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B. Document Number: ECF-200BP5-10-0344 Revision 0

C. Title: Geologic Data Package: 200-BP-5 Hydrostratigraphic Database Development

D. Internet Address

E. Required Information (MANDATORY)

1. Is document potentially Classified? ◉ No ○ Yes
   A. H. Aly
   Manager Required (Print and Sign)
   If Yes _____
   ADC Required (Print and Sign) ○ No ○ Yes Classified
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2. Group Sponsoring _____
3. Date of Conference _____
4. City/State _____
5. Will Information be Published in Proceedings? ○ No ○ Yes
6. Will Material be Handed Out? ○ No ○ Yes

H. Information Owner/Author/Requestor
P. R. Cabbage
(Print and Sign)

Responsible Manager
A. H. Aly
(Print and Sign)

Approval by Direct Report to President (Speech/Articles Only) _____
(Print and Sign)

I. Reviewers	Yes	Print	Signature	Public Y/N (If N, complete J)
General Counsel	☒	R. T. Swenson	per email 5/10/10 Pg. 2	(Y) / N
Office of External Affairs	☐			Y / N
DOE-RL	☐			Y / N
Other	☒	B. A. Williams - OUO	per email 5/10/10 Pg. 3	(Y) / N
Other	☒	J. D. Aardal - Clearance	Janis Aardal	(Y) / N

J. Comments

If Additional Comments, Please Attach Separate Sheet 1 of 3

Information Clearance Approval
APPROVED FOR RELEASE OFFICIAL DOCUMENT Date 05/11/2010

A-6001-401 (REV 2)

Gibson, Gayelyn G

From: Swenson, Raymond T
Sent: Monday, May 10, 2010 7:22 PM
To: Gibson, Gayelyn G
Subject: Approve: Approval of ECF-200BP5-10-0344, Rev. 0

Gibson, Gayelyn G

From: Williams, Bruce A
Sent: Monday, May 10, 2010 4:07 PM
To: Gibson, Gayelyn G
Subject: RE: Approval of ECF-200BP5-10-0344, Rev. 0

Hi Gayelyn, Please move ahead with the doc.. this will not require an OUO.. thanks, BAW

CHPRC ADMINISTRATIVE DOCUMENT PROCESSING AND APPROVAL

S

DOCUMENT TITLE:	OWNING ORGANIZATION/FACILITY:
Geologic Data Package: 200-BP-5 Hydrostratigraphic Database Development	S&GRP
Document Number: ECF-200BP5-10-0344	**Revision/Change Number:** 0

DOCUMENT TYPE *(Check Applicable)* [ ] Plan [X] Report [ ] Study [ ] Description Document [ ] Other

DOCUMENT ACTION *(Check One)* [X] New [ ] Revision [ ] Cancellation

RESPONSIBLE CONTACTS

	Name	Phone Number
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Manager:	A. H. Aly	376-0300

DOCUMENT CONTROL

Is the document intended to be controlled within the Hanford Document Control System (HDCS)?	[X] Yes [X] No
Does document contain scientific and technical information intended for public use?	[X] Yes [ ] No
Does document contain controlled-use information *("yes" requires information clearance review in accordance with PRC-PRO-IRM-184)*	[ ] Yes [X] No

DOCUMENT REVISION SUMMARY

NOTE: Provide a brief description or summary of the changes for the document listed.

REVIEWERS **Others**

Name *(print)*	Organization
S. Airhart	Freestone
B. A. Williams	CHPRC, Risk Integration

APPROVAL SIGNATURES

Author: Portal Cabbage	Name: (Print) P. R. Cabbage	4/13/10 Date	RELEASE / ISSUE
Responsible Manager: A. H. Aly	Name: (print) A. H. Aly	4/13/10 Date	
Other: NOT REQUIRED see email 5/10/10 N/A	Name: (print) J. A. Winterhalder/ECO	Date	
Other: see email 4/28/10 Pg. 2	Name: (print) W. R. Thackaberry/QA	4/28/10 Date	

MAY 11 2010
DATE:
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ID: 20

Gibson, Gayelyn G

From: Thackaberry, W R (Bill)
Sent: Wednesday, April 28, 2010 9:35 AM
To: Williams, Bruce A; Gibson, Gayelyn G
Cc: Rohay, Virginia J
Subject: RE: BP-5 CALC BRIEF REPLACEMENT FOR ECF-200BP5-10-00244.

My comments have been addressed satisfactorily.

Bill Thackaberry

From: Williams, Bruce A
Sent: Wednesday, April 28, 2010 9:08 AM
To: Gibson, Gayelyn G
Cc: Thackaberry, W R (Bill); Rohay, Virginia J
Subject: BP-5 CALC BRIEF REPLACEMENT FOR ECF-200BP5-10-00244.

Gayelyn, Please replace the old calc brief with this corrected version.
Bill, Please check and accept (or not) the changes per your comments.
Thank you everyone.

Bruce A. Williams, RHG, REG
Risk and Data Integration
Environmental Program and Regulatory Management
(509)-376-3060 (office)
(509)-551-5485 (cell)

CH2MHILL
Plateau Remediation Company

ECF-200BP5-10-0344
Revision 0

Geologic Data Package: 200-BP-5 Hydrostratigraphic Database Development

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

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Revision 0

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Geologic Data Package: 200-BP-5 Hydrostratigraphic Database Development

Document Type: ENV

P. R. Cabbage
Freestone Environmental Services, Inc.

Date Published
April 2010

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

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under Contract DE-AC06-08RL14788

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P.O. Box 1600
Richland, Washington

R. D. Randal 05/11/2010
Release Approval Date

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Environmental Calculation Cover Page

Calculation No.: ECF-200BP5-10- 0344 Revision No.: 0

Project: Date: 04/01/10

Calculation Title & Description:

Geologic Data Package: 200-BP-5 Hydrostratigraphic Database Development

Revision History:

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Document Review & Approval:

Originator: P. Cabbage/Freestone

Name/Position

Signature 4/1/10 Date

Checker: S. Airhart/Freestone

Name/Position

Signature 4.1.10 Date

Senior Reviewer: B. Williams/CHPRC

Name/Position

Signature 4-5-10 Date

Responsible Manager: A. Aly/CHPRC 4-5-2010

Name/Position

Signature Date

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Contents

Appendices

Figures

Terms

CHPRC	CH2M HILL Plateau Remediation Company
Freestone	Freestone Environmental Services, Inc.
HGA	Hydro GeoAnalyst
HSU	hydrostratigraphic unit
HWIS	Hanford Well Information System
Intera	Intera Geosciences & Engineering
OU	CERCLA Operable Unit
PNNL	Pacific Northwest National Laboratory
TD	total depth

1 Introduction

This Data Package documents the development of a hydrostratigraphic database to support hydrostratigraphic model construction used for contaminant fate and transport modeling and hydrogeologic conceptual model development for the 200-BP-5 Groundwater Operable Unit (OU) Remedial Investigation.

Freestone Environmental Services, Inc. (Freestone) under contract to CH2M Hill Plateau Remediation Company (CHPRC) developed a database containing stratigraphic, lithologic, and groundwater elevation information for boreholes located within the 200 BP-5 Groundwater OU. This project utilized a standardized set of Hanford Site geologic information (Hanford geologic tops database) developed by the Pacific Northwest National Laboratory (PNNL). A geologic contacts database (excel format) was provided to Freestone and included "Best Estimates" for tops of major and minor stratigraphic units for wells defined within and surrounding the 200-BP-5 Groundwater OU. An explanation of the process and the criteria used to compile the geologic contacts database and define the best estimates is published in PNNL-17913, *Hydrogeology of the Hanford Site's Central Plateau, A Status Report for 200 West Area.*

Freestone input the geologic information into a environmental database software called Hydro GeoAnalyst (HGA). In addition to its database functionality, HGA can accept and output to Hanford approved ArcGIS formats. HGA is designed to facilitate graphics production, such as geologic cross sections and layers or surfaces. A general description of the HGA software, including the data query and data exporting functionality used in this effort are provided. Within HGA, Freestone used top and bottom elevations of stratigraphic units to create hydrostratigraphic units (HSUs). From this dataset, Freestone developed hydrostratigraphic cross sections and defined the HSU contacts used for constructing the model's HSU layers for contaminant transport simulation. These HSU contact data were then electronically transferred to Intera Geosciences & Engineering (Intera) for model construction.

The steps below summarize the data handling and file synthesis for the production of the geologic data files. This information is intended to provide traceability for the information contained in the files. The general process can be divided into three categories (Figure 1). These are:

- Data Preparation,
- Data Querying, and
- Data Exporting.

2 Data Preparation

2.1 Hydrostratigraphic Unit Development

Geologic contact spreadsheets were provided to Freestone on December 4, 2009. The well data used to develop the geologic contact spreadsheets included information available from boreholes within the 200-BP-5 Groundwater OU (and included portions of the surrounding 200 East and 600 Areas). The geologic contact data (reported in feet below ground surface) included major and minor stratigraphic unit contacts that are representative of Hanford Site suprabasalt geology These include; the Hanford formation (including subunits), the Cold Creek Unit (including subunits), the Ringold Formation (including subunits), and the top of basalt.

Several data evaluation iterations were required to resolve issues relating to contact selection, mapping continuity, and data consistency. During each review, the project team (CHPRC, Freestone, PNNL, and Intera staff) reviewed the raw geologic data in order to validate questionable geologic contacts and improve consistency in the hydrogeologic interpretation. .

A hydrostratigraphic nomenclature and corresponding model layers from the geologic units and subunits (Figure 2) were developed by revising and grouping some units to more consistently interpret and define the significant physical and hydraulic features that control the groundwater flow and potential contaminants across the 200-BP-5 Groundwater OU.

The same data review and evaluation process described above for the geologic contact data was used for defining the various hydrostratigraphic cross sections and associated HSU model layer data, to validate questionable geologic contacts and improve consistency in the hydrogeologic interpretation. Revisions were updated and captured in the appropriate databases.

To maintain hydrogeologic model consistency across the site, consideration was also given to existing hydrostratigraphic model layers, boundaries, and units defined for the adjacent OUs (e.g., 200-ZP-1 and 200-PO-1 Groundwater OUs).

A flow diagram depicting the process (including quality review checks) is presented in Figure 1 and each step in the flow chart is explained below.

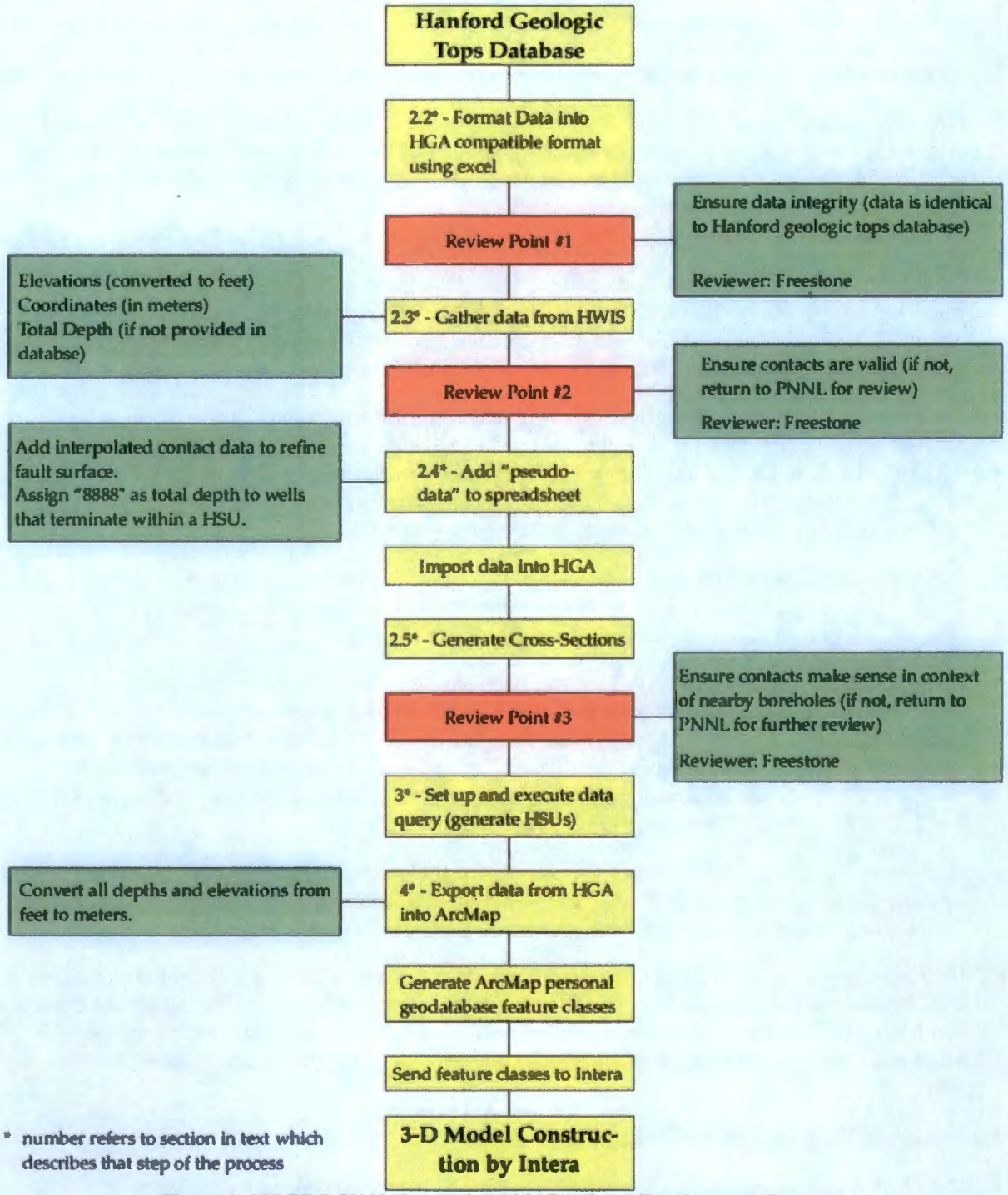

Figure 1. 200-BP-5 OU Hydrostratigraphic Database Development Process

The resulting hydrostratigraphic model layers (HSUs) are defined as follows:

- Hydrostratigraphic Unit 1 (HSU 1) – Equivalent to Hanford formation undifferentiated or subunits Hanford 1, Hanford 2, and Hanford 3 where identified. This unit represents the youngest unit present in the model and exhibits very high hydraulic properties. It is present within the vadose zone and upper portions of the unconfined aquifer.
- Hydrostratigraphic Unit 3 (HSU 3) – Equivalent to Cold Creek unit undifferentiated or subunits Cold Creek, unit Z (aka Early Palouse Soil), unit C (aka Caliche), and unit G (aka Pre-Missoula Gravels) where identified. For the 200-BP-5 Groundwater OU this unit represents the unit G Pre-Missoula Gravel. This unit typically underlies HSU 1 and exhibits hydraulic properties similar to slightly less than the HSU 1. It is present within the vadose zone and upper portions of the unconfined aquifer.
- Hydrostratigraphic Unit 4 (HSU 4) – Equivalent to the Ringold Formation Upper Ringold unit undifferentiated or Ringold Taylor Flat member when identified. E-mail from Bruce A. Williams (CHPRC) dated August 28, 2009 (Appendix A) provides justification for defining the Upper Ringold as a separate HSU. Where present, HSU 4 exhibits much lower hydraulic properties than overlying HSU 1 and HSU 3. It is present primarily within the upper portion of the unconfined aquifer.
- Hydrostratigraphic Unit 5 (HSU 5) – Equivalent to Ringold Formation unit E combined with the unit C. This unit underlies HSU 1, 3, and 4 (where present) and exhibits hydraulic properties that are generally lower than HSU 1 and HSU 3, but higher than HSU 4.
- Hydrostratigraphic Unit 8 (HSU 8) – Equivalent to Ringold Formation Lower mud (Rlm) undifferentiated or subunits: Rlm combined with Ringold Wooded Island units b and d (Rwib & d),where identified. Note: E-mail from Bruce A. Williams (CHPRC) dated June 4, 2009 (Appendix A) provides justification for isolating the Ringold Fm Rwi B and D within the lower mud model layer. HSU 8 is an aquitard, creating confining conditions, and isolating overlying units (e.g., HSU 1, 3, 4, and HSU 5) from HSU 9 where the units are present.
- Hydrostratigraphic Unit 9 (HSU 9) – Equivalent to Ringold Formation unit A undifferentiated or subunits: Rwia, upper; Rwia, mud; and Rwia, lower where identified. HSU 9 is typically confined by the overlying HSU 8 within the OU and exhibits relatively low hydraulic properties.
- Hydrostratigraphic Unit 10 (HSU 10) – Equivalent to the uppermost Columbia River Basalt Group undifferentiated. The Elephant Mountain Member is the uppermost basalt unit throughout the eastern 200-BP-5 OU. The younger Pomona, Esquatzel, andUmatilla Members represent the uppermost basalt unit beneath the Ringold Formation sediments throughout the central and western 200-BP-5 OU.

2.2 Format Data into HGA Compatible Format

All of the hydrogeologic data and interpretations were processed for this project using HydroGeoAnalyst (HGA). Initially, geologic unit contact depths data was received in a Microsoft Excel[1] spreadsheet. The Excel spreadsheet was re-formatted by creating vertical columns of data that assigned a "to" and "from" depth of each unit for each specific well. All depths were entered into HGA as feet below ground surface

[1] Excel is a registered trademark of Microsoft Corporation in the United States and other countries.

to preserve original data. No calculations were performed during this formatting. The data was then reviewed to ensure that all values were captured correctly and were identical to the values in the original excel database.

HGA is a software package developed by Schlumberger Water Services which enables the user to create a project specific database. It collects all previous data and reports and consolidates them into a powerful relational database system that can be queried and referenced. HGA operates as a desktop application based on Microsoft SQL Server[2] technology. The package supports multiple user levels, for controlled data management, with structured access privileges for setting up project data structures, checking out data to working sub-projects, and submitting new or modified data. Data is imported into HGA using the Data Transfer System. Using the Data Transfer System, borehole data can be imported from practically any source format, including delimited text files, Excel spreadsheets, Microsoft Access[3] databases, and SQL Server databases. HGA is built on a SQL Server; users may either write queries using standard SQL Server query language to retrieve specific data from the database, or use HGA's Query Builder. The Map Manager, built on ESRI's MapObjects technology, provides a spatial view of any set of selected data. Base maps of the site can be quickly imported, allowing for meaningful interpretation of borehole and well data while maintaining consistency and traceability of data. The Map Manager is designed in such a way that most files required for a desired map view are generated automatically.

Additional information on HGA can be obtained from the vendor:

Schlumberger Water Services
460 Phillip Street - Suite 101
Waterloo, Ontario, Canada N2L 5J2
Ph: (519) 746-1798

2.3 Gather Data from HWIS

All well locations within the 200-BP-5 Groundwater OU domain (coordinates in meters), and corresponding elevations (brass survey marker assumed to be ground surface) were obtained from the Hanford Well Information System (HWIS) well survey database, which are maintained within the Hanford Environmental Information System (HEIS). Elevation data acquired from HWIS was listed in meters and therefore required conversion to feet to be consistent with the geologic contacts elevation data. For select wells (50 wells in the vicinity of B-BX-BY Tank Farms), the project team re-evaluated the "Best Estimate Ground Surface Elevations to improve contact elevation accuracy," (see email from November 12, 2009 in Appendix A). The borehole total depth (TD) entered into HGA was the TD provided in the Hanford geologic tops database. If TD data was unavailable in the geologic tops database, the TD value was obtained from HWIS.

During data validation and review, it was noticed that some well TD values were identical to the top of a recorded geologic contact (e.g., basalt contact). In order for HGA to recognize that a layer or unit is present based on the well data, 0.1 ft was added to the TD value so HGA would be able to differentiate the data for the lowest most unit. Data was reviewed at this point to ensure that contact depths were sequential and made geologic sense. Contact depths which were questionable were flagged, and brought to the attention of the project team for further review. Revised values were included in the data set.

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[2] SQL Server is a registered trademark of Microsoft Corporation in the United States and other countries.

[3] Access is a registered trademark of Microsoft Corporation in the United States and other countries.

2.4 Add Pseudo Data

Additional data processing was required in HGA for hydrostratigraphic units that were only partially penetrated. Boreholes drilled partially, but not completely, through a geologic unit, had no bottom of unit depth defined in the original spreadsheets. Without a bottom of unit contact depth, HGA correlates the bottom of the borehole (TD) as the bottom of that geologic unit. To correct for this, a pseudo value of "8888" was assigned to the TD of each borehole that terminated above the basalt (boreholes drilled to basalt did not require the pseudo value).

Another instance where pseudo data were added was to assign control points on both sides of the May Junction Fault to define the fault surface and orient the hydrostratigraphic units on opposite sides of the fault surface. Six existing wells were used (699-42-30, 699-46-31, 699-49-31, 699-40-32, 699-46-32, and 699-49-32B), along with 26 assigned control points (named Fault Wells 1-26), to define the shape and orientation of the fault surface. The elevations of the top and bottom of HSU's 8, 9, and 10 were assigned to the Fault Wells based on a straight-line interpolation from the six existing wells.

2.5 Cross-Sections

The various data sets listed above (geologic unit contacts, well coordinates and elevations) were imported into HGA using the Data Transfer System module. The imported data were used to generate nine representative hydrostratigraphic cross-sections throughout the 200-BP-5 Groundwater OU. Four of the cross-sections were modeled after the geologic cross-sections published in BHI-00184, *Miocene- to Pliocene Suprabasalt Sediments of the Hanford Site, South-Central Washington*. The top of basalt surface for areas with limited well control was modeled after the top of basalt surface in PNNL-14753 (*Groundwater Data Package for Hanford Assessments)* and further refined using the revised top of basalt surface which incorporates seismic data interpretations. These revisions to the top of basalt surface will be documented in a calculation brief that Intera will prepare for development and construction of the Central Plateau Groundwater Model (CPGWM) used for 200-BP-5 work.

Data was reviewed at this point to ensure that the contact depths made sense spatially and relative to nearby wells. Contact depths which were questionable were flagged, and brought to the attention of the project team for further review. Values which were revised and returned to Freestone were included in the data set.

3 Data Query

The assembled HGA database was queried to extract the necessary HSU top and bottom elevations. Queries were performed to generate the elevations, in feet, of the top and bottom of each HSU (e.g., Figure 3). Queries performed to generate the bottom of each unit were set up to ignore values of "8888," to eliminate the false assignment of bottom elevations for units that are only partially penetrated. For the basalt, only the top of basalt was queried. The final validated dataset containing all available HSU contact elevations for wells within the 200 BP-5 Groundwater OU were transferred to Intera on December 15, 2009 (Appendix A).

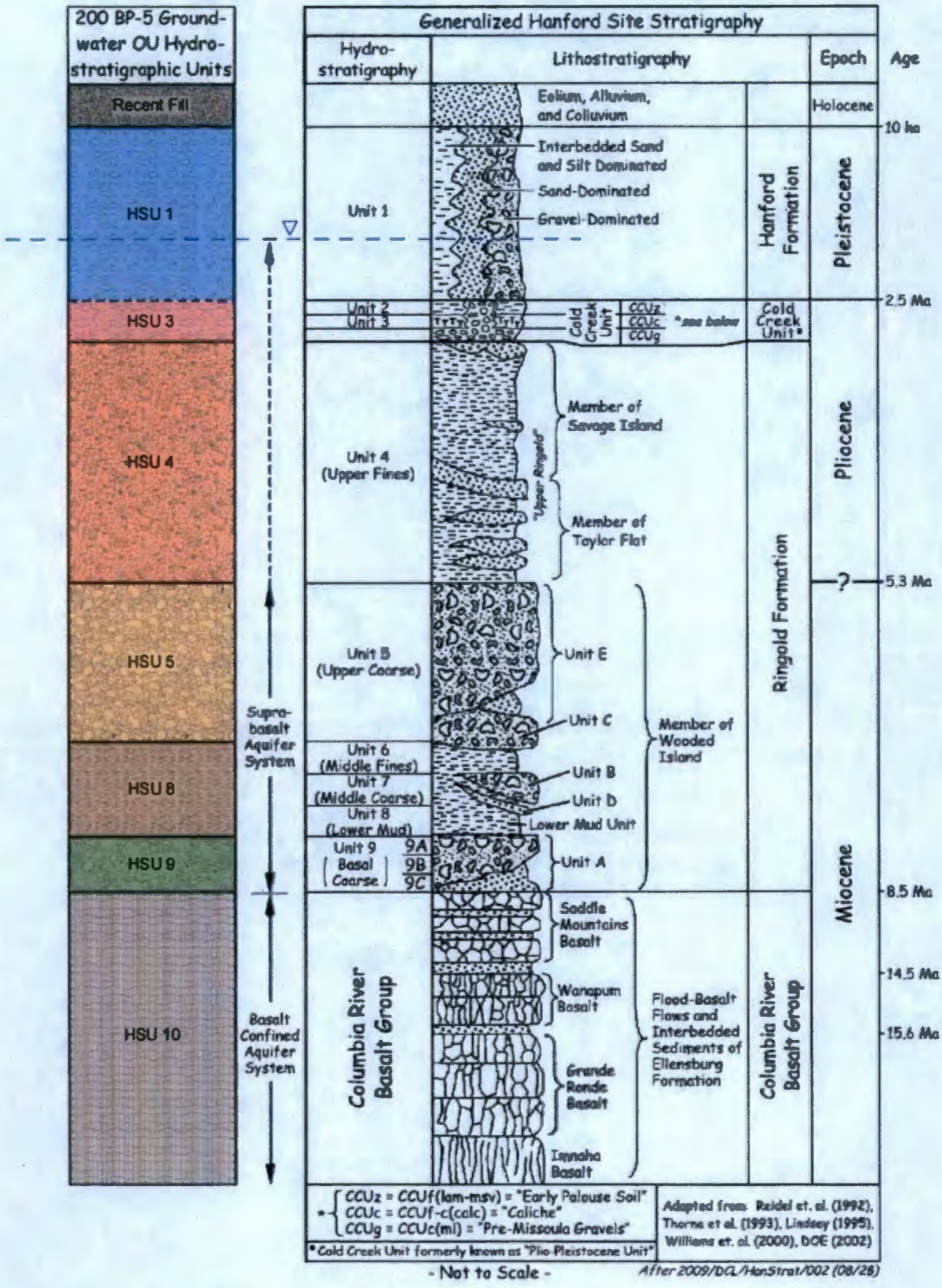

Figure 2. Generalized Hydrostratigraphic Nomenclature for the 200-BP-5 Groundwater Operable Unit

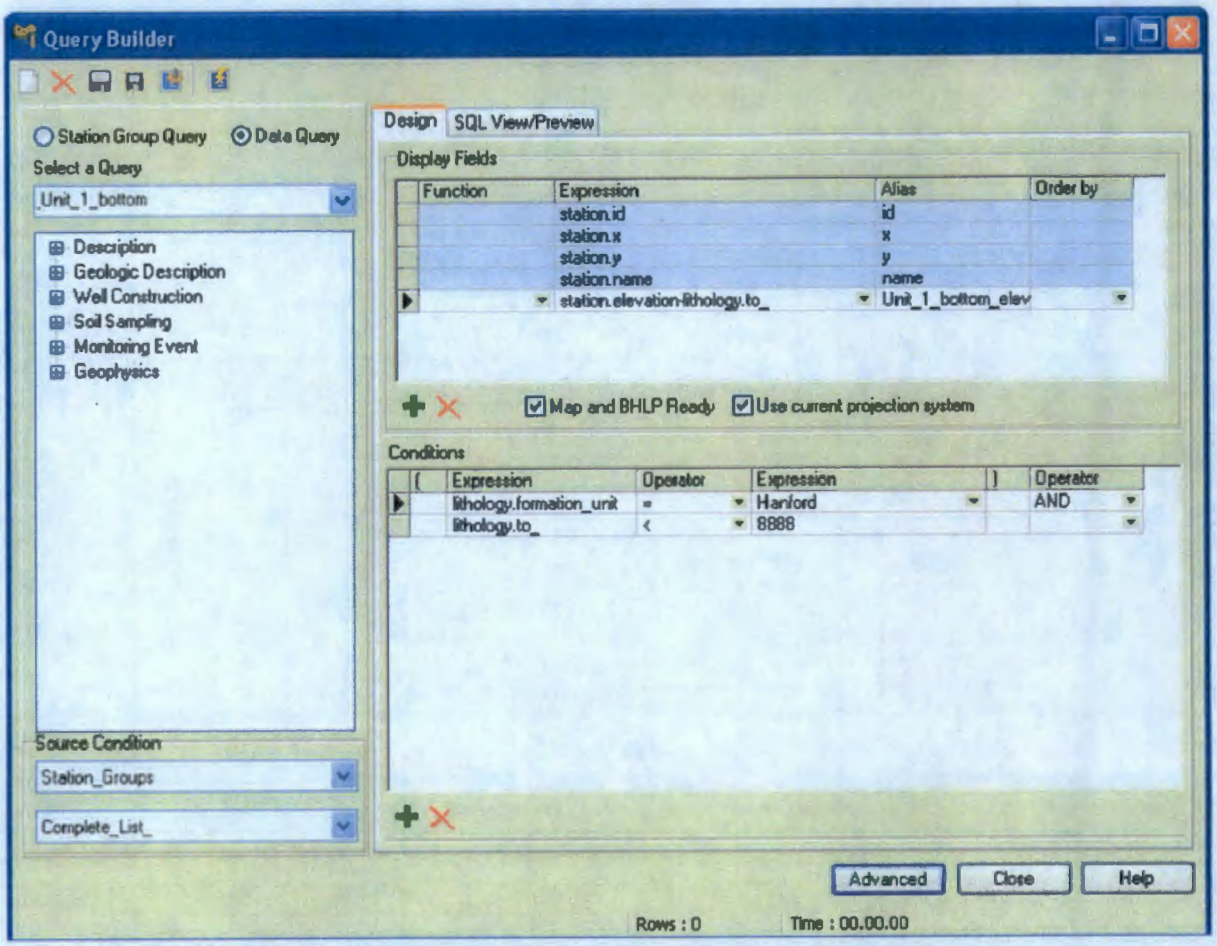

Figure 3. Screenshot of HGA's Query Builder Tool, Showing the Query Used to Generate the Bottom Elevation of HSU 1 at Each Well

4 Data Export

Data was exported from HGA (as shapefiles). A separate shapefile was created for the top of each HSU and for the bottom of each HSU, which were subsequently imported into ArcMap. The attribute table for each shapefile was exported from ArcMap, as a text file. A metric conversion was subsequently performed for each text file to comply with DOE requirements that all data and reports be provided in meters. The converted text files were imported into ArcMap, then exported as personal geodatabase feature classes and electronically transmitted to Intera for model construction. Data handling by Intera will be documented in a calculation brief that Intera will prepare for development and construction of the Central Plateau Groundwater Model (CPGWM) used for 200-BP-5 work.

5 References

BHI-00184, 1995, *Miocene- to Pliocene Suprabasalt Sediments of the Hanford Site, South-Central Washington*, Rev. 0, Bechtel Hanford Inc., Richland, Washington.

PNNL-17913, 2009, *Hydrogeology of the Hanford Site's Central Plateau, A Status Report for 200 West Area*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-14753 Rev 1, 2006, *Groundwater Data Package for Hanford Assessments*, Pacific Northwest National Laboratory, Richland, WA.

Appendix A

Supporting E-Mails

This page intentionally left blank.

Pat Cabbage

From:	Williams, Bruce A [Bruce_A_Williams@RL.gov]
Sent:	Thursday, June 04, 2009 1:08 PM
To:	'Matt Tonkin'; Thorne, Paul D
Cc:	Tonkin, Matthew J; Cabbage, Patrick R; Pat Cabbage; 'Jami'; Airhart, Steven; Last, George V; Bjornstad, Bruce N; 'Tom Clemo'
Subject:	RE: MEETING TO RESOLVE UNITS 6, 7, AN D8 (RINGOLDUNITS B, D, AND C. SOUTHEAST PLATEAU REGION

I hope the differences are not too great.. the Unit D/D layers should be the same... but the lower mud will now have an upper surface that will encompass the surface that used to be the 'upper mud' This is a more consistent interpretation that we will want to incorporate into the (or any) model for this area and beyond.
RAW

From: Matt Tonkin [mailto:matt@sspa.com]
Sent: Thursday, June 04, 2009 11:35 AM
To: Williams, Bruce A; Thorne, Paul D
Cc: Tonkin, Matthew J; Cabbage, Patrick R; patrickcabbage@gofreestone.com; 'Jami'; Airhart, Steven; Last, George V; Bjornstad, Bruce N; 'Tom Clemo'
Subject: RE: MEETING TO RESOLVE UNITS 6, 7, AN D8 (RINGOLDUNITS B, D, AND C. SOUTHEAST PLATEAU REGION

This is fine: the issue will simply be how to blend the layer tops/bottoms as they currently are, with any locally revised tops/bottoms. If the differences are not great, then a matrix-smooth type of join will likely work. If the differences are great at the margins, it gets more complicated.

Matt Tonkin
S.S. Papadopulos & Assoc., Inc.
7944 Wisconsin Avenue
Bethesda, MD, 20814
Tel: 301 718 8900 x258
Fax: 301 718 8909
Cell: 508 815 9886
email: matt@sspa.com

From: Williams, Bruce A [mailto:Bruce_A_Williams@RL.gov]
Sent: Thursday, June 04, 2009 2:32 PM
To: 'Matt Tonkin'; Thorne, Paul D
Cc: Tonkin, Matthew J; Cabbage, Patrick R; patrickcabbage@gofreestone.com; 'Jami'; Airhart, Steven; Last, George V; Bjornstad, Bruce N; 'Tom Clemo'
Subject: RE: MEETING TO RESOLVE UNITS 6, 7, AN D8 (RINGOLDUNITS B, D, AND C. SOUTHEAST PLATEAU REGION

Matt, Regarding your question ... Pat and Jami, please correct me if I am wrong, but I believe we're just making a local refinement of the layer top/bottom elevations in the model. The data are the same but we are lumping these units slightly different than previous model layers to reflect the correct correlations that we need to adequately build the model.
BAW

From: Matt Tonkin [mailto:matt@sspa.com]
Sent: Thursday, June 04, 2009 10:10 AM
To: Williams, Bruce A; Thorne, Paul D
Cc: Tonkin, Matthew J; Cabbage, Patrick R; patrickcabbage@gofreestone.com; 'Jami'; Airhart, Steven; Last, George V;

Bjornstad, Bruce N; 'Tom Clemo'
Subject: RE: MEETING TO RESOLVE UNITS 6, 7, AN D8 (RINGOLDUNITS B, D, AND C. SOUTHEAST PLATEAU REGION

Bruce:

The central plateau model is just one model – i.e., there is only one structure – this was done so that there will be consistency across that region. So yes, I am assuming that when the model is updated for PO-1, there will remain one model structure, and that will be the current structure, updated with this new information. That should work great.

Have you figured how best to proceed – i.e., to supplement the data we used before and repeat the similar process, or to try to just make a local refinement of layer top/bottom elevations in the model?

Cheers! Matt

Matt Tonkin
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7944 Wisconsin Avenue
Bethesda, MD, 20814
Tel: 301 718 8900 x258
Fax. 301 718 8909
Cell: 508 815 9886
email: matt@sspa.com

From: Williams, Bruce A [mailto:Bruce_A_Williams@RL.gov]
Sent: Thursday, June 04, 2009 1:05 PM
To: Thorne, Paul D
Cc: Tonkin, Matthew J; 'Matt Tonkin'; Cabbage, Patrick R; patrickcabbage@gofreestone.com; 'Jami'; Airhart, Steven; Last, George V; Bjornstad, Bruce N
Subject: RE: MEETING TO RESOLVE UNITS 6, 7, AN D8 (RINGOLDUNITS B, D, AND C. SOUTHEAST PLATEAU REGION

Hi Paul, We all met and came to a consensus on how to display and map the lower Ringold units at the southeastern corner of our model domain, which is where we were getting discrepancies in the model layers with Matt's model and with the hydrogeologic interpretations. Based on our review of the geo data , we are going to rename the Ringold 'upper mud' (Matt Tonkin's 'FineGrained overbank unit') to the top of the Ringold 'lower mud unit' and use the top of Ringold A as the base of the lower mud unit. This will make the overall gross thickness of the lower mud much thicker in this region just southeast off of the plateau. In this thickening area we're going to be lumping B and D into one coarse grained unit (B/D unit) and sandwich it within the Lower mud. This will simplify the model and maintain continuity of the lower mud. Since our model domain only goes a short distance south off of the plateau these changes will only simplify the model and not create holes or unwanted perturbations.

Matt, please reply if you can to let us know that you received this message. I don't know if you want or need to change your deeper Ringold model layers to accommodate the changes we agreed to or not. If your domain boundary matches Intera's for the plateau region we should probably change your layering designation and elevations as well? Let me know what you think.

Paul, Pat Cabbage will need your up dip western extent (near the plateau)of the unit B+D so he can map the up dip extent consistent with your Earthvision model.

Let me know if anyone has any questions.
Thanks, BAW

From: Thorne, Paul D [mailto:paul.thorne@pnl.gov]
Sent: Thursday, June 04, 2009 8:47 AM
To: Williams, Bruce A
Subject: RE: MEETING TO RESOLVE UNITS 6, 7, AN D8 (RINGOLDUNITS B, D, AND C. SOUTHEAST PLATEAU REGION

Bruce,

I just got back in the office. Let me know what you come up with.

Paul

-----Original Appointment-----
From: Williams, Bruce A
Sent: Wednesday, June 03, 2009 4:28 PM
To: Last, George V; Cabbage, Patrick R; 'Jamf'; Thorne, Paul D; Bjornstad, Bruce N; Lanigan, David C; 'Matt Tonkin'; Tonkin, Matthew J; 'Tom Clemo'; Airhart, Steven
Subject: MEETING TO RESOLVE UNITS 6, 7, AN D8 (RINGOLD UNITS B, D, AND C. SOUTHEAST PLATEAU REGION
When: Thursday, June 04, 2009 8:30 AM 9:00 AM (GMT 08:00) Pacific Time (US & Canada).
Where: freestone's office

This meeting is being called to get us all together to resolve some hydrogeo layer issues and build consistency between the PO-1 and the ZP-1 model layers. Primarily, we need to define the extents for geologic units, Ringold B, C, and D (used by Tonkin) or Hydrogeologic layers 6, 7, and 8 (used by Thorne). These layers are only present in the very southeastern corner of the model domain where the basin thickens.

BAW

Pat Cabbage

From: Williams, Bruce A [Bruce_A_Williams@rl.gov]
Sent: Friday, August 28, 2009 3:41 PM
To: Cabbage, Patrick R
Cc: 'Jami Ludwig'; 'Tom Clemo'; Cummins, Gloria D; 'Sunil Mehta'; Miller, Charles W
Subject: RE: Updated PO-1 Cross-Sections

Patrick, After a discussion this afternoon we have decided to add the Upper Ringold to the cross sections.
Based on our meeting, please begin separating the Upper Ringold from the Ringold E (HSU 5) grouping and designate the upper Ringold as HSU 4 and provide the new tops data to Intera. Intera is going to krig the data to check the extent and coverage of HSU 4 to be sure it extends through the coverage defined by the GoldSim tubes. I know you did this originally for some of the cross sections. We will need redefine the HSU 4 on the cross section you have done for us as well. I know this will take a bit more time... Please let me know if you have any questions.
BAW

From: Cummins, Gloria D
Sent: Friday, August 28, 2009 3:12 PM
To: 'Sunil Mehta'; Miller, Charles W; Williams, Bruce A
Cc: 'Jami Ludwig'; 'Tom Clemo'; Cabbage, Patrick R
Subject: RE: Updated PO-1 Cross-Sections

What I am hearing is that we will separate out Upper Ringold Unit 4 (HSU 4) from Unit 5 (HSU 5) in the cross-sections to address Doug Hildebrand's inquiry and to support/visualize the GoldSim assumptions.

Need to compare INTERAs krigging results of the Cold Creek with the Earthvision layer.

Thanks.
gdc

From: Sunil Mehta [mailto:smehta@intera.com]
Sent: Friday, August 28, 2009 2:12 PM
To: Miller, Charles W; Williams, Bruce A
Cc: 'Jami Ludwig'; 'Tom Clemo'; Cummins, Gloria D
Subject: RE: Updated PO-1 Cross-Sections

The Upper Ringold unit seems to be pervasive in the far-field PO-1 area (at least where the plumes are) but could be ignored in the near-field model domain based on its limited extent and small thickness west of the May Junction fault. So, an argument can be made for not including it in the 3-D model but still incorporating it in the cross-sections.

–Sunil

From: Miller, Charles W [mailto:Charles_W_Miller@RL.gov]
Sent: Friday, August 28, 2009 1:53 PM
To: Williams, Bruce A; 'Sunil Mehta'
Cc: 'Jami Ludwig'; 'Tom Clemo'; Cummins, Gloria D
Subject: RE: Updated PO-1 Cross-Sections

I am inclined to wait and see what the calibration results are...Matt indicated earlier today that it is looking good. Other thoughts?

Chuck

From: Williams, Bruce A
Sent: Friday, August 28, 2009 1:47 PM
To: 'Sunil Mehta'
Cc: 'Jami Ludwig'; 'Tom Clemo'; Miller, Charles W; Cummins, Gloria D
Subject: RE: Updated PO-1 Cross-Sections

Gloria and Chuck, This is your call, we have discussed this in the past and decided to lump it... now it appears that there is cause to separate it out. DOE also seems a bit concerned about not recognizing it.... I know through previous discussions with Freestone that they can regenerate the data set fairly quickly, and designate the Upper Ringold as HSU 4. It would then be up to Jami to incorporate the new top boundaries and redefine the layers for HSU 4 (if any exist within the near-field domain) and for Sunil to add the changes for GoldSim. Freestone indicated it would take a bit more time to update the cross sections to include HSU 4 also, but probably not more than a couple days or so.

A schedule to do this would be –
Freestone redefine the tops data to include HSU 4- 1 day
Intera (Jami and Sunil) construct the boundaries inclusive of HSU 4 -2-4 days?
Freestone update cross sections in HGA to include HSU 4 (parallel with Intera's efforts).
Overall about a week to do this...

Let us know which way to proceed.

From: Sunil Mehta [mailto:smehta@intera.com]
Sent: Friday, August 28, 2009 12:54 PM
To: Williams, Bruce A
Cc: 'Jami Ludwig'; 'Tom Clemo'; Miller, Charles W; Cummins, Gloria D
Subject: RE: Updated PO-1 Cross-Sections

Bruce,

I just started looking at the new cross-sections put together by Freestone, and realized that the Upper Ringold (silt and clay facies) unit is now combined with the Ringold E & C unit. I would like to keep them separated in the cross-sections as the Upper Ringold is appreciably thick in the far-field and would act as a confining unit. That was the primary reason for assuming small saturated thickness of the unconfined aquifer for modeling transport in the far-field. Furthermore, in the SAC groundwater model report (PNNL-14753 Rev 1; Table 5.2) the Upper Ringold (Unit 4) is assigned orders of magnitude lower hydraulic conductivity than either the Cold Creek Unit (Unit 3) or the Ringold E & C (Unit 5). I think it is very important to call this unit out separately in the cross-sections.

--Sunil

From: Jami Ludwig [mailto:jludwig@intera.com]
Sent: Friday, August 28, 2009 9:29 AM
To: smehta@intera.com
Subject: FW: Updated PO-1 Cross-Sections

From: Pat Cabbage [mailto:PatCabbage@gofreestone.com]
Sent: Wednesday, August 26, 2009 4:59 PM
To: Bruce Williams ; Gloria_D_Cummins@rl.gov

Cc: jludwig@intera.com; charles_w_miller@rl.gov; Rodiker, Julie A; Last, George V; Bruce Bjornstad; Steve Airhart; Kim Royal
Subject: Updated PO-1 Cross-Sections

Bruce and Gloria (and others),

Attached are the thirteen updated PO 1 cross sections. These cross sections were constructed using the most current geologic contacts available from PNNL (Geologic Contact Depths 2009-05-27.xls, and 600.300.PO-1.contacts.6.30.09A.xls). For all cross-section wells not found in the PNNL contacts spreadsheet, data from Thorne (2006) was used. For wells with data available, the screened interval is represented, as well as water levels from March, 2008. As a reminder, the units shown on the cross-sections are hydrostratigraphic units (the lithologic units associated with each HSU are shown in the legend). Let me know if you have any comments.

Thank you,

Patrick Calihage • Geologist
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Tel: 509.943.5222 • Cell: 509.438.0441 • Fax: 509.943.5454

From:	Williams, Bruce A
To:	Pat Calhoun; Thomas, Greg S
Cc:	Lanigan, David C
Subject:	FW: B-BX-BY Area Best Estimate Ground Surface at Time of Drilling for Top of Basalt Well Set
Date:	Thursday, November 12, 2009 3:10:02 PM
Attachments:	B-BX-BY Best Est Grnd Srfc at TOD 12Nov09 FINAL.xlsx

Patrick, The attached database has not changed since I e-mailed it this morning but this e-mail provides more of the documentation you will need to document the changes to your HSU database. Let me know if questions. BAW

From: Lanigan, David C [mailto:david.lanigan@pnl.gov]
Sent: Thursday, November 12, 2009 2:32 PM
To: Williams, Bruce A; Webber, William D
Cc: Last, George V; Thorne, Paul D
Subject: B-BX-BY Area Best Estimate Ground Surface at Time of Drilling for Top of Basalt Well Set

The elevation and casing stick-up values in HWIS do not take into account the historical changes in stick-up where stick-up is used to calculate a best estimate ground surface at time of drilling from current survey data of top of casing in HEIS and the stick-up stored in HEIS.

Using Disc_Z for ground surface at time of drilling is suspect (and showed to be an incorrect use) for some wells (i.e. 299-E33-18, 299-E33-19, and 299-E33-20) based on remediation of the well and whether fill was added around the well, and/or casing was added or subtracted up to the time of the current survey of the brass cap survey marker. In these cases, the historical change in stick-up, the stick-up at time of survey, and the survey of top of casing are used to calculate a ground surface at time of drilling.

The previously sent spreadsheet indicated that the calculated ground surface elevation at time of drilling for 299-E33-19 and 299-E33-20 were suspect. Those elevations have now been shown to be correct based on analysis of current stick-up and calculations of fill added around these wells and well 299-E33-75 (to the East of 299-E33-19 and 299-E33-20).

Using Disc_Z of other wells for ground surface at time of drilling is suspect (and showed to be incorrect) when the top of casing stays the same, but the pad is remediated. 299-E33-14 is an example of this, although the change in elevation was only 0.5 ft.

The attached spreadsheet was built after an analysis of well documentation and survey data accessed from WIDL and IDMS. The best estimates of ground surface were calculated to be at the time of drilling, since this is the ground surface that is the reference point for all well drilling and geologic sampling information. This spreadsheet takes into account any fill added, casing added or removed, or well pad modifications after the well was drilled and up to the date of the current, most recent top of casing survey data available in HEIS.

Assumptions made when putting together the spreadsheet were:

1. Wells drilled 1949-1969 are suspects for casing and pad changes.
2. Wells in the BY Cribs area, B-57 Crib area, and just North of B Tank farm are suspects for casing and pad changes due to fill being added in those areas.
3. Wells drilled 1989-2008 are considered to have no casing or pad changes, except in the case of #2 above.

Please note that well 299-E33-24 was decommissioned after the top of casing was surveyed and before fill was added. The fill on top of B-57 Crib is not a factor in the calculation of ground surface elevation at time of drilling for this well.

David Lanigan
Scientist
ENERGY & ENVIRONMENT DIRECTORATE

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From:	Pat Cabbage
To:	"Jami Ludwig"
Cc:	"Williams, Bruce A"; Steve Airhart; Kim Schuyler
Subject:	BP-5 HSU Elevation Dataset
Date:	Tuesday, December 15, 2009 12:54:00 PM
Attachments:	BP5_HSU_12_15_09.zip Exclusion List 12 15 09.xls

Jami,

Attached is a zipped folder containing a personal geodatabase which has the BP-5 Hydrostratigraphic Unit elevations. As with the PO-1 datasets, top and bottom elevations for HSU's 1, 3, 4, 5, 7, 8, 9, and 10 are included. All elevations are in meters. This dataset contains data for all wells from the 12-3-09 PNNL contacts database for which a Best Estimate was designated. I have attached an Excel spreadsheet detailing which wells from the PNNL database were excluded from this dataset, as well as the reason for the exclusion.

Let me know if you have any questions/comments.

Thank you,

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Appendix B

Data Table

All data are elevations, in meters

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name	HSU_1top	HSU_3top	HSU_4top	HSU_5top	HSU_8top	HSU_9top	HSU_10top
299-E13-1	227.929			121.249			
299-E13-13	222.382			120.579			
299-E13-18	224.150			131.491	97.658		
299-E13-20	227.533			131.521		83.972	49.225
299-E13-62	227.411	161.270					
299-E13-63	225.826	163.952					
299-E13-64	226.344						
299-E16-1	212.872			129.357	111.069	91.562	69.007
299-E17-21	222.748			122.164	109.057	90.465	
299-E17-22	220.584						
299-E17-23	223.845						
299-E17-24	224.820			113.568			
299-E17-25	225.034			115.306			
299-E17-26	222.931						
299-E17-4	219.700			126.126	101.742		
299-E17-6	219.791			124.389	107.930	90.251	
299-E18-1	219.486			121.950			
299-E19-1	225.278			118.902	111.282	95.738	66.477
299-E23-2	220.797					103.754	85.161
299-E24-13	208.593	131.479					
299-E24-14	211.653	127.833					
299-E24-18	219.450						
299-E24-19	208.614	127.233					
299-E24-20	210.123	126.303					
299-E24-22	207.112	118.110					
299-E24-23	217.810				131.856	126.675	
299-E24-24	218.975						
299-E24-3	213.970						
299-E24-33	205.952						
299-E24-4	208.904						
299-E24-5	211.013						
299-E24-67	194.432						
299-E24-68	194.249						
299-E24-7	219.365					100.493	82.814
299-E24-70	196.352						
299-E24-71	196.288						
299-E24-72	196.230						
299-E24-73	196.017						
299-E24-8	210.912					102.099	96.612
299-E25-1	205.374	130.698					

299-E25-100	193.518						
299-E25-1000	205.527					94.884	90.160
299-E25-101	193.670						
299-E25-102	193.731						
299-E25-103	193.792						
299-E25-104	193.944						
299-E25-105	193.426						
299-E25-106	193.700						
299-E25-107	193.914						
299-E25-108	193.914						
299-E25-109	193.914						
299-E25-110	193.091						
299-E25-111	193.670						
299-E25-112	193.822						
299-E25-113	193.578						
299-E25-114	193.944						
299-E25-115	194.767						
299-E25-116	193.518						
299-E25-117	193.639						
299-E25-118	193.536						
299-E25-119	194.310						
299-E25-12	207.112				112.319	110.795	
299-E25-120	193.822						
299-E25-122	193.841						
299-E25-123	194.859						
299-E25-124	194.280						
299-E25-127	193.792						
299-E25-13	202.994	131.061					
299-E25-14	203.484						
299-E25-15	211.318	127.498					
299-E25-16	211.687	130.915					
299-E25-17	207.234				121.890		
299-E25-18	208.056				121.188	119.664	
299-E25-19	206.289					123.688	
299-E25-2	202.387	129.235					98.450
299-E25-236	211.632						
299-E25-28	202.997					113.690	99.060
299-E25-32	204.734					111.465	98.054
299-E25-33	205.313				123.322	117.531	89.489
299-E25-35	203.171	127.275					
299-E25-40	203.119	127.528					

299-E25-41	204.740	127.626					
299-E25-42	202.143	133.259					
299-E25-45	206.990						
299-E25-46	209.751	128.674					
299-E25-48	202.098	126.964					
299-E25-55	204.868						
299-E25-56	195.651						
299-E25-57	195.285						
299-E25-58	201.525						
299-E25-6	200.354	121.411					
299-E25-66	193.944						
299-E25-7	202.052						
299-E25-72	193.792						
299-E25-73	193.822						
299-E25-74	193.670						
299-E25-77	195.499						
299-E25-79	195.529						
299-E25-81	195.651						
299-E25-87	196.200						
299-E25-89	195.804						
299-E25-90	195.560						
299-E25-92	196.169						
299-E25-93	203.911	126.187					
299-E25-94	210.099	128.412				125.974	
299-E25-97	195.925						
299-E25-99	193.396						
299-E26-1	189.159						120.579
299-E26-10	183.520						121.249
299-E26-11	183.002						122.652
299-E26-4	197.968	130.912					
299-E26-5	196.200						
299-E26-6	194.920	125.730					
299-E26-7	198.272						
299-E26-77	182.485						121.373
299-E26-79	182.060						119.271
299-E26-8	186.169						113.017
299-E26-9	183.947						122.682
299-E27-10	190.805						117.653
299-E27-105	185.958						
299-E27-107	185.471						
299-E27-11	196.261						116.403

299-E27-12	201.564						
299-E27-13	204.094						
299-E27-14	196.291						
299-E27-15	196.108						
299-E27-155	207.691						105.278
299-E27-17	193.578						118.537
299-E27-2	204.155	126.431					
299-E27-20	205.161						
299-E27-21	204.690						
299-E27-22	191.079	123.109					110.917
299-E27-23	202.613						
299-E27-3	206.228						102.900
299-E27-4	197.979						
299-E27-5	209.032				134.356	132.832	
299-E27-51	185.776						
299-E27-52	185.532						
299-E27-54	187.665						
299-E27-55	188.244						
299-E27-56	185.471						
299-E27-58	187.117						
299-E27-6	202.601	127.315					101.102
299-E27-65	186.202						
299-E27-66	186.781						
299-E27-68	185.898						
299-E27-69	185.867						
299-E27-7	194.135						
299-E27-70	185.471						
299-E27-71	185.318						
299-E27-72	184.861						
299-E27-73	185.684						
299-E27-8	194.523						116.190
299-E27-9	192.298						117.622
299-E28-16	215.433					126.126	
299-E28-17	216.713					127.406	
299-E28-18	211.287					133.868	
299-E28-2	208.575					124.145	112.563
299-E28-20	211.379						
299-E28-26	209.855					115.367	110.490
299-E28-27	208.483						
299-E28-3	212.202					112.532	
299-E28-5	204.673					117.805	112.624

299-E28-8	203.911						113.081
299-E28-9	214.640						
299-E29-1	217.597						
299-E32-1	200.589						117.683
299-E32-2	204.673						117.196
299-E32-3	206.959					115.824	
299-E32-4	209.794					119.268	
299-E33-10	197.846						118.902
299-E33-106	186.416						
299-E33-11	188.900	120.625					120.473
299-E33-12	190.294	133.906					119.580
299-E33-125	184.099						
299-E33-129	188.123						
299-E33-13	189.664						120.170
299-E33-130	188.184						
299-E33-131	188.001						
299-E33-132	188.062						
299-E33-14	190.020						120.526
299-E33-141	188.397						
299-E33-142	189.311						
299-E33-143	188.366						
299-E33-144	188.366						
299-E33-145	189.342						
299-E33-146	188.366						
299-E33-147	188.549						
299-E33-148	188.305						
299-E33-15	186.881						118.758
299-E33-150	188.946						
299-E33-151	188.123						
299-E33-153	188.214						
299-E33-154	187.818						
299-E33-155	188.549						
299-E33-158	187.970						
299-E33-159	188.092						
299-E33-16	194.330	133.980					119.807
299-E33-160	188.732						
299-E33-161	188.244						
299-E33-163	187.879						
299-E33-164	188.244						
299-E33-165	188.488						
299-E33-169	188.458						

299-E33-17	193.060	131.795					119.146
299-E33-171	188.153						
299-E33-177	185.105						
299-E33-178	184.831						
299-E33-179	186.233						
299-E33-18	192.498	133.062					116.207
299-E33-180	188.031						
299-E33-182	188.092						
299-E33-184	187.604						
299-E33-185	187.787						
299-E33-186	187.909						
299-E33-189	187.665						
299-E33-19	195.160						116.826
299-E33-190	187.818						
299-E33-191	188.305						
299-E33-192	187.696						
299-E33-193	187.239						
299-E33-195	188.062						
299-E33-196	188.275						
299-E33-198	188.885						
299-E33-1A	192.908						
299-E33-2	187.238						120.944
299-E33-20	195.960	132.866					118.541
299-E33-200	187.818						
299-E33-201	187.787						
299-E33-202	186.660						
299-E33-203	188.031						
299-E33-204	187.879						
299-E33-205	199.735	132.984					118.963
299-E33-206	184.465						
299-E33-208	185.379						
299-E33-209	185.136						
299-E33-21	203.420						118.381
299-E33-213	188.488						
299-E33-214	189.067						
299-E33-215	188.519						
299-E33-216	188.915						
299-E33-217	188.519						
299-E33-218	188.824						
299-E33-219	188.610						
299-E33-22	186.385						

299-E33-220	189.037						
299-E33-221	188.519						
299-E33-223	188.641						
299-E33-224	189.403						
299-E33-225	188.946						
299-E33-226	188.458						
299-E33-228	185.410						
299-E33-229	188.001						
299-E33-231	187.543						
299-E33-232	186.660						
299-E33-233	185.562						
299-E33-234	188.519						
299-E33-235	188.184						
299-E33-237	187.147						
299-E33-24	194.255						120.189
299-E33-240	184.374						
299-E33-241	183.916						
299-E33-242	184.495						
299-E33-243	183.886						
299-E33-244	184.404						
299-E33-245	184.526						
299-E33-246	184.404						
299-E33-248	185.014						
299-E33-249	184.556						
299-E33-25	192.360						120.732
299-E33-250	183.764						
299-E33-251	184.739						
299-E33-252	184.526						
299-E33-253	183.672						
299-E33-254	184.526						
299-E33-255	184.495						
299-E33-256	184.374						
299-E33-258	188.031						
299-E33-26	193.143						120.296
299-E33-262	188.184						
299-E33-27	189.433						
299-E33-28	203.088						
299-E33-29	205.770						117.378
299-E33-296	187.269						
299-E33-3	191.260						120.851
299-E33-30	202.875						118.445

299-E33-302	187.391						
299-E33-31	197.426	136.161					119.458
299-E33-32	201.241	132.966					119.250
299-E33-33	195.298	132.204					118.488
299-E33-334	203.288	135.622					117.944
299-E33-335	203.415	134.530					117.919
299-E33-337	201.990	136.458					116.341
299-E33-338	200.260	135.490					117.659
299-E33-339	200.474	134.333					117.264
299-E33-34	193.243						120.091
299-E33-340	188.340	124.332					119.425
299-E33-341	191.254	134.256					120.388
299-E33-342	191.994	136.215					120.244
299-E33-343	199.095	134.477					119.573
299-E33-345	194.523	132.954					119.756
299-E33-35	196.174						119.974
299-E33-36	197.272						116.866
299-E33-37	199.185	139.749					117.499
299-E33-38	193.020						120.478
299-E33-39	190.134						120.183
299-E33-4	187.048						121.211
299-E33-40	190.381						120.887
299-E33-41	189.074	132.839					119.519
299-E33-42	199.400						
299-E33-43	201.930						
299-E33-44	196.030	133.546					120.744
299-E33-45	197.419	133.716					
299-E33-46	189.677	134.813					
299-E33-47	196.835						119.111
299-E33-48	202.287						115.572
299-E33-49	189.368						116.825
299-E33-5	185.120						120.807
299-E33-50	190.742	133.592					119.541
299-E33-57	188.732						
299-E33-6	191.640						121.841
299-E33-61	187.543						
299-E33-62	191.567						
299-E33-63	192.695						
299-E33-64	188.580						
299-E33-65	185.532						
299-E33-7	190.710						120.606

299-E33-71	190.409						
299-E33-72	196.474						
299-E33-73	186.873						
299-E33-74	186.934						
299-E33-75	199.309						
299-E33-76	191.628						
299-E33-77	191.780						
299-E33-78	189.006						
299-E33-8	198.350	130.075					120.016
299-E33-84	184.495						
299-E33-85	183.490						
299-E33-86	184.404						
299-E33-87	184.770						
299-E33-88	184.374						
299-E33-9	185.484						119.038
299-E33-92	188.336						
299-E33-95	184.282						
299-E33-97	184.800						
299-E33-99	184.526						
299-E34-11	188.406						122.569
299-E34-2	192.816						119.360
299-E34-3	186.873						121.950
299-E34-4	179.466						125.974
299-E34-5	180.624						123.017
299-E34-6	182.941						123.810
299-E34-8	195.418						117.084
299-E35-1	179.802						121.280
299-E35-2	183.733						122.773
299-W10-1	207.164	184.000	173.636	164.188			
299-W10-10	206.883	184.633	171.526	166.040			
299-W10-101	194.995	181.888					
299-W10-105	194.802	182.000					
299-W10-107	194.100	180.993	172.154				
299-W10-11	206.550	181.252	169.060	165.707			
299-W10-111	193.723	180.616	172.692				
299-W10-112	194.130	179.804	172.184				
299-W10-113	194.155	181.048	172.514	169.771			
299-W10-115	191.100	180.889					
299-W10-117	194.266	180.550	174.454	168.662			
299-W10-12	206.473	181.785	172.336	165.630			
299-W10-120	194.116	181.009	172.475	168.817			

299-W10-121	193.768	181.271	174.566	168.470			
299-W10-122	193.835	181.033					
299-W10-125	193.416	180.615					
299-W10-126	191.817	180.844					
299-W10-127	191.313	181.865					
299-W10-13	213.426	178.679		169.535			
299-W10-134	193.578	178.948					
299-W10-135	194.239	179.609					
299-W10-14	213.582	177.921		171.825	77.337		
299-W10-140	194.233	179.907					
299-W10-141	193.600	181.103	170.740	168.911			
299-W10-143	193.890	180.174					
299-W10-146	195.196	181.785					
299-W10-147	193.962	181.160					
299-W10-148	194.665	180.339					
299-W10-15	203.032	183.830	171.028	164.932			
299-W10-16	203.430	179.961	173.255	165.940			
299-W10-161	191.270	179.078					
299-W10-168	193.448	182.780	172.417	168.454			
299-W10-17	204.614	177.182	170.476	165.600			
299-W10-18	202.838	178.149	169.615	165.043			
299-W10-196	194.587	180.871	174.166	168.679			
299-W10-2	204.455	180.681	172.147	167.879			
299-W10-22	207.729	182.431	173.897	163.838			
299-W10-23	204.262	182.316	173.172	166.771			
299-W10-24	208.074	183.690	176.070	170.583	86.154	81.582	
299-W10-26	203.769	177.861	171.155	165.973			
299-W10-27	203.690	177.782	170.467	166.809			
299-W10-3	198.763	179.865	172.245	167.063			
299-W10-4	205.265	178.138	170.213	165.031			
299-W10-5	205.972	175.492	166.653	164.824			
299-W10-51	205.745	177.703					
299-W10-8	208.392	182.484	173.035	170.292			
299-W10-88	191.939	176.699					
299-W10-89	191.809	178.093					
299-W10-9	206.756	181.458		165.913			
299-W10-90	191.748	178.032					
299-W10-91	191.669	176.734					
299-W10-92	191.675	176.435					
299-W10-93	191.366	177.650					
299-W10-94	191.962	178.246					

299-W10-95	191.576	177.251					
299-W10-96	191.854	177.528					
299-W10-97	191.743	177.417					
299-W10-98	191.638	177.922					
299-W10-99	191.361	177.645					
299-W11-10	204.300	189.060	183.574	180.221			
299-W11-12	208.196	180.459		169.487			
299-W11-2	217.287	184.978	173.700	165.471	89.880	85.308	62.448
299-W11-24	210.563	181.912	176.426	169.415			
299-W11-25B	208.537	182.019	171.961	169.523	85.093		
299-W11-26	213.088	182.608		169.807	87.206	82.024	59.469
299-W11-27	205.847	182.987	172.319	170.186			
299-W11-28	211.365	181.800	173.570	167.779			
299-W11-39	208.371	182.494	173.319	170.271			
299-W11-40	208.792	182.884	173.740	168.863			
299-W11-41	208.763	181.940	173.101	169.748			
299-W11-42	209.275	181.843	174.832	171.784			
299-W11-43	216.744	188.092	180.168	168.280	90.861	89.947	
299-W11-48	208.907	182.999		169.893	86.378		
299-W11-86	222.691	188.248	184.591	178.190	91.627	91.017	73.034
299-W11-87	222.522	188.689	183.812	177.107			
299-W11-88	218.992	199.790	179.978	171.443	88.538	87.928	72.688
299-W13-1	222.822	177.407		166.434		92.672	62.497
299-W14-1	204.893	180.509	168.927	167.707			
299-W14-11	200.735	176.047	166.598	165.988			
299-W14-12	202.882	175.755		166.001			
299-W14-13	202.832	177.229	170.218	166.256			
299-W14-14	204.631	175.980	171.103	167.141	82.101	71.129	
299-W14-15	203.984	178.076	169.237	167.104			
299-W14-18	203.663	178.060	171.050	167.087			
299-W14-2	201.227	179.891		170.137			
299-W14-3	205.802	182.028	171.360	169.836			
299-W14-4	205.824	183.878		170.772			
299-W14-5	201.161	179.825		165.499			
299-W14-6	203.566	176.744		168.209			
299-W14-7	206.112	169.536		167.403	78.401	75.658	49.750
299-W14-8A	221.482	170.580		165.399	87.979	81.579	58.109
299-W14-9	205.050	171.827	167.255	166.340	77.339	63.927	45.639
299-W15-1	205.479	173.170	171.646	165.855			
299-W15-10	207.608	167.984		161.888			
299-W15-101	197.062						

299-W15-102	202.371	170.367		166.709			
299-W15-11	208.271	169.562		163.466			
299-W15-12	204.056	177.843		169.309			
299-W15-126	191.580						
299-W15-127	190.605						
299-W15-128	190.624						
299-W15-13	205.023	176.677	168.447	164.485			
299-W15-131	189.919						
299-W15-133	190.543						
299-W15-134	190.419						
299-W15-14	212.354	166.330	162.062	158.100	73.975	59.345	41.971
299-W15-15	213.172	171.110					
299-W15-155	190.666	174.512					
299-W15-159	189.874	175.548					
299-W15-16	205.821	168.636	160.406	154.920			
299-W15-160	189.681	177.489					
299-W15-161	190.169	177.672					
299-W15-162	190.450	177.953					
299-W15-163	190.071	177.879					
299-W15-164	190.643	176.622					
299-W15-166	190.974	175.429					
299-W15-167	191.060	175.515					
299-W15-17	209.246	167.793	160.478	155.601	74.525		
299-W15-171	191.080	175.535					
299-W15-177	190.248	175.313					
299-W15-178	190.347	176.021					
299-W15-18	206.408	169.527	164.041	157.335			
299-W15-180	189.617						
299-W15-184	191.803	177.477					
299-W15-2	212.421	179.198		170.054			
299-W15-20	210.030	171.321		159.434			
299-W15-202	201.614	171.743		167.171			
299-W15-203	200.997						
299-W15-216	198.457	169.805		166.148			
299-W15-217	199.459	170.503					
299-W15-218	198.357	171.229		167.267			
299-W15-219	200.691	171.125		167.772			
299-W15-22	204.556	173.466	167.980	166.151			
299-W15-220	198.470	170.123		167.075			
299-W15-223	198.304	170.872					
299-W15-23	208.459	167.311		159.386			

299-W15-3	205.254	175.384	167.459	162.887			
299-W15-32	198.063	170.326		165.754			
299-W15-36	193.813	174.305		166.381			
299-W15-38	202.881	173.620		168.743			
299-W15-39	201.258	168.949		165.901			
299-W15-4	202.253	174.821		165.372			
299-W15-40	205.070	175.504	166.970	164.836			
299-W15-41	202.493	174.147	168.355	165.612			
299-W15-42	203.798	170.879	166.612	157.163			
299-W15-48	198.140	170.647					
299-W15-49	208.393	184.009	159.320	157.492	75.805		
299-W15-5	200.276	171.320		163.396	75.004	58.544	44.524
299-W15-6	199.346	171.609	169.475	165.513			
299-W15-67	192.689	178.059		169.524			
299-W15-69	190.640	174.181		166.865			
299-W15-7	202.735	173.169	170.731	166.464			
299-W15-70	190.330	173.566		168.079			
299-W15-71	190.744	174.285		165.445			
299-W15-72	189.397	175.986		165.623			
299-W15-73	189.921	173.766		166.451			
299-W15-75	195.697	174.361		164.912			
299-W15-765	203.905	177.388	171.292	166.293			
299-W15-79	191.614	177.289	166.316	163.268			
299-W15-8	197.713	172.414		167.842			
299-W15-82	198.564						
299-W15-84	199.336	170.380		166.113			
299-W15-85	199.181						
299-W15-86	198.135	171.313		166.436			
299-W15-9	199.234	171.192		167.230			
299-W17-1	198.416	167.936		158.792			
299-W18-1	206.738	170.162	163.761	157.361			
299-W18-10	206.381	167.671		160.082			
299-W18-11	204.876	169.184	162.173	162.234			
299-W18-149	202.109						
299-W18-15	202.229	165.958		152.851			
299-W18-150	200.989	168.087					
299-W18-158	202.465	167.718					
299-W18-159	199.793	169.922					
299-W18-16	202.397	170.095		162.495			
299-W18-163	201.230	168.007					
299-W18-164	202.636	169.134		162.421			

299-W18-165	202.018	168.490					
299-W18-166	202.083	168.581					
299-W18-168	202.550	169.348					
299-W18-169	200.340	170.638					
299-W18-17	206.129	170.163					
299-W18-170	203.038						
299-W18-171	200.354	169.852					
299-W18-173	202.437						
299-W18-174	201.689	169.380					
299-W18-175	202.784	169.482					
299-W18-18	205.489	165.865		161.293			
299-W18-19	204.817	166.717		162.450			
299-W18-20	203.159	171.765		164.754			
299-W18-21	204.263	168.601					
299-W18-22	204.259	168.902		158.539	68.928		
299-W18-23	212.864	164.706					
299-W18-24	209.048	168.815					
299-W18-246	204.984	168.082		162.782			
299-W18-247	204.799	167.897					
299-W18-248	203.846	168.794					
299-W18-249	206.502	168.400					
299-W18-252	204.827	170.384		165.812			
299-W18-26	213.253	168.143	159.609	156.561			
299-W18-27	210.349	167.372		162.800			
299-W18-28	207.222	165.465		159.978			
299-W18-29	203.048	166.472		160.376			
299-W18-30	205.092	170.040		165.163			
299-W18-31	202.437	167.994		162.813			
299-W18-32	206.406	170.440		160.381			
299-W18-33	201.912	165.946		157.716			
299-W18-56	202.378	169.176		161.276			
299-W18-57	202.779	169.277	161.677	160.077			
299-W18-58	202.084	167.082		159.482			
299-W18-59	204.052	170.250		161.350			
299-W18-6	203.933	170.431		162.731			
299-W18-60	201.283	170.181	164.081				
299-W18-61	202.756	171.362		165.875			
299-W18-62	201.372	169.978	163.882				
299-W18-63	202.021	170.030		162.432			
299-W18-64	202.009	169.395		164.854			
299-W18-65	202.853	172.373		166.582			

299-W18-66	203.192	166.891		162.898			
299-W18-7	202.767	166.465		159.765			
299-W18-76	202.373						
299-W18-77	202.575						
299-W18-78	202.018						
299-W18-79	202.423						
299-W18-80	202.275						
299-W18-81	203.209						
299-W18-82	209.089	169.087					
299-W18-85	206.794	168.692					
299-W18-86	207.930	168.328					
299-W18-87	206.030	169.728					
299-W18-88	203.727	169.894					
299-W18-89	208.772	170.063		164.576			
299-W18-9	209.121	168.719	161.019	157.319			
299-W18-93	205.559	168.557					
299-W18-94	207.298						
299-W18-95	207.039						
299-W18-96	206.970	167.368					
299-W18-97	206.167						
299-W18-98	207.228						
299-W18-99	206.118	168.616					
299-W19-1	205.918	168.123		161.112			
299-W19-10	209.361	168.213		158.155	69.763	61.533	39.892
299-W19-12	204.482	169.125		158.457			
299-W19-13	212.322	160.506		157.458			
299-W19-14	211.842	162.465		159.417			
299-W19-15	211.988	167.183	161.392	158.344			
299-W19-16	212.432	169.760		161.531			
299-W19-17	214.048	165.280		157.660			
299-W19-18	213.993	165.225		158.215			
299-W19-2	212.243	164.085	150.369	139.091			
299-W19-22	210.249	167.577					
299-W19-27	205.496	161.605	155.509	152.461			
299-W19-3	213.677	159.423		154.851			
299-W19-31	205.646	169.070		162.974			
299-W19-32	205.876	167.776		160.156			
299-W19-4	216.868	168.100	144.325	138.534	83.365	76.660	52.276
299-W19-41	205.791	167.081		161.290			
299-W19-42	205.516	170.159		162.234			
299-W19-44	205.768	166.357	160.658	159.286			

299-W19-45	205.671	165.133		158.732			
299-W19-47	203.123	167.766		161.365			
299-W19-8	216.600	163.260		152.592	84.621	67.248	42.864
299-W21-1	214.154	161.729					
299-W22-1	204.112	165.403		158.697			
299-W22-11	202.645	169.422		157.839			
299-W22-15	205.423	164.885	156.350	152.693			
299-W22-17	205.712	160.297		158.468			
299-W22-19	207.745	149.528		139.165			
299-W22-2	204.309	164.685		157.979			
299-W22-24	212.170	170.718	146.029	139.018	70.438	61.294	39.349
299-W22-27	208.540	167.392	161.296	150.628	71.990	54.616	38.157
299-W22-38	210.289	169.141	162.436	152.377			
299-W22-39	202.321	164.831	158.735	158.034			
299-W22-44	206.440	160.873	159.501	148.833			
299-W22-45	201.621	166.874	155.901	150.110			
299-W22-46	203.031	166.150	158.835	152.739			
299-W22-47	204.019	163.785		160.737			
299-W22-48	207.142	165.994	161.727	148.621			
299-W22-49	203.937			158.217			
299-W22-50	203.850	165.445		160.569	63.947		
299-W22-85	202.168	164.068	154.314	150.657			
299-W23-1	203.629	162.786		155.166			
299-W23-10	201.004	165.038		158.332			
299-W23-100	187.047						
299-W23-105	187.458						
299-W23-106	187.427						
299-W23-108	187.027	164.777					
299-W23-109	187.022						
299-W23-11	201.804	164.924	154.865	153.341			
299-W23-113	187.442						
299-W23-114	187.000						
299-W23-115	187.040						
299-W23-117	186.809						
299-W23-119	187.068						
299-W23-121	186.346						
299-W23-125	186.411	163.246					
299-W23-13	200.217	165.775		157.240			
299-W23-132	186.345	168.057					
299-W23-133	187.872						
299-W23-135	187.252	163.478					

299-W23-136	186.868						
299-W23-137	188.038	163.959					
299-W23-138	186.932						
299-W23-139	186.761						
299-W23-14	201.630	163.530	152.253	149.510			
299-W23-140	187.302						
299-W23-141	187.843						
299-W23-142	187.673						
299-W23-143	186.831	164.581					
299-W23-144	186.444						
299-W23-15	199.805	158.657		152.561			
299-W23-16	203.639	161.272		156.090			
299-W23-163	191.012						
299-W23-17	200.175	163.904		155.065			
299-W23-171	191.321						
299-W23-19	183.907	164.400		153.732			
299-W23-2	186.950	166.528		155.860			
299-W23-3	187.901	165.041		155.287			
299-W23-4	203.009	159.422		151.193			
299-W23-5	203.060	166.789	156.121	151.549			
299-W23-51	204.056	165.956					
299-W23-52	203.764	164.750					
299-W23-53	203.273	164.259					
299-W23-54	204.320	166.220					
299-W23-55	203.389	165.289					
299-W23-56	204.210	163.062					
299-W23-57	203.377	163.753					
299-W23-58	186.889						
299-W23-6	188.149	166.203	157.669	152.487			
299-W23-62	187.360						
299-W23-64	187.561	166.530					
299-W23-65	186.697						
299-W23-66	186.822	165.791					
299-W23-67	187.230						
299-W23-68	186.981						
299-W23-69	187.238						
299-W23-7	203.163	166.587	154.090	151.347			
299-W23-70	186.603						
299-W23-72	186.995						
299-W23-73	187.573						
299-W23-74	187.648						

299-W23-75	187.373						
299-W23-77	187.382						
299-W23-78	187.036						
299-W23-79	186.753						
299-W23-8	203.447	163.823		153.155			
299-W23-80	186.771	166.654					
299-W23-83	187.294						
299-W23-86	186.932						
299-W23-9	199.703	166.175	153.983	151.240			
299-W23-92	187.465	163.081					
299-W23-93	187.447						
299-W23-94	187.662						
299-W23-96	187.860						
299-W23-99	187.328	163.859					
299-W26-12	205.975	168.789					
299-W26-14	204.380	163.537	153.479	146.163			
299-W27-2	205.583	153.462	145.232	139.136	77.567		
299-W6-1	213.340	202.672	196.576	184.993	89.286	85.324	76.484
299-W6-2	211.478	193.495		181.913			
299-W6-3	213.365	194.773	186.543	183.495	86.873	83.825	
299-W6-6	216.210	207.371	197.922	183.291	86.670	82.403	
299-W7-1	210.978	192.385					
299-W7-2	206.300	196.546					
299-W7-3	206.461	196.098	182.077	174.457		95.209	61.986
299-W7-4	205.028	190.702					
299-W7-5	205.447	195.389					
299-W7-6	207.229	202.048					
299-W8-1	214.300	187.478					
299-W9-1	225.247	179.832	169.164	166.421			
699-23-33	168.458	154.437	108.717	102.621	56.901	5.085	-22.347
699-24-33	155.633			119.972			
699-24-34A	163.077						
699-24-35	162.107						
699-24-46	181.209	132.441		117.201	33.381	-3.195	
699-25-31	157.927	144.211		110.073	61.610	5.527	-15.809
699-25-33A	161.587	113.185		105.382			
699-25-33B	161.653	114.409		100.693			
699-26-35A	162.672	118.476					
699-26-35C	162.757						
699-26-35D	163.246	117.526		101.372			
699-28-30	157.357	143.641	102.493	76.585	1.909	-37.715	-54.479

699-28-40	171.553			116.689		35.308	
699-31-31	159.325	125.797	101.413	101.413	-9.839		
699-32-32	155.599	149.503		92.505	6.247	-16.613	-59.285
699-32-42	151.158			122.202			
699-32-72A	204.671	149.502	145.235	131.519	80.313	65.987	30.021
699-33-42	152.219			123.263			
699-34-41B	175.040			123.224			
699-35-66A	222.463			141.663	100.970	86.663	
699-35-78B	202.170	170.166		153.402	75.983	52.818	25.386
699-36-58A	225.442			130.344			
699-36-61B	229.395			131.859	108.085	84.310	61.755
699-36-70A	215.238	170.432		148.182	83.564		
699-37-36	166.870	141.389	120.388	117.614	106.794		38.854
699-37-47A	218.449		131.581	131.581	107.197	84.641	60.867
699-37-89	194.870			149.455	60.454	34.850	-4.469
699-37-92	197.751	183.425		162.089	67.906	35.597	-7.989
699-38-34A	158.348	144.632	124.820	109.580	108.056	77.576	53.192
699-38-65	230.720	157.263		144.767	109.715	92.951	70.395
699-38-70	216.191	161.327	156.755	143.039	97.319		
699-38-70B	219.698	169.711		136.793	84.977	82.538	
699-39-39	164.679				128.408		
699-39-79	200.364	168.360		160.740			
699-40-32	159.194	148.526			121.094	82.994	62.267
699-40-33A	158.931				123.879	95.532	74.196
699-40-33C	159.059				125.531	96.270	73.715
699-40-36	161.297				126.854	101.251	79.306
699-40-39	165.260				127.160	104.300	
699-40-40A	164.940				129.278	106.418	
699-40-62	228.040			133.552	114.959		
699-40-65	228.517	147.441		145.307	119.094	98.368	
699-40-80	200.871	173.744		155.151	67.368	51.519	34.145
699-41-31	153.354	130.494	124.398	122.874	116.778	81.726	60.390
699-41-35	158.748				127.963	106.017	83.462
699-41-40	166.497				129.312	116.205	
699-41-42	196.214				126.719	119.404	94.106
699-42-29	138.294	115.434	106.290	100.194		20.946	
699-42-37	158.368				129.717	118.744	82.168
699-42-39A	170.097				128.035	117.367	
699-42-39B	170.154				129.311	117.119	
699-42-40A	166.749				128.131	123.528	
699-42-40C	166.781				128.163	124.170	100.335

699-42-41A	172.952						
699-42-42	184.550				127.552	121.152	91.891
699-42-42B	177.727				129.873	122.253	
699-43-41E	167.986				130.801		
699-43-41F	168.040				130.855	124.759	
699-43-41G	168.053				130.868	124.772	
699-43-42	172.848				127.128	125.909	108.536
699-43-42J	177.240				129.081		
699-43-42K	177.484				129.325	122.010	101.284
699-43-43	176.560					123.829	
699-43-69	225.936	197.285	191.799	151.870	115.599	106.150	74.146
699-43-84	198.671	180.078	170.019	170.019	65.778	50.538	27.373
699-44-39B	156.368					118.268	103.942
699-44-43B	176.927					128.159	
699-44-64	222.214			142.966	126.202	120.106	87.492
699-44-64P	222.319			139.413	125.697	120.211	87.597
699-45-42	177.066					127.688	119.154
699-45-69A	221.539	215.443	191.059	158.446	124.613	119.431	
699-45-69C	221.684	210.711	189.680	154.628	119.576	110.432	83.000
699-45-78	211.329	183.897	179.325	171.096	76.913	63.501	56.491
699-46-31	147.134	136.466		107.510	75.506	48.074	30.701
699-46-32	141.891	137.319			119.031	91.294	83.369
699-46-33	144.429	136.809				129.189	126.141
699-46-85B	242.438	178.735	174.772	155.875	68.702	54.071	26.944
699-47-35A	146.221					135.218	115.132
699-47-35B	146.310					135.947	115.830
699-47-42	144.290					124.478	122.040
699-47-46A	177.316						124.280
699-47-50	178.342						112.810
699-47-60	198.822						112.259
699-47-92	247.203	194.777	193.253	163.993	78.953	51.826	21.651
699-48-50B	185.571	148.690					121.715
699-48-77A	205.932	199.074	187.644	180.786		103.519	67.705
699-48-77C	205.386	199.473	186.976	180.880		108.033	73.896
699-49-31	159.531	147.339	106.191	81.807	71.139		42.183
699-49-32B	156.880	143.164			135.544		111.160
699-49-33	153.239						132.512
699-49-57B	169.638						120.108
699-49-79	210.759	185.156	183.327	175.098			
699-50-42	143.351					131.769	123.539
699-50-59	172.108						121.146

699-50-85	226.386	199.259	190.724	161.768	81.301	64.232	45.030
699-50-96	245.043			170.062	74.050	53.019	26.197
699-50-99	243.063			170.520	103.464	102.245	101.026
699-51-63	175.311						119.532
699-51-75	196.571			166.091		115.799	80.747
699-52-54	173.406						122.383
699-52-57	171.201	138.740					122.525
699-53-55A	175.975						98.251
699-54-45A	150.805			119.899			
699-54-48	139.649				120.446		110.998
699-55-44	157.938				128.982	116.790	
699-55-50A	135.617					112.217	106.117
699-55-50B	136.093					114.193	108.693
699-55-60A	175.491						
699-55-63	175.415						120.855
699-55-70	174.444			159.508		147.012	111.960
699-55-76	178.736				143.074	133.930	110.765
699-55-89	185.298			160.914			
699-55-95	238.104			172.572	122.889	96.676	82.046
699-56-53	132.877						102.397
699-57-83A	177.183			113.175	111.651	94.887	72.636
699-59-80B	178.809					156.254	122.726
699-60-57	143.448					102.910	99.252
699-63-90	156.863			115.715	113.886	106.571	83.711
B8826	202.598			135.847			
C3103	191.963	132.527					
C3104	202.000	135.858					
C3245	194.807						
C3246	204.982						
C3247	205.189						
C3830	190.600	175.848					
C3832	191.881	174.203					
C4106	202.832						
C4160	211.311						
C4191	222.281	170.770					
C4297	186.035						
C4545	195.999					126.961	
C4562	224.058			136.962	108.844	87.203	60.305
C4666	224.401			138.448	109.492		
C4993	200.571	128.699				112.240	91.513
C4996	202.863	126.510				111.575	97.859

C4997	201.189	128.434				109.079	89.572
C4998	203.567	130.110				108.164	89.876
C5515	209.901				132.177	126.385	
C5941	203.433						
C6911	214.780						
299-E27-16	198.977	136.493					116.986
299-E34-10	195.180						119.590
299-E34-9	191.820						120.344
399-1-1	115.071						
399-1-10A	114.383						
399-1-10B	112.106			97.567	80.102		
399-1-11	115.682						
399-1-12	117.472						
399-1-13A	116.799			102.778			
399-1-13B	118.611			100.323	83.254		
399-1-14A	116.209						
399-1-14B	116.841				83.770		
399-1-15	114.809			102.769			
399-1-16A	115.693						
399-1-16B	116.859			101.009	82.112		
399-1-16C	117.072			100.613	82.020		63.732
399-1-16D	117.085			100.626	83.557		62.221
399-1-17A	115.366						
399-1-17B	114.862			99.927	82.553		
399-1-17C	113.068			99.962	80.455		64.910
399-1-18A	116.322			103.368			
399-1-18B	116.008			102.597	83.699		
399-1-20	117.809			102.569	81.690		64.164
399-1-21B	116.977			96.098	84.058		
399-1-3	114.404			104.346			
399-1-33	115.738						
399-1-34	115.874						
399-1-35	115.612						
399-1-36	115.835						
399-1-37	115.818						
399-1-38	115.756						
399-1-5	114.188			102.910			
399-1-6	114.238			101.436			
399-1-7	118.564			102.714			
399-1-8	117.838			103.817	85.834		
399-1-9	117.829			102.589	82.777	66.013	63.270

399-2-1	114.672			100.346			
399-2-2	115.330			97.042			
399-2-3	115.462			97.174			
399-3-10	118.493			101.729			
399-3-11	121.149			102.861			
399-3-12	118.543			99.036			
399-3-18	113.723			103.665	79.281		
399-3-19	116.690			95.354			
399-3-2	117.564			106.591	93.180		
399-3-22	117.867			99.732	77.329		
399-3-3	119.744			105.723	82.558		
399-3-9	112.462			102.099			
399-4-1	120.844			101.337			
399-4-2	122.964						
399-4-7	109.869			89.753	79.694		
399-4-8	117.489						
399-5-1	120.353			102.065			
399-5-2	119.745			105.114	66.100		61.223
399-5-4B	120.415			103.194			
399-6-1	118.149			101.690			
399-8-1	117.969			100.291			
399-8-2	119.436			100.234			
399-8-3	118.453			102.604	93.764		
399-8-5C	122.216			99.813	85.945		63.694
699-10-30A	170.913			103.492	65.392	48.597	16.593
699-11-23A	167.266	153.550		97.162	25.534	2.674	-38.474
699-11-29	167.997	148.185					
699-12-18	168.298	143.914					
699-12-1A	135.718			117.552	60.249	-4.643	-16.530
699-12-4D	136.789			120.939	91.069		
699-13-1A	135.626			115.052			
699-13-1B	134.689			121.582			
699-13-26	157.238	143.522		97.497	94.754		-68.314
699-13-3A	136.427			121.187			
699-16-E4A	141.051			113.924	91.368	54.183	
699-17-26A	160.240	129.760					
699-17-5	133.003		113.283	104.383			
699-18-25A	159.865	132.433					
699-18-25C	162.608	136.700					
699-18-25D	162.608	138.224					
699-18-27E	163.148	138.764					

699-18-27F	163.052	141.716					
699-18-27I	163.274	138.890					
699-18-28	165.396	137.964					
699-20-25	160.408	136.024	88.780	82.684	38.488	-30.092	-43.808
699-20-E5P	143.387						
699-2-3	143.935			117.417			
699-25-20	160.855	140.128	104.772	77.035	25.219	-35.741	-60.125
699-28-27	164.249						
699-29-4	149.948						
699-2-E19	113.508			99.792	61.692	43.404	
699-30-25A	159.371	128.891	90.791	81.647			
699-30-25B	165.854	130.802					
699-31-11	147.886	126.550	99.118	85.402	12.250	1.582	-22.192
699-31-17	132.652	123.508	95.161	82.360	36.640	-15.176	-32.855
699-31-23	159.993		97.509	82.878			
699-32-22A	158.782			110.014			
699-34-8	146.225	121.841	98.067	91.361	48.689	31.925	-9.832
699-35-16	136.197	128.577	101.754	88.953	37.137	26.469	-17.727
699-35-6	154.342		107.098	93.382	76.618	35.470	1.942
699-38-15	139.657		104.117	101.039	41.633	5.027	-3.477
699-38-3	153.281			101.709	100.124		90.432
699-38-8A	148.473		102.235	82.332			26.035
699-39-2A	142.344	116.436			86.261		65.230
699-39-7A	149.646	123.738			108.498		104.688
699-40-12B	157.746	128.181	108.978	101.663	88.557		16.929
699-40-6	149.790	119.310			103.461		79.991
699-41-23	143.404			114.448			
699-48-22	157.928	141.164		110.684	68.012		45.152
699-9-E5A	139.371	118.949		108.891	47.931	3.430	-5.714
699-S11-E12B	112.299				73.895		
699-S12-29	149.668			131.380	102.424		95.109
699-S14-20A	145.186			120.802	110.134	107.086	
699-S19-E13	116.695			98.102			
699-S19-E14	110.509						
699-S20-E10	119.737			105.411			
699-S22-E9A	112.943						
699-S22-E9B	112.786			100.442	69.047		
699-S27-E9C	118.679						60.158
699-S28-E12	117.267						
699-S29-E12	119.266			105.550			
699-S29-E16B	115.074						

699-S29-E16C	115.023			97.954	85.458		62.750
699-S30-E15A	122.411			102.599			
699-S3-25	151.475			122.519			
699-S3-E12	117.126		108.897	105.544	56.166	46.108	
699-S6-E14B	113.827			103.159	67.803	56.525	
699-S6-E4B	129.503						
699-S7-34	160.427				133.604	123.241	118.059
299-E13-10	226.323	166.582		139.760			
299-E13-12	223.046	164.220		136.178			
299-E13-17	222.880	163.444		139.060			
299-E17-12	218.751			133.102			
299-E24-21	215.424						
299-E25-4	199.684				128.056	123.484	
299-E25-43	198.133					134.125	
299-E25-50	205.346	124.574					
299-E26-12	192.261						
299-E26-13	184.431						
299-E27-1	208.306						
299-E27-19	198.480						
299-E32-8	196.753						
299-E33-23	188.265	134.316					
299-E33-304	190.141	135.033					
299-E33-333	195.820	134.555					
299-E34-1	192.145						120.517
299-E34-12	194.833						119.852
299-E34-7	184.325						121.841
299-W10-109	193.714	180.912		168.111			
299-W11-3	219.420	188.026		175.834			
299-W11-9	221.388	187.860		177.192			
299-W12-1	220.931	195.023		187.403			
299-W15-152	209.424	169.800	164.314				
299-W15-46	197.398	170.411		166.144	76.350	59.281	44.468
299-W15-95	199.350	170.699		167.346			
299-W22-10	205.874	163.812					
699-21-30B	164.582	153.914	97.526	82.286	38.090	-28.966	-51.826
699-26-29A	154.108	132.772	101.682	84.004	30.664	-34.868	-57.728
699-26-33	163.701	122.553					
699-31-84A	191.590			169.035	74.242	42.848	6.882
699-35-57	219.585			130.431			
699-35-58	218.524			133.180			
699-36-46P	216.102			127.405	106.374	83.514	57.910

699-36-58B	220.519			129.841			
699-36-63A	227.092			146.320			
699-37-82B	191.596	173.003		161.421	72.114	44.987	11.459
699-37-83	194.906			149.186	70.852	44.030	6.844
699-37-84	194.142	168.234	162.748	162.138	66.736	40.523	5.471
699-38-61	227.272			126.688			
699-43-40	163.723	127.757					
699-43-45	182.256						
699-43-91B	205.830			117.438	64.708	34.532	-5.092
699-44-42	176.548						
699-48-71	209.350						
699-49-55B	162.111						120.963
699-49-57A	168.949						119.572
699-50-48A	168.976						135.143
699-50-53A	170.173						122.472
699-50-53B	170.195						122.707
699-50-56	168.917	141.485					119.844
699-51-46	136.561						
699-52-52	170.945						125.225
699-53-50	136.450						125.477
699-54-57	175.874						120.705
699-55-60B	175.926						
699-55-65B	177.243			136.705			135.181
699-57-59	175.761						
699-59-55	131.726						
699-59-58	152.026						
699-60-60	156.364						117.654
699-61-62	151.158		111.229				96.599
699-61-66	160.202						94.670
699-63-55	130.712						96.879
699-63-58	150.926						114.350
699-64-62	153.480						
699-65-50	143.372		112.282	88.508	67.172	-25.487	-31.888
3099-47-18A	112.941				100.846		60.343
399-1-18C	115.737			102.935	82.513		74.589
399-1-2	118.207			99.858			
399-1-23	115.167			99.317	84.992		
399-1-24	115.627						
399-1-25	115.601						
399-1-26	115.465						
399-1-27	115.699						

399-1-28	115.713						
399-1-29	115.703						
399-1-30	115.636						
399-1-31	115.528						
399-1-32	115.279						
399-1-4	114.905			103.323			
399-2-10	111.916			96.828			
399-2-11	109.787			97.900			
399-2-12	111.203			95.049			
399-2-13	110.392			98.047			
399-2-14	111.792			98.228			
399-2-15	111.838			98.122			
399-2-16	112.364			98.191			
399-2-17	111.828			97.959			
399-2-18	111.820			97.494			
399-2-19	112.433			98.412			
399-2-20	113.063			97.823			
399-2-21	112.712			98.082			
399-2-22	113.047			97.350			
399-2-23	113.052			98.117			
399-2-24	113.066			97.216			
399-2-25	113.662			97.965	78.458		65.961
399-2-26	112.177			97.242			
399-2-27	112.158			97.376			
399-2-28	112.422			97.639			
399-2-29	113.068			97.980			
399-2-30	113.395			98.002			
399-2-31	113.071			97.831			
399-2-5	111.043			97.937	76.906		
399-2-7	111.258			98.456			
399-2-8	112.187			98.776			
399-2-9	111.561			96.778			
399-3-1	118.200						
399-3-20	115.272			96.070			
399-3-21	114.909			96.621	76.200		
399-3-23	110.143			98.560			
399-3-24	110.107			98.829			
399-3-25	111.833			97.507			
399-3-26	110.420			99.142			
399-3-27	111.888			99.391			
399-3-28	111.248			97.837			

399-3-29	113.075			98.902			
399-3-30	111.834			97.965			
399-3-31	111.539			97.975			
399-3-32	111.849			97.828			
399-3-6	120.763						
399-3-7	121.183						
399-3-8	119.178						
399-4-10	115.679						
399-4-14	115.710			97.574	78.372		
399-4-5	123.574			97.666	77.244		63.681
399-4-9	116.753						
399-8-4	120.292						
499-S1-7B	164.379			123.231	25.695	13.503	-12.405
699-11-45A	177.340			125.524	108.760	82.852	63.040
699-1-18	164.897			126.797			
699-13-2B	135.018		107.586	98.442	46.626	-6.714	
699-14-38	157.975			125.117	104.117	42.516	30.020
699-14-E3E	138.246		106.242	100.146	51.378	17.850	3.524
699-14-E6P	140.787		99.639	63.063	55.443	31.059	
699-15-15A	167.776	122.056	102.244	90.052	19.948	-30.344	
699-15-26	156.100	122.572	91.787	75.328			
699-15-E13	126.106			105.075	75.205	52.954	33.142
699-16-23	170.265	150.453		98.637	-9.567		-49.800
699-16-30A	172.074	153.786		124.830	71.490		-91.578
699-17-15	164.364	147.600		103.404	34.824		-40.462
699-17-26G	159.410	150.266		96.926	29.566	-39.624	-60.899
699-18-21	165.004	149.764		96.424		-30.068	-48.356
699-19-23	165.431	144.095	93.498	87.097	37.415	-26.288	-44.881
699-19-27	161.566	137.182		97.558	27.454	-40.517	-56.366
699-19-34A	163.023	135.591	97.491	88.347	27.387	-29.001	-54.909
699-19-58	175.671			130.668	118.668	113.187	113.668
699-20-18A	163.249	138.865	100.155	94.669	51.997	-10.487	-26.337
699-20-39	163.728	131.045		115.135	61.542	-12.561	-23.761
699-20-E12	134.371	114.559	109.987	108.463	76.154	35.311	
699-21-17	162.481	136.573	101.521	93.901	46.657	-17.351	-29.543
699-22-23	158.162	141.398	100.250	86.534	42.338	-29.290	-38.739
699-2-33A	164.499			126.704	71.535	36.483	
699-24-1P	145.675	124.339	102.698	99.955	46.615	13.087	
699-25-26	158.190	144.474		98.449		-9.450	-27.738
699-25-55	205.220	138.946		124.346			
699-26-15A	133.033						

699-26-15C	134.789	114.642	105.162	78.706	11.345	-41.995	-48.701
699-2-6A	155.301						
699-2-7	157.127						
699-28-23	160.776	148.584	96.768	78.480	19.044	-31.248	-51.060
699-29-78	196.155	159.647		146.847	63.043	39.842	17.941
699-29-83	188.840	169.148		155.748	75.544	52.643	20.341
699-2-E14	119.731			99.919	49.627	34.387	22.195
699-30-25C	166.589	131.537	94.047	78.197	8.093	-27.873	-42.504
699-31-53A	214.523			128.846			
699-31-65	207.526			144.147			
699-31-8	143.938	125.650	108.277	86.026	37.258	-8.462	-17.606
699-32-22B	157.859		90.437	84.402	31.031	-23.863	-33.068
699-32-26	157.404	142.164	97.053	82.728	70.536	-24.562	-40.716
699-32-62	214.444			147.147	92.644	72.144	
699-33-14	142.236	125.472	102.612	88.896	37.080	-13.212	-22.356
699-33-21A	153.543	135.255	104.775	88.011	24.003	-20.193	-35.433
699-33-56	217.501			131.346	96.545		
699-33-6	153.756	130.896	101.940	89.748	73.898	-8.307	-10.836
699-34-20	153.694	126.262	92.734	85.114	54.634	-18.518	-34.672
699-3-45	154.793						114.864
699-35-28	162.416	148.700	98.408	87.740	25.256	3.920	-25.036
699-35-3A	149.306	131.018	102.062	97.490	79.202		9.098
699-35-3B	147.413	130.040		103.522	97.121	46.829	31.589
699-36-10	162.631	124.531	104.201	96.185	79.207	7.914	-3.394
699-36-17	136.171		102.216	92.889	42.719		-9.067
699-36-27	163.319	143.507	99.311	88.643	36.827	3.299	-18.037
699-36-E3	143.374	115.942		106.798	77.842		44.314
699-37-43	211.368	137.912	125.110	90.668	89.448	81.828	56.225
699-37-E4	118.972			103.214			
699-38-19	138.893	126.701	102.317	93.173	32.213		-7.411
699-38-E0	144.915			101.877	91.179		80.480
699-39-23	143.053	130.861	106.477	97.333	51.613	-1.727	-4.775
699-39-7B	149.694	123.786			108.546		105.498
699-39-E2	123.575	112.907			86.999	79.379	68.711
699-40-0	126.288	114.096	108.000	66.852	48.564		33.324
699-40-1	134.713	107.281		102.709	93.107		39.493
699-40-13	155.803	120.446	107.035	100.024	70.459	41.807	9.194
699-40-2	140.989	110.204		106.547	95.269		34.309
699-40-20	142.579	133.740	104.479	99.907	32.851	6.943	-2.201
699-40-84	193.412	173.047	166.048	160.487	71.845	49.642	12.141
699-41-10	150.276	120.558	100.136	95.564	94.040		71.180

699-41-11	155.874	119.298	101.010	93.390	72.054		41.574
699-41-20	144.346	124.534		97.102	36.142	19.378	7.186
699-42-10	150.558	129.222			101.790		89.598
699-42-12A	154.740	128.527	115.116	106.276	82.807		57.813
699-42-21	140.957	124.193		106.515	43.421	15.989	3.797
699-42-3	133.430	102.950			101.426	66.374	16.082
699-42-E9B	117.882		91.608	82.525	74.783		50.490
699-43-18	158.947	133.039		101.644	61.411		20.263
699-43-23	159.947	132.515	103.559	100.511	65.459	19.739	16.691
699-43-8	145.307	114.827		99.587	90.443		65.145
699-43-9	147.937	122.029					100.693
699-44-16	137.464	122.224	96.316	71.932	46.024		31.393
699-44-7	134.456			78.068	73.496		6.135
699-45-24	156.648	133.788	107.880	104.832	72.828		28.632
699-45-26	159.163	136.303	107.347	101.251	66.199		22.003
699-46-15	136.421						127.581
699-46-21B	160.191		137.087	123.310	80.394		
699-46-21C	160.266		137.406	124.299			
699-46-3	117.865		104.149	84.337	76.717		25.815
699-46-5	118.239		95.379	86.235	74.043		19.179
699-47-24	157.224	141.984			93.216	62.736	38.657
699-48-18	129.786						
699-48-27	159.888	143.124		108.072	88.260		40.406
699-49-13A	126.034		100.187				
699-49-13B	126.710		104.551				
699-49-13C	127.099		108.933				
699-49-13E	126.838		104.649				
699-49-21	151.859						119.246
699-49-55A	162.874	146.110		131.784			121.726
699-4-E6	130.448						
699-50-30	160.366			134.047	117.945	48.942	47.842
699-50-45	138.022						127.049
699-52-46A	139.363				128.695		123.818
699-54-15A	125.226	116.082		82.554	58.170		22.813
699-54-18C	121.576		89.544	82.018	61.542	17.941	15.741
699-55-55	171.849						82.238
699-6-2A	141.660			119.410	21.569	0.538	-22.627
699-8-17	160.279	121.874	99.319				
699-8-32	170.015						
699-9-E2	128.511						
699-S11-E12A	112.516			94.228	77.464		48.508

699-S12-3	133.738						
699-S18-E2A	133.566			112.230	71.082		57.670
699-S19-11	148.501						
699-S24-19	130.383			123.068			116.363
699-S27-E14	123.485						
699-S31-1	141.245			118.995	84.552		73.884
699-S4-E16	106.150			98.530	60.430		58.601
699-S6-E14A	116.327			105.354	62.682		56.281
699-S6-E4A	136.373						
699-S6-E4C	132.616			115.852	42.700	32.337	20.755
699-S6-E4D	132.216						
699-S6-E4E	130.868						
699-S8-19	154.628			120.490			
ENW#2	128.930			117.958			
ENW#3	131.064			121.006			
699-17-26F	0.000	-6.706		-60.655	-130.759		
699-S22-E9C	112.894			103.750	68.698		62.298
699-43-41H	-1.829	-28.651					
699-18-25B	159.345	129.779					
699-18-25E	160.008	150.864	96.914		7.608	-33.540	-62.496
699-17-26B	158.622	128.142					
699-17-26C	0.000	-24.384					
299-W11-6	218.259	183.207	174.063	167.967			
299-E28-22	214.540					132.244	102.069
699-70-68	161.388						
699-73-61	163.022						
699-66-64	155.202						
699-36-46Q	215.781			106.967			
699-36-46R	215.925			106.806			
699-19-26B	156.690	150.594		131.391			
699-55-57	172.816						121.610
299-E27-18	198.270	144.320		123.594			117.498
299-E28-1	209.858	149.813					
299-E28-13	216.327			139.517			
299-E28-19	213.431	141.803		117.419			
299-E33-344	194.577	133.007					
699-39-1A	141.883	114.451			88.543		70.255
699-39-12	162.112	133.765					
699-40-12C	158.321	138.509	129.365	126.317	88.217		
699-40-12D	159.396		128.916	122.820	107.580		
699-40-12E	157.864	142.624	107.572	101.476			

699-40-12F	157.025		129.593	121.973			
699-40-12G	158.124						
699-40-12H	157.827						
699-40-21	143.687						
699-41-5	148.507	119.551			101.263		79.927
699-41-25	144.179						
699-42-27	142.504						
699-43-2	115.586		106.442	83.582	36.338		21.098
699-44-27	143.229	134.085		114.273	67.029		34.111
699-44-28	143.197						
699-45-6A	126.659	103.799	94.655	53.507	33.695		18.455
699-45-30	143.861						
699-46-21D	159.923		137.368	123.956			
699-46-21E	160.286		136.511	124.319			
699-46-21F	160.704		136.929	124.737			
699-46-21G	160.601		134.693	122.501			
699-47-25	164.204	138.296		103.244	69.716	62.096	33.140
699-47-51	178.908						130.445
699-48-35	148.137	144.785		137.469	134.421	111.561	99.369
699-48-48A	175.432						112.948
699-48-48B	175.459						112.975
699-49-32A	155.472						
699-49-34	150.633						127.773
699-50-28B	163.279	155.659					
699-50-28C	162.827	153.683		117.107	103.391		53.099
699-50-48B	168.786						134.953
699-51-19	131.033				111.221		106.649
699-51-36B	159.130		149.986				148.462
699-51-36C	157.460						144.658
699-51-36D	156.681						150.585
699-52-17	121.320		94.498	87.792	60.360		14.640
699-52-30	167.681	161.585	160.061	141.773			
699-52-48	141.566						134.556
699-52-55	174.052	131.685					120.956
699-52-55B	173.339	129.143					121.065
699-53-35	161.670	150.697		139.724	128.751		
699-53-47B	134.175						125.335
699-53-48A	134.920						122.118
699-53-48B	135.272	123.994					121.860
699-54-34	163.883	150.472		127.612			123.040
699-54-49	134.472	118.622					116.488

699-55-40	166.595			146.783	129.105		
699-55-50C	134.994						
699-55-50D	133.256						107.043
699-55-65A	177.243						
699-55-65C	177.853						135.181
699-56-40A	172.352						155.284
699-56-40B	197.272						177.612
699-56-40C	187.827						169.539
699-56-41	181.580						166.340
699-56-42A	163.386						135.954
699-56-42B	166.850					137.894	136.370
699-56-42C	162.018						133.062
699-56-42D	171.849						157.219
699-56-42E	165.174						139.266
699-56-42F	176.354						164.162
699-56-43	165.781						149.627
699-56-51	134.268						103.483
699-57-41A	216.871						194.011
699-57-41B	216.865						197.053
699-57-41C	216.520						198.232
699-57-41E	213.177						202.509
699-57-41F	216.232						191.848
699-57-42	202.542						191.874
699-58-41B	210.227						191.939
699-58-41C	210.320						185.632
699-58-41D	214.253						209.681
699-58-41F	211.897						192.085
699-59-44	231.311						226.739
699-60-59	155.201						100.337
699-62-53	134.689						126.764
699-63-51	130.415			124.319	122.795		
699-65-59A	154.935				96.718		
699-65-59B	155.295						
699-65-59C	155.295						
699-66-58	154.410						
699-71-77	144.968			112.964			
399-1-19	114.482			102.290			
399-3-4A	121.745						
399-3-5	120.525						
699-12-2C	135.448			119.293			
699-13-1D	135.283			114.251			

699-13-2D	135.928			119.316			
699-20-E2	143.064	122.338	102.830	95.820	47.662	4.380	
699-42-42A	184.550				127.552	121.152	91.891
699-67-51	160.892		113.648	99.932			
699-72-73	148.132			122.224			
699-S27-E9B	118.658				84.216		
699-42-30		147.752		107.519	67.285	36.195	17.907
699-61-16A			124.523		108.146		33.142
Fault Well 4					66.509	35.084	17.710
Fault Well 5					68.013	37.746	20.068
Fault Well 6					69.513	40.009	22.940
Fault Well 7					72.006	43.233	25.249
Fault Well 8					72.501	46.014	30.774
Fault Well 9					70.008	46.813	36.450
Fault Well 10					67.006	47.956	44.298
Fault Well 1						23.624	5.946
Fault Well 2						26.820	9.751
Fault Well 3						29.397	12.328
Fault Well 13						56.428	39.969
Fault Well 14						59.081	42.622
Fault Well 15						63.882	47.423
Fault Well 16						70.102	51.814
Fault Well 17						74.607	56.015
Fault Well 18						77.427	60.054
Fault Well 19						79.194	67.002
Fault Well 20						81.547	73.927
Fault Well 21						87.457	78.313
Fault Well 22						91.334	88.895
Fault Well 11							49.475
Fault Well 12							55.885
Fault Well 23							98.944
Fault Well 24							106.187
Fault Well 25							108.001
Fault Well 26							109.935
699-61-53							233.875
699-47-80B							56.274
699-58-40							227.062
699-58-41A							210.672
699-58-41E							210.812
699-60-53F							251.006
699-61-55A							141.735

699-61-55B							142.068
699-61-57							135.329

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