

January 29, 2020

via electronic mail

Ms. Katie Murphy
Tennessee Department of Environment & Conservation
Division of Water Pollution Control
711 R.S. Gass Blvd.
Nashville, Tennessee 37243

Re: Hydrologic Determinations
Unnamed Tributaries to the Cumberland River
3901 & 3905 Ivy Drive
Nashville, Davidson County, Tennessee

Dear Ms. Murphy:

Attached, please find materials supporting a recent Hydrologic Determinations (HD) conducted on two watercourses for the referenced property (the Site) in Davidson County, Tennessee. We are forwarding the accompanying Hydrologic Determination Field Data Sheets, figures and photographs, which are provided in support of our determinations that indicate the assessed watercourses as a stream and a wet weather conveyance, as defined by Tennessee statute and associated administrative regulations.^{1,2}

This report is submitted with the knowledge of the property owners³ and prospective developer⁴. Per TDEC Rule 0400-40-17-.04, the writer of this report is “**seeking to qualify for the treatment provided in §69-3-108(r)**”. The purpose of this report is to obtain TDEC’s concurrence with this hydrologic determination to inform site planning for a proposed parking lot on the property.

Proposed Site development activities may require watercourse alterations to accommodate structures and associated infrastructure. The owner and prospective site developer will consider practicable alteration alternatives pending determination of jurisdiction.

PROJECT SITE

The subject watercourses (D-1 & D-2) are located on an approximately 9.05-acre Site (Figure 1). Site land-use in the tributaries’ watersheds are primarily residential properties and forested areas. The assessed watercourses are located within the Cumberland River – Dry Creek Watershed 12-digit hydrologic unit code (HUC) boundary (051302020302).

¹ Tennessee Code Annotated §69-3-103 (43) (A-D)

² TDEC Rules of the Tennessee Water Quality Control Board 1200-04-03-.04(25)

³ Marcia Malone, 3905 Ivy Drive, Nashville, TN 37216; and Charles and Sally Wehby Living Trust, 3901 Ivy Drive, Nashville, TN 37216

⁴ MiKeN Development LLC, Attn: Michael Kenner, 665 Vernon Avenue, Nashville, TN 37209, michael@mikendevlopment.com, 615-294-4535

Representative photographs of the assessed watercourses are provided on the attached photo pages. A depiction of assessed reaches is provided in Figure 2, and locations of photographs are provided in Figure 3. Additionally, a soil survey of the Site is also attached.

HYDROLOGIC DETERMINATION FINDINGS & REQUEST FOR CONCURRENCE

For the purposes of these hydrologic determinations, the assessed watercourses were scored using TDEC's Hydrologic Determination Protocols. Sam Parish (QHP #1107-TN13) with BDY Environmental, LLC (BDY) conducted the hydrological determinations within the subject site on January 22, 2020.

Prior to the January 22, 2020 site visit, the 7-day antecedent precipitation totaled 0.22 inches and 0.0 inches of rainfall were recorded during the 48 hours preceding the site visit. Based on a climatological analysis, the determinations were conducted under normal conditions.

Secondary field indicators were determinative of the hydrologic status of D-1 as a wet-weather conveyance throughout its assessed reach. D-1 is a concrete stormwater ditch.

Primary field indicator #6, "*presence of fish (except Gambusia)*", was determinative of the hydrologic status of D-2 as a stream. Obligate lotic macroinvertebrates were also observed within D-2.

The attached photographs provide representative views of the Site watercourses, and the location of photographs is shown on Figure 3. Hydrologic Determination Field Data Sheets are attached, with detailed documentation of scoring results and supporting data.

We attest that all information submitted herein and in the accompanying attachments is true, accurate, and complete. We appreciate your review of this information and request your concurrence of our jurisdictional determinations.

Please contact us at (615) 460-9797 if we may provide additional information or address your questions regarding our findings.

Very truly yours,

BDY Environmental, LLC



Samuel K. Parish, PG, CPESC
Senior Scientist
TN QHP 1107-TN13

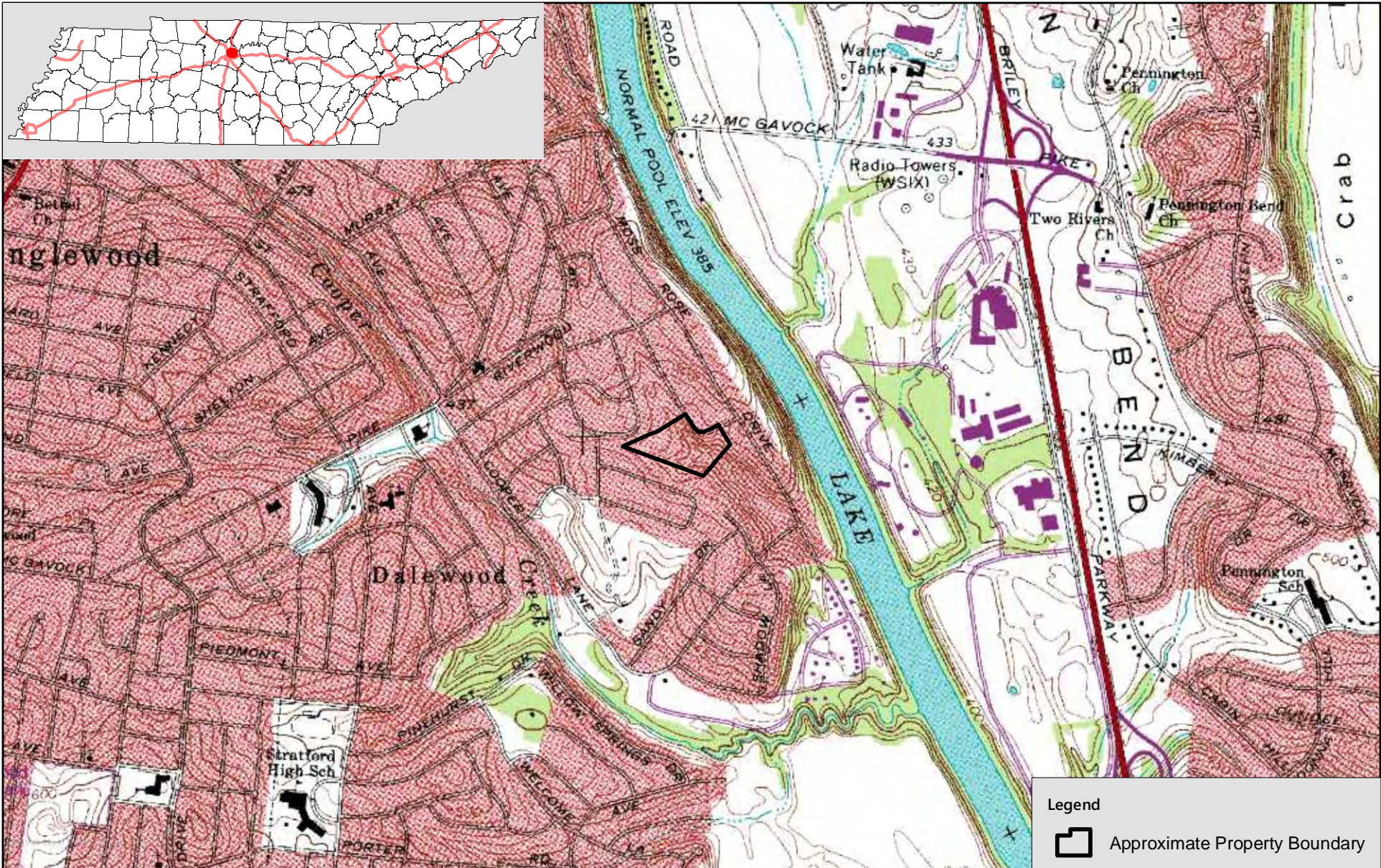


Figure 1. Site Location Map
 3901 Ivy Drive
 Nashville, Davidson County, Tennessee

BDY NATURAL SCIENCES CONSULTANTS
 2607 Westwood Drive, Nashville, Tennessee | 615.460.9797 | www.bdy-inc.com

Date: 1/29/2020
 NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 Map Center: 36.208359, -86.704247
 Prepared For: MikeN
 Prepared By: MDR
 Sources: 7.5-Minute Nashville East
 Topographic Quadrangle Map and
 BDY Site Visit 1/22/2020

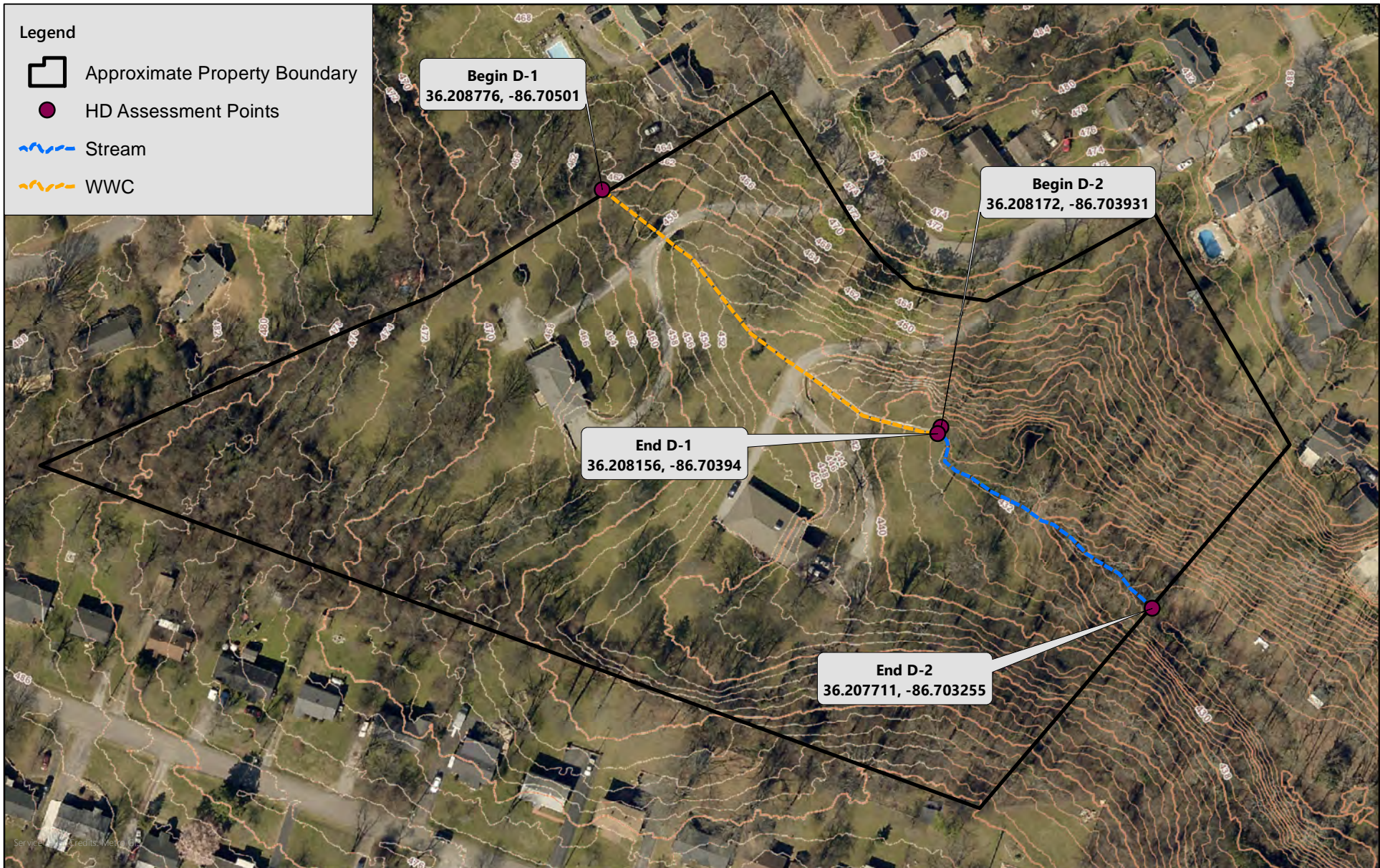
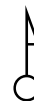
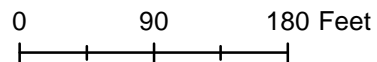


Figure 2. HD Summary Map
3901 Ivy Drive
Nashville, Davidson County, Tennessee

BDY NATURAL SCIENCES CONSULTANTS
2607 Westwood Drive, Nashville, Tennessee | 615.460.9797 | www.bdy-inc.com



Date: 1/23/2020
NAD 1983 StatePlane Tennessee FIPS 4100 Feet
Map Center: 36.208142, -86.704721
Prepared For: Mike N
Prepared By: MDR
Sources: TN Imagery, Metro 2ft Contours,
BDY Site Visit 1/22/2020

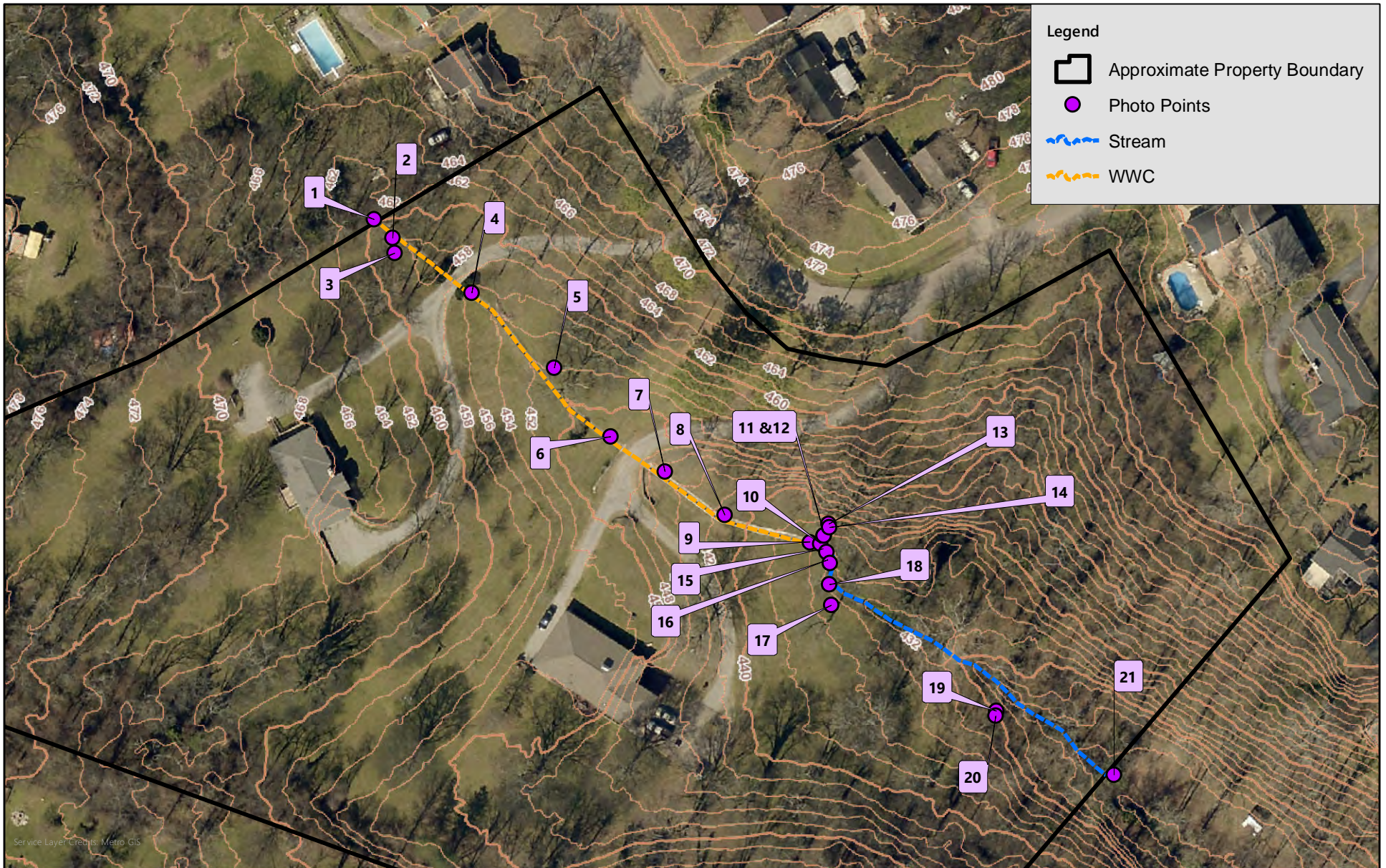
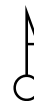
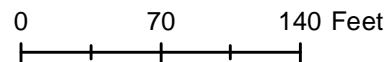


Figure 3. Photo Point Map
 3901 Ivy Drive
 Nashville, Davidson County, Tennessee

BDY NATURAL SCIENCES CONSULTANTS
 2607 Westwood Drive, Nashville, Tennessee | 615.460.9797 | www.bdy-inc.com



Date: 1/29/2020
 NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 Map Center: 36.208359, -86.704247
 Prepared For: Mike N
 Prepared By: MDR
 Sources: TN Imagery, Metro 2ft Contours,
 BDY Site Visit 1/22/2020

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Davidson	Named Waterbody: Unnamed Trib Cumberland River	Date/Time: 1/22/2020; 12:15
Assessors/Affiliation: S.Parish TN QHP 1107-TN13		Project ID : D-1
Site Name/Description: 3901 Ivy Drive		
Site Location: 3901 & 3905 Ivy Drive, Nashville, Tennessee		
USGS quad: Nashville East	HUC (12 digit): 051302020302	Lat/Long: Start: 36.208776, -86.70501; End: 36.208156, -86.70394
Previous Rainfall (7-days) : 0.22"		
Precipitation this Season vs. Normal : very wet wet average dry drought unknown Source of recent & seasonal precip data : Nashville AP <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Watershed Size : ~38.4 acres	Photos: <input checked="" type="radio"/> or N (circle) Number : 1-10	
Soil Type(s) / Geology : Lindell Urban Land Complex / Bigby-Cannon Limestone		Source: <small>Web Soil Survey / Geo Quad</small>
Surrounding Land Use : Residential Properties		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : <input checked="" type="radio"/> Severe Moderate Slight Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES	
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="radio"/>	<input type="radio"/>	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	<input checked="" type="radio"/>	<input type="radio"/>	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input type="radio"/>	<input type="radio"/>	WWC <input checked="" type="radio"/> N/A
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input type="radio"/>	<input type="radio"/>	WWC <input checked="" type="radio"/> N/A
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input checked="" type="radio"/>	<input type="radio"/>	Stream
6. Presence of fish (except <i>Gambusia</i>)	<input checked="" type="radio"/>	<input type="radio"/>	Stream
7. Presence of naturally occurring ground water table connection	<input checked="" type="radio"/>	<input type="radio"/>	Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed	<input checked="" type="radio"/>	<input type="radio"/>	Stream
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="radio"/>	<input type="radio"/>	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 6 OR N/A

Justification / Notes : _____

Watercourse has been severely altered by the construction of a concrete stormwater ditch across to driveways. This concrete ditch is clearly a WWC.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 4.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank		0	1	2	3
2. Sinuous channel		3	1	2	3
3. In-channel structure: riffle-pool sequences		3	1	2	3
4. Sorting of soil textures or other substrate		3	1	2	3
5. Active/relic floodplain		3	1	2	3
6. Depositional bars or benches		3	1	2	3
7. Braided channel		3	1	2	3
8. Recent alluvial deposits		3	0.5	1	1.5
9. Natural levees		3	1	2	3
10. Headcuts		3	1	2	3
11. Grade controls		3	0.5	1	1.5
12. Natural valley or drainageway		0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

B. Hydrology (Subtotal = 1.5)		Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel		3	1	2	3
15. Water in channel and >48 hours since sig. rain		3	1	2	3
16. Leaf litter in channel (January – September)		1.5	3	0.5	0
17. Sediment on plants or on debris		3	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)		0	3	1	1.5
19. Hydric soils in stream bed or sides of channel		No = 0 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

C. Biology (Subtotal = 0)		Absent	Weak	Moderate	Strong
20. Fibrous roots in channel ¹	N/A	3	2	1	0
21. Rooted plants in channel ¹	N/A	3	2	1	0
22. Crayfish in stream (exclude in floodplain)		3	0.5	1	1.5
23. Bivalves/mussels		3	1	2	3
24. Amphibians		3	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)		3	1	2	3
26. Filamentous algae; periphyton		3	1	2	3
27. Iron oxidizing bacteria/fungus		3	0.5	1	1.5
28. Wetland plants in channel ²	N/A	0	0.5	1	2

¹ Focus is on the presence of upland plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 6

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

1) concrete channel with continuous bed and bank. 2-11) absent in constructed concrete channel. 12) concrete channel in natural drainageway. 14-15) absent. 16) Leaf litter observed in several piles in concrete channel. 18) leaf litter built-up behind obstructions (driveway culverts) only. 20-21) Not applicable due to concrete channel. 22-27) absent. 28) Not applicable due to concrete channel.

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Davidson	Named Waterbody: Unnamed Trib Cumberland River	Date/Time: 1/22/2020; 12:30
Assessors/Affiliation: S.Parish TN QHP 1107-TN13		Project ID : D-2
Site Name/Description: 3901 Ivy Drive		
Site Location: 3901 & 3905 Ivy Drive, Nashville, Tennessee		
USGS quad: Nashville East	HUC (12 digit): 051302020302	Lat/Long: Start: 36.208172, -86.703931; End: 36.207711, -86.703255
Previous Rainfall (7-days) : 0.22"		
Precipitation this Season vs. Normal : very wet wet average dry drought unknown Source of recent & seasonal precip data : Nashville AP <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Watershed Size : ~57.6 acres	Photos: <input checked="" type="radio"/> or N (circle) Number : 11-21	
Soil Type(s) / Geology : Lindell Urban Land Complex / Bigby-Cannon Limestone		Source: <small>Web Soil Survey / Geo Quad</small>
Surrounding Land Use : Residential Properties		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate <input checked="" type="radio"/> Slight Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES	
1. Hydrologic feature exists solely due to a process discharge	<input checked="" type="radio"/>	<input type="radio"/> WWC	
2. Defined bed and bank absent, dominated by upland vegetation / grass	<input checked="" type="radio"/>	<input type="radio"/> WWC	
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	<input type="radio"/>	<input type="radio"/> WWC	<input checked="" type="radio"/> N/A
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	<input type="radio"/>	<input type="radio"/> WWC	<input checked="" type="radio"/> N/A
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	<input type="radio"/>	<input checked="" type="radio"/> Stream	
6. Presence of fish (except <i>Gambusia</i>)	<input type="radio"/>	<input checked="" type="radio"/> Stream	
7. Presence of naturally occurring ground water table connection	<input checked="" type="radio"/>	<input type="radio"/> Stream	
8. Flowing water in channel and 7 days since last precipitation in local watershed	<input checked="" type="radio"/>	<input type="radio"/> Stream	
9. Evidence watercourse has been used as a supply of drinking water	<input checked="" type="radio"/>	<input type="radio"/> Stream	

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 0 OR N/A

Justification / Notes :

Minor alterations to stream apparent at concrete spring box and through residential yard. Channel was determined to be a stream based on the presence of fish in the channel and based on the presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase. I observed multiple (12) gilled snails, two caddisflies (Limnephilidae), 6 waterpennies (Psephenidae), and hundreds of isopods.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 0)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0 <input type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

B. Hydrology (Subtotal = 0)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0 <input type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

C. Biology (Subtotal = 0)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel ¹	3	2	1	0
21. Rooted plants in channel ¹	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0.5	1	1.5
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel ²	0	0.5	1	2

¹ Focus is on the presence of upland plants.

² Focus is on the presence of aquatic or wetland plants.

Total Points = 0 _____

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :



1. View of D-1 at the start of assessment, facing downstream.



2. View of D-1 with concrete channel, facing downstream.



3. View of the D-1 concrete channel at the beginning of the assessed reach, facing upstream.



4. View of D-1, facing downstream.



1/22/2020 12:22:52 PM (-6.0 hrs) Lat=36.20849 Lon=-86.70457

5.

View of D-1 with concrete channel, facing upstream.



1/22/2020 12:23:18 PM (-6.0 hrs) Lat=36.20836 Lon=-86.70444

6.

View of D-1 with leaf pack, facing downstream.



1/22/2020 12:23:43 PM (-6.0 hrs) Lat=36.20829 Lon=-86.70431

View of D-1, facing downstream.

7.



1/22/2020 12:24:11 PM (-6.0 hrs) Lat=36.20821 Lon=-86.70417

View of D-1, facing upstream.

8.



9. View of D-1 and D-2 at confluence, facing downstream.



10. View of D-1 at the end of assessment/confluence, facing upstream.



11.

View of spring and fish in channel at D-2 origin.



12.

View of D-2 at origin, facing downstream.



13.

View of D-2 near origin, facing upstream.



14.

View of D-2 just downstream of D-1 confluence, facing downstream.



15.

View of Gilled Snail found in D-2.



16.

View of Caddisfly (*Trichoptera*) and water penny (*Psephenidae*) found in D-2.



1/22/2020 12:34:42 PM (-6.0 hrs) Lat=36.20804 Lon=-86.70391

17.

View of D-2 with continuous flow, facing downstream.



1/22/2020 12:34:52 PM (-6.0 hrs) Lat=36.20808 Lon=-86.70392

18.

View of D-2, confluence with D-1 (on left), and spring location, facing upstream.



19.

View of D-2 in lower reach, facing upstream.



20.

View of D-2 in lower reach, facing downstream.



21.

View of D-2 at the end of assessment, facing downstream.

Name of Site: 3901 Ivy Drive

Date of Site Visit: 1/22/2020

Previous 7 Day Rainfall Total: 0 inches (reported from Nashville International Airport)

Previous 48-hr Rainfall Total: 0.22 inches (reported from Nashville International Airport)

Weather Station Norms from <http://www.weather.gov/climate/xmacis.php?wfo=ohx>

Actual Rainfall from NWS, Nashville International Airpc <http://www.weather.gov/climate/xmacis.php?wfo=ohx>

Monthly Standard Deviation obtained online at NOAA Earth System Research Laboratory, Physical Sciences (<http://www.esrl.noaa.gov/psd/cgi-bin/data/usstation/city.pl?state=TN&lane=scroll&itypea=1&submit=Submit&.cgifields=itypea>)

Calculation Based on Nashville BNA Rainfall Amounts with Nashville BNA Normals/Std. Deviations

Calculation of Normal Weather Conditions

		Long-Term Rainfall Records								
	Month	Minus one Std. Dev. (dry)	Normal (mean inches)	Plus One Std. Dev. (wet)	Actual Rainfall	Condition (dry, normal, wet)	Condition Value*	Month Weight Value	Condition Value Calculation	Std. Deviation
1st Month Prior	December	1.55	4.24	6.93	5	Normal	2	x 3	6	2.68617
2nd Month Prior	November	2.54	4.31	6.08	5.39	Normal	2	x2	4	1.768041
3rd Month Prior	October	1.50	3.04	4.58	6.46	Wet	3	x1	3	1.538178
								Sum=	13	

If sum is:	
6 to 9	then prior period has been drier than normal
10 to 14	then prior period has been normal
15 to 18	then prior period has been wetter than normal

Condition Value:*	
Dry=	1
Normal=	2
Wet=	3

Climatological Data for NASHVILLE INTL AP, TN - January 2020

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2020-01-01	52	33	42.5	4.7	22	0	0.00	0.0	0
2020-01-02	54	46	50.0	12.3	15	0	1.23	0.0	0
2020-01-03	59	52	55.5	17.8	9	0	0.39	0.0	0
2020-01-04	55	35	45.0	7.4	20	0	0.03	0.0	0
2020-01-05	56	29	42.5	5.0	22	0	0.00	0.0	0
2020-01-06	55	32	43.5	6.0	21	0	0.08	0.0	0
2020-01-07	54	36	45.0	7.6	20	0	0.00	0.0	0
2020-01-08	60	34	47.0	9.6	18	0	0.00	0.0	0
2020-01-09	62	37	49.5	12.1	15	0	0.00	0.0	0
2020-01-10	68	59	63.5	26.1	1	0	0.07	0.0	0
2020-01-11	71	46	58.5	21.2	6	0	1.51	0.0	0
2020-01-12	53	38	45.5	8.2	19	0	0.00	0.0	0
2020-01-13	57	37	47.0	9.7	18	0	T	0.0	0
2020-01-14	63	52	57.5	20.2	7	0	0.63	0.0	0
2020-01-15	70	55	62.5	25.2	2	0	0.03	0.0	0
2020-01-16	55	35	45.0	7.6	20	0	0.00	0.0	0
2020-01-17	53	34	43.5	6.1	21	0	0.00	0.0	0
2020-01-18	57	39	48.0	10.6	17	0	0.22	0.0	0
2020-01-19	40	23	31.5	-6.0	33	0	0.00	0.0	0
2020-01-20	25	20	22.5	-15.0	42	0	T	0.2	0
2020-01-21	37	24	30.5	-7.1	34	0	0.00	0.0	0
2020-01-22	47	20	33.5	-4.1	31	0	0.00	0.0	0
2020-01-23	M	M	M	M	M	M	M	M	M
2020-01-24	M	M	M	M	M	M	M	M	M
2020-01-25	M	M	M	M	M	M	M	M	M
2020-01-26	M	M	M	M	M	M	M	M	M
2020-01-27	M	M	M	M	M	M	M	M	M
2020-01-28	M	M	M	M	M	M	M	M	M
2020-01-29	M	M	M	M	M	M	M	M	M
2020-01-30	M	M	M	M	M	M	M	M	M
2020-01-31	M	M	M	M	M	M	M	M	M
Sum	1203	816	-	-	413	0	4.19	0.2	-
Average	54.7	37.1	45.9	8.4	-	-	-	-	0.0
Normal	46.6	28.4	37.5	-	608	0	2.63	1.7	-

Above Normals represent the month through 2020-01-22.

**Observations for each day cover the 24 hours ending
at the time given below (Local Standard Time).**

Max Temperature : midnight

Min Temperature : midnight

Precipitation : midnight

Snowfall : midnight

Snow Depth : 6am

Climatological Data for NASHVILLE INTL AP, TN - December 2019

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2019-12-01	65	42	53.5	9.3	11	0	0.00	0.0	0
2019-12-02	42	35	38.5	-5.3	26	0	0.02	0.0	0
2019-12-03	47	34	40.5	-3.0	24	0	0.00	0.0	0
2019-12-04	61	38	49.5	6.3	15	0	0.00	0.0	0
2019-12-05	64	33	48.5	5.6	16	0	T	0.0	0
2019-12-06	58	49	53.5	10.9	11	0	0.03	0.0	0
2019-12-07	58	39	48.5	6.2	16	0	0.00	0.0	0
2019-12-08	63	36	49.5	7.5	15	0	0.00	0.0	0
2019-12-09	68	57	62.5	20.8	2	0	0.50	0.0	0
2019-12-10	63	31	47.0	5.5	18	0	0.30	T	0
2019-12-11	49	24	36.5	-4.7	28	0	0.00	0.0	0
2019-12-12	56	25	40.5	-0.4	24	0	0.00	0.0	0
2019-12-13	50	45	47.5	6.8	17	0	0.04	0.0	0
2019-12-14	53	44	48.5	8.0	16	0	0.01	0.0	0
2019-12-15	61	40	50.5	10.2	14	0	T	0.0	0
2019-12-16	64	45	54.5	14.5	10	0	1.41	0.0	0
2019-12-17	45	31	38.0	-1.8	27	0	0.02	T	0
2019-12-18	37	25	31.0	-8.7	34	0	0.00	0.0	0
2019-12-19	49	23	36.0	-3.5	29	0	0.00	0.0	0
2019-12-20	53	26	39.5	0.2	25	0	0.00	0.0	0
2019-12-21	55	38	46.5	7.4	18	0	0.00	0.0	0
2019-12-22	51	42	46.5	7.5	18	0	0.09	0.0	0
2019-12-23	69	46	57.5	18.7	7	0	T	0.0	0
2019-12-24	70	39	54.5	15.8	10	0	0.00	0.0	0
2019-12-25	69	38	53.5	15.0	11	0	0.00	0.0	0
2019-12-26	64	47	55.5	17.1	9	0	T	0.0	0
2019-12-27	65	49	57.0	18.7	8	0	0.01	0.0	0
2019-12-28	73	49	61.0	22.8	4	0	0.04	0.0	0
2019-12-29	67	54	60.5	22.4	4	0	2.53	0.0	0
2019-12-30	54	43	48.5	10.5	16	0	0.00	0.0	0
2019-12-31	51	38	44.5	6.6	20	0	0.00	0.0	0
Sum	1794	1205	-	-	503	0	5.00	T	-
Average	57.9	38.9	48.4	8.0	-	-	-	-	0.0
Normal	49.5	31.3	40.4	-	763	1	4.24	0.5	-

**Observations for each day cover the 24 hours ending
at the time given below (Local Standard Time).**

Max Temperature : midnight

Min Temperature : midnight

Precipitation : midnight

Snowfall : midnight

Snow Depth : 6am

Climatological Data for NASHVILLE INTL AP, TN - November 2019

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2019-11-01	53	30	41.5	-13.6	23	0	0.00	0.0	0
2019-11-02	58	28	43.0	-11.8	22	0	0.00	0.0	0
2019-11-03	60	31	45.5	-8.9	19	0	0.00	0.0	0
2019-11-04	65	33	49.0	-5.1	16	0	0.00	0.0	0
2019-11-05	64	41	52.5	-1.3	12	0	0.00	0.0	0
2019-11-06	74	37	55.5	2.1	9	0	T	0.0	0
2019-11-07	59	39	49.0	-4.0	16	0	0.73	0.0	0
2019-11-08	44	28	36.0	-16.7	29	0	0.00	0.0	0
2019-11-09	57	24	40.5	-11.8	24	0	0.00	0.0	0
2019-11-10	69	38	53.5	1.5	11	0	0.00	0.0	0
2019-11-11	64	29	46.5	-5.1	18	0	0.34	0.4	0
2019-11-12	29	18	23.5	-27.7	41	0	0.02	T	0
2019-11-13	44	17	30.5	-20.3	34	0	0.00	0.0	0
2019-11-14	55	28	41.5	-9.0	23	0	0.00	0.0	0
2019-11-15	50	32	41.0	-9.1	24	0	0.00	0.0	0
2019-11-16	57	28	42.5	-7.2	22	0	0.00	0.0	0
2019-11-17	57	28	42.5	-6.8	22	0	0.00	0.0	0
2019-11-18	53	37	45.0	-3.9	20	0	0.00	0.0	0
2019-11-19	65	40	52.5	4.0	12	0	T	0.0	0
2019-11-20	60	33	46.5	-1.7	18	0	0.00	0.0	0
2019-11-21	64	43	53.5	5.7	11	0	T	0.0	0
2019-11-22	61	48	54.5	7.1	10	0	1.12	0.0	0
2019-11-23	51	41	46.0	-1.0	19	0	0.37	0.0	0
2019-11-24	55	34	44.5	-2.2	20	0	0.00	0.0	0
2019-11-25	65	33	49.0	2.7	16	0	0.00	0.0	0
2019-11-26	64	42	53.0	7.1	12	0	0.89	0.0	0
2019-11-27	67	41	54.0	8.4	11	0	0.45	0.0	0
2019-11-28	50	35	42.5	-2.7	22	0	T	0.0	0
2019-11-29	54	44	49.0	4.2	16	0	0.00	0.0	0
2019-11-30	65	50	57.5	13.0	7	0	1.47	0.0	0
Sum	1733	1030	-	-	559	0	5.39	0.4	-
Average	57.8	34.3	46.1	-3.7	-	-	-	-	0.0
Normal	60.3	39.4	49.8	-	459	5	4.31	0.0	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).

Max Temperature : midnight

Min Temperature : midnight

Precipitation : midnight

Snowfall : midnight

Snow Depth : 6am

Climatological Data for NASHVILLE INTL AP, TN - October 2019

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2019-10-01	98	70	84.0	18.5	0	19	0.00	0.0	0
2019-10-02	99	68	83.5	18.4	0	19	0.00	0.0	0
2019-10-03	99	65	82.0	17.3	0	17	0.00	0.0	0
2019-10-04	85	65	75.0	10.7	0	10	0.00	0.0	0
2019-10-05	95	58	76.5	12.5	0	12	0.00	0.0	0
2019-10-06	82	66	74.0	10.4	0	9	0.95	0.0	0
2019-10-07	68	55	61.5	-1.7	3	0	1.24	0.0	0
2019-10-08	77	55	66.0	3.1	0	1	0.00	0.0	0
2019-10-09	83	53	68.0	5.5	0	3	0.00	0.0	0
2019-10-10	83	62	72.5	10.3	0	8	0.00	0.0	0
2019-10-11	86	48	67.0	5.2	0	2	0.30	0.0	0
2019-10-12	64	42	53.0	-8.5	12	0	T	0.0	0
2019-10-13	72	38	55.0	-6.2	10	0	0.00	0.0	0
2019-10-14	76	44	60.0	-0.8	5	0	0.00	0.0	0
2019-10-15	79	52	65.5	5.0	0	1	T	0.0	0
2019-10-16	68	45	56.5	-3.7	8	0	0.35	0.0	0
2019-10-17	63	41	52.0	-7.9	13	0	0.00	0.0	0
2019-10-18	72	40	56.0	-3.6	9	0	0.00	0.0	0
2019-10-19	68	45	56.5	-2.8	8	0	0.01	0.0	0
2019-10-20	78	60	69.0	10.1	0	4	T	0.0	0
2019-10-21	74	60	67.0	8.4	0	2	0.33	0.0	0
2019-10-22	67	48	57.5	-0.8	7	0	0.00	0.0	0
2019-10-23	70	40	55.0	-3.0	10	0	0.00	0.0	0
2019-10-24	73	42	57.5	-0.2	7	0	0.00	0.0	0
2019-10-25	61	48	54.5	-2.9	10	0	1.00	0.0	0
2019-10-26	76	58	67.0	9.9	0	2	0.65	0.0	0
2019-10-27	63	49	56.0	-0.7	9	0	0.02	0.0	0
2019-10-28	65	46	55.5	-0.9	9	0	0.00	0.0	0
2019-10-29	62	50	56.0	-0.1	9	0	0.00	0.0	0
2019-10-30	72	57	64.5	8.7	0	0	0.66	0.0	0
2019-10-31	69	33	51.0	-4.5	14	0	0.95	0.0	0
Sum	2347	1603	-	-	143	109	6.46	0.0	-
Average	75.7	51.7	63.7	3.4	-	-	-	-	0.0
Normal	71.7	48.9	60.3	-	191	46	3.04	0.0	-

**Observations for each day cover the 24 hours ending
at the time given below (Local Standard Time).
Observation times may have changed during this period.**

Max Temperature : midnight

Min Temperature : midnight

Precipitation : midnight

Snowfall : unknown, midnight

Snow Depth : 6am

Hydric Rating by Map Unit—Davidson County, Tennessee

86° 42' 29" W

86° 42' 3" W

36° 12' 36" N

36° 12' 36" N

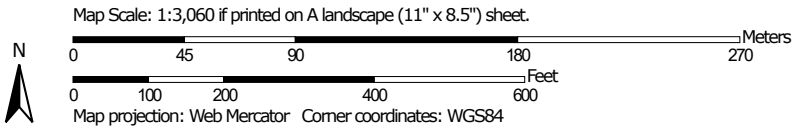


36° 12' 22" N

36° 12' 22" N


86° 42' 29" W

86° 42' 3" W









MAP LEGEND

Area of Interest (AOI)







 Area of Interest (AOI)

Soils







Soil Rating Polygons

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available


Soil Rating Lines

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available






Soil Rating Points

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Davidson County, Tennessee
 Survey Area Data: Version 17, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 2, 2019—Nov 16, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ln	Lindell-Urban land complex	0	5.0	16.9%
McB	Maury-Urban land complex, 2 to 7 percent slopes	0	24.7	83.1%
Totals for Area of Interest			29.7	100.0%

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower