La Presa de Campana: Constructing the Narrative of a Dominican Legacy in Calamba, Laguna

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Abstract: In Spanish colonial Philippines, a number of structures were constructed for various purposes such as churches, cemeteries, bridges, watchtowers, fortifications, and lighthouses but little is known about the religious contributions to engineering and irrigation. This paper proposes a contribution to knowledge in this field, particularly water engineering as literature on dams and irrigation systems is scant. This attempts to construct the history and heritage of the Campana Dam in Calamba, Laguna using available archival documents from the Archivo de la Universidad de Santo Tomas (AUST). These documents have to be mined for information that would shed light on this forgotten but equally important aspect of Spanish era infrastructure. The stories that will be culled from the documents are significant particularly on how we view the other structures the Regulars built during that time apart from the usual religious edifices.

Keywords: Campana Dam, Dominicans, irrigation, Calamba, Laguna

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Introduction

As mentioned, when we talk about Spanish colonial edifices in the country, the first things that come to mind are the churches. Then there are structures associated with churches such as convents, cemeteries, and cemetery chapels aside from chapels built in various communities to serve primarily as mission stations. Other known infrastructure projects constructed during the more than three centuries of Spanish rule are watchtowers, fortifications, lighthouses, and bridges. Many still exist today and are being used as is or as tourism sites but are under threat from the ravages of both man and nature.

Apart from these, there are also relatively unknown infrastructures built during this period, many just sitting under our noses. These include stone canals such as in Tayabas and Lucban in Quezon Province; school buildings, a number of which still exist such as in Aparri in Cagayan and Prieto Díaz in Sorsogon; and markets like in Baclayon, Bohol.[1] Most of these structures were built by the Religious Orders Augustinians, Franciscans, Jesuits, Dominicans, and Augustinian Recollects as well as the Seculars.

Some of the aforementioned structures have already been studied such as churches,[2] fortifications,[3] lighthouses,[4] bridges,[5] and houses.[6] Prior studies also include Spanish colonial architecture,[7] the Philippine architecture in general,[8] Intramuros and

[1] Edgar Allan M. Sembrano: "Not a church, Not a Fort, Not a *Bahay na Bato*, Not a *Municipio*: Other Forms of Infrastructure Built in Spanish Philippines," *The Journal of History,* Vol. LXV (2019), 161-162.

[2] See Richard E. Ahlborn: "Spanish-Philippine Churches: An Interpretation," *Exchange News Quarterly* (1958) Oct-Nov; Benito Legarda: "Colonial Churches of Ilocos," *Philippine Studies* Vol. 8. No. 1 (1960); Benito Legarda: "Angels in clay: the typical Cagayan church style," *The Filipinas Journal of Science and Culture,* Vol. 2 (1981); Alicia Coseteng: *Spanish Churches in the Philippines* (Manila: UNESCO National Commission of the Philippines, 1972); Regalado Trota José: *Simbahan: Church Art in Colonial Philippines: 1565-1898* (Makati: Ayala Museum, 1991); René B. Javellana: *Wood and Stone for God's Greater Glory: Jesuit Art and Architecture* (Quezon City: Ateneo de Manila University Press, 1991).

[3] See Manuel Herbella y Pérez: *Manual de Construcciones y de Fortificación de Campaña en Filipinas* (Madrid: La Imprenta Memorial de Ingenieros, 1882); René B. Javellana: *Fortress of Empire: Spanish Colonial Fortifications of the Philippines,* (Makati: Bookmark, Inc., 1997).

[4] See Manuel Noche: *Lonely Sentinels of the Sea: The Spanish Lighthouses in the Philippines* (Manila: University of Santo Tomas Publishing House, 2005).

[5] See Manuel Noche: *Puentes de España en las Filipinas: The Spanish Colonial Bridges in the Philippines* (Manila: University of Santo Tomas Publishing House, 2011).

[6] See Fernando Zialcita and Martín Tinio Jr.: *Philippine Ancestral Houses (1810-1930)* (Quezon City: GCF Books, 1980).

[7] See María Lourdes Díaz-Trechuelo y López-Spínola. *Arquitectura española en Filipinas (1565-1800),* (Spain: Escuela de Estudios Hispano-Americanos de Sevilla, 1959).

[8] See Winand Klassen: *Architecture in the Philippines: Filipino Building in a Cross-Cultural Context,* (Cebu City: University of San Carlos Press, 1986); Gerard Lico: *Arkitekturang Filipino: A History of Architecture and Urbanism in the Philippines,* (Quezon City: University of the Philippines Press, 2008).

related structures,[9] and construction techniques for churches in Manila following the 1863 and 1880 earthquakes.[10] Furthermore, unknown infrastructure projects during the Spanish colonial period such as *puentecitos*, *imbornales*, *aqueductos*, and *hornos* were also previously studied.[11]

One largely unknown undertaking these Religious Orders made during the Spanish period was the construction of dams, or in a larger scale, complex irrigation systems to provide water to their respective properties – structures that are not religious in nature and not located in church complexes although water storage facilities were also built in church complexes like the cisterns of San Francisco and San Agustin churches in Intramuros.[12] To be discussed in this paper using archival sources and field survey is the Dominican-built Campana Dam in Calamba, Laguna which was constructed to primarily irrigate the Dominican hacienda in Calamba.

Not much is actually written about dams and irrigation systems. The sources are few. An important work on the subject matter is the two-volume "Ingeniería Española en Ultramar: Siglos XVI-XIX" by Ignacio González Tascón in 1992.[13] Tascón's work provides significant information on Spanish colonial engineering in South America particularly Mexico, Cuba, Bolivia, and the Philippines which include hydrological engineering, revealing similarities on dam-building undertakings by Spain in its former territories.[14] In AUST, there are a handful of documents pertaining to the topic at hand. Most of the said documents actually pertain to the Campana Dam. These records are very significant since these offer a glimpse into the history of this particular heritage structure which is part of a much larger Spanish colonial water engineering endeavor of the aforementioned Religious Orders. These structures are generally obscure but not at all forgotten.

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[9] See Pedro Ortiz Armengol: *Intramuros de Manila de 1571 hasta su Destrucción en 1945* (Madrid: Ediciones de Cultura Hispánica, 1958); Jaime Laya and Esperanza Gatbonton: *Intramuros of Memory* (Manila: Intramuros Administration, 1983); Pedro Luengo: *Intramuros: Arquitectura en Manila (1739-1762)* (Fundación Universitaria Española, Doctoral dissertation), Madrid, 2003; Pedro Luengo: *The Convents of Manila: Globalized Architecture during the Iberian Union* (Quezon City: Ateneo de Manila University Press, 2018).

[10] Ana Ruiz Gutiérrez: *Las técnicas constructivas en Manila a partir de los terremotos de 1863 y 1880* (Cádiz: Colegio Oficial de Arquitectos de Cádiz, 2005).

[11] See Sembrano, "Not a church."

[12] Pedro Luengo, *The Convents of Manila*, 114.

[13] Ignacio González Tascón*: Ingeniería Española en Ultramar: Siglos XVI-XIX*, Vol. I. (Madrid: Tabapress, SA.), 208-214.

[14] See Edgar Allan P. Sembrano: *Presa: A Preliminary Documentation on Spanish Colonial Dams in the Provinces of Cavite and Laguna, 1745-1898* (UST, 2017, Unpublished master's thesis), 37-42.

Dams

Dam building is not new in the Philippines as it was already being practiced during the precolonial times. The Tagalog of Batangas call a dam, *salac* while in the Laguna de Bay area, it is called *sala*. The latter term is still being used today but the word *prinza* or *prinsa* is now commonly used. This word is the Tagalized term for the Spanish word for dam which is *presa*.[15]

The early forms of dams were those constructed using mud akin to the small dikes that we see in rice fields called *pilapil* and those made from wooden or bamboo stakes. These were relatively small and often constructed in creeks or streams. Much larger dams made of stone were built starting from the 18th century. The oldest dated, Casundit Dam in Dasmariñas, Cavite, is still extant and functioning. This dam was built in 1780 by the Augustinian Recollects as part of its vast irrigation systems for its Imus Hacienda.[16] Cavite has actually the most number of dams constructed in Spanish colonial Philippines numbering to over a hundred. Most still exist and serve their intended purpose although these are facing a number of issues such as industrialization, human resettlement, land conversion, and pollution.[17]

Elsewhere in the country, dams or irrigation systems in general were built in Ilocos Norte, Cagayan Valley, Pangasinan, Nueva Ecija, Bataan, Bulacan, Batangas, Quezon, Camarines Sur, and Albay. There were possibly some that were built by the Augustinian Recollects in Negros Occidental but aside from these, there are no records or tangible evidences yet of the existence of Spanish era dams in the rest of the Visayas and Mindanao. For now, it is safe to assume that massive dam building were undertaken in Luzon but there is always a possibility that these structures were also built in other parts of the Visayas and Mindanao.

In Laguna, the Franciscans built at least a dam in Pakil in the early 19th century. There is also one made from *mampostería* or river stone in Calauan and the one in Liliw not far from its church most likely had its origins in the Spanish period. The Franciscans also built dams in Umingan, Nueva Ecija (now part of Pangasinan).[18] Meanwhile, the Jesuits have also constructed a dam across the San Juan River in Calamba.

[15] E. Sembrano, *Presa*, 28.

[16] Edgar Allan M. Sembrano: "Paurungan: The Spanish Colonial Irrigation Systems in Dasmariñas, Cavite, 1780-1882," *UP Los Baños Journal* Volume XIX (2020), p.32-39.

[17] Edgar Allan M. Sembrano: "Prinsa: The Spanish colonial dams of Cavite," paper presented to the Annual Seminar on Cavite Local History and Culture, De La Salle University-Dasmariñas, 23 August 2019.

[18] Edgar Allan M. Sembrano: "Sala: The Franciscan-built dams in central and southern Luzon provinces," paper presented to the 9th Tayabas Province National Conference, Tayabas City, Quezon, 17 August 2019.

It is interesting to note that quite a few places were named after dams and associated structures. For example, a barangay in Calauan, Laguna is named Prinza. The same barangay name exists in Calamba, also in Laguna and General Trias in Cavite. In Cabuyao, also in Laguna, a barangay is named Sala while in Tanza, Cavite, a barangay is named Sanja Mayor which translates to "big irrigation canal." The existence of dams in these areas was the reason why they were named as such with the exception of the latter which has the main irrigation canal of the Tres Cruces Dam upstream.

Calamba Hacienda

Prior to the handing over of the Hacienda de Calamba to the hands of the Jesuits by its impoverished Spanish owner in 1759 in exchange for his lifetime stay at the Jesuit monastery, the property was owned by a number of Spanish lay people. However, less than 10 years after, the Jesuits were expelled in the Spanish Empire through a decree by King Charles III which resulted to the confiscation of their properties including the Calamba Hacienda which was noted to be largely unproductive. The Office of the Jesuit Temporalities which was created by the government then managed the entire properties left by the said religious group. In 1773, the hacienda was leased for 1400 pesos, sold to a Spanish lay person in 1803 for 44,507 pesos, and was bought by the Dominicans in 1833 following the death of its owner. The price for the sale was 52,000 pesos.[19]

The Dominicans held to this property until the early 20th century when the haciendas owned by the religious orders were sold to the insular government in 1903 for US$3,671.657.00. However, as early as 1896, these haciendas were already in decline due to the Philippine Revolution of the same year. As a result, the Dominican haciendas in Orion, Bataan; Lolomboy and Sta. Maria de Pandi in Bulacan; Biñan and Sta. Rosa in Laguna; and Naic and Sta. Cruz de Malabon (Tanza) in Cavite were sold to the Philippine Sugar Estates Development Company though the order maintained legal ownership since they owned the major shares of the company.

After 1903, these haciendas, including those owned by other religious orders, were sold to individual buyers[20] who would later become *hacienderos*, landed elites on their own.

[19] Dennis Morrow Roth: *The Friar Estates of the Philippines* (Albuquerque: University of New Mexico Press), 16.

[20] Sembrano, *Presa*, 28.

Dominican dams

In the Dominican haciendas of Biñan and Sta. Rosa, excluding Calamba, the said order had at least 13 dams supplying irrigable water to the said areas in the early 19th century. In a map of the haciendas dated 1824 and obtained from AUST, five dams are located in Biñan and the rest in Sta. Rosa. Of these dams, two are named – Presa de Calaboso (now called Timbao or Prinsa) at the Calaboso (now Biñan or Carmona) River and the Presa de Sta. Rosa at the Tripa de Gallina River bordering Cabuyao town. The latter no longer exists while the former is still being used to this day.

All located at the same river, only two dams in Biñan exist. Apart from Calaboso, another one downstream exists but has long been decommissioned. That dam is called Soro-soro after the name of the barangay where it is located.[21]

In Sta. Rosa, aside from the Presa de Sta. Rosa, those that were built at the Estero Pacasam, Estero de Maba, Estero Muerto, Estero Rabon, and Estero Tiuay Tiuay[22] no longer exist. The only extant Spanish colonial dam in Santa Rosa is the one called Diezmo on the Diezmo River at Barangay Sto. Domingo. The water from this dam runs through a tunnel and empties into the tunnel exit located in what is now Sta. Elena Golf and Country Club in Barangay Don Jose. This dam constructed in the 19th century provides water for irrigation in Sta. Rosa. The existence of an unnamed one at the Rio Bual Divicion de Sta. Rosa and another at Rio Quilip need to be investigated further.

At present, a dam exists where the Quilip River branches out of the Rosa River called Macabling by the National Irrigation Administration (NIA) which was said to be built during the Spanish period[23] but was later verified to have been built only in 1977.[24] A smaller one called *salaan*, an *azud* or weir located downstream of the one at the Sta. Rosa River also exists to this day called Salang Bago. This particular structure might date back to the Spanish period.

San Cristobal Dam

In Calamba, a lakeshore town possibly named after a plant of the same name, the Dominicans built a dam in the 19th century at the San Cristobal River straddling Calamba and Cabuyao. This dam was constructed at the confluence of two rivers.

[21] Ibid, 155.

[22] Plano de la Hacienda de Biñán y Sta. Rosa (1824).

[23] Sembrano, *Presa*, 161.

[24] National Irrigation Administration Region between IV-A and Facebook Messenger interview, February 1, 2021.

Building dams where two or three rivers meet is actually strategic to maximize the supply of water. This technique is evident in a number of dams elsewhere such as the Tres Cruces Dam in Tanza and Molino Dam in Bacoor, Cavite.

The dam is called Campana and presently, the National Irrigation Administration has jurisdiction over it. It was possibly called as such due to a local folklore wherein a golden bell stolen by the *tulisanes* in the local church was dropped into the dam during a chase with authorities. That bell used to ring whenever there's rain and when it rings, it is believed that all pregnant women in the community would lose their unborn babies.[25] This dam is located between barangays Diezmo in Cabuyao and Barangay Mapagong in Calamba. Incidentally, the word *diezmo* translates to land tax.

The dam which is still being used today is made from cut adobe[26] stone quarried from the banks of the same river about a kilometer upstream and about two or more kilometers downstream. In fact, cut marks called *dasto*, *linyada*, or *bakat* on the riverbanks upstream are still visible to this day. The cut stone were brought to the dam site through the use of *balsa* or bamboo rafts.[27] The dam has a *bunganga* or sluice gate breached from its facade by NIA some years ago and two *ventanas* or small box-like breaches, all on its facade. The lower part of its façade called *labak* has previously been cemented. Its *cantirilla* or intake gate is located few meters off the back of the structure. This intake gate leads to the *bukete* or irrigation tunnel and empties into the *bambang* or irrigation canal at the Calamba side. The end part of the tunnel, which in itself has at least five vents or skylights called *balon* used for access in times of debris clearing and desiltation, is called *bantilan*.[28] An area upstream of the San Cristobal River is a water source called *matangtubig*, springs that were made into an open-air reservoir which possibly has its roots during the Spanish period.[29]

There is no record on when the dam was exactly constructed but most likely after 1833 especially when the Dominicans possibly realized the land that they bought was largely not fertile. This dam supplied water to Calamba which in mid-19th century was producing rice and sugarcane. Abaca, cacao, coffee, cotton, indigo, mango, *pimienta*, sesame, beans, and various fruits were also noted to grow in the area.[30]

[25] Sembrano, *Presa*, 213-214.

[26] The adobe in this part of Laguna is classified as *adobeng itim* and *adobeng dilaw* or the black and yellow varieties.

[27] Mario Lomibao, personal communication, October 27, 2016.

[28] For detailed discussion on terminologies, see Sembrano, *Presa*, 237-244.

[29] Matangtubig is one of the Tagalog terms for spring.

[30] Manuel Buzeta y Felipe Bravo, O.S.A.: *Diccionario Geográfico, Estadístico, Histórico, de las Islas Filipinas* (Madrid: Imprenta de D. José C. de la Peña, 1850), 449.

But while there are no records (yet) of the year when it was constructed, a number of documents[31] culled from the AUST offer important details on the dam's renovation in the 1880s. These documents are significant for their rarity and historical value. A total of seven archival records including a drawn plan provide interesting, previously obscure information.

In the first document,[32] which we are going to call as the "Sawyer Letter 1," Engineer Federico H. Sawyer with office at Muelle del Rey, Manila wrote a letter to Rev. Fr. Francisco Govea,[33] noted as the "Sindico de la Provincia de Santisimo Rosario." The letter mentions that the former was glad to write the latter in January 28 of that year about the tubes for the siphon which will be coming from Liverpool, England. Sawyer mentions here the tubes cost 390.10 pounds plus two tons of lead costing about 30 pounds or more. Sawyer said, with the help of an agent, they can make the price cheaper. He also mentioned in the letter that the tubes will be coming from a certain John Bell Mustard and an intermediary here will hand over the tubes to those that will be building the dam. This letter was signed by Mr. Sawyer and dated May 31, 1884.

Document 2,[34] Sawyer Letter 2, was also addressed to Fr. Govea bearing the same date. This letter mentions that Mr. Sawyer was glad in presenting to the priest the total cost of the tubes of the double siphon. He said the cost exceeded the original price which he mentioned in the previous letter.

Another document, Sawyer Letter 3,[35] dated June 11, 1884 was likewise addressed to the same priest. In the letter, Mr. Sawyer said he was happy for the approval of the payment for the tubes. He also mentioned that the materials are going to be tested by "*personas intelegentes*," vouching for the quality of the tubes. Mr. Sawyer also said the additional expenses will be shouldered by the priest such as customs and port fees, transportation, and conduction. He said the materials will pass through customs first and will be delivered to the priest as soon as he wants it.

In this letter, it seems that Fr. Govea had replied to his previous letter. Also, Mr. Sawyer seemed to engage the priest in a sales talk when he said the tubes will be tested by the intelligent people. It also looks like Mr. Sawyer was the intermediary between the source in Liverpool and the Dominicans.

[31] The translation of the documents were done through the help of Tulio Camacho, former employee of the Venezuelan Embassy in China and a Venezuelan expatriate now working in Manila.

[32] Seccion de Folletos, Varios, Tomo 82, Fol. 5.

[33] Fr. Govea was from Salamanca. He arrived in Manila in 1862. His major projects were in Naic, Cavite. These include the church, bridges, canals, school, *casa de maestro*, and *cuarteles*.

[34] Ibid.

[35] Sección de Folletos (no details).

Meanwhile, the budget for the dam construction is detailed in the next document. The two-page document prepared in October 1885[36] is a list of materials that will be used in the construction, their amount in cubic meters, and the respective prices. Here, it mentions materials such as white rock, *mamposteria*, and mortar as well as the construction of *almacenes* and *casetas*. Mamposteria are common construction materials during the Spanish colonial period together with *silleria* or cut stone and bricks.[37]

Quantity in cubic meters		Types of work		Price of the importation Peso	Cent. Peso Cent.
528	400	soil		10	52.84
1385	300	*roca blanca*		20	317.06
845	418	*mampostería* with mortar	3	20	2959.17
2455	968	body of the dam with ordinary mortar	3		7364.19
54	218	production of *sillería*	4	50	243.98
		provisional dam			300
		canal of the provisional dam			150
		auxiliary mortars			200
		construction of *almacenes and casetas*			100
			Total		11.690.95

Manila October ____, 1885

In the same document, it mentions that 11,300 will be paid first and the rest will be paid once the project is completed. It also mentions that if the cost will exceed, the amount that exceeded will be refunded to the contractor.

Another document,[38] an important one, is an itemized list of materials and their corresponding prices. This document was signed by Bro. Felipe Domínguez[39] on August 29, 1885. Among those indicated here are sand, sticks, Chinese granite called *piedra china*, molave, *graba* or small stone pieces, cement, etc. The total expenses were close to four thousand pesos.

[36] Sección de Folletos, Varios, Tomo 82 Fols. 8-9.

[37] See "Palitada: Skin of the Church" in *Zero In*, Ayala Museum, 2003, 6-52.

[38] Sección de Folletos, Varios, Tomo 82 Fol. 10.

[39] Bro. Domínguez was assigned in Calamba for the second time from 1891-1898. A native of Cuenca, he arrived in Manila in 1875.

For 9000 stones, 6 pesos each	540
For 3000 *cabanes* de cal, 35 pesos each	1050
For 9000 *cabanes* of sand, 5 pesos each	450
For 7000 sticks (*estacas*), 5 pesos each	350
For 120 *piedra de china*, 2 pesos each	240
For 5 pieces of molave of 5 meters each with 25cm diameter	72.90
For 8 pieces of molave of meters each with 50cm diameter	24
For 8 sacks of cement, 8 pesos each	54
For 200 cubic meters of graba, 3 coales	37.50
For short cut to drain the water	300
For cutting the rocks	800
For the carpenter to make the box for the water to flow (*ventana*)	15
Total	3943.40

Sto. Domingo de Agosto 29 de 1885
Signed by Fr. Felipe Domínguez

Two months after this list came out, Fr. Vicente Yztéguiz (also Iztegui) who was a Basque priest from Ellorio, wrote a letter to the venerable Provincial Council explaining why it is important to build a dam in the confluence of the three rivers. He said it is of importance since the water will be maximized. He also mentioned the water from the dam with its headwaters between Tanauan in Batangas and Silang in Cavite, will irrigate the farms of Cabuyao and Calamba. The priest also wrote about the possibility of losing their right to use the water if the people would build another dam of wood and soil.

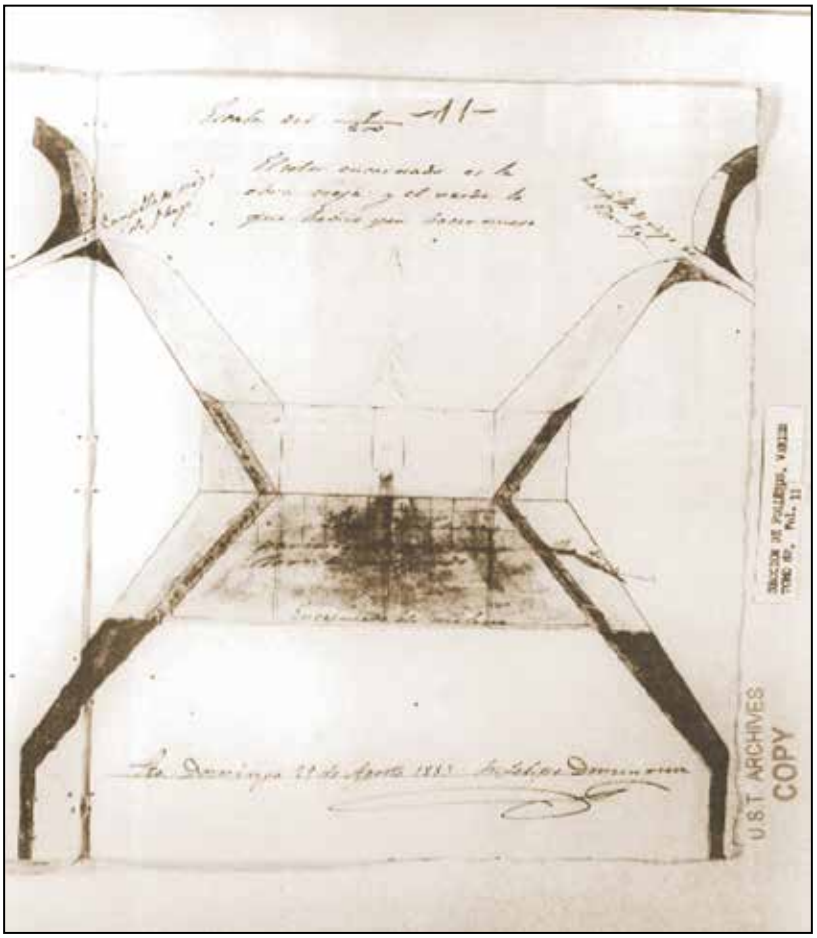
Fr. Yztéguiz also presented in the three-paged letter that with the assistance of the council engineer, they can check the place. Then, if the project is plausible, he will present it to the council. After that, if the council approves it, he will elevate it to the Gobierno General then to the Spanish government. He also mentioned the expenses of the work and materials will also be presented by him which will be about 10,000 to 12,000 pesos or more.

The discussion for the project might have started in 1883 when a plan was

drawn detailing what are needed to be done on the existing structure. The plan was drawn by the Dominican brother Felipe Domínguez on August 29, 1883.

The top left portion of the plan indicates "zanjilla de riego de Ibayo" while on the top right reads "zanjilla de riego de Banlig" which points to irrigation canals going to Ibayo in Calamba and Banlig (now Banlic) in Cabuyao. Zanjilla (*sanghilya*) in the present context refers to small irrigation ditches on the rice fields but on this particular map, it pertains to the sanja (also zanja) mayor or sanghang malaki, the main irrigation canal emanating from the vicinity of the dam.

On the top middle portion reads "El color encarnado es la obra vieja y el verde lo que habria que hacer nuevo" which means "The red color indicates the old work and the green color indicates what would have to be renovated."



Plan for the renovation of the Campana Dam dated August 29, 1883. This was prepared by Fr. Felipe Domínguez at the Sto. Domingo convent in Manila (AUST).

Construction

With all these information at hand, we can surmise that the project commenced on or after 1885. These involve the construction of a diversionary canal where the water was diverted while the dam was being reconstructed. Temporary shelters for the workers as well as storage for the materials were also built.

For the dam itself, the process of its construction is similar to the building of walls of historic structures. After a diversionary canal is constructed, a depression is dug from the river, then from there, the dam is going to be built using cut stone. The filling inside two walls which makes the structure of the dam is made of soil and stones compacted together with the wooden stakes. In the case of the Campana Dam, *piedra china*, cement, and *graba* (aggregates) were also utilized in its reconstruction. The use of piedra china is particularly interesting since it was previously believed that this kind of stone used for church pavements and grave markers were surplus materials from Chinese junks. The listing of it in one of the documents discussed here puts it as a legitimate construction commodity ordered from sources.

One confusing detail though in the document is the Ysteguiz letter which mentions the dam at the confluence of three rivers. A satellite image from the site would confirm the existence of two rivers and not three. To reconcile the letter to the present-day geography of the place, the same satellite image would show a possible third river at the southwestern part of the dam. This body of water, most likely a rivulet or stream no longer exists and is now part of a subdivision.

Campana Dam and the vents at its irrigation tunnel (encircled) and the possible lost river pointed by an arrow (Google Earth).

Apart from these, two canals were planned that would lead to areas in Calamba and Cabuyao. The Calamba canal starts from an intake gate, as previously mentioned, to the vented irrigation tunnel and open waterway and ends at the rice fields north of the San Juan River. Meanwhile, the water intended for the irrigable lands in Cabuyao was coursed through underground tubes or pipes ordered from England.

> "There are two large irrigating dams on the estate for the rice fields called the San Juan Dam and the Campana Dam, together with a tunnel, and a number of pipes and irrigating canals which run down to the town. There is also an iron main which runs under the San Cristobal River in the Barrio of Calamias, and which is used for conducting water for the irrigation of the Bantic and San Cristobal lands."

The estate and the town that was being referred here is Calamba. Calamias is located in Calamba while Bantic (Banlic) and San Cristobal are located in Cabuyao. Today, the condition of the iron pipes mentioned are uncertain and further investigation is needed to ascertain whether these are still functioning specially that another dam was constructed in the 20th century by the government downstream to provide water in the aforementioned places and their environs.

Ownership

Following the sale of the friar lands in 1903, the ownership and management of dams changed hands from the religious to the government. However, it was not until 1908 that an Irrigation Division at the Bureau of Public Works was created through the Philippine legislature Act No. 1854 on June 17 of that year appropriating 750,000 pesos for the construction of irrigation systems all over the country. In the same law, the Secretary of Commerce and Police appointed a nine-member irrigation committee "to help the Irrigation Division in formulating an irrigation program for the country and establishing rules and regulations on the operation and maintenance of irrigation systems in friar lands."

On June 22, 1963, President Diosdado Macapagal signed the Republic Act No. 3601 or "An Act Creating the National Irrigation Administration." Due to this law, the Bureau of Public Works Irrigation Division was abolished and all its functions, employees, records, and equipment among others were transferred to NIA.

As a result, the administration of the irrigation at the former friar lands was transferred to the said newly-created institution. The administration of the dams in

Calamba became the task of the NIA-Laguna Friar Lands office in Cabuyao. These dams – Campana and San Juan – are still being administered and operated today by the said office now called as the Laguna-Rizal Irrigation Management Office. Not all dams though in the former friar lands are under the management of NIA as some were already given to local farmer organizations for them to operate like the Calaboso Dam in Biñan and a number of dams in Cavite.

Conclusion

The Campana Dam is just one part of the extensive irrigation systems constructed by the Dominicans in their Laguna haciendas. Apart from Laguna, the Order had also built dams in Pangasinan and Cavite. Its construction and subsequent renovation of the Campana Dam is an enduring non-religious legacy of the Order of Preachers not only in Laguna but in the country as a whole. It is both a tangible reminder and a monument of their venture into the relatively unknown field of water engineering in Spanish colonial Philippines.

The dam and its irrigation system are significant built heritages worthy of protection and preservation. It is a worthwhile Dominican contribution to the growth of both Calamba and Laguna, the lands of which have since been converted into subdivisions and industrial parks.

Meanwhile, the documents pertaining to the said dam are not only historically and culturally significant but are also important materials for commerce as they provide glimpses into the business dealings of that period. PS

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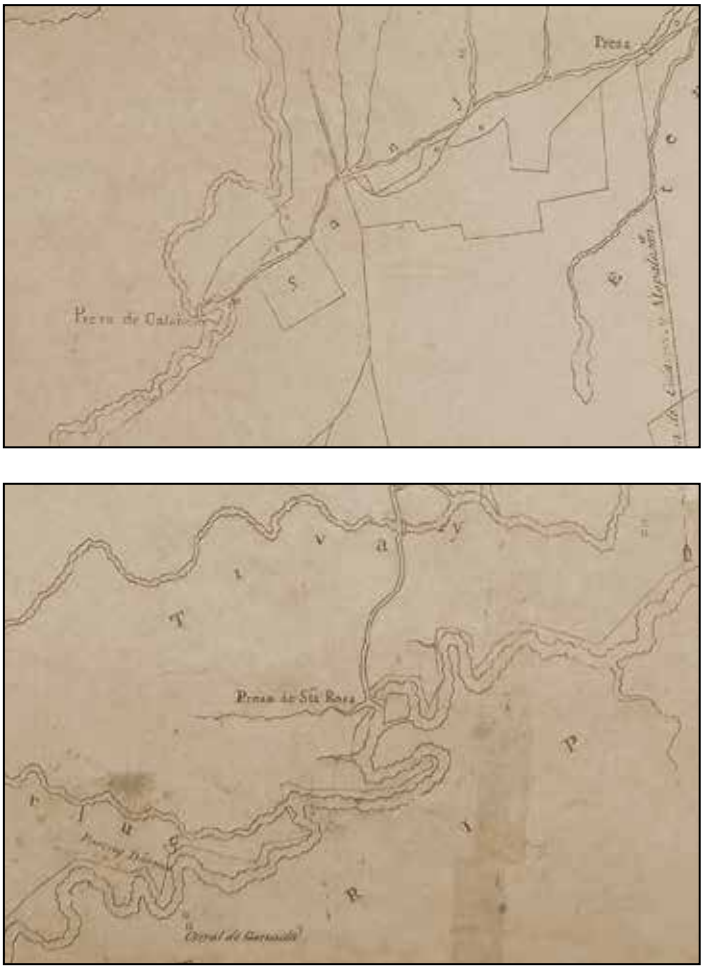
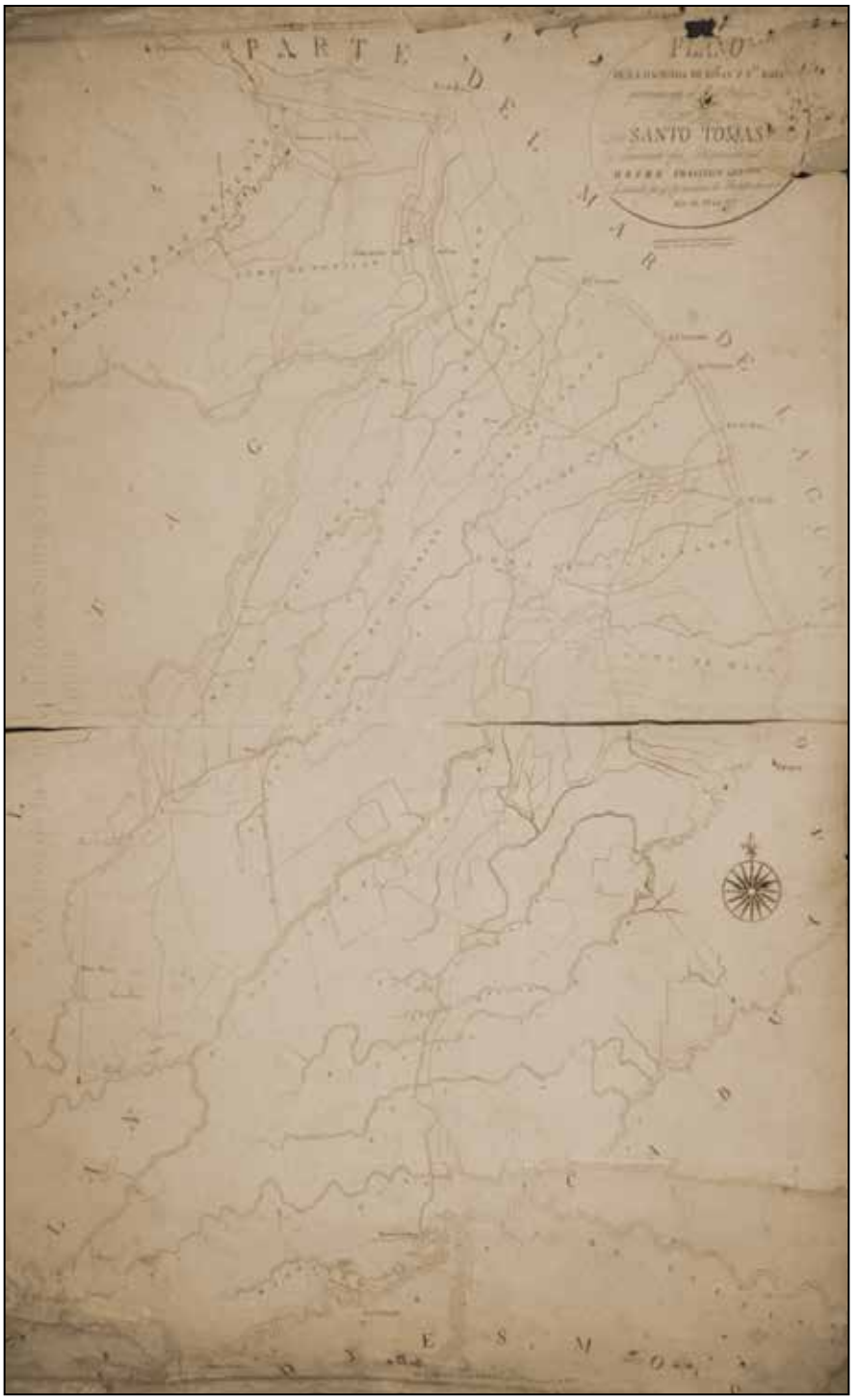
Images

Location of Campana Dam in Calamba where San Cristobal and another river meet (1); San Juan River (2) (Bea Dodman, 2021)



Details of the 1824 map showing Calaboso Dam and another dam in Biñán (top) and the Sta. Rosa Dam (bottom) in Sta. Rosa, both in Laguna (AUST)



Plano de la Hacienda de Biñan y Sta. Rosa in 1824 (AUST)

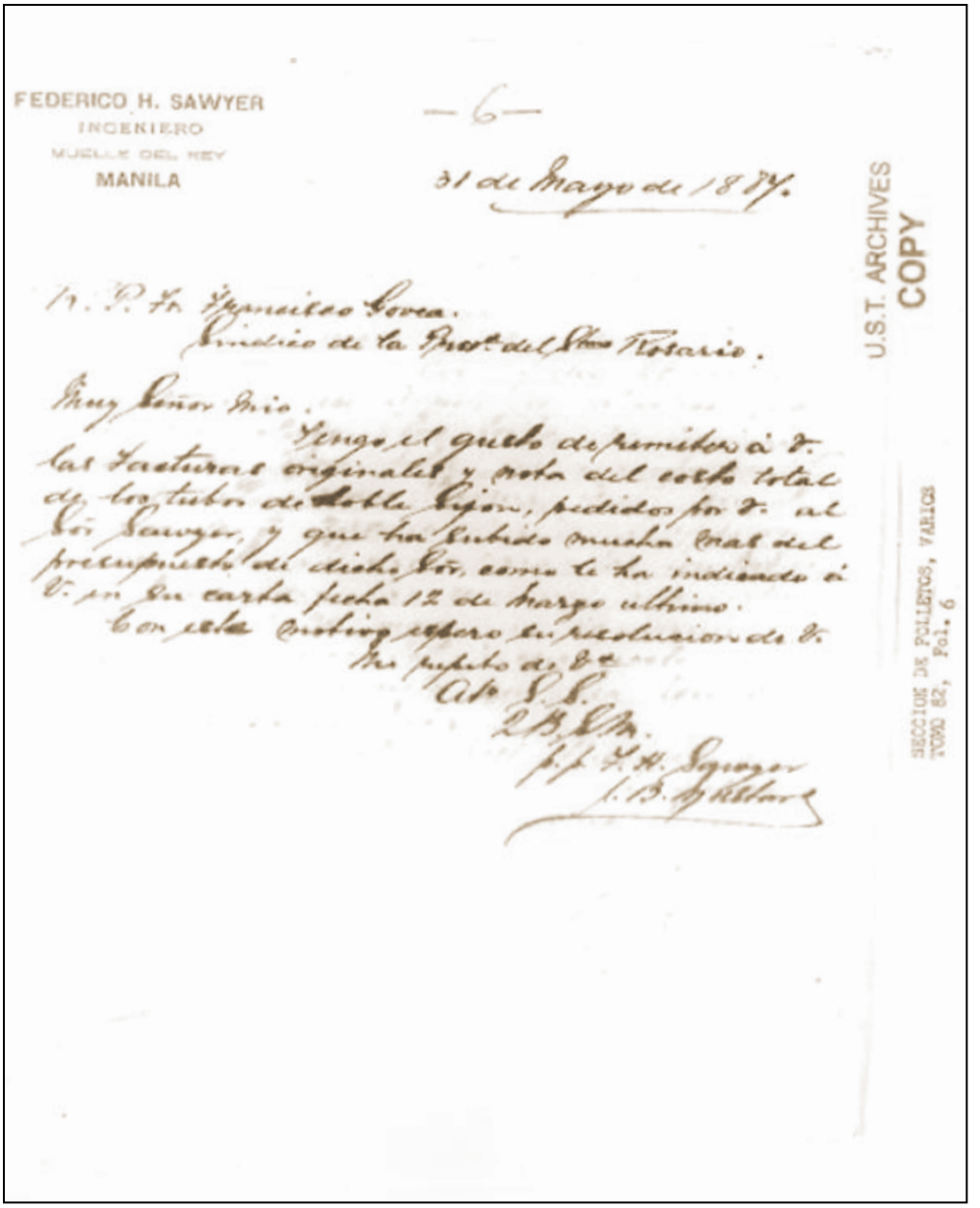
Campana Dam in 1916 (Bureau of Public Works Quarterly Bulletin)

Campana Dam in 2016 (Edgar Allan M. Sembrano)

Campana Dam in 1920
(Ateneo de Manila's American Historical Collection)

Intake gate, Calamba side
(Edgar Allan M. Sembrano, 2016)

Quarry site near Campana Dam
(Edgar Allan M. Sembrano, 2016)


FEDERICO H. SAWYER
INGENIERO
MUELLE DEL REY
MANILA

—6—

31 de Mayo de 1884.

U.S.T. ARCHIVES
COPY

SECCION DE FOLLETOS, VARIOS
TOMO 82, Fol. 6

R. P. Fr. Francisco Govea.
Prelado de la Prov.a del Stmo Rosario.

Muy Señor Mio.

Tengo el gusto de remitir á V. las facturas originales y nota del coste total de los tubos de doble hierro, pedidos por V. al Sor Sawyer, y que ha subido mucho mas del presupuesto del dicho Sor, como le ha indicado á V. en su carta fecha 12 de Marzo ultimo.

Con esta motivo reparo su resolucion de V. mi respeto de V.a

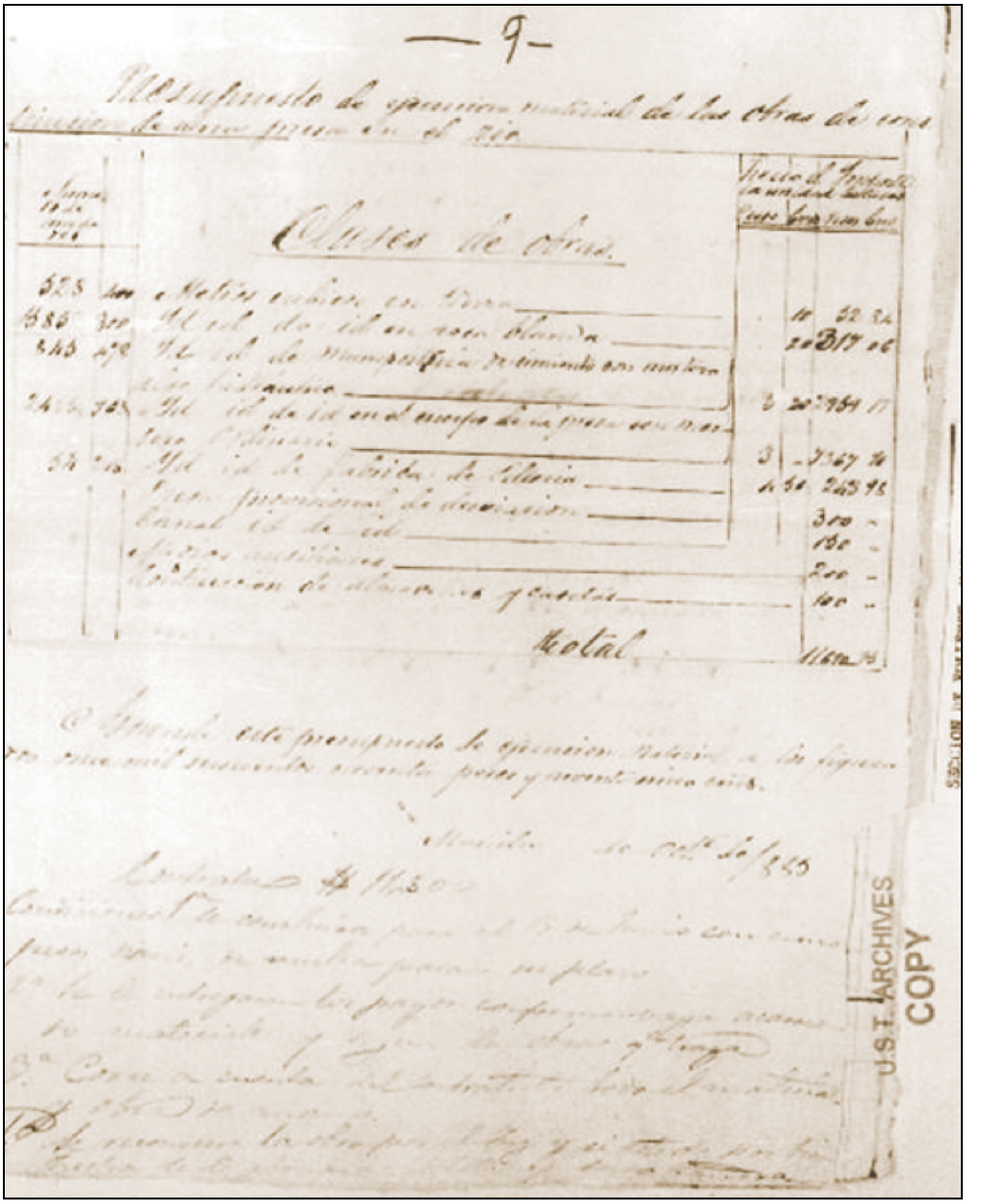
Afmo S. S.

S.B.L.M.

p.p. F. H. Sawyer

L. B. y Ballard

Sawyer Letter 2 addressed to Fr. Francisco Govea dated May 31, 1884. Here, Mr. Sawyer said he was glad in presenting to Fr. Govea the total cost of the pipes for the irrigation system. He said the cost exceeded the original price which he mentioned in another letter bearing the same date. (AUST)



Budget for the construction. This is the first of the two-page document prepared in October 1885 listing materials that are going to be used in the construction and the respective amount in cubic meters. Here, it mentions materials such as *roca blanca*, *mampostería*, and mortar. It also mentions the construction of *almacenes* and *casetas*. (AUST)