

**BHB** Baird, Hampton & Brown, Inc.  
Engineering & Surveying

December 17, 1997

Board of Directors  
El Dorado Homeowner's Association  
% Mr. Clayton Myhre  
2623 Valley Creek Trail  
McKinney, TX 75070

Post-It Date # of pages  
Fax Note R7673 12-19 5  
To Clayton Myhre  
Fax# 972-250-6206  
From Bill Baird  
Phone#

RE: ENGINEERING EVALUATION OF DRAINAGE PROBLEMS  
EL DORADO ESTATES  
McKINNEY, TEXAS  
BHB PROJECT 9713.78

Dear Mr. Myhre:

In accordance with our agreement, I made a site visit on December 8, 1997 to observe the conditions and problems that are being experienced related to drainage, erosion and sedimentation within El Dorado Estates. As you know, we have not performed any storm drainage analyses, hydrologic/hydraulic computations or detailed engineering investigations. Instead, I made visual observations of the areas that have been reported to be experiencing problems.

I was accompanied by Mr. Bill Whitfield, who was very helpful and showed me several areas of concern. Following are the areas that we observed, my evaluation of the problems and recommendations:

1. **Location: Open drainage way behind homes on east side of Greenway Drive and adjacent to golf course.**

Problem: The drainage way flows off of the golf course and individual lots from generally south to north in a poorly defined open channel. The flow has cut a channel in some areas and exhibits minor erosion and is undercutting a railroad tie retaining wall at the rear of two homes. At the current time the walls do not appear to be in any imminent danger, but I expect that future heavy runoff conditions will worsen the conditions and could cause the walls to fail.

It was also reported that the golf course irrigates the course extensively and that area homeowners report problems with mosquitoes, caused by localized "bird baths" and low spots that hold water.

Recommendation: This erosion is relatively minor at this point. The drainage way can be shaped to move the centerline of flow away from the retaining wall by at least 10'-12' and carefully graded to provide a uniform grade on the channel. In addition, gabions can be placed at periodic intervals to help control the velocities, allow some drops to occur and assist in preventing future erosion. This repair will need a survey and engineering plan and profile in order to have the repairs installed correctly.

Budgetary Estimate of Repair Work: \$ 12,000 + Engineering Fee (estimated \$2,400.)

**2. Location: Open drainage way behind homes on the south side of Colonial Circle (east of Country Club Drive) and cul de sac of Forest Creek.**

Problem: The open drainage way flows from generally west to east along the rear lot lines described above. As it flows easterly the drainage way has a relatively flat slope for about the first 300'-400', then breaks to a steeper slope for another 300'-400' until it drains into the creek. In the second, steeper section of the channel, there are several areas of localized erosion. The erosion is most likely caused by velocities exceeding that which is acceptable for grass lined channels. In addition, a storm drain discharges into the channel and additional erosion is occurring. The discharge of this storm drain was not provided with any means, such as concrete apron or gabion mat, that would assist to curtail erosion.

Additionally, considerable erosion is occurring near the confluence of this channel with the creek. At this time a shelf has been cut that is about 2'-3' high and it has eroded back 10'-15' feet. This erosion should be addressed to prevent further, more extensive erosion.

It was reported that the developer of the property south and east of the creek has agreed to clean and restore the main creek. At the current time the creek has considerable weeds and unsightly growth in the creek bed. This growth is a nuisance to the adjacent homeowners.

Recommendations: The erosion along this channel is not considered extensive or critical at this time. However, it more than likely will continue and worsen as time goes on. A solution similar to that which was utilized behind the homes on Brookside Drive is recommended. A series of gabion structures spaced along the channel can help to control the erosion, reduce velocities and provide a means for restoration of the eroded areas. This repair will need a survey and engineering plan and profile in order to have the repairs installed correctly.

Budgetary Estimate of Repair Work: \$ 15,000. + Engineering Fee (Estimated \$3,000)

**3. Location: Dam at Second Lake on Golf Course (near U.S. Hwy. 75 Service Road)**

Problem: The left abutment of the dam is leaking. The dam consists of a structure approximately 30'-40' wide with a center contracted weir spillway. The face of the dam is near vertical, approximately 4' high and is faced with field stone grouted in place. Construction details of the dam structure are not known. Normal design practice is for the dam to be lined with some type of impervious material, clay, concrete, etc. The edge of the second lake is lined with stone gabions at the water level, with a topping of railroad ties, wired into place. Wing walls of mortared stone are constructed on both sides of the dam. On the left side there are additional stones placed at the base of the wing wall. Additional gabions are installed on the downstream side of the dam/spillway at water level of the lower lake. It should be noted that gabions are not considered suitable for retention of water. By their very nature they are very permeable. If the original design intent for use of the gabions was to define the lake edge, then there should have been an impermeable layer constructed behind the gabions.

On the afternoon of the site visit water was visibly leaking (entering) through the gabions at water

level and discharging through at least two areas on the downstream side of the dam. It appears that water is leaking around the gabion basket and making its way through the wing wall, and discharging through the base of the wing wall. This could be a serious problem or develop into a serious problem. It is conceivable that continued leakage through the dam abutment could undermine the stability of the left side of the dam, and at a minimum cause subsidence of this abutment (increasing the leakage rate) and possibly lead to failure of the dam.

Recommendations: We recommend that this problem be studied further than the limited scope of this visual investigation. We are not able to make recommendations at this stage of the project, but we definitely recommend that this problem be addressed. An engineering study should be performed to more carefully evaluate this problem.

Budgetary Estimate of Repair Work: Range of \$20,000 to \$50,000 since scope of problem is unknown

**4. Location: Comegys Creek upstream of El Dorado, near the Reserve and north of Commercial Property being developed at El Dorado Parkway at Hardin.**

Problem: Development in immediate vicinity of Comegys Creek is depositing sediment within the creek, which then flows into series of El Dorado lakes. We observed new development adjacent to the creek, with ineffective erosion control fences, areas of new fill that is eroding into the creek and storm drains discharging into the creek which in turn are causing erosion and downstream sedimentation.

Recommendations: This area is outside of the El Dorado Estates development and consequently the Homeowner's Association has no direct control or influence on the erosion control practices designed by the engineers or utilized by the contractors. However, as you know, since your development is immediately downstream of this new development, you are directly affected by the sediment load being deposited into the series of lakes within El Dorado. I understand that you have been successful in reporting upstream violations to the City, et. al., and that the developer of The Reserve has pledged to remove the sediment from one lake that has been significantly sedimented. Additional development is continuing, and El Dorado could be further affected.

I understand that you have an ongoing relationship with the City of McKinney. I think that it would be prudent for The Homeowner's Association to create a proactive "political liaison" committee to regularly coordinate with the City staff and elected leaders. This committee would be responsible for communicating the problems and expectations of the El Dorado Homeowner's Association. This would hopefully encourage the City to require more and better construction techniques that would *prevent* erosion and sedimentation or any other adverse impact on El Dorado. It is certainly better to prevent problems, rather than have to address problems and damage after it has occurred.

Of course you will have to be constantly vigilant of the upstream development and ensure that the developers know of your expectations before construction commences. You will need to be aware of the unacceptable development practices and complain to the authorities: City of McKinney, Environmental Protection Agency and Texas Natural Resources Conservation Commission. If the

land development allows problems to occur, it is important that you insist that the agencies hold the developers and contractors accountable for any damages suffered by El Dorado.

Budgetary Estimate of Repair Work:      \$ No Cost Since the developer of The Reserve has pledged to remove sediment from the lake and restore to original conditions.

*However, if the developer does not follow through and the remedial work falls to the El Dorado Homeowner's Association, then you should budget from \$75,000 to \$150,000 for the dredging and restoration of the lakes. (I do not have enough information to be more definitive.)*

**5. Location: Creek at Dryden at Kensington (south side of intersection)**

Problem: The creek has experienced considerable sediment deposits, caused by upstream development. The creek currently has several meanders, is quite shallow and has considerable vegetation within the banks. It is rather unsightly in its current condition. Further, it was reported that the creek at this location has degraded significantly in the recent past.

An 84" storm drain discharges into the creek through a concrete flume and drop apron structure. Sediment has deposited at the confluence with this discharge and the main creek.

Recommendations: The conditions in the creek at this location are symptomatic of the overall problems being experienced in the creeks throughout El Dorado. Upstream development is being constructed with inadequate erosion control measures. The resulting sediment is being deposited in the creeks and lakes of El Dorado. The resulting problems are that the lakes are silted up and have little depth, the creeks are laden with sediment, allowing unsightly growth to occur and possibly a breeding ground for mosquitoes in warm months.

As in Item number 4 above, the best remedy is to be constantly vigilant of upstream development that is allowing erosion and sediment deposits within El Dorado. The developers should be reported to the appropriate agencies and then held accountable to repair the damage and restore the natural areas to their original conditions.

Budgetary Estimate of Repair Work:      \$ 20,000 Dredging and Cleanup of Creek

**6. Location: Golf Course Lake (east of Valley Creek Trail)**

Problem: There are two lakes immediately east of Valley Creek Trail. The first lake east of the street is rather long and narrow in some areas. This lake has experienced severe sedimentation. It was reported that the original depth was 8'-10' deep, with the lake bottom coinciding with a hard shale or limestone outcropping. The first 300'± (to a foot bridge) of the lake has been dredged. We assume that the dredge depth is to the original lake bottom. The remainder of the lake from the foot bridge to the dam/spillway has not been dredged. But it was reported that the City of McKinney made a commitment to dredge the remainder of the lake.



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**Summary:**

Baird, Hampton & Brown appreciates the opportunity to assist the El Dorado Estates Homeowner's Association with this assignment. I hope that we have accurately understood your problems, concerns and goals. If there is any aspect of this report that you do not understand or that I have not accurately assessed, please call me. I will be happy to "relook" at anything that you feel needs additional review. In addition, if you would like me to meet with the Board of Directors to discuss this report, I will be happy to.

Please feel free to contact me at any time, and of course we would be happy to provide any further engineering or surveying services that the Board needs.

Sincerely,

**BAIRD, HAMPTON & BROWN, INC.**

A handwritten signature in cursive script that reads "Bill Baird".

John W. Baird, Jr., P.E.