APPENDIX E
DATA MANAGEMENT PLAN

1.0   MANAGEMENT

During the Project, a large amount of data will be generated. The purpose of this data management plan is to establish guidance for data filing, storage, and security during the Project and after Project completion. Data will be filed and stored in both a Project file and in a computer database.

2.0   PROJECT FILES

Project files that store all technical project documents will be established. Technical documents include, but are not limited to, the following:

- All correspondence to/from regulatory agencies,

- Memoranda containing technical information or documentation of technical decisions,

- Reports,

- Field data sheets,

- Field logs/daily reports,

- Laboratory reports,

- Computer files of technical data,

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- Minutes of meetings with regulatory agencies,

- Permits,

- Legal documents,

- Press clippings,

- Fact sheets,

- Photographs,

- Calculations,

- Quality assurance/quality control (QA/QC) reports.

Information regarding each document will be entered into a computer database and the document filed in the Technical Project File.

2.1 Storage and Security

Active Project files will be maintained at a place to be designated by Metropolitan while the Project is ongoing. Technical Project records will be stored and secured in locking file cabinets. Prior to storage, records will be assigned a sequential number and entered into the project reference database. The database will include the following items of information for each document to assist in retrieval:

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- Document number,

- Date document was generated or received,

- Type of document,

- Author and corporation,

- Addressee,

- Subject (description of document contents),

- Source of document, and

- Project/Task No. (and associated task description).

2.2 File Access

Once placed in the Technical Project File, records will be checked out by placing a checkout card in the file in place of the project record. Access will be limited to Metropolitan's technical experts, Metropolitan personnel and/or their legal representative, Cadiz, Inc. personnel, and agency representatives. Personnel who are not directly involved with the project may obtain access to project files only after receiving approval from the Project Manager or a designated project representative.

2.3 File Closure

At the close of the Project, files will be closed and transferred to Metropolitan.

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3.0   PROJECT DATABASE

Data also will be stored, organized, and secured in a computer database created specifically for the project. The database will store data in an efficient and usable manner.

Types of data to be sorted in the computer database may include, but are not limited to, technical information such as results of groundwater analytical records, well construction details, and water levels. Project tracking records, such as schedules and records management data, also will be most effectively organized using a computer database and related programs. Storage and organization of project tracking records will follow guidelines outlined in this section.

Technical and database programs used during the Project will be those designed to run on IBM-compatible computers. If programs designed for other operating systems are used, the data files will be transferable to an IBM-compatible format.

Access, Paradox or other equivalent relational database software will be used for general database applications. Specific technical programs used for data analysis will be selected based on the specific technical question to be answered.

3.1   Database Construction

The database construction process will consist of three phases: design, implementation, and testing. The database will be designed to meet the output requirements of the dataset and will be structured to avoid redundant input of information by separating data into separate files when possible. Data items will be coded when possible and standard naming conventions for similar data items will be used.

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Databases will be implemented using software that is best suited for storage and manipulation of the data to meet the output requirements. Once the physical construction of the database has been completed, a sample set of data will be input and thorough testing will be performed to ensure that the required output can be achieved.

3.2   Maintenance

Databases created for a specific task will be maintained by the Database Manager. This individual will be responsible for the creation, implementation, testing, documentation, and security of the database. The Database Manager will ensure that data entered into the database is complete and correct.

The Database Manager also will coordinate the many individual databases created for the investigation so that the database design is appropriate and the data are represented in a consistent manner according to standard formats. The Database Manager will provide a central storage location for data files and documentation.

3.3   Documentation

Documentation will be prepared regarding the database files and file structure, QC of data entry, and analysis and manipulation of the data. The objective of documentation is to provide enough information for individuals unfamiliar with the data to work efficiently within the database. It also will provide a clear work history to simplify data reconstruction, if necessary. Documentation records will be submitted to the Database Manager for permanent storage when the database is complete.

File documentation will include a complete description of database fields and types. Codes will be listed with an explanation of the data they summarize. The relationship between files will also be

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included. A list of files using the described structures and including the date of creation, number of records, and sources of data will be provided as a part of the file documentation.

Data entered manually (typed in) will be printed out and compared to the source document. The printout will be initialed and dated when the QC review is performed and when corrections are made to the data file. If data are imported from other sources, randomly chosen records will be compared to the source file. If discrepancies occur, the entire importing process will be reviewed, corrected, and re-executed. If no discrepancies occur, a document will be submitted listing the date of the comparison, which file was checked, and the individual who performed the QC review.

3.4   Security

Proper back-up and security measures will be taken to prevent accidental loss of data and tampering with the database. Exact duplicates of working files will be made at least once each work session. The backup files will be stored in a separate physical location from the working files. Both the backup and working files will be kept in a locked storage area.

If the software program used offers data protection through passwords, passwords will be used for working and backup files. The password protection will be removed when files are submitted for permanent storage.

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