

PROJECT SPECIFIC PLAN FOR
INSTALLATION OF THE ON-SITE DISPOSAL FACILITY
GREAT MIAMI AQUIFER MONITORING WELLS

3819

DOCUMENT NUMBER 20100-PSP-0002
Revision 3, Final

August 2001

Prepared by
Fluor Fernald

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8/8/01

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1.0 PURPOSE

This Project Specific Plan is the controlling document for the installation of the Great Miami Aquifer monitoring well system for the On-site Disposal Facility (OSDF), a component of the OSDF monitoring program, as referenced in the Groundwater/Leak Detection and Leachate Monitoring Plan for the OSDF, dated August 1997: Document Control No. 201000-PL-009, Revision 0.

The OSDF leak detection strategy, for determining any facility environmental impact, includes a Great Miami Aquifer monitoring well system. This monitoring program component consists of the installation of an upgradient and downgradient monitoring well for each individual cell. Monitoring wells specific to each cell will be installed prior to each individual cell's construction and follow the general construction schedule for the OSDF. Sampling requirements for the monitoring wells are outlined in the Project Specific Plan entitled, "PSP for the OSDF Monitoring Program," Project No. 50.03.50.

1.1 Scope

Generally, two monitoring wells will be installed for each individual cell, one upgradient and one downgradient. Locations for the cell-specific downgradient wells were selected (via groundwater modeling) to be in the most likely position to detect a leak based on anticipated groundwater flow. Under this plan, the following nine monitoring wells will be installed:

- Upgradient for Cell 4
- Up- and downgradient for Cells 5, 6, and 7
- Two wells on the south side of Cell 7.

Existing monitoring wells for Cells 1 through 4 were installed under previous revisions of this plan (refer to Figure 1-1 for well locations).

1.2 Project Organization

A qualified subcontractor under the direct supervision of Fluor Fernald will conduct drilling activities.

Fluor Fernald personnel will perform sampling activities defined in this Project Specific Plan. The key project personnel are listed below:

TABLE 1-1

TEAM MEMBERS

Title	Primary Contact	Alternate Contact
Project Lead	William Hertel	Ken Broberg
Field Geologist	Jonathan Walters	Thea Layne
Quality Assurance Contact	Frank Thompson	Muriel Vigus
Health and Safety Contact	Keith Lanning	Andy Cleeter
Construction Contract Manager	Willie Frazier	Gary Pope

2.0 DRILLING PROGRAM

2.1 Preparation

Figure 1-1 depicts the general location for each OSDF Great Miami Aquifer monitoring well. The well locations will be surveyed and the ground surface elevation in feet above mean sea level (AMSL) will be established prior to drilling. The exact location for each well shall be identified with a surveyor's stake, labeled with the assigned Fluor Fernald well number, and confirmed by the project lead. Coordinates will be listed by NAD 83. Final locations for wells west of the OSDF may need to be adjusted to avoid construction conflicts with the OSDF.

Project personnel shall follow the requirements of procedure ADM-02, *Field Project Prerequisites*, in preparation of field activities.

2.2 Borehole

Guidelines presented in Section 5 and Appendix J of the Sitewide CERCLA Quality Assurance Project Plan (SCQ) will be followed for borehole drilling and well installation activities unless otherwise specified in this Project Specific Plan.

The boreholes will be installed using a Rotasonic drilling rig. Continuous soil cores will be collected in a 4-inch core barrel advanced with a drill rod tool string. Six-inch temporary casing will follow advancement of the core barrel to the proposed well depth (bottom of the sump). Although water is necessary to advance the Rotasonic core tools, every effort shall be made to minimize water use, and maximize drill fluid recovery; only potable water will be used as a drilling fluid.

Boreholes will be advanced to a depth sufficient to set the top of the screen interval at 518 feet AMSL (approximately 100 to 120 feet as well depths will vary slightly according to surface elevation and length of sump used).

Continuous soil cores shall be collected from near the ground surface to the bottom of the boring. A Fluor Fernald geologist will examine recovered soil cores and soil characteristics shall be documented onto a boring log according to the requirements of procedure DRL-04, *Completion of Visual Classification of Soils*.

Soil cores from the screened interval and portions of the adjacent vadose zone may be containerized in wooden boxes and placed into archive storage following completion of well installation, if determined necessary by the Project Lead.

2.3 Well Installation

The monitoring wells will be installed according to the requirements of Sections 5.2.2 and Appendix J of the SCQ, unless otherwise directed in this Project Specific Plan. The OSDF monitoring wells will be Type 2 monitoring wells as referenced in the SCQ. The well screen shall be 15 feet in length. The top of the screen for all the wells shall be installed at 518 feet AMSL which is approximately five feet above the average mean water table elevation for Monitoring Wells 2424 and 2051. These two wells are located along the east side of the OSDF footprint (refer to Figure 1-1). The water level data sets for Monitoring Wells 2424 and 2051 date back to 1993 and 1988 respectively, as shown on Figures 2-1 and 2-2. Figure 2-3 provides a cross-sectional view of the screened interval for previously installed OSDF monitoring wells along with the proposed screen elevation for the Cell 4 upgradient well (and the remaining monitoring wells to be installed for the OSDF). As shown on Figure 2-3, there are variations in the elevations of the screened interval of previously installed wells. These variations are due to varying well screen interval selection methodologies and varying water level data sets used to select the screen interval.

Note: It is possible during the long-term monitoring that the regional water level might drop or rise such that the well screens in the existing wells, or those being installed under this work plan, will no longer be effective in monitoring the water table interval. If this occurs, additional wells may be required to re-establish the effectiveness of the monitoring network.

During installation of the well, the field geologist will be responsible for documenting that the correct thickness of annular fill material is being installed, and that the well screen is installed at the correct depth. Frequent measurements of the depth to the top of the annular fill need to be collected to verify the installation process. If installation work is interrupted, the field geologist will verify that the depths measured prior to the interruption are the same depths measured prior to resuming installation activities.

Each monitoring well shall be constructed of 4-inch inner diameter 304 or 316 stainless steel riser with threaded joints and a continuous wire wrap, 0.010-slot screen. Each well shall have a sump attached to the bottom of the screen; sump size may vary from two to five feet, depending on availability of commercial well materials (a decision will need to be made prior to drilling to establish total depth).

The filter pack will consist of Global Sand Drilling Supply No. 7 to eight feet above the top of the screen, then layering one foot bentonite pellets, five feet sand up to five feet below the aquifer/overburden interface (hydrate each one foot bentonite pellet layer with a minimum of five gallons of potable water). A gravity emplacement method will be used to install the sand pack.

A 10-foot bentonite pellet seal shall be installed at the aquifer/overburden interface; the seal shall extend from five feet below the interface to five feet above the interface. Bentonite grout slurry shall be installed above the bentonite seal to ground surface; the grout shall have a weight/density of at least 9.4 pounds per gallon. The grout slurry shall be allowed to settle for a time period of at least 24 hours; additional grout slurry shall be added as necessary to accommodate any subsidence of the slurry.

Completion of the well and well pad shall require the removal of grout and soils, around the well riser, to a depth of 4.5 feet beneath ground surface. The well pad shall be concrete and measure 4' x 4' x 6" extending to a depth of two feet at the base of the protective casing. Additional requirements for the well pad, riser and surface casing (unless otherwise indicated in this Project Specific Plan) are detailed in Appendix J, Section J.4.3.2 (H through L) of the SCQ.

2.4 Well Development Requirements

Well development will commence following a time period of at least 48 hours following well installation. All well development activities will follow the requirements of procedure DRL-03, *Monitoring Well Development*.

3.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Drilling, monitoring well installation, and development shall follow Quality Assurance/Quality Control (QA/QC) protocol as established in Section 5 and Appendix J of the SCQ.

3.1 Project Requirements for Surveillance

Self-assessment of work processes and operations may be undertaken to assure quality of performance. Self-assessment may be performed by the Project Lead or his designee, and may encompass surveillance of the drilling/well installation work to ensure technical and/or procedure requirements are met. Such self-assessment may be conducted at any point in the project.

Independent assessment may be performed by the Fernald Environmental Management Project (FEMP) QA organization by conducting surveillances. Surveillances may consist of monitoring/observing ongoing project activity and work areas to verify conformance to specified requirements. Surveillances will be planned and documented in accordance with Section 12.3 of the SCQ. At least one surveillance per three well installations will be completed.

3.2 Changes to the Project Specific Plan

Variances shall be performed and documented with the requirements of Section 15.2 of the SCQ. They shall be documented on the Variance/Field Change Notice (V/FCN). If the variance is time-critical, then the requirements of Section 15.3.1 shall be followed. This allows approval of the variance by hard copy, electronic mail, or fax with the original V/FCN to follow and be completed within five working days. Verbal approval is not allowed for variances; some form of documentation is required as stated in Section 15.3.1 of the SCQ.

4.0 EQUIPMENT DECONTAMINATION

Drilling and sampling equipment shall be decontaminated prior to transport to the sample field site and after all drilling and sampling is completed to limit the introduction of contaminants from equipment to sampled media and to protect worker safety and health. The decontamination of drilling equipment shall be a Level I decontamination as described in Section K.11 of the SCQ.

5.0 HEALTH & SAFETY

Field personnel shall conform to precautionary surveys performed by the personnel representing the Utility Engineer, Industrial Hygiene, and Radiological Control. Concurrence to applicable safety permits (indicated by the signature of each person assigned to this project) is expected by field personnel in the performance of their assigned duties.

The Fluor Fernald Field Lead will ensure that all personnel participating in field activities related to this project have read the Project-Specific Health and Safety Matrix and the applicable permits that protect worker safety and health. Field personnel who do not sign these documents shall not participate in the execution of sampling activities related to the completion of assigned project responsibilities. A copy of applicable safety permits/surveys issued for worker safety and health shall be available for reference at each field location.

6.0 DISPOSITION OF WASTES

Project activities will generate soil and waters that require disposal such as, water used for decontamination of tools/drilling equipment and groundwater collected during well development activities; control and disposal of this wastewater will be in accordance with an approved Wastewater Discharge Form. Contact waste will be containerized and disposed on-site.

The disposal of soil cuttings and soil cores will be coordinated with and approved by the Manager of the Waste Acceptance Organization. Options include spreading the soil out on the ground surface at the drilling site, or transporting the soil to a holding area for later disposal into the OSDF. Final directions for the disposal of the soil will be issued prior to the commencement of drilling activities for the installation of the well.

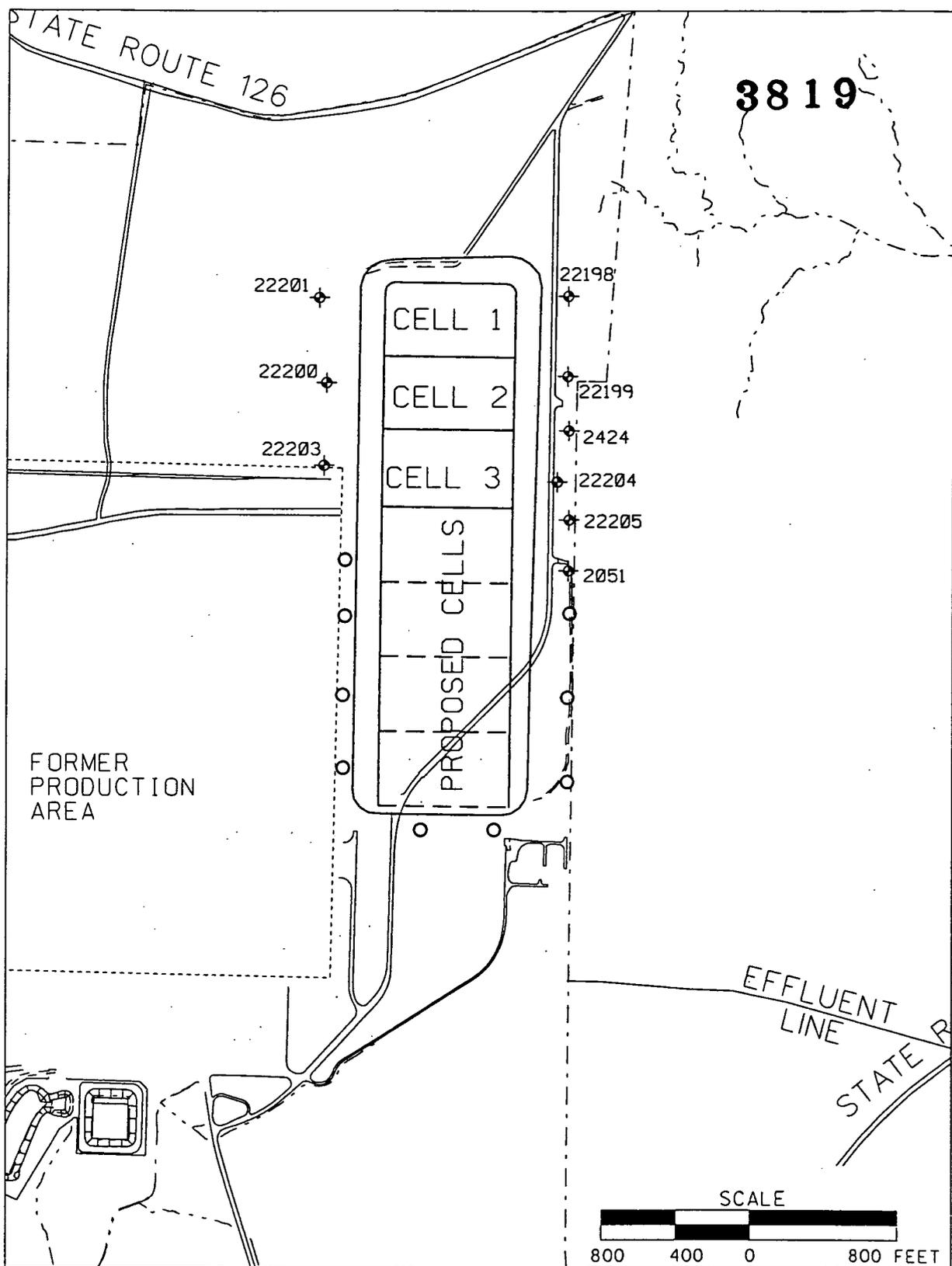
7.0 DATA MANAGEMENT

Field documentation, as required by procedures referenced in this Project Specific Plan (i.e., Field Activity Logs, Boring Logs, Sample Collection Logs, Chain of Custody Forms and Well Development Forms) shall be carefully maintained in the field. Following completion of field activities, Environmental Monitoring personnel shall verify field documents as complete.

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STATE PLANNED COORDINATE SYSTEM 1983

07-AUG-2001



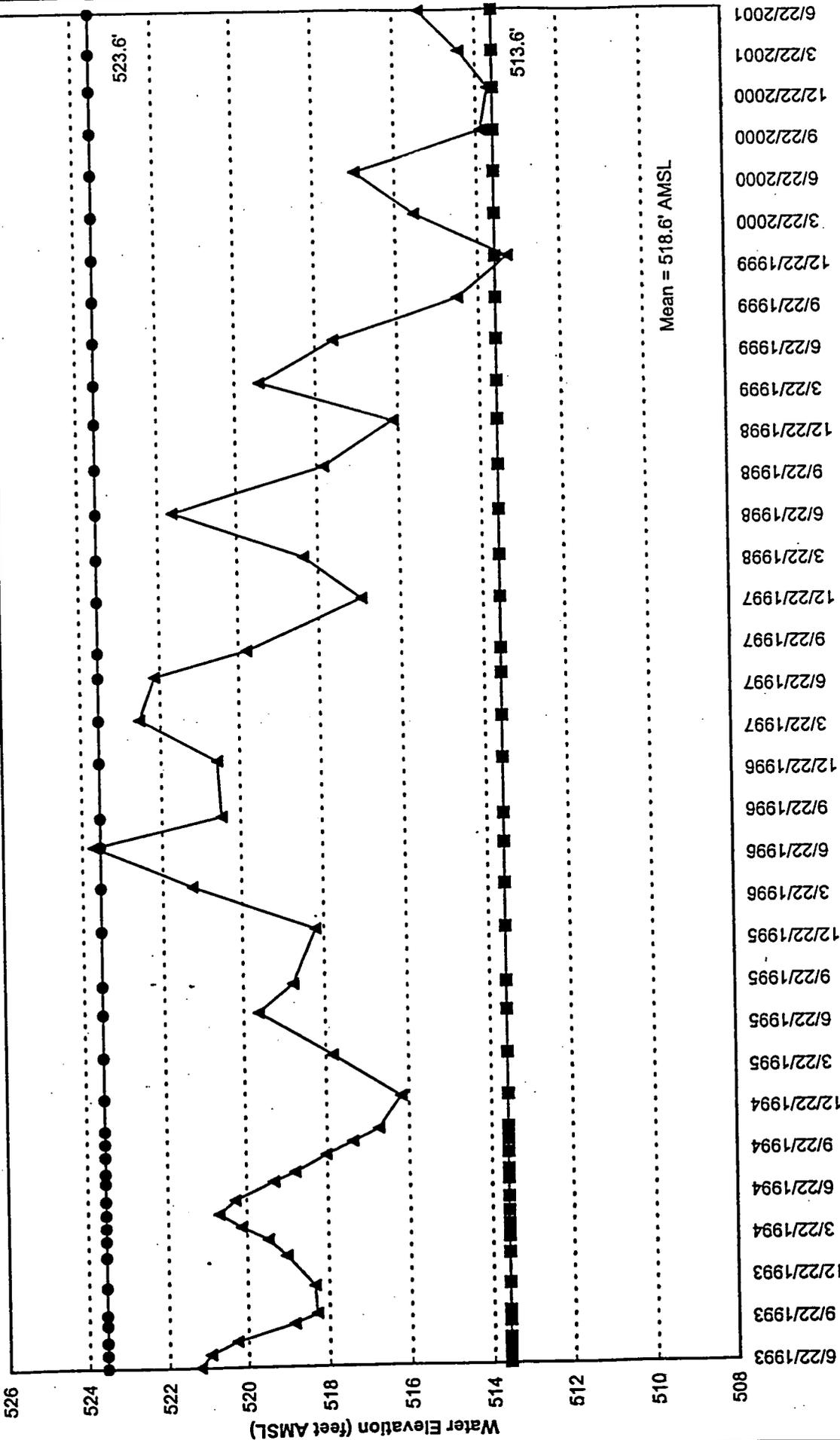
LEGEND:

- FEMP BOUNDARY
- ◆ OSDF MONITORING WELL IN GREAT MIAMI AQUIFER
- PROPOSED OSDF GREAT MIAMI AQUIFER DETECTION MONITORING WELL

FINAL

FIGURE 1-1. ON-SITE DISPOSAL FACILITY FOOTPRINT AND MONITORING WELL LOCATIONS

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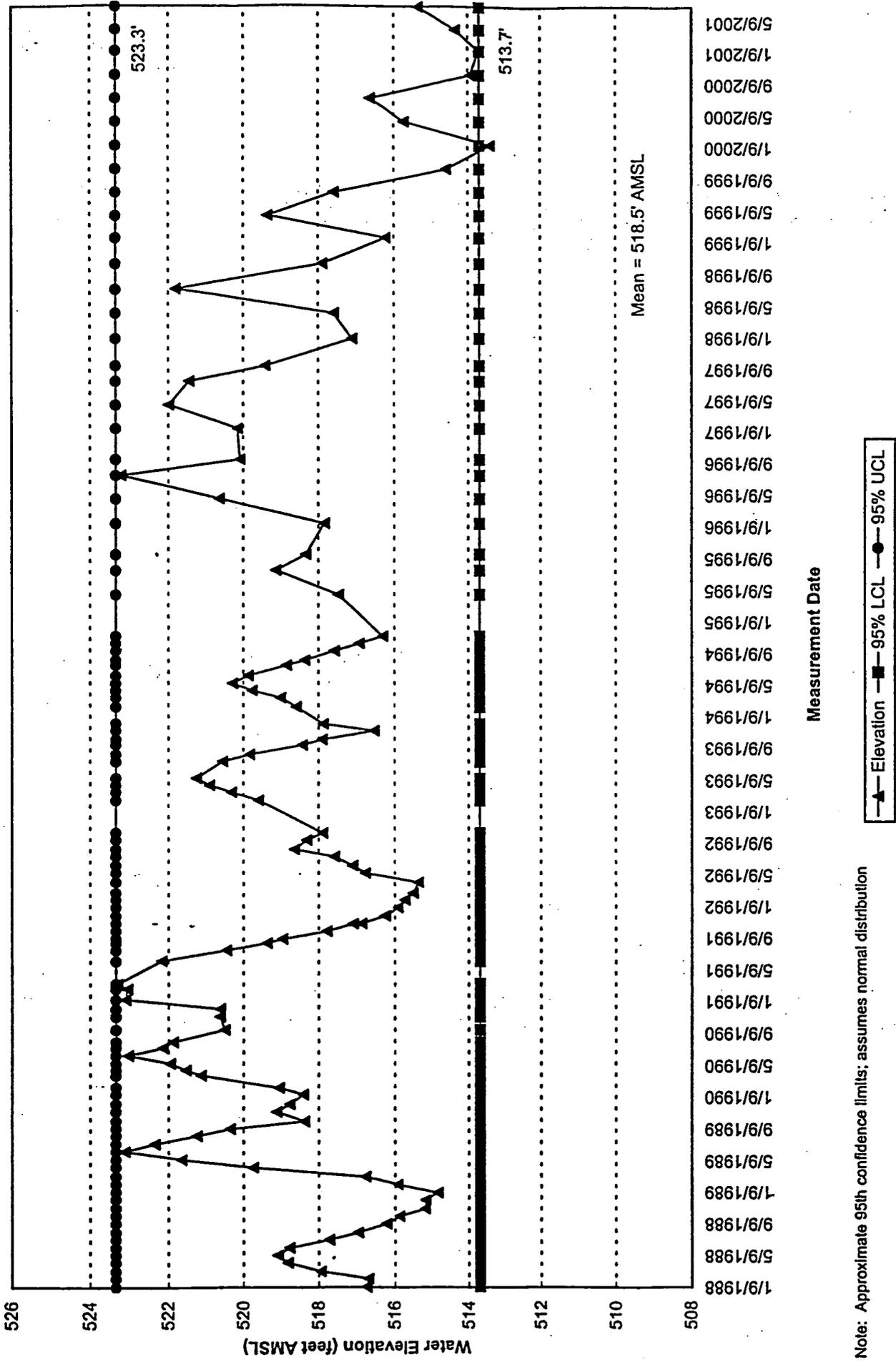


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Note: Approximate 95th confidence limits; assumes normal distribution

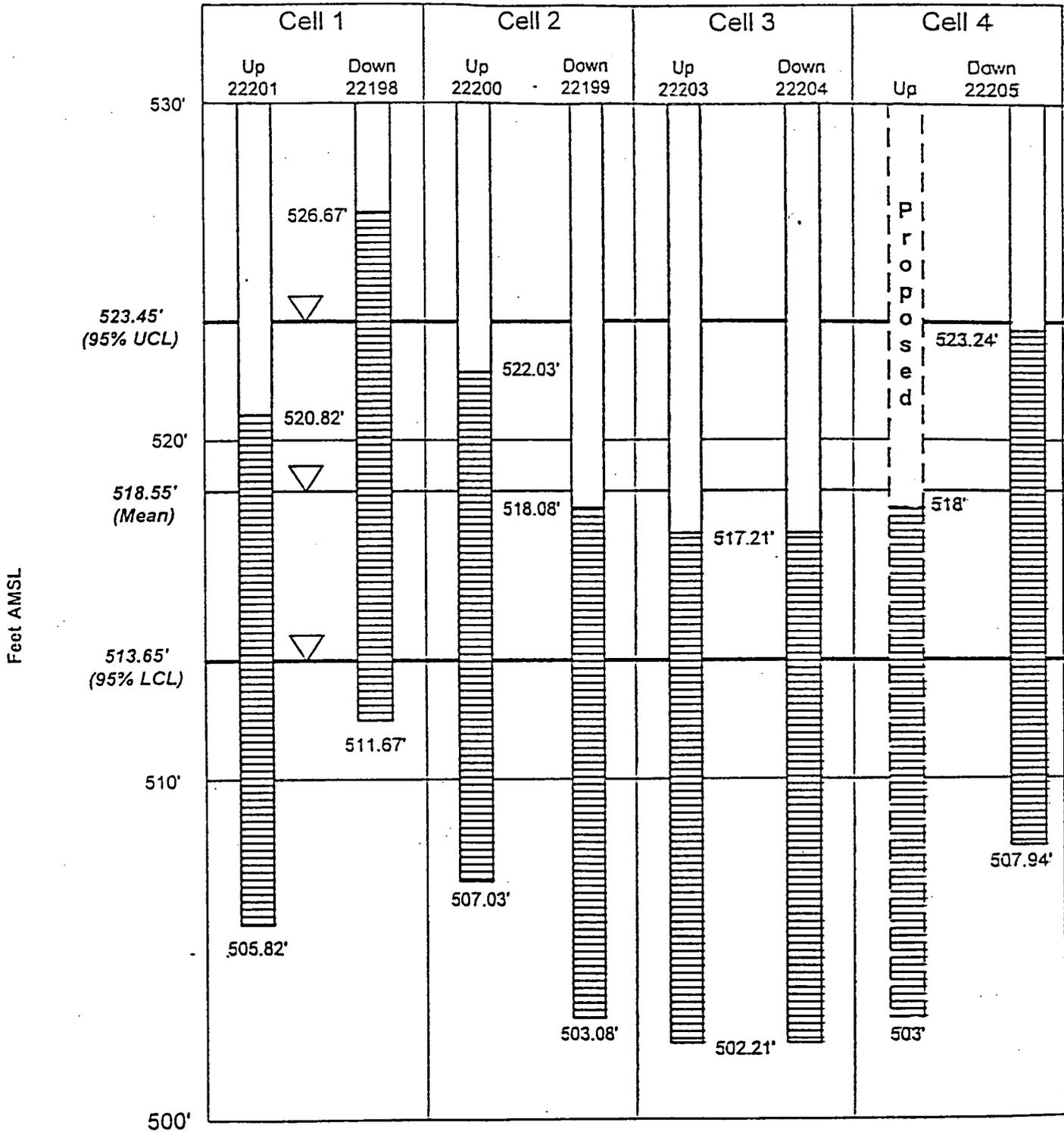
▲ Elevation ■ 95% LCL ● 95% UCL

FIGURE 2-1. WATER ELEVATION IN MONITORING WELL 2424



Note: Approximate 95th confidence limits; assumes normal distribution

FIGURE 2-2. WATER ELEVATION IN MONITORING WELL 2051



Note: Water Level Data Statistics Are Averages of Monitoring Wells 2424/2051.

FIGURE 2-3. ON-SITE DISPOSAL FACILITY GREAT MIAMI AQUIFER MONITORING WELL SCREEN INTERVALS, 7/01