



City Council Chamber
735 Eighth Street South
Naples, Florida 34102

City Council Special Meeting – January 19, 2001 – 1:00 p.m.

Mayor MacKenzie called the meeting to order and presided.

ROLL CALLITEM 1

Present: Bonnie R. MacKenzie, Mayor

Council Members:

Gary Galleberg

Joseph Herms

William MacIlvaine

Fred Tarrant

Penny Taylor

Tamela Wiseman

Also Present:

Kevin Rambosk, City Manager

Mick Moore, City Attorney

Tara Norman, City Clerk

Jon Staiger, Natural Resources Manager

Dan Mercer, Public Works Director

Robert Middleton, Utilities Director

Jessica Rosenberg, Recording Specialist

Gina Devlin, Executive Asst.

Karen Kately, Admin. Specialist

Sunny Fore, Service Worker

County Commissioner Pamela Mac'Kie

Michael Simonik

William Boggess

Carl Boyer

Colin Kelly

Charles Kessler

Virginia Corkran

County Commissioner James Colleta

County Commissioner Donna Fiala

Thomas Oliff

Michael McNees

Harley Young

Mark Pierce

Michael Weinberg

Clarence Tears

Donald McNeill

County Commissioner Thomas Henning

Roy Smith

James Mudd

Joseph Cheatham

Media:

Denise Zoldan, Naples Daily News

Karen Guglielmoni, WINK News

Other interested citizens and visitors.

INTRODUCTION.....ITEM 2

OVERVIEW OF CITY CONCERNS REGARDING COASTAL RIDGE WELLFIELD (CITY) (1:18 p.m.) Collier County Manager Tom Oliff expressed appreciation for the opportunity to address the proposed aquifer storage and recovery (ASR) program. County Public Utilities Administrator James Mudd then introduced Harley Young, Technical Support Manager of the Florida Department of Environmental Protection (FDEP); Mark Pierce, Senior Scientist of Water Research Solutions; Michael Weinberg, Senior Hydro-geologist of Water Research Solutions; Clarence Tears, Director of Big Cypress Basin; Joseph Cheatham, County Wastewater Director; Roy Smith, County Director of Pollution Control; and Carl Boyer, County Director of Engineering. City Manager Kevin Rambosk noted that Donald McNeill, the City's technical consultant; Jon Staiger, City Natural Resources Manager; Dan Mercer, City Public Works Director; and Robert Middleton, City Utilities Director, would also participate in the discussion.

City Manager Rambosk stressed that water must be conserved, preserved, and protected, and noted the many challenges City and County as water purveyors face. He briefly outlined the agenda, but said that Council's questions and their answers would be the most important factor in ensuring sufficient information to make informed decisions. City Manager Rambosk detailed the chronology of this issue up to the July 7, 2000 petition for administrative hearing and current joint agreement for abeyance of that hearing. (A copy of this and all subsequent referenced material is contained in the file for this meeting in the City Clerk's Office.) He then noted various potential problems with ASR technologies: unsuitable injection units; inadequate confinement for injected water and ultimate loss of stored water; low recovery due to off-site water migration or well plugging problems; biochemical reactions between injected water and aquifer rock, bacterial problems with recovered water; and a low overall recovery making utilization uneconomic. He also noted that City staff had specific concerns, including a lack of data assuring no threat to the raw water supply, and no feasibility study indicating the economics of using other methods of storing and disposing reclaimed water.

Natural Resources Manager Jon Staiger explained that Joan Rose, a professor at the University of South Florida had raised a series of questions about this issue relative to current overall ground water quality, the quality of the ground water in the ASR zone, the quality of the water to be stored, and whether the various types of waters could be distinguished. He said she also questioned the following: movement of ground water; the dilution, and the potential mixing of the aquifer and ASR stored water; the strength of the confining layers that would theoretically keep the ASR water from migrating vertically; and the location and functioning of the monitoring wells which should assure this material does not migrate into the drinking water supply.

Council Member MacIlvaine noted that the City currently uses reclaimed water for irrigation which then filters 100 feet into the fresh water aquifer; however, ASR technology would involve injecting water 1000 feet which could then filter 900 feet upward to the aquifer. He therefore questioned why one but not the other practice is considered safe. Dr. Staiger explained that the downward movement in irrigation is just gravity while water stored in the ground is under pressure. If a reuse water well were to be inserted into an artesian aquifer, the water would rise vertically, in some cases to the surface, Dr. Staiger said. Given the geology of this area, he continued, the water would rise a great distance at a fairly rapid rate through a significant amount of pore space in the rock which would not however provide filtration. He stated that if, on the other hand, it could be ascertained that the soil was actually uniform and provided adequate filtration, many of the aforementioned questions would be resolved. Dr. Staiger then pointed out the Coastal Ridge wellfield, which runs from the vicinity of Golden Gate Parkway through Goodlette-Frank Road to an area just south of the North Collier

Regional Water Treatment Plant and said that the City staff's main concern is that the distance from the northernmost City well to the proposed ASR test well is only 1.3 miles.

County Presentation To City Council

OVERVIEW OF NEED FOR AN ASR PROGRAMITEM 3

DISCUSSION OF PROPOSED EXPLORATORY WELL PROJECTITEM 4

- a) summary of revised aquifer testing program
- b) summary of revised geophysical logging
- c) regional extent and competency of Peace River formation confining unit

DISCUSSION OF PROPOSED ASR PROGRAM AND FUTURE EXPANSIONITEM 5

- a) scope of ASR planned for North Collier Regional Wastewater Recovery Facility site
- b) proposed monitor well safeguard program for City wellfield

QUESTIONS AND DISCUSSION BY CITY COUNCILITEM 6

Technical Briefing To City Council

REVIEW OF PROPOSED EXPLORATORY WELL/SUBSEQUENT ASR PLANITEM 7

- a) Exploratory well program
- b) Scope of proposed ASR system

QUESTIONS/DISCUSSION REGARDING EXPLORATORY WELL/ASR PLANITEM 8

It is noted for the record that the above items were addressed concurrently.

County Public Utilities Administrator Mudd then explained that although darker in color than potable water, reclaimed water is safe and passes the Florida standard for drinking. He then said that the County Commission has directed its staff to determine ways to maximize the use of reclaimed water for irrigation. The City disposes of 365 million gallons of reclaimed water per year into the Gordon River, he said, while the County places approximately two billion gallons of excess reclaimed water per year in deep injection wells in its treatment plants during the rainy season, which it recovers during dry season at a rate of 16.5 million gallons per day. He stated that the goal for this particular project is to store another 140 million gallons to be recovered at a rate of 3.5 million gallons per day. Mr. Mudd stated that these two sources would together satisfy the County's current contractual agreements with its reclaimed water customers. County Manager Oliff also pointed out the 54 potential customers on a waiting list now drawing their supply from the drinking water aquifer which, Mr. Mudd noted, would add a \$7 billion gallon per year demand for irrigation. Mr. Mudd also said that staff would perform exploratory drilling at the site to ensure appropriateness for an ASR well install a test well, and ultimately place three to five wells in that area.

Regarding alternatives, Mr. Mudd said that a tank farm large enough to store 140 million gallons of water would require 50 acres of land and cost \$49 million. This same gallonage in a lined pond would be subject to evaporation and would require 82 acres at a cost of \$14 million. The estimated cost for an ASR facility, however, is between \$2.2 to \$3.5 million. Mr. Mudd then said that the County currently has a potable water ASR well which produces 1 million gallons of water per day. He then countered recent allegations relative to an ASR moratorium in the state of Georgia, and commented that ASR technology is being used to restore the Everglades.

Mr. Mudd further explained that reclaimed water is actually sewage treatment plant effluent which has been disinfected and filtered, and that it is well within the County standards for chloride, iron, manganese and other elements. Council Member MacIlvaine therefore questioned whether it could be used for drinking. Mr. Mudd stated that cities in Arizona, California, and Texas do transmit it to their water plants for treatment and further use, but that he was uncertain whether this was permissible in Florida. Council Member Tarrant stated that Jack Myers, a geologist for the FDEP, had stated during a June 6th meeting at the County's wastewater facility that he would not advise

people to drink reclaimed water. Mr. Mudd however clarified that he had only said that it meets the drinking water standard. Harley Young of the FDEP explained that it is necessary for the reclaimed water to meet drinking water standards, but that this alone is not sufficient for it to become potable, although it is a high quality water, and that he is unaware of anyone becoming ill due to its use in irrigation.

Council Member Galleberg questioned the cost for making this water substantially equal to the Tamiami wellfield; however, Mr. Mudd said he did not have that information. Mr. Galleberg then questioned the reclaimed water quality in terms of bacteria. Mr. Mudd said that staff had not been able to obtain a reading on this, but that it could indeed be present, noting that cryptosporidium had been an issue in the state of Wisconsin causing 400,000 people to become ill with 100 deaths. He added that a SFWMD study on potential microorganisms should be completed in approximately eight months. Mr. Oliff stated that the water the County is proposing to put into the ASR well is better than the water in the aquifer where it is being placed. Mayor MacKenzie however said this is a broad statement, and said that Council is concerned about what may be in the water that the County is not measuring. Mr. Mudd then stated that construction of ASR wells is governed by state and federal regulations and that there are special safeguards to ensure there are no leaks, and that there is a monitoring program. In further discussion, he affirmed there would be sufficient separation between the proposed ASR aquifer and the fresh water aquifer. In response to Council Member MacIlvaine, Dr. Mark Pierce of Water Research Solutions explained that there would be drill cuttings from the entire test well, and that staff would take core borings in everywhere deemed necessary. Mr. Mudd also explained the County would take appropriate measures to ensure wellfield integrity.

Dr. Pierce then stated he had been working with injection wells for over 20 years, and that he has been designing ASR wells, selecting ASR intervals and zones, and operating ASR wells for the last five. He explained that wellfield protection is achieved through confinement, well design, well testing, and monitoring and that geologists had examined a large portion of the County's geography, and said that the Peace River formation is the confining zone. Council Member MacIlvaine nevertheless questioned the possibility of an interruption in the confining zone, noting the Calusa Bay well situation. Dr. Pierce however said there is additional information to consider such as the fact that those aquifers that lie below the Peace River formation are artesian, which means the well water would flow to the top. Council Member Tarrant questioned whether pumping millions of gallons of water into an ASR well would therefore increase the artesian effect. Dr. Pierce however estimated that the increase would amount to only two inches of water. Artesian aquifers, he said, are confined by definition, and have existed for millions of years. Dr. Pierce then stated that the recharge in a fresh water wellfield is however coming laterally and from the surface. He stressed that because there is no brackish water flowing from the lower zones into the upper Tamiami aquifer, there is no evidence to suggest significant leakage. He said that this is the basis for affirming an excellent confinement for this zone. In further response to Council, Dr. Pierce stated that many of the existing wells are several thousand feet deep, and that the intervals of spacing range from one thousand feet to one mile.

Dr. Pierce then stressed the importance of a solid well design, and provided details on the required casing. He also commented that there is no significant movement of the water through the confining layers. In response to Vice Mayor Herms, Dr. Pierce further stated that the water may actually be flowing at less than 1/10 per inch per year. Dr. Pierce also affirmed that ASR wells typically have 50-70% recovery efficiency, which he said is comparable to other recovery methods. He further stated that staff would perform core testing especially in the upper confining zone when drilling the

exploratory well to ensure the zone is, in fact, confining, and then select an ASR target interval. Dr. Pierce confirmed for Council Member Tarrant however that this type of core testing was not the one used by Coastal Engineering on the beach renourishment project. He further explained that this testing would involve imposing upon a core the stress existing underground, and pumping water through it to determine permeability. Dr. Pierce added that in this phase, staff would also perform a packer test which determines water flow, and log various geophysical criteria. In response to Vice Mayor Herms, Dr. Pierce predicted the flow rate would be three to five feet per year, but Mr. Herms said he had been informed by other experts that this rate could actually be as high as six inches to one foot per day. Dr. Michael Weinberg of Water Resource Solutions stated that if the City has concerns about pumping reclaimed water from its wellfield, it should ascertain travel time from contour maps in relation to the location it is applying reclaimed water. In further response to Mr. Herms, Dr. Weinberg stated that according to SFWMD data, water in the mid-Hawthorne aquifer is actually moving northwest, away from the wellfield due to Lee County pumping, but that the water in the City's wellfield is being recharged by rainfall and is moving west. He then countered information presented earlier in the meeting by Dr. Stagier saying that a portion of reclaimed water infiltrates into the ground, moves rapidly through the sand, and upon reaching the water table moves under the same influence as water pumped into any other ground water system. Council Member Tarrant stated that while Drs. Weinberg and Pierce had given the impression that the movement of the water in the area proposed for the ASR well is very slow, leakage from that area up into the Tamiami aquifer would engender rapid movement. Dr. Weinberg however explained that the water in the aquifer near the wells is moving rapidly because it is under a higher hydraulic gradient, but that this gradient decreases with increased distance from the wells lengthening the water travel time. In regard to concerns regarding a slow upward leakage, Dr. Weinberg pointed out that the re-use water the City currently sprays does penetrate its wells and that a leak in an ASR well would not cause a dissimilar situation. Mayor MacKenzie however noted for the record that wells 25 and 26 near Calusa Bay, although near sprinkler heads, are not currently pumping.

Dr. Pierce explained that after all the data for the exploratory well have been compiled, County staff would apply for a construction testing permit and would at that time demonstrate well design and structure as well as preliminary modeling to indicate where the water would go. The actual construction would entail the required coring, monitor well construction, geophysical logging, and a flow test to evaluate well performance. Vice Mayor Herms stated that County staff had previously indicated that 1-2% of the total well depth would be cored in order to determine the presence of an impermeable layer. Dr. Pierce explained that this along with the drill cuttings would be sufficient to assure a similar material. He added that County staff would then apply for an operational testing permit and provide a well completion report followed by cycle testing to calibrate the modeling, and assessment of pressure and water quality changes and recovery efficiency. The County would then apply for a Florida Department of Environmental Protection (FDEP) operating permit, re-evaluating all the data. He stressed there would be extensive monitoring of the well with monthly reports, as well as intermittent drinking water standard analyses. Dr. Pierce also commented on the reclaimed water radius, noting that 100 million gallons of water at a 50 foot height and a 20% porosity would cause the plume or edge of the water to extend approximately 300 feet unmixed with another 100 feet of mixed native and injected water. Council Member Tarrant questioned whether the unrecoverable reclaimed water would also remain in that scope. Dr. Pierce stated it would move at the same rate as the aquifer, which if moving quickly, would cause the ASR project to fail. In closing, Collier County Manager Oliff stated that in 1999 the cities of Naples and Marco Island and Collier County were ranked as "Best in State" for their use of re-use water.

Recess 3:14 p.m. to 3:32 p.m. It is noted for the record that Council Members Taylor and Wiseman left the meeting during the recess.

In response to Council Member MacIlvaine, Dr. Pierce assessed the likelihood of an ASR well contaminating the City's drinking water as remote. He added that, even in the event of contamination, the City treats its water properly. Vice Mayor Herms said the procedure would be to close the affected wellfield subsequent to identified contamination. Mr. MacIlvaine noted that the City of Milwaukee had an excellent water purifying system, but that a lapse had occurred causing fatal consequences. He explained that there is much controversy on this issue, and that he believed it prudent to err on the side of conservatism to ensure public safety. Mr. MacIlvaine also cited the possibility of chemical and bacteria interaction; Dr. Pierce however said this becomes a problem only when the water is brought back to the surface. Mr. Herms observed however that it could also be a problem if it leaks back up through the confining layer. Dr. Pierce said the water has been underground for millions of years under much pressure and had not migrated upward. Mr. Oliff reiterated that the material is treated effluent, and that it would not be used for irrigation or discharged into the Gordon River if it were dangerous. He clarified that even if contaminated, the risk to the City's drinking water supply is greater through ground application than through an ASR well.

Vice Mayor Herms then questioned how this untried process could be completely safe. Dr. Pierce however countered that the ASR technology is being tested throughout the State and that re-use water would migrate in the same fashion as fresh water, as migration is independent of water quality and dependent only on the type of formation it is being injected into. Mr. Mudd commented that the city of Gainesville recharges its aquifer with re-use water and transmits it to its water plant for further use. County Wastewater Director Joseph Cheatham clarified that Gainesville has been injecting re-use water into the Floridian aquifer at a depth of 800 feet for approximately 23 years, and that the water has not as yet reached the City's wellfield located approximately seven miles away. He emphasized that there has been no adverse effect from this practice.

Council Member Galleberg questioned the importance of proceeding with this particular project, in light of its storing only 140 million gallons of reclaimed water. Mr. Mudd responded that this would be adequate to satisfy the County's current supply contracts for reclaimed water. Mr. Galleberg then said that County staff needs to understand that the public wants to know what would occur in the event of contamination. He also questioned why this technology is not being proposed for a larger community such as those north of the City or on the east coast. Additionally, Mr. Galleberg requested additional information on the five-year moratorium in Georgia. Assistant County Manager Michael McNees stated that the County's contracts for reclaimed water are not guaranteed delivery contracts, and explained that County staff had been required, as part of the permitting process, to submit data that demonstrated there would be sufficient customers to use the effluent being created. He then explained that because this technology has met with much resistance, a small scale project would be an apt starting point. Mr. McNees then stated that several people had pointed out that the water sprayed onto the land is filtered through sand and rock; however, there is more definitive geological data on the area intended for the injection well than there is for any of the land application sites. He therefore questioned the belief that land filtering exists without fracture or fold, and guarantees safety. Mr. Galleberg suggested that a layman's lack of understanding complicates this issue. Mayor MacKenzie commented that the fact that the County's septic systems do not seem to be penetrating the fresh water supply lends credence to the notion that geology purifies surface water. She then questioned why this project would not be located nearer to the coast, saying that any leakage or fault would cause material to flow towards the Gulf instead of the wellfields. Mr. Oliff stated that while this is an option, it would be more expensive.

Noting ongoing water restrictions, Mr. Oliff stressed the importance of finding ways to avoid wasting re-use water. Mayor MacKenzie however suggested exploring other sources of water to meet the demands, such as recaptured stormwater. In response to Council Member Galleberg, Mr. Oliff said that a Savannah project to recharge stormwater into its fresh water aquifer had been halted because Savannah did not have appropriate regulations in place, and had not considered the quality of water being injected.

Mayor MacKenzie questioned whether there was a possibility that the City would construct additional wells that would encroach into the 1.3 mile separation between the ASR well and the City's wellheads. Dr. Pierce explained that there would be a monitoring well, and that the City would be able to determine whether there were any water quality changes. Mayor MacKenzie reiterated her prior concern that the County may not test for all potentially harmful substances. Vice Mayor Herms also voiced concern relative to the proposed location of the ASR well, noting its proximity to the City's water supply. He added that although a tank farm would be more costly, the recovery would be 100% and there would be no risk to the water supply system. Mr. Herms suggested that the City slightly increase the price of its water in order to recoup this additional expense.

Council Member Tarrant recommended that Council review the videotape of the recent joint City Council/County Commission meeting on this issue and pointed out that a County staff member had said that if a monitoring well were to detect migration, the County would be required to shut down the ASR well, examine the migration, and potentially commence a reclamation project. Mr. Tarrant asked how the County therefore intended to clean the upper Tamiami aquifer once contaminated. Dr. Pierce said it would be cleared the same way as any other site, which would entail pumping water out of the ground, treating it, and replacing it. Citing the possibility of millions of gallons of water migrating into surrounding areas, Mr. Tarrant questioned the County's ability to determine where this water had migrated. Dr. Pierce said that technology exists which would bring the water back to safe levels. Mr. Tarrant, however, stated that the water customers will want definitive assurance of a high quality drinking water, and therefore recommended that the County proceed to build a concrete tank farm. Mr. Tarrant expressed the belief that Americans have historically treated their environment and natural resources with disdain and contempt and therefore encouraged the County to not gamble with public health and safety by taking a risk of contaminating an irreplaceable natural water source.

While Mr. Mudd noted that the County meets all State requirements for reclaimed water treatment, Council Member Tarrant pointed out that FDEP geologists are on record advising citizens to not drink it. County Manager Oliff said that the FDEP would nevertheless advise against drinking raw water directly from the Tamiami aquifer before it was treated. Council Member MacIlvaine said that in the event that some of this reclaimed water were to flow into the aquifer, it would be treated at the City's water plant. When Mr. Oliff pointed out that this same effluent is currently going into the City's aquifer, Mr. Tarrant countered that the City's Natural Resources Manager had previously explained that the material being sprayed onto the ground must however filter through many feet of material before entering the Tamiami aquifer while 50% or more of treated effluent may migrate from an ASR well to an unknown location and not be recovered. Mr. Tarrant predicted that the County would not indemnify the City against such a catastrophe; however, Mr. Oliff said he was uncertain where this catastrophe would occur.

Vice Mayor Herms stated that the City had received much information on potential biological and pathogenic materials and that health and government experts recommend further research in order to

understand the effect the ground materials will have on these other components. The City, he said, could not guarantee the public that injected materials will not be transmitted into the water supply in the future with carcinogenic consequences; this is not an acceptable risk with citizen safety, he added. Mr. MacIlvaine observed, however, that whatever material is transmitted into the water purification system will be treated before its use by the public. Mr. Oliff expressed doubt that the City is currently testing its raw water supply for all potentially dangerous materials. Mr. Tarrant suggested placing this issue on a referendum to allow the public to make the decision on this proposal.

Donald McNeill of McNeill Geological Services explained that he had been retained by the City to review the permit application that the County has submitted with respect to an exploratory well and a potential ASR system. Dr. McNeill said that his specialty is sedimentary rocks, and said he had drilled a series of cores throughout southern Florida and has been involved in reviewing the ASR program for the Everglades restoration. He then said that he had reviewed the County's permit, and has consulted with County staff regarding potential changes in the exploratory program; he said he had also reviewed all relevant geological information from Lee County to the southern Collier County regarding the confining unit. Dr. McNeill said he maintains some concerns with respect to the competency and continuity of the upper confining unit which separates the Hawthorne aquifers from the lower Tamiami aquifer. Dr. McNeill explained that, although the ASR process theoretically involves injecting fluid into porous rock which is supposedly confined and keeps the fluid in place, there is a possibility for various problems. He listed various issues such as the need to identify the proper injection units, inadequate confinement of the injected water, and the possibility of water migration. Water migration, he said, is controlled by the geology as well as by the density of the injected water relative to the native water. Additionally, there are problems with low recovery and declining efficiency. Another of the unknowns, he explained, is the biogeochemical reactions previously mentioned. Dr. McNeill then said that the proposed ASR injection intervals below the Peace River confining beds range from a depth of 400 to 1200 feet so that injected water could potentially pass within a few hundred feet of the base of the lower Tamiami aquifer. He then enumerated various geological uncertainties with respect to the Peace River confining bed such as the variable quality of the existing geological data, which poses serious questions regarding possible fractures, and more permeable zones leading to inadequate confinement. In response to Council Member MacIlvaine, Dr. McNeill affirmed that he had in fact recommended more extensive coring, but said that the County would nevertheless have to consider the potential for lithologic (physical character of rock) or lateral changes.

County Commissioner Pamela Mac'Kie stated that she, like Council, is endeavoring to obtain more information. She then said she is not concerned about reclaimed water returning to the surface because she is satisfied with its quality, and because she is confident that the County is already introducing it into the Tamiami aquifer from the surface. Ms. Mac'Kie said she is also confident that raw water would be treated at the plant. She however raised the issue of possible changes in the water while still underground. Dr. McNeill said the consequences of chemical changes that may occur when the water loses oxygen are as yet unknown. Dr. Pierce however explained that the inorganic chemistry can be well understood, and said that although some may raise a question, they had not actually established the problem. Vice Mayor Herms stated that the City does not purify its water supply to a great extent, and may not remove antibiotics or other materials, however, those materials present in the re-use water are removed via the natural purification process of the many confining layers prior to arriving at the water system. Council Member Tarrant also pointed out pumping treated sewer water into the aquifer conversely involves concentrating large amounts in one area and that geologists have conceded that 100% recovery is not possible because a large portion

would migrate into other areas. Mr. Tarrant then questioned whether the County had accidents at its water plant in the past year; however, Ms. Mac'Kie said this is irrelevant.

Council Member Galleberg asked for a comparison of upward and downward percolation from the surface. Dr. McNeill reiterated that this is unknown, but added that the reclaimed water placed on the surface does not necessarily transmit to the wells as there is a shallow water table aquifer which overlays the Tamiami aquifer separated by some low permeability units. He noted an incident near Key West wherein potable water was injected into a brackish water aquifer with the assumption that the storage interval would be confined by 430 feet of low permeable sediments such as clay sandstone. However, it was later discovered that instead of this material, there was only a fine grain carbonate with high permeability, and that all the fresh water had disappeared from that interval. Dr. McNeil then related another situation wherein a municipality had been informed by its consultants that it would take 343 years for the water to move from its injection site up 1100 feet to the base of the underground drinking water source; however, the actual time between injection and detection was approximately 11 years. Council Member Tarrant pointed out that Natural Resources Manager Jon Staiger had previously explained that any contamination entering the Tamiami aquifer would begin to flow at a high rate of speed and then travel to the City's wellfield relatively quickly. Council Member Galleberg questioned, however, whether the rate of flow degrades the filtering process; Dr. McNeill affirmed that while it is a question of rate, he could not provide a definitive answer. Dr. McNeil however stated that time, rather than distance, affords more opportunity for various biological and geo-chemical processes. Dr. Weinberg stated that according to the data previously presented by Dr. Staiger, it would take 100 years for the material to reach the City's wellfield. He then said he had determined that the confining zone is a plastic clay in which fault is largely unheard of. Council Member Tarrant reiterated his prior contention that the County should instead build a concrete tank farm; Dr. McNeill affirmed this would be a safer approach.

PUBLIC COMMENT(5:08 p.m.).....ITEM 9

Michael Simonik, representing The Conservancy of Southwest Florida, stated that the Conservancy believes that the proposed ASR test well will indicate whether this new technology is a safe and effective means of increasing the water supply. He however urged that the County test beyond the proposed elements and standards to answer additional questions, such as the fate of microorganisms, pathogens, and the possibility for biogeochemical reactions. Mayor MacKenzie questioned whether he believed the County should place the ASR test well in an alternate location, noting an increased opportunity to protect the wellfields with only a marginal increase in cost. Mr. Simonik suggested that elected officials ascertain whether the risk is sufficiently minimized to justify the increased cost. Council Member MacIlvaine questioned whether the risk would, in fact, be reduced by a greater distance from the well. Council Member Tarrant noted that a dye introduced experimentally at one point in an underground Floridian aquifer was detected 20 miles away in a short period of time. He therefore urged caution in regard to both permeability and the potential for unknown risks. **Clarence Tears, representing Big Cypress Basin of the SFWMD**, stated that many of SFWMD decisions are based on local decisions and affirmed that to meet citizen demands, alternative water sources are needed. Mr. Tears further pointed out that although all want a guarantee of safety, the City's water currently contains carcinogenic chemicals and cannot be guaranteed safe. He added that the County is taking every step possible to ensure the safety and effectiveness of the ASR and that it should proceed with the test well, noting the many ASR wells already operational in the Country. In response to Mayor MacKenzie, Mr. Tears stated that recycled water is safer than stormwater because it is treated and tested; however, since the goal is to provide a high quality product at a reasonable cost, additional testing increases costs. Ms. Mac'Kie requested additional information on the current tests; Dr. Harley Young of the FDEP explained that the effluent would be tested for the same elements as drinking water and then took exception to previous

comments that leaks are acceptable because the water would be treated. He said leakage into the aquifer is not acceptable, and that this water should not be used for drinking.

Council Member Tarrant pointed out that many experts have conceded that ASR technology is still controversial and experimental, as such, the public should not be placed at risk without an opportunity to vote on the issue. Mayor MacKenzie explained that because this is experimental, the City is asking for additional information and opportunities to monitor the situation. Commissioner Mac'Kie however questioned why this material would be monitored to a greater extent than drinking water. Vice Mayor Herms stated that it is because it contains more pathogens; while Council Member MacIlvaine however disagreed on that point, Mr. Tears stated that he had been informed by City staff that it had never found pathogens or bacteria in its re-use water. Vice Mayor Herms stated that 50 years ago, mangroves were removed and the Everglades were drained because people did not understand their importance to the environment. He predicted that in approximately 40 years, the City would discover that ASR wells are also major mistakes; he therefore urged the construction of above-ground storage facilities. Commissioner Mac'Kie however suggested fully informing the citizens of both the appearance and cost of such facilities and pointed out that the City is currently discharging 300 million gallons per year of re-use water into the Gordon River which ultimately flows to the City's beaches. Mr. Herms countered that this may however be a better option than pumping it underground and drinking it. In response to Ms. Mac'Kie, Mr. Tears said he believed ASR technology is safe, because the water can always be removed. He said that his concern is actually relative to the appropriate protection of the surficial aquifer system.

(Public Comment continued) Colin Kelly, 2811 64th Street SW, stated that in the past the phosphate industry had been allowed to accumulate a low-grade radium by-product above ground; however, on one occasion one of the accumulations had collapsed into a sink hole and discharged into an aquifer. He also relayed other instances wherein technological intervention had caused adverse environmental consequences and costly repairs, therefore urging the County to be certain before proceeding with the ASR process in order to ensure the safety of the shallow water aquifers.

City Manager Rambosk commented that all are seeking a safe and effective way to deal with water concerns and that the public should understand that the City is not introducing re-use water directly into the aquifer. Mr. Rambosk said he nevertheless believed it important for the staff to provide additional information on the potential biogeochemical reactions and the pathogens discussed so that Council could make informed decisions.

Mr. Oliff expressed appreciation for the opportunity to discuss this issue but reiterated that the main consideration is the test well, which he said is necessary to ensure that geological conditions are safe for an effluent ASR well. Mr. Oliff reiterated that the effluent is not hazardous, is used regularly, and would be removed yearly at a rate of up to 80%. Mr. Oliff also noted that this technology is key to the Everglades restoration, and that the Conservancy of Southwest Florida had registered its support for this technology under the right conditions. He then urged that all parties agree to make decisions based on fact, stating that he believed this technology would allow reuse of a precious natural resource.

Mayor MacKenzie also expressed appreciation to County staff for its time, thoroughness, and cooperative spirit, and added that she is also proud of the City staff for its work in this regard. She then said she had questions she would further research, and that she was sure that other Council Members felt similarly. Commissioner Mac'Kie said she was pleased that several other County Commissioners had been able to attend the meeting. She then said that the County has made a

commitment to an ASR test well only at this time and therefore requested that the City withdraw its current objection. Vice Mayor Herms urged that the citizens be thoroughly educated on ASR technology as well as the alternatives, and recommended an ongoing dialogue.

ADJOURN
5:57 P.M.

Bonnie R. MacKenzie, Mayor

Tara A. Norman, City Clerk

Prepared by:

Jessica R. Rosenberg, Recording Specialist

Minutes approved: 3/21/01