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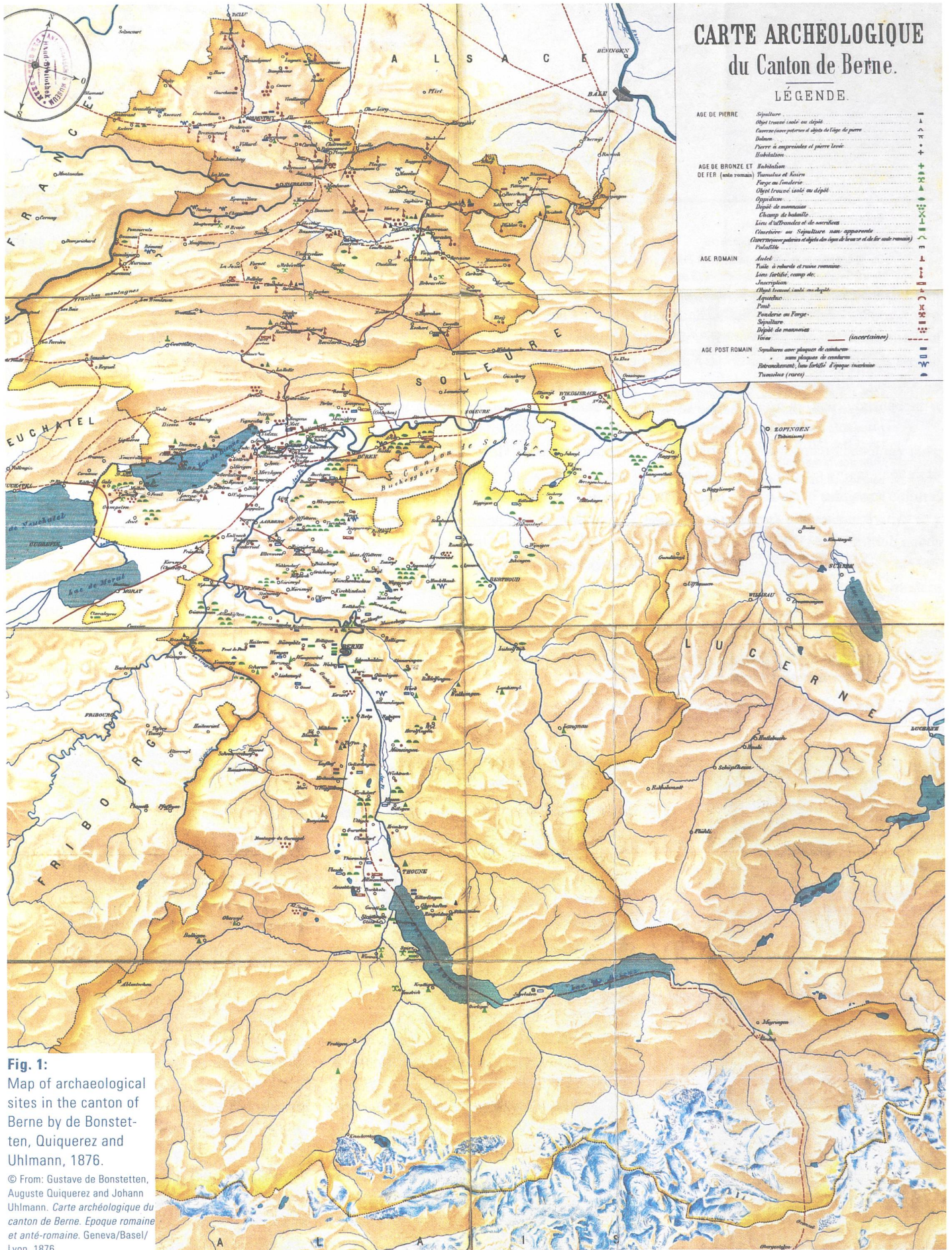
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**Fig. 1:** Map of archaeological sites in the canton of Berne by de Bonstetten, Quiquerez and Uhlmann, 1876.

© From: Gustave de Bonstetten, Auguste Quiquerez and Johann Uhlmann. *Carte archéologique du canton de Berne. Époque romaine et anté-romaine.* Geneva/Basel/Lyon, 1876



# From the «listing of antiquities» to the Geoportals

*Archaeological inventories serve to make data on archaeological sites available to those engaged in regional planning and research and members of the general public. According to the *Denkmalstatistik des Bundes* (Swiss statistics on built heritage), there are almost 39 000 known archaeological sites in Switzerland.*

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The protection of these sites is the responsibility of the cantons in which they are located, many of which established Archaeological Services between the 1950s and 1980s (see article by Robert Fellner and Georg Matter, pp. 6–9). One of the primary legal obligations of each cantonal archaeology department is to maintain an inventory of archaeological sites. In doing so, they adhere to the Convention for the Protection of the Archaeological Heritage of Europe (Valetta Convention 1992), Article 2 of which states that parties to the convention shall maintain an inventory of their archaeological heritage and designate protected monuments and areas so they are preserved for investigation by future generations. The *Guidelines for Monument Preservation in Switzerland*, which were issued by the Federal Commission for Monument Preservation in 2007, also apply to archaeological monuments and stipulate that monuments are to be publicly designated, and potential archaeological sites are to be registered in advance.

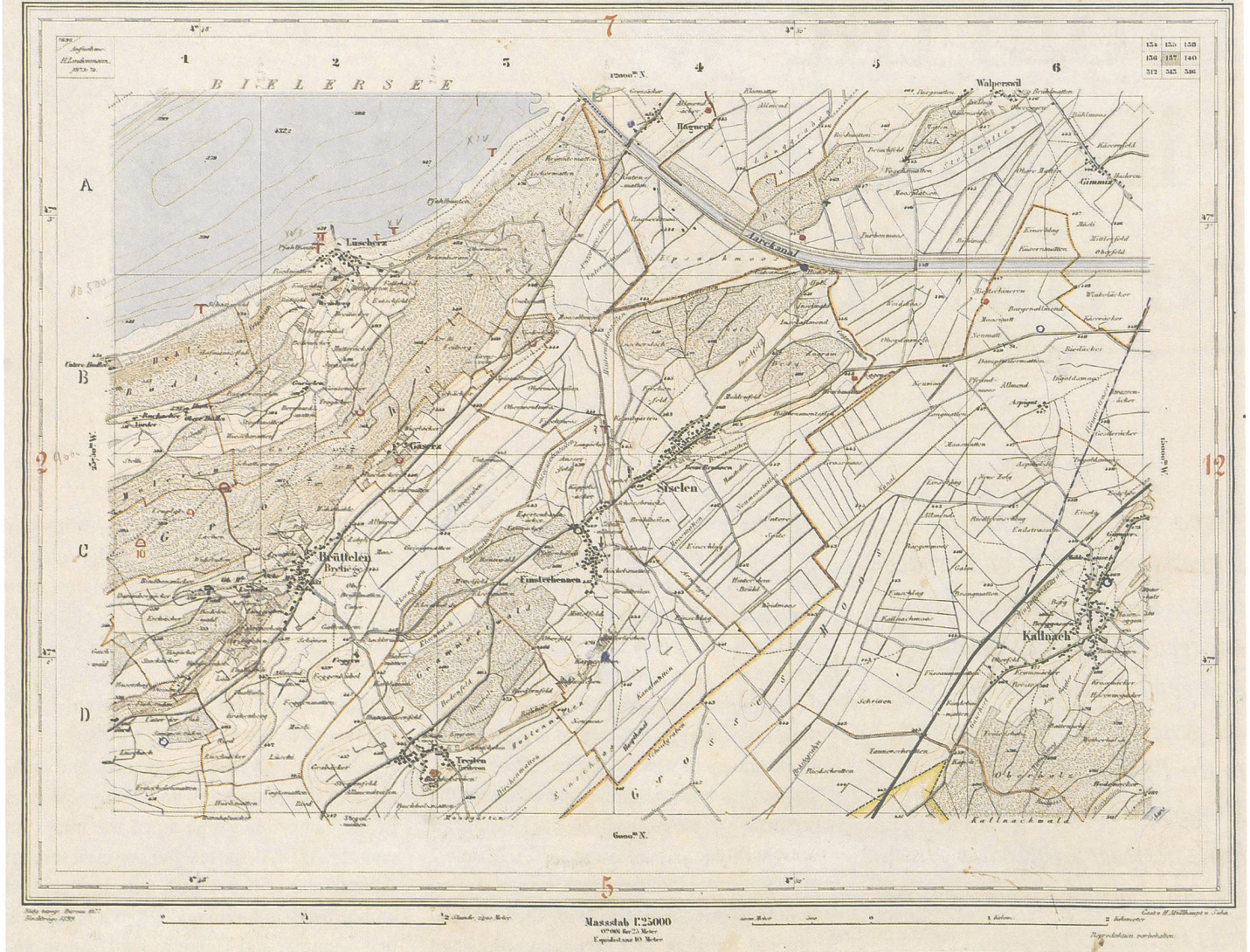
The implementation of these guidelines varies from canton to canton: some inventories cover only proven archaeological sites, while others incorporate more speculative data. Cantonal inventories also differ in terms of content – many define an archaeological site as the sum of archaeological legacies in a particular location, while others define sites not only according to location, but also according to dating and function. In addition to the archaeological sites, archaeological protected areas are defined,

for which special regulations regarding any form of ground intervention apply. According to Swiss statistics on built heritage, such land represents around one per cent of the total surface area of Switzerland.

## **A look back at the archaeological inventory in the canton of Berne**

Researchers have been gathering and cataloguing information on archaeological sites in the canton of Berne since the mid-19th century. In 1850, the teacher and civil servant Albert Jahn (1811–1900), who had studied archaeology in Germany, wrote a handbook that «enumerated Helvetic and Roman antiquities, with reference to the oldest knightly and church structures, documented place names and folk legends» in the canton of Berne. Auguste Quiquerez (1801–1882), an engineer from Jura, produced a similar work about the French-speaking region of Jura in 1862. In 1876, the first comprehensive map of archaeological sites in the canton (Fig. 1) was published by Quiquerez together with the independent scholar Gustav von Bonstetten (1816–1892), whose archaeological collection formed the foundation of the Berne Historical Museum, and Dr Johannes Uhlmann (1820–1882), who was primarily interested in pile dwellings. Noteworthy is also the work of sub-postmaster and geometer Bendicht Moser (1862–1940), who annotated topographic maps with his observations on archaeological sites (Fig. 2). The last systematic overview in the form of a handbook was written by the Bernese university professor Otto Tschumi (1878–1960;





**Fig. 2:** Topographic Atlas by Bendicht Moser. The archaeological sites have been marked by hand on the map sheets. Each sheet also includes handwritten explanatory notes.

© From: Bendicht Moser. *Topographischer Atlas*. Unpublished collection of maps. No year indicated [1902].

**Fig. 3):** *Urgeschichte des Kantons Bern* (The Prehistory of Canton Berne. Statistics on Finds up to 1950). The principal focus for all these pioneers – both academics and amateurs – was archaeological research.

The archaeological research that accompanied the construction of the motorway network, which began in 1960, saw changes in the way inventories were compiled, i.e. a pre-emptive recording of data with a view to the planning of rescue excavations. In the canton of Berne, Hans Grütter took on this task in 1964 – initially under the auspices of the Berne Historical Museum, and from 1970 as the first cantonal archaeologist. In 1982, he initiated the first *Archäologische Hinweisinventar* (Archaeological Reference Inventory), which was printed on topographic maps at a scale of 1:25 000 (Fig. 4). The legal foundation for this was initially provided merely by cantonal building law, which demanded the compilation of an in-

ventory of «historical and archaeological sites, finds and ruins». In 1999, the law on the preservation of monuments was introduced, which stipulates the maintaining of inventories of «proven and potential archaeological sites, finds and ruins». The Archaeological Inventory of the canton of Berne, which currently has approximately 4300 sites, is the result of decades of data collection and the information it contains varies greatly in quality (Fig. 5).

In line with the cantonal Geoinformation Ordinance, the Archaeological Inventory of sites and protected areas has been maintained since 2015 under the cantonal law on geodata. Such data has to be made available in the cantonal geo-database. The status of archaeological sites can already be viewed online as point information on the Geoportail of the canton of Berne. While some cantons provide online information on archaeological areas (suspected sites





**Fig. 3:**  
Otto Tschumi visiting  
excavations in Ranggi-  
loch, Boltigen 1933.  
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and protected areas), Berne makes detailed information on sites and current protected areas available only on demand. For some time, Berne has exercised restraint in the on-line publication of data on current protected areas due to the risk of illicit excavations. However, with increasing digitalization in the fields of regional planning and construction project planning, this argument is no longer sustainable. In fact, archaeology's limited presence on the cantonal Geoportal is increasingly seen as a shortcoming. In order to publish a legally binding inventory that reflects the current state of archaeological protected areas, a further administrative step is required: The inventory of sites and protected areas must be approved for practically the entire canton or all 346 municipalities. The preparatory work for this under-

taking is scheduled to be completed in the coming year, thereby enabling information on all archaeological sites and protected areas to become available online in future (Fig. 6).

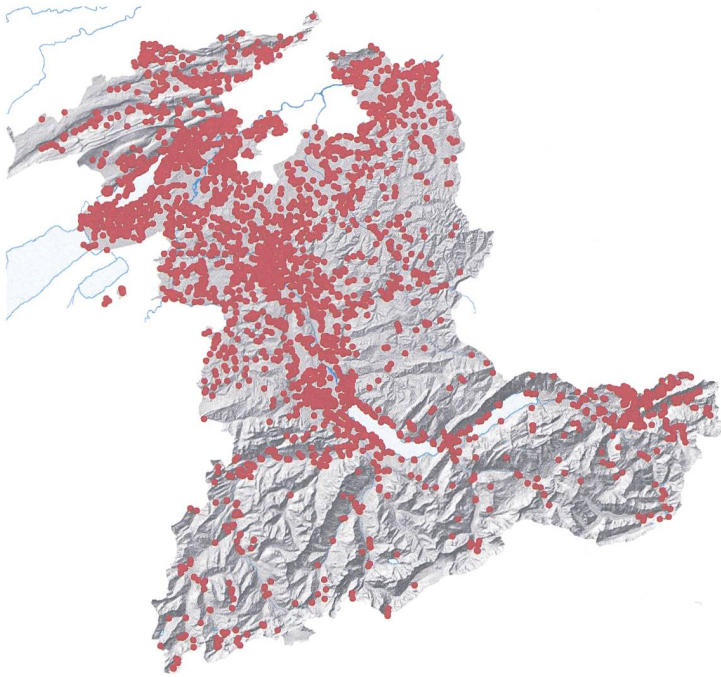
### Inventories as a basis for planning

The Bernese strategy for cultural conservation set out in 2015 explains why the Archaeological Service maintains a regularly updated inventory: «The archaeological inventory is accessible to all interested parties and provides public authorities and building owners with legal security. As a basis for planning, it helps keep delays in construction projects to a minimum». For construction projects in protected areas, the granting authorities are liable for submitting applications to the Archaeological Service. After an application has been assessed, the Archaeological Service issues stipulations for the construction permit. In order to take preventative action by also registering activities in suspected archaeological sites,

**Fig. 4:**  
Archaeological Reference Inventory, 1982.  
Map sheet of the Lake Biel region.  
© From: Kantonsarchäologie  
Bern, Planungsamt des Kantons  
Bern (Ed.). *Archäologisches  
Hinweisinventar*. Berne, 1982.







**Fig. 5:**  
Archaeological sites in the canton of Berne as point information.

© Wenke Schimmelpfennig; based on the geo-database and swisstopo JA100012; graphic reworking by Max Stöckli

every planning application submitted in the canton of Berne – around 7000 per year – is verified.

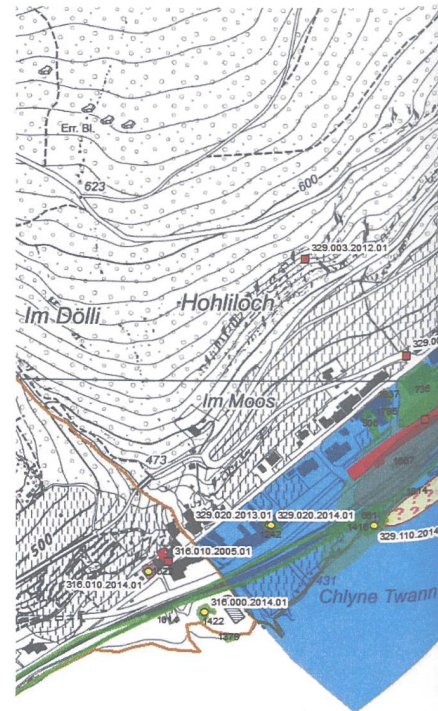
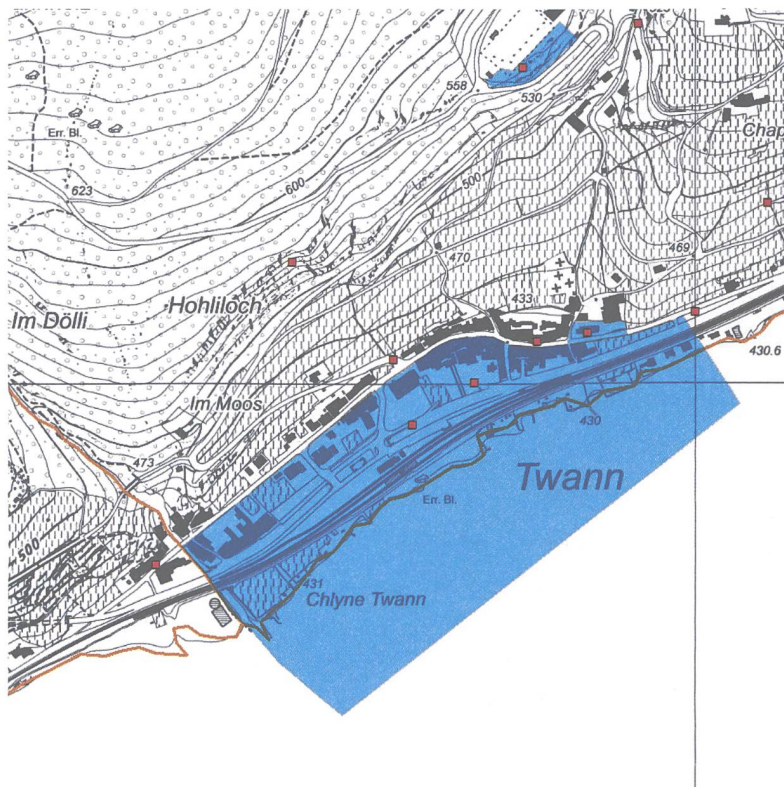
If extensive archaeological finds are not expected, construction work is merely monitored. However, if there are known finds in areas immediately adjacent to the building site, an archaeological excavation will possibly be carried out prior to the start of construction work. In such cases, efforts are made to carry out the archaeological in-

vestigation as early as possible. Preliminary probing is conducted whenever feasible – the results being incorporated into the detailed planning of the project. This enables alternatives to be explored that would avoid interventions affecting archaeological finds. If this is impossible, archaeological measures can be developed and implemented at an early stage. This can ensure planning security for the developers.

The Archaeological Service of the canton of Berne has a number of employees in the Archaeological Inventory Department responsible for updating the inventory on an ongoing basis. The results of archaeological interventions are entered into the inventory immediately upon conclusion of a project, and the archiving keeps the database updated. At the same time, the Archaeological Service's geo-information system is updated. Included alongside archaeological sites and protected areas are sites pending building permission, suspected or potential archaeological sites and sondages, excavations and surveys. The Archaeological

**Fig. 6:**  
Archaeological sites and protected areas in the immediate proximity of Twann. Not every site is surrounded by a protected area. Blue areas indicate the perimeters of the protected areas; the red dots mark the archaeological sites.

© Elena Prado; based on the geo-database and swisstopo JA100012; graphic reworking by Max Stöckli



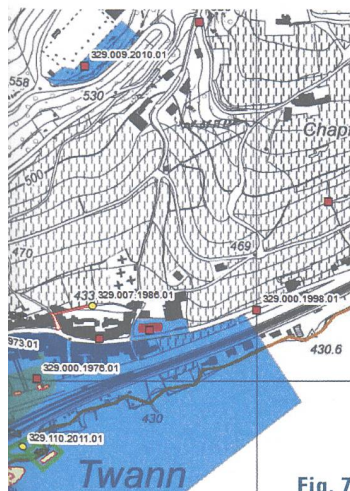


Service thereby has at its disposal a current archaeological map of the entire canton (Fig. 7), which enables a rapid response to inquiries from municipalities, developers, planners and the interested public. ■

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**Fig. 7:** The various information on archaeological sites, suspected sites, construction site monitoring, excavations, etc. is brought together in a GIS.

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## Resümee

Archäologische Inventare in der Schweiz dienen der Raumplanung, der Forschung und der Information der interessierten Öffentlichkeit. Die Erfassung der archäologischen Fundstellen liegt in der Hand der Kantone. Die systematische Sammlung von Informationen zur Archäologie hat eine über 100-jährige Geschichte. Während die Pioniere der Inventarisierung ihre Erkenntnisse meist von Hand auf Karten festhielten, bietet die heutige digitale Erfassung die Chance, archäologische Informationen online einer breiten Öffentlichkeit zur Verfügung zu stellen. Die lagegenaue Verfügbarkeit archäologischer Daten ermöglicht eine rasche Informationsbeschaffung für Planer, Bauherren und Gemeinden – Grundlage zur Planungssicherheit für Bauprojekte. Daneben bieten die digitalen Daten viele Möglichkeiten zur effizienten Untersuchung wissenschaftlicher Fragestellungen, beispielsweise als Potentialkarte, die als Modell Prognosen für bislang fundleere Gebiete möglich macht.

## Résumé

Les inventaires archéologiques de la Suisse servent à l'aménagement du territoire, à la recherche et à l'information du public intéressé. Il appartient aux cantons de répertorier les sites archéologiques. Le recueil systématique d'informations sur l'archéologie a une histoire plus que centenaire. Alors que les pionniers de l'inventaire relevaient généralement les sites à la main sur des cartes, les techniques numériques actuelles permettent à un large public d'accéder en ligne à des informations dans le domaine de l'archéologie. En mettant à disposition des données archéologiques précises, on permet aux urbanistes, aux maîtres d'ouvrage et aux communes d'obtenir rapidement des informations et de planifier leurs projets de construction avec une plus grande sécurité. En outre, les données numériques offrent la possibilité de mener des recherches efficaces sur des questions scientifiques, par exemple en dressant des cartes de potentiel au moyen desquelles les archéologues peuvent estimer les découvertes possibles dans les zones encore inexplorées.