

WASTEWATER INFRASTRUCTURE WORKGROUP
Formed Under the
Arroyo Colorado Watershed Steering Committee

Draft Meeting Summary - Thursday, December 02, 2004

ATTENDING WORK GROUP COMMITTEE MEMBERS

Kim Jones
Bing Hung
Darrell Gunn
Neil Hammon
Darla A. Jones
Carlos Garza
Solomon Torres
Joe Hinojosa
Rene Flores
Juan M. Selvera
Jose L. Moreno
Oscar J. Hinojosa
Ray Palomo
Ashley Almon
Michael Weeks
Don Medina
John Avilez
Ni-Bin Chang
David Garza
Richard Eyster
Mary Lou Campbell
Marco Pedraza
Gary A. Jones
Wes Rosenthal
Randy Blankinship
Kay Jenkins
Olivia Gomez
DJ Davis
Jaime Garza
Chris Caudle
John Jacob
Juan Anciso
Roger Miranda
Earlene Lambeth
Laura De La Garza

WELCOME/INTRODUCTIONS

Earlene Lambeth of the Texas Commission for Environmental Quality (TCEQ) opened the meeting at 10:00 am in the Rio Red Classroom of the Texas A&M Kingsville Citrus Research Center. She announced that the meeting was being recorded and if anyone wanted a copy of the CDs, she would be happy to provide them.

Earlene recognized the attendance of Mr. Solomon Torres of Senator Ruben Hinojosa's office and asked if he had anything to say. Mr. Torres stated that he was here to learn about this complicated situation and that he was very interested to know what the issues are so that they can better assist us at the federal level.

Earlene then introduced Laura De La Garza as Watershed Coordinator for the Arroyo Colorado (Arroyo) and asked her to make some comments. Laura explained that her role in this watershed planning process is to coordinate, facilitate, and document the writing of a watershed protection plan (WPP) which is a community based plan. Laura stated that the bottom line or the problem that needs to be addressed is the high nutrient loading to the Arroyo which is a cause of the low dissolved oxygen (DO) problem.

Laura explained that this group has been assembled to write the wastewater component of the Arroyo WPP. A draft is due by the end of the year 2005, so we have one year to get together and write a plan. Once written the plan will be submitted to the State TCEQ for review. Laura stated that she is here to assist in the process and that she can be reached at the Citrus Center (956-968-2132) or by email (lauradlg@tamu.edu).

Roger Miranda of the TCEQ was introduced and announced that he was encouraged with the turn out for this effort to improve the quality of water in the Arroyo. He explained that this project started in 1998 and expressed his appreciation of the participants recognizing that this has been a long process and that there is a new generation of involvement. Roger invited the wastewater community to be involved and that all the municipalities from Mission to Arroyo City would be part of this project.

PRESENTATION

Roger began a PowerPoint presentation explaining the process that led to the total maximum daily load (TMDL) study and ultimately the Arroyo WPP.

The following is a summary of his presentation with the recording available to any interested party.

A TMDL study is a requirement of the State of Texas (State) under the Federal Clean Water Act. When a water body fails to meet State water quality standards it is put on the 303(d) list. The Arroyo has been listed since the 1970's.—a perennial problem that does not seem to be getting better. In 1998, the State started a multi-parameter TMDL effort which was completed in 2002.

Surface water bodies are assessed against the Texas Water Quality standards that are part of the Texas Administrative Code. There are numeric and narrative standards and nutrients are part of the narrative standard. Nutrients are part of the narrative standards

but they influence the numeric dissolved oxygen (DO) standard. Excessive nutrient levels are identified through nutrient screening criteria. There are four (4) general categories of uses and the standards support the uses. The upper segment of the Arroyo has an intermediate aquatic life use.

Once an assessment is done, the entire results of the assessment (good and bad) are published in a water quality inventory 305(d) report. Water bodies that do not meet standards are published in a subsequent 303(d) report. The State then develops a schedule to address the water quality problem. This is done through the TMDL process which is determined through computer modeling and assessment. As part of the TMDL, the federal government requires that the loading be allocated between point and non-point sources (NPSs) of pollution. A TMDL is three things: 1) a technical term, 2) a document for EPA approval, and 3) a process for restoring water quality.

TMDL work is a process that starts with a 303(d) listing. The TMDL project is initiated for the impaired water body and when completed, a report is published and available for public comment. Once it gets State approval, it is sent for EPA approval. The State takes it further with an Implementation Plan (IP). Again there is opportunity for public comment and then TCEQ approval with no Federal approval required. From there, the stakeholders implement the plan.

In 1998, the upper segment of the Arroyo was listed because of excessive bacteria, a few organo-chlorine pesticides, and PCBs. The tidal segment of the Arroyo was listed for DO and for toxicity in the sediment. The Laguna Madre was also listed for bacteria. The Laguna Madre is considered because ultimately this is the water body that needs protection.

In the draft 2004 303(d) list, the organo-chlorines have been removed because a TMDL and IP were completed for those constituents in 2002. The tidal segment was de-listed for sediment toxicity because the TCEQ re-evaluated the issue by contracting with an engineering firm to review the listing. The original listing was based on two toxicity analysis which was considered questionable evidence. Therefore, a full-blown toxicity study was conducted which showed that there was not as big of a toxicity problem as thought, so the tidal segment was de-listed for sediment toxicity.

The tidal segment of the Arroyo is still listed for DO. The Laguna Madre is no longer listed for bacteria but also listed for DO. This does not mean that bacteria are not a problem in the LM but that there are issues with the State standard changes.

There are thirty-nine (39) permitted wastewater discharge points in the Arroyo watershed. Sixteen (16) are direct discharges to the Arroyo and are mainly from municipalities. There are ten cities are at or above the 100,000 population level. The remaining discharges are not direct, an example being discharges to evaporation ponds. There are 33,000 acres of farmland, most being irrigated with irrigation return flows that contain pollutants that need to be addressed.

The Arroyo is extensively modified to carry floodwater and wastewater. The Lower Rio Grande Valley (LRGV) is considered to be economically distressed because of the number of colonias where there is a problem with wastewater treatment. The situation has gotten better but still behind the rest of the State. The Arroyo is also continually dredged from the Laguna Madre to the Port of Harlingen which significantly adds to the low DO issue. Rio Hondo is approximately in the middle of the zone of impairment (ZOI) but the ZOI can occasionally extend to the Laguna Madre.

The results of the TMDL showed no limiting nutrient in the Arroyo. That is, no one nutrient or concentration of that nutrient can be isolated to try to control DO. The reason is that the Arroyo in most places is light limited. It has all the phosphorous and nitrogen that it needs to grow significant amounts of algae and the only thing that limits the growth of algae is light penetration in the water body. This is a computer modeling issue.

The models in the TMDL study show that the violations occur even with extreme reductions in nutrient loads. This is something that the State did not anticipate. It took a simulated 90% reduction in nutrients to get compliance with the DO standard and a 90 % reduction would be what is going into the Arroyo under natural conditions. This indicates that either the standard is wrong or that something else is affecting the Arroyo other than loading. The TCEQ determined that it was the physical modifications that have been implemented on the Arroyo that are also affecting DO.

The Arroyo has nutrient loading above the 85th percentile of other water bodies of the State. The Arroyo has excessive nutrient levels but when removed, there is still a DO problem. The Arroyo has mixing and aeration issues related to the physical aspect of the stream. Again, the DO dynamics are highly influenced by the physical characteristics of the water body and the loading adjustments necessary for compliance are not realistically achievable. There is a need for further study to characterize and quantify the effects of the physical conditions as opposed to what the effects of the loading are. Based on these conclusions, the TCEQ decided to continue to study the Arroyo to better define the role of pollutants versus the physical modifications.

The State wants to reduce the uncertainty of the TMDL analysis and if appropriate, to re-evaluate or redefine the DO standard. However, there must be evidence that undoubtedly shows the criteria to be inappropriate, which at this time, the State does not have.

The TMDL modeling shows the following loading values from urban point sources (in percent of total): nitrates – 20%, BOD – 23%, phosphorous – 40%, ammonia – 22%, and a small amount of suspended solids.

There are many complicating factors (like the way fertilizer is off-loaded at the Port of Harlingen) and this is the reason for five (5) and possibly six (6) workgroups. The Arroyo has nitrate levels that routinely exceed 8 mg/l and ammonia levels 3.5-4 mg/l. This is a big problem and very unusual for a receiving water body. There is no question that the Arroyo is receiving too much loading from these pollutants and when talking about DO, the problem is more complicated.

Laura asked about possible numeric criteria for nutrients. Roger explained that the EPA has been talking about nutrient standards but that this has been in the works a long time and most likely will not happen any time soon. Fresh water reservoirs would be looked at first then fresh water streams but it is a long time coming.

The State has a long time goal to meet the water quality standards but on the short term bases, the goal is to reduce loading to the Arroyo. The problem might not be solved immediately but can be improved. The TMDL model shows that a 20% reduction in loading translates into an improvement in water quality although there may be DO sags and fish kills. The State wants to reduce nutrient loading to the Arroyo but wants to do it with what is achievable in a consensus-based way, with participation of the permittees and with agencies like the Texas Water Development Board (TWDB), the EPA, and the colonias.

The effort will start with the existing facilities recognizing that there are significant amounts of loading from wastewater that is not controlled by the permittees. This is the reason that groups are being brought in to address the colonias like the Rensselaerville Institute, the TWDB, the Secretary of State Office, Texas A&M, and ~~NAD bank~~ NADBANK for funding. There is a need to talk to Senator Hinojosa as this effort may need direct funding like what the irrigation districts did for their infrastructure needs. A meeting participant cautioned that much of that money was used elsewhere.

The Wastewater Infrastructure Workgroup (WIW) will discuss reducing loadings from wastewater treatment plants and the Agriculture Workgroup work on reducing loads from agricultural fields. A big component of the WPP is the Outreach and Education component. If awareness and education is promoted then a capacity can be developed to solve the problem. Without this, and there is only discussion with the stakeholders, we might expect only marginal results. EPA studies have found that successful watershed programs have a strong outreach component.

The TMDL Workgroup will conduct further studies. They will determine how good the data was in the previous modeling effort. Determine if the models were appropriate. Ask if there is a good handle on what is going on with the Arroyo. And the answer at this time is that we do not have a good handle on the complicated nature of the Arroyo watershed. The State did the best they could with the models that were available however they are going to try to do it better.

The Arroyo Workgroups were formed to produce individual components of the WPP. The WIW will address the wastewater component and produce a portion of the plan. Maybe we need only to document what is currently happening. Like the fact that the City of San Benito is building a new plant, and about the upgrades that the other municipalities have done. The self-reporting data shows that compliance has improved. Compliance was bad in the 80's, improved in the 90's, and today compliance is much better. This all needs to be documented as well.

The Workgroups will be receiving guidance and direction from the Arroyo Colorado Steering Committee (ACSC). If there is a question like effluent trading, that would be brought up before the ACSC.

Effluent trading is analogous to air credit trading but in regards to water. If a facility thinks it is too expensive to implement controls on loadings, it could find a facility that has reduced loadings by a certain amount and buy their credits. A system could be set up by which they could keep loading the Arroyo without changing their concentrations or loadings. This would be allowed under an agreement with another facility that has reduced a comparable amount of loading and is available for trade.

Effluent trading is very controversial. Unlike air where pollutants are discharge into a “big bubble”, water is a linear system. It is not just about the amount of loading but how close one is to the problem and about the assimilative capacity of the stream. In order to make it work, we would have to have a very accurate model that shows for example, that a 100 lb reduction in McAllen is equivalent to a 20 lb reduction in Harlingen. There will be a difference in the loading values depending on where you are in the system.

Roger just read an article on why trading does not work in surface water bodies and it had a lot of good points. However, this issue is not “off the table” and the current EPA supports trading.

Roger described Laura De La Garza as the main point of contact. The TCEQ learned the hard way that it was not easy working on this issue from Austin. For any problems, issues, ideas, or if there is a need to disseminate or obtain information, contact Laura.

A question was asked about a website for this project. Laura said that one should be up by the end of January. For now, bi-weekly updates will be sent out on a listserv. Information on this effort is available on the TCEQ website where one can find meeting notices and summary notes.

The writing of the Arroyo WPP is a consensus-based effort but in terms of non-compliance, this is not really negotiable. Chris Caudle, TCEQ Region 15, reminded the group that there is enhanced enforcement for water bodies on the 303(d) list. An alarm is kicked off with a 20% exceedence versus a 40% exceedence. So it is in the interest of all to get the Arroyo off the 303(d) list. It would lessen the enforcement. This is an incentive to fix the problem. Also, there are significant non-compliance provisions for facilities that consistently do not meet permit limits. There are actual criteria for a significant non-complier and the criteria are tough.

The reason that this workgroup has been the last to meet is because the TCEQ is undergoing a review of enforcement procedures. Roger has been reconciling what the TCEQ is planning and what this group is doing in terms of enforcement efforts. The TCEQ has conducted system reviews of all the Valley wastewater treatment plants and was hoping to have proposals for this first meeting however it has been put on hold because of this agency wide enforcement review.

There may be negotiated modifications to effluent limits and particularly for facilities that are around the ZOI. The TCEQ will be working with the TWDB on funding and treatment levels. There may be modifications to self-reporting requirements to get data to better model the Arroyo. There may be a need to monitor for more than is on current permits.

In regards to the NPS issue, we may look at additional infrastructure development for the colonias and may consider storm water monitoring.

The TCEQ wants to do a better job of estimating the effects of load reductions from implementing BMPs in the watershed. In the next TMLD study, the TCEQ hopes to use the SWAT model because it does a better job of estimating loading from agricultural activities. They want to refine pollutant estimates from other sources as well as gain a better understanding of the hydrodynamics, productivity, and sediment-oxygen demand (which is a big issue). The watershed model will be revamped and the receiving water body remodeled. There are also plans for additional water quality modeling to verify load reductions before and after the WPP. The State will be looking at actual effects of load reductions. The last model did not look at the hydrodynamics of the Arroyo and the new modeling effort will be more sophisticated in order to do that.

The State and all other stakeholders will develop the Arroyo WPP together. The State will offer suggestions but expects to receive proposals from the stakeholders. The workgroups will be “idea factories”. Remember that the State is bound by the Federal Government to fix this problem in the Arroyo. This will not be a paper exercise but a demonstration of load reductions in the Arroyo.

The schedule for implementation is: one year to write the plan, 6-8 months for TCEQ review, 2-4 years for implementation, and an additional 2 years for assessment to see the affects of what has been done. Therefore, we are looking towards 2012 for possible completion and hopefully delisting.

Chris Caudle reminded the group that this is more than meeting permit limits. Municipalities have a vested interest in cleaning up the Arroyo. It is more about the community. Laura explained that it is about quality of life and economics. The Valley is fortunate to have the abundance of birds and a very productive Laguna Madre. With these resources there is a big draw for additional economic development. If constructed wetlands are used for water restoration there would be the added benefit of additional bird and wildlife habitat, the opportunity for hike and bike trails, and a way to connect communities. Laura suggested that we think regionally for economic benefits and to attract more people to the Valley. This problem with the Arroyo is an opportunity to improve the quality of life in the region.

Roger emphasized economics. Recreation fishing and boating are a big industry. The Arroyo and the Laguna Madre are valuable resources that attract millions, if not billions,

of dollars to the Valley. Protecting the Arroyo is as much an altruistic gesture as it is an economic and quality of life issue.

QUESTIONS AND ANSWERS

Q-On the urban run-off loadings, where did the data come from?

A-Mainly it was modeled using a watershed model.

Q-When the data was taken was there actual sampling and analysis?

A-No, not locally, most of the data used come from studies that were done in other urban areas such as Houston and Dallas.

Q-How much credibility can be put into the data?

A- As much faith as possible, there was no data available and it had to be modeled from somewhere so the TCEQ looked to what was available. In the model, actual data from the area were used whenever possible and an example would be the use of local rainfall data.

Q-Is there going to be actual test data?

A-That depends on how far the cities get with there storm water permitting.

Q-How was a DO problem identified without actual sampling of the Arroyo or was there actual sampling?

A-There was extensive sampling.

Q-So this model was a separate kind of testing?

A-No, the TCEQ and the separate research entities went out and gathered data for calibration then the water body was modeled and calibrated using the data.

CLOSURE AND EXPECTED OUTCOMES FOR THE NEXT MEETING

Roger will provide technical modeling information at the next meeting. Between now and then, there will be face to face meetings with facility managers, and hopefully the City Managers and Mayors. The State will ask the facility managers to review the State's system reviews to ensure that the TCEQ got it right and did not make assumptions or misinterpret ~~ate~~ what was in the files and the databases. The municipalities will have the opportunity to discuss future plans.

At the next meeting, outlines from some of the proposal may be discussed along with information that has been gathered from the face-to-face meetings. The expected outcome of the next meeting is a "straw-man" draft document that will be drafted for each facility. Then there will be discussions about the colonias. Ideas for the plan will also be discussed.

FINAL COMMENTS

Laura asked Wes Rosenthal, of the Blackland Research Center, to discuss his work modeling agricultural BMPS. He explained that he used the SWAT model to assess the

impacts of utilizing BMP and suggested that if every farmer reduced fertilizer application by 50% there would be a 50% reduction in loading to the Arroyo.

Laura asked for assistance in identifying “hot spots”. Not to single out anyone or activity but to lend assistance to solve the problem. The point is that if most everyone is doing a good job at reducing nutrient loading; it only takes a few not doing such a good job to negate the progress.

A participant explained what the City of McAllen is doing as far as brush control and composting. McAllen is in the process of getting a permit for bio-solids composting. This together with the agricultural issue could lead to dual benefits by reducing what goes into the landfill and by improving soil texture and productivity. Laura stated that this is an excellent idea and that these are the types of ideas that we want for our plan.

The meeting was adjourned at 12 noon.