

MINUTES OF A MEETING OF THE BOARD OF DIRECTORS OF
TARRANT COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NUMBER ONE
HELD IN THE DISTRICT OFFICE AT FORT WORTH, TEXAS, ON
THE 30TH DAY OF SEPTEMBER, 1955, AT 1:30 P.M.

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The call of the roll disclosed the presence or absence of Directors as follows:

PRESENT

Joe B. Hogsett
Houston Hill
Lacy Boggess
W. L. Pier
A. T. Seymour, Jr.

Also present were Messrs. Ben F. Hickey, General Manager of the District and Marvin C. Nichols of the Firm of Freese and Nichols, Consulting Engineers for the District.

Director Hogsett acted in his capacity as President, and Director Boggess acted in his capacity as Secretary, whereupon proceedings were had and done as follows:

1.

On motion duly made and seconded, the minutes of the meeting of September 9, 1955 were read and approved by the Directors present and it was accordingly so ordered.

2.

On motion of Director Boggess, seconded by Director Seymour, voucher-checks #7078 to #7148, inclusive, were approved, having theretofore received the approval and verification of Mr. J. M. Williams, County Auditor, who by virtue of the Statutes is the Auditor of this District as well. All the Directors voted aye thereon.

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3.

President Hogsett exhibited to the Directors, Safekeeping Receipt SK No. 7540, issued by the Fort Worth National Bank Safekeeping Department, the Depository of the District for all Securities, showing that Fort Worth National Bank held in their vault, five (5) \$1,000.00 Par Value Tarrant County Water Control and Improvement District Number One, Series 1950 Bonds, now owned by District. Said Bonds were purchased with funds from the Construction Account (Program B). Mr. Ben Hickey was instructed to have a photostated copy made of the Safekeeping Receipt and exhibit same at the next meeting; keeping the copy in District Safe and placing the original in the Lock Box at the Continental National Bank.

4.

President Hogsett presented a letter to the Board of Directors from Mr. Enoch H. Totten, of Fort Worth, in which Mr. Totten proposed to lease, from the District, a certain tract of land purchased by the District from The William M. McDonald Estate. After much discussion, regarding the proposals outlined by Mr. Totten, it was the unanimous decision of the Board, to make further study, and instructed Mr. Ben Hickey to prepare and present to the Board at the next meeting, data as to the possibilities of offering the land for sale.

5.

President Hogsett, presented and read to the Board of Directors, an eight (8) page report of an examination made of the facilities located at the District's Eagle Mountain Lake Reservoir, dated September 26, 1955, and signed by Marvin C. Nichols, District

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Engineer, Tarrant County Water Control and Improvement District Number One. This report, giving a detailed account of each appurtenance, was found in whole, to arrive at this conclusion, "Pursuant to instructions of the Board of Directors, I have made a careful examination of Eagle Mountain Dam including Burgess Levee and Spillway. Inspections were made February 16, March 1 and September 13, 1955. On the inspections made February 16 and March 1, 1955, I was accompanied by Mr. McNair and Mr. Bintliff. Mr. McNair and Mr. Massingill were with me at the time of the inspection September 13, 1955. A previous inspection was made May 23 and July 7, 1949 and was covered by report to you dated July 12, 1949. A supplemental report dated November 25, 1949 covered an inspection made on that date. The properties are well maintained. The Main Dam, Burgess Levee and appurtenant structures are in good physical condition. The operating and maintenance procedures are sound and should be continued. In my opinion the structures are functioning as intended and are adequate and safe."

In concluding the report, Mr. Marvin C. Nichols recommended ten (10) suggestions in respect to operation and maintenance; and it was the unanimous decision of the Directors that Mr. C. L. McNair give a written report at the next Board Meeting, on the status of remedial recommendations as outlined by Mr. Marvin C. Nichols. President Hogsett suggested, with all Directors concurring, that the report of Mr. Marvin C. Nichols be attached, and made a part of the minutes of this meeting.

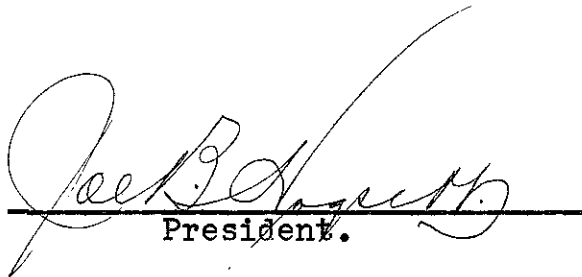
6.

Mr. Robert Sansom, Attorney for the Sansom Ranch Company,

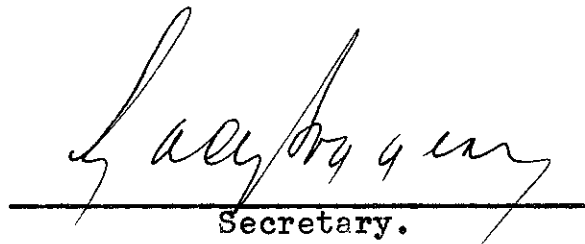
appeared before the Board, to discuss certain matters pertaining to the acquisition of land needed for a dam on Marine Creek. Following Mr. Robert Sansom's presentation, a roundtable discussion was held, after which it was the decision of the Directors, that the matter be held in abeyance until the next meeting.

7.

There being no further business before the Board, the meeting adjourned.



President.



Secretary.

S W FREESE
M. C. NICHOLS
S. G. ENDRESS

FREESE AND NICHOLS
CONSULTING ENGINEERS
407 DANCIGER BUILDING
FORT WORTH 2, TEXAS

TELEPHONE
FANNIN 4364

September 26, 1955

TO BE ATTACHED TO THE MINUTES
OF A MEETING HELD BY THE BOARD
OF DIRECTORS SEPTEMBER 30, 1955.

Mr. Joe B. Hogsett, President
Tarrant County Water Control
and Improvement District No. 1
Danciger Building
Fort Worth, Texas

Dear Mr. Hogsett:

Re: Inspection Eagle Mountain Dam

Pursuant to instructions of the Board of Directors, I have made a careful examination of Eagle Mountain Dam including Burgess Levee and Spillway. Inspections were made February 16, March 1 and September 13, 1955. On the inspections made February 16 and March 1, 1955, I was accompanied by Mr. McNair and Mr. Bintliff. Mr. McNair and Mr. Massengill were with me at the time of the inspection September 13, 1955. A previous inspection was made May 23 and July 7, 1949 and was covered by report to you dated July 12, 1949. A supplemental report dated November 25, 1949 covered an inspection made on that date. The properties are well maintained. The Main Dam, Burgess Levee and appurtenant structures are in good physical condition. The operating and maintenance procedures are sound and should be continued. In my opinion the structures are functioning as intended and are adequate and safe.

MAIN DAM

Earthwork

The downstream slopes are in good condition. These slopes have been improved since the 1949 inspection. Very little erosion or washing was observed.

The bermuda grass cover on the downstream slopes has suffered as a result of the long drouth which is now in its fifth year. The grass is in better condition on the east end than on the west end.

The berms and slope drains are open, well maintained and in good condition.

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Following the 1949 inspection levels were run on top of the dam. Some low spots were found. These low spots were subsequently filled and considerable gravel placed on the roadway. Upon completion of this work levels were again run in March 1950. At that time the top of the dam was above design grade. At the present time no appreciable settlement was observed. It is believed the dam is up to grade.

Rip-Rap

The rip-rap is in good and satisfactory condition. The weathering of the rip-rap is progressing very slowly. Little change could be observed since the 1949 inspection. The small trees and growths of foliage are under control and none were observed.

Since the 1949 inspection the bluff immediately upstream from the west end of the dam has been dressed down and rip-rap placed. It is a good job and effective.

The bluff immediately upstream from the east end of the dam is showing the effect of wave action. This bluff should be dressed and rip-rap placed up to an elevation 5' to 10' above spillway elevation of 649'. The dam is entirely safe under present conditions but this rip-rap should be placed as a precautionary measure.

Seepage

Due to the long drouth and the low level of the lake (639.34', 639.06' and 638.96' on February 16, March 1, and September 13, 1955 respectively), no seepage was observed at the toe of the dam into the natural ground and bluff at the east end of the dam. When we again have a rainy season these seeps will doubtless develop. They have never been considered as serious and do not affect the safety or stability of the dam.

At the time of the inspection all of the ponds of the fish hatchery south of the dam were full of water. Several years ago an extensive program of improvements was made by the State Fish, Game and Oyster Commission. A concrete drainage channel now runs from west to east, discharging into a slough of the river near the east end of the dam. The seepage water flowing through this channel near its east end was estimated to be $1\frac{1}{4}$ million gallons per day. No evidence of sand boils were observed.

About 40 of 50 acres of unimproved land owned by the State drains out through a depression near the south end of the State property. The seepage through this outlet was estimated at 160,000 gallons per day.

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We do not consider the indicated seepage in the fish hatchery area as affecting in any way the safety or stability of the dam.

Conduit Barrels

These barrels are in excellent condition. No structural cracks or strains were observed. Some slight seepage is present in both barrels. In the east barrel seepage was observed in the floor at construction joints No. 2 and No. 4. Construction joint No. 1 is at the headwall or entrance to the conduit proper. The seepage is slight and not considered as important at this time. It is to be noted that in the May 23, 1949 inspection the lake level was 649.64' whereas the level on March 1, 1955 was 639.06'. Some of the seeps in 1949 were under a few inches of head. In the 1955 inspection the seepage was less and under no head above the floor level. There was no sand or silt being carried in the seep water. Construction joints in the wall and roof were moist and damp in places.

In the west barrel seepage was observed in the construction joints in the floor at No. 4. At No. 3 there is a slight seep $3/4$ up the west wall. As contrasted to the 1949 inspection, construction joint No. 5 showed practically no seepage. There was no evidence of sand being carried by the seeps. Construction joints in the wall and roof were moist in places.

Comparing the seepage in 1955 to that observed in 1949, it is believed that the seepage increases with a higher lake level or during a protracted rainy season. The seepage may be related to either or both changes in condition.

We do not believe this seepage condition to be serious and do not recommend any remedial measures. However, these seeps should be kept under systematic observation.

Following the 1949 inspection a program of patching a few areas or spots where the concrete had spalled off and exposed the reinforcing steel was carried out. This work was well done and is in good shape. In connection with the improvements at the fish hatchery an old water line was removed from the west wall of the west conduit and a 14" cast iron line installed. A few patches need to be made in the concrete where brackets were removed.

The ladder from top of headwall to the dividing wall between the barrels is not in good condition and should be removed.

Gate Wells and Head House

A trolley rail and hoist has been installed over the four gate wells. At the time of the inspection the cage used in traveling up and

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down the wells was at Bridgeport Dam. No cracks or seeps were observed in any of the wells by throwing a heavy flashlight beam up and down the walls from both top and bottom of wells. Mr. Bintliff made a detailed examination of the wells March 16, 1955, traveling in the cage up and down the wells. He has advised us that he found no cracks in any of the wells. So far as is known, no appreciable movement, if any, has occurred in the gate wells or gate house.

Some difficulty has been experienced with the settings of the floor stands on the operating floor of the Head House. These have been reinforced and regouted and are now believed to be in good operating condition.

A Fairbanks Morse light plant has been installed.

Outlet From Conduit Barrels

In our report of July 12, 1949 we recommended that consideration be given to cutting a new tail ditch below the conduits. At the time this recommendation was made it was the policy of the City of Fort Worth to keep Lake Worth near spillway level. The present policy is to hold Lake Worth 4' to 5' below spillway. This results in better hydraulic conditions below the conduits when the valves are open. Also, the policy of the District at that time was to "unload" Eagle Mountain several feet in anticipation of spring or fall floods. From experience gained as a result of the present drouth and its effect on our water supply, taken together with the completion of the Brookside-Crestwood levee system, we consider it doubtful that more than one valve will be operated except on infrequent occasions. We believe the new tail ditch can be deferred for the present.

Gate Valve Assemblies

At the time of the inspection, valves 1B, 2B, 3B and 4A were closed. Valves 1A, 2A, 3A and 4B were open. As the valves are rising stems, the stems for the latter valves were up. The threads are in good condition.

Since the February and March 1955 inspections the old Overland motor used to operate the valves through the floor stands has been replaced with a Willis Jeep motor. This was a needed improvement and should result in better operation.

No difficulty in operating the valves was reported by Mr. Bintliff. Alignment of the valve stems appears to be better than in 1949.

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The valve assemblies are well painted and valve chambers are reasonably dry. Piping is tight and in good condition. The stuffing boxes at the top of the bonnets of the closed valves are tight. No observation could be made on the open valves.

Valve 1B which was closed had a very small leak. Mr. Bintliff advised this valve could be tightly closed, but he had just completed some cementing around the floor stand and did not wish to put any strain on the stand. Valve 2B was closed and some little leakage. Valve 3B was leaking somewhat more but not excessively.

Valve 4A was closed and was practically dry. This valve has not been operated recently due to the condition of the valve and nipple. The tightness of valve 4A is doubtless due in part to some siltation. As observed in 1949 a serious condition exists in Valve 4A. Immediately below the downstream disc, but in the interior of case, cavitation has occurred. The metal is extremely thin and in at least one place a hole as large as a pencil has developed. Facing the valve from downstream, this cavitation in the case is in the upper left quadrant. Considerable cavitation has taken place in the upper right quadrant of the nipple between valves 4A and 4B. In the 1949 report it was recommended that this cavitation be built up by welding, if found to be practicable. It has not been found practicable to make repairs by welding due to the spongy character of the remaining metal and the moisture present.

Between the inspections made March 1 and September 13, 1955, a repair of the cavitation was made using Oakum Cold Solder. In general, this repair appeared in good condition on September 13. It was observed however that in two or three spots, limited in area, the solder was loose and had not adhered to the cast iron metal of the castings. Mr. McNair is having these spots chiseled out and new Oakum added. This repair should be systematically observed in order to determine if it has proven satisfactory.

BURGESS LEVEE SECTION

Barthwork

No washes, slips or eroded areas were observed on downstream slope. This slope is uniform and in good condition. Considering the long drouth the bermuda grass sodding and other vegetation is in fair condition. Following the 1949 inspection, levels were run over the top of the dam. It was found to be up to design grade. It is believed the dam is to design grade at the present time. A few gopher holes were observed. These should be eradicated.

Rip-Rap

Rip-rap is in good condition. The small sprouts and foliage are under control.

Seepage.

For many years there has been some seepage in the low ground below the levee. A careful examination was made of this area. There are no boils or evidence of water under pressure. It should be pointed out however that at the time of inspection the lake was 10' below spillway. We believe these seepy low areas to be of no significance.

Service Spillway

Spalling of the surfaces of the walls of the stilling basin continues. While this spalling has not reached serious proportions, it is recommended that consideration be given to repairing these surfaces.

At the time of the inspection some regrading was being done just north of the stilling basin. To the extent practicable, water should be prevented from seeping over the north and south headwalls. This seepage aggravates the spalling of the concrete surfaces.

The gates were being painted at the time of inspection. We have been advised this has been completed.

The hoists and gate structures are in good condition. Since the report of July 12, 1949 a gasoline engine has been purchased and is now used to operate the gates. This method has proved satisfactory and is an improvement over the former manual operation.

At the time of inspection some patching of concrete surfaces was being done in the spillway bays. It is our understanding this work has been completed.

Sand had accumulated in front of the spillway which would interfere with the full flow approach of water from the lake to the spillway. This sand was removed before completion of the inspection March 1, 1955.

It was estimated that the outflow from the stilling basin to the river was of the order of 250,000 gallons per day. This is not considered significant.

In October 1946 a detailed study was made of the stilling basin. At that time no undercutting of the toe walls had occurred. No significant discharges over spillway have occurred since this examination. It is

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recommended that the stilling basin be carefully examined at such time as the discharge over the spillway approaches elevation 654 or 5' over spillway.

An examination was made in the inspection tunnel under the crest of the spillway. The tunnel is in good condition with no evidence of structural defects.

RECOMMENDATIONS

The following recommendations are made in respect to operations and routine maintenance:

1. Present routine operation and maintenance is satisfactory and should be continued.
2. Periodic examination of the seeps in the conduits should be made.
3. At such time as the discharge over the spillway approximates 5' a detailed examination of the stilling basin, cut off walls, and tail ditch below spillway should be made.
4. At such time as the fish hatchery ponds are drained a detailed examination should be made in this area in respect to seepage.
5. As weather conditions permit, additional sodding or seeding should be done on the back slopes of Eagle Mountain Dam and Burgess Levee.
6. Consideration should be given to rather extensive patching of the concrete surfaces of the stilling basin which are spalled.
7. Careful observations should be made of Valve 4A to determine the effectiveness of the repair with Oakun Cold Solder. It is recommended that this valve not be operated at the present time.
8. Additional rip-rap should be placed at the toe of the upstream bluff at east end of Main Dam.
9. No capital improvements are indicated at this time.
10. Due to the continued low level of the lake over an extended period of time, the facilities should be inspected at such time as lake level reaches 654' or within five years, whichever occurs first.

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Mr. Joe B. Hogsett

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CONCLUSION

Based on this examination, together with knowledge of the design and functions of the structures as designing and supervising engineers and observations of the operations since completion of the facility, we are of the opinion all structures are structurally sound and stable. The facilities have been well maintained since the 1949 examination. We find the structures to be in safe operating condition and that they will function properly and adequately under the conditions for which they were intended and designed.

Respectfully submitted,

FREESE AND NICHOLS

By *Marvin C. Nichols*

Marvin C. Nichols
District Engineer
Tarrant County Water Control
and Improvement District No. 1

MCN:lk