Identifying high infiltration and ground water recharge areas in Dane County, WI

Kathleen Arrington, Cindy Stiles*, Steve Ventura, and John Norman

Soil Science Department

University of Wisconsin

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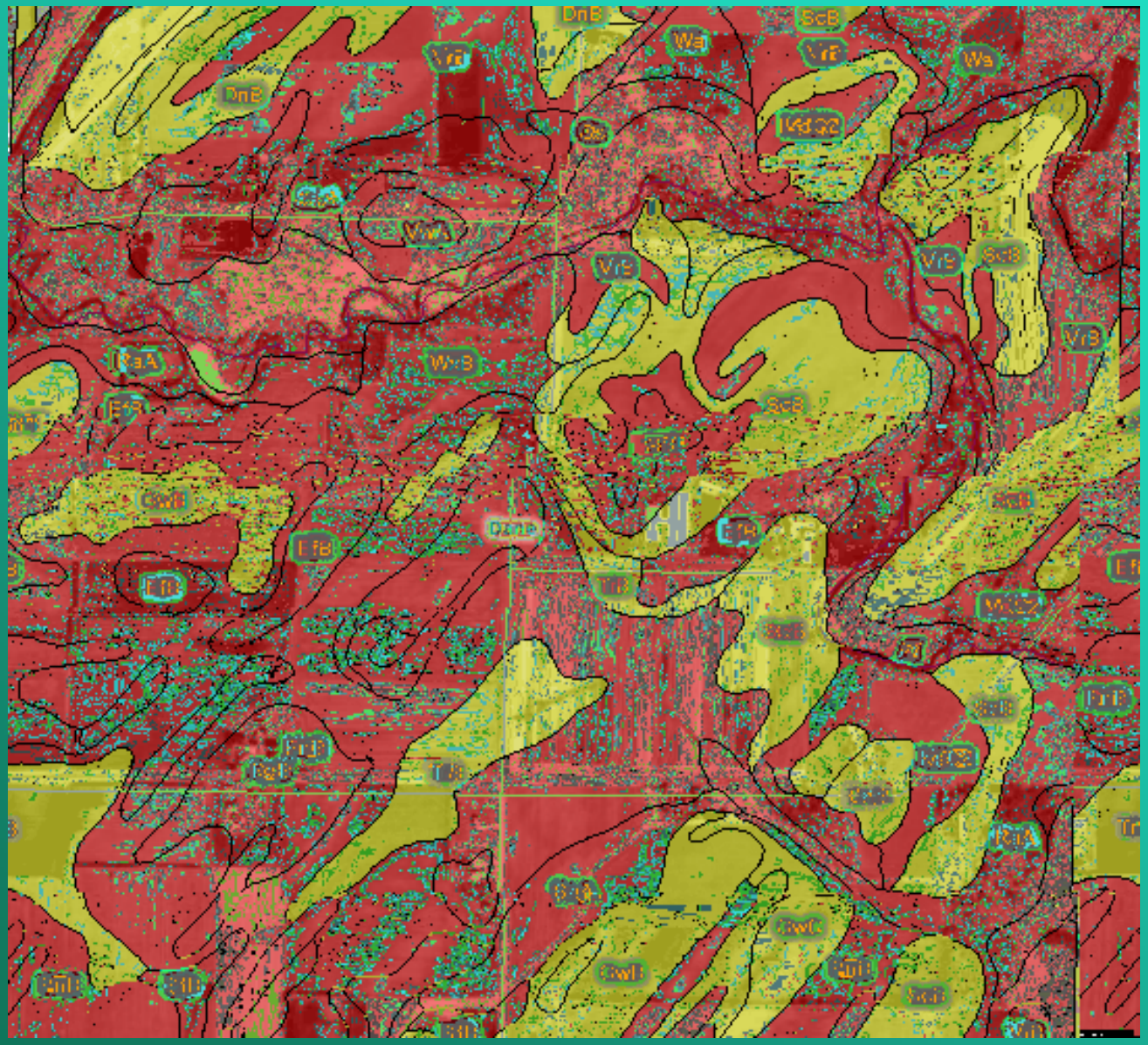
- High infiltration/recharge areas provide valuable ecosystem services in landscapes
- Infiltration databases are relatively data-poor and inconsistent, but this information is a valuable resource for community planners



Suitability of soil series for septic leach fields, eastern Dane County (derived from Web Soil Survey)

Questions driving the Dane County infiltration/recharge area project

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- Can maps of these sensitive areas become part of community/regional urban development planning?
- Will developers actually utilize the information and what format do they prefer?

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- Assess the impact of development on the infiltration rates of soils
- Develop tools to make this information readily accessible to the public

Model development

- Weighting and rating model combined with GIS layers to identify specific areas of interest

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- Three land-use categories: agricultural, residential, recreation/open/vacant/ woodland
- Sampling sites identified within combined land-use area and estimated surface horizon infiltration potential
- Information for land-use from Dane County Regional Planning Commission (2005)

Activities – Stage 1

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- Field measurement of Ksat using confined ring infiltrometer, lab data obtained from cores with falling head permeameter

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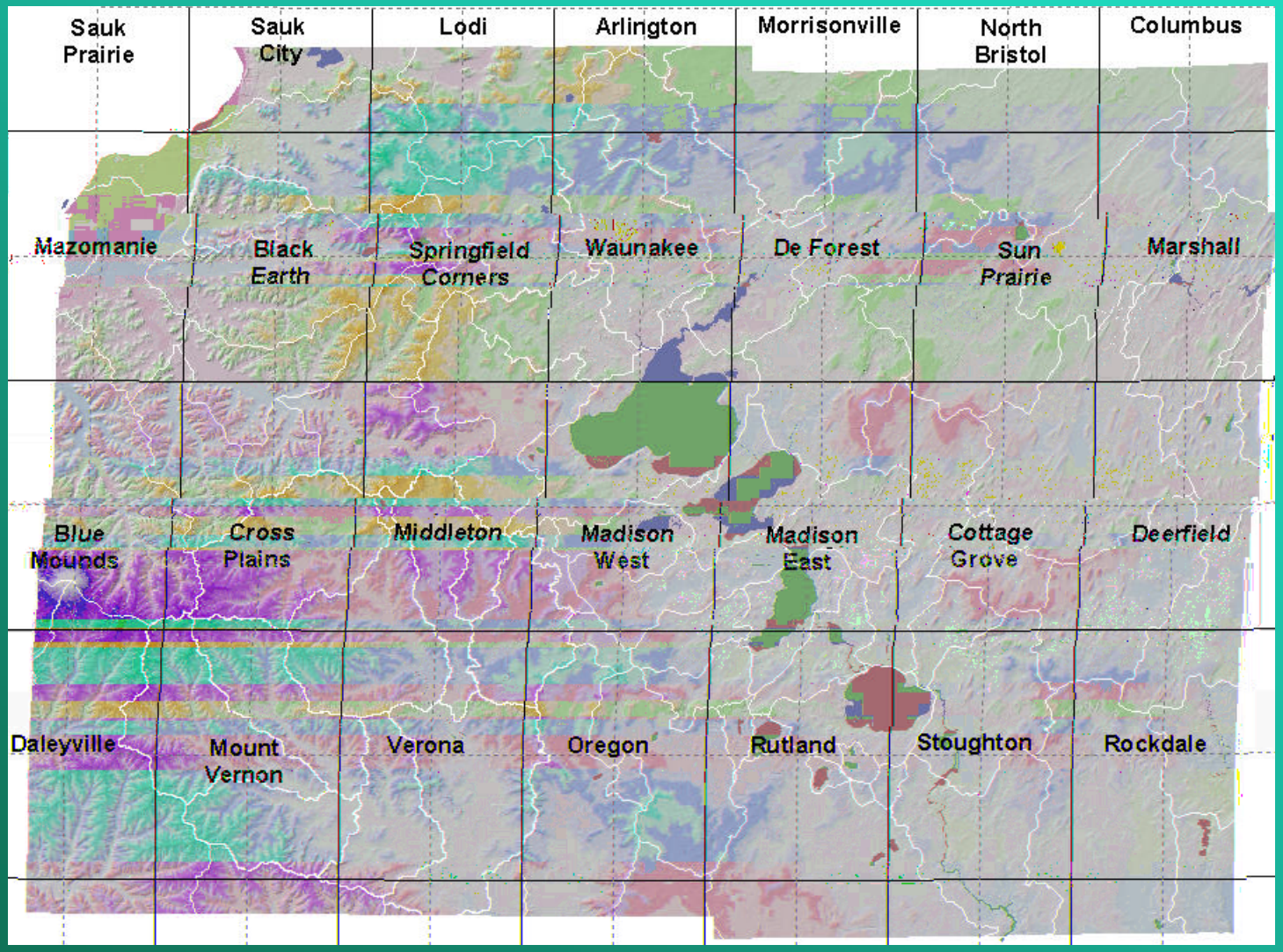
- Stratified random sampling from SoLIM data points dependent upon relevant classes

Setting – Dane County, WI



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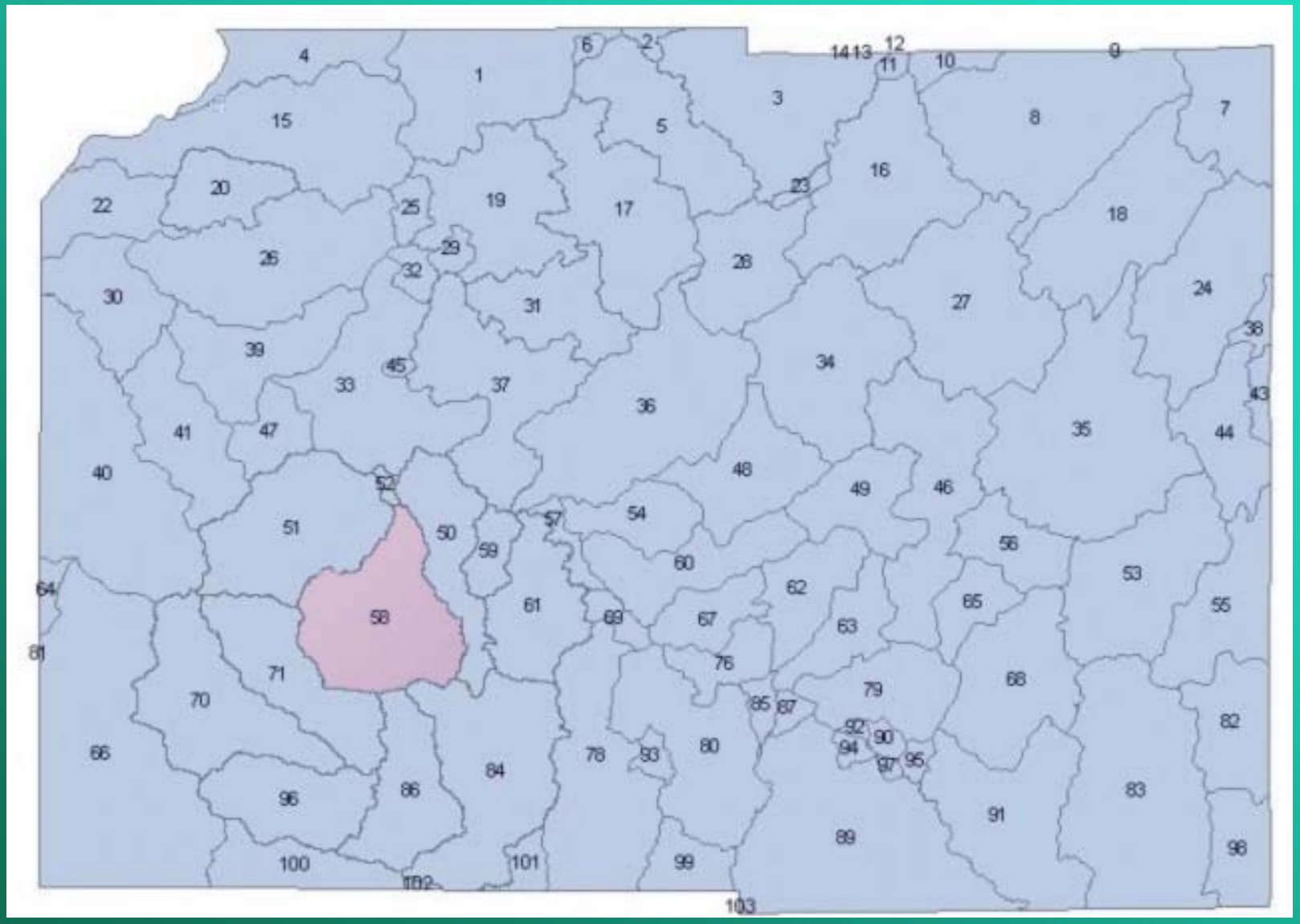

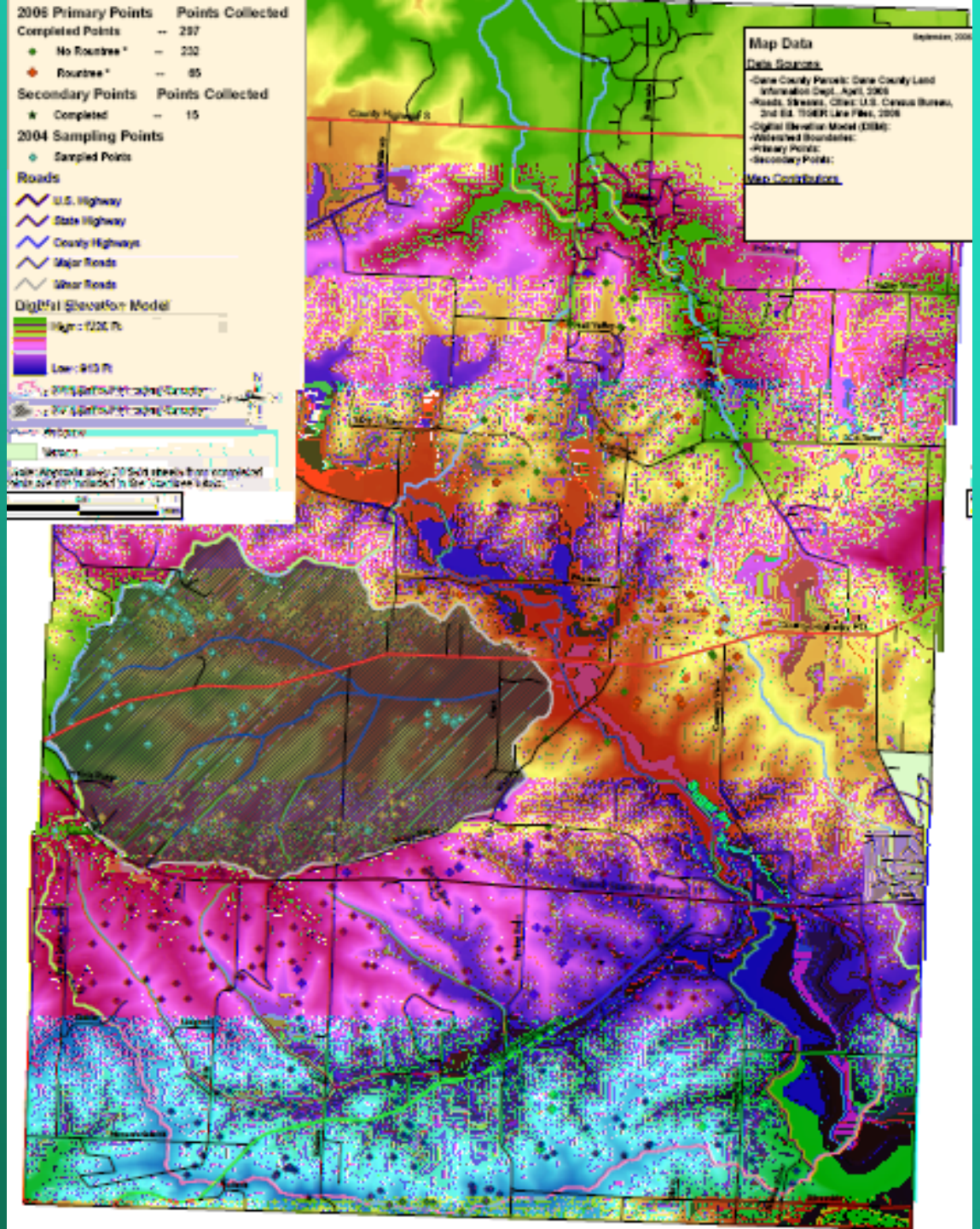
2006 Primary Points
Points Collected
Completed Points -- 297
No Rountree * -- 232
Rountree * -- 65
Secondary Points
Points Collected
Completed -- 15
2004 Sampling Points
Sampled Points
Roads
U.S. Highway
State Highway
County Highways
Major Roads
Minor Roads
Digital Elevation Model
Map Data
Data Sources:
Map Contributors:

Field measurements

- Surficially confined portable infiltrometer
- 1m x 0.5m rectangular steel frame surrounding a portable instrument
- Two replicates per landscape sample point
- Constant head maintained by ponded water on the surface within the confines of the ring
- Cores recovered and returned to lab for falling head permeameter measurements of separate horizons

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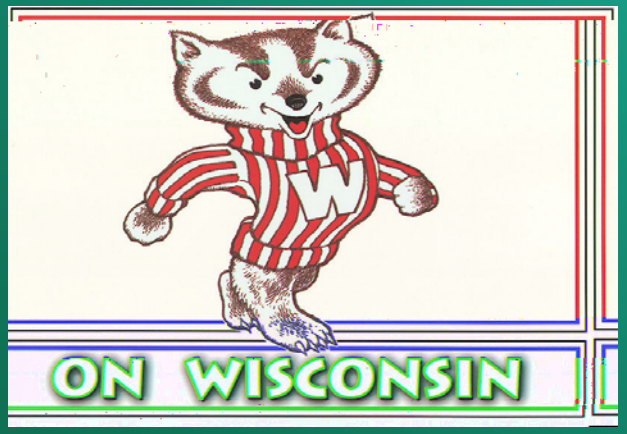
- Modeling information publication through USGS/WNHGS for knowledgeable land-use managers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