

United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3DAL10001

Project: Dale Hollow

Location: Obey River, Mile 7.0

State: Tennessee

Latitude: 36° 32' 13.4'

Quad: Dale Hollow Dam, TN-KY

County: Clay

Longitude: 85° 27' 24.9'

HUC: 05130105

Sample Date: 12 Jun 2012

Water Surface Elevation = 508.2 ft

Secchi Disk =

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	0.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 80	0.0	10.0	50.0	7.7	68.4	195.0	7.0	0.5
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 153								
Solids, Tot Diss	mg/L 153								
Solids, Tot Susp	mg/L <4.00								
Solids, Vol	mg/L 108								
Solids, Vol Diss	mg/L 108								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L <0.200								
Kjeldahl N, Tot	mg/L 0.150								
NO3+NO2, Tot	mg/L 0.312								
Phosphorus, Tot	mg/L 0.0181								
Phosphorus, Diss	mg/L 0.0133								
OrthoPhosphate, D	mg/L <0.0500								
Organic Carbon, T	mg/L 2.00								
Hardness, Tot	mg/L 93.7								
Sulfate, Tot	mg/L 16.8								
Calcium, Tot	mg/L 29.2								
Magnesium, Tot	mg/L 5.04								
Sodium, Tot	mg/L 2.84								
Potassium, Tot	mg/L 1.21								
Chloride, Tot	mg/L 4.32								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 24.3								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L <0.5								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L <0.5								
Iron, Tot	ug/L 13.9								
Iron, Diss	ug/L <8.0								
Lead, Tot	ug/L 4.6								
Lead, Diss	ug/L 15.8								
Manganese, Tot	ug/L 43.3								
Manganese, Diss	ug/L 1.7								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 1.6								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 1.3								
Zinc, Diss	ug/L 2.1								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 10.3								
Aluminum, Diss	ug/L <8.0								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L <0.005								

Water Quality Physical / Chemical Data Report

Page 2

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL10011

Project: Dale Hollow

Location: Wolf River, Mile 22.7

State: Tennessee

Latitude: 36° 35" 1'

Quad: Moodyville, TN-KY

County: Pickett

Longitude: 85° 7" 5'

HUC: 05130105

Sample Date: 14 Jun 2012

Water Surface Elevation =

Secchi Disk =

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	0.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 119	0.0	21.8	71.2	7.5	85.6	346.0	8.1	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 207								
Solids, Tot Diss	mg/L 207								
Solids, Tot Susp	mg/L <4.00								
Solids, Vol	mg/L 166								
Solids, Vol Diss	mg/L 166								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L <0.200								
Kjeldahl N, Tot	mg/L <0.0700								
NO3+NO2, Tot	mg/L 0.304								
Phosphorus, Tot	mg/L 0.0155								
Phosphorus, Diss	mg/L 0.0143								
OrthoPhosphate, D	mg/L <0.0500								
Organic Carbon, T	mg/L 2.00								
Hardness, Tot	mg/L 162								
Sulfate, Tot	mg/L 48.3								
Calcium, Tot	mg/L 48.6								
Magnesium, Tot	mg/L 9.79								
Sodium, Tot	mg/L 7.16								
Potassium, Tot	mg/L 1.17								
Chloride, Tot	mg/L 9.81								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 57.1								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 0.6								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L <0.5								
Iron, Tot	ug/L 37.6								
Iron, Diss	ug/L 10.3								
Lead, Tot	ug/L 5.9								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 17.2								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.3								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 3.2								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 30.7								
Aluminum, Diss	ug/L <8.0								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

Water Quality Physical / Chemical Data Report

Page 3

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL10012

Project: Dale Hollow

Location: Spring Creek, Mile 2.7

State: Kentucky

Latitude: 36° 38" 6'

Quad: Albany, KY-TN

County: Clinton

Longitude: 85° 8" 43'

HUC: 05130105

Sample Date: 14 Jun 2012

Water Surface Elevation =

Secchi Disk =

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	0.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 151	0.0	19.1	66.4	9.4	101.8	610.0	8.2	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 378								
Solids, Tot Diss	mg/L 378								
Solids, Tot Susp	mg/L <4.00								
Solids, Vol	mg/L 103								
Solids, Vol Diss	mg/L 103								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L <0.200								
Kjeldahl N, Tot	mg/L 0.130								
NO3+NO2, Tot	mg/L 1.56								
Phosphorus, Tot	mg/L 0.0846								
Phosphorus, Diss	mg/L 0.0769								
OrthoPhosphate, D	mg/L 0.0605								
Organic Carbon, T	mg/L 2.20								
Hardness, Tot	mg/L 235								
Sulfate, Tot	mg/L 69.6								
Calcium, Tot	mg/L 70.6								
Magnesium, Tot	mg/L 14.3								
Sodium, Tot	mg/L 34.0								
Potassium, Tot	mg/L 2.11								
Chloride, Tot	mg/L 54.0								
Arsenic, Tot	ug/L 0.8								
Barium, Tot	ug/L 39.3								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 1.8								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.8								
Iron, Tot	ug/L 29.1								
Iron, Diss	ug/L <8.0								
Lead, Tot	ug/L 1.3								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 11.1								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L 0.8								
Nickel, Tot	ug/L 3.4								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L 0.9								
Zinc, Tot	ug/L 2.8								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 27.7								
Aluminum, Diss	ug/L <8.0								
Selenium, Tot	ug/L 1.1								
Mercury, Tot	ug/L								

Water Quality Physical / Chemical Data Report

Page 4

United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3DAL10014

Project: Dale Hollow

Location: East Fork Obey River, Mile 12.6

State: Tennessee

Latitude: 36° 25' 0'

Quad: Riverton, TN

County: Fentress

Longitude: 85° 1' 38'

HUC: 05130105

Sample Date: 13 Jun 2012

Water Surface Elevation =

Secchi Disk =

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	0.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 78	0.0	24.5	76.1	10.0	119.9	303.0	8.1	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 193								
Solids, Tot Diss	mg/L 193								
Solids, Tot Susp	mg/L <4.00								
Solids, Vol	mg/L 55.0								
Solids, Vol Diss	mg/L 55.0								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L <0.200								
Kjeldahl N, Tot	mg/L <0.0700								
NO3+NO2, Tot	mg/L 0.269								
Phosphorus, Tot	mg/L 0.0096								
Phosphorus, Diss	mg/L <0.0080								
OrthoPhosphate, D	mg/L <0.0500								
Organic Carbon, T	mg/L 1.50								
Hardness, Tot	mg/L 137								
Sulfate, Tot	mg/L 60.5								
Calcium, Tot	mg/L 41.6								
Magnesium, Tot	mg/L 8.15								
Sodium, Tot	mg/L 5.31								
Potassium, Tot	mg/L 1.40								
Chloride, Tot	mg/L 6.37								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 35.7								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L <0.5								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.6								
Iron, Tot	ug/L 38.3								
Iron, Diss	ug/L 11.8								
Lead, Tot	ug/L 1.3								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 35.6								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.5								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 1.8								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 67.5								
Aluminum, Diss	ug/L 52.4								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

Water Quality Physical / Chemical Data Report

Page 5

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL10015

Project: Dale Hollow

Location: West Fork Obey River, Mile 7.5

State: Tennessee

Latitude: 36° 24" 7'

Quad: Alpine, TN

County: Overton

Longitude: 85° 10" 40'

HUC: 05130105

Sample Date: 13 Jun 2012

Water Surface Elevation =

Secchi Disk =

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	0.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 118	0.0	25.3	77.5	8.4	102.1	402.0	8.1	
Alkalinity, Phenol	mg/L 0								
Solids, Tot	mg/L 293								
Solids, Tot Diss	mg/L 293								
Solids, Tot Susp	mg/L <4.00								
Solids, Vol	mg/L 82.0								
Solids, Vol Diss	mg/L 82.0								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L <0.200								
Kjeldahl N, Tot	mg/L 0.240								
NO3+NO2, Tot	mg/L 0.349								
Phosphorus, Tot	mg/L <0.0080								
Phosphorus, Diss	mg/L <0.0080								
OrthoPhosphate, D	mg/L <0.0500								
Organic Carbon, T	mg/L 1.60								
Hardness, Tot	mg/L 178								
Sulfate, Tot	mg/L 64.6								
Calcium, Tot	mg/L 53.7								
Magnesium, Tot	mg/L 10.6								
Sodium, Tot	mg/L 11.5								
Potassium, Tot	mg/L 1.14								
Chloride, Tot	mg/L 14.4								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 29.4								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 0.78								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L <0.5								
Iron, Tot	ug/L 22.7								
Iron, Diss	ug/L <8.0								
Lead, Tot	ug/L 2.2								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 22.4								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.8								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 1.5								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 71.5								
Aluminum, Diss	ug/L 46.9								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

Water Quality Physical / Chemical Data Report

Page 6

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL10028

Project: Dale Hollow

Location: Big Eagle Creek, Mile 5.3

State: Tennessee

Latitude: 36° 28" 43.9'

Quad: Alpine, TN

County: Overton

Longitude: 85° 14" 29.7'

HUC: 05130105

Sample Date: 14 Jun 2012

Water Surface Elevation =

Secchi Disk =

(No Laboratory Analyses)

Profile Measurements

Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
0.0	18.2	64.8	8.7	92.6	422.0	8.1	

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL20002

Project: Dale Hollow

Location: Obey River, Mile 7.7

State: Tennessee

Latitude: 36° 32' 24.1'

Quad: Dale Hollow Dam, TN-KY

County: Clay

Longitude: 85° 26' 46'

HUC: 05130105

Sample Date: 12 Jun 2012

Water Surface Elevation = 648.5 ft

Secchi Disk = 3.9 m

Results of Laboratory Analyses

Profile Measurements

Sample	Depth ft	0.0	70.0	135.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L	80	80	82	0.0	25.5	77.9	8.7	106.2	194.0	8.4	1.4
Alkalinity, Phenol	mg/L	4	0	0	5.0	25.5	78.0	8.8	107.3	193.9	8.4	1.4
Solids, Tot	mg/L	134	112	116	10.0	25.5	78.0	8.8	107.3	194.0	8.4	1.5
Solids, Tot Diss	mg/L	134	112	116	15.0	24.9	76.8	8.9	107.6	193.4	8.4	1.5
Solids, Tot Susp	mg/L	<4.00	<4.00	<4.00	20.0	20.9	69.6	11.6	129.9	191.4	8.6	2.2
Solids, Vol	mg/L	226	88.0	77.0	25.0	16.1	61.0	10.3	105.0	193.8	8.0	1.8
Solids, Vol Diss	mg/L	226	88.0	77.0	30.0	13.7	56.6	9.6	92.8	195.2	7.6	2.3
Solids, Vol Susp	mg/L	<4.00	<4.00	<4.00	35.0	12.0	53.6	8.9	82.9	195.1	7.4	2.0
Ammonia N, Tot	mg/L	<0.200	<0.200	<0.200	40.0	11.1	52.0	8.6	77.9	194.5	7.3	1.9
Kjeldahl N, Tot	mg/L	0.160	0.340	0.140	45.0	10.7	51.3	8.1	73.4	194.1	7.2	1.3
NO3+NO2, Tot	mg/L	<0.0200	0.315	0.351	50.0	10.4	50.7	7.9	70.2	193.8	7.2	0.5
Phosphorus, Tot	mg/L	0.0188	0.0264	0.0204	55.0	10.2	50.4	7.6	67.6	193.9	7.1	0.4
Phosphorus, Diss	mg/L	0.0156	0.0133	0.0207	60.0	10.1	50.1	7.5	66.9	193.6	7.1	0.4
OrthoPhosphate, D	mg/L	<0.0500	<0.0500	<0.0500	65.0	10.0	49.9	7.6	67.5	193.3	7.1	0.3
Organic Carbon, T	mg/L	2.80	2.20	2.30	70.0	9.8	49.7	7.7	68.2	193.1	7.1	0.2
Hardness, Tot	mg/L	91.0	93.2	94.1	75.0	9.7	49.5	7.6	67.0	192.9	7.1	0.2
Sulfate, Tot	mg/L	16.6	16.9	16.6	80.0	9.7	49.4	7.6	66.8	192.9	7.1	0.2
Calcium, Tot	mg/L	28.1	29.1	29.3	85.0	9.6	49.2	7.1	62.1	192.9	7.1	0.1
Magnesium, Tot	mg/L	5.05	5.00	5.08	90.0	9.5	49.0	6.9	60.7	192.9	7.0	0.1
Sodium, Tot	mg/L	2.74	2.84	2.90	95.0	9.4	48.9	6.6	57.8	193.0	7.0	0.1
Potassium, Tot	mg/L	1.17	1.20	1.25	100.0	9.3	48.8	6.5	57.1	193.4	7.0	0.1
Chloride, Tot	mg/L	4.21	4.34	4.41	105.0	9.3	48.7	6.1	52.7	193.3	7.0	0.1
Arsenic, Tot	ug/L	<0.5	<0.5	0.7	110.0	9.2	48.6	5.7	49.6	193.5	7.0	0.1
Barium, Tot	ug/L	18.9	23.5	25.2	115.0	9.2	48.5	5.7	49.5	193.0	7.0	0.1
Beryllium, Tot	ug/L	<0.5	<0.5	<0.5	120.0	9.1	48.5	5.5	48.0	193.4	6.9	0.0
Cadmium, Tot	ug/L	<0.5	<0.5	<0.5	125.0	9.1	48.4	4.8	41.9	193.5	6.9	0.0
Chromium, Tot	ug/L	<0.5	<0.5	<0.5	130.0	9.1	48.3	3.8	33.2	193.8	6.9	0.1
Cobalt, Tot	ug/L	<0.5	<0.5	<0.5	135.0	9.0	48.3	3.4	29.7	194.1	6.8	0.1
Copper, Tot	ug/L	0.5	<0.5	0.5	140.0	9.0	48.3	2.9	25.3	194.6	6.8	0.0
Iron, Tot	ug/L	13.5	10.2	23.3								
Iron, Diss	ug/L	<8.0	<8.0	<8.0								
Lead, Tot	ug/L	3.7	3.3	3.5								
Lead, Diss	ug/L	3.6	3.5	3.7								
Manganese, Tot	ug/L	5.2	9.4	286.0								
Manganese, Diss	ug/L	0.6	0.6	2.1								
Thallium, Tot	ug/L	<0.5	<0.5	<0.5								
Molybdenum, Tot	ug/L	0.7	<0.5	<0.5								
Nickel, Tot	ug/L	1.7	1.6	1.7								
Silver, Tot	ug/L	<0.5	<0.5	<0.5								
Vanadium, Tot	ug/L	<0.5	<0.5	<0.5								
Zinc, Tot	ug/L	1.2	1.0	1.8								
Zinc, Diss	ug/L	0.9	1.1	1.0								
Antimony, Tot	ug/L	<0.5	<0.5	<0.5								
Aluminum, Tot	ug/L	25.1	<8.0	<8.0								
Aluminum, Diss	ug/L	11.4	<8.0	<8.0								
Selenium, Tot	ug/L	<0.5	<0.5	<0.5								
Mercury, Tot	ug/L	0.106	0.069	0.102								

Water Quality Physical / Chemical Data Report

Page 8

United States Army Corps of Engineers

Nashville District

CELRN-EC-H / Water Management Section

Station: 3DAL20003

Project: Dale Hollow

Location: Obey River, Mile 16.7

State: Tennessee

Latitude: 36° 32' 48.9'

Quad: Dale Hollow Dam, TN-KY

County: Clay

Longitude: 85° 23' 25.1'

HUC: 05130105

Sample Date: 12 Jun 2012

Water Surface Elevation = 648.5 ft

Secchi Disk = 3.1 m

(No Laboratory Analyses)

Profile Measurements

Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
0.0	25.5	77.9	8.8	107.8	193.7	8.4	0.8
5.0	25.5	77.9	8.8	107.2	194.0	8.4	1.3
10.0	25.5	77.8	8.8	107.0	193.8	8.4	1.4
15.0	25.4	77.7	8.8	106.9	193.7	8.4	1.4
20.0	21.0	69.7	11.6	130.3	189.8	8.6	2.7
25.0	17.5	63.5	9.7	101.4	191.2	8.1	1.9
30.0	14.2	57.6	8.9	86.3	192.1	7.5	2.3
35.0	11.3	52.4	7.5	68.2	190.1	7.1	2.4
40.0	10.8	51.5	7.4	66.7	190.2	7.1	2.7
45.0	10.6	51.0	7.4	66.3	190.0	7.0	2.8
50.0	10.3	50.5	7.0	62.9	190.4	7.0	1.7
55.0	10.2	50.4	7.0	62.2	190.5	7.0	1.1
60.0	10.0	50.0	6.9	60.9	191.0	7.0	0.9
65.0	9.9	49.9	6.8	60.6	191.1	7.0	0.7
70.0	9.9	49.8	6.7	59.1	191.1	7.0	0.5
75.0	9.8	49.7	6.6	57.8	191.8	7.0	0.5
80.0	9.7	49.4	6.2	54.3	192.1	7.0	0.4
85.0	9.6	49.2	6.0	52.3	192.0	6.9	0.3
90.0	9.5	49.0	5.5	48.0	192.7	6.9	0.3
95.0	9.4	49.0	5.3	45.9	192.7	6.9	0.2
100.0	9.4	48.8	5.0	43.3	192.8	6.9	0.2
105.0	9.3	48.8	4.8	41.8	193.2	6.9	0.2
110.0	9.3	48.8	4.7	40.9	193.2	6.9	0.2
115.0	9.3	48.7	4.6	40.0	193.3	6.9	0.2
120.0	9.2	48.6	4.1	35.8	193.5	6.9	0.1
125.0	9.2	48.6	3.9	33.8	194.2	6.8	0.2

CELNRN-EC-H / Water Management Section

Location: Obey River, Mile 27.7

Quad: Dale Hollow Reservoir SE, TN-KY
HUC: 05130105

Secchi Disk = 3.2 m

Profile Measurements

Data by Laboratory Analysis				Depth	Water Temp	Water Temp	Dis Oxygen	Dis Oxygen	Spec Cond	pH	Chloro a F
Sample	Depth ft	0.0	100.0	ft	deg C	deg F	mg/l	% sat	umho/cm	units	ug/l
Alkalinity, Tot	mg/L	78	78	0.0	25.6	78.2	8.9	108.8	192.8	8.5	0.6
Alkalinity, Phenol	mg/L	5	0	5.0	25.6	78.1	8.9	109.0	192.6	8.5	0.8
Solids, Tot	mg/L	103	125	10.0	25.5	77.9	8.9	108.9	192.9	8.5	0.9
Solids, Tot Diss	mg/L	103	125	15.0	25.4	77.6	8.8	107.8	192.8	8.5	1.3
Solids, Tot Susp	mg/L	<4.00	<4.00	20.0	24.0	75.3	9.3	111.0	192.0	8.5	2.8
Solids, Vol	mg/L	107	70.0	25.0	17.1	62.7	8.9	91.9	192.6	7.9	3.6
Solids, Vol Diss	mg/L	107	70.0	30.0	13.7	56.7	7.0	67.6	191.3	7.2	2.6
Solids, Vol Susp	mg/L	<4.00	<4.00	35.0	12.0	53.6	6.3	58.6	190.1	7.0	2.5
Ammonia N, Tot	mg/L	<0.200	<0.200	40.0	11.3	52.3	4.9	45.1	192.2	6.9	4.5
Kjeldahl N, Tot	mg/L	0.190	0.120	45.0	10.7	51.3	4.4	39.9	191.3	6.9	2.1
NO3+NO2, Tot	mg/L	0.0996	0.386	50.0	10.4	50.6	4.6	40.6	191.5	6.9	0.7
Phosphorus, Tot	mg/L	0.0154	0.0206	55.0	10.3	50.5	4.7	42.2	191.1	6.9	0.7
Phosphorus, Diss	mg/L	0.0170	0.0172	60.0	10.1	50.1	4.6	40.4	191.2	6.9	0.6
OrthoPhosphate, D	mg/L	<0.0500	<0.0500	65.0	10.0	49.9	4.4	39.2	190.9	6.9	0.5
Organic Carbon, T	mg/L	3.00	2.40	70.0	9.9	49.9	4.4	39.3	191.1	6.9	0.5
Hardness, Tot	mg/L	90.5	92.8	75.0	9.9	49.7	4.2	37.3	191.5	6.8	0.5
Sulfate, Tot	mg/L	16.3	16.9	80.0	9.8	49.6	4.1	36.1	191.7	6.8	0.5
Calcium, Tot	mg/L	28.2	29.0	85.0	9.7	49.5	4.0	35.4	192.0	6.8	0.5
Magnesium, Tot	mg/L	4.90	4.96	90.0	9.7	49.5	4.1	36.3	191.9	6.8	0.5
Sodium, Tot	mg/L	2.60	2.79	95.0	9.7	49.4	4.0	34.8	191.9	6.8	0.4
Potassium, Tot	mg/L	1.11	1.18	100.0	9.6	49.3	3.9	34.3	192.1	6.8	0.4
Chloride, Tot	mg/L	3.87	4.26	105.0	9.6	49.2	3.7	32.6	192.2	6.8	0.4
Arsenic, Tot	ug/L	<0.5	<0.5								
Barium, Tot	ug/L	19.2	24.6								
Beryllium, Tot	ug/L	<0.5	<0.5								
Cadmium, Tot	ug/L	<0.5	<0.5								
Chromium, Tot	ug/L	0.6	<0.5								
Cobalt, Tot	ug/L	<0.5	<0.5								
Copper, Tot	ug/L	0.7	<0.5								
Iron, Tot	ug/L	17.2	27.2								
Iron, Diss	ug/L	<8.0	<8.0								
Lead, Tot	ug/L	3.4	4.7								
Lead, Diss	ug/L	3.4									
Manganese, Tot	ug/L	3.9	179.0								
Manganese, Diss	ug/L	<0.5									
Thallium, Tot	ug/L	<0.5	<0.5								
Molybdenum, Tot	ug/L	<0.5	<0.5								
Nickel, Tot	ug/L	1.6	1.7								
Silver, Tot	ug/L	<0.5	<0.5								
Vanadium, Tot	ug/L	<0.5	<0.5								
Zinc, Tot	ug/L	1.2	1.1								
Zinc, Diss	ug/L	1.0									
Antimony, Tot	ug/L	<0.5	<0.5								
Aluminum, Tot	ug/L	21.8	12.2								
Aluminum, Diss	ug/L	8.7	<8.0								
Selenium, Tot	ug/L	<0.5	<0.5								
Mercury, Tot	ug/L										

Water Quality Physical / Chemical Data Report

Page 10

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL20005

Project: Dale Hollow

Location: Obey River, Mile 33.0

State: Tennessee

Latitude: 36° 35" 46.6'

Quad: Dale Hollow Reservoir SE, TN-KY

County: Clay

Longitude: 85° 17" 1.7'

HUC: 05130105

Sample Date: 12 Jun 2012

Water Surface Elevation = 648.5 ft

Secchi Disk = 2.9 m

(No Laboratory Analyses)

Profile Measurements

Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
0.0	25.9	78.6	9.0	110.8	191.5	8.4	0.6
5.0	25.9	78.6	9.0	111.0	191.6	8.4	1.0
10.0	25.7	78.3	9.0	110.8	191.8	8.4	1.5
15.0	25.0	77.0	9.2	111.2	191.4	8.4	2.1
20.0	22.8	73.1	10.3	119.5	191.2	8.5	4.3
25.0	18.0	64.5	9.9	105.1	190.7	8.1	3.8
30.0	15.0	59.0	7.3	72.3	192.6	7.3	2.9
35.0	13.2	55.7	6.3	60.2	185.7	7.0	2.2
40.0	11.8	53.2	5.1	47.5	183.5	6.9	2.6
45.0	10.9	51.7	4.0	36.6	184.7	6.8	1.8
50.0	10.6	51.0	4.0	35.9	186.8	6.8	0.7
55.0	10.4	50.6	3.9	35.1	188.7	6.8	0.8
60.0	10.2	50.4	3.8	33.9	189.8	6.7	0.7
65.0	10.2	50.3	3.6	32.4	190.0	6.7	0.8
70.0	10.2	50.3	3.5	31.0	189.9	6.7	0.7
75.0	10.1	50.2	3.5	31.3	190.5	6.7	0.6
80.0	10.0	50.1	3.5	31.2	191.3	6.7	0.5
85.0	10.0	49.9	3.5	30.6	191.4	6.7	1.2
90.0	10.0	49.9	3.5	30.5	191.7	6.7	0.6
94.0	9.9	49.9	3.4	30.4	191.5	6.8	0.6

CELNRN-EC-H / Water Management Section

Location: Obey River, Mile 41.6

Quad: Byrdstown, TN-KY
HUC: 05130105

Secchi Disk = 4.2 m

Profile Measurements

[illegible]

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL20007

Project: Dale Hollow

Location: Obey River, Mile 55.8

State: Tennessee

Latitude: 36° 28' 21.3'

Quad: Alpine, TN

County: Pickett

Longitude: 85° 8' 6.8'

HUC: 05130105

Sample Date: 13 Jun 2012

Water Surface Elevation = 648.5 ft

Secchi Disk = 1.6 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	20.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 92	0.0	28.2	82.8	8.1	104.2	222.2	7.9	1.7
Alkalinity, Phenol	mg/L 0	5.0	26.4	79.6	8.4	103.9	223.4	7.9	4.4
Solids, Tot	mg/L 155	10.0	25.5	77.9	8.1	98.8	224.3	7.8	9.4
Solids, Tot Diss	mg/L 155	15.0	24.6	76.4	2.7	32.1	257.4	7.1	4.5
Solids, Tot Susp	mg/L <4.00	20.0	23.6	74.5	2.0	23.0	275.8	7.0	2.6
Solids, Vol	mg/L 88.0	25.0	19.2	66.5	0.0	0.4	269.0	6.8	1.6
Solids, Vol Diss	mg/L 88.0	30.0	15.0	59.1	0.0	0.4	253.7	6.6	0.9
Solids, Vol Susp	mg/L <4.00	35.0	14.9	58.7	0.0	0.4	261.6	6.5	0.9
Ammonia N, Tot	mg/L <0.200	38.0	14.8	58.6	0.0	0.3	265.9	6.5	0.9
Kjeldahl N, Tot	mg/L 0.370								
NO3+NO2, Tot	mg/L 0.0489								
Phosphorus, Tot	mg/L 0.0225								
Phosphorus, Diss	mg/L 0.0204								
OrthoPhosphate, D	mg/L <0.0500								
Organic Carbon, T	mg/L 2.40								
Hardness, Tot	mg/L 121								
Sulfate, Tot	mg/L 32.2								
Calcium, Tot	mg/L 37.0								
Magnesium, Tot	mg/L 7.01								
Sodium, Tot	mg/L 4.29								
Potassium, Tot	mg/L 1.21								
Chloride, Tot	mg/L 5.48								
Arsenic, Tot	ug/L 0.6								
Barium, Tot	ug/L 30.3								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 0.5								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.6								
Iron, Tot	ug/L 156.0								
Iron, Diss	ug/L 8.2								
Lead, Tot	ug/L 3.6								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 103.0								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.2								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 2.3								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 83.5								
Aluminum, Diss	ug/L 14.1								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

CELNRN-EC-H / Water Management Section

Location: Wolf River, Mile 8.7

Quad: Byrdstown, TN-KY
HUC: 05130105

Secchi Disk = 3 m

Profile Measurements

[illegible]

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL20009

Project: Dale Hollow

Location: East Fork Obey River, Mile 2.0

State: Tennessee

Latitude: 36° 27' 6.9'

Quad: Riverton, TN

County: Pickett

Longitude: 85° 5' 38.5'

HUC: 05130105

Sample Date: 13 Jun 2012

Water Surface Elevation = 648.5 ft

Secchi Disk = 1.3 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	15.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 88	0.0	26.4	79.6	9.2	114.9	240.9	8.1	8.6
Alkalinity, Phenol	mg/L 0	5.0	25.4	77.7	9.4	114.5	240.7	8.1	9.7
Solids, Tot	mg/L 153	10.0	24.9	76.8	8.7	105.0	240.9	7.9	9.8
Solids, Tot Diss	mg/L 153	15.0	23.4	74.2	5.6	66.0	285.2	7.2	3.4
Solids, Tot Susp	mg/L <4.00	20.0	19.9	67.9	0.1	0.7	291.3	6.9	1.8
Solids, Vol	mg/L 57.0	25.0	19.0	66.1	0.0	0.4	299.6	6.9	1.8
Solids, Vol Diss	mg/L 57.0	27.0	18.8	65.9	0.0	0.4	305.3	6.9	1.8
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L <0.200								
Kjeldahl N, Tot	mg/L 0.300								
NO3+NO2, Tot	mg/L 0.0800								
Phosphorus, Tot	mg/L 0.0193								
Phosphorus, Diss	mg/L 0.0141								
OrthoPhosphate, D	mg/L <0.0500								
Organic Carbon, T	mg/L 2.30								
Hardness, Tot	mg/L 125								
Sulfate, Tot	mg/L 39.1								
Calcium, Tot	mg/L 38.0								
Magnesium, Tot	mg/L 7.42								
Sodium, Tot	mg/L 4.61								
Potassium, Tot	mg/L 1.31								
Chloride, Tot	mg/L 6.05								
Arsenic, Tot	ug/L <0.5								
Barium, Tot	ug/L 35.0								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L <0.5								
Cobalt, Tot	ug/L <0.5								
Copper, Tot	ug/L 0.7								
Iron, Tot	ug/L 121.0								
Iron, Diss	ug/L 12.5								
Lead, Tot	ug/L 3.6								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 95.8								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L <0.5								
Nickel, Tot	ug/L 2.4								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L <0.5								
Zinc, Tot	ug/L 2.4								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 90.4								
Aluminum, Diss	ug/L 25.8								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL20010

Project: Dale Hollow

Location: West Fork Obey River, Mile 1.8

State: Tennessee

Latitude: 36° 26' 49.3'

Quad: Alpine, TN

County: Overton

Longitude: 85° 9' 8.9'

HUC: 05130105

Sample Date: 13 Jun 2012

Water Surface Elevation = 648.5 ft

Secchi Disk = 1 m

Results of Laboratory Analyses

Profile Measurements

Sample Depth ft	15.0	Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
Alkalinity, Tot	mg/L 114	0.0	27.8	82.0	8.5	108.3	254.9	7.9	3.7
Alkalinity, Phenol	mg/L 0	5.0	25.7	78.2	8.2	100.8	258.0	7.9	12.5
Solids, Tot	mg/L 266	10.0	24.7	76.4	5.4	64.5	290.7	7.4	5.4
Solids, Tot Diss	mg/L 257.2	15.0	23.1	73.6	0.6	6.5	359.8	7.0	2.5
Solids, Tot Susp	mg/L 8.80	20.0	22.1	71.9	0.0	0.4	371.6	7.0	1.8
Solids, Vol	mg/L 133	22.0	21.4	70.5	0.1	0.5	386.7	7.0	2.4
Solids, Vol Diss	mg/L 133								
Solids, Vol Susp	mg/L <4.00								
Ammonia N, Tot	mg/L 0.240								
Kjeldahl N, Tot	mg/L 0.570								
NO3+NO2, Tot	mg/L 0.149								
Phosphorus, Tot	mg/L 0.0229								
Phosphorus, Diss	mg/L 0.0215								
OrthoPhosphate, D	mg/L <0.0500								
Organic Carbon, T	mg/L 2.40								
Hardness, Tot	mg/L 157								
Sulfate, Tot	mg/L 48.0								
Calcium, Tot	mg/L 47.3								
Magnesium, Tot	mg/L 9.55								
Sodium, Tot	mg/L 7.21								
Potassium, Tot	mg/L 1.29								
Chloride, Tot	mg/L 9.29								
Arsenic, Tot	ug/L 0.9								
Barium, Tot	ug/L 35.7								
Beryllium, Tot	ug/L <0.5								
Cadmium, Tot	ug/L <0.5								
Chromium, Tot	ug/L 0.7								
Cobalt, Tot	ug/L 0.5								
Copper, Tot	ug/L 0.82								
Iron, Tot	ug/L 251.0								
Iron, Diss	ug/L 11.7								
Lead, Tot	ug/L 3.8								
Lead, Diss	ug/L								
Manganese, Tot	ug/L 340.0								
Manganese, Diss	ug/L								
Thallium, Tot	ug/L <0.5								
Molybdenum, Tot	ug/L 0.5								
Nickel, Tot	ug/L 2.9								
Silver, Tot	ug/L <0.5								
Vanadium, Tot	ug/L 0.7								
Zinc, Tot	ug/L 3.1								
Zinc, Diss	ug/L								
Antimony, Tot	ug/L <0.5								
Aluminum, Tot	ug/L 136.0								
Aluminum, Diss	ug/L 15.6								
Selenium, Tot	ug/L <0.5								
Mercury, Tot	ug/L								

CELNRN-EC-H / Water Management Section

Location: Spring Creek, Mile 0.5

Quad: Albany, KY-TN
HUC: 05130105

Secchi Disk = 1.1 m

Profile Measurements

[illegible]

Water Quality Physical / Chemical Data Report

Page 17

United States Army Corps of Engineers

Nashville District

CELNRN-EC-H / Water Management Section

Station: 3DAL20067

Project: Dale Hollow

Location: Obey River, Mile 50.0

State: Tennessee

Latitude: 36° 30' 49.8"

Quad: Byrdstown, TN-KY

County: Pickett

Longitude: 85° 9' 28.3"

HUC: 05130105

Sample Date: 13 Jun 2012

Water Surface Elevation = 648.5 ft

Secchi Disk = 3.2 m

(No Laboratory Analyses)

Profile Measurements

Depth ft	Water Temp deg C	Water Temp deg F	Dis Oxygen mg/l	Dis Oxygen % sat	Spec Cond umho/cm	pH units	Chloro a F ug/l
0.0	27.1	80.8	8.5	106.3	204.4	8.1	0.3
5.0	26.8	80.3	8.5	106.6	203.6	7.9	0.5
10.0	25.9	78.7	8.7	106.7	201.6	8.0	1.2
15.0	25.9	78.5	8.6	105.5	202.1	8.0	1.9
20.0	23.7	74.7	5.2	61.6	248.3	7.1	10.4
25.0	19.5	67.1	3.6	39.5	232.3	6.9	4.8
30.0	16.8	62.3	0.8	8.0	220.9	6.6	1.7
35.0	14.6	58.2	0.3	2.6	204.1	6.5	1.4
40.0	12.2	54.0	0.0	0.4	188.7	6.5	0.6
45.0	11.4	52.4	0.1	0.8	184.0	6.4	0.7
50.0	11.1	51.9	0.2	2.1	182.3	6.4	0.5
55.0	10.9	51.6	0.4	3.9	184.0	6.4	0.4
58.0	10.8	51.5	0.6	4.9	184.8	6.4	0.5