PHOENIX

BBI Explorer – User Guide

Pacific Northwest NATIONAL LABORATORY

About PHOENIX

The Department of Energy has partnered with the Pacific Northwest National Laboratory on PHOENIX, a family of spatially enabled web applications providing quick access to decades of valuable scientific data and insight through intuitive query, visualization, and analysis tools.

PNNL-Hanford Online ENvironmental Information eXchange provides a single access point to multiple data sets via standard web browsers. PHOENIX also provides data visualization tools and provides explanations of key data sets to aid understanding. PHOENIX applications are based on the innovative technology applied by the Pacific Northwest National Laboratory (PNNL) to access and visualize other environmental data sets at the Hanford Site.

By integrating previously isolated datasets and developing relevant visualization and analysis tools, PHOENIX applications are enabling DOE to discover new correlations hidden in legacy data, allowing them to more effectively address complex issues at Hanford.

About BBI Explorer

BBI Explorer allows DOE and Contractor staff to access, visualize and download current and historical Hanford tank farm Best Basis Inventory (BBI). Users can choose which Tanks, analytes, waste phases and BBI Published date to download data for. These selections can be easily changed on-the-fly from within the application. The application then presents the user with tables and graphics visualizing the contents of the selected tanks. Additionally, tanks can be ranked by analyte inventory or waste phase volume, and a calculations page allows summing across user-selectable criteria, user-supplied weighting factors, and mass and volume conversions. All tables within the application are downloadable for use in other software.

Questions, Comments, Concerns, Feedback?

Contact the PHOENIX team: PHOENIX@pnnl.gov

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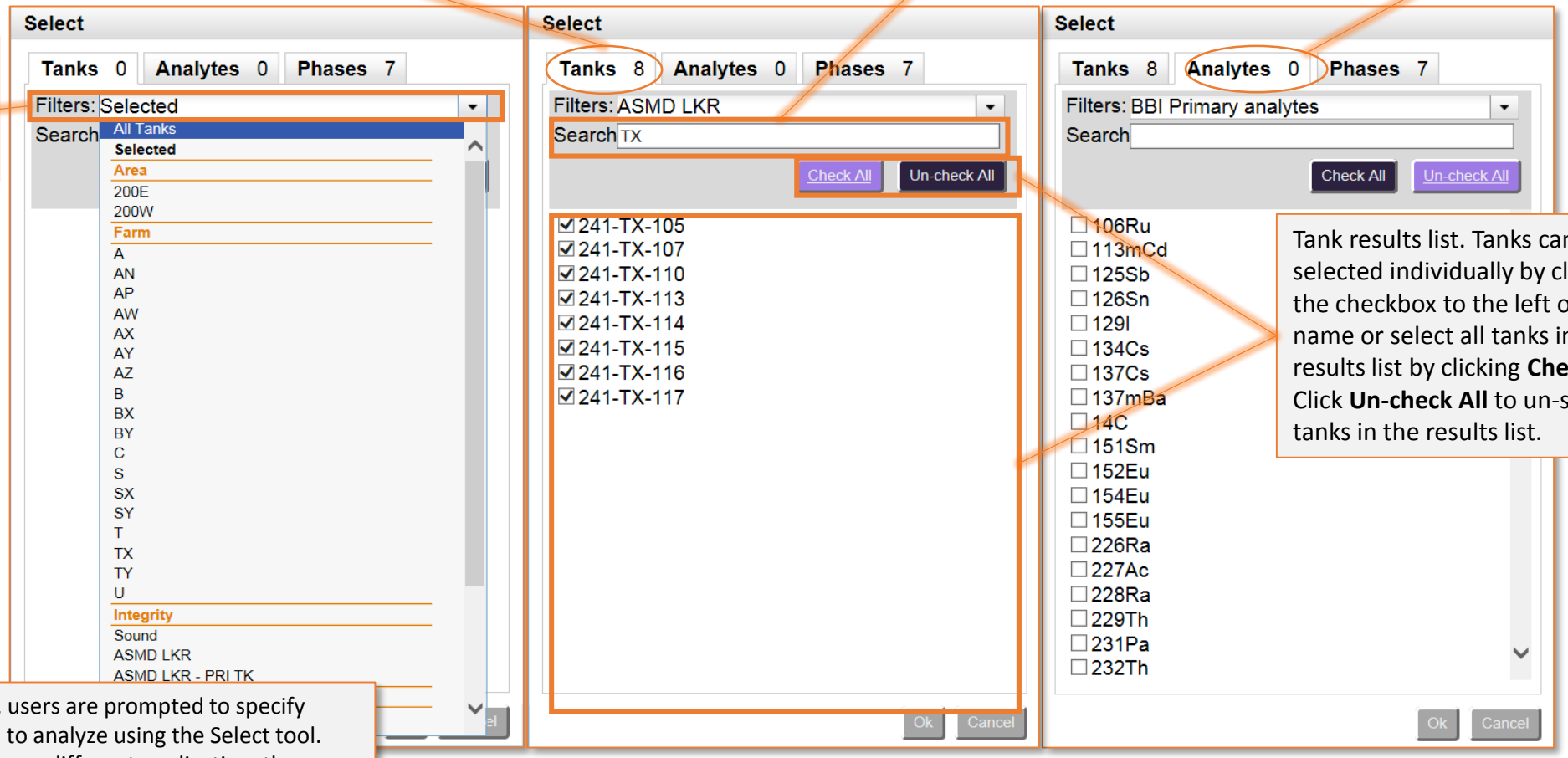
Select Tool

Users must select a Tank(s) and Analyte(s) to submit.

Total number of selected tanks.

Users can refine their results by specifying search text.

The Filters drop-down will filter the tanks by pre-defined lists such as Hanford Area, Tank Farms, Tank Status, etc..



Tank results list. Tanks can be selected individually by clicking the checkbox to the left of their name or select all tanks in the results list by clicking **Check All**. Click **Un-check All** to un-select all tanks in the results list.

When navigating from the Gallery, users are prompted to specify tanks and analytes they would like to analyze using the Select tool. When opening the BBI Explorer from a different application, the user's current list will be used.

Application Tools

Navigate to the different tools within BBI Explorer by clicking the gray tabs.

Click here to change date; the BBI that was valid on the selected date will be loaded and all tabs will update to use the loaded BBI. The selection box turns red to indicate that the application is not using the current BBI.

Number of selected Tanks, Analytes, and Phases currently selected. Click each one to return to the Select tool.

Click **Prev** to return to your previous application or **Next** to send your current Tank and analyte selections to another PHOENIX application.

Click the green down arrow to download the current table to a comma-delimited values (csv) file. CSV files downloaded from all of the tabs (except BBI Output) will contain a record of the tank, analyte, and phase selections, as well as the date downloaded and BBI date selected.

Click the *(i)* to view the Data Dictionary information.
Click the *(?)* to view help text for the current page.

Return to the PHOENIX Gallery.

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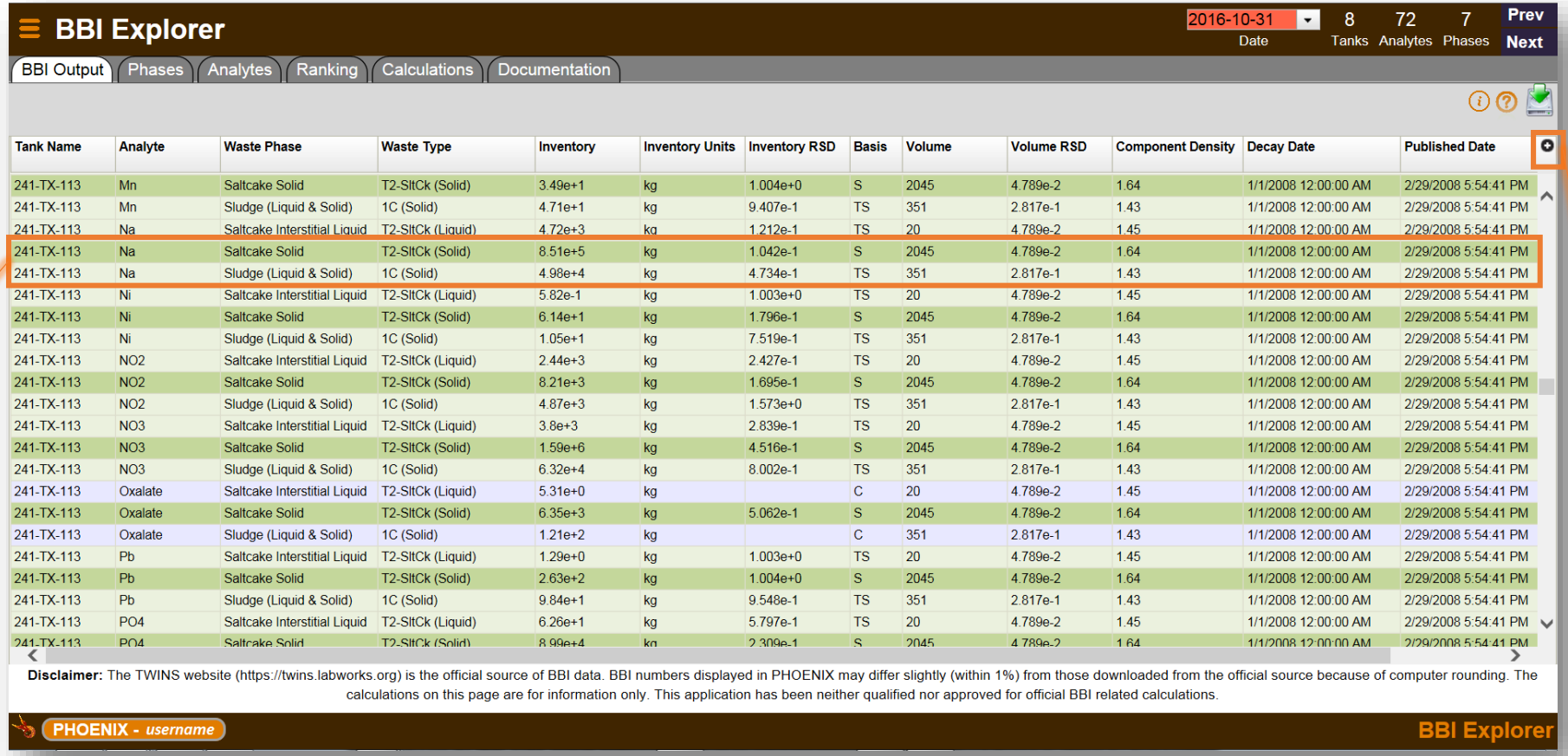
The BBI Output table shows the tank waste data elements provided through TWINS.

Rows in dark green are sample based ("S"). Rows in lighter green are based on sample-based waste templates ("TS"). The default styling of the table rows are shaded blue every other row, so the blue shade isn't an indicator.



Tank Name	Analyte	Waste Phase	Waste Type	Inventory	Inventory Units	Inventory RSD	Basis	Volume	Volume RSD	Component Density	Decay Date	Published Date
241-TX-113	Mn	Saltcake Solid	T2-SltCk (Solid)	3.49e+1	kg	1.004e+0	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Mn	Sludge (Liquid & Solid)	1C (Solid)	4.71e+1	kg	9.407e-1	TS	351	2.817e-1	1.43	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Na	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	4.72e+3	kg	1.212e-1	TS	20	4.789e-2	1.45	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Na	Saltcake Solid	T2-SltCk (Solid)	8.51e+5	kg	1.042e-1	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Na	Sludge (Liquid & Solid)	1C (Solid)	4.98e+4	kg	4.734e-1	TS	351	2.817e-1	1.43	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Ni	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	5.82e-1	kg	1.003e+0	TS	20	4.789e-2	1.45	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Ni	Saltcake Solid	T2-SltCk (Solid)	6.14e+1	kg	1.796e-1	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Ni	Sludge (Liquid & Solid)	1C (Solid)	1.05e+1	kg	7.519e-1	TS	351	2.817e-1	1.43	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	NO2	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	2.44e+3	kg	2.427e-1	TS	20	4.789e-2	1.45	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	NO2	Saltcake Solid	T2-SltCk (Solid)	8.21e+3	kg	1.695e-1	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	NO2	Sludge (Liquid & Solid)	1C (Solid)	4.87e+3	kg	1.573e+0	TS	351	2.817e-1	1.43	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	NO3	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	3.8e+3	kg	2.839e-1	TS	20	4.789e-2	1.45	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	NO3	Saltcake Solid	T2-SltCk (Solid)	1.59e+6	kg	4.516e-1	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	NO3	Sludge (Liquid & Solid)	1C (Solid)	6.32e+4	kg	8.002e-1	TS	351	2.817e-1	1.43	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Oxalate	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	5.31e+0	kg		C	20	4.789e-2	1.45	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Oxalate	Saltcake Solid	T2-SltCk (Solid)	6.35e+3	kg	5.062e-1	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Oxalate	Sludge (Liquid & Solid)	1C (Solid)	1.21e+2	kg		C	351	2.817e-1	1.43	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Pb	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	1.29e+0	kg	1.003e+0	TS	20	4.789e-2	1.45	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Pb	Saltcake Solid	T2-SltCk (Solid)	2.63e+2	kg	1.004e+0	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	Pb	Sludge (Liquid & Solid)	1C (Solid)	9.84e+1	kg	9.548e-1	TS	351	2.817e-1	1.43	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	PO4	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	6.26e+1	kg	5.797e-1	TS	20	4.789e-2	1.45	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM
241-TX-113	PO4	Saltcake Solid	T2-SltCk (Solid)	8.99e+4	kg	2.309e-1	S	2045	4.789e-2	1.64	1/1/2008 12:00:00 AM	2/29/2008 5:54:41 PM

Click the **(+)** icon to add/remove columns to the table and in the downloaded csv file (using the download button above). What is shown in the table is what's downloaded in the csv file.

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Toggle between a **chart** view of the data, or **table** view (shown below) that you can export to a csv file.

Click **Waste Volume** to view the waste volume data in bar charts relative to the total tank capacity or **Waste Fraction** to view the waste volume relative to the total waste volume in each tank.

Click the **Show Waste Types** check box to include the Waste Type volumes that comprise the waste phases.

Tank Name	Waste Phase	Waste Type	Volume (kGal)
241-TX-105	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	26
241-TX-105	Saltcake Solid	T2-SltCk (Solid)	534
241-TX-105	Sludge (Liquid & Solid)	MW2 (Solid)	8
241-TX-105	Sludge (Liquid & Solid)	Z (Solid)	3
241-TX-107	Saltcake Interstitial Liquid	R-SltCk (Liquid)	2
241-TX-107	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	5
241-TX-107	Saltcake Solid	R-SltCk (Solid)	6
241-TX-107	Saltcake Solid	T2-SltCk (Solid)	15
241-TX-110	Saltcake Interstitial Liquid	T2-SltCk (Liquid)	25
241-TX-110	Saltcake Solid	T2-SltCk (Drained)	243
241-TX-110	Saltcake Solid	T2-SltCk (Saturated)	72

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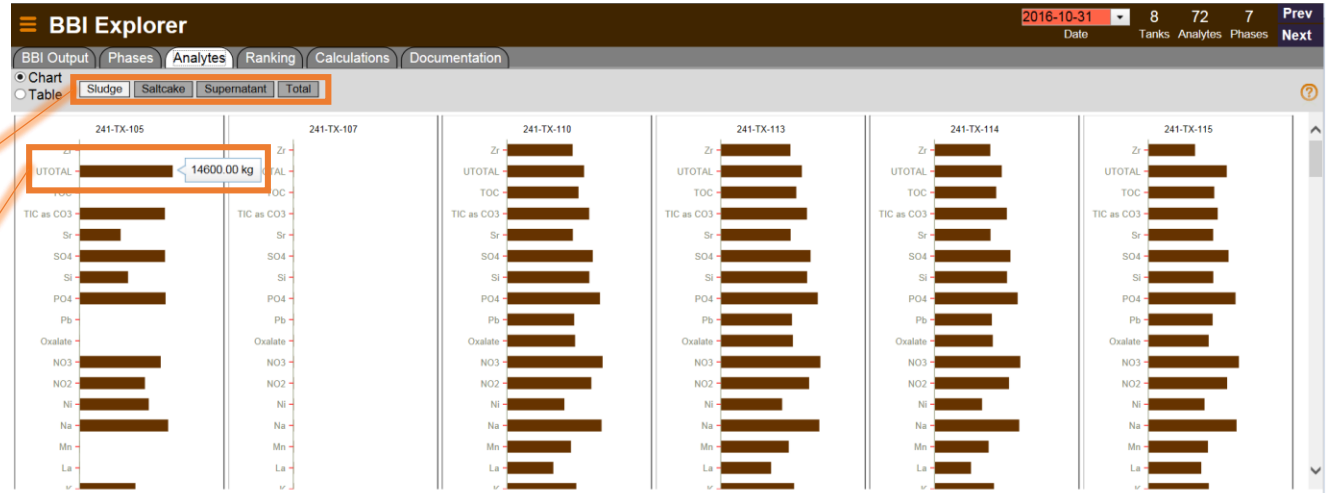
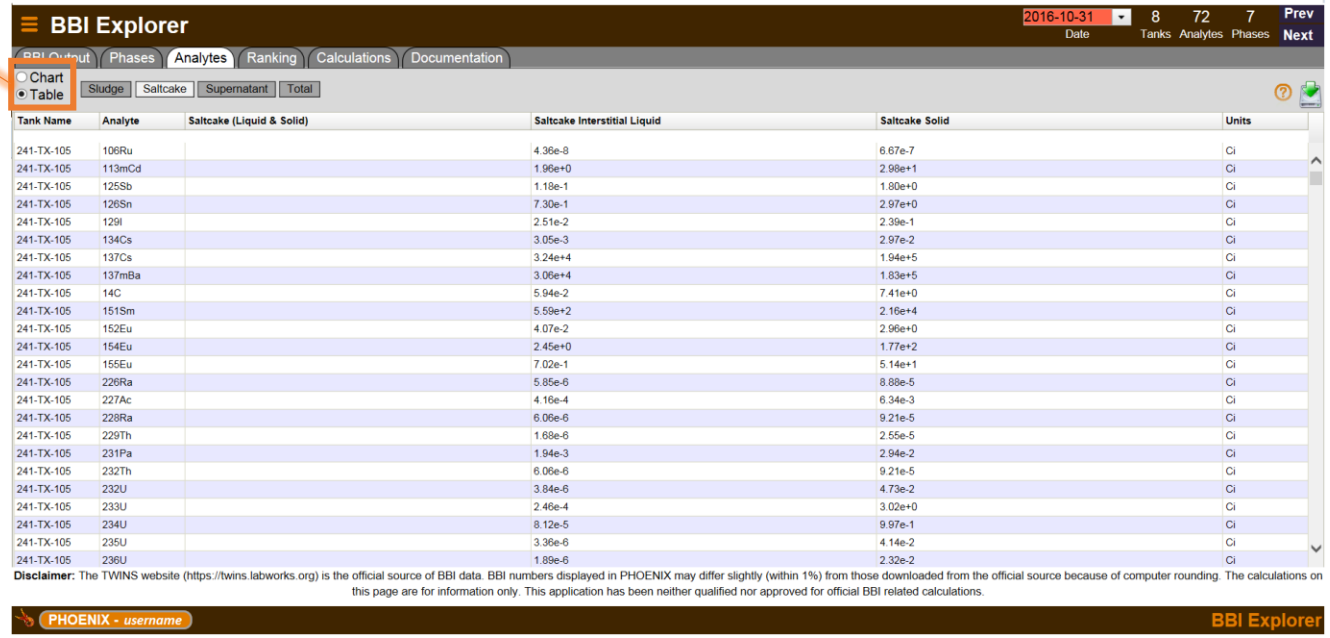
Click the **Sludge**, **Saltcake**, **Supernatant**, or **Total** buttons to view the respective data.

Scroll over the data in the charts to view the data value.

Toggle between a **chart** view of the data, or **table** view that you can export to a csv file.





Tank Name	Analyte	Saltcake (Liquid & Solid)	Saltcake Interstitial Liquid	Saltcake Solid	Units
241-TX-105	106Ru		4.36e-8	6.67e-7	Ci
241-TX-105	113mCd		1.96e+0	2.98e+1	Ci
241-TX-105	125Sb		1.18e-1	1.80e+0	Ci
241-TX-105	126Sn		7.30e-1	2.97e+0	Ci
241-TX-105	129I		2.51e-2	2.39e-1	Ci
241-TX-105	134Cs		3.05e-3	2.97e-2	Ci
241-TX-105	137Cs		3.24e+4	1.94e+5	Ci
241-TX-105	137mBa		3.06e+4	1.83e+5	Ci
241-TX-105	14C		5.94e-2	7.41e+0	Ci
241-TX-105	151Sm		5.59e+2	2.16e+4	Ci
241-TX-105	152Eu		4.07e-2	2.96e+0	Ci
241-TX-105	154Eu		2.45e+0	1.77e+2	Ci
241-TX-105	155Eu		7.02e-1	5.14e+1	Ci
241-TX-105	226Ra		5.85e-6	8.88e-5	Ci
241-TX-105	227Ac		4.16e-4	6.34e-3	Ci
241-TX-105	228Ra		6.06e-6	9.21e-5	Ci
241-TX-105	229Th		1.68e-6	2.55e-5	Ci
241-TX-105	231Pa		1.94e-3	2.94e-2	Ci
241-TX-105	232Th		6.06e-6	9.21e-5	Ci
241-TX-105	232U		3.84e-6	4.73e-2	Ci
241-TX-105	233U		2.46e-4	3.02e+0	Ci
241-TX-105	234U		8.12e-5	9.97e-1	Ci
241-TX-105	235U		3.36e-6	4.14e-2	Ci
241-TX-105	236U		1.89e-6	2.32e-2	Ci

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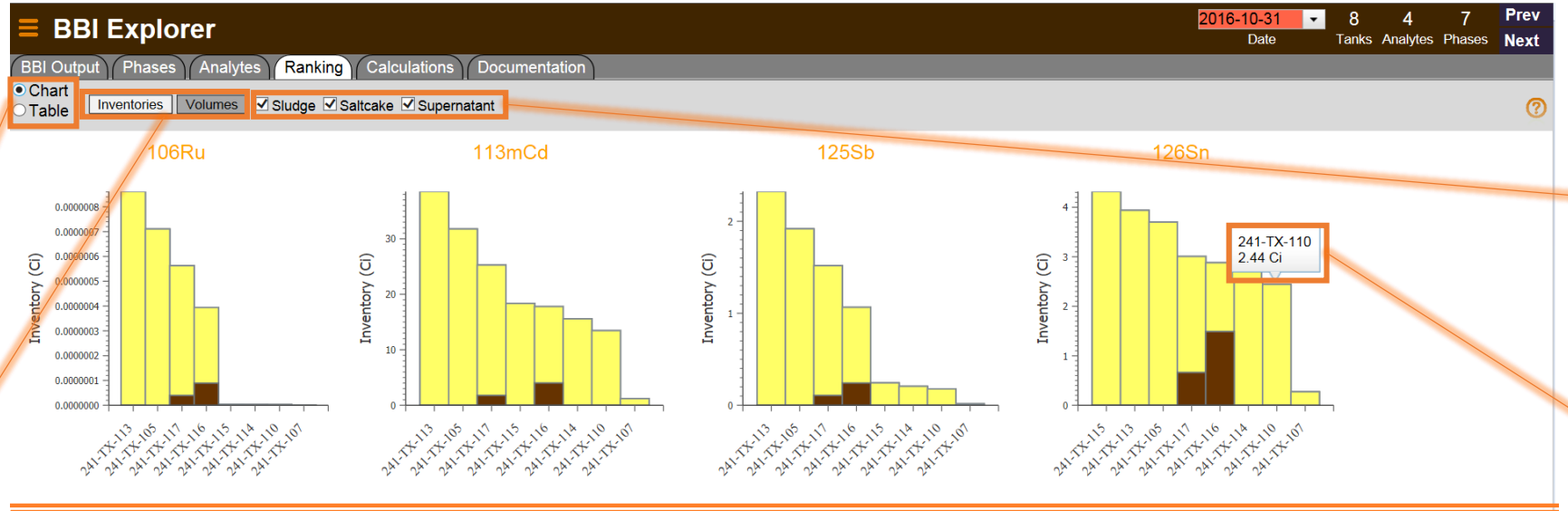
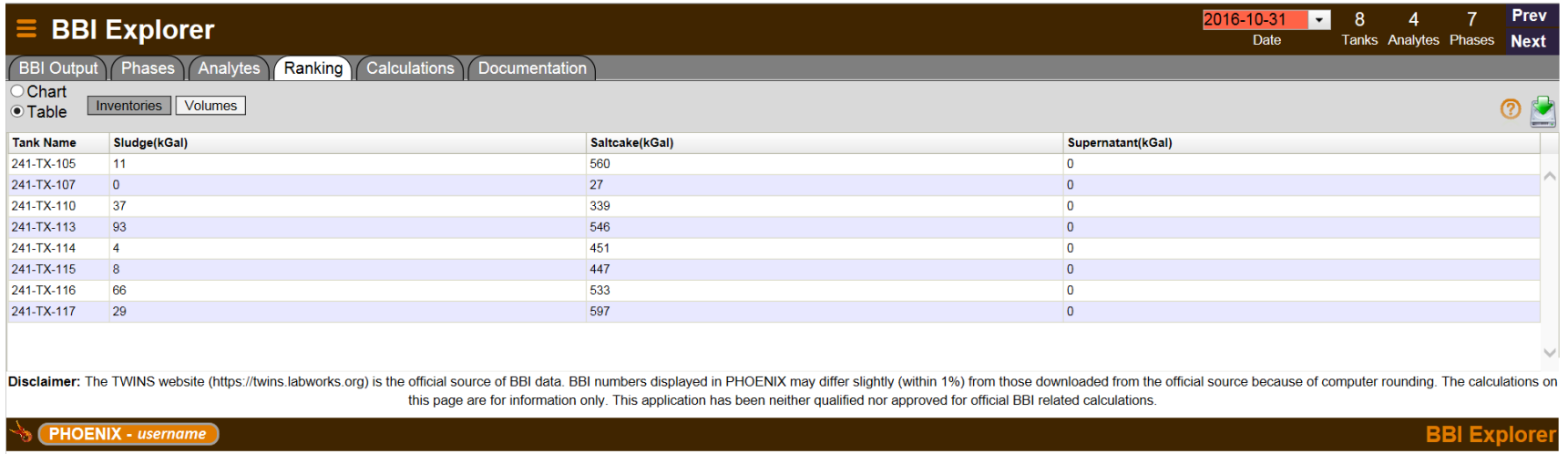
Toggle between a **chart** view of the data, or **table** view (shown below) that you can export to a csv file.

Click **Inventory** button to view the waste inventory data in bar charts or **Volume** button to view the waste volume for each tank.



Click the **Sludge**, **Saltcake**, **Supernatant**, or **Total** buttons to add/remove the respective data. The charts will re-rank the tanks based on the changes.

Scroll over the data in the charts to view the data value.



Tank Name	Sludge(kGal)	Saltcake(kGal)	Supernatant(kGal)
241-TX-105	11	560	0
241-TX-107	0	27	0
241-TX-110	37	339	0
241-TX-113	93	546	0
241-TX-114	4	451	0
241-TX-115	8	447	0
241-TX-116	66	533	0
241-TX-117	29	597	0

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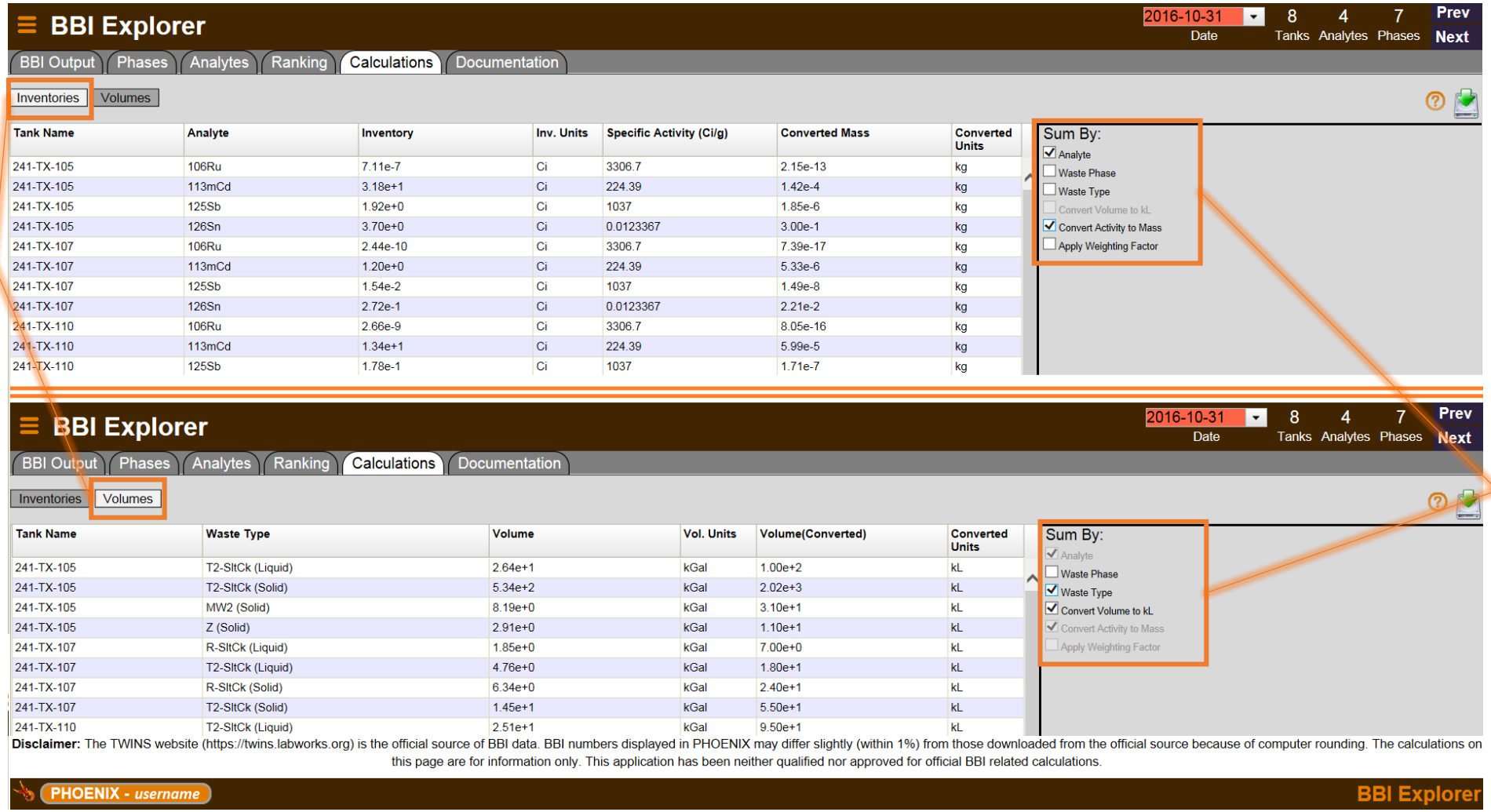
Click the **Inventories** or **Volumes** button to view the respective data in the tables, and perform the selected calculations on that data.



Tank Name	Analyte	Inventory	Inv. Units	Specific Activity (Ci/g)	Converted Mass	Converted Units
241-TX-105	106Ru	7.11e-7	Ci	3306.7	2.15e-13	kg
241-TX-105	113mCd	3.18e+1	Ci	224.39	1.42e-4	kg
241-TX-105	125Sb	1.92e+0	Ci	1037	1.85e-6	kg
241-TX-105	126Sn	3.70e+0	Ci	0.0123367	3.00e-1	kg
241-TX-107	106Ru	2.44e-10	Ci	3306.7	7.39e-17	kg
241-TX-107	113mCd	1.20e+0	Ci	224.39	5.33e-6	kg
241-TX-107	125Sb	1.54e-2	Ci	1037	1.49e-8	kg
241-TX-107	126Sn	2.72e-1	Ci	0.0123367	2.21e-2	kg
241-TX-110	106Ru	2.66e-9	Ci	3306.7	8.05e-16	kg
241-TX-110	113mCd	1.34e+1	Ci	224.39	5.99e-5	kg
241-TX-110	125Sb	1.78e-1	Ci	1037	1.71e-7	kg

Tank Name	Waste Type	Volume	Vol. Units	Volume(Converted)	Converted Units
241-TX-105	T2-SltCk (Liquid)	2.64e+1	kGal	1.00e+2	kL
241-TX-105	T2-SltCk (Solid)	5.34e+2	kGal	2.02e+3	kL
241-TX-105	MW2 (Solid)	8.19e+0	kGal	3.10e+1	kL
241-TX-105	Z (Solid)	2.91e+0	kGal	1.10e+1	kL
241-TX-107	R-SltCk (Liquid)	1.85e+0	kGal	7.00e+0	kL
241-TX-107	T2-SltCk (Liquid)	4.76e+0	kGal	1.80e+1	kL
241-TX-107	R-SltCk (Solid)	6.34e+0	kGal	2.40e+1	kL
241-TX-107	T2-SltCk (Solid)	1.45e+1	kGal	5.50e+1	kL
241-TX-110	T2-SltCk (Liquid)	2.51e+1	kGal	9.50e+1	kL

The **Sum By**: section shows the different calculations you can perform on the Inventory or Volume data. Check all that you would like to apply, and the table will update automatically.

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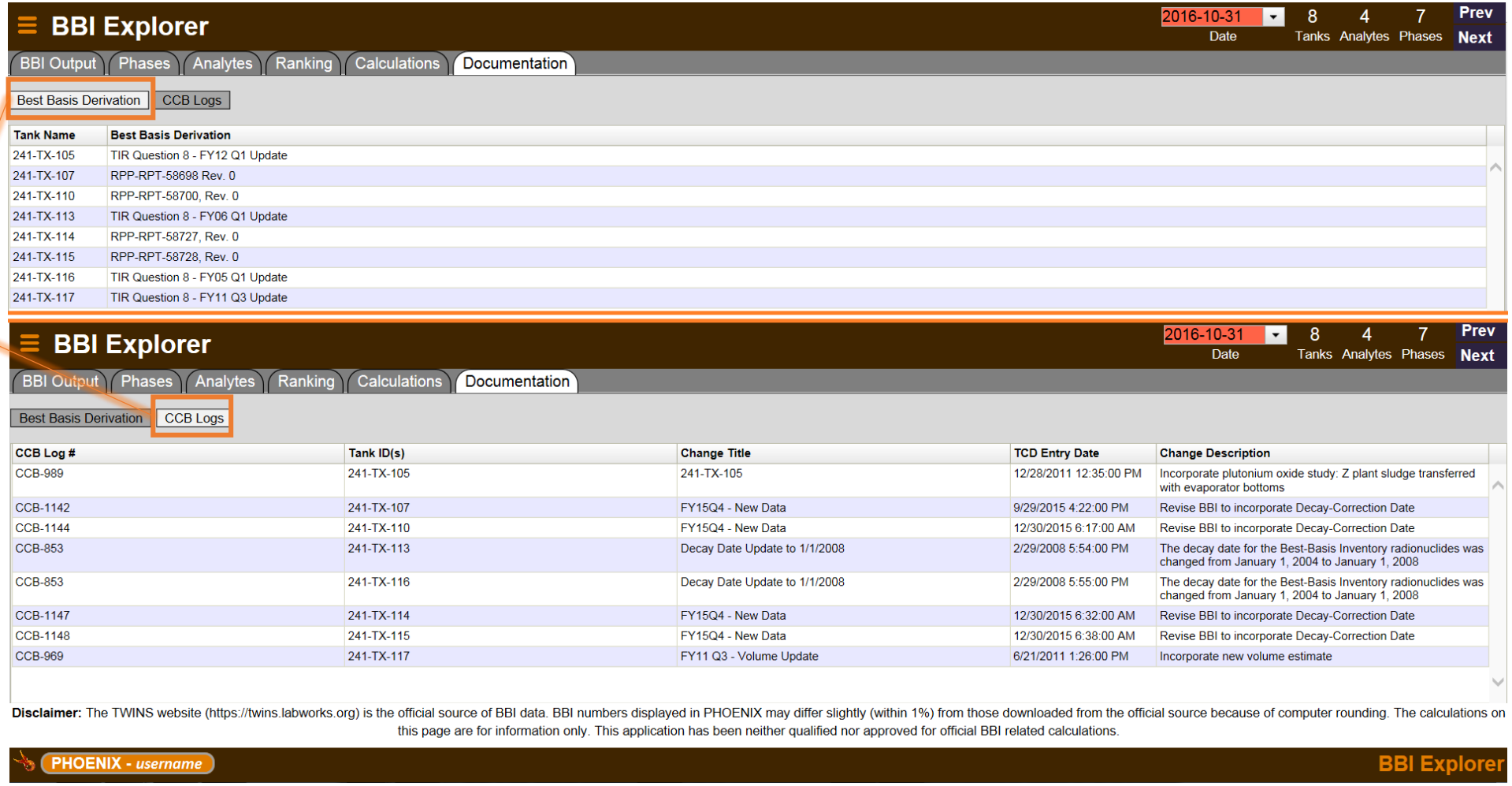
Click the **Best Basis Derivation** or **CCB Logs** button to view the documentation for each in the tables for each selected tank.



Tank Name	Best Basis Derivation
241-TX-105	TIR Question 8 - FY12 Q1 Update
241-TX-107	RPP-RPT-58698 Rev. 0
241-TX-110	RPP-RPT-58700, Rev. 0
241-TX-113	TIR Question 8 - FY06 Q1 Update
241-TX-114	RPP-RPT-58727, Rev. 0
241-TX-115	RPP-RPT-58728, Rev. 0
241-TX-116	TIR Question 8 - FY05 Q1 Update
241-TX-117	TIR Question 8 - FY11 Q3 Update

CCB Log #	Tank ID(s)	Change Title	TCD Entry Date	Change Description
CCB-989	241-TX-105	241-TX-105	12/28/2011 12:35:00 PM	Incorporate plutonium oxide study: Z plant sludge transferred with evaporator bottoms
CCB-1142	241-TX-107	FY15Q4 - New Data	9/29/2015 4:22:00 PM	Revise BBI to incorporate Decay-Correction Date
CCB-1144	241-TX-110	FY15Q4 - New Data	12/30/2015 6:17:00 AM	Revise BBI to incorporate Decay-Correction Date
CCB-853	241-TX-113	Decay Date Update to 1/1/2008	2/29/2008 5:54:00 PM	The decay date for the Best-Basis Inventory radionuclides was changed from January 1, 2004 to January 1, 2008
CCB-853	241-TX-116	Decay Date Update to 1/1/2008	2/29/2008 5:55:00 PM	The decay date for the Best-Basis Inventory radionuclides was changed from January 1, 2004 to January 1, 2008
CCB-1147	241-TX-114	FY15Q4 - New Data	12/30/2015 6:32:00 AM	Revise BBI to incorporate Decay-Correction Date
CCB-1148	241-TX-115	FY15Q4 - New Data	12/30/2015 6:38:00 AM	Revise BBI to incorporate Decay-Correction Date
CCB-969	241-TX-117	FY11 Q3 - Volume Update	6/21/2011 1:26:00 PM	Incorporate new volume estimate

Questions, Comments, Concerns, Feedback?

Contact the PHOENIX team:
PHOENIX@pnnl.gov