CONSULTING ENGINEERS

4844-12

March 14, 1986

Mr. Robert Edwards
Division of Solid and Hazardous Waste
New York State Dept. of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Dear Mr. Edwards:

Subject: Interim Status Report
Phase I Evaluation
Task VC
Love Canal Remedial Project

Enclosed is the subject report summarizing field activities and data compiled to date. Information contained in the report should be considered preliminary until the entire data base has been assembled to include the upcoming Phase II work. While we are confident in the data presented, evaluations and interpretations of data may be modified based on Phase II data which will be used to fill in data gaps and supply added confidence in the chemical data interpretations.

In order to keep the report to a managable size, the boring logs are being issued as a separate volume. Since that information may also have a more limited audience, reproduction costs may also be reduced by this approach.

If there are any questions regarding the report, please give us a call.

Very truly yours,

E.C. Jordan Co.

William R. Fisher, ~~P.E.~~
Project Manager

Ronald A. Lewis
Project Engineer

WRF/RAL/mal
Enclosure

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INTERIM STATUS REPORT

IMPLEMENTATION OF A

LONG TERM MONITORING PROGRAM

PHASE I - TASK VC

LOVE CANAL REMEDIAL PROJECT

PREPARED BY

E.C. JORDAN CO.

MARCH, 1986

FOR

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
ALBANY, NEW YORK

NORMAN H. NOSENCHUCK, P.E., DIRECTOR

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1.0 INTRODUCTION

This report presents the current status of Task VC, Implementation of a Long Term Monitoring Program, of the Love Canal Remedial Project. Task VC consists of 3 phases: Phase I - installation of monitoring systems and collection of samples; Phase II - installation of supplemental monitoring systems and additional sampling and analysis; and Phase III - additional sampling and analysis and preparation of the yearly long term monitoring report. Phase I commenced in September 1985 and continued through the Fall and Winter. The Phase I Fall and Winter work of Task VC has consisted primarily of:

1. The installation of monitoring wells around the periphery of the site at a distance estimated, on the basis of available information (completion of a perimeter survey), to be beyond the present limit of migration of chemicals from the Canal;

2. Nested piezometer installations to provide for measurement of piezometric heads in the soil units in the vicinity of the Canal waste deposits to monitor the effects of the barrier drain and recently expanded capping system;

3. Installations of bedrock wells to investigate for the presence of chemicals or the potential for contaminant migration through the aquifer in the fractured dolomite underlying the site;

4. Review of the modeling effort conducted for the Task VB project with regard to the new data gathered during the Fall and Winter task work; and

5. Review of preliminary geologic and water level data for the purpose of improving the locations for monitoring wells originally proposed. This review of preliminary data forms part of the basis for recommendations of work items for the Spring (1986) field activities of Task VC.

Nearly all items scheduled for completion under the Phase I Fall (1985) field activities were accomplished. There were some delays experienced with the unusually wet fall weather and with access to some scheduled exploration locations. Items remaining from the schedule for the Fall (1985) program to be completed include installation of a shallow and an intermediate bedrock well, the installation of one perimeter well and the excavation of two test pits. These items will be carried over into the Spring (1986) field activities.

This report summarizes the Phase I Fall and Winter work using the Task item order presented in the October 1985 project work plan.

2.0 TASK 2 - PROJECT OPERATION PLANS

The project operations plans for the Fall (1985) program consisted of a work plan, a site specific health and safety plan (HASP) and a Quality Assurance Plan for the conduct of all field related operations as well as defining the scope of applicable protocols for subcontracted laboratory work. Drafts of these documents were submitted to NYSDEC and EPA for review and comment. Modifications to the plans as required for approval by these agencies were made and final plans were revised and approved prior to the commencement of field activities in October 1985.

3.0 PHASE 1 EXPLORATION PROGRAM

The exploration program conducted by Jordan consisted of six subtasks. The subtasks consisted of:

- Completion of a Perimeter Survey
- Investigation of Contaminated Areas
- Installation of Nested Wells/Piezometers
- Installation of Bedrock Wells
- Excavation of Test Pits, and
- Survey to Locate Explorations and Well Elevations

Jordan contracted John Mathes and Associates of Columbia, Illinois to make borings, install monitoring wells and piezometers and excavate test pits as outlined in the Task VC Phase I Work Plan. The survey work was subcontracted to E.S. Richards of Williamsville, New York and is discussed in detail in section 3.8.

On October 8, 1985, John Mathes and Associates mobilized three drill rigs, drilling tools, decontamination equipment, and personnel to the Love Canal site. Drilling began on October 10th and continued in ten day work-shifts until December 12th. Demobilization of drill rigs and associated equipment began December 10th and continued until winter weather conditions forced an early termination of demobilization operations.

3.1 General Procedures

Each drill rig was assigned an E.C. Jordan drilling monitor who observed drilling operations, logged the geology of the borehole as indicated in split spoon or tube soil sampling, provided sampling criteria for the driller and assisted in collecting soil samples. The drilling monitor had the authority to stop advancement of any borehole if contract technical specifications were not met. In addition, a field operations coordinator was present at the site to assure proper coordination between drill rigs, adherence to health and safety requirements, adherence to drilling specifications, uniformity in documentation and adherence to decontamination procedures.

Decontamination of drill rigs and drilling tools was accomplished with a high pressure steam wash at the equipment decontamination pad located at the south end of Love Canal. Decontamination of small tools and soil sampling tools were conducted at rig side. Details of decontamination procedures used during the exploration program are discussed in the site Health and Safety Plan and the drilling contract technical specifications. All drilling fluids, decontamination fluids and borehole soil cuttings generated during the exploration program were disposed of as outlined in the Health and Safety Plan and drilling contract technical specifications. Ambient air conditions at all boring locations were monitored using an HNU photoionization meter. All soil samples taken from boreholes were scanned with an HNU photoionization meter for the presence of volatile organic compounds.

3.2 Perimeter Survey

Twenty borings and twenty monitoring wells were completed at Love Canal and four borings and monitoring wells were completed at the 93rd Street School during the period October 7 to December 12, 1985. A total of 672 linear feet of soil drilling and 629 linear feet of well installation was completed during this subtask. The borings and wells were completed to: 1) identify geologic conditions around the perimeter of Love Canal and at the 93rd Street School; 2) obtain soil samples for laboratory chemical analysis and visual classification; 3) obtain groundwater samples for laboratory chemical analysis; 4) assess the extent of contaminant migration from the Canal; and 5) establish a long term monitoring system for the Love Canal site.

3.2.1 Borings. The depth of the borings ranged from 18 to 33 feet below the ground surface. The soil borings were made with 4.25-inch inside diameter hollow stem augers. Split spoon samples or continuous tube samples were taken from the ground surface to the bottom of each boring. Soil sampling was conducted in accordance with the sampling protocols described in the QAPP. Soil samples collected for laboratory chemical analysis were generally collected at two depths: 1) from ground surface to a depth of two feet; and 2) at the sand/clay interface. In addition, soil samples for chemical analysis were collected from the glacial till at locations selected on the basis of elevated HNU readings.

3.2.2 Monitoring Wells. Groundwater monitoring wells were installed in boreholes at all perimeter survey boring locations. The depth of monitoring wells below ground surface ranged from 17 to 31 feet. The well screens were all 10.0 feet long and sand packs around the screens ranged from 12.0 to 31.0 feet in length depending on the depth of the till unit. All perimeter wells were positioned entirely in soils overlying bedrock.

3.3 Contaminated Areas Borings and Wells

Thirteen borings and eight monitoring wells were completed at Love Canal during the period November 4 to December 12, 1985. A total of 336 linear feet of soil drilling and 209 linear feet of well installation was completed during this subtask. The borings and wells were completed to: 1) further assess the extent of contamination encountered during the Task VA project; 2) obtain soil samples for field GC screening; 3) obtain soil samples for laboratory chemical analysis; 4) obtain soil samples for visual classification and geologic interpretation; 5) obtain groundwater samples for laboratory chemical analysis; and 6) establish monitoring wells in clean areas (meeting NYSDEC criteria) to become part of the long term monitoring system for the Love Canal site.

3.3.1 Borings. The depth of the borings ranged from 4 to 34 feet below the ground surface. The soil borings were made with 4.25-inch inside diameter hollow stem augers. Continuous split spoon samples were taken from the ground surface to the bottom of the boring. Selected soil specimens from split spoon samples were screened in the field for volatile organics using a gas chromatograph (GC). If the GC data and photoionization data confirmed nondetectable contamination then a well was installed in the borehole. If contaminants were detected and the levels exceeded applicable NYSDEC criteria the borehole was backfilled with a bentonite/cement slurry and a new boring was started further from the area of contamination.

Three borings were placed near manholes to obtain soil samples from sewer line trench materials. This was done to provide additional data to assess the potential for migration through the storm sewer line backfill materials. The locations of the borings were: 1) SB-1 at Frontier and 95th; 2) SB-2 at Frontier and 100th; and 3) SB-4 at Wheatfield and 100th. A fourth boring at Frontier and 101st had been planned, but clearances could not be obtained during the time remaining on the final shift. Two soil samples were taken from each boring, one at mid depth and the other near the invert elevation of the sewer line. Additional soil samples would have been taken had there been visual or photoionization meter indications of significant contamination.

3.3.2 Monitoring Wells. Groundwater monitoring wells were installed in boreholes at Borings 7161, 8106, 8110, 9130, 9140, 10105, 10115 and 10125. Because contamination was detected by the GC no wells were installed at borings 7160, 8105, 10110, 10111 and 10112. The depth of the monitoring wells below the ground surface ranged from 18 to 33 feet. The wellscreens were all 10 feet long and sand packs ranged from 14 to 31 feet in length. All contaminated area wells were positioned entirely in the surficial soils overlying bedrock.

3.4 Nested Wells/Piezometers

Fifty-two borings and fifty-two piezometers were completed at the Love Canal site during the period October 7 to December 9, 1985. A total of 1,163 linear feet of soil drilling and 1,278 linear feet of piezometer installation was completed for this subtask. The borings and piezometers were completed to: 1) assess piezometric conditions existing within geologic units adjacent to the drain; 2) obtain soil samples for visual classification and geologic interpretation; and 3) obtain soil samples for selection by Occidental Petroleum Corporation for laboratory chemical analysis.

3.4.1 Borings. The borings and well nests are identified as 1190 thru 1194 series nests, 1170 thru 1174 series nests, 1150 thru 1154 series nests, and 1180 thru 1184 series nests. The borings were designated with an "A", "B", "C" or "D" suffix to indicate the deepest ("A") to shallowest ("D") boring in a nest. The depth of the borings ranged from 7 to 41 feet below ground surface. The soil borings were made with 4.25-inch inside diameter hollow stem augers. Split spoon samples or five-foot split-tube samples were taken continuously from the ground surface to the bottom of the deep ("A") suffixed boring in each well nest. Normally no soil sampling was conducted at the "B", "C" or "D" suffixed boring locations. Additional samples were collected at several "B" borings to confirm placement of piezometers in the appropriate geologic formation.

3.4.2 Piezometers. A single piezometer was installed in each borehole at the boring locations. The piezometers were designated with an "A", "B", "C", or "D" suffix, similar to the boring designations, to indicate deep to shallow wells respectively. The deep piezometers ("A") were positioned in glacial till. The ("B") piezometers were positioned in the lower silty clay and the "C" piezometers were positioned in the upper soft silty clay. The "D" piezometers were positioned in the upper fractured stiff clay. The wellscreens and sand pack generally ranged from 1.5 to 2.5 feet in length.

3.5 Bedrock Wells

Eleven bedrock borings and eleven bedrock monitoring wells were completed at the Love Canal site during the period October 7 to December 12, 1985. A total of 395 linear feet of soil drilling, 634 linear feet of bedrock drilling, and 1039 linear feet of monitoring well installation was completed during this subtask. The bedrock borings and wells were completed to: 1) evaluate the hydrogeologic characteristics of the Lockport Dolomite at selected locations both near the soil-rock interface and throughout the dolomite bedrock unit; 2) obtain groundwater samples for laboratory chemical analysis; 3) obtain core for visual classification and visual identification of potential contamination; and 4) become part of the Long Term Monitoring Program.

3.5.1 Borings. The depth of the bedrock borings ranged from 46 to 222 feet below ground surface. The borings were made with four-inch inside diameter casing and standard wash boring techniques. Boring 10205A was made using 6.25-inch inside diameter hollow stem augers to facilitate reaming of the core hole to 4.825 inches. Split spoon samples were taken in the soil at five-foot intervals from ground surface to bedrock surface. No split spoon samples were taken from borings 10225B and 10205A. Upon reaching bedrock, the borehole was flushed with clean water and rock coring commenced using potable water.

Six shallow bedrock borings 7205, 8210, 9205, 10205, 10220 and 10215 were advanced approximately 15 feet into bedrock using an NX size core band. Two other shallow borings, 9210 and 10225C, were advanced approximately 30 feet into the bedrock using NX size core. Two sets of multilevel bedrock borings (3 borings per location) were scheduled to be made during the Phase I exploration program. The multilevel bedrock borings at locations 10210 and 10225 consisted of a deep boring, an intermediate boring and a shallow boring. The borings were designated with an "A", "B", or "C" to indicate a deep intermediate and shallow boring respectively. Weather conditions limited the installation to a complete multilevel set of bedrock borings at location 10225 and the deep boring at location 10210. Deep borings 10210A and 10225A were advanced 184 and 181, feet respectively, through bedrock using an NQ wireline core barrel. The deep borings were advanced through the Lockport Dolomite to the Rochester Shale. Packer tests were performed in the deep borings at fifty-foot intervals as the borehole was advanced. After completion of coring operations each multilevel boring was reamed using a tricone drill bit to allow for proper placement of the monitoring wells. An intermediate boring 10225B was advanced to 139 feet into bedrock using only a tricone bit. No rock core was recovered from this boring.

3.5.2 Monitoring Wells. Groundwater monitoring wells were installed in the bedrock boreholes at all boring locations. The depth of the monitoring wells below ground surface ranged from 44 to 82 feet. The wellscreens were 10.0 feet long and sand packs about the screens ranged up to 47.7 feet in length. These wells were completely sealed in bedrock. Multi-level wells were installed at 10225 (A,B,C,) and 10210 (A). The monitoring wells were designated with an "A", "B", or "C" suffix to indicate deep, intermediate, and shallow wells respectively. The sand packs for the multilevel wells ranged from 25 to 44 feet in length.

3.6 Monitoring Well and Piezometer Construction

All monitoring wells and piezometers installed at Love Canal during the Phase I exploration program were constructed with threaded, flush-joint, 2-inch inside diameter, Schedule 40 stainless steel pipe. The screened portions of the wells installed in the contaminated area borings, perimeter survey borings and bedrock borings were all 10 feet in length. The screened portions of piezometers installed in the nested borings were 1 foot in length. All well and piezometer screens installed in the exploration program were stainless steel wire wrap with 0.010-inch wide slot openings. Each monitoring well installed in a perimeter survey boring or contaminated area boring was backfilled with Ottawa sand to approximately five feet from the ground surface. A bentonite pellet seal approximately two-feet thick was placed in the annulus above the sand pack.

The annulus of each nested piezometer was backfilled with Ottawa sand to a minimum of one-half foot above the screen section. A bentonite pellet seal approximately two feet thick was placed above the sand pack. The remaining annulus was backfilled with bentonite slurry to the ground surface. All shallow bedrock wells were installed in a similar manner as the nested piezometer. The annulus around deep and intermediate bedrock wells was backfilled with Ottawa sand to approximately twenty feet above the screened section. The remaining annulus above the sand pack was filled with bentonite slurry tremied into the borehole.

A protective steel casing with a locking cap was placed around all wells installed at Love Canal during the Phase I exploration program. The protective steel casing was sealed about three feet into the ground with premix concrete. All monitoring wells installed in the contaminated areas, perimeter survey, and bedrock explorations were developed to remove fine sediment and to assure a good hydraulic connection with the groundwater system. Development of the contaminated area and perimeter survey wells was accomplished by conventional pumping of the wells. Development of the bedrock wells was accomplished by both conventional pumping and by air lift methods.

3.7 Test Pits

Two test pits were to be made in "clean" areas beyond the perimeter of the extended clay and synthetic cap for the purpose of observing the structure of the weathered clay strata underlying the site. In situ sampling and testing of the weathered clay stratum was scheduled if deemed safe and practical. The backhoe, equipment and material required for the test pit program was mobilized to the site on November 25, 1985. The test pit program, however, was cancelled due to lack of site access clearance and inclement weather conditions. As a result, the test pit program has been postponed until the Spring of 1986 Phase II program.

3.8 Survey

The firm of E.S. Richards (Richards) of Williamsville, New York was sub-contracted by Jordan to conduct a survey to determine location and elevation of all additional explorations completed during the Phase I exploration program. On a periodic basis during the period November 11, 1985 to January 31, 1986 E.S. Richards conducted a horizontal and vertical survey of all explorations completed during the Phase I exploration program. The survey was referenced to a U.S. Geological Survey (U.S.G.S.) benchmark located at the Love Canal treatment plant. The benchmark elevation is 575.86 feet above mean sea level (MSL). Ground surface elevation, protective casing elevation, and monitoring well/piezometer riser elevation were surveyed to the nearest 0.01 foot. The horizontal location of the explorations are based on an assumed grid system established by the surveyor. The grid system is referenced to a baseline defined by P.K.s set by Richards and located at the intersections of Frontier Avenue and 100th Street and of Colvin Boulevard and 100th Street.

A site plan (see pocket at end of report) was prepared by Richards at a scale of 1 inch equals 100 feet on the basis of the survey and base map provided by Jordan and NYSDEC. The site plan shows the location of explorations, roads, the treatment plant, limits of the Love Canal cap, and perimeter fence.

4.0 TASK 4 - SAMPLING

This task consisted of collecting samples of groundwater from perimeter and bedrock wells installed during the Fall and Winter plus three existing wells (4108, 4215 and 5102) designated as acceptable for purposes of the long-term monitoring program. Two sampling episodes were conducted. The first occurred December 10 through December 14, 1985. During this sampling event nearly all the perimeter wells were sampled as well as two shallow bedrock wells within the fenced area of the Canal and the four overburden wells installed at the 93rd St. School. Weather and problems with properly purging the deep bedrock wells made it not feasible to attempt to finish all sampling during this episode. The second sampling took place between January 19 through 22, 1986. The remaining ten bedrock and two perimeter wells were sampled during this second event. All samples were obtained according to the quality assurance plan protocols and were sent to CompuChem, the subcontractor for the Phase I CLP analyses of soil and groundwater samples.

5.0 ANALYSES

Analysis of samples was conducted by CompuChem within contractually agreed upon turnaround times of 28 days. The hazardous substance list (HSL) parameters analytical data reported by CompuChem has been reduced to a summary report of results listing only those reported values above detection limits and is included as Appendix A.

Detection limits suggested by NYSDEC for establishing acceptable contaminant levels of selected HSL and Love Canal indicator compounds at the perimeter well locations are shown in Appendix F. The results of the first round of analyses indicate the criteria for most of the parameters were met. In the case of the analyses of soil samples for dioxin, detection limits ranged (mainly due to matrix effects) from 0.02 to 1.55 ppb, with an average value of 0.15 ppb and a standard deviation of 0.21 ppb for 80 sample analyses. There was only one instance when the detection limit exceeded the level of 1 ppb established for acceptable risk for dioxin in soils and in no sample was the detection limit exceeded.

Two issues arose in the course of the analytical program. One was the use of the containers provided by CompuChem for soil and water samples. CompuChem, as part of their standard packaging system, had provided 1 liter clear glass bottles for the soils samples which were subsequently aliquotted for the required analyses in the laboratory. Similarly 1 liter clear glass bottles were provided for the water samples for SVOA and pesticide analyses (instead of more generally used amber bottles). After review of the existing CLP protocol, it was resolved that the use of the containers was appropriate within the protocol, but that it would be better in subsequent sampling episodes to utilize VOA containers to contain soils for VOA analysis and amber bottles for soil and water samples for SVOA and pesticide analyses.

The second issue consisted of the almost ubiquitous presence of acetone in the analytical results for both soil and water samples. CompuChem has responded that the concentrations of acetone reported (as high as 9 ppm) are probably much too high to represent laboratory introduced contamination. (EPA CLP protocol establishes acceptable limits in blanks for the three most commonly used laboratory solvents. These limits for acetone are 10 ppb.) It was CompuChem's conclusion that all QA/QC protocols were met and that the acetone concentrations detected were present in the samples. A VOA vial which contained some stains and did not pass field inspection for use was returned to CompuChem for analysis. The results showed non-detects for all HSL volatile organic compounds. In the Spring (1986) program additional techniques will be used, such as split samples, to verify the presence and concentrations of acetone. Background samples will also be taken during Spring (1986) program. These data should aid in resolving the question as to whether or not the acetone detected in the samples is truly derived from the Canal.

Another possible source suggested for the acetone was in the iso-propyl alcohol used as a decontamination fluid in cleaning equipment. Although this alcohol is not an HSL compound, tentatively identified compounds, provided as part of the CLP data package, frequently listed the presence of an alcohol, probably iso-propyl alcohol. The concentration of the alcohol was present in such a low concentration relative to that of the acetone so as to make it improbable that the isopropyl alcohol was a source for the acetone.

A sample of treatment plant leachate was collected and analyzed by NYSDEC. This sample showed 260 ppb of acetone. While this concentration is low in comparison with the maximum concentrations seen in groundwater, concentrations of acetone in the leachate may be significantly affected by dilution and aeration (solvent stripping) which may occur in the leachate collection system. Also, concentrations at the perimeter well locations may reflect a period in time past when more concentrated sources of acetone may have been introduced into the environment. A non-detect for acetone in the leachate would have cast doubts concerning the validity of the presence of the acetone. However, the detected value in the leachate plus that seen in 10135 (near the barrier drain) lend more credence to its presence. Until criteria are established for the acetone, it is unclear if the presence at less than 10 mg/l concentrations represents any significant environmental or health problems.

6.0 EVALUATION

6.1 Chemical Data

Preliminary examination of the chemical data for HSL compounds in soils and water indicates that the locations selected for the perimeter wells appear to be relatively clean both with respect to the number and concentrations of compounds encountered and the criteria which NYSDEC established for determining the extent of significant contaminant migration from the Canal. The compound encountered most frequently and in the greatest concentration was acetone, reaching 9 ppm in samples collected in the southwestern sector of the Canal perimeter. Water samples, in addition to the acetone, typically contained only slight concentrations of methylene chloride and the occasional presence of aromatics and phthalates. The soil samples contained a wider variety of compounds than the water, but these compounds (e.g., DDE and DDT) were also present in relatively low concentrations. Only in three perimeter locations did the concentrations of compounds detected exceed the NYSDEC determined criteria for soil or water. One was in well 7205 where the concentration of benzene (7.8 ppb) exceeded the criterion of 5.0 ppb. The other two instances were in borings 9105 and 10105 where the criterion of 10.5 ppb for naphthalene was exceeded. Total concentrations of polynuclear aromatics (PNA) in each of these samples were 1268 and 1061 ppb, indicating fairly weak sources of PNAs. It has been suggested that the source of PNA in boring 10105 is related to the fact that an old railroad bed was located here and that the contamination detected may be unrelated to activities at the Canal. Analyses of soil samples collected in this vicinity during Task VA also showed the presence of the PNAs.

In order to fully assess the chemical data relative to NYSDEC established criteria, it will be necessary for NYSDEC to formulate additional criteria for those compounds that were detected in sample data reported to date and for which criteria had not yet been established. This situation has arisen since most previous chemical data generated from analyses of Love Canal environmental samples has been for analysis for priority pollutants only. The analyses for the Task VC program have included the Hazardous Substance List (HSL) of which the priority pollutants are only a subset. Thus it is not inconsistent for acetone which is on the HSL but is not a priority pollutant volatile organic compound, to have been detected, whereas it had not been reported previously.

6.2 Hydrogeology

The Fall (1985) program has provided additional data on the hydrogeology of the site primarily through the additional observations of the site geology and through the collection of water level in the newly installed piezometers. In addition, further data provided to Jordan by NYSDEC has indicated conditions arising at the Canal relative to the leachate flows collected by the barrier drains.

Two major observations regarding the geology at the Canal were made as a result of conditions encountered during the Phase I explorations. These were: 1) the wide variation in composition of the so-called till layer; and 2) the deeper fracturing of the dolomite surface than had been reported previously. First, the till encountered varied from almost a washed gravel in the vicinity of the 1190 series of nested piezometers to a very dense silt at many other locations and ranged in thickness from 2.0 feet at 1192 to 20.0 feet at 9120. Moisture content of the till was visually observed to range from nearly dry to very wet. Thus, the till layer presents a much greater degree of variability than had been noted before and should not, in general, be simply considered as a single layer having similar hydrogeologic properties as the overlying soft clay. In some areas, the coarser till may present a greater potential for migration than the denser and siltier tills in the other areas as was indicated by chemical analysis of some till samples which evidenced the presence of volatiles, principally acetone.

The second major geologic observation at the site was that the fractured zone in the surface of the dolomite extended approximately 30 feet below the surface of the bedrock rather than the 15 feet which had been suggested in previous reports. This is significant because most of the existing monitoring wells in the bedrock only penetrate 5 to 10 feet into the rock. While it is still possible for these wells to detect the presence of solubilized contaminants in the dolomite aquifer, the possibility that a contaminant, particularly a heavier than water component such as the Non-aqueous Phase Liquid (NAPL) could pass beneath the sampling zones of the existing bedrock wells exists. Further, initial water level data from the nested bedrock wells indicate that vertical gradients through the rock, even the deep dolomite, may affect vertical flow potentials. This may be important for assessing potentials for migration of solubilized species and, if so, will affect how this zone is monitored and modelled.

Data on the treatment plant flow recently supplied to Jordan have indicated that the treatment plant flows still appear to be responding strongly to periods of rain or high water levels in the Niagara River, as suggested in the NYSDEC quarterly monitoring report for November 1, 1984 to March 31, 1985. These conditions were reflected in high February flows (corresponding in time to an ice jam on the River) and in high flows for November and December 1985 during which it rained almost continually. This meant the total flow processed by the treatment plant for 1985, even with the expanded cap in place, was almost the same as for 1985 during which the cap was fully in place only near the end of the year. Flows for 1985 were, however, much less than any of the years 1981-1983. The recent flow data suggests that further review regarding the potential source of these increases is warranted. First, sand lenses or zones of permeable fills intercepted by the barrier drain may extend to recharge areas located beyond the influence of the cap. Second, there may be areas of the Canal which exhibit relatively good hydraulic connection with the bedrock allowing upward flow into the Canal which is subsequently collected by the laterals extending into the Canal. A third possibility is that the hydraulic conductivity of the till may be great enough in areas near the barrier drain such that the increase in River head with rainy season or ice jam may significantly increase flow to the drain system. The actual occurrence may be a combination of these possibilities. In any case, more data will be necessary to evaluate the situation.

6.3 Modeling Review

The October work plan originally included some final revisions to the groundwater flow model developed in Task VB. However, with the postponement of the Canal piezometers until the Spring (1986) program, a data source essential for the finalization of the modeling was delayed. At this point the model is being reviewed for possible revisions based on the geologic information, the water levels and the observations of geology made during Phase I. At this time it appears probable that the model should be revised to: 1) include additional layers for the till and the additional thickness of fractured dolomite; 2) modify specification of boundary conditions for the bedrock and the drain operations; and 3) redefine the model and grid to facilitate comparison of computed head data with the locations of actual wells. In addition, we also plan to replace the Trescott-Larson model we had used for Task VB with the updated USGS version of that model. The newer version is referred to by several names, MODFLOW being one of the more common. The newer MODFLOW offers several advantages over the older Trescott-Larson including a more versatile array for specifications of boundary conditions, a flexibility in specifying vertical thickness of geologic units, a more efficient solution routine (eliminating inactive nodes) and easier definition of input files. It had been our original intent to use MODFLOW for the Task VB modeling, but it was not yet available to those outside of the USGS when we began the modeling phase of Task VB. The model revisions will commence as the preliminary Fall (1985) program data are reduced for use. The MODFLOW model has currently been loaded to a VAX system for use on this project and a sample data file has been run on the system.

7.0 SUMMARY

The Phase I Fall (1985) field activities included the completion of the installation of 11 bedrock wells (8 shallow; 2 deep and 1 intermediate), 32 perimeter wells (including 4 at the 93rd St. School), 52 nested piezometers and 6 additional borings (3 contaminated borings in the perimeter survey and 3 sewer line borings).

The program proceeded on schedule with the exception of the completion of one perimeter well, two bedrock wells and test pits; all of which will be completed as part of the Spring (1986) field program. The results of most of the analyses of samples from the perimeter borings and wells met NYSDEC criteria for establishing the probable limits of significant contaminant migration of HSL compounds from the Canal through soil and groundwater. Of the three exceptions, two may not actually be due to Love Canal (the presence of naphthalene may be attributable to other sources) and the third exception was only slightly above the criterion established for benzene. Background bedrock groundwater quality was not yet available for comparison. NYSDEC needs to establish criteria for some compounds (principally acetone) to assess concentrations of compounds detected in samples but for which criteria had not yet been established.

Preliminary data gathered during the Phase I activities have been compiled for the interim working report. These include: 1) Appendix A-Listings of Chemical Data; 2) Appendix B-Geologic Cross Section; 3) Appendix C-Tables of Water Level Data; 4) Appendix D-Tabulated Survey Locations and Elevations; 5) Appendix E-Treatment Plant Flow Update; 6) Appendix F-NYSDEC soil and water criteria; and 7) included in a pocket at the rear of the report, a plot of chemical distribution in soils and water, the Richards plot of exploration locations and a tabulation of geologic data. These data will be subject to further review and will be supplemented with additional data in the next phase. The water level data, in particular, should be interpreted with care since readings have occurred close to events such as well installation, well development and well urging for sampling. Additionally, many of the nested piezometers have considerable amounts of silt in them which may interfere with the hydraulic connection to the formation. This silt is to be removed in a program of development for all the piezometers.

8.0 RECOMMENDATIONS FOR THE SPRING (1986) PROGRAM

8.1 Additional Borings/Wells

The Spring (1986) program for includes the installation of piezometers into the Canal and the completion of the remaining Fall (1985) work (2 bedrock wells, one perimeter well and two test pits). Based on the preliminary compilation of data and the desire of the DEC to resolve in more detail the flow patterns (and the immediate influence of the barrier drain system on the surrounding soils, we recommend the following additional nested piezometers: 1) 2 piezometers at 1161, 1 piezometer at 1171 and 1 piezometer at 1191 to refine interpretation of the drain influence: 2) 4 piezometers to reinstate the 1184 nest; and 3) 1 piezometer at 1151 to act with 1 piezometer at 1153 to determine potentials for flow through the fill from the direction of LaSalle Expressway to the barrier drain. This is a total of 10 piezometers, only 4 of which would penetrate the cap. These piezometers would also provide additional sites for determinations of permeability in the soil strata.

The geology at the southwest end of the canal appears more complex than previously estimated. Numerous permeable sand lenses capable of transmitting groundwater were encountered in some borings. These lenses could be significantly influencing flow of leachate to the barrier drain. Sufficient data to determine the areal distribution, interconnectedness and permeability of these sand lenses is not yet available. We recommend additional explorations consisting of borings and test pits be done in this area to address the sand lenses in more detail. We suggest a budget of 10 borings, 5 of which would have a monitoring well installed, and test trenches toward the south end of the Canal site.

In addition to the sand lenses at the southwest corner of the Canal, further information regarding the structure and composition of the sandy washed till at the northwest end of the Canal is required to allow an assessment of the influence of the "washed" till on the computer model. Test pits are suggested as the exploration method to gather the information.

8.2 Test Pits

The primary reason for the test pitting scheduled for the Fall (1985) program was to observe and make measurements of the fractured clay to provide data with which to assess the feasibility of the "trench" wells for monitoring the fractured clay zone (to intercept several fractures where a monitoring well might miss the fractures altogether). With the increased concern for sand lenses to respond to infiltration and contribute additional loadings to the treatment plant flow, the best way to observe the extent and assess the influence of the sand layers and the fractured clay and tills where they are shallow is probably by means of making test pits or trenches in selected areas either just inside the fenced area. Borings to establish locations and extents of sand lenses may be a possible alternate exploration technique, but test pitting would the be best opportunity to expose more of the geologic structure for detailed observation of extents and interconnections of features such as fractures or lenses. As a result, we recommend the test pitting effort be expanded to six test pits, four in the southern end of the Canal site and two to the northern end where the tills are shallower.

8.3 Water Levels and Permeability Testing

Performance of permeability testing and frequent readings of the water levels in the nested piezometers will form an important part of the basis for assessment of remedial action performance and of the understanding of the groundwater flow and contaminant transport. They will also be necessary to significant revisions of the groundwater model, for this project and for others. Whether the DEC, DOL or Jordan perform the testing, this data should be provided early in the Spring (1986) effort, probably even before the scheduled installation of piezometers in the Canal. We recommend that Jordan perform this testing to assure that adequate resources are available to perform this in a timely manner and with a consistency of personnel assigned to the task. Permeability testing will require the development of several piezometers to remove silt from inside the well in the screened zone.

8.4 Sampling and Analysis

A second round of groundwater sampling for the monitoring wells is scheduled for Spring 1986. To further assess the import of acetone in site samples and to improve the overall quality control for the project, several samples should be split between labs to allow independent comparison of analytical results.

Although such comparisons may create some problems of interpretation, acetone, the primary compound of concern at the perimeter, is present in high enough concentrations to permit a more reliable comparison of these results to be made.

APPENDIX A

LISTINGS OF CHEMICAL DATA

The following flags are used in the data to identify certain conditions. The meanings of these flags are presented below.

U - Compound was analyzed for but not detected.

J - Indicates an estimated value for the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.

B - This is used when the compound is found in the blank as well as the sample. It indicates possible blank contamination and warns the data user to take appropriate action.

ND - Not detected.

LOVE CANAL TASK VC PHASE I
HAZARDOUS SUBSTANCE LIST COMPOUNDS
GROUNDWATER ANALYTICAL DATA
ALL DATA IN MICROGRAMS/LITER(PPB)

TW-1 (TANK WATER FROM B-80 RIG)[CC#65976]

VOA	
METHYLENE CHLORIDE	2.0 J
CHLOROFORM	9.2
BROMODICHLOROMETHANE	5.1
DIBROMOCHLOROMETHANE	1.9 J
SVOA	
BIS(2-ETHYLHEXYL)PHTHALATE	4.4 J
PEST/PCB	
ALL U	

WS-1 (WELL SCREEN SAMPLE)[CC#65978]

VOA	
METHYLENE CHLORIDE	2.1 J
ACETONE	21
CHLOROFORM	3.7 J
TRICHLOROETHENE	3.0 J
TOLUENE	1.8 J
SVOA	
BIS(2-ETHYLHEXYL)PHTHALATE	190
DI-N-OCTYL PHTHALATE	4.8 J
PEST/PCB	
ALL U	

TRIP BLANK (FOR TW-1 AND WS-1)[CC#65988]

VOA	
METHYLENE CHLORIDE	3.6 J

MW-4108 (PREVIOUSLY INSTALLED)[CC#70844]

VOA	
METHYLENE CHLORIDE	2.7 JB
ACETONE	100
SVOA	
BIS(2-ETHYLHEXYL)PHTHALATE	82
PEST/PCB	
ALL U	

MW-4215 [CC#73941]

VOA

ACETONE	94

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	8.6 J

PEST/PCB

ALL U

MW-5102 (PREVIOUSLY INSTALLED)[CC#70973]

VOA

METHYLENE CHLORIDE	1.3 JB

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	16 J

PEST/PCB

ALL U

MW-7105 [CC#70993]

VOA

METHYLENE CHLORIDE	1.7 J
ACETONE	210

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	6.6 J

PEST/PCB

ALL U

MW-7115 [CC#70994]

VOA

METHYLENE CHLORIDE	30
ACETONE	280
TOLUENE	2.0 J
ETHYL BENZENE	5.5 J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	46/56(RE)
DI-N-OCTYLPHTHALATE	-/2.2 J(RE)

PEST/PCB

ALL U

MW-7120 [CC#71234]

VOA

METHYLENE CHLORIDE	7.2 B
ACETONE	130 B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	14 J

PEST/PCB

ALL U

MW-7125 [CC#71240]
    VOA
        METHYLENE CHLORIDE   1.3 JB
        ACETONE   91   B
    SVOA
        BIS(2-ETHYLHEXYL)PHTHALATE   26   B
        DI-N-OCTYL PHTHALATE   2.6 J
    PEST/PCB
        ALL U

MW-7130 [CC#71238]
    VOA
        METHYLENE CHLORIDE   24   JB
        ACETONE   3400
    SVOA
        BIS(2-ETHYLHEXYL)PHTHALATE   36   B
    PEST/PCB
        ALL U

MW-7135 [CC#71223]
    VOA
        METHYLENE CHLORIDE   10   JB
        ACETONE   750
    SVOA
        ALL U
    PEST/PCB
        ALL U

MW-7140 [CC#71243]
    VOA
        METHYLENE CHLORIDE   8.0 B
        ACETONE   62   B
    SVOA
        BIS(2-ETHYLHEXYL)PHTHALATE   6.8 JB
    PEST/PCB
        ALL U

MW-7145 [CC#71207]

VOA

METHYLENE CHLORIDE	5.3 B
ACETONE	100
TOLUENE	1.0 J

SVOA

N-NITROSODIPHENYLAMINE	2.4 J

PEST/PCB

ALL U

MW-7150 [CC#71255]

VOA

METHYLENE CHLORIDE	7.7 J
ACETONE	570

SVOA

ALL U

PEST/PCB

ALL U

MW-7155 [CC#71233]

VOA

METHYLENE CHLORIDE	20 JB
ACETONE	2700

SVOA

DI-N-BUTYLPHTHALATE	3.4 J
BIS(2-ETHYLHEXYL)PHTHALATE	3.4 J

PEST/PCB

ALL U

MW-7161 [CC#71237]

VOA

METHYLENE CHLORIDE	13 JB
ACETONE	630

SVOA

DIETHYLPHTHALATE	3.2 J

PEST/PCB

ALL U

MW-7205 [CC#71235]

VOA

METHYLENE CHLORIDE	26	B
ACETONE	390	B
BENZENE	7.8	J
TOLUENE	4.0	J
ETHYLBENZENE	2.7	J
XYLENES	4.8	J

SVOA

DI-N-BUTYLPHTHALATE	2.6	J

PEST/PCB

ALL U

MW-8106 [CC#71247]

VOA

METHYLENE CHLORIDE	24	JB
ACETONE	590	B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	2.2	J

PEST/PCB

ALL U

MW-8110 [CC#70797]

VOA

METHYLENE CHLORIDE	5.7	JB
ACETONE	430	

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	29	

PEST/PCB

ALL U

MW-8115 [CC#70846]

VOA

METHYLENE CHLORIDE	2.6	JB
ACETONE	140	

SVOA

DIETHYLPHTHALATE	2.4	J
BIS(2-ETHYLHEXYL)PHTHALATE	3.6	J

PEST/PCB

ALL U

MW-8120 [CC#70840]

VOA

METHYLENE CHLORIDE	36	B
ACETONE	750	
CHLOROFORM	4.5	J
2-BUTANONE	96	
BENZENE	5.0	J

SVOA

DIETHYLPHTHALATE	6.0	J
BIS(2-ETHYLHEXYL)PHTHALATE	52	

PEST/PCB

ALL U

MW-8125 [CC#70847]

VOA

METHYLENE CHLORIDE	11	JB
ACETONE	460	

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	13	J

PEST/PCB

g-BHC(LINDANE)	.08	

MW-8130 [CC#70848]

VOA

METHYLENE CHLORIDE	26	B
ACETONE	670	
BENZENE	3.1	J

SVOA

ALL U

PEST/PCB

ALL U

MW-8140 [CC#70850]

VOA

METHYLENE CHLORIDE	2.7	JB
ACETONE	180	

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	9.4	J

PEST/PCB

ALL U

MW-8210 [CC#73815]

VOA

ACETONE	35	
TOLUENE	2.8	J

SVOA

ALL U

PEST/PCB

ALL U

MW-9105 [CC#70832]

VOA

METHYLENE CHLORIDE	4.1	JB
ACETONE	130	

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	9.4	J

PEST/PCB

ALL U

MW-9110 [CC#70849]

VOA

METHYLENE CHLORIDE	22	JB
ACETONE	2000	

SVOA

ALL U

PEST/PCB

ALL U

MW-9115 [CC#70808]

VOA

METHYLENE CHLORIDE	3.3	JB
ACETONE	180	
BENZENE	1.4	J
TOLUENE	1.9	J

SVOA

DIETHYLPHTHALATE	2.0	J
BIS(2-ETHLYHEXYL)PHTHALATE	31	

PEST/PCB

ALL U

MW-9120 [CC#70809]

VOA

METHYLENE CHLORIDE	3.3	JB
ACETONE	220	
BENZENE	1.0	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	32	

PEST/PCB

ALL U

MW-9125 [CC#70810]

VOA

METHYLENE CHLORIDE	2.2 JB
ACETONE	220
TETRACHLOROETHENE	4.0

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	120

PEST/PCB

ALL U

MW-9130 [CC#70835]

VOA

METHYLENE CHLORIDE	5.2 JB
ACETONE	120
BENZENE	1.0 J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	220

PEST/PCB

ALL U

MW-9140 [CC#71245]

VOA

METHYLENE CHLORIDE	130 B
ACETONE	3600 B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	6.6 JB

PEST/PCB

ALL U

MW-9205 [CC#73800]

VOA

METHYLENE CHLORIDE	1.2 J
ACETONE	85 B

SVOA

ALL U

PEST/PCB

ALL U

MW-9210 [CC#73817]

VOA

ACETONE	210 B
TOLUENE	4 J
XYLENES	2.7 J

SVOA

PHENOL	3.0

PEST/PCB

ALL U

MW-10105 [CC#71244]

- VOA
  - METHYLENE CHLORIDE 14 JB
  - ACETONE 610 B
- SVOA
  - ALL U
  - BIS(2-ETHYLHEXYL)PHTHALATE 4.8 J (RE SAMPLE)
- PEST/PCB
  - ALL U

MW-10115 [CC#71215]

- VOA
  - METHYLENE CHLORIDE 210 JB
  - ACETONE 9000
- SVOA
  - N-NITROSODIPHENYLAMINE 2.2 J
- PEST/PCB
  - ALL U

MW-10125 [CC#70996]

- VOA
  - METHYLENE CHLORIDE 74 JB
  - ACETONE 7400
- SVOA
  - DIETHYLPHTHALATE 5.4 J
  - BIS(2-ETHYLHEXYL)PHTHALATE 35
- PEST/PCB
  - ALL U

MW-10130 [CC#70997]

- VOA
  - METHYLENE CHLORIDE 1.4 J
  - ACETONE 140
- SVOA
  - BIS(2-ETHYLHEXYL)PHTHALATE 47
- PEST/PCB
  - ALL U

MW-10135 [CC#71236]

VOA

METHYLENE CHLORIDE	310	JB
ACETONE	6700	B
CHLOROFORM	150	J
1,1,2,2-TETRACHLOROETHANE	160	J
TRICHLOROETHENE	360	
BENZENE	3300	
TETRACHLOROETHENE	71	J
TOLUENE	15000	
CHLOROBENZENE	1300	

SVOA

BIS(2-CHLOROETHYL) ETHER	20	J
1,4-DICHLOROBENZENE	76	J
BENZYL ALCOHOL	1600	
1,2-DICHLOROBENZENE	38	J
BENZOIC ACID	29000	
2,4-DICHLOROPHENOL	1400	
1,2,4-TRICHLOROBENZENE	82	J
4-CHLORO-3-METHYLPHENOL	24	J
2,4,6-TRICHLOROPHENOL	910	
2,4,5-TRICHLOROPHENOL	910	J
BIS(2-ETHYLHEXYL)PHTHALATE	78	JB

PEST/PCB

ALL U

MW-10145 [CC#71001]

VOA

METHYLENE CHLORIDE	43	J
ACETONE	6200	

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	33

PEST/PCB

ALL U

MW-10150 [CC#70998]

VOA

METHYLENE CHLORIDE	49	JB
ACETONE	4400	

SVOA

ALL U

PEST/PCB

ALL U

MW-10205 [CC#73811]

VOA

ACETONE	44 B

SVOA

DIETHYLPHTHALATE	2.4 J
BIS(2-ETHYLHEXYL)PHTHALATE	4.2

PEST/PCB

ALL U

MW-10205 [CC#73818]

VOA

ACETONE	110

SVOA

PHENOL	2.4 J
BIS(2-THYLHEXYL)PHTHALATE	4.6 J

PEST/PCB

ALL U

MW-10210 [CC#73816]

VOA

METHYLENE CHLORIDE	2.0 JB
ACETONE	65 B
CHLOROFORM	2.5 J
BENZENE	1.6 J
TOLUENE	7.5
ETHYL BENZENE	1.4 J
XYLENES	4.0 J

SVOA

BENZYL ALCOHOL	11 J
BUTYL BENZYL PHTHALATE	2.4 J
BIS(2-ETHYLHEXYL)PHTHALATE	7.4 J

PEST/PCB

ALL U

MW-10215 [CC#73822]

VOA

METHYLENE CHLORIDE	1.3 JB
ACETONE	36 B

SVOA

ALL U

PEST/PCB

ALL U

MW-10220 [CC#73819]

VOA

METHYLENE CHLORIDE	2.5	JB
ACETONE	90	B
TOLUENE	1.4	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	2.2	J

PEST/PCB

ALL U

MW-10225A [CC#73812]

VOA

METHYLENE CHLORIDE	2.3	J
ACETONE	160	B
TOLUENE	2.8	J
ETHYL BENZENE	1.1	J
XYLENES	5.0	

SVOA

PHENOL	41	
BENZYL ALCOHOL	3.4	J
BIS(2-ETHYLHEXYL)PHTHALATE	9.4	J

PEST/PCB

ALL U

MW-10225B [CC#73813]

VOA

METHYLENE CHLORIDE	8.7	J
ACETONE	560	B

SVOA

PHENOL	45	
BENZYL ALCOHOL	6.0	J
BIS(2-ETHYLHEXYL)PHTHALATE	23	
DI-N-OCTYL PHTHALATE	2.2	J

PEST/PCB

ALL U

MW-10225C [CC#70995]

VOA

METHYLENE CHLORIDE	3.9	J
ACETONE	64	

SVOA

ALL U

PEST/PCB

ALL U

```
TRIP BLANK #1 [CC#70901]
    VOA
        METHYLENE CHLORIDE              3.2 JB
        ACETONE                        17
        TRICHLOROETHENE                 2.4 J

TRIP BLANK #2 [CC#70976]
    VOA
        METHYLENE CHLORIDE              8.8 J
        ACETONE                      1200

TRIP BLANK #3 [CC#71242]
    VOA
        METHYLENE CHLORIDE              3.6 JB

TRIP BLANK #4 [CC#73830]
    VOA
        METHYLENE CHLORIDE              2.1 J
        ACETONE                        16   B

TRIP BLANK #5 [CC#73942]
    VOA
        METHYLENE CHLORIDE              4.0 J
        ACETONE                        77   B
        TRICLOROETHENE                  2.9 J

DUPLICATE #1 [CC#70829] DUP FOR MW-9115
   VOA
        METHYLENE CHLORIDE              4.9 JB
        ACETONE                       110
    SVOA
        BIS(2-ETHYLHEXYL)PHTHALATE     28
    PEST/PCB
        ALL U
```

DUPLICATE #2 [CC#71248] DUP FOR MW-7150 ALSO A QA/QC REPLICATE

VOA

METHYLENE CHLORIDE	67	JB
ACETONE	3100	B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	11	JB
DIETHYLPHTHALATE	3.6	J
N-NITROSODIPHENYLAMINE	4.4	J
DI-N-BUTYLPHTHALATE	2.6	J
BIS(2-ETHYLHEXYL)PHTHALATE	2.8	J

PEST/PCB

ALL U

DUPLICATE #3 [CC#73814] DUP FOR MW-8210

VOA

METHYLENE CHLORIDE	1.0	J
ACETONE	62	B

SVOA

ALL U

PEST/PCB

ALL U

DUPLICATE #4 [CC#73821] DUP FOR MW-10215

VOA

METHYLENE CHLORIDE	1.0	JB
ACETONE	40	B
TOLUENE	3.8	J

SVOA

ALL U

PEST/PCB

ALL U

DUPLICATE #5 [CC#73820] DUP FOR MW-10220

VOA

ACETONE	34	B
TOLUENE	4.1	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	3.2	J

PEST/PCB

ALL U

SAMPLE BLANK #1 [CC#71216]

VOA

METHYLENE CHLORIDE	2.7 JB
ACETONE	9.9 J
TOLUENE	2.2 J

SVOA

ALL U

PEST/PCB

ALL U

LOVE CANAL SOIL DATA - TASK VC
HAZARDOUS SUBSTANCE LIST COMPOUNDS
ALL CONCENTRATIONS IN PPB
71XX BORING DESIGNATIONS

7105S (9% MOISTURE)(0.3-0.8 FT)[CC#63893] PH=7.75

VOA

METHYLENE CHLORIDE	24	B
ACETONE	9.7	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	78	J

PEST/PCB

ALL U

DIOXIN - ND(0.07)

7105D (24% MOISTURE)(4.8 FT)[CC#63894] PH=8.47

VOA

METHYLENE CHLORIDE	19	B
ACETONE	6.8	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	53	J

PEST/PCB

ALL U

DIOXIN - ND(0.06)

7115S (20% MOISTURE)(3.2-3.4 FT)[CC#69504] PH=7.7

VOA

METHYLENE CHLORIDE	5.7	JB
ACETONE	8.1	JB

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.70)

7115D (18% MOISTURE)(5.2-5.6 FT)[CC#69502] PH=7.9

VOA

METHYLENE CHLORIDE	34	B
ACETONE	7.2	JB

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.08)

7117S (23% MOISTURE)[CC#65929] PH=6.8 DUPLICATE FOR 7120S

VOA

METHYLENE CHLORIDE	7.1	B
ACETONE	3.9	J
BENZENE	1.5	J

SVOA

BENZOIC ACID	48	J
N-NITROSODIPHENYLAMINE	97	J
BIS(2-ETHYLHEXYL)PHTHALATE	240	J

PEST/PCB

ALL U

DIOXIN - ND(0.04)

7120S (23% MOISTURE)(2.0 FT)[CC#65947] PH=7.4

VOA

METHYLENE CHLORIDE	9.7	B

SVOA

FLUORANTHENE	57	J
PYRENE	57	J
BIS(2-ETHYLHEXYL)PHTHALATE	280	J
BENZO(A)PYRENE	44	J

PEST/PCB

4-4'-DDE	15	
AROCHLOR 1260	72	

DIOXIN - ND(0.12)

7120D (7% MOISTURE)(5.5 FT)[CC#65946] PH=8.0

VOA

METHYLENE CHLORIDE	11	B

SVOA

N-NITROSODIPHENYLAMINE	150	J
DI-N-BUTYLPHTHALATE	150	J
BIS(2-ETHYLHEXYL)PHTHALATE	99	J

PEST/PCB

ALL U

DIOXIN - ND(0.10)

7125S (14% MOISTURE)(0.5 FT)[CC#65973] PH=9.10

VOA

METHYLENE CHLORIDE	20	B
ACETONE	5.5	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	180	J

PEST/PCB

ALL U

DIOXIN - ND(0.12)

7125D (4% MOISTURE)(4.0 FT)[CC#65937] PH=8.6

VOA

METHYLENE CHLORIDE	12	B
ACETONE	33	

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.06)

7130S (21% MOISTURE)(0.5 FT)[CC#65971] PH=8.10

VOA

METHYLENE CHLORIDE	13	B
ACETONE	7	J

SVOA

DI-N-BUTYLPHTHALATE	51	J
PYRENE	43	J
BIS(2-ETHYLHEXYL)PHTHALATE	820	

PEST/PCB

ALL U

DIOXIN - ND(0.14)

7130D (7% MOISTURE)(3.5 FT)[CC#65974] PH=7.49

VOA

METHYLENE CHLORIDE	27	B
ACETONE	5.8	J

SVOA

DIETHYLPHTHALATE	53	J
BIS(2-ETHYLHEXYL)PHTHALATE	150	J

PEST/PCB

ALL U

DIOXIN - ND(0.17)

7135S (37% MOISTURE)(1.5 FT)[CC#70754] PH=8.1

VOA

METHYLENE CHLORIDE	44	B
ACETONE	14	JB

SVOA

PYRENE	59	J
BENZO(A)ANTHRACENE	64	J
BIS(2-ETHYLHEXYL)PHTHALATE	450	J
BENZO(B)FLUORANTHENE	59	J
BENZO(K)FLUORANTHENE	59	J

PEST/PCB

a-BHC	45
b-BHC	150

DIOXIN - ND(0.06)

7135D (48% MOISTURE)(5.0 FT)[CC#70755] PH=7.5

VOA

METHYLENE CHLORIDE	10	B
CHLOROFORM	4.4	JB

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	120	J

PEST/PCB

ALL U

DIOXIN - ND(1.55)

7140S (18% MOISTURE)(0.4-0.6 FT)[CC#70756] PH=7.2

VOA

METHYLENE CHLORIDE	7.0	B

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.51)

7140D (22% MOISTURE)(4.2-4.4 FT)[CC#70751] PH=8.2

VOA

METHYLENE CHLORIDE	13	B

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.18)

7141S (21% MOISTURE)(4.2-4.4 FT)[CC#70753] PH=8.5 DUPLICATE FOR 7140S

VOA

METHYLENE CHLORIDE	8.9	B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	51	

PEST/PCB

ALL U

DIOXIN - ND(0.74)

7145S (14% MOISTURE)(0.8-1.0 FT)[CC#70731] PH=8.4

VOA
METHYLENE CHLORIDE 57 B
ACETONE 250 B
SVOA
ALL U
PEST/PCB
ALL U
DIOXIN - ND(0.19)

7145D (21% MOISTURE)(4.6-4.8 FT)[CC#70731] PH=8.4
VOA
METHYLENE CHLORIDE 14 B
SVOA
ALL U
PEST/PCB
ALL U

7150S (21% MOISTURE)(0.5-0.8 FT)[CC#70744] PH=7.3
VOA
METHYLENE CHLORIDE 13
ACETONE 6.9 JB
1,1,1-TRICHLOROETHANE 2.7 J
SVOA
PHENANTHRENE 47 J
FLUORANTHENE 69 J
PYRENE 60 J
CHRYSENE 73 J
PEST/PCB
4-4' - DDE 5.8
4-4' - DDT 8.7
DIOXIN - ND(0.08)

7150D (32% MOISTURE)(6.4-6.9FT)[CC#70743] PH=7.0
VOA
METHYLENE CHLORIDE 23 B
ACETONE 140 B
2-BUTANONE 16
SVOA
ALL U
PEST/PCB
ALL U
DIOXIN - ND(0.04)

7155S (19% MOISTURE)(0.8-1.0 FT)[CC#65969] PH=7.68

VOA

METHYLENE CHLORIDE	9.5	B

SVOA

DI-N-BUTYL PHTHALATE	46	J
BIS(2-ETHYLHEXYL)PHTHALATE	130	J

PEST/PCB

ALL U

DIOXIN - ND(0.09)

7155D (6% MOISTURE)(4.8 FT)[CC#65965] PH=7.5

VOA

METHYLENE CHLORIDE	89	B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	82	J

PEST/PCB

ALL U

DIOXIN - ND(0.03)

7161S (21% MOISTURE)(0.0-1.3 FT)[CC#67992] PH=8.1

VOA

METHYLENE CHLORIDE	12	B
ACETONE	5	JB
CHLOROFORM	1.4	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	100	JB

PEST/PCB

ALL U

DIOXIN - ND(0.10)

7161D (17% MOISTURE)(2.8-3.4 FT)[CC#68006] PH=8.4

VOA

METHYLENE CHLORIDE	13	B
ACETONE	14	B
2-BUTANONE	4.1	JB

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.29)

LOVE CANAL SOIL DATA - TASK VC
HAZARDOUS SUBSTANCE LIST COMPOUNDS
ALL CONCENTRATIONS IN PPB
81XX BORING DESIGNATIONS

8106S (17% MOISTURE)(1.0-1.3 FT)[CC#68012] PH=8.4

VOA

METHYLENE CHLORIDE	24	B
ACETONE	14	B
2-BUTANONE	4.6	JB

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	200	JB

PEST/PCB

ALL U

DIOXIN - ND(0.10)

8106D (15% MOISTURE)(2.2-2.7 FT)[CC#68013] PH=8.2

VOA

METHYLENE CHLORIDE	46	B
ACETONE	8.3	JB

SVOA

DI-N-BUTYLPHTHALATE	47	J
BIS(2-ETHYLHEXYL)PHTHALATE	3800	B
DI-N-OCTYLPHTHALATE	200	J

PEST/PCB

ALL U

DIOXIN - ND(0.14)

8106T (13% MOISTURE)(13.2-13.8 FT)[CC#68005] PH=8.5

VOA

METHYLENE CHLORIDE	38	B
ACETONE	860	B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	38	JB

PEST/PCB

ALL U

DIOXIN - ND(0.09)

8107D (15% MOISTURE)[CC#68004] PH=8.0 DUPLICATE FOR 8106D

VOA

METHYLENE CHLORIDE	11	B
ACETONE	5.2	JB
2-BUTANONE	4	JB

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	56	JB

PEST/PCB

ALL U

DIOXIN - ND(0.11)

8110S (17% MOISTURE)(2.8-3.2 FT)[CC#68009] PH=6.7

VOA

METHYLENE CHLORIDE	21	B
ACETONE	12	JB
2-BUTANAONE	4.9	JB

SVOA

BIS(2-ETHYLHEXY1)PHTHALATE	220	JB

PEST/PCB

ALL U

DIOXIN - ND(0.20)

8110D (17% MOISTURE)(5.5-5.8 FT)[CC#68010] PH=8.2

VOA

METHYLENE CHLORIDE	16	B
ACETONE	6.8	JB
2-BUTANONE	4.2	JB

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	91	JB

PEST/PCB

ALL U

DIOXIN - ND(0.15)

8113S (17% MOISTURE)[CC#65972] PH=7.89 DUPLICATE FOR 8115S

VOA

METHYLENE CHLORIDE	12	B
ACETONE	5.3	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	94	J

PEST/PCB

ALL U

DIOXIN - ND(0.07)

8115S (15% MOISTURE)(3.0 FT)[CC#65951] PH=8.1

VOA

METHYLENE CHLORIDE	7.4	B

SVOA

DI-N-BUTYLPHTHALATE	75	J
BIS(2-ETHYLHEXYL)PHTHALATE	110	J

PEST/PCB

ALL U

DIOXIN - ND(0.14)

8115D (0% MOISTURE)(4.0 FT)[CC#65950] PH=8.2

VOA

METHYLENE CHLORIDE	4.5	JB

SVOA

N-NITROSODIPHENYLAMINE	37	J
DI-N-BUTYLPHTHALATE	37	J

PEST/PCB

ALL U

DIOXIN - ND(0.03)

8120S (22% MOISTURE)(0.7 FT)[CC#65949] PH=6.8

VOA

METHYLENE CHLORIDE	11	B

SVOA

N-NITROSODIPHENYLAMINE	65	J
DI-N-BUTYLPHTHALATE	120	J
PYRENE	52	J

PEST/PCB

ALL U

DIOXIN - ND(0.09)

8120D (7% MOISTURE)(2.5 FT)[CC#65948] PH=7.4

VOA

METHYLENE CHLORIDE	5.0	JB

SVOA

N-NITROSODIPHENYLAMINE	44	J
BIS(2-ETHYLHEXYL)PHTHALATE	120	J

PEST/PCB

ALL U

DIOXIN - ND(0.08)

8123D (0% MOISTURE)[CC#63898] PH=8.42 DUPLICATE FOR 8125D

VOA

METHYLENE CHLORIDE	11	B
ACETONE	7.6	JB
CHLOROFORM	1.2	J

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.02)

8125S (2% MOISTURE)(0.25 FT)[CC#63896] PH=8.11
VOA
METHYLENE CHLORIDE 9.6 B
CHLOROFORM 1.1 JB
SVOA
ALL U
PEST/PCB
ALL U
DIOXIN - ND(0.05)

8125D (0% MOISTURE)(4.5 FT)[CC#63897] PH=8.37
VOA
METHYLENE CHLORIDE 9.6 B
ACETONE 8.1 JB
CHLOROFORM 1.9 J
SVOA
BIS(2-ETHYLHEXYL)PHTHALATE 56 J
PEST/PCB
ALL U
DIOXIN - ND(0.02)

8127S (31% MOISTURE)[CC#63889] PH=7.45 DUPLICATE FOR 8130S
VOA
METHYLENE CHLORIDE 9.2 B
ACETONE 20
SVOA
FLUORANTHENE 73 J
PYRENE 88 J
BIS(2-ETHYLHEXYL)PHTHALATE 63 J
BENZO(B)FLUORANTHENE 98 J
BENZO(K)FLUORANTHENE 98 J
PEST/PCB
DIELDRIN 22
4-4'-DDT 12
CHLORDANE 64
DIOXIN - ND(0.07)

8130S (10% MOISTURE)(0.0-1.0 FT)[CC#63899] PH=7.44
VOA
METHYLENE CHLORIDE 32 B
ACETONE 8.5 JB
SVOA
DI-N-BUTYLPHTHALATE 240 J
BUTYLBENZYLPHTHALATE 260 J
BIS(2-ETHYLHEXYL)PHTHALATE 5200
DI-N-OCTYLPHTHALATE 820
PEST/PCB
ALL U
DIOXIN - ND(0.03)

8130D (19% MOISTURE)(4.5 FT)[CC#63900] PH=8.30

VOA

METHYLENE CHLORIDE	74	B
ACETONE	3000	

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	58	J

PEST/PCB

ALL U

DIOXIN - ND(0.04)

8140S (26% MOISTURE)(1.0-1.5FT)[CC#70746] PH=7.7

VOA

METHYLENE CHLORIDE	35	B
CHLOROFORM	2.6	J
1,1,1-TRICHLOROETHANE	4.8	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	64	J

PEST/PCB

4-4' - DDT	10	

DIOXIN - ND(0.07)

8140D (12% MOISTURE)(5.0 FT)[CC#63895] PH=8.43

VOA

METHYLENE CHLORIDE	4.8	JB
ACETONE	160	

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.04)

8140T (1.0 FT)[CC#63906]

SVOA

DIETHYLPHTHALATE	37	J
BIS(2-ETHYLHEXYL)PHTHALATE	140	J

DIOXIN - ND(0.04)

NOTE: VOA NOT REPORTED FOR 8140T DUE TO INSUFFICIENT SAMPLE TO RESOLVE HIGH ACETONE RESULT ON FIRST RUN AND ND ON SECOND. ALSO INSUFFICIENT SAMPLE VOLUME FOR PEST/PCB.

LOVE CANAL SOIL DATA - TASK VC
HAZARDOUS SUBSTANCE LIST COMPOUNDS
ALL CONCENTRATIONS IN PPB
91XX BORING DESIGNATIONS

9105S (9% MOISTURE)(0.5 FT)[CC#65970] PH=8.19

VOA		
METHYLENE CHLORIDE	36	B
ACETONE	49	
SVOA		
NAPHTHALENE	160	J
2-METHYLNAPHTHALENE	240	J
DI-N-BUTYLPHTHALATE	36	J
FLUORANTHENE	66	J
PYRENE	100	J
BENZO(A)ANTHRACENE	66	J
BIS(2-ETHYLHEXYL)PHTHALATE	230	J
CHRYSENE	110	J
BENZO(B)FLUORANTHENE	230	J
BENZO(K)FLUORANTHENE	230	J
BENZO(A)PYRENE	66	J
PEST/PCB		
ALL U		
DIOXIN - ND(0.02)		

9105D (6% MOISTURE)(4.5 FT)[CC#65975] PH=8.45

VOA		
METHYLENE CHLORIDE	9.8	B
ACETONE	40	
SVOA		
BIS(2-ETHYLHEXYL)PHTHALATE	160	J
PEST/PCB		
ALL U		
DIOXIN - ND(0.08)		

9110S (22% MOISTURE)(0.5-1.0FT)[CC#70747] PH=7.9

VOA		
METHYLENE CHLORIDE	93	B
ACETONE	12	
CHLOROFORM	1.5	J
SVOA		
BIS(2-ETHYLHEXYL)PHTHALATE	70	J
PEST/PCB		
4-4' - DDT	27	
DIOXIN - ND(0.07)		

9110D (15% MOISTURE)(5.0 FT)[CC#63892] PH=8.55
VOA
METHYLENE CHLORIDE 12 B
ACETONE 140
SVOA
ALL U
PEST/PCB
ALL U
DIOXIN - ND(0.07)

9115S (18% MOISTURE)(1.8-2.2 FT)[CC#68007]
VOA
METHYLENE CHLORIDE 22 B
ACETONE 9 JB
CHLOROFORM 3 J
2-BUTANONE 7.3 JB
SVOA
BIS(2-ETHYLHEXYL)PHTHALATE 93 JB
PEST/PCB
ALL U
DIOXIN - ND(0.07)

9115D (24% MOISTURE)(4.3-4.7 FT)[CC#68008]
VOA
METHYLENE CHLORIDE 13 B
ACETONE 3600 B
CHLOROFORM 2.8 J
SVOA
BIS(2-ETHYLHEXYL)PHTHALATE 100 JB
PEST/PCB
ALL U
DIOXIN - ND(0.16)

9120S (17% MOISTURE)(0.5-0.9FT)(CC#70748] PH=7.8
VOA
METHYLENE CHLORIDE 18 B
SVOA
BIS(2-ETHYLHEXYL)PHTHALATE 61 J
PEST/PCB
ALL U
DIOXIN - ND(0.12)

9120D (9% MOISTURE)(5.0 FT)[CC#63901] PH=8.54

VOA

METHYLENE CHLORIDE	9.3	B
ACETONE	47	B

SVOA

DI-N-BUTYLPHTHALATE	52	J
BIS(2-ETHYLHEXYL)PHTHALATE	210	J
DI-N-OCTYLPHTHALATE	140	J

PEST/PCB

ALL U

DIOXIN - ND(0.09)

9120T (9% MOISTURE)(18.0-18.5 FT)[CC#63902] PH=8.60

VOA

METHYLENE CHLORIDE	610	B
ACETONE	9200	B
2-BUTANONE	4500	B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	65	J

PEST/PCB

ALL U

DIOXIN - ND(0.06)

9125S (18% MOISTURE)(0.3-0.4FT)[CC#70749] PH=7.9

VOA

METHYLENE CHLORIDE	23	B

SVOA

2-METHYLNAPHTHALENE	50	J
PHENANTHRENE	99	J
FLUORANTHENE	110	J
PYRENE	110	J
BUTYLBENZYLPHTHALATE	130	J
BENZO(A)ANTHRACENE	91	J
BIS(2-ETHYLHEXYL)PHTHALATE	74	J
CHRYSENE	91	J
BENZO(B)FLUORANTHENE	150	J
BENZO(K)FLUORANTHENE	74	J
BENZO(A)PYRENE	83	J

PEST/PCB

ALL U

DIOXIN - ND(0.12)

9125D (21% MOISTURE)(4.0 FT)[CC#63877] PH=8.33

VOA

METHYLENE CHLORIDE	43	B
ACETONE	630	
CHLOROFORM	4.2	JB

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	43	J

PEST/PCB

ALL U

DIOXIN - ND(0.06)

9130S (17% MOISTURE)(0.0-1.0 FT)[CC#69486] PH=8.1

VOA

METHYLENE CHLORIDE	20	B
ACETONE	42	
CHLOROFORM	2.5	J

SVOA

N-NITROSODIPHENYLAMINE	49	J
BIS(2-ETHYLHEXYL)PHTHALATE	160	J

PEST/PCB

4-4' - DDE	4.5	J
4-4' - DDT	5.7	

DIOXIN - ND(0.12)

9130D (19% MOISTURE)(4.7 FT)[CC#69484] PH=8.0

VOA

METHYLENE CHLORIDE	12	B
ACETONE	38	
CHLOROFORM	2.3	J

SVOA

DIETHYLPHTHALATE	68	J

PEST/PCB

ALL U

DIOXIN - ND(0.23)

9140S (21% MOISTURE)(8.0-8.5 FT)[CC#69490] PH=8.2

VOA

METHYLENE CHLORIDE	8.2	B
ACETONE	94	

SVOA

N-NITROSODIPHENYLAMINE	60	J
BIS(2-ETHYLHEXYL)PHTHALATE	47	J

PEST/PCB

ALL U

DIOXIN - ND(0.15)

9140D (21% MOISTURE)(8.5-9.5 FT)[CC#69488] PH=8.2

VOA

METHYLENE CHLORIDE	18	B
ACETONE	62	

SVOA

N-NITROSODIPHENYLAMINE	60	J

PEST/PCB

ALL U

DIOXIN - ND(0.18)

LOVE CANAL SOIL DATA - TASK VC
HAZARDOUS SUBSTANCE LIST COMPOUNDS
ALL CONCENTRATIONS IN PPB
101XX BORING DESIGNATIONS

10105S (31% MOISTURE)(2.0 FT)[CC#69473] PH=8.1

VOA		
METHYLENE CHLORIDE	14	B
ACETONE	36	
SVOA		
NAPHTHALENE	54	J
2-METHYLNAPHTHALENE	78	J
PHENANTHRENE	150	J
FLUORANTHENE	180	J
PYRENE	170	J
BENZO(A)ANTHRACENE	120	J
BIS(2-ETHYLHEXYL)PHTHALATE	410	J
CHRYSENE	150	J
BENZO(K)FLUORANTHENE	160	J
PEST/PCB		
4-4' - DDE	2.4	J
4-4' - DDT	9.3	
DIOXIN - ND(0.12)		

10105D (17% MOISTURE)(8.5 FT)[CC#69460] PH=8.0

VOA		
METHYLENE CHLORIDE	13	B
ACETONE	43	
SVOA		
ALL U		
PEST/PCB		
ALL U		
DIOXIN - ND(0.25)		

10115S (3% MOISTURE)(4.2-5.2 FT)[CC#69494] PH=8.4

VOA		
METHYLENE CHLORIDE	18	B
ACETONE	25	B
SVOA		
N-NITROSODIPHENYLAMINE	35	J
BIS(2-ETHYLHEXYL)PHTHALATE	360	
PEST/PCB		
ALL U		
DIOXIN - ND(0.22)		

10115D (22% MOISTURE)(8.0-10.0 FT)[CC#69492] PH=8.5

VOA
METHYLENE CHLORIDE 15 B
ACETONE 430
SVOA
N-NITROSODIPHENYLAMINE 70 J
BIS(2-ETHYLHEXYL)PHTHALATE 940
PEST/PCB
ALL U
DIOXIN - ND(0.13)

10115T (16% MOISTURE)(30.5-31.5 FT)[CC#69496] PH=8.5
VOA
METHYLENE CHLORIDE 7.4 B
ACETONE 50 B
SVOA
N-NITROSODIPHENYLAMINE 44 J
PEST/PCB
ALL U
DIOXIN - ND(0.41)

10125S (20% MOISTURE)(1.0-1.6 FT)[CC#69480] PH=8.0
VOA
METHYLENE CHLORIDE 8.7 B
ACETONE 31
CHLOROFORM 2.4 J
SVOA
ALL U
PEST/PCB
4-4' - DDE 10
4-4' - DDT 7.6
DIOXIN - ND(0.11)

10125D (22% MOISTURE)(5.1-5.5 FT)[CC#69482] PH=8.3
VOA
METHYLENE CHLORIDE 10 B
ACETONE 16
CHLOROFORM 1.7 J
SVOA
N-NITROSODIPHENYLAMINE 43 J
DI-N-BUTYLPHTHALATE 43 J
PEST/PCB
ALL U
DIOXIN - ND(0.20)

10127D (13% MOISTURE)[CC#65955] PH=8.18 DUPLICATE FOR 10130D
VOA
METHYLENE CHLORIDE 44 B
SVOA
BIS(2-ETHYLHEXYL)PHTHALATE 610
PEST/PCB
ALL U
DIOXIN - ND(0.04)

10130S (16% MOISTURE)(2.0 FT)[CC#65952] PH=7.9
VOA
METHYLENE CHLORIDE 6.1 B
SVOA
DI-N-BUTYLPHTHALATE 89 J
BIS(2-ETHYLHEXYL)PHTHALATE 330 J
PEST/PCB
ALL U
DIOXIN - ND(0.06)

10130D (15% MOISTURE)(4.6 FT)[CC#65958] PH=8.26
VOA
METHYLENE CHLORIDE 9.5 B
ACETONE 2.4 J
SVOA
BIS(2-ETHYLHEXYL)PHTHALATE 810
PEST/PCB
ALL U
DIOXIN - ND(0.05)

10135S (14% MOISTURE)(2.8 FT)[CC#69500] PH=8.0
VOA
METHYLENE CHLORIDE 19 B
ACETONE 5.7 JB
SVOA
1,2,4-TRICHLOROBENZENE 82 J
FLUORANTHENE 67
PYRENE 63 J
1,2,3,4-TETRACHLOROBENZENE 160 J
PEST/PCB
a-BHC 120
d-BHC 53
g-BHC 68
DIOXIN - ND(0.37)

10135D (15% MOISTURE)(4.7 FT)[CC#69498] PH=8.2

VOA

METHYLENE CHLORIDE	21	B
ACETONE	12	B
TOLUENE	1.5	J

SVOA

BI(2-ETHYLHEXYL)PHTHALATE	96	

PEST/PCB

a-BHC	6.1	
b-BHC	5.3	
d-BHC	4.0	
g-BHC	3.1	

DIOXIN - ND(0.25)

10145D (4% MOISTURE)(2.0 FT)[CC#68011] PH=7.6

VOA

METHYLENE CHLORIDE	6.0	B
ACETONE	5.9	JB
2-BUTANONE	3.5	

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	140	JB

PEST/PCB

ALL U

DIOXIN - ND(0.11)

10150S (24% MOISTURE)(1.0 FT)[CC#65954] PH=7.7

VOA

METHYLENE CHLORIDE	8.6	B

SVOA

PHENANTHRENE	81	J
FLUORANTHENE	160	J
PYRENE	150	J
BENZO(A)ANTHRACENE	86	J
BIS(2-ETHYLHEXYL)PHTHALATE	230	J
CHRYSENE	150	J
BENZO(B)FLUORANTHENE	180	J
BENZO(A)PYRENE	72	J

PEST/PCB

4-4'-DDE	12	
4-4'-DDD	23	
4-4'-DDT	40	

DIOXIN - ND(0.04)

10150D (16% MOISTURE)(4.5 FT)[CC#65953] PH=8.4

VOA

METHYLENE CHLORIDE	9.2	B

SVOA

DI-N-BUTYLPHTHALATE	52	J
BIS(2-ETHYLHEXYL)PHTHALATE	300	J

PEST/PCB

ALL U

DIOXIN - ND(0.04)

LOVE CANAL TASK VC PHASE I
HAZARDOUS SUBSTANCE LIST COMPOUNDS
SEWER LINE BORING SOIL SAMPLE DATA
ALL CONCENTRATIONS IN PPB

SB-1S (7% MOISTURE)(4.0-6.0 FT)[CC#70745] PH=8.0

VOA

METHYLENE CHLORIDE	20	B
ACETONE	200	

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.18)

SB-1D (4% MOISTURE)(8.0-10.0 FT)[CC#70757] PH=NO

VOA

METHYLENE CHLORIDE	10	B
ACETONE	6.5	JB
CHLOROFORM	2.0	JB

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	74	J

PEST/PCB

ALL U

DIOXIN - ND(0.08)

SB-2S (15% MOISTURE)(3.5-4.0 FT)[CC#70758] PH=8.4

VOA

METHYLENE CHLORIDE	4.1	JB

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.10)

SB-2D (22% MOISTURE)(8.2-8.7 FT)[CC#70759] PH=8.3

VOA

METHYLENE CHLORIDE	110	B

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	48	J

PEST/PCB

g-BHC(LINDANE)	1.6	J
4-4'-DDT	8.2	

DIOXIN - ND(0.57)

SB-2A (17% MOISTURE)[CC#70760] (3.5-4.0') PH=8.5 DUPLICATE FOR SB-2S

VOA

METHYLENE CHLORIDE	21	B
ACETONE	390	

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.13)

SB-4S (17% MOISTURE)(3.5-3.7 FT)[CC#70761] PH=8.1

VOA

METHYLENE CHLORIDE	100	B
ACETONE	100	B

SVOA

ALL U

PEST/PCB

ALL U

DIOXIN - ND(0.08)

SB-4D (21% MOISTURE)(8.0-8.4 FT)[CC#70750] PH=8.3

VOA

METHYLENE CHLORIDE	34	B
ACETONE	420	B
TOLUENE	1.6	J

SVOA

BIS(2-ETHYLHEXYL)PHTHALATE	170	J

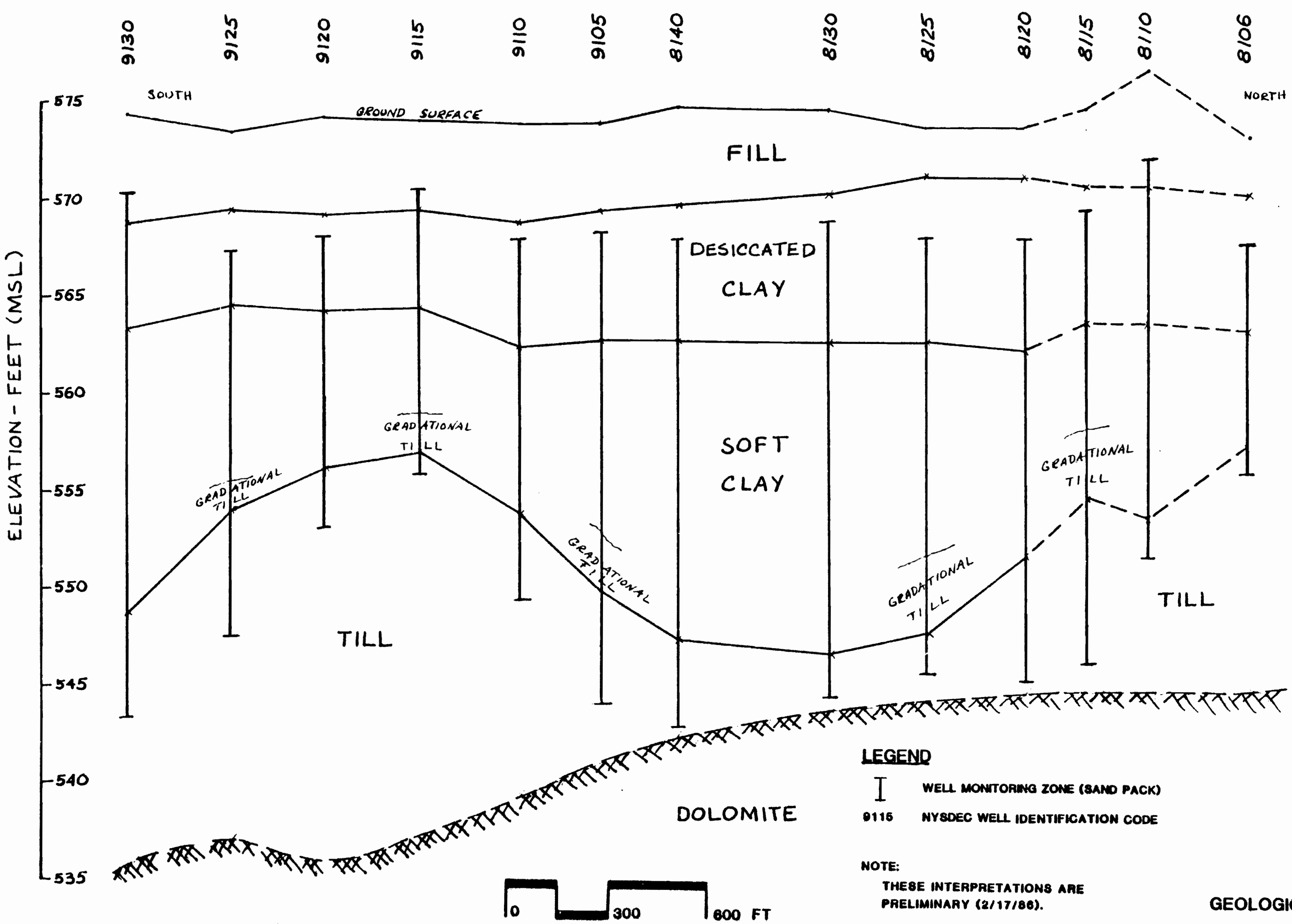
PEST/PCB

ALL U

DIOXIN - ND(0.05)

APPENDIX B

GEOLOGIC CROSS SECTIONS



LEGEND

I WELL MONITORING ZONE (SAND PACK)

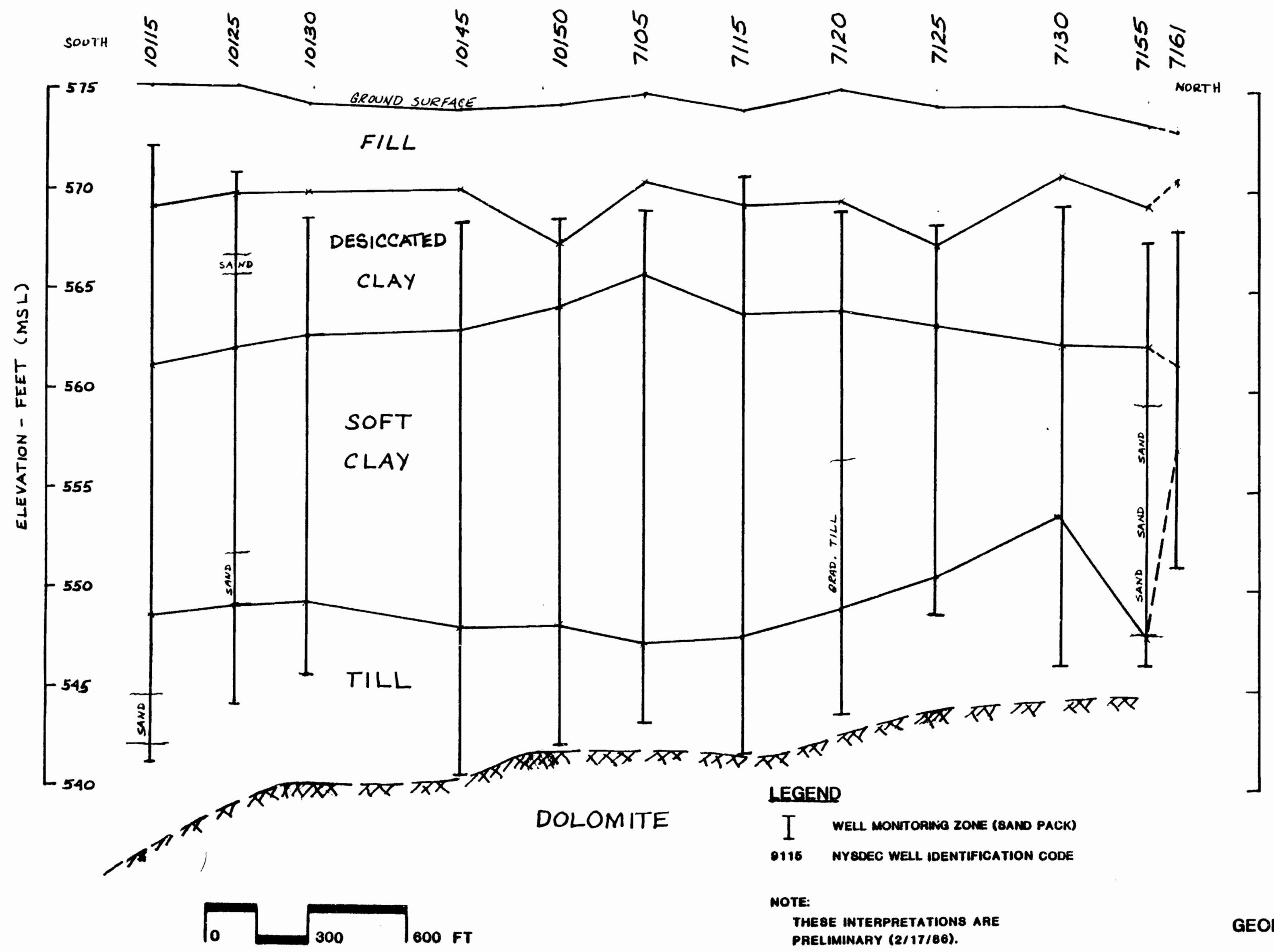
9115 NYSDEC WELL IDENTIFICATION CODE

NOTE:

THESE INTERPRETATIONS ARE PRELIMINARY (2/17/86).

FIGURE A- 1
GEOLOGIC CROSS SECTION
EAST PERIMETER
LOVE CANAL REMEDIAL PROJECT - TASK VC

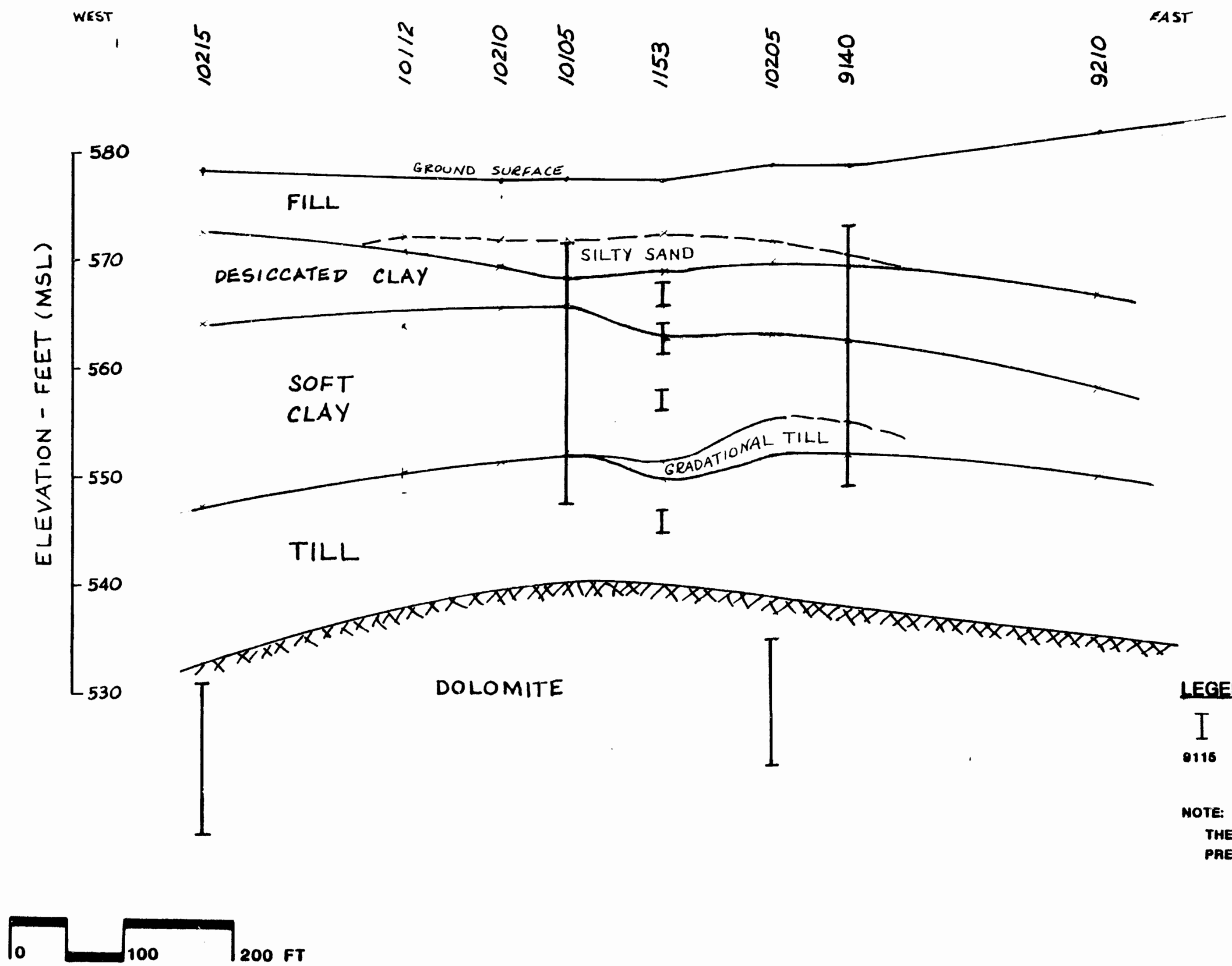
E.C.JORDAN CO.



NOTE:
THESE INTERPRETATIONS ARE PRELIMINARY (2/17/86).

FIGURE A-2
GEOLOGIC CROSS SECTION
WEST PERIMETER
LOVE CANAL REMEDIAL PROJECT - TASK VC

E.C.JORDAN CO.



LEGEND

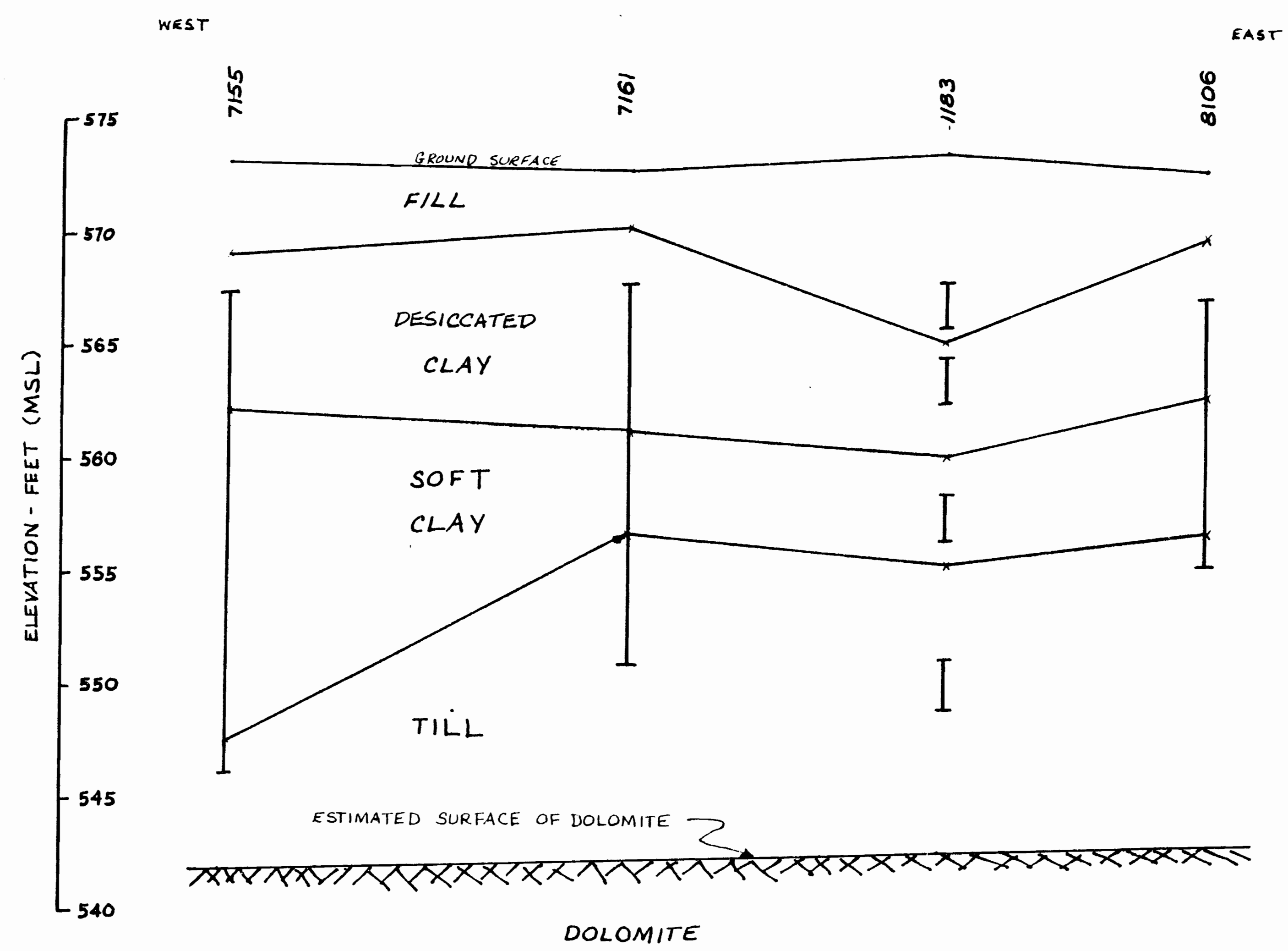
I WELL MONITORING ZONE (SAND PACK)

9115 NYSDEC WELL IDENTIFICATION CODE

NOTE:
THESE INTERPRETATIONS ARE PRELIMINARY (2/17/86).

FIGURE A-3
GEOLOGIC CROSS SECTION
SOUTH PERIMETER
LOVE CANAL REMEDIAL PROJECT - TASK VC

E.C.JORDAN CO.



LEGEND

I WELL MONITORING ZONE (SAND PACK)

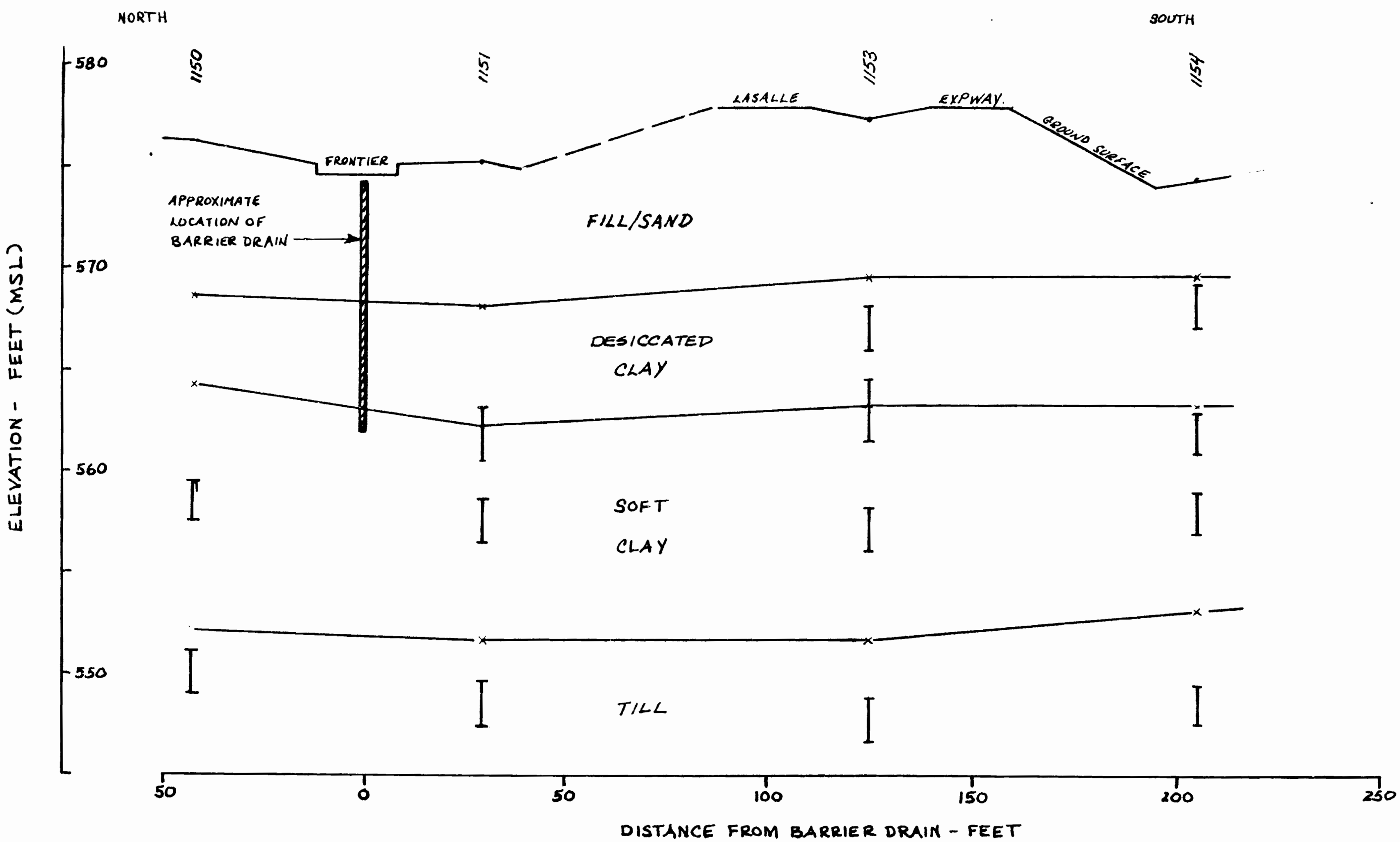
9115 NYSDEC WELL IDENTIFICATION CODE

NOTE:
THESE INTERPRETATIONS ARE PRELIMINARY (2/17/86).

0 100 200 FT

FIGURE A-4
GEOLOGIC CROSS SECTION
NORTH PERIMETER
LOVE CANAL REMEDIAL PROJECT - TASK VC

E.C.JORDAN CO.



LEGEND

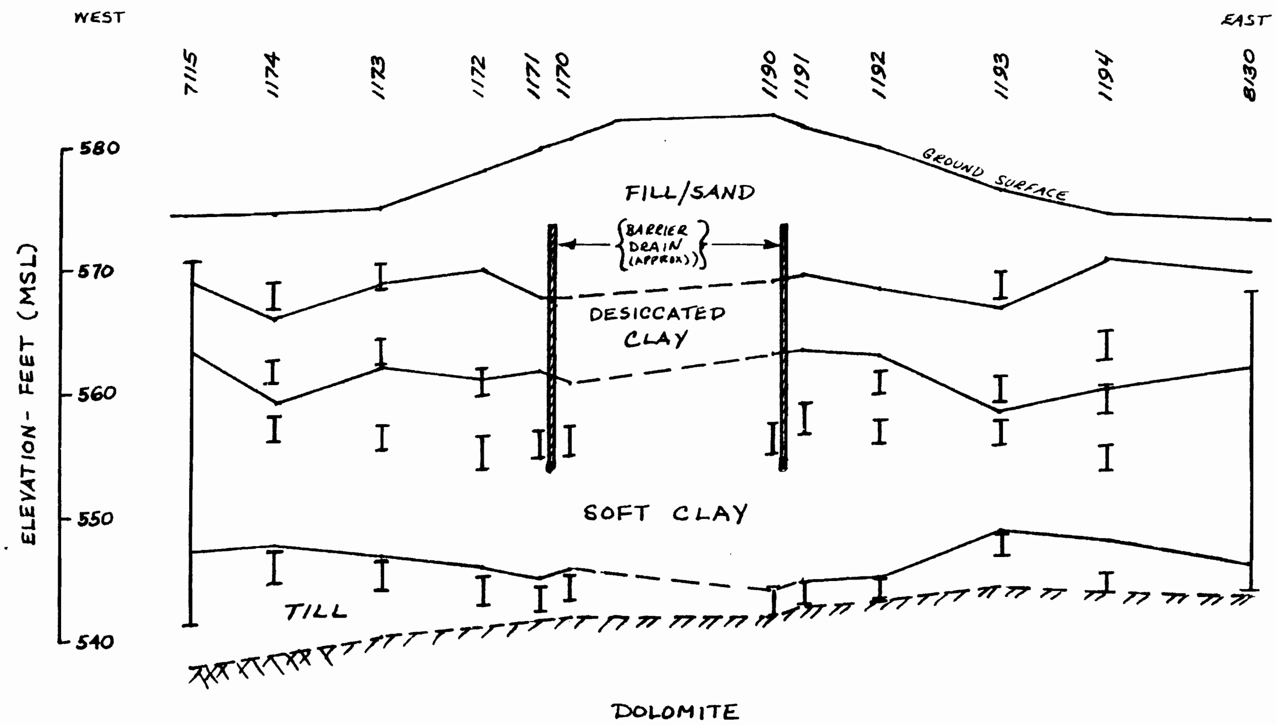
I WELL MONITORING ZONE (SAND PACK)

9115 NYSDEC WELL IDENTIFICATION CODE

NOTE:
THESE INTERPRETATIONS ARE PRELIMINARY (2/17/86).

FIGURE A-5
GEOLOGIC CROSS SECTION
1150 SERIES PIEZOMETERS
LOVE CANAL REMEDIAL PROJECT - TASK VC

E.C.JORDAN CO.



LEGEND

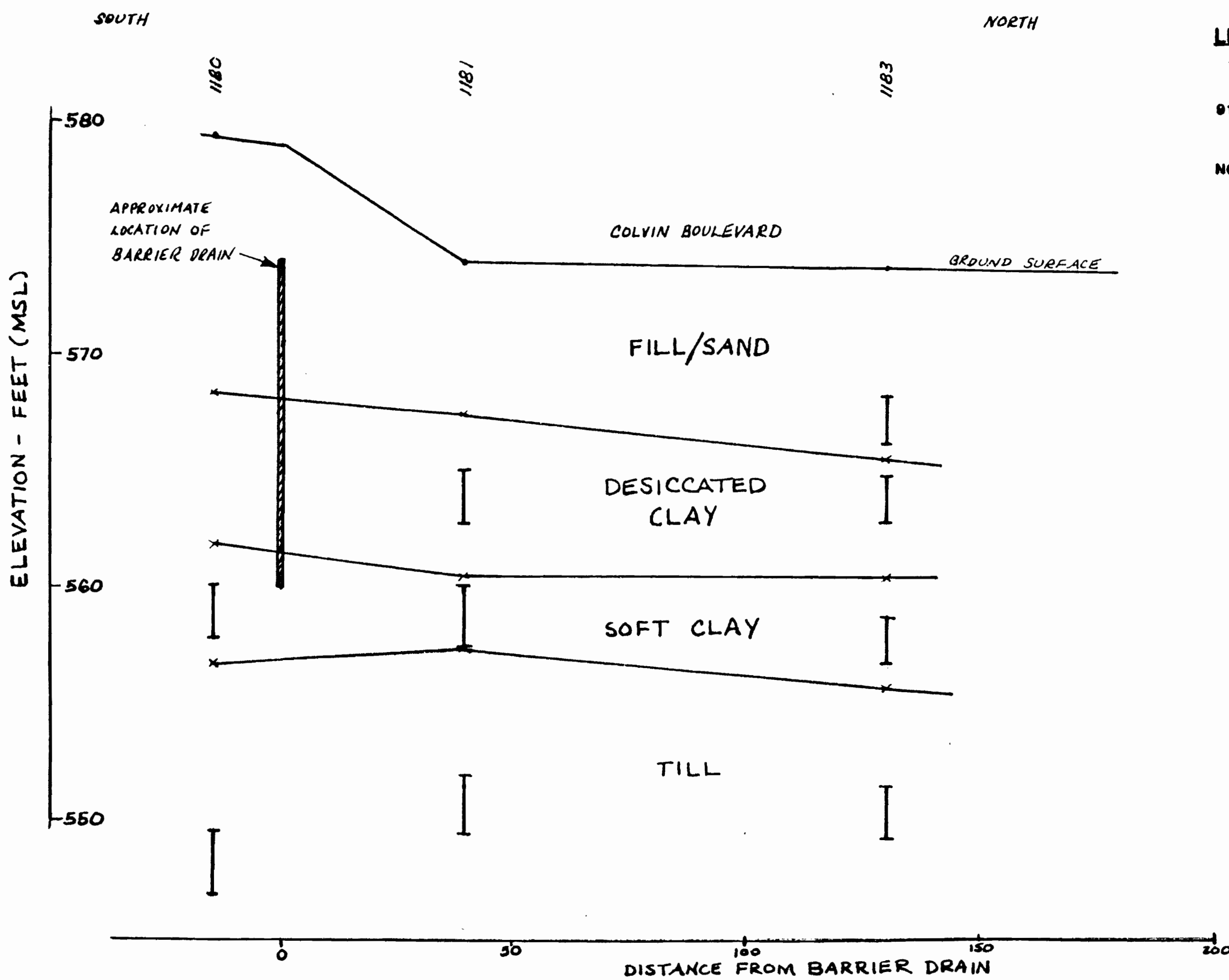
I WELL MONITORING ZONE (SAND PACK)

9115 NYSDEC WELL IDENTIFICATION CODE

NOTE:
THESE INTERPRETATIONS ARE PRELIMINARY (2/17/86).

FIGURE A-6
GEOLOGIC CROSS SECTION
1170 AND 1190 SERIES PIEZOMETERS
LOVE CANAL REMEDIAL PROJECT - TASK VC

E.C.JORDAN CO.



LEGEND

I WELL MONITORING ZONE (SAND PACK)

9115 NYSDEC WELL IDENTIFICATION CODE

NOTE:
THESE INTERPRETATIONS ARE PRELIMINARY (2/17/86).

FIGURE A-7
GEOLOGIC CROSS SECTION
1180 SERIES PIEZOMETERS
LOVE CANAL REMEDIAL PROJECT - TASK VC

E.C.JORDAN CO.

APPENDIX C

TABLES OF WATER LEVEL DATA

LOVE CANAL TASK VC PERIMETER/CONTAMINATED WELLS
WATER LEVEL READINGS

WELL NO.	GS ELEV. (FT)	TOP OF RISER (FT)	WATER LEVEL READINGS 11/26/85	11/27/85	12/10/85	12/11/85	12/12/85	12/13/85	12/14/86	2/6/86
4108	---	578.50	NA	NA	570.04	NA	NA	NA	NA	NA
5102	---	578.10	NA	NA	NA	569.78	NA	NA	NA	NA
7105	574.8	577.80	565.89	NA	NA	NA	563.32	NA	NA	NA
7115	574.7	578.66	543.26	NA	NA	NA	NA	NA	NA	NA
7120	575.0	577.89	571.42	NA	NA	NA	568.95	NA	NA	NA
7125	574.3	577.43	561.46	NA	NA	NA	571.36	NA	NA	NA
7130	574.3	576.74	NA	NA	NA	NA	565.39	NA	NA	NA
7135	573.4	576.55	NA	NA	NA	NA	NA	567.17	NA	NA
7140	573.5	576.73	NA	NA	NA	NA	NA	565.43	NA	NA
7145	573.9	577.25	NA	NA	NA	NA	NA	561.95	NA	NA
7150	574.2	577.34	NA	NA	NA	NA	NA	569.75	NA	NA
7155	573.2	576.37	565.93	NA	NA	NA	565.05	NA	NA	NA
7161	573.0	576.54	NA	562.62	NA	NA	NA	562.20	NA	NA
8106	573.1	575.96	NA	568.24	NA	NA	NA	567.96	NA	NA
8110	576.5	579.19	569.88	NA	569.64	NA	NA	NA	NA	NA
8115	574.6	577.99	572.04	NA	571.69	NA	NA	NA	NA	NA
8120	573.6	576.47	567.21	NA	560.00	NA	NA	NA	NA	NA
8125	573.6	577.46	565.40	NA	565.20	NA	NA	NA	NA	NA
8130	574.6	578.48	567.12	NA	565.26	NA	NA	NA	NA	NA
8140	574.7	578.22	566.45	NA	561.84	NA	NA	NA	NA	NA
9105	573.9	577.07	557.74	NA	NA	553.60	NA	NA	NA	NA
9110	573.9	576.88	NA	565.88	565.42	NA	NA	NA	NA	NA
9115	574.0	577.16	NA	564.50	NA	567.90	567.18	NA	NA	NA
9120	574.2	576.97	NA	568.86	NA	569.39	NA	NA	NA	NA
9125	573.5	576.63	NA	563.76	NA	566.83	NA	NA	NA	NA
9130	574.3	576.77	NA	552.66	NA	559.14	NA	NA	NA	NA
9140	578.9	578.24	NA	NA	NA	NA	NA	570.17	570.84	569.96
10105	577.3	577.05	NA	NA	NA	NA	NA	563.76	563.72	NA
10115	575.1	578.14	NA	NA	NA	NA	NA	566.35	NA	NA
10125	575.1	578.51	570.81	NA	NA	572.36	NA	NA	NA	NA
10130	574.2	577.10	571.57	NA	NA	567.10	NA	NA	NA	NA
10135	577.1	580.35	NA	570.62	NA	NA	567.80	NA	NA	NA
10145	574.0	577.10	552.95	NA	NA	554.74	NA	NA	NA	NA
10150	574.2	576.87	565.35	NA	NA	565.13	NA	NA	NA	NA

LOVE CANAL TASK VC BEDROCK WELLS
WATER LEVEL READINGS

WELL NO.	GS ELEV. (FT)	TOP OF RISER (FT)	WATER LEVEL READINGS(FT) 11/26/85	11/27/85	12/12/85	1/19/86	1/20/86	1/21/86	2/6/86
4215	---	571.90	NA	NA	NA	NA	NA	563.27	NA
7205	574.1	577.32	565.35	NA	566.82	NA	NA	NA	NA
8210	573.7	576.83	565.45	NA	NA	567.40	NA	NA	NA
9205	574.5	577.66	565.38	NA	NA	567.05	NA	NA	NA
9210	582.4	581.91	NA	NA	NA	NA	566.13	NA	565.30
10205	578.4	578.12	565.27	NA	NA	NA	NA	565.96	565.28
10210A	577.2	576.63	NA	NA	NA	NA	572.23	NA	569.23
10215	578.2	577.44	565.29	NA	NA	NA	NA	565.89	NA
10220	574.0	576.78	NA	565.70	NA	NA	NA	566.25	NA
10225A	574.5	576.93	571.59	NA	NA	NA	NA	567.70	565.72
10225B	574.4	577.04	566.26	NA	NA	NA	NA	566.35	567.49
10225C	575.2	578.14	570.20	NA	564.96	NA	NA	NA	565.86

LOVE CANAL TASK VC NESTED WELLS
WATER LEVEL READINGS

WELL NO.	GS ELEV. (FT)	TOP OF RISER (FT)	WATER LEVEL READINGS 11/24/85	11/25/85	11/27/85	12/12/85	12/14/85	1/24/86	2/6/86
1150A	576.5	579.80	NA	NA	NA	554.52	NA	NA	568.88
1150B	576.1	578.08	NA	NA	NA	561.04	NA	NA	560.93
1151A	575.2	578.06	NA	NA	557.97	NA	568.28	NA	566.10
1151B	575.2	578.08	NA	NA	566.06	NA	571.51	NA	568.94
1151C	575.1	578.27	NA	NA	561.25	NA	572.64	NA	574.43
1153A	577.7	577.46	NA	557.06	NA	NA	560.57	NA	565.99
1153B	577.5	576.67	NA	561.47	NA	NA	568.60	NA	568.96
1153C	577.6	577.63	NA	568.94	NA	NA	562.86	NA	567.90
1153D	577.7	577.31	NA	569.62	NA	NA	570.04	NA	569.66
1154A	574.6	572.87	NA	NA	NA	NA	NA	NA	561.20
1154B	574.5	573.93	NA	568.50	NA	NA	569.13	NA	569.32
1154C	574.4	574.03	NA	561.69	NA	NA	563.77	NA	567.36
1154D	574.3	573.81	NA	569.76	NA	NA	569.82	NA	569.89
1170A	581.2	584.68	NA	NA	NA	559.26	NA	NA	564.78
1170B	581.3	584.56	NA	NA	NA	556.61	NA	NA	562.91
1171A	580.2	583.37	NA	NA	NA	552.04	NA	NA	558.32
1171B	580.4	583.63	NA	NA	NA	565.92	NA	NA	565.58
1172A	578.5	581.73	NA	557.04	NA	558.98	NA	NA	563.48
1172B	578.6	581.78	NA	555.23	NA	565.22	NA	NA	568.87
1172C	578.5	581.77	DRY	581.77	NA	561.14	NA	NA	567.57
1173A	575.3	578.14	NA	568.18	NA	568.51	NA	NA	568.89
1173B	575.3	578.36	NA	559.76	NA	567.45	NA	NA	570.15
1173C	575.3	578.45	DRY	578.45	NA	563.79	NA	NA	568.98
1173D	575.5	578.60	NA	571.81	NA	572.14	NA	NA	571.90
1174A	574.5	577.77	NA	567.59	NA	567.79	NA	NA	568.41
1174B	574.6	577.73	NA	566.50	NA	568.55	NA	NA	570.21
1174C	574.6	578.14	NA	570.18	NA	570.73	NA	NA	571.19
1174D	574.6	577.78	NA	570.99	NA	571.38	NA	NA	571.66
1180A	579.4	582.59	NA	NA	NA	548.17	NA	559.45	559.31
1180B	579.5	582.47	NA	NA	NA	568.57	NA	561.86	567.39
1181A	574.0	576.81	NA	NA	NA	567.49	NA	571.36	571.00
1181B	574.0	577.15	NA	568.56	NA	568.07	NA	568.18	568.15
1181C	574.1	577.07	NA	571.31	NA	570.25	NA	571.33	570.72
1183A	573.8	576.62	NA	NA	NA	563.24	NA	565.61	565.35
1183B	573.8	576.54	NA	NA	NA	563.29	NA	567.17	566.44
1183C	573.8	577.33	NA	NA	NA	568.04	NA	569.22	568.55
1183D	573.8	576.91	NA	NA	NA	569.58	NA	567.68	567.75
1190A	583.0	586.53	NA	NA	NA	565.30	NA	NA	573.58
1190B	583.1	586.22	NA	NA	NA	563.43	NA	NA	564.81
1191A	582.0	584.91	570.58	NA	NA	570.17	NA	NA	567.77
1191B	582.0	584.90	567.52	NA	NA	567.36	NA	NA	567.25
1192A	580.3	583.43	567.53	NA	NA	567.38	NA	NA	567.05
1192B	580.3	583.46	567.97	NA	NA	568.52	NA	NA	569.19
1192C	580.4	583.85	560.95	NA	NA	561.99	NA	NA	567.85
1193A	577.0	579.97	566.34	NA	NA	566.36	NA	NA	566.90
1193B	576.7	579.49	566.77	NA	NA	568.39	NA	NA	568.95
1193C	576.5	579.60	570.11	NA	NA	570.11	NA	NA	570.35
1193D	576.6	579.60	570.71	NA	NA	571.05	NA	NA	571.23
1194A	575.3	578.40	566.87	NA	NA	566.62	NA	NA	567.02
1194B	575.3	578.03	568.49	NA	NA	569.01	NA	NA	569.73
1194C	575.3	578.56	568.47	NA	NA	570.12	NA	NA	570.69

APPENDIX D

SURVEY LOCATIONS AND ELEVATIONS

TASK VC WELL COORDINATES AND ELEVATIONS

A: BEDROCK WELLS

WELL	NORTH	EAST	GS	RISER	TOC
7205	7812.61	1068.83	574.1	577.32	577.43
8210	7784.56	2218.65	573.7	576.83	577.00
9205	6508.03	2114.70	574.5	577.66	577.92
9210	4965.34	1746.10	582.4	581.91	582.14
10205	5081.09	1474.18	578.4	578.12	578.59
10210	5179.72	1253.70	577.2	576.63	576.81
10215	5296.58	983.76	578.2	577.44	577.68
10220	5908.01	1111.70	574.0	576.78	577.00
10225A	6616.50	1105.58	574.5	576.93	577.10
10225B	6621.17	1107.97	574.4	577.04	577.33
10225C	6970.10	1110.93	575.2	578.14	578.36

B: PERIMETER WELLS

7105	6918.83	1113.37	574.8	577.80	577.98
7115	7221.35	1107.59	574.7	578.66	578.84
7120	7506.22	1098.60	575.0	577.89	578.12
7125	7791.20	1070.72	574.3	577.43	577.62
7130	8171.22	1072.85	574.3	576.74	577.48
7135	9260.37	226.99	573.4	576.55	576.77
7140	9468.75	558.16	573.5	576.73	577.08
7145	9489.41	115.68	573.9	577.25	577.55
7150	9262.87	-77.76	574.2	577.34	577.63
7155	8430.37	1150.20	573.2	576.37	576.63
7161	8505.33	1407.76	573.0	576.54	576.90
8106	8545.79	1913.73	573.1	575.96	576.23
8110	8233.40	1772.05	576.5	579.19	579.41
8115	8040.94	1852.79	574.6	577.99	578.24
8120	7849.05	1968.47	573.6	576.47	576.76
8125	7544.61	1969.83	573.6	577.46	577.70
8130	7249.21	1966.38	574.6	578.48	578.68
8140	6786.34	1966.41	574.7	578.22	578.43
9105	6547.73	1965.16	573.9	577.07	577.43
9110	6297.12	1968.89	573.9	576.88	577.18
9115	5985.19	1962.46	574.0	577.16	577.35
9120	5684.69	1965.93	574.2	576.97	577.19
9125	5388.38	1973.39	573.5	576.63	576.77
9130	5069.71	1912.90	574.3	576.77	577.08
9140	5057.60	1534.82	578.9	578.24	578.69
10105	5162.69	1293.73	577.3	577.05	577.23
10115	5421.31	1085.67	575.1	578.14	578.44
10125	5669.34	1124.02	575.1	578.51	578.83
10130	5895.81	1117.38	574.2	577.10	577.23
10135	6048.09	1288.89	577.1	580.35	580.56
10145	6363.51	1092.53	574.0	577.10	577.26
10150	6663.25	1105.65	574.2	576.87	577.11

C. NESTED PIEZOMETERS

1150A	5293.47	1395.06	576.5	579.80	579.96
1150B	5285.55	1396.18	576.1	578.08	578.32
1151A	5225.60	1388.46	575.2	578.06	578.23
1151B	5222.51	1395.06	575.2	578.08	578.23
1151C	5219.90	1400.72	575.1	578.27	578.33
1153A	5120.98	1386.55	577.7	577.46	577.64
1153B	5126.68	1373.38	577.5	576.67	576.85
1153C	5124.21	1379.18	577.6	577.63	577.71
1153D	5130.16	1365.46	577.7	577.31	577.48
1154A	5040.08	1374.24	574.6	572.87	573.18
1154B	5043.22	1366.73	574.5	573.93	574.36
1154C	5045.90	1361.91	574.4	574.03	574.23
1154D	5047.63	1357.54	574.3	573.81	574.16
1170A	7286.18	1417.99	581.2	584.68	584.86
1170B	7272.18	1414.13	581.3	584.56	584.79
1171A	7285.40	1392.34	580.2	583.37	583.52
1171B	7267.97	1392.17	580.4	583.63	583.80
1172A	7279.63	1343.91	578.5	581.73	581.89
1172B	7267.62	1343.20	578.6	581.78	581.93
1172C	7254.45	1342.56	578.5	581.77	581.81
1173A	7279.91	1261.65	575.3	578.14	578.31
1173B	7268.96	1253.00	575.3	578.36	578.51
1173C	7256.68	1253.40	575.3	578.45	578.61
1173D	7248.02	1253.55	575.5	578.60	578.75
1174A	7273.50	1176.09	574.5	577.77	577.87
1174B	7266.08	1176.25	574.6	577.73	577.90
1174C	7257.15	1176.26	574.6	578.14	578.29
1174D	7247.95	1177.42	574.6	577.78	577.83
1180A	8418.77	1583.45	579.4	582.59	582.82
1180B	8415.34	1574.46	579.5	582.47	582.61
1181A	8465.21	1622.93	574.0	576.81	576.91
1181B	8465.09	1615.59	574.0	577.15	577.31
1181C	8464.66	1607.96	574.1	577.07	577.25
1183A	8530.78	1686.94	573.8	576.62	576.79
1183B	8530.60	1679.03	573.8	576.54	576.78
1183C	8529.66	1669.69	573.8	577.33	577.50
1183D	8529.07	1661.99	573.8	576.91	577.07
1190A	7279.25	1580.10	583.0	586.53	586.66
1190B	7286.36	1579.03	583.1	586.22	586.36
1191A	7287.55	1604.81	582.0	584.91	585.05
1191B	7277.93	1604.41	582.0	584.90	585.00
1192A	7290.69	1665.83	580.3	583.43	583.63
1192B	7279.74	1656.27	580.3	583.46	583.63
1192C	7303.87	1655.24	580.4	583.85	584.01
1193A	7283.53	1762.67	577.0	579.97	580.17
1193B	7290.24	1772.93	576.7	579.49	579.70
1193C	7301.30	1772.46	576.5	579.60	579.81
1193D	7313.12	1771.43	576.6	579.60	579.84
1194A	7282.49	1849.95	575.3	578.40	578.50
1194B	7290.47	1850.79	575.3	578.03	578.13
1194C	7299.00	1850.93	575.3	578.56	578.78
1194D	7308.57	1855.30	575.2	578.54	578.79

D. BORINGS

7160	8472.38	1370.31
8105	8473.37	1772.89
10112	5219.69	1160.62
SB-1	5441.54	997.29
SB-2	4994.77	1981.15
SB-4	6418.81	1991.21

Note: The north and east coordinates given are relative to an assumed cordinate system with a baseline along 100th St. assumed to be due north. Survey in the Spring of 1986 will tie the assumed system to the NYSDEC coordinate system for prior Canal well locations.

GS - Ground Surface
Riser - Top of well riser (uncapped)
TOC - Top of protective casing (open)

Elevations are relative to USGS datum.

APPENDIX E

TREATMENT PLANT FLOW

AVERAGE TREATMENT PLANT FLOWS*

	1980	1981	1982	1983	1984	1985
JANUARY	11.37	4.72	13.94	8.96	5.65	5.36
FEBRUARY	5.75	15.75	5.56	8.03	5.14	11.19
MARCH	8.75	8.77	9.71	13.01	8.94	8.51
APRIL	15.39	7.50	22.12	12.73	7.86	5.02
MAY	12.05	8.09	5.88	7.99	5.96	2.82
JUNE	7.14	4.18	6.51	2.97	4.42	2.38
JULY	5.39	5.12	11.62	3.35	2.86	2.05
AUGUST	5.43	5.14	4.57	4.14	6.08	1.87
SEPTEMBER	5.93	5.43	2.27	4.12	3.56	2.14
OCTOBER	8.83	7.17	2.12	7.00	3.97	2.44
NOVEMBER	6.02	9.76	9.14	19.43	3.68	9.53
DECEMBER	11.08	11.67	14.64	12.42	3.66	7.40
MONTHLY AVERAGE	8.59	7.78	9.01	8.68	5.15	5.06

* The flows presented are average flows, in gpm, calculated from totalized flows recorded for each month. The plant is operated intermitently so that instantaneous flow rates at the time of processing will be much higher than the average flow for the month as tabulated.

APPENDIX F

NYSDEC SOIL AND WATER CRITERIA

	Standard	Criteria	Drinking Water Standard	Detect. Limits	Perimeter Survey Criteria
Chloroform	100	0.2	--	5	100
1,2,3 - Trichlorobenzene	--	10	--	10	15
Chlorobenzene	--	20	--	5	20
Toluene	--	50	--	5	50
Benzene	N.D.	1.5	N.D.	5	5
Trichloroethylene	10	5	N.D.	5	10
1,2 Trans-Dichloroethylene	--	50	--	5	50
Gamma BHC	N.D.	0.2[5]	4.0	.05/2*	4.0
Delta BHC	N.D.	0.2[5]	--	.05/2*	.2/2*
1,2 - Dichlorobenzene	4.7	30	750	10	750
Tetrachloroethylene	--	2	--	5	5
1,4 - Dichlorobenzene	4.7	30	750	10	750
1,1,2,2 - Tetrachloroethane	--	0.3	--	5	5
Phenol	--	1	--	10	10
Alpha BHC	N.D.	0.2[5]	--	.05/2*	.2/2*
Hexachlorobenzene	0.35	0.04	--	10	10
2,4,6 - Trichlorophenol	--	1	--	10	10
4-Chloro-3-Methyl phenol	1	1	--	10	10
2 - Chloronaphthalene	--	10	--	10	10
2,4 - Dichlorophenol	--	0.3	--	10	10
1,3 - Dichlorobenzene	--	20	750	10	750
Hexachlorobutadiene	--	0.4	--	10	10
1,1,2 - Trichloroethane	--	0.5	200	5	200
Ethyl Benzene	--	50	--	5	50
Carbon Tetrachloride	5	0.3	N.D.	5	5
2 - Chlorophenol	1	1	--	10	10
Pyrene	--	0.2	--	10	10
Naphthalene	--	10	--	10	10
Beta BHC	--	.2[5]	--	.05/2*	.2/2*
1,2,3,4 Tetrachlorobenzene	--	10	--	--	10

1
2
3
4
5 sum of all isowers
* water/soil