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MAPPING OF ADMINISTRATIVE BOUNDARIES OF URUTSEWU VILLAGE, AMPEL DISTRICT, BOYOLALI REGENCY USING THE CARTOMETRIC METHOD

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ABSTRACT

Mapping of village administrative boundaries is one of the key aspects supporting governance, public services, and regional development planning. This research goal is to map the administrative boundaries of Urutsewu Village, Ampel Subdistrict, Boyolali Regency, with high accuracy using a cartometric method in accordance with Ministry of Home Affairs Regulation Number 75 of 2014 concerning Guidelines for Determining and Confirming Village Boundaries. The cartometric method was used to integrate various data sources, including historical maps, satellite imagery, field surveys, and administrative documents, to produce an objective and accurate boundary analysis. The results is that the administrative boundary of Urutsewu Village consists of four main segments connecting boundary node points. Differences in segment lengths were found between the existing indicative village boundary and the newly delineated boundary, resulting in a change in the village's area from approximately 245.473 ha to 290.982 ha and in its perimeter from 8,210.949 meters to 8,918.779 meters. The boundary verification process also involved community participation as a validation step to ensure conformity with field conditions. The outputs of this research include a 1:5,000 scale boundary map of Urutsewu Village in both printed and digital formats.

Keywords : village boundary, cartometric method, boundary confirming, scale, community participation.

1. INTRODUCTION

The boundaries of an area play an important role in determining the administrative authority of a local government. Boundaries ensure that each local government has a clear jurisdiction to carry out administrative functions, public services, and law enforcement without overlap (Syarifudin, 2017). A village can be considered a community occupying a certain area and has the authority to manage and govern the interests of its inhabitants independently. This authority is based on local history and customs that are respected by the government (Prakasa, 2017). The boundary of a village is a line that divides the territory between villages, which is formed from coordinate points on the earth's surface. This boundary line can follow natural features, such as watersheds, the midpoint of rivers, or existing man-made elements, and is represented in the form of maps (Kemendagri, 2016).

The concept of boundaries is closely related to the understanding of an area itself, where the term area refers to a geographical unit with specific limits (Mukaddas, 2022). Administrative boundaries not only affect government affairs but also social, economic, and spatial planning aspects. Furthermore, administrative boundaries between regions play a crucial role in optimizing a region's authority, prompting BIG (Geospatial Information Agency) to establish and affirm territorial boundaries. The segment of administrative boundaries of villages is very important for managing areas, especially for villages that directly border other administrative entities. According to legislation, it is mentioned that each adjacent village administrative boundary must follow the boundary lines established by the Minister of Home Affairs. (Sukoco, 2021).

Ideally, the village boundaries established by the Ministry of Home Affairs (Kemendagri) should align with the delineation of boundaries that exist on the ground. Regulation of the Minister of Home Affairs No. 75 of 2014 regarding the boundary between Semarang Regency and Boyolali Regency is a government effort to provide legal certainty regarding the boundaries between the two regencies. However, in practice, the implementation of the territorial boundaries as stated in these regulations often does not reflect the geographical, social, and

factual administrative conditions on the ground (Sutanta et al., 2020).

This study applies a cartometric method in measuring and analyzing boundary areas with precision. The cartometric approach allows for the achievement of agreements between two bordering areas, which are then reflected in the form of points on a working map, resulting in definitive boundaries (Sutanta et al., 2020). The use of cartometric methods allows the integration of various data sources, including historical maps, satellite imagery, field survey data, and administrative documents. High-resolution satellite imagery provides images of the earth's surface produced by satellites capable of displaying object details very clearly and sharply (Javan, 2021). With the cartometric method, this research can assess whether the boundaries established in Regulation of the Minister of Home Affairs No. 75 of 2014 truly reflect the actual geographical conditions.

This study aims to examine and analyze the level of compatibility and differences in territorial boundaries between the applicable regulations and actual conditions on the ground. Through this research, it is hoped to produce an objective and accurate delineation of the boundary map of Urutsewu Village as an official reference. It is also expected that this study can provide suggestions and recommendations to the government to adjust regulations if there are significant differences, to ensure the accuracy of territorial boundaries and minimize potential conflicts.

2. DATA AND METHODS

2.1 Research Data

The location of this research is in Urutsewu Village, Ampel District, Boyolali Regency, as shown in **Figure 1**.

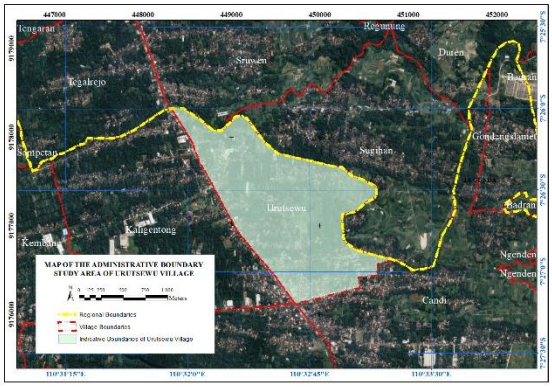

Figure 1 Research area

The data in this research includes administrative boundary data in the form of a shapefile (.shp) of the Urutsewu Village boundary, Ampel District, Boyolali Regency, as well as CTRT SPOT 6 for Boyolali Regency in 2021 from the Geospatial Information Agency. In addition, Regulation of the Minister of Home Affairs No. 45 of 2016 regarding the Establishment and Assertion of Village Boundaries, Regulation of BIG No. 15 of 2019 regarding Cartometric Methods, and Regulation of BIG No. 6 of 2018 regarding Base Map Accuracy are used as regulatory references. Other supporting data includes the administrative map of Sugihan Village, Tengaran District, Semarang Regency from 1953, as well as the Detailed Map of Urutsewu Village, Ampel District from 1999/2000 from the Bureau of Geospatial Information.

2.2 Methodology

This research is conducted in Urutsewu Village, Ampel District, Boyolali Regency with the aim of mapping the administrative boundaries of the village using cartometric methods. The research is divided into four main stages. First, in the preparation stage, a literature study and problem formulation are conducted based on the regional conditions and applicable regulations, followed by a preliminary survey to identify data needs and the existing boundary conditions in the field. Second, data collection includes both non-spatial and spatial data. The spatial data consists of indicative village boundaries in shapefile (.shp) format for Boyolali Regency and CTRT SPOT 6 data from 2021 from BIG with an accuracy of 1.5 meters. The delineation of boundary lines is performed on a working map involving the community through adjudication and witnessed by a third party, namely the Provincial Government. Non-spatial data includes regulations and technical guidelines as the basis of the methodology, such as Permendagri No. 45 of 2016, Regulation of BIG No. 15 of 2019 regarding Cartometric Methods, and Regulation of BIG No. 6 of 2018 regarding Base Map Accuracy.

Third, in the data processing stage, a base map is created from the spatial data, the determination of cartometric points is performed according to cartometric procedures, and village boundaries are delineated. Subsequently, the analysis of creating cartometric points based on digitization in CTRT is conducted, and field validation is performed. Methods for testing geometric accuracy include techniques such as RMSE, coordinate comparison, and residual error testing. This accuracy is important for determining the methods and survey equipment, especially in high-accuracy applications such as topographic mapping, infrastructure development, and geospatial monitoring (Badan Informasi Geospasial, 2014).

RMSE is utilized to calculate Circular Error and Linear Error. In the evaluation of base map

accuracy, RMSE can predict the magnitude of positional error. The lower the RMSE value, the higher the accuracy of the resulting map. This analysis process is conducted to assess accuracy and ensure the legality of the mapping results. Finally, in the closing stage (presentation of results), a map of the administrative boundaries of Urutsewu Village is produced at a scale of 1:5000 (Haque, 2024). This stage is conducted using ArcGIS software.

3. RESULT AND DISCUSSION

3.1 Map Delineation of Urutsewu Village Boundaries

During the delineation process of the boundaries of Urutsewu Village, adjudication was necessary to reach an agreement regarding the village's administrative boundaries. This adjudication process involved Urutsewu Village and its directly adjacent villages, namely Tegalrejo Village, Sruwen Village, Sugihan Village, Candi Village, Kaligentong Village, and Gladagsari Village. Throughout the adjudication, a review of the indicative village boundaries identified from relevant agencies was conducted, as shown in **Figure 2** below.

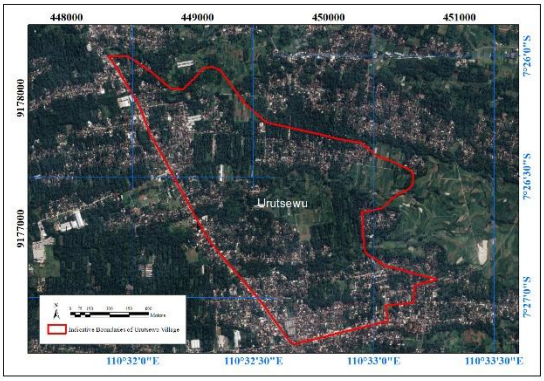

Figure 2 Indicative boundaries of Urutsewu Village

During the adjudication, several boundary segment changes occurred based on community recognition and the village apparatus. Based on the indicative village boundary data, a number of boundary node points have been identified that form the indicative boundary line of Urutsewu Village. **Figure 3** below presents the node points found in Urutsewu Village.

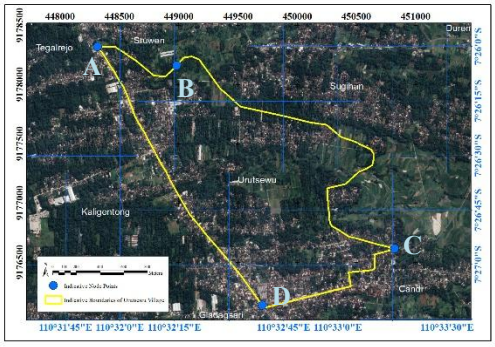

Figure 3 Indicative node point of Urutsewu Village

These changes impacted the reconstruction of node points and boundary lines as a whole. The adjustments from the indicative data points to the results of the cartometric points can be seen in **Figure 4** below.

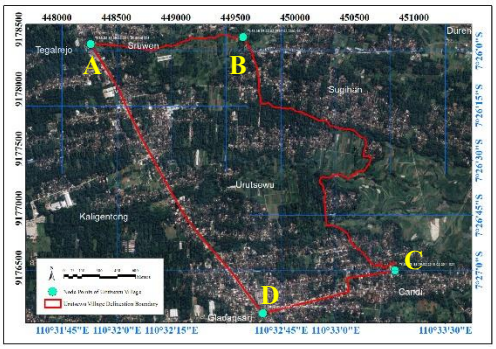

Figure 4 Delineation node point of Urutsewu Village

Table 1 below details the shifts of the node points located at the indicative boundaries and the node points at the cartometric boundaries of Urutsewu Village:

Table 1 Shifting of coordinates of the node point of Urutsewu Village

No	Code Node Point	Indicative Coordinate (m)		Cartometric Coordinate (m)		Distance Difference (m)
		X	Y	X	Y	
1	NP A	448317,158	9178320,076	448284,855	9178378,702	66,936089
2	NP B	448986,523	9178163,184	449567,487	9178437,060	642,28335
3	NP C	450825,436	9176616,370	450843,006	9176477,830	139,649013
4	NP D	449707,327	9176137,808	449734,915	9176118,428	33,714473

.

In the process of drawing boundary lines on the working map through adjudication, changes were evident in the cartometric boundary segment arrangement, reflecting the actual boundaries between villages based on agreements and physical conditions in the field. The changes in segments can be identified in the indicative boundaries compared to the boundaries delineated, as shown in **Figures 5**, **Figure 6**, **Figure 7**, and **Figure 8**:

1. Boundary segment with Sruwen Village
   The adjudication process resulted in changes between Urutsewu Village and Sruwen Village. Initially, agricultural land at the edge of Sruwen Village was entirely within Sruwen Village; however, it was agreed that part of it would now become the territory of Urutsewu Village. The new boundary was set to follow the river north of the Urutsewu agricultural area, then bend eastward following the landscape of trees and fields.

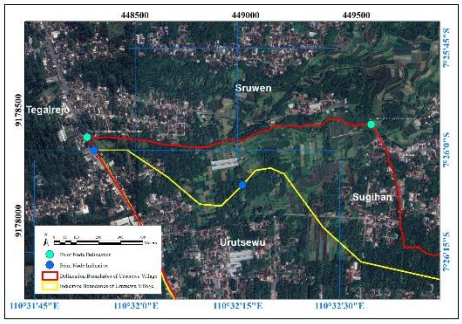

Figure 5 Boundary segment of Urutsewu Village with Sruwen Village

2. Boundary segment with Sugihan Village
   Through adjudication, changes in the boundary between Sugihan Village and Urutsewu Village were agreed upon, encompassing part of the housing, fields, and rice paddies in Dukuhan Hamlet included within Urutsewu Village, while part of the paddy fields in Jetak Hamlet remained in Sugihan Village. Disputes over the umbul area are still ongoing. The boundary between the two villages is marked by the Sigereng River and the road in Jetak Hamlet.

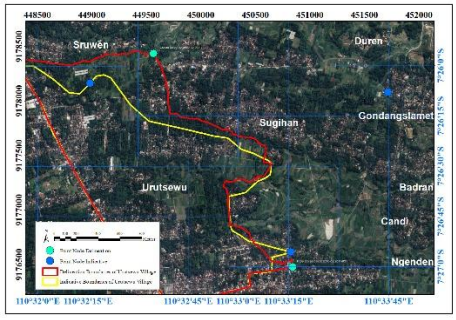

Figure 6 Boundary segment of Urutsewu Village with Sugihan Village

3. Boundary segment with Candi Village
   In this segment, there were no boundary changes, and the boundary between the two was defined by a constructed boundary, namely the road stretching from East to West with housing on both sides.

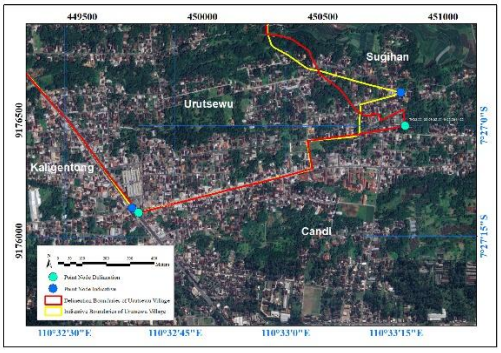

Figure 7 Boundary segment of Urutsewu Village with Candi Village

4. Boundary segment with Kaligentong and Gladagsari Villages
   In this segment, there were also no boundary changes, and the boundary is characterized by a constructed boundary based on the highway where housing is located on either side of the road.

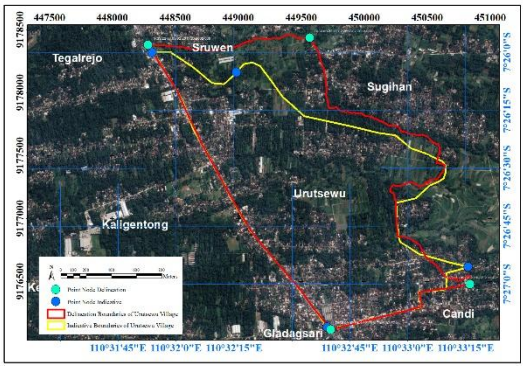

Figure 8 Boundary Segment of Urutsewu Village with Candi and Gladagsari Villages

After the adjudication stage was completed, the next step is the reconstruction of the boundaries based on the boundary drawing done on the working map. The results of the boundary delineation can be seen in **Figure 9**.

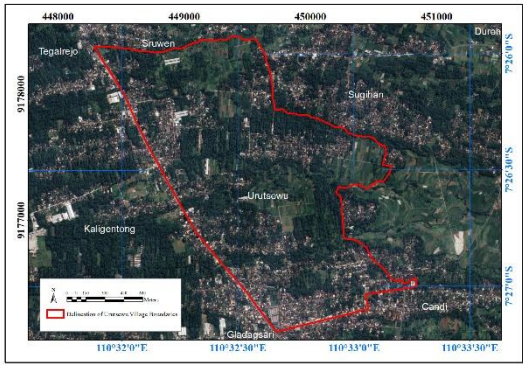

Figure 9. Delineation of Urutsewu Village Boundaries

The results of the boundary delineation indicate changes in the length of the boundary segments between Urutsewu Village and the directly adjacent villages. The changes in the length of the segments between the indicative boundaries and the delineated boundaries based on the adjudication results are shown in **Table 2** below.

Table 2. Differences in Indicative Boundaries and Delineation Results

Region	Boundary Segment Type	Segment Length (m)		Difference (m)
		Boundary Home Ministry	Result Delineation	
North	Waterways	790,550	1339,944	549,394
East	Rivers and waterways	3407,567	3608,368	-200,801
South	Tegalan, rivers	1410,032	1273,052	136,980
West	Tegalan	2602,808	2697,413	94,605

These changes in segment lengths affect the area and perimeter of Urutsewu Village's administrative region. A comparison of the area and perimeter between the indicative boundaries and the delineated results is shown in **Table 3** below.

Table 3. Differences in Area and Perimeter of Indicative Boundaries and Delineation Results

Source	Area (ha)	Circumference (m)
Indicative Village Boundaries	245,473	**8.210,949**
Result Delineation	**290,982**	**8.918,779**

3.2 Determination, Naming, and Testing of Cartometric Points

The determination of cartometric points was carried out through on-screen digitization on a digital map using high-resolution SPOT-6 Satellite imagery, based on agreements between villages during the adjudication. Cartometric points were chosen at easily recognizable objects, start/end points of segments, straight line segments, junctions of boundaries, as well as changes in boundary types. The naming is based on Ministry of Home Affairs Regulation No. 45 of 2016, with the format displayed in **Table 4** below.

Table 4. Format for Naming Cartometric Points

Village Location	Cartometric Point Naming
Inter-village in the same sub-district	TK11.01.01.2001.01.2002-001
Inter-village in Different Districts	TK11.01.01.2001.02.1001-001

Notes:

TK : Cartometric Point

11 : Code for Province

01 : Code for Regency/City

01 : Code for District/Subdistrice

2001 : Code for Village

001 : Cartometric Point Number

The results of creating cartometric points for Urutsewu Village can be seen in **Figure 10** below.

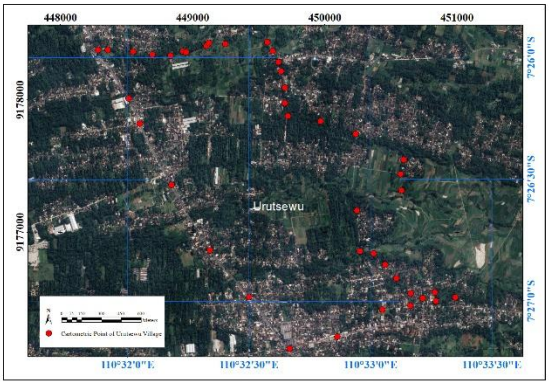

Figure 10. Cartometric Point Distribution Map Urutsewu Village

The determination of cartometric points in Urutsewu Village is based on an agreement among the villages reached during the adjudication process. This process involved Urutsewu Village, Sruwen Village, Kaligentong Village, Gladagsari Village, Candi Village, Tegalrejo Village, and Sugihan Village. The outcome of the adjudication

established 41 cartometric points as markers for the administrative boundaries of Urutsewu Village, grouped according to boundary segments between villages. The coordinates of the cartometric points for Urutsewu Village can be seen in **Tables 4**, **Tables 5**, **Tables 6**, and **Tables 7** below.

1. Boundary Segment with Sruwen Village
   The coordinates of the cartometric points for the segment between Urutsewu Village and Sruwen Village can be seen in **Table 5** below.

Table 5. Naming of Cartometric Points of Urutsewu Village bordering Sruwen Village

Number Points	Points Name	UTM coordinates 49S		Segment
		X (m)	Y(m)	
TK.022	TK33.09.02.2011-22.02.2003-001	449247,675	9178423,499	Segment 1
TK.023	TK33.09.02.2011-22.02.2003-002	449123,107	9178433,089	
TK.024	TK33.09.02.2011-22.02.2003-003	449106,142	9178411,045	
TK.025	TK33.09.02.2011-22.02.2003-004	448952,466	9178361,03	
TK.026	TK33.09.02.2011-22.02.2003-005	448927,86	9178369,733	
TK.027	TK33.09.02.2011-22.02.2003-006	448833,549	9178333,595	
TK.028	TK33.09.02.2011-22.02.2003-007	448695,053	9178342,214	
TK.029	TK33.09.02.2011-22.02.2003-008	448550,33	9178365,936	
TK.030	TK33.09.02.2011-22.02.2003-009	448360,32	9178379,75	
TK.031	TK33.22-33.09.02.2011-20.2002-000	448284,855	9178378,702	

2. Boundary Segment with Sugihan Village
   The coordinates of the cartometric points for the segment between Urutsewu Village and Sugihan Village can be seen in **Table 6** below.

Table 6. Naming of Cartometric Points of Urutsewu Village bordering Sugihan Village

Number Points	Points Name	UTM coordinates 49S		Segment
		X (m)	Y(m)	
TK.001	TK33.09-33.22.02.2002-02.2003-000	449567,487	9178437,06	Segment 2
TK.002	TK33.22.02.2002-09.02.2011-001	449605,735	9178372,427	
TK.003	TK33.22.02.2002-09.02.2011-002	449650,408	9178286,955	
TK.004	TK33.22.02.2002-09.02.2011-003	449668,463	9178217,276	
TK.005	TK33.22.02.2002-09.02.2011-004	449697,638	9178093,248	
TK.006	TK33.22.02.2002-09.02.2011-005	449698,173	9177977,851	
TK.007	TK33.22.02.2002-09.02.2011-006	449721,268	9177879,71	
TK.008	TK33.22.02.2002-09.02.2011-007	449969,47	9177839,761	
TK.009	TK33.22.02.2002-09.02.2011-008	450237,341	9177743,604	
TK.010	TK33.22.02.2002-09.02.2011-010	450574,816	9177439,172	
TK.011	TK33.22.02.2002-09.02.2011-009	450598,809	9177546,946	
TK.012	TK33.22.02.2002-09.02.2011-011	450582,185	9177314,446	
TK.013	TK33.22.02.2002-09.02.2011-012	450243,754	9177165,25	
TK.014	TK33.22.02.2002-09.02.2011-013	450268,241	9176857,624	
TK.015	TK33.22.02.2002-09.02.2011-014	450371,576	9176838,306	
TK.016	TK33.22.02.2002-09.02.2011-015	450457,545	9176753,743	
TK.017	TK33.22.02.2002-09.02.2011-016	450543,163	9176651,305	
TK.018	TK33.22.02.2002-09.02.2011-017	450652,429	9176536,408	
TK.019	TK33.22.02.2002-09.02.2011-018	450741,097	9176500,241	
TK.020	TK33.22.02.2002-09.02.2011-019	450834,552	9176545,369	
TK.021	TK33.22- 33.09.02.2010-02.2011-000	450843,006	9176477,83	

3. Boundary Segment with Candi Village
   The coordinates of the cartometric points for the segment between Urutsewu Village and Candi Village can be seen in **Table 7** below.

Table 7. Naming of Cartometric Points of Urutsewu Village bordering Candi Village

Number Points	Points Name	UTM coordinates 49S		Segment
		X (m)	Y(m)	
TK.032	TK33.09.02.2011-20.2002-001	448516,142	9178009,971	Segment 3
TK.033	TK33.09.02.2011-20.2002-002	448601,081	9177819,855	
TK.034	TK33.09.02.2011-20.2002-003	448840,284	9177357,293	
TK.035	TK33.09.02.2011-20.2002-004	449130,915	9176861,48	
TK.036	TK33.09.02.2011-20.2002-005	449428,633	9176511,006	
TK.037	TK33.09.02.2011-02.2010-20.2003-000	449734,915	9176118,428	

4. Boundary Segment with Candi, Kaligentong, and Gladagsari Villages
   The coordinates of the cartometric points for the segment between Urutsewu Village and Candi, Kaligentong and Gladagsari Villages can be seen in **Table 8** below.

Table 8. Naming of Cartometric Points of Urutsewu Village bordering Candi, Kaligentong, and Gladagsari Villages

Number Points	Points Name	UTM coordinates 49S		Segment
		X (m)	Y(m)	
TK.038	TK33.09.02.2011-02.2010-001	450095,939	9176209,053	Segment 4
TK.039	TK33.09.02.2011-02.2010-002	450457,723	9176301,072	
TK.040	TK33.09.02.2011-02.2010-003	450436,884	9176415,464	
TK.041	TK33.09.02.2011-02.2010-000	450650,269	9176443,692	

Geometric accuracy testing was conducted by comparing the coordinates of the test points obtained from digitization on CSRT SPOT-6 in ArcGIS with the actual positions in the field using GPS measurements with the rapid static method. There were 14 test points. The results are presented in the distribution map of the boundary test points, which can be seen in **Figure 11** below.

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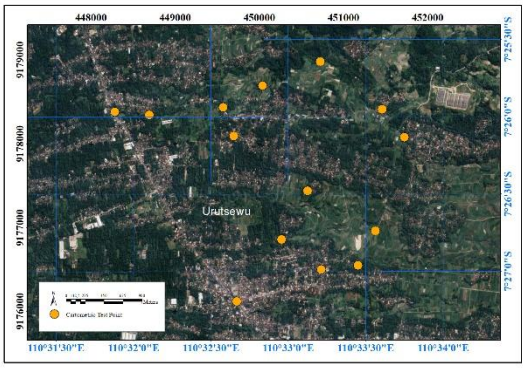

Figure 11. Distribution of Field Accuracy Test Points

The accuracy testing resulted in an RMSE value, which was then used to calculate the Circular Error (CE90) value, with the results for horizontal accuracy displayed in **Tables 9** and **Table 10** below.

Table 9. Differences between Map Coordinates and Measurements

Number	Points Name	Measurement Coordinates GNSS (m)		Map Cartometric Coordinates (m)	
		X	Y	X	Y
1	TK33.22-33.09.02.2011-20.2002-000	448285,754	9178380,758	448284,855	9178378,702
2	TK33.09.02.2011-22.02.2003-007	448696,282	9178342,735	448695,053	9178342,214
3	TK33.09-33.22.02.2002-02.2003-000	449570,276	9178437,716	449567,487	9178437,06
4	TK33.22.02.2002-09.02.2011-004	449698,224	9178092,766	449697,638	9178093,248
5	TK33.22.02.2002-09.02.2011-010	450574,892	9177438,738	450574,816	9177439,172
6	TK33.22.02.2002-09.02.2011-013	450268,277	9176857,681	450268,241	9176857,624
7	TK33.22.02.2002-09.02.2011-018	450740,765	9176501,159	450741,097	9176500,241
8	TK33.09.02.2011-02.2010-20.2003-000	449734,511	9176120,501	449734,915	9176118,428
9	TK33.22.02.2002-33.09.02.2010-002	451177,687	9176550,012	451180,402	9176548,185
10	TK33.22.02.2002-33.09.02.2010-009	451383,761	9176961,426	451384,500	9176961,003
11	TK33.22.02.2002-02.2001-003	451462,578	9178412,817	451461,926	9178412,178
12	TK33.22.02.2002-02.2003-004	450038,803	9178695,753	450038,526	9178696,79
13	TK33.22.02.2002-02.2007-007	450728,899	9178980,644	450728,110	9178980,606
14	TK33.09-33.22.02.2002-02.2001-000	451728,389	9178078,304	451728,314	9178076,43

Number	Points Name	(X2-X1)^2+(Y2-Y1)^2
1	TK33.22-33.09.02.2011-20.2002-000	5,0334
2	TK33.09.02.2011-22.02.2003-007	1,7822
3	TK33.09-33.22.02.2002-02.2003-000	8,2061
4	TK33.22.02.2002-09.02.2011-004	0,5757
5	TK33.22.02.2002-09.02.2011-010	0,1940
6	TK33.22.02.2002-09.02.2011-013	0,0045
7	TK33.22.02.2002-09.02.2011-018	0,9517
8	TK33.09.02.2011-02.2010-20.2003-000	4,4589
9	TK33.22.02.2002-33.09.02.2010-002	10,7072
10	TK33.22.02.2002-33.09.02.2010-009	0,7245
11	TK33.22.02.2002-02.2001-003	0,8342
12	TK33.22.02.2002-02.2003-004	1,1512
13	TK33.22.02.2002-02.2007-007	0,6245
14	TK33.09-33.22.02.2002-02.2001-000	3,5170
Total		35.2577
Mean		2.5184
RMSE		1.5869
CE90		2.4082

Tabel 10. Calculation of RMSE and CE90

Based on the results in the table, an RMSE value of 1.5869 meters indicates that the root mean square deviation between the cartometric interpretation points and the actual field measurement points is relatively small, suggesting that the spatial accuracy of this cartometric data is classified as good. The CE90 value of 2.4082 meters is still within the tolerance limits set for class 2 maps on a scale of 1:5,000. Referring to the Head of BIG Regulation No. 6 of 2018 concerning Technical Specifications for Base Maps, the horizontal accuracy requirement for maps with a scale of 1:5,000 is that the CE90 value does not exceed 3 meters.

Thus, the testing results show that the cartometric data used has met the required spatial accuracy standards and is suitable for use as a reference in the delineation of boundary areas. After the village boundary agreement was reached, a digital boundary map was prepared using ArcGIS software. This delineation process resulted in the boundary map of Urutsewu Village on a scale of 1:5,000 with a layout that complies with the provisions of Minister of Home Affairs Regulation No. 45 of 2016. The resulting boundary map of Urutsewu Village can be seen in **Figure 12** below:

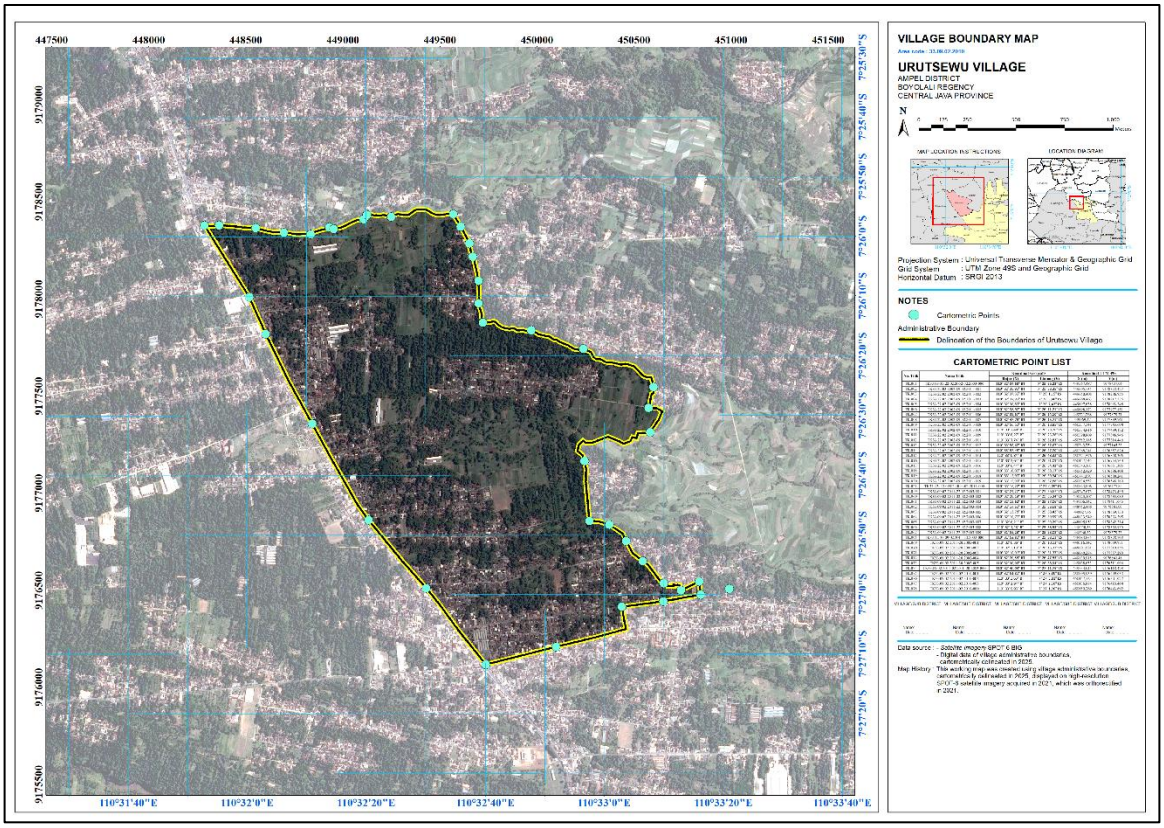

Figure 12. Boundary Map of Urutsewu Village

4. CONCLUSIONS AND SUGGESTIONS

Thus, the mapping of the administrative boundaries of Urutsewu Village was carried out in accordance with the guidelines of Minister of Home Affairs Regulation No. 75 of 2014 and Minister of Home Affairs Regulation No. 45 of 2016. The delineation process began with the boundary drawing on the working map through an adjudication method involving Urutsewu Village and the directly adjacent villages: Tegalrejo, Sruwen, Sugihan, Candi, Kaligentong, and Gladagsari. This process produced 41 cartometric points determined based on mutual agreement and physical conditions in the field.

The delineation results showed changes in boundary segments with several villages, such as boundary shifts with Sruwen Village and Sugihan Village, which affected the area and perimeter of the Urutsewu Village administrative region. The area increased from 245.473 hectares to 290.982 hectares, while the perimeter increased from 8,210.949 meters to 8,918.779 meters. All results of the delineation process are presented in the boundary map of Urutsewu Village at a scale of 1:5,000, with the map presentation following Minister of Home Affairs Regulation No. 45 of 2016.

Based on the accuracy testing and the delineation process, it can be concluded that the boundary map of Urutsewu Village has met the spatial accuracy standards for class 2 maps at a scale of 1:5,000 in accordance with the provisions in Head of BIG Regulation No. 6 of 2018. The map was then arranged in digital format using ArcGIS with a layout according to Minister of Home Affairs Regulation No. 45 of 2016, thus it can be used as an official reference for the administrative boundaries of Urutsewu Village.

Recommendations for further research suggest that the on-screen digitization process in determining cartometric points and boundary delineation should be conducted with more precision and accuracy. Additionally, it is advised to use satellite imagery with higher resolution for improved results.

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