

HEIS Sample, Result, and Sampling Site Data Dictionary

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

 **CH2MHILL**
Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited

HEIS Sample, Result, and Sampling Site Data Dictionary

J. T. Rieger
CH2M HILL Plateau Remediation Company

Date Published
January 2013

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

 **CH2MHILL**
Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352

APPROVED

By Shauna E. Adams at 1:59 pm, Jan 30, 2013

Release Approval

Date

Approved for Public Release;
Further Dissemination Unlimited

TRADEMARK DISCLAIMER

Reference herein to any specific commercial product, process, or service by tradename, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

This report has been reproduced from the best available copy.

Printed in the United States of America

Table of Contents

1.0 OVERVIEW AND SCOPE	1
1.1 ACRONYMS	1
1.2 DISCLAIMERS	2
2.0 TABLE DESCRIPTIONS	3
2.1 RESULT TABLE (HEIS2_ADM)	3
2.2 SAMPLE TABLE (SDT_ADM)	5
2.3 SAMPLING SITE TABLE (HEIS2_ADM)	8
3.0 FIELD DEFINITIONS	10
4.0 REFERENCES	46

1.0 OVERVIEW AND SCOPE

Acronym:	HEIS	HISI ID:	139	Software Grade:	D
----------	------	----------	-----	-----------------	---

This document serves to define the fields in the SAMPLE, RESULT, and SAMPLING_SITE tables. These objects are created and maintained within the Hanford Environmental Information System (HEIS) Oracle database. The requirements for the Sample, Result, and Sampling Site tables are listed in the document HNF-38154 Rev 1, "HEIS Sample, Result, and Sampling Site Requirements Analysis" and the design specifications are listed in the document CHPRC-0006 Rev 1, "HEIS Sample, Result, and Sampling Site Software Design Description". All tables referenced in this document are in the HEIS database unless otherwise documented.

Information provided in this document is intended primarily for members of the CH2M HILL Plateau Remediation Company (CHPRC) Environmental Database Management (EDM) software development team, project management, and control personnel.

HEIS is an Oracle database that stores data for environmental samples of groundwater, soil, biota, air monitoring, surface water, et al collected from the Hanford Site. All EDM software development uses the document HNF-28242 Rev 1, "EDM Software Management Plan" (SMP).

1.1 ACRONYMS

Acronym	Description
ASTM	American Society of Testing Materials
CAS	Chemical Abstracts Service
CHPRC	CH2M HILL Plateau Remediation Company
EDM	Environmental Database Management
EPA	Environmental Protection Agency
HEIS	Hanford Environmental Information System
HGWDB	Hanford Groundwater Database
HLAN	Hanford Local Area Network
LEMIS	Liquid Effluent Monitoring Information System
LPCS	Liquid Processing and Capsule Storage

MDA	Minimum Detectable Activity
ODBC	Open Database Connectivity
RDBMS	Relational Database Management System
RI/FS	Remedial Investigation/Feasibility Study
RRN	Result Reference Number
SAF	Sample Authorization Form
SDT	Sample Data Tracking Application
SDG	Sample Delivery Group
SESP	Surface Environmental Surveillance Project
SMP	Software Management Plan
TIC	Tentatively Identified Compound
WIDS	Waste Inventory Data System

1.2 DISCLAIMERS

Trademarks and registered trademarks are the property of their respective owners. All product names mentioned are listed for containment potential only; such listing does not imply ownership and does not constitute endorsement.

2.0 TABLE DESCRIPTIONS

2.1 RESULT TABLE (HEIS2_ADM)

The RESULT table is used for the storage of chemical, radiological, and physical results for samples collected on or in the vicinity of the Hanford Site for the purpose of monitoring and restoration activities.

COLUMN NAME	DATA TYPE/ LENGTH	NULLABLE	PK/ UK
SAMP_NUM	VARCHAR2(12)	N	PK
METHOD_NAME	VARCHAR2(20)	N	PK
LAB_CODE	VARCHAR2(6)	N	PK
CON_ID	VARCHAR2(15)	N	PK
ANALYSIS_BATCH_NUM	VARCHAR2(12)	Y	
ANAL_DATE_TIME	DATE	Y	
ANAL_UNITS_RPTD	VARCHAR2(10)	Y	
COLUMN_TYPE	VARCHAR2(10)	Y	
COUNTING_ERROR	NUMBER(*)	Y	
DATA_GROUP	VARCHAR2(20)	Y	
DATE_LAST_MODIFIED	DATE	Y	
DILUT_FACTOR	NUMBER(*)	Y	
DISTILLATION_VOL	NUMBER(*)	Y	
FORMAT_TYPE	VARCHAR2(4)	N	
LAB_COMMENT_CD	VARCHAR2(24)	Y	
LAB_EXTRACTED_DATE	DATE	Y	
LAB_MATRIX_CODE	VARCHAR2(12)	Y	
LAB_QUALIFIER	VARCHAR2(6)	Y	
LAB_RECEIVED_DATE	DATE	Y	

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

LAB_SAMP_ID	VARCHAR2(12)	Y	
LOAD_DATE_TIME	DATE	Y	
MIN_DETECTABLE_ACTIVITY	NUMBER(*)	Y	
MOISTURE_DEC	CHAR(1)	Y	
OLD_METHOD_NAME	VARCHAR2(20)	Y	
OWNER_ID	VARCHAR2(8)	Y	
PCNT_DEAD_TIME	NUMBER(*)	Y	
PCNT_MOISTURE	NUMBER(*)	Y	
PCNT_SOLIDS	NUMBER(*)	Y	
REAL_TIME_SECS	NUMBER(*)	Y	
REPORTING_LIMIT	NUMBER(*)	Y	
REPORTING_LIMIT_TYPE	VARCHAR2(3)	Y	
REQUIRED_DETECTION_LIMIT	NUMBER(*)	Y	
RESULT_COMMENT	VARCHAR2(2000)	Y	
RESULT_RECEIVED_DATE	DATE	Y	
RETENTION_TIME	NUMBER(*)	Y	
REVIEW_QUALIFIER	VARCHAR2(6)	Y	
RRN	NUMBER(14, 0)	Y	UK
SAMP_ALIQUOT_SIZE	NUMBER(*)	Y	
SAMP_ALIQUOT_UNITS	VARCHAR2(10)	Y	
SAMP_CONTRACT	VARCHAR2(20)	Y	
SDG_NUM	VARCHAR2(12)	Y	
STD_ANAL_UNITS_RPTD	VARCHAR2(10)	Y	
STD_CON_ID	VARCHAR2(15)	Y	

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

STD_COUNTING_ERROR	NUMBER(*)	Y	
STD_MDA	NUMBER(*)	Y	
STD_REPORTING_LIMIT	NUMBER(*)	Y	
STD_REQUIRED_DETECTION_LIMIT	NUMBER(*)	Y	
STD_TOTAL_ANAL_ERROR	NUMBER(*)	Y	
STD_VALUE_RPTD	NUMBER(*)	Y	
TIC_FLAG	CHAR(1)	Y	
TOTAL_ANAL_ERROR	NUMBER(*)	Y	
VALIDATION_QUALIFIER	VARCHAR2(6)	Y	
VALUE_RPTD	NUMBER(*)	Y	

2.2 SAMPLE TABLE (SDT_ADM)

The SAMPLE table stores sample numbers and their attributes for groundwater, surface water, soil, air monitoring, biota, and other samples collected for environmental monitoring and restoration activities on or in the vicinity of the Hanford Site. The table also provides the link between other HEIS tables (e.g., RESULT and SAMPLING_SITE) and the set of database tables that support the Sample Data Tracking (SDT) process.

It is important to remember that analytical results for samples collected from sites other than wells cannot be retrieved from the HEIS database by specifying a coordinate range unless the sample record is associated with a SAMPLING_SITE record that includes coordinate values. When entering information for new samples, data entry personnel should always search for an existing SAMPLING_SITE record whose coordinates are the same as those for the new sample. If an existing record is found, then its SAMP_SITE_ID should be used in the new sample record, instead of creating a new SAMPLING_SITE record.

COLUMN NAME	DATA TYPE/ LENGTH	NULLABLE	PK/ UK
SAMP_NUM	VARCHAR2(12)	N	PK
ALTERNATE_SAMP_NUM	VARCHAR2(12)	Y	
ANAL_SPONSOR	VARCHAR2(6)	Y	
BIOTA_MEDIA	VARCHAR2(1)	Y	

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

COLLECTION_PURPOSE	VARCHAR2(6)	Y	
COLL_MTHD	VARCHAR2(20)	Y	
COLL_SAMP_SIZE	VARCHAR2(10)	Y	
COLL_SAMP_SIZE_UNITS	VARCHAR2(10)	Y	
COMPOSITE_FLAG	CHAR(1)	Y	
DATE_ASSIGNED	DATE	Y	
DATE_LAST_MODIFIED	DATE	Y	
END_FLOW_RATE_OR_VOLUME	NUMBER	Y	
EXPOSURE_HOURS	NUMBER	Y	
FIELD_QC_TYPE	VARCHAR2(3)	Y	
FILTERED_FLAG	CHAR(1)	Y	
FLOW_RATE_OR_VOLUME_UNITS	VARCHAR2(10)	Y	
LAB_QC_TYPE	CHAR(1)	Y	
MATRIX	VARCHAR2(50)	Y	
MEDIA	VARCHAR2(3)	Y	
OWNER_ID	VARCHAR2(8)	Y	
PROJECT_LEAD	VARCHAR2(20)	Y	
RETURN_REQUEST_NUM	VARCHAR2(15)	Y	
SAF_NUM	VARCHAR2(10)	Y	
SAMPLER	VARCHAR2(50)	Y	
SAMPLE_LOCATION	VARCHAR2(254)	Y	
SAMPLE_NUM_ASSIGNED_TO	VARCHAR2(50)	Y	
SAMP_COMMENT	VARCHAR2(2000)	Y	
SAMP_DATE_TIME	DATE	Y	

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

SAMP_DATE_TIME_ON	DATE	Y	
SAMP_FROM	VARCHAR2(40)	Y	
SAMP_INTERVAL_BOTTOM	NUMBER	Y	
SAMP_INTERVAL_TOP	NUMBER	Y	
SAMP_INTERVAL_UNITS	VARCHAR2(10)	Y	
SAMP_ITEM	VARCHAR2(20)	Y	
SAMP_MTHD	VARCHAR2(20)	Y	
SAMP_PREP	VARCHAR2(12)	Y	
SAMP_SITE_ID	NUMBER(10)	Y	
START_FLOW_RATE_OR_VOLUME	NUMBER	Y	
STATUS	VARCHAR2(4)	Y	
STD_SAMP_INTV_BOT	NUMBER	Y	
STD_SAMP_INTV_TOP	NUMBER	Y	
STD_SAMP_INTV_UNITS	VARCHAR2(10)	Y	
TAG_ID	VARCHAR2(40)	Y	
WELL_NAME	VARCHAR2(15)	Y	

The following are additional requirements for each sample MEDIA before STATUS can be set to 'Used', permitting analytical result records to be loaded:

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

MEDIA / COLUMN	AT	BI	ER	GW	MM	QC	SG	SO	SW	WS	WW	PW	ST
BIOTA_MEDIA	<null>	X	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>
COLLECTION_PURPOSE	X ³		X ³										
FIELD_QC_TYPE	<null>	<null>	<null>	<null>	<null>	X	<null>						
FILTERED_FLAG	<null>	2	<null>	X	2		<null>	<null>	X	<null>	X	X	<null>
MEDIA	X	X	X	X	X	X	X	X	X	X	X	X	X
OWNER_ID	X	X	X	X	X	X	X	X	X	X	X	X	X
SAMP_DATE_TIME	X	X	X	X	X	X	X	X	X	X	X	X	X
SAMP_FROM		X	<null>		X	<null>	<null>		X	X	X	<null>	X
SAMP_INTERVAL_BOTTOM													
SAMP_ITEM	X	X	<null>	<null>	X	<null>	<null>			X	X	<null>	X
SAMP_MTHD						<null>							
SAMP_NUM	X	X	X	X	X	X	X	X	X	X	X	X	X
SAMP_SITE_ID	X	X	X	<null>	X ¹		X ¹	X ¹	X	X	X	X ¹	X
TAG_ID	<null>	X	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>	<null>
WELL_NAME	<null>	<null>	<null>	X	X ¹		X ¹	X ¹	<null>	<null>	<null>	X ¹	<null>

LEGEND

X = The field must have a valid value.

<null> = The field must be null.

1 = SAMP_SITE_ID or WELL_NAME, but not both.

2 = FILTERED_FLAG may be specified if SAMPLE MATRIX is "WATER" or "OTHER LIQUID"

2.3 SAMPLING SITE TABLE (HEIS2_ADM)

The SAMPLING_SITE table is used to store information about sites from which non-well related samples are collected. The fields in this table that are of most interest to data users are the SAMP_SITE_ID, SAMP_SITE_NAME, NS_COORD, and EW_COORD. The SAMP_SITE_ID column provides the link between the SAMPLING_SITE and SAMPLE tables, allowing the user to find the description, coordinates and other information about the site from which samples are collected. Linking the SAMPLE, SAMPLING_SITE, and RESULT tables by means of the SAMP_SITE_ID and SAMP_NUM columns, the user may determine the concentrations of constituents and the X, Y coordinates at which those concentrations were found.

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

COLUMN NAME	DATA TYPE/ LENGTH	NULLABLE	PK/ UK
SAMP_SITE_ID	NUMBER(10)	N	PK
COORD_SOURCE	VARCHAR2(10)	Y	
DATE_LAST_MODIFIED	DATE	Y	
DIST_CLASS	VARCHAR2(20)	Y	
ELEVATION_UNITS	VARCHAR2(10)	Y	
EW_COORD	NUMBER(11,3)	Y	
HORIZ_COORD_TYPE	VARCHAR2(9)	Y	
NS_COORD	NUMBER(11,3)	Y	
OWNER_ID	VARCHAR2(8)	N	
RAD_LEVEL	VARCHAR2(15)	Y	
SAMP_SITE_DESC	VARCHAR2(240)	Y	
SAMP_SITE_NAME	VARCHAR2(255)	Y	
SAMP_SITE_TYPE	VARCHAR2(30)	Y	
SCHED_LABEL_CODE	VARCHAR2(1)	Y	
SITE_CODE	VARCHAR2(15)	Y	
SITE_ELEVATION	NUMBER(11,3)	Y	
TRANSFORM_CODE	VARCHAR2(5)	Y	
VERT_COORD_TYPE	VARCHAR2(9)	Y	

3.0 FIELD DEFINITIONS

ALTERNATE_SAMP_NUM

The ALTERNATE_SAMP_NUM is an alternate number assigned to the sample. Typically, this alternate number is assigned to meet the needs of a non-HEIS-database system (e.g. laboratory assigned internal sample identification number) but may be used to document any alternate identification applied to a specific sample. The contents of the SAMP_NUM field should not be redundantly used in this field.

ANAL_SPONSOR

The ANAL_SPONSOR is the person, organization, or project that provided funding for the collection and analysis of the sample.

ANALYSIS_BATCH_NUM

The ANALYSIS_BATCH_NUM is the lab-specific analysis batch identifier for internal tracking of samples. This information must be provided when lab QC data is reported.

ANAL_DATE_TIME

The ANAL_DATE_TIME is the date and time when the sample was analyzed for the constituent identified by the CON_ID. If specified for measurements made in the field during the collection of the sample, the ANAL_DATE_TIME should be the same as the SAMP_DATE_TIME.

ANAL_UNITS_RPTD

The ANAL_UNITS_RPTD is the measurement units associated with the numeric values stored in the VALUE_RPTD, COUNTING_ERROR, MIN_DETECTABLE_ACTIVITY, TOTAL_ANAL_ERROR, REPORTING_LIMIT, and REQUIRED_DETECTION_LIMIT fields. The units specified in this field are common to all of these numeric fields; it is not possible to store a result record where two or more of these fields have different measurement units.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'CONCENTRATION_UNITS '. Examples of valid codes and their translations are:

CODE	TRANSLATION
cps	Counts per second
g/L	Grams per liter
pCi/g	Picocuries per Gram
PPB(V/V)	Parts per billion, volume per volume

BIOTA_MEDIA

The BIOTA_MEDIA is a single character code used for grouping types of biota samples. The BIOTA_MEDIA code should be consistent with the SAMP_FROM and SAMP_ITEM entries (described below). For example, if the SAMP_FROM value is 'DEER MOUSE' and the SAMP_ITEM value is 'MUSCLE', then the BIOTA_MEDIA would be 'W', not 'F' or 'V'.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'BIOTA_MEDIA'. Examples of valid codes and their translations are:

CODE	TRANSLATION
F	Foodstuff (commercial only)
V	Vegetation
W	Wildlife

COLLECTION_PURPOSE

The COLLECTION_PURPOSE is a code that identifies the primary reason the sample was collected.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'COLLECTION_PURPOSE'. Examples of valid codes and their translations are:

CODE	TRANSLATION	DEFINITION OF TRANSLATION
C	Characterization	Typically a sample collected for initial site characterization to support cleanup decisions. Examples include: <ul style="list-style-type: none"> • Samples collected during the Remedial Investigation/Feasibility Study (RI/FS) phase of the CERCLA process to guide the evaluation of alternative cleanup options and the design of the Remedial Action (RA) selected. • Area wide sampling of soil, water, and biota is done to determine the background concentrations of chemical and radiochemical contaminants in the Hanford environment.
CNF	Confirmatory	Sampling that is performed on waste sites being investigated under CERCLA, where insufficient information exists to determine whether contamination exists at unacceptable levels. Confirmatory samples, typically collected through a judgmental or focused

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

		<p>sampling design, provide data used to determine whether no further action is the appropriate cleanup response or if the site requires remediation through a remove/treat/dispose, or other assigned, remedy.</p>
IH	Industrial Hygiene	<p>Samples collected to support health compliance requirements. Examples include:</p> <ul style="list-style-type: none"> • Air filter samples collected to monitor for asbestos, beryllium, heavy metals, radioactive particulate, etc. • Water samples (sanitary water, groundwater, or surface water) collected to monitor water quality (e.g., biological) requirements.
IP	In Process	<p>Samples collected to guide site cleanup work activities such as guiding where additional excavation (i.e., soil), surface decontamination (e.g., concrete) or water decontamination (e.g., ponds or groundwater) is needed. Examples include:</p> <ul style="list-style-type: none"> • Process water sample collected for a treatment facility or pump-and-treat groundwater remediation system for analytical data to guide and monitor contaminant removal operations. Treatment facility and pump-and-treat processes include ion exchange columns, activated carbon canisters, and in situ chemical injection (i.e., ISRM) to remove contaminants of concern from wastewaters or groundwater. • Groundwater pumped from a pump-and-treat system into an injection well may be suitable for "in process" feed information for a pump-and-treat process. • Groundwater pumped from more than one extraction well to a common feed tank for a pump-and-treat process is no longer representative of "groundwater" and is therefore considered "in-process." • Soil and/or miscellaneous material sample collected for lab analysis where field methods are not available to provide data of sufficient quality to guide excavations or D&D activities. • IP should not be used for a sample used to establish or confirm waste disposal criteria. The WM collection purpose code (below) should be used for samples collected to provide data to guide waste disposal decisions.

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

PE	Performance Evaluation	Performance Evaluation
R	Routine (i.e., repetitive)	<p>Repetitive samples collected on a scheduled, periodic basis in support of a compliance program such as site-wide monitoring for health, safety, and/or environmental requirements. Routine sample data is generally collected to monitor trends. Examples include:</p> <ul style="list-style-type: none"> • Scheduled groundwater samples collected for the Hanford Groundwater Monitoring Program. • Scheduled samples collected for the Surface Environmental Surveillance Project (SESP). • Near Field Monitoring samples <p>Additional samples may be collected during a scheduled sampling event based on field observations that may be identified as 'routine' samples.</p>
RC	Radiological Control	<p>Samples taken by health physics technicians (HPT) to assess radiological status. Examples include:</p> <ul style="list-style-type: none"> • Equipment smears • Item smears
S	Special Studies	<p>Typically one-time sampling to provide analytical and/or physical measurement data to support a specific task. Examples include:</p> <ul style="list-style-type: none"> • Sampling done in support a waste site-specific or area-specific leachability study for contaminants of concern such as hexavalent chromium, uranium, arsenic, etc. • leachability from site soils, arsenic background concentrations, sampling studies for soil distribution correlation between sets of contaminants such as non-radioactive chemicals and radioactive chemicals, etc. <p>Non-routine samples collected from a sampling point usually used for routine samples.</p>
T	Transportation	Samples collected for analysis used to assign or verify transportation status (e.g., radioactive) for other samples.
TS	Time Series	To be used for time series sampling where the well is pumped for a long period of time and samples are collected at different times to see how the chemistry is changing.

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

VAR	Variance (Remediation)	<p>Samples collected after remediation has been completed to test that the waste site is "clean" and to determine how many verification samples will be required to demonstrate the site meets the established remedial action goals (i.e., cleanup standards). Variance samples are collected pursuant to a prescribed sampling design and the sample analytical data is evaluated in accordance with an approved Sampling and Analysis Plan. Examples include:</p> <ul style="list-style-type: none"> Statistical samples from soil waste sites collected to verify completion of cleanup activities and to determine the number of verification samples required.
VER	Verification (Remediation)	<p>Samples from soil/engineered structural waste sites collected for analysis to verify completion of cleanup activities. Examples include:</p> <ul style="list-style-type: none"> Samples documented in cleanup packages and data quality assessments (DQAs).
VP	Vertical Profile	To be used for samples collected at different depths in a well or at depths in the aquifer different from the depth of the completed well (e.g., samples collected during well drilling or abandonment).
WM	Waste Management	Samples collected for analysis of contaminants to guide waste disposal decisions based on waste acceptance criteria at waste disposal sites. The sample data provides traceability for waste disposal decisions.

COLL_MTHD

The COLL_MTHD is the surface water collection method used mostly by the Surface Environmental Surveillance Project (SESP).

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'COLL_MTHD'. Examples of valid codes and their translations are:

CODE	TRANSLATION
FILTER	Filter through which water passed
RESIN	Resin bed through which water passed
TRANSECT	Transect

UNFILTERED	Unfiltered water
------------	------------------

COLL_SAMP_SIZE

The COLL_SAMP_SIZE is the numeric value that together with the COLL_SAMP_SIZE_UNITS specifies the size of the sample that was collected. If a value is given for this field, then the COLL_SAMP_SIZE_UNITS field must also contain a valid value.

COLL_SAMP_SIZE_UNITS

The COLL_SAMP_SIZE_UNITS is the measurement units that together with the COLL_SAMP_SIZE gives the size of the sample that was collected.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'SAMP_SIZE_UNITS'. Examples of valid codes and their translations are:

CODE	TRANSLATION
g	Grams
gal	Gallons
L	Liters
lb	Pounds

COLUMN_TYPE

The COLUMN_TYPE field is slated for deletion.

COMPOSITE_FLAG

The COMPOSITE_FLAG is set to 'Y' if the sample number is a composite of two or more other samples, to 'N' if the sample number is one of the samples that makes up a composited sample, and is null if the sample number is not involved in compositing. The default value for this field is null.

CON_ID

The CON_ID is a unique identifier for a specific element, compound, radioisotope, or physical parameter. When available, the Chemical Abstracts Service (CAS) number is used. If CAS has not assigned a number to the constituent then "pseudo-CAS" names are used (e.g., U-238, NO3-N, P04-P, CONDUCT, PH). The CON_ID code provides the link to the CONSTITUENT table in which long and short names of the constituent are stored.

COORD_SOURCE

The COORD_SOURCE is the source of the coordinates for a sampling site.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'COORD_SOURCE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
ESTIMATED	Estimated (generally from a map)
GPS	Global Positioning System
MEASURED	Measured, Not Surveyed
SURVEYED	Surveyed

COUNTING_ERROR

The COUNTING_ERROR is an error value measured by counting disintegrations of radioactive analytes, reported in the same units as the result value for the current analyte. Typically, the counts are modeled with a Poisson distribution where count variability is directly related to the number of counts. This error serves as a lower bound for the uncertainty of the measurement. Counting error is not appropriate for non-counting analyses of total uranium.

DATA_GROUP

The DATA_GROUP identifies the source document (e.g., diskette, data file) from which the result record was loaded. The DATA_GROUP value is provided by the data owner when the record is loaded into the result table.

DATE_ASSIGNED

The DATE_ASSIGNED is the computer system date/time when the sample record was created.

DATE_LAST_MODIFIED

The DATE_LAST_MODIFIED is the date and time the record was last updated. This field is initially loaded with the date and time the record was created.

DILUT_FACTOR

The DILUT_FACTOR is a value representing the amount the sample was diluted by (D) to determine the amount of the analyte (R) in the sample. It is nominally 1.0 but can change based on measurement processes. The dilution accounts for all nonstandard scaling between the instrument measurement (V) and the reported result. These values

combined with the aliquot (A), after adjustment for method-specific parameters (K), provide the true result value. If final results are corrected for percent solids (%S), the correction for percent solids is not to be included in the dilution factor. The following generic formulas are provided for conceptual purposes and assume a simplified world with no units:

$$\frac{V \times D}{A \times K} = R \quad \text{or} \quad \frac{V \times D}{\%S \times A \times K} = R$$

DIST_CLASS

The DIST_CLASS is the qualitative description of the sampling site relative to the Hanford Site.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'DIST_CLASS'. Examples of valid codes and their translations are:

CODE	TRANSLATION
COMMUNITY	From the Surrounding Community
DISTANT	No translation defined
OFFSITE	Outside Hanford Site Boundary
ONSITE	Inside Hanford Site Boundary

DISTILLATION_VOL

The DISTILLATION_VOL is the total volume of water, in milliliters, distilled from the media (silica gel, vegetation, tissue, etc.) for analysis (e.g., tritium). It is applicable only for RAD samples.

ELEVATION_UNITS

The ELEVATION_UNITS are the units of measure for the SITE_ELEVATION value. Only "m" (meters) is permitted. Values reported in feet must be multiplied by .3048 to convert them to meters.

END_FLOW_RATE_OR_VOLUME

The END_FLOW_RATE_OR_VOLUME is the flow rate of the sampled fluid through the collection device (filter, canister, etc.) as measured at the end of the sampling period. This field is appropriate only for air monitoring and flowing surface-water (e.g., river) samples. If this field is not null then the FLOW_RATE_OR_VOLUME_UNITS field must be specified. If only one flow rate value is recorded for a sample it is entered in the END_FLOW_RATE_OR_VOLUME field and the START_FLOW_RATE_OR_VOLUME field is left empty.

EXPOSURE_HOURS

The EXPOSURE_HOURS is the total number of hours the collection device is exposed to the matrix that is sampled. This field is applicable only to samples where fluid flows through a filter or collection canister. For example, air samples are commonly collected by using a vacuum pump to draw air through a filter. If the vacuum pump is turned on and off more than once between the time the filter is installed and the time it is removed, then the EXPOSURE_HOURS is the total number of hours that the vacuum pump was actually running (not the difference in the filter installation and removal date/times).

EW_COORD

The EW_COORD is the east/west distance in meters from the coordinate origin for the Washington State Coordinate System, South Quadrant.

FIELD_QC_TYPE

The FIELD_QC_TYPE identifies the type of field quality control (QC) sample. A valid code must be entered into this field if the MEDIA for the sample record is 'QC'. Conversely, the media must be 'QC' if the FIELD_QC_TYPE field is not null.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'FIELD_QC_TYPE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
FB	Field Blank
FXR	Field Transfer Blank
EB	Equipment Blank
TB	Trip Blank

FILTERED_FLAG

The FILTERED_FLAG is a field indicating whether or not the sample was filtered in the field. The value is 'Y' if the sample was filtered at collection time and 'N' if the sample was not filtered at collection time. A null value in this field (where filtering would be appropriate) may indicate that the sample was not filtered.

The FILTERED_FLAG field should not be confused with air-monitoring or surface water (typically river) samples where air or water flows through a filter and the filter (not the sampled medium) is sent to the laboratory for analysis. For more information about air and water samples collected on filters, see SAMP_MTHD and COLL_MTHD.

FLOW_RATE_OR_VOLUME_UNITS

The FLOW_RATE_OR_VOLUME_UNITS are the units of measure for the rate of flow of a fluid through the sampling device. A value is required in this field if either the START_FLOW_RATE_OR_VOLUME or END_FLOW_RATE_OR_VOLUME field is not null.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'FLOW_RATE_OR_VOLUME_UNITS'. Examples of valid codes and their translations are:

CODE	TRANSLATION
CFH	Cubic feet per Hour
CFM	Cubic feet per Minute
CFS	Cubic Feet per Second
LPM	Liters per Minute

FORMAT_TYPE

The FORMAT_TYPE identifies the format in which the analytical result data was delivered.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'FORMAT_TYPE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
CLP	Contract Laboratory Program
FEAD	Format for Electronic Analytical Data
NCLP	Non-Contract Laboratory Program (The NCLP code has generally been used to indicate that the record was manually loaded as opposed to being loaded by a program from an electronic media in one of the other formats.)
NCLP	Non-Contract Laboratory Program (The NCLP code has generally been used to indicate that the record was manually loaded as opposed to being loaded by a program from an electronic media in one of the other formats.)
RCL	RIVERCOR DATA LOADER

HORIZ_COORD_TYPE

The HORIZ_COORD_TYPE is the name of the north/south and east/west coordinate system.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'HORIZ_COORD_TYPE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
NAD83	North American Datum 1983
NAD83(91)	North American Datum 1983 with 1991 correction

Coordinate values for these two coordinate types always have units of meters.

The HORIZ_COORD_TYPE field must have a value if the EW_COORD and NS_COORD fields have values.

LAB_CODE

The LAB_CODE is the unique code for the laboratory that performed the analysis. The LAB_CODE field provides the link between the RESULT and LABORATORY table in which attributes about the laboratory are stored. LAB_CODE "FIELD" is used for analyses performed at the sample collection location or in an on-site mobile laboratory.

LAB_COMMENT_CD

The LAB_COMMENT_CODE are codes reported by the analytical laboratories that translate to recurring comments regarding result records. Multiple codes may be reported in this field if they are delineated by the ampersand (&) character.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'LAB_COMMENT_CD'. Examples of valid codes and their translations are:

CODE	TRANSLATION
PCY	PRECIPITATE IN COOKDOWN; YELLOW
Q	QUESTIONABLE RESULT; DILUTION REQUIRED REDUCES CONC. BELOW DL.
RC	SAMPLE REQUIRED CENTRIFUGING TO BE ANALYZED.
RCB	BLUE SOLUTION FORMED WHEN ADDING A REAGENT OR DURING COOKDOWN

LAB_EXTRACTED_DATE

The LAB_EXTRACTED_DATE is the date the sample aliquot was extracted from the sample for analysis. The LAB_EXTRACTED_DATE is not appropriate for parameters measured in the field (e.g., pH, temperature, conductivity, turbidity).

LAB_MATRIX_CODE

The LAB_MATRIX_CODE is the predominant medium of the analyzed sample.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'LAB_MATRIX_CODE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
GASEOUS	Gaseous
OTHER LIQUID	Liquids other than water
OTHER SOLID	Solids other than soil
SOIL	Soil
WATER	Water

LAB_QUALIFIER

The LAB_QUALIFIER is a character string containing codes that qualify the associated result. These codes are reported by the analytical laboratory. Different categories of constituents may have different permitted combinations of valid qualifiers; however, "B" and "U" are mutually exclusive qualifiers for all categories.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'LAB_QUALIFIER'. Examples of valid codes and their translations are:

CODE	TRANSLATION
*	INORGANICS - Duplicate analysis not within control limits.
+	INORGANICS - Correlation coefficient for Method of Standard Additions (MSA) is < 0.995.
>	WETCHEM - Result greater than quantifiable range or greater than upper limit of the analysis range.
A	ORGANICS - Valid for TICs only: The TIC is a suspected aldol-condensation product.

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

B	<p>INORGANICS and WETCHEM - The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).</p> <p>ORGANICS - The analyte was detected in both the associated QC blank and in the sample.</p> <p>RADIONUCLIDES - The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample.</p>
C	<p>INORGANICS/WETCHEM: The analyte was detected in both the sample and the associated QC blank, and the sample concentration was $\leq 5X$ the blank concentration.</p> <p>ORGANICS (PESTICIDE only) – The identification of a pesticide confirmed by gas chromatograph/mass spectrometer (GC/MS).</p>
D	<p>All - Analyte was reported at a secondary dilution factor, typically $DF > 1$ (i.e., the primary preparation required dilution to either bring the analyte within the calibration range or to minimize interference). Required for organics/wetchem if the sample was diluted.</p>
E	<p>INORGANICS - Reported value is estimated because of interference. See comment on cover page, hardcopy case narrative, or specific inorganic hardcopy data sheet.</p> <p>ORGANICS - Concentration exceeds the calibration range of the GC/MS.</p>
J	<p>ORGANICS - Estimated value; (1) constituent detected at a level less than the RDL or PQL and greater than or equal to the MDL, (2) estimated concentration for tentatively identified compounds (TICs).</p> <p>Note - For HEIS data generated prior to December 1, 2002, laboratories may have applied a "J" qualifier to non-organic results. When applied, application was based primarily on criteria comparable to statement (1) above. Prior to January, 1998, validation qualifiers (including "J") were recorded in the LAB_QUALIFIER field without identification as validation qualifiers.</p>
L	MDL \leq value < CRQL [RETIRED]
M	INORGANICS - Duplicate precision criteria not met.
N	ALL (except GC/MS based analysis) - Spike and/or spike duplicate sample recovery is outside control limits.

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

	ORGANICS (GC/MS only) - Presumptive evidence of compound based on mass spectral library search.
P	ORGANICS (PCB only) - Aroclor target analyte with greater than 25% difference between column analyses.
Q	ORGANICS (Dioxins & PCB Congeners only) - Estimated maximum concentration. Used if one of the qualitative identification criteria is not met (e.g., Cl isotopic ratios outside theoretical range.)
S	INORGANICS - Reported value determined by the Method of Standard Additions (MSA).
T	Organics (GC/MS only) - Spike and/or spike duplicate sample recovery is outside control limits.
U	ALL - Analyzed for but not detected above limiting criteria. Limiting criteria may be any of the following: value reported < 0; value reported < counting error ; value reported < total analytical error; value_rptd <=contract MDL/IDL/MDA/PQL . Note - When another qualifier accompanies a "U" qualifier the result is always considered non-detected. The qualifier combinations "UJ" and "UL" indicate that the result was non-detected, but the detection limit (i.e., value reported in the VALUE_RPTD or MIN_DETECTABLE_ACTIVITY [rad analysis only] fields was estimated.
W	INORGANICS - Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	ALL – The result-specific translation of this qualifier code is provided in the hardcopy data report and/or case narrative. Additional result-specific translation information may also be found in the RESULT_COMMENT field for this record.
Y	Same as X if more than one flag is required. In the process of being retired.
Z	Same as X and Y if more than two flags are required. In the process of being retired.

NOTE: If no qualifier code is reported with the analytical result then the value reported is believed to be reliable without qualification.

LAB_QC_TYPE

The LAB_QC_TYPE is used to indicate if the sample is related to other samples as a replicate or split. 'Replicates' are samples sent to the same laboratory for analysis, while 'splits' are samples sent to different laboratories for analyses.

This field should not be confused with QC samples that are prepared by laboratories for their own internal quality control purposes. Data for QC samples prepared and used by the laboratories are not stored in HEIS.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'LAB_QC_TYPE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
B	Sample is both a split and a replicate
R	Sample is a replicate
S	Sample is a split

LAB_RECEIVED_DATE

The LAB_RECEIVED_DATE is the date the sample was received at the laboratory. The LAB_RECEIVED_DATE is not applicable for parameters measured in the field (e.g., pH, temperature, conductivity, turbidity).

LAB_SAMP_ID

The LAB_SAMP_ID is an identifier assigned to a sample by the laboratory for internal tracking. This identifier must be unique for each customer sample.

LOAD_DATE_TIME

The LOAD_DATE_TIME is the system date/time when the record was initially loaded or when the record was updated by a reanalysis result.

MATRIX

The MATRIX is the classification of the sample matrix.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'LAB_MATRIX_CODE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
GASEOUS	Gaseous

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

OTHER LIQUID	Liquids other than water
OTHER SOLID	Solids other than soil
SOIL	Soil
WATER	Water

MEDIA

The MEDIA code categorizes samples into logical types.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'MEDIA'. Examples of valid codes and their translations are:

CODE	TRANSLATION	DEFINITION OF TRANSLATION
AT	Atmospheric (Air Monitoring)	Atmospheric samples are indoor or outdoor air monitoring samples, including air samples collected from emission stacks. The air monitoring sample that is sent to the laboratory for analysis may actually consist of gases and particulates, but typically it is the filter, canister, or other collection device through which the air flowed that is sent to the laboratory for analysis.
BI	Biota	Biota samples are collected from animals or plants.
ER	External Radiation	External Radiation is used exclusively by the PNNL SESP program for recording radioactive exposure data.
GW	Groundwater	Groundwater samples are collected from wells, including engineered structures that provide access to the aquifer for groundwater samples at locations close to the river. "GW" is also assigned to samples collected from tubes inserted ~1 meter or deeper into the always-submerged riverbed.
MM	Miscellaneous Material	Miscellaneous material samples are any environmental characterization or remediation samples that do not fit into any of the other sample MEDIA categories. Examples of such samples are those collected from pipes (sewer and other), drums, concrete, tanks, engineered basins, landfills, building walls/ceilings/floors, etc.
PW	Pore Water	
QC	Quality Control (Field)	'QC' is the MEDIA code for field quality control samples that are blanks or spikes. All 'QC' samples must have a valid value in the FIELD_QC_TYPE field. <u>NOTE:</u> The

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

		MEDIA code 'QC' is not applicable for environmental samples that are replicates or splits. Such samples have the same MEDIA code as the samples to which they are related. For example, if a sample is related to another 'GW' sample as a replicate or split, then the MEDIA code for this sample is also 'GW', not 'QC'. For more information about replicates and splits, see LAB_QC_TYPE.
SG	Soil Gas	MEDIA code 'SG' is used for soil gas samples.
SO	Soil	MEDIA code 'SO' is used for soil samples.
ST	Sediment	
SW	Surface Water	<p>MEDIA code 'SW' is used for surface water samples which include:</p> <ul style="list-style-type: none"> • Samples collected from rivers, ponds, puddles, riverbank seeps and springs, and streams. • Samples collected at shallow depths (< 1-meter) below the always-submerged riverbed. • Standing water on pads, floors, roofs, etc. • Water samples collected from water mains. <p>Drinking water samples collected from potable sources shall have the SAMP_FROM code 'DRINKING', and samples collected from raw water intake pipes shall have the SAMP_FROM value 'RAW WATER INTAKE'. The sampling location of drinking and raw water samples shall be included in the name of the SAMPLING_SITE record assigned to the sample (see also SAMP_SITE_ID).</p> <p>More on riverbed and riverbank samples: Assignment of MEDIA code "GW" or "SW" to samples collected from tubes in the riverbed or riverbank is at the discretion of the project manager, following consultation with HEIS data management staff who will advise with regard to consistent treatment for sample categorization.</p>
WS	Waste Solid	MEDIA code "WS" denotes samples of solid matter resulting from engineered water treatment processes, such as pump-and-treat systems or Liquid Processing and Capsule Storage (LPCS) facilities. Examples of "WS" samples are residue from filters, ion exchange resins, and waste solidified by the addition of absorbents.
WW	Waste Water	MEDIA code "WW" is used for aqueous samples collected from engineered water treatment processes, such as pump and treat systems and Liquid Processing and Capsule Storage (LPCS) facilities. The samples may

		be collected during all phases of the process: untreated inlet samples, in-process samples of treated water, and hindmost treated water samples. Untreated inlet water samples from a single identified well are given the MEDIA code of "GW".
--	--	--

METHOD_NAME

The METHOD_NAME is a code identifying the method used to analyze the sample for the constituent identified by the CON_ID. This code is an alias for analytical methods used by the Environmental Protection Agency (EPA), American Society of Testing Materials (ASTM), or laboratory-generated methods and/or procedures. This code provides the link to the METHOD table in which the METHOD_NAME is described.

MIN_DETECTABLE_ACTIVITY

The MIN_DETECTABLE_ACTIVITY or MDA is assumed to be a sample-dependent estimate, typically dependent on the measured instrument background and sample yield, reported in the same units as the result value (VALUE_RPTD) for the current analyte. Generally, it depends on the actual aliquot, count time, yield, efficiency, decay correction, and some measurement of the background. The background might be from associated instrument blanks, reagent blanks, baseline information for the sample, or some combination of these.

MOISTURE_DEC

The MOISTURE_DEC states whether the soil/sediment sample was decanted before the analysis was performed. This field is required for solid samples only (if decanted, enter "Y" in the field; if not decanted, enter "N" in the field); this field is not required for liquid samples.

NS_COORD

The NS_COORD is the north/south distance in meters from the coordinate for the Washington State Coordinate System, South Quadrant.

OLD_METHOD_NAME

The OLD_METHOD_NAME is the old analysis method ID (a system generated integer) that has been replaced with the METHOD_NAME. This field is used for cross-reference between the old and new analytical methods used in HEIS.

OWNER_ID

The OWNER_ID field identifies the Hanford contractor that owns the sample record and is responsible for the sample and its attributes.

The OWNER_ID column is used to control the insertion/modification/deletion of sample records and the insertion/modification/deletion of their associated analytical result

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

records. The database administrator controls user privileges to sample records based on the OWNER_ID of the sample records.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'OWNER_ID'. Examples of valid codes and their translations are:

CODE	TRANSLATION
CENTPLAT	Central Plateau Remediation Project Contractor (Fluor Hanford)
FHAS	Fluor Hanford Analytical Services
HEISPROD	River Corridor Contractor (Washington Closure Hanford)
LPCS	Liquid Processing and Capsule Storage (Fluor Hanford)
PNLGW	PNNL Groundwater
PNLWELL	PNNL Lithology
SESPMNT	SESP Maintenance (PNNL)
SESPSPEC	SESP Special Analysis (PNNL)
TFVADZNP	Tank Farm Vadose Zone Project
TRANSWMH	Samples records from the Liquid Effluent Monitoring Information System (LEMIS) database.

PCNT_DEAD_TIME

The PCNT_DEAD_TIME field is slated for deletion.

PCNT_MOISTURE

The PCNT_MOISTURE is the approximation of the proportion of moisture in a sample determined by drying an aliquot of the sample at 105°C until constant weight is achieved. This field is required for most soil/sediment samples as directed by the client. This field is not applicable for liquid samples.

PCNT_SOLIDS

The PCNT_SOLIDS is the approximation of the proportion of solid in a sample determined by drying an aliquot of the sample at 105°C until constant weight is achieved. This field is required for most soil/sediment samples as directed by the client. This field is not applicable for liquid samples.

PROJECT_LEAD

The PROJECT_LEAD is the name of the project leader for the sampling effort.

RAD_LEVEL

The RAD_LEVEL is the qualitative level of radiation at the sampling site.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'RAD_LEVEL'. Examples of valid codes and their translations are:

CODE	TRANSLATION
HIGH	High
INTERMEDIATE	Intermediate
LOW	Low

There has been no historical control on this field. Therefore, this field has little credence.

REAL_TIME_SECS

The REAL_TIME_SECS field is slated for deletion.

REPORTING_LIMIT

The REPORTING_LIMIT is the lowest concentration of an analyte reported by the laboratory, corrected for the particular analysis conditions used with the sample. The reporting limit is typically the value reported for non-detected results. Several types of reporting limits exist (see REPORTING_LIMIT_TYPE); the laboratory contract will normally stipulate which type should be used.

REPORTING_LIMIT_TYPE

The REPORTING_LIMIT_TYPE is the type of limit used in the reporting limit field.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'REPORTING_LIMIT_TYPE'. Examples of valid codes and their translations are:

CODE	TRANSLATION	DEFINITION OF TRANSLATION
ARL	Adjusted Reporting Limit	Adjusted for the total sample size (mass or volume) or sample dilutions.
EQL	Estimated Quantitation Limit	The lowest concentration that can be reliably measured within specified limits of accuracy and precision under routine laboratory operating conditions. The EQL is specified by the laboratory and is typically 5-10 times

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

		greater than the method detection limit. In some cases, the EQL is equal to the concentration of the lowest calibration standard.
IDL	Instrument Detection Limit	Analyte concentration that corresponds to the minimum instrument signal that can be distinguished from instrument background noise with 99% confidence. The IDL is typically determined by measuring a standard solution containing the analytes of interest at concentrations 3-5 times the IDL 7 consecutive times on 3 non-consecutive days and multiplying the standard deviation of the measurements by 3.
MDL	Method Detection Limit	Minimum analyte concentration that can be distinguished from the method blank with a 99% probability. The MDL is typically determined by measuring a standard solution containing the analytes of interest at concentrations 3-5 times the MDL 7 times and multiplying the standard deviation of the measurements by 3.14.
PQL	Practical Quantitation Limit	Same as the EQL.
RDL	Required Detection Limit	Minimum level of detection required by the laboratory contract.

REQUIRED_DETECTION_LIMIT

The REQUIRED_DETECTION_LIMIT is the minimum level of detection required by the laboratory contract.

RESULT_COMMENT

The RESULT_COMMENT is a text column in which comments about the result record may be entered. Entries into this column are not reported by the laboratories but are added by data reviewers.

RESULT_RECEIVED_DATE

The RESULT_RECEIVED_DATE is the date the result record was received by the requestor or loaded into HEIS from the laboratory.

RETENTION_TIME

The RETENTION_TIME is the time in decimal minutes from the introduction of the sample into the laboratory instrument until the maximum peak response of the analyte is detected. This column is appropriate only for TICs.

RETURN_REQUEST_NUM

The RETURN_REQUEST_NUM field is slated for deletion.

REVIEW_QUALIFIER

The REVIEW_QUALIFIER is a set of one or more codes indicating that the quality of the record has been questioned by the reviewer.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'REVIEW_QUALIFIER'. Examples of valid codes and their translations are:

CODE	TRANSLATION
F	The result is undergoing further review.
G	Record has been reviewed and determined to be correct, or the record has been corrected with laboratory confirmation or other supporting information.
H	Laboratory holding time exceeded before the sample was analyzed.
P	Potential problem. Collection/analysis circumstances makes value questionable.
Q	Associated quality control sample is out of limits.
R	Do not use. Further review indicates the result is not valid.
Y	Result suspect. Review - insufficient evidence to show result valid or invalid.
Z	Miscellaneous circumstances exist. Additional information may be found in the RESULT_COMMENT field for this record and/or in the SAMP_COMMENT field of the parent sample record.

RRN

The RRN or Result Reference Number is a system-assigned unique identifier assigned to the result record. The RRN remains unchanged for a record even if the field values that make up the key for the record are changed.

SAF_NUM

The SAF_NUM, or Sample Authorization Form number, is assigned by SDT to identify a sampling event or group of sampling events for a single project. This number is the primary link between the sample table and the records in the SAF table.

SAMP_ALIQUOT_SIZE

The SAMP_ALIQUOT_SIZE is the amount of the sample that was analyzed. For composited air and water samples, it is the total volume of water or air through the medium/substrate of all composite fractions.

SAMP_ALIQUOT_UNITS

The SAMP_ALIQUOT_UNITS are the associated units for the value in the sample aliquot size field.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'SAMP_SIZE_UNITS'. Examples of valid codes and their translations are:

CODE	TRANSLATION
g	Grams
gal	Gallons
L	Liters
lb	Pounds

SAMP_COMMENT

The SAMP_COMMENT is a text field used to enter pertinent information about a sample for which there is not a designated field in the sample table. Attributes for a sample should not be entered into this field if a different field is provided for those attributes.

SAMP_CONTRACT

The SAMP_CONTRACT is the contract identifier under which the analysis was performed.

SAMP_DATE_TIME

The SAMP_DATE_TIME is the date and local time that the sample was collected. This field is also used for the ending sample date/time if a SAMP_DATE_TIME_ON is specified.

SAMP_DATE_TIME_ON

The SAMP_DATE_TIME_ON is used for samples collected over an interval of time. This is the date and local time that sampling was started. If only one date/time was recorded for samples collected over a period of time then that date/time is stored in the SAMP_DATE_TIME field and the SAMP_DATE_TIME_ON field is left empty.

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

SAMP_FROM

The SAMP_FROM is the MEDIA-dependent entity that was sampled.

Entries into this field are validated against MEDIA specific codes in the VALID_CODES table where the VALID_FIELD_NAME is MEDIA and 'SAMP_FROM'. Examples of valid codes and their translations are:

MEDIA	CODE	TRANSLATION
BI	ALFALFA	
BI	ALGAE	Algae
BI	APPLES	
BI	ANTS	Formicidae Family
MM	BASIN	Basin
MM	FACILITY	Facility
MM	LANDFILL	Land fill
MM	SEPTIC	Septic system
SO	SUB_SURFACE	Sub-Surface
SO	SURFACE	Surface
SW	BASIN	Basin
SW	DRINKING	Potable water
SW	POND	Pond
SW	RAW WATER INTAKE	Raw water intake
WS	BURIAL BOX	
WS	DRUM	
WS	OTHER CONTAINER	
WW	BASIN	
WW	LIFT STATION	

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

WW	OTHER	
WW	PIPE	

SAMP_INTERVAL_BOTTOM

The SAMP_INTERVAL_BOTTOM is normally the vertical distance from the land surface to the bottom of the sample, but in the case of sloping or spiraling boreholes this is the distance measured along the path of the hole. If the SAMP_INTERVAL_BOTTOM is not null then valid units must be entered into the SAMP_INTERVAL_UNITS column. If only one sample interval is provided then it is stored in the SAMP_INTERVAL_BOTTOM, and the SAMP_INTERVAL_TOP field is left empty.

SAMP_INTERVAL_TOP

The SAMP_INTERVAL_TOP is normally the vertical distance from the land surface to the top of the sample, but in the case of sloping or spiraling boreholes this is the distance measured along the path of the hole. If the SAMP_INTERVAL_TOP is not null then the SAMP_INTERVAL_BOTTOM cannot be null and valid units of length (distance) must be entered into the SAMP_INTERVAL_UNITS column.

SAMP_INTERVAL_UNITS

The SAMP_INTERVAL_UNITS are the units of length used to measure the SAMP_INTERVAL_TOP and SAMP_INTERVAL_BOTTOM. If the sample interval bottom is specified then the SAMP_INTERVAL_UNITS field must contain a valid code.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'DISTANCE_UNITS'. Examples of valid codes and their translations are:

CODE	TRANSLATION
cm	Centimeter
ft	Foot
in	Inch
m	Meter

Sample top and bottom intervals with any of these units of length are standardized to meters in the STD_SAMP_INTV_TOP, STD_SAMP_INTV_BOT, and STD_SAMP_INTV_UNITS fields.

SAMP_ITEM

The SAMP_ITEM is the specific item that was sampled from the entity identified in the SAMP_FROM field.

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

Entries into this field are validated against MEDIA specific codes in the VALID_CODES table where the VALID_FIELD_NAME is MEDIA and 'SAMP_ITEM'. Examples of valid codes and their translations are:

MEDIA	CODE	TRANSLATION
AT	GAS	Gas
AT	HALOGEN	Halogen
AT	PARTICULATE	Particulate Air
AT	WATER VAPOR	Water Vapor
BI	ANTLER	Antler
BI	BONES	Bones
BI	BRANCH	Branch
BI	BURROW	Mammal excavated soil
MM	AIR FILTER	Air filter
MM	CONCRETE SCRAPINGS	
MM	DECON SOLUTION	Subsystem composite
MM	SPENT RESIN	
SO	GEO_SAMPLE	Geologic sample
SO	SITE_BKGD_JUD GE	Site background judgment
SO	SITE_BKGD_REF	Site background reference
SO	SURF_SOIL	Surface soil
WS	POWDER	
WS	SLUDGE	
WS	SOLID WASTE	
WW	BOILER BLOWDOWN	

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

WW	BRINE	
WW	COOLING WATER	
WW	EFFLUENT	

SAMP_MTHD

The SAMP_MTHD is the method used to collect the sample.

Entries into this field are validated against MEDIA specific codes in the VALID_CODES table where the VALID_FIELD_NAME is MEDIA and 'SAMP_MTHD'. Examples of valid codes and their translations are:

MEDIA	CODE	TRANSLATION
AT	CHARCOAL_CARTRIDGE	Charcoal Cartridge
AT	SILICA_GEL_HT	Silica Gel HT
AT	SILICA_GEL_HTO	Silica Gel HTO
AT	SODA_LIME_CH	Soda Lime CH
BI	GRAB	Grab
BI	TRANQUILIZE	Tranquilize
BI	TRAP	Trap
ER	40_L_CHAMBER	40 Land Chamber
ER	AERIAL_SURVEYS	Aerial Surveys
ER	LAND_CHAMBER	Land Chamber
ER	ROADWAY_SURVEY	Roadway Survey
GW	AIRLIFT	Airlift
GW	ARTESIAN	Artesian
GW	BAILER	Bailer
GW	PIEZOMETER	Piezometer

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

MM	CORE DRILLING	
MM	SCRAPING	
MM	SPLIT SPOON	Split Spoon
SO	AIR PERCUSSION	Air Percussion
SO	AUGER	Auger
SO	BACKHOE	Backhoe
SO	HARD TOOL	Hard Tool
SW	CONTINUOUS	Sample is continuously collected
SW	CUMULATIVE	Sample is collected continuously for a finite period of time
SW	RAW GRAB	Sample is untreated and collected quickly at one point in time and at one place
SW	SAN. GRAB	Sanitary Water Grab - Sample is treated with chemicals to stabilize specific constituents in sample.

SAMP_NUM

The SAMP_NUM is a unique identifier for a physical sample. The SAMP_NUM is comprised of uppercase letters and numbers and may be generated by a HEIS algorithm or specified by the project that is responsible for the sample. HEIS-generated sample numbers are six characters in length, begin with a consonant, end with a number (0 - 9), and disallow "A", "E", "I", "O", "U", "G", "Q", "S", and "Z".

Sample numbers beginning with 'H000' identify ground-water samples from the old PNNL Hanford Groundwater Database (HGWDB), and sample numbers beginning with capital letter 'E' identify historic SESP samples.

Sample numbers can also be made up by the user.

SAMP_PREP

The SAMP_PREP is a code indicating special preparations performed on a sample component at the time of sampling in the field. The identified preparation is applicable to all analytical results associated with the SAMP_NUM. It is the responsibility of sample schedulers to ensure that a unique SAMP_NUM is generated for the sample component on which the SAMP_PREP is performed.

SAMP_SITE_DESC

The SAMP_SITE_DESC is a textual description of the sampling site.

SAMP_SITE_ID

The SAMP_SITE_ID is a unique, system generated number that is assigned to a sampling site.

All samples that are not collected from wells should have a SAMP_SITE_ID value. The SAMP_SITE_ID provides the link between SAMPLE table and the SAMPLING_SITE table in which the site names, Washington State Plane Coordinates, and other site attributes are stored.

SAMP_SITE_NAME

The SAMP_SITE_NAME is the name of the sampling site. Entries into this field should concisely describe the sampling site. Entities such as the SAF (sample authorization form) title for a sampling effort should not be entered into this field. Many historical SAMP_SITE_NAMES are comprised of the operable unit name, the character “[”, and the first sample number collected at that site.

During data entry, special attention should be given to SAMP_SITE_NAMES for test pits and seep sites. Test pit names should always include the characters “TP” or “TEST PIT”, and seep sampling sites should have names which include the characters “SEEP”. These naming conventions assist the data retrieval for seep sites and test pits.

SAMP_SITE_TYPE

The SAMP_SITE_TYPE is the type of sampling site.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'SAMP_SITE_TYPE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
AREA	Area
NAMED_POINT	Named Point

Single point sampling sites should always be entered with a SAMP_SITE_TYPE of ‘NAMED_POINT’. SAMPLING_SITE records whose SAMP_SITE_TYPE is “AREA” are somewhat indefinable, since the SAMPLING_SITE table does not provide storage of the size, shape, or coordinate origin of these sites. “AREA” should be used only when the site is known to be larger than a single point but only a single set of coordinates has been provided (e.g., a test pit, waste site, town).

SAMPLE_LOCATION

The Sample Location field is a free form text field used to capture ancillary information regarding a sample location. The Sample Location is not relationally tied to the WELL table or the SAMPLING_SITE table and should not be used to identify the Well, WIDS site, Facility, or other sampling site. The Well, WIDS site, or other sampling site should be captured in the respective WELL_NAME, or SAMP_SITE_ID fields of the SAMPLE table.

Samples collected since August 2003 must have either a SAMP_SITE_ID or WELL_NAME, if appropriate, before the STATUS can be set to "U" (Used), permitting analytical results to be loaded.

SAMPLE_NUM_ASSIGNED_TO

The SAMPLE_NUM_ASSIGNED_TO is the name of the individual to whom the sample number is assigned or the name of the individual who generated the sample number.

SAMPLER

The SAMPLER is the name of the individual(s) who collected the sample.

SCHED_LABEL_CODE

The SCHED_LABEL_CODE is the scheduling code for the sampling site.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'SCHED_LABEL_CODE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
A	Off Site - Low Level
B	Off Site - Intermediate Level
C	On Site - Low Level (100 Area)
D	On Site - Low Level (200/300 Areas)
E	On Site - Intermediate Level (100 Area)
F	On Site - Intermediate Level (200/300 Areas)
G	New Site

SDG_NUM

The SDG_NUM or Sample Delivery Group Number is used to identify a group of samples for data delivery. Analytical results from all samples in an SDG are due

concurrently. An SDG is typically a predetermined number of samples collected over a period of time from a particular site.

An SDG is typically defined by one of the following:

- Each 20 field samples obtained from a particular sampling site;
- All samples received from a site or project during a seven calendar day period;
- As designated by the project sampling data management organization.

SITE_CODE

The SITE_CODE is the parent sampling site identifier. Currently only WIDS site codes are permitted in this field. The SITE_CODE value must exist in the WIDS_SITE_CODE table that is periodically updated from the WIDS database.

SITE_ELEVATION

The SITE_ELEVATION is the sampling site elevation. Only elevation values with units of meters should be entered into this field.

START_FLOW_RATE_OR_VOLUME

The START_FLOW_RATE_OR_VOLUME is the rate of flow of the sampled fluid through the collection device (filter, canister, etc.) as measured at the beginning of the sampling period. If this field has a value the FLOW_RATE_OR_VOLUME_UNITS field must be specified. If only one flow rate value is recorded for a sample it is entered in the END_FLOW_RATE_OR_VOLUME field and the START_FLOW_RATE_OR_VOLUME field is left empty.

STATUS

The STATUS is a code that denotes the state or standing of a sample. For the requirements to set the STATUS equal to U, see section 2.2 in this document.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'STATUS'. Examples of valid codes and their translations are:

CODE	TRANSLATION	DEFINITION OF TRANSLATION
C	Checked Out	Sample records are automatically given the status code of 'C' when the sample number is first generated and the sample record is created.
L	Locked to SDT	If using the SDT application to modify sample records, the sample status becomes 'L' when the sample date/time is specified. The purpose of 'L' is to prevent the reuse of the sample number by SDT for the assignment of a different analyses plan.
R	Reserved	If using the SDT application, the sample status becomes

		'R' when a FIELD_SERVICES record for the sample number is created. If the FIELD_SERVICES record for a sample number is deleted, the status code returns from 'R' to 'C'.
U	Used	Analytical results for a sample may not be loaded into the RESULT table before the status of the SAMPLE record is 'U'. The SAMPLE STATUS may be set to 'U' only after all MEDIA-dependent information has been specified for the sample. Conversely, the status of a sample cannot be changed from 'U' if records exist in the RESULT table for the sample number.
V	Voided	The sample number has been voided and is not available for use.

STD_ANAL_UNITS_RPTD

The STD_ANAL_UNITS_RPTD is the selected units to which all variations of the same type of measurement unit (e.g., mass per mass, mass per volume, activity per mass, activity per volume) are standardized. For example, the mass-per-volume values stored in the ANAL_UNITS_RPTD field as "g/L", "mg/L", "mg/mL", "ng/L", etc. are standardized to "ug/L" in the STD_ANAL_UNITS_RPTD field. Similarly, various mass-per-mass units reported by the analyzer are standardized to ug/kg. The complete set of CONVERTED_FROM/CONVERTED_TO units is stored in the UNIT_CONVERSION_STD2 table.

These standardized units apply to all of the standardized numeric fields described below (e.g., STD_VALUE_RPTD, STD_COUNTING_ERROR, STD_MDA, STD_REPORTING_LIMIT, STD_REQUIRED_DETECTION_LIMIT, and STD_TOTAL_ANAL_ERROR).

STD_CON_ID

The STD_CON_ID is the "standardized" constituent identifier. This is the CAS number to which a nonstandard constituent identifier is converted when the concentration value reported for the nonstandard identifier is multiplied by the conversion factor in the table below. For example, the pseudo-CAS number NO3-N (nitrogen in nitrate) reported by the laboratory is standardized to the CAS number 14797-55-8 (nitrate anion) when the VALUE_RPTD is multiplied by 4.4268 (the ratio of the molecular weight of NO3 divided by the atomic weight of nitrogen).

The following constituents are standardized in the RESULT table:

REPORTED AS	CONVERTED TO	CONVERTED TO NAME	CONVERSION FACTOR
NH3-N	7664-41-7	ammonia	1.21589
NH4-N	14798-03-9	ammonium	1.28785
NO3-N	14797-55-8	nitrate	4.4268
NO2-N	14797-65-0	nitrite	3.28454
PO4-P	14265-44-2	phosphate	3.06618

STD_COUNTING_ERROR

The STD_COUNTING_ERROR is the COUNTING_ERROR value when the units are standardized to those stored in the STD_ANAL_UNITS_RPTD field and/or the CON_ID field is converted to the constituent identifier stored in the STD_CON_ID field. The computed STD_COUNTING_ERROR is rounded to the same number of significant digits as the reported COUNTING_ERROR, but never less than three or more than six significant digits.

STD_MDA

The STD_MDA is the MIN_DETECTABLE_ACTIVITY value when the units are standardized to those stored in the STD_ANAL_UNITS_RPTD field and/or the CON_ID field is converted to the constituent identifier stored in the STD_CON_ID field. The computed STD_MDA is rounded to the same number of significant digits as the reported MIN_DETECTABLE_ACTIVITY, but never less than three or more than six significant digits.

STD_REPORTING_LIMIT

The STD_REPORTING_LIMIT is the REPORTING_LIMIT value when the units are standardized to those stored in the STD_ANAL_UNITS_RPTD field and/or the CON_ID field is converted to the constituent identifier stored in the STD_CON_ID field. The computed STD_REPORTING_LIMIT is rounded to the same number of significant digits as the reported REPORTING_LIMIT, but never less than three or more than six significant digits.

STD_REQUIRED_DETECTION_LIMIT

The STD_REQUIRED_DETECTION_LIMIT is the REQUIRED_DETECTION_LIMIT value when the units are standardized to those stored in the STD_ANAL_UNITS_RPTD field and/or the CON_ID field is converted to the constituent identifier stored in the STD_CON_ID field. The computed STD_REQUIRED_DETECTION_LIMIT is rounded to the same number of significant digits as the reported REQUIRED_DETECTION_LIMIT, but never less than three or more than six significant digits.

STD_SAMP_INTV_BOT

The STD_SAMP_INTV_BOTTOM is the value of the SAMP_INTERVAL_BOTTOM when the SAMP_INTERVAL_UNITS are converted to meters. Rounding of this computed value is described under the description of the STD_SAMP_INTV_UNITS, below.

STD_SAMP_INTV_TOP

The STD_SAMP_INTV_TOP is the value of the SAMP_INTERVAL_TOP when the SAMP_INTERVAL_UNITS are converted to meters. Rounding of this computed value is described under the description of the STD_SAMP_INTV_UNITS, immediately below.

STD_SAMP_INTV_UNITS

The STD_SAMP_INTV_UNITS are the normalized sampling interval units (meters). Units of 'm' must exist in this field if either the STD_SAMP_INTV_BOT or STD_SAMP_INTV_TOP has a value.

A rounding function has been applied to the values in the STD_SAMP_INTV_TOP and STD_SAMP_INTV_BOT fields in the SAMPLE table. In general, the rounding function limits the number of significant digits in the standardized (computed) intervals to the number of significant digits in their respective reported SAMP_INTERVAL_TOP and SAMP_INTERVAL_BOTTOM values. Additionally, however, if the number of reported significant digits is 3 or less then the standardized value is stored with 3 significant digits; and if the number of reported significant digits is 6 or more then the standardized value is stored with 6 significant digits. Finally, if the reported units are 'inches' then the standardized values are stored with 2 more significant digits than reported; and if the reported units are 'feet' then the standardized values are stored with 1 more significant digit than in the reported value.

STD_TOTAL_ANAL_ERROR

The STD_TOTAL_ANAL_ERROR is the TOTAL_ANAL_ERROR value when the units are standardized to those stored in the STD_ANAL_UNITS_RPTD field and/or the CON_ID field is converted to the constituent identifier stored in the STD_CON_ID field. The computed STD_TOTAL_ANAL_ERROR is rounded to the same number of significant digits as the reported TOTAL_ANAL_ERROR, but never less than three or more than six significant digits.

STD_VALUE_RPTD

The STD_VALUE_RPTD is the VALUE_RPTD value when the units are standardized to those stored in the STD_ANAL_UNITS_RPTD field and/or the CON_ID field is converted to the constituent identifier stored in the STD_CON_ID field. The computed STD_VALUE_RPTD is rounded to the same number of significant digits as the reported VALUE_RPTD, but never less than three or more than six significant digits.

TAG_ID

The TAG_ID is an identifier used to group multiple biota samples that were collected from different parts for the same item. For example, a single TAG_ID would be used to group the samples collected from the tissue, antlers, and blood of a single deer.

TIC_FLAG

The TIC_FLAG, or Tentatively Identified Compound Flag, indicates if the constituent for the result record is a tentatively identified compound. The valid values for this field are "Y" and <null>.

TOTAL_ANAL_ERROR

The TOTAL_ANAL_ERROR is a combination of counting error plus a laboratory-specific estimate dependent on the chosen analysis methods, representing sample-specific error (at 2 sigma) that could possibly be introduced into the analysis while at the laboratory, reported in the same units as the result value for the current analyte. For radiological analyses, this is the total propagated uncertainty. If this field is not null, the associated units must be specified in the ANAL_UNITS_RPTD field.

TRANSFORM_CODE

The TRANSFORM_CODE is the coordinate conversion or transformation method used to compute the coordinate values of the record.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'TRANSFORM_CODE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
CTRAN	Hanford Plant Coordinate Transformation Algorithm
NADCN	North American Datum Conversion Algorithm (NAD27 to NAD83)
NONE	Conversion Not Necessary

VALIDATION_QUALIFIER

The VALIDATION_QUALIFIER is a set of one or more codes that are assigned by an individual who validates the result; this validation is performed only at the request of the project management for which the sample was collected. If no VALIDATION_QUALIFIER is recorded, then the validator either did not validate the record or agreed with the value reported and LAB_QUALIFIER code(s).

HEIS Sample, Result, and Sampling Site Data Dictionary

Rev. 1

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'VALIDATION_QUALIFIER'. Examples of valid codes and their translations are:

CODE	TRANSLATION
J	Estimated value: The associated result value may not reflect quantitation/detection levels (if assigned with an associated "U" qualifier) or actual concentrations with the precision/accuracy typically associated with results by this methodology. Result precision/accuracy may have been impacted due to minor quality control deficiency/s or sample matrix interferences identified during data validation.
R	Rejected value: The value may not reflect true concentrations. The ability to establish detection/non-detection may be questionable. Validation activities identified major quality control deficiency/s or sample matrix interferences. The data should be considered unusable for most purposes. Any use of this data should be undertaken with great care. The data should not be used for certain regulatory decision-making purposes.
U	Functional non-detect: The constituent was analyzed for and reported as detected by the laboratory. The constituent has been assigned a non-detect qualifier due to associated low-level analytical batch contamination or other circumstances noted by the validator that indicates that use of the data as detected is inappropriate. Validation may result in a revised reported value. Revised results typically involve substituting the quantitation/reporting limit if greater than the initial laboratory reported value. Note-this qualifier may be assigned along with either, but never both, of the other validation qualifiers. In that case, both definitions apply to the associated result. The data should be considered usable as a non-detect for most decision-making purposes.

VALUE_RPTD

The VALUE_RPTD is the magnitude of the concentration or activity measured during the analysis of the sample. If the VALUE_RPTD is not null then the associated units must be specified in the ANAL_UNITS_RPTD field.

VERT_COORD_TYPE

The VERT_COORD_TYPE is the name of the vertical (elevation) coordinate system. The VERT_COORD_TYPE field must have a value if the SITE_ELEVATION and ELEVATION_UNITS fields have values.

Entries into this field are validated against codes in the VALID_CODES table where the VALID_FIELD_NAME is 'VERT_COORD_TYPE'. Examples of valid codes and their translations are:

CODE	TRANSLATION
NAVD88	North American Vertical Datum (1988)
NGVD29	National Geodetic Vertical Datum (1929)
UNKNOWN	Unknown vertical survey method

WELL_NAME

The WELL_NAME is the name of the well or borehole from which the sample was collected. Entries into this field are validated with WELL_NAMES in the Well table.

4.0 REFERENCES

CHPRC-00006, *HEIS Sample, Result, and Sampling Site Design Specification*, CH2MHILL Plateau Remediation Company, Inc., Richland, Washington.

HNF-28242, *EDM Software Management Plan*, CH2M Hill Plateau Remediation Company, Richland, Washington.

HNF-38154, *HEIS Sample, Result, and Sampling Site Requirements Analysis*, CH2M Hill Plateau Remediation Company, Richland, Washington.