.1 LT	6.6 LT	3.6 LT	5.3 LT
Copper, Total	µg/l	11		58.1		8.4 J	13 LT	5.4 LT	NA	NA	3.2 LT		5.5 LT		13 LT	8.6 LT
Iron, Total	µg/l	102	9	78.3 J	580	120	81.9 LT	259	NA	NA	380	794	443	654	915	529
Lead, Total	µg/l	1		7.4					NA	NA						
Magnesium, Total	µg/l	44400		6000	36000 J	67000	33000	29300	NA	NA	23700	19000	34200	28700	22600	18500
Manganese, Total	µg/l	430	47	8540	7890	190	4160	2460	NA	NA	2190	8170	7550	5810	5180	1350
Mercury, Total	µg/L								NA	NA				0.08 J		
Nickel, Total	µg/L	20		65.4	17 LT		21.2 LT	17.3 LT	NA	NA	16.5 LT	35.4 LT	51.4	31.2 LT		28.1 LT
Potassium, Total	µg/L	26600		26100	15000	20000	13000	8570	NA	NA	11300	11500	8900	9030	7830	11300
Selenium, Total	µg/L	3							NA	NA						
Silver, Total	µg/L								NA	NA						
Sodium, Total	µg/L	178000	187000	312000	160000 J	130000 LT	123000 J	87500	NA	NA	101000	92900	94500	101000	120000	62500
Thallium, Total	µg/L								NA	NA						
Vanadium, Total	µg/L								NA	NA				25.8 LT	9.3 LT	
Zinc, Total	µg/L	13 J		61.8			2.49 LT	2.4 LT	NA	NA						
Aluminum, Soluble	µg/l							60.3 LT	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Barium, Soluble	µg/l				190 LT	150 J	13 LT	79.5 LT	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Soluble	µg/l				87000	230000	88200 J	79600	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Soluble	µg/l					11			NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Cobalt, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Copper, Soluble	µg/l					15 J	9.64 LT	5.9 LT	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Soluble	µg/l				400	92 J	9 LT	244	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Soluble	µg/l				0.69 LT	2.3 J	27.1		NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Soluble	µg/l				29000	65000	32300 J	27300	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Soluble	µg/l				6310	180	4060	2350	NA	NA	NA	NA	NA	NA	NA	NA
Mercury, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Soluble	µg/l				12 LT	8.9 J	21.8 LT	17 LT	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Soluble	µg/l				13000	19000	12600	8090	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Silver, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Soluble	µg/l				130000	130000	119000 J	80700	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Soluble	µg/l								NA	NA	NA	NA	NA	NA	NA	NA
Vanadium, Soluble	µg/l							14.7 LT	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Soluble	µg/L					5.2 J	42.6	4 LT	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1 Trichloroethane	µg/l															
1,1,2,2 Tetrachloroethane	µg/l															
2 Butanone	µg/l															
2 Hexanone	µg/l															
4-Methyl-2-Pentanone	µg/l															
Acetone	µg/l											4.4 B 3.8 B	4.3 J	14 B 24 B	5.4 B	
Benzene	µg/l															
Bromoform	µg/l															
CARBON DISULFIDE	µg/l															
Chlorobenzene	µg/l															
Dibromochloromethane	µg/l															
Ethylbenzene	µg/l					36.3										
Methyl iso butyl ketone	µg/l															
Methylene chloride	µg/l					7.79 B	B		0.9 B					0.6 B	2.6 B	
Styrene	µg/l					12.3										
TETRAHYDROFURAN	µg/l							41	110 110 91 91	48 50 51 51			38 34 42 [illegible]	[illegible]		
Toluene	µg/l					1.03 J										
Xylene (total)	µg/l															
Trichloroethene	µg/l													[illegible]		
Chloride	mg/l	54.5	54.5	74.1	30.2	43.8	55	16	NA	NA	[illegible]	21.9	[illegible]	[illegible]	34	[illegible]
Phenolics, Total	mg/l								NA	NA						
Sulfide as S	mg/l	0.07	0.07					92	NA	NA	41	84				
Sulfate as SO4	mg/l	110	110	97.8	38.8	333	52	46	NA	NA	34	25	[illegible]	44.[illegible]	15	
Total Organic Carbon	mg/l	30.4	30.4	68.2	25.75	31.3	18	10	NA	NA	61	15.2	12.6	5.84	16	[illegible]
Total Organic Halides (TOX)	µg/l			178	89	82	56		NA	NA	[illegible]	46	48	123	51	[illegible]

MKE[illegible].XLW
[illegible]

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Detected Analytes (Sample Number / Date Sampled)	Unit	DU-06-S 3/8/88 Value Q	DU-06-S 3/8/88 Value Q	DU-06-S 3/28/88 Value Q	DU-06-S 3/28/88 Value Q	DU-06-S 6/19/89 Value Q	DU-06-S 10/2/90 Value Q	DU-06-S01 7/31/91 Value Q	DU-06-S02 7/31/91 Value Q	DU-06-S03 7/31/91 Value Q	DU-06-S 1/29/92 Value Q
Aluminum, Total	µg/L				120		408				
Antimony, Total	µg/L										
ARSENIC, Total	µg/L			9 J	9	6	14.8	9.8 LT	9.3 LT	6.9 LT	9 J
Barium, Total	µg/L	301	370	290	290		229	220	230	220	470
Beryllium, Total	µg/L										
Cadmium, Total	µg/L										
Calcium, Total	µg/L	38800	38500	35700	35700		42800	43000 J	46000 J	44000 J	130000
Chromium, Total	µg/L						5.6 J				
CHROMIUM (VI), Total	µg/L										
Cobalt, Total	µg/L										
Copper, Total	µg/L		9 J	7 J	7 J			10 LT	7.6 LT	9.4 LT	
Iron, Total	µg/L			38 J	95 J	220	1970	1100	1100	1100	6900
Lead, Total	µg/L			2 J	1 J			12		12	
Magnesium, Total	µg/L	26400	26200	27200	26800		25900	17000	18000	18000	59000
Manganese, Total	µg/L	1980	1960	1950	2020	2800	3430	4510 J	4860 J	4730 J	16900
Mercury, Total	µg/L										1
Nickel, Total	µg/L			8 J	11 J		16.6 J			8.1 LT	
Potassium, Total	µg/L	2800 J	2700 J	3000	2500		3090 J	4200 LT	4500 LT	4300 LT	4900 J
Selenium, Total	µg/L			1 J							
Silver, Total	µg/L									3.7 LT	
Sodium, Total	µg/L	244000	242000	249000	245000	263000	117000	140000	140000	140000	120000 LT
Thallium, Total	µg/L										
Vanadium, Total	µg/L										
Zinc, Total	µg/L	23	25	21	24		21	100	97	110	
Aluminum, Soluble	µg/L										
Antimony, Soluble	µg/L										
ARSENIC, Soluble	µg/L						14	8 LT	8.3 LT	8.2 LT	9.8 J
Barium, Soluble	µg/L						193 J	210	220	210	500
Beryllium, Soluble	µg/L										
Calcium, Soluble	µg/L						45700	48000	50000	49000	130000
Chromium, Soluble	µg/L										3.5 J
CHROMIUM (VI), Soluble	µg/L										
Cobalt, Soluble	µg/L										
Copper, Soluble	µg/L						33.6				
Iron, Soluble	µg/L						23.3 J	1100	1100	1100	6500
Lead, Soluble	µg/L						9.4	1.8 LT		0.63 LT	2.7 J
Magnesium, Soluble	µg/L						26400	19000	20000	19000	57000
Manganese, Soluble	µg/L						3470	4640	5280	4860	16400
Mercury, Soluble	µg/L										
Nickel, Soluble	µg/L						12.4				10 J
Potassium, Soluble	µg/L						3300 J	4600 LT	4800 LT	5000	5000
Selenium, Soluble	µg/L										
Silver, Soluble	µg/L										
Sodium, Soluble	µg/L						126000	150000	150000	150000	120000
Thallium, Soluble	µg/L										
Vanadium, Soluble	µg/L										
Zinc, Soluble	µg/L						47.4				11 J
1,1,1-Trichloroethane	µg/L										
1,1,2,2-Tetrachloroethane	µg/L										
2-Butanone	µg/L										
2-Hexanone	µg/L										
4-Methyl-2-Pentanone	µg/L										
Acetone	µg/L										
Benzene	µg/L										
Bromoform	µg/L										
CARBON DISULFIDE	µg/L										
Chlorobenzene	µg/L										
Dibromochloromethane	µg/L										
Ethylbenzene	µg/L										
Methyl iso-butyl ketone	µg/L										
Methylene chloride	µg/L	5.01									5.64 B
Styrene	µg/L										
TETRAHYDROFURAN	µg/L										
Toluene	µg/L		4.14								
Xylene (total)	µg/L										
Trichloroethene	µg/L										
Chloride	mg/L	18.4	19.1	18.9	18.6		14.5	16.6	16.8	16.7	32
Phenolics, Total	mg/L										
Sulfide as S	mg/L	0.1	0.23	0.12	0.34						
Sulfate as SO4	mg/L	140	140	140	130		46.6	14.3	19.5	20.8	272
Total Organic Carbon	mg/L	18.1	17.8	11.1	10		15.4	13.5	13.5	12.75	20.8
Total Organic Halides (TOX)	µg/L						29	29	31	40.5	48

Detected Analytes (Sample Number / Date Sampled)	Unit	DU-06-S 7/28/92 Value Q	DU-06-S 04/27/93 Value Q	DU-06-S 10/12/93 Value Q	DU-06-S-FR 10/12/93 Value Q	DU-06-S 1/26/94 Value Q	DU-06-S 4/25/94 Value Q	DU-06-S 6/29/94 Value Q	DU-06-S 10/4/94 Value Q	DU-06-S 4/25/95 Value Q
Aluminum, Total	µg/L		417 LT						17.8 J	
Antimony, Total	µg/L								22.5 LT	
ARSENIC, Total	µg/L	7.02 LT	3.6 LT	9.3 J	11.3 J	5.8 J	5 LT	8.0 LT	9.3 LT	9.5 LT
Barium, Total	µg/L	173 LT	120 LT	196 LT	196 LT	179 LT	156 LT	163 LT	242	161 LT
Beryllium, Total	µg/L									
Cadmium, Total	µg/L									
Calcium, Total	µg/L	41300	31000	52000	51700	45500	44600	42500	56100	33200
Chromium, Total	µg/L									
CHROMIUM (VI), Total	µg/L					NA				
Cobalt, Total	µg/L								3 LT	5.2 LT
Copper, Total	µg/L		1.1 LT		1.9 LT		4.4 LT		1.4 LT	
Iron, Total	µg/L	1310	1300	2150	2070	1860	2110	2090	3240	2360
Lead, Total	µg/L									8.2 J
Magnesium, Total	µg/L	17400	19100	23100	23200	22300	22000	20400	26400	15000
Manganese, Total	µg/L	3450	1640	3400	3360	4090	3180	2750	3940	2270
Mercury, Total	µg/L									
Nickel, Total	µg/L		7.6 LT							
Potassium, Total	µg/L	3880 LT	2160 LT	3970 LT	4050 LT	2190 LT	8070	2340 LT	3250 LT	1930 LT
Selenium, Total	µg/L									
Silver, Total	µg/L			2.8 LT	2.7 LT			2.3 LT		2.7 LT
Sodium, Total	µg/L	136000 J	71000	44100	44200	51900	47400	68900	96600	141000
Thallium, Total	µg/L									
Vanadium, Total	µg/L							17.4 LT	10.5 LT	
Zinc, Total	µg/L		3.6 LT	21	25.2		17.6 LT			
Aluminum, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Antimony, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
ARSENIC, Soluble	µg/L	2.5 LT	1.6 LT	NA	NA	NA	NA	NA	NA	NA
Barium, Soluble	µg/L	152 LT	106 LT	NA	NA	NA	NA	NA	NA	NA
Beryllium, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Calcium, Soluble	µg/L	38400 J	30400	NA	NA	NA	NA	NA	NA	NA
Chromium, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Cobalt, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Copper, Soluble	µg/L	3.59 LT	1.3 LT	NA	NA	NA	NA	NA	NA	NA
Iron, Soluble	µg/L	1060	1050	NA	NA	NA	NA	NA	NA	NA
Lead, Soluble	µg/L	8.61		NA	NA	NA	NA	NA	NA	NA
Magnesium, Soluble	µg/L	16200 J	17900	NA	NA	NA	NA	NA	NA	NA
Manganese, Soluble	µg/L	3220	1570	NA	NA	NA	NA	NA	NA	NA
Mercury, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Nickel, Soluble	µg/L	6.9 LT		NA	NA	NA	NA	NA	NA	NA
Potassium, Soluble	µg/L	3550 LT	2440 LT	NA	NA	NA	NA	NA	NA	NA
Selenium, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Silver, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Sodium, Soluble	µg/L	128000 J	67700	NA	NA	NA	NA	NA	NA	NA
Thallium, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Vanadium, Soluble	µg/L			NA	NA	NA	NA	NA	NA	NA
Zinc, Soluble	µg/L	52.5		NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	µg/L									
1,1,2,2-Tetrachloroethane	µg/L									
2-Butanone	µg/L									
2-Hexanone	µg/L									
4-Methyl-2-Pentanone	µg/L									
Acetone	µg/L									
Benzene	µg/L									
Bromoform	µg/L									
CARBON DISULFIDE	µg/L									
Chlorobenzene	µg/L									
Dibromochloromethane	µg/L									
Ethylbenzene	µg/L									
Methyl iso-butyl ketone	µg/L									
Methylene chloride	µg/L	3 B						1.1 B	2.4 B	
Styrene	µg/L									
TETRAHYDROFURAN	µg/L									
Toluene	µg/L									
Xylene (total)	µg/L									
Trichloroethene	µg/L									
Chloride	mg/L	15.7	9.5	[illegible]	8.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/L									
Sulfide as S	mg/L		90	[illegible]		100				
Sulfate as SO4	mg/L	11	34	[illegible]	17	53.1	[illegible]		6	[illegible]
Total Organic Carbon	mg/L	11.3	5.6	[illegible]	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]
Total Organic Halides (TOX)	µg/L	21.5	26	12		[illegible]	[illegible]	[illegible]		[illegible]

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Sample Number / Date Sampled / Detected Analytes	Unit	DU-07-S 3/7/88 Value Q	DU-07-S 3/28/88 Value Q	DU-07-S 6/19/88 Value Q	DU-07-S 10/3/90 Value Q	DU-07-S01 7/31/91 Value Q	DU-07-S 1/28/92 Value Q	DU-07-S 7/28/92 Value Q	DU-07-S 04/27/93 Value Q	DU-07-S 10/13/93 Value Q	DU-07-S 1/26/94 Value Q	DU-07-S-FR 1/26/94 Value Q	DU-07-S 4/25/94 Value Q	DU-07-S 6/29/94 Value Q	DU-07-S 10/4/94 Value Q	DU-07-S 4/25/95 Value Q
Aluminum, Total	µg/l				655				67.6 LT							107 LT
Antimony, Total	µg/l						49 J			33.3 J						41.8 LT
ARSENIC, Total	µg/l		1 J		2.1 J	2.7 LT	14	8.19 LT	3.9 LT	9.8 LT	3.8 LT	4.5 LT	3.6 LT	2.2 LT		19.4
Barium, Total	µg/l	510	440		378	200	1000	711	592	875	361	361	377	303	254	1180
Beryllium, Total	µg/l							0.26 LT		1 LT						0.53 LT
Cadmium, Total	µg/l						1.6 J	4.42 LT								
Calcium, Total	µg/l	131000	127000		119000	77000 J	150000	124000	134000	120000	95300	98192	112000	103000	103000	161000
Chromium, Total	µg/l				23.6		19		7.4 LT							81.7
CHROMIUM (VI), Total	µg/l										NA	NA				
Cobalt, Total	µg/l				5.8 J				6.5 LT	23 LT		9.3 LT	9.8 LT	4.4 LT	3.3 LT	73.2
Copper, Total	µg/l				6.8 J			6.76 LT	9.2 LT	4.6 LT						34
Iron, Total	µg/l	23000	25300	200	4990	10500	82300	50500	34100	56900	19000	21236	25000	9430	5260	334000
Lead, Total	µg/l						1.3 J	1.13 LT								2.3 J
Magnesium, Total	µg/l	53000	52000		44600	31000 J	54000	45300	50700	43300	35100	35399	62700	36900	37100	48400
Manganese, Total	µg/l	1940	15400	2700	3320	970	1870	1430	1140	2260	1190	1109	1700	933	1040	1190
Mercury, Total	µg/l															
Nickel, Total	µg/l		8		46		33 J	8.39 LT	20.7 LT	15.1 LT		9.3 LT	9.3 LT			94
Potassium, Total	µg/l	15600	16700		23400	9700	17000	14100	18900	13300	11300	10688	10500	10000	11000	11100
Selenium, Total	µg/l							4.16 LT								2.3 LT
Silver, Total	µg/l									3.7 LT						3.8 LT
Sodium, Total	µg/l	48700	50600	42300	51100	74000	130000 LT	76800 J	58600	73100	89200	88117	74900	72300	68000	57000
Thallium, Total	µg/l															
Vanadium, Total	µg/l				7.7 J		11 J	6.97 LT	13.3 LT	7.5 LT				23 LT	11.8 LT	63.1
Zinc, Total	µg/l	40	24		33.4	15 LT		15.6 LT	2.4 LT			14.3 LT	14.3 LT			51.7
Aluminum, Soluble	µg/l									NA	NA	NA	NA	NA	NA	NA
Antimony, Soluble	µg/l						18 J			NA	NA	NA	NA	NA	NA	NA
ARSENIC, Soluble	µg/l						3.7 LT			NA	NA	NA	NA	NA	NA	NA
Barium, Soluble	µg/l				186	320	400	320	306	NA	NA	NA	NA	NA	NA	NA
Beryllium, Soluble	µg/l									NA	NA	NA	NA	NA	NA	NA
Calcium, Soluble	µg/l				119000	130000	140000	118000 J	130000	NA	NA	NA	NA	NA	NA	NA
Chromium, Soluble	µg/l						2.2 J			NA	NA	NA	NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/l									NA	NA	NA	NA	NA	NA	NA
Cobalt, Soluble	µg/l									NA	NA	NA	NA	NA	NA	NA
Copper, Soluble	µg/l					8.4 LT			5.2 LT	NA	NA	NA	NA	NA	NA	NA
Iron, Soluble	µg/l				30.6 J	16900	23300	20000	455	NA	NA	NA	NA	NA	NA	NA
Lead, Soluble	µg/l				7.4	0.69 LT		10.7		NA	NA	NA	NA	NA	NA	NA
Magnesium, Soluble	µg/l				46800	48000	52000	42700 J	48900	NA	NA	NA	NA	NA	NA	NA
Manganese, Soluble	µg/l				3380	1500	1650	1370	1070	NA	NA	NA	NA	NA	NA	NA
Mercury, Soluble	µg/l									NA	NA	NA	NA	NA	NA	NA
Nickel, Soluble	µg/l				30.7 J		11 J		10.9 LT	NA	NA	NA	NA	NA	NA	NA
Potassium, Soluble	µg/l					16000	17000	13000	18400	NA	NA	NA	NA	NA	NA	NA
Selenium, Soluble	µg/l								1.3 LT	NA	NA	NA	NA	NA	NA	NA
Silver, Soluble	µg/l									NA	NA	NA	NA	NA	NA	NA
Sodium, Soluble	µg/l				56700	120000	120000	71900 J	56700	NA	NA	NA	NA	NA	NA	NA
Thallium, Soluble	µg/l									NA	NA	NA	NA	NA	NA	NA
Vanadium, Soluble	µg/l								16.2 LT	NA	NA	NA	NA	NA	NA	NA
Zinc, Soluble	µg/l					51	8.7 J	19.9 LT	3 LT	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	µg/l															
1,1,2,2-Tetrachloroethane	µg/l															
2-Butanone	µg/l															
2-Hexanone	µg/l															
4-Methyl-2-Pentanone	µg/l															
Acetone	µg/l											3.6 B		[illegible] B		
Benzene	µg/l				3 J	5.26					1.2 J	1.2 J	1.5 J	2 J		[illegible] J
Bromoform	µg/l															
CARBON DISULFIDE	µg/l															
Chlorobenzene	µg/l				34	9.34 J	6.93			34	5.2	5.8	[illegible]	[illegible]	2.2	2.4
Dibromochloromethane	µg/l															
Ethylbenzene	µg/l															
Methyl iso-butyl ketone	µg/l															
Methylene chloride	µg/l							1 B							[illegible] B	
Styrene	µg/l															
TETRAHYDROFURAN	µg/l					15.2							[illegible]	1		[illegible]
Toluene	µg/l															
Xylene (total)	µg/l															
Trichloroethene	µg/l															
Chloride	mg/l	18.6	16.9	11.1	21.5	19.3	20.2	13.6	15	9.9	13.1	12.8	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/l															
Sulfide as S	mg/l	0.33		0.25					[illegible]	[illegible]	[illegible]	[illegible]				
Sulfate as SO4	mg/l	6		40	12.3	6.3		6.1					[illegible]			18.4
Total Organic Carbon	mg/l	20.1	18.5	3.4	21	16.6	28.1	23.1	14	140	8.8	9	11.3	6.4	[illegible]	[illegible]
Total Organic Halides (TOX)	µg/l				89	18.5	77	59	70	37	50	30	50.2	[illegible]	[illegible]	38

MKE10015FLB.XLW

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Sample Number	TBDU07D01	TBDU08S01	TBDU25I2	TB-DU03S	TB-JB01D	TB-DU11D	TB-DU03S	TB-DU02S	TB-DU11D	TBLK-1	TBLK-2	TBLK-1	TBLK-1	TBLK-1	TNLK-1	TBLK-1	TBLK-1	TBLK-2	TBLK-4
Date Sampled	8/1/91	7/31/91	7/30/91	1/28/92	1/30/92	1/29/92	7/28/92	7/28/92	7/29/92	6/26/93	6/27/93	6/8/93	10/13/93	1/26/94	6/15/94	6/29/94	10/4/94	6/25/95	6/25/95
Detected Analytes	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q
Aluminum, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM (VI), Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Total ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM (VI), Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Soluble ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane ug/l																			
1,1,2,2-Tetrachloroethane ug/l		2.44 B																	
2-Butanone ug/l																			
2-Hexanone ug/l																			
4-Methyl-2-Pentanone ug/l																			
Acetone ug/l									6 B					5.6 B					
Benzene ug/l																			
Bromoform ug/l																			
CARBON DISULFIDE ug/l																			
Chlorobenzene ug/l																			
Dibromochloromethane ug/l																			
Ethylbenzene ug/l																			
Methyl-iso-butyl-ketone ug/l																			
Methylene chloride ug/l																			
Styrene ug/l																			
TETRAHYDROFURAN ug/l																			
Toluene ug/l																			
Xylene (total) ug/l																			
Trichloroethene ug/l																			
Chloride mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenolics, Total mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide as S mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate as SO4 mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides (TOX) mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Detected Analytes	Unit	DU-01-D01 7/30/91 Value Q	DU-01-D02 7/30/91 Value Q	DU-01-D03 7/30/92 Value Q	DU-01-D 1/28/92 Value Q	DU-01-D 7/29/92 Value Q	DU-01-DFR 7/29/92 Value Q	DU-01-D 04/26/93 Value Q
Aluminum, Total	µg/L					114 LT	140 LT	105 LT
Antimony, Total	µg/L							
ARSENIC, Total	µg/L							
Barium, Total	µg/L					17.3 LT	17.3 LT	23.6 LT
Beryllium, Total	µg/L							
Cadmium, Total	µg/L							
Calcium, Total	µg/l	54000 J	54000 J	53000 J	58000	58800	58900	58800
Chromium, Total	µg/l							
CHROMIUM (VI), Total	µg/l							
Cobalt, Total	µg/L							
Copper, Total	µg/L	17 LT	11 LT	18 LT		3.65 LT		
Iron, Total	µg/L	38 LT	31 LT	36 LT	49 J	204	257	79.5 LT
Lead, Total	µg/L	16	13	9.9		1.81 LT	2.36 LT	
Magnesium, Total	µg/L	30000	30000	29000	31000	31800	32200	33500
Manganese, Total	µg/l	9 LT	6.6 LT	6.5 LT		6.27 LT	6.46 LT	
Mercury, Total	µg/l							
Nickel, Total	µg/l							
Potassium, Total	µg/L					353 LT	381 LT	
Selenium, Total	µg/L							2.3 LT
Silver, Total	µg/L			2.6 LT				
Sodium, Total	µg/L	3700 LT	3500 LT	3700 LT	3000 LT	3920 LT	3790 LT	3920 LT
Thallium, Total	µg/l							
Vanadium, Total	µg/L							
Zinc, Total	µg/L	150	97	150			2.97 LT	
Aluminum, Soluble	µg/L							17.4 LT
Antimony, Soluble	µg/L							
ARSENIC, Soluble	µg/L							
Barium, Soluble	µg/L					13.2 LT	11.5 LT	23.7 LT
Beryllium, Soluble	µg/L							
Calcium, Soluble	µg/L	58000	60000	57000	58000	58300 J	53200 J	58700
Chromium, Soluble	µg/L							
CHROMIUM (VI), Soluble	µg/l							
Cobalt, Soluble	µg/L							
Copper, Soluble	µg/L					3.31 LT	3.86 LT	2 LT
Iron, Soluble	µg/l	110				3.11 LT	54.3 LT	19.8 LT
Lead, Soluble	µg/L	2.2 LT	1.6 LT			10.4	6.63	
Magnesium, Soluble	µg/L	32000	33000	31000	32000	32200 J	33300 J	32200
Manganese, Soluble	µg/L				4.4 J			
Mercury, Soluble	µg/L		0.14 LT					
Nickel, Soluble	µg/L							
Potassium, Soluble	µg/L					229 LT	324 J	
Selenium, Soluble	µg/L							1.6 LT
Silver, Soluble	µg/L				1.1 J			
Sodium, Soluble	µg/L	2800 LT	2800 LT	2700 LT	4000 J	3670 LT	3450 LT	3820 LT
Thallium, Soluble	µg/l							
Vanadium, Soluble	µg/l							14.2 LT
Zinc, Soluble	µg/l					44.4	28.1	1.7 LT
1,1,1-Trichloroethane	µg/l							
1,1,2,2-Tetrachloroethane	µg/l							
2-Butanone	µg/l							
2-Hexanone	µg/l							
4-Methyl-2-Pentanone	µg/l							
Acetone	µg/l							
Benzene	µg/l							
Bromoform	µg/l							
CARBON DISULFIDE	µg/l							
Chlorobenzene	µg/l							
Ethylbenzene	µg/L							
Methyl iso-butyl ketone	µg/l							
Methylene chloride	µg/l				3.6 B	4 B	2 B	
Styrene	µg/l							
TETRAHYDROFURAN	µg/l							
Toluene	µg/l							
Xylene (total)	µg/l							
Chloride	mg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/l							
Sulfide as S	mg/l							14 J
Sulfate as SO4	mg/l	7.3	7.2	6	5.1	5.9	6.2	8.1
Total Organic Carbon	mg/l	1.95	1.85	3.25	1.4	1.8	4.3	
Total Organic Halides (TOX)	µg/L	17	32.5	16.5	[illegible]	26	19.5	

Detected Analytes	Unit	DU-02-D01 7/30/91 Value Q	DU-02-D02 7/30/91 Value Q	DU-02-D03 7/30/91 Value Q	DU-02-D 1/28/92 Value Q	DU-02-D 7/28/92 Value Q	DU-02-D 04/26/93 Value Q	DU-03-D01 7/30/91 Value Q	DU-03-D02 7/30/91 Value Q	DU-03-D03 7/30/91 Value Q	DU-03-D 1/29/92 Value Q	DU-03-D 7/28/92 Value Q	DU-03-D 04/26/93 Value Q
Aluminum, Total	µg/L			1600			58.6 LT						52.1 LT
Antimony, Total	µg/L												
ARSENIC, Total	µg/L												
Barium, Total	µg/L					21.8 LT	28.7 LT					13.2 LT	21.7 LT
Beryllium, Total	µg/L					0.22 LT							
Cadmium, Total	µg/L												
Calcium, Total	µg/l	75000 J	72000 J	75000 J	79000	78400	77300	53000 J	54000 J	55000 J	63000	57600	61900
Chromium, Total	µg/l												
CHROMIUM (VI), Total	µg/l												
Cobalt, Total	µg/L												
Copper, Total	µg/L					3.13 LT		21 LT					
Iron, Total	µg/L					22.4 LT	33.6 LT	34 LT		140			
Lead, Total	µg/L	2.3 LT	5.3	1.6 LT				9.9					
Magnesium, Total	µg/L	43000 J	44000 J	43000 J	42000	42400	44100	33000	35000 J	35000 J	37000	35000	39400
Manganese, Total	µg/l					4.74 LT		9.6 LT				2.07 LT	
Mercury, Total	µg/l												
Nickel, Total	µg/l												
Potassium, Total	µg/L					692 LT	1010 LT					555 LT	
Selenium, Total	µg/L						1.5 LT						1.9 LT
Silver, Total	µg/L							3.6 LT					
Sodium, Total	µg/L	6200 J	6200 J	5900 J	5300 LT	6100 J	6170	4500 LT	4200 LT	4100 LT		4330 LT	4780 LT
Thallium, Total	µg/l												
Vanadium, Total	µg/L												
Zinc, Total	µg/L	21						140	38				
Aluminum, Soluble	µg/L						26.4 LT						24 LT
Antimony, Soluble	µg/L												
ARSENIC, Soluble	µg/L										2 J		
Barium, Soluble	µg/L					16.5 LT	28.5 LT					11.8 LT	21.4 LT
Beryllium, Soluble	µg/L												
Calcium, Soluble	µg/L	61000	75000	64000	76000	72900 J	79000	62000	50000	58000	60000	58400 J	61300
Chromium, Soluble	µg/L												
CHROMIUM (VI), Soluble	µg/l												
Cobalt, Soluble	µg/L												
Copper, Soluble	µg/L	7.3 LT				4.69 LT	1.5 LT					6.47 LT	1.9 LT
Iron, Soluble	µg/l				29 J	23 LT						46.6 LT	
Lead, Soluble	µg/L		0.69 LT		2.1 J	13.3		2.8 LT	1.4 LT	0.69 LT	2.7 J	11.9	
Magnesium, Soluble	µg/L	34000	42000	36000	42000	40100 J	43300	38000	32000	36000	37000	35400 J	37200
Manganese, Soluble	µg/L	3.8 LT	3.4 LT		9.4 J						5.4 J	11 LT	
Mercury, Soluble	µg/L												
Nickel, Soluble	µg/L												
Potassium, Soluble	µg/L					606 LT	763 LT					655 LT	847 LT
Selenium, Soluble	µg/L						1.7 LT						1.3 LT
Silver, Soluble	µg/L				3.8 J						2.5 J		
Sodium, Soluble	µg/L	4800 LT	5900	4900 LT	6100	5720 J	6160	3900 LT	3700 LT	4300 LT	4700 J	5930 J	4430 LT
Thallium, Soluble	µg/l												
Vanadium, Soluble	µg/l						15.3 LT						15.4 LT
Zinc, Soluble	µg/l				6.5 J	43.2					5.6 J	40	
1,1,1-Trichloroethane	µg/l												
1,1,2,2-Tetrachloroethane	µg/l												
2-Butanone	µg/l												
2-Hexanone	µg/l												
4-Methyl-2-Pentanone	µg/l												
Acetone	µg/l												
Benzene	µg/l												
Bromoform	µg/l												
CARBON DISULFIDE	µg/l												
Chlorobenzene	µg/l												
Ethylbenzene	µg/L												
Methyl iso-butyl ketone	µg/l												
Methylene chloride	µg/l				2.3 B	1 B						6 B	
Styrene	µg/l												
TETRAHYDROFURAN	µg/l												
Toluene	µg/l												
Xylene (total)	µg/l												
Chloride	mg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/l												
Sulfide as S	mg/l						80 J						
Sulfate as SO4	mg/l	28.2	29.2	28.6	30.3	[illegible]	[illegible]	20.1	[illegible]	[illegible]	[illegible]	[illegible]	
Total Organic Carbon	mg/l	3.35	3.2	2.9	1.8	[illegible]		1.95	[illegible]	[illegible]		[illegible]	
Total Organic Halides (TOX)	µg/L	28	26.5	28.5	5	19	6.1	33.5	[illegible]	[illegible]		11	

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Detected Analytes	Unit	DU-06-D01 7/31/91 Value Q	DU-06-D02 7/31/91 Value Q	DU-06-D03 7/31/91 Value Q	DU-06-D 1/29/92 Value Q	DU-06-D 7/28/92 Value Q	DU-06-D 04/26/93 Value Q	DU-06-D-FR 04/26/93 Value Q
Aluminum, Total	µg/l		120 UJ				34.5 UJ	51.3 UJ
Antimony, Total	µg/l							
ARSENIC, Total	µg/l							
Barium, Total	µg/l					20.5 UJ	30.6 UJ	30.8 UJ
Beryllium, Total	µg/l							
Cadmium, Total	µg/l							
Calcium, Total	µg/l	51000 J	56000 J	49000 J	57000	55100	58000	58600
Chromium, Total	µg/l							
CHROMIUM (VI), Total	µg/l							
Cobalt, Total	µg/l							
Copper, Total	µg/l							
Iron, Total	µg/l				24 J		14 UJ	
Lead, Total	µg/l				1.1 J			
Magnesium, Total	µg/l	29000 J	31000	28000 J	31000	29600	32700	33300
Manganese, Total	µg/l		27 J					
Mercury, Total	µg/l					0.13 UJ		
Nickel, Total	µg/l						9.4 UJ	
Potassium, Total	µg/l					255 UJ		
Selenium, Total	µg/l			1.4 UJ			1.9 UJ	1.7 UJ
Silver, Total	µg/l							
Sodium, Total	µg/l	8700 J	8900	7100 J	4700 UJ	4260 UJ	4850 UJ	5010
Thallium, Total	µg/l							
Vanadium, Total	µg/l							
Zinc, Total	µg/l							2.2 UJ
Aluminum, Soluble	µg/l				54 J		32.6 UJ	44.8 UJ
Antimony, Soluble	µg/l							
ARSENIC, Soluble	µg/l							
Barium, Soluble	µg/l					16.8 J	29.7 UJ	29.6 UJ
Beryllium, Soluble	µg/l							
Calcium, Soluble	µg/l	45000	50000	50000	55000	53700 J	56800	56800
Chromium, Soluble	µg/l							
CHROMIUM (VI), Soluble	µg/l							
Cobalt, Soluble	µg/l							
Copper, Soluble	µg/l				14 J		1.2 UJ	3.9 UJ
Iron, Soluble	µg/l				46 J	18.8 J	10.2 UJ	
Lead, Soluble	µg/l	1.2 UJ	2.6 UJ	0.93 UJ	1.7	10		
Magnesium, Soluble	µg/l	25000	28000	28000	30000	29200 J	30800	30900
Manganese, Soluble	µg/l							
Mercury, Soluble	µg/l							
Nickel, Soluble	µg/l							6.1 UJ
Potassium, Soluble	µg/l					389 J		881 UJ
Selenium, Soluble	µg/l						1.9 UJ	1.6 UJ
Silver, Soluble	µg/l							
Sodium, Soluble	µg/l	7500	7800	7000	5600	4490 J	4410 UJ	4420 UJ
Thallium, Soluble	µg/l							
Vanadium, Soluble	µg/l						13.6 UJ	14.9 UJ
Zinc, Soluble	µg/l				11 J	23	1.2 UJ	1.7 UJ
1,1,1 Trichloroethane	µg/l							
1,1,2,2 Tetrachloroethane	µg/l							
2 Butanone	µg/l							
2 Hexanone	µg/l							
4 Methyl 2 Pentanone	µg/l							
Acetone	µg/l							
Benzene	µg/l							
Bromoform	µg/l							
CARBON DISULFIDE	µg/l							
Chlorobenzene	µg/l							
Ethylbenzene	µg/l							
Methyl iso butyl ketone	µg/l							
Methylene chloride	µg/l					2 J		
Styrene	µg/l							
TETRAHYDROFURAN	µg/l							
Toluene	µg/l							
Xylene (total)	µg/l							
Chloride	mg/l	14	[illegible]	[illegible]	[illegible]	14	11	13
Phenolics, Total	mg/l							
Sulfide as S	mg/l						50 J	11
Sulfate as SO4	mg/l	5.7	5.8	5.1				
Total Organic Carbon	mg/l	2.3	2.4	4.8	[illegible]			
Total Organic Halides (TOX)	µg/l	31	16.5	13	[illegible]	17.5		16

Detected Analytes	Unit	DU-07-D01 8/1/91 Value Q	DU-07-D02 8/1/91 Value Q	DU-07-D03 8/1/91 Value Q	DU-07-D 1/29/92 Value Q	DU-07-D 7/28/92 Value Q	DU-07-D 04/26/93 Value Q	DU-11-D02 7/31/91 Value Q	DU-11-D03 7/31/91 Value Q	DU-11-D 1/29/92 Value Q	DU-11-D 7/29/92 Value Q	DU-11-D 04/26/93 Value Q
Aluminum, Total	µg/l						61.8 UJ			1500	437	201
Antimony, Total	µg/l											
ARSENIC, Total	µg/l											
Barium, Total	µg/l					37.6 UJ	29.8 UJ				20.4 UJ	24.3 UJ
Beryllium, Total	µg/l											
Cadmium, Total	µg/l											
Calcium, Total	µg/l	72000	66000	63000	61000	56800	61100	73000	72000	70000	72600	75400
Chromium, Total	µg/l											
CHROMIUM (VI), Total	µg/l											
Cobalt, Total	µg/l											
Copper, Total	µg/l					3.99 UJ	1.7 UJ					
Iron, Total	µg/l	120	46 UJ	34 UJ		18.4 UJ	22.2 UJ	80 UJ	100	950	299	233
Lead, Total	µg/l	1.6 UJ						0.81 UJ	0.83 UJ	14 J	1.52 UJ	
Magnesium, Total	µg/l	36000	33000	31000	29000	27700	31000	35000	35000	33000	34500	37500
Manganese, Total	µg/l	13 UJ	8.2 UJ	7 UJ				11 UJ	11 UJ		3.21 UJ	1.6 UJ
Mercury, Total	µg/l											
Nickel, Total	µg/l											
Potassium, Total	µg/l	1400 J				505 UJ	815 UJ	20000	3500 UJ		475 UJ	
Selenium, Total	µg/l						2 UJ					2.1 UJ
Silver, Total	µg/l	31	2.8 UJ					700	100			
Sodium, Total	µg/l	5800	5300	5000	5300 UJ	5410 J	5520	11000	10000	7700 UJ	9340 J	8930
Thallium, Total	µg/l											
Vanadium, Total	µg/l											
Zinc, Total	µg/l					383	4.9 UJ	7.4 UJ	7.1 UJ			
Aluminum, Soluble	µg/l						29.1 UJ					37.1 UJ
Antimony, Soluble	µg/l											
ARSENIC, Soluble	µg/l											
Barium, Soluble	µg/l					16.3 UJ	29.2 UJ				11.8 UJ	22.9 UJ
Beryllium, Soluble	µg/l											
Calcium, Soluble	µg/l	61000	50000	58000	58000	56000 J	60000	57000	57000	64000	57200 J	73400
Chromium, Soluble	µg/l											
CHROMIUM (VI), Soluble	µg/l											
Cobalt, Soluble	µg/l											
Copper, Soluble	µg/l					3.03 UJ		6.8 UJ	7.2 UJ			2.2 UJ
Iron, Soluble	µg/l				20 J	23.4 UJ	13.6 UJ					17.6 UJ
Lead, Soluble	µg/l			1 UJ	2.1 J	15.9				3.9		
Magnesium, Soluble	µg/l	30000	24000	28000	28000	27300 J	29200	28000	27000	31000	27500 J	34900
Manganese, Soluble	µg/l											
Mercury, Soluble	µg/l											
Nickel, Soluble	µg/l											
Potassium, Soluble	µg/l					432 UJ						881 UJ
Selenium, Soluble	µg/l						1.9 UJ					2.2 UJ
Silver, Soluble	µg/l											
Sodium, Soluble	µg/l	4700 J	3800 UJ	4600 UJ	5400	4570 UJ	5110	8200	7900	8400	7060 J	8290
Thallium, Soluble	µg/l											
Vanadium, Soluble	µg/l						13.9 UJ					16.4 UJ
Zinc, Soluble	µg/l				6.2 J	35.8	1.3 UJ					
1,1,1 Trichloroethane	µg/l											
1,1,2,2 Tetrachloroethane	µg/l											
2 Butanone	µg/l											
2 Hexanone	µg/l											
4 Methyl 2 Pentanone	µg/l											
Acetone	µg/l					5 B						
Benzene	µg/l											
Bromoform	µg/l											
CARBON DISULFIDE	µg/l											
Chlorobenzene	µg/l											
Ethylbenzene	µg/l											
Methyl iso butyl ketone	µg/l											
Methylene chloride	µg/l	[illegible] B	7 B	6.6 B		2 B		[illegible] B	[illegible] B		[illegible] B	
Styrene	µg/l											
TETRAHYDROFURAN	µg/l											
Toluene	µg/l											
Xylene (total)	µg/l											
Chloride	mg/l	[illegible]	[illegible]	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/l											
Sulfide as S	mg/l						[illegible]					
Sulfate as SO4	mg/l	13.8	14.3	13.4	21.4	[illegible]	[illegible]	8.1	[illegible]	[illegible]	[illegible]	
Total Organic Carbon	mg/l	[illegible]	3.75	6.35	1.8	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	
Total Organic Halides (TOX)	µg/l	[illegible]	24	5	10	[illegible]	11	16	21.5	15	[illegible]	[illegible]

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DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Sample Number	DU-12-D01	DU-12-D02	DU-12-D03	DU-12-D	DU-12-D	DU-12-D
Date Sampled	8/1/91	8/1/91	8/1/91	1/29/92	7/28/92	04/26/93
Detected Analytes	Value Q	Value Q	Value Q	Value Q	Value Q	Value Q
Aluminum, Total ug/l						514 LT
Antimony, Total ug/l						
ARSENIC, Total ug/l						
Barium, Total ug/l					22.3 LT	30.2 LT
Beryllium, Total ug/l						
Cadmium, Total ug/l						
Calcium, Total ug/l	74000	73000	52000	63000	62600	64400
Chromium, Total ug/l	4.7 LT					
CHROMIUM (VI), Total ug/l						
Cobalt, Total ug/l						
Copper, Total ug/l						
Iron, Total ug/l	35 LT			34 J	4.52 LT	
Lead, Total ug/l	1.4 LT	1.1 LT				
Magnesium, Total ug/l	44000	43000	30000	36000	37400	39400
Manganese, Total ug/l	18	11 LT	6.5 LT		6.27 LT	
Mercury, Total ug/l						
Nickel, Total ug/l						
Potassium, Total ug/l		1100 LT			658 LT	
Selenium, Total ug/l						2 LT
Silver, Total ug/l	3.6 LT	29 J				
Sodium, Total ug/l	5300	5000	3300 LT	4100 LT	4940 LT	5010
Thallium, Total ug/l						
Vanadium, Total ug/l					3.25 LT	
Zinc, Total ug/l						
Aluminum, Soluble ug/l						36.9 LT
Antimony, Soluble ug/l						
ARSENIC, Soluble ug/l						
Barium, Soluble ug/l					15.1 LT	29.2 LT
Beryllium, Soluble ug/l						
Calcium, Soluble ug/l	63000	57000	56000	57000	51300 J	62700
Chromium, Soluble ug/l						
CHROMIUM (VI), Soluble ug/l						
Cobalt, Soluble ug/l						
Copper, Soluble ug/l	9.1 LT	5.6 LT				1.4 LT
Iron, Soluble ug/l				20 J		
Lead, Soluble ug/l				2.5 LT	2.06 LT	
Magnesium, Soluble ug/l	37000	33000	32000	34000	31300 J	36800
Manganese, Soluble ug/l				5.8 J		
Mercury, Soluble ug/l		0.13 LT				
Nickel, Soluble ug/l						
Potassium, Soluble ug/l					276 J	881 LT
Selenium, Soluble ug/l						1.5 LT
Silver, Soluble ug/l						
Sodium, Soluble ug/l	4500 LT	3800 LT	3700 LT	4500 J	3790 LT	4620 LT
Thallium, Soluble ug/l						
Vanadium, Soluble ug/l						14.9 LT
Zinc, Soluble ug/l			4 LT	4.2 J	4.27 LT	
1,1,1 Trichloroethane ug/l						
1,1,2,2 Tetrachloroethane ug/l						
2 Butanone ug/l						
2 Hexanone ug/l						
4 Methyl 2 Pentanone ug/l						
Acetone ug/l						
Benzene ug/l						
Bromoform ug/l						
CARBON DISULFIDE ug/l						
Chlorobenzene ug/l						
Ethylbenzene ug/l						
Methyl iso butyl ketone ug/l						
Methylene chloride ug/l	6.63 B	7.65 B	7.23 B	6.78 B	1 B	1 B
Styrene ug/l						
TETRAHYDROFURAN ug/l						
Toluene ug/l						
Xylene (total) ug/l						
Chloride mg/l	4.1	3.6	3.2	4.5	4.8	4.4
Phenolics, Total mg/l						
Sulfide as S mg/l						
Sulfate as SO4 mg/l	20.1	20.8	20.7	18.6	21.8	22
Total Organic Carbon mg/l	3.28	4.85	4.58	1.7		
Total Organic Halides (TOX) ug/l	17.8	7		16	6.5	

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
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Detected Analytes	Units	DU-08-S 3/9/88 Value Q	DU-08-S 3/29/88 Value Q	DU-08-S01 7/31/91 Value Q	DU-08-S 1/29/92 Value Q	DU-08-S 7/29/92 Value Q	DU-08-S 04/27/93 Value Q	DU-08-S 10/12/93 Value Q	DU-08-S 4/25/94 Value Q	DU-08-S 10/4/94 Value Q	DU-08-S 4/25/95 Value Q
Aluminum, Total	µg/l	310	390		420	124 LT	38[illegible] LT	801 LT	478 LT	612 J	324 LT
Antimony, Total	µg/l				98			340 J			
ARSENIC, Total	µg/l	90	60	130	430	131	119	389	326	185	231
Barium, Total	µg/l	285	320	370		407	477	796 LT	733 LT	582 LT	721 LT
Beryllium, Total	µg/l					0.34 LT					
Cadmium, Total	µg/l										
Calcium, Total	µg/l	49500	70600	140000 J	140000	142000	140000	156000	140000	112000	136000
Chromium, Total	µg/l	25	45	67	62	48.9	91.5	64.8 LT	119	98.4 LT	74.6
CHROMIUM (VI), Total	µg/l						20				
Cobalt, Total	µg/l	45	70	36 LT	48 J	48 LT	37.5 LT	95 LT	101 LT	126 LT	91.7 LT
Copper, Total	µg/l				5 J	10.2 LT	10.3 LT		13.6 LT		
Iron, Total	µg/l	6800	5500	16100	11100	5080	13600	3330	6440	1830	7060
Lead, Total	µg/l	7			9.2	4.55 J	3 LT	2.5 J			1.6 J
Magnesium, Total	µg/l	24300	33600	67000 J	630000	62900	65700	67000	62700	54500	57400
Manganese, Total	µg/l	1070	1650	1300	1400	894	868	908	752	630	854
Mercury, Total	µg/l										
Nickel, Total	µg/l	160	300	290	260	231	215	402	431	597	284
Potassium, Total	µg/l	5300 J	9100	9100	6000	4160 LT	4360 LT	16400 LT			
Selenium, Total	µg/l										
Silver, Total	µg/l										13 LT
Sodium, Total	µg/l	662000	1360000	1120000 J	925000 LT	912000 J	707000	2160000	1950000	2210000	1710000
Thallium, Total	µg/l										
Vanadium, Total	µg/l	46 J	74	57	36 J	32.2 LT	39.[illegible] LT	9.4 LT	127 LT	144 LT	94 LT
Zinc, Total	µg/l	75	68	460	180	65.7	35.[illegible] LT	119 LT	123	66.6 LT	
Aluminum, Soluble	µg/l							NA	NA	NA	NA
Antimony, Soluble	µg/l			12 LT	14 J			NA	NA	NA	NA
ARSENIC, Soluble	µg/l			120	76 LT	99.7	117	NA	NA	NA	NA
Barium, Soluble	µg/l			340	310	194	361 LT	NA	NA	NA	NA
Beryllium, Soluble	µg/l							NA	NA	NA	NA
Calcium, Soluble	µg/l			120000	120000	130000 J	132000	NA	NA	NA	NA
Chromium, Soluble	µg/l			29	17	15.2	17.[illegible] LT	NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/l						23	NA	NA	NA	NA
Cobalt, Soluble	µg/l			45 LT	30 J	27.7 LT	40.[illegible] LT	NA	NA	NA	NA
Copper, Soluble	µg/l				5.4 J			NA	NA	NA	NA
Iron, Soluble	µg/l			1800	12600	2410	4890	NA	NA	NA	NA
Lead, Soluble	µg/l			3.8	2.7 LT	10.1		NA	NA	NA	NA
Magnesium, Soluble	µg/l			58000	50000	60300 J	60500	NA	NA	NA	NA
Manganese, Soluble	µg/l			1200	1300	896	817	NA	NA	NA	NA
Mercury, Soluble	µg/l							NA	NA	NA	NA
Nickel, Soluble	µg/l			240	130	163	194 LT	NA	NA	NA	NA
Potassium, Soluble	µg/l			9900	5600	4240 LT	5940 LT	NA	NA	NA	NA
Selenium, Soluble	µg/l						[illegible] LT	NA	NA	NA	NA
Silver, Soluble	µg/l				2.4 J			NA	NA	NA	NA
Sodium, Soluble	µg/l			1300000	740000	825000 J	785000	NA	NA	NA	NA
Thallium, Soluble	µg/l							NA	NA	NA	NA
Vanadium, Soluble	µg/l			52	28 J	26.4 LT	54.[illegible] LT	NA	NA	NA	NA
Zinc, Soluble	µg/l			23	11 J	32		NA	NA	NA	NA
1,1,1 Trichloroethane	µg/l										
1,1,2,2 Tetrachloroethane	µg/l										
2 Butanone	µg/l						[illegible] J				
2 Hexanone	µg/l	30.2 J									
4 Methyl 2 Pentanone	µg/l										74 J
Acetone	µg/l	388 J	524 J			8 B			660	530 B	840
Benzene	µg/l	19.6 J	20 J		4.52 J	7	[illegible] J				
Bromoform	µg/l										
CARBON DISULFIDE	µg/l	1120	749 J		[illegible]	26	[illegible]	[illegible] J		[illegible]	360
Chlorobenzene	µg/l										1300
Ethylbenzene	µg/l				1.45 J	2 J					
Methyl iso-butyl ketone	µg/l		59 J								
Methylene chloride	µg/l	74.8	11 J			[illegible] B		[illegible] B		74 B	
Styrene	µg/l										
TETRAHYDROFURAN	µg/l		74000	15800	7140	17000	[illegible]	[illegible]	[illegible]	[illegible]	41000 J
Toluene	µg/l	1080	2230 J	128 J	70.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Xylene (total)	µg/l										
Chloride	mg/l	120	136	134	[illegible]	122	8	[illegible]	[illegible]	640	[illegible]
Phenolics, Total	mg/l							[illegible]	[illegible]	0.096	
Sulfide as S	mg/l	53	210	8.4	4.4	[illegible]	[illegible] J	[illegible]	[illegible]		36.5
Sulfate as SO4	mg/l	120	160		25.1	16	[illegible]	[illegible]	[illegible]	140	
Total Organic Carbon	mg/l	154	89.6	112	409	[illegible]	4	[illegible]	[illegible]	210	399
Total Organic Halides (TOX)	µg/l			698	[illegible]	511	[illegible]	[illegible]	[illegible]	1750	2150 LT

Detected Analytes	Units	DU-09-S 3/9/88 Value Q	DU-09-S 3/29/88 Value Q	DU-09-S01 7/31/91 Value Q	DU-09-S 1/30/92 Value Q	DU-09-S 7/29/92 Value Q	DU-09-S 04/27/93 Value Q	DU-09-S 10/12/93 Value Q	DU-09-S 4/25/94 Value Q	DU-09-S 10/4/94 Value Q	DU-09-S 4/25/95 Value Q
Aluminum, Total	µg/l		7		54 J	144 LT	333		253	75.8 J	112 LT
Antimony, Total	µg/l							32.9 J		19.4 LT	39.5 LT
ARSENIC, Total	µg/l		22 J	17	7.2 J	33.9	41.1	13.6	34.5	20.6	55.1
Barium, Total	µg/l	523	480	400	370	212	217	311	198 LT	170 LT	178 LT
Beryllium, Total	µg/l					0.27 LT					
Cadmium, Total	µg/l								2 LT		
Calcium, Total	µg/l	77200	89700	110000 J	160000	144000	162000	133000	147000	89900	145000
Chromium, Total	µg/l					7.03 LT	33		7.3 LT		4.4 LT
CHROMIUM (VI), Total	µg/l										
Cobalt, Total	µg/l					11.3 LT	8.6 LT	6.7 LT	8.1 LT	6.5 LT	9.5 LT
Copper, Total	µg/l		7 J			8.31 LT	2.3 LT		3.9 LT	1.4 LT	
Iron, Total	µg/l	2200	2900	1900	6700	20800	29000	12600	18800	10500	14800
Lead, Total	µg/l		5 J			6.07 J					
Magnesium, Total	µg/l	35600	43000	62000 J	87000	71900	87400	65900	74800	18600	70900
Manganese, Total	µg/l	6440	4820	1940	4100	2760	3280	1830	2500	742	2340
Mercury, Total	µg/l								34.2 LT		
Nickel, Total	µg/l	42	54	160	54	176	82.5	25.5 LT		47.7	26.7 LT
Potassium, Total	µg/l	1500 J	2800	1400 LT	1200 J	1080 LT	723 LT	1340 LT		1260 LT	
Selenium, Total	µg/l			1 LT			1.1 LT				
Silver, Total	µg/l							2.2 LT			3 LT
Sodium, Total	µg/l	114000	250000	340000 J	310000 LT	213000 J	179000	168000	141000	127000	131000
Thallium, Total	µg/l										
Vanadium, Total	µg/l		16 J				10.6 LT			10.3 LT	15.2 LT
Zinc, Total	µg/l	30	21		7.1 J	8.1 LT	5.6 LT			2.8 LT	
Aluminum, Soluble	µg/l							NA	NA	NA	NA
Antimony, Soluble	µg/l						29.1 LT	NA	NA	NA	NA
ARSENIC, Soluble	µg/l			8.6 LT	7.9 J	28.9	27.4	NA	NA	NA	NA
Barium, Soluble	µg/l			250	390	195 LT	171 LT	NA	NA	NA	NA
Beryllium, Soluble	µg/l							NA	NA	NA	NA
Calcium, Soluble	µg/l			90000	140000	145000 J	158000	NA	NA	NA	NA
Chromium, Soluble	µg/l							NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/l							NA	NA	NA	NA
Cobalt, Soluble	µg/l					9.84 LT	7.8 LT	NA	NA	NA	NA
Copper, Soluble	µg/l				5.1 J	6.61 LT		NA	NA	NA	NA
Iron, Soluble	µg/l			6900	8200	15300	18100	NA	NA	NA	NA
Lead, Soluble	µg/l					14.4		NA	NA	NA	NA
Magnesium, Soluble	µg/l			52000	72000	76500 J	83100	NA	NA	NA	NA
Manganese, Soluble	µg/l			1930	2550	2890	3230	NA	NA	NA	NA
Mercury, Soluble	µg/l							NA	NA	NA	NA
Nickel, Soluble	µg/l			39 LT	36 J	129	51.8	NA	NA	NA	NA
Potassium, Soluble	µg/l			2200 LT	1500 J	1050 LT	1290 LT	NA	NA	NA	NA
Selenium, Soluble	µg/l						1.6 LT	NA	NA	NA	NA
Silver, Soluble	µg/l				3.2 J			NA	NA	NA	NA
Sodium, Soluble	µg/l			140000	240000	224000 J	173000	NA	NA	NA	NA
Thallium, Soluble	µg/l						1.4 LT	NA	NA	NA	NA
Vanadium, Soluble	µg/l						19.5 LT	NA	NA	NA	NA
Zinc, Soluble	µg/l				18 J	23.7		NA	NA	NA	NA
1,1,1 Trichloroethane	µg/l										
1,1,2,2 Tetrachloroethane	µg/l										
2 Butanone	µg/l										
2 Hexanone	µg/l										
4 Methyl 2 Pentanone	µg/l										
Acetone	µg/l		90 J		[illegible]		20			[illegible] B	
Benzene	µg/l		4.4 J		[illegible] J	[illegible] J					
Bromoform	µg/l										
CARBON DISULFIDE	µg/l										
Chlorobenzene	µg/l										
Ethylbenzene	µg/l										
Methyl iso-butyl ketone	µg/l										
Methylene chloride	µg/l		[illegible] J					[illegible] B	[illegible] J	[illegible] B	
Styrene	µg/l										
TETRAHYDROFURAN	µg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Toluene	µg/l					[illegible]					
Xylene (total)	µg/l					[illegible]	[illegible]			[illegible]	
Chloride	mg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenolics, Total	mg/l										
Sulfide as S	mg/l	[illegible]	[illegible]				[illegible]	[illegible]			
Sulfate as SO4	mg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		
Total Organic Carbon	mg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Organic Halides (TOX)	µg/l			46	31	[illegible]		[illegible]	[illegible]		

DuPont Impoundment Operable Unit
Lawrence Todtz Farm Landfill NPL Site
Sampling/Historical Data
(Page 5 of 5)

Detected Analytes	Units	DU-10-S 3/8/88 Value Q	DU-10-S 3/29/88 Value Q	DU-10-S01 7/31/91 Value Q	DUFR10S01 7/31/91 Value Q	DU-10-S 1/30/92 Value Q	DU-10-S 7/29/92 Value Q	DU-10-S 04/27/93 Value Q	DU-10-S 10/12/93 Value Q	DU-10-S 4/25/94 Value Q	DU-10-S 10/4/94 Value Q	DU-10-S 4/25/95 Value Q
Aluminum, Total	µg/l	290	350	114 LT	96 LT	150 J	215	1210 LT			1280 J	
Antimony, Total	µg/l											
ARSENIC, Total	µg/l	1600	1500	2490	2210	2150	2400	1980	1640	1980	1680	1730
Barium, Total	µg/l	487	440	760	970	1200	643	580 LT	653 LT	433 LT	441 LT	573 LT
Beryllium, Total	µg/l		1 J		1.6 LT	1.4 J	3.2 LT					
Cadmium, Total	µg/l											
Calcium, Total	µg/l	8600	8300	9000	13000	12000	9120	10500 LT	12300 LT	7380 LT	13600 LT	8720 LT
Chromium, Total	µg/l	1500 J	140	320	270	350	200	156	40.7 LT	157	165 LT	125 LT
CHROMIUM (VI), Total	µg/l											
Cobalt, Total	µg/l	600	530	320	260	570	513	414 LT	95.7 LT	480 LT	402 LT	529 LT
Copper, Total	µg/l	19 J	6 J		5.9 LT	8.9 J	29.9				14.7 LT	
Iron, Total	µg/l	1600	1500	10500	940	1300	1180	862 LT	903 LT	892 LT	9100	1010 LT
Lead, Total	µg/l	14	6 J	31	33	34	15 J	13.8	34.8		31.6 J	13 LT
Magnesium, Total	µg/l	40200 J	2300	8600	22000	14000	11700	18300 LT	30400 LT	6570 LT	41600 LT	12200 LT
Manganese, Total	µg/l	390	260	490	780	640	509	453	519	285	409	394
Mercury, Total	µg/l		1 J	0.4	0.57	0.89	0.81	0.68	0.51	0.93	0.33	0.89
Nickel, Total	µg/l	2360	2300	4000	3100	3600	3510	2770	1280	2880	2920	3020
Potassium, Total	µg/l	1500 J	1200	2420 LT	3000 LT	2500 J	2190 LT					
Selenium, Total	µg/l	20	10			4.6 J	6.94 LT	7.2 LT				
Silver, Total	µg/l			6.31 LT	3.8 LT							
Sodium, Total	µg/l	4840000	5350000	6540000	5520000	6080000 LT	5830000 J	4810000	3410000	5250000	4190000	5050000
Thallium, Total	µg/l											
Vanadium, Total	µg/l	1300	1200	2600	2300	2700	2230	1800	1260	1840	1240	1930
Zinc, Total	µg/l	420	500	139	130	140	115	61 LT	56.1 LT	90.3 LT	70.3 LT	
Aluminum, Soluble	µg/l			120 LT	110 LT	170 J	113 LT		NA	NA	NA	NA
Antimony, Soluble	µg/l			12 LT		17 J			NA	NA	NA	NA
ARSENIC, Soluble	µg/l			2390	2260	2130	2130	1460	NA	NA	NA	NA
Barium, Soluble	µg/l			740	690	880	745	493 LT	NA	NA	NA	NA
Beryllium, Soluble	µg/l					4.4 J			NA	NA	NA	NA
Calcium, Soluble	µg/l			8600	8000	13000	9530 J	8440 LT	NA	NA	NA	NA
Chromium, Soluble	µg/l			310	300	310	162	109	NA	NA	NA	NA
CHROMIUM (VI), Soluble	µg/l								NA	NA	NA	NA
Cobalt, Soluble	µg/l			470	490	520	236	340 LT	NA	NA	NA	NA
Copper, Soluble	µg/l			21 LT	10 LT	12 J	3.03 LT	14.9 LT	NA	NA	NA	NA
Iron, Soluble	µg/l			990	880	1100	897	397 LT	NA	NA	NA	NA
Lead, Soluble	µg/l			35	34	42	30.6	25.4	NA	NA	NA	NA
Magnesium, Soluble	µg/l			7900	7100	22000	17400 J	15500 LT	NA	NA	NA	NA
Manganese, Soluble	µg/l			500	460	760	54[illegible]	436	NA	NA	NA	NA
Mercury, Soluble	µg/l			0.51	0.45	0.78	[illegible]	0.56	NA	NA	NA	NA
Nickel, Soluble	µg/l			3800	3500	3400	2800	2230	NA	NA	NA	NA
Potassium, Soluble	µg/l			4800 LT	2600 LT	2900 J	2420 LT		NA	NA	NA	NA
Selenium, Soluble	µg/l					3.8 J	4.86 LT		NA	NA	NA	NA
Silver, Soluble	µg/l					3.6 J			NA	NA	NA	NA
Sodium, Soluble	µg/l			5920000	5500000	5540000	5250000 J	4000000	NA	NA	NA	NA
Thallium, Soluble	µg/l								NA	NA	NA	NA
Vanadium, Soluble	µg/l			2400	2300	2300	2140	1520	NA	NA	NA	NA
Zinc, Soluble	µg/l			130	120	120	214	36.2 LT	NA	NA	NA	NA
1,1,1-Trichloroethane	µg/l											
1,1,2,2-Tetrachloroethane	µg/l											
2-Butanone	µg/l							5 J				
2-Hexanone	µg/l							9 J				
4-Methyl-2-Pentanone	µg/l								8 J	9.4 J	11	9.6 J
Acetone	µg/l			56.1	53.2		29 B	21		16	43 B	9 B
Benzene	µg/l			2.3 J		2.43 J	[illegible] J	1 J	2 J		1.3 J	1.4 J
Bromoform	µg/l											
CARBON DISULFIDE	µg/l	4250	2350	52.9	55			16	13		39	9 J
Chlorobenzene	µg/l											
Ethylbenzene	µg/l											
Methyl iso butyl ketone	µg/l			19.6	18.3	15.7						
Methylene chloride	µg/l			7.18 B	6.5 B		[illegible] B	1 B		1.6 J		
Styrene	µg/l											
TETRAHYDROFURAN	µg/l			428	378	300	340	190	240	290	560	190
Toluene	µg/l			8.9 B	8.81 B	1.99	3 J	5	8 J	[illegible] J	4.9 J	5.4
Xylene (total)	µg/l											
Chloride	mg/l	707	766	420	430	558	47[illegible]	380	500	472	340	64[illegible]
Phenolics, Total	mg/l			0.121	0.089		0.06		0.26	[illegible]	0.408	
Sulfide as S	mg/l	1160	1000	50	23	110	119	NA	89	96.3	16	23.4
Sulfate as SO4	mg/l	680	790	62.2	58	176	147	520	430			
Total Organic Carbon	mg/l	525	2265	1335	1510	1345	1640	570	1200	1410	243	522
Total Organic Halides (TOX)	µg/l			2315	3110	2470	3850	590	2900	1550	1760	775

Detected Analytes	Units	JB01D01 7/30/91 Value Q	JB01D02 7/30/91 Value Q	JB01D03 7/30/91 Value Q	JB01D 1/30/92 Value Q	JB01D 7/29/92 Value Q	JB-01-D 04/27/93 Value Q	JB-01-D 10/12/93 Value Q	JB-01-D 4/25/94 Value Q	JB-01-D 4/25/95 Value Q
Aluminum, Total	µg/l						171 LT	26.9 J		
Antimony, Total	µg/l									
ARSENIC, Total	µg/l									
Barium, Total	µg/l					10 LT	17.2 LT	19.9 LT	18.8 LT	20 LT
Beryllium, Total	µg/l									
Cadmium, Total	µg/l									
Calcium, Total	µg/l	57000 J	52000 J	52000 J	59000	55500	55300	60100	56700	57500
Chromium, Total	µg/l									
CHROMIUM (VI), Total	µg/l									NA
Cobalt, Total	µg/l									
Copper, Total	µg/l	21 LT	22 LT	44		10.4 LT	5.2 LT	8.3 LT	12.6 LT	16.9 LT
Iron, Total	µg/l	180	160	160	210	379	270	108	130	1660
Lead, Total	µg/l	12	13	13	5.5	2.2 LT		1.9 LT		72.2
Magnesium, Total	µg/l	38000	34000	34000	38000	37300	39200	38100	36900	37400
Manganese, Total	µg/l	13 LT	5.5 LT	5.7 LT	44	19.6	21	3.8 LT	4.4 LT	17.2
Mercury, Total	µg/l									
Nickel, Total	µg/l									
Potassium, Total	µg/l					671 LT	833 LT			
Selenium, Total	µg/l							2.1 J		
Silver, Total	µg/l		2 LT	2.7 LT						
Sodium, Total	µg/l	4500 LT	4000 LT	4000 LT	4000 LT	4350 LT	4670 LT	4590 LT	4230 LT	4190 LT
Thallium, Total	µg/l									
Vanadium, Total	µg/l									
Zinc, Total	µg/l	270	230	300	500	129	156	354	198	1630
Aluminum, Soluble	µg/l						33.3 LT	NA	NA	NA
Antimony, Soluble	µg/l							NA	NA	NA
ARSENIC, Soluble	µg/l							NA	NA	NA
Barium, Soluble	µg/l					4.44 LT	17.2 LT	NA	NA	NA
Beryllium, Soluble	µg/l							NA	NA	NA
Calcium, Soluble	µg/l	56000	58000	34000	57000	49400 J	54800	NA	NA	NA
Chromium, Soluble	µg/l							NA	NA	NA
CHROMIUM (VI), Soluble	µg/l							NA	NA	NA
Cobalt, Soluble	µg/l							NA	NA	NA
Copper, Soluble	µg/l					3.31 LT	1.9 LT	NA	NA	NA
Iron, Soluble	µg/l	63 LT				83 LT	74.9 LT	NA	NA	NA
Lead, Soluble	µg/l	3	2.3 LT	1.3 LT	2 J	8.85	1 LT	NA	NA	NA
Magnesium, Soluble	µg/l	37000	38000	11000	37000	32800 J	37000	NA	NA	NA
Manganese, Soluble	µg/l				41	10.4 LT	19.2	NA	NA	NA
Mercury, Soluble	µg/l							NA	NA	NA
Nickel, Soluble	µg/l							NA	NA	NA
Potassium, Soluble	µg/l			1900 LT	5600	597 LT	847 LT	NA	NA	NA
Selenium, Soluble	µg/l						1.7 LT	NA	NA	NA
Silver, Soluble	µg/l			6.3 LT				NA	NA	NA
Sodium, Soluble	µg/l	3100 LT	3300 LT	3700 LT		3660 LT	4260 LT	NA	NA	NA
Thallium, Soluble	µg/l							NA	NA	NA
Vanadium, Soluble	µg/l						11.9 LT	NA	NA	NA
Zinc, Soluble	µg/l	160	140		400	48	61	NA	NA	NA
1,1,1-Trichloroethane	µg/l									
1,1,2,2-Tetrachloroethane	µg/l									
2-Butanone	µg/l									
2-Hexanone	µg/l									
4-Methyl-2-Pentanone	µg/l									
Acetone	µg/l									
Benzene	µg/l									
Bromoform	µg/l									
CARBON DISULFIDE	µg/l									
Chlorobenzene	µg/l									
Ethylbenzene	µg/l									
Methyl iso butyl ketone	µg/l									
Methylene chloride	µg/l					1 B				
Styrene	µg/l									
TETRAHYDROFURAN	µg/l									
Toluene	µg/l									
Xylene (total)	µg/l									
Chloride	mg/l	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	NA	NA
Phenolics, Total	mg/l							NA	NA	NA
Sulfide as S	mg/l						[illegible]	NA	NA	NA
Sulfate as SO4	mg/l	6.8	5.6	[illegible]	[illegible]	[illegible]	[illegible]	NA	NA	NA
Total Organic Carbon	mg/l	3.8	4.2	3.1	1.6	[illegible]		NA	NA	NA
Total Organic Halides (TOX)	µg/l	14	16	13.5		24	14	NA	NA	NA

APPENDIX 2

DuPont and EPA Analytical Results of Trigger Compounds

TOTDZ FARM LANDFILL
ARSENIC (ppb)

WELL NO	3/88	6/89	10/90	7/91	1/92	7/92	4/93	6/93	8/93	10/93	1/94	4/94	6/94
DU-01S				2.2LT 33	5.5J	1.31J				3.9J			
DU-02S	84 60	50 30	41.3	34 41 34	29 26 (FR)	28.8	29			27.2	27.2	24.5 22.8 (FR)	37.0
DU-03S		40	34.8	30 37 42	20	30.1 30.5 (FR)	16 15.2 (FR)			37.9	17.6	22.1	36.0
DU-04S	1J	2	5.8J	6LT	4.7J	3.16LT	3.8LT			7.4LT	3.8LT	3.1LT	
DU-05S	2		1.6J	2.7LT				NA	NA	2.5LT	2LT		
DU-06S	9J 9	6	14.8	9.8LT 9.3LT 6.9LT	9J	7.02LT	3.6LT			9.3J 11.3J (FR)	5.8J	5LT	
DU-07S	1J		2.1J	2.7LT	14	8.19LT	3.9LT			9.8LT	3.8LT 4.5LT (FR)	3.6LT	
DU-08S	90 60			130	430	131	119			389		326	
DU-09S	22J			17	7.2J	33.9	41.1			13.6		34.5	
DU-010S	1600 1500			2490 2210 (FR)	2350	2400	1980			1640		1980	

LT - Inorganic or conventional parameter concentration is below reporting limit. Because of the possibility of interferences being incorrectly identified as target analytes by the inorganic and conventional parameter methodologies, positive identification of the compounds at these concentrations cannot be made. The reported concentration is estimated.
B - Blank Contamination
J - Estimated
U - Not detected
TB - Trip Blank
FR - Field Replicate

11/9/94

TOTDZ FARM LANDFILL
CARBON DISULFIDE (ppb)

WELL NO	3/88	6/89	10/90	7/91	1/92	3/92	7/92	4/93	6/93	8/93	10/93	1/94	4/94	6/94
DU-01S	0			0	0		0	0			0		0	
DU-02S	0	0	0	0	0		0	0			1J	0	0	
DU-03S		0	3J	0	0	5J 8	0	0			0		0	
DU-04S	0	0	0	0	0		0	0			0	0	0	
DU-05S	0	0	0	0	0		0	0	0	0	0	0	0	
DU-06S	0	0	0	0	0		0	0			0	0	0	
DU-07S	0	0	0	0	0		0	0			0	0	0	
DU-08S	1120 749J			0	27		76	52			370J		0	
DU-09S	4.4J	0		0	1.31J		2J	0			0		0	
DU-010S	4250 2350			52.9 55 (FR)	0		0	16			13		0	

J - Estimated
FR - Field Replicate

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TOTDZ FARM LANDFILL
CHROMIUM (VI), TOTAL (ppb)

WELL NO	3/88	6/89	10/90	7/91	1/92	3/92	7/92	4/93	6/93	8/93	10/93	1/94	4/94	6/94
DU-01S	0			0	0		0	0			0		0	
DU-02S	0	0	0	0	0		0	0			1J	NA	0	
DU-03S		0	0	0	0	0	0	0			0	NA	0	
DU-04S	0	0	0	0	0		0	0			0	NA	0	
DU-05S	0	0	0	0	0		0	0	0	0	0	NA	0	
DU-06S	0	0	0	0	0		0	0			0	NA	0	
DU-07S	0	0	0	0	0		0	0			0	NA	0	
DU-08S	0			0	0		0	20			0		0	
DU-09S	0	0		0	0		0	0			0		0	
DU-010S	0	0		0	0		0	0			0		0	

J - Estimated
FR - Field Replicate
NA - Not Analyzed

11/9/94

TOTDZ FARM LANDFILL
TETRAHYDROFURAN (THF) (ppb)

WELL NO	3/88	10/90	7/91	1/92	3/92	7/92	4/93	6/93	8/93	10/93	1/94	4/94	6/94
DU-02S			14.5 9.25J	0 0(FR)		0	0			0			
DU-03S		15		43	10 10U 10U 10U	0 0(FR) 3(TB)J	10 0(FR)			0			
DU-04S				0		11B	0			0		20 **47***	35.7 34 **59***
DU-05S				0		0	41	110 110 91 93 **101***	51 50 51 48 **10*** **15***	0		38 34 42 37 **57*** **63***	12 8.1 9.3 6.8 **14*** **15***
DU-06S				0		0	0			0			
DU-07S			15.2	0		0	0			0		22	4.5J
DU-08S	74000		15800	7140		17000	12000			45000		46000	
DU-09S	56300J 85900J		9700	1040		950	260			280J		350	
DU-010S			428 378	300		340	190			240		290	

*** FIGURES WITH ASTERISKS ARE EPA SAMPLES**

B - Blank Contamination
J - Estimated
U - Not Detected
TB - Trip Blank
FR - Field Replicate

11/9/94

APPENDIX 3

Photographs of the April 25, 1995 Inspection

Unscanned Items

Photographs that could not be scanned
exist with this document
or as a document
To view the photographs, please contact the
Superfund Records Center