ANALISIS PEMBUATAN PETA KONTUR DENGAN METODE *AERIAL MAPPING* DAN *TERRESTRIAL* DALAM RENCANA PEMBANGUNAN *SPILLWAY* BENDUNGAN BENER DI PURWOREJO, JAWA TENGAH

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ABSTRAK

Direncanakan menjadi bendungan tertinggi di Indonesia, pembangunan *spillway* Bendungan Bener di Kabupaten Purworejo, Jawa Tengah memerlukan peta kontur sebagai dasar analisis dan desain konstruksi. Proyek Pembangunan *Spillway* Bendungan Bener Paket 2 telah menerapkan metode *Aerial Mapping* maupun *terrestrial* dalam pembuatan peta kontur. Namun, belum ada kajian mendalam mengenai kedua metode tersebut. Oleh karena itu, diperlukan telaah lebih lanjut, dengan menganalisis penerapan kedua metode yang mencakup tiga aspek utama, yaitu mutu, waktu, dan biaya. Penelitian ini bertujuan untuk membandingkan penerapan metode *aerial mapping* dan *terrestrial* dalam pembuatan peta kontur, dengan mempertimbangkan keakurasian mutu, efisiensi biaya, dan efisiensi waktu. Metode penelitian menggunakan pendekatan deskriptif kuantitatif. Data primer berupa foto udara seluas 12,10 hektar (ha) yang mencakup area *spillway* diolah menggunakan *software* Agisoft Metashape, Geomatica, Global Mapper, dan Civil 3D, sedangkan data ukur *terrestrial* diolah menggunakan Microsoft Excel dan Civil 3D. Hasil penelitian menunjukkan bahwa akurasi mutu ditinjau melalui *cross profile* gabungan, antara metode *aerial mapping* dan metode *terrestrial* memiliki selisih rata-rata 1,10 meter. Meskipun demikian, metode *terrestrial* menunjukkan akurasi yang lebih tinggi. Dari aspek waktu, metode *aerial mapping* lebih efisiensi 15 jam 10 menit dibandingkan dengan metode *terrestrial*. sedangkan, dari aspek biaya, metode *aerial mapping* jauh lebih ekonomis dengan biaya Rp. 3.802.147, atau 42,26% lebih rendah dibandingkan metode *terrestrial*. Jika dibandingkan berdasarkan luas area, metode *aerial mapping* membutuhkan biaya sebesar Rp. 232.000 per ha, sedangkan metode *terrestrial* mencapai Rp. 693.000 per ha. Dengan demikian, penggunaan metode *aerial mapping* dapat menghemat biaya sebesar Rp. 461.000 per ha dibandingkan dengan metode *terrestrial*.

Kata Kunci: *Aerial mapping, terrestrial, peta kontur, spillway, Bendungan Bener.*

ANALYSIS OF CONTOUR MAP MAKING BY AERIAL MAPPING AND TERRESTRIAL METHODS IN THE BENER DAM SPILLWAY CONSTRUCTION PLAN IN PURWOREJO, CENTRAL JAVA

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ABSTRACT

Planned to be the highest dam in Indonesia, the construction of the Bener Dam spillway in Purworejo Regency, Central Java requires contour maps as a basis for construction analysis and design. The Bener Dam Spillway Construction Project has applied aerial and terrestrial mapping methods to make contour maps. However, no in-depth study has been conducted on either method. Therefore, further study is needed, by analyzing the application of both methods covering three main aspects: quality, time, and cost. This research aims to compare the application of aerial mapping and terrestrial methods in making contour maps, by considering quality accuracy, cost efficiency, and time efficiency. The research method used a quantitative descriptive approach. Primary data in the form of aerial photographs of 12.10 hectares (ha) covering the spillway area were processed using Agisoft Metashape, Geomatica, Global Mapper, and Civil 3D software, while terrestrial measurement data were processed using Microsoft Excel and Civil 3D. The results showed that the accuracy of the quality assessed through the combined cross profile, between the aerial mapping method and the terrestrial method had an average difference of 1.10 meters. However, the terrestrial method showed higher accuracy. In terms of time, the aerial mapping method is 15 hours and 10 minutes more efficient than the terrestrial method. Meanwhile, from the cost aspect, the aerial mapping method is much more economical with a cost of Rp. 3,802,147 or 42,26% lower than the terrestrial method. When compared by area, the aerial mapping method costs Rp. 232,000 per ha, while the terrestrial method costs Rp. 693,000 per ha. Thus, using the aerial mapping method can save Rp. 461,000 per ha compared to the terrestrial method.

Keywords*: Aerial mapping, terrestrial, contour map, spillway, Bener Dam.*