

# California State Water Resources Control Board



## Survey XYZ, Well Data, and Site Map Guidelines & Restrictions

### Electronic Deliverable Format and Data Dictionary

Revision 6.1  
April, 2005

Web site: <http://www.geotracker.waterboards.ca.gov/>

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## Acronyms

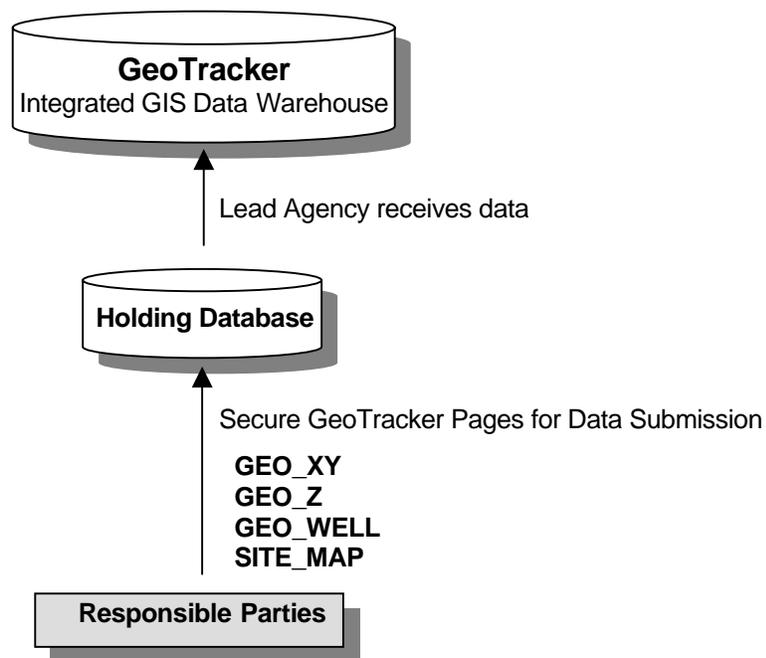
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<b>CSV</b>	Comma Separated Values (also known as comma/quote delimited)
<b>EDD</b>	Electronic Data Deliverable
<b>EDF</b>	Electronic Deliverable Format
<b>GIS</b>	Geographic Information System
<b>GPS</b>	Global Positioning System
<b>LUST</b>	Leaking Underground Storage Tank
<b>PK</b>	Primary Key
<b>RP</b>	Responsible Party
<b>SWRCB</b>	(California) State Water Resources Control Board
<b>UST</b>	Underground Storage Tank
<b>VVL</b>	Valid Value List

# 1 Introduction

In September 2004, the State Water Resources Control Board (SWRCB) adopted regulations that require electronic submittal of information (ESI) for groundwater cleanup programs. These regulations gained approval from the Office of Administrative Law (OAL) in November 2004. For several years, parties responsible for cleanup of leaks from underground storage tanks (LUST) have been required to submit groundwater analytical data, the surveyed locations of monitoring wells, and certain other data to the SWRCB's GeoTracker database over the internet. Beginning January 1, 2005, electronic submittal of these items and a portable data format (PDF) copy of the full report is being extended to include all SWRCB groundwater cleanup programs including the LUST, non-LUST (SLIC), Department of Defense (DOD), and Chapter 15 land disposal programs. These regulations also added new data dictionaries (the format for electronic data submittals) to Title 27, CCR, in coordination with existing Cal/EPA Unified Program data dictionaries.

The GeoTracker Survey\_XYZ electronic data deliverable (EDD) consists of X, Y, and Z coordinates measurement data, and groundwater well measurement data. This deliverable is intended to be produced by the Responsible Party (or their consultant) and to be imported into the GeoTracker system via Internet. The GeoTracker Survey\_XYZ data, when uploaded into the SWRCB GeoTracker database, will provide essential information pertaining to groundwater and soil sampling points.



**Figure 1: Data Flow for the GeoTracker Survey\_XYZ Deliverable**

## 1.1 Document Conventions

This document presents the structure and guidelines and restrictions for creating GeoTracker Survey\_XYZ electronic data deliverables. Each data file of the deliverable is discussed in a level of detail that assists the user in creating an electronic deliverable that meets the criteria of the data standard. Included is a discussion of guidelines and restrictions that apply to files and those that apply to individual fields.

### 1.1.1 Figure Representation of Files

Each file discussion begins with a figure representing the fields in the file. Refer to **Error! Reference source not found.** as an example. The fields are listed in the order in which they exist within the structure, and primary key fields are underlined. “Primary key” means a selected field (or fields in combination) that makes a record unique in a database. Refer to the Glossary in Appendix B for a technical definition of this and other terms. The order of the fields in the figure **is** the order expected for delivery.

### 1.1.2 Table Representation of GeoTracker Survey\_XYZ EDD Files

The following table is a representation of the tables defining files of the GeoTracker Survey\_XYZ.

Field Name	Attrb	VVL	RE Q	Dscr. Name	Definition	Guidelines & Restrictions
<i>NAME1</i>	C18	Yes	Yes	Field 1		Field 1 is a character field with 18 available positions.
<i>NAME2</i>	D10	No	Yes	Field 2		Field 2 is a date field with an expected format of MM/DD/YYYY.
<i>NAME3</i>	N5	No	No	Field 3		Field 3 is a numeric field with a total of 5 spaces available for numbers and decimals, with no restriction on the number of digits to the right of the decimal point other than the overall field size.

The “Field Name” is the actual structural name of the field. All primary key fields are shaded within these tables (e.g., *FIELD1* and *FIELD2*). Primary key fields are identified within the tables by shading. **Fields are listed in their structural order within these tables.**

“Attrb” describes the field attributes (type and size). For example:

- C18 is an 18-character field (alphanumeric).
- D10 is a date field with an expected format of MM/DD/YYYY (i.e., 01/01/2001).
- N5 is a numeric field with a total of 5 spaces available for numbers and decimals, with no restriction on the number of digits to the right of the decimal point other than the overall field size (e.g., 12345 or 123.4 or 1.234).

The “VVL” column indicates with a “Yes” or “No” whether the data field requires a valid value code.

The “REQ” column indicates with a “Yes” or “No” whether entry into a field is required.

The “Dscr. Name” column gives the descriptive name of the field.

The “Definition” is a brief definition and/or explanation of the field.

The “Guidelines & Restrictions” describe expectations for entry into the field.

### **1.1.3 Conventions for Text**

Throughout this document, file names are capitalized (e.g., the GEO\_XYZ file), and field names are capitalized and italicized (e.g., the *GLOBAL\_ID* field). The words “file” and “table” are used interchangeably. The description of each file includes such information as which fields require valid values, which fields require entry for submission, and the file’s primary keys.

## **1.2 Valid Values (VVLs)**

Various data fields in the GeoTracker Survey\_XYZ electronic deliverable require entry of valid values. Valid values are built-in codes that the format requires for certain fields, such as datum and survey method. The reason for using specific values for these fields is to standardize the data entry, to ensure data consistency, and to help prevent errors. Freely entered data might contain extra spaces, commas, or dashes that would make meaningful data manipulation and thorough or accurate data searches impossible.

Most valid values are abbreviations of common or proper names; hence selecting the correct code is generally straightforward.

## 2 Data Deliverable Description

The GeoTracker system relies on a relational database consisting of files related to one another through common (key) fields. These data files are described as relational because the information in one file is related to information in other files, linked through a group of fields called the primary key. The primary key fields in one file record must be identical to the same fields in the linking file record in order to “relate” the data records in both files.

The GEO\_XY and GEO\_Z files contain information pertaining to the exact location (survey point) from which a sample is collected. The GEO\_WELL file contains some of the fields of the GeoTracker database pertaining to wells. The GEO\_XY, GEO\_Z, and GEO\_WELL files are related to each other and the EDF analytical data files through the primary keys fields of *GLOBAL\_ID* and *FIELD\_PT\_NAME*.

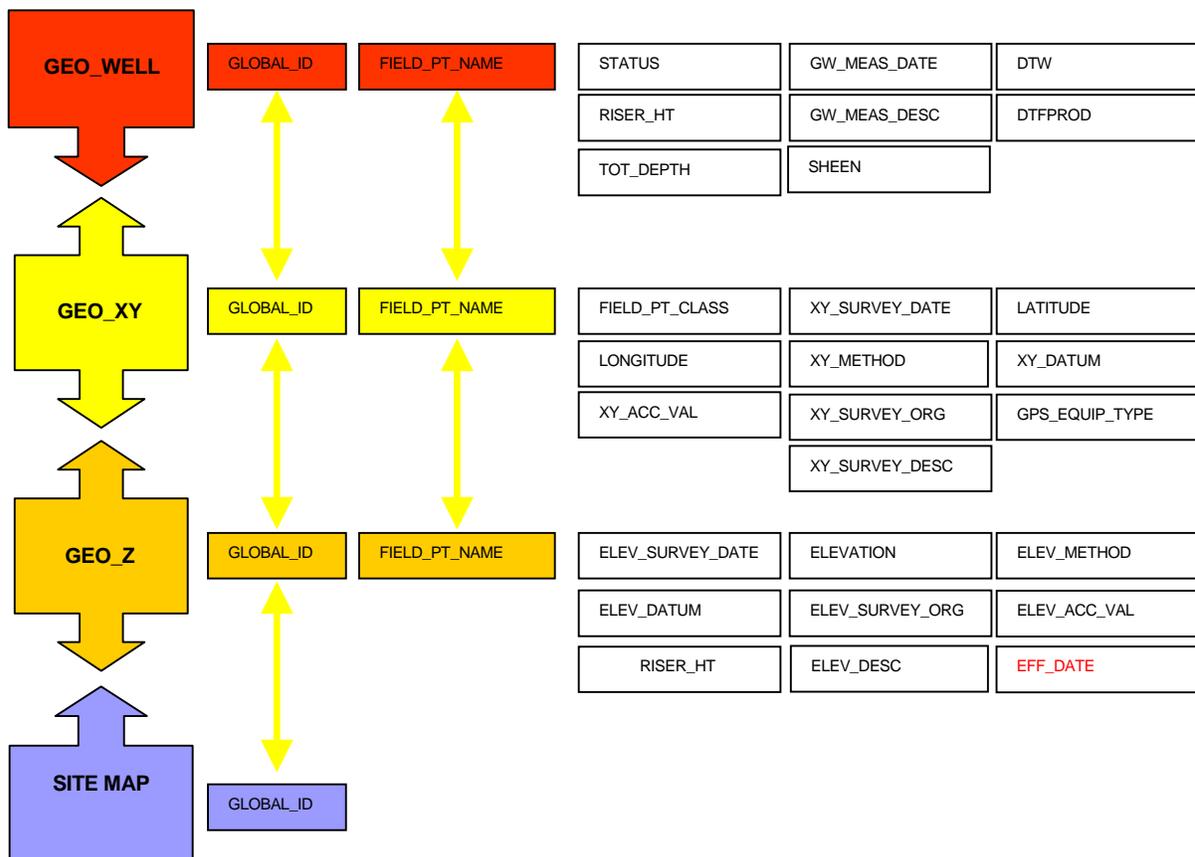


Figure 2. Relational Structure for GeoTracker Survey\_XYZ files

### **3 Relational Files Format**

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The following Chapter describes the format, data dictionary and guidelines and restrictions associated with each of the data files of the GeoTracker Survey\_XYZ electronic deliverable.

#### **3.1 GEO\_XY: The Location Measurement File**

The GEO\_XY file provides sub-meter field location measurements data for import into the GeoTracker system. Each field point sampling location (X,Y) for each groundwater monitoring well should only be reported once for a site.

The SWRCB has received a legal opinion from the State of California – State and Consumer Services Agency on behalf of the California Board for Professional Engineers and Land Surveyors as to the use of licensed professionals for collection of GeoTracker XY&Z data. In summary, the collection of information related to the exact location of groundwater wells, required by Title 12, California Code of Regulations §§2729-2729.1, constitutes "land surveying," as the term is defined in section 8726 of the Business and Profession Code and the collection of data is restricted to those who are licensed to practice land surveying in California.

Summary of California Board for Professional Engineers and Land Surveyors to SWRCB:

The collection of information related to the exact location of groundwater monitoring wells, required by Title 12, California Code of Regulations §§ 2729-2729.1, constitutes "land surveying," as the term is defined in section 8726 of the Business and Profession Code and requires a license issued by the Board unless an exemption from licensure applies. Among the statutory exemptions are the following:

- Civil engineers registered prior to January 1, 1982. (Bus. & Prof. Code §8731.)
- Registered geologists or others persons authorized to practice geology, such as licensed civil and petroleum engineers. (Geological exemption, Bus. & Prof. Code §§ 8727 and 7838.) Please note that licensed civil and petroleum engineers may only conduct such surveying work to the extent they are by education and/or experience fully competent and proficient. (Title 16, California Code of Regs. § 415).
- Certain federal officials and subordinates to appropriately licensed professionals may engage in land surveying activities without being licensed. (Bus. & Prof. 7836, 7837, 7838, 6739, 6740 and 8730.)

As a matter of history and policy, professional land surveyors may be in the best position to perform this work since the scope of practice of land surveying fundamentally relates to determining the location of fixed works.

### GEO\_XY FILE

<u>Global ID</u>	<u>GLOBAL_ID</u>
<u>Field Point Name</u>	<u>FIELD_PT_NAME</u>
<u>Field Point Class</u>	<u>FIELD_PT_CLASS</u>
<u>XY Survey Date</u>	<u>XY_SURVEY_DATE</u>
<u>Latitude</u>	<u>LATITUDE</u>
<u>Longitude</u>	<u>LONGITUDE</u>
<u>XY Survey method</u>	<u>XY_METHOD</u>
<u>XY Datum</u>	<u>XY_DATUM</u>
<u>XY Accuracy Value</u>	<u>XY_ACC_VAL</u>
<u>XY Survey Organization</u>	<u>XY_SURVEY_ORG</u>
<u>GPS Survey Equipment Type</u>	<u>GPS_EQUIP_TYPE</u>
<u>XY Survey Description</u>	<u>XY_SURVEY_DESC</u>

#### **3.1.1 File Guidelines and Restrictions:**

- Primary key fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME*, and *XY\_SURVEY\_DATE* comprise the primary keys.
- Required fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME*, *FIELD\_PT\_CLASS*, *LATITUDE*, *LONGITUDE*, *XY\_METHOD*, *XY\_DATUM*, *XY\_ACC\_VAL*, *XY\_SURVEY\_ORG*, *GPS\_EQUIP\_TYPE* require entry.
- Valid Value fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME*, *FIELD\_PT\_CLASS*, *XY\_METHOD*, *XY\_DATUM*, *GPS\_EQUIP\_TYPE*, require valid value entries.
- *XY\_SURVEY\_DESC* may be left blank.

### 3.1.2 The GEO\_XY File Format

**Table 1: GEO\_XY Format**

Field Name	Attrb	VVL	REQ	Dscr. Name	Definition	Guidelines & Restrictions
<i>GLOBAL_ID</i>	C12	Yes	Yes	Global ID	The unique identifier for a regulated facility or site.	Obtain from GeoTracker web pages.
<i>FIELD_PT_NAME</i>	C15	Yes	Yes	Field Point Name	The field name or common name of the location where the field measurement has been collected (i.e., Well 01).	Obtain from GeoTracker web pages. Add new field point names via GeoTracker AB2886 electronic reporting interface.
<i>FIELD_PT_CLASS</i>	C5	Yes	Yes	Field Point Class	The code representing the type of survey point.	
<i>XY_SURVEY_DATE</i>	D10	No	Yes	XY Survey Date	The date on which the latitude & longitude coordinates were measured.	Date format is MM/DD/YYYY.
<i>LATITUDE</i>	N15	No	Yes	Latitude	The latitude (Y coordinate) of the survey point, measured in decimal degrees, and reported to 7 decimal points.	Determined with Third Order methods using a minimum of 2 reference points: California Spatial Reference System-Horizontal (CSRS-H) or 2 horizontal geodetic control points derived from the California Spatial Reference System-Horizontal (CSRS-H).
<i>LONGITUDE</i>	N15	No	Yes	Longitude	The longitude (X coordinate) of the survey point, measured in decimal degrees, and reported to 7 decimal points.	Determined with Third Order methods using a minimum of 2 reference points: California Spatial Reference System-Horizontal (CSRS-H) or 2 horizontal geodetic control points derived from the California Spatial Reference System-Horizontal (CSRS-H).
<i>XY_METHOD</i>	C5	Yes	Yes	XY Survey Method	The code representing the survey method by which the latitude/longitude measurements were collected.	Required for all surveys
<i>XY_DATUM</i>	C5	Yes	Yes	XY Datum	The code representing the datum from which the latitude/longitude coordinates were	Required NAD 83 Datum

					determined.	
<i>XY_ACC_VAL</i>	N15	No	Yes	XY Accuracy Value	The accuracy range (+/-) of the latitude and longitude reported in centimeters at a 95% confidence interval.	The least accurate measurement should be reported, regardless if it is for latitude or longitude. Values must be >0 and <100cm
<i>XY_SURVEY_ORG</i>	C35	No	Yes	XY Survey Organization Name	The name of the organization who collected the latitude/longitude coordinates.	A legal opinion from the California Board for Professional Engineers and Land Surveyors requires these organizations to be licensed to practice land surveying in California.
<i>GPS_EQUIP_TYPE</i>	C100	Yes	Yes*	GPS Survey Equipment	The name of the GPS unit used to determine the latitude/longitude coordinates.	*Leave blank if survey method did not involve GPS. To add a GPS unit name to the valid value list, please contact the help desk at <a href="mailto:geotracker@cwpswrcb.ca.gov">geotracker@cwpswrcb.ca.gov</a>
<i>XY_SURVEY_DESC</i>	C240	No	No	XY Survey Description	General description information pertaining to the survey of latitude/longitude. May describe offset azimuth, distance and slope	

### 3.1.3 Valid Value Lists for GEO\_XY

**Table 2: FIELD\_PT\_CLASS valid values**

New values are added on an ongoing basis. For a current list please see [https://esi.waterboards.ca.gov/ab2886/public\\_vvl\\_search.asp](https://esi.waterboards.ca.gov/ab2886/public_vvl_search.asp)

Code	Description
AGT	Above Ground Tank Location
AGIR	Agriculture/irrigation well
AAS	Ambient Air Sample
AMB	Ambient drinking water aquifer monitoring well (NOT a remediation well)
BM	Benchmark
BH	Borehole
CS	Composite Sample
PRIW	Domestic/Private Drinking Water Well
ES	Effluent Sample
FAGT	Former Above Ground Tank Location
FUST	Former Underground Storage Tank, Tank Pit Location
FL	Fuel Line Sampling Point
IS	Influent Sample
RES	Lake or Reservoir Sampling Point
LSP	Leachate Sampling Point
CENT	Location of facility/site surveyed at the centroid of UST field
LYSP	Lysimeter Sampling Point
MS	Midway Treatment Sampling Point
PLS	Pan Lysimeter Sampling Point
PUBW	Public Drinking Water Well
MW	Remediation/Groundwater Monitoring Well
RIV	River Sampling Point
SP	Spring
SS	Stockpile Sample
STR	Stream or Creek Sampling Point
SUR	Surface Sampling Point
TASN	Transient Air Sample
TRS	Transient Subsurface Sampling Point (i.e. geoprobe.)
TPS	Treatment Plant Sample
UST	Underground Storage Tank, Tank Pit Location
VEW	Vapor Extraction Well
WSW	Water Supply Well
WSFI	Water System Facility Intake

**Table 3: XY\_METHOD valid values**

Note: \*\*California Spatial Reference System-Horizontal (CSRS-H) includes HPGN, HPGN-D and other geodetic control that have been determined by Global Positioning System survey methods in accordance with first order or better FGCS standards and specifications and whose coordinates are published by the NGS, CSRC or its successor. For a listing of CSRS-H control points most recently observed, please see <http://csrc.ucsd.edu/cgi-bin/csrsCoords.cgi>.

<b>Code</b>	<b>Description</b>
CONV	Conventional survey technique (Federal Geodetic Control Subcommittee, Third Order - Class II, Triangulation or Traverse). Minimum of 2 geodetic control points: California Spatial Reference System-Horizontal (CSRS-H) or 2 horizontal control points derived from the CSRS-H**.
CGPS	Conventional survey technique (Federal Geodetic Control Subcommittee, Third Order - Class II, Triangulation or Traverse) in combination with GPS survey techniques (RTK, static, & rapid/fast static). Minimum of 2 geodetic control points: California Spatial Reference System-Horizontal (CSRS-H) or 2 horizontal control points derived from CSRS-H**.
RTK	Real-Time Kinematic (RTK) GPS survey technique using a minimum of 2 geodetic control points based on California Spatial Reference System-Horizontal (CSRS-H)**. Data collected in real-time.
STAT	Static (or rapid/fast static) GPS survey technique using a minimum of 2 reference points based on California Spatial Reference System-Horizontal (CSRS-H)**. Data post processed.

**Table 4: XY\_DATUM valid values**

<b>Code</b>	<b>Description</b>
NAD83	NAD 83 Datum

**Table 5: *GPS\_EQUIP\_TYPE* valid values**

**Note: The State Water Resources Control Board does not ensure the accuracy of the GPS units listed and does not advocate use or preference for any of the listed manufacturers or GPS units.**

- This listing includes the manufacturer stated accuracy (typically for real-time static). **For any given measurement, the position accuracy will depend on the equipment utilized as well as the skill and knowledge of the user.** The position accuracy will vary with GPS receiver configuration (receiver and antenna), location (surrounding objects possibly blocking reception or causing multi-path reception), satellite constellation, and atmospheric conditions.
- The GPS unit list is not all inclusive. To add a GPS unit name to the valid value list, please contact the help desk at [geotracker@waterboards.ca.gov](mailto:geotracker@waterboards.ca.gov).

New values are added on an ongoing basis. For a current list of *GPS\_EQUIP\_TYPE* valid values please see [https://esi.waterboards.ca.gov/ab2886/public/vvl\\_search.asp](https://esi.waterboards.ca.gov/ab2886/public/vvl_search.asp)

### **3.1.4 Limitations of Several XY Data Collection Methods**

#### ***Differential GPS (DGPS)***

DGPS units cannot be used to meet GeoTracker Survey XYZ Guidelines & Restrictions.

For example, the NAVCEN operates the Coast Guard Maritime Differential GPS (DGPS) Service and the developing Nationwide DGPS Service which broadcasts correction signals on marine radiobeacon frequencies to improve the accuracy of and integrity to GPS-derived positions. Accuracy is dependant on relative position to the radiobeacon as well as other factors. Typically the positional error of a DGPS position is 1 to 3 meters which does not meet GeoTracker guidelines for sub-meter data. Further, the Coast Guard radiobeacons only enable differential correction of data to one CORS within the CSRS-H, which is not consistent with GeoTracker guidelines that require a minimum of 2 reference points based on California Spatial Reference System-Horizontal (CSRS-H). Although limited areas of California have coverage by two radiobeacons, no receivers on the market will receive signals from two separate beacons simultaneously. Thus, this method is not acceptable for data collection for the SWRCB database.

#### ***Single Frequency GPS Equipment***

Use of single frequency GPS equipment, commonly known as mapping grade GPS, requires use of a “relative positioning method” and a minimum of two GPS units is required to tie into a CSRS-H control station. One unit (the base station) would be set at the control monument, which could be a CORS (provides continuous GPS data that is publicly available). The second unit would collect data simultaneously at the survey point. The distance of the site from the control monument will control the amount of time needed for data collection. The data can be collected real-time (unless using a CORS monument) or post-processed. This simultaneous data collection would need to be performed at a minimum of two CSRS-H reference points to meet GeoTracker guidelines.

## 3.2 GEO\_Z: The Elevation Measurement File

The GEO\_Z file provides field elevation measurements data for import into the GeoTracker system. Elevation data should be submitted every time a new survey is performed.

The SWRCB has received a legal opinion from the State of California – State and Consumer Services Agency on behalf of the California Board for Professional Engineers and Land Surveyors as to the use of licensed professionals for collection of GeoTracker XY&Z data. In summary, the collection of information related to the collection of data required by Title 12, California Code of Regulations §§2729-2729.1, constitutes "land surveying," as the term is defined in section 8726 of the Business and Profession Code and requires a license issued by the Board. (See GeoTracker Tip#3 for more details, <http://www.swrcb.ca.gov/cwphome/ust/docs/ab2886/tips.html> - tip3)

<u>GEO_Z FILE</u>	
<u>Global ID</u>	<u>GLOBAL_ID</u>
<u>Field Point Name</u>	<u>FIELD_PT_NAME</u>
<u>Elevation Survey Date</u>	<u>ELEV_SURVEY_DATE</u>
Elevation	ELEVATION
Elevation Method	ELEV_METHOD
Elevation Datum	ELEV_DATUM
Elevation Accuracy Value	ELEV_ACC_VAL
Elevation Survey Organization	ELEV_SURVEY_ORG
Riser height	RISER_HT
Elevation Survey Description	ELEV_DESC
Effective Date	EFF_DATE

### 3.2.1 File Guidelines and Restrictions:

- Primary key fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME* and *ELEV\_SURVEY\_DATE*, comprise the primary keys.
- Required fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME*, *ELEVATION\_SURVEY\_DATE*, *ELEVATION*, *ELEV\_METHOD*, *ELEV\_DATUM*, *ELEV\_SURVEY\_ORG*, require entry.
- Valid Value fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME*, *ELEV\_METHOD*, *ELEV\_DATUM*, require valid value entries.
- *ELEV\_ACC\_VAL*, *RISER\_HT*, *ELEV\_DESC*, and *EFF\_DATE* may be left blank.

### 3.2.2 The GEO\_Z File Format

**Table 5: GEO\_Z Format**

Note: **The relative elevations of locations on the site (intersite well elevations) are to be measured within 0.01 ft. The accuracy of the absolute elevation, the value referenced to a vertical datum, may exceed 0.1 ft, primarily due to the distance to valid benchmark(s) and the methods used to bring elevation on site. The absolute accuracy is to be reported in the *ELEV\_ACC\_VAL* field.**

Field Name	Attrb	VVL	REQ	Dscr. Name	Definition	Guidelines & Restrictions
<i>GLOBAL_ID</i>	C12	Yes	Yes	Global ID	The unique identifier for a regulated facility or site.	Obtain from GeoTracker web pages.
<i>FIELD_PT_NAME</i>	C15	Yes	Yes	Field Point Name	The field name or common name of the location where the field measurement has been collected (i.e., Well 01).	Obtain from GeoTracker web pages. Add new field point names via GeoTracker AB2886 electronic reporting interface.
<i>ELEV_SURVEY_DATE</i>	D10	No	Yes	Elevation Survey Date	The date on which the elevation was measured.	Date format is MM/DD/YYYY. Day and month may be estimated for historical data.
<i>ELEVATION</i>	N15	No	Yes	Elevation	The elevation of the survey point measured to top of well casing to a hundredth of a foot between well locations within the site.	Enter elevation in feet. The relative elevations of locations on the site (intersite well elevations) are to be measured within 0.01 ft. The accuracy of the absolute elevation (tied to the vertical datum) may be greater than 0.1 ft.
<i>ELEV_METHOD</i>	C5	Yes	Yes	Elevation Survey Method	The code representing the method by which the elevation measurement was collected	Required for all surveys.
<i>ELEV_DATUM</i>	C5	Yes	Yes	Elevation Datum	The code representing the datum from which the elevation was determined.	NAVD88 is preferred.

<b>Field Name</b>	<b>Attrb</b>	<b>VVL</b>	<b>REQ</b>	<b>Dscr. Name</b>	<b>Definition</b>	<b>Guidelines &amp; Restrictions</b>
<i>ELEV_ACC_VAL</i>	N15	No	Yes	Elevation Accuracy Value	The accuracy range (+/-) of the absolute elevation measurement reported in centimeters at the 95% confidence interval.	Required for all surveys.
<i>ELEV_SURVEY_ORG</i>	C35	No	Yes	Elevation Survey Organization Name	The name of the organization collecting the elevation measurement.	A legal opinion from the California Board for Professional Engineers and Land Surveyors requires these organizations to be licensed to practice land surveying in California.
<i>RISER_HT</i>	N15	No	No	Riser Height	The measured distance from ground surface to top of well casing reported as a positive or negative value to a hundredth of a foot.	Optional field
<i>ELEV_DESC</i>	C240	No	No	Elevation Survey Description	General description information pertaining to the survey.	If a publically available city, county or state benchmark was used, describe here.
<i>EFF_DATE</i>	D10	No	No	Effective Date	The effective date that the elevation measurement should be used for surveyed point	Report the date that the casing elevation changed, if change occurred before the date of this current elevation survey .

### 3.2.3 Valid Value Lists for GEO\_Z

**Table 6: *ELEV\_METHOD* valid values**

Code	Description
DIG	Conventional differential leveling, digital or non-digital, (Federal Geodetic Control Subcommittee, Third Order) based on minimum of 2 geodetic control points.
TRIG	Trigonometric leveling using total stations (Federal Geodetic Control Subcommittee, Third Order) based on minimum of 2 geodetic control. (May not achieve 0.1 foot accuracy; may not be compliant with AB2886. Results will vary with length of line and accuracy of equipment utilized.)
CGPS	Conventional elevation survey technique (Federal Geodetic Control Subcommittee Third Order) based on minimum of 2 GPS-derived control points (RTK, static, & rapid/fast-static) established from HPGN or HPGN-Densification geodetic control points.

**Table 7: *ELEV\_DATUM* valid values**

Note:

- “Mean Sea Level” is not a datum, see Appendix A: Glossary of Terms
- National Geodetic Survey no longer supports the NGVD29 datum- does not guarantee that any formerly published NGVD29 value is correct, and no longer publishes in that datum.

Code	Description
29	NGVD29
88	NAVD88 ( <b>Preferred for all new surveys</b> )
LOC	Publicly available local datum from city, county or state agency; enter name in survey description

### 3.3 GEO\_WELL: Groundwater Well Measurement File

The GEO\_WELL file provides field measurements from groundwater wells for import into the GeoTracker system. GEO\_WELL data should be submitted after every sampling event.

<u>GEO_WELL FILE</u>	
<u>Global ID</u>	<i>GLOBAL_ID</i>
<u>Field Point Name</u>	<i>FIELD_PT_NAME</i>
Status	<i>STATUS</i>
<u>Groundwater Measurement Date</u>	<i>GW_MEAS_DATE</i>
Depth to Free Product	<i>DTFPROD</i>
Depth to Groundwater Surface	<i>DTW</i>
Riser Height	<i>RISER_HT</i>
Total depth	<i>TOT_DEPTH</i>
Groundwater Measurement Description	<i>GW_MEAS_DESC</i>
Sheen	<i>SHEEN</i>

#### 3.3.1 File Guidelines and Restrictions:

- Primary key fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME* and *GW\_MEAS\_DATE* comprise the primary keys.
- Required fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME*, *STATUS*, *GW\_MEAS\_DATE*, *DTFPROD\**, *DTW\**, *SHEEN\*\** require entry.  
\*  
\_
- Valid Value fields: *GLOBAL\_ID*, *FIELD\_PT\_NAME*, and *STATUS* requires valid value entries.
- *RISER\_HT*, *TOT\_DEPTH*, and *GW\_MEAS\_DESC* may be left blank.

### 3.3.2 The GEO\_WELL File Format

**Table 8: GEO\_WELL Format**

Field Name	Attrb	VVL	REQ	Dscr. Name	Definition	Guidelines & Restrictions
<i>GLOBAL_ID</i>	C12	Yes	Yes	Global ID	The unique identifier for a regulated facility or site. Identifies facility/site name , address, regulatory program etc.	Obtain from GeoTracker web pages.
<i>FIELD_PT_NAME</i>	C15	Yes	Yes	Field Point Name	The field name or common name of the location where the field measurement has been collected (i.e., Well 01).	Obtain from GeoTracker web pages. Add new field point names via GeoTracker AB2886 electronic reporting interface.
<i>STATUS</i>	C5	Yes	Yes	Well Current Status	The code representing the current status of well.	
<i>GW_MEAS_DATE</i>	D10	No	Yes	GW Measurement Date	The date that the depth to groundwater was measured.	Date format is MM/DD/YYYY.
<i>DTFPROD</i>	N15	No	Yes**	Depth to Floating Product	The measured depth from top of well casing to floating product surface reported to hundredth of a foot.	**Leave blank if free product is not present.
<i>DTW</i>	N15	No	Yes**	Depth to groundwater surface	The measured depth from top of well casing to groundwater surface reported to hundredth of a foot.	**Leave blank if groundwater cannot be sampled
<i>RISER_HT</i>	N15	No	No	Riser Height	The measured distance from ground surface to top of well casing reported as a positive or negative value to a hundredth of a foot.	
<i>TOT_DEPTH</i>	N15	No	No	Total Depth	Depth of well measured in the field during the sampling event from top of well casing to “bottom” of well reported to hundredth of a foot.	
<i>GW_MEAS_DESC</i>	C240	No	No	DTW Description	General description	
<i>SHEEN</i>	C2	Yes	Yes	Sheen	Indicates the presence of sheen in the groundwater sample	May be left blank if well is not “active” status (i.e. no groundwater)

### 3.3.3 Valid Value Lists for GEO\_WELL

**Table 9: STATUS valid values**

<b>Code</b>	<b>Description</b>
ACT	Groundwater well currently used for monitoring
INACT	Groundwater well is NOT included in groundwater monitoring program
DRY	Groundwater well is dry and cannot be sampled
NOACC	Presently no access to groundwater well
AB	Groundwater well is abandoned, but not yet destroyed
DEST	Groundwater well has been properly and legally destroyed; no longer is conduit to the subsurface

**Table 10: SHEEN valid values**

<b>Code</b>	<b>Description</b>
Y	Yes, sheen is present
N	No sheen

### **3.4 GEO\_MAP: The Site Map File**

The GEO\_MAP file is an electronic image of the site for import into the GeoTracker system. The maps are to include all groundwater well locations, boreholes, transient sampling points (i.e. direct push subsurface or surface sampling points) or any other field points utilized for soil or groundwater sampling. The maps are also to include the locations of underground storage tanks, former underground storage tanks, dispenser islands, buildings, roads. A number of site map formats may be submitted including:

- GIF
- TIFF
- JPEG
- PDF

## **4.0 Submittal File, Record, and Data Field Requirements**

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It is mandatory that the file, record, and data field requirements identified below be adhered to in order to generate acceptable upload file.

### **4.1 Submittal File Requirements**

An EDD may be submitted as a fixed length or tab-delimited format including: ASCII \*.TXT file, Microsoft Excel™ tab delimited \*.XLS file, or comma separated value (CSV) delimited ASCII \*.TXT file (also known as “comma/quote delimited”).

Each line of data is equivalent to a single record in the data submission. Each record is made up of distinct fields of information. Listed below are the file and record specifications for entering each record of data in its specified file.

- The column heading or field name is not part of the file and should be omitted. Only the data being entered should be in the upload file. Inclusion of column headers (i.e. the field names) in the upload document will cause errors. (Specific instructions for use of Microsoft Excel™ and Microsoft Access™ are detailed below).
- If entering the data via a spreadsheet, such as Microsoft Excel™, enter the first field’s data in the A1 cell. Each cell following A1 should be an additional field of data. When the document is saved as tab-delimited text, excel will save it in the proper format for entry (see instructions below).
- If the record is being created in a text-editor program, there should be no margins and no word-wrapping. (Text-editor programs include Notepad™ and Wordpad™). In each file, every record starts in the farthest left position of “position number 1.”
- Empty rows (records) are not allowed. The first record or row in the file, and every subsequent record or row, must contain valid data.

- Every record within a file must be unique. If, for each key field, a record's data appears exactly the same in another record, these two records are considered to be duplicate records.

## 4.2 Submittal Data Field Requirements

When producing the fixed or tab delimited formats, data element formats (attributes) must be strictly followed.

- Only authorized codes from the valid value list should be keyed into fields requiring valid values.
- Valid data must always be entered for all required fields.
- Do not add or delete any fields.
- Optional fields where data is not being reported should be left blank (will be converted to unknown).

### 4.2.1 Tab Delimited Formats

Creating a tab delimited file from a Microsoft Excel™ spreadsheet:

1. In order to create a file for submittal, create an Excel spreadsheet with column headings that match the fields AND order required for the GEO\_XY, GEO\_Z, GEO\_WELL files.
2. Each row in the spreadsheet will represent one record in the database.
3. To enter the first record, enter the first field's data in the A2 cell (A1 if you choose not to use column headings). Enter the next field's data in the next cell to the right, etc. The number of characters entered in each field must not exceed the maximum number of characters allowed for that field.
4. **IF YOU ARE NOT ENTERING DATA INTO THE LAST FIELD, IT IS VERY IMPORTANT THAT YOU ENTER A BLANK SPACE IN THAT FIELD ON EACH ROW. THIS WILL ENSURE THAT YOUR SAVED TEXT FILE WILL HAVE THE PROPER NUMBER OF FIELDS**
5. Once you have finished the first record, move to cell A3 (A2 if you are not using column headings) and enter the second record. Continue this process for all records.
6. When you are done entering data, **DELETE THE FIRST ROW OF THE SPREADSHEET IF IT CONTAINS THE COLUMN HEADINGS.** Column headings are not allowed in the submitted file.
7. Save the spreadsheet as a text document (tab delimited), which is one of the options under File > Save As > Save As Type and enter the applicable file name (i.e. GEO\_XY, GEO\_Z, or GEO\_WELL).
8. At this point, Excel will generate a message warning that some formatting may be lost by saving your document in this format.
9. Simply click the "Yes" button, and save the file.
10. The file must then be zipped before it can be uploaded to the GeoTracker Web-based system.

Creating a tab delimited file from Microsoft Access™:

1. In order to create a file for submittal, first create a database consistent with the GEO\_XY, GEO\_Z, GEO\_WELL file guidelines.
2. To export data as a tab delimited file, go to file>Export, and set the "Save As Type" as "Text Files" and press the "Save All" button.

3. In the new window that will appear, select the "Delimited" option, press "Next", and choose tab delimited.
4. Press "Next" again, and then press "Finish".

The new tab-delimited text document will be saved in the directory that was chosen during export.

#### **4.2.2 Comma Delimited Format**

Creating a comma delimited file from a Microsoft Excel™ spreadsheet:

To create a comma delimited text file from an Excel™ spreadsheet, follow the tab delimited guidelines above except "Save As" a CSV file (CSV stands for "comma separated values"). After saving as a CSV, manually change the ".csv" filename extension to ".txt" before zipping.

#### **4.2.3 Fixed Length Format**

The fixed length format:

Data fields in a file are limited to a certain number of spaces and the data must be in a specific position. Character data must be left justified within a field. Numeric data must be right justified within a field. If the information to be entered is shorter than the field width, insert blank spaces in the field's remaining positions. If the data to be entered is longer than the allowed field width, the data must be shortened to a unique identifier or significant value.

The start- and end-position numbers indicate the exact character locations where the applicable data must be placed in the file. There are some cases where the field is a single character wide. It, therefore, has the same start- and end-position number. The single character of data must be put in that position of the record. For example, when entering a *GLOBAL\_ID*, which is a C12 field, if the value to be entered is only C5, in the fixed length format, it would look like:

12345.....next field entry  
(where the dots represents 7 blank spaces before the next field).

### **4.3 Procedure for EDD Submittal**

Files may be error checked and submitted to the GeoTracker Web-based system at <http://geotracker.swrcb.ca.gov/ab2886>. Dynamic error reports will be generated to inform the user of any data format issues that must be resolved. The files must pass the error-checking program before the data will be submitted to the lead regulatory agency and the GeoTracker database.

## Appendix A: Glossary of Terms

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**Attributes** - The format and size attributes of a database field. A field type of C8 is a field that can hold up to eight alphanumeric characters. An N5 field type has a total of 5 spaces available for numbers and decimals, with no restriction on the number of digits to the right of the decimal point other than the overall field size (e.g., 12345 or 123.4 or 1.234). A D10 field type is a date field, and is formatted as MM/DD/YYYY ([month]/[day]/[year]).

**Database** - A collection of information arranged into records (rows) and fields (columns) for ease of sorting and manipulation within a table or related tables.

**Deliverable** - A report, data, etc., that is “delivered” to another party, either electronically, or in hard copy format.

**EDD (Electronic Data Deliverable)** - Information stored in a defined format, accessible via a computer (e.g., stored on diskette, internal hard drive, CD ROM, magnetic tape, etc.).

**Field** - An area of a table (a column) that contains a particular piece of information. One or more fields make a record. Fields are defined by the attributes of format and size.

**File** - A named group of electronic data in a defined format.

**Guidelines and Restrictions** - Information provided to the user regarding data entry, data performance, and data delivery expectations.

**National Geodetic Vertical Datum of 1929 (NGVD 29)** - A fixed reference adopted as a standard geodetic datum for elevations determined by leveling. The geodetic datum is fixed and does not take into account the changing stands of sea level. Because there are many variables affecting sea level, and because the geodetic datum represents a best fit over a broad area, the relationship between the geodetic datum and local mean sea level is not consistent from one location to another in either time or space. For this reason, the National Geodetic Vertical Datum should not be confused with mean sea level which is only applicable in the vicinity of a tide gage. This datum was superseded in 1991 by NAVD88.

**North American Vertical Datum of 1988 (NAVD 88)** - A fixed reference for elevations was originally defined by geodetic leveling. This datum was derived from a general adjustment of the first-order terrestrial leveling nets of the United States, Canada, and Mexico. NAVD88 is a vertical reference framework for elevations that are determined either by leveling or by a combination of precise methods of GPS surveying and utilization of a geoid model.

**Primary Key** - A field or set of fields that uniquely identify a record within a table. Key fields within a table define the primary key. Each database record can be uniquely identified using the combination of data fields that make up the primary key.

**Record** - A line of data (a row) in a table or file made up of distinct fields of information.

**Responsible Party**- The individual or organization legally responsible for the assessment, monitoring and/or remediation of a contaminated site.

**Table** - A format for data that allows for data manipulation within a database. Tables are organized with columns and rows of information.

**Valid Value** - Specially assigned, standardized coded value designating an approved (i.e., “valid”) value for entry into a field in the database.