WHC-EP--0142-4

DE91 001351

Ground Water Maps of Hanford Site Separations Areas, December 1989

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Date Published
June 1990

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management

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U.S. Department of Energy under Contract DE-AC06-87RL10930

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SUMMARY

The Separations Areas consist of the 200 East and 200 West areas and the surrounding vicinity on the Hanford Site. Chemical processing operations are carried out in the Separations Areas by Westinghouse Hanford Company for the U.S. Department of Energy - Richland Operations Office.

This set of ground water maps consists of: (1) Separations Areas depth-to-water map, (2) Separations Areas water table map, and (3) a map comparing the potentiometric surface of the Rattlesnake Ridge confined aquifer with the water table of the unconfined aquifer. The field measurements for these maps were collected during December 1989, and are listed in Table 1. For clarity, the locating prefixes have been omitted from all well numbers shown on the maps. Wells in the 200 Areas have the prefix 299, and the wells outside of these areas have the prefix 699.

The Separations Areas depth-to-water map depicts the measurement well locations and the depths to the water table at these locations. This map supports engineering or environmental studies which may require the approximate depth from the ground surface to the water table.

The Separations Areas water table map shows the location of the measurement wells and the elevation of the ground water at a 5-foot contour interval. Comparison of this map with the January 1989 map (WHC-EP-0142-2) indicates that the water table continues to lower in areas away from active liquid effluent disposal. This reflects the impact of recent discharge minimization programs and deactivating U Pond and Gable Lake.

On the third map, the potentiometric surface of the Rattlesnake Ridge confined aquifer is compared with the water table of the unconfined aquifer in the vicinity of West Lake, Gable Mountain Pond, and the B Pond system. The map was constructed from water-level measurements made in 12 wells penetrating this aquifer. The purpose of this map is to monitor the potential for aquifer intercommunication in this area.

The ground water maps of the Hanford Site Separations Areas are prepared by Environmental Engineering, Technology, and Permitting Function, Environmental Division, Westinghouse Hanford Company. The ground water maps are updated on a semiannual basis and are complementary to the Hanford Site water table map prepared by Pacific Northwest Laboratory.

Table 1. December 1989 Water Level Measurement Data,
200 Separations Areas. (Sheet 1 of 7)

Well	Depth to Water, ft	Elevation, ft above msl	
		Adjusted Casing	Water Level
299-E13-10	333.71	738.84	405.13
299-E13-12	327.07	731.34	404.17
299-E16-01	287.17	696.44	409.27
299-E17-05	314.78	718.69	403.91
299-E17-08	314.16	718.38	404.22
299-E17-18	316.04	720.65	404.61
299-E18-01	315.49	720.24	404.75
299-E18-03	317.27	722.04	404.77
299-E23-01	304.75	709.65	404.90
299-E23-02	316.04	720.66	404.60
299-E24-02	313.08	717.47	404.39
299-E24-07	311.34	716.01	404.67
299-E24-08	283.66	688.81	405.15
299-E24-18	314.66	719.28	404.62
299-E24-19	288.89	693.66	404.77
299-E25-04	255.95	659.39	403.44
299-E25-09	251.81	654.86	403.05
299-E25-11	276.35	681.28	404.93
299-E25-18	274.36	679.05	404.69
299-E25-19	272.71	677.20	404.49
299-E25-20	271.77	676.30	404.53
299-E25-22	269.44	674.02	404.58
299-E25-24	274.53	679.55	405.02
299-E25-25	263.50	669.42	405.92
299-E25-26	263.16	668.52	405.36
299-E25-27	270.99	676.08	405.09
299-E25-28	257.16	662.44	405.28
299-E25-29P	267.75	672.86	405.11
299-E25-30P	272.88	678.20	405.32
299-E25-31	267.43	672.53	405.10
299-E25-32P	263.10	670.04	406.94
299-E25-33	244.76	650.03	405.27
299-E25-34	257.40	662.87	405.47
299-E25-35	269.40	674.39	404.99
299-E25-36	302.75	707.39	404.64
299-E25-37	268.21	673.29	405.08
299-E25-38	268.21	673.52	405.24
299-E25-40	260.80	665.72	404.92
299-E25-41	266.29	671.27	404.98
299-E26-01	211.69	617.25	405.56

Table 1. December 1989 Water Level Measurement Data,
200 Separations Areas. (Sheet 2 of 7)

Well	Depth to Water, ft	Elevation, ft above msl	
		Adjusted Casing	Water Level
299-E26-02	229.86	633.60	403.74
299-E26-04	242.57	645.82	403.25
299-E26-08	197.20	602.76	405.56
299-E27-08	233.18	637.83	404.65
299-E27-09	224.44	629.21	404.77
299-E27-10	219.34	624.47	405.13
299-E27-11	238.78	643.30	404.52
299-E27-12	256.18	660.96	404.78
299-E27-13	264.31	669.00	404.69
299-E27-14	253.49	658.35	404.86
299-E27-15	248.21	652.68	404.47
299-E28-04	286.61	691.55	404.94
299-E28-06	295.19	700.11	404.92
299-E28-07	281.83	685.91	404.08
299-E28-09	295.92	700.77	404.85
299-E28-12	303.28	708.60	405.32
299-E28-17	302.81	708.56	405.75
299-E28-18	287.78	692.58	404.80
299-E28-26	282.81	687.26	404.45
299-E28-27	275.92	680.37	404.45
299-E32-01	251.89	656.17	404.28
299-E32-02	265.83	670.06	404.23
299-E32-03	272.21	676.51	404.30
299-E32-04	281.71	685.88	404.17
299-E33-07	222.09	626.58	404.49
299-E33-08	246.52	648.03	401.51
299-E33-12	217.89	623.00	405.11
299-E33-14	217.27	622.12	404.85
299-E33-17	226.86	631.65	404.79
299-E33-21	263.58	663.43	399.85
299-E33-28	259.76	664.23	404.47
299-E33-29	269.29	673.77	404.48
299-E33-30	259.30	663.70	404.40
299-E33-31	242.75	647.29	404.54
299-E33-32	255.38	659.84	404.46
299-E33-33	235.57	640.18	404.61
299-E34-02	225.98	630.80	404.82
299-E34-03	206.24	611.52	405.28
299-E34-05	185.18	590.79	405.61
299-E34-06	193.22	597.83	404.61

Table 1. December 1989 Water Level Measurement Data,
200 Separations Areas. (Sheet 3 of 7)

Well	Depth to Water, ft	Elevation, ft above msl	
		Adjusted Casing	Water Level
299-W06-01	243.39	702.53	459.14
299-W06-02	230.97	692.45	461.48
299-W07-01	229.63	690.71	461.08
299-W07-03	217.14	676.14	459.00
299-W07-04	209.25	671.69	462.44
299-W07-05	213.27	673.03	459.76
299-W07-06	218.93	678.64	459.71
299-W08-01	239.89	701.33	461.44
299-W09-01	273.25	737.73	464.48
299-W10-02	207.92	674.33	466.41
299-W10-05	205.10	672.31	467.21
299-W10-08	214.20	680.33	466.13
299-W10-10	233.93	699.43	465.50
299-W11-06	254.00	716.23	462.23
299-W11-07	244.63	709.11	464.48
299-W11-09	262.72	722.94	460.22
299-W11-10	271.28	728.89	457.61
299-W11-12	213.25	679.58	466.33
299-W11-14	253.02	715.16	462.14
299-W11-19	245.64	707.00	461.36
299-W11-23	220.04	685.86	465.82
299-W12-01	273.93	726.46	452.53
299-W14-01	201.22	665.83	464.61
299-W15-04	192.00	662.00	470.00
299-W15-05	199.23	670.68	471.45
299-W15-10	207.74	676.00	468.26
299-W15-12	202.10	671.00	468.90
299-W15-15	229.25	697.96	468.71
299-W15-16	215.32	684.89	469.57
299-W15-18	215.83	685.71	469.88
299-W15-20	230.42	698.37	467.95
299-W18-10	210.77	682.63	471.86
299-W18-15	190.80	660.76	469.96
299-W18-21	199.76	668.62	468.86
299-W18-22	200.55	668.49	467.94
299-W18-23	228.09	696.81	468.72
299-W18-24	214.50	684.35	469.85
299-W19-01	201.38	673.77	472.49
299-W19-02	233.42	694.04	460.62
299-W19-04	254.18	715.26	461.08

Table 1. December 1989 Water Level Measurement Data,
200 Separations Areas. (Sheet 4 of 7)

Well	Depth to Water, ft	Elevation, ft above msl	
		Adjusted Casing	Water Level
299-W19-06	220.19	700.00	479.81
299-W19-13	229.34	695.08	465.74
299-W19-14	227.66	693.21	465.55
299-W19-15	226.73	693.28	466.55
299-W19-20	230.31	691.04	460.73
299-W19-21	207.37	678.53	471.16
299-W19-23	237.32	698.44	461.12
299-W19-24	235.94	696.95	461.01
299-W19-25	231.79	691.64	459.85
299-W19-27	212.81	683.65	470.84
299-W21-01	242.78	699.26	456.48
299-W22-07	226.26	687.41	461.15
299-W22-17	206.46	671.62	465.16
299-W22-19	222.70	681.26	458.56
299-W22-21	208.39	670.00	461.61
299-W22-22	229.33	690.38	461.05
299-W22-26	215.95	680.30	464.35
299-W22-28	227.15	689.00	461.85
299-W23-04	194.20	662.82	468.62
299-W23-06	202.74	667.00	464.26
299-W23-11	197.12	664.14	467.02
699-24-33	120.29	524.21	403.92
699-25-55	262.95	676.55	413.60
699-25-70	180.51	629.78	449.27
699-28-40	155.01	559.44	404.43
699-28-52A	278.67	684.67	406.00
699-29-78	182.58	647.05	464.47
699-31-31	125.34	529.32	403.98
699-31-65	242.19	683.09	440.90
699-32-43	111.95	516.62	404.67
699-32-62	278.18	707.09	428.91
699-32-70B	214.21	666.68	452.47
699-32-72	217.64	668.16	450.52
699-32-77	190.61	653.74	463.13
699-33-42	111.23	516.00	404.77
699-33-56	311.21	717.03	405.82
699-34-39A	132.50	537.07	405.57
699-34-41B	166.14	570.89	404.75
699-34-42	135.45	540.20	404.75
699-34-51	331.45	736.76	405.31

Table 1. December 1989 Water Level Measurement Data,
200 Separations Areas. (Sheet 5 of 7)

Well	Depth to Water, ft	Elevation, ft above msl	
		Adjusted Casing	Water Level
699-35-66	286.24	725.65	439.41
699-35-70	241.26	693.72	452.46
699-35-78A	192.91	660.65	467.74
699-36-46S	299.65	704.33	404.68
699-36-61A	339.43	748.11	408.68
699-37-43	284.75	690.17	405.42
699-37-82A	168.52	636.75	468.23
699-38-65	323.21	753.33	430.12
699-38-70	257.16	710.67	453.51
699-39-39	123.05	536.65	413.60
699-39-79	205.21	673.52	468.31
699-40-33A	106.90	518.05	411.15
699-40-39	127.85	541.84	413.99
699-40-62	340.73	747.78	407.05
699-41-40	129.21	545.94	416.73
699-42-40A	123.21	545.53	422.32
699-42-40B	124.42	546.46	422.04
699-42-40C	131.06	546.16	415.10
699-42-42A	189.30	602.20	412.90
699-43-41E	129.48	550.86	421.38
699-43-41F	129.40	551.01	421.61
699-43-42	145.31	566.36	421.05
699-43-43	164.06	579.37	415.31
699-43-45	191.45	597.68	406.23
699-43-91D	262.25	671.99	409.74
699-44-42	158.06	579.22	421.16
699-44-64	317.87	705.60	407.73
699-45-42	159.26	577.33	418.07
699-45-69A	276.71	725.46	448.75
699-47-35B	62.19	476.65	414.46
699-47-46A	174.24	580.14	405.90
699-47-50	177.00	583.87	406.87
699-47-60	245.65	649.84	404.19
699-47-80C	307.70	711.93	404.23
699-47-80D	298.55	712.18	413.63
699-48-71	241.28	688.15	446.87
699-49-55A	125.59	530.14	404.55
699-49-55B	126.76	530.33	403.57
699-49-57	148.40	552.81	404.41
669-49-79	231.69	689.20	457.51

Table 1. December 1989 Water Level Measurement Data,
200 Separations Areas. (Sheet 6 of 7)

Well	Depth to Water, ft	Elevation, ft above msl	
		Adjusted Casing	Water Level
699-50-42	55.16	466.84	411.68
699-50-45	41.98	451.41	409.43
699-50-48B	142.98	550.39	407.41
699-50-53	151.96	556.30	404.34
699-50-85	292.39	739.35	446.96
699-51-46	36.50	444.63	408.13
699-51-63	165.54	571.84	406.30
699-51-75	191.26	641.51	450.25
699-52-46A	45.21	455.61	409.40
699-52-48	59.86	466.06	406.20
699-53-35	133.16	530.99	397.83
699-53-47A	32.12	438.28	406.16
699-53-47B	32.46	438.58	406.12
699-53-48A	38.30	442.45	404.15
699-53-48B	38.20	442.71	404.51
699-53-50	38.50	444.21	405.71
699-53-55B	172.84	576.16	403.32
699-53-55C	172.95	576.08	403.13
699-54-42	115.45	511.49	396.04
699-54-45A	96.65	494.29	397.64
699-54-48	53.49	457.02	403.53
699-54-57	171.75	575.58	403.83
699-55-40	133.16	543.13	409.97
699-55-50C	40.95	444.43	403.48
699-55-70	136.32	569.03	432.71
699-55-76	138.36	583.24	444.88
699-56-53	30.37	434.34	403.97
699-57-83A	145.04	577.96	432.92
699-59-32	62.37	424.29	361.92
699-59-58	95.10	497.77	402.67
699-59-80B	154.70	583.25	428.55
699-60-32	63.78	425.30	361.52
699-60-60	108.69	512.03	403.34
699-61-37	60.79	442.94	382.15
699-61-41	32.54	428.92	396.38
699-61-62	94.25	497.51	403.26
699-61-66	119.93	522.18	402.25
699-62-31	72.44	434.12	361.68
699-62-43A	35.55	432.30	396.75
699-63-51	24.01	424.54	400.53

Table 1. December 1989 Water Level Measurement Data,
200 Separations Areas. (Sheet 7 of 7)

Well	Depth to Water, ft	Elevation, ft above msl	
		Adjusted Casing	Water Level
699-63-58	90.02	491.90	401.88
699-64-62	98.74	500.25	401.51
699-65-50	66.49	467.06	400.57
699-65-59A	105.50	506.96	401.46
699-65-72	141.14	540.28	399.14
699-65-83	87.62	485.63	398.01

The Separations Area water table map is prepared by the Environmental Engineering Technology & Permitting Function of the Environmental Division of Westinghouse Hanford Company. This map complements the Hanford Site water table map being prepared by Pacific Northwest Laboratory.

Note: To convert to metric, multiply elevation (ft) by 0.3048 to obtain elevation (m).

Separations Area Depth-to-Water Map December 1989

298.91 Depth to the surface of the water from the top of the well casing, in feet

W22-26 Wells used in preparation of map

Ponds

Generalized Basalt above water table, as inferred 6/84

The Separations Area depth-to-water map is prepared by the Environmental Engineering Technology & Permitting Function of the Environmental Division of Westinghouse Hanford Company. This map complements the Hanford Site water table map being prepared by Pacific Northwest Laboratory.

Note: To convert to metric, multiply elevation (ft) by 0.3048 to obtain elevation (m).

Comparison of Potentiometric Surface of the Rattlesnake Ridge Confined Aquifer with the Water Table of the Unconfined Aquifer

December 1989

- 400** Potentiometric surface of the Rattlesnake Ridge confined aquifer in feet above mean sea level (ft msl)
- Water table contours in feet above mean sea level
- Areas of complete erosion of the Elephant Mountain Member (from RHO-RE-ST-12)
- Areas of downward hydraulic gradient
- 50-45
405 • Wells in confined aquifer used in preparation of maps
- Pond
- Generalized basalt above water table, as inferred 6/84

The Rattlesnake Ridge aquifer, which is confined by the Elephant Mountain Member, is monitored quarterly in the eastern portion of the separations area. The December 1989 water-level measurements in 13 wells completed in the Rattlesnake Ridge interbed were used to contour the potentiometric surface of the aquifer. Areal extent of downward hydraulic gradient from the unconfined aquifer to this confined aquifer is inferred from the water-table map and the contours of the potentiometric surface of the Rattlesnake Ridge. This area represents the zone in which downward flow might occur if a pathway is available due to complete erosion of the Elephant Mountain Member or sufficiently high hydraulic conductivity in the basalt.

The potentiometric surface of the Rattlesnake Ridge confined aquifer map is prepared by the Environmental Engineering Technology & Permitting Function of the Environmental Division of Westinghouse Hanford Company.

Note: To convert to metric, multiply elevation (ft) by 0.3048 to obtain elevation (m).

T.13 N.
T.12 N.

0 1 Mile
0 1 Kilometer

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