

**MINUTES OF SURFACE WATER STUDY WORKSHOP MEETING OF THE  
CITY COUNCIL OF THE CITY OF LUFKIN, TEXAS, HELD ON THE  
11th DAY OF SEPTEMBER 2000 AT 9:00 A. M.**

On the 11th day of September 2000 the City Council of the City of Lufkin, Texas, convened in a Surface Water Study Workshop meeting in the Council Chambers of City Hall with the following members thereof, to wit:

Louis Bronaugh	Mayor
R. L. Kuykendall	Mayor pro tem
Don Boyd	Councilmember, Ward No. 2
Lynn Torres	Councilmember, Ward No. 3
Bob Bowman	Councilmember, Ward No. 4
Jack Gorden, Jr.	Councilmember, Ward No. 5
Dennis Robertson	Councilmember, Ward No. 6
C. G. Maclin	City Manager
James Hager	Asst. City Manager/Finance
Atha Stokes Martin	City Secretary
Keith Wright	City Engineer
Kenneth Williams	Director of Public Works

being present when the following business was transacted.

1. Mayor Bronaugh called meeting to order.

**2. SURFACE WATER STUDY WORKSHOP**

City Manager Maclin stated that about three weeks ago the Council received the preliminary version of the feasibility study that Council had commissioned almost a year ago to study the feasibility, and evaluate all the aspects involved in going to Sam Rayburn for surface water, in order to take advantage of the surface water rights on Rayburn that the City has been paying for since 1967, and to identify the various answers to questions as far as legalities, as far as procedures, as far as where should the intake structure be located, where would a treatment plant be located, where would be the proposed location for the transmission line from the lake back to town. Mr. Maclin stated that based on the fact that our ground water study that was completed a little over two years ago indicated that by 2010 the City would be approaching, based on current growth rates, the maximum peak pumping capacity of our ground water. Mr. Maclin stated that it was his understanding that a part of a focus group appointed by Lt. Governor Rick Perry that he had a group that had been studying ground water issues in Texas with the potential of establishment of ground water districts and that one of the issues included in their proposal to go back to the legislature in the next session is that in essence studies will be required to be completed that determine ground water capacities for all aquifers in Texas by the year 2004. Mr. Maclin stated that that has recently been posted on the Texas Water Development web site. Mr. Maclin stated that perhaps there would be some intricate studies. Mr. Maclin stated that he had a hard time personally distinguishing between the Carrizo-Wilcox Aquifer in Angelina County versus the one in Brazos County all the way up to Smith County since they are all part of the Carrizo-Wilcox Aquifer. Mr. Maclin stated that the question is how do you determine peak pumping capacity from one area of the aquifer. Mr. Maclin stated that it was explained to him that it was part of the draw down capacity where if you over pump an area your wells start dropping.

Mr. Maclin stated that the reason for talking about the Lake today is the potential that ground water in the future will not be able to meet the needs of the growth of Lufkin and Angelina County. Mr. Maclin stated that today the consultants are going to go into a little more detail into the Executive Summary that was included in the Surface Water Study notebook, and after they have completed their presentations and have shown their charts and demographic issues they have explored, they will be available for any questions by Council for further in-depth details that deals with this feasibility study. Mr. Maclin stated that ultimately we would be leading up to an item that is in the Executive Summary and that is a recommendation for Council to consider moving forward with the first phase of this project. Mr. Maclin stated that the first phase of the

project is defined as moving forward with the permitting process, the acquisition of property for the treatment plant, the acquisition of property for the transmission line from the lake back to town which is approximately 26 miles, and then also included in phase one is a rate study. Mr. Maclin stated that a consultant would be brought in to analyze the existing City rates for residential and commercial customers and make any recommendations based on any inequities in that regard and then also use the rate study to help determine what would be the impact to our rates should five years from now, once we have completed the first phase, then decide to move forward with the construction of the treatment plant and issue some \$36-46,000,000 in debt for that project, what would be the impact to the rate payers in Lufkin. Mr. Maclin stated that as the City is able to secure either additional partners from rural water supplies or potentially secure additional grant funding and/or low-interest loans from the Texas Water Development Board or TNRCC as a regional water supplier how those receipts and participants would impact the rate analysis, and ultimately what the citizen pays in order to have water at their home or their business each month.

Larry Lasiter stated that he would like to recognize the study team who were present. They were Wayne Stoltz and Jed Morris of EGA, Susan Crawford of CDM, Bob Thurber and Steve Dorman of KSA and himself and Mike Walker of Goodwin-Lasiter. Mr. Lasiter stated that these are the individuals who have actually done the work and prepared the report that has been given to Council.

Mr. Lasiter stated that he would follow the Executive Summary in giving the report. Mr. Lasiter stated that the City of Lufkin has experienced steady growth and the chart on the first page of the study indicates various growth projections. Mr. Lasiter stated that the Region I study committee of the Texas Water Development Board has come up with some projections and their numbers indicated in the growth range of about .8%. Mr. Lasiter stated that they went back and looked at the City of Lufkin's historic growth from 1960 up through today and that historic growth has more paralleled 1.9% growth rate and the County's growth rate has been a little higher than that. Mr. Lasiter stated that based on the historical data they had, there was some discussion between the Region I group, and they have actually accepted the projections that have been generated from this study as far as the growth rate. Mr. Lasiter stated that now their growth rates pretty much parallel the growth rates of this surface water study. Mr. Lasiter stated that it is important to understand that growth rates are projections and it doesn't mean that in the year 2050 this is your population, it is based on projections and projections can change. Mr. Lasiter stated that as Mr. Maclin mentioned, the City now totally relies on the Carrizo Aquifer for their water supply. Mr. Lasiter stated that the City currently has 10 wells in production and are in the process of acquiring sites and looking at drilling additional wells in the future. Mr. Lasiter stated that because of the nature of this surface water projection being a very long term commitment by the City to finally be able to get the first water from the surface water source, in the meantime the City has to continue to plan for ground water supply that will meet the City's needs. Mr. Lasiter stated that the projections of the aquifer are that it can support about a 32-33,000,000 gallon per day safe yield. Mr. Lasiter stated that in 1997 the pumpage from the aquifer was estimated at 26.2. Mr. Lasiter stated that based on that you could see that we're approaching the projected capacity of the aquifer to sustain the demand that is on it. Mr. Lasiter stated that leaves us in the neighborhood from 1997 until now about a six million gallon per day cushion. Mr. Lasiter stated that since 1997 it seems like there has been a fairly extended drought period every year, which is becoming a fairly regular situation to be dealing with drought conditions. Mr. Lasiter stated that during those periods pumpage from the aquifer is right at the capacity of the aquifer because the pumping capability that is out there as far as water wells is pretty much the capacity of the aquifer. Mr. Lasiter stated that there are short periods of time that we are actually pumping water at the capacity of the aquifer.

Mr. Lasiter stated that the other issue is that the leaders in the City made a wise decision back in the '60's to get water rights from Sam Rayburn reservoir and this gives us the opportunity that we have now to consider that as a water supply for the City. Mr. Lasiter stated that the City of Lufkin is in the Region I regional surface water study that was established under Senate Bill One. Mr. Lasiter stated that the surface water treatment facilities for the City of Lufkin are recognized in this study and the City's combined demands compare with the supply and deficient results from the year 2000 to

2050, so the City has a deficient according to the document that has been approved in the Region I study of water supply starting now. Mr. Lasiter stated that the regional study also projects the annual average production and the TNRCC requires planning for the expansion when you meet 85% of capacity. Mr. Lasiter stated that the water supply planning for the City must consider the long range peak demands – you can't just look at the average usage in a year but must consider peak projections. Mr. Lasiter stated that the goal of this study was that the City of Lufkin would be prepared with a defined course of action to meet the long-term water supply needs of its customers. Mr. Lasiter stated that with the adoption of this study the City now has a plan of how they can meet the City's long-term water supply needs with surface water. Mr. Lasiter stated that it was developed with the assumption that other water suppliers in the region would participate and they will utilize some of the capacity as the surface water is developed. Mr. Lasiter stated that this includes the City of Zavalla and the City of Huntington, which is now using some City of Lufkin water through an intergovernmental agreement. Mr. Lasiter stated that the City of Zavalla is in a pretty needful situation as far as getting additional water supply. Mr. Lasiter stated that they are in a situation where drilling additional wells is not a very viable or good solution for them so they are looking for another source of water supply. Mr. Lasiter stated that most of the other water users in the County have a shortage of water and shortage of well capacity and are all making plans to try and address that. Mr. Lasiter stated that some of them on the southern end of the County have more difficulty in finding a good location for a water well, so as time goes on over the next four or five years, the other water users would be very likely candidates to enlist to participate.

Mr. Lasiter stated that the City has contracts with the Corps of Engineers and the Lower Neches Valley Authority for their water surface supply. Mr. Lasiter stated that the withdrawal rate approved in these contracts is 28,000 acre-feet annually which equates to 25,000,000 gallon per day average production. Mr. Lasiter stated that this initial 25 million gallon per day would be supplemented with the City's current ground water supply to meet the projections of the City through the year 2050. Mr. Lasiter stated that the City should begin taking steps now as the City fathers did in the '60's looking at additional supplies for water through other reservoirs as those opportunities come along or increased supply capacity from Sam Rayburn reservoir.

In response to question by Mr. Wright, Mr. Lasiter stated that the contract that the City has now with LNVA and the Corps of Engineers gives the City the right or privilege to request a certificate to have water rights from the TNRCC Water Rights Division.

Mr. Lasiter stated that he would go through the results that were arrived through the surface water study and the conclusions that the team came to. Mr. Lasiter stated that the quality of the water in Sam Rayburn Reservoir is comparable to other East Texas reservoirs and it was determined that a conventional treatment process for this drinking water would meet the current and proposed drinking water standards. Mr. Lasiter stated that there have been questions about the quality of the drinking water standards in some of the prior meetings they have had with Council and they have done some looking at other reservoirs and the water qualities of those other East Texas reservoirs and they are all somewhat unique because every reservoir has its own unique characteristics. Mr. Lasiter stated that over all the water quality they (the consultants) see at Sam Rayburn is comparable to other East Texas reservoirs. Mr. Lasiter stated that it may be that because this is a long term project and there is going to be a process here of actually getting to the point of getting ready to start on construction of a project like this it might be prudent for the City to initiate a quarterly sampling and testing just to monitor the water quality. Mr. Lasiter stated that they have based their study results on samples that were taken last year in August. Mr. Lasiter stated that they felt that taking the water samples at a time when the reservoir was in a low water level condition as well as low flow condition should model the worst conditions of the water quality and that was the reason for the sampling being done last year in August.

In response to question by Councilmember Bowman, Ms. Crawford stated that they had some additional water study data from Lake Palestine and KSA was attempting to get some additional information from the Lake O' the Pines. Ms. Crawford stated that what they are generally seeing with the East Texas lakes is there is water with lower alkalinity. Ms. Crawford stated that alkalinity is the buffering capacity of the water basically, and does not have anything to do necessarily with water quality but is

basically the level of chemicals that would be required to treat the water is what alkalinity will reflect. Ms. Crawford stated that it has a moderate ph, and those are the things generally from a treatment standpoint that they are looking at and how they have to treat the water. Ms. Crawford stated that some of the other issues were that it had a somewhat elevated level of iron and manganese, which is very typical for reservoir supplies particularly in areas that are somewhat heavily forested. Ms. Crawford stated that you can get stratification of levels of manganese within a reservoir and basically you can get rid of that through an oxidation process, either aerating the water or using something like chlorine or another chemical to oxidize that metal out.

Mayor Bronaugh asked Ms. Crawford that in dealing with the people who question the quality of the water in testing, etc. did she have anything that would satisfy their needs? Ms. Crawford stated that from what she has heard some of the main concerns are with mercury and the fish kills that have occurred. Mr. Maclin stated that also the group that oppose the change in the permit for the Papermill. Ms. Crawford stated that it is difficult to explain to a non-lay person something that a fish is going to be toxic to is very different from something that would harm a human being. Ms. Crawford stated that a simple analogy would be for example, if you have an aquarium in your home you cannot have a chlorine residual because it will kill the fish. Ms. Crawford stated that the chlorine is toxic to the fish, whereas you do have a chlorine residual in the water coming into your house because it will kill the bacteria. Ms. Crawford stated that the levels of mercury in the water sampling that they did did not show any elevated levels of dissolved mercury in the water. Ms. Crawford stated that as Mr. Lasiter recommended, it was her opinion also that it would be prudent to continue sampling on a quarterly basis just to confirm those issues.

Councilmember Bowman stated that some of these things that you find in the water occur naturally like mercury and iron, and if you didn't have a Papermill you would still have these things in the water. Ms. Crawford agreed. Ms. Crawford stated that you do see this in areas that are more heavily forested and you get natural organics that run off from the tannic and the trees, etc. into the reservoir and they are not necessarily bad things and they are very treatable. Ms. Crawford stated that for the organics, the pesticides and herbicides they tested for they are all non-detect in the samples that they collected last year. Mr. Wright stated that all the testing was done to primary and secondary EPA standards. Ms. Crawford agreed.

In response to question by Councilmember Bowman, Ms. Crawford stated that the lake could be treated to EPA standards. Ms. Crawford stated that there was nothing that they saw that would raise a concern of being a treatability issue at this lake.

Mr. Lasiter stated that the consultants looked at four locations that were sampled for the water. The most northern location was the 103-bridge area and the southern location was south of the 147 bridge at Calhoun Point. Ms. Lasiter stated that the recommended location for withdrawal is at the Highway 147 Cassell-Boykins Park area, which there was some variation in some of the water constituents and color from the northern end of the southern end and it appeared that the highest water quality levels were at the southern end.

Mr. Lasiter stated that the location of the treatment plant and storage facilities would be also near the location of the intake structure. Mr. Lasiter stated that showed the Highway 147 bridge on the map and showed two possible locations for intake structures. Mr. Lasiter stated that it would be desired that the treatment plant be located in the proximity of the intake facility so you do not have to pump raw water for a great distance. Mr. Lasiter stated that there are a number of reasons for that; one thing is pumping costs for the intake structure. Mr. Lasiter stated that when you are building an intake structure out over the water and you would like to have that intake structure not being any larger pumping station than it has to be because of the expense of building out over the water. Mr. Lasiter stated that by keeping the treatment plant near the intake point it allows us to reduce some of the cost of the intake structure pumping as well as it allows us to pump treated water back to the City of Lufkin so that if we have potential other users along the route that they can take water right out of that line and use it.

In response to question by Councilmember Bowman, Mr. Lasiter stated that actually we could get into deep water at any of the locations including the 103 area where you would be in the main river channel. Mr. Lasiter stated that there was some advantageous locations as far as deep water near the shore that was more possible at the southern location at the 147 bridge whereas if you go up to the 103 area it's a greater distance from the shore out to deep water. Mr. Lasiter stated that there are some unique characteristics about the under water topography at this location near Cassell-Boykins that makes it an ideal place for an intake structure.

In response to question by Councilmember Robertson, Mr. Lasiter stated that the intake structure would have to be in the channel.

In response to question by Mr. Wright, Mr. Lasiter stated that he did not recall the exact difference in the elevation between the two locations, but they weren't going near the maximum depth of the river but was looking at a 120 to 140 elevation. Mr. Lasiter stated that if the lake got down low enough where it basically became a river on the north end it would be the depth of the channel in the river and maybe not necessarily the lake level. Mr. Lasiter stated that it didn't make a lot of sense to go to that area because you don't have as much deep water and it is longer from the shore and the water quality is not quite as good as at the southern end.

Mr. Wright asked that as far as water quality in a lake isn't it true that in the upper end of any reservoir the water quality will be less than the lower end. Mr. Lasiter stated that the reservoir acts as a settling basin so when you have rains or any flow in any kind of basin once it hits a large pool like a lake then the sediments start dropping out of the water so you are taking advantage of some of the lakes treatment ability and even when there is film on the reservoir you can go to the upper end and it gets muddy when it rains so you have a lot more variation and water quality whereas you go to the dam end of your reservoir and the water quality is pretty consistent. Mr. Lasiter stated that they were not at the dam, but in between.

In response to question by Councilmember Gorden, Mr. Lasiter stated that they are proposing at the intake facilities two different depths where you have the option of drawing water out of either depth and the reason for that is that sometimes the water quality is a little better at one depth than another so it is desirable to have multiple depths you can draw water from. Mr. Lasiter stated that in both cases those intake points are below the historic low level that Rayburn has ever been at which is 150.8. Mr. Lasiter stated that the City's contract allows them to take water out down to the 149 elevation and the Lake has never gotten that low before. In response to question by Councilmember Gorden, Mr. Lasiter stated that their lowest level is 137.5. Mr. Lasiter stated that if the water level ever did get below 149, actually it would change jurisdiction or regulation and TNRCC would have control over the City drawing water out of the reservoir once the City gets below 149. Councilmember Gorden stated that the Corps of Engineers told him once that the water level would change but the City could somehow draw water out of there until it dried up. Mr. Maclin stated that this is the issue that the Corps of Engineers, the LNVA, the Sam Rayburn Municipal Power Authority and specifically the State of Texas via the TNRCC and the Attorney General all have different opinions about that subject, but in the end most people indicate that municipal water supply would be the highest use and would have the greatest opportunity for taking water when others could not – we would be the number one priority as a municipal water supply.

Councilmember Gorden asked if there was a rough standard of the more you move the line the more it will cost. Mr. Lasiter asked if Mr. Gorden was asking about the distance that you pump the water from the intake to the City. Mr. Lasiter stated that there is a relationship there and basically it would be in reduced pumping facilities and line costs which would include right-of-way and construction of the line. Mr. Lasiter stated that they would do the math on this and let Mr. Gorden how much it would be per mile. Mr. Maclin stated that because of the elevations it doesn't appear that anything much farther north of the 147 bridge is feasible for the long-term needs of the City. Mr. Maclin stated that you could take that point possibly and go further south with it towards the dam but based on the intake at 136 it is hard to come up with a cost benefit analysis for that. Mr. Lasiter stated that there are some cost trade-offs too. Mr. Lasiter stated that the location they have recommended has a lot of advantages

because of the intake structure cost being lower because they don't have to go so far out in the reservoir whereas they could shorten the line if they moved north but if you have to go three times as far out in the lake with the intake facilities then you may lose any savings that you would have by a shorter pipe line. Mr. Lasiter stated that another advantage in coming from the direction that they are proposing is a lot of the other potential county water users have a lot better opportunity to tie on to the water supply coming to the south whereas if you went out to the 103 area you would lose a lot of those opportunities.

Mr. Maclin stated that another factor that minimizes the cost justification by going further south is there are no population densities as you go to the regular dam on either side. Mr. Maclin stated that if there was a Tyler, Longview, or Beaumont somewhere where you would have potential for sale of significant volumes of water, that might possibly cost justify additional extension, but that doesn't exist currently and is not forecast in the next 50 years. Mr. Lasiter stated that in answer to Mr. Gorden's earlier question, the cost is about three quarters of a million to a million dollars per mile for the transmission line (phase 1 and 2).

Mr. Bowman asked how long would it be if the City did not undertake this project, in what year could the City expect serious water shortages based on our current usage and current population growth. Mr. Lasiter stated that based on their projections it would be in the range of 2006 to 2010. Mr. Lasiter stated that once the Carrizo Aquifer is tapped out then the City could get in a situation where they had to ration the amount of pumpage out of the wells. Mr. Lasiter stated that you could get into a situation where you have forced rationing, maybe having to cut back on industrial consumption because the City has a fairly high industrial pumpage. Mr. Lasiter stated that another issue is that the City of Lufkin is not the only user that is tapping into the Carrizo Aquifer. Mr. Lasiter stated that there are areas in the County such as Hudson that have been growing at 6 to 7% growth rate and they are planning a new well that is in the Carrizo and any future wells they have would go there. Mr. Lasiter stated that we are all competing and trying to use that one water resource and it is a countywide issue that we are looking at. Mr. Gorden stated that, in his opinion, we would be negligent by not moving forward.

Councilmember Gorden stated that this could be the single biggest economic development tool we could come up with.

Mr. Lasiter stated that the initial phase capacity that was recommended on the treatment plant is ten million gallons per day, which combined with the City of Lufkin's well production capacity of about 14 million gallons per day currently and plans for additional wells, that would put the City's total water supply at 25 million gallons per day once the phase 1 project is finished. Mr. Lasiter stated that the ultimate development of the treatment plant which would carry the City out to year 2050 would be for the surface water plant to be upgraded in stages up to 25 million gallons per day. Mr. Lasiter stated that the timing of those upgrades would be dictated by the City's growth. Mr. Lasiter stated that the first phase upgrade from 10 million gallons per day to 15 million gallons per day is a fairly easy upgrade. Mr. Lasiter stated that the treated water line connecting the surface water plant to the City would not have to be upgraded in that stage, but you would have to add some additional pumping capabilities at the transfer station at the lake and at the booster station in the City, and you would have to add additional treatment unit line in the treatment plant. Mr. Lasiter stated that the first step of upgrade is fairly economical.

Mr. Lasiter stated that it is recommended that the intake option is a pump station constructed on the shore with the pipeline running into the reservoir. Mr. Lasiter stated that he would get into the details of this later but basically the pumps would be located on the bank and they would be coring or drilling out into the reservoir for the intake lines. Mr. Lasiter stated that if they could time the construction at a low water level time of the reservoir which would be ideal, there may be a part of this that could be constructed with open cut and reduce some of the length of the boring requirement.

Mr. Lasiter stated that the conventional treatment plant is the method preferred for treating the water. The recommended sizing for the initial storage and transfer pumping facilities is four million gallons of storage and 11 million gallon per day

pumping capacity. Mr. Lasiter stated that the transfer pumping station is at the treatment plant, and this is the pump station that transfers the water to the City of Lufkin. Mr. Lasiter stated that the study of the routing and sizing of the transmission line is a route that follows Highway 147 from the intake and treatment plant and then there is some cross county line that is across from the US Forest Service property that makes its way over to U S 69 and then they would follow along the railroad tracks along U S 69 all the way through the City of Huntington. Mr. Lasiter stated that when you get past the City of Huntington the line would intersect with Ford Chapel Road and the booster pump station would be located along the new proposed I-69 corridor and the Ford Chapel Road intersection. Mr. Lasiter stated that they envision that the City's distribution system could have lines that would be laid up and down the I-69 corridor that would allow the City to get water north and south along a new right-of-way. Mr. Lasiter stated that this brings up the issue that the City would need to coordinate that right-of-way acquisition with TxDOT.

In response to question by Councilmember Robertson, someone stated that when you go through the City of Zavalla there is a lot of right-of-way and off the right-of-way there are a lot of residences and particularly in the downtown area there is no right-of-way or ground adjacent to the right-of-way. Mr. Dorman stated that by going across the top of the City you avoid all the acquisitions from the small individual residential properties. Mr. Wright stated that what was assumed is that each entity would have to build a storage plant and pumping facility off of the City's transmission line and pump it back to their appropriate entity. Mr. Lasiter stated that there are some ground elevation issues in going straight on into Zavalla. Mr. Dorman stated that on the northeast quadrant of Zavalla there is a very high hill. Mr. Dorman stated that the route could be moved over closer to Zavalla but what they were trying to do was follow established right-of-way through the Forest Service lands to get back over to 69. Mr. Dorman stated that the main reasons for not going through the City of Zavalla is the number of residential acquisitions required, the limited right-of-way, and the high point in the northeast quadrant. Mr. Dorman stated that going through Huntington there is already right-of-way where the old railroad track was abandoned that goes through the City and is unencumbered by existing utilities or structures built on top of it. Mr. Dorman stated that the ownership of it will probably revert back to the adjacent owners, but is clear and wide open and would make the path of least resistance through Huntington.

Councilmember Robertson asked what kind of right-of-way is already across on National forest land. Mr. Dorman stated that it is a combination of existing Forest Service roads and abandoned Forest Service roads. Mr. Dorman stated that probably half of the distance is closed Forest Service roads. Mr. Dorman stated that the Forest Service would prefer that they go through the old closed roads rather than blazing a trail through the middle of the forest. Mr. Wright stated that he had talked to the Forest Service representatives and they are interested and would like to have water to their facility. In response to question by Councilmember Robertson, Mr. Dorman stated that they could straighten out the "dog leg" and follow an existing property line.

Mr. Lasiter stated that the size on the transmission line recommended as part of Phase One is a 36" transmission line from the treatment plant, transfer station, all the way to the City of Lufkin. Mr. Lasiter stated that obviously they would look at alternate bids for various sizes of line which would be some economic advantage at the point that they bid the project out to go with different sizes if they could get a good value for that size pipe and/or looking at various materials. Mr. Lasiter stated that they would bid more than one pipe material to keep everyone honest in the bidding process and make the different pipe materials compete against each other.

Mr. Lasiter stated that the booster facilities would be located near the intersection of the proposed I-69 Corridor and Ford Chapel Road. Mr. Lasiter stated that issues concerning blending of the water in the distribution system, there is a situation where there is well water feeding in at one point in the distribution system and surface water feeding in at another point. Mr. Lasiter stated that the disinfection currently used for the well water supply is just free chlorine, normal chlorination of the water, whereas the surface water requires that you use a chloramine, which is a chlorine and ammonia mixture for sterilization and treatment of the water. Mr. Lasiter stated that in surface water there are by-products that would be generated if you didn't use that type of disinfection system. Mr. Lasiter stated that when you blend those two types of waters

– free chlorine versus chloramination – you could have some taste and odor issues that develop. Mr. Lasiter stated that there are a couple of alternatives, the least expensive of which would be to divide the City's distribution system into zones and not have the water mixing in the distribution system. Mr. Lasiter stated that you would have one part of the system fed with surface water and the other part of the system fed with ground water. Mr. Lasiter stated that a preferable way to go would be to upgrade the disinfection system at the well water plant to a chloramination disinfection so you don't have to worry about any taste and odor issues when the waters are blended in the distribution system. Mr. Lasiter stated that their estimated cost for that upgrade at the well water plant is approximately \$150,000. Mr. Lasiter stated that he would think that this would be the direction the City would want to plan even though it is not the least expensive way they could go.

Mr. Lasiter stated that the cost for the recommended initial phase construction is estimated at \$46.5 million with all the recommended facilities. Mr. Lasiter stated that that equates to a cost of about a \$1.18 per thousand gallons based on a 30-year loan and a \$1.29 per thousand gallons based on a 20-year loan. Mr. Lasiter stated that that really doesn't have anything to do with the City's water rates, part of the recommendation for the next step is that the City have a rate study done looking at the impact this project will have on the City's water rates. Mr. Lasiter stated that these are just looking at taking cost of constructing the surface water facilities and dividing it by the number of gallons per day production you can get out of the plant. Mr. Lasiter stated that these numbers are not about water rates, but the cost of producing the water.

Mr. Lasiter stated that another factor in the cost to the City is the participation of other water users. Mr. Lasiter stated that if they can enlist enough other county water users in this process of developing this project it will reduce the cost to the City of Lufkin and there is definitely a need throughout the County for additional water supply. Mr. Lasiter stated that they also looked at cost reduction alternatives, trying to look at a bare bones budget in order to still get the surface water to the City at the same capacity levels, ultimately what could they do to reduce the cost of looking at all the various alternatives. Mr. Lasiter stated that he would go into these details later. Mr. Lasiter stated that the cost would be reduced to \$37.8 million.

Mr. Lasiter stated that the City's power supply to the treatment plant and pump station down at Sam Rayburn Reservoir is an unresolved issue at this point. Mr. Lasiter stated that the Jasper/Newton Electric Co-op has the service area for the electric power service in that area. Mr. Lasiter stated that TXU Electric furnishes them power and there is a sub-station on Hwy. 147, which is an interface between TXU and Jasper/Newton. Mr. Lasiter stated that Jasper/Newton has made some preliminary estimates of about \$1.8 million in order to upgrade their facilities in order to handle these power requirements. Mr. Lasiter stated that, in his opinion, there would be room for some negotiations there either with them or jointly together with TXU and Jasper/Newton. Mr. Lasiter stated that this is an issue that will need to be resolved before we move along much further.

Mr. Lasiter stated that the study also evaluated the acquisition and operation and maintenance costs including the environmental permitting issues associated with the project. Mr. Lasiter stated that the recommendations as to what they are recommending that the City do as far as the next step is to engage in a rate evaluation, to begin site and route acquisitions, to begin environmental studies and complete them, begin the permitting process, and then begin making financing plans for financing the project. Mr. Lasiter stated that once those steps are in place, then the City would be at the point where they would be ready to proceed with the design and construction of the facilities.

City Manager Maclin asked that Mr. Lasiter define the Environmental Assessment and Fiscal, Legal and Administration costs on page 11-8. Mike Walker stated that the permitting costs are included in item 4 and the cost of the rate analysis is part of item 7. Mr. Maclin asked when the consultants talk about archeological survey, wetlands investigation and environmental assessment was that all dealing with the properties for acquisition meaning the site for the treatment plant and the distribution lines. Mr. Walker said "Yes, that was the whole route coming back to town." Mr. Walker stated

that they actually contacted the entities that are presently doing that work for the City for the basic line replacement to try and get as close as they could for those prices. Mr. Dorman stated that that included the intake structure to the booster plant on the I-69 corridor. In response to question by Mr. Maclin, Mr. Walker stated that the permitting for the intake structure was included in this cost. Mr. Maclin stated that he would assume that a portion of the Fiscal, Legal and Administration was the rate analysis study, and asked what they would classify as the remaining services. Mr. Parker stated that this would be the cost of financing right now any other administrative costs associated with the rate study. Mr. Walker stated that they included contingencies in case they had any kind of environmental mitigation. Mr. Maclin stated that Legal could possibly include imminent domain if we got to that point. Mr. Walker stated that the 15% on item #7 is 15% of the first six items, a contingency to account for the rate study and any legal matters and financing costs.

City Manager Maclin stated that he would point out to Council that from a financing cost standpoint, it will be staff's recommendation to consider utilization of the depreciation fund since it will be spread out over at least four years. Mr. Maclin stated that staff thinks that it is feasible to utilize the depreciation fund without a rate increase and without having to amortize any debt or issue debt for this portion of the project. Mr. Maclin stated that some of the cost towards the end of the project based on limitations of the law could be reimbursed to the City. Mr. Maclin stated that the City has done projects in the past where they have issued debt and we would have a Resolution to go ahead and get started on the project and maybe incur some engineering costs or acquisition costs and then once the debt is actually issued the City would reimburse itself back to the fund balance. Mr. Maclin stated that we could do that possibly with a portion of this, as we get closer to issuing debt for the treatment plant and the construction of the distribution line. Mr. Maclin stated that his point in bringing that up is that it is not staff's intent to have any financing costs on this if the Council chooses to use the funds that are set aside from the Depreciation Fund, which staff feels is adequate, particularly since it will be spread out over four years.

Councilmember Robertson asked if it would not also be a consideration to raise some rates in the next two or three years in anticipation of putting some money in the bank for this project. Mr. Maclin stated that when we do the rate analysis we would have the answers to these types of questions. Mr. Maclin stated that we will bring in our financial consultant, Mike Byrd, and he will bring some ideas. Mr. Maclin stated that another thing that he would like to include as a part of implementation of step 1 is once Council feels comfortable with giving staff permission to move forward with step 1, they would also then like Council's permission to contact all of the other entities in Angelina County and northern Jasper County to talk about their potential participation to involve the economies of scale. Mr. Maclin stated that staff would also continue to pursue the Texas Water Development Board and TNRCC. Mr. Maclin stated that it might even be cost effective, not this session but the next session of the legislature to utilize a lobbyist to lobby for funds to be appropriated in the State Legislature, specifically for a regional water supply from Rayburn. Mr. Maclin stated that staff will have a better idea of that when Region I's report comes out and compound that with the ground water study issues that will be brought forth, which is another issue which he as a City Manager would want to ask Council's permission. Mr. Maclin stated that if the City is going to be talking to the other 15 water producers in Angelina County about potential utilization of surface water he would also like to talk to them about ground water districts and some of the implications there and what we as water producers should all be aware of and perhaps partnering together in order to best protect our future.

Councilmember Bowman asked if property tax could be used in any form for this project. City Manager Maclin stated that "Yes, property tax could be used". Councilmember Bowman asked how much was raised for each one cent of property tax. City Manager Maclin stated that \$120,000 right now based on net taxable tax roll, maybe \$124,000 with the new tax roll. Mr. Maclin stated that that would be something that the committee appointed for the bond election would be looking at at their meeting on September 25<sup>th</sup> too. Mr. Maclin stated that Mr. Byrd has given the City the option of doing a combination tax and revenue bond issuance where you have a portion of the debt that is issued against tax rate and a portion of it is issued against revenues that are created from increased fees, increased rates. Mr. Maclin stated that is why staff

feels it is so important to have a rate analysis done. Mr. Maclin stated that the City has not had a rate study in the past 10 years that we was aware of.

Mr. Lasiter stated that that covers the Executive Summary. Mr. Maclin stated that whenever Council feels like it is ready to address some of the issues brought about in Step 1 it is up to them whether it be today or if staff brings it back on a future agenda. Mr. Maclin stated that basically staff's goal is to get to the point where Council hopefully feels comfortable with the Step 1 implementation recognizing that staff is proposing to use Depreciation Funds over the next four years to cover those costs and would not have a rate impact as a result of using those Depreciation Funds. Mr. Maclin stated that the timing from hereafter is up to Council and when they are comfortable and ready to proceed.

City Manager Maclin stated that it is his understanding that it is the consensus of opinion from Council to place this item on next Tuesday's agenda for September 19<sup>th</sup> for further consideration based on the Step 1 implementation, the utilization of Depreciation Funds for Step 1, and likewise to begin meetings with the water producers of Angelina County and northern Jasper County to consider their potential participation. Councilmember Boyd stated that staff could put a notice in the newspaper so that if the public had any input they would be aware of the meeting.

Councilmember Robertson asked if there would be some public meetings on this issue. City Manager Maclin stated that as staff and Council identify issues from the Step 1 implementation such as the analysis of the rates, that will be a separate meeting by itself for discussion. Mr. Maclin stated that one of the options he would like to consider is to get an option on purchase of the property as opposed to purchasing the property and tie it up if the landowner is willing to do that. Mr. Maclin stated that in the event the property owner would not give the City an option for purchase then we would have to move forward with the actual cash purchase of the property. Mr. Maclin stated that because of the price impact this purchase would be brought back to Council for a decision as we progress through the project. Mr. Maclin stated that, in his opinion, the biggest discussion and public information would be following the rate analysis because this would ultimately tell the citizen how much their water bill will go up if the City takes water from the lake.

Mr. Lasiter stated that the permitting process would also necessitate public meetings.

Councilmember Robertson stated that there is still a lot of misinformation about water quality especially about the mercury issue. Mr. Robertson stated that if the Texas Parks and Wildlife is putting a restriction on the amount of fish that a person can eat out of Rayburn over a period of time, then there is a perception that there is excess mercury in the lake. Mr. Robertson stated that how we get over that and how we can justify and validate the fact that the information here is correct and that there is not excess mercury in the lake that will cause us any treatment problems or any health problems. Mr. Robertson stated that we must assure the public and the citizens who will be using the water that the City is O. K. on that. Mr. Robertson stated that we must make sure that we have people on board with that issue before we get caught up in a negative situation. Mr. Maclin stated that the suggestion of quarterly water sampling is probably the best way the City can overcome that and making those quarterly sample test results available to any and all groups that desire them and make that well known through the media would go a long way to minimizing misperceptions in that regard. Mr. Maclin stated that there are some toxicologists and biologists who could possibly assist the City with that. Mr. Lasiter stated that this will be a public relations situation that needs to be managed well. Mr. Lasiter stated that the City does a great job of keeping the citizens informed through their newsletter and that is a good forum to educate the citizens of Lufkin. Mr. Lasiter stated that this goes a little larger than that because you are trying to educate people in the county and water regions.

The meeting adjourned for lunch at 12 noon.

After reconvening, Mr. Lasiter stated that he thought it would be a good idea to start off at the intake structure and let KSA go through some of the issues that they are dealing with at the park.

Mr. Dorman pointed out the existing Cassells-Boykin Park on the map and stated that EGA had prepared a current master plan (not the final master plan). Mr. Dorman stated that a couple of key issues that they are looking at at the intake structure is to get to deep water as quickly as possible to limit how long the pipes have to be out in the water. Mr. Dorman stated that they have to stay 1000 feet away from any boat ramp. Mr. Dorman stated that basically the pump station is just a 25 feet diameter wet well and they will do a cason construction to form 15 ft. sections on site and excavate out in the middle and that should sink down to the 80 ft. depth that you need to be. Mr. Dorman stated that from there they will come out and bore from the wet well to the lake at the two elevations, which will allow them to withdraw water either from the low elevation or the high elevation depending on the water quality, because both of them will be below the minimum water level in the lake.

Councilmember Robertson asked what would determine the water quality difference in those different elevations. Ms. Crawford stated that it would be time of year, rain events that occur, etc. Ms. Crawford stated that this is something that was talked about earlier with the iron and manganese levels. Ms. Crawford stated that manganese tend to sink to the bottom of the lake and a lot of times you would want to pull off the higher intake level just because of that situation. Ms. Crawford stated that it would be seasonable. Mr. Thurber stated that it will be equipped with a smaller pipe line to sample the raw water at each intake that way the City can maintain a check on the water quality and determine at that point in time which is the best to take. Mr. Maclin stated that Rayburn annually goes through a turnover like most lakes due to decomposition and it is a normal evolution of lakes to turnover. Mr. Dorman stated that the quarterly sampling would be taken at different levels to make sure that it is defined.

In response to question by Mayor Bronaugh, Mr. Dorman stated that the incoming pipe would be underwater and there would be floating buoys that would restrict any navigation over the pipes and this is a TNRCC regulation. Mr. Dorman stated that this would be at a 200 ft. radius of intake points.

Mayor Bronaugh stated that it is very important to note that septic tanks surrounding the lake that are out of compliance are pumping a lot of raw sewage into the Lake.

In response to question by Mayor Bronaugh, Mr. Dorman stated that in his opinion Lufkin would have to go to those who are currently in place to police those types of facilities. Mr. Dorman stated that one of the things that TNRCC requires is that you have some control over your intake. Mayor Bronaugh stated that the control of the septic systems on this end of the lake is with the Lower Neches River Authority.

Mr. Thurber stated that they looked at the various types of techniques and types of intake structures and there is only two or three ways you can get water out of a lake and they investigated all of those at the various depths and they also looked at utilizing the 147 bridge trying to save money. Mr. Thurber stated that they had been told by TxDOT that it would be difficult for them to hang a pipe on the bridge. Mr. Thurber stated that they looked at a lot of alternatives and various depths as far as intake and cost is concerned.

Ms. Crawford stated that they had basically looked at three alternatives: one is what they call a conventional treatment plant which includes rapid mixing, sedimentation, infiltration. Ms. Crawford stated that the disinfection process that they are recommending is a combination of chlorine-chlorimain and then if the regulations dictate they have also allowed for putting in settled water resination. Ms. Crawford stated that the other one that they looked at is a viable and perhaps more economical option and was also a high rate sedimentation process. Ms. Crawford stated that one of the reasons they did not recommend it right off the bat is that to approve that type of process you would have to do approximately three months of pilot testing to confirm that that process would be applicable and amenable to treating the Sam Rayburn Reservoir water. Ms. Crawford stated that that is certainly something that is an option and if the City chooses to do that they could. Ms. Crawford stated that one thing that would have to be kept in mind with these high rate sedimentation processes. Ms. Crawford stated that essentially what they mean by high rate sedimentation is it more rapidly settles out the solids in the water and it can do it by many different processes.

Ms. Crawford stated that there are other processes out there that use proprietary ballasted sand to basically sink the settled solids out. Ms. Crawford stated that there are a lot of different things that could be looked at, and looking at one doesn't mean that all of them would work. Ms. Crawford stated that essentially what they have laid out is a conventional process and as Mr. Lasiter talked about earlier it has been laid out for the 10 MGD treatment trains and shows basically two five MGD treatment trains and the one of the cost advantages if you are looking at reducing cost you could potentially go to one single 10 MGD treatment train. Ms. Crawford stated that to do that the City would require from TNRCC that we would have to have enough well capacity to meet the average daily flows. Ms. Crawford stated that if this plant is off-line the wells could handle the average daily demand. Ms. Crawford stated that to handle solids they have planned for sludge lagoons.

In response to question by Councilmember Robertson, Ms. Crawford stated that periodically the City would have to collect the solids out of the lagoons. Ms. Crawford stated that there are two main types of waste processes that come from the water plant, one would come from the sedimentation basins when the solids are settled out where they will go over to the lagoons, and the other large waste product is when you back wash a filter. Ms. Crawford stated that every couple of years the lagoons would have to be dredged and cleaned out. Ms. Crawford stated that a landfill would be an option for disposal but having a sanitary sewer system nearby would be the better option. Mr. Wright stated that he would suggest taking the sludge back to the City's digester facility and take the water out of it and treat it like we do the wastewater sludge. Ms. Crawford stated that she would recommend that in proceeding on the preliminary design phase certainly all of those options need to be looked at in more depth.

In response to question by Mayor Bronaugh, Ms. Crawford stated that ozone is still an effective tool for drinking water treatment.

Mr. Lasiter stated that from the treatment plant the water would go to a transfer pump station, which is adjacent to the treatment plant and basically consists of storage tanks. Mr. Lasiter stated that Phase One would be two two-million-gallon storage tanks with future capability to add eight million more or even more than that, and then pumps that would transfer the water back to the City of Lufkin and to anyone along the route. Mr. Lasiter stated that there is a similar pump station located near the City that pumps into the distribution system. Mr. Lasiter stated that that comprises all of the facilities that they have talked about constructing. Mr. Lasiter stated that they had cost estimates that are broken down into detail and that information is in the report.

City Manager Maclin stated that this would be placed on the Council agenda for consideration next Tuesday.

3. There being no further business for consideration, meeting adjourned at 1:30 p. m.



Louis Bronaugh  
Mayor

ATTEST:



Atha Stokes Martin - City Secretary