



State of the Holdings

The Condition of Analogue Holdings at Library and Archives Canada

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Analogue Preservation Branch
Analogue Collection Management Division



Library and Archives
Canada

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Canada

Canada

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Executive Summary

Library and Archives Canada (LAC) holds in trust for Canadians our documentary heritage. Developed over a period of 130 years, these extensive holdings consist of approximately 20 million books, periodicals, newspapers, microforms, literary texts and government publications. It also includes 241,418 linear metres of government and private textual records, as well as 3 million architectural drawings, maps and plans. LAC also preserves 28 million photographs, 400,000 audio recordings, 150,000 video recordings, 90,000 motion picture film titles, 425,000 pieces of art, including paintings, drawings, watercolours, posters, prints, medals, caricatures, and 547,000 musical heritage items. In short, this documentary heritage is the record of Canada, preserved by LAC for use by Canadians.

But this record is at constant risk. Paper degrades. Ink can erode the paper on which it is traced. Red rot can afflict the leather used in the past to bind books. Audio-visual records deteriorate and playback machinery disappears. Colour photographs fade away. Nitrate-based holdings can self-combust. Digital holdings created in obsolete formats on yesterday's hardware and stored on out-of-date physical carriers become rapidly jeopardized.

Holdings management is the function that aims to slow or arrest this relentless degradation and loss of Canadians' collective memory. Vigilant review of the state of holdings is the cornerstone of holdings management. It allows effective priority-setting of the measures necessary to maintain the collections usability now and in the future; and it ensures these actions are cost-effective.

In short, in managing the on-going usability of its holdings, LAC aims to ensure value for money.

Holdings management takes various shapes. Appropriate accommodation is the basic measure: ensuring that holdings are preserved in appropriate facilities with the correct temperature and humidity. Other steps are also necessary. Holdings need to be tracked to ensure they can be managed and retrieved. They need to be kept in appropriate containers for secure storage and transport. Some holdings, such as audio-visual materials, require systematic migration to new digital file formats. Still other records, including maps, photographs, paintings and watercolours, as well as rare books and other publications, need specialized laboratory treatment to maintain their continuing usability.

Effective collection management rests on various tools and practices. Three ways we are managing risk include gathering institutional knowledge, preparing collections for relocation to more appropriate facilities, and conducting collection surveys or censuses.

Most importantly, sound collection management requires actions: positive steps that effectively assist in ensuring Canadians continue to benefit from their documentary heritage.

This report aims to share with Canadians the state of their documentary heritage and LAC's efforts to ensure that it is preserved for generations to come. LAC intends to produce an update of this report every six months to ensure current and clear information is provided on the state of the documentary heritage LAC holds for Canadians.

Introduction and Overview

This report includes an overview of LAC's analogue holdings, an outline of the risks to these holdings, and an account of LAC's efforts to respond appropriately to identified risks. Finally, a series of appendices offer a more detailed view of aspects of LAC's holdings management program.

Library and Archives Canada aims for effective management of its holdings to ensure:

- that necessary steps are taken to maintain their usability now and in the future; and that
- these actions are cost effective.

An integrated methodology is essential to achieve these objectives. LAC intends to produce an update of this report every six months to ensure current and clear information is provided on the state of the holdings LAC preserves.

By distributing this document broadly we are looking for and expecting feedback from peer organizations and the Canadian public on opportunities to improve the effective management of the holdings. Our intent is to be transparent so that Canadians are aware of the condition of Canada's documentary heritage. It is our intention, in reporting regularly on the state of holdings, to set an international standard for peer institutions in sharing information on holdings management practices.

Should you wish to comment on the report, or provide feedback or recommendations, you can do so by emailing communications@bac-lac.gc.ca.

Scope of LAC's Analogue Holdings

The analogue holdings of Library and Archives Canada include an estimated 20 million books, periodicals, newspapers, microforms, literary texts and government publications. LAC is also responsible for the sound stewardship of and access to 241,418 linear metres of government and private textual records, as well as 3 million architectural drawings, maps and plans. Along with the traditional paper-based media, LAC also preserves 28 million photographs, 400,000 audio recordings, 150,000 video recordings, 90,000 motion picture film titles, 425,000 pieces of art, including paintings, drawings, watercolours, posters, prints, medals, caricatures, and 547,000 musical heritage items. The holdings were created over a period that ranges from the 15th century to the present day.

Factors Influencing the State of Holdings

The state of LAC holdings is influenced by multiple factors, some of which are inherent to the item itself. Others are influenced by the method of creation, pattern of use and previous storage conditions. Some holdings arrive at LAC in a badly deteriorated condition—such holdings can constitute a particular challenge.

The most important preservation measure is to use appropriate accommodation. LAC uses a tiered-facilities approach to place holdings in the best possible storage conditions to slow the rate of deterioration. Appendix A shows the *Accommodations Decision Tree* used by LAC to identify the appropriate facility for accommodating holdings. Appendix B outlines the extent of materials held at the various LAC facilities. Currently, holdings extend over approximately 430,000 linear metres of storage space, and they grow by thousands of metres annually. Appendix B also details the tiered-facilities approach used by LAC and provides an overview of the principal storage facilities, with a general summary of their holdings, their extent, and the condition of those holdings. It also provides an update of recent activities with respect to holdings at that facility.

LAC also uses containers and specialized housing to help protect items and buffer them against further damage. We also treat select holdings in our laboratories to slow or arrest deterioration. Life expectancy of information on carriers such as magnetic tape and film is linked to the storage conditions of the media,

but also at risk is our continuing ability to access the information using specialized and often obsolete equipment. Migration strategies for audio, video and film formats are being pursued.

Analysis of Physical Condition

There are two major categories of risk to the survival of holdings. The first relates to the physical nature of holdings and whether they are stable or unstable (i.e. having an inherent vice or chemical instability). Inherent vice can be defined as the physical properties of an object which may cause it to suffer deterioration or damage without outside influence (examples follow below). The second category relates to external risk factors that can be mitigated (primarily through appropriate storage) to reduce potential damage or loss.

Risk Category 1: Physical Nature of Holdings

The inherent vice of unstable physical media causes documents to be more vulnerable to physical or chemical damage after creation. Physically unstable media are the result of poor-quality materials and/or manufacturing techniques. Either of these conditions, left unmanaged, will result in a shortened lifespan of documents. Unstable media types include acidic paper (such as newspapers), certain plastics used in photographic negatives and film (including cellulose acetate and cellulose nitrate), corrosive ink (iron gall ink), red rot leather, poorly processed photographs, colour photographs and negatives, and thermal printer paper. Among the stable media types in LAC holdings are the following broad categories: textual records on alkaline paper; properly processed photographs, artwork on non-acidic materials, most published heritage, medals, sculptures and globes. Extremely small- or extremely large-format holdings, such as certain maps, are not considered unstable media types, though these objects are known to suffer losses due to stresses placed on them during handling and improper storage.

Risk Category 2: External Factors

After a document's creation, various factors can cause damage to the material and reduce life expectancy. Ten common agents of deterioration (based on Rob Waller's *Risk Management Applied to Preventive Conservation*) are:

- physical forces (e.g., mishandling, catastrophic events like earthquakes and bombs);
- fire (smoke, charring);
- water (flood, leaks; may follow from fire);
- pests (biological agents: active mould, insects, vermin);
- incorrect temperature;
- incorrect relative humidity;
- contaminants (gaseous, liquid or solid);
- radiation (light and ultraviolet light exposure);
- delinquent activity (theft, vandalism); and
- custodial neglect (includes obsolescence).

These ten common agents of deterioration have a limited impact on most LAC holdings due to well-planned and implemented mitigation processes. Preventive measures such as appropriate housing and optimal storage environment, training in handling of documents, pest management practices and emergency preparedness mitigate many of these issues and reduce the likelihood of damage once holdings are under LAC's stewardship.

Identifying Risk

LAC requires knowledge of the holdings' physical formats and condition to manage risk appropriately. Appendix D: *Issues in the Preservation of Analogue Holdings*, outlines common threats to holdings based on format.

At an item or file level, the volume of our holdings is overwhelming and calls for an integrated system of monitoring and reporting activities that encompasses all holdings.

The three ways we are managing risk include gathering institutional knowledge, preparing collections for relocation to more appropriate facilities, and conducting collection surveys or censuses.

Institutional Knowledge

Experts throughout LAC are well versed in identifying problematic formats and collections. These experts understand, in general terms, the preservation challenges. Insufficient data regarding format or type of document in our management systems requires a continuing reliance on institutional knowledge to assess the state of the collection in many instances. This varied and non-centralized institutional knowledge helps uncover collections at risk. Individuals still hold key pieces of information, at the level of specific items, regarding their physical state and possible preservation needs. Leveraging this knowledge, we create fiscally sound and usable work plans which combine preservation treatment or copying with proper storage and housing. Our challenge in upcoming years is to gather this knowledge in a fully integrated collection management system that will allow LAC to manage projects and work plans with validated information rather than in the anecdotal/ad-hoc fashion that currently takes place.

Collection Moves

Collection moves, such as the upcoming Collection Storage Facility move and the 395 Wellington Building Sprinkler Refit project, provide an excellent opportunity to gather important information about the state of LAC's holdings. Moving collections can be an opportunity to re-evaluate storage and housing conditions. Also, to adequately facilitate the safe move of collection material from one facility to another, it is necessary to first verify existing physical locator information. As material is packed and relocated, items are tracked and finding aids are updated.

Surveys and Censuses

A sound means of gathering data about the state of LAC's holdings and identifying areas of highest risk is through the use of focused, small-scale surveys and censuses. In modernizing our approach to holdings management, LAC will concentrate on targeted portions of the holdings to improve institutional knowledge. Recent projects include:

- LAC survey of textual records (government and private), 2008–2011;
- Survey of the Photographic Nitrate Film Collection, 2010;
- Census of the artists' books held in LAC's collection of rare books, 2010–2011; and
- Census of cellulose acetate microfilm masters in the Preservation Centre, 2011.

LAC Survey of Textual Records (Government and Private), 2008–2011

Statistics Canada was contracted in 2008 to design a survey methodology for the 241,418 linear metres of textual records held at LAC and to analyze the resulting data. LAC prepared the survey questionnaire, designed the survey tool, prepared data collection instructions, conducted the survey and created the data file. On the recommendation of Statistics Canada, LAC launched a small-scale pilot survey in mid-2008. Based on the results from the first pilot report, LAC implemented a second pilot in February 2011. Currently, Statistics Canada is reviewing data collected from the second pilot survey.

Survey of the Photographic Nitrate Film Collection, 2010

As part of the scope of the Nitrate Collection: Preparation and Move Project, whereby nitrate film holdings were moved from an outdated facility at CFB Rockcliffe to a state-of-the-art facility at Shirley's Bay in the west end of Ottawa, a survey was undertaken to assess the physical condition of the photographic nitrate collection. In advance of the collection move, LAC completed this survey using representative random sampling to assess physical condition. The results were to be used as a benchmark for future surveys.

Nitrate is a particularly challenging format because it self-combusts in certain circumstances. To be preserved safely, it requires cool low-humidity environments.

The survey assessed the physical condition of the nitrate negatives, the type and condition of their enclosures, as well as any evidence of pest activity. The results, which follow, indicate the holdings were in good condition, most were adequately housed, and pest activity was limited:

- physical condition of 63% of the collection was at level 0 (no obvious signs of deterioration);
- condition of 36% of the collection was at level 1 (signs of the first stages of deterioration);
- 67% of the collection was housed in Type A archival envelopes with a mean pH of 5.08; and
- 1% of the collection was stored in containers showing some evidence of pest activity.

In February 2011, LAC moved its nitrate film to the newly constructed Nitrate Film Preservation Facility (NFPF). This state-of-the-art facility provides the stable, pest-free environment necessary to help ensure that Canada's nitrate photographic and film heritage is preserved into the future. The frequency of twice-yearly censuses of motion picture film will be reduced now that this material is permanently housed in a low-temperature environment.

Artists' Books Materials Composition Census, 2010–2011

A census of the artists' books held in LAC's collection of rare books was undertaken during 2010/2011. The purpose of the project was to record the various materials used in the composition of these items, to be used in future identification and targeting of materials deemed to be at risk due to inherent vice. With the census, a form was developed and a procedure has been put in place to continue recording details about new items as they are acquired.

Census of Microfilm Masters in the Preservation Centre, 2011

This census focussed on identifying those microfilm reels on cellulose acetate (as opposed to the more robust polyester film) and testing these reels for evidence of deterioration such as vinegar syndrome. It concluded that the collection was in relatively good condition.

Appendix E outlines other major surveys and censuses conducted by LAC since 1980 to gauge the state of its holdings.

Appendix F outlines parts of the collection where knowledge regarding the state of the holdings requires further elaboration.

Priority Actions

Determining the current state of the holdings is an ongoing challenge for LAC and one in which various information-gathering tools must be used collectively to establish the areas of greatest risk and to invest preservation resources most effectively. These areas provide the focus for action.

In 2011, LAC revitalized its preservation planning process through a Preservation Planning Committee. The Committee drafted an annual preservation plan based on a range of evidence, including submissions from expert staff. The planning process will be repeated annually.

Recently Completed Work

LAC has taken action to reduce the risk to parts of its holdings by:

- moving its collection of nitrate film to the newly constructed Nitrate Film Preservation Facility (NFPF) in February 2011. This state-of-the-art facility provides the stable environment necessary to help ensure that Canada's nitrate photographic and film heritage is preserved into the future. The frequency of twice-yearly censuses of motion picture film will be reduced now that this material is permanently housed in a low-temperature environment;
- ongoing work on LAC's 10-year AV Migration Strategy. In 2009, LAC began implementation of its ten-year strategy to migrate recordings to digital file format, with priority given to those formats most at risk;
- ongoing review of registry materials (pre-acquisition) to reduce backlog;
- ongoing portraits digitization (preservation-quality scans reduce handling of originals);
- ongoing planning for move of Second World War service files to new storage facility (CSF); and
- ongoing separation of published preservation and service copies (to ensure integrity of preservation copy in a separate and more secure building).

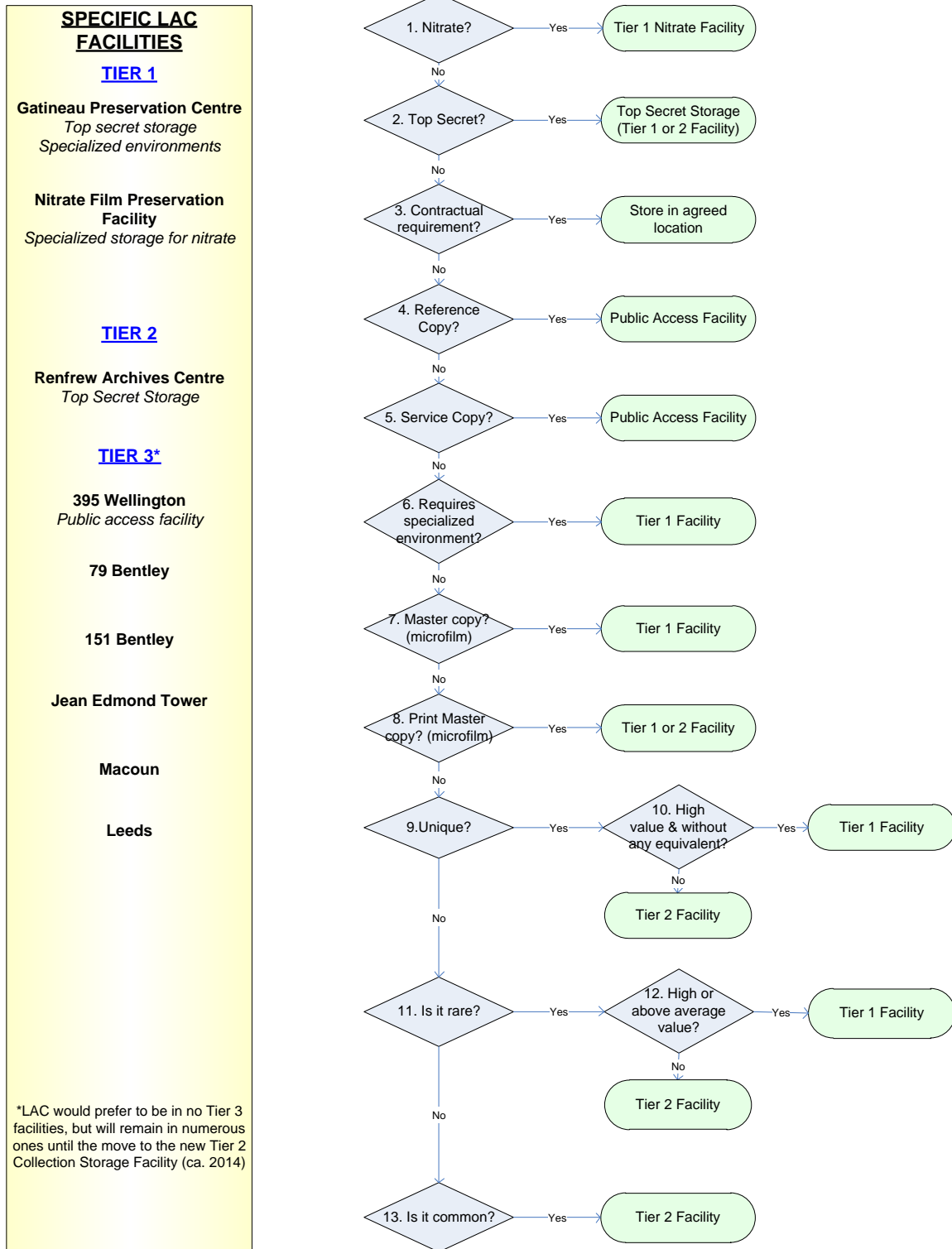
Future Priorities for Action

LAC has identified the following as future priorities for action:

- concentrate on gaining a greater understanding of the parts of the collection where knowledge regarding the state of the holdings requires further elaboration (see Appendix F);
- development of a motion picture film digital migration strategy;
- review and preparation of holdings in the 395 Wellington Building as part of the building sprinkler refit project. This project allows LAC the opportunity to reorganize the collection in that facility and leverage opportunities for examining acquisition decisions;
- the deselection of portions of the published collection no longer defined as in alignment with LAC's mandate will also be a focus for LAC over the coming year;
- approval of new direction, based on results from the second pilot textual survey with Statistics Canada; and
- develop a plan to address the results of the microfilm survey.

Appendix A: Accommodations Decision Tree

Decision Tree for Accommodation of LAC Collection



Appendix B: LAC Collections Facilities Utilization

The LAC facilities encompass approximately 430,000 linear metres of storage space. The chart below provides greater detail on facilities utilization.

Facility	Tier	Space usage (in linear metres)	Collection
Preservation Centre	1	87,176	Public textual
Preservation Centre	1	29,352	Private textual
Preservation Centre	1	6,862	Published Heritage material
Preservation Centre	1	36,802	Media, preservation copies, special formats, microfilms, maps
Renfrew Archives Centre	2	76,272	Public textual
Renfrew Archives Centre	2	45,727	Private textual
Renfrew Archives Centre	2	720	Cartographic (1800 drawers)
Leeds	3	1,408	Public textual
Leeds	3	683	Private textual
Nitrate Film Preservation Facility	1	3,025	Nitrate holdings
395 Wellington	3	98,116	Published Heritage/Music
Jean Edmond Tower	3	14,524	Published Heritage
79 Bentley	3	5,000	Published Heritage
151 Bentley	3	11,100	Published Heritage
1755 Pink Road	3	7,300	Published Heritage
Regional Service Centre – Québec	3	3,567	Published Heritage

LAC Facility Types

- TIER 1 PRESERVATION QUALITY: Purpose-built and designed collection storage space meeting required environmental and security standards. Target 18°C and 45% Relative Humidity (RH) for paper-based textual documents; varying targets for other media.
Preservation Centre (PC), Nitrate Film Preservation Facility (NFPP)
- TIER 2 GOOD QUALITY: Collection storage space meets minimum interim storage requirements for a standard environment but is not acceptable for storage of material requiring specialized storage environments. Target 18°C and 45% RH; reality +/- 5°C and +/- 10% RH.
Renfrew Archives Centre (RAC), Collection Storage Facility (CSF)
- TIER 3 POOR QUALITY: Space not appropriate for storage of collection material. Significant fluctuations in temperature and humidity in relation to outdoor conditions: usually >25°C but can reach 30°C+ in some buildings; RH ranges 20%–75%.
395 Wellington Building (PANL), Jean Edmonds Tower (JET), 79 and 151 Bentley Avenue, Macoun Building, Leeds Building, Regional Service Centre – National Capital Region (RSC-NCR), Regional Service Centre – Québec (RSC-QC)

Overall, it can be stated that the majority of archival holdings are housed in Tier 1 and 2 facilities. Published heritage holdings are more vulnerable as much of it is currently housed in Tier 3 facilities. The situation for preservation copies of published holdings will improve when CSF is ready for collections, resulting in the closure of Jean Edmonds Tower, Bentley Avenue, Macoun and Leeds buildings. CSF will be a Tier 2 facility.

Appendix C: Holdings and Facilities Overview

Holdings Details by Facility

The following pages outline a **general summary** of collection holdings in each LAC storage facility, their extent, and the condition of those holdings.

LAC uses the following terminology to describe the condition of the collection:

- *Good* – the material has essentially no damage
- *Fair* – the material has minor damage that does not impede its main intended use
- *Poor* – the material has significant damage and requires careful use and could be treated
- *At Risk* – the material has major damage that restricts use and therefore action should be taken (e.g., treatment, copying or deselection); obsolescence is also a consideration

Preservation Centre (PC)

625 boulevard du Carrefour, Gatineau, Quebec

Tier 1

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Archival	Government textual	87,176	Good to fair	- Acid hydrolysis of paper - Deteriorating manuscript (MS) inks (corrosion and fading)
Archival	Private textual	29,352	Good to fair	- Acid hydrolysis of paper - Deteriorating MS inks (corrosion and fading)
Archival	Other media types: photographs, preservation masters (microfilm), art, philatelic, three dimensional (3D) objects	36,802	Good to at risk	- Appropriate storage for 3D objects - Acid hydrolysis of paper - Unsegregated acetate negatives
Archival	Audio, video, motion picture film	Included in previous total (IPT)	Good to at risk	- Instability and obsolescence of formats
Published	Rare books	6,862	Good to fair	- Physical organization of part of collection
Published	Library of Congress (LC) monographs – preservation copies	2,750	Good	- Acid hydrolysis of paper
Published	Canadian Official Publications (COP)-federal preservation copies	IPT	Good	- Acid hydrolysis of paper

November 2011:

- Published monographs and COP-federal preservation copies to move to CSF
- Review of registry materials in vaults underway (accessioning backlog and disposition)

Nitrate Film Preservation Facility (NFPF)

Shirley's Bay, Ottawa, Ontario

Tier 1

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Archival	Motion picture film	3,025	Good to at risk	- Obsolescence
Archival	Photographic negatives	IPT	Good	

November 2011:

- Portrait Program digitization project underway on-site (preservation-quality scans reduce handling of originals)

Renfrew Archives Centre (RAC)

770 Gibbons Road, Renfrew, Ontario

Tier 2

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Archival	Government textual	76,272	Good to fair	- Acid hydrolysis of paper - Deteriorating MS inks (corrosion and fading) - Significant quantity of material not in enclosures (ledgers) - Unsegregated acetate or nitrate negatives
Archival	Private textual	45,727	Good to fair	- Acid hydrolysis of paper - Deteriorating MS inks (corrosion and fading)
Published	Cartographic	720	Good to fair	- Rolled items

November 2011:

- Department of National Defence (DND) files disposition project—identification of material complete (200 bays), disposition memo has gone to Librarian and Archivist of Canada

Collection Storage Facility (CSF)

555 boulevard des Entreprises, Gatineau, Quebec
(expected occupancy 2014)

Tier 2

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Archival	Second World War personnel service files	To be determined (TBD)	Good to poor	- Number of files subjected to flood while still under DND's control (mould, staining and deterioration problems) - High circulation - Not in full enclosures to protect from light
Archival	Government/private textual files	TBD	Good to fair	- Acid hydrolysis of paper - Deteriorating MS inks (corrosion and fading)
Published	Monographs – preservation copies	TBD	Good to fair	- Acid hydrolysis of paper
Published	Serial preservation copies	TBD	Good to fair	- Acid hydrolysis of paper
Published	Official publication preservation copies	TBD	Good to fair	- Acid hydrolysis of paper
Published	Print newspapers	TBD	Good to poor	- Acid hydrolysis of paper

November 2011:

- Currently developing enclosure and move plan for Second World War personnel files
- CSF Preparation of the Collection team working on retrospective separation of published preservation and service copies

395 Wellington Building (PANL)

395 Wellington Street, Ottawa, Ontario

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Published	LC monograph preservation copies	98,116	Good	- Acid hydrolysis of paper
Published	Monograph service copies	IPT	Good to fair	- Acid hydrolysis of paper
Published	Serial service copies	IPT	Good to fair	- Acid hydrolysis of paper
Published	Official publication service copies	IPT	Good to fair	- Acid hydrolysis of paper
Published	Music	IPT	Good to fair	- Varied formats requiring specialized cabinetry
Published	Reference	IPT	Good to fair	- High/public use copies that are added to stacks as service copies when superseded
Published	Microforms	IPT	Good to poor	- Includes fiche and film; some very heavily used and in poor condition - Significant gap in our knowledge of collection

November 2011:

- CSF Preparation of the Collection team working on retrospective separation of published preservation and service copies
- Variety of music audio formats moved to the Preservation Centre (PC), autumn 2011; approximately 130 linear metres of material, plus other items to follow; shelved in various vaults according to space and environmental requirements

Jean Edmonds Tower (JET)

365 Laurier Avenue West, Ottawa, Ontario

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Published	Listed monographs	14,524	Good to fair	- Acid hydrolysis of paper
Published	LC monographs	IPT	Good to fair	- Acid hydrolysis of paper
Published	Serials	IPT	Good to fair	- Acid hydrolysis of paper

November 2011:

- LAC will vacate JET when CSF is ready for occupancy
- CSF team has not yet separated preservation copies and service copies of retrospective material; service copies will return to 395 Wellington Building, preservation copies will go to CSF

79 Bentley Avenue

Ottawa, Ontario

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Published	Bound print newspapers	5,000	At risk	- Acid hydrolysis of paper - Breakdown of binding elements

November 2011:

- LAC will vacate Bentley Avenue buildings when CSF is ready for occupancy

151 Bentley Avenue

Ottawa, Ontario

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Published	Bound print newspapers	11,100	Good to at risk	- Acid hydrolysis of paper
Published	Print newspapers – single issues	IPT	Good to poor	- Acid hydrolysis of paper

November 2011:

- LAC will vacate Bentley Avenue buildings when CSF is ready for occupancy
- All materials boxed in preparation for move to CSF

Macoun

1755 Pink Road, Gatineau, Quebec

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Published	COP – provincial preservation copies	7,300	Good to fair	- Acid hydrolysis of paper
Published	COP – municipal preservation copies	IPT	Good to fair	- Acid hydrolysis of paper
Published	Foreign International Official Publications (FIOP) – United Nations Educational, Scientific and Cultural Organization (UNESCO)	IPT	Good to fair	- Acid hydrolysis of paper

November 2011:

- Macoun Building will be vacated when CSF is ready for occupancy
- FIOP materials being shipped to the Regional Service Centre – Québec (RSC-QC) for storage—awaiting deselection approval
- COP (provincial and municipal) preservation copies will move to CSF
- Provincial and Territorial Official Publications currently included in deselection briefing note—proposal is to retain and continue to collect one preservation copy only

Leeds

1255 Leeds Avenue, Ottawa, Ontario

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Archival	Government	1,408	Good to fair	- Acid hydrolysis of paper - Deteriorating MS inks (corrosion and fading)
Archival	Private	683	Good to fair	- Acid hydrolysis of paper - Deteriorating MS inks (corrosion and fading)

November 2011:

- Leeds Building must be vacated by December 2012
- Government textual to move to CSF
- Private textual to move to Renfrew

Regional Service Centre – National Capital Region (RSC-NCR)

18 Goldenrod Driveway, Tunney's Pasture, Ottawa, Ontario

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (linear metres)	Condition Statement	Concerns
Archival	Second World War personnel files	19,385	Good to poor	- Number of files subjected to flood while still under DND's control (mould, staining and deterioration problems) - High circulation - Not in full enclosures to protect from light

November 2011:

- Currently developing enclosure and move plan for Second World War personnel files
- Will be moved to CSF when building is ready for occupancy

Regional Service Centre – Québec (RSC-QC)

75 rue de Hambourg, Québec, Quebec

Tier 3

Holdings Type	Collection/Media Sub-sections	Utilized Space (skids)	Condition Statement	Concerns
Published	A, B, C monographs retrospective – preservation copies	206	Good	- Acid hydrolysis of paper - Boxed storage; transfer to CSF as soon as possible
Published	A, B, C monographs new items – preservation copies	75	Good	- Acid hydrolysis of paper - Boxed storage; transfer to CSF as soon as possible - Some of this material not packed properly for long-term storage
Published	Official Publications (federal) – preservation copies	293	Good	- Acid hydrolysis of paper - Boxed storage; transfer to CSF as soon as possible
Published	International Official Publications (Foreign)	148	Good to fair	- Acid hydrolysis of paper
Published	Loose-leaf updates	69	Good to fair	- Acid hydrolysis of paper

November 2011:

- FIOP and loose-leaf update material is awaiting deselection approval
- Preservation copy materials will go to CSF when it is ready for occupancy
- Monographs – preservation copies (new items) will continue to be boxed and shipped to Québec for storage until CSF is ready for occupancy

Appendix D: Issues in the Preservation of Analogue Holdings

There are a variety of issues which can make the preservation of analogue records challenging. At times, it can be the physical and chemical instability inherent in the media (e.g., cellulose nitrate film), or it can be the physical nature of the material and how it is stored (e.g., oversize documents).

The chart below details some of the most common issues in dealing with analogue holdings:

Issue	Definition	Time Period	Mitigation	Where Issue May be Found in LAC's Holdings
Acid hydrolysis of paper	A chemical reaction involving acid that deteriorates paper, resulting in discolouration, weakening and brittleness. It is prevalent in poor-quality paper, paper exposed to acidic atmospheric pollutants, and paper adjacent to acidic materials like cardboard. The reaction is accelerated by exposure to light.	ca. 1850 to present, due to the use of ground wood pulp paper	Storage in cool, dry, dark conditions reduces the rate of deterioration. Inherent acidity may be reduced with deacidification. Washing of artistic and philatelic works with alkaline additives is beneficial as long as pigments are stable.	Low-grade pulp papers are found in some newspapers, paperbacks, and ephemera such as posters and broadsides in Published Heritage and archival holdings. Found throughout published and unpublished textual holdings, in particular newspapers and published paperbacks. In archival holdings, paper produced during the wars is of poor quality. Found throughout artistic, photographic and philatelic collections.
Cellulose acetate film	An early plastic used in photography, X-ray and motion picture film developed to replace cellulose nitrate. Cellulose acetate can deteriorate in characteristic ways: releasing acetic acid (vinegar syndrome), colour changes, pitting and channelling, cockling. Also known as safety film. Decomposing film is autocatalytic. Its deterioration can spread to adjacent film.	ca. 1908 to present (today coexists with polyester film)	Cool to cold storage and low RH slows the deterioration. Segregate from other materials. Copy to another format or digitize to provide access and keep collection out of circulation. Staff should self-monitor when working with deteriorated acetate.	In photographic, motion picture film and microfilm holdings. Some photographic negatives and X-rays appear among textual records such as military personnel files. Some photographic and motion picture acetate film has been segregated, but there remains large quantities of acetate photographic negatives housed in among the photo collections.
Cellulose nitrate film	Another early plastic used in photography, X-ray and motion picture film. Signs of deterioration include amber, brown or yellowish discolouration; partly or totally faded image; tacky, sticky, soft, surface; sticking together; blistering or bubbling surface, possibly with yellowish froth; noticeable acrid odour ranging from a faintly to strongly irritating smell; decomposing into a fine brown powder or brittle residue. Decomposing nitrate is autocatalytic and releases poisonous off-gassing. Deterioration can spread to adjacent film. Nitrate is flammable, does not require oxygen to burn, and, when burned, generates poisonous smoke. Considered a hazardous material.	Photographic negatives: 1885–1950s Motion picture film: 1891–1950s	Must be segregated from other collections and housed in a well-ventilated space with cool to cold temperatures and low controlled RH. Staff should self-monitor, follow handling guidelines and take precautionary measures when working with nitrate negatives.	In photographic and motion picture film holdings. Cellulose nitrate was identified, segregated, housed and moved to a purpose-built facility, the Nitrate Film Preservation Facility at Shirley's Bay, Ontario, in 2010/2011. There are small quantities of nitrate negatives interspersed throughout the photographic and textual collections.
Iron gall ink	The more acidic ink formulations can corrode (crack or create holes in) paper and other substrates. Less acidic inks fade. Also used in letterpress copying processes where it quickly corrodes the thin tissue substrate.	The most common manuscript ink in Canada into the 20th century. Letterpress copybooks: from mid-19th century into the 20th century	Cool storage arrests the deterioration. Interventive treatment such as phytate immersion is appropriate for very intrinsically valuable documents.	Prevalent in manuscript textual and art on paper holdings.
Mould	Microbiological contamination of organic materials evident as colourful stains, and/or coloured dusty or spongy-appearing surface growths. There is often a characteristic odour. Mould consumes its host, leading to informational and image loss. The contamination can spread to adjacent documents. Mould is identified as a known health hazard to humans.	Ubiquitous and throughout time	Cool dry conditions prevent mould growth and proliferation. Affected documents may be isolated in plastic to prevent contamination of other documents and reduce the risk to human health. Surface removal of loose spores is the most common treatment method. Staff should self-monitor, follow handling guidelines and take precautionary measures when working with mould.	Thrives on almost all materials found in library and archives holdings (paper, plastic, textiles, parchment and leather, paper board, adhesives, glass, wood and surface coatings, etc.).
Red rot leather	A rapid and non-reversible deterioration mechanism of improperly processed leathers involving residual or atmospheric sulphuric acid leading to structural breakdown. Characterized by a powdery, reddish-brown or yellowish surface. Generates dust that is considered a human respiratory irritant.	From the 18th century to 20th century	Containerization and wraps can help to reduce the spread of dust. The crumbling surface may be consolidated with an interventive surface coating application by conservators. No known reversal method.	Known issue with many bindings, and particularly evident at the Renfrew Archives Centre where many bindings are not containerized. Common when the container type is "bound volume". Much of the published holdings have been wrapped/boxed.

*State of the Holdings:
The Condition of Analogue Holdings at Library and Archives Canada*

Issue	Definition	Time Period	Mitigation	Where Issue May be Found in LAC's Holdings
Thermal papers	Copy process on a paper coated with dye and acid exposed to heat. Over time, the paper darkens from exposure to heat or friction. Thermal papers may also become brittle and the printing can fade. All are very sensitive to light which may darken or fade the copies. Thermal copies are sensitive to solvents and vapours common in office environments (e.g. emitted from highlighters or polyvinyl chloride (PVC) plastics).	Thermal papers produced in the 1950s and 1960s slowly darken and have limited permanence. Those created ca.1969 onward fade rapidly, often with total image loss in less than five years and are impermanent. Contemporary artists are dabbling with thermal papers.	Store in cool, dry, dark conditions far from office environments. Papers dating from the 1970s onward are not considered permanent and should be copied to an alkaline bond paper.	Receipts, faxes in textual records.
Folded/rolled documents	Flat oversized items (greater than legal size) are more likely to be folded or rolled. The substrate is weakened along fold lines and may tear during use. Rolled items are susceptible to being flattened or crushed.	Problem not specific to a time period.	Some documents may be carefully opened and held flat with weights. Housing of appropriate size and strength can help protect from physical damage. Items resisting opening may be humidified and flattened by conservation (common issue with parchment and panorama photographic prints) and reboxed.	Architectural plans and drawings, maps, posters, broadsides, art on paper, petitions, certificates, correspondence, panoramas, folded textual documents (e.g. patents and other docket-style records, correspondence)
Oversized documents and objects	Any item that does not fit into a B30S box or smaller is considered oversized (for flat documents, generally anything greater than legal size). Includes 3D objects that may also be heavy and awkward to handle.	More common from 19th century onwards, however scattered throughout collection.	Use appropriate size and type of housing and racking.	Art (paintings, 3D objects like sculptures), globes, architectural plans and drawings, maps, posters, broadsides, art on paper, photographs, petitions, certificates. Racking type is indicative of oversized records but not necessarily those that are damaged or at greater risk of damage (e.g. folded). Oversize published material (modern) particularly prevalent in Juvenile collection.
Pressure sensitive tape	Common tear repair or attachment method. The adhesive crosslinks (chemically changes) over time, resulting in loss of adhesion to the paper or plastic carrier, failure of the repair, and staining of the substrate.	Starting in the 1890s with glassine and cellophane tapes; masking tape 1925; Scotch tape 1929	Residue and staining may be reduced and stable repairs performed by Conservation.	Common in bound and manuscript holdings, plans and drawings, art on paper, philatelic, photographic albums, etc.
Tears and losses	Common example of physical damage, usually due to improper handling prior to acquisition by LAC.	Problem not specific to a time period.	May be stabilized by placement in an enclosure such as an encapsulation. Prevented by well-communicated care and handling procedures. Conservators can perform repairs or consolidate surfaces.	Throughout holdings to varying degrees.
Adhesives	Common method in adhering two items together. Adhesive (natural or synthetic) can be applied in a liquid or semi-liquid state. Curing (or hardening) occurs by solvent evaporation or chemical reaction. Adhesive may be pH neutral or acidic. Adhesive may fail over time and staining or yellowing may occur.	Throughout history, but first known adhesive patent issued in 1750 in Britain.	Store in cool stable environment. Residue and staining may be reduced; separation of layers may be required.	Artistic, photographic and philatelic collections.

Appendix E: Collection Surveys and Censuses

Surveys are intended to provide information about the state of the holdings and identify risks. This data leads to actions that enhance the life expectancy and usability of LAC collections. LAC has used two methodologies for surveys: large-scale sample surveys, as well as media-specific censuses. Since 1984, LAC has undertaken six large-scale sample surveys. More commonly used in the institution are media specific censuses which target a group or smaller collection of related materials.

Overview of Surveys at LAC from 1980

Date(s)	Sampling Survey Title	Conducted or Reported
1984	Archives Branch Conservation Survey	Supply and Services Canada and National Archives of Canada (NAC)
1990	First World War – Canadian Expeditionary Forces Records Series: A Study on Preservation and Access	NAC
1991–1992	Manuscript Division Condition Survey (Renfrew) INCOMPLETE	NAC
2005	Nitrate Survey (photographic)	LAC
2010	Nitrate Negatives Pre-Move Survey	LAC
2009, 2011	1st and 2nd Textual Record Survey Pilots	LAC and Statistics Canada

Overview of Censuses at LAC from 1980

Date(s)	Census Surveys Title	Conducted or Reported
1980–1982	Medals Survey (Census)	NAC
1985	Miniatures Survey (Census)	NAC
1987	The Canadian Centre for Caricature Cartoon Materials Survey (NAC Caricature Collection)	NAC
1989	Survey of Non-Printed Rare Collections	National Library of Canada (NLC)
1990	Survey of Conservation Requirements for the Rare Book Division	NLC and NAC
1993–1994	Film Collection Surveys (Preservation Centre move preparation: 1993 complete census, 1994 colour survey)	NAC
1995	Jacob M. Lowy Census (Library)	NAC
c.1997	Philatelic Surveys (Preservation Centre move preparation)	NAC
c.1997	Oil and Acrylic Painting Survey (Census)	NAC
c.1998	Survey of Audiovisual Collections	NAC
1999	NAC Items at Laurier House	NAC
1999–2000	Children’s Literature Collection Census	NLC and NAC
2000	Geological Survey of Canada Album Census	NAC
2004	Cellulose Acetate Motion Picture Film Survey (Census)	LAC
2005	William Topley Studio Album Census	LAC
2006	Indian Treaty Survey (Census)	LAC
To 2010	Motion picture film – every 6 months	LAC
2011	Microfilm Survey (PC masters only)	LAC
2011	Aboriginal Language Religious Texts (Rare Books)	LAC
2011	B10L album census (container-specific census)	LAC
2011	Artists’ Books Material Composition (Census)	LAC

Appendix F: Confidence Dashboard – Knowledge of the Holdings

LAC's confidence levels about its knowledge of the condition of specific holdings

Archival Holdings Details

Material Type	Confidence Level
Audiovisual	High
Cartographic (includes government cartographic)	Medium
Documentary art, photography and philatelic	Medium
Government archives	High
Literary manuscript	High
Private archives	Medium
Music manuscript	Medium
Archival microfilm (masters)	Low
On deposit/Registry/Backlog	Low

Published Holdings Details

Material Type	Confidence Level
Monographs	High
Periodicals	High
Juvenile	High
COPs (Canadian Official Publications) – provincial	High
COPs (Canadian Official Publications) – federal	High
FIOPs (Foreign Official Publications)	High
India Collection	Medium
Chinese Collection	Medium
Newspapers	High
Microfiches	Low
Microfilms	Low
Rare books	Medium
Music/Audio Visual (cassettes, Compact Discs (CDs), Digital Video Discs (DVDs), etc.)	High
Unprocessed holdings	Low
Canadian thesis (film and fiche)	Low
Philatelic	High