MEETING SUMMARY

Public Meeting Regarding the Lake Sam Rayburn Total Maximum Daily Load (TMDL) Water Quality Project

Time and Location: Thursday, May 15, 2003, 6:30 - 9:15 p.m.; Rayburn Hall, Sam Rayburn, Texas

INTRODUCTION AND GROUND RULES

The purpose of the meeting was to inform the public of the status of work on the Sam Rayburn Total Maximum Daily Load (TMDL) project for Aluminum, Dissolved Oxygen, and pH, and to provide them with an opportunity to give input about the data collected and about what happens next. The meeting was facilitated by Diane Sheridan. Approximately 75-80 people attended (list attached).

Ron Stein of the Texas Commission on Environmental Quality (TCEQ) TMDL Team introduced the TMDL process. Sean Covington of Tetra Tech, Inc. summarized the historical data review process and its outcomes. Ron Stein then reviewed the current status of the Clean Water Act Section 303(d) 2000 and 2002 listings for Sam Rayburn Reservoir. He listed the investigations and sampling being conducted at Sam Rayburn over 2003 and 2004. Ron Stein then explained that a TMDL will be performed if sampling confirms an impairment of specific water quality standards. If that occurs, the agency will form a stakeholder group. More details of the individual presentations are given later in this summary.

The ground rules for the meeting were as follows.

- Everyone's ideas are important--share the time.
- Those who wished to speak twice were asked to wait until others had spoken.
- Stick to the topic.
- Attendees were advised that the agenda was the Sam Rayburn TMDL Project. They were asked to hold comments about other subjects until after the meeting.
- Attendees were invited to submit written comments to the facilitator. Ron Stein will see that they are passed along to the appropriate contact person.
- Be candid but kind.
- Address all comments to the group at large.

Attendees were informed that a meeting summary would be posted on the TCEQ Web site, as would the presentations. Ron Stein said the full Tetra Tech report on historic data will be posted after it has been reviewed. It is currently in draft form. The TCEQ Web site address for information about the Sam Rayburn TMDL is **www.tceq.state.tx.us/water/quality/tmdl/rayburn.** Ron Stein can be contacted at 512/239-4507 or **rstein@tceq.state.tx.us**

INTRODUCTION TO THE TMDL PROCESS

Ron Stein introduced attendees to Total Maximum Daily Loads and various uses of the term. His presentation is attached. The purpose of a TMDL is to restore water quality in Texas surface waters. Under Section 303(d) of the federal Clean Water Act, the state identifies segments of water bodies not meeting water quality standards for their designated use(s). The

assessment is reported in the Water Quality Inventory and 303(d) List. The TMDL process generally consists of the following steps.

1. Historical data are collected and analyzed for a comprehensive survey of existing data.
2. Additional sampling may be required to confirm the impairment.
3. If the impairment is confirmed, a TMDL study is conducted.
4. A TMDL is calculated and then allocated to point and nonpoint sources, allowing a margin for safety.
5. An action plan is then developed and implemented to bring about the changes necessary to restore water quality. The action plan may include controls, such as permit changes. The plan also identifies standards or other methods for measuring outcomes to determine success. It may also include voluntary measures, such as best management practices.
6. Stakeholders and all of the residents and businesses in the watershed then implement the plan. Reasonable assurance is needed that voluntary nonpoint source management measures will be carried out.

The water quality inventory categorizes water body segments. Surface water bodies that are not meeting water quality standards are placed in Category 5, which has three subcategories. Category 5a means the water body is impaired and a TMDL will be conducted. Category 5b means the water quality standard will be examined by the TCEQ Water Quality Standards staff. Category 5c means that data for the assessment are incomplete, so the TCEQ Surface Water Quality Monitoring Group needs to obtain additional data to confirm whether there is indeed impairment.

Questions, Comments, and Suggestions about TMDL Process

TMDL Timelines: Questions were asked about the general timeline for a TMDL, which Ron Stein said might be 4-6 years. The state assesses water bodies every two years, based on data from the previous five years. Time is then needed to confirm the impairment and develop the TMDL and action plan. Frustration was expressed that the lake could become more impaired during the time it takes to identify, confirm, and determine how to fix the impairment. Questioning revealed that the lake was first placed on the impaired list in 1998, based on testing that occurred before then. In 1998, Texas released its first 303(d) list.

Number of Samples: Someone asked how many measurements are taken before a water body is designated as impaired. Sean Covington replied that different numbers apply to different standards; for example, ten 24-hour samples are required to confirm a dissolved oxygen impairment.

Sampling Sites: Asked how many sampling sites there are, and whether there are areas of the lake that have not been sampled, Sean Covington said his presentation (attached) shows the sampling sites for the data collected in the historical review.

Designated Uses and Standards: One of Sam Rayburn's designated uses is aquatic use, which is considered the highest of its uses. The designation applies to the whole lake. Asked if Segment 0615 is considered part of the lake, Ron Stein said it is. Asked if standards have

changed since the 1970s, Ron Stein said he could not compare standards that far back but is not aware of any more recent changes in water quality standards. Concern was expressed that standards might be lowered in the future.

HISTORICAL DATA REVIEW

Sean Covington of Tetra Tech, the contractor assisting TCEQ with this TMDL, reviewed the search for historical data, what was collected, and the conclusions drawn from data analysis. His presentation is attached. It summarizes what is in the report Tetra Tech submitted to TCEQ, which filled a large binder. Ron Stein said the full report would be posted on the Web site once the agency has reviewed it.

Sean Covington's slides show the watershed draining into Sam Rayburn Reservoir. Land from ten counties drains into the lake, though the portion from Newton County is very small. A satellite image of different views of the land shows that it is mostly forest. With 750 miles of shoreline, there is a lot of land contacting the lake, so the potential for runoff is great. The lake was built in 1954 by the Army Corps of Engineers for flood control and hydroelectric power. As a result, the water level rises and falls routinely.

There are a variety of designated uses for two segments of Sam Rayburn Reservoir involved in this TMDL: Segments 0610 and 0615. Segment 0610 was listed as impaired for dissolved oxygen (DO), aluminum, and pH on the 2000 303(d) list, but pH was removed as an impairment in the 2002 list based on the last 5 years of available data. The pH had been in the 6.5 – 9.0 range. No impairments were shown for Segment 0615 in the 2000 list but it was listed for depressed oxygen in 2002. The listing includes feeders and tributaries, not just the reservoir itself. Not all of the tributaries are currently classified as water body segments but the state could choose to classify them as it learns more. Bacteria were the primary impairment in the tributaries except for Attoyac Bayou (segment 0612), which was listed for cadmium and lead in 2000 but not in 2002.

The water quality standards applicable to each water body segment assessed were presented. The TCEQ used the listed standards for 2000 but not all have been formally adopted. Sean Covington pointed to dissolved oxygen as an important standard on which to focus. There are three standards for dissolved oxygen (DO). Sean Covington pointed out that DO levels can be influenced by nutrient levels and presented the TCEQ screening levels for nutrients and EPA's reference criteria. There is no dioxin standard applicable to aquatic life use.

The historical data review included evaluating existing data on water quality and surface elevation for the reservoir as well as water quality and flow data for its tributaries. Water quality data from 1990 to the present were compiled. Data were taken from two sources: Texas Review and Comment System (TRACS) and EPA's STORET database. Other data are available but the budget was not sufficient to compile and analyze all data. Tetra Tech focused on the TRACS data because the state relies on it when assessing water quality. It has also been through quality assurance and quality control. The EPA's database has not necessarily had that review.

Texas has 30 years of TRACS data. Because there were so many data, the historical review focused on the last ten years. In some cases, additional information was reviewed; for example, a slide showing surface elevations of the reservoir covers 1969-2003. It shows

several periods of extended dips, meaning years of drought. The presentation included a list of water quality parameters for which data were analyzed. The available measurements varied by the parameter but included the mean, the minimum, the maximum, the number of samples, the number of stations, and the number of parameters above current standards or criteria. Sean Covington clarified that water quality *standards* are adopted by the state agency (TCEQ), approved by the EPA, and they are enforceable. Water quality *criteria* are set by the US Environmental Protection Agency. They serve as benchmarks against which to assess water quality, but they are not enforceable.

The TCEQ TRACS system includes 45 monitoring stations on Segment 0610 and 17 on Segment 0615. These are the stations within the segments the state identified as impaired. Some stations are in the arms of the reservoir. There are 14 EPA STORET monitoring stations on Segment 0610 but none on 0615. The two systems cover the lake pretty well. The number of samples taken at each station varies, so some locations give a more complete picture than others.

Covington summarized what was learned about impairments to Segments 0610 and 0615:

- Dissolved oxygen is used as an indictor of overall surface water quality because adequate oxygen is necessary for all forms of life. If DO is a problem, there are probably other problems. Below 3.0 DO level, fish begin having problems. If DO stays low, some aquatic fauna may die off. Nutrients from a variety of sources can lead to growth of plants or algae and affect oxygen levels. DO is also depleted by bacteria as they break down dead aquatic plants and other organic material. Dissolved oxygen stratifies during the summer months. The lower portion of the water body is the hypolimnion. The middle portion is the metalimnion, and the upper layer is the epilimnion. Covington said the diagram of a summer DO profile for the lake is typical of what is found in southern reservoirs. Comparing dissolved oxygen data to two DO standards, few exceedances of both criteria were found on Ayish Bayou but 19 exceedances of the minimum were found in Segment 0615. Very low DO levels were observed in both Attoyac and Ayish Bayous in August 1996 during a time of long drought, which was followed by rain that washed runoff into the lake.

- When nutrients, transparency, and chlorophyll *a* were compared to the Texas screening levels and EPA reference criteria, both Segments 0610 and 0615 had higher levels. Sean Covington said this suggests that conditions are present for nutrients to play a large role in oxygen dynamics for the reservoir and its tributaries.

- A small number of exceedances of aluminum, dissolved copper, dissolved lead, and dissolved zinc was found in both segments. Many of the TRACS data for metals showed concentrations reported as less than the detection limit and, in most cases, the detection limits were greater than the applicable criteria. Many of these data are therefore not reliable for assessing metals concentration in the reservoir relative to criteria. The Angelina and Neches River Authority (ANRA) and TCEQ recognized the problem two years ago and in 2002 instituted a new “ultra-clean metals” monitoring program. The new sampling technique and analytical method will allow for an accurate determination of whether the metals standards are being met, using the lower detection levels.

- The 303(d) list for 2000 showed pH as an impairment. For segment 0610, pH averages ranged from 5.9 to 8.1. Sixty-seven measurements exceeded either the lower or upper criteria limits. Nineteen records exceeded the upper limit of 8.5, and 48 exceeded the lower limit of 6.0. For segment 0615, pH averages ranged from 6.45 to 7.65. All 34 records exceeded the lower limit of 6.5.

- Bacteria exceedances were found in both segments, but not many. Most of those found were in the Ayish Bayou arm.

- Chloride, sulfate, and total dissolved solids (TDS) were checked, and some exceedances found. More were found in Segment 0615 than in Segment 0610.

In addition to checking data on the two water body segments for which Sam Rayburn was listed as impaired (Segments 0610 and 0615) Tetra Tech looked at the contributing watershed—those waters that feed the reservoir. The main two tributaries feeding the reservoir are the Angelina River (segment 0611) and Attoyac Bayou (segment 0612). TRACS data were available from 54 monitoring stations on Segment 0611 and 8 stations on Segment 0612. STORET data were available from 9 monitoring stations on Segment 0611 and 2 on Segment 0612.

- 436 DO samples were analyzed on Segment 0611 and only three exceedances of the minimum criterion were found. No DO exceedances were found on Segment 0612.

- All tributaries with data had several nitrogen and phosphorus readings above the Texas Screening Levels and EPA's reference criteria. This suggests that nutrients from the tributaries may affect growth of algae and subsequently the dissolved oxygen levels in the tributaries as well as the reservoir.

- Seven aluminum exceedances were found as well as some of other metals. The same issue with accuracy occurred because the analytical detection levels were often higher than the criteria.

- Several exceedances of parameters measuring bacteria were found in all tributaries, with most in the La Nana Bayou. The exceedances were of fecal coliform and *E. coli.*

- Chloride and sulfate exceedances occurred on Segment 0611 and 0612 but the percentage was less than 5%. There were some pH exceedances on both segments, usually low pH. Several exceedance of total dissolved solids (TDS) were found, mostly on Segment 0612.

If an impairment is confirmed, an early step in developing a TMDL is determining the sources of the pollutants causing the impairment. The historic data report therefore includes information on both the nonpoint and point sources.

- Nonpoint sources are primarily silviculture and urban areas, with some agriculture (cropland and livestock). Urban sources of nonpoint source pollution include runoff from population centers, landfills, and septic systems. The Angelina and Neches

River Authority (ANRA) regulates the on-site septic systems and estimates there are over 3800 permitted systems within 2000 ft. of the lake. Not all are identified within the GIS. ANRA has also done a study to determine the water quality impacts of runoff from poultry litter land application sites in the Attoyac Watershed. The Texas State Soil and Water Conservation Board has been working with the Texas Forest Service and poultry farmers in the region to institute best management practices to reduce runoff via watershed management plans. Stephen F. Austin University, the forestry industry, and others are working together to assess the effectiveness of these plans.

- The watershed has 44 facilities holding Texas Pollutant Discharge Elimination System (TPDES) permits. These constitute the known point sources. From 35 of those facilities, data are available from the Discharge Monitoring Reports that permitted facilities submit to the state. Most of the reports show few exceedances. The most common exceedance is dissolved oxygen. Of the 44 point sources, 7 are considered major facilities. A major facility is one designed to discharge more than a million gallons per day

Tetra Tech's analysis of ten years of data on the two reservoir segments and the contributing watershed led to the following conclusions:

- The reservoir stratifies in the summer. Dissolved oxygen concentrations sometimes meet the criteria in the mixed layer but not in the lower layer. The worst conditions were found after an extended period of drought. The reservoir water level data show several of these since 1969.

- Nutrients, chlorophyll *a*, and transparency were regularly higher than the Texas Screening Levels and EPA's reference criteria in both the reservoir and its tributaries. Especially high nutrient levels were observed in the arms of the reservoir in August 1996 after a period of rain following a long drought. With concentrations this high, there is potential for dissolved oxygen to become a problem though not too many DO exceedances are seen now. Nutrients have many sources, including urbanization, agriculture, failing septic systems, point sources, and erosion. Sean Covington observed that the nutrient issue was a watershed-wide issue, not tied to a single source.

- Metals data show exceedances of applicable criteria in both the reservoir and its tributaries. Because of the sampling techniques and analyses used in the past, it is not clear whether this means there is a problem with metals. Equipment and analytical methods will be used that allows detection of metals at lower levels. Further research is also needed into the background levels of metals found in the soils of this watershed. Metals may occur naturally at high levels in soils.

- Bacteria exceedances were found in the reservoir and tributaries, with most in La Nana Bayou and Attoyac Bayou. Bacteria can come from many sources, and it is often difficult to identify them.

- In general, monitoring for all pollutants should continue in the reservoir as well as the major tributaries. Monitoring should be conducted on a year-round basis and during wet and dry weather to obtain a better understanding of the sources of pollutants in Sam Rayburn Reservoir.

Questions, Comments, and Suggestions about the Historical Data Review and Analysis

A number of questions were asked and comments made. They have been grouped by subject matter rather than chronological order in the notes that follow. Questions were answered by Ron Stein of TCEQ or Sean Covington of Tetra Tech, or both.

Amount of Data on Which Listing Was Made: Someone asked why Sam Rayburn is on the 303(d) list if the presentation is factual and there have not been many exceedances of water quality standards. Covington said it takes few data points to be listed but many to get off the 303(d) list. Ron Stein said apparent impairments need to be confirmed because there may not have been enough useful data to determine there is an impairment. The report of historical data is used not only by the TCEQ TMDL team but also by other parts of the state agency, which may also seek more data.

Mercury: Questions were asked about mercury, with an attendee observing that he has seen mercury warning signs at various East Texas lakes, but no signs warning of human contamination. He noted that mercury is dangerous to human health and bad for tourism. The problem seems to have traveled from East Texas to the Gulf of Mexico. He asked why mercury was not part of the report. Ron Stein said that mercury is being addressed through another TCEQ TMDL program project, the "Statewide Mercury in Fish Tissue" project. This reservoir, as well as other bodies of water across the state, is part of the mercury program. One of the sources of mercury in fish tissue is air deposition, and the sources of mercury in air may come from a wide variety of places including sources from other watersheds, other states, or possibly other countries. Unlike other TMDL pollutants, the sources are probably not confined to just the watershed. Mercury is not just a state issue but also a national one. Texas participates in the Environmental Council of the States, where states are working with EPA to develop an alternative to mercury TMDLs. One approach under consideration is to reduce mercury at the source in order to control it quickly so therefore individual TMDL studies will not be required. Information on how the TMDL program will be affected by the prospective approaches is expected by the end of the year. Ron Stein provided a handout summarizing the work on mercury in Texas.

Dissolved Oxygen: Referring to the slide showing 436 samples of dissolved oxygen on Segment 0610, a questioner asked if the three cases not meeting the minimum DO criterion were in the reservoir. Covington said he would have to check the report to confirm but thought they were in the lower Ayish arm of the reservoir. He commented that warmer water holds less oxygen. A suggestion was made to have a slide showing the percentage of saturation along one side if the data are available, along with the time of year. Equations are available to make these calculations. Another person asked if any dissolved oxygen data came from Segment 0615. Covington said data were available, mostly from grab samples. The dissolved oxygen standard for segment 0615 was portrayed as 4.0 mg/L on in the presentation. After some discussion it was decided that this would be checked and if it was

incorrect, it would be changed in the final report. After checking, it was determined that the aquatic life use for segment 0615 is designated as high aquatic life use and therefore the dissolved oxygen standard is 5.0 mg/L. This will be corrected in the final report prior to posting on the Internet.

PH: Commenting on how an 8.0 pH could have occurred, a participant said pH increases when photosynthesis uses up free carbon dioxide, providing bicarbonates. Asked about normal pH levels, Covington said that 6.5 – 7.0 looks like the average for the reservoir.

Paper mill discharge: Frustration was expressed that the Abitibi paper mill was not distinguished as the largest among the 7 major dischargers within the group of 44 point sources. The speaker said the mill discharges 20 million gallons a day, and he feels they are responsible for 90% of the pollution entering the reservoir. Covington said that the full report Tetra Tech has submitted to TCEQ contains details about each of the individual dischargers and what they are regulated for. The identification of contributions from each discharger and all non-point sources is the product of a complete and exhaustive TMDL project. There is not enough information in the Historical Data review to determine contributions from different sources at this time.

Another audience member said the volume discharged by the paper mill should be reported to the community, not just to the TCEQ. He said there have been failures of ambient water toxicity tests and asked if they were considered in the historical data review. Sean Covington said they were not. The report covers water quality characteristics relative to water quality criteria. Asked if synergistic effects were evaluated, he said they were not. This historical data review covered only the water quality impairments for which the reservoir was listed in the 2000 303(d) list. Unless and until ambient water toxicity is listed as an impairment, it cannot be addressed in the TMDL program.

Bacteria: Another questioner said that the discharge from the paper mill and runoff need to be looked at but so do bacteria, erosion, and septic systems. There are many possible sources of bacteria, including septic systems, poultry farming on the Ayish arm, and municipal wastewater treatment facilities. It was suggested that the TCEQ look at how the Army Corps of Engineers manages the lake, which affects the water table, as well as the saltwater barrier.

Naturally Occurring Pollutants: If some of the pollution is naturally occurring, someone wondered what could be done about it. If discharges from the river are lower, the problem increases. The questioner felt a lower load of pollutants would be needed to protect the water quality. Sean Covington said a TMDL is like a pie, with each piece a different source. The basic formula for calculating the load the water body can assimilate and still meet applicable standards is concentration times flow, producing a load of so many pounds of a pollutant per day. The TMDL “pie” contains both point and nonpoint sources. Nonpoint sources include both naturally occurring sources and those resulting from human activities. Some uncertainty will exist in the data but, if a TMDL is devised, it attempts to address naturally occurring nonpoint source pollution along with other sources.

Aluminum: Asked whether the aluminum exceedances were due to the limitations of the detection methods or whether they were true exceedances, Sean Covington said they were true exceedances. They were not, however, at toxic concentrations. He explained that a pH

above 5.5, aluminum hydroxide is bound up and is not bioavailable. Below that, aluminum is begins to dissociate and becomes more ionic, bioavailable, and toxic.

Manganese: An attendee asked why manganese was not a TMDL issue, saying that levels in the lake exceed drinking water standards. Sean Covington said manganese is not an issue for aquatic life, which is the impaired designated use addressed in the TMDL.

Metals in Sediment: Commenting that all sources of contamination should be examined, a questioner said that metals in sediment had not been mentioned. He said they were listed as a concern in the 2000 303(d) list but not in the 2002 list. Ron Stein said there is information on sediments in the full Tetra Tech report and that the issue is being addressed by the TCEQ Water Quality Assessment group. That group will receive the Tetra Tech report on historical data.

Dioxin: An attendee observed that three slides mention dioxins but no details are provided, though the person says fish tissue tests showed high levels of dioxins. Sean Covington said that the historical data review process begins with compilation of the data known to exist, but that the budget for the project determined how extensively data could be reviewed. Tetra Tech found a number of sources of data but focused only on the two large data sources to stay within the budget. The two used were the TCEQ TRACS and the EPA STORET databases. In those two databases, there were no data on dioxins. The databases showed a code for dioxins but no measurements had been made. Because dioxin is not one of the TMDL parameters for the lake, Ron Stein said this is an issue that falls to the TCEQ Surface Water Quality Monitoring Group and the TCEQ Water Quality Assessment Group.

List of Sources: Someone suggested that the Martin Creek Power Plant is within the watershed and should be one of the point sources listed. Someone else said it is not in the Neches Basin.

Comparison of Data before and after Storms: Extreme storm events, such as Tropical Storm Allison, increase discharges to the water body. The questioner asked if the report compares data taken before and after such a storm. Sean Covington said Tetra Tech was not tasked to do so, so the report does not.

Sampling below the Dam: Asked whether any of the sampling locations were below the dam, Covington said Segment 0610 ends at the dam. The questioner believes sampling needs to be done below the dam, and data on rain and runoff and the time of year tracked. It was mentioned by a TCEQ staff member in the audience that monitoring is currently being conducted on this portion of the Angelina River.

Overall Summary Chart: A suggestion was made that the presentation should have contained a summary chart of everything found in each segment compared to the criteria. Covington said the full report contains many more tables and details than shared in a summary presentation that had to be limited in time.

SAM RAYBURN RESERVOIR: TMDL STATUS

Ron Stein summarized the status of Total Maximum Daily Load work on Sam Rayburn Reservoir. His presentation is attached. On the 2000 303(d) List, Sam Rayburn was listed for mercury in fish tissue based on a fish consumption advisory from the Texas Department of Health (TDH). Dissolved oxygen was depressed in six areas. Aluminum exceeded the acute aquatic life standard in one area. High and low pH readings were found in one area. When the 2002 303(d) List was released, mercury remained a concern but the approach to addressing it had changed. The TCEQ has developed a statewide project to address mercury in fish tissue, which is a nationwide issue. Among the complexities of dealing with mercury is that the sources of mercury in water may include mercury in air. Mercury in air may come from coal-fired power plants and from other watersheds and other states. All states are facing similar mercury problems and are working jointly on a strategy through the Environmental Council of the States and with EPA. The strategy could affect all mercury TMDLs in Texas and other states. The strategy is likely to focus on source reduction to reduce mercury emissions at the source. Gail Rothe of TCEQ is heading the work on this issue (512/239-4617).

The 2002 303 (d) List designated Sam Rayburn as Category 5b for aluminum in water in the Upper Angelina arm. A category 5b designation means that the confirmation of the impairment is pending assessment of the existing standard. This relegates work on aluminum to the TCEQ Water Quality Standards Team. They will perform a Water Effects Ratio (WER) study based on the information that lead to the WER of 8.39 for segment 0615A and any additional data that is necessary. EPA has approved the WER for 0615Aand Texas Parks and Wildlife Department is reviewing the decision. TCEQ will consider other studies. The contact for the aluminum WER study is Jim Davenport (512/239-4585).

The 2002 303(d) list continued the listing for depressed dissolved oxygen in six areas of the reservoir. They include the upper Angelina arm, the lower Attoyac arm, the upper Ayish arm, the mid-upper Angelina arm, and upstream and downstream of Papermill Creek. Ron Stein corrected a typo on the slide, clarifying that the listing is Category 5c. This means more data are needed to confirm the impairment. Specifically, more 24-hour measurements are required to fulfill the requirement for 10 measurements for the assessment. The TCEQ Surface Water Quality Monitoring Team will conduct the monitoring. The Clean Rivers Program of the Angelina and Neches River Authority works with TCEQ on monitoring.

On the 2002 303(d) list, the reservoir was delisted for high and low pH based on 5 years of data indicating pH is not a problem.

New on the 2002 303(d) list was listing of the reservoir as Category 5a for impairments to the fish community. The impairments were found at the Papermill Creek confluence. On the 2004 list, the category will change to 5c, meaning more data are needed to confirm the impairment. The quality of the data currently available is not sufficient for assessment. Most of it was obtained in 1996 and 1998. There were drought conditions at that time. The method used in the calculations was found to be erroneous, so the data are not of good quality. The TCEQ Surface Water Quality Monitoring Team will conduct more monitoring. Data from the Bio-West study, which is being conducted according to state standards, will contribute to understanding whether there is an impairment.

If and when either the 2004 or 2006 303(d) lists place the reservoir in Category 5a for any parameters, a TMDL project will be performed. A stakeholder group will be formed if that occurs. Ron Stein said the Sam Rayburn TMDL project team that has worked on the project to date will remain under contract so work can start as soon as funding is obtained. The draft 2004 list will be out at the end of the year.

SAM RAYBURN RESERVOIR: PLANNED WATER QUALITY ACTIVITIES

Ron Stein said that, although no TMDL allocations are being developed yet, there is a lot of activity taking place related to water quality of the reservoir. His slide presentation (attached) summarized several activities.

Bio-West is conducting an intensive survey of the environmental conditions of Papermill Creek to determine whether a more comprehensive study of this watershed is warranted. They are screening for any impairments of the aquatic community in Papermill Creek. They are checking for attainment of the designated use for aquatic life. They are also looking for any significant physical or chemical contamination occurrences in the sediment as well as the water column. Screening will also look for possible human health risks due to pollutants, including dioxins. Their proposed scope of work and quality assurance project plan have been submitted to and approved by the TCEQ and the EPA, so the agencies may use the resulting data in their assessments. In addition to learning about Papermill Creek, the survey will assess whether Papermill Creek is a significant source of pollutants to the Angelina River and Sam Rayburn Reservoir. Results of the study will be presented to the Technical Advisory Committee of the Conservation Community and used to design strategy for a fish and habitat study of the reservoir. Ed Oborny and Cynthia Gorham-Test are the contacts at Bio-West.

Texas Parks and Wildlife Department (TPWD) conducts a Statewide Freshwater Fisheries Monitoring and Management Program. It is primarily an inventory of major sport fishes and important prey species. For the next two years, they will double their sampling of the fish population. TPWD issues a report yearly. Todd Driscoll serves as the contact locally (409/384-9572).

An ambient water quality monitoring program is conducted by the TCEQ and the ANRA. The TCEQ uses these data for assessment purposes. Data are evaluated for compliance with standards to determine whether a water body is impaired. Monitoring for fiscal year 2004 (September 1, 2003 - August 31, 2004) will occur at 24 stations and cover a variety of water quality parameters. Among these will be dissolved oxygen, metals in water, conventional parameters such as nitrates and phosphates, water toxicity, bacteria, and field parameters such as temperature and pH. David Hancock is the contact for ANRA, (936/632-7795). Ron Stein said the ANRA Web site contains a lot of information about water quality, **www.anra.org** The TCEQ Tyler regional TMDL staff will conduct 5 measurements of 24-hour dissolved oxygen in 2003 and 5 in 2004.

Abitibi Consolidated takes water quality samples quarterly at 8 sampling stations on Papermill Creek (Segment 0615A) and the Angelina River (Segment 0615). They analyze for alkalinity, biochemical oxygen demand, chloride, sulfate, pH, color, temperature, ammonia, phosphate, dissolved oxygen, total suspended solids, and total dissolved solids. They have 15

years of data that are useful for checking water quality but cannot be used in state assessments because they were not collected under a state-approved quality assurance plan. The contact is Charles Hughes (936/633-1647). Anticipating questions about the status of the Abitibi permit application, though it was beyond the scope of the TMDL work, Ron Stein brought a handout from the TCEQ office handling the permit.

Questions, Comments, and Suggestions about TMDL Status and Planned Water Quality Activities for Sam Rayburn Reservoir

Time Required to Address Impairments: Asked how long it takes to clean up a lake the size of Sam Rayburn, Ron Stein said no one nationwide knows yet. The TMDL program is relatively young in terms of implementing action plans. The is little data to show how long it takes to achieve water quality standards after an implementation plan has been put into operation. The length of time will depend on the nature of the impairment, the persistence of the constituents involved, and the effectiveness of the actions taken to control loads. Ron Stein said that there is no requirement that a community wait until the state acts before developing a watershed action plan. Communities can gather together stakeholders on their own, find funding, and develop a plan. Another member of the audience commented that dramatic improvements have occurred on the Lower Neches as a result of the Clean Water Act. Water quality from Evadale to the Gulf of Mexico has improved from controls on point sources and the work of industry, municipalities, and agencies. Another attendee asked when all these studies would produce conclusions that will lead to actions to clean up the reservoir. Ron Stein said there are a large number of impaired water bodies in the state, so the state sets priorities for TMDL projects. Once it is confirmed that Sam Rayburn has impairments and what they are, work can begin to identify the sources, determine the maximum daily load and how to allocate it, and develop a plan for making necessary changes. Once designated as Category 5a, meaning that a TMDL will be performed, Ron Stein estimates it may take 4 more years of work. Asked if results of the Bio-West survey can be used quickly by the agency once available, Ron Stein said the survey results would go to the TCEQ Water Quality Assessment section.

Public Support for Water Quality: Someone commented that TMDLs exist because citizens sued EPA for not enforcing the Clean Water Act. Another person said that the problem with Sam Rayburn water quality was brought to the attention of the community by only a few people. Most did not believe there was a problem. A start is now being made to addressing these problems. He believes the political pressure on TCEQ is great, and he urged people to speak up in support of improved water quality.

Need for Ambient Water Toxicity Testing: Referring to the designation of Sam Rayburn as having an impaired fish community, an attendee voiced concern that no testing for ambient water toxicity is being conducted, based on sampling of fish in the area where the impairment was found. Ron Stein stated that the ambient water quality tests by the TCEQ and ANRA include water toxicity tests and that the BioWest study also had toxicity tests. Cynthia Gorham-Test of Bio-West confirmed that their study would include such tests.

Attendees Who Signed In

Bill Arnold
Rachel Arnold
Mark Aud
Dian Avriett, Sierra Club
Tim Bagget
Fred Barnett
Gary Bass, *Lufkin Daily News*
Dennis Becker, Lower Neches Valley Authority
Gene Borders
Earl Brown, City of Tyler
Andrew Bruno, Lower Neches Valley Authority
John Bryan, Texas Forestry Association
Tommy Burch
Gary Clos, International Paper
Bill Creveling
Maretts Creveling
Richard M. Donovan, Texas Committee on Natural Resources
Donald Gervais, *Jasper Newsboy*
Clark Gimpel
Cynthia Gorham-Test, Bio-West, Inc.
Scott Griffith, TCEQ
Melady Hale
Paul Hale, Texas Logging Council
David Hancock, Angelina and Neches River Authority
Richard C. Harrel, Clean Air and Water, Inc.
Buster and Barbara Harvey, Bass Buster Inn
Robert Heugatizer, Country Inn Motel
Ron Hufford, Texas Forestry Association
Charles Hughes, Abitibi – Consolidated
Debbie Johnston, Abitibi – Consolidated
Philip Jordan, Office of State Rep. Wayne Christian
Will Kirkpatrick, The Fishing Schools
Jeff Lambert
Mary Anne Lambert
Shirley Long
Victor Long
Bill Marshall
John H. Matthews, Friends of Martin Dies Park
Ed Parten, Texas Black Bass Unlimited and SMART
Pat Pollack, Tyson Foods
Mike Prater, TCEQ
Kenneth Reneau, Angelina and Neches River Authority
G. M. Richardson
Jerry Shands, Brookland Fresh Water Supply District
Larry Sharp
Shirley Sharp
Bob Shaw
Theresa Shaw
Hughes Simpson, Texas Forestry Service
W. R. Smith, 2ofUS Couples Tournaments
M. G. Snow, ITS
Terry D. Stelly, Clean Air and Water
Mary Taylor, Sam Rayburn Friends Inc.
Michael Taylor, Stump Restaurant
Bob Taylor
Anne Tindell
Dr. Gary Van Gelder
Randi Wayland, Texas Association of Bass Clubs
Walter West, Sam Rayburn Friends, Inc.
Adam Whisenant, Texas Parks and Wildlife Department
Flora R. Wilhite
Ron Dale Womack