

ANALYSIS OF THE JENIPAPO PUBLIC DAM IN THE MUNICIPALITY OF MERUOCA IN THE NORTHERN REGION OF THE CEARÁ SEMI-ARID

Juscelino Chaves Sales - <https://orcid.org/0000-0003-0815-8585>
Prof. Dr. da **Universidade Estadual Vale do Acaraú, UVA**, curso **Engenharia Civil**,
Sobral, Ceará, e-mail: juscelinochaves@hotmail.com

ABSTRACT

The construction of dams in northeastern Brazil to alleviate the drought in the semi-arid state of Ceará comes since the 19th century with the construction of the Cedro Dam in the municipality of Quixadá. The present work aimed to make a physical (structural) analysis of the Jenipapo reservoir located in the north of the State of Ceará. Through an on-site visit it was possible to conclude that the reservoir was built within a valley on top of the Serra da Meruoca and today presents few pathological manifestations (anomalies). It was also possible to conclude that the Jenipapo Public Dam with its water reservoir is of great importance for the residents of the region because it is used for fish farming, human supply and hunting that exists in its surroundings due to dense vegetation. It was also possible to conclude that if the construction of The Jenipapo Public Dam had not occurred, the municipalities of Alcantras and Meruoca would today have a serious water supply problem for their populations located in the Serra da Meruoca, in addition to the Jenipapo Public Dam serving as leisure and for the activity of psychoculture.

KEYWORDS - Jenipapo Public Dam, dam, Meruoca mountain.

RESUMO

A construção de açudes no nordeste do Brasil, para amenizar a seca no semiárido no Estado do Ceará vem desde o século XIX com a construção do Açude Cedro no município de Quixadá. O presente trabalho teve como objetivo fazer uma análise física (estrutural) do açude Jenipapo localizado no norte do Estado do Ceará. Através de visita in loco foi possível concluir que o reservatório foi construído dentro de um vale em cima da Serra da Meruoca e hoje apresenta poucas manifestações patológicas (anomalias). Foi possível concluir também que o Açude Público Jenipapo com o seu reservatório de água é de grande importância para os moradores da região pois é utilizado para piscicultura, abastecimento humano e caça que existe em seu entorno devido a vegetação densa. Foi possível também concluir que se não tivesse ocorrido a construção Açude Público Jenipapo os municípios de Alcantras e Meruoca estariam hoje com um sério problema de abastecimento de água para as suas populações localizadas na Serra da Meruoca, além de o Açude Público Jenipapo servir como lazer e para a atividade da piscicultura.

PALAVRAS-CHAVE – Açude Público Jenipapo, barragem, Serra da Meruoca.

INTRODUCTION

The Brazilian semi-arid is characterized by the lack of regular rainfall during the year, and this entails the need for the man of the region to obtain water in various ways to survive during the dry season (SALES, 2020).

The municipality of Forquilha is located in the northern region of the semi-arid state of Ceará (ceará) (PEREIRA, 2020). The city of Forquilha located in the northern region of the State of Ceará is located on the bank of the Forquilha Reservoir. The Forquilha Dam is about 32km away from the Jenipapo Public Dam, noting that the Forquilha Dam is not on a mountain range, where it rains less than in the Meruoca mountain.

The low availability of water to meet a population of 30 million inhabitants of northeastern Brazil and faced the construction of dams of various sizes, involving from large reservoirs built by the public sector to micro reservoirs deployed by rural owners (MALVEIRA, 2013).

Aguiar Filho and Sales (2013) analyzed the benefits of The Taquara Dam for the northern region of the semi-arid state of the State of Ceará which are: human and animal supply with water, development of fish farming and agriculture in the region etc. The Dam Of The Taquara Dam bar the Jaibaras River.

The Public dam Jenipapo supplies more than 25,000 people with water and is the largest reservoir in the Meruoca moutain and one of the most important in the Acaraú River basin (MUNICIPAL GOVERNMENT OF MERUOCA, 2018).

The present work aimed to analyze the structural conditions of the Jenipapo public dam, as well as its importance for people living in the Meruoca moutain in the northern part of the State of Ceará.

METHODOLOGY

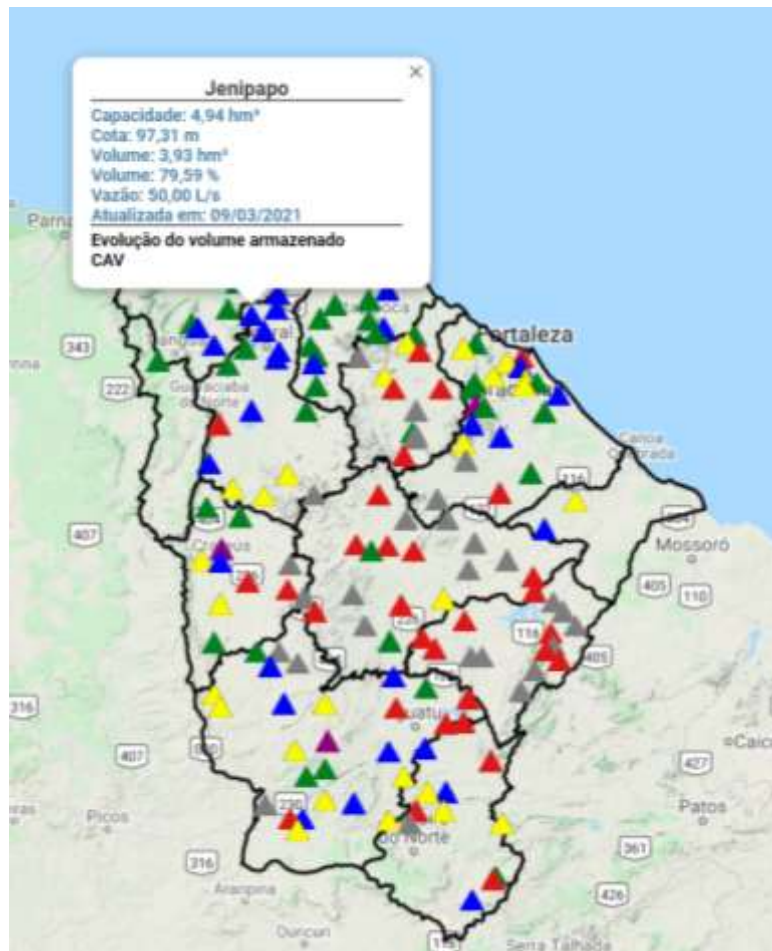
This work was carried out through an on-site visit to the Jenipapo Public Dam located in the municipality of Meruoca where photographic records were made and a visual inspection of the dam of the bleeder etc. A bibliographic search was also carried out on articles, websites, ebook.

THE JENIPAPO PUBLIC DAM

Figure 1 shows the location of the Jenipapo Public Dam in the northern region of the State of Ceará and how its total capacity: 4.49 hm³. On March 9, 2021 the quota was 97.31 m, with a volume of 3.93 hm³, with 79.59% a total volume and the flow rate of 50 L/s (COGERH, 2021).

The Jenipapo Public Dam in the north of the State of Ceará is one of the largest dams that were not built by DNOCS (National Department of Works against Drought) but by the Government of the State of Ceará itself.

Figure 1 - Location of the Jenipapo Public Dam in the northern region of the State of Ceará.



Source:(COGERH, 2021).

The Jenipapo Public Dam besides the municipality of Meruoca also supplies water to the municipality of Alcantras.

There were about 19 families who lived where today is the reservoir of the reservoir of the reservoir and who were indemnified to build the Jenipapo Public Dam.

Figure 2 shows the reservoir of the reservoir surrounded by dense vegetation different from the caatinga biome, but emphasizing that the Jenipapo Public Dam is in the semi-arid region of the State of Ceará.

Figure 2 – Reservoir of the Jenipapo Public Dam surrounded by denser vegetation different from the caatinga biome.



Source: Own, 2018.

In November 2018, the Jenipapo Public Dam was about 92% of its capacity.

Fishing in the Reservoir of The Jenipapo Public Dam is only possible if it is done with hook. A person was found hunting with a shotgun on the edge of the Jenipapo dam. In Figure 3 it was possible to notice the saws that are on the banks of the dam showing how it was built in a valley.

Figure 3 - Saws that are on the banks of the Jenipapo Public Dam.



Source: Own, 2018.

The is deep and has a small water mirror so it decreases the evaporation of water from the dam. The Jenipapo Public Dam has a place where it reaches 60 m deep and was formed by three streams that gave the Meruoca moutain coming from the localities (districts) of Cachoeira, Pedra Furada and São João das Almas.

One of the streams that flow into the Jenipapo Public Dam, passes through the district of São João das Almas and the district of Pedra Furada passing then through the site Refice then the stream goes to the Mount Dam. The water that passes through the bleeder of the Monte Reservoir goes to the Jenipapo Dam. In the location of the Dam Of The Jenipapo Public Dam there were some waterfalls that were extinguished on the descent of the Meruoca moutain. Today there is still a waterfall downstream of the dam called Veil of Bride that has become a place of leisure for residents of the northern region of the State of Ceará.

Before the construction of the Jenipapo Public Dam, in the region where today is the reservoir there was a sugarcane plantation and had a large house that had even slave in the nineteenth century.

Before the construction of the Jenipapo Public Dam had about seven families on one side, and another twelve families on the other side of the valley who were disappropriated for the construction of the reservoir dam.

In the wall (dam) of the Jenipapo Public Dam it was possible to notice the existence of a geological fault, where a reinforcement was made in the wall after the discovery of the geological fault. In Figure 4 it was possible to perceive the crest of the rock dam of the Jenipapo Public Dam through which a dirt road passes and serves as access to other localities of the Meruoca moutain, and in the left shoulder it was possible to notice the existence of a dense vegetation. The rock dam of the Jenipapo Public Dam was built in a valley through which passes the water resource (stream), located on top of the Meruoca mountain.

Figure 4 – Crest of the rock dam of the Jenipapo Public Dam through which a dirt road passes.



Source: Own, 2018.

Figure 5 shows the floating pump inside the Jenipapo Public Dam capturing water for human water supply that is carried through an adductor (pipe) to the cities of Meruoca and Alcantras and to the districts of the municipalities of Meruoca and Alcantras, benefiting about 25,000 inhabitants in the Serra da Meruoca in the State of Ceará in the northern region of the state of Ceará.

Figure 5 - Floating pump inside the Jenipapo Public Dam used in the capture of water from the reservoir.

27



Source: Own, 2018.

The distance between the Jenipapo Public Dam in the Meruoca mountain and the Forquilha Dam in the city of Forquilha is small, and hardly the Forquilha Dam bleeds during the year, while the Jenipapo Public Dam is one of the first dams to bleed during the year in the state of Ceará and this fact stems from the location of the vthat is over the Meruoca mountain, which is in a higher place than the Fork Dam.

The dam Forquilha is in a place where it rains less, that is, it has a lower rainfall throughout the year.

CONCLUSION

The Jenipapo Public Dam is of great importance for the residents of the Meruoca mountain, because in addition to the municipality of Meruoca also supplies the municipality of Alcantras which is also over the Meruoca mountain.

The creek of the Jenipapo Public Dam is next to the dam (rocking) of land of the dam in the right shoulder pad.

The Jenipapo Public Dam is always one of the first dams that bleed in the rainy season in the State of Ceará, which has its territory in almost its entirety inserted in the semiarid region of northeastern Brazil.

It was possible to verify that the physical (structural) part of the Jenipapo Public Dam presented good structural conditions.

It was also possible to realize that even though the Meruoca Mountain Range, with a higher rainfall during the year, it was necessary to build the Jenipapo Dam, because if the Construction of Jenipapo Dam had not occurred the municipalities of Alcantras and Meruoca would today have a serious water supply problem for their populations living around the reservoir.

REFERENCES

AGUIAR FILHO, E. R. P; SALES, J.C. (2013). The benefits of the Taquara dam for the northern region of the state of Ceará. XXIX National Seminar of Large Dams. Chicken Port.

COGERH - Water Resources Management Company - Ceará Hydrological Portal (Government of the State of Ceará). (2021). Jenipapo Dam. Available in: <<http://www.hidro.ce.gov.br/>>. Access on: 09 Mar. 2021.

MUNICIPAL GOVERNMENT OF MERUOCA. (2018). City Hall cleans the Jenipapo Dam. Available in: <<https://www.meruoca.ce.gov.br/informa.php?id=663>>. Access on: 09 Mar. 2021.

MALVEIRA, V. T.C.; Araújo, J.C. (2013). Dam arrangements in the semi-arid northeast. XXIX National Seminar of Large Dams. Chicken Port.

PEREIRA, J. L; XIMENES, M; SALES, J.C. (2020). A technical analysis of the Fork adductor in the semi-arid state of Ceará. In: Ernane Cortez Lima, Francisca Edineide Lima Barbosa and Livana Souza Guimarães. (Org.). Water resources, dams and social technologies. 1eded. SOBRAL: PROEX/UVA, v. 1, p. 231-240.

SALES, J.C.; ALBUQUERQUE, G. L. A. (2020). Dams in the dead water town of Taparuaba district in the municipality of Sobral. In: Ernane Cortez Lima, Francisca Edineide Lima Barbosa and Livana Souza Guimarães. (Org.). Water resources, dams and social technologies. 1eded. Sobral: PROEX/UVA. v. 1, p. 9-16.