TCEQ DOCKET NO. 2012-0065-WR

APPLICATION BY	§	**BEFORE THE**
UPPER TRINITY REGIONAL	§	
WATER DISTRICT FOR	§	**TEXAS COMMISSION ON**
WATER USE PERMIT NO. 5821	§	**ENVIRONMENTAL QUALITY**

EXECUTIVE DIRECTOR'S RESPONSE TO HEARING REQUEST

The Executive Director of the Texas Commission on Environmental Quality (TCEQ or commission) respectfully submits this response to the hearing requests filed in the application by Upper Trinity Regional Water District (the District) for new Water Use Permit No. 5821. Thirty-nine hearing requests were timely received from the following requesters: John S. Adams, Leslie A. Adams, Sarah Hembry Ashcraft-Peterson, Jeff Barnett, Eddie Belcher, Linda Belcher, Peggy Belcher, Pete Belcher, Gail and Tommy Brown, Leah Colley, Richard Cook on behalf of the Town of Double Oak, Crystal Cooper-Smith, Chester E. DeBord, Michelle Dowell, Kevin Driscoll on behalf of International Paper Company, Mike Flesher, Jody A. Smith on behalf of the Town of Flower Mound, Nina Holt, Robert Holt, Ronal and Debbie Kennemer, Richard Lowerre on behalf of Ward Timber, Ltd. and Ward Timber Holdings, Ltd., John D. McConnell, William McKinney, David and Sharron Nabors, National Wildlife Federation, Dale and Karen Pope, Angela J. Scott, Floyd Sessums, Hellen Sessums, Sulpher River Oversight Society, Tommy Sutherland, Texas Committee on Natural Resources, Carol A. Weiss, Annie F. Woodson, Larry Woodson, Doug Wicks, Kristi Wicks, Patsy Wicks, and Randy Wicks.

Three hearing requests were received from James P. Allison on behalf of Fannin County, Patricia McKelvey, and Joe Max McKelvey. Each of those hearing requests was withdrawn.

Attached to this response for the commission's consideration in addition to materials provided in the agenda backup packet is the "Conceptual Design and Analysis of the Proposed North Sulphur River Ribarian Habitat Mitigation Area for Lake Ralph Hall" provided to the Executive Director by the District during technical review. It is attached hereto as "Attachment A."

The Executive Director respectfully recommends that the commission grant 7 of the hearing requests, deny 31 of the hearing requests, and refer the matter to the State Office of Administrative Hearings for a contested case hearing.

I. Background

The District has applied for an authorization to construct and maintain a reservoir on the North Sulphur River, a tributary of the Sulphur River, which would impound a maximum of 180,000 acre-feet of water to be used for in-place recreational purposes. The District further seeks an authorization to divert and use not to exceed

45,000 acre-feet of water per year from the perimeter of the proposed reservoir for municipal, industrial, and agricultural purposes at a maximum rate of 205 cubic feet per second. The District also requests an interbasin transfer authorization pursuant to TEX. WATER CODE §11.085 to transfer water diverted from the Sulphur River Basin to the Trinity River Basin for use in portions of Collin, Cooke, Dallas, Denton, Fannin, Grayson, and Wise Counties within the Trinity and Sulphur River Basins.

The draft permit authorizes the District to impound 180,000 acre-feet of water in a reservoir to be known as Lake Ralph Hall on the North Sulphur River. It further authorizes a diversion of up to 45,000 acre-feet of water to vary depending on stream conditions. The Water Availability Analysis performed by the Executive Director's Surface Water Availability and Interstate Compacts Team determined that 45,000 acre-feet of water will not be available for diversion at Lake Ralph Hall 100 percent of the time. Accordingly, the draft permit authorizes a firm water diversion of 34,082 acre-feet which will be available for diversion by the District at Lake Ralph Hall at all times. The diversion of an additional 10,918 acre-feet is authorized on a less than firm basis. The availability of the additional water is determined by stage trigger levels outlined in an accounting plan incorporated by reference in the draft permit. The District will be further authorized to transfer water diverted from Lake Ralph Hall to certain areas within the Trinity River Basin.

II. Procedural History

This application was received September 2, 2003. The application was declared administratively complete on August 13, 2004. Notice for this amendment application was originally mailed by the Chief Clerk to the water rights holders in the Sulphur and Trinity River basins on January 31, 2006. A revised version of the notice was mailed on February 8, 2006. The revised version of the notice was published on February 13, 2006 and again on February 20, 2006. Public hearings for this permit were held in each affected river basin on March 27 and 28, 2006. The hearing request period for this application closed on March 22, 2006. Forty-one requests for a contested case hearing were timely received. Three were withdrawn.

Notice for this application was issued prior to the Texas Supreme Court decision in *City of Marshall v. City of Uncertain*. The Commission issued guidance on new standards for notice determinations in water availability matters in a work session on January 18, 2008. Accordingly, a finding that notice for this application conforms to the requirements in the *City of Marshall* case is unnecessary.

III. Legal Authority

The following may request a contested case hearing on water rights applications: the commission, the Executive Director, the applicant, and affected persons when authorized by law. Affected persons are authorized to submit hearing requests for water rights permit applications by TEX. WATER CODE §11.132(a). The commission, on the request of any affected person, shall hold a public hearing on an application to amend a

water right permit. Id. The application is subject to the procedures for determining whether a hearing requestor is an affected person and whether a document submitted on an application constitutes a valid request. Those procedures for applications declared administratively complete on or after September 1, 1999 are located at 30 TEX. ADMIN. CODE §§55.250-256.

An "affected person" is one who has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application. An interest common to the general public does not constitute a justiciable interest. Id. §55.256(a). Governmental entities, including local governments and public agencies, with authority under state law over issues contemplated by the application may be considered affected persons. Id. §55.256(b).

To determine whether a hearing requestor is an affected person, all relevant factors must be considered, including but not limited to:

(1) whether the interest claimed is one protected by the law under which the application will be considered;
(2) distance restrictions or other limitations imposed by law on the affected interest;
(3) whether a reasonable relationship exists between the interest claimed and the activity regulated;
(4) the likely impact of the regulated activity on the health, safety, and use of property of the person;
(5) the likely impact of the regulated activity on the use of the impacted natural resource by the person; and
(6) for governmental entities, their statutory authority over or interest in the issues relevant to the application.

Id. §55.256(c).

Title 30, Sections 55.251(b) and (c) of the Texas Administrative Code specify that a hearing request must:

(1) be in writing and be filed with the Office of the Chief Clerk during the public comment period
(2) give the name, address, and daytime telephone number of the person who files the request;
(3) identify the person's personal justiciable interest affected by the application including a brief, but specific, written statement explaining in plain language the requestor's location and distance relative to the activity that is the subject of the application and how and why the requestor believes he or she will be affected by the activity in a manner not common to members of the general public; and
(4) request a contested case hearing.

A hearing request must strictly comply with requirement (1) above and must "substantially comply" with requirements (2) through (4). Id. §55.251(c).

A request for a contested case hearing must be granted if the request is made by an affected person and the request:

(1) complies with the requirements of 30 TEX. ADMIN. CODE §55.251;
(2) is timely filed; and
(3) is pursuant to a right to hearing authorized by law.

Id. §55.255(b)(2).

A hearing request is considered timely if it is submitted to the Commission within 30 days after the publication of the notice of application if the commission has not extended the period for hearing requests. Id. §295.171.

IV. Hearing Requests and Recommendations

A total of 38 individual hearing requesters were identified by the Office of Public Assistance.[1] Below is an outline of each request and the Executive Director's respective recommendations.

John S. Adams – Mr. Adams' hearing request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. Mr. Adams states that construction of the reservoir would take a portion of his property and restrict his use of the remainder. The hearing request demonstrates that Mr. Adams is an affected person. It should be granted.

Leslie A. Adams – Ms. Adams' hearing request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. Ms. Adams states that she will be affected for the same reasons as Mr. Adams, specifically that the planned reservoir would inundate between 20 and 30 acres of her property. The hearing request demonstrates that Ms. Adams is an affected person. It should be granted.

Sarah Hembry Ashcraft-Petersen – Ms. Ashcraft-Petersen's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. The request states that the requester's property will be inundated by the proposed reservoir. She is an affected person, and the request should be granted.

Jeff Barnett – Mr. Barnett's hearing request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. It is therefore a valid hearing request. However, Mr. Barnett only states that his land "is in

[1] The Office of Public Assistance is now known as the Small Business and Environmental Assistance Division.

the immediate vicinity of the dam." There is no statement as to how or why Mr. Barnett feels he will be impacted in a way not common to the general public. No personal justiciable interest is identified. The hearing request is insufficient to determine whether Mr. Barnett is an affected person. Therefore, it should be denied.

Gail & Tommy Brown – Mr. and Ms. Brown's hearing request substantially complies with technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 except that it includes no location and distance relative to the proposed activity. Id. §55.251(c)(2). While the request states that the requesters anticipate a possibility of being forced to relocate or sell their property, there is no statement as to why or how the proposed activity will result in that impact. Id. Therefore, no personal justiciable interest is identified. The request should be denied.

Crystal Cooper-Smith – Ms. Smith's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. It states that property owned by the requester will be inundated by the reservoir. She is an affected person, and the request should be granted.

Richard Cook on behalf of the Town of Double Oak – This hearing request, filed through the town's mayor, complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. The hearing request, however, does not state how the governmental entity has statutory authority or interest in issues relevant to the application. Id. §55.256(c)(6). The request solely addresses issues regarding the applicant's financial standing which are not interests protected under the law under which this application is being considered. Id. §55.256(c)(1). The request states that the town is 80 miles away from the proposed reservoir. The town is also not in the river basin where the reservoir is to be constructed, but rather in the basin that will receive water transferred pursuant to the proposed IBT. It does not appear as though this governmental entity has any authority under state law over issues contemplated by the application. Id. §55.256(b). The request should be denied.

Chester E. DeBord – Mr. DeBord's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. It states that Mr. DeBord and his wife will lose all of their land as a result of the construction of the reservoir and that the dam will run directly through the property. Mr. DeBord is an affected person. The request should be granted.

Michelle Dowell – Ms. Dowell's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. It states that Ms. Dowell believes she will lose land to inundation or mitigation. The request identifies the requester's location as being on "County Road 3351, Mary Allen Survey." That location is approximately 4 to 5 miles from the furthest upstream impoundment limitation of the proposed reservoir. Further, the location is in the proximity of Allen Creek, a tributary of the North Sulphur River which is not authorized for impoundment or use in the draft permit. The mitigation lands identified in the Environmental Analysis performed by the Executive Director's Resource Protection staff indicates that the

location described in this hearing request is outside of the area designated for mitigation. There is very little likelihood that the health, safety, use of property or the natural resource by or of this requester will be impacted. Id. 55.256(c)(4)-(5). The request is insufficient to constitute a finding of affected person status. It should be denied.

Kevin Driscoll on behalf of International Paper Company – This request does not comply with technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 in that it was not sent by U.S. Mail, fax, or hand-delivery. The request indicates that a location generally identified as being potentially affected is 120 miles from the proposed reservoir. The request states that this location, owned by International Paper, will be affected because a facility at that location discharges significant amounts of water to the Sulphur River. The Executive Director's Resource Protection Staff determined that activities authorized by this permit will not cause an impact to water quality within the Sulphur River Basin. Beyond that general finding, there is insufficient information in the hearing request to determine how and why the requester believes the proposed permit will impact its ability to discharge water into the Sulphur River. The request further expresses concerns that lands used for harvesting timber may become unavailable due to mitigation. 30 TEX. ADMIN. CODE §297.53(f)(4) states that wildlife mitigation shall be on-site and in-kind where possible and, where not possible, shall be limited to the same watershed and ecoregion. The mitigation lands identified in the Environmental Analysis performed by the Executive Director's Resource Protection staff indicates that all lands used for mitigation will be at least 100 miles away from the location identified in this request. There is very little likelihood that the health, safety, use of property or the natural resource by or of this requester will be impacted. Id. 55.256(c)(4)-(5). The request further references affects on water rights. The requester has not identified a specific water right that might be impacted. Nevertheless, the Executive Director's Water Availability Division has determined that this permit will cause no impact to other water rights in the Sulphur River Basin. The request is insufficient to constitute a finding of affected person status. It should be denied.

Mike Flesher – Mr. Flesher's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. The request states that Mr. Flesher's home and 81 acres of property are at the center of the proposed project and he will be forced to sell his home and relocate against his will as a result of the reservoir construction. He is an affected person, and the request should be granted.

Richard Lowerre on behalf of Ward Timber, Ltd. and Ward Timber Holdings, Ltd. – This request, filed through Ward Timber's legal counsel, substantially complies with technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 but fails to state a location relative to the regulated activity. It generally states that Ward Timber is "based in Cass County, Texas" and alludes to interests in timber lands in Fannin county and other East Texas counties "where it has properties and other timber interests." The request raises issues related to loss of available timber for harvesting due to mitigation efforts. 30 TEX. ADMIN. CODE §297.53(f)(4) states that wildlife mitigation shall be on-site

and in-kind where possible and, where not possible, shall be limited to the same watershed and ecoregion. The mitigation lands identified in the Environmental Analysis performed by the Executive Director's Resource Protection staff indicates that all lands used for mitigation will be at significantly upstream from any location in Cass County. While mitigation lands are located in Fannin County, it is impossible to determine from information provided in this hearing request whether Ward Timber has any interest in those areas. There is very little likelihood that the health, safety, use of property or the natural resource by or of this requester will be impacted. Id. §55.256(c)(4)-(5). Ward Timber also raises concerns about impact to streamflows relative to an authorized waste discharge by International Paper. The request does not provide a location of that discharge relative to the reservoir. Therefore, it is impossible to assess what impact this application may have if any on that specific discharge. Resource Protection staff performed a full environmental review and determined that, with certain special conditions, the proposed permit will have no adverse impact on water quality within the Sulphur River Basin. Finally, the request states that conservation methods relative to the proposed interbasin transfer as required by statute are inadequate. According to an interoffice memorandum prepared by a Senior Water Conservation Specialist on the Executive Director's Resource Protection Team, the District has developed a water conservation plan that meets statutory and regulatory requirements. The request is insufficient to constitute a finding of affected person status. It should be denied.

John D. McConnell – Mr. McConnell's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. The request is concerned with loss of property due to mitigation requirements. The requester states that his property is 40 miles east of the proposed reservoir. 30 TEX. ADMIN. CODE §297.53(f)(4) states that wildlife mitigation shall be on-site and in-kind where possible and, where not possible, shall be limited to the same watershed and ecoregion. The mitigation lands identified in the Environmental Analysis performed by the Executive Director's Resource Protection staff indicates that all lands used for mitigation do not include lands 40 miles east of the proposed reservoir. There is very little likelihood that the health, safety, use of property or the natural resource by or of this requester will be impacted. Id. §55.256(c)(4)-(5). The request should be denied.

William McKinney – This request does not substantially comply with technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 in that it does not state how and why the requester believes he will be affected and gives no location relative to the regulated activity. Additionally, no phone number was provided. It is insufficient to determine that the requester is an affected person. The request should be denied.

David & Sharron Nabors – Mr. and Ms. Nabors' request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. It states that the requesters own property along the Sulphur River 15 miles downstream from the proposed reservoir and believe their use and enjoyment of the resource will be impacted. The request further states that the requesters are concerned that wildlife mitigation lands remained unidentified at the time the request was filed.

The mitigation lands identified in the Environmental Analysis performed by the Executive Director's Resource Protection staff indicates that the location described in this hearing request is outside of the area designated for mitigation. There is very little likelihood that the health, safety, use of property or the natural resource by or of this requester will be impacted. Id. 55.256(c)(4)-(5). The request is insufficient to constitute a finding of affected person status. It should be denied.

National Wildlife Federation – This hearing request, filed through the group's legal counsel, complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. The hearing request, however, fails to identify any individual member of the organization who would have standing to request a hearing on his or her own right. Id. §55.252(a)(1). The hearing request fails to satisfy the requirements for groups or associations and should be denied.

Dale & Karen Pope – Mr. and Ms. Pope's request substantially complies with technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. However, the request does not state specifically how and why the requesters believed they will be impacted by the proposed activity. Considering the information provided in the request, it is impossible to determine that the requester is an affected person. Accordingly, the request should be denied.

Angela J. Scott – Ms. Scott's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. The request states that land owned by the requester will be inundated by the reservoir. Ms. Scott is an affected person and the request should be granted.

Jody A. Smith on behalf of the Town of Flower Mound – This hearing request, filed through the town's mayor, does not comply with technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 in that it was not filed by United States mail, facsimile, or hand delivery. The hearing request also fails to state how the governmental entity has statutory authority or interest in issues relevant to the application. Id. §55.256(c)(6). It does not appear as though this governmental entity has any authority under state law over issues contemplated by the application. Id. §55.256(b). The request raises issues related to the financial abilities of the District which is not an interest protected under the law under which this application is being considered. Id. §55.256(c)(1). The request states that the town is approximately 80 miles away from the proposed reservoir. The town is also not in the river basin where the reservoir is to be constructed, but rather in the basin that will receive water transferred pursuant to the proposed IBT. The request also raises concerns regarding sedimentation of the reservoir. It is unclear how this issue constitutes an interest not common to members of the general public. Id. §§55.251(c)(2), 55.256(a). The request should be denied.

Sulphur River Oversight Society – This request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. Little information is provided concerning the purpose of this group or association. It is insufficient to demonstrate that the interests that the association seeks to protect are

germane to its purpose. Therefore, this request does not satisfy the requirements of 30 TEX. ADMIN. CODE §55.252. It should be denied.

Tommy Sutherland – Mr. Sutherland's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 except that it does not state a location relative to the regulated activity. The request merely implies that the requester has interest in some property that might potentially be impacted, but does not state with any specificity how or why that impact will occur. The request is insufficient to justify a determination of affected person statues. Accordingly, it should be denied.

Texas Committee on Natural Resources – This hearing request, filed through the group's Executive Director, complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. The hearing request, however, fails to identify any individual member of the organization who would have standing to request a hearing on his or her own right. Id. §55.252(a)(1). The hearing request fails to satisfy the requirements for groups or associations and should be denied.

Carol A. Weiss – Ms. Weiss' request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251. However, the request fails to state an interest protected by the law under which this application is being considered. The request identifies three issues: 1) taxing boundaries of the District, 2) required installation of improved septic facilities on private land in the vicinity of the proposed reservoir, and 3) property values. None of these concerns are relevant to a water rights application. Therefore, the request should be denied.

Annie F. Woodson – Ms. Woodson's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 except that it does not provide a daytime phone number or state a location relative to the regulated activity. The request merely implies that the requester has interest in some property that might potentially be impacted, but does not state with any specificity how or why that impact will occur. The request is insufficient to justify a determination of affected person statues. Accordingly, it should be denied.

Larry Woodson – Mr. Woodson's request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 except that it does not provide a daytime phone number or state a location relative to the regulated activity. The request merely implies that the requester has interest in some property that might potentially be impacted, but does not state with any specificity how or why that impact will occur. The request is insufficient to justify a determination of affected person statues and should be denied.

Eddie Belcher, Linda Belcher, Peggy Belcher, Pete Belcher, Nina Holt, Robert Holt, Floyd Sessums, Helen Sessums – This request included the names and addresses of each of the above-named individuals. The request complies or substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251

respective to each hearing requester. The signature line of the letter reads "Citizens of Cuthand Community" and includes one phone number. To the extent that this request was filed by a group or association, it does not sufficiently explain the purpose of that group or association. The request is concerned solely with loss of property due to mitigation requirements. The requesters state that affected property is 40 miles east of the proposed reservoir. 30 TEX. ADMIN. CODE §297.53(f)(4) states that wildlife mitigation shall be on-site and in-kind where possible and, where not possible, shall be limited to the same watershed and ecoregion. The mitigation lands identified in the Environmental Analysis performed by the Executive Director's Resource Protection staff indicates that all lands used for mitigation do not include lands 40 miles east of the proposed reservoir. There is very little likelihood that the health, safety, use of property or the natural resource by or of these requesters will be impacted. Id. §55.256(c)(4)-(5). Each of these seven individual hearing requests should be denied.

Leah Colley, Ronal and Debbie Kennemer, Doug Wicks, Kristi Wicks, Patsy Wicks, and Randy Wicks – This request included the names and addresses of each of the above-named individuals. The request substantially complies with all technical requirements for hearing requests in 30 TEX. ADMIN. CODE §55.251 respective to each hearing requester except that it does not explain how or why the requesters believe they will be affected by the granting of the draft permit in a manner not common to the general public. It is insufficient to constitute a determination that these requesters are affected persons. Accordingly, each of these six individual hearing requests should be denied.

V. Conclusion

The Executive Director respectfully recommends that the Commission grant the hearing requests of John S. Adams, Leslie A. Adams, Sarah Hembry Ashcraft-Petersen, Crystal Cooper-Smith, Chester E. DeBord, Mike Flesher, and Angela J. Scott. The Executive Director further recommends that the hearing requests of Jeff Barnett, Eddie Belcher, Linda Belcher, Peggy Belcher, Pete Belcher, Gail and Tommy Brown, Leah Colley, Richard Cook on behalf of the Town of Double Oak, Michelle Dowell, Kevin Driscoll on behalf of International Paper Company, Richard Lowerre on behalf of Ward Timber, Ltd. and Ward Timber Holdings, Ltd., Ronal and Debbie Kennemer, John D. McConnell, William McKinney, David and Sharron Nabors, National Wildlife Federation, Dale and Karen Pope, Floyd Sessums, Hellen Sessums, Judy A. Smith on behalf of the Town of Flower Mound, Sulphur River Oversight Society, Tommy Sutherland, Texas Committee on Natural Resources, Carol A. Weiss, Annie F. Woodson, Larry Woodson, Nina Holt, Robert Holt, Doug Wicks, Kristi Wicks, Patsy Wicks, and Randy Wicks be denied.

The Executive Director respectfully recommends that this matter be referred to the State Office of Administrative Hearings for a contested case hearing for the foregoing reasons in addition to any finding by the commission that a hearing would be in the public interest. 30 TEX. ADMIN. CODE §§55.255(c).

Respectfully submitted,
Texas Commission on Environmental Quality

Mark R. Vickery, P.G.
Executive Director

Robert Martinez, Director
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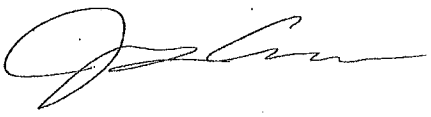

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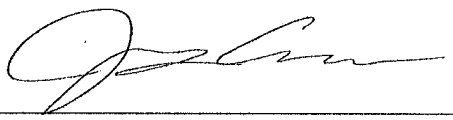
CERTIFICATE OF SERVICE

I certify that on January 30, 2012, an original and seven copies of the "Executive Director's Response to Hearing Requests" was filed with the Texas Commission on Environmental Quality's Office of the Chief Clerk, was electronically filed with the same, and a complete copy was transmitted by electronic mail, facsimile, or United States mail to all persons on the attached mailing list.



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BOGATA TX 75417-4648

WILLIAM MCKINNEY
1185 COUNTY ROAD 3640
LADONIA TX 75449-4412

DAVID & SHARRON NABORS
1822 E POLK ST
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DAVID NABORS
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MELISSA D NORTHERN
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DALE & KAREN POPE
1628 COUNTY ROAD 3365
LADONIA TX 75449-3603

ANGELA J SCOTT
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FLOYD SESSUMS
PO BOX 195
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HELEN SESSUMS
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MAX SHUMAKE
PRESIDENT, SULPHUR RIVER OVERSIGHT SOCIETY
157 COUNTY ROAD 4291
DE KALB TX 75559-5642

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3011 COUNTY ROAD 3640
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5843 FM 68
WOLFE CITY TX 75496-4845

CAROL A WEISS
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DOUG WICKS
10012 FM 895
LAKE CREEK TX 75450-3406

KRISTI WICKS
10012 FM 895
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4905 COUNTY ROAD 1412
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Attachment A

Conceptual Design and Analysis of the
Proposed North Sulphur River
Ribarian Habitat Mitigation Area for Lake Ralph Hall

CONCEPTUAL DESIGN AND ANALYSIS OF THE PROPOSED NORTH SULPHUR RIVER RIPARIAN HABITAT MITIGATION AREA FOR LAKE RALPH HALL

PREPARED FOR:

UPPER TRINITY REGIONAL WATER DISTRICT
Lewisville, Texas

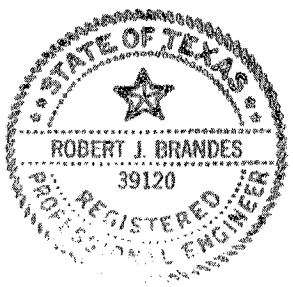
BY:

CHIANG, PATEL & YERBY, INC.

ALAN PLUMMER ASSOCIATES, INC.

R. J. BRANDES COMPANY

February 12, 2008
Revised March 18, 2010



3-18-10
Robert J. Brandes

CONCEPTUAL DESIGN AND ANALYSIS OF THE PROPOSED NORTH SULPHUR RIVER RIPARIAN HABITAT MITIGATION AREA FOR LAKE RALPH HALL

BACKGROUND

In September of 2003, the Upper Trinity Regional Water District (District) submitted a water rights application to the Texas Commission on Water Quality (TCEQ) to construct Lake Ralph Hall on the North Sulphur River in Fannin County, Texas and to appropriate water from Lake Ralph Hall for municipal and industrial purposes for users in Fannin County and for the District's customers in the Trinity River Basin. That application was declared administratively complete by the TCEQ in August of 2004. The TCEQ held public hearings relating to this application on March 27 & 28, 2006. Currently, TCEQ is conducting its technical review of the application documents.

The District also submitted an application for a Section 404 permit for Lake Ralph Hall to the Fort Worth District of the US Army Corps of Engineers (USACE) in November of 2006. That application is currently under administrative review by the USACE. The 404 permit application package contains an Environmental Information Document which includes a draft mitigation plan for the Lake Ralph Hall project.

One of the elements of the draft mitigation plan involves the creation of three miles of linear riparian habitat along a segment of the abandoned channel of the original North Sulphur River located on the south bank of the existing river channel immediately downstream of the proposed dam for Lake Ralph Hall. The intent is to restore this segment of the original river channel in a manner that emulates the habitat and ecological functions of the natural channel of the North Sulphur River, with similar hydrologic and hydraulic characteristics primarily supported with natural inflows from the upstream watershed. Stored water from Lake Ralph Hall will be used to maintain the primary pools of this restored riparian habitat mitigation area full at all times. All natural runoff from the contributing watershed of this area will be passed through the primary pools and discharged into the existing North Sulphur River channel. None of this runoff will be stored in the proposed riparian habitat mitigation area.

The original analysis of the available supply of water from Lake Ralph Hall for purposes of the water rights application as provided by the District included a proposal for passing inflows to the reservoir in specified amounts for purposes of maintaining instream uses in the existing channel of the North Sulphur River downstream of the reservoir. As a "placeholder" pending further environmental studies, these instream flow proposals were calculated based on the Lyons method, using historical river flows measured at a streamflow gage located approximately 20 miles downstream of the proposed dam site. Comprehensive studies of the North Sulphur River system downstream of the proposed Lake Ralph Hall have documented an eroded and barren river channel with significant river flows occurring only immediately after substantial rainfall events.[1] These intermittent flows continue to erode the channel substrate and will likely do so

[1] R. J. Brandes Company, *Hydrologic and Hydraulic Studies of Lake Ralph Hall Report*, April, 2004

for the foreseeable future.[2] These same studies also demonstrate that significant habitat to support a viable aquatic ecosystem within the river channel does not exist, and that biological organisms are rarely found in the river because its channel is essentially dry.[3] Given these conditions the passage of inflows to Lake Ralph Hall to support nonexistent instream uses in the existing river channel below the reservoir is considered to be an inappropriate and ineffective use of water. Instead, and as a substitute for such passage of inflows, it is proposed that water from Lake Ralph Hall be made available to develop and support the proposed riparian habitat element of the mitigation plan that is to be located within and along the abandoned river channel below the dam.

This report presents the conceptual design of the instream and riparian habitat element of the mitigation plan in greater detail including how the habitat will function biologically, hydrologically, and hydraulically. The report also presents analyses of the water supply needs of the proposed instream and riparian habitat that are to be provided from Lake Ralph Hall as an alternative to the passage of inflows to the reservoir for instream uses in the existing relatively-sterile downstream channel of the river with little or no environmental benefit.

OBJECTIVE FOR RESTORED RIPARIAN HABITAT AREA

The proposed riparian habitat mitigation area is designed to function hydrologically, hydraulically, and ecologically as close as possible to emulate a natural North Sulphur River bottomland hardwood system. It is also intended that the riparian habitat will be sustainable and require little or no maintenance. Finally, it is desired that the valuable water resources of the North Sulphur River be efficiently and effectively utilized to sustain a viable, functioning ecosystem instead of simply being used to satisfy a regulatory requirement by passing water through Lake Ralph Hall downstream to sustain and support the extremely limited instream uses along the existing river channel below the reservoir.

CONCEPTUAL PLAN, PROFILE AND TYPICAL CROSS SECTION

The proposed mitigation plan for the riparian habitat mitigation area focuses on functional restoration and enhancement of approximately three miles of former North Sulphur River channel. The mitigation plan includes restoration of flows into and through this abandoned river channel, including reconstruction of channel reaches formerly filled by siltation and agricultural activities. Figure 1 illustrates the principal elements of this proposed channel restoration project. Attachments 1 and 2 illustrate the conceptual plan and profiles of the proposed riparian habitat area.

The proposed riparian habitat mitigation area will be designed with an associated restored floodplain to enhance the overall hydrologic functions of the restored river channel segment. As shown in the typical cross section on Figure 2, the complex channel design will provide enhanced hydrology to support a diversity of habitat zones and improved water quality within the North Sulphur River restoration reach and downstream.

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[2] Mussetter Engineering, Inc., *Geomorphic and Sedimentation Evaluation of North Sulphur River and Tributaries for the Lake Ralph Hall Project*, October, 2006

[3] Alan Plummer Associates, Inc, *Lake Ralph Hall Habitat Assessment*, December, 2006

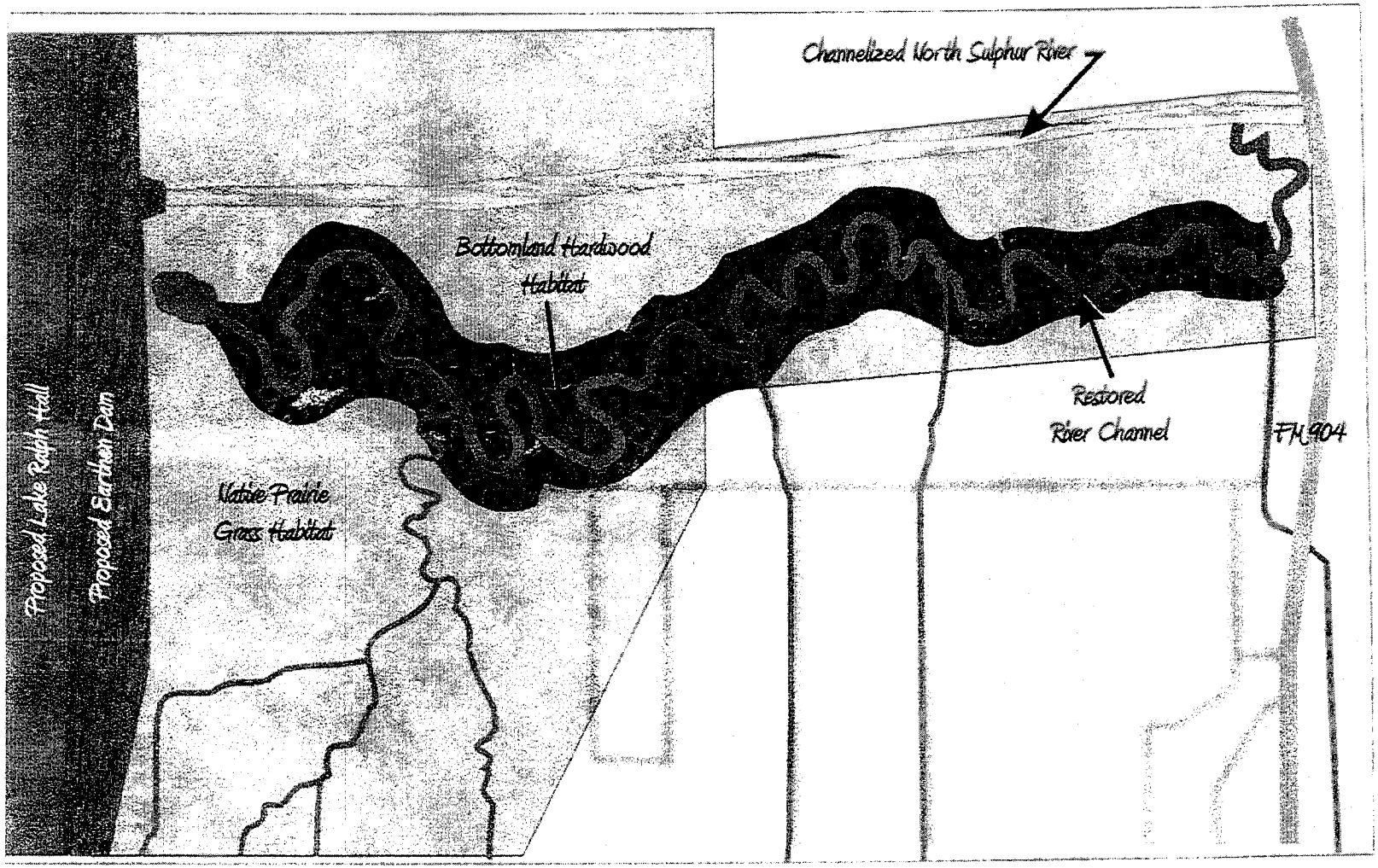

FIGURE 1
RIPARIAN HABITAT CONCEPTUAL PLAN

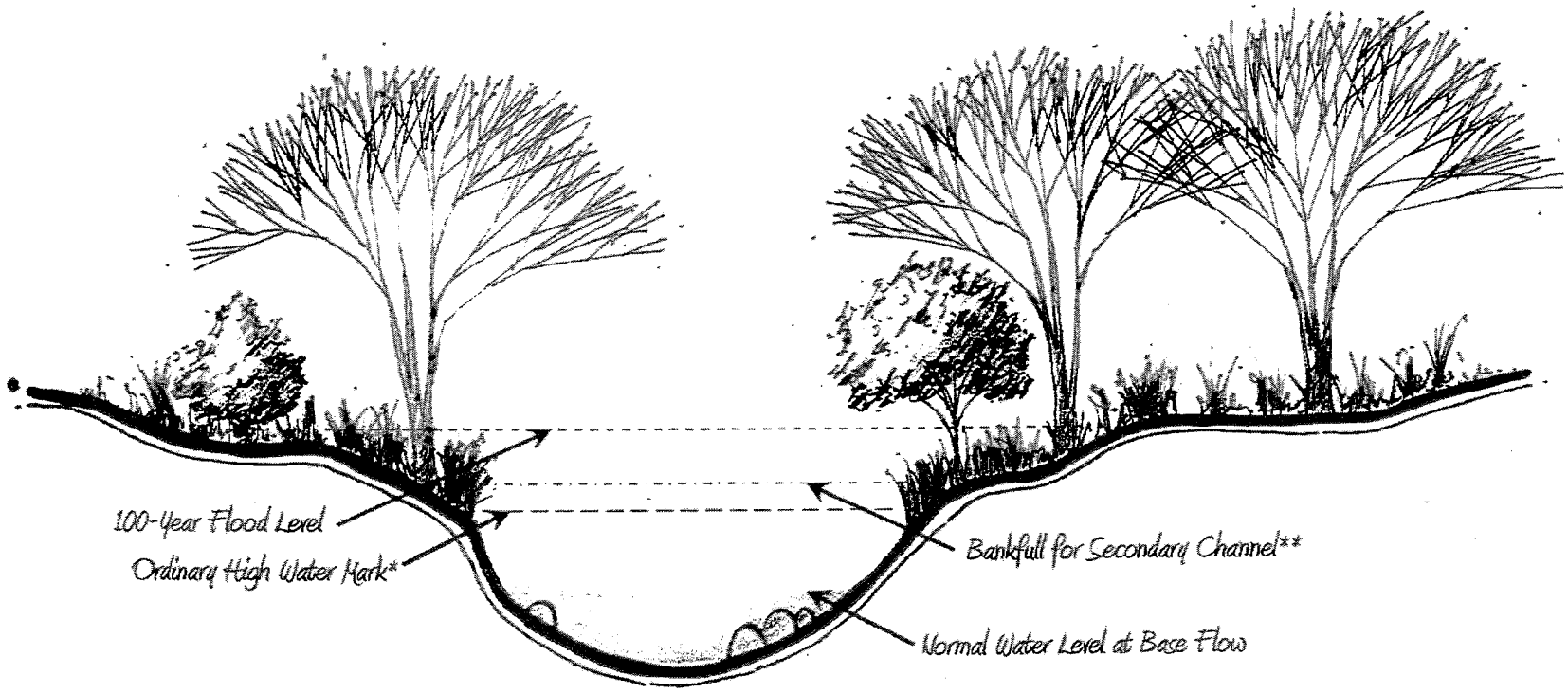

FIGURE 2
RIPARIAN HABITAT AREA
COMPLEX CHANNEL CONCEPTUAL CROSS

Native trees and shrubs will be planted to restore and enhance a contiguous woody riparian zone along the restored channel and the lower reaches of its tributaries. This enhanced woody riparian buffer zone will serve to improve habitat quality as well as water quality within the restored channel. In keeping with the natural vegetation of the Blackland Prairie Ecoregion, native prairie vegetation will be planted outside the woody riparian buffer zone to reestablish the original plant community characteristic of this region.

DESCRIPTION OF THE RIPARIAN HABITAT OPERATION

The restored meandering channel will include a diversity of habitat, developed through the recreation and enhancement of riffle zones, runs, and pools of various depths. The surface area of the various water features included within this restored channel segment is approximately 13 acres. Inflows to the restored channel segment will be from both natural runoff from the tributary watersheds and releases of stored water from Lake Ralph Hall, as needed. The primary pools will be maintained full at all times with releases from Lake Ralph Hall; consequently, none of the natural runoff will be stored in the pools-they will simply pass through the restored channel including the pools and be discharged into the existing channel of the North Sulphur River. Outflow structures will be constructed at two locations where the primary tributary channels currently discharge into the existing eroded channel of the North Sulphur River. These structures will serve the dual purpose of controlling stormwater flows that must be discharged from the riparian mitigation area into the existing North Sulphur River channel, with minimal erosive energy, and creating perennial pools that can be sustained within the restored segment of the former North Sulphur River channel. A water recycling system that will pump water from the downstream pool through a pipe back to the upper reach of the restored channel segment will be employed as necessary to maintain the dissolved oxygen levels and to create a flow through the riffle areas during critical habitat spawning periods.

DESCRIPTION OF THE DESIGN PARAMETERS FOR THE RESTORED SYSTEM

The riparian habitat area design is based on the vegetative and aquatic species the habitat is intended to support. The species proposed for the mitigation planting zones of the riparian habitat area have been selected to reflect the native bottomland hardwood forests historically found along major rivers and creeks in the Blackland Prairie Ecoregion and the tall prairie grasses and legumes representative of the native prairies. Several aquatic plant species will also be used in the creation of the restored river channel to provide slope stabilization and erosion control, covers for native fish species and aquatic invertebrates, and forage for waterfowl and wildlife. The proposed planting materials for the woody riparian zone, native prairie zone, and aquatic zone are listed in Tables 1, 2, and 3, respectively.

TABLE 1
PROPOSED WOODY VEGETATION FOR RIPARIAN AREAS

Common Name		Scientific Name	Planting Density (#/acre)
Canopy Trees	Bur Oak	*Quercus macrocarpa*	60/acre
	Water Oak	*Quercus nigra*	40/acre
	Willow Oak	*Quercus phellos*	40/acre
	Pecan	*Carya illinoensis*	60/acre
	Black Walnut	*Juglans nigra*	40/acre
	Shumard Oak	*Quercus shumardii*	55/acre
	Chinkapin Oak	*Quercus muhlenbergii*	54/acre
Small Trees and Shrubs	Hawthorn	*Crataegus spp.**	5/acre
	Coralberry	*Symphoricarpos orbiculatus*	16/acre
	Eastern Redbud	*Cercis canadensis*	6/acre
	Mexican Plum or Chickasaw Plum	*Prunus mexicana* *Prunus angustifolia*	10/acre
	Rough-leaf Dogwood	*Cornus drummondii*	10/acre
	Texas Persimmon	*Diospyros texana*	10/acre
	Deciduous Holly	*Ilex decidua*	10/acre
	American Beautyberry	*Callicarpa americana*	10/acre
	Swamp Privet	*Forestiera acuminata*	10/acre

***Appropriate *Crataegus* species include Littlehip Hawthorn (*C. spathulata*), Green Hawthorn (*C. viridis*), Big Hawthorn (*C. berberifolia*), Cockspur Hawthorn (*C. crus-gallii*), Reverchon Hawthorn (*C. reverchonii*), or Downy Hawthorn (*C. mollis*).**

TABLE 2
PROPOSED HERBACEOUS SEED MIXTURE FOR NATIVE PRAIRIE RESTORATION AREAS

Common Name		Scientific Name	Seeding Rate (10 lbs/acre)
Grasses	Little Bluestem	*Schizacyrium scoparium*	15%
	Indiangrass	*Sorghastrum nutans*	15%
	Lowland Switchgrass	*Panicum virgatum*	15%
	Big Bluestem	*Andropogon gerardii*	10%
	Sideoats Grama	*Bouteloua curtipendula*	10%
	Prairie Wildrye	*Elymus canadensis*	10%
Legumes	Illinois Bundleflower	*Desmanthus illinoensis*	20%
	Partridge Pea	*Chamaecrista fasciculata*	5%

TABLE 3
PROPOSED AQUATIC VEGETATION FOR STREAM/WETLAND AREAS

Common Name	Scientific Name	Planting Density
Delta Arrowhead	*Sagittaria platyphylla*	4' centers
Bull-tongue Arrowhead	*Sagittaria falcata*	4' centers
Burhead	*Echinodorus rostratus*	3' centers
Crowfoot Sedge	*Carex crus-corvi*	3' centers
Cherokee Sedge	*Carex cherokeensis*	3' centers
Emory Sedge	*Carex emoryi*	3' centers
Large-spike Spikerush	*Eleocharis palustris*	3' centers
Compressed Spikerush	*Eleocharis compressa*	3' centers
Three-square Bulrush	*Schoenoplectus pungens*	4' centers
Hard-stem Bulrush	*Schoenoplectus acutus*	4' centers
Softstem Bulrush	*Schoenoplectus tabernaemontani*	4' centers
Soft Rush	*Juncus effusus*	3' centers
Swamp Smartweed	*Polygonum hydropiperoides*	3' centers or seed
Pennsylvania (Pink) Smartweed	*Polygonum pensylvanicum*	3' centers or seed
Waterwillow	*Justicia americana*	3' centers

Restoration design of the former North Sulphur River segment includes elements to provide essential instream habitat requirements for a variety of fish, amphibians, and reptiles. Habitat Suitability Index Models from the U.S. Fish and Wildlife Service's Habitat Evaluation Procedure (HEP) for representative species that would have historically been typical in the North Sulphur River prior to its channelization were used to develop restoration design criteria. The aquatic species used are listed in Table 4. Design criteria for habitat elements important for the channel restoration include turbidity, percent pools, depth of pools, dissolved oxygen, summer temperature, stream gradient, substrate, average velocity, percent cover, spawning season, spawning habitat, and average stream width.

TABLE 4
REPRESENTATIVE AQUATIC SPECIES

	Common Name	Scientific Name
Fish	Slough Darter	*Etheostoma gracile*
	Warmouth	*Lepomis glulosus*
	Green Sunfish	*Lepomis cyanellus*
	Bluegill	*Lepomis macrocirus*
	Gizzard Shad	*Dorosoma cepedianum*
	Creek Chub	*Semotilus atromaculatus*
	Channel Catfish	*Ictalurus punctatus*
Amphibians	Bullfrog	*Rana catesbeiana*
Reptiles	Slider Turtle	*Pseudemys scripta*
	Snapping Turtle	*Chelydra serpentine*

HYDROLOGIC/HYDRAULIC ASPECTS OF RESTORED RIPARIAN HABITAT AREA

As discussed above, the proposed riparian habitat mitigation area is to be designed and operated to function as close as possible to a bottomland hardwood system characteristic of the natural North Sulphur River before it was modified and eroded to the state it is in today. This means that hydrologically this system should be sustained with a base flow regime and also be subject to periodic flood flows from its contributing watershed. Both of these flow conditions have been accounted for and accommodated in the proposed design of the riparian habitat mitigation area.

Hydrology of the Natural Inflows to the Riparian Habitat System

It is proposed that base flows along the length of the proposed riparian habitat mitigation area be provided intermittently by a combination of natural inflows resulting from stormwater runoff from the contributing drainage area that flows into the riparian habitat as shown on Figure 3, releases of stored water from Lake Ralph Hall, and recirculation water pumped from the lower-most pool of the restored channel segment back to the headwaters of the segment. Natural inflows from stormwater runoff will be the primary source of flows through the riparian habitat. Since these inflows occur only during and immediately following rainfall events, the system will function with intermittent flows between perennial pools. When natural inflows are insufficient to maintain dissolved oxygen levels or velocities through riffle areas during critical spawning

periods, the recirculation water system will operate, and/or stored water will be delivered from Lake Ralph Hall, as needed to assure movement of water through the restored channel. Additionally, stored water from Lake Ralph Hall will be released as necessary to maintain the primary pools of the restored riparian habitat area full at all times. The flow rate of the recirculation system has been established to assure appropriate velocities through the riffle reaches of the restored channel segment that will be adequate for supporting the life cycle functions of aquatic species. For this purpose, velocities in the range of 5 to 10 centimeters per second, or about 0.15 to 0.35 feet per second, have been used with a typical riffle cross section that is trapezoidal in shape with an effective average width of 6 feet and a nominal depth of 0.5 feet. These velocities and channel properties result in a required recirculation flow rate on the order of 200 to 500 gallons per minute.

An electrical pump system capable of providing this range of discharge will be installed in the lower-most pool of the restored channel segment. A pipe approximately 7,500 feet in length with a diameter on the order of 4 to 6 inches will be connected to the recirculation pump and installed along the northern floodplain of the restored channel segment to its headwaters. An outfall for this pipe will be constructed within the restored channel segment at its headwaters just downstream of the toe of the dam for Lake Ralph Hall. Water will be withdrawn from the lower-most pool of the restored channel segment and pumped to and discharged into the headwaters of the segment as needed to maintain appropriate dissolved oxygen levels and habitat flow requirements along the entire length of the segment.

Flood Flow Evaluations

The drainage area that contributes runoff to the proposed restored segment of the North Sulphur River encompasses a total of approximately 2,000 acres and is delineated on the aerial map in Figure 3. As shown, it is comprised of several tributary watersheds, each of which is characterized by different land use, vegetation and soil conditions. For purposes of evaluating runoff quantities and flood flows from this drainage area, the Corps of Engineers' HEC-HMS rainfall-runoff model has been applied, with each of the tributary watersheds identified on the map in Figure 3 represented as a separate watershed unit. Key hydrologic features and parameters for these tributary watersheds as used in the runoff modeling are summarized in Table 5.

For describing infiltration and retention losses, the Soil Conservation Service's curve number procedure has been used in the runoff modeling, taking into consideration the specific soil types and land use conditions within the overall drainage area. A value of 79 has been used for the overall curve number value.

FIGURE 3
DRAINAGE AREA AND WATERSHEDS CONTRIBUTING RUNOFF TO PROPOSED RIPARIAN HABITAT MITIGATION AREA

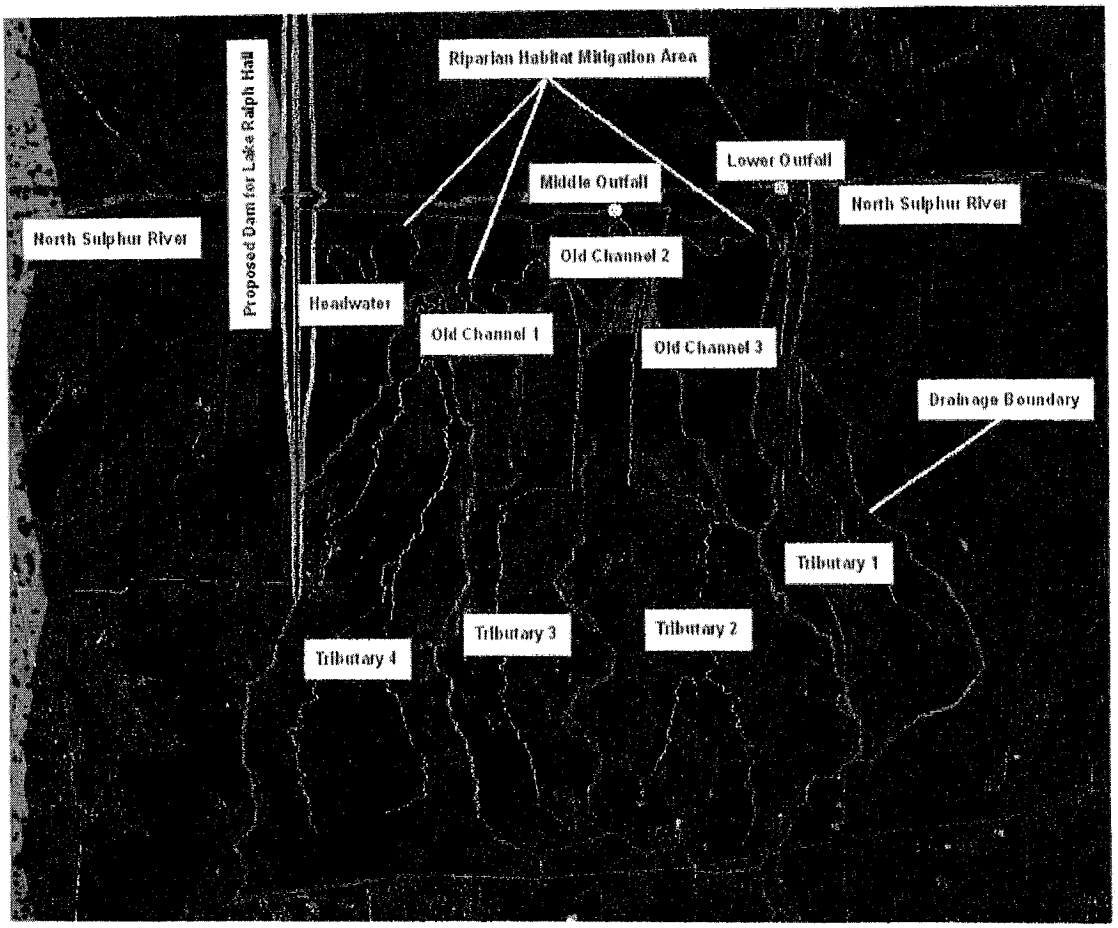

TABLE 5
RIPARIAN HABITAT AREA WATERSHED CHARACTERISTICS

WATERSHED NAME	DRAINAGE AREA (acres)	TIME OF CONCENTRATION (hours)
Tributary 1	243	0.80
Tributary 2	512	1.07
Tributary 3	307	0.95
Tributary 4	512	1.34
Headwater	141	1.46
Old Channel 1	102	0.53
Old Channel 2	38	0.04
Old Channel 3	141	0.25

Results from operating the HEC-HMS rainfall-runoff model for different storm events are summarized in Table 6 in terms of peak flood flows for each of the individual watersheds. All of these peak flood flow values reflect a three-hour storm duration, which is considered to be appropriate for the size and time of concentration of the overall drainage area. The peak flood flows from the entire drainage area that are discharged into the existing channel of the North Sulphur River at the two primary tributary outflow points are indicated at the bottom of the table. These outflow points are shown on the aerial map of the restored riparian habitat area in Figure 3, and for purposes of simulating the outflows at these points, several iterations of model runs were made to develop preliminary designs for these outfall structures. The resulting structures are basically overflow weirs (Ogee crest spillways) with the dimensions and elevations noted in Table 7. The crest elevations correspond to the normal water levels of the two primary pools along the impounded reaches of the riparian habitat mitigation area that are immediately upstream of and associated with these structures.

TABLE 6
PEAK FLOOD FLOWS FOR WATERSHEDS UPSTREAM OF PROPOSED RIPARIAN HABITAT MITIGATION AREA

WATERSHED	PEAK FLOOD FLOW, CFS					
	2-Year Flood	5-Year Flood	10-Year Flood	25-Year Flood	50-Year Flood	100-Year Flood
Tributary 1	120	239	322	416	505	591
Tributary 2	210	420	572	744	885	1,038
Tributary 3	136	272	369	478	573	671
Tributary 4	180	362	496	647	766	899
Headwater	47	94	128	168	198	233
Old Channel 1	64	124	165	212	270	316
Old Channel 2	34	63	81	101	176	203
Old Channel 3	116	216	282	355	540	625
Middle Outfall	111	187	373	620	791	953
Lower Outfall	148	229	312	372	414	462

TABLE 7
DIMENSIONS AND ELEVATIONS OF OUTFALL STRUCTURES

OUTFALL STRUCTURE NAME	CREST ELEVATION (feet msl)	CREST LENGTH (feet)	APPROXIMATE HEIGHT (feet)
Middle Structure	490.5	25	30
Lower Structure	488.0	8	22

Estimate of the Quantity of Stored Water to be Released from Lake Ralph Hall to Support the Riparian Habitat

It is anticipated that losses of water will occur from the various reaches of the restored riparian habitat area due to evaporation and evapotranspiration. Water losses due to evaporation and evapotranspiration will be made up with stored water from Lake Ralph Hall delivered to the headwaters of the restored channel segment through a pipe from the reservoir. It is possible that a pump may have to be installed at the reservoir to provide the required water deliveries as they are needed, particularly during hot, dry periods of the summer. Sufficient water will be released to maintain the primary pools of the riparian habitat mitigation area full at all times at the crest elevations of the structures as specified in Table 7.

To quantify the potential requirements for makeup water from Lake Ralph Hall to offset the evaporative losses associated with the restored riparian habitat area, the TCEQ's water availability model (WAM) for the Sulphur River Basin has been applied, with appropriate modifications to represent the proposed operation of Lake Ralph Hall and the proposed restored riparian habitat area. The representation of Lake Ralph Hall in the WAM was identical to that previously provided to TCEQ and described in the report prepared by R. J. Brandes Company, titled "Hydrologic and Hydraulic Studies of Lake Ralph Hall" and dated April 27, 2004. For representing the restored riparian habitat area, a new "reservoir" with a normal-pool surface area of 13 acres (which is the estimated water surface area of the mitigation area) was created in the WAM and assigned a contributing drainage area equal to 3.12 square miles (which is the estimated size of the total drainage area that contributes runoff to the proposed mitigation area). The historical monthly net evaporation rates used for Lake Ralph Hall in the WAM were also assigned to the new reservoir representing the restored riparian habitat area. The Lyons-based instream flow requirements previously included in the WAM for Lake Ralph Hall were deactivated, and the WAM was restructured to require stored water from Lake Ralph Hall to be used every month of the simulation period to maintain the restored riparian habitat "reservoir" in a full condition at all times. This approach for representing the restored riparian habitat area in the WAM simulation ensures that the stormwater inflows from the drainage area of the restored channel segment are not ever used to refill the restored riparian habitat "reservoir" since the "reservoir" is maintained full at all times with water from Lake Ralph Hall. Results from this WAM simulation in terms of the monthly requirements for makeup water from Lake Ralph Hall needed to offset evaporation losses and to maintain the primary pools of the restored riparian habitat area in a full condition are summarized in Table 8. As shown, the maximum amount of stored reservoir water ever needed during a month is indicated to be approximately 11.2 acre-feet

(during July), and that as much as about 50 acre-feet of reservoir water could be needed in a calendar year[4]. Assuming that the maximum monthly demand for stored water from Lake Ralph Hall (11.2 acre-feet) would occur uniformly over the period of a month (which is a reasonable assumption for a month with no rainfall), the delivery capacity required for releases from Lake Ralph Hall would be on the order of 80 gallons per minute.

For estimating the total water lost from a water body due to both evaporation and water uptake by aquatic plants, a rule of thumb sometimes used is to simply double the estimated evaporation loss. Applying this approach, the total requirement for makeup water from Lake Ralph Hall storage during the maximum evaporation month would be approximately 22 acre-feet, or an equivalent continuous delivery capacity of about 160 gallons per minute. Referring to the simulated evaporation losses in Table 8, the total annual amount of makeup water that might be needed from Lake Ralph Hall to offset the combined evaporation and evapotranspiration losses from the riparian habitat mitigation area would be on the order of 100 acre-feet per year, i.e., approximately two times 49.7 acre-feet. Sufficient delivery capacity will be installed for releasing adequate makeup water from Lake Ralph Hall to maintain the primary water features of the restored riparian habitat area in a full condition at all times.

[4] It should be noted that this annual quantity of approximately 50 acre-feet is the maximum amount of Lake Ralph Hall water needed to offset evaporation losses from the restored riparian habitat area in any single year as simulated with the WAM. This quantity does not represent the corresponding effect on the firm annual yield of Lake Ralph Hall. The firm annual yield of the reservoir is based on the entire critical drought period for Lake Ralph Hall, which according to the WAM simulation, extends over a 16-year period from June 1942 through May 1958, and the average amount of water needed from Lake Ralph Hall for offsetting evaporation losses from the restored riparian habitat area during this critical drought period is approximately 32 acre-feet/year (again based on the WAM simulation).

TABLE 8
LAKE RALPH HALL WATER NEEDED TO MAINTAIN WATER FEATURES FULL IN RIPARIAN HABITAT MITIGATION AREA (ACRE-FEET)
(As Simulated with the TCEQ Sulphur River Basin Water Availability Model)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1940	0.4	0.0	2.8	0.0	0.0	3.3	3.7	7.2	6.8	3.6	0.0	0.0	27.8
1941	1.8	0.0	2.3	0.0	3.9	0.0	2.8	4.7	5.8	0.0	2.0	0.0	23.3
1942	1.2	1.7	2.3	0.0	1.6	1.8	8.1	4.2	0.5	1.2	1.5	0.0	24.1
1943	2.2	2.1	0.0	3.1	0.3	0.9	8.3	10.3	4.3	3.2	2.8	0.0	37.5
1944	0.0	0.0	2.0	2.1	0.0	3.7	5.8	5.0	5.2	4.0	0.0	0.0	27.8
1945	0.0	0.0	0.0	2.5	3.1	0.0	2.1	5.3	1.7	2.0	2.4	1.7	20.8
1946	0.0	0.0	0.1	0.9	0.0	3.2	7.9	3.7	2.5	3.5	0.0	0.0	21.8
1947	0.3	2.5	0.3	0.0	2.1	2.8	7.9	3.9	5.2	3.0	0.6	0.0	28.6
1948	0.0	0.0	1.6	3.9	0.0	4.6	4.5	8.2	7.8	2.6	3.5	0.7	37.4
1949	0.0	0.0	1.0	0.0	1.6	0.9	3.7	3.3	3.5	0.0	3.4	0.0	17.4
1950	1.1	3.9	3.1	1.1	0.8	3.4	0.0	0.7	2.8	5.0	4.3	2.6	28.8
1951	0.8	0.0	3.2	2.6	2.2	3.3	5.8	9.2	2.5	2.0	1.2	2.1	34.9
1952	1.7	1.1	0.5	0.9	2.2	7.6	6.5	10.1	7.3	7.3	0.0	0.0	45.2
1953	1.9	0.8	0.4	1.9	2.9	9.1	3.4	5.8	4.8	1.6	0.0	2.0	34.6
1954	0.0	4.2	4.4	1.4	0.8	4.9	9.5	8.6	4.8	0.0	2.4	0.0	41.0
1955	0.1	0.0	2.4	2.1	0.2	5.0	6.3	5.8	2.3	5.1	4.4	2.0	35.7
1956	0.4	0.1	4.3	3.0	3.7	7.2	8.8	10.5	8.7	3.0	0.0	0.0	49.7
1957	0.0	0.0	0.0	0.0	0.0	6.0	7.1	6.5	0.0	0.9	0.0	0.5	21.0
1958	0.0	0.9	0.0	0.7	2.6	4.9	4.8	4.8	0.7	2.2	0.4	0.3	22.3
1959	0.7	0.4	2.9	2.6	2.1	1.2	1.7	4.8	3.9	0.0	1.1	0.6	22.0
1960	0.1	0.3	2.0	2.9	2.8	5.2	2.5	3.2	2.2	2.3	1.7	0.5	25.7
1961	0.8	0.0	1.7	4.9	1.3	0.2	2.9	5.6	1.5	1.6	0.0	0.0	20.5
1962	0.4	1.2	1.3	0.5	4.9	0.0	3.3	5.3	0.0	1.9	1.6	0.8	21.2
1963	1.7	2.0	3.2	1.0	1.0	5.6	4.1	7.7	5.3	6.5	2.2	0.1	40.4
1964	0.4	0.5	0.0	1.0	0.4	4.8	9.1	2.7	0.0	3.8	0.0	1.0	23.7
1965	0.4	0.9	2.0	3.7	0.0	2.2	7.4	6.4	0.2	3.0	0.1	0.6	26.9
1966	0.0	0.0	3.2	3.7	3.6	4.3	5.5	0.6	1.1	3.6	2.9	0.0	28.5
1967	2.3	1.6	3.0	0.2	0.6	5.8	4.0	7.4	0.0	2.7	1.7	1.1	30.4
1968	0.0	1.2	1.3	2.2	0.9	3.6	4.0	6.1	0.0	2.9	0.0	1.9	24.1
1969	1.7	0.1	1.0	1.7	0.0	4.2	8.7	5.3	2.2	0.0	2.2	0.0	27.1
1970	0.6	0.3	2.9	1.1	1.8	3.9	6.9	5.7	0.0	2.2	3.1	1.5	30.0
1971	1.3	1.2	4.6	3.7	1.1	6.9	4.8	1.3	1.5	3.5	1.4	0.0	31.3
1972	1.1	2.5	3.5	1.8	3.0	5.5	6.6	4.6	1.4	0.0	0.0	0.8	30.8
1973	0.0	0.3	2.3	0.0	1.5	0.0	2.4	6.4	0.0	1.8	3.2	1.8	19.7
1974	0.9	2.3	3.2	1.7	3.3	4.3	7.2	0.4	0.0	0.0	1.6	0.0	24.9
1975	0.5	2.7	0.9	2.9	0.0	2.8	4.1	4.6	3.1	4.9	1.0	0.1	27.6
1976	3.0	2.7	0.6	0.0	0.0	3.9	5.1	5.5	2.3	0.0	1.8	1.6	26.5
1977	0.0	1.6	0.0	1.8	3.3	4.6	7.3	2.3	3.6	4.4	1.4	2.8	33.1
1978	0.0	0.0	0.9	3.3	0.0	5.4	9.2	6.2	3.8	5.3	0.0	2.1	36.2
1979	0.2	0.0	0.5	1.9	0.0	5.9	3.6	3.0	3.8	2.7	2.4	0.5	24.5
1980	0.3	1.7	2.4	3.5	1.0	5.7	10.3	9.9	0.0	1.5	1.3	1.3	38.9
1981	1.8	1.1	1.0	2.1	0.0	5.0	5.4	5.8	3.4	0.0	0.6	2.8	29.0
1982	0.0	0.4	2.6	2.0	0.0	0.4	4.4	4.9	5.2	1.6	0.0	0.0	21.5
1983	0.5	1.5	1.9	3.0	0.0	1.2	5.5	4.8	5.7	0.2	0.1	0.0	24.4
1984	0.2	2.2	1.0	3.6	2.8	4.4	6.1	5.6	5.2	0.0	1.1	0.0	32.2
1985	0.4	0.0	1.7	0.1	2.2	3.1	5.2	8.2	4.2	0.0	0.1	1.6	26.8
1986	2.6	0.3	3.4	0.0	0.0	0.0	8.1	6.1	2.0	0.0	0.1	0.0	22.6
1987	0.8	0.0	2.3	5.2	0.0	0.9	4.8	6.5	1.8	3.4	0.6	0.0	26.3
1988	1.9	1.4	1.4	3.3	4.8	4.3	3.3	5.8	0.0	1.3	0.0	0.0	27.5
1989	0.0	0.9	0.6	4.5	0.0	1.0	1.7	5.0	1.6	3.5	3.1	2.4	24.3
1990	0.0	0.3	0.0	0.0	0.3	5.1	4.1	4.7	2.4	1.6	0.0	0.0	18.5
1991	1.3	1.4	3.0	0.9	0.2	2.4	6.0	3.8	1.9	0.0	2.1	1.7	24.7
1992	2.3	0.9	3.9	2.4	0.6	1.1	3.0	4.8	0.2	4.0	0.0	0.6	23.8
1993	1.9	0.6	2.0	2.0	0.8	2.3	11.2	7.5	1.8	0.8	1.9	2.9	35.7
1994	1.4	1.0	4.4	1.2	1.3	5.4	0.6	4.0	2.8	0.0	0.0	1.9	24.0
1995	2.5	0.3	0.0	0.6	0.0	3.5	4.1	6.4	0.0	4.8	2.9	0.0	25.1
1996	0.8	5.2	1.8	2.7	4.6	4.0	2.0	0.0	0.1	2.1	0.0	0.0	23.3
AVG	0.8	1.0	1.8	1.9	1.4	3.6	5.3	5.4	2.7	2.2	1.3	0.8	28.1
MAX	3.0	5.2	4.6	5.2	4.9	9.1	11.2	10.5	8.7	7.3	4.4	2.9	49.7
MIN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4