Run Process in ArcGIS & QGIS

Time Allocated: 2 hours – Time Taken: 5 hours

Description

Running the process manually allows for a better understanding of the tasks required in each step of the process. There was only 1 minor difference in terminology between the two software. The individual steps taken can be seen below:

1. Set up project space
2. Define central point
3. Add hydro data
4. Add road data
5. Create 50 metre Hydro buffer
6. Create 40 metre Road buffer
7. Remove Hydro and Road data
8. Merge Hydro and Road buffer feature classes (MergeBuffer)
9. Delete Hydro and Road buffers
10. Merge Hydro and Road buffer features (DissolveBuffer)
11. Delete MergeBuffer
12. Determine volume of Nitrogen
13. Determine concentration of Nitrogen required
14. Calculate area of Buffer0
15. Calculate radius of Buffer0
16. Create initial Buffer0
17. Clip DissolveBuffer by Buffer0 (Clip1)
18. Determine area of Clip1
19. Calculate area for Buffer1 (Area of Buffer0 + Area of Clip1)
20. Calculate radius for Buffer1
21. Create Buffer1
22. Clip DissolveBuffer by Buffer1 (Clip2)
23. Determine area of Clip 2
24. Calculate area of Buffer2 (Area of Buffer1 + (Area of Clip2 - Area of Clip1))
25. Delete Buffer2 and Clip1
26. Calculate radius of Buffer 2
27. Create Buffer2
28. Clip DissolveBuffer by Buffer2 (Clip3)
29. Determine area of Clip 3
30. Calculate area of Buffer3 (Area of Buffer2 + (Area of Clip3 - Area of Clip2))
31. Delete Buffer2 and Clip2
32. Calculate radius of Buffer 3
33. Create Buffer3
34. Delete DissolveBuffer
35. Calculate area increase (Area of Buffer3 – Area of Buffer0)
36. Calculate percent increase (((Area of Buffer3 / Area of Buffer0) – 1) * 100)
37. Delete Buffer0

Results

A screenshot of the result of the two software can be seen in Figure 1, and a summary of the results of running the process can be seen in Table 2. Further testing confirms most of this difference in area results from the segmentation of arc-length in QGIS.

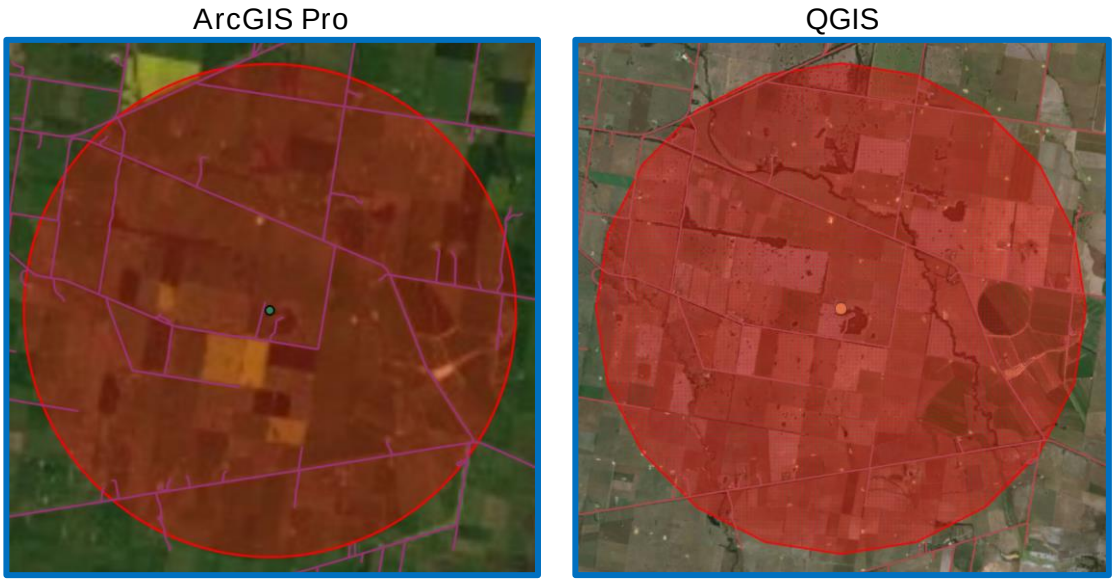

Figure 1. Resultant outputs from ArcGIS Pro and QGIS

Table 1. ArcGIS Pro vs QGIS manual accuracy

	ArcGIS Pro	QGIS
areaIncrease (Ha)	899	874
percentIncrease (%)	21	20