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Waste Site Reclassification Form

Date Submitted: 5/10/2004 **Originator:** R. A. Carlson **Phone:** 372-9632	**Operable Unit(s):** 100-BC-1 **Waste Site ID:** 100-B-14:5 **Type of Reclassification Action:** Rejected ☐ Closed Out ☐ Interim Closed Out ☐ No Action ☒	**Control Number:** 2004-009 **Lead Agency:** EPA RECEIVED JUL 0 8 2004 EDMC

This form documents agreement among the parties listed below authorizing classification of the subject unit as rejected, closed out, interim closed out, or no action and authorizing backfill of the site, if appropriate. Final removal from the National Priorities List (NPL) of no action, interim closed-out, or closed-out sites will occur at a future date.

Description of current waste site condition:

Sampling and evaluation of this site have been performed in accordance with remedial action objectives and goals established by the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington* (Remaining Sites ROD). The selected action involved (1) sampling of the site, (2) demonstration through a combination of field screening and confirmational sampling that cleanup goals have been met, and (3) proposal of no further action.

Basis for reclassification:

The Sodium Dichromate and Sodium Silicate Lines (100-B-14:5) meets the Remedial Action Objectives (RAOs) specified in the Remaining Sites ROD, U.S. Environmental Protection Agency, Region 10, Seattle, Washington. The results demonstrated that residual contaminant concentrations support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario. Also, the results showed that residual contaminant concentrations support unrestricted future use of the shallow zone soil (i.e., surface to 4.6 m [15 ft]) and that contaminant levels remaining in the soil meet the RAOs for direct exposure and are protective of groundwater and the Columbia River. The basis for reclassification is described in detail in the *Remaining Sites Verification Package for 100-B-14:5 Sodium Dichromate and Sodium Silicate Lines* (attached).

H. E. Bilson DOE-RL Assistant Manager	Signature	5/14/04 Date
NA Ecology Project Manager	Signature	Date
D. A. Faulk EPA Project Manager	Signature	6-3-04 Date

REMAINING SITES VERIFICATION PACKAGE FOR 100-B-14:5 SODIUM DICHROMATE AND SODIUM SILICATE LINES

Attachment to Waste Site Reclassification Form 2004-009

May 2004

REMAINING SITES VERIFICATION PACKAGE FOR 100-B-14:5 SODIUM DICHROMATE AND SODIUM SILICATE LINES

EXECUTIVE SUMMARY

The 100-B-14:5 site is located within the 100-BC-1 Operable Unit in the 100-B/C Area of the Hanford Site. The 100-B-14 site includes the underground process and sanitary sewer pipelines associated with the 100-B Area pre-reactor cooling water treatment facilities. For the confirmatory sampling effort, the 100-B-14 site was divided into seven sub-units (Waste Information Data System subsites) for decision-making based upon identified use of the pipe (i.e., sanitary or process sewer), expected sources of contamination, and different potential remedial actions. The 100-B-14:5 Sodium Dichromate and Sodium Silicate Pipelines site is one of the subsites associated with 100-B-14 and is the only subsite discussed in this report. The other subsites will be discussed in separate reports. The 100-B-14:5 subsite consists of the sodium dichromate and sodium silicate product pipelines that transferred product from 108-B to 185-B facilities.

A focused sampling approach was selected for this site, biased toward worst-case sample locations and locations that were accessible (BHI 2003a). Results of the sampling event were used to make decisions for reclassifying the site in accordance with the Waste Site Reclassification Guideline TPA-MP-14 (RL-TPA-90-0001) (DOE-RL 1998).

Confirmatory sampling was conducted at the 100-B-14:5 subsite in October 2003. The original sampling approach consisted of collecting one sample of pipe scale and one soil sample from below each pipe (BHI 2003a) at two sampling locations. Since no scale or sediment was found in the piping at the selected locations, two alternative soil locations along the piping were sampled (BHI 2003c). The maximum detected results from soil samples were used to support waste site reclassification. A summary of the evaluation of the soil sample results against the applicable remedial action goals (RAGs) is presented in Table ES-1.

In accordance with this evaluation, the confirmatory sampling results from soil samples support no action reclassification of the 100-B-14:5 site. The current site conditions achieve the remedial action objectives and the corresponding RAGs established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (RDR/RAWP) (DOE-RL 2002) and the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington* (commonly called the Remaining Sites Record of Decision) (EPA 1999). The basis for reclassification is summarized in Table ES-1. These results show that any residual soil concentrations support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario. The results demonstrated that residual concentrations support unrestricted future use of shallow zone soil (i.e., surface to 4.6 m [15 ft]), and that contaminate levels remaining in the soil are protective of groundwater and the Columbia River.

Table ES-1. Summary of Remedial Action Objectives for the 100-B-14:5 Site.

Regulatory Requirement	Remedial Action Goals	Results	Remedial Action Objectives Attained?
Direct Exposure – Nonradionuclides	Attain individual RAGs.	Maximum detected results for nonradionuclide COPCs are below the RAGs.	Yes
Direct Exposure – Radionuclides	Attain individual RAGs.	Radionuclides were not identified as a COPC.	NA
Meet Nonradionuclide Risk Requirements	Attain a hazard quotient of <1 for noncarcinogens.	All hazard quotients are below 1.	Yes
	Attain a cumulative hazard quotient of <1 for noncarcinogens.	Cumulative hazard quotient (0.01) is less than 1.	
	Attain an excess cancer risk of $<1 \times 10^{-6}$ for individual carcinogens.	Excess cancer risk for individual carcinogens is 0.	
	Attain a total excess cancer risk of $<1 \times 10^{-5}$ for carcinogens.	Total excess cancer risk is 0.	
Groundwater/River Protection – Radionuclides	Attain single-COPC groundwater and river protection RAGs.	Radionuclides were not identified as a COPC.	NA
	Attain National Primary Drinking Water Standards[a]: 4 mrem/yr (beta/gamma) dose rate to target receptor/organs.		
	Meet drinking water standards for alpha emitters: the more stringent of 15 pCi/L MCL or 1/25th of the derived concentration guide from DOE Order 5400.5[b].		
	Meet total uranium standard of 21.2 pCi/L[c].		
Groundwater/River Protection – Nonradionuclides	Attain individual nonradionuclide groundwater and river cleanup requirements.	Maximum detected results for all COPCs are below groundwater and river RAGs.	Yes

[a]"National Primary Drinking Water Regulations" (40 *Code of Federal Regulations* 141).
[b]*Radiation Protection of the Public and the Environment* (DOE Order 5400.5).
[c]Based on the isotopic distribution of uranium in the 100 Areas, the 30 µg/L MCL corresponds to 21.2 pCi/L. Concentration-to-activity calculations are documented in *Calculation of Total Uranium Activity Corresponding to a Maximum Contaminant Level for Total Uranium of 30 Micrograms per Liter in Groundwater*, 0100X-CA-V0038 (BHI 2001).
COPC = contaminant of potential concern
DOE = U.S. Department of Energy
NA = not applicable
MCL = maximum contaminant level

REMAINING SITES VERIFICATION PACKAGE FOR 100-B-14:5 SODIUM DICHROMATE AND SODIUM SILICATE LINES

STATEMENT OF PROTECTIVENESS

The *100-B-14:5 Sodium Dichromate and Sodium Silicate Line* (BHI 2003a) (referred to as the 100-B-14:5 site) sample results demonstrate that the site achieves the remedial action objectives and remedial action goals (RAGs) as established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (RDR/RAWP) (DOE-RL 2002) and the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington* (commonly called the Remaining Sites Record of Decision) (EPA 1999). These results show that any residual soil concentrations support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario. The results demonstrated that residual concentrations support unrestricted future use of shallow zone soil (i.e., surface to 4.6 m [15 ft]), and that contaminate levels remaining in the soil are protective of groundwater and the Columbia River. The site does not have a deep zone, therefore, institutional controls are not required.

GENERAL SITE INFORMATION AND BACKGROUND

The 100-B-14:5 site is located within the 100-BC-1 Operable Unit in the 100-B/C Area of the Hanford Site. The subsite consists of the sodium dichromate and sodium silicate pipelines. During the initial operation phase of the 105-B Reactor beginning in 1944, the 108-B Building was used to store bulk water treatment chemicals. Two 7.6 cm (3 in.) diameter stainless-steel pipes transferred concentrated sodium dichromate and sodium silicate solutions from the 108-B Building to the 185-B/190-B Pumphouse facility, where they added to filtered cooling water prior to its use in the reactor. By 1949, storage of bulk water treatment chemicals, including sodium dichromate, was moved to the water treatment facilities (i.e., 183-B, 190-B, and 189-B). The 108-B facility was used to support the tritium separation project from 1949 until 1953. After 1953, the 108-B facility became the Critical Components Examination Facility. Based on historical knowledge, the sodium dichromate and sodium silicate transfer lines from 108-B to 185-B were not used after 1949. No mention is made of using these pipes to transfer anything but sodium dichromate and sodium silicate.

Sodium dichromate and sodium silicate product transfer lines are twin 7.6-cm (3-in.) stainless-steel pipes that exit the northwest side of the 108-B facility and connect to the north side of the185-B facility. The pipes make three 90-degree corners in a step-like fashion with north-south and east-west sections (see Figure 1). Piping depths were measured at approximately 1 m (3.5 ft) during sampling.

CONFIRMATORY SAMPLING ACTIVITIES

Contaminants of Potential Concern

Contaminants of potential concern (COPCs) were identified based on historical process information associated with water treatment at the 108-B and 185-B/190-B facilities. These COPCs include inductively coupled plasma (ICP) metals and hexavalent chromium.

The decommissioning report for the 184-B Powerhouse (WHC 1988) states that the facility was never a radiologically controlled site, that radioactive materials were never stored at the site, and that no radiologically contaminated material was identified prior to or during site cleanup (decommissioning) activities. The absence of radiological contamination was confirmed using gamma energy analysis (GEA) and gross alpha and gross beta sample analyses. On this basis, no radionuclide COPCs were identified for this site.

Confirmatory Sample Design

Confirmatory sampling was conducted at the 100-B-14:5 site on October 1, 2003. A focused sampling approach was selected for this site, biased toward worst-case sample locations and locations that were accessible. The sodium dichromate and sodium silicate transfer lines were sampled at two locations where the lines make 90-degree bends. Since no material was present inside the pipes for sampling, two additional soil samples were collected from two separate locations in place of the pipe contents samples. These alternate sampling sites were located between the two 90-degree bends (BHI 2003a).

The sampling approach consisted of collecting one soil sample directly beneath the pipelines (BHI 2003a). The maximum detected results from the soil samples were used to support site reclassification. The sample locations are shown on Figure 1, and Table 1 provides a sample summary.

Confirmatory Sample Results

The samples were analyzed by offsite contract laboratories using U.S. Environmental Protection Agency-approved analytical methods. After sampling was completed, all of the fixed-based laboratory data from one sampling data group were validated to Level C per BHI-EE-1, *Environmental Investigation Procedures* (Tech Law 2004a, 2004b, 2004c, 2004d, 2004e). A data quality assessment (DQA) review was performed to compare the sampling approach and resulting analytical data with the sampling and data quality requirements specified by the project objectives and performance specifications. The results of this review are reported in the Data Quality Assessment Section. The sample results are stored in the Environmental Restoration (ENRE) Project Specific Database prior to archiving in the Hanford Environmental Information System (HEIS) and are summarized in the data summary tables (Appendix B).

Figure 1. Sampling Locations at the 100-B-14:5 Site.

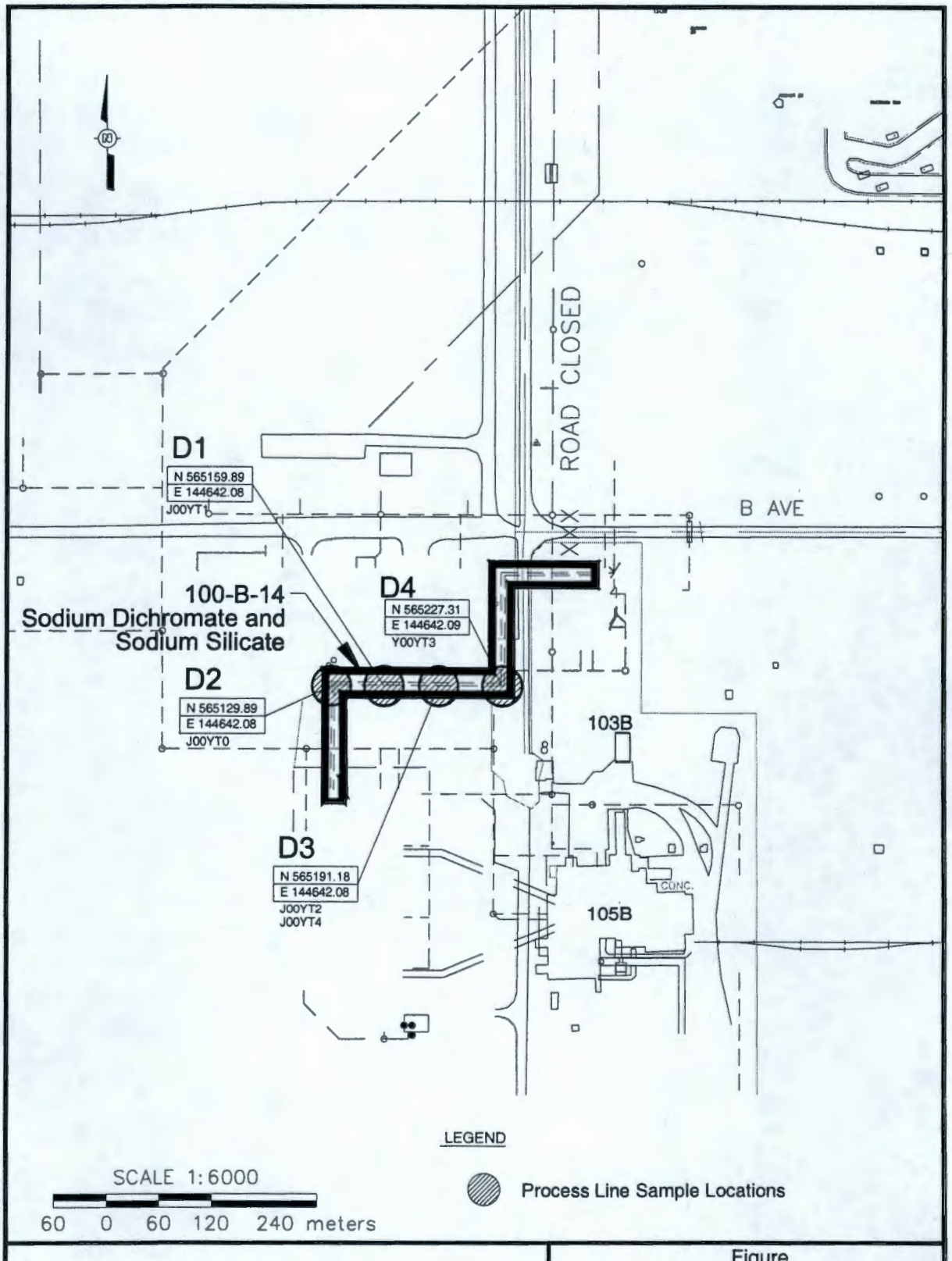

Table 1. Sample Summary Table[a].

Sample Location	Sampling Access	Sample Location Sample Depth	Sample Media	HEIS Sample Number	Sample Analyses
D1	Trench	Alternate location ~27 m (~30 yards) east of Sample D2. Depth at 1.1 m (3.5 ft) bgs	Medium to dark brown sandy silt with some rocks	J00YT1	GEA, gross alpha[b], gross beta[c], ICP metals, mercury, and hexavalent chromium
D2	Trench	Directly below pipe. Depth at 1.1 m (3.5 ft) bgs	Silt/sand and cobbles.	J00YT0	GEA, gross alpha[b], gross beta[c], ICP metals, mercury, and hexavalent chromium
D3	Trench	Alternate location ~54 m (~60 yards) east of Sample D2. Depth at 1.1 m (3.5 ft) bgs	Silt/sand and cobbles, some ash around pipe	J00YT2	GEA, gross alpha[b], gross beta[c], ICP metals, mercury, and hexavalent chromium
D4	Trench	Directly below pipe. Depth at 1.1 m (3.5 ft) bgs	Silt/sand and cobbles	J00YT3	GEA, gross alpha[b], gross beta[c], ICP metals, mercury, and hexavalent chromium
Equipment blank	N/A	N/A	Silica sand	J00YT5	ICP metals, mercury, and hexavalent chromium
Duplicate	Trench	Duplicate of Sample J00YT2. Depth at 1.1m (3.5 ft) bgs	Silt/sand and cobbles, some ash around pipe	J00YT4	GEA, gross alpha[b], gross beta[c], ICP metals, mercury, and hexavalent chromium

[a] Logbook (BHI 2003c).
[b] If gross alpha was detected above background, then GEA data was evaluated to determine if further alpha-specific analyses were needed.
[c] If gross beta was detected above background, then strontium analyses was performed.
bgs = below ground surface
HEIS = Hanford Environmental Information System
ICP = inductively coupled plasma
N/A = not applicable

Process knowledge, historical information, and field observations were used to identify the locations in order to collect samples of the pipe scale and underlying soil at 100-B-14:5 site locations with the greatest potential for residual contamination. In accordance with the focused sampling approach and *Washington Administrative Code* (WAC) 173-340-740(7)(d)(iii), direct comparison of the sample results with the remedial action goals (RAGs) is an acceptable method for evaluating compliance with cleanup objectives at the 100-B-14:5 site.

Table 2 compares the maximum detected results for 100-B-14:5 site COPCs with cleanup levels identified in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (RDR/RAWP) (DOE-RL 2002). Radionuclides were not identified as COPCs and their absence was confirmed using gamma energy analysis (GEA) and gross alpha and gross beta analysis (see Appendix B). Of the inductively coupled plasma metals analyzed, aluminum, calcium, iron, magnesium, potassium, silicon, and sodium are not evaluated in the WAC 173-340-740(3) Cleanup Levels and Risk Calculations table, and thus are not considered COPCs. However, data results for these constituents are presented in

Appendix B. Contaminants that were not detected above the practical quantitation limits or minimum detectable activities are excluded from Table 2. Complete sample results are provided in Appendix B.

For the soil data evaluation, with the exception of zinc, the maximum detected results for all COPCs are less than the applicable RAGs. Zinc is not predicted to migrate into groundwater within a 1,000-year assessment period, based on generic site RESRAD input parameters and modeling performed in accordance with Appendices B and C of the RDR/RAWP (DOE-RL 2002).

Nonradionuclide risk requirements include an individual contaminant hazard quotient of less than 1.0, a cumulative hazard quotient of less than 1.0, an individual contaminant carcinogenic risk of less than $1x10^{-6}$, and a cumulative carcinogenic risk of less than $1x10^{-5}$. For the 100-B-14:5 site, these risk values were not calculated for constituents that were either not detected or were detected at concentrations below Hanford Site or Washington State background. All individual hazard quotients for non-carcinogenic constituents were less than 1.0. The cumulative hazard quotient for these non-carcinogenic constituents above background or detection levels is 0.01. The individual carcinogenic risk values for carcinogenic constituents above background levels or detection are 0. Therefore, cumulative carcinogenic risk value for these constituents is 0. Based on the conservative nonradionuclide groundwater and river protection RAGs shown in Table 3, the residual concentrations of the nonradionuclide contaminants are protective of groundwater and the Columbia River.

A focused sampling approach was selected for this site, therefore, the WAC-173-340-740(7)(e), which is a requirement for statistically based soil cleanup assessments, is not applicable.

Table 2. Comparison of Maximum Values to Action Levels (Sodium Dichromate and Sodium Silicate Lines, 100-B-14:5).

COPC	Maximum Result (mg/kg)	Remedial Action Goals (mg/kg)			Does the Maximum Result Exceed Lookup Value?	Does Maximum Result Pass RESRAD Modeling?
	Soil	Direct Exposure	Soil Standard for Groundwater Protection	Soil Standard for River Protection	Soil	
Nonradionuclides (mg/kg)						
Antimony[a]	0.31 (<BG)	32	5[b]	5[b]	No	--
Arsenic[a]	3.3 (<BG)	20[b]	20[b]	20[b]	No	--
Barium	82.1 (<BG)	5,600	132	224	No	--
Beryllium	0.36 (<BG)	1.51[b]	1.51[b]	1.51[b]	No	--
Boron[c]	4.4	7,200	144	--[d]	No	--
Cadmium[a]	0.19 (<BG)	13.9	0.81[b]	0.81[b]	No	--
Chromium, total	16.5 (<BG)	80,000	18.5[b]	18.5[b]	No	--
Cobalt	9.9 (<BG)	1,600	32	--[d]	No	--
Copper	17.7 (<BG)	2,960	59.2	22[b]	No	--
Lead	7.3 (<BG)	353[e]	10.2[b]	10.2[b]	No	--
Manganese	395 (<BG)	11,200	512[b]	512[b]	No	--
Molybdenum[c]	0.56	400	8	--[d]	No	--
Nickel	11.6 (<BG)	1,600	32	27.4	No	--
Silver	0.09 (<BG)	400	8	0.73[b]	No	--
Vanadium	69.4 (<BG)	560	85.1[b]	--[d]	No	--
Zinc	76.2	24,000	480	67.8[b]	Yes	Yes[f]

[a]Hanford Site-specific background not available. Background value is from Ecology (1994).
[b]Where cleanup levels are less than background, cleanup levels default to background (WAC 173-340-706[1][a]).
[c]There is no Washington state or Hanford Site background value.
[d]A river protection value cannot be calculated because there is no published water quality criteria.
[e]WAC 173-340-740(3) value for lead is not available. Cleanup value calculated using *Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children* (EPA 1994).
[f]The generic RESRAD model indicates that the contaminant does not impact groundwater or the river within 1,000 years.
-- = not applicable
BG = background

DATA QUALITY ASSESSMENT

A DQA review was performed to compare the confirmatory sampling approach and resulting analytical data with the sampling and data requirements specified by the project objectives and performance specifications. The review involves evaluation of the data to determine if they are of the right type, quality, and quantity to support their intended use (i.e., closeout decisions [EPA 2000]). The assessment review completes the data life cycle (i.e., planning, implementation, and assessment) that was initiated by the data process.

This DQA review was performed in accordance with BHI-EE-01, *Environmental Investigation Procedures*. Specific data quality objectives for the site are found in the *100 Area Remedial Action Sampling and Analysis Plan* (SAP) (DOE-RL 2001). A review of the field logbooks and the sample design showed that the correct number of samples were collected according to the sample design and all the correct analysis were performed. The logbook noted that no pipe contents, scale or sediment, was available for sampling from location D1 and D3. Therefore, two additional locations between sample location D2 and D4 were excavated and the soil underneath was sampled.

The data quality requirements in the 100 Area SAP are used for assessing data from statistically determined sample design and do not specifically apply to the data sets results from the focused sampling performed for this site. However, to ensure quality data sets, the 100 Area SAP data quality assurance requirements, as well as the validation procedures detailed in BHI-01435 (BHI 2000a) and BHI-01433 (BHI 2000b) for chemical and radiochemical analyses, are followed where appropriate. The DQA review for the 100-B-14:5 site found the results to be accurate within the standard errors associated with the methods, including sampling and sample handling. The DQA review concludes that the data are of the right type, quality, and quantity to support their intended use. Detection limits, precision, accuracy, and sampling data group completeness were assessed to determined if any analytical results should be rejected as a result of quality assurance and quality control deficiencies. All analytical data were found to be acceptable for decision-making purposes.

The confirmatory sample analytical data are stored in the Environmental Restoration (ENRE) Project Site Specific Database prior to archiving in HEIS and are summarized in Appendix B.

SUMMARY FOR NO ACTION

The no action decision for the 100-B-14:5 site is supported based on reviews of site history, field observations, and characterization results. The maximum detected results from soil samples collected underneath the sodium dichromate and sodium silicate product pipelines at locations suspected of having the greatest potential for residual contamination levels were shown to meet the cleanup objectives for direct exposure, groundwater protection, and river protection.

REFERENCES

40 CFR 141, "National Primary Drinking Water Regulations," *Code of Federal Regulations,* as amended.

BHI-EE-01, *Environmental Investigation Procedures*, Procedure No. 1.22, Bechtel Hanford, Inc., Richland, Washington.

BHI, 2000a, *Data Validation Procedure for Chemical Analysis*, BHI-01435, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-2000b, *Data Validation Procedure for Radiochemical Analysis*, BHI-01433, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI, 2001, *Calculation of Total Uranium Activity Corresponding to a Maximum Contaminant Level for Total Uranium of 30 Micrograms per Liter in Groundwater*, 0100X-CA-V0038, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI, 2003a, *Waste Site Evaluation for 100-B-14 Sodium Dichromate and Sodium Silicate Lines (100-B-14:5) (100-B-14 Process and Sanitary Sewer Underground Pipelines)*, 0100B-CA-V0187, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI, 2003b, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort,* BHI-01249, Rev. 3, Bechtel Hanford, Inc., Richland, Washington.

BHI, 2003c, "Remaining Sites Field Sampling Logbook," EL-1578-1, pages 23 through 25, Bechtel Hanford, Inc., Richland, Washington.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601, et seq.

DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, as amended, U.S. Department of Energy, Washington, D.C.

DOE-RL, 1995, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, DOE/RL-92-24, Rev. 3, Vol. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 1998, *Tri-Party Agreement Handbook Management Procedures,* RL-TPA-90-0001, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)," U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL, 2001, *100 Area Remedial Action Sampling and Analysis Plan*, DOE/RL-96-22, Rev. 3, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2002, *Remedial Design Report/Remedial Action Work Plan for the 100 Area,* DOE/RL-96-17, Rev. 4, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *National Background Soil Metals Concentrations in Washington State*, Publication No. 94-115, Washington State Department of Ecology, Olympia, Washington.

EPA, 1994, *Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children*, EPA/540/R-93/081, Publication No. 9285.7-15-1, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1999, *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington,* U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA, 2000, *Explanation of Significant Difference for the 100 Area Remaining Sites ROD*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

Tech Law, 2004a, *Inorganics – Data Package No. H2370-LLI (SDG No. H2370)*, Tech Law, Inc., Richland, Washington.

Tech Law, 2004b, *PCB/Pesticides – Data Package No. H2370-EB (SDG No. H2370)*, Tech Law, Inc., Richland, Washington.

Tech Law, 2004c, *Radiochemistry – Data Package No. H2370-EB (SDG No. H2370)*, Tech Law, Inc., Richland, Washington.

Tech Law, 2004d, *Semivolatile – Data Package No. H2370-EB (SDG No. H2370)*, Tech Law, Inc., Richland, Washington.

Tech Law, 2004e, *Wet Chemistry – Data Package No. H2370-LLI (SDG No. H2370)*, Tech Law, Inc., Richland, Washington.

WAC 173-340, "Model Toxics Control Act—Cleanup," *Washington Administrative Code*, 1996.

WHC, 1988, *184-B Powerhouse, 184-D Powerhouse, 1717-1 Maintenance Shop Facility Decommissioning Report,* SD-DD-TI-033, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

WASTE INFORMATION DATA SYSTEM GENERAL SUMMARY REPORT

Waste Information Data System

04/29/2004

General Summary Report

Site Names: 100-B-14, 100-B Area Process and Sanitary Sewer Underground Pipelines, see subsites
Site Type: Process Sewer
Status: Inactive
Operable Unit: 100-BC-1
Hanford Area: 100B

Start Date: 1944
End Date: 1969
Coordinates:
(E) 0.000
(N) 0.000
Washington State Plane

Site Description: This site includes the underground process sewers associated with the 100-B Area operations. It also includes the pipelines feeding the 1607-B2 and 1607-B7 Septic Systems, the sodium dichromate pipelines running from the 108-B Building to the 190-B Building, and the treated water pipelines between the 190-B Building and the 105-B Reactor.

Location Description: These pipelines are mostly north and west of the 105-B Reactor and north of the 183-B Filter House. Most join to empty into the 116-B-7 Outfall. Others empty into the 126-B-1 Power House Ash Pit, and the 1607-B2 and 1607-B7 Septic Systems. The sodium dichromate pipeline connected the 108-B Laboratory and the 190-B Pump House building, and the treated reactor cooling water ran from the 190-D Pump House to the 105-B Reactor.

Process Description: These pipelines carried a variety of non-radioactive waste fluids, product (sodium dichromate), treated cooling water (pre-reactor), and septage.

Associated Structures: Buildings associated with these pipelines include the 105-B Reactor, 190-B Pumphouse, 108-B Laboratory, 182-B and 183-B Filter Buildings, 184-B Power House, 115-B Filter House, and 1700-Series support buildings.

Site Comment: These pipelines were separated from the other pipelines in 100-B-7 in March 2001, to allow the clean water pipes (100-B-7) to be Rejected through the TPA-MP-14 process.

References:
1. J. J. Sharpe, J. K. Linville, 1/2/01 100-B/C Reactor Area Underground Pipeline Historical Information Summary, BHI-01453.
2. Linda Dietz, 1/21/04 Subsite information for 100-B-14, 100-B Area Process and Sanitary Sewer Underground Pipelines.

SubSites:

SubSite Code: 100-B-14:1
SubSite Names: 100-B-14:1, Main Process Sewer Collection Pipelines
Classification: Accepted
Description: This subsite includes the process pipelines from the 108-B, 105-B facilities, and 185/190-B facilities, and the main trunk line flowing west and then north to the 116-B-7 outfall.
References:
1. 6/1994 The 300 Area Waste Acid Treatment System Closure Plan DOE/RL-90-11 Rev. 0.
2. Linda Dietz, 1/21/04 Subsite information for 100-B-14, 100-B Area Process and Sanitary Sewer Underground Pipelines.

SubSite Code: 100-B-14:2
SubSite Names: 100-B-14:2, Sanitary Sewer Pipelines
Classification: Accepted
Description: This subsite includes the 1607-B7 pipeline from the 183-B facility to the stub at the excavation remaining from 2003 remedial action. It also includes the pipelines from the following removed facilities to their link with the 1607-B2 main drain line: the 1700 Buildings, the 108-B facility, the 185/190-B facilities, and the 115-B facility.

SubSite Code: 100-B-14:3
SubSite Names: 100-B-14:3, Process Sewer Feeder Pipelines from 182-B and 183-B
Classification: Accepted
Description: This subsite consists of the process sewers from the 182-B and 183-B Area facilities to the junction with the main trunk line flowing north (Subsite 100-B-14:1)

SubSite Code: 100-B-14:4
SubSite Names: 100-B-14:4, Cooling Water Pipelines and Tunnels from 190-B
Classification: Accepted
Description: This subsite includes the pipes and tunnels from the 190-B Building to the road east of the 105-B Reactor. The pipes from the edge of the road to the reactor should be included with 105-B, as they cannot be removed until the reactor is addressed.

SubSite Code: 100-B-14:5
SubSite Names: 100-B-14:5, Sodium Dichromate and Sodium Silicate Pipelines
Classification: Accepted
Description: This subsite includes the two parallel sodium dichromate and sodium silicate pipelines from the 108-B Building to the 185/190-B Facilities

SubSite Code: 100-B-14:6
SubSite Names: 100-B-14:6, Process Sewer Feeder Pipeline from 184-B and 184-B Ash Slurry Line
Classification: Accepted
Description: This subsite includes the process sewer pipelines from the 184-B Powerhouse, flowing north to the ash pit, and flowing east to the main trunk line (100-B-14:1) on both the north and south sides of the powerhouse.

SubSite Code: 100-B-14:7
SubSite Names: 100-B-14:7, Process Sewer Feeder Pipelines from 185-B and 190-B
Classification: Accepted
Description: This subsite is the pipelines from the south side of the 185-B and 190-B facilities and ending in a sump on the southeast corner of 190-B. The subsite includes the sump.

SubSite Code: 100-B-14:8
SubSite Names: 100-B-14:8, 190-B Sanitary Sewer Pipelines
Classification: Accepted

Waste Information:

Type: Equipment
Category: Unknown
Physical State: Solid
Waste Obscured: Soil Overburden
Description: The waste is the abandoned process and sanitary sewer pipelines, and any residual chemicals remaining on the pipes. Chemical additives to the reactor cooling water included aluminum sulfate (alum) with excess hydrated calcium oxide, sulfuric acid, chlorine, and sodium dichromate. Water pH was maintained at about 7.5, the free chlorine residual was approximately 0.2 milligrams/liter, and sodium dichromate was added at a rate of about 2 milligrams/liter. One length of the product piping held undiluted sodium dichromate: the pipe from the 185-B/190-B to the 108-B Building (per drawing M2913, Sheet 5). This pipeline was in use only for a few years, until the sodium dichromate was added to the cooling water at the 185-B Building. (Note: Reference: WHC-SD-EN-TI-169 is for 100-F, and applies equally to 100-B).
References:
1. D. H. DeFord, 07/06/93 100-F Reactor Site Technical Baseline Report Including Operable Units 100-FR-1 and 100-FR-2, WHC-SD-EN-TI-169, Rev 0.
2. J. J. Sharpe, J. K. Linville, 1/2/01 100-B/C Reactor Area Underground Pipeline Historical Information Summary, BHI-01453.

Regulatory Information:

Programmatic Responsibility

DOE Program:
Confirmed By Program: Yes
DOE Division: ERD - Environmental Restoration Division
Responsible Contractor/Subcontractor: BHI. Bechtel Hanford, Inc.

Site Evaluation

Solid Waste Management Unit: Yes
TPA Waste Management Unit Type: Inactive Contaminated Structure
This site was consolidated with:

Reason:

Permitting

RCRA Part B Permit: No
RCRA Part A Permit: No
RCRA PermitStatus:
Septic Permit: No
Inert LandFill: No

TSD Number:
Closure Plan: No

216/218 Permit: No
NPDES: No
State Waste Discharge Permit: No

Air Operating Permit: No

Tri-Party Agreement

Lead Regulatory Agency: EPA
Unit Category: CERCLA Past Practice (CPP)
TPA Appendix: C

Remediation and Closure

Decision Document:
Decision Document Status:
Remediation Design Group:
Closure Document:
Closure Type:
Post Closure

Residual Waste:
Requirements:

APPENDIX B

100-B-14:5 DATA SUMMARY TABLES

Sodium Dichromate and Sodium Silicate Lines Radionuclide Data Summary (100-B-14:5)

Sample Area	HEIS Number	Sample Date	Americium-241 GEA			Cesium-137			Cobalt-60			Europium-152			Europium-154			Europium-155		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
D2	J00YT0	10/01/03	0.25	U	0.25	0.026	U	0.026	0.025	U	0.025	0.061	U	0.061	0.088	U	0.088	0.087	U	0.087
D1	J00YT1	10/01/03	0.32	U	0.32	0.031	U	0.031	0.035	U	0.035	0.081	U	0.081	0.11	U	0.11	0.11	U	0.11
D3	J00YT2	10/01/03	0.37	U	0.37	0.047	U	0.047	0.045	U	0.045	0.092	U	0.092	0.14	U	0.14	0.13	U	0.13
D4	J00YT3	10/01/03	0.34	U	0.34	0.061	U	0.061	0.077	U	0.077	0.17	U	0.17	0.25	U	0.25	0.18	U	0.18
Duplicate of J00YT2	J00YT4	10/01/03	0.2	U	0.2	0.095	U	0.095	0.094	U	0.094	0.19	U	0.19	0.26	U	0.26	0.18	U	0.18

Sample Area	HEIS Number	Sample Date	Gross Alpha			Gross Beta			Potassium-40			Radium-226			Radium-228			Thorium-228 GEA		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
D2	J00YT0	10/01/03	1.34	U	4.3	13.7		5.6	11.7		0.28	0.466		0.053	0.777		0.13	0.584		0.033
D1	J00YT1	10/01/03	4.48		4	14.7		6.3	10.9		0.46	0.474		0.07	0.652		0.15	0.556		0.046
D3	J00YT2	10/01/03	4.1		2.5	14		5.7	11.8		0.46	0.552		0.082	0.822		0.15	0.696		0.051
D4	J00YT3	10/01/03	1.04	U	3	17.4		5.9	10.1		0.83	0.354		0.14	0.457		0.3	0.616		0.12
Duplicate of J00YT2	J00YT4	10/01/03	2.54	U	3.3	16.5		6.6	8.78		0.67	0.349		0.18	0.364	U	0.41	0.442		0.081

Sample Area	HEIS Number	Sample Date	Thorium-232 GEA			Uranium-235 GEA			Uranium-238 GEA		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
D2	J00YT0	10/01/03	0.777		0.13	0.11	U	0.11	3.3	U	3.3
D1	J00YT1	10/01/03	0.652		0.15	0.14	U	0.14	4	U	4
D3	J00YT2	10/01/03	0.822		0.15	0.17	U	0.17	4.8	U	4.8
D4	J00YT3	10/01/03	0.457		0.3	0.23	U	0.23	9.5	U	9.5
Duplicate of J00YT2	J00YT4	10/01/03	0.364	U	0.41	0.27	U	0.27	9.7	U	9.7

Acronyms

B	=	blank contamination
C	=	low-level detect
D	=	diluted
GEA	=	gamma energy analysis
HEIS	=	Hanford Environmental Information System
I	=	interference during analysis
J	=	estimate
MDA	=	minimum detectable activity
OS	=	other solids
PQL	=	practical quantitation limit
Q	=	qualifier
SVOA	=	semivolatile organic analyses
TCLP	=	toxicity characteristic leachate procedure
U	=	undetected

Sodium Dichromate and Sodium Silicate Lines Inorganics Data Summary (100-B-14:5)

Sample Area	HEIS Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium			Boron		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
D2	J00YT0	10/01/03	6740		4.7	0.29	U	0.29	2.7		0.43	69.9		0.02	0.31		0.04	1.8		0.22
D1	J00YT1	10/01/03	7570		4.4	0.27	U	0.27	2.5		0.4	66		0.02	0.32		0.04	2		0.21
D3	J00YT2	10/01/03	7210		4.9	0.3	U	0.3	3.3		0.44	80.3		0.02	0.31		0.04	4.4		0.23
D4	J00YT3	10/01/03	4590		4.4	0.27	U	0.27	1.9		0.39	49		0.02	0.16		0.04	1.2		0.21
Duplicate of J00YT2	J00YT4	10/01/03	7270		5	0.31		0.31	3		0.45	82.1		0.02	0.36		0.04	3		0.23
Equipment Blank of J00YT2	J00YT5	10/01/03	46.6		4.2	0.26	U	0.26	0.38	U	0.38	0.96		0.02	0.04	U	0.04	0.2	U	0.2

Sample Area	HEIS Number	Sample Date	Cadmium			Calcium			Chromium			Cobalt			Copper			Hexavalent Chromium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
D2	J00YT0	10/01/03	0.17		0.04	4570		3.1	9.7		0.1	9.7		0.12	17.7		0.12	0.42	U	0.42
D1	J00YT1	10/01/03	0.17		0.04	4510		2.9	10.4		0.09	9.5		0.11	17.5		0.11	0.42	U	0.42
D3	J00YT2	10/01/03	0.17		0.04	5720		3.2	16.5		0.1	9.5		0.13	16.5		0.13	0.43	U	0.43
D4	J00YT3	10/01/03	0.13		0.04	5700		2.9	7.7		0.09	7.1		0.11	16.5		0.11	0.42	U	0.42
Duplicate of J00YT2	J00YT4	10/01/03	0.19		0.04	5680		3.3	11.6		0.11	9.9		0.13	17.4		0.13	0.43	U	0.43
Equipment Blank of J00YT2	J00YT5	10/01/03	0.04	U	0.04	17.3		2.8	0.15		0.09	0.11	U	0.11	0.11	U	0.11	0.4	U	0.4

Sample Area	HEIS Number	Sample Date	Iron			Lead			Magnesium			Manganese			Mercury			Molybdenum		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
D2	J00YT0	10/01/03	24100		2	4.9		0.19	4520		0.71	381		0.03		U	0.01	0.4		0.19
D1	J00YT1	10/01/03	25600		1.9	4.5		0.18	4510		0.66	373		0.03	0.01	U	0.01	0.38		0.18
D3	J00YT2	10/01/03	25900		2.1	7.3		0.2	4430		0.73	383		0.03	0.02	U	0.02	0.49		0.2
D4	J00YT3	10/01/03	19800		1.9	3.1		0.18	3960		0.66	290		0.03	0.01	U	0.01	0.38		0.18
Duplicate of J00YT2	J00YT4	10/01/03	26800		2.1	5.7		0.2	4440		0.75	395		0.03	0.01	U	0.01	0.56		0.2
Equipment Blank of J00YT2	J00YT5	10/01/03	97.3		1.8	0.38		0.17	6.1		0.63	2.6		0.03	0.01	U	0.01	0.17	U	0.17

Sodium Dichromate and Sodium Silicate Lines Inorganics Data Summary (100-B-14:5) (continued)

Sample Area	HEIS Number	Sample Date	Nickel			Potassium			Selenium			Silicon			Silver			Sodium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
D2	J00YT0	10/01/03	11.6		0.2	1300		2.4	0.29	U	0.29	229		0.55	0.08	U	0.08	150		0.72
D1	J00YT1	10/01/03	12		0.19	1270		2.2	0.27	U	0.27	125		0.51	0.08	U	0.08	218		0.67
D3	J00YT2	10/01/03	13		0.21	1400		2.4	0.3	U	0.3	142		0.56	0.08	U	0.08	178		0.74
D4	J00YT3	10/01/03	9.3		0.19	668		2.2	0.27	U	0.27	176		0.51	0.09		0.07	115		0.66
Duplicate of J00YT2	J00YT4	10/01/03	11.2		0.21	1350		2.5	0.31	U	0.31	107		0.58	0.09		0.09	195		0.76
Equipment Blank of J00YT2	J00YT5	10/01/03	0.18	U	0.18	18.7		2.1	0.26	U	0.26	42.3		0.48	0.07	U	0.07	6.1		0.63

Sample Area	HEIS Number	Sample Date	Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL
D2	J00YT0	10/01/03	60.1		0.09	47.8		0.26
D1	J00YT1	10/01/03	61.2		0.08	46.2		0.25
D3	J00YT2	10/01/03	63.3		0.09	76.2		0.27
D4	J00YT3	10/01/03	50		0.08	34.9		0.24
Duplicate of J00YT2	J00YT4	10/01/03	69.4		0.1	49.6		0.28
Equipment Blank of J00YT2	J00YT5	10/01/03	0.08	U	0.08	0.44		0.23