

Rio Grande Citizens' Forum
USIBWC Headquarters
El Paso, TX
August 9, 2007
***tentative meeting notes**

Welcome and Introductions

Co-chair Alisa Jorgensen welcomed those in attendance and introduced the USIBWC co-chair, Principal Engineer-Operations Alfredo Riera, who made brief remarks.

USIBWC Staff in attendance

Nancy Hanks
Hayley Goodstein
Carlos Peña
Alfredo Riera
Steve Smullen
Tony Solo
Sally Spener

Board Members in Attendance

Doug Echlin, Coronado Neighborhood Association
Ed Fierro, El Paso Water Utilities
Joe Groff, Chihuahuan Desert Wildlife Rescue
John Hernandez, Elephant Butte Irrigation District
Alisa Jorgensen, Save the Valley
Conrad Keyes, Jr., USACE consultant, Paso del Norte Watershed Council
Terry McMillan, Texas Commission on Environmental Quality

Board Members Absent

Zay Clopton, New Mexico rancher
Lupe Garcia, Hispanic Farmers and Ranchers
Irene Tejeda, Paso del Norte Water Task Force

Approximately 24 other members of the public were in attendance.

El Paso Desalination Plant

Bill Hutchison, Water Resources Manager, El Paso Water Utilities (EPWU), gave a presentation on this topic.

El Paso has a new water treatment plant/desalination plant. The groundwater that feeds the plant is from the Hueco Bolson aquifer, which has brackish water beneath the freshwater. Groundwater pumping has decreased since 1989 due to increased surface water diversions and water conservation. We had experienced brackish water intrusion into freshwater areas of the aquifer. Some wells that were fresh are now brackish. Biggest areas of concern are the Lower Valley and airport area. In the Lower Valley, we installed wellhead reverse osmosis units and in the airport area we have constructed the new plant. It is called the Kay Bailey Hutchison Desalination Plant in recognition of

Senator Hutchison's efforts to secure federal funding for the plant. It's a plant of El Paso Water Utilities and Ft Bliss.

18.5 million gallons per day (mgd) of brackish groundwater is pumped to the plant and 3 mgd of brine concentrate is injected into the ground. We pump 12 mgd of brackish water to blend with the treated water for a total of 27.5 mgd of water production.

For water sources, EPWU used some old or redrilled wells as well as 16 new wells on Loop 375. There are 32 wells as part of the project and a total of 36 wells are connected to it (some of the wells are not currently being used). Groundwater flow in this area is from northeast to southwest. They want to pump in such a way as to alter the flow pattern to create a trough of brackish water and preserve the quality of the freshwater wells. This pumping pattern/trough is intended to interrupt brackish flow into freshwater areas.

Reverse osmosis is a simple system where you run water under pressure through a membrane that holds back salts. The membranes are cylindrical pressure vessels. The plant has five skids or arrays of membranes. They recover 72-80% of the water put in. Salt rejection is up to 93%. We have to pre-treat the water before we put it through the membranes. Then, once the water is treated, they do PH adjustment, chlorinate, and introduce a corrosion inhibitor.

For disposal of the brine concentrate there are 3 injection wells, surface injection facilities, and a 22-mile pipeline. Injection wells are located 22 miles away on Ft Bliss property at the base of the Hueco Mountains drilled into fractured bedrock. The wells were drilled to class I standards, the most stringent/restrictive. It's an open hole injection zone. Wells are about 3700-4000 feet deep. The natural geology forms a type of cap that prevents the water from migrating upward.

The water quality at the injection wells is 8800 mg/l of TDS, similar quality to the concentrate that's being injected. It is more saline than the brackish water that's being treated. They use gravity flow into the wells. The brine goes into a reservoir/tank that fills and then it feeds it by gravity. Some concerns include reservoir capacity and the potential for mineral precipitation, the tendency for calcite, barite, and silica to come out of solution. This is being monitored because they don't want the minerals to clog the wells. If needed, acid could be added to control this.

There were some initial glitches at start up. Testing began July 19. As of today, 10 mgd is in the distribution system and by tomorrow we will be up to 25-27 mgd in the distribution system. Then we will scale it back to 10 mgd.

The project cost was \$87 million from four sources, \$26M from Congressional appropriations, \$1 M loan from Texas Water Development Board, \$56.7 M El Paso Water Utilities bonds and cash, \$3.3M from the Army. Annual operating costs are \$4.8 M. If you amortize capital and O & M, the water costs \$534/acre-foot. By comparison, groundwater costs \$163, surface water \$300, reclaimed \$706, and imported water \$1400.

There were questions and answers.

Lorenzo Arriaga – With the high temperature in the injections wells, have you considered development of geothermal power?

Hutchison – The Army had been considering this at sites near the wells but nothing has been done since. It was the Army's consideration of potential geothermal sites that led us to the site for our injection wells.

Joe Groff – Wouldn't it be cheaper to do more desalination than to import water?

Hutchison – You're still mining the water. Is it more rational to keep mining it or get a sustainable supply at greater cost?

Mike Landis – Are you considering potential future expansion at the plant?

Hutchison – There is room for a 6th skid. Our current plan is to run the plant below capacity for a few years and there are no immediate plans for expansion.

Doug Echlin – One of your techs suggested that the concentrate might return in 50 years.

Hutchison – It's not going to get into the Hueco Bolson aquifer. One of the discussions is in the far future, the higher saline water at the injection wells could be treated (currently not feasible at that concentration of salinity).

Doug Echlin – Is this bigger than the Yuma Desalting Plant in Arizona?

Hutchison – We call this an inland plant and one challenge is how to get rid of the concentrate. Yuma dumps its concentrate in the Gulf of California even though it's inland. Yuma is a bigger plant.

Question about water in the injection wells.

Hutchison – We sampled the formation water after drilling. We are not degrading anything.

Conrad Keyes, Jr. – How far east does the formation go where you are injecting?

Hutchison – It goes quite far to the east. The more we inject, the more we will learn over the next year.

Question – You mentioned acid as an option to prevent precipitation.

Hutchison – It's a cost we want to avoid. By keeping a constant flow we can attribute changes in pressure to mineral concentration. If we see a change, we can add acid to mitigate that. We have not yet seen anything that suggests we should add acid or that we're having precipitation. We appear to have big fractures in the geology.

Question about flow of brackish water.

Hutchison – We know it's migrating to the south; it's not a closed system.

Questions - Are you injecting enough volume to hydrocrack it?

Hutchison – No. There is not enough pressure, especially with just gravity flow being used at the injection wells.

Question - What actions are you taking to slow down the migrating southward flow of the brackish water?

Hutchison – The trough will help draw water back from the south, which will benefit Juarez. The brackish water intrusion they are seeing due to their pumping is Texas water that migrated there so this project will have secondary benefits in Juarez as well.

Jorgensen – There are meeting minutes and presentation links on the USIBWC web page for people who would like more information.

Rio Grande Clean Rivers Program Updates for 2007

Nancy Hanks, Environmental Protection Specialist, USIBWC, gave a presentation on this topic. She gave background about the history of the Clean Rivers Program (CRP). Following the 1991 passage of the Texas Clean Rivers Act, the Texas Natural Resources Conservation Commission (later renamed the Texas Commission on Environmental

Quality or TCEQ) administered the CRP for the Rio Grande from 1992-1998. Then in 1998 they contracted with USIBWC to do it due to the international aspect of the Rio Grande.

CRP has 45 water data collection sites in the Rio Grande basin, TCEQ has 38 sites, the U.S. Geological Survey has 5 sites. At these sites, various parameters are monitored including traditional data, metals, pesticides, etc. She showed maps of the monitoring sites in the Upper Rio Grande basin in Texas.

She mentioned special studies related to such issues as metals, salinity, bacteria, and pesticides in various parts of the basin.

Data are checked and submitted to TCEQ. The data are compared to the Texas Water Quality Standards and then TCEQ puts out the Texas Water Quality Inventory every two years. The 303 (d) list shows impairments where water quality does not meet the standards for the river segment's designated use. The 2006 list of impairments for the Upper Rio Grande is virtually identical to 2004.

Impairments affecting some segments in the Upper Rio Grande area include bacteria, total dissolved solids, and chloride.

Program changes include ensuring that all work is done by laboratories accredited by the National Environmental Laboratories Accreditation Conference (NELAC) and sampling for pesticides rather than metals for the next couple of years. There is an annual Basin Highlights Report and next year a 5-year Basin Summary Report will be issued.

The Clean Rivers Program for the Rio Grande web page, <http://www.ibwc.state.gov/Organization/Environmental/CRP/Index.htm>, has much data from individual monitoring stations. You can see all the data for a site by selecting the site/monitoring station. You can also zoom in on a geographical area using the GIS function. TCEQ has a web site, <http://cms.lcra.org>, where you can find out about monitoring in different parts of Texas. EPA has the Enviromapper for water, <http://www.epa.gov/waters/enviromapper>, where you can find Rio Grande water quality. On the EPA site, there is also Window to My Environment, <http://www.epa.gov/enviro//wme/> where one can put in the name of a city and find information about such things as water discharges. On the EPA site, there is also STORET data, <http://www.epa.gov/storet/>.

Questions should be directed to Nancy Hanks, 915-832-4794, nancyhanks@ibwc.state.gov.

There were then questions and answers.

Mike Landis – I would like to have water flow data along with water quality data.

Hanks – When flow gets measured, we put it in. When there is not a scientific measurement, estimated flow is put into our web site.

Cory Horan – Flow estimates are made on site by the person collecting the data. Part of the reason why it isn't collected at each site is much of the Rio Grande monitoring is done through in-kind participants. Sometimes it's too dangerous to do flow measurements or there are time constraints.

Lorenzo Arriaga – If you wanted to do a salinity assessment of natural sources of salinity to the river, would there be enough data to indicate sources?

Cory Horan – We have substantial data on the mainstem but we don't do a lot of tributary sampling. We take input from the public to get ideas for future studies. If it's something you'd like to see, we could discuss it.

Lorenzo Arriaga mentioned Green River and Red Light Draw as two tributaries that might warrant monitoring.

Ari Michelsen – The Paso del Norte Watershed Council has a coordinated water database for the region which provides access to other data, including historical data. This is available at the Paso del Norte Watershed Council web site. The Council is developing bacteria source tracking as well.

The FEMA Mandate: USIBWC Levee-Raising Activities in the El Paso-Las Cruces Area

Steve Smullen, Principal Engineer, USIBWC, gave a presentation on this topic.

He gave background about the Canalization and Rectification Projects. The Canalization Project covers 106 river miles from Percha Dam, NM to El Paso, TX. Rectification covers 85 river miles from El Paso to Ft. Quitman, TX.

FEMA is updating flood insurance rate maps. FEMA requires 3 feet of freeboard for the 100-year flood. We notified FEMA we cannot certify the Rio Grande flood control levees, primarily due to insufficient freeboard, the distance from the water surface elevation to the top of the levee. FEMA maps flood risk as if the levees did not exist at all. He described that FEMA's modeling extends the area of inundation until it hits a certain elevation. This does not take into account attenuation of the floodwaters as they move farther away from the river.

He showed a FEMA map with an area of inundation. A large portion of the river valley is in the flood zone. FEMA has a public appeal and protest process. We believe their model may overestimate flood risk.

FEMA released draft maps in April for Doña Ana County but decided to halt the Flood Insurance Rate Map (FIRM) process there in order to review methods of analysis. El Paso maps were released in July. FEMA is meeting August 22, 6:00 p.m. at El Paso City Hall.

Doña Ana maps are online at: <http://www.co.dona-ana.nm.us/flood/NFIP/>

El Paso maps are online at:

http://www.ci.el-paso.tx.us/development_services/flood_zone_maps.asp.

FEMA interagency report released in September 2006 proposes a risk-based approach rather than the 100-year 3 ft. freeboard requirement. It proposes phasing out the 100-year 3 feet standard. It also suggests a greater return frequency for urban areas such as a 500 year flood.

USIBWC has studied its flood control levees extensively. In Doña Ana County, the levee height is deficient for 38 miles.

USIBWC proposes to raise levees. He showed maps of deficient levee segments. Areas in the lower part of the Canalization Project are most in need of raising. In Las Cruces, most levees can handle the 100-year flood with 2 feet of freeboard. Most levees just need to be raised by 1 foot in order to meet the FEMA criteria. The area above Selden Canyon in New Mexico has some overtopping; these are primarily agricultural areas.

Levee raising as proposed by USIBWC is subject to federal appropriations. The U.S. Senate is proposing \$11.7 million for fiscal year 2008 for New Mexico levees, which could fund improvements from Leasburg to Courchesne Bridge.

Environmental considerations – We have a collaborative process underway that is looking at potential environmental enhancements. A model by the U.S. Army Corps of Engineers is being used to study the potential environmental enhancements. The model should be finished by the end of the year. Vegetative growth typically increases water surface elevations. We are using the FLO 2D model to evaluate dense growth of vegetation.

For the Rectification Project, the Draft Programmatic Environmental Impact Statement (Draft PEIS) is out for public comment until September 24. A public meeting will be held at USIBWC Headquarters on August 21 at 6:00 p.m. Three alternatives are under consideration - Enhanced Operations and Maintenance, Integrated Water Resources Management, and Multipurpose Project Management.

For El Paso County, the cost is similar to Doña Ana County. The Senate is proposing \$15 million for the USIBWC in FY 2008 for Texas levees, most for the Lower Rio Grande. In the El Paso area, it is proposed to raise levees from the Anthony area to Country Club Bridge and a fairly significant project at Canutillo includes construction of a floodwall. We are reviewing alternatives to reduce costs. The cost of a floodwall is estimated at \$13.3 million. We are looking at other things like expanding the floodplain along the west bank of the river.

He showed a map of deficiencies in the Rectification Project. Recently we raised the levee from the end of the Chamizal channel to the Zaragoza Bridge area. We used our own personnel to put a cap on the levee. It cost about \$1 million. We still have pending issues with wasteways and drain closures, which have to be shown to close in a flood. Hope to have those completed by the end of the year.

Sediment has been removed at selected arroyo mouths in the Canalization Project. Additional sediment removal will be performed as funding becomes available. The stakeholder collaborative process is looking at this.

For the Chamizal channel through central El Paso-Cd. Juarez, the USIBWC received \$650,000 for sediment removal. We reached agreement with Mexico for them to do the work. They are removing 100,000 cubic meters of silt. The work is about 40% complete.

Questions and Answers

Robert Grijalva – You mentioned levee-raising activities stop at the Zaragoza Bridge. For the residents south of there, is levee height satisfactory there?

Smullen – There is adequate freeboard. We raised the levee to the point where we don't need to raise it. Further downstream, there are a few areas in El Paso County that would need to be raised. Maps showing deficient levee segments in El Paso County are available on the USIBWC web page at:

http://www.ibwc.state.gov/Files/ElPasoLeveeFactSheet_060407.pdf

Maps showing deficient levee segments in Doña Ana County are available on the USIBWC web page at:

http://www.ibwc.state.gov/Files/DonaAnaLeveeFactSheet_060407.pdf

Ari Michelsen - FEMA maps are on the City of El Paso web page. The 100-year flood is based on what flow or precipitation?

Smullen – It's based on the FLO 2D model which is based on river flow. It's a volume of approximately 11,000 cubic feet per second at International Dam at El Paso-Cd. Juarez. The U.S. Army Corps of Engineers is still working on the model for this.

John Hernandez – Has FEMA always used a 3 foot freeboard rule?

Smullen – They've had it for a long time.

Mike Landis – Do you know what hydrograph FEMA uses? 2 hour? 1 day?

Smullen – They have guidelines that they follow. Unsure about the time period.

Mike Landis – The levees were not breached in the flooding last year. You met your requirement. The flooding that occurred in El Paso was because FEMA had not updated their flood curves based on development along Mesa Street. FEMA failed to identify risk. The levees did their job. Is that why FEMA is now updating the maps for El Paso?

Smullen – This is a national effort. They are preparing new maps for many communities across the country.

Ed Fierro – Once the levee is certified, does it change the flood map zone?

Smullen – We certify it and then FEMA approves it. And it will change the maps. We are going to attempt to have a partial certification for those levee segments within the Rectification or Canalization Project that are raised to meet the criteria.

Comment – In Vinton last year, there was water that had come over from the river on the east side.

Mike Landis – It was water coming from the mountain into the river over the levee. In Canutillo, the levee blocked the water from reaching the river.

Ed Fierro – Isn't it cheaper to raise the levee than buy flood insurance?

Smullen – If you raise the levee to handle the 100-year flood, you could still have a 200-year event in the next year. It's probably wise to get flood insurance.

Ed Fierro – If levees are certified, then the insurance is cheaper.

Jorgensen – Please describe the sequence of events before the maps are finalized.

Smullen – The maps are issued for everyone to look at then FEMA will have a public meeting. That happened in Doña Ana County in May. Then they issue two notices, the second of which starts the 90-day appeal process where you can state your case if you have a problem with the map (such as you know your home is on a hill and wouldn't flood). That process can go on for months because they have to go through a process of finalizing it. A normal process would take about a year to get to a final map. But because of controversy, it's more like a 2-year or longer process. It depends on how many appeals and protests they get.

Greg Bloom – New Mexico's U.S. Senators are looking at getting \$12 million in appropriations for next year. What is the area where you would work?

Smullen – He showed the maps of the affected areas in New Mexico where levees would need to be raised. If the New Mexico levee failed in the southern part of the Canalization Project, much of the affected area would be in Texas. We met today to discuss how we could do the levee work sooner such as using our own forces rather than a contractor but there might be right-of-way issues and geotechnical issues that could affect where/when the work is done.

Conrad Keyes, Jr. - Are you saying you could not get funding in a combined effort to do a joint stretch for New Mexico and Texas?

Smullen – We've heard the money would be targeted to New Mexico. There are two accounts that receive appropriations - Canalization and Rio Grande Flood Control.

Conrad Keyes, Jr. – If the Record of Decision were signed for the Canalization Project Environmental Impact Statement, would it help you?

Smullen – We are going to raise the levees. But we will do some environmental documentation.

Leonard Bloom – Is this data being correlated back to the infrastructure system such as natural gas or utility companies?

Smullen – No.

Luis Ito – Who determines which areas are priorities?

Smullen – The USIBWC makes that determination.

Spener – It's also a function of appropriations. If we have money that can only be used in New Mexico, we will use it in New Mexico regardless of other priorities in Texas if we don't have funding for Texas.

John Hernandez – Who has to buy flood insurance?

Smullen – Anybody who has a federally-backed mortgage.

Lorenzo Arriaga – Would a formation of a Texas-New Mexico flood district help avoid the Texas-New Mexico divisions that arise?

Smullen – We signed a Memorandum of Understanding with Hidalgo County in South Texas. They passed a bond issue to raise levees. Establishing a flood district in this area is an interesting concept.

Ari Michelsen – What is the policy and coordination with Mexico in terms of raising one side of the levee and not the other?

Smullen – We have informed Mexico of our intentions and that we have this mandate to meet. They have to get funding for it, too, just like we do. I'm not sure it's necessary to have a coordinated effort. Each country is responsible to maintain its levees.

Ari Michelsen – This goes back to the Mississippi River where each state had an incentive to raise the levee higher than the other.

Smullen – Mexico has not informed of us plans to raise their levees.

Questions – Won't this cause problems like the dam problem last year?

Smullen – La Montada Dike won't store water anymore so that problem does not still exist.

John Hernandez – Sediment in the Rectification Project is a shared responsibility with Mexico, isn't it?

Alfredo Riera – The IBWC is almost done with an agreement to define the responsibilities of each country in the Rectification Project. We divided the river in segments and identified work that needs to be done in each segment. The agreement will be approved this month.

John Hernandez – What's happening on August 21? What's a PEIS?

Smullen – We knew that these levee improvements are needed and it's just a means for us to address future impacts in a broad and general way. We still have to do site-specific environmental assessments for those projects. On August 21 it's a public meeting to discuss the Programmatic EIS.

Alfredo Riera – We don't work in a vacuum. Both Mexico and the U.S. are part of IBWC. Mexico is currently working on their levees in this area. We have joint

meetings all the time and share this information. The silt removal project in the Chamizal is our money but to do it faster, we asked Mexico to do the work.

Jorgensen – The Draft FEMA maps are available for review on the 4th floor of El Paso City Hall in the Engineering Department.

Leonard Bloom – You can see maps at the county building and they are online too and at the City Library.

Jorgensen – IBWC has maps of their levees online.

Next Meeting

Next meeting will be November 7 in Las Cruces. We expect to have a presentation about the stakeholder collaborative process with Dr. Phil King at the next meeting.

Suggested Future Agenda Items, Board Discussion

Jorgensen - Levee updates, Border Security and the Environment from the Good Neighbor Environmental Board report

Conrad Keyes, Jr. – FLO 2D modeling presentations in both sections of the river. This presentation could also show the effects of the 2006 flooding.

Jorgensen – This should be geared for both a technical and general audience.

Keyes – In the 20-mile stretch of the river between Texas and New Mexico, there are two different sets of impairments. It would be interesting to have both Texas and New Mexico give presentations about their views on water quality impairments in this reach.

*Meeting notes are tentative and summarize in draft the contents and discussion of Citizens' Forum Meetings. While these notes are intended to provide a general overview of Citizens' Forum Meetings, they may not necessarily be accurate or complete, and may not be representative of USIBWC policy or positions.