

EUGENE WATER & ELECTRIC BOARD
WORK SESSION
EWEB BOARD ROOM
JUNE 20, 2006
5:30 P.M.

Commissioners present: Sandra Bishop, Mel Menegat, John Simpson Patrick Lanning, and Ron Farmer.

Others Present: Randy Berggren, Jim Wiley, Debra Smith, Dick Helgeson, Patti Boyle, Ken Beeson, Tom Buckhouse, Mel Damewood, Marty Douglass, Roseanna McArthur, Deborah Brewer, Brad Taylor, Jay Bozievich, and Krista Hince of the EWEB staff; Gary Rayor, OBEC Consulting Engineers; and Ruth Atcherson, City of Eugene minutes recorder.

Vice President Menegat convened the Work Session of the Eugene Water & Electric Board (EWEB) at 5:33p.m. (President Bishop had yet to arrive.)

COLLEGE HILL RESERVOIR STATUS

Senior Water Engineer Jay Bozievich explained that in accordance with the schedule that was presented to the Commissioners, he had returned to present the results of the study of the structural integrity of the College Hill Reservoir. He introduced Gary Rayor, a structural engineer with OBEC Consulting Engineers and author of the structural integrity study.

President Bishop arrived.

Mr. Bozievich stated that the College Hill Reservoir had been constructed in 1939 and 1940, before current building code standards for life and safety. He said the reservoir was beginning to show normal wear. He noted that the hand railing was not originally designed for safety; rather the second railing from the top had been designed to carry wash water around the perimeter so that the top of the reservoir could be washed off.

Mr. Bozievich described the structure of the reservoir, with the aid of power point slides and diagrams. He noted that one particular point of vulnerability, identified in a 1999 study, was that the tops of the supports on the uphill side could crumble and the slab could fall off of the support in an earthquake event. He related that in the year 2000 EWEB had gone under the reservoir and added angle irons on either side of the supports so that it would make the top of the support wider and would confine the top so that it would not chip away as the slab moved back and forth in such an event. He said this work brought the reservoir to the point at which during a major event the top would fall in but the walls would not collapse and flood the downhill residences. He said during that same period EWEB had “redone” the joints inside the reservoir and on top of the reservoir.

Mr. Bozievich reported that EWEB had contracted with OBEC Consulting Engineers to answer four questions about the reservoir:

1. Was it structurally sound for public occupancy?
2. What level of seismic event would cause the roof to fail?
3. How was that structure performing in that level and what would other structures do in comparison?
4. Was the railing that was originally designed as a pipe system safe under current code?

Commissioner Farmer arrived.

Gary Rayor, OBEC Consulting Engineer, provided an in-depth overview of his engineering report. He had chiefly focused on the ability of the top slab to support the public gathering load, 100 pounds per square foot (PSF) and how the reservoir would be affected by seismic activity. He stated that there was more capacity to meet the load demand than was required. He explained that the International Building Code (IBC) for seismic requirements had been changed in 2003. He said in terms of the code the structure was at a third of the required strength.

Mr. Rayor discussed the types of earthquakes that could affect the area. He showed a map of the tectonic plates and activity in the area. He said in recorded time the City of Eugene had experienced very minor quake activity.

Commissioner Lanning noted that more earthquakes were recorded in Klamath Falls and asked if there was more recording there. Mr. Rayor replied that there were more faults in that area.

Mr. Rayor said by code every component of the structure should be designed for the maximum credible earthquake. He added that it was known that the short columns in the structure did not meet that code requirement. He noted that the long columns had almost twice the capacity of the short columns. He stated that the corners of the reservoir had a calculation overstress that at the time the support walls underneath the sloping slab had been retrofitted had not been addressed. He explained that the work on the support walls could be completed without drawing down the reservoir, but all interior work would require a draw down.

Mr. Rayor stated that there had been 13 “mega-thrust” seismic events in the past 6,000 years, an average of one every 500 to 600 years. He said some had been as close together as 200 years and some had been as far apart as 800 years and the last one occurred 305 years ago. He explained that carbon dating trees that were buried by tsunamis resulting from the seismic activity had determined this. He added that an earthquake of this magnitude tended to last two to three minutes.

In response to a question from Mr. Berggren, Mr. Bozievich said a lot of reservoirs had been designed with a “hopper bottom” at the time this reservoir had been built and the design sought to take out settled sediment. He underscored that it had been well designed for its time.

Mr. Bozievich stated that the handrail did not meet code because the code dictated that a safety railing had to be 42 inches to the top of the rail and this one was not, though the chain link

extended to 42 inches. He said the top rail would have to be able to take 50 pounds per linear foot load pushing against it and structurally it did meet the code requirements. He felt the rail met the intent of the code, but it would probably not meet the code. Mr. Rayor added that current code dictated that the railings needed to be close enough together that a child could not squeeze through.

Vice President Menegat asked what the threshold was for requiring a 42 inch handrail. Mr. Bozievich responded that it was required for any structure that people would occupy and that had more than a 30-inch drop.

Commissioner Lanning asked Mr. Bozievich to respond specifically to the four questions. Mr. Bozievich stated that the answer to the first question was that the reservoir was structurally sound for public occupancy. He said the answer to the second question was that the roof would fail in a 350-year seismic event.

President Bishop asked what magnitude of earthquake that would translate to. Mr. Bozievich replied that it depended on the distance from the reservoir. He said a magnitude five earthquake within 27 kilometers would damage the reservoir and a magnitude eight that was 175 kilometers away would also damage the reservoir.

Regarding the third question, Mr. Bozievich stated that the reservoir would react to a large seismic event in a manner comparable to the City Hall; it would fare better than a brick structure, but much worse than a wooden house as such a structure would have the most flex. He said the answer to the fourth question was that the hand railing met the intent but not the letter of the building code.

Commissioner Simpson asked if this area was overdue for a large seismic event. Mr. Bozievich replied that people talk about 100- or 500-year events, but the number was the statistical chance. In other words, the occurrences of such events were averaged out over 10,000 years but one could experience such an event two years in a row or it could be 1,000 years before the next major event of that kind would occur. He said the other thing one needed to consider was what chance the reservoir roof had if it was occupied at the time an event might occur. He pointed out that if such an event happened at four a.m. in the middle of winter the reservoir would most likely not be occupied.

President Bishop asked how a large seismic event would play out on the reservoir. Mr. Rayor replied that the controlling elements were the short columns. He said the corner columns would probably fail first and would be most likely followed by the roof panels immediately adjacent to them. He thought the exterior walls would tend to be fine, but the roof caving in would create a wave.

President Bishop asked how many people standing on the reservoir would potentially collapse the roof. Mr. Rayor responded that it would take three times the highest number of people that had been on the roof of the reservoir in the past.

In response to a question from Commissioner Simpson, Mr. Rayor affirmed that there were nine columns per slab.

In response to a question from President Bishop, Mr. Bozievich stated that the work on the reservoir that had been recommended in the 1999 engineering study was in the five-year plan.

WATER SUPPLY STRATEGY UPDATE

Water Resource & Systems Planner Brad Taylor provided a power point presentation on *Water Supply Planning*. He asked for Commissioner input on whether a secondary source of water should be for emergency situations only or should be able to meet peak summer demands.

Commissioner Farmer commented that given that EWEB had water rights on the Willamette River and had the capacity to meet the potential need it was difficult for him to argue that EWEB did not have enough water rights to meet demand.

Commissioner Simpson supported having a secondary water source to meet both emergency demands and peak water usage demands so long as the quality of the water or the taste was not affected for too long of a period.

Vice President Menegat said he was uncertain what the alternatives were. He remarked that he would not care how water tasted in the event of an emergency. He reiterated his concern in having a single source for water. He felt the McKenzie River would continue to meet peak demands but underscored his concern that a catastrophic event could jeopardize the utility's single source for water. He was uncertain as to whether the Willamette River resource would be available.

President Bishop observed that the water supply was also limited by how many kilo-gallons (Kgal) the Hayden Bridge water treatment facility could treat.

Commissioner Lanning did not have a firm position on this item. He agreed with the comments made by his colleagues.

Mr. Taylor stated that a peak event in which demands exceeded filtration plant capacity would push EWEB to go to a secondary source, though the first step to be taken would be to conduct public curtailment of water use.

Commissioner Farmer felt that due diligence should require EWEB to determine what peak demand could be.

Mr. Berggren recalled Board action from ten years earlier that made the commitment to pursue a groundwater resource to serve as an emergency back-up source. He said the original concept had been that the secondary source would be brought into play in the event of an emergency such as an oil spill on the river.

In response to a question from Commissioner Simpson, Mr. Taylor explained that an emergency source would be needed in the event of contamination of the river above the intake point, filtration failure, or transmission failure. He added that EWEB's reservoirs contained just under a 24-hour water supply for the City.

Commissioner Simpson favored demand side management (DSM) as the first strategy to address peak usage.

Mr. Taylor stated that currently the groundwater and the Moe-Hayden Intertie were the only emergency back-up resources. He recommended consideration of further backup resources such as development of the Willamette River water rights.

Commissioner Farmer observed that there were financial problems in the water utility at present. He urged staff and the Board not to think of the cost of developing such resources in the abstract.

Mr. Taylor reviewed the *Water Supply Forecast Methodology (Primary, Peak, and Emergency)*. He noted the importance of making the best decision possible in the short-term. He underscored the need to expand the Hayden Bridge facility. He recommended that construction begin in late in 2008. He said this date could still be flexible based on water usage during the peak season in 2006 and 2007. He called the emergency resource and potential influence of raw water intake relative to fish criteria "wild cards" in the scenario.

Mr. Taylor stated that staff would bring an Intergovernmental Agreement (IGA) for emergency interties with the neighboring water utilities to the July 18 meeting. He said the impacts of staff's recommendation to expand the Hayden Bridge facility would be brought to the Board as part of the August 2 budget retreat. He anticipated that the Water Supply Plan update would be completed by the end of the year.

In response to a question from Commissioner Simpson, Mr. Taylor affirmed that the population of Eugene was projected to increase by 1.14 percent annually.

Commissioner Simpson asked where water that was unaccounted for went. Mr. Taylor replied that because of aging infrastructure there were leaking valves and water lines from the raw water intake to the plant.

Commissioner Simpson requested further information from staff regarding the 20-year expansion.

Commissioner Farmer said he was somewhat confused regarding the three scenarios, the financial, the facility and the source, and how they meld together. He noted that Mr. Taylor had talked of funding the expansion with Systems Development Charges (SDCs). He asked to see how

those numbers would correlate with the population projection. He felt the assumptions on growth did not seem to have the potential to generate that much money.

Mr. Taylor responded that SDCs were initiated by EWEB in 1997. He said in the 1997 methodology there had been an assumption about an expansion of the Hayden Bridge facility and this methodology had been revised in 2002, again including the assumption about an expansion. He underscored that the utility had been forward-looking in the SDC methodology since 1997. Commissioner Farmer acknowledged that this was essentially a “leg up” but he wished to review the figures nonetheless.

Commissioner Farmer wished to ensure that the studies that were being conducted and the assumptions being used regarding the water supply could not be used against EWEB in its water rights application. He added that he wanted to see how this process would fold into the potential of EWEB becoming a regional water supplier.

Mr. Taylor stated that the expansion of the Hayden Bridge facility did not take away the regional metro partnership concept; rather, it would strengthen EWEB’s position to promote it. He said the staging of the expansion was critical to the regional process.

President Bishop said she would not be in attendance at the July meeting but was supportive of the IGA.

President Bishop adjourned the meeting at 7:29 p.m.