APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): August 29, 2013

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:MVN 2010-01775-2-SQ Hebert

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:LA County/parish/borough: Livingston Parish City:
Center coordinates of site (lat/long in degree decimal format): Lat. 30.534395° **N**, Long. -90.920224° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: Unnamed conveyance tributary/Harrels Lateral
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Colyell Creek/Bay
Name of watershed or Hydrologic Unit Code (HUC): 8070202

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): 12/28/10, 01/04/11, 01/27/11, 06/15/11, 07/30/13, 08/02/13, 08/09/13

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☒ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☒ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 200 linear feet: 4-6 width (ft) and/or acres.
      Wetlands: 13.1 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 1890 **square miles**
Drainage area: 122 **acres**
Average annual rainfall: 64 inches
Average annual snowfall: 0 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **3** tributaries before entering TNW.

Project waters are **15-20** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.
Project waters are **15-20** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: no.

Identify flow route to TNW[5]: wetland to non-RPW, to unnamed tributary (RPW), to West Colyell Creek (RPW), to Colyell Creek (/NW).

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☒ Artificial (man-made). Explain: portion of tributary is conveyance cut through wetland.
☒ Manipulated (man-altered). Explain: natural portion channelized by parish.

Tributary properties with respect to top of bank (estimate):
Average width: 4-6 feet
Average depth: 1-3 feet
Average side slopes: **2:1.**

Primary tributary substrate composition (check all that apply):

☒ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☒ Vegetation. Type/% cover: emergent 10%
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: relatively stable.
Presence of run/riffle/pool complexes. Explain: no.
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: **Intermittent but not seasonal flow**
Estimate average number of flow events in review area/year: **20 (or greater)**
Describe flow regime: Carrying storm runoff within banks, groundwater flow during periods of high water table.
Other information on duration and volume: Development and conveyances in area increasing flow rate and frequency and decreasing duration.

Surface flow is: **Discrete and confined.** Characteristics: Carrying discrete flow within banks.

Subsurface flow: **Unknown**. Explain findings: not determined at this time.
☐ Dye (or other) test performed: .

Tributary has (check all that apply):

☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):

☒ clear, natural line impressed on the bank ☒ the presence of litter and debris
☐ changes in the character of soil ☒ destruction of terrestrial vegetation
☐ shelving ☒ the presence of wrack line
☒ vegetation matted down, bent, or absent ☐ sediment sorting
☒ leaf litter disturbed or washed away ☐ scour
☒ sediment deposition ☒ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):

☒ Discontinuous OHWM.[7] Explain:Downstream from the property, a segment of Harrels Lateral, approximately 50 feet long, has been shaped into a grassy swale for purposes of equipment crossing. Flow in this portion of Harrel's Lateral is discreet and will remain confined within the swale even during relatively high water events.

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: Cloudy .
Identify specific pollutants, if known: silt-clay sediments, organic matter, grease/ oil (roads), fertilizer/pesticide (yards).

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☒ Riparian corridor. Characteristics (type, average width): Hardwoods 100'.
☐ Wetland fringe. Characteristics: .
☒ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☒ Aquatic/wildlife diversity. Explain findings: crustaceans, amphibians, reptiles, birds, mammals known to use similar habitat.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size:13.1 acres
Wetland type. Explain:Wet Oak Flats.
Wetland quality. Explain:Not determined at this time.
Project wetlands cross or serve as state boundaries. Explain: no.

(b) General Flow Relationship with Non-TNW:
Flow is: **Ephemeral flow**. Explain: Unconfined sheet flow in wetland during and after rain events.

Surface flow is**: Overland sheetflow**
Characteristics: Unconfined sheet flow during and after rain events.

Subsurface flow: **Unknown**. Explain findings: Not determined at this time.
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☒ Directly abutting
☐ Not directly abutting
☐ Discrete wetland hydrologic connection. Explain: Culvert under old racetrack to unnamed conveyance tributary/Harrels Lateral. Portions of old racetrack currently functioning as wetlands.
☐ Ecological connection. Explain: Forested habitat throughout.
☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **15-20** river miles from TNW.
Project waters are **15-20** aerial (straight) miles from TNW.
Flow is from: **Wetland to navigable waters.**
Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Cloudy.
Identify specific pollutants, if known: Silt and clay sediments and organic matter.

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width): .
☒ Vegetation type/percent cover. Explain:wet oak flats 100%.
☒ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☒ Aquatic/wildlife diversity. Explain findings:observed Invertebrates (insects, leaches), crustaceans, amphibians, reptiles, birds (wood ducks, woodpeckers), mammals.

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **2**
Approximately (33) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
n	28	y	5

Summarize overall biological, chemical and physical functions being performed: Wetland on property is part of larger wetland that performs flood storage (observed), sediment sequestering (observed), nutrient sequestering, filtering, wildlife habitat (observed), and groundwater recharge. The 5-acre wetland has been affected by parish drainage improvements.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: This significant nexus determination applies to the non-RPW and its adjacent wetlands. The significant nexus determination does not apply only to the non-RPW and wetlands on the property, but to the non-RPW and associated wetlands on and off the property, for a total of approximately 33 acres of wetlands adjacent to the non-RPW. Significant Nexus discussion concerning the non-RPW and its adjacent wetlands is continued in Section IV B.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .

☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☒ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
- ☒ Tributary waters: **200** linear feet **5** width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

☒ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: **13.1 +/-** acres.

7. Impoundments of jurisdictional waters.[9]

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
- ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
- ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☒ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:Watson, LA.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation:NRCS Web Soil Survey.
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☒ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):1998 IR, 2004 IR, 2008 IR.
or ☒ Other (Name & Date):LIDAR.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☒ Other information (please specify): USDA NRCS National Water and Climate Center Web Page.

Alexander, R.B., E.W. Boyer, R.A. Smith, G.E. Schwartz, and R.B. Moore, 2007. The Role of Headwater Streams in Downstream Water Quality. Journal of the American Water Resources Association 43. DOI: 10.1111/j.1752-1688.2007.00005.x.

Kappiella, Karen, and Lisa Fraley-McNeat. 2007. The Importance of Protecting Vulnerable Streams and Wetlands at the Local Level. Wetlands and Watersheds Article #6. Center for Watershed Protection. Elliot City, Maryland, for Office of Wetlands, Oceans, and Watersheds. U.S. Environmental Protection, Washington, D.C.

Meyer, Judy et al. 2003. Where Rivers are Born: The Scientific Imperative for Defending Small Streams and Wetlands. Sierra Club.

Mitsch, W.J., J.W. Day Jr, J.W. Gilliam, P.M. Groffman, D.L. Hey, G.W. Randall, and N. Wang, 2001. Reducing Nitrogen Loading to the Gulf of Mexico From the Mississippi River Basin: Strategies to Counter a Persistent Ecological Problem. Bioscience 51:373-388.

North Carolina Division of Water Quality (NCDWQ). 2006. The Ecological and Water Quality Value of Headwater Wetlands in North Carolina. North Carolina Division of Water Quality. Raleigh, North Carolina.

Saksa, Philip; Xu, Yi Jun; Stich, Richard Date: 2013 Hydrologic influence on sediment transport of low-gradient, forested headwater streams in central Louisiana In: Guldin, James M., ed. 2013. Proceedings of the 15th biennial southern silvicultural research conference. e-Gen. Tech. Rep. SRS-GTR-175. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 551-558. Station ID: Paper (invited, offered, keynote)-SRS-175

Tracie-Lynn Nadeau & Mark Cable Rains, Hydrological Connectivity Between Headwater Streams and Downstream Waters: How Science Can Inform Policy, 43(1) J. AM. WATER RESOURCES ASS'N 118–133 (2007)

Wipfli, M.S., J.S. Richardson, and R.J. Naiman, 2007. Ecological Linkages Between Headwaters and Downstream Ecosystems: Transport of Organic Matter, Invertebrates, and Wood Down Headwater Channels. Journal of the American Water Resources Association 43, DOI: 10.1111/j.1752-1688.2007.00007.x.

Zimmerman, R.J. and J.M. Nance, 2001. Effects of Hypoxia on the Shrimp Fishery of Louisiana and Texas. Coastal and Estuarine Sciences 58:293-310

B. ADDITIONAL COMMENTS TO SUPPORT JD: Historically, according to the current landowner, a linear horse racing track was built near the eastern boundary of the property. This feature includes a culvert to allow water to cross the raised surface of the track. Furthermore, a portion of the track was constructed through a wetland, a portion of which currently meets the criteria of the manual and regional supplement and is mapped as wetland. While flow was evident around the previously buried and currently inverted culvert this hydrological connection is not necessary to establish adjacency of the wetland to the tributary that is the relevant reach. Portions of the wetland on either side of and across a portion of the historical track abuts the tributary and other portions are neighboring the tributary. The wetland is contiguous with the non-RPW; This wetland is not isolated by the track because the wetland is continuous across a portion of the track.

Several high points occur in the non-RPW that are downstream of the property were considered during site inspections in June, 2011, and August, 2013. Evidence of flow in the non-RPW, including sediment deposits at 12-14" above the bottom of the non-RPW, indicates that flow gets past these high spots. The non-RPW has been channelized by Livingston Parish, thereby increasing flow rates and enhancing the ability of the tributary to carry sediments and particulates to West Colyell Creek. A portion of non-RPW, approximately 50 feet long, downstream of the property has been shaped into a grassy swale to allow for equipment crossing. Flow in this portion of the tributary is not sheet flow, but is discrete and confined within the swale. A previous determination identified this portion of the non-RPW as a jurisdictional water of the US.

MVN issued a Jurisdictional Determination on behalf of Livingston Parish Gravity Drainage District 2 for excavation work proposed on a water body named Harrel's Lateral that is partly along Harrel's Lane. Nevertheless, the main channel in the non-RPW upstream of Harrel's Lane is much larger (15 feet wide by 1.5 feet deep) than the the conveyance along Harrel's Lane (6 feet wide by 0.5-1 foot deep). Subsequently, the drainage district (or some other entity) maintained the relative sizes of these channels and the main tributary is only slightly larger below the confluence with Harrel's Lane. Therefore, the relevant reach includes the entire non-relatively permanent channel from the Hebert property to its confluence with the unnamed tributary of West Colyell Creek that is a relatively permanent water. The entire relevant reach is of the same order (1). There are two small man-made ditches that flow into the non-RPW downstream of the subject property without a resulting change of channel characteristics. It was therefore determined that the stream order remained unchanged below these features. A change in order occurs west of Dunn Road at the confluence of the non-RPW and the unnamed tributary to West Colyell Creek.

Mosquitofish (Gambusia sp.) are present in ponded areas inside the wetland on the upstream side of the historical race track. This firmly establishes an aquatic connection and continuous surface water connection between the wetland and the non-RPW at various times since the mosquitofish would not be able to survive drier periods in the wetlands when ponding is absent for prolonged periods. This aquatic connection was observed by MVN as water was passing through the culvert under the historical race track, but more importantly it serves to show that this area was aquatically connected to the non-RPW before the historical racetrack was constructed through the wetland. Mosquitofish are live bearers and, as such, cannot be transported as eggs on the legs of birds or other mechanisms. The mosquitofish must have swum in a continuous water column into the wetland on the subject property.

Additionally, a breeding population of live freshwater clams (Sphaeriids) were found just to the east (downstream side) of the historical track in the intermittent channel bed that was not flowing or inundated at the time. This demonstrates that the non-RPW has enough active flow to support aquatic organisms, which would show the water column in the non-RPW extends up to the downstream side of the historical race track. The historic and recent hydrological connectivity between the wetland and the non-RPW is not speculative and is evidenced by live aquatic organisms on both sides of the historic race track on the subject property and in the bed of the non-RPW immediately downstream of the wetland. Drainage patterns over the historic race track also indicate additional sheet flow between portions of the wetland on either side of the historical race track. The wetland still present on the historic racetrack also indicates that the track was constructed through the wetland and a single barrier cannot sever adjacency.

In spite of increased flow rates due to work conducted on the non-RPW, the associated wetland system holds water back from the non-RPW, thereby directly affecting the integrity of the non-RPW, the receiving RPW, and West Colyell Creek (RPW) in a more positive respect. Calculation of flow rates is not required to demonstrate that high flows are adequate to suspend sediments and other particulates. When inundation is not present, indicators on the project site and in the non-RPW, including sediment deposits and drainage patterns in the wetland and scouring and deposition in the tributary, demonstrate that sediments and pollutants are suspended in the water column at the point where the water exits the wetland and downstream in the tributary. When inundated, suspended sediments and organic matter were directly observed in the water column flowing from the wetland to the non-RPW. During relatively low flow periods, a portion of sediments and other pollutants will be assimilated by the tributary and associated wetland. During relatively higher flows, a portion of the pollutants will be re-disturbed and additional pollutants will be contributed to the non-RPW and the downstream system. Pollutants in excess of the assimilative capacity of the non-RPW and associated wetlands will eventually reach West Colyell Creek. Likewise, a portion of the pollutants in excess of the assimilative capacity of West Colyell Creek will eventually reach the TNW.

West Colyell Creek, downstream of the site and the entire Colyell Creek system are listed as impaired waters by EPA for primary recreational contact due to fecal coliform from onsite treatment systems. Additionally the Collyell Creek and its tributaries are impaired for primary fish and shellfish production due to Biological Oxygen Demand (BOD) and nutrients from similar sources. In the context of the overall pollutant contributions to the receiving RPW and eventually the TNW, the effect of relatively unimpaired water from the wetland will be positive because it will help dilute sediments and other pollutants that are entering the relevant reach from properties downstream of the subject property.

The tributary and associated wetland in the subject watershed can impact the TNW adversely and beneficially. The wetland on the subject property is the largest wetland in the sub-basin of the relevant reach and is also part of the largest forested block in the watershed of the receiving RPW. To the extent that the wetland, similarly situated wetland, and the tributary can withhold sediments, pollutants, carbon, and floodwater, this system collectively has a significant positive effect on the integrity of the TNW. Where portions of the system have been disturbed or removed, including channelization and clearing for development, the tributary and associated wetland will have less beneficial effects on the TNW due to reduced system functionality. Similarly, events that exceed the assimilitive capacity of the system will have marked negative and/or positive effects on the downstream system. Thus, the tributary, associated wetland, and similarly situated wetland have a significant nexus with the TNW.

The presence of sediment deposits in the tributary and associated wetlands demonstrates four functions accruing in the wetland that will affect the water quality of the TNW: floodwater storage, sediment retention, pollution retention, and organic carbon transport. In order for sediment deposits to be present in a wetland, flows from adjacent uplands and within the wetland itself were substantial enough to suspend silt and clay particles. This would also substantiate suspension of organic particulates within the size ranges that can be readily transported to downstream waters. Additionally, repeated direct observations of inundation and the presence of sediment deposits in the tributary and associated wetlands substantiate inundation in the tributary system. The duration is long enough for silt and clay sediments and organic carbon to fall out of suspension and to be sequestered by the wetland. This would also substantiate flood storage in the tributary and associated wetlands, which would directly affect the functionality of the downstream waters, based on general flow characteristics and potential assimilative capacities. In a parish averaging 64 inches of precipitation per year, with events of 0.1" or greater occurring, on average, 69 days per year, saturation and flow from the wetland commonly occur on this site. Flow across wetlands on the site and through the culvert into Harrels lateral was observed during several site visits.

MVN observed wood ducks in inundated portions of wetlands on the property. Woodpeckers and other birds, other wildlife sign including deer tracks, rabbit droppings, and raccoon tracks were observed traversing uplands and wetlands on the property. Wading birds were observed feeding in the non-RPW downstream from the property. The wetlands and tributary provide organic matter to food webs in West Colyell Creek and downstream waters. This is based on the observation of organic matter that would provide carbon to the system as well as food and substrate for aquatic insects in the tributary and associated wetlands during periods of inundation. Aquatic insects supported by the wetlands and tributary provide food for fish in downstream waters.

The significant nexus between the TNW and the non-RPW and its associated wetlands has several facets. West Colyell Creek downstream of the site and the entire Colyell Creek system are considered impaired by LADEQ and EPA. This fact increases the significance of every wetland that contributes positively to the aquatic ecosystem and water quality in the system and the TNW. Primarily, positive significant impacts accrue to the TNW from the tributary and associated wetlands, as well as wetlands throughout the watershed. Given the pressure of development in the area, all such wetlands become increasingly more important locally and thus have a significant impact on the physical, biological, and chemical integrity of the TNW. Importance is an ecological measure of the significance of the functions of the wetland within a prescribed area. The wetland on the property is the largest wetland on this tributary and therefore accounts for the majority of positive wetland functionality on the tributary and its contribution to the downstream TNW, the Colyell Creek system.

The specific functions accruing in the tributary and associated wetlands include stormwater flow attenuation, short and long-term floodwater storage, nutrient retention and sequestration, sediment retention, and organic matter retention and sequestration, in addition to wildlife habitat. Several of these functions, including nutrient retention and organic matter retention, directly affect the impaired nature of the downstream waters in the Colyell Creek system. Short and long-term flood storage, sediment and organic matter retention, contribution to downstream food webs, and wildlife habitat functions were observed directly on the site by MVN.

More specifically, the wetland on the property is currently filtering sewerage effluent from an adjacent property before this flow can enter the non-RPW. Immediately downstream, however, sewerage effluent is entering the receiving tributary directly from two man-made conveyances that receive no filtering. Both conveyances downstream of the subject property exhibit eutrophication from sewerage effluent, including constant algal blooms and other indicators of nutrient enrichment. In spite of the nutrient enrichment evident in both conveyances, a pool in the non-RPW immediately below the two conveyances contains suckerfish (Hypostomus sp.), a non-native catfish that is usually sensitive to nutrient enrichment. This pool also contains damselfly larvae (Argia apicalis), which are also known to be less tolerant of eutrophic conditions than other aquatic insects such as dragonflies (Odonata). If the only source of flow for this portion of the relevant reach was the two eutrophic conveyances, the Hypostomus and damselfly larvae would not be expected to occur there. Based on relative watershed size, filtered water from the wetland on the subject property contributes the vast majority of flow at the head of the non-RPW. This instance readily demonstrates both positive and negative impacts from the non-RPW and its associated wetlands to the relatively permanent waters and TNW downstream.

Given its position on the landscape and its size, another of the subject wetland's major functions is stormwater runoff attenuation. The ability of the wetland to retain floodwater in a given event will enhance capacity of the tributary to accommodate accelerated flow from developed areas downstream that have lost wetlands and stormwater attenuation previously associated with those wetlands. Furthermore, the floodwater storage function enables all the other functions in the wetland. Not only is stormwater flow attenuated during and after these events, but sediment deposition, organic matter, and other depositions occur because of the floodwater retention. These functions in this wetland are critical to contributing relatively higher quality water into the impaired system on West Colyell Creek. Additionally, seasonal inundation of this wetland allows a greater diversity of wildlife, wood ducks for example, to use the site that might not otherwise utilize it.

It is well established in the scientific literature that upper reach wetlands and waters play a significant role in the characteristics of the downstream waters (see references listed in Section IV. A above). The condition of any RPW or TNW is the sum of the condition of all the inputs from wetlands and tributaries that contribute flow into the RPW or TNW. "Alteration of small streams and wetlands disrupts the quanity and availablility of water in a stream and river system." (Meyer et al., 2006).

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