0080245

SGW-40274
Revision 0

Groundwater Quality Assessment Plan for the Non-Radioactive Dangerous Waste Landfill

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

Project Hanford 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

attached to: 0080244

SGW-40274
Revision 0

Groundwater Quality Assessment Plan for the Non-Radioactive Dangerous Waste Landfill

Document Type: TI Program/Project: SGW

S. P. Luttrell
CH2M HILL Plateau Remediation Company

Date Published
February 2009

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

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

CH2MHILL
Plateau Remediation Company

P.O. Box 1600
Richland, Washington

S. P. Luttrell 01/30/2009
Release Approval Date

TABLE OF CONTENTS

FIGURE

TABLES

LIST OF TERMS

CAS	Chemical Abstract Services
CFR	*Code of Federal Regulations*
CRDL	contract-required detection limit
DOE	U.S. Department of Energy
NRDWL	Nonradioactive Dangerous Waste Landfill
RCRA	*Resource Conservation and Recovery Act of 1976*
TOC	total organic carbon
TPH	total petroleum hydrocarbon
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
WAC	*Washington Administrative Code*

METRIC CONVERSION CHART

Into Metric Units			Out of Metric Units		
If You Know	*Multiply By*	*To Get*	*If You Know*	*Multiply By*	*To Get*
Length			**Length**		
inches	25.4	millimeters	millimeters	0.039	inches
inches	2.54	centimeters	centimeters	0.394	inches
feet	0.305	meters	meters	3.281	feet
yards	0.914	meters	meters	1.094	yards
miles	1.609	kilometers	kilometers	0.621	miles
Area			**Area**		
sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.093	sq. meters	sq. meters	10.76	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.6	sq. kilometers	sq. kilometers	0.4	sq. miles
acres	0.405	hectares	hectares	2.47	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.035	ounces
pounds	0.454	kilograms	kilograms	2.205	pounds
ton	0.907	metric ton	metric ton	1.102	ton
Volume			**Volume**		
teaspoons	5	milliliters	milliliters	0.033	fluid ounces
tablespoons	15	milliliters	liters	2.1	pints
fluid ounces	30	milliliters	liters	1.057	quarts
cups	0.24	liters	liters	0.264	gallons
pints	0.47	liters	cubic meters	35.315	cubic feet
quarts	0.95	liters	cubic meters	1.308	cubic yards
gallons	3.8	liters			
cubic feet	0.028	cubic meters			
cubic yards	0.765	cubic meters			
Temperature			**Temperature**		
Fahrenheit	subtract 32, then multiply by 5/9	Celsius	Celsius	multiply by 9/5, then add 32	Fahrenheit
Radioactivity			**Radioactivity**		
picocuries	37	millibecquerels	millibecquerels	0.027	picocuries

1.0 INTRODUCTION

The groundwater beneath the Nonradioactive Dangerous Waste Landfill (NRDWL) has been monitored under the *Resource, Conservation, and Recovery Act of 1976* (RCRA) in interim status under a groundwater indicator parameters evaluation program (*Washington Administrative Code* [WAC] 173-303-400, "Dangerous Waste Regulations; Interim Status Facility Standards"; and by reference, 40 *Code of Federal Regulations* [CFR] 265.92, "Interim Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Sampling and Analysis") (*Groundwater Monitoring Plan for the Nonradioactive Dangerous Waste Landfill* [PNNL-12227] and ICN-1).

Results from August 24, 2008, samples from downgradient wells 699-25-34A and 699-25-34B exceeded the critical mean value of 1,020 µg/L for total organic carbon (TOC), an indicator parameter. The quadruplicate results averaged 1,525 µg/L for well 699-25-34A and 1,803 µg/L for well 699-25-34B. The wells were re-sampled on October 29, 2008, and the resulting quadruplicate average for well 699-25-34A was below the laboratory detection level of 200 µg/L, but the result for well 699-25-34B averaged 2,025 µg/L. Verification sampling results for well 699-25-34B confirmed the initial results, indicating that the NRDWL may be impacting groundwater quality.

The source of the elevated organic carbon is uncertain. One possible source is chlorinated hydrocarbons, which were disposed at the NRDWL and at the adjacent Solid Waste Landfill (Figure 1). Although low levels (less than 1 µg/L) of chlorinated hydrocarbons are detected in the NRDWL well network, the concentrations are too low to cause TOC levels as high as 2,000 µg/L. Sewage was disposed to two liquid discharge trenches at the nearby Solid Waste Landfill (*Groundwater Monitoring Plan for the Solid Waste Landfill* [PNNL-13014]) and is a more likely source for the elevated TOC.

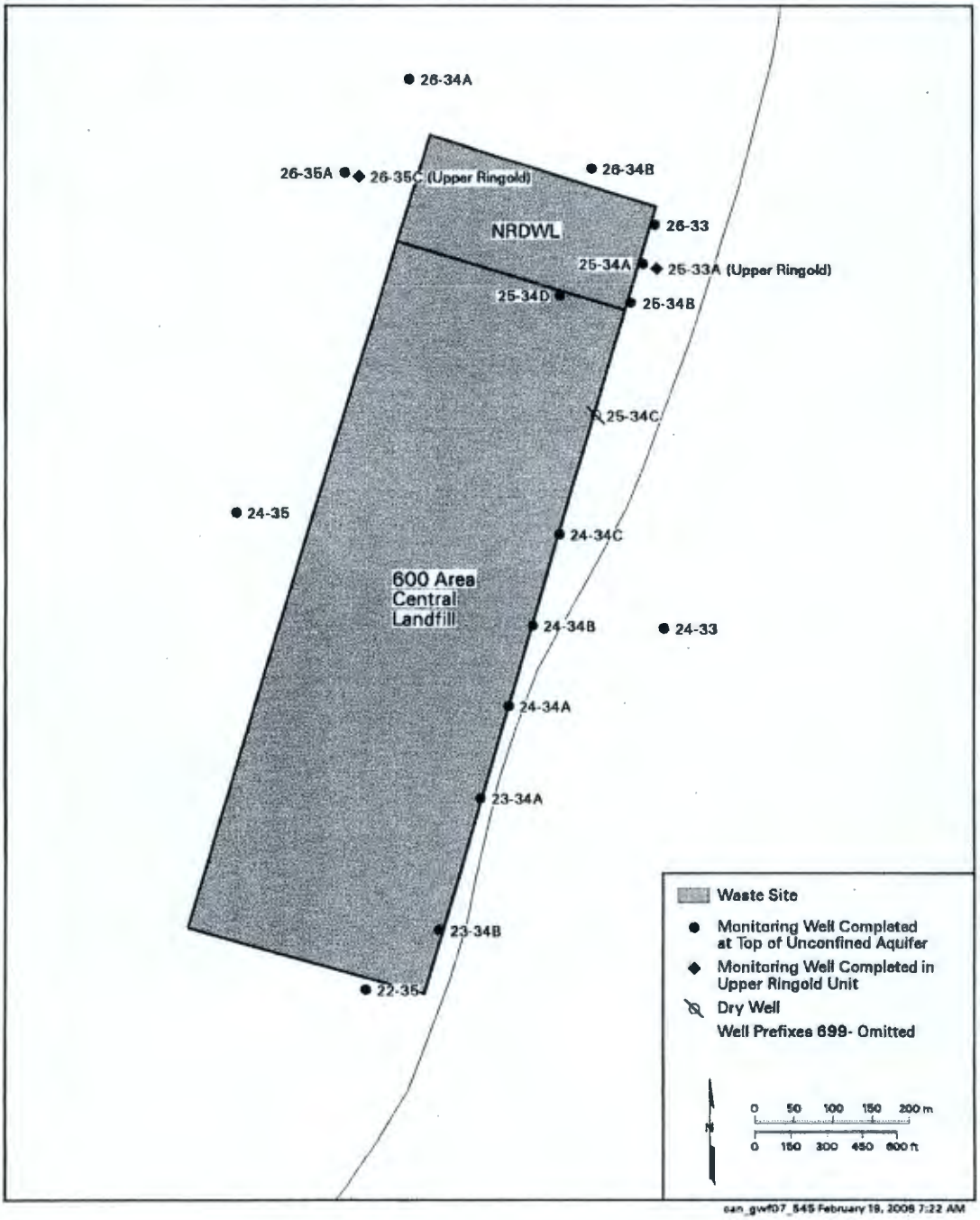
2.0 THE ASSESSMENT PLAN

In accordance with WAC 173-303-400 (and by reference to 40 CFR 265.93[d][2], "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Preparation, Evaluation, and Response"), this groundwater assessment will be carried out in two parts. The first part of the assessment will consist of a "first determination" (40 CFR 265.93[d)][4]) to evaluate specific organic compounds to determine whether they are present in groundwater. The presence of potential dangerous waste or dangerous waste constituents in groundwater will be determined by monitoring well 699-25-34B and nearby wells 699-25-34A and 699-25-34D) (Figure 1) for 40 CFR 264, Appendix IX[1], "Standards for Owners and Operator of Hazardous Waste Treatment, Storage, and Disposal Facilities; Ground-Water Monitoring List," organic constituents and other constituents potentially responsible for elevated TOC. Additional constituents will include total petroleum hydrocarbons (TPH) and parameters

[1] The U.S. Department of Energy (DOE) is proposing to use 40 CFR 264, Appendix IX in order to be consistent with the final status requirements in WAC 173-303-645, and that all Hanford treatment, storage, and disposal units must be closed to final status standards in the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement), Section 5.3 (Ecology et al. 2003). Otherwise, the interim status requirements would result in a different conclusion.

to investigate possible sewage impacts from the adjacent Solid Waste Landfill. Both new and existing data will be evaluated. If dangerous waste or 40 CFR 264, Appendix IX constituents are below their respective contract-required detection limits (CRDLs), it will be concluded that the NRDWL has not impacted groundwater quality, and the indicator parameter evaluation program for groundwater monitoring will be reinstated.

Figure 1. Location of Nonradioactive Dangerous Waste Landfill and Solid Waste Landfill Groundwater Monitoring Wells.



If results from the first determination indicate the presence of dangerous waste or other constituents identified in 40 CFR 264, Appendix IX above the respective CRDL, the second part of assessment will be initiated by expanding this assessment plan to assess the rate and extent of migration of dangerous constituents[1] and concentrations in groundwater.

Details of the first determination portion of the assessment are provided below.

2.1 NUMBER, LOCATION, AND DEPTH OF WELLS

Three of the NRDWL downgradient groundwater monitoring wells (Figure 1 and Table 1) will be sampled initially. All three wells are screened at the water table and are compliant with WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells." The water table lies at approximately 40 to 43 m below ground surface, at an elevation of approximately 122 m. Groundwater flow direction is generally toward the east-southeast, and these wells are considered adequate for the first determination to evaluate potential contamination that may have impacted groundwater in well 699-25-34B.

The remainder of the wells in the NRDWL monitoring network may be included if groundwater monitoring continues under a groundwater quality assessment program, under an expanded assessment plan, for the second part of the assessment.

2.2 SAMPLING AND ANALYSIS METHODS

The indicator parameter exceeding its critical mean was TOC. Therefore, the groundwater analytes will include the organic compounds portion of the 40 CFR 264, Appendix IX constituent list; TPH for oil, gas, and diesel; and oil and grease. The analyses will also include coliform bacteria and chemical oxygen demand because of the potential that the elevated TOC was caused by the sewage disposed at the Solid Waste Landfill. Field parameters, temperature, and pH will be measured (as well as TOC) for comparison to previous measurements and any other detected analytes.

General analysis groups, analytical methods, and CRDLs for key constituents are provided in Table 2. The list of organic constituents from 40 CFR 264, Appendix IX that will be requested is provided in Table 3, with respective Chemical Abstract Services (CAS) registry numbers. The routine analyses, including anions and metals, will continue as described in the original groundwater monitoring plan (PNNL-12227 and ICN-1).

2.2.1 Sampling

Sampling methods will be consistent with current sample collection, preservation, documentation, shipment, and chain-of-custody requirements. Three wells in the NRDWL network will be sampled once. If constituents identified in 40 CFR 264, Appendix IX are detected above CRDLs, sampling and analysis will be performed in these wells for the specific constituents detected to confirm the presence of these constituents.

---

[1] DOE is proposing to use the definition of "dangerous constituent" in WAC 173-303-645(4), "Dangerous Waste Regulations"; "Releases from Regulated Units," for the purposes of groundwater monitoring in order to be consistent with final status requirements.

Table 1. Monitoring Wells That Will Be Evaluated in First Determination for the Nonradioactive Dangerous Waste Landfill.

Well Number	Upgradient/ Downgradient	Date Completed	WAC Compliant?	Depth to Water August 2008	Water Remaining In Well
699-25-34A	Downgradient	1986	Yes	40.7 m	2.9 m
699-25-34B	Downgradient	1986	Yes	40.5 m	3.4 m
699-25-34D	Downgradient	1992	Yes	43.2 m	8.3 m

WAC = *Washington Administrative Code*

Table 2. Preservation Techniques, Analytical Methods, and Contract-Required Detection Limit for Selected Organic Constituents. (2 sheets)

Constituent	Collection and Preservation[a,b]	Analysis Methods[c]	Method Quantitation Limit (µg/L)[d]
Pesticides			
Endrin	G, none	SW-846[e], #8081A	0.1
Methoxychlor			0.5
Toxaphene			2
Lindane (four isomers)			0.05
Herbicides			
2,4-D	G, none	SW-846, #8151A	20
2,4-5-TP silvex			1
2,4,5-T			1
Volatile Organic Analyses			
Carbon tetrachloride	G, no headspace	SW-846, #8260B	5
Benzene			5
Methyl ethyl ketone			10
Toluene			5
1,1,1-trichloroethane			5
1,1,2-trichloroethane			5
Trichloroethylene			5
Tetrachloroethylene			5
Xylene-o, p			10
Chloroform			5
1, 1-dichloroethane			10
1, 2-dichloroethane			5
Trans-1, 2-dichloroethylene			5
Methylene chloride			5
Vinyl chloride			10
Xylene-m			10
Methyl isobutyl ketone			10
Acetone by volatile organic analysis			20
Tetrahydrofuran			50
P-dichlorobenzene			5

Table 2. Preservation Techniques, Analytical Methods, and Contract-Required Detection Limit for Selected Organic Constituents. (2 sheets)

Constituent	Collection and Preservation[a,b]	Analysis Methods[c]	Method Quantitation Limit (µg/L)[d]
Semi-Volatile Organic Analyses			
Bis(2ethylhexyl)phthalate (DEHP)	Amber glass, cool to 4°C	SW-846, #8270D	10
Cresol (o,p,m)			10
n-nitrosodimethylamine			10
Other			
Coliform bacteria	P, none	SW-846, #9223 [f]	2.2 [g]
Chemical oxygen demand	P,G, H_2SO_4 to pH<2	EPA, 410.4	10,000
Oil and grease	G, HCl or H_2SO_4 to pH<2	EPA, 413.1 SW-846, #9070	2,000 1,000
Total petroleum hydrocarbons	G, HCl to pH <2	EPA, 418.1	500
Total organic carbon	G, HCl or H_2SO_4 to pH<2	SW-846, #9060	1,000

[a] P = plastic; G = glass.
[b] All samples will be cooled to 4°C upon collection.
[c] Constituents grouped together are analyzed by the same method, unless otherwise indicated.
[d] Detection limit units, except where indicated.
[e] EPA SW-846, *Methods for Evaluation of Solid Waste, Physical/Chemical Methods.*
[f] Enzyme substrate test.
[g] Most probable number.
EPA = U.S. Environmental Protection Agency

Table 3. Selected 40 CFR 264, Appendix IX Groundwater Constituents for Nonradioactive Dangerous Waste Landfill First Determination Assessment. (7 sheets)

Common Name	CAS Number [a]
1,1,1,2-Tetrachloroethane	630-20-6
1,1,1-Trichloroethane; Methylchloroform	71-55-6
1,1,2,2-Tetrachloroethane	79-34-5
1,1,2-Trichloroethane	79-00-5
1,1-Dichloroethane	75-34-3
1,1-Dichloroethylene; Vinylidene chloride	75-35-4
1,2,3-Trichloropropane	96-18-4
1,2,4,5-Tetrachlorobenzene	95-94-3
1,2,4-Trichlorobenzene	120-82-1
1,2-Dibromo-3-chloropropane; DBCP	96-12-8
1,2-Dibromoethane; Ethylene dibromide	106-93-4
1,2-Dichloroethane; Ethylene dichloride	107-06-2
1,2-Dichloropropane	78-87-5
1,4-Dioxane	123-91-1
1,4-Naphthoquinone	130-15-4

Table 3. Selected 40 CFR 264, Appendix IX Groundwater Constituents for Nonradioactive Dangerous Waste Landfill First Determination Assessment. (7 sheets)

Common Name	CAS Number [a]
1-Naphthylamine	134-32-7
2,3,4,6-Tetrachlorophenol	58-90-2
2,3,7,8-TCDD; 2,3,7,8-Tetrachlorodibenzo-p- dioxin	1746-01-6
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5
2,4,5-Trichlorophenol	95-95-4
2,4,6-Trichlorophenol	88-06-2
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7
2,4-Dichlorophenol	120-83-2
2,4-Dimethylphenol	105-67-9
2,4-Dinitrophenol	51-28-5
2,4-Dinitrotoluene	121-14-2
2,6-Dichlorophenol	87-65-0
2,6-Dinitrotoluene	606-20-2
2-Acetylaminofluorene; 2-AAF	53-96-3
2-Chloronaphthalene	91-58-7
2-Chlorophenol	95-57-8
2-Hexanone	591-78-6
2-Methylnaphthalene	91-57-6
2-Naphthylamine	91-59-8
2-Picoline	109-06-8
3,3[prime]-Dichlorobenzidine	91-94-1
3,3[prime]-Dimethylbenzidine	119-93-7
3-Methylcholanthrene	56-49-5
4,4[prime]-DDD	72-54-8
4,4[prime]-DDE	72-55-9
4,4[prime]-DDT	50-29-3
4,6-Dinitro-o-cresol	534-52-1
4-Aminobiphenyl	92-67-1
4-Bromophenyl phenyl ether	101-55-3
4-Chlorophenyl phenyl ether	7005-72-3
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1
4-Nitroquinoline 1-oxide	56-57-5
5-Nitro-o-toluidine	99-55-8
7,12-Dimethylbenz[a]anthracene	57-97-6
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Acetone	67-64-1

Table 3. Selected 40 CFR 264, Appendix IX Groundwater Constituents for Nonradioactive Dangerous Waste Landfill First Determination Assessment. (7 sheets)

Common Name	CAS Number [a]
Acetonitrile; Methyl cyanide	75-05-8
Acetophenone	98-86-2
Acrolein	107-02-8
Acrylonitrile	107-13-1
Aldrin	309-00-2
Allyl chloride	107-05-1
alpha, alpha-Dimethylphenethylamine	122-09-8
alpha-BHC	319-84-6
Aniline	62-53-3
Anthracene	120-12-7
Aramite	140-57-8
Benzene	71-43-2
Benzo[a]anthracene; Benzanthracene	56-55-3
Benzo[a]pyrene	50-32-8
Benzo[b]fluoranthene	205-99-2
Benzo[ghi]perylene	191-24-2
Benzo[k]fluoranthene	207-08-9
Benzyl alcohol	100-51-6
beta-BHC	319-85-7
Bis(2-chloro-1-methylethyl) ether; 2,2[prime]-Di- chlorodiisopropyl ether	108-60-1
Bis(2-chloroethoxy)methane	111-91-1
Bis(2-chloroethyl)ether	111-44-4
Bis(2-ethylhexyl) phthalate	117-81-7
Bromodichloromethane	75-27-4
Bromoform; Tribromomethane	75-25-2
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7
Carbon tetrachloride	56-23-5
Chlordane	57-74-9
Chlorobenzene	108-90-7
Chlorobenzilate	510-15-6
Chloroethane; Ethyl chloride	75-00-3
Chloroform	67-66-3
Chloroprene	126-99-8
Chrysene	218-01-9
cis-1,3-Dichloropropene	10061-01-5
Delta-BHC	319-86-8
Diallate	2303-16-4

Table 3. Selected 40 CFR 264, Appendix IX Groundwater Constituents for Nonradioactive Dangerous Waste Landfill First Determination Assessment. (7 sheets)

Common Name	CAS Number [a]
Dibenz[a,h]anthracene	53-70-3
Dibenzofuran	132-64-9
Dibromochloromethane; Chlorodibromomethane	124-48-1
Dichlorodifluoromethane	75-71-8
Dieldrin	60-57-1
Diethyl phthalate	84-66-2
Dimethoate	60-51-5
Dimethyl phthalate	131-11-3
Di-n-butyl phthalate	84-74-2
Di-n-octyl phthalate	117-84-0
Dinoseb; DNBP; 2-sec-Butyl- 4,6-dinitrophenol	88-85-7
Diphenylamine	122-39-4
Disulfoton	298-04-4
Endosulfan I	959-98-8
Endosulfan II	33213-65-9
Endosulfan sulfate	1031-07-8
Endrin aldehyde	7421-93-4
Endrin	72-20-8
Ethyl methacrylate	97-63-2
Ethyl methanesulfonate	62-50-0
Ethylbenzene	100-41-4
Famphur	52-85-7
Fluoranthene	206-44-0
Fluorene	86-73-7
Gamma-BHC; Lindane	58-89-9
Heptachlor epoxide	1024-57-3
Heptachlor	76-44-8
Hexachlorobenzene	118-74-1
Hexachlorobutadiene	87-68-3
Hexachlorocyclopentadiene	77-47-4
Hexachloroethane	67-72-1
Hexachlorophene	70-30-4
Hexachloropropene	1888-71-7
Indeno(1,2,3-cd)pyrene	193-39-5
Isobutyl alcohol	78-83-1
Isodrin	465-73-6
Isophorone	78-59-1

Table 3. Selected 40 CFR 264, Appendix IX Groundwater Constituents for Nonradioactive Dangerous Waste Landfill First Determination Assessment. (7 sheets)

Common Name	CAS Number [a]
Isosafrole	120-58-1
Kepone	143-50-0
m-Cresol	108-39-4
m-Dichlorobenzene	541-73-1
m-Dinitrobenzene	99-65-0
Methacrylonitrile	126-98-7
Methapyrilene	91-80-5
Methoxychlor	72-43-5
Methyl bromide; Bromomethane	74-83-9
Methyl chloride; Chloromethane	74-87-3
Methyl ethyl ketone; MEK	78-93-3
Methyl iodide; Iodomethane	74-88-4
Methyl methacrylate	80-62-6
Methyl methanesulfonate	66-27-3
Methyl parathion; Parathion methyl	298-00-0
Methylene bromide; Dibromomethane	74-95-3
Methylene chloride; Dichloromethane	75-09-2
m-Nitroaniline	99-09-2
Naphthalene	91-20-3
Nitrobenzene	98-95-3
N-Nitrosodiethylamine	55-18-5
N-Nitrosodimethylamine	62-75-9
N-Nitrosodi-n-butylamine	924-16-3
N-Nitrosodiphenylamine	86-30-6
N-Nitrosodipropylamine; Di-n-propylnitrosamine	621-64-7
N-Nitrosomethylethylamine	10595-95-6
N-Nitrosomorpholine	59-89-2
N-Nitrosopiperidine	100-75-4
N-Nitrosopyrrolidine	930-55-2
O,O,O-Triethyl phosphorothioate	126-68-1
O,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2
o-Cresol	95-48-7
o-Dichlorobenzene	95-50-1
o-Nitroaniline	88-74-4
o-Nitrophenol	88-75-5
o-Toluidine	95-53-4
p-(Dimethylamino)azobenzene	60-11-7

Table 3. Selected 40 CFR 264, Appendix IX Groundwater Constituents for Nonradioactive Dangerous Waste Landfill First Determination Assessment. (7 sheets)

Common Name	CAS Number [a]
Parathion	56-38-2
p-Chloroaniline	106-47-8
p-Chloro-m-cresol	59-50-7
p-Cresol	106-44-5
p-Dichlorobenzene	106-46-7
Pentachlorobenzene	608-93-5
Pentachloroethane	76-01-7
Pentachloronitrobenzene	82-68-8
Pentachlorophenol	87-86-5
Phenacetin	62-44-2
Phenanthrene	85-01-8
Phenol	108-95-2
Phorate	298-02-2
p-Nitroaniline	100-01-6
p-Nitrophenol	100-02-7
Polychlorinated biphenyls; PCBs	1336-36-3[b]
Polychlorinated dibenzofurans; PCDFs	[d]
Polychlorinated dibenzo-p-dioxins; PCDDs	[c]
p-Phenylenediamine	106-50-3
Pronamide	23950-58-5
Propionitrile; Ethyl cyanide	107-12-0
Pyrene	129-00-0
Pyridine	110-86-1
Safrole	94-59-7
Silvex; 2,4,5-TP	93-72-1
Styrene	100-42-5
sym-Trinitrobenzene	99-35-4
Tetrachloroethylene; Perchloroethylene;Tetrachloroethene	127-18-4
Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5
Toluene	108-88-3
Toxaphene	8001-35-2
trans-1,2-Dichloroethylene	156-60-5
trans-1,3-Dichloropropene	10061-02-6
trans-1,4-Dichloro-2-butene	110-57-6
Trichloroethylene; Trichloroethene	79-01-6
Trichlorofluoromethane	75-69-4
Vinyl acetate	108-05-4

Table 3. Selected 40 CFR 264, Appendix IX Groundwater Constituents for Nonradioactive Dangerous Waste Landfill First Determination Assessment. (7 sheets)

Common Name	CAS Number [a]
Vinyl chloride	75-01-4
Xylene (total)	1330-20-7

[a] Chemical Abstract Services (CAS) registry number.
[b] Polychlorinated biphenyls contains congener chemicals, including aroclors.
[c] This category contains congenor chemicals including dioxins.
[d] This category contains congenor chemicals including benzofurans.

2.2.2 Evaluation Procedures

Data evaluation will initially include quality assurance reviews to ensure that the requested analyses were received and meet the analytical performance requirements. The evaluation of results will primarily consist of determining if the selected analytes are detected in concentrations greater than the respective CRDLs. Data evaluation will also include evaluating concentrations of TPH (oil and grease), coliform bacteria, and chemical oxygen demand. The presence of these may indicate an impact from the Solid Waste Landfill. If constituents identified in 40 CFR 264, Appendix IX are not detected above CRDLs, then an indicator parameter evaluation program will be reinstated.

If constituents identified in 40 CFR 264, Appendix IX are detected and confirmed, this assessment plan will be revised and the second part of the assessment will be initiated to evaluate the rate and extent of contaminant migration.

3.0 SCHEDULE

The first sampling event will occur as soon as practical after the Washington State Department of Ecology's receipt of this assessment plan. The next scheduled sampling month for NRDWL is February 2009. However, this sampling event will be delayed, tentatively to March 2009, to include the analyses required under this plan. Laboratory analysis results should be received within 45 days of sample collection, and the data are expected to be available to complete the first determination by June 30, 2009, if constituents identified in 40 CFR 264, Appendix IX are not detected.

If constituents identified in 40 CFR 264, Appendix IX are detected above CRDLs, sampling and analysis to confirm the presence of these constituents will add approximately 6 weeks to the schedule to complete the first determination.

After the data are evaluated and conclusions are reached, a report will be transmitted to the Washington State Department of Ecology within 15 days, stating whether groundwater monitoring will return to indicator evaluation, or if a groundwater quality assessment program will be continued.

4.0 REFERENCES

40 CFR 264, Appendix IX, "Standards for Owners and Operator of Hazardous Waste Treatment, Storage, and Disposal Facilities; Ground-Water Monitoring List," *Code of Federal Regulations.*

40 CFR 265.92, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Sampling and Analysis," *Code of Federal Regulations.*

40 CFR 265.93, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Preparation, Evaluation, and Response," *Code of Federal Regulations.*

APHA, AWWA, and WEF, 1998, *Standard Methods for the Examination of Water and Wastewater, 20th Edition*, American Public Health Association, American Water Works Association, and Water Environmental Federation, Washington, D.C.

Ecology, EPA, and DOE, 2003, *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement), 2 vols., as amended, 89-10, Rev. 6, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

EPA-600/4-84-017, 1984, *Test Methods for Determination of Inorganic Anions in Water by Ion Chromatography*, EPA Method 300.0, U.S. Environmental Protection Agency, Washington, D.C.

PNNL-12227, 1999, *Groundwater Monitoring Plan for the Nonradioactive Dangerous Waste Landfill*, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-12227-ICN-1, 2001, *Groundwater Monitoring Plan for the Nonradioactive Dangerous Waste Landfill*, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-13014, 2000, *Groundwater Monitoring Plan for the Solid Waste Landfill*, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq.

SW-846, 1997, *Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods*, 3rd edition (as amended by Update I [July 1992], Update IIA [August, 1993], Update IIB [January 1995], and Update III), U.S. Environmental Protection Agency, Washington, D.C.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code.*

WAC 173-303-400, "Dangerous Waste Regulations; Interim Status Facility Standards," *Washington Administrative Code.*

WAC 173-303-645, "Dangerous Waste Regulations"; "Releases from Regulated Units," *Washington Administrative Code.*

DISTRIBUTION

Onsite

1	U.S. Department of Energy, Richland Operations Office DOE Public Reading Room (2)	H2-53
1	CH2M Hill Plateau Remediation Company S. C. Davis	E6-35
1	Lockheed Martin Information Technology Document Processing Center	H6-08