



Soil & Environmental Consultants, PA

11010 Raven Ridge Road • Raleigh, North Carolina 27614 • Phone: (919) 846-5900 • Fax: (919) 846-9467
www.SandEC.com

April 14, 2006
S&EC Project No.: 8330.W3

WR Henderson and Associates
Attn: Tom Goodwin
8366 Six Forks Road, Suite 203
Raleigh NC, 27612

Re: Wetland Delineation and Stream Evaluation
Lystra Road Site
Chatham County, NC

Mr. Goodwin:

On March 29, 2006, S&EC personnel completed the wetland delineation and stream evaluation on the Lystra Gardens Property in Chatham County. You will find the attached report detailing our findings. Supporting maps, data forms, stream evaluation forms, and site photographs that further document the wetland and stream related site characteristics are also attached. Please review this information and call our office if you have questions.

The next step in the wetland and stream verification process is to visit the site with the Army Corps of Engineers' agent for Chatham County. S&EC will schedule this meeting at your request; therefore, please contact S&EC if you would like the verification meeting scheduled immediately. In addition, I am attaching a copy of our agent authorization form that you should complete and return; this will grant S&EC authority to correspond with the Corps on your behalf.

As you move forward in planning your development, S&EC personnel are available for site plan review and permit consultation services. Please contact S&EC if you have any questions related to wetland and stream regulations or if you need clarification of the attached report. I can be reached by email at jpayne@sandec.com or by mobile at (919) 427-7036.

Sincerely,

Jason Payne
Environmental Scientist

Attachments:

- 1) Wetland Delineation Report
- 2) USGS site vicinity map
- 3) NRCS Soil Survey
- 4) Wetland & Stream Sketch Map
- 5) Agent Authorization Form
- 6) Requirements for Delineation Maps

CC: Kevin Hamak -The John R. McAdams
Company, Inc.

Charlotte Office:
236 LePhillip Court, Suite C
Concord, NC 28025
Phone: (704) 720-9405
Fax: (704) 720-9406

Greensboro Office:
3817-E Lawndale Drive
Greensboro, NC 27455
Phone: (336) 540-8234
Fax: (336) 540-8235



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WETLAND & STREAM DELINEATION REPORT FOR LYSTRA GARDENS

On March 29, 2006, S&EC personnel completed a detailed wetland delineation and stream evaluation on the Lystra Road Property (\pm 140 acres). The subject property is located south of Lystra Road (S.R. 1721), approximately 2,000 feet east of Lystra Church. Lystra Road borders the property to the north. Figure 1 and Figure 2 show the location of the site on a USGS topographic quadrangle and Chatham County Soil Survey, respectively.

EXECUTIVE SUMMARY

We have determined that approximately nine wetland areas, six perennial streams, and three intermittent streams generally account for the jurisdictional waters observed on the site. The attached wetland sketch map depicts the approximate location of wetlands and streams. Please refer to the sketch map and the results and recommendations section below for more detailed information.

SCOPE OF WORK

The detailed wetland delineation consisted of pedestrian reconnaissance of the property to examine soils, vegetation, and hydrology across the site to identify areas that meet the criteria for jurisdictional wetlands as described by the procedures set forth in the Corps of Engineers Wetlands Delineation Manual (January 1987 – Final Report). Areas on the site with positive indicators of hydric soils, evidence of wetland hydrology, and presence of hydrophytic vegetation were flagged with sequentially numbered, pink S&EC logo flagging. Proof of wetland hydrology would be the existence of hydric soils with oxidized root channels in the upper 12 inches of the soil profile, water borne deposits, drift lines, scour marks, drainage patterns, regional indicators of soil saturation, etc. Surface waters such as intermittent and perennial stream channels, ponds, and lakes, which are also subject to regulation by the US Army Corps of Engineers (USACE) as waters of the US, were also identified. These surface waters may also be referred to as jurisdictional waters to indicate that they are within the jurisdiction of the USACE. It is important to note that wetlands are also classified as waters of the US and regulated by the USACE.

RESULTS & RECOMMENDATIONS

The results of the wetland delineation and stream evaluations are discussed below.

Wetlands and Jurisdictional Waters:

We have determined that wetlands and other jurisdictional waters (i.e., streams) exist on the site. Please refer to the attached “Wetland Sketch Map” for specific flag numbers and approximate locations.

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Concord, NC 28025
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A number of jurisdictional streams were observed during the site evaluation, the approximate locations of which are illustrated on the attached wetland sketch map. Photos of these areas are included in Appendix 1. Stream evaluation forms documenting S&EC's assessment of these streams are included in Appendix 2. Streams identified on-site include:

- Herndon Creek (feature B), which flows onto and off of the property at the southwest property corner. We believe the USACE would classify this stream as perennial, serving important aquatic function.
- Feature A, an unnamed tributary (UT) of Herndon creek, beginning at flag S-15, and flowing southerly along the western property line until it converges with Herndon Creek. We believe the USACE would classify this stream as perennial, serving important aquatic function.
- Feature I (UT to Herndon Creek), flowing on-site from the western property line before converging with feature A south of flag S-15. We believe the USACE would classify this stream as perennial, serving important aquatic function.
- Feature G (UT to Herndon Creek), a broken stream that would likely be considered three isolated stream segments. This drainage contains characteristics of an intermittent stream in three segments as illustrated on the attached map and documented on the attached stream form (SF-6).
- Feature C, a UT to Jones Branch, beginning on site at flag S-06 and flowing easterly approximately 100' before leaving the property. This stream would be classified by the USACE as perennial, having important aquatic function; stream forms documenting our assessment can be found in Appendix 2 (SF-5).
- Feature D, a UT to Jones Branch, beginning at flag S-05 and flowing east-southeast approximately 500' before leaving the site at the eastern property line. This stream would be classified by the USACE as perennial, having important aquatic function. Stream form "SF-4" documents our assessment of this drainage area.
- Feature E, a UT to Jones Branch, beginning at flag S-02, flowing southeast before ending at flag S-04, and reappearing at flag S-05. The upper portion of this stream between flags S-02 and S-04 may be considered an isolated water of the state not regulated by the USACE. However, confirmation of this assessment should be obtained during an on-site meeting with the USACE. Stream forms SF-2 and SF-3 document our assessment of this drainage upslope (upstream) and downslope (downstream) of flag S-02, respectively.
- Feature F, UT to Jones Branch, beginning at flag S-01 and flowing southeast approximately 350' before leaving the property. This stream would be classified by the USACE as perennial, having important aquatic function. Evidence of this may be found within Appendix 1 (site photos) and Appendix 2 (stream forms SF-1).

Surface waters on this site flow into Herndon Creek and Jones Branch, which have both been classified in NC-DWQ's "Classification and Water Quality Standards Applicable to Surface Waters and Wetlands of North Carolina" as WS-IV, NSW; CA and WS-IV, NSW.

Wetlands plant communities observed and identified on this site include Low Elevation Seeps and Upland Depressional Swamp Forest¹. Data forms documenting the soils, plant species, and

¹ Schafale, Michael P. and Alan S. Weakley. Classification of the Natural Communities of North Carolina: Third Approximation. 1990.

hydrology characteristics of these areas are included in Appendix 3. Many of the Low Elevation Seeps occur above (upslope) of the stream origins at a point of surface water seepage from the soil where water impermeable substrate becomes shallow. The largest of these areas on-site is delineated by flags 305-316. An Upland Depression Swamp Forest is located on a poorly drained soil at the top of a ridge and delineated by flags E01-E12, upslope of the stream origin of feature E. .

One marginal feature exists on the property that somewhat exhibits characteristics of a jurisdictional stream, but lacks important hydrologic characteristics one would observe in a jurisdictional area. This area is not believed to be a jurisdictional wetland or water, due to weak evidence of hydrology and hydric soils. This area is labeled as feature H on the attached Wetland Sketch Map. Due to the marginal nature of this area, confirmation of our assessment should be obtained from the USACE. No other wetlands or jurisdictional waters were found within the project boundaries.

All S&EC flags comprising the wetland and jurisdictional waters delineation should be surveyed and a Wetland Delineation Map generated for use in site planning and USACE approval and permitting. The entire length of each stream feature was not flagged, but will need to be surveyed for the Wetland Delineation Map. Stream features may be located either along the centerline (with channel widths noted at each survey point) or at the top-of-bank. The Wetland Delineation Map should include all of the information listed on the attached "**Requirements for Wetland Delineation Maps.**" S&EC delineation flag numbers should be shown on the wetland survey. Please have the property owner or contracting buyer complete the attached agent authorization form if you would like S&EC to act on their behalf for requesting approval of the wetland delineation. This form will also be used in preparing a permit application for impacts to wetlands or surface waters when we are provided with a plan showing the proposed impacts. **S&EC cannot conduct correspondence with the USACE unless we have agent authorization (see attached Agent Authorization). This authorization form must be filled out in its entirety and returned to S&EC (a faxed copy is acceptable).**

Stream Buffers:

Streams on this site may be subject to buffer regulations administered by state and local authorities. The NC-DWQ is currently reviewing draft regulations that could potentially apply regulated buffers alongside streams and other surface waters within the Jordan Lake Watershed. Details of the rules are subject to change during the review process. The time-frame for rule implementation is uncertain; however, these rules could become effective in 2008.

Per Chatham County's Watershed Protection Ordinance (revised 11/7/05), local Chatham County stream buffer regulations will also apply. The project engineer or planner should provide input toward the application of these regulations to the site plan during design and review. However, in summary, a fifty-foot (50') vegetative buffer is required along all perennial streams indicated on the most recent version of the USGS 1:24,000 (7.5 minute) topographic quadrangle or as determined by local government studies. Therefore, in accordance with this ordinance, Herndon Creek would require a 50' Chatham County vegetative buffer. No other streams observed on-site are identified on the USGS quadrangle. Local government studies may dictate further stream buffers within the project.

Please note that due to the water quality classification for streams on site, NCDWQ will require either a 30' or 100' buffer alongside Herndon Creek (feature B) depending on impervious surface of the development. See the Waters Supply Waters section below for further detail.

Regulations

A general list of regulations that apply to jurisdictional wetlands and waters present on the site are discussed below. Please be aware that other local, state, and federal regulations not included in this list may also apply. S&EC personnel are available to discuss these regulations as they apply to your project.

Water Supply Waters Rules:

Herndon Creek is mapped as a perennial stream on the USGS topographic quadrangle. Those perennial streams identified on the USGS within a classified water supply watershed require a 100-foot buffer for new development activities with greater than 24 percent "built upon" area (i.e., percent covered by impervious or partially impervious cover) and a 30-foot buffer for activities with less than 24 percent built upon area by the NC-DWQ. (These buffers are in addition to the any other stream buffers. The stricter of the two buffers applies to these stream channels.)

Wetland Permitting:

Wetland impact permits are issued on a per-project basis as determined by the USACE. The USACE has determined that impacts on parcels sub-divided from larger tracts are sometimes considered to be cumulative to existing impacts for the large tract. If this is the case, then thresholds as discussed below may not apply and impacts to wetlands must be considered in light of existing permits.

Preconstruction notification to the USACE and the NC-DWQ is not required for wetland impacts that meet the general conditions of Nationwide Permit 39 and that impact less than 1/10 acre per project. Preconstruction notification and approval by the USACE is required for wetland impacts that exceed 1/10 of an acre and /or any stream channel impacts. **Preconstruction notification and approval by the NC-DWQ is required for wetland impacts that exceed 1/10 of an acre if the property is west of I-95 or 1/3 of an acre if the project is east of I-95. Preconstruction notification and approval by the NC-DWQ is required for any stream channel impacts within buffered basins (i.e. the Neuse, Tar-Pamlico, Randleman, and portions of the Catawba Basins) or for cumulative stream impacts that exceed 150 linear feet in non-buffered basins.** If development impacts exceed the thresholds for notification and proposed impervious area for the project or any part of the project exceeds 30%, then stormwater treatment to meet the pollutant removal design standard of 85% removal of total suspended solids (i.e., wet detention basins, stormwater wetlands, bioretention areas, etc.) and 30% of Nitrogen will likely be required by the NC-DWQ. The maximum permanent impact allowed per project under the nationwide permits is 1/2 acre of wetland and/or 300 linear feet of USACE important stream channel. Nationwide Permit 39 limits above-grade fills within 100-year floodplains specifically prohibiting above-grade fill within the floodway. Additionally,

Nationwide Permit 39 limits stream channelization and relocation to streams with an average annual flow of less than 1 cfs.

Per project impacts to vegetated wetlands in excess of 1 acre or impacts to streams that contain "significant aquatic function" in excess of 150 linear feet will most likely require mitigation by the NC-DWQ. The USACE may require mitigation for any wetland/jurisdictional waters impacts. Actual mitigation requirements are typically determined on a case-by-case basis. Wetland mitigation is a complex process that requires planning and monitoring. S&EC will discuss mitigation issues with you if we believe your project may require mitigation. Impacts to channels containing "significant aquatic function" in excess of the notification thresholds may require mitigation. Channel mitigation is typically intended to replace lost significant aquatic functions and values. Relocating channels is considered to be an adverse impact and typically results in mitigation within the new channel. Therefore, this type of mitigation usually requires that meanders be created within constructed channels. Side-slopes and beds be vegetated; riprap is discouraged.

A complete NC-DWQ 401 Water Quality Certification application for a Nationwide Permit has a maximum 60-day processing period. A complete USACE Nationwide Permit application has a 45-day processing period, while Individual Permit applications submitted to the USACE have no maximum processing periods. **The USACE requires that all impacts to wetlands or Waters of the US, less than 1/10 acre, be reported to the USACE within 30 days of the completion of construction.**

Nationwide Permits can potentially be utilized if the project is designed to impact up to 1/2 acre of jurisdictional wetlands or waters of the US including a maximum of 300 linear feet of important stream channel impact under NWP 39. Cumulative impacts per project over these nationwide thresholds will require an individual permit. Individual Permits require an analysis to determine that the proposed impact is the least environmentally damaging practical alternative, typically require compensatory mitigation, notification to adjacent property owners, a public notice, and may require a public hearing. All impacts greater than 1/10 acre require written justification.

CONCLUSION

The Lystra Gardens site evaluated by S&EC during March, 2006, contains a number of jurisdictional wetlands and streams that would require preconstruction authorization for impacts (i.e. road construction, lot fill, stormwater pond construction, etc.). A survey location of S&EC's wetland delineation flags should be conducted to integrate these site constraints into planning for property development. A site meeting should be conducted with the USACE agent responsible for Chatham County in order to confirm our wetland and stream delineation.