

RECLAMATION

Managing Water in the West

DataSpace Console Data Steward Guide

Reclamation GIS (BORGIS)



TABLE OF CONTENTS

1	INTRODUCTION	4
	1.1 Concepts, Terms and Definitions	4
	1.2 Office Tier vs. Local Tier	6
	1.2.1 Choosing the Office Tier Library	6
	1.2.2 Choosing the Local Tier Library.....	6
2	DATASPACE CONSOLE INSTALLATION	7
3	ADMIN FUNCTIONS & TOOLS	8
4	CREATING A LIBRARY MASTER AND DATASPACE	9
	4.1 Data Management Workflow	9
	4.2 Migrating Data into File Geodatabases	11
	4.3 Organize Data in a Library Master Folder	11
	4.4 Create a Dataspace for the Library Master	13
5	GEOSPATIAL LIBRARY DEPLOYMENT	17
	5.1 Deploy Library – Bureau, Regional, or Local Tier	17
	5.2 Create a Geofiltered Library	21
	5.2.1 Deploy the Library MASTER to GeofilteredLibraries Folder.....	21
	5.2.2 Run Library Geofilter Tool.....	21
	5.3 Deploy a Geofiltered Library	23
6	MAINTAINING BUREAU, REGIONAL, AND LOCAL TIER LIBRARIES	24
	6.1 Update Content in Library MASTER.....	24
	6.1.1 Replace an Existing Feature Class	24
	6.1.2 Add a New Feature Class	24
	6.1.3 Add/Update Other Content	26
	6.2 Update the Dataspace for the Library MASTER	26
	6.3 Test and Verify a Library Master Dataspace	27
	6.4 Deploy Library and Dataspace Updates	27
7	CREATE AN OFFICE TIER LIBRARY	29
	7.1 Create the Office Tier Folder and Dataspace	29
	7.2 Add Layers to the Office Tier Dataspace	30
	7.3 Publish the Office Tier Dataspace	30
8	MAINTAINING THE OFFICE TIER LIBRARY AND DATASPACE.....	31
	8.1 Update Office Tier Library	31
	8.1.1 Replace an Existing Feature Class	31
	8.1.2 Add a New Feature Class	31
	8.1.3 Add/Update Other Content	32
	8.2 Import and Edit Office Tier Dataspace	32
	8.3 Update the Office Tier Dataspace	32
	8.3.1 Modify Layer Properties of an Existing Feature Class	33
	8.4 Re-Publish a Office Tier Library Dataspace	33
9	HANDLING FOUO OR LIMITED ACCESS DATA IN A GEOSPATIAL LIBRARY AND DATASPACE	35
	9.1 Create Special Access Groups	35
	9.2 Create an FOUO or Limited Access Local Tier Library	35

Appendix A – List of Common Themes Folders

1 INTRODUCTION

This document provides Data Stewards with considerations and best practices, as well as step-by-step instructions for using DataSpace Console to organize, manage, and deliver Reclamation geospatial data and imagery assets stored on BORGIS Geospatial File Servers.

It is assumed that Data Stewards have working knowledge and skill using the custom ArcGIS Desktop extension called DataSpace Console. The Dataspace Console User Guide details the functions and interface options described throughout this document.

DataSpace Console also serves as the primary data access tool for GIS personnel, using the ArcGIS Desktop, to find and retrieve geospatial data, imagery, and web services managed in Reclamation GIS (BORGIS) distributed data architecture.

1.1 Concepts, Terms and Definitions

The table below defines some concepts that are central to the BORGIS system architecture.

Library Dataspace (Blue folder)	A system managed collection of pointers to geospatial data, imagery, and web services organized into a structure (folders and subfolders). Content is managed by a BORGIS Data Steward or GIS personnel assigned duties as a Data Steward. Library Dataspaces cannot be modified by users; all content is read-only.
Personal Dataspace (Gray folder)	A user-managed collection of pointers to geospatial data, imagery, web services, and other content organized into a tree view structure (folders and subfolders). Layer information is stored locally as a property of a tree view object, which stored in an .xml file. Users can add layers into Personal DataSpaces from the ArcMap table of contents. Users are responsible for maintaining data source pointers if data moves (except for layers copied from Library Dataspaces). Layer information is stored in an XML file on users' PC. Personal Dataspaces can be converted to Library Dataspaces by BORGIS Data Stewards.

Geospatial Libraries and Dataspaces

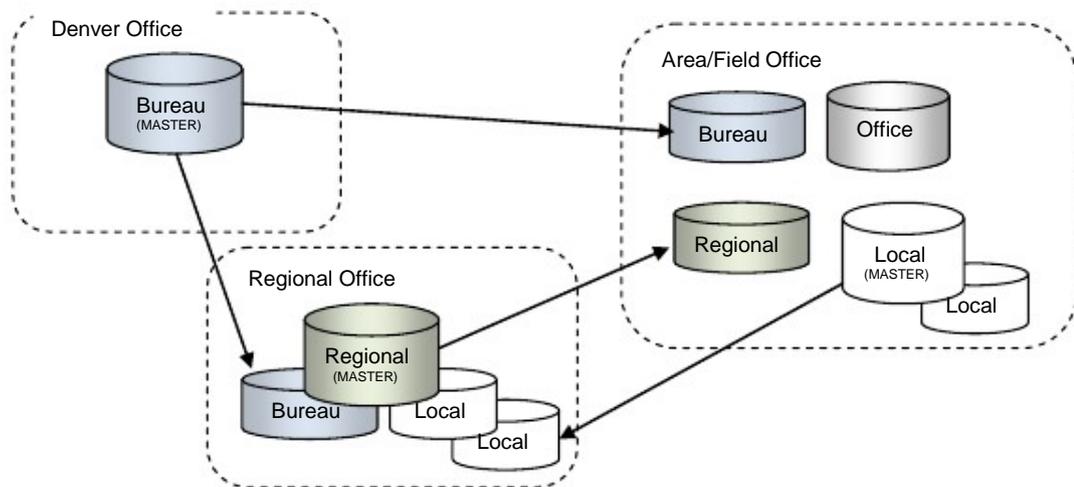
The primary purpose of BORGIS Geospatial Libraries and Dataspaces is to ensure that current, consistent, well-documented geospatial data and related resources are available to GIS users across Reclamation in a form that can be readily used. The data architecture acknowledges Reclamation's organizational structure and strives to meet the unique needs of each organization level.

BORGIS Geospatial Libraries and Dataspaces are designed to correspond with each of the three major organizational tiers of Reclamation – Bureau, Region, and Area. The following table describes the each of the Library Dataspaces:

Bureau Tier Library	A compilation of Bureau-wide geospatial data, imagery, and web service layers. The geographically relevant subset of data is distributed to all offices with a BORGIS server. Content is managed by Bureau BORGIS Data Steward.
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Region Tier Library	A compilation of Region-wide and state-wide geospatial data, imagery, and web service layers. The geographically relevant subset of data is distributed to all offices within the Region with a BORGIS server. Content supplements the Bureau Library Dataspace and is managed by Region BORGIS Data Stewards.
Office Tier Library	A compilation of local geospatial data, imagery, and other content typically used by an office. This library type is intended for a single office, and not shared with other offices. NOTE: If a shareable library is desired, use a Local Tier library. Specific functions in DataSpace Console make the Office Tier fast and easy to update and maintain. Content is managed by Local BORGIS Data Stewards or other GIS personnel assigned the duty of data management.
Local Tier Library	A compilation of local geospatial data, imagery, and other content, which might include a Reclamation Project, a special project or study area, an office, or any other context for creating a data compilation. The Local Tier is designed be shareable with other offices. Content is managed by Local BORGIS Data Stewards or other GIS personnel assigned the duty of data management.

The Bureau Tier Library is distributed to the Region and Area/Field offices by the BORGIS Bureau Data Steward. Concurrently, BORGIS Region Data Stewards distribute Region Tier Libraries to the Area/Field offices in their respective regions. Local Tier Libraries may be shared with any another office with a need for the data contained in the library (e.g., Area Office to Region Office or Denver Office, Area Office to Field Office). Creation, management, and deployment of BORGIS Libraries is performed using specifically designed tools in DataSpace Console – Enterprise Data Management Tools (EDM). The figure below illustrates the relationship between the four tiers of Library Dataspaces:



Bureau, Regional, and Local Tier geospatial libraries and Dataspaces are portable and can be readily shared between offices by simply copying the pieces to the corresponding location on another \geolib file share in another office.

1.2 Office Tier vs. Local Tier

The Office Tier and Local Tier are very similar in most respects. The Office Tier has one major difference – a set of special functions that provide Data Stewards with the ability to quickly update the library with new data and “publish” the associated Dataspace.

The unique aspect of the Local Tier is that it is portable and can be readily shared with other offices. Another characteristic of the Local Tier is that there can be more than one. This makes the Local Tier ideal for sharing project or program data among a team with members located in different offices.

DataSpace Console is designed to have only one Office Tier Library, whereas it can have many Local Tier Libraries. Using the Office Tier does not preclude using the Local Tier. In fact, both can be used together to gain advantages of the best of both types.

1.2.1 Choosing the Office Tier Library

DataSpace Console has some simple, easy to use functions for creating and maintaining an Office Tier library and Dataspace. This may be a good option for offices with only one or two projects, or that generally manage geospatial data in the context of the office rather than projects. Projects can be handled as folders inside an Office Tier Library.

The main reason for choosing the Office Tier library is simplicity. New layers can be added to a Dataspace and made available to users in a matter of minutes.

Procedures for creating, deploying, and maintaining an Office Tier Library can be found in Sections 7 and 8 of this document.

1.2.2 Choosing the Local Tier Library

The Local Tier Library is designed to be highly flexible and portable. Local Tier libraries can be compiled for Reclamation Projects, Programs, special projects, large projects or small projects. Local Tier libraries are ideal for collections of geospatial data that share a common geographic extent, like a subbasin, a reservoir, a river, etc. Geospatial data that share a common theme are also good candidates for a Local Tier library.

The main reason for choosing the Local Tier Library is to share it with other office locations. Local Tier libraries can be readily deployed to other offices that need the data contained in the library. Each Local Tier Library should have a designated Data Steward assigned to manage the content and update of the library.

Local Tier libraries are shareable using the same procedures used for Bureau Tier and Regional Tier libraries. Procedures for creating, deploying, and maintaining Local Tier libraries can be found in Sections 4, 5 and 6 of this document.

2 DataSpace Console Installation

DataSpace Console is designed to be deployed either manually or using Reclamation's software deployment infrastructure – Microsoft's System Center Configuration Manager (SCCM). DataSpace Console is part of the Reclamation deployment package for ArcGIS Desktop software, which includes the current service pack. DataSpace Console is also packaged separately for installation on previous deployments of ArcGIS Desktop.

For offices where SCCM is not available, the package can be installed manually by local IT personnel.

Requirements: DataSpace Console v2.0 requires the prior installation of Microsoft .NET Framework 2.0 or later and ArcGIS Desktop 9.3 or later with current service pack.

ArcGIS 10 requires DataSpace Console v10.0 or later.

Contact the GIS Manager or Coordinator for the Region to get more information about getting DataSpace Console installed.

The installer for DataSpace Console places a new icon on the main menu bar in ArcMap label DataSpace.

3 Admin Functions & Tools

The functions and tools found under the Admin menu are intended for use by designated BORGIS Data Stewards. However, GIS personnel who have data management responsibilities for a project or office may be provided the password to access this menu on a case-by-case basis. Contact a BORGIS Data Steward in the Region, or the BORGIS System Manager.

To access the Admin menu, select the "Login as Data Steward" option, and enter a valid password.

4 Creating a Library Master and Dataspace

The procedures described in this section apply to creating geospatial libraries and Dataspaces for the Bureau Tier, Regional Tier, and Local Tier. Bureau Tier, Regional Tier, and Local Tier libraries and Dataspaces are designed to be shared among two or more offices using the Enterprise Data Management Tools in the Admin menu of DataSpace Console (refer to Section 5 of this document).

The Office Tier, by nature, is not intended be shared. Creation and maintenance procedures for Office Tier libraries are described in Sections 7 and 8 of this document.

Bureau Tier and Regional Tier geospatial libraries are deployed to the \geolib file share in each participating Reclamation office location. Local Tier libraries are created, deployed, and maintained by local Data Stewards using the same procedures used for Bureau Tier and Regional Tier libraries.

When the \geolib file share is mapped to the reserved drive letter for BORGIS file shares, W:/, users can readily access the libraries through DataSpace Console.

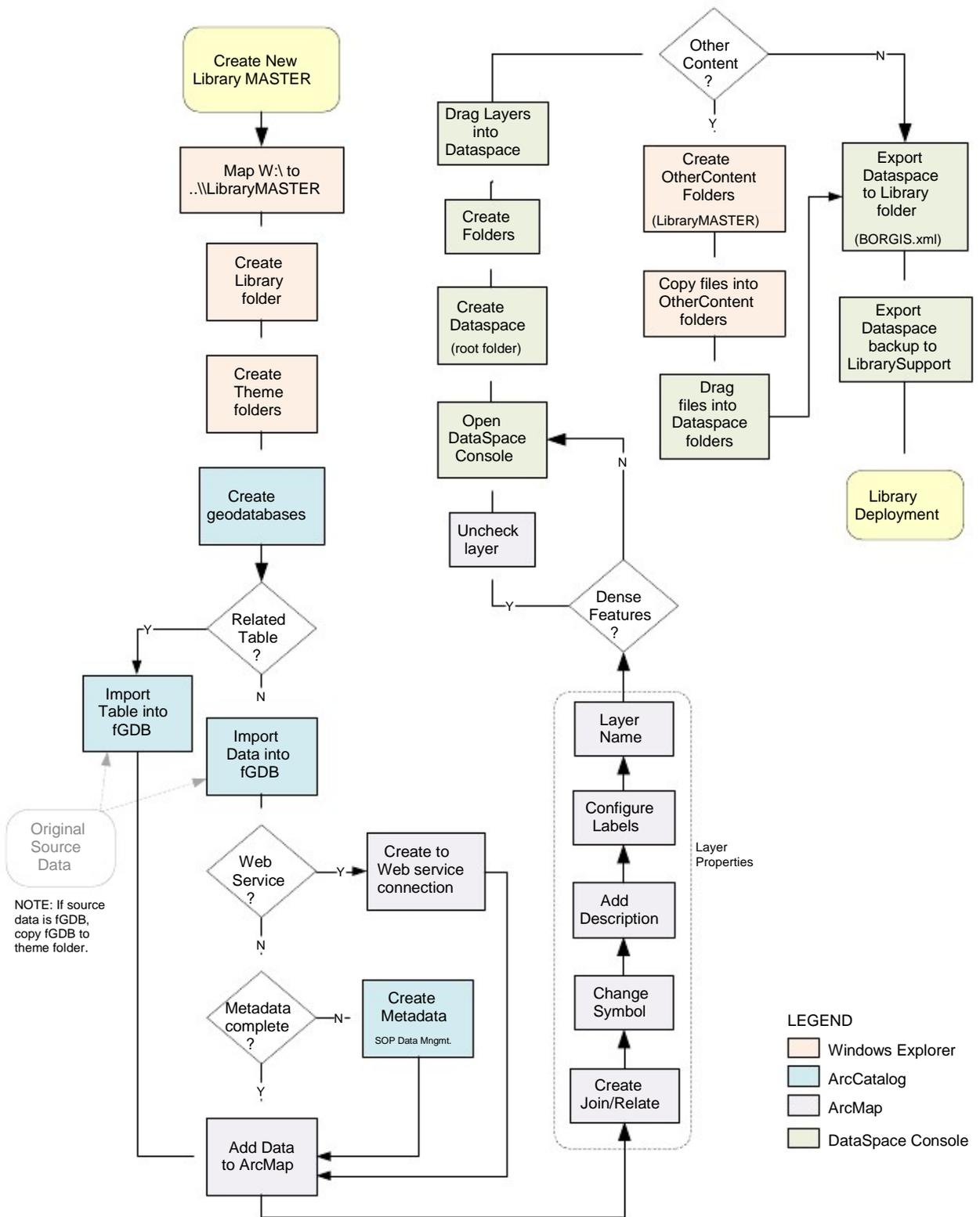
Data Stewards map the \LibraryMASTER file share to W:\ when creating, deploying and maintaining Bureau Tier, Regional Tier, and Local Tier geospatial libraries. This ensures that the paths stored in ArcGIS layerfiles are the same when content is deployed to a \geolib file share.

4.1 Data Management Workflow

A data management workflow has been developed for Data Steward to follow that ensures consistency across the Bureau. The following sections describe step-by-step procedures for performing the following tasks:

- Create a Library MASTER and Dataspace
- Deploy a library to one or more \geolib file shares
- Update a Library MASTER and Dataspace
- Deploy update to previously deployed libraries on \geolib file shares

The workflow involves using Windows Explorer ArcCatalog, ArcMap, and DataSpace Console. The workflow diagram on the next page illustrates the procedures described in the sections that follow.



Library Master Data Management Workflow

Last revised: 11/5/2010

4.2 Migrating Data into File Geodatabases

The first task in preparing data for a Reclamation GIS geospatial library is to organize data into file geodatabases (fGDB). The file geodatabase is a high performance, file-based format for geospatial data and imagery that has a very large capacity. While it is possible to put all data in a geospatial library into a single fGDB, it is not recommended.

There are a number of considerations to take into account when deciding how to best organize data in fGDBs for a geospatial library:

- Size and density of features in the feature class – It is generally a good idea to manage large, dense feature classes in their own fGDB.
- Update frequency of feature classes – A feature class(s) that is frequently updated should not be stored with feature classes that are static. This reduces the potential for lock conflicts.
- The nature of the library – A Local Tier library for a project that will be share with one or more other offices may be best managed in a single fGDB to facilitate portability. Whereas an Office Tier libraries may be structured to contain a combination of general reference (e.g., office wide) data and project specific data. In this case, feature classes would be best organized into themes and projects in multiple fGDB to facilitate easier maintenance.
- Type of data – Although the fGDB can store both vector and raster data types, it is recommended that raster data be stored separately from vector data in the Office Tier. In a Local Tier library, it may be more practical to combine data types in a single fGDB.
- Data maintenance – Consider maintenance needs carefully when organizing data into fGDBs in the Library. Frequently updated or modified data should be segregated into separate fGDBs from data that are static (do not change often).

Use ArcCatalog to create and import Feature Classes and tables into fGDBs. Feature Classes that share a common theme should be organized into an fGDB that has a name that reasonable represents the thematic content of the fGDB. For example – streams, waterbodies, and hydrologic units could be stored in an fGDB named hydrography.gdb. Large or dense data sets (e.g., 24k NHD hydrography) can be stored in a standalone fGDB to facilitate updates.

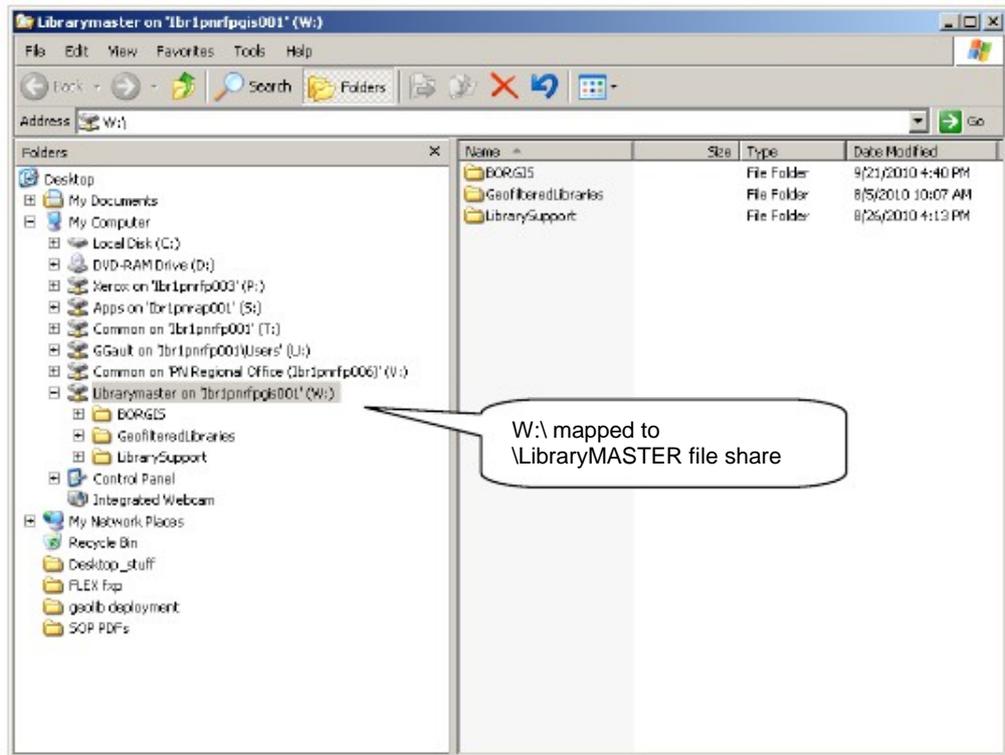
At the Bureau Tier and Region Tier, Data Stewards have found it practical to organize fGDBs into folders based on theme. Appendix A contains a list of common theme names that were derived from a combination of FGDC and ISO terms. The next section describes the recommend structure for organizing fGDBs into theme folders.

4.3 Organize Data in a Library Master Folder

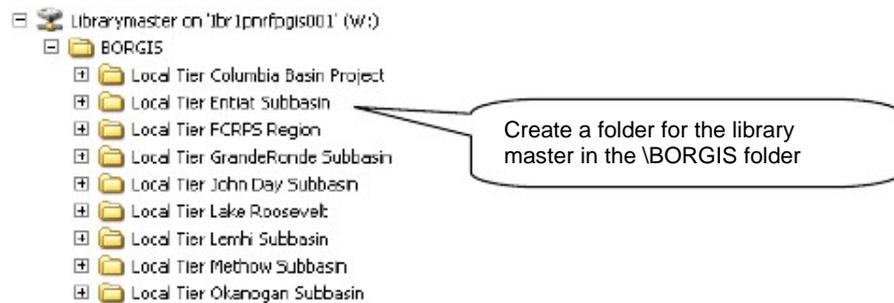
The second task is to organize fGDBs into a folder structure under a parent folder that is designated as the library master. It is recommended that fGDBs be organized into theme folders, as deemed applicable. The Bureau Tier and Region Tier use the list of themes found in Appendix A.

The following describes a step-by-step procedure for building a library master:

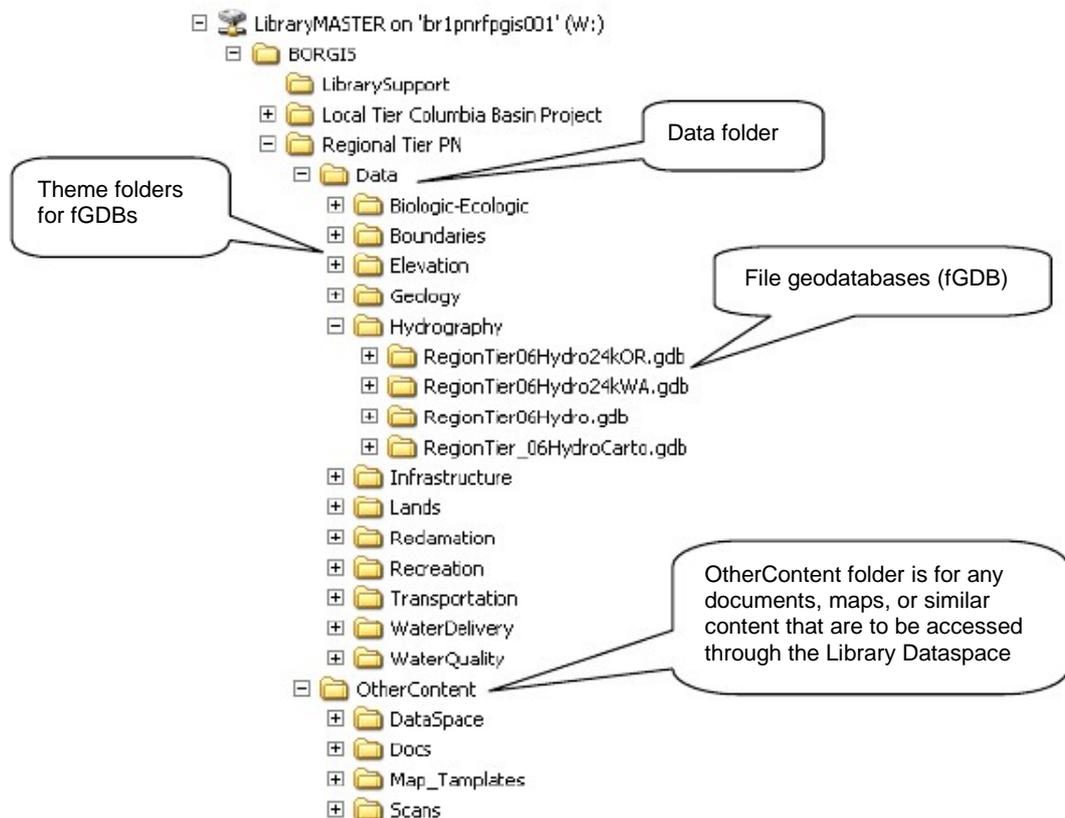
1. Map the W:\ drive to the BORGIS file share that contains the LibraryMASTER – for example: LibraryMASTER on ibr1pnrfpgis002.bor.doi.net (W:)



2. In the folder \BORGIS, create a folder for the library master – use a name that generally indicates the geographic extent of the data (e.g., Area Office, Project, project, study area, etc.)



3. In the library master folder, create subfolders – theme folders (as needed).



Wherever possible, use the terms established listed in Appendix A for theme folder names. If no existing theme folder name suits the planned data content, name the folder as needed to suit the nature of the data which it will contain.

4. In Windows File Explorer, navigate to the library master folder created in the last step. This is where data is to be placed. Complete the following steps:
 - a. Create a subfolder named Data. Add theme folders, as needed. Copy/move fGDBs containing library data into the appropriate theme folder.

NOTE: Data must be copied/moved into the library master folder before creating the Dataspace for the library.
 - b. Create a folder named OtherContent for any documents (work plans, references, etc.). Copy non-geospatial data files that are to be accessed through the Dataspace into this folder.
 - c. [optional] In the OtherContent folder, create subfolders like Docs, Maps, Scans, etc. for content that will be accessed through the Dataspace.

4.4 Create a Dataspace for the Library Master

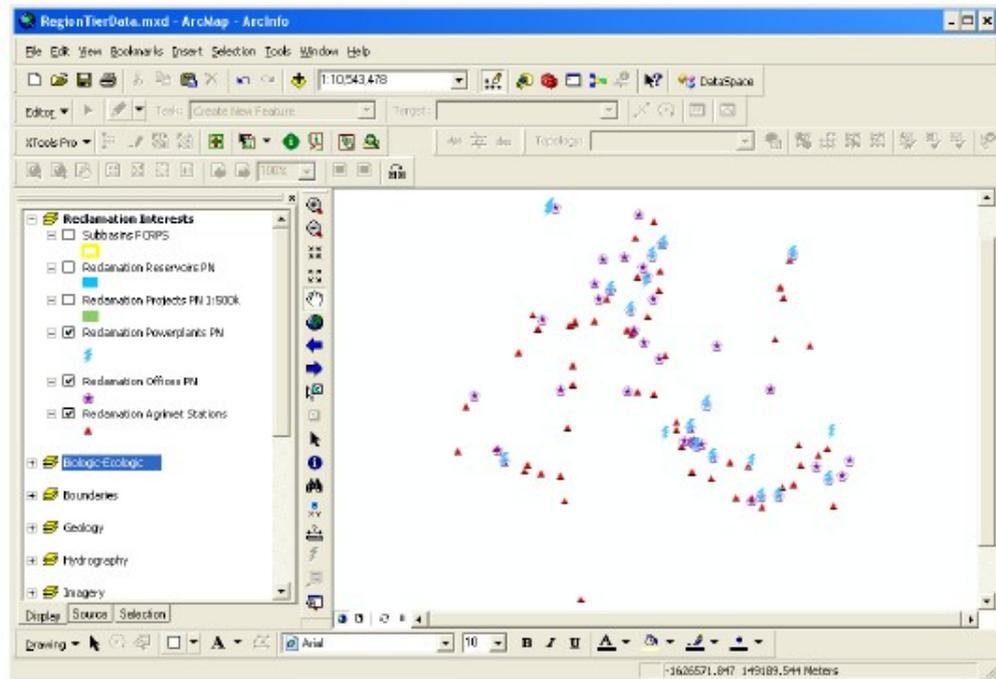
Now it is time to create the Dataspace for the library master. This Dataspace will be used to set the data source paths for data in the library master folder, so that data are accessible to users when deployed.

An ArcMap document (.mxd) is used to manage layers and their properties (i.e., symbols, fills, color, line weight, query, and any other properties supported by layers). The mxd provides the source for layers when creating the Dataspace.

1. Open ArcMap and add data. Make sure that the data being added comes from the fGDBs placed in the appropriate library folder on the \LibraryMASTER file share (mapped to W:).

IMPORTANT: The \LibraryMASTER file share must be mapped to W:\. The paths to data must be: W:\BORGIS\<Library_name>\<theme>\<fGDB>\...

2. [optional] Add a new Dataframe for each theme folder, as needed. This helps with keeping track of data in the context of themes and organizing content according to the folders in a Dataspace. This step is generally only needed for large, complex libraries.



3. For each data layer, edit the layer properties. This step typically takes the longest to complete. The properties set in this step govern how the layers will appear in ArcMap when users access it through Dataspace Console. It is an important step, take your time.

At a minimum, set the following properties.

- a. Edit the Layer Name: property to a name that is well suited for an ArcMap Table of Contents. This is also the name that appears in the Dataspace when the layer is added to a Dataspace folder.
- b. Edit Symbology to desired colors, symbols, etc.
- c. Set the properties for Labels.
- d. Set transparency in Display.
- e. Set other properties.

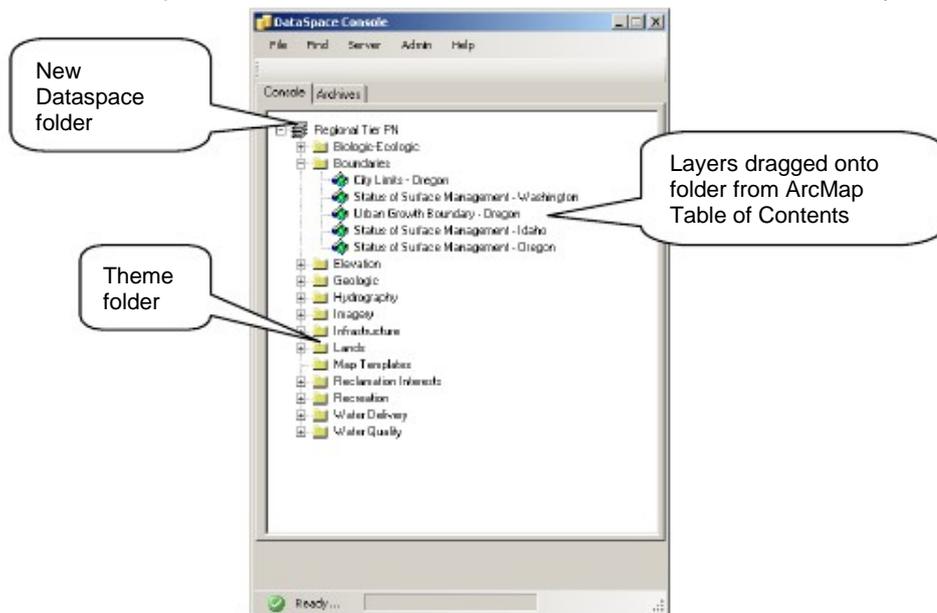
4. For layers with dense, complex data that will take a while to render at full extent, turn layer visibility off after completing the previous step.

NOTE: It is considerate to users to turn visibility off for large, dense data layers to avoid long waits for data to draw when initially loaded to ArcMap.

5. [As required] For a data set that has an associated table that is needed for Join or Relate, make sure to that the table is in the same fGDB as the data set. Add the table to ArcMap and set the necessary properties in the Joins & Relates tab of layer Properties.

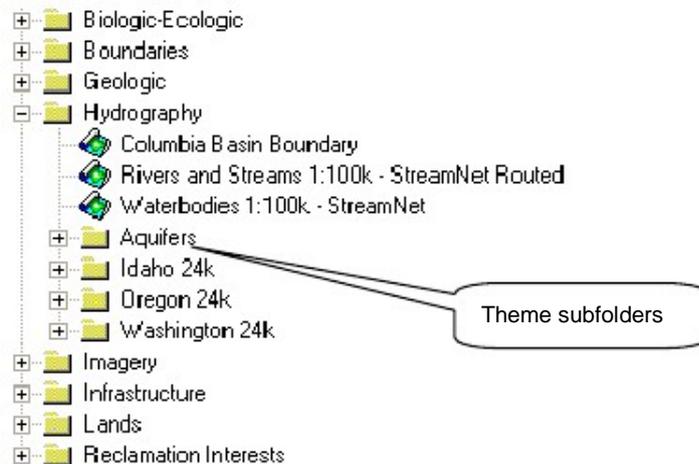
NOTE: Relationship classes are not supported by layer files.

6. [Optional] Set the Scale Range for display. This setting can be overridden by user if needed. Consider using for data sets that are not useable a certain scales (e.g., images, raster data, and similar).
7. Open Dataspace Console in ArcMap.
 - a. Create a new Dataspace, by clicking the File menu and selecting New Root Folder.
 - b. Name the folder to reflect the Library Dataspace being created.
8. Create theme folders in the new Dataspace (root folder). Right-click on the new Dataspace, and select New Folder. Add theme folders to suit the Library.



Wherever possible, also use the established theme terms listed in Appendix A to create theme folders in a Dataspace. If no existing theme folder term suits the planned data content, name the folder as needed to suit the nature of the data which it will contain.

Theme folders may also have subfolders, as needed. This is useful for organizing data that has subcategories or multiple scales, or for collections of time series data like images by year.



9. Select one or more layers in the ArcMap Table of Contents and drag them onto the appropriate theme folder. The layers will be added to the Dataspace folder.

NOTE: The names of layers in ArcMap Table of Contents will be the names of layers when added to a Dataspace (refer to Step 3 above). Make sure the layer name is plain, easy to understand language. Spaces and dashes may be used in names. Avoid other special characters.

Once a layer has been loaded to the Dataspace, changes to layer Properties made in the ArcMap Table of Contents can be added to the Dataspace by using the Update Layer function (on the right-click context menu of layers in Dataspace).

10. Once all the layers have been loaded into the Dataspace, right-click on the Dataspace (root folder) and select Export Dataspace on the context menu.
 - a. Save the Dataspace to the library master root folder (the name of the library, e.g., \Regional Tier PN), and name the file – BORGIS.xml.
 - b. Also, save a backup copy of the Dataspace to the \LibrarySupport\Dataspace folder created previously. Add the date to the file name -

<dataspace>_20090505.xml

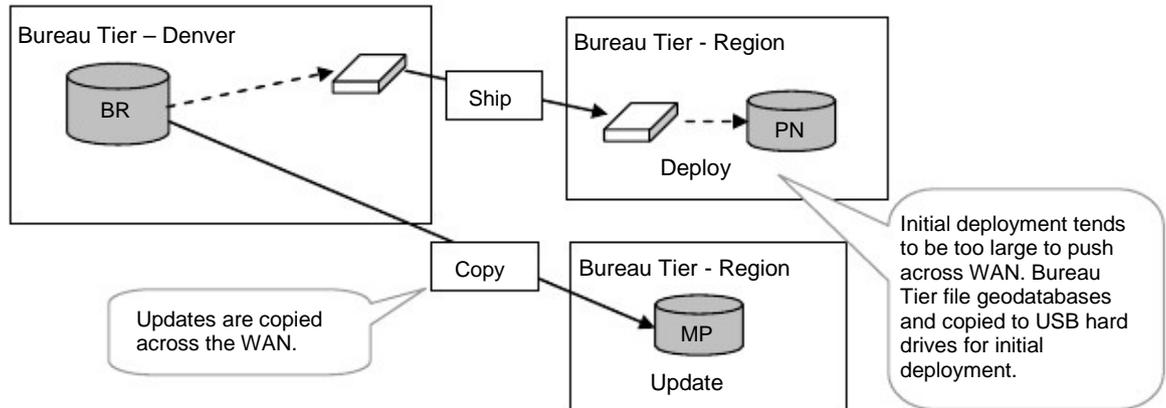
The library master and its Dataspace are now complete and ready to be deployed. Proceed to the next section for procedures to use Enterprise Data Management Tools to deploy the library master and its Dataspace to the \geolib file shares on local and remote servers.

5 Geospatial Library Deployment

At DataSpace Console v2.0, the core capabilities of the Enterprise Data Manager software were incorporated. A set of tools has been created to automate the deployment and update of geospatial libraries in the Bureau, Region and Local Tiers.

NOTE: Office Tier libraries are not intended to be deployed to other offices.

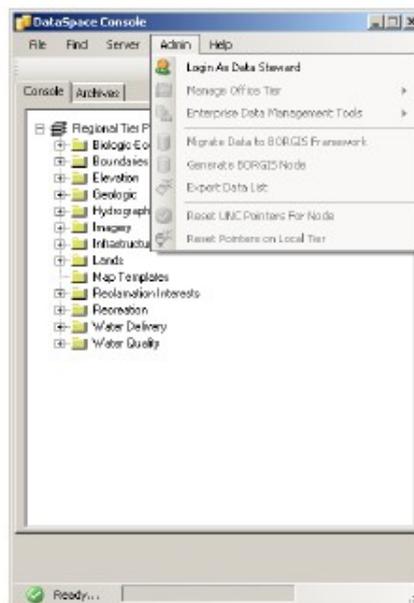
This section describes the use of Enterprise Data Manager functions that are part of the Admin menu of DataSpace Console.



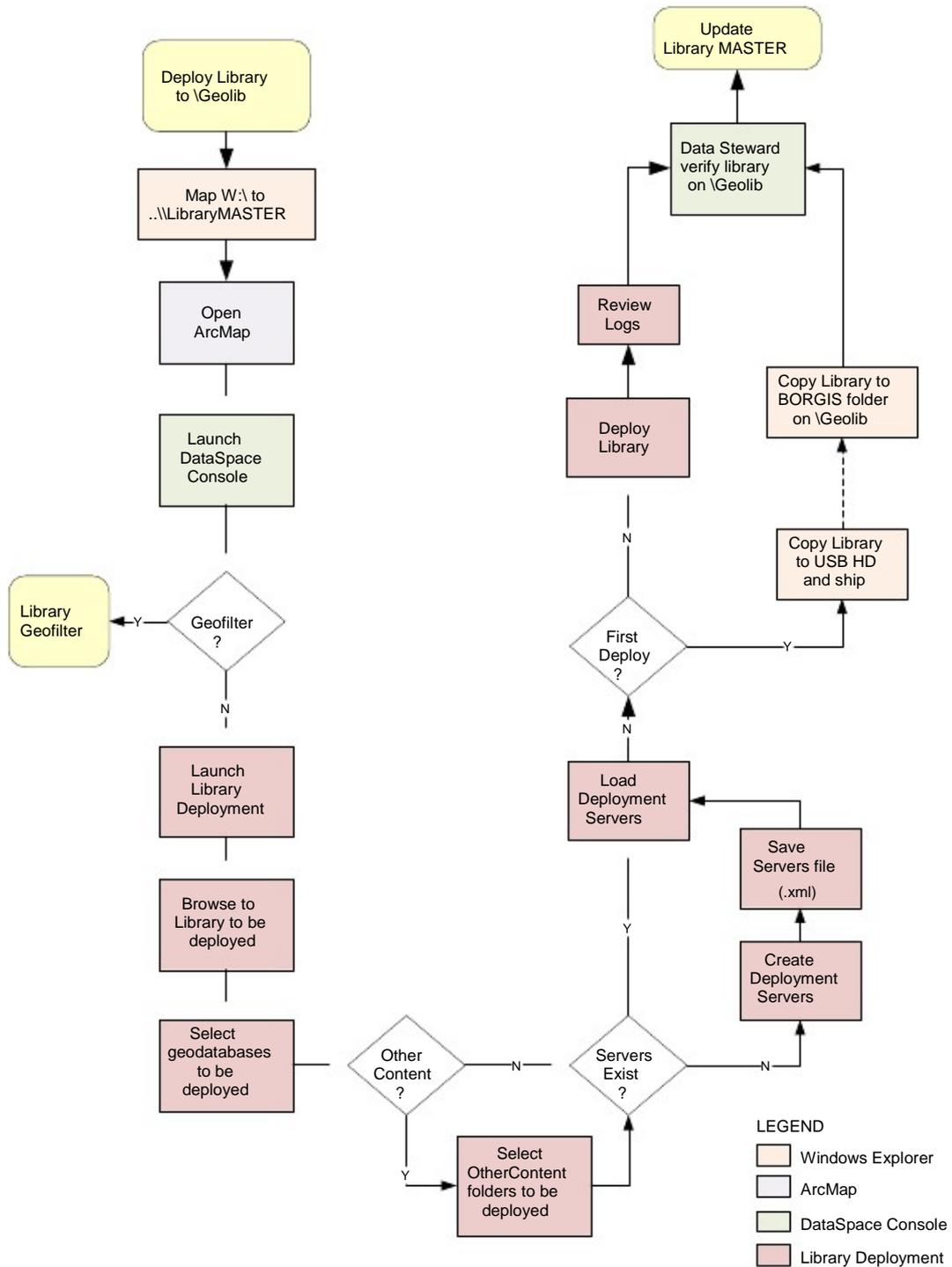
5.1 Deploy Library – Bureau, Regional, or Local Tier

The deployment of Bureau, Regional, and Local Tier geospatial libraries and associated Dataspaces is performed using the Enterprise Data Management Tools in DataSpace Console (v2.0 or later or ArcGIS 9.3; v10.0 or later for ArcGIS 10).

1. First, use the Login as Data Steward option in the Admin menu to enable functions under this menu. The password will be provided to Data Stewards by the BORGIS Project Manager or System Manager.



The workflow for deploying geospatial libraries to BORGIS Geospatial File Servers or office file servers that host a BORGIS \geolib file share is illustrated in the diagram below.



Library Deployment Workflow

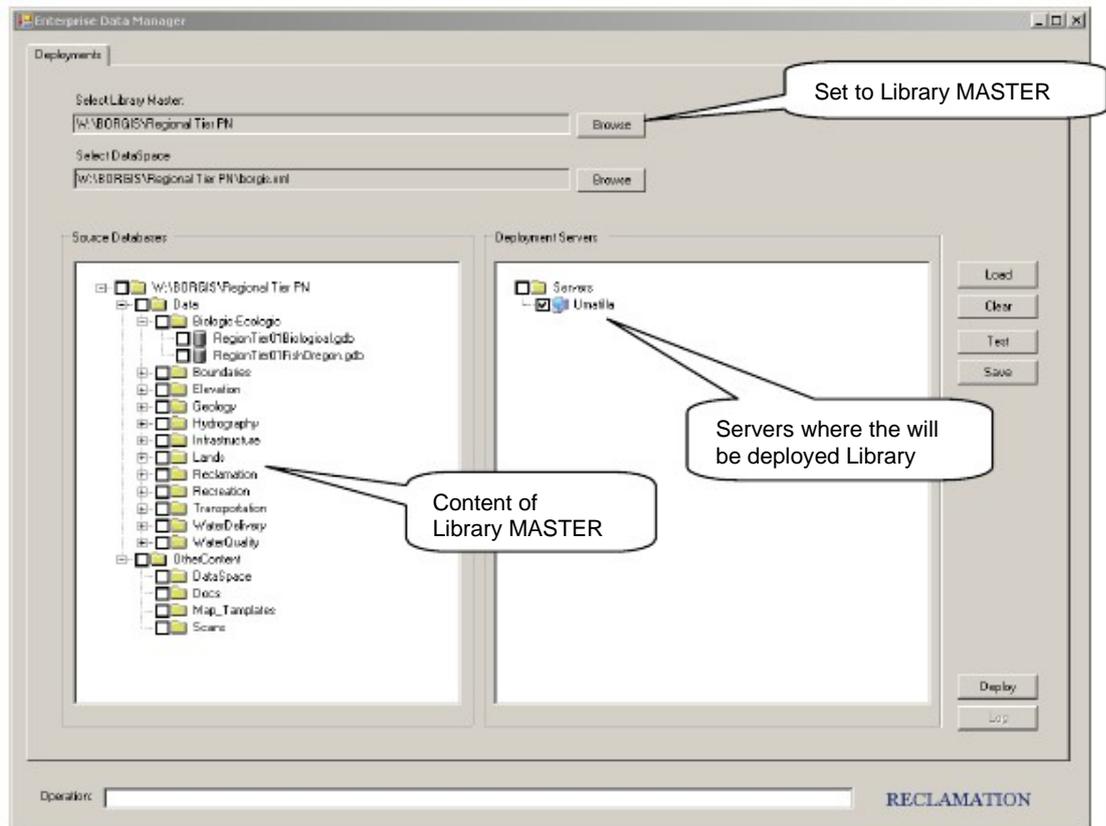
Last revised: 11/5/2010

Follow the procedure below to deploy a Bureau, Regional, or Local Tier library to one or more Reclamation office locations:

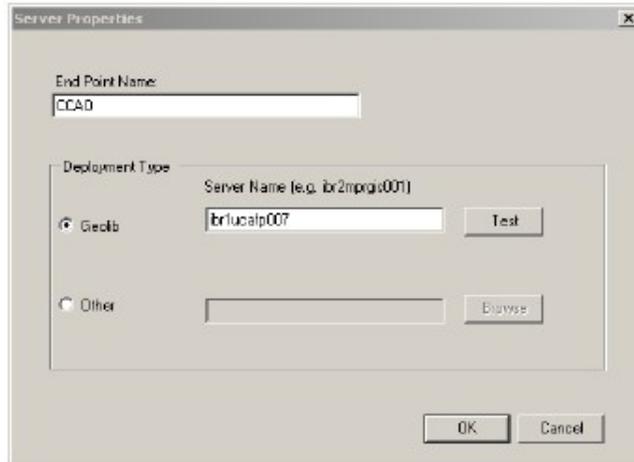
1. Verify that the \LibraryMASTER file share is mapped to the W:\ drive.
2. In DataSpace Console, use the Login as Data Steward item in Admin menu to enable functions under this menu. The password will be provided by the BORGIS Project Manager or System Manager.
3. Launch the Library Deployment tool. Click on the Admin menu, hover over Enterprise Data Management Tools, and click on the Library Deployment tool.
4. In the Library Deployment tool, click the Browse button at the end of the Select Library Master: blank. Navigate to the \Geofiltered Libraries folder (on the \LibraryMASTER file share), and select the folder of the geofiltered library to be deployed.

Note that the path to the BORGIS.xml file (Dataspace) is shown in the Select Dataspace: blank. If this blank is empty, the library is not ready for deployment.

5. Verify the selected library is correct. Expand the tree in the left panel and verify that content of theme folders contain fGDBs. To view the contents of a fGDB, right-click on the fGDB and select Display Content.
6. In the Source Databases panel (left), check the boxes of the all the folders that are to be deployed.



7. In the Deployment Servers panel (right), right-click on the Servers folder, and select New Server from the context menu. Enter a name. Typically this is the office name or code, but can be some other descriptive name.
8. Right-click on the new server item select Properties from the context menu. Select the Geolib option (default). Enter the name or IP address of the server that hosts a \geolib file share. Click the Test button.



9. The test should result in a message box that states "Server OK". An error message will be returned if 1) the \geolib file share is not found on the server name or IP address, or 2) the current user does not have permissions to write to the geolib file share. This must be corrected in order for this process to continue.
10. Add additional servers by repeating Steps 7-9 above.
11. Save the information in the Deployment Servers panel. Click the Save button, navigate to an appropriate folder in the \LibrarySupport\Deployments, and enter a name for the file. For example – Regional Tier PN deployments.xml

This file will be useful in the maintenance process described in Section 6 of this document.

12. Click the Test button. This will test each of the servers to ensure that the current user has write privileges on the \geolib file share of the server.
13. Click the Deploy button. The deployment process will deploy the content (checked) in the Source Databases panel to each server in sequence. Progress is indicated in the Operation blank.

IMPORTANT: First time deployments over 1GB in size to remote servers should be deployed by copied the library to a portable hard drive and shipped to the office to be copied into the \BORGIS folder on the \geolib file share.

14. Click the Log button to verify that the deployment process completed processing each server deployment.

5.2 Create a Geofiltered Library

At the Bureau Tier and the Region Tier, it is sometimes practical to “geofilter” (clip) the content of the library master to reduce the footprint of the geospatial data. The process involves defining an Area of Interest like the box that encompasses an Area Office boundary. Although an Area of Interest is typically related to a Reclamation office, it can also be a subbasin, Project, or other boundary.

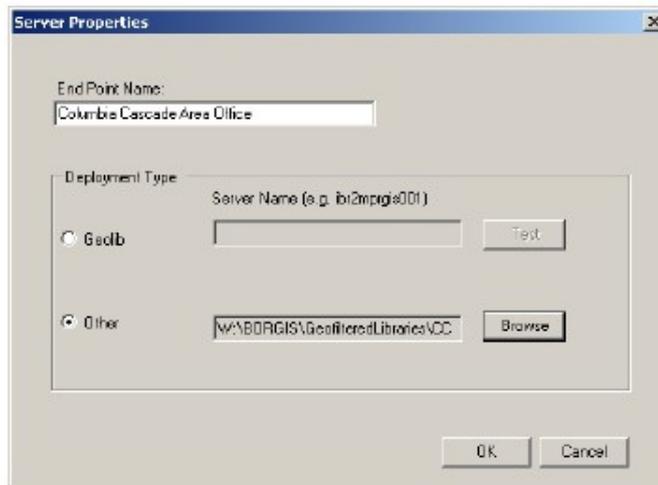
The Area of Interest polygon is used filter the content in the library master. The result is a copy of the library master that contains only the features that intersect the Area of Interest box.

5.2.1 Deploy the Library MASTER to GeofilteredLibraries Folder

Before a library master can be geofiltered, a copy must be deployed to the \GeofilteredLibraries folder. Use the procedure described in Section 5.1, except replace Steps 7 and 8 with the steps described below.

NOTE: A subfolder must be created in the \GeofilteredLibraries folder for the deployed copy of the library master.

7. In the Deployment Servers panel (right), right-click on the Servers folder, and select New Server from the context menu. Enter a name for the geofiltered library. Typically this is the office name or code, but could be a subbasin, project, or some other descriptive name.
8. Right-click on the new server item select Properties from the context menu. Select the Other option, and click the Browse button. Navigate to the \GeofilteredLibraries folder on the \LibraryMASTER file share.

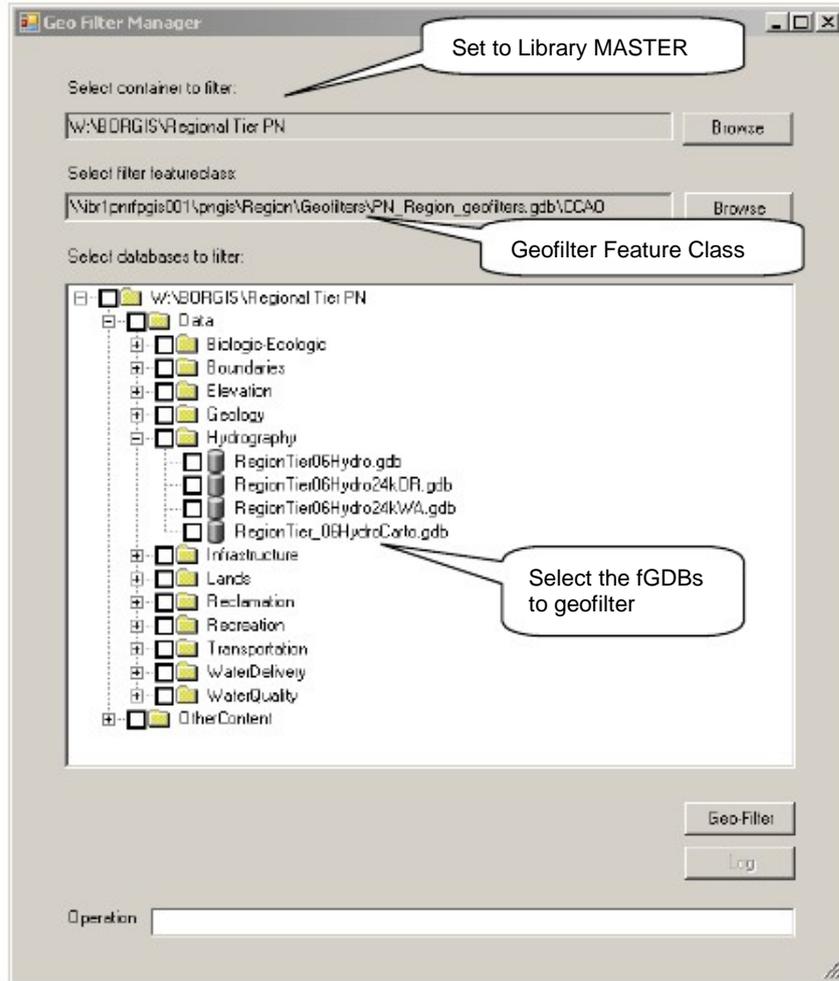


In this example, a copy of the library master will be deployed into the CCAO subfolder of the \GeofilteredLibraries folder.

5.2.2 Run Library Geofilter Tool

The geofilter process will perform an inverse selection on each Feature Class and delete features that fall outside an Area of Interest polygon. The result becomes the library master for the location associated with the Area of Interest polygon.

1. Verify that the \LibraryMASTER file share is mapped to the W:\ drive.
2. In DataSpace Console, use the Login as Data Steward option in the Admin menu to enable functions under this menu. The password will be provided by the BORGIS Project Manager or System Manager.
3. Launch the Library Geo-Filter tool. Click on the Admin menu, hover over Enterprise Data Management Tools, and click on the Library Geo-Filter tool.



4. Click the Browse button at the end of the blank labeled Select container to filter:, and navigate to a library master.
5. Click the Browse button at the end of the blank labeled Select filter feature class:, and navigate to the Feature Class that contains the Area of Interest polygon.
6. In the Select database to filter panel, check the boxes next to the fGDBs that are to be geofiltered.
7. Click the Geo-Filter button. The process will iterate through each checked fGDB in panel in sequence. Progress is indicated in the Operation blank.
8. Click the Log button to verify that the deployment process completed processing each server deployment.

5.3 Deploy a Geofiltered Library

Deploying a geofiltered library is the same as deploying any other library except that the library master is in the \GeofilteredLibraries folder. Use the procedure described in Section 5.1, and replace Step 4 with the step below.

4. In the Library Deployment tool, click the Browse button at the end of the Select Library Master: blank. Navigate to the \Geofiltered Libraries folder (on the LibraryMASTER file share), and select the folder of the geofiltered library to be deployed.

Note that the path to the BORGIS.xml file (Dataspace) is shown in the Select Dataspace: blank. If this blank is empty, the library is not ready for deployment.

The geofiltered library will be deployed to the servers listed under Deployment Servers.

6 Maintaining Bureau, Regional, and Local Tier Libraries

Once a Bureau, Regional, or Local Tier Library and Dataspace have been deployed, there will be occasions when it is necessary to update its content with newer versions of data and/or new data. The procedures in this section describe how to update the data in an existing Local Tier Library and re-deploy an updated Dataspace to a BORGIS Geospatial File Server or \geolib file share on server managed by local IT Services.

The first thing to consider is the nature of the maintenance to be performed. The following are likely:

- edit an existing Feature Class
- replace an existing Feature Class (replacement has same name)
- add a new Feature Class, or delete a Feature Class
- modify layer properties of a Feature Class

Consider maintenance needs carefully when deciding how data will be structured in fGDBs in the Library (refer to Section 4.2). Frequently updated or modified data should be segregated into separate fGDBs from data that do not change often.

6.1 Update Content in Library MASTER

The first step in the maintenance process is to update or modify the library master. This includes both geospatial data in and non-geospatial content in the library.

6.1.1 Replace an Existing Feature Class

To replace an existing Feature Class, the Data Steward can usually go to fGDB in the library master folder (W:\BORGIS\

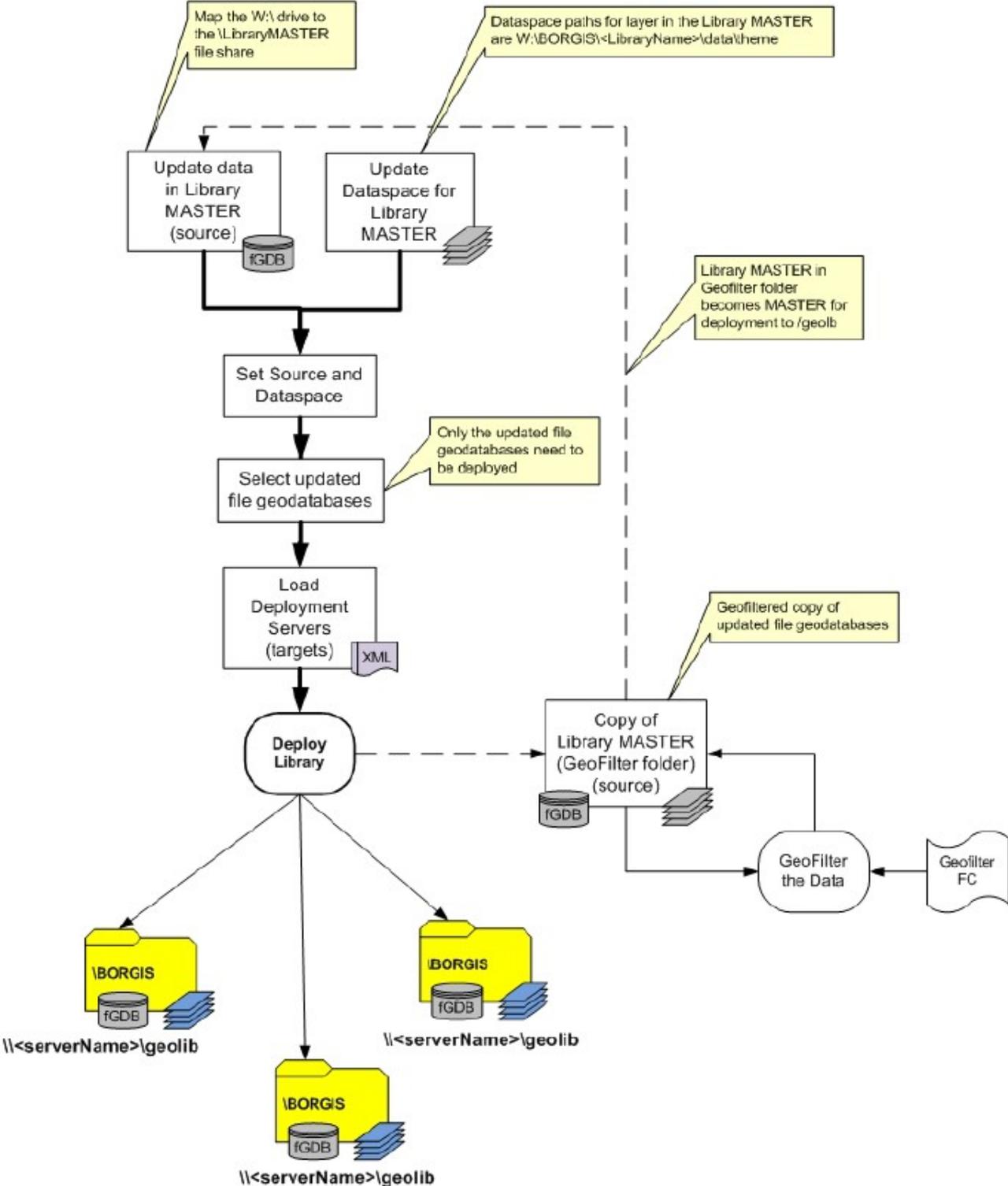
1. Use ArcCatalog to connect to the fGDB containing the Feature Class to be replaced and delete the Feature Class.
2. Import the replacement Feature Class into the fGDB. Make sure the Feature Class name is the same.
3. Since replacing an existing Feature Class does not change the content of the Dataspace, no further action is needed.

6.1.2 Add a New Feature Class

To add a new Feature Class, the Data Steward can usually go to the Office Tier library folder (W:\BORGIS\

1. Use ArcCatalog to connect to the fGDB in which the new Feature Class will be stored. Import the new Feature Class into the fGDB. Make sure the Feature Class has complete metadata.
2. Configure the layer properties of the new Feature Class. Refer to Section 4.3.
3. Once the new Feature Class(s) has been added to the library master, the Data Steward must add the new layer to the associated Dataspace (Section 6.2).

The workflow for updating a library master and deploying updates is illustrated in the diagram below.



6.1.3 Add/Update Other Content

To add or update non-geospatial files, the Data Steward can go to the library master folder (W:\BORGIS\

1. Use Window Explorer to copy files to the appropriate subfolder in W:\BORGIS\

6.2 Update the Dataspace for the Library MASTER

A Bureau, Regional, a Local Tier Dataspace must be updated after any of the following maintenance operations are performed:

- add a new Feature Class
- delete a Feature Class
- change the name of a Feature Class
- modify layer properties of any Feature Class

Updating the Dataspace for a library master involves loading the BORGIS.xml file (Dataspace) into DataSpace Console. The BORGIS.xml file is located at the root of the library master folder.

1. Open ArcMap and launch DataSpace Console. Under the File menu, use the Import Dataspace function to load the Dataspace.
2. Add any new data to the ArcMap Table of Contents. Make sure that the data being added comes from the fGDBs placed in the library master folder on the \LibraryMASTER share (W:\).

IMPORTANT: The library master file share must be mapped to W:\. The paths to data should be: W:\BORGIS\

3. For each new layer or modified layer ~ select the layer in the ArcMap Table of Contents and open the Properties dialog. Review the layer name and other layer properties (e.g. color, symbol, labels, lines, fills, or any other properties supported by a layer file).
4. Start DataSpace Console, and import the Dataspace for the library to be updated (BORGIS.xml file in the root of the library folder. The imported Dataspace will be gray.
5. Update Dataspace layers ~ select the layer selected in the ArcMap Table of Contents, right-click the corresponding layer the Dataspace and select Update Layer from the context menu.

If the layer name changed, right-click the corresponding layer in the Dataspace and select the Remove option on the context menu. Then, drag the renamed layer from the ArcMap Table of Contents onto the Dataspace folder.

6. Add new layers ~ drag the new layer onto the appropriate folder in the Dataspace.
7. When all updates are complete, export the Dataspace (BORGIS.xml) file back to the root of the library master folder. Overwrite the existing file. Also, export a backup copy of the Dataspace to another location (a good place is a folder in \LibraryMASTER called \LibrarySupport\Dataspace).

The final step is to deploy the updated Library and Dataspace to the \geolib share on the BORGIS Geospatial File Server or server managed by local IT Services. Proceed to Section 6.4.

6.3 Test and Verify a Library Master Dataspace

Before updates to the library master are deployed, it is important to test layers in the Dataspace to make sure they work as expected.

1. Open a new ArcMap session and open Dataspace Console.
2. Map the W:\ drive to the BORGIS file share that contains the Library Master – for example: LibraryMASTER on ibr1pnrfpgis002.bor.doi.net (W:)
3. In Dataspace Console, use the Switch function (under the Server menu) to change the server to W:\. Then use the Configure function to select the new library master Dataspace. Click the Refresh button on the Select Dataspaces to Load dialog. The dialog should update with the new Local Tier Library Dataspace listed. Check the box and load the Dataspace.



4. Expand each of the theme folders and add the layer to verify that data loads correctly.
5. Check the layer Properties to verify that the data source is W:\ and not another file share where other GIS users do not have access.
6. When the library master Dataspace is ready, proceed to deploy updates.

6.4 Deploy Library and Dataspace Updates

The deployment of updates to the library master and the associated Dataspace uses the same process described in Section 5.1. Except – only the fGDBs that contain modifications, additions, or deletions need to be deployed to the \geolib file share on local and remote servers.

IMPORTANT: Select (check) only the fGDBs or folders that contain updates.

Once updates have been deployed, send an email to GIS users with a summary of the updates and instructions for refreshing the Dataspace in DataSpace Console.

7 Create an Office Tier Library

The procedure for creating an Office Tier Library and Dataspace is a little different than the other tiers. The Office Tier is intended to support only GIS users in a single Reclamation office, and is not distributed to other offices. For this reason, the data in the Office Tier folder on the \geolib file share (where other tiers are deployed to) is equivalent of a library master.

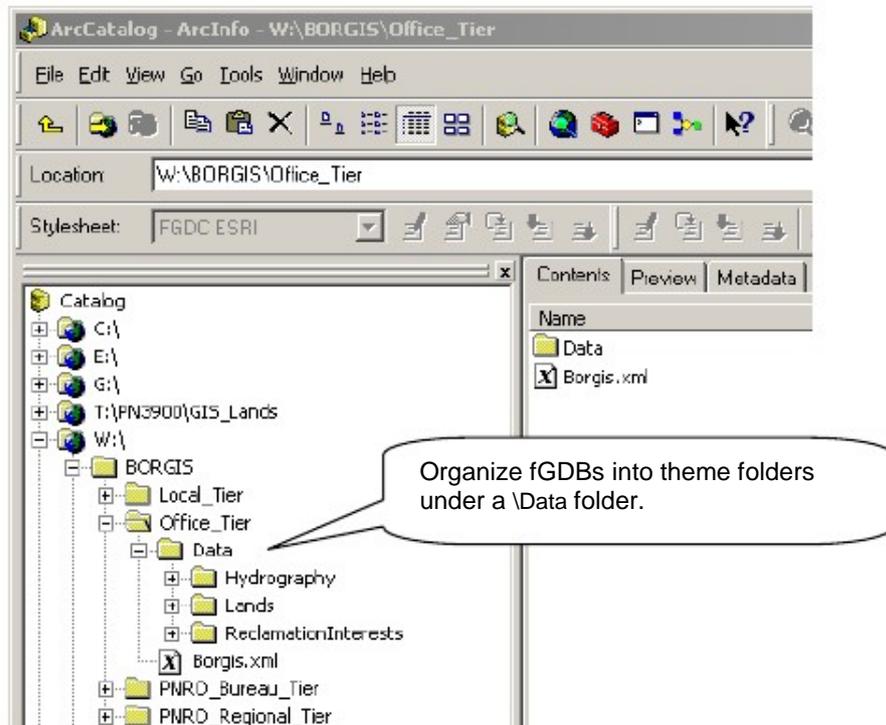
DataSpace Console has some special functions designed specifically for the Office Tier to make it quick and easy to update, and making data available to users in a matter of minutes.

There is Office Tier Library is managed by a Data Steward assigned by the local office.

7.1 Create the Office Tier Folder and Dataspace

Follow these steps using DataSpace Console to create the Office_Tier folder in the under the BORGIS folder on the \geolib file share:

1. Open ArcMap and launch DataSpace Console. If the DataSpace Console window is empty, verify that the \geolib file share is mapped to the W:\ drive letter.
2. Login as Data Steward. Contact the BORGIS Region Data Steward for the password.
3. Click on the Admin menu, hover over Manage Office Tier and click on Create Office Tier in the context menu. This will do two things:
 - create the Office_Tier library folder in the \BORGIS folder , and
 - create a new root folder (gray) named Office Tier in the DataSpace Console window



4. In Windows Explorer, copy the subfolders (themes) and fGDBs to the new Office Tier folder (W:\BORGIS\Office_Tier).
Refer to the procedure in Section 4.2 for creating and organizing data into the Office Tier folder.

7.2 Add Layers to the Office Tier Dataspace

Once data have been organized into folders and fGDBs, they are ready to be added to the Office Tier Dataspace. Since the Office Tier folder was created in the \geolib file share (mapped to W:\ drive previously).

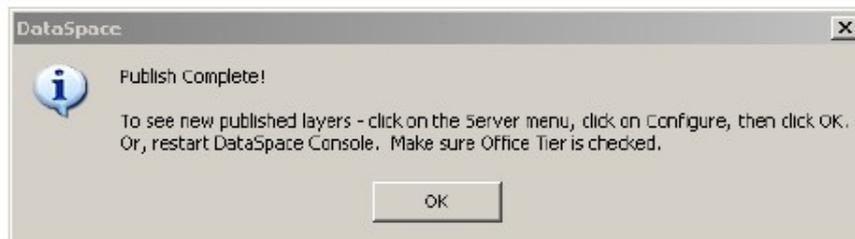
In ArcMap, add data from the W:\BORGIS\Office_Tier folder to the map. Then follow the procedure described in Section 4.3 beginning at Step 3 through 9.

7.3 Publish the Office Tier Dataspace

The final task is to “publish” in the Office Tier Dataspace so that users can access the Office Tier library content. Once all the layers have been loaded into the Office Tier Dataspace, use the DataSpace Console function to “publish” it:

1. Click on the Admin menu, hover over the Manage Office Tier item, and select the Publish option.
2. Click the OK button on the message box “Ready to publish Office Tier”. This will write the Dataspace (BORGIS.xml) to the appropriate location in the Office Tier folder.

The following message box will appear:



Click the OK button. The Office Tier is now published.

5. In Dataspace Console, use the Configure function (under the Server menu) to select the new Office Tier Library Dataspace. Click the Refresh button on the “Select Dataspaces to Load” dialog. The dialog will update the list of Dataspaces. Check the box next to the new Office Tier Library Dataspace and click the OK button.
6. Expand each of the theme folders and load all the layers to verify that data loads correctly and renders as expected.
7. Check the layer Properties to verify that the data source is W:\BORGIS\Office_Tier\ and not another file share where other GIS users may not have access.
8. When the Office Tier Library Dataspace is ready to use, notify users via email.

8 Maintaining the Office Tier Library and Dataspace

After an Office Tier Library and Dataspace have been published, there will be occasions when it is necessary to update its content with newer versions of data and/or to add new data or delete old data. The procedures in this section describe how to update the data in an existing Office Tier Library and re-publish an updated Dataspace.

The first thing to consider is the nature of the maintenance to be performed. The following are likely:

- replace an existing Feature Class (replacements should have the same name)
- add a new Feature Class, or delete a Feature Class
- modify layer properties of a Feature Class

The maintenance process for the Office Tier Dataspace uses special functions of DataSpace Console (version 1.5 or later) found on the Manage Office Tier menu under the Admin menu. The following subsections describe sequentially the procedures for maintaining Office Tier library data and the associated Dataspace.

8.1 Update Office Tier Library

The first step in the maintenance process is to update or modify the Office Tier Library. This includes both geospatial data in and non-geospatial content in the library.

8.1.1 Replace an Existing Feature Class

To replace an existing Feature Class, the Data Steward can usually go to fGDB in the Office Tier library folder (W:\BORGIS\Office_Tier) and delete the old Feature Class and add the new Feature Class directly to the fGDB.

4. Use ArcCatalog to connect to the fGDB containing the Feature Class to be replaced and delete the Feature Class.
5. Import the replacement Feature Class into the fGDB. Make sure the Feature Class name is the same.
6. Since replacing an existing Feature Class does not change the content of the Dataspace, no further action is needed.

8.1.2 Add a New Feature Class

To add a new Feature Class, the Data Steward can usually go to the Office Tier library folder (W:\BORGIS\Office_Tier) and add the new Feature Class directly to the appropriate fGDB.

4. Use ArcCatalog to connect to the fGDB in which the new Feature Class will be stored. Import the new Feature Class into the fGDB. Make sure the Feature Class has complete metadata.
5. Configure the layer properties of the new Feature Class. Refer to Section 4.3.
6. Once the new Feature Class has been added to the Local Tier Library, the Data Steward must update the associated Dataspace. Proceed to Section 8.2.

8.1.3 Add/Update Other Content

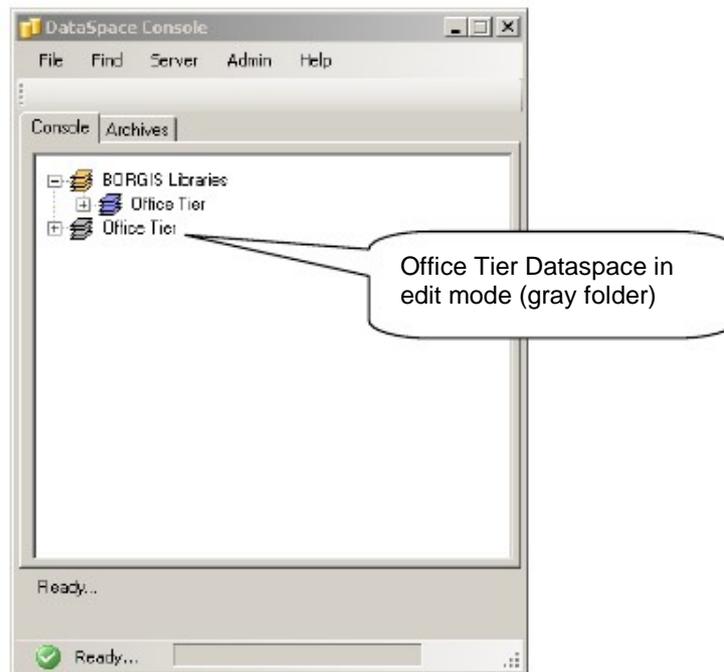
To add or update non-geospatial files, the Data Steward can go to the Office Tier library folder (W:\BORGIS\Office_Tier) and add, update, or delete files in the OtherContent folder.

2. Use Window Explorer to copy files to the appropriate subfolder in W:\BORGIS\Office_Tier\OtherContent.

8.2 Import and Edit Office Tier Dataspace

After the Office Tier Library has been modified, the next step in the maintenance process is to edit the Office Tier Dataspace. This is accomplished by using the "Import and Edit Office Tier" function, which is on the Manage Office Tier menu under the Admin menu.

1. Open ArcMap and start DataSpace Console. Click on the Admin menu, select the Login as Data Steward, and enter the password to enable the Admin functions.
2. Click on the Admin menu and hover over Manage Office Tier option, then click on Import and Edit Office Tier option in the context menu. This will create a copy of the Office Tier Dataspace (gray folder) in the DataSpace Console window. This is where changes to the Dataspace will be made in the following sections.



8.3 Update the Office Tier Dataspace

An Office Tier Library Dataspace must be updated after any of the following maintenance operations are performed:

- add a new Feature Class
- delete a Feature Class

- change the name of a Feature Class
- modify layer properties of any Feature Class

Updates to the Office Tier Dataspace can be made at anytime, although users will need to use the Refresh function (Server menu>>Configure) in order to see the update Dataspace.

With the Office Tier Library Dataspace in edit mode, use the procedures in the following subsections to update the Office Tier Dataspace with changes to layer properties, and changing, adding or deleting Feature Classes.

8.3.1 Modify Layer Properties of an Existing Feature Class

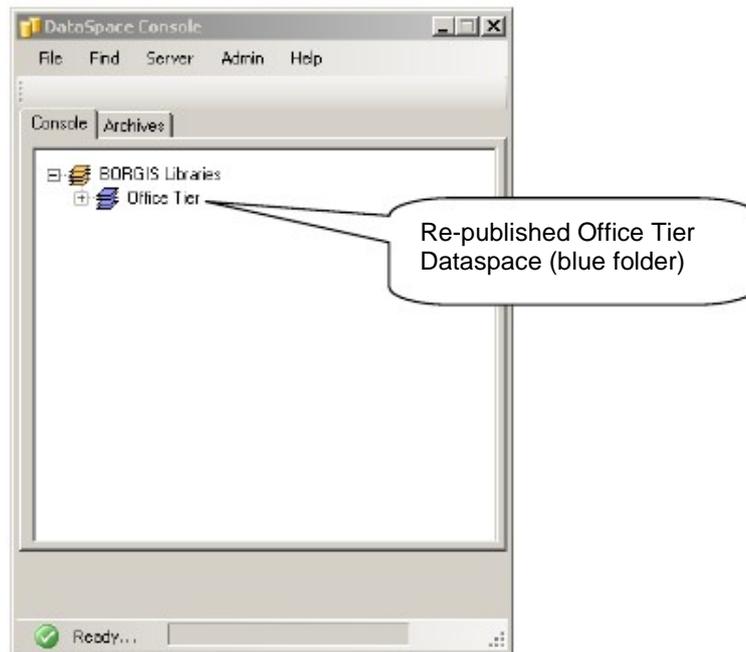
To modify the layer properties of an existing Feature Class, the Data Steward must import the Dataspace for editing (refer to Section 8.2 above), then follow the steps in the subsections below.

1. In ArcMap, use Dataspace Console to add the layer to be modified into the ArcMap Table of Contents.
2. Right-click the layer to be modified, and select the Properties option. Make the desired modifications to color, symbol, labels, lines, fills, or other layer properties. Refer to Section 4.2.
3. Once all modifications to layers are complete, the layers in the ArcMap TOC can be used to update the Office Tier Dataspace. Use of these methods:
 - a. For changes to existing layers where the name did not change, right-click on the layer in DataSpace Console and select the Update Layer option from the context menu.
 - b. For new layers or layers with new names, right-click the layer in Dataspace Console and select the Remove option from the context menu. Then, drag-and-drop the new layer from the ArcMap TOC to the appropriate folder in the DataSpace Console window.
4. When all changes to the Office Tier Dataspace are complete, proceed to the next section.

8.4 Re-Publish a Office Tier Library Dataspace

After changes have been made to the Office Tier Dataspace it must be “published” in order for users to see change. The process is essentially the same as publishing the original Office Tier Dataspace.

1. In DataSpace Console, go to the Admin menu, hover over Manage Office Tier and click on Publish in the context menu. The gray Office Tier icon will disappear and a message box will appear.



2. Click the Yes button in the first message box to proceed with publishing the updated Office Tier Dataspace to the server.
3. Note the instructions in the second message box for re-loading the updated Office Tier Dataspace in DataSpace Console.

In Dataspace Console, use the Configure function (under the Server menu). Click the Refresh button on the "Select Dataspaces to Load" dialog. This will update the list of Dataspaces. Check the box next to the updated Office Tier Library Dataspace, and click the OK button.

4. Expand the theme folders and locate new or modified layers and add them to the map to verify that data loads correctly and renders as expected.
5. Check the layer Properties to verify that the data source is W:\BORGIS\Office_Tier\ and not another file share where other GIS users may not have access.
6. When the Office Tier Dataspace is ready to use, notify users via email.

9 Handling FOUO or Limited Access Data in a Geospatial Library and Dataspace

Occasionally, some data may be considered FOUO or a Reclamation manager may request that access to certain data be limited to a project team. By default, the BORGIS geospatial libraries are accessible to all Reclamation GIS who have been approved to access BORGIS. However, additional access controls can be implemented to restrict access to folders containing geospatial libraries, if needed.

Refer to Section 2, Data Sensitivity – Assessment, Storage, and Handling in BORGIS SOP Data Management for additional information on handling FOUO data.

9.1 Create Special Access Groups

Contact the system administrator for the file server where the \geolib file share is located. Request two new groups be created on the server or in the office organization unit (OU). The groups should be named such that they can be easily associated with a subfolder created in Local Tier <name> in the \geolib file share. For example:

IBR1GGISCultural

IBR1GGISFOUO

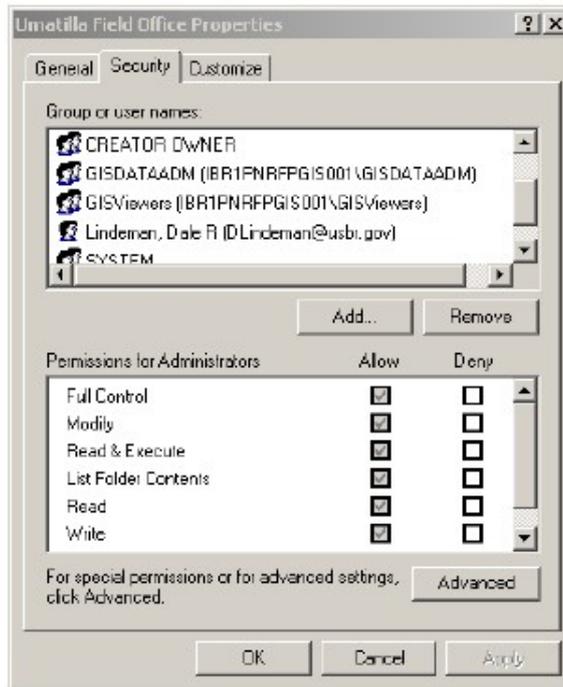
The privileges for special groups are assigned when the groups are added to the folder rights in a later step.

9.2 Create an FOUO or Limited Access Local Tier Library

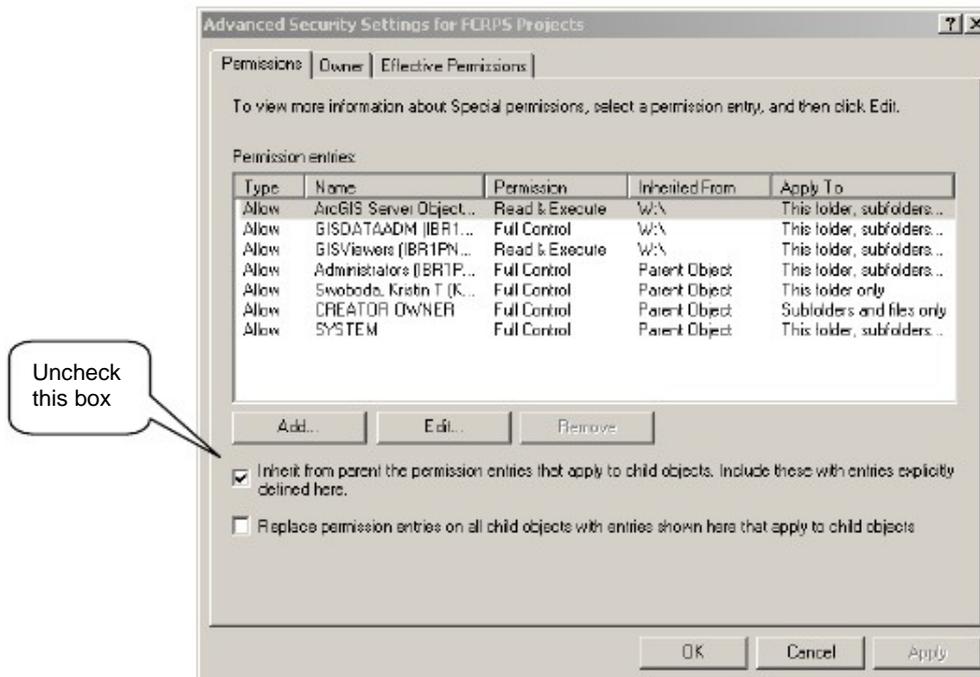
To implement access controls on a folder in a Local Tier geospatial library, use the following procedure:

1. In Windows Explorer, create a new folder in the library master folder in which to store the data that requires limited access. Refer to Section 4.2. Or, create a separate Local Tier Library for FOUO data.
2. Name the folder to reflect the nature of the content and add FOUO or LIMITED ACCESS to the name.

\Special Project FOUO
3. To modify the privileges on the new folder, right-click the folder and select the Properties option from the context menu, then click on the Security tab.



4. Click on the Advanced button to open the following dialog.



5. Uncheck the Inherit from parent... box and click the Copy option in the dialog that pops up.

NOTE: Inheritance of privileges from the parent folder must be turned off to prevent privileges associated with the folder above from being applied to this folder.

6. Select each item that should not have access to the content of the new folder. Do not remove the following:

Administrators
Creator Owner
SYSTEM

7. Next, add the groups that should have access – the two new groups. Click the Add button.

For groups created in the office OU (AD groups), type the name of the groups in the box (use ; to separate). Click the Check Names button. Then, click the OK buttons to close the Select User dialog and Advanced Security Settings dialog.

For groups created on the server, click the Locations button and select the server name from the list, then click the OK button. In the Select User dialog, type the name of the groups in the box (use ; to separate). Click the Check Names button. Then, click the OK buttons to close the Select User dialog and Advanced Security Settings dialog.

8. Select a new group name in the list in the Security tab of the Properties dialog. With the group selected, be sure to check only the boxes for the privileges listed below:

IBR1GISSpecialViewer	Read, Read & Execute, List Folder Contents
IBR1GISSpecialSteward	Full Control

IMPORTANT– Double check that privileges include only those shown above.

Data placed in the new folder will only be accessible to members of the new groups and system administrators. A Dataspace can now be created for this Local Tier library and publish using the same procedures described in the remainder of this document. Be aware that all DataSpace Console users will be able view the Dataspace that contains limited access data, but only people that are members of one of the two special groups will have access to the data reference by the Dataspace layers..

Appendix A
List of Common Theme Folders

Where applicable, use this list of theme folders names when creating Local Tier libraries. Using a common theme naming convention will make finding similar data and easier among multiple Local Tier libraries created for projects and/or offices.

New folder names should be created when none of the following are deemed suitable.

- ⊕  Biologic-Ecologic
- ⊕  Boundaries
 -  Cadastral
 -  Climate
 -  Demographic
 -  Elevation
- ⊕  Geologic
- ⊕  Hydrography
- ⊕  Imagery
- ⊕  Infrastructure
 -  Land Class
 -  Land Cover - Land Use
 -  **Lands**
- ⊕  Reclamation Interests
- ⊕  Recreation
 -  Reference
 -  Soils
 -  Transportation
- ⊕  Water Delivery
- ⊕  Water Quality