



**US Army Corps
of Engineers**

Recent Advances in Developing a Standardized Automated Curation Assessment Method

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Purpose

Recent Federal legislation now explicitly requires that all Federal agencies take full responsibility for the proper curation of artifacts and record holdings that have resulted from enumerable cultural resource management projects that have been driven by Federal laws. Recently, an automated curation assessment method has been developed that offers more objective means for assessing collections and repositories in the context of a standardized database. The aim of this technical note is to inform field operating elements that the method and database have been developed and are available upon request for use by all interested parties.

Background—Curation Assessment Problem

In September 1990, the Federal Government established regulations and guidelines in "Curation of Federally Owned and Administered Archaeological Collections" (36 CFR Part 79) to protect and preserve curated cultural materials and associated records under its control. This regulation requires all repositories housing Federally owned collections to meet certain curation standards, procedures, and guidelines.

The U.S. Army Corps of Engineers, in February 1991, issued Engineer Regulation (ER) 1130-2-433, "Collection Management and Curation of Archaeological and Historical Data." ER 1130-2-433 represents the Corps of Engineers' implementation of 36 CFR Part 79. The Corps regulation requires a formal assessment and report for every repository holding collections that are the responsibility of the Corps.

The report requirement contained in ER 1130-2-433 asks over 100 questions of each curation facility. These data, if rigorously collected and standardized, can be of great utility for evaluating how well repositories comply with curation requirements and ensure responsible, long-term curation of artifacts and information. It is clearly in the

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public interest to ensure that the anthropological research and public appreciation value inherent in these collections is realized.

Research Goals

The applied research described in this technical note represents one particular approach within one Federal agency for complying with the law and promoting future anthropological research using curated collections. This approach emphasizes the development and field testing of (1) an objective and standardized method for assessing collections and repositories and (2) an automated database describing a population of collections and repositories.

The results of this research are important as a decision-making tool for ensuring compliance, and offer a defensible and objective means for establishing priorities regarding various possible long-term curation strategies. The method and database are designed to provide the maximum value of the investment in reliable information contained in required assessments, whether standardized or not. Use of the method provides a reasonable basis and greater accountability for making the difficult kinds of decisions that must be made to comply with the law.

A nationwide assessment of Corps of Engineers curation facilities suggested a golden opportunity to do more than simply encourage compliance at the Corps district level. Such an undertaking is an opportunity to acquire essential comparative data that are as impartial, objective, and comprehensive as possible. This can best be accomplished by developing standardized methods that allow any collection or facility to be fairly evaluated in the context of national, regional, and local populations of collections and repositories. Reliable comparative information is critical for answering difficult questions about the ultimate disposition of collections. A nationwide curation assessment effort is a challenging applied research opportunity, not just an administrative action encouraging compliance.

Before considering long-term curation solutions, one should consider how a particular collection or repository compares to a population of collections and repositories. To evaluate repositories reliably and objectively and to make meaningful comparisons that avoid subjective case-by-case decisions requires an investment in information that is representative of a population of curation facilities holding Federal collections. Decisions to consolidate collections, remove collections from certain facilities, upgrade facilities, etc., are best made on the basis of defensible information. The information must be reliable and replicable. An emphasis on quantitative evaluative criteria is in general preferable to qualitative information. Data gathering and database development are essential for allowing any curation facility to be fairly evaluated in the context of a more holistic framework. The requirement to evaluate repositories carries with it the responsibility of accountability.

Research Phases

The project to develop an objective curation assessment method, field test the method, and develop an automated curation assessment database occurred in distinct phases beginning in the spring of 1991 and culminating 4 years later in the completion

of a Corps district-wide application of the method and database in the early summer of 1995. The phases described below were driven mainly by available research funds. The research was accomplished in increments by leveraging available funds from the three research programs described.

Early Phase of the Research

The project was initiated at the U.S. Army Engineer Waterways Experiment Station (WES) with funds provided by the Department of Defense (DoD) LEGACY Resource Management Program under the Curation Needs Assessment Demonstration Project (Briuer and Hebler 1992, Hebler and Briuer 1992, Meyers and Trimble 1992). The demonstration project resulted in comprehensive assessments of 20 curation facilities serving five DoD installations described in Meyers and Trimble (1992).

Middle Phase

The research was continued with funding from the U.S. Army Corps of Engineers' Environmental Impact Research Program. This funding provided the opportunity to use the initial assessment data gathered by Meyers and Trimble to develop an automated assessment report in dBASE IV. The initial automated version followed the specific assessment report requirements contained in ER 1130-2-433. To do this, it was essential to analyze and restructure the original questions contained in the regulation. The objective at this phase was to make these questions and answers less subjective and more suitable for use with an electronic database.

Late Phase

Direct technical assistance requests from several Corps divisions and districts, submitted under the Natural Resources Technical Support (NRTS) Program, allowed an opportunity to field test the assessment procedure as it was being developed. Field testing was conducted at six repositories serving eight Corps districts throughout the country (Hebler and Briuer 1993a-e, 1994a-c). The field testing was done at the invitation of each Corps district's Operations Division, upon requesting assessments under provisions of the NRTS Program.

Final Phase

The assessment of three repositories housing collections for the Corps' Huntington District (Huntington, WV) had demonstrated a consistency and comparability of standardized results that suggested that the method and database could be successfully demonstrated district-wide. The Vicksburg District offered to adopt the method for assessing all the repositories that were curating collections under its responsibility. The method and database were given to R. Christopher Goodwin and Associates, contractor for the Vicksburg District, for their use in assessing all curation facilities in a four-state area serving the Vicksburg District.

The assessment of the University of Arkansas curation facility offered an opportunity to transition the method and database to contractor use. Personnel from WES worked with a contractor team from Goodwin and Associates at the University of Arkansas to instruct them on the use of the method and database. From that point on, the

contractor was able to complete the assessment of some 12 permanent curation facilities using the procedure and database developed by WES. Close cooperation among WES, the Vicksburg District, and the contractor was needed to ensure comparability and standardization of results. Obviously, comparability of results cannot be achieved if each evaluator interprets the questions, scales for measurement, categories of answers, etc., in his own idiosyncratic fashion.

As a result of this three-way partnership in developing and implementing a district-wide curation assessment, Vicksburg District cultural resource managers now have a comprehensive informational basis to comply with 36 CFR Part 79 and ER 1130-2-433. In addition, they are in a position to more objectively assess each repository and its collections within the context of a population of repositories and collections. This gives the district's personnel an ability, which is probably unique, to evaluate repositories and collections in a fashion that is explicitly defensible. The assessment data from the Vicksburg District are in the process of being incorporated into the growing database of assessments. A final revision supplementing the current database will be made available to requesters. It should be of considerable interest to curation facility managers to know how their facility and collections compare to a regional population or a national sample of facilities and their collections.

Examples of How the Automated Assessment Works

Sample Questions

Engineer Regulation 1130-2-433 contains 98 questions divided into eight sections. Sections I-III deal with general curation policies toward artifacts, as well as policies towards records and documents. Sections IV-VIII deal with the conditions of the collections. Section IV specifically covers all types of artifacts, while section V involves human remains. Sections VI-VIII deal with written records, photographic materials, maps, and drawings. The database is structured to be consistent with the organization of questions in the regulation.

Some questions were split into two or more parts; others were combined. A few new questions were added. Using the best data available from the initial assessments of 26 repositories serving both DoD installations and Corps of Engineers districts, a standardized list of answers for each question was developed which served as the basis for the possible range of responses to be expected at other repositories as they were assessed. The following are sample assessment questions that illustrate the method and structure of the database.

What are the anticipated storage and handling requirements to adequately maintain collections for the next 20 years? [Section I, No. 18]

This question is entirely subjective and open ended, inviting a wide range of basically incomparable answers by simply filling in the blanks. Based on initial responses to this question in the earlier phases of this research, a finite set of answers was selected that covered the range of responses gathered at that point in time. The following eight categories of expected responses replaced the idea of subjectively filling in the blank.

- Expanded storage space will be needed.

- Improved structural conditions will be needed.
- Improved collections management will be needed.
- Qualified staff will be needed.
- Expanded staff will be needed.
- No new storage and handling requirements other than those already present are expected.
- Unknown.
- Other responses.

The recorder performing the assessment needs only to choose the answer that is most appropriate. If none of these anticipated responses is suitable or if there is a need to document other information, the option is given to use the "Other" category, in which case the new information can be written into the database for consideration. Since responses were gathered in the middle phase of the research, this presented the opportunity to fine-tune and adjust the categories of responses to reflect the growing range of answers as new assessments were completed.

Is there a full-time professional curation staff? [Section I, No. 31]

Instead of a simple "yes/no" answer to this critical question, our data from early assessments suggested the following revision to express a more appropriate range of answers.

- Yes.
- Part time.
- No staff.
- Other.

How large is the staff? [Section I, No. 32]

By the same token, early data gathered suggested the following revisions since the original question asks for the number of the staff without taking into consideration whether or not the repository has any part-time or volunteer staff, as many do. A better expected response follows:

How large is the staff (full-time equivalent)?

- One employee or less.
- Two employees or less.
- Three employees or less.
- Four employees or less.
- More than four employees.
- Unknown.
- N/A.

Since the training and size of the professional staff have a major impact on how well collections management practices will be carried out at any facility, this becomes an especially important factor in evaluating a facility. Many of the shortcomings of a substandard facility are in fact a function of inadequacies in staffing.

Another critical factor that needs a more objective and quantitative treatment concerns assessment of environmental conditions. The original question in the Engineer Regulation was insufficiently explicit and vague.

Environmental Conditions [Section II, No. 3]

Light
Temperature
Humidity

Dust
Biological infestation
Infestation control

These selections are nonexplicit, to say the least. They do not necessarily lead to clear and concise answers or standardized comparable responses. A more appropriate revision considers the formal requirements established by the U.S. Department of the Interior (1991), as stated below.

Are the following Environmental Conditions monitored and controlled in accordance with the guidelines established in the Department of the Interior's "Interim Standards for Documentation, Preservation and Protection of Museum Property"?

- Relative humidity.
Yes No Unknown
- Light (visible).
Yes No Unknown
- Light (ultraviolet radiation).
Yes No Unknown
- Temperature.
Yes No Unknown
- Pests (insects, vertebrates, and microorganisms).
Yes No Unknown

Scoring

Since all questions in the required assessment report are not considered of equal importance, each question was classified into categories of relative importance. The 46 questions considered most important focus on curation policies, environmental conditions, and the conditions of the collections themselves. Considered the most critical in the assessment process, they are used for evaluative purposes by assigning points to each question. In this way, a standard score can be calculated that measures relative compliance with the Federal Curation Guidelines.

The data from the remainder of the questions serve as supplemental information of a more qualitative nature that should also be taken into consideration. The field testing demonstrated that the method could be revised to incorporate new information. As new data from additional assessments reflecting a larger, more representative sample became available, these data were used to fine-tune the method. Field testing also demonstrated that a particular repository could be objectively reevaluated considering changed conditions. Having standardized the procedure, recalculating scores becomes a very straightforward matter.

Quantitative information on any question or group of questions lends itself to an analysis of populations of repositories, collections, or elements of collections. For

example, it might be of interest to answer questions about the size of artifact or records holdings in the population or in a specific sample of the population. It is a relatively easy matter to calculate values such as range, means, or modes for the entire population or any sample of the population with respect to any quantitative variable or set of variables. Perhaps the most obviously important values are the total scores assigned to each repository, collection, or element.

A value was assigned (based on the total number of points given for each question) that reflects how well each repository scored overall. This score is measured on a scale of 0 (worst) to 100 (best). Two scores were generated for each repository assessed. This first score was based on the repository's formal policies, guidelines, and procedures. In other words, how well does the repository itself measure up to the Federal Guidelines? For example, a repository with woefully inadequate staffing, no formal written curation policies, no formal long-range plans, etc., will score significantly lower than a well-staffed repository that has responsibly developed and institutionalized formal curation procedures and commitments in terms of long-range programming and a master plan.

The second score assigned to each repository was a measure of differences in its collections, either individually or as a whole. Quantitative scores were assigned to variables such as the physical condition of the artifacts and associated records, as well as to specific environmental factors. Put in other words, a separate score was calculated that measures the relative condition of the holdings. For details on how points are assigned for each question and how scores are calculated for repositories or their collections, the reader is referred to Hebler and Briuer (1992).

Table 1 depicts the entire population of curation facilities that have been assessed over the 4-year period of this research. The particular repositories remain purposely anonymous. The purpose of this table is to compare assessment results for a population of curation facilities that can serve as the context for future assessments. Comparisons can be made with respect to scores for the repository, the collections, and a cumulative score for each facility and its collections. Scores are arranged in descending order.

Table 1. Summary of Results — Standardized Curation Assessments						
Repository Number	Number of Collections	Total Cubic Feet of Collections	Total Linear Feet of Records	Facility Score	Collection Score	Cumulative Score
1	4	6.40	0.04	98.65	65.67	82.16
2	17	42.00	2.80	79.73	79.85	79.79
3	4	18.34	5.40	97.30	56.77	77.04
4	29	25.40	8.70	86.49	52.13	69.31
5	2	11.40	0.80	61.97	65.82	63.90
6	1	1.50	0.00	56.76	66.67	61.72
7	15	231.00	10.20	69.44	51.15	60.30
8	4	282.83	4.00	58.00	56.00	57.00
9	13	19.99	9.00	61.00	48.50	54.75
10	2	2.80	0.20	67.57	29.18	48.37
11	7	80.00	4.18	35.81	54.86	45.34
12	7	67.67	0.43	61.00	27.00	44.00
13	4	4.63	1.00	66.00	20.00	43.00
14	13	109.50	4.80	48.65	32.02	40.34
15	26	168.20	6.28	33.78	31.67	32.73
16	2	8.30	0.40	47.89	11.43	29.66
17	12	230.00	79.00	25.00	24.00	24.50

Table 2 summarizes the database with respect to total number of collections assessed, total size of artifact and record collections, and mean scores for the 17 repositories assessed.

Table 2. Range and Means — Standardized Curation Assessments						
Total No. Repositories	Total No. Collections	Total Cubic Feet of Collections	Total Linear Feet of Records	Facility Score	Collection Score	Cumulative Score
17	162.00	1,309.96	137.23	—	—	—
Mean	9.53	77.06	8.07	62.06	45.45	53.76

Summary

This research project has resulted in the development of an automated curation assessment method as an objective and defensible means for evaluating collections and repositories in the context of a standardized database. The method has been field tested around the country at 17 curation facilities that hold a total of 162 Corps of Engineers collections. The method and database have also been successfully demonstrated on a district-wide basis.

The method and database are available upon request for use by Corps field operating elements and all interested parties as a tool to more efficiently comply with Federal Curation requirements. Use of this method also encourages Corps district partners to contribute standardized assessment information to a growing database of national scope. Interested persons can receive, upon request, the software for the automated curation assessment method. The floppy disc that will be received includes information on the method and all available assessment data to date. Instructions for obtaining a copy of the software are provided at the end of this technical note.

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