User Guide to the

Softcopy Orthophotomap Data Base
(SODB) of New Brunswick

DOCUMENT VERSION 1.5

SERVICE NEW BRUNSWICK
SERVICES NOUVEAU-BRUNSWICK

The material in this Guide reflects SNB's best judgement in light of the information available at the time of its preparation. Any use which a third party makes of this Guide, or any reliance on / or decisions to be made based on it, are the responsibility of such third parties. SNB accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Guide.

Table of Contents

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

New / Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

ABOUT THIS GUIDE

Purpose

The purpose of this Guide is to provide an introduction to and a working knowledge of the New Brunswick Softcopy Orthophotomap Data Base (SODB).

Scope

This Guide describes the structure and content of the SODB files and provides guidelines for transferring data from Service New Brunswick (SNB) to users. The Guide does not provide step-by-step procedures for using files in Computer Aided Design (CAD), Image Analysis System (IAS), map browser or Geographic Information Systems (GIS) applications.

Audience

This Guide was prepared to assist those who wish to use digital orthophotomap data within the Province of New Brunswick.

Pre-requisites

This Guide assumes the user has a basic knowledge of digital geographic data and how this data is stored within a IAS system (for example, PCI-Easi Pace), map browser (for example, MapInfo) or GIS system (for example CARIS) to be used with the SODB data. A basic knowledge of digital image files and the techniques used to manipulate image data within these systems is also assumed.

Some GIS systems require special modules to manipulate and/or display raster image files, such as the SODB. If you are unsure, please consult with your GIS vendor.

Development of the SODB

The SODB is being completed in a series of Blocks. When all eight blocks are completed, the entire province will be covered.

Block	Completion Date	Number of 1:10 000 Windows
1	Winter 2000	65
2	Winter 2000	72
3	Spring 2000	102
4	Spring 2000	87
5	Spring 2000	85
6	2001/2002	573 (approximate)
7	2002/2003	480 (approximate)
8	2003/2004	430 (approximate)

An index map showing each block of the SODB is attached in Appendix A. Each block of the SODB is based on a series of aerial photography and block adjustment data completed specifically for the SODB production. An index map showing the dates of photography used for each block of the SODB is shown in Appendix B.

Organization

The Guide is divided into six sections and seven appendices.

Section 1   Installing the SODB

This section deals with the transfer of data from the supplied media to your computer. It provides a set of file naming conventions, lists the files you receive from SNB and provides guidelines for transferring the data. It also provides a "checklist" to ensure that all data has been properly transferred.

Section 2   Contents of the SODB Files

This section deals with the contents and organization of the SODB files. It defines terms needed to understand the production process, the contents and structure of the orthophotomaps.

Section 3   Working with the SODB

This section provides explanations and guidelines for working with your orthophotomap data. It includes guidelines for enhancement of the files and integration of SODB files with other datasets.

Section 4   Ordering the SODB

This section describes how to order SODB files to suit your applications. It includes instructions on how to order and download files through SNB Online.

Section 5   Data Licensing Agreement

This section contains a sample of the SNB Data Licensing Agreement.

Section 6   SNB Offices

This section lists the address and telephone number for each SNB Office. The section also includes an order form for SODB Files.

Appendix A   Index Map of SODB Production

This Appendix provides a map of the eight SODB Production Blocks.

Appendix B   Index of Aerial Photography

This Appendix provides a list of the aerial photography used to create the SODB.

Appendix C   TIFF Header Sample

This Appendix provides a sample SODB tiff header.

Appendix D   List of each SODB File with Date of Photography

This Appendix provides a list of each SODB file with the date of aerial photography used or planned to be used in its production.

Appendix E   Example of Surround Files

This Appendix provides a sample surround file.

Appendix F   Header for Orthophotomap Surround Files

This Appendix provides a sample surround file header.

Appendix G   Naming Convention for Support File

This Appendix provides information on the File naming convention for the support files.

Document References

This section contains a list of references which the user may find informative for more specific and detailed information concerning digital mapping, Geographic Information Systems, other SNB digital mapping products, and other topics discussed within this guide.

It should be noted that this list is not exhaustive. It rather represents a sample of reference materials which provide further insight into these topics.

1.   New Brunswick Technical Specifications for Coastal Softcopy Orthophotomap Data Base Production File 98039a02.doc, December 1998 or later.

2.   As Built Version New Brunswick Technical Specification for Softcopy Orthophotomap Data Base Production File 97071b351.doc, April 2000 or later.

3.   User Guide to the Enhanced Topographic Data Base (ETB98) of New Brunswick File UGE1998e.doc, November 2000 or later.

4.   New Brunswick Technical Specification for the Creation and Structuring of the Enhanced Topographic Data Base ETB98 File 97066a276, April 2000 or later.

5.   New Brunswick Land and Water Information Standards Manual: Service New Brunswick.

List of Acronyms

The following acronyms are used within this document.

ASCII	American Standard Code for Information Exchange
ATS77	Average Terrestrial System 1977
CAD	Computer Aided Drafting
CARIS	Computer Assisted Resource Information System
CARIS ASCII	A data interchange format used with the CARIS GIS software product. This format is used for some of the SODB support files.
CARIS NTX	A data interchange format used with the CARIS GIS software product.
CD-ROM	Compact Disk Read Only Memory
DPM	Digital Property Maps
DTM	Digital Terrain Model
DTDB	Digital Topographic Data Base
DXF	Digital Exchange Format, a data interchange format used by AutoCAD
ETB	Enhanced Topographic Base
FMB	Forest Management Branch, Department of Natural Resources and Energy
FTP	File Transfer Protocol
GIS	Geographic Information System
MrSID	Multi-resolution Seamless Image Data base. A lossy compression format sold by Lizard Tech Inc.
NAD83(CSRS)	North American Datum 1983 (Canadian Spatial Reference System)
NBDNR&E	New Brunswick Department of Natural Resources and Energy
NBDOT	New Brunswick Department of Transportation
SNB	Service New Brunswick

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

SODB	Softcopy Orthophotomap Data Base
TIFF	Tagged Image File Format Version 6.0
TIFF World File	A file required by ArcView/ArcInfo software for georeferencing TIFF images
ZIP	Lossless compression method/engine sold by PKWARE

Quick Facts

The following is a brief summary of the SNB Softcopy Orthophotomap Data Base (SODB) product. The Softcopy Orthophotomap Data Base consists of a suite of files for each 1:10 000 window and a common set of support files.

SODB   The SODB consists of:

Orthophotomap files – image files (original and compressed)
Surround file containing a graphic map surround
Corner Coordinate files, containing corner or georeferencing information for each orthophotomap. These are provided in three formats.

Support Files   The SODB Support Files contain files which may be required by CARIS and other GIS users. SODB user documentation in both English and French, Adobe Acrobat software, MrSID Viewer software, and various other support files.

Coverage   The SODB when completed will cover the entire Province of New Brunswick. There are 1894 individual SODB Files, each representing a 1:10 000 window encompassing 0.1 degree in longitude (7.5 kilometres) by 0.05 degree in latitude (5.5 kilometres). As the SODB is being created over a period of years, the entire Province will not be available until 2004.

Content   The SODB files are image maps. These combine the image characteristics of an aerial photograph with the geometric qualities of a map and can be used in numerous geographic information systems (GIS) applications, either alone or in combination with other digital data.

Spatial   Reference systems: NAD83 (CSRS)
Framework   Projection: Stereographic Double
                Resolution (XY):   1.0 metre
                Nominal Scale: 1:10 000
                Accuracy: ± 3.0 metres for well defined features (uncompressed)
                                     ± 3.0 metres for well defined features (compressed)

Currency   The image content of the SODB is as current as the date for the original photography from which they were derived.

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Attributes   No features currently have index keys. CARIS Source Identifier and Feature
                Code attributes are only available for the map surround features.

Availability   Contact your local SNB office or check SNB Online.

Media   The SODB will be available to download from the internet on SNB Online.

Data Format   The original or uncompressed SODB files are provided in Standard TIFF format.
                Surround files are provided in CARIS ASCII format. The georeferencing files are
                provided in a CARIS IGA format, a TIFF world file, and an ASCII text format.

                Compressed SODB files are provided in MrSID format. These compressed files
                can be viewed with a MrSID viewer as well as other GIS, CAD and IAS software.
                MrSID files can also be decompressed into standard TIFF files using MrSID
                viewer.

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

1. Installing the SODB

Introduction

This section deals with the transfer of data from the supplied media to your computer. It provides a set of file naming conventions, lists of files you receive from SNB and provides guidelines for transferring the data. It also provides a "checklist" to ensure that all data has been properly transferred.

File Name Conventions

In order to avoid confusion when referring to the various data products described within this Guide, the following naming conventions are used to ensure consistency in reference to specific data products and individual files comprising these products.

SNB Digital Data	Refers to the complete collection of digital data products available from SNB, including the Softcopy Orthophotomap Data Base (SODB), Digital Topographic Data Base (DTDB) and the Digital Property Map Data Base (DPM Data Base).
Softcopy Orthophotomap Data Base (SODB)	Refers to the digital files associated with the Provincial Softcopy Orthophotomap Data Base product. It includes the orthophotomap image and its associated files.
Softcopy Orthophotomap	Refers to the softcopy colour orthophotomap image. These files are organized into individual 1:10 000 windows.
Original Orthophotomap	Refers to the orthophotomap image (*.ort) developed to the Provincial standards.
Compressed Orthophotomap	Refers to original orthophotomap compressed with the MrSID compression engine (*.sid). When compressed, it is approximately 1/50 its original size, uncompressed and converted to TIFF it may exhibit some loss of data quality.
Digital Topographic Data Base (DTDB)	Refers to the complete collection of Provincial digital topographic data base products. It includes the Enhanced Topographic Base (ETB) and Digital Terrain Model (DTM).
Enhanced Topographic Base (ETB Data Base)	Refers to the collection of digital files associated with the ETB Data Base product. It includes ETB graphic files and ETB attribute files.
ETB Graphic Files	Refers to the digital maps (graphic features) of the ETB. These files are organized into individual 1:10 000 windows and subdivided within each window by major thematic group.

New Nouveau **Brunswick**

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

ETB Attribute Files	Refers to the non-graphic attributes which describe individual ETB graphic file features. At present there are two ETB attribute files:

- Road attribute files describe transportation (road/rail) linear features.
- Hydrographic attribute files describe hydrographic linear features and waterbody polygons.

Digital Terrain Model (DTM Data Base)	Refers to the digital files of elevation data, which are associated with the Digital Topographic Data Base. There is a corresponding DTM graphic file for each ETB graphic file.
DTDB Support Files	Refers to the files which are used by CARIS and AutoCAD to define individual DTDB graphic file features and their display characteristics, as well as user documentation and other miscellaneous support files.
Digital Property Map Data Base (DPM Data Base)	Refers to the digital files associated with the Provincial Digital Property Map Data Base product. This product includes DPM graphic files and DPM attribute files.
DPM Graphic Files	Refers to the digital maps of the DPM Data Base. These files contain property parcel polygons which are identified by a unique parcel identifier (PID).
DPM Attribute Files	Refers to the non-graphic attributes which describe individual DPM parcels through the PID.

At the present there are two DPM attribute files:

Parcel Data contains information concerning parcel ownership, size and documents registered against it.

Assessment Data contains information about assessment of parcels and the PID's associated with each assessed parcel.

NBDOT Road Inventory Data Base	Refers to the collection of digital files maintained by the New Brunswick Department of Transportation (NBDOT) as an inventory of Provincial roads.
NBDNRE Forest Management Branch Data Base (FMB Data Base)	Refers to the collection of digital files maintained by the New Brunswick Department of Natural Resources and Energy (NBDNR&E) as an inventory of forest management areas.

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Figure 1-1 illustrates the hierarchy associated with the above file naming conventions.

File Naming Convention
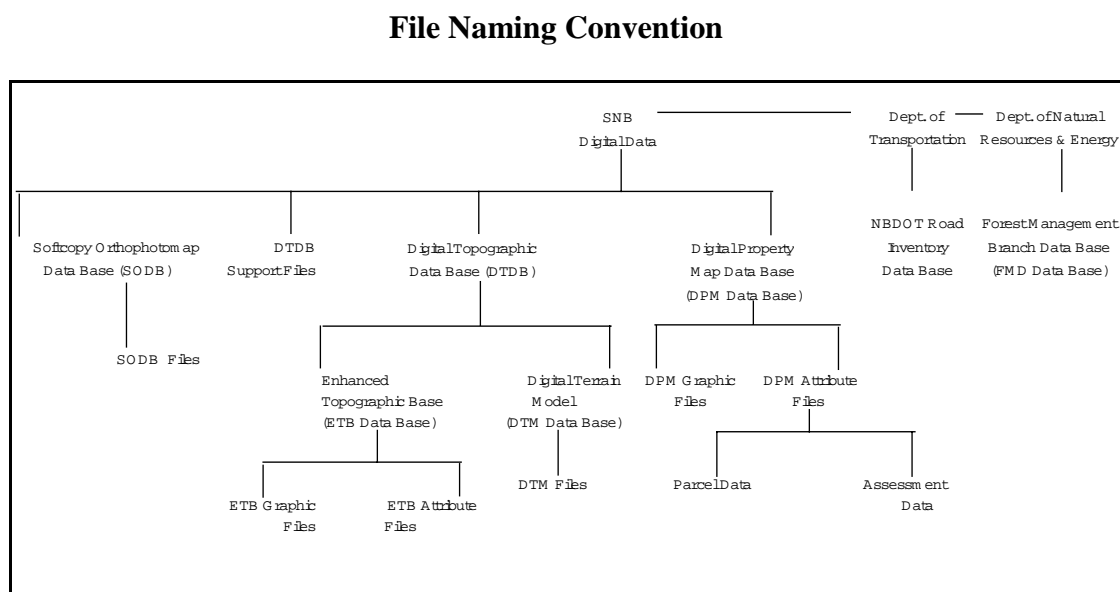
Figure 1-1

Receiving the SODB

Media	Due to the size of each individual SODB file the uncompressed images are only available on CD-ROM. Compressed versions (MrSID) of each file are available from SNB Online.
Data Format	SODB files distributed on CD-ROM or from SNB Online are provided in a standard format. The SODB consists of a suite of files for each 1:10 000 window. The suite of files for each window are provided in a single "zipped" file.
Data provided	You will receive from SNB Online or on CD-ROM a compressed (*.zip) file for each 1:10 000 window with the following suite of files:

- A 1:10 000 SODB image, with filename in the form *filename*.ort (TIFF (v6.0 on CD-ROM) or *filename*.sid (MrSID format from SNB Online),
- A CARIS image parameter file (*filename*.iga),
- An ASCII text Corner Coordinate files (*filename*.cor),
- A CARIS ASCII Surround file (*filename*.sur).
- A TIFF World File with georeferencing information (*filename*.tfw).

SODB File Names	The naming convention for SODB files as for all SNB 1:10 000 windows is based upon the latitude and longitude (expressed in decimal degrees) of the South East corner of the window. These file names are coded as follows:

aaaabbbb

where:

aaaa is the North latitude of the SE window corner, expressed as a 4 digit integer number in decimal degrees to the nearest 0.01 degree.

bbbb is the West longitude of the SE window corner, expressed as a 4 digit integer number in decimal degrees to the nearest 0.01 degree.

As an example, the SODB file name for the window having its SE corner at latitude 46° 00' 00" N (i.e., 46.00 and longitude 66° 54' 00" E (i.e., 66.90) is 46006690.   The corresponding Image, Surround Map and Georeferencing Coordinate file names would therefore be as follows:

SODB uncompressed Image Name:	46006690.ort
SODB Compressed Image Name:	46006690.sid
SODB CARIS Corner georeferencing coordinates:	46006690.iga
SODB ASCII Corner georeferencing coordinates:	46006690.cor
SODB TIFF World File georeferencing information:	46006690.tfw
SODB Surround Map File Name:	46006690.sur

Data Packaging on CD-ROM

All softcopy orthophotomaps delivered on the CD-ROM medium conform to the ISO 9660 specifications.

Each CD will have an identification composed of the volume label and the File names.

Volume Name:

Each CD will have a volume label as follows

sodbaaaabbbb

where:

sodb   is a constant which designates "Softcopy Orthophotomap Data Base"

aaaa   is the latitude of the southeast corner of the 1:20 000 window in degree and decimal of degree, (i.e., 45.10 = 4510)

bbbb   is the longitude of the southeast corner of the 1:20 000 window in degree and decimal of degree, (i.e., 66.20 = 6620)

Example: sodb45106620

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

Each CD-ROM includes up to the four (4) 1:10 000 windows, which fall within the corresponding 1:20 000 window.

Each softcopy orthophotomap file name has its name coded as follows:

aaaabbbb.zip

where:

aaaa   is the latitude of the southeast corner of the 1:10 000 window in degree and decimal of degree.

bbbb   is the longitude of the southeast corner of the 1:10 000 window in degree and decimal of degree.

zip   is the lossless compressed version of all files associated with the softcopy orthophotomap of a 1:10 000 window.

Example: 45106620.zip

Each zipped file on the CD-ROM corresponding to a 1:10 000 window is made of the following files:

45106620.ort
45106620.iga
45106620.tfw
45106620.cor
45106620.sur

On the CD-ROM, the file names are handwritten in the appropriate quadrant on the front of the CD-ROM. (See figure 1-2).

CD-ROM Layout

Figure 1-2

Data
Packaging on
Internet

All softcopy orthophotomaps delivered over the Internet are provided in a standard format.

All 1:10 000 windows selected for downloaded from the Internet will be provided in a single zipped archive as follows:

>   ordernumber.zip

where: ordernumber is assigned by the SNB Online Server.

Within the ordernumber.zip, each softcopy orthophotomap file suite of files is also zipped.

Each softcopy orthophotomap file name has its name coded as follows:

aaaabbbb.zip

where:

aaaa   is the latitude of the southeast corner of the 1:10 000
window in degree and decimal of degree.

bbbb   is the longitude of the southeast corner of the 1:10 000
window in degree and decimal of degree.

zip   is the lossless compressed version of all files associated
with the softcopy orthophotomap of a 1:10 000 window.

Example: 45106620.zip

Each zipped file downloaded from SNB Online corresponding to a 1:10 000
window is made of the following files:

> 45106620.sid*
> 45106620.iga
> 45106620.tfw
> 45106620.cor
> 45106620.sur

*(45106620.sid – lossy compressed MrSID version of file).

Receiving the SODB Support Files

Media   Irrespective of the media on which the SODB Files are obtained, the SODB
Support Files must be downloaded from SNB Online. Section 4 of this Guide
contains specific instructions for accessing and using the Browser.

Data Format   SODB Support Files are downloaded in compressed file (.zip) format. These
files are divided into the following categories.

CARIS Support Files

These files are required by CARIS GIS software. The complete suite of the
CARIS support files have been packaged into a single compressed archive file
ETB1998A.zip, where A refers to the version A - Z. As the files are updated or
changed, the version will change. There are five (5) CARIS Support Files.
They are as follows:

ETB1998A.col   Enhanced Topographic Base 1998 Colour table file (CARIS
Format) Version A. This file controls the colour of map
features.

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

ETB1998A.cma   Enhanced Topographic Base 1998 Colour map file (CARIS Format) Version A. This file controls the hue, lightness and saturation of colours.

ETB1998A.bin   Enhanced Topographic Base 1998 Symbol file (CARIS Binary Format) Version A. This file controls the display of symbols.

ETB1998A.dat   Enhanced Topographic Base 1998 Symbol file (CARIS ASCII Windows Format) Version A. This file controls the display of symbols.

ETB1998A.txt   Enhanced Topographic Base 1998 Master file (CARIS Format) Version A. This file is required to load the SODB files in CARIS.

Information Files

These include the Users' Guide and distribution agreement for the Softcopy Orthophotomap Data Base in English.

ORE1999A.pdf   Softcopy Orthophotomap Data Base 1999 User Guide in the English language (Adobe Acrobat Format) Version A.

AGR1999A.pdf   Softcopy Orthophotomap Data Base, Enhanced Topographic Base and Digital Terrain Model distribution agreement (Adobe Acrobat format) Version A.

Map Index Files

These are Provincial Map Index files containing the New Brunswick 1:10 000, 1:50 000 and 1:250 000 windows in CARIS ASCII, DXF and PRN formats. The compressed archive file NDX1998A.zip contains the following index files:

NDX1998A.asc   1998 index map of the province - It shows the 1:250 000 windows, the 1:250 000 file names, 1:50 000 windows, the 1:50 000 file names, the 1:10 000 windows, the 1:10 000 file names, the county boundaries and the outline of the province (CARIS format).

NDX1998A.prn   1998 index map of the province - It shows the 1:250 000 windows, the 1:250 000 file names, 1:50 000 windows, the 1:50 000 file names, the 1:10 000 windows, the 1:10 000 file names, the county boundaries and the outline of the province (HP DesignJet 750C Plus or compatible format).

New Nouveau Brunswick   Service New Brunswick
Services Nouveau-Brunswick   Document: ORE1999Q.doc
Version 1.5
March 13, 2001

NDX1998A.dxf	1998 index map of the province - It shows the 1:250 000 windows, the 1:250 000 file names, 1:50 000 windows, the 1:50 000 file names, the 1:10 000 windows, the 1:10 000 file names, the county boundaries and the outline of the province (AutoCad format).

More information on the Naming Convention of the Support Files is provided in Appendix G.

Guidelines for Installing SODB Files

Hints   If individual windows are requested or the SODB is ordered on media other than CD-ROM or through SNB Online, perform a directory check of the media to ensure that all files are present.

Create a temporary directory on your system for the files being transferred from the supplied media. Move the files to their permanent directory once the data transfer is successfully completed.

It is recommended that a tape backup of the data directory be made once the files have been successfully loaded and prepared for use with your GIS or CAD software.

The time to install the files will vary according to the number of files you have ordered and the capacity of your computer.

Be familiar with how your GIS software imports geographical and image/raster data.

If your needs for SODB files are for occasional project area use, you may wish to load and process these files directly from CD-ROM as they are needed in order to conserve online disk storage requirements.

Disk Storage   The disk storage needed for each decompressed 1:10 000 window varies significantly from the original lossless compressed version on CD-ROM or the lossy compressed version downloaded from the Internet.

Each original zipped archive for a 1:10 000 window (from CD-ROM) will require 40 to 120 MB of disk space. Coastal windows which include significant portions of water, experience greater compression, resulting in the smaller ZIPPED files of approximately 40 – 50 MB. A typical inland 1:10 000 window will compress (zip) to just 100-120 MB. Regardless of the ZIPPED size of the suite of files, it will require another 145 MB of space to uncompress (UNZIP). The *.ort (TIFF Image file) is typically 130 MB, while the *.sur, *.cor, *.iga *.tfw files are approximately 1 MB.

The compressed version of each SODB 1:10 000 Window (from SNB Online)

consists of the orthophotomap image compressed using MrSID. These versions of the file are much smaller than the original uncompressed (*.ort). The *.sid version of the Image file is typically 2.6 MB.

Support Files	In addition to the actual SODB Files, there are also support files which should be copied to your system. The specific files to be copied depend on which GIS, IAS or CAD system you intend to use. Refer to the section *Guidelines for Installing SODB Support Files* for instructions on which files are to be copied for the most common software packages.
For CARIS Users	CARIS users should be aware that the *.ort (TIFF image) files must be renamed to *.tif and processed by the CARIS utility program REFOTIFF before they can be used for analysis, and that the *.iga file must be present in the same directory as the *.tif to reformat the TIFF file into the CARIS IPV format. Alternatively the CARIS Map Import Module may be used. In either case ensure the correct CARIS support files are downloaded and installed before importing the *.ort file.
For Other Users	Users of other GIS software should be aware that translation from the *.ort (TIFF) images to another image format may be required by their GIS software before the files can be used for analysis. Most systems also require the georeferencing file *.tfw or may require a specific georeferencing to be created from the supplied *.cor file in order to properly display the spatial extent of the *.ort file.

Guidelines for Installing SODB Support Files

Hints	The SODB Support Files must be obtained through SNB Online regardless of the media/format requested.
	Support files should be copied to a specific support directory on your system and then copied from this directory to the software support directory. This will ensure that a copy of these files is maintained on your system in the event that installation of a subsequent release of your GIS software overwrites these files in the GIS support directory.
	You should be familiar with how your GIS, IAS or CAD software expects to interface with these files.
For all Users	All SODB users should download the following files from the SODB Support Files page of SNB Online to disk:

- the user guide documentation (ORE1999N.pdf) from the *Information* section.
- the distribution agreement information (AGR1998A.pdf) from the *Information* section.

New ⛵ Nouveau
Brunswick
Service New Brunswick
Services Nouveau-Brunswick
Document: ORE1999Q.doc
Version 1.5
March 13, 2001

- the Provincial Index Map (NDX1998C.zip) from the *Map Index* section.

Users who do not currently possess a copy of the Adobe Acrobat Reader software program should also download this program to disk.   It is required to read and/or print the SODB Users' Guide and any other files with a .PDF extension.

Users who do not currently possess either WINZIP or PKZIP data compression software should download the PKZIP utility program.   It is required to uncompress .zip files transferred from SNB Online or provided on CD-ROM.

Users who do not currently possess a copy of the MrSID Viewer should also download this program to disk. It is required to decompress the compressed *.sid version of the image files to TIFF.

For CARIS Users

CARIS users should download the following SODB Support Files ETB1998A.zip from the *CARIS Format* section to disk. The uncompressed archive includes:

ETB1998A.txt, which contains the CARIS Master File associated with the map datasets.

ETB1998A.dat, which contains the CARIS Symbol File (in ASCII text format) associated with the map datasets.

ETB1998A.bin, which contains the CARIS Symbol File (in CARIS Binary Format) associated with the map datasets.

ETB1998A.col, which contains the CARIS Colour Table File associated with the map datasets.

ETB1998A.cma, which contains the CARIS Colour Map File associated with the map datasets.

Note that, the CARIS utility program BUILSYMB may also be run against the file ETB1998A.dat to create a binary version of the symbol file.

For all Users

All users should also download the following file from the Map Index section to disk:

NDX1998A.zip - the current index map of the province in CARIS, DXF and PRN formats.

Notes on Installation

Recommendation   If you reformat the data you should read about Digital Interchange
Formats, Chapter 8 in the *Land and Water Information Standards Manual*.
It discusses problems which may be encountered when transferring data
between platforms and operating systems.   The chapter also provides a list
of resource persons who may be contacted for assistance.

The *Land and Water Information Standards Manual* may be downloaded
free from the Digital Topographic Data Base section on SNB Online.

Verifying the Installation

Checking SODB   Display one of the SODB *.ort (TIFF Image Files) files using your GIS
Files   software. If the image fails to display, check that:

- the format is correct
- the translation from one format to another has been done correctly
- georeferencing information from the *.iga , *.cor or *.tfw has been
  used correctly

Checking SODB   Display the surround (*.sur) file using your CARIS software. Verify that
Surround Files   multiple colours are displayed to represent different feature classes (for
example, grid lines should be black). Also, verify that text is correctly
displayed and that special symbols are present and drawn properly. If the
surround does not display correctly, check that:

- the correct version of the CARIS master file is installed
- the correct version of the CARIS symbol file is installed

Note, the *.sur file is in CARIS ASCII format and must be reformatted
through the CARIS refoascii command.

New Brunswick Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

2. Content of the SODB Files

Introduction

This section deals with the content and organization of the SODB files. It defines terms needed to understand the contents and structure of the data, and describes the sources from which the files were constructed. The section also tells how data is organized within the files. Current limitations of the files are also discussed.

What is an Orthophotomap?

Orthophotomaps combine the image characteristics of a photograph with the geometric qualities of a map. They serve a variety of purposes, from field maps to data sources for spatial analysis. The digital orthophotomap is useful as a layer of a geographic information system (GIS) and as a tool for revision of vector data representing, for example, topographic features.

Unlike a standard aerial photograph, relief displacement in orthophotos has been removed so that ground features are displayed in their true ground position. This allows for the direct measurement of distance, areas, angles, and positions. Also, an orthophotomap displays features that may be omitted or generalized on conventional maps.

Digital orthophotos require several types of information to produce an orthogonally rectified map from the original perspective image captured by the camera. These inputs include:

- the unrectified raster image frame scanned from the diapositive
- a digital terrain model with the same area of coverage as the digital orthophoto
- the image and ground coordinates of photo identifiable (pugged) ground control points, and
- calibration information about the camera (camera file)

These inputs are used to register the scanned image to the aircraft platform, to determine the orientation and location of the aircraft camera with respect to the ground, and to remove the relief displacement from the image data.

When a vertical photograph is collected from an aircraft platform, it represents a planar (two dimensional) reference of a curved (three dimensional) surface. The photograph also includes distortion due to the tilt, pitch and yaw of the airplane. To produce an orthophotomap, the aerial photographs undergo a series of steps as shown in Figure 2-1. First the photo is converted into a digital image through the process of scanning. Each orthophoto diapositive is scanned. Once scanned each individual scanned image frame is rectified to remove the tilt, pitch and yaw of the aircraft, and to compensate for the varying terrain features (elevations) of the ground. The result is an orthophoto which has an orthographic projection, free of tilt and relief displacement. It maintains the geometric properties of a map with the information content of a photograph. To produce a complete 1:10 000 orthophotomap window two or more orthophotos are merged or mosaiced together. During the process of mosaicing the images, they are radiometrically corrected to ensure a consistent colour balance across the entire orthophotomap. The final step is to clip the 1:10 000 window out of the mosaic image.

New ⚓ Nouveau
Brunswick
Service New Brunswick
Services Nouveau-Brunswick
Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Orthophoto Map Production
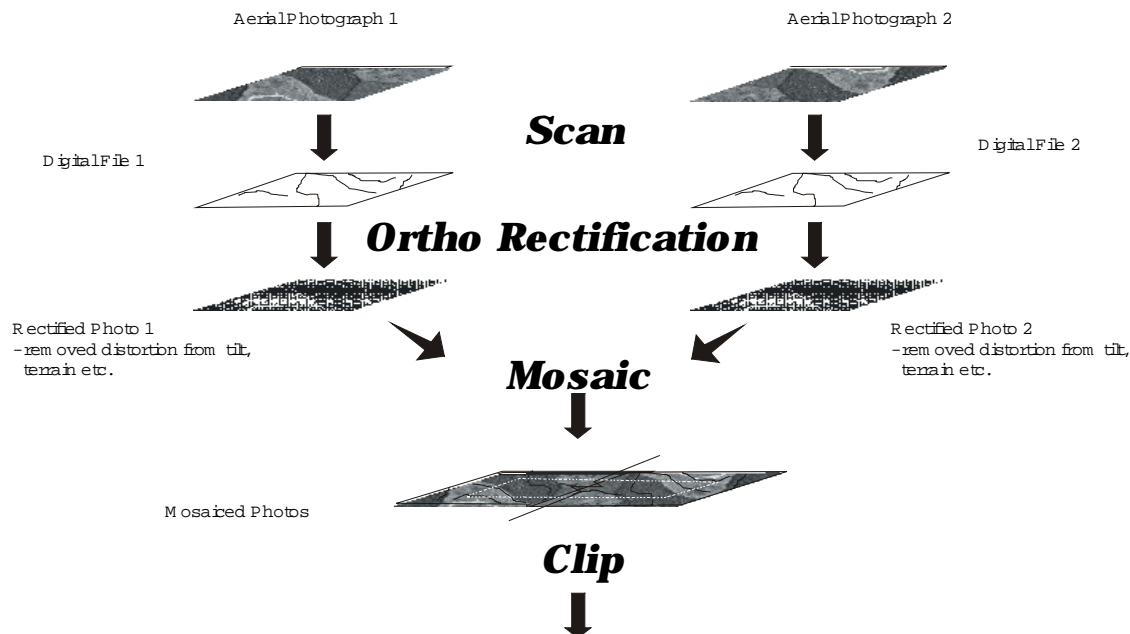
Figure 2-1

Definitions

There are a number of terms which are used within this section to describe the content of the SODB. Definitions of these terms are given below.

Attributes	Data fields or items which are used to describe individual map features. Attributes may either be directly associated with map features by the GIS software (for example, the Source ID and Feature Code in CARIS) or linked to map features from a data base table using an index key.
AutoCAD	A Computer Assisted Drafting (CAD) package marketed by Autodesk.
Bridging Diapositive	A colour diapositive used in the aerial triangulation project, with locations of all aerial triangulation pass, tie and control points marked and symbolized on the diapositive in accordance with the *New Brunswick Technical Specifications for Aerial Triangulation Production.*

Bridging Photograph	A colour paper print of the photograph to be used as a hardcopy reference in support of the aerial triangulation project, with the ID numbers and symbolized locations of all aerial triangulation pass, tie and control points marked on the diapositive in accordance with the *New Brunswick Technical Specifications for Aerial Triangulation Production*.
CARIS	A GIS software package which is marketed by CARIS of Fredericton, NB. CARIS is the standard GIS software package for SNB and other Provincial government agencies within the Province of New Brunswick.
Co-location	Linear or Polygon features are said to be co-located when two or more of these features share a common boundary along some or all of their length, and this common boundary is duplicated within each feature to maintain the integrity of the feature.
Digital Topographic Map	A computer generated map file which represents map features in terms of digital numeric coordinate values (for example, X, Y, and Z coordinates). These coordinates are used to define points, lines and polygons, which are the three categories of map features that may be present. Map Features may be stored using either two-dimensional (X, Y) or three dimensional (X, Y, Z) coordinates. Topographic maps contain information about the land and its cultural characteristics, including drainage, transportation systems, vegetation, structures and land use. ETB Map Files are digital topographic maps.
Edge Matching	A digital map editing procedure which aligns individual map features along the common edges of adjoining sheets.
Feature Code	A CARIS attribute which is used to describe characteristics of a map feature. Feature Codes may be up to 12 characters in length.
Image smear	An anomaly or artifact occasionally appearing on a orthophoto image and usually due to spikes in the elevation data or excessive topographic relief. In some areas, the steepness of the terrain may be such that some ground image is effectively hidden from view (e.g. on the backside of the mountain or the sides of a steep cliff). This can be especially prominent near the edge of images from large-scale aerial photography (incidence of the anomaly decreases as the altitude of the sensor platform increases). When that portion of the scanned raster image is adjusted to its conjugate area on the elevation model, the void in the image is assigned brightness values

New ⛵ Nouveau
Brunswick
Service New Brunswick
Services Nouveau-Brunswick
Document: ORE1999Q.doc
Version 1.5
March 13, 2001

via an interpolation algorithm which uses the visible image surrounding the void. This sometimes results in a "smeared" or "stretched" area on the image.

Index Key   A CARIS attribute which is normally used to cross reference map features to associated Relational Data Base Management System attribute files. Index keys may be up to 12 characters in length.

Logical Consistency   The rules which define the relationships among the individual features present within a digital map file.

Lossless Compression   Compression method which once decompressed does not alter the original file, i.e., the decompressed file is identical to the original file.

Lossy Compression   Compression method which alters originals, such that uncompressed file is not the same as the original. Degree of difference between original and decompressed version depends on the specific compression algorithm used.

Map Window   The geographic area encompassed by one digital map file.

Network Topology   Relationships between connected linear and point features, stored in a GIS, which enable the software to represent a real world linear network entity such as a river system.

Orthophoto Diapositive   A colour diapositive to be used exclusively for the digital orthophoto production, with only the locations of a sufficient number of aerial triangulation pass, tie and control points transferred (i.e., pugged) from the bridging diapositives in accordance with the "*New Brunswick Technical Specifications for Aerial Triangulation Production*" in order to provide control for production of each orthophoto.

Orthophoto, or Digital   Either a full or a portion of a scanned image frame that has been
Orthophoto   differentially rectified to remove distortions due to tip, tilt and height displacement in accordance with the "New Brunswick Technical Specifications for the Softcopy Orthophotomap Data Base Production".

Orthophoto Photograph   A colour paper print to be used as a hardcopy reference in support of orthophoto production, with only the ID numbers and symbolized locations of a sufficient number of aerial triangulation pass, tie and control points transferred (i.e., pugged) from the bridging photographs on the orthophoto photographs in accordance with the "*New Brunswick Technical Specifications for Aerial Triangulation Production*".

Polygon Topology	Relationships between connected linear features and associated textual labels, stored in a GIS, which enable the software to represent a real world area feature such as a lake.
Scanned Image Frame	A digital version of a full orthophoto diapositive scanned and formatted.
Source ID	A CARIS attribute which is used to describe the data source associated with each digital map feature. Source ID's may be up to 12 characters in length.
Theme/User Number	A CARIS numeric attribute which is used to group similar map features within a digital map file. A CARIS Theme/User Number analogous to a layer within other GIS and CAD packages.
Topological Structuring	The editing process which is used to remove errors and/or inconsistencies present within a digital map file, group associated features into common themes or layers, code feature attributes, edge match adjoining map files, and other such operations which are designed to structure map data according to a defined standard.

Data Sources for the SODB

In August 1996, a draft proposal for a Provincial Land Use Policy for New Brunswick was issued. For implementations of the proposed policy, a Coastal Topographic Data Base (CTDB), a Coastal Land Data Base (CLDB) and a Coastal Softcopy Orthophotomap Data Base (CSODB) were proposed. This initial series of the SODB maps was originally referred to as "Coastal" or CSODB.

In the summers of 1996 and 1997, colour aerial photography was taken at a scale of 1:35 000 to compile the first five blocks of this data base. Based on the success of these first blocks, the Province of New Brunswick decided to extend the map series to cover the complete Province. The SNB Board of Directors approved this province wide project on March 30, 1999. The production sequence will be the same as the coastal project. In other words, acquisition of aerial photography and photo control, aerotriangulation and finally softcopy orthophotomap production.

During the summer of 1999 a portion of colour aerial photography was taken for Block 6 of the SODB. Again, all photography was captured at 1:35 000. An index containing the dates of the photography used for and planned for the SODB are shown in Appendix "B".

Influence of Grid Convergence on the SODB

Since the 1:10 000 windows are based on a graticule, defined by regular divisions of latitude and longitude, they are not rectangular in nature. A raster TIFF file must be a rectangle defined by a number of pixels in x and a number of rows in y. The *.ort (TIFF) images are defined in terms

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

of a Minimum Bounding Rectangle (MBR) oriented to the axes of the NB Stereographic Double co-ordinate system. The corners of the MBR are defined by the minimum and maximum X- and Y-co-ordinates of the ETB window (See Figure 2-2). Due to the grid convergence, the 1:10 000 windows will be skewed with respect to the boundaries of the MBR, and this skewness will vary from window to window along the strip. The North-South dimension of the MBR will be the same throughout the project. The East-West dimension of the MBR's along any given horizontal strip of map files will also be constant. However, the East-West dimension will decrease from strip to strip as one moves in a northerly direction through the Province.

The TIFF image pixels located within the MBR but falling wholly outside the 1:10 000 window

ETB window
neatline

(Xmax, Ymax)

(Xmin, Ymin)

Grid in NB Stereographic
Double Projection

Extent of the digital
Mosaic is the Minimum
Boundary Rectangle
(MBR)

Areas to be R=0 , G=0, B=0
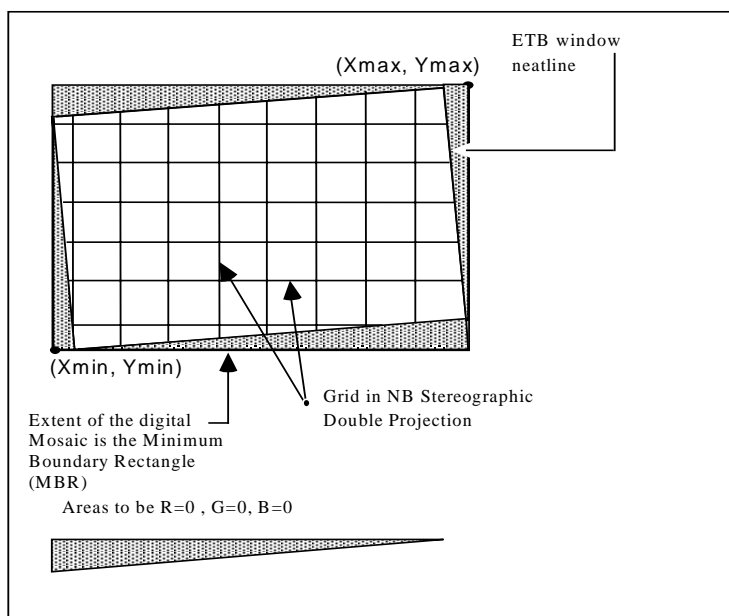
are coloured pure black (i.e., R=0, G=0, B= 0). Figure 2-2 illustrates an exaggerated version of this.

Influence of Grid Convergence on Orthophotomap

Figure 2-2

SODB Files

Each SODB file contains a suite of five files:

> *.ort (or *.sid for compressed versions)
> *.iga
> *.cor
> *.tfw
> *.sur

The actual original softcopy orthophotomap image file is stored as a 24-bit colour Tagged Image File Format (TIFF) having the filename extension *.ort. The georeferencing or corner coordinates from the image file are provided in three formats, CARIS image parameter file

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

having the filename extension **.**iga, ArcView/ArcInfo TIFF World format (.tfw) and a generic format having the extension .cor.

The ASCII text file *.cor provides the georeferencing information for each softcopy orthophotomap for the non-CARIS users. This text file contains two (2) sets of coordinates in New Brunswick Stereographic Double Projection. The first set of coordinates reflect the precise coordinates of the outside corners of the four (4) corner pixels of the MBR. The second set of coordinates reflect the X, Y coordinates of the centers of the four (4) corner pixels of the MBR (Refer to Figure 2-2).

The "*.cor " file has the following layout:

$1,x_1,y_1$
$2,x_1,y_1$
$3,x_1,y_1$
$4,x_1,y_1$
$1,x_2,y_2$
$2,x_2,y_2$
$3,x_2,y_2$
$4,x_2,y_2$

Where:

Point 1 is the south-west corner of the 1:10 000 window.
Point 2 is the south-east corner of the 1:10 000 window.
Point 3 is the north-east corner of the 1:10 000 window.
Point 4 is the north-west corner of the 1:10 000 window; and
x_1,y_1 are the first set of coordinates.
x_2,y_2 are the second set of coordinates.

The last file provided for each 1:10 000 window is the CARIS ASCII file containing the surround information in vector form covering that particular orthophotomap file. This file has the filename extension "*.sur".

Compressed Versions of SODB Files

A lossy compressed version of each softcopy orthophotomap image file was generated to provide an alternative image file with a much smaller size while maintaining the overall quality of the original file.

Image Compression

The following description of image is taken from the University of New Brunswick Report, "Orthophoto Data Compression Final Report", May 1999 prepared for SNB:

"Image compression/decompression operations are used to reduce the data content size of a digital image file. In other words, we can say that image compression is concerned

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

with minimizing the number of bits required to represent an image. Image compression/ decompression operations are essential for applications where many large images have to be archived in limited storage space or where digital images will be transmitted over narrow channels.

Still-Image compression schemes can be divided into two groups, Lossless compression and Lossy compression. 'Lossless' compression algorithms preserve the exact data content of the original image, but can only achieve a relatively low compression ratios (<5:1) (i.e., an image of size 150 MB will be compressed and stored as a 30 MB image). On the other hand, 'Lossy' compression algorithms offer the potential of very high compression ratios (50~100:1 or more), but they preserve an arbitrary level of image quality."

MrSID

SNB's orthophotomaps are compressed utilizing a lossy compression technique based on wavelet technology. SNB utilizes Lizard Tech Inc.'s compression engine called Multi-resolution Seamless Image Data base (MrSID). MrSID provides compression ratios of 30:1 to 50:1 for colour images without a perceptual loss of visual quality. More information on Lizard Tech and MrSID is available from:

> LizardTech, Inc.
> The National Building, Second Floor
> 1008 Western Avenue
> Seattle, WA 98104 USA
> Voice: +1 206-652-5211
> Fax: +1 206-652-0880
> www.lizardtech.com

MrSID Versions of Orthophotomaps

Each orthophotomap image is compressed to approximately 50:1 ratio, using MrSID. These compressed files are suitable for most applications using the image as a backdrop or as the base for subjective photo interpretation usage, as the compressed images have only a slight loss in image quality.

From the results of the UNB research report, the MrSID files have the following Geometric Quality:

Maximum RMSE in either direction is 1.8 m.

Maximum Resultant RMSE is 2.7 m.

Maximum shift of any point in a window in both directions is 2 m.

Typical File Size

The disk storage needed for each decompressed 1:10 000 window varies significantly from the original lossless compressed version on CD-ROM or the lossy compressed version downloaded from the Internet.

Each original zipped archive for a 1:10 000 window will require 40 to 120 MB of disk space. Coastal windows, which include significant portions of water, experience greater compression, resulting in smaller ZIPPED files of approximately 40 – 50 MB. A typical inland 1:10 000 window will compress (zip) to just 100 – 120 MB. Regardless of the ZIPPED size of the suite of files, it will require another 145 MB of space to uncompress (UNZIP). The *.ort (TIFF Image file) is typically 130 MB, the *.sur, *.cor, *.iga, *.tfw files are approximately 1 MB.

The CARIS file versions of the *.sur file is equivalent in size to the CARIS ASCII file.

The total size for all 1894 original uncompressed SODB files covering the Province of New Brunswick will be approximately 270 GB.

A lossy compressed version of the SODB for a 1:10 000 window will require 2.6 – 3.0 MB of disk space. Each compressed ZIPPED archive will require another 2.5 – 3.0 MB of space to uncompress (UNZIP). The *.sid (lossy compressed image file) is typically 2.6 MB, the *.sur, *.cor, *.iga, *.tfw files are approximately 1 MB. The total size for all 1894 lossy compressed SODB files covering the Province of New Brunswick will be approximately 5 GB.

About the SODB Files

Map Projection	The map projection for the SODB files is the New Brunswick Stereographic Double Projection.
Reference System	The reference system for all data is the 1983 North American Datum, Canadian Spatial Reference System (NAD83 CSRS).
Coordinate Resolution	Coordinates associated with individual pixels within the SODB files are recorded as X, Y values to the nearest 1.0 metre.
Elevations	Elevations are not present within the SODB files.
Technical Reference	For more technical information concerning the SODB spatial framework, refer to LWISM. A sample TIFF Header File is contained with Appendix C of this guide.

Accuracy and Scale

Accuracy	When measured in the resulting softcopy orthophotomap, the calculated positions of ninety per cent (90%) of all well-defined features must fall within four (4) metres of their true position on

the ground. No well-defined feature shall fall more than seven (7) metres from its true position on the ground. Well defined features are those whose positional accuracy is not adversely affected by vegetative cover.

Nominal Scale | The nominal scale of the SODB files (the scale at which hardcopy maps are produced) is 1:10 000.

Currency

Features | All features are current as of the date of the aerial photography from which the SODB image has been compiled.

Photography Dates | Appendix B indicates on a Provincial overview map the photography dates (completed or planned) for the SODB files. These dates are also given on an individual file basis within Appendix D.

Spatial Extent

Map Window | Each SODB file covers a geographic area encompassed by a spatial window extending 0.1 degree in longitude (7.5 kilometres) and 0.05 degree in latitude (5.5 kilometres).

Image Parameters

Spatial Resolution | The spatial resolution of the SODB file is 1 metre.

Spectral Range | The *.ort files are 24 bit TIFF files. Each of the Red, Green, Blue (RGB) channels maintain 8 bits of information or 0 – 255 values.

TIFF File Parameters

Image Type:	Bitmap (raster)
Version:	6.0
Byte Order:	Intel
Samples per Pixel:	3
Bits per Sample:	8
Compression:	none

About the Surround File

Surround Format | CARIS ASCII format must be converted to a CARIS file format.

Content | Contains map surround information for window. Example of surround is shown in Appendix E. Surround file header is shown in Appendix F.

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Themes   Numerous

Feature Codes   The *.sur file contains the following feature codes:

DLGL30 –	Grid Line
DLNL30 –	Map Neat Line
DLNLIN –	Neat Line for Surround
SRCOTX –	County text
SRDLGL –	Surround Gridline
SRLW16 –	Surround line weight 16 – parts of scale bar
SRLW30 –	Surround line weight 30 – parts of index map (centre map)
SRLW6 –	Surround line weight 6 – parts of True North Pointer
SRLW8 –	Corner Tick Mark-Surround line weight 8
SRNA –	Map Name
SRTICK –	Surround tick mark
SRTX –	Surround text

Known Limitations of the SODB

Radiometric Matching

The digital source orthophotos were radiometrically matched so that tonal values were consistent across the edges and there is a minimal evidence of a join. The seamline between orthophotos were defined interactively following well-defined features such as roads, rivers, or other linear features to further minimize the evidence of the join.   In some cases, the radiometric contrast between source images were such that the joins may be visible.

In some cases, the last controlled orthophoto image at the seaward end of the strip did not fully cover the extent of the ETB window. In these "partial images" along the coastline where non-rectified remainder of the image consists of ocean only, the window was completed to the window boundary by mosaicing in an unrectified scanned image of water. Where possible, this image was radiometrically matched to the adjacent orthophoto image such that tonal values are consistent across the seamline and there is minimal evidence of a join.

Edge Matching

The SODB windows have been developed to ensure a satisfactory edge-match between each orthophotomap and the corresponding adjacent orthophotomaps bordering it to the North and South. No well-defined feature shall be displaced relative to its continuation in an adjacent file by more than three (3) to five (5) metres at ground scale.

Users should be aware that in some situations, where a linear feature such as a road, crosses map edge at an angle almost parallel to that edge, features can "appear" to be offset at distances greater than three (3) to five (5) metres. As shown in Figure 2-3, the road AB is split on map

edge MN. While the true offset of the road at point A is only displaced by one (1) metre from its true position, the road appears to be offset seven (7) metres at the edge of the map.

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

Edge Matching Issue
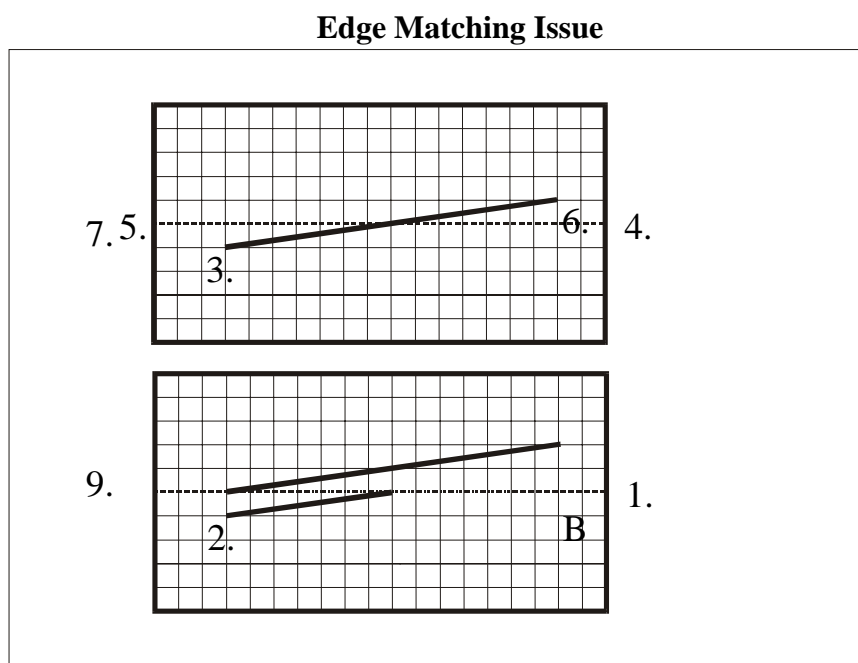
Figure 2-3

North Rock

The small island of North Rock in southern New Brunswick was not flown in the 1996/1997 photography. It will be flown in either 2001 or 2002 and included in the SODB.

Data Outside the Province

Along the border of the Province with Maine, Nova Scotia and Quebec, the complete 1:10 000 window was produced, including the image data outside the province. Due to limited ground control points outside the Province, accuracy is not maintained, and user should not use the SODB files to accurately locate positions outside the Provincial boundary.

Users are advised that significant offsets occur in edge-match between orthophotomaps outside the Province. Examples of offsets are given below:

Window 1	Window 2	Offset at Edge
44956700	44906700	38 metres
44856690	44806690	8 metres
45106710	45156710	55 metres
45106710	45056710	45 metres

Overlay of ETB96 Data

Significant offsets (7 - 25 metres) will appear if the user attempts to overlay the older ETB96 or DPM data, even if converted to NAD83 (CSRS) on the following SODB files:

>   46206440
>   46206430
>   46206420

These SODB files have features accurate within the current SODB specifications (3 to 5 metres) to their true ground position but appear to be significantly offset to the older ETB and DPM data due to an anomaly between the Aerial Triangulation completed for the ETB96/DPM and the new CSODB/CTDB projects. Figure 2-4 shows this situation.

Overlay of ETB96 Data
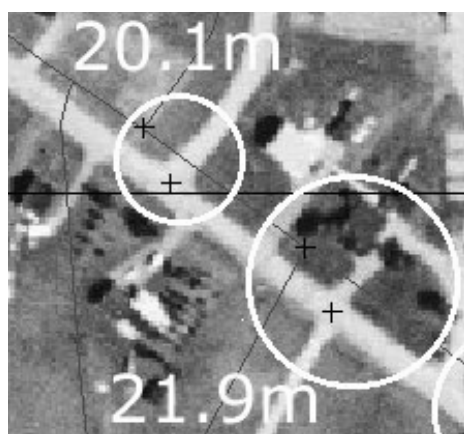
Figure 2-4

The apparent displacement between the ETB96 and SODB can be as high as 22 metres. Some offsets are also present when comparing the ETB96 data to SODB files covering:

>   The Wolves Islands
>   Machias Seal Island
>   Grand Manan, and
>   other smaller Islands

These offsets are caused by limited control in some areas and the methods of collecting the older ETB data over these areas.

Sun Spots

Sun glare occurs when the sun is reflected over water bodies resulting in sun spots or hot spots in the orthophoto diapositives. The use of orthophoto diapositives with sun spots have been minimized but sun spots do occur in some coastal areas, and offshore.

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Moire Patterns

These colour patterns occur in water bodies and are evident in some SODB windows.

High Structures

For very tall features, such as office towers, bridge towers, smokestacks, some "lean" or tilt may be evident on the SODB due to the location of these features in relation to the photo centers.

Scratches

Some of the original aerial photography films were scratched during production and storage. Scratches are evident on some SODB images as thin white lines of 1 – 2 pixels wide, extending east - west along portions of the image.

Image Smear

Some images show a smeared or distorted area due to significant slopes or changes in elevation. An example is shown in Figure 2-5. These anomalies or artifacts are due to spikes in the elevation data or excessive topographic relief. In some areas, the steepness of the terrain may be such that some ground image is effectively hidden from view (e.g., on the backside of the mountain or the sides of a steep cliff).

Image Smear
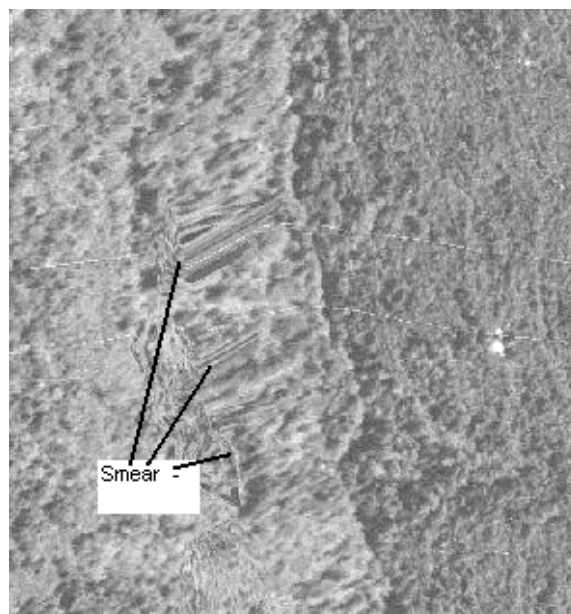
Figure 2-5

Local Offsets

Some images show a small localized offset of roads or features which exceed the SODB specifications. These offsets occur in and around man made depressions, which have been

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

created since the Digital Terrain Model (DTM) data was collected. Examples include gravel pits, peat harvesting and other excavations. Typically, the offsets only occur over areas within 20 – 30 metres of the excavation.

Minor Offsets

A small but consistent offset (3-4 metres) occurs along two map edges. This displacement could not be successfully removed through reprocessing the windows without causing a more significant (7-10 metre) distortion along another egde of the same window.

Window 1	Window 2	Size of Offset
47806460	47756460	3 – 4 metres

Offsets Between Blocks

Some files along the border between block 5 and the previously completed Blocks 1 – 4 may have slight offsets in edge matching. These are typically localized offsets that could not be corrected as part of Block 5 and were not identified until after windows from the adjoining Blocks had been completed and contracts closed.

Known edges affected included:

Window 1 (Block 5)	Window 2 (Block 1 – 4)	Size of Offsets
45156680	45156690	6 metres
45156660	45156650	8 metres
46456490	46456500	10 metres
46956540	47006540	9 metres
47556500	47556490	5 – 7 metres
	47606500	4 – 7 metres
47606510	47606500	8 – 13 metres

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

3. Working with the SODB

Introduction

This section provides explanations and guidelines for working with your softcopy orthophotomap data. It includes guidelines for the display and output of the file as well as the integration of the SODB with other digital datasets.

Displaying Uncompressed SODB Files in CARIS

Before the uncompressed SODB files (TIFF format) can be displayed in CARIS, they must be imported into CARIS IPV format. This import can be completed by selecting CARIS Tools then Map Import & export and TIFF Image Format or from the command line as:

> refotiff –file = filename –direction = from

In order to successfully convert each window, ensure the *.iga file is located in the same directory as the *.ort file. Depending on the version of CARIS being used, the *.ort extension may have to be renamed to *.tif.

CARIS will create a complete suite of files including three *.ipv files (red, green, blue) from the *.ort file and the CARIS internal file *.ret. To display the file in CARIS, open the newly created *.des file, and set the viewing parameters for the image.

```
Draw  →  Raster Image Backdrop  →  CARIS Image (IPV) Settings
```
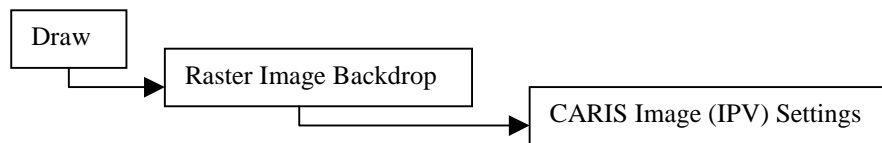
In the Settings screen select the following:

> layers selected = 'Three Layers'
> highlight the layers in the following order: 'Red Layer =1, Green Layer=2, Blue Layer=3'
> Click "OK"

Select overview and then refresh, your orthophotomap image should now display on screen.

CARIS stores descriptive data about the *.ipv files in a *.ret file. This file describes their location on your computer, georeferencing information, and the dimensions of the image. Because the location of the *.ipv files is referenced, moving the suite of files may render the *.ret file inconsistent with the new location of the *.ipv files. When executing refotiff, if the filename does not include the complete path, the path will not be stored in the *.ret file. In this case, the *.ipv file must be in the same directory as the *.des file for the image to display.

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Displaying Compressed MrSID Files in CARIS

CARIS v. 4.4 can read and display multiple MrSID compressed files, with vector data overlay, using CARIS Editor (CARED) or CARIS Manager (CARMAN).

To display a MrSID compressed file an associated MrSID geographic referencing file (world file, *.sdw) is required. This world file must have the same name as the compressed file but with the .sdw extension. To create the *.sdw file, copy the *.tfw file of the same name, provided by SNB Online, to the same directory as the associated MrSID file and change the extension to .sdw.

Also included in the directory for each orthophotomap, is a support file having the extension *.vtm (vector transparency mask). This file is used to eliminate the speckling that occurs in the "no data" areas between the orthophotomap extent and the MBR of the image (see page 2-6 for further details). This speckling is a result of the MrSID compression algorithm that changes the pure black pixels in the "no data" areas to non-pure black values (Figure 3-3 shows an example of speckling). Enhancements have been included in CARIS v. 4.4 (CARED and CARMAN) to automatically make these pixels outside of the orthophotomap boundary transparent. The *.vtm file containing the coordinates of the points bounding the area of the orthophotomap must be included in the directory where the MrSID file has been placed for the transparency process to be carried out.

Before MrSID files can be displayed in CARED or CARMAN, a CARIS file must first be opened. Once a CARIS file is loaded, add the MrSID files as raster image backdrops.

Select

```
┌────────┐
│  Draw  │
└────────┘
     │
     ▼
     ┌───────────────────────┐
     │ Raster Image Backdrop │
     └───────────────────────┘
              │
              ▼
              ┌─────────────────┐
              │ External Images │
              └─────────────────┘
                      │
                      ▼
                      ┌───────────────────────────┐
                      │ External Format Image List │
                      └───────────────────────────┘
```
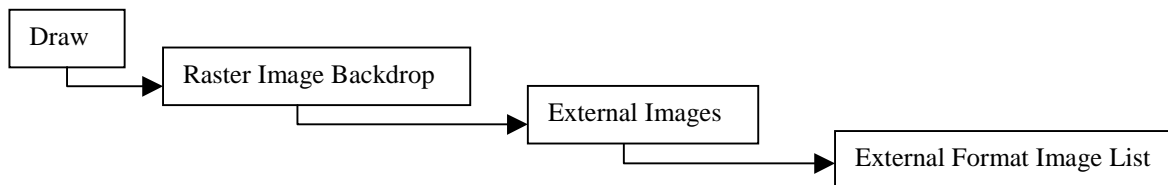
Click the Add button and select the MrSID file(s). Once the file(s) are selected click OK.

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001
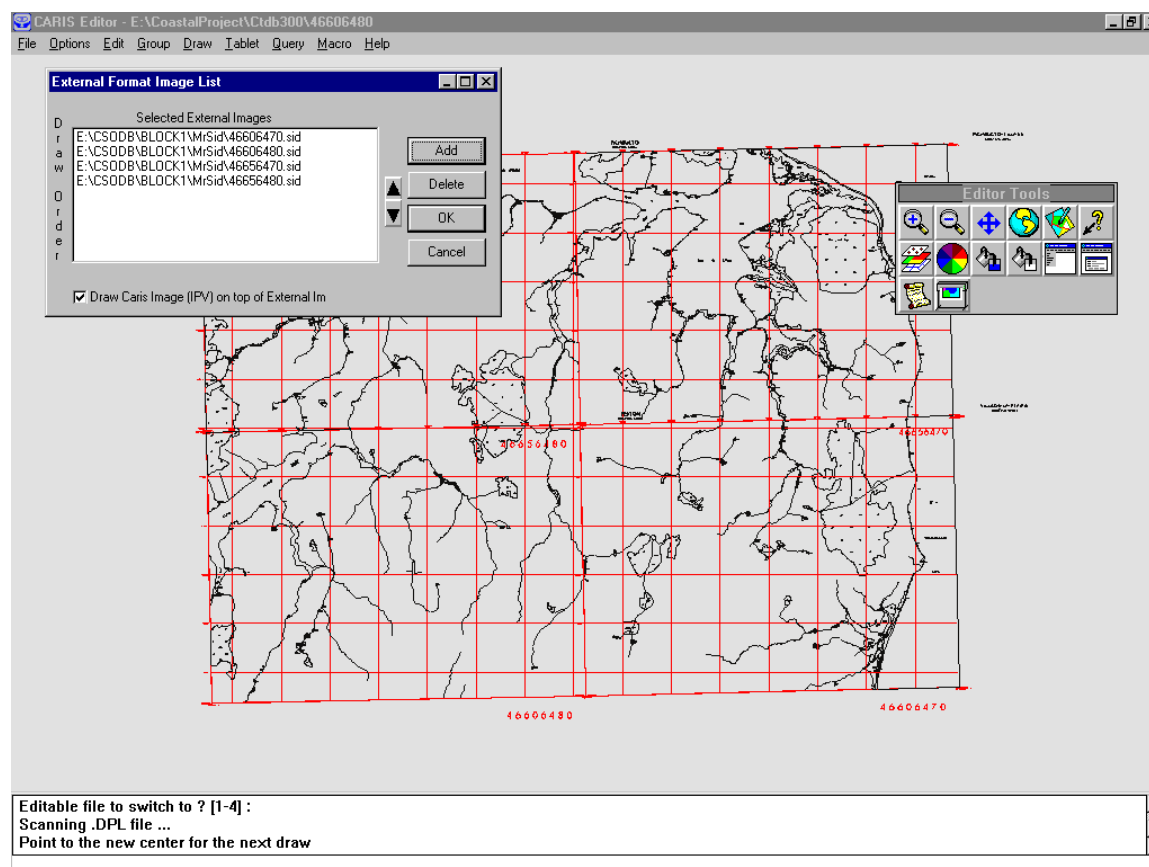
Figure 3-1

Select Refresh, the MrSID image(s) will now appear on the screen.

In order to view MrSID images, CARIS decompresses the MrSID files. This decompression limits the number of images that can be displayed depending upon the resources of the system being used.

In order to increase the number of MrSID images viewable, increase the RAM of the system and/or the virtual memory.

Working with the Surround

To utilize the CARIS ASCII SODB surround file, (*.sur) you must create the CARIS file utilizing the following command line:

        refoascii –file = filename –direction = from

This can then be displayed by following the steps to overlay any vector data on your SODB image.

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

Due to the naming convention used, "filename".extension, it is suggested users create a separate directory for the orthophotomap and the surround. The suites of CARIS files, for both the *.ort and *.sur , must be generated so they can be used in CARIS. (If both files are located in the same directory, the portions of first suite of CARIS files will be overwritten by the second set). Alternatively, the surround file can be renamed before creating the CARIS file. To overlay the surround vectors on your orthophotomap, you can choose the following:

```
File
  └──► Management
            └──► Add
```
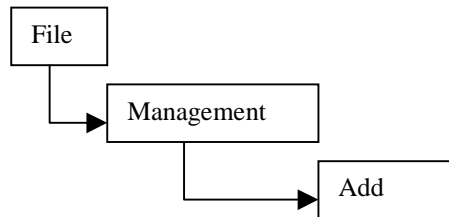
In order to query the vector overlay on your orthophotomap, ensure that you select the correct vector layer using the following commands:

```
File
  └──► Management
            └──► Switch
```
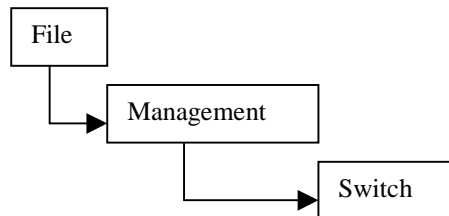
Using SODB Files with Other Digital Map Products

Provincial Digital Topographic Data Base (DTDB)

ETB96 Files	These are in AST77 and must be converted to NAD83 (CSRS). Use CARIS's TRAN function.
ETB98 Files	These are in NAD83 (CSRS) and do not require any transformation.
NAD83 (CSRS)	If you are combining the SODB with older data such as ETB96 or DTM96 data, ensure you transform the data into the NAD83 (CSRS) reference system. Incorrect reference system will result in significant offsets (50 – 100 metres) when trying to overlay datasets.
SODB Corner Coordinates	Overlaying the ETB98 datasets on the SODB data base, a minor difference in Corner Coordinates may be notable by the 1 or 2 metres.

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Provincial Digital Property Map Data Base

Digital Property Map   As of Spring 1999, these are all in NAD83 (CSRS) and do not
Data   require transformation.

                              In order to display the SODB with the DPM in CARIS, the *.ret file
                              must be edited to match the 0.05 metre resolution of the DPM files.
                              The SODB files were produced at 1 metre resolution resulting in a
                              difference of a factor of 20 with the resolution of the DPM data. To
                              use the SODB with the DPM the values in the following 4 fields in
                              each layer of the *.ret file must be multiplied by 20:

                              Field 6 – x origin
                              Field 7 – y origin
                              Field 10 – pixel x dimension
                              Field 11 – pixel y dimension

                              The following example shows the changed *.ret to match the DPM
                              resolution. The changed fields are bolded. To edit the *.ret file open
                              it with a text editor (for example Notepad).
                              Note: It is critical that the tabs be retained between the fields in the
                              *.ret file.

                              1   Reformatted from RGB TIFF image, Red component
                                      null   47056530_r   0   **51670020**   **151234480**
                              7677   5670   **20**   **20**   8
                              0.000000   1.000000   Digital Number   null
                                      unpacked
                              2   Reformatted from RGB TIFF image, Green component
                                      null   47056530_g   0   **51670020**   **151234480**
                              7677   5670   **20**   **20**   8
                              0.000000   1.000000   Digital Number   null
                                      unpacked
                              3   Reformatted from RGB TIFF image, Blue component
                                      null   47056530_b   0   **51670020**   **151234480**
                              7677   5670   **20**   **20**   8
                              0.000000   1.000000   Digital Number   null
                                      unpacked

                              The DPM can then be viewed with the SODB files using the File
                              Management options as described above in Section 3 under
                              "Working with the Surround".

Joining SODB Files

                              It is often desirable to carry out GIS-Image analysis using an area
                              which exceeds the size of an individual SODB file. When this
                              situation occurs, adjacent map files may be joined to create a new

map file with a larger spatial extent.

Continuous Data Base Creation Options Using the Uncompressed Files

Depending upon the GIS software employed, it may be possible to merely build a data base index which associates the adjoining files and maintains connectivity among them. This is sometimes referred to as *tiling*.

CARIS does not require a user to merge all the image files together into a single file, but, CARIS does require the user to create a single *.ret. The *.ret file is used by CARIS to define the image components (path and parameters of each *.ipv file) which make up the file to be opened. The *.ret file is generated through the CARIS refotiff command. (See Section 3 above "Displaying Uncompressed SODB files in CARIS").

To create a single file named "group" from a series of four SODB Windows, (47956690, 47906690, 47956680, 47906680), assemble each SODB window to be joined together in separate directories on your hard drive. Prepare each SODB window through the refotiff process (See Section 3 above). Create a separate directory called "group" on your hard drive. Create a new generic suite of CARIS components in the "group" directory using the CARIS command:

        CARCOPY input file = C:/47906690/47906690
                    output file = C:/group/group

This will create a suite of CARIS files called group.*, including "group.ret". Only one of the original files is to be copied to the group directory. Open "group.ret" with a text editor, using the copy and paste commands, copy the contents of each of the other *.ret files (e.g. 47956690.ret, 47956680.ret, and 47906680.ret into "group.ret".

Open the new "group" file using the standard CARIS commands. Zoom out and four image components will be displayed as a single composite file.

Single File

For GIS other than CARIS, it may be necessary to merge all data from individual files into one new file with an expanded coverage area.

Problem

When individual files are merged to create a new file, GIS software performance may degrade due to the increased file size and the number of map features within it.

CARIS does not require the user to merge the individual SODB files and avoids the problem of creating one image or CARIS *.ipv file.

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

It is suggested users do not try merging of more than 16 – 20 SODB windows together. (This will depend on the computer platform available to the user.)

Working with composite or merged SODB files, users may experience some edge matching issues. See Section 2 "Known Limitations" for more details.

Solutions

Alternatively if your GIS requires you to merge all images into one large file, the file resolution may be made coarser. This may degrade the visual image quality. Alternatively, it may be possible to work with the compressed *.sid versions of the SODB.

Continuous Data Base Creation Options Using the Decompressed Files- Method 1

It is also possible to display multiple SODB images together using TIFF files decompressed from MrSID images. Once the files are decompressed to TIFF, the processes for combining these files is the same as those described above in Section 3 "Displaying Uncompressed SODB files in CARIS" and "Continuous Data Base Creation Options Using the Uncompressed Files". As described, the accompanying *.iga file is required to import the TIFF into CARIS IPV format.

To decompress the MrSID files to TIFF, open the MrSID Viewer. To open the MrSID file to be decompressed select:

```
┌──────┐
│ File │
└──┬───┘
   │      ┌──────┐
   └─────▶│ Open │
          └──────┘
```
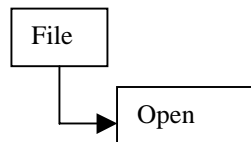
Once the file is loaded select:

```
┌──────┐
│ File │
└──┬───┘
   │      ┌────────┐
   └─────▶│ Export │
          └────────┘
```
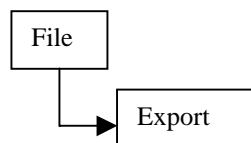
Click on the Set Export Area to Full Dataset option.
From the export dialog box use Export To… and select the output file in the Save As window (see Figure 3-2). Click on the Go button to create the TIFF file and an associated *.tfw file (not required by CARIS).
These MrSID files will typically decompress to 130MB TIFF files. The *.tfw file automatically created by the process will be in pixel

units. This file will have the same name as the newly created TIFF
file but with a different file extension. CARIS does not require the
*.tfw file to display the TIFF images but it may be required by other
GIS packages. If the *.tfw file is required, overwrite the *.tfw
created by the MrSID viewer with the corresponding *.tfw file that
comes packaged with the zipped file from SNB. This *.tfw contains
the correct georeferencing information.

MrSID GeoViewer will decompress to 130 MB GeoTIFF files.
There is no *.tfw file created with the MrSID GeoViewer.
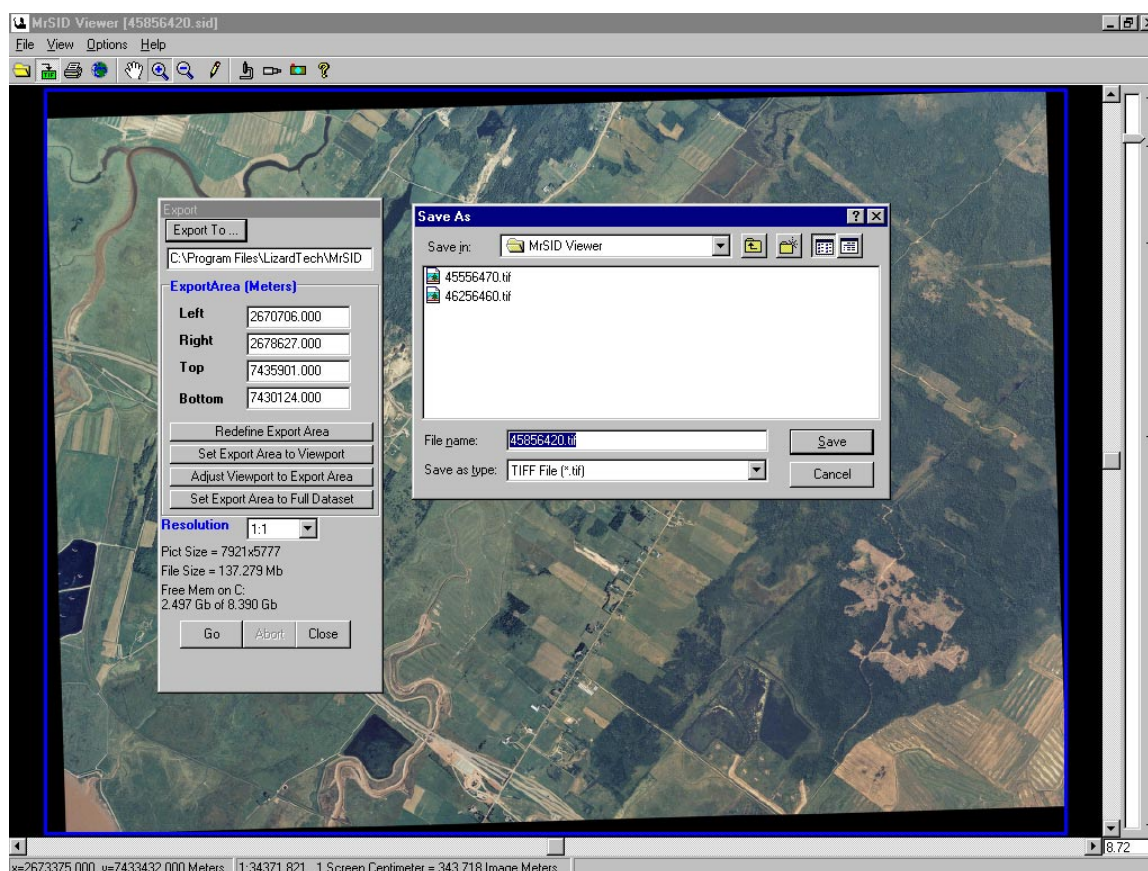
Figure 3-2

Problems with
Decompressed Files

The TIFF files created from the compressed MrSID files will
contain "speckling" along the edges of the image. This "speckling"
is present in the original MrSID files and is a result of the encoding
algorithm used by the MrSID Geospatial Encoder. As illustrated in
Figure 2-2 and described in Section 2 "Influence of Grid
Convergence on the SODB", the original TIFF image pixels located
within the MBR but falling wholly outside the 1:10000 window are

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

coloured pure black (i.e., R=0, G=0, B=0). Due to the compression algorithm used by the MrSID encoding software, these areas of pure black contain "speckling". This "speckling" around the edges of images is due to pixels that have been converted to non-pure black values. Speckling will be visible on single files and between adjacent files when multiple decompressed TIFF images are brought together through the same process described above under "Continuous Database Creation Options Using the Uncompressed Files". Figure 3-3 shows an example of speckling that occurs along the edges of the decompressed files.

Solutions   Discussions have been initiated between LizardTech and SNB to address the issue of "speckling". Presently, LizardTech has stated that there is no way to remove "speckling" from the images. In order to view the area of interest without "speckling" the following options exist:
- The original TIFF files can be used
- The compressed MrSID images can be viewed together in CARIS version 4.4 software (note that the associated *.vtm files must be copied to the same directory as the MrSID files to eliminate the speckling in the "no data" overlap areas between the orthophotomaps) or,
- The decompressed images can be mosaiced together.

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001
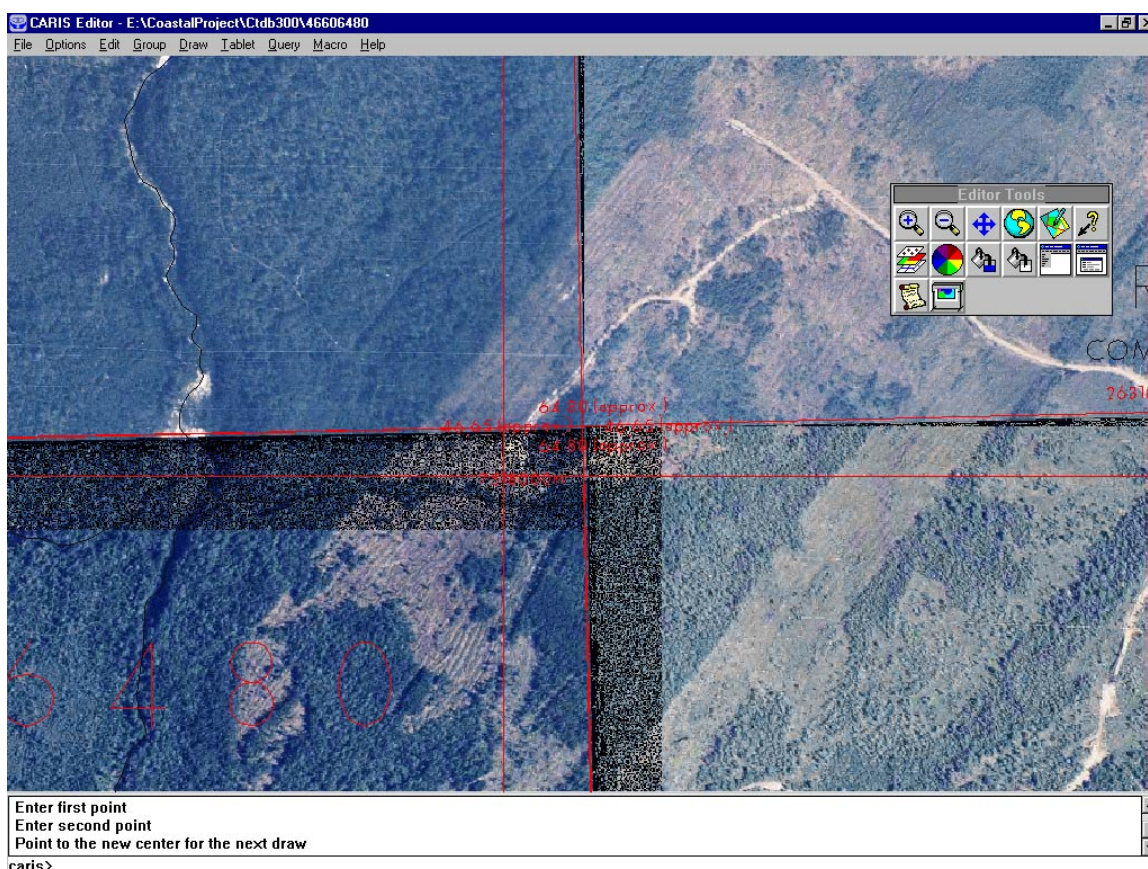
Figure 3-3

Continuous Data Base Creation Options Using the Decompressed Files- Method 2

Mosaicing can be carried out to join two or more decompressed TIFF files together to eliminate the speckling introduced in the MrSID compression Three major steps must be completed to mosaic two or more adjacent decompressed windows together:

1. Convert MrSID to TIFF
2. Convert TIFF to CARIS
3. Mosaic CARIS Files together

Convert MrSID to TIFF

After downloading and unzipping each of the adjoining MrSID images, open a file in the MrSID viewer to decompress the file to TIFF. The process to be followed is described above in Section 3 under Continuous Data Base Creation Options using the Decompressed Files – Method 1.

Convert TIFF to CARIS

Converting the decompressed TIFF files to CARIS follows the same process as that described in Section 3 above under "Displaying Uncompressed SODB Files in CARIS".

Mosaicing Adjacent Windows

With all SODB files now in CARIS format, you can now begin to mosaic windows together. Select two windows to mosaic, adjoining East/West or North/South.

Commence the image mosaic process by opening and selecting both windows in CARIS. From the CARIS Suite Manager, click the MOSARAST Icon. Within MOSARAST, select:

```
┌──────────┐
│  File    │
└──────────┘
     │
     │      ┌──────────────┐
     └─────▶│  Open Image  │
            └──────────────┘
```
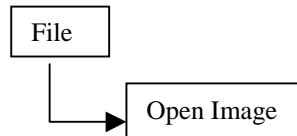
Change to the directory where your TIFF files are located. Select the first window *.ret. Click open. After the window loads, repeat:

```
┌──────────┐
│  File    │
└──────────┘
     │
     │      ┌──────────────┐
     └─────▶│  Open Image  │
            └──────────────┘
```
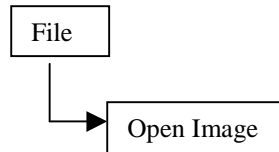
for the second window.

To begin to Mosaic, select:

```
┌──────────┐
│  Image   │
└──────────┘
     │
     │      ┌──────────┐
     └─────▶│  Select  │
            └──────────┘
```
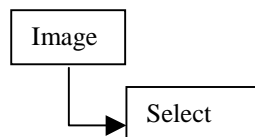
from the select window, highlight both windows, click OK.

Click the overview icon, to redraw both windows.

To continue Mosaic, select:

```
┌──────────┐
│  Image   │
└──────────┘
     │
     │      ┌──────────┐
     └─────▶│  Mosaic  │
            └──────────┘
```
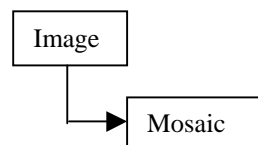
On the Image Mosaic Dialogue box set:

Output file name:	name of your Mosaic
Radiometric correction:	not selected
Mosaic type:	manual
Feathering:	ignore

Click OK.

Once the parameters are entered and accepted, cross-hairs will appear in the image window allowing the creation of the seam line. The following steps outline the basic process to define a seam line:

Click the upper left corner of the images you wish to mosaic.
Click in the approximate area where you wish to commence the seam line, (i.e., the edge where the two images adjoin.)
Zoom into that area (Z key).
Commence collection of seam line points to edge of zoomed area.
Follow the edge between the images carefully.
Draw Overview (O key) and zoom in again and repeat seam line creation process. The user can also flip the images (F key) and delete the last entered point (D key).
Once the seam line is at the bottom of the overlap area, make a last point in the lower right corner of the windows you wish to mosaic.

Click right mouse button or Q to quit.

Note: The first and last points of the seam line determine the extent of the final image, so be sure to collect the start and end of the corners of the two images you wish to adjoin. The user is then displayed the entered seam line and asked if it is okay or not (Yes or No). If the user answers yes, mosaic process runs.

CARIS automatically generates the entire CARIS suite of files, including the *.ret to georeference the newly merged file.

Once the process completes, the user can display the final image by selecting:

```
┌──────────┐
│  Image   │
└──────────┘
     │
     │      ┌──────────┐
     └─────▶│  Select  │
            └──────────┘
```
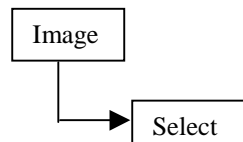
highlight the newly created image.

Click the overview icon to redraw the new image.

File Size	Note: You will need approximately 400 MB free space to merge two 1:10,000 windows (100 MB for each source image and 200 MB for the final image).
Problem	A thin seam line containing the speckled pixels may occur if you did not precisely draw your cut/seam line along the edge of the image data, during the mosaic procedure.
Solutions	Select the seam line very carefully to follow along the original edge of the image and no data area inside the 1:10,000 window.

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Continuous Data Base Creation Options Using the Compressed Files	Multiple compressed MrSID images can be displayed together to form a continuous data base in CARED or CARMAN v. 4.4. The process for displaying these multiple images is described in Section 3 above under "Displaying Compressed MrSID Files in CARIS". As discussed previously under "Displaying Compressed MrSID Files in CARIS", the associated *.vtm files that are provided by SNB must be copied to the same directory as the MrSID files to eliminate the speckling in the "no data" overlap areas between the orthophotomaps.

Plotting SODB Files

Plotting of large format raster images, such as the SODB files requires specific plotting capabilities and can utilize significant resources in ink, paper and computer processing time. Output devices tested by SNB and able to provide consistent high quality results include:

> HP750C Inkjet Plotter
> HP2000C Inkjet Plotter

Note: Use of the HP650C inkjet plotters did not produce high quality results. All SODB production utilized high quality semi gloss photo grade plotter paper, (such as Basic Image Matte Paper from Continental Imaging Systems) to ensure the best plotting results.

Plotting in CARIS

Plotting of SODB images in uncompressed, decompressed or compressed MrSID format is carried out through CARIS Plot Composer. To use Plot Composer a CARIS Metafile must first be created in CARED or CARMAN.

The processes for bringing the uncompressed, decompressed or compressed MrSID images into CARED or CARMAN are described above in Section 3.

Creating the CARIS Metafile

Once the SODB image is displayed in CARED or CARMAN a CARIS Metafile can be created.

In CARED or CARMAN select:

```
File
  └──> Print
          └──> Save As
```
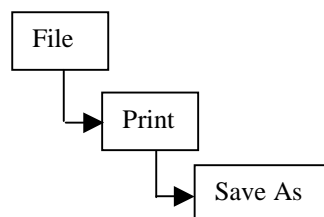
From the CARIS Print Previewer, select Save As and save the file as a CARIS Metafile with the *.plt extension. This CARIS Metafile can now be loaded into CARIS Plot Composer.

Start CARIS Plot Composer, select:

```
┌──────────┐
│   File   │
└─────┬────┘
      │
      └──▶┌────────────────────┐
          │ New Plot Template  │
          └────────────────────┘
```

A blank page is presented to which plot items may be added.   The page size must be configured for the plotter and paper being used. Select:

```
┌──────────┐
│   File   │
└────┬─────┘
     │
     └──▶┌────────────┐
         │ Page Setup │
         └──────┬─────┘
                │
                └──▶┌──────────┐
                    │ Printer  │
                    └──────────┘
```
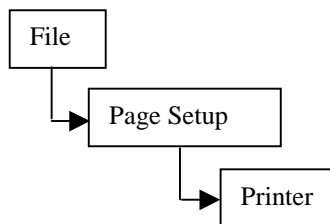
Select the desired printer from the drop down list. Under Properties select the desired paper size, orientation, and special options such as Paper type and Quality under Options. To plot directly to the plotter the "In computer" option may also need to be selected under the Advanced setting.

NOTE: The "In computer" must be used to plot images that are larger than the memory capacity of the plotter. Plotting in computer slows down the printing process but allows for larger files to be plotted.

The following settings are recommended for plotting a SODB at 1:10 000 scale:

Orientation:	Landscape
Paper Size:	ANSI E
Option – Paper Type:	Semi-gloss photo
Quality:	Best
Advanced - Process Document:	In Computer (see above for details)

To add the CARIS Metafile to the page, select:

```
┌──────────┐
│   File   │
└─────┬────┘
      │
      └──▶┌────────────────────┐
          │ New Plot Template  │
          └────────────────────┘
```
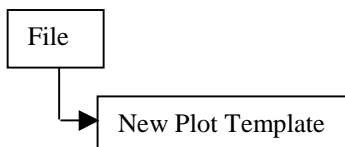
Open the appropriate CARIS Metafile. The metafile appears on the page. This metafile can be resized by dragging the corners of the metafile or a size can be set by selecting

```
┌──────────┐
│   View   │
└──────────┘
        │
        └──►┌──────────────┐
            │  Properties  │
            └──────────────┘
```
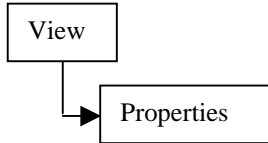
and setting the size of the metafile in the CARIS Metafile Item Properties Dialog Box. The scale of the metafile can also be set in this dialog box. The Fit to Viewport check box must be unselected under the Metafile tab to set a scale. A scale can then be entered in the scale field. Click OK when finished. The metafile redraws with the new settings.

Other OLE (Object Linking and Embedding) objects can be added to the plot as well. The user can either send the plot to a file, usually for plotting multiple files in a batch process, or send the file directly to the plotter when the user requires a single plot.

Plot to File

To plot to file, select:

```
┌──────────┐
│   File   │
└──────────┘
        │
        └──►┌──────────┐
            │  Print   │
            └──────────┘
```
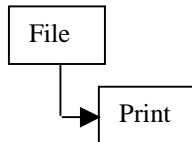
In the Print Dialog Box, check the Print to File Check Box. To send the plot to a file, click OK and select a file name and location for the file.

Refer to the section above "Plotting in CARIS" for details on the printer setup.

The plot file created can later be sent to the plotter using the following dos command:

copy /b filename printer-path

For example, to print the file test.prn on a network printer with a shared name of HPLJ2100 on a computer named PCSERVER type the following from the dos prompt (in the directory where test.prn resides):

copy /b test.prn \\PCSERVER\HPLJ2100

Plotting Directly to the Plotter

To directly plot a file select:

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

```
┌──────────┐
│   File   │
└────┬─────┘
     │    ┌──────────┐
     └───▶│  Print   │
          └──────────┘
```
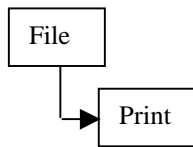
Click OK and the file will be sent to the plotter. Refer to the section above "Plotting in CARIS" for details on the printer setup.

Using SODB in Other GIS Systems

Most GIS, IAS, CAD and desktop mapping systems support the display of raster imagery, such as the SODB images. Depending on the system, it may be limited to displaying the orthophotomap or it may provide full image analysis capabilities. The following section provides some suggestions on importing the SODB files into several common GIS systems. For further information on using raster imagery in your GIS contact the GIS vendor.

ArcView/ArcInfo

To open the SODB image in ArcView or ArcInfo:

Copy the image (*.ort) from the CD-ROM to a local drive and rename with a *.tif extension, also copy the *.tfw into the same directory as the image on the local drive.

In order to have the image georeferenced in ArcView, the *.tfw must be present.

AutoCad

AutoCad Map (R.2) software also supports the use of a raster image. Using the following menu option

```
┌──────────┐
│  Insert  │
└────┬─────┘
     │    ┌───────────────┐
     └───▶│  Raster Image │
          └───────────────┘
```
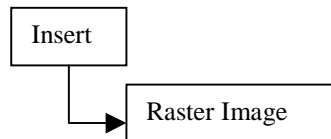
SODB images can be imported. Units of measurements must be set to metres, and the bottom left (i.e., south western coordinates) from line 1 of the *.cor file must be entered as the insertion point. The rotation angle should also be set to zero.

PCI Easi Pace

The SODB *.ort image file can be opened for viewing directly by PCI, although it will not be georeferenced. In order to create a georeferenced file, the *.ort must be imported into PCI (using the Fimport command) to create PCI's *.pix file. The corner coordinates from the *.cor file must be entered in PCI (using the Geoset function). PCI requires the user to enter the upper left

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

(North West) and lower right (South East) coordinates of the corner pixel values from the *.cor file. The upper left values are located on the 4th line of the *.cor file, while the lower right values are on the 2nd line of the *.cor.

MapInfo

The same concepts work for MapInfo as described for ArcView above. You can use the *.ort file (renamed to *.tif) but you must create the corresponding MapInfo header file *.tab. Once you have created the *.tab file, use the Open Table function and open the *.tab file. The registered TIFF image will then appear up in the window. For MapInfo, you do not need to set the file format to 'raster image'. Their convention is to use the 'tab' filename suffix for the registration information and the 'raster image' format is used for images that have not been registered.

SPANS

The SODB *.ort file can be opened in SPANS. SPANS requires the following information:

> Georeferencing of the lower left corner: (line 1 of the *.cor file).
> Pixel width: 1 m
> Pixel weight: 1 m

Working with Compressed SODB Files

This section provides additional information for working with the compressed versions of the softcopy orthophotomap data. It describes working with the compressed *.sid files as well as how to convert them for use in other software packages.

MrSID is used to compress each original 130 MB orthophotomap files using a compression ratio of 50:1. The size of each resultant compressed file is approximately 2.6 MB. Users access the data base through SNB Online, browse the data base, select the appropriate orthophotomap files for their needs and download that file(s) in MrSID format. After downloading the file(s), the user(s) has two options to work with the files. The image can be used in MrSID format with software that has MrSID support embedded in it like CARIS (version 4.4 or later), ArcView, MapInfo or PhotoShop, etc. To display a seamless continuous database with MrSID files in CARIS (version 4.4 or later), the user will need to download the associated *.vtm files. Alternatively, the user can convert the image to TIFF format, for use within any software package that supports standard TIFF images, like CARIS GIS and most raster image processing packages. A free MrSID viewer is available, for a variety of computing platforms, that will allow the user to view the MrSID images and export them to TIFF format. The images can be exported in their entirety or in smaller cropped sections, at their full resolution or at a reduced resolution.

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

Working with MrSID Files

For decompressing or viewing MrSID files, tools are available for some specific software packages:

> CARIS (Version 4.4 or later)
> Micro Station 95 MrSID Viewer
> MapInfo
> Adobe PhotoShop
> ArcView

In addition, an online viewer, a stand-alone viewer, and an ActiveX Control for MrSID are also available.

MicroStation 95MrSID Viewer	For MicroStation users, the free MrSID Viewer for MicroStation displays georeferenced images stored in the MrSID format while working in a MicroStation graphics session. Beta MicroStation®95MrSID Viewer is free for individual use.
MrSID for MapInfo	For MapInfo users, the free MapInfo MrSID Module allows handling and viewing of MrSID images. In MapInfo, users can zoom, pan and navigate throughout the MrSID image and overlay vector data.
MrSID Plug-in for PhotoShop	The free MrSID plug-in for PhotoShop gives the ability to view and manipulate MrSID image files within Adobe PhotoShop. When a MrSID file is first selected, users are shown a thumbnail view of the image and allowed to select a specific section of the image at a specific zoom level and print resolution to import. The MrSID plug-in for PhotoShop® is free for individual use.
MrSID ArcView Extension	For ArcView users, the MrSID extension allows the handling of the compressed MrSID image inside ArcView. The image can be displayed, navigated and overlaid with vector data. The MrSID ArcView extension is included in ArcView versions 3.1 and later.
MrSID Online Viewer	Each MrSID image file contains data from multiple resolutions built into a single data base. The MrSID Image Server allows viewing an image with the smallest resolution view, and allows for a complete control in navigating through larger and smaller zoom levels. The Online Viewer uses MrSID's "selective decompression" feature, decompressing only the selected portion of an image. MrSID Online Viewer is free for individual use.

MrSID ActiveX Control

The MrSID ActiveX Control displays images that have been compressed into the MrSID format with any application that supports the

```
┌──────────┐
│  Insert  │
└────┬─────┘
     │   ┌──────────┐
     └──▶│  Object  │
         └──────────┘
```
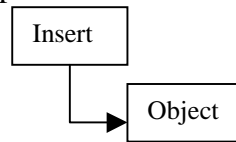
operation. Some applications include Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Microsoft Access, Corel Draw, etc. MrSID ActiveX Control is free for individual use.

MrSID Stand Alone Viewer

The MrSID Stand Alone Viewer displays images that have been compressed into the MrSID format. The Viewer is available for Windows 95/NT, Macintosh PPC, AIX 4.2.1, IRIX 6.2, Linux 2.0.32, and Sun Solaris 2.6. The viewer has the following capabilities:
Open and display MrSID images on any 8, 16, or 24-bit screen
Pan and zoom
Display speed is fastest with 16 or 24-bit screens
Display coordinates of mouse cursor
Display pixel size
Export any part of the image to TIFF at any resolution with accompanying TIFF World File (.tfw)
Zoom directly to overview of entire dataset
Tool for measuring distances
"Microscope" full-resolution view for a small area around the mouse cursor.
"Telescope" thumbnail view of the entire image.
On-line help.

4. Ordering the SODB

Introduction

This section contains information on how to obtain Softcopy Orthophotomap Data Base (SODB) files to suit your applications.

Preparing to Order

Need-to-Know   Prior to ordering Softcopy Orthophotomap Data Base files, you must select:
- lossy compressed or uncompressed
- the media (for example, CD-ROM or SNB Online download)
- the file name (s) or coverage area desired

How to Order   There are two basic methods by which SODB files may be ordered:
- by directly downloading SODB files through SNB Online
- by placing an order through any SNB Offices. Addresses and telephone numbers of the SNB Offices are provided in Section 6 of this Guide, along with an order form. Orders may be placed by telephone, fax, mail, e-mail or in person.

Each of these methods is further described within the following sections.

Uncompressed SODB files are only available on CD-ROM.

Ordering the SODB through SNB Online

SNB Online   You should download your SODB files through SNB Online if:
Downloads

- you are ordering the lossy compressed version of the files
- you have access to SNB Online
- you need the data quickly

Background   Service New Brunswick provides SNB Online through a World Wide Web (WWW) site. This service was initially established in 1996 to provide convenient access to Digital Property Map data. It is possible to use this service to download lossy compressed versions of the SODB files.

Prerequisites   In order to use SNB Online you must:
- have Internet WWW browser software installed on your computer
- have access to an Internet Service Provider (ISN) from your computer, either directly through a modem or through a computer network direct connection
- have an SNB Online account

WWW Browsers Supported	The following WWW browser packages have been tested and verified to operate correctly with SNB Online SODB File Download function.

- Microsoft Internet Explorer, Version 3.02
- Netscape Navigator and Netscape Navigator Gold, Version 3.01

Users having earlier releases of the above packages are encouraged to upgrade their software.

SNB Online Account	If you currently have an SNB Online Account for access to the Real Property Information, this account may also be used to download SODB files. If you do not currently have an account, you will need to apply for one in order to access the SODB download service. You may obtain the application form and other details concerning this service by:

- calling Customer Support at: (506) 856-3704
- sending an E-mail message to: rpiis.comments@snb.ca

Costs	Users downloading SODB files will incur two categories of costs:

- connect time charges which are assessed by your Internet Service Provider
- a flat rate fee per SODB file window which is automatically calculated and assessed by SNB Online.

Note	It should be noted that there is no volume discount at present if more than 10 SODB files are ordered through SNB Online.

Current information regarding the cost structure for SODB files may be obtained from the SNB WWW site:

http://www.snb.ca

Select Topographic Information from the Online Services Selection

Downloading SODB Files

WWW Site	SODB files may be downloaded from SNB Online www site:

http://www.snb.ca

Selecting SODB File Download	From the SNB Online Home Page, select Digital Topographic Data Base or https://www.snb.ca/PLANET (November 2000), select Softcopy Orthophotomap Data Base. From this page, select Download Orthophotomap files.

Licence Agreement	You will be presented with a Licence Agreement page at this point. You may choose to either <u>ACCEPT</u> this agreement to proceed with the file download, or <u>CANCEL</u>.
User Name Password	You will be requested to provide the User Name and Password supplied by SNB Customer Support when you proceed to the file download section.
File Selection Options	You may select the individual SODB windows to be downloaded in one of two ways:

- <u>Graphic Selection</u> will allow you to select individual windows by clicking on them with the mouse cursor
- <u>Non-Graphic Selection</u> will permit you to enter a list of up to 10 file names

Graphic Selection	You will be presented with a Provincial map. To select individual files

- use the mouse cursor to center the map on your general area of interest (for example, Fredericton)
- select the Map Scale of the files to be downloaded - this will cause the Map Index windows and map names to be displayed
- ZOOM IN (X 10 recommended initially) to the area of interest
- use the ZOOM IN, PAN or ZOOM OUT buttons to further refine your area of interest
- select individual windows by clicking the mouse cursor within the window desired
- when all desired files (up to a maximum of 10) have been selected, click on the *Proceed with File Download* button at the bottom left of the page

Non-Graphic Selection	This selection mode permits the user to directly enter SODB files by entering the names to a list. Simply follow the instructions on this page to specify the required files. When all desired files (up to a maximum of 10) have been entered, click on the *Cost and Download* button at the bottom left of the page. *Note that users who have selected files using Graphic Selection will be presented with this page also, with the files previously selected being displayed within the ADD window.*
Proceeding With Download	The cost of downloading the selected files will be displayed, along with the total file size. To proceed with the download, click on the *Proceed* button. Another page will be presented. Click within the [<u>HERE</u>] text to commence download of the files. At this point, you will be prompted to indicate the directory on your

computer where the downloaded files are to be stored.

Status of
Download

As the files are downloaded, status information will be presented. Both Microsoft Internet Explorer and Netscape Navigator will display the status of the download in a file download popup window.

Completion of
Download

Once the file download has been completed, the user will be notified. This notification will vary depending on the Browser being used:

- Microsoft Internet Explorer will close the File Download popup window and display the message "Download complete" in an information popup window.
- Netscape Navigator will display the message "Document done" in the status bar at the bottom of the screen. As well, the file download status window will be closed.

Hints

The following points should be kept in mind when planning to download the compressed SODB files using SNB Online.

- The lossy compressed files are approximately 2.6 Mb in size. Avoid downloading too many files at once - a reasonable upper limit would be 12 megabytes, unless you have a modem speed rate at much higher than 56.6 kbps.
- Users may want to acquire high speed Internet access such as NBNet's VIBE Service:

  http://www.nbtel.nb.ca

- You must ensure that there is sufficient room on your local hard drive to store the downloaded files. The software does *not* check this prior to download.
- It is probably not practical to download multiple files in one session unless your modem speed rating is at least 56.6 kbps.
- Each file downloaded is a lossy *compressed* file which contains one (1) individual files (see Section 1 for a description of these files). You must ensure that you have sufficient space on your computer disk to contain the unpacked files. Typical lossy compression ratios for SODB *.zip files is approximately 50.1. This means, for example, that a downloaded one megabyte SODB file may require as much as 50 megabytes of *additional* disk space when uncompressed.
- The SODB compressed files were created with the PKZIP utility program. This utility may be downloaded through a link on SNB Online SODB Support Files page. Select Download Support Files

PKZip is a
DOS Utility

Windows users can alternatively use the WinZip utility program to uncompress the files. An evaluation version is available for downloaded from the WinZip home page (www.winzip.com).

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

If for some reason, your download fails, the same files can be downloaded again provided the download take place before 12 a.m. the same day.

Ordering SODB Files from any SNB offices

Background   Service New Brunswick provides a service to order SODB files from SNB office.

Pre-requisite   In order to order files from any SNB office you should have a list of files you wish to order.

Licensing   After your order has been processed, the SODB files will be sent to you
Agreement   along with a licensing agreement which must be signed and returned to the SNB within ten days.

Price List   The cost of acquiring SODB files shall be in accordance with the Price List established by the SNB.

Need-to-Do   Read the rest of this section for information about each step for ordering SODB files.

Choosing Media   The SNB supplies uncompressed SODB files only on CD-ROM. All CD's are produced to ISO 9660 standards and can be read on various platforms, such as DOS, MS Windows or UNIX.

Supported GIS   SODB files are supplied in lossless compressed *.zip format by window.
Formats   Each *.zip file contains a complete suite of files for the 1:10 000 window. Note the *.sur file is only provided in CARIS ASCII format.

5. Data Licensing Agreement

Introduction

This section contains a sample of the SNB Data Licensing Agreement.

Service New Brunswick

Digital Topographic Data Licensing Agreement

This Agreement made in duplicate as of the day of _____.

    BETWEEN:

Service New Brunswick hereinafter called "the Licensor"

    AND:

_____, hereinafter called "the Licensee.

    Whereas the Licensor is the sole owner and distributor of the Digital Topographic Data described in Section 1 of this Agreement; and

    Whereas the Licensee wishes to utilize the aforementioned Digital Topographic Data to market a *(specific map product)*_____;

In consideration of the premises and of the mutual covenants and agreements hereinafter contained, the parties hereto agree each with the other as follows:

1. Description of the Digital Topographic Data:

1.1   Topographic Data provided under the terms of this Agreement shall consist of _*X*_ topographic files, in 1: _____ scale, used to produce _____.

1.2   The geographic area for which the Licensor will supply data to the Licensee for this Agreement will consist of _____.

1.3   The Licensor will provide to the Licensee, one copy of each of the aforementioned topographic files.

1.4   The Licensor will provide the Digital Topographic Data to the Licensee in electronic format.

2.   Use of the Land Ownership Data:

2.1   The Licensee will use the Topographic Data described in Section 1 for the exclusive
          purpose of _____according to
          the terms set forth in section 2.2 of this Agreement.

2.2   The Licensee shall market *(specified products)*_____, which may contain
          any of the public information described in section 1.

3.   Payment provisions:

3.1   In consideration for the use of the Topographic Data described in Section 2, the Licensee
          will pay the Licensor, at the end of *(specified period),* _____the accumulated
          amount of all royalty fees. Royalty fees payable to SNB for each copy of the map product
          sold will be $_____.

4.   Auditing provisions:

4.1   The Licensee will provide to the Licensor a monthly report of sales to include the name
          of wholesalers and consignees having purchased/sold the product and the number of
          copies purchased/sold.

4.2   The Licensor reserves the right to audit the Licensee's financial records related to the
          development, marketing, sale and distribution of the product covered by this
          Agreement.

5.   Restrictive covenants:

5.1   The Licensor will retain sole ownership rights to the data provided to the Licensee
          under the terms of this Agreement.

5.2   No data originating directly or indirectly from the Licensor will be used in its original
          form, customized or changed in any way by the Licensee or its agents for any other
          purpose than those specified in section 2 of this Agreement without prior written
          consent from the Licensor.

5.3   Subject to Section 2 of this Agreement, the Licensee shall have an unlimited, but not
          exclusive, right to use the data supplied by the Licensor.   This right shall not extend to
          affiliates of the Licensee as defined in the Business Corporations Act, R.S.N.B. 1973,
          Chapter B-9.1.

5.4   A contractor or business partner may use this data on behalf of the Licensee but has no rights to the data or to the use of it, outside of the purposes described in section 2 of this Agreement.

5.5   The Licensee may not give, loan, lease, sell or otherwise make the aforementioned Topographic Data available to other parties other than for purposes specified in Section 2 without prior written consent from the Licensor.

5.6   The Licensee may not give, loan, lease, sell or otherwise make available the aforementioned Topographic Data in its original form, customized or changed in any way, as part of a value added product, other than for delivering the service specified in Section 2, without prior written consent from the Licensor.

6.   Warranty

6.1   The Licensor makes no representations or warranties, either express or implied as to the accuracy of the Topographic Data. The Licensor shall not be liable for any loss or damage of any kind arising from the use of the Topographic Data or accompanying written materials or from errors, deficiencies or faults therein, whether such damage is caused by negligence or otherwise.

6.2   If the Topographic Data supplied by the Licensor is not usable due to a defective magnetic tape cartridge, the Licensee may return the defective magnetic tape within 30 days of the date of delivery and the Licensor shall replace it at no charge.

6.3   While the Topographic Data may not be free from error or omission, care has been taken to ensure the best possible quality.   A hierarchy of information sources was used to map the property boundaries and the positional accuracy of the data varies according to the source.

7.   Assignment

7.1   This agreement or any portion thereof shall not be assigned by the Licensee without the prior written consent of the Licensor.

7.2   If the Licensee undergoes a change in either ownership or organization, this agreement will become null and void.

8.   Entire Agreement

This Agreement is the entire agreement between the parties and supersedes all previous agreements, arrangements, or understandings between the Parties hereto whether written or oral, in connection with or incidental to the aforementioned Topographic Data.

9.   Law of the Contract

9.1   This Agreement shall be governed by and construed in accordance with the laws of the Province of New Brunswick and the laws of Canada applicable in the Province of New Brunswick.

9.2   The Licensor shall not be liable for any loss, damage of any kind and costs incurred by the Licensee should legislation of the Province of New Brunswick restrict or prohibit the distribution of all or any products produced as a result of this agreement.

10.   Time is of the essence

Time shall be of the essence of this agreement.

11.   Termination of Contract

11.1   The Licensee may terminate this Agreement by giving notice in writing to the Licensor thirty days prior to termination date.

11.2   The Licensor may terminate this Agreement upon written notice if the Licensee breaches this Agreement and fails to correct the breach to the Licensor's satisfaction within 30 days following the written notice specifying the breach.

11.3   Termination of this Agreement shall not relieve the Licensee's obligation to pay all fees that accrued prior to termination date.

11.4   Upon termination or expiration of this Agreement, the Licensee shall cease using the Topographic Data and certify to the Licensor that all copies of the Topographic Data, whether in its original form, modified or merged with other data has been destroyed or returned to the Licensor within 30 days of termination date.

11.5   This Agreement expires _____.

11.6   This Agreement may be renewed by consent of both parties.

Within 10 business days of receiving this agreement, a signed copy is to be returned and addressed to:

> Marketing Coordinator
> Service New Brunswick
> 527 King Street - P.O. Box 6000
> Fredericton, N.B. E3B 5H1

The above conditions are agreed to:

On behalf of _____

Signature	Title	Date

On behalf of Service New Brunswick

Signature	Title	Date

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

6. SNB Offices

This section lists the address and telephone number for each of the SNB offices. The section also includes an order form for Softcopy Orthophotomap Data Base Files.

NOTE:
1. The information within Table 6-1 is subject to ongoing change. For the most current information on SNB offices and contacts (including E-mail address if available), consult the "SNB Locations" page on the SNB web site. The address of this page is as follows:

English: http://www.gnb.ca/snb/e/2000/2001e.htm
French: http://www.gnb.ca/snb/f/2000/2001f.htm

Table 6-1   SNB Offices and Contacts

Location	Address	Contact/Location/Phone #
Bathurst	PO Box 5001 161 Main Street Bathurst, NB E2A 1A6 Tel: (506) 547-2090 Fax: (506) 547-2925	Caroline Landry Bathurst Tel: (506) 547-2611 Fax: (506) 547-2778
Campbellton	PO Box 5001 157 Water Street, City Centre Campbellton, NB E3N 3H5 Tel: (506) 789-2305 Fax: (506) 789-2582	Caroline Landry Bathurst Tel: (506) 547-2611 Fax: (506) 547-2778
Fredericton	PO Box 5001 77 Westmorland Street, 2nd Floor Fredericton, NB E3B 5G4 Tel: (506) 453-3390 Fax: (506) 444-5030	Richard Albert Edmundston Tel (506) 735-2544 Fax: (506) 735-2036
Moncton	PO Box 5001 633 Main Street Moncton, NB E1C 8R3 Tel: (506) 856-3303 Fax: (506) 856-2609	Darrel Parker Moncton Tel: (506) 856-3140 Fax: (506) 856-2609

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Miramichi	PO Box 5001 Castle Square Building Pleasant Street, 1st Floor Miramichi, NB E1V 3X1 Tel: (506) 627-4028 Fax: (506) 627-4448	Caroline Landry Bathurst Tel: (506) 547-2611 Fax: (506) 547-2778
Saint John	PO Box 5001 15 King Square North 2nd Floor Saint John, NB E2L 4Y9 Tel: (506) 643-2865 Fax: (506) 658-2156	Phil Roper Saint John Tel: (506) 643-2865 Fax: (506) 658-2156
Edmundston	PO Box 5001 121 rue de l'Église Suite 219, Carrefour Assomption Edmundston, NB E3V 3L3 Tel: (506) 735-2710 Fax: (506) 735-2036	Richard Albert Edmundston Tel: (506) 735-2544 Fax: (506) 735-2036
Hampton	PO Box 5001 27 Centennial Road, Unit 1 Hampton, NB E5N 6N3 Tel: (506) 832-6060 Fax: (506) 832-6008	Phil Roper Saint John Tel: (506) 643-2865 Fax: (506) 658-2156
Richibucto	PO Box 5001 9239 Main Street Richibucto, NB E0A 2M0 Tel: (506) 523-7725 Fax: (506) 523-7629	Darrel Parker Moncton Tel: (506) 856-3140 Fax: (506) 856-2609
St. Stephen	73 Milltown Boulevard Gagnon Building St. Stephen, NB E3L 1G5 Tel: (506) 466-7335 Fax: (506) 466-7358	Phil Roper Saint John Tel: (506) 643-2865 Fax: (506) 658-2156

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Woodstock	PO Box 5001 220 King Street Bicentennial Place Woodstock, NB E7M 5C6 Tel: (506) 325-4410 Fax: (506) 325-4475	Richard Albert Edmundston Tel: (506) 735-2544 Fax: (506) 735-2036
Perth/Andover	1135 W Riverside Drive PO Box 870 Perth Andover, NB E7H 5G5 Tel: (506) 273-4716 Fax: (506) 273-5900	Richard Albert Edmundston Tel: (506) 735-2544 Fax: (506) 735-2036
Burton	Burton Court House PO Box 80, RR #1 Burton, NB E2V 2G4 Tel: (506) 357-4044 Fax: (506) 357-4046	Richard Albert Edmundston Tel: (506) 735-2544 Fax: (506) 735-2036

Softcopy Orthophotomap Data Base (SODB) Order Form

Client Information   Date: _____

Name of Organization   _____

Address   _____

                                        _____

Telephone   _____

Contact Person   _____

Softcopy Orthophotomap Data Base File Information

Media (check appropriate box)

☐   CD-ROM

☐   Other (specify – contact SNB office for available options):

SODB Support Files (check appropriate box)

☐   I have Internet access and can download these files.

☐   I do not have Internet access. Please provide these files on the media selected above.

Intended use of SODB File(s)   _____

_____

Description of areas and File Names Required:

☐   Entire Province (Note: Not complete at this time)

☐   Others (specify)   _____

APPENDIX A

Index Map of SODB Production

New ⛵ Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

Index Map of SODB Production

BLOCK 3

BLOCK 6

BLOCK 1

BLOCK 7

BLOCK 2

BLOCK 8

BLOCK 4

	Block 6	complete - 00/01
	Block 7	complete - 01/02
	Block 8	complete - 02/03
	SODB windows	complete - 99/00

DataQC✔

9706623
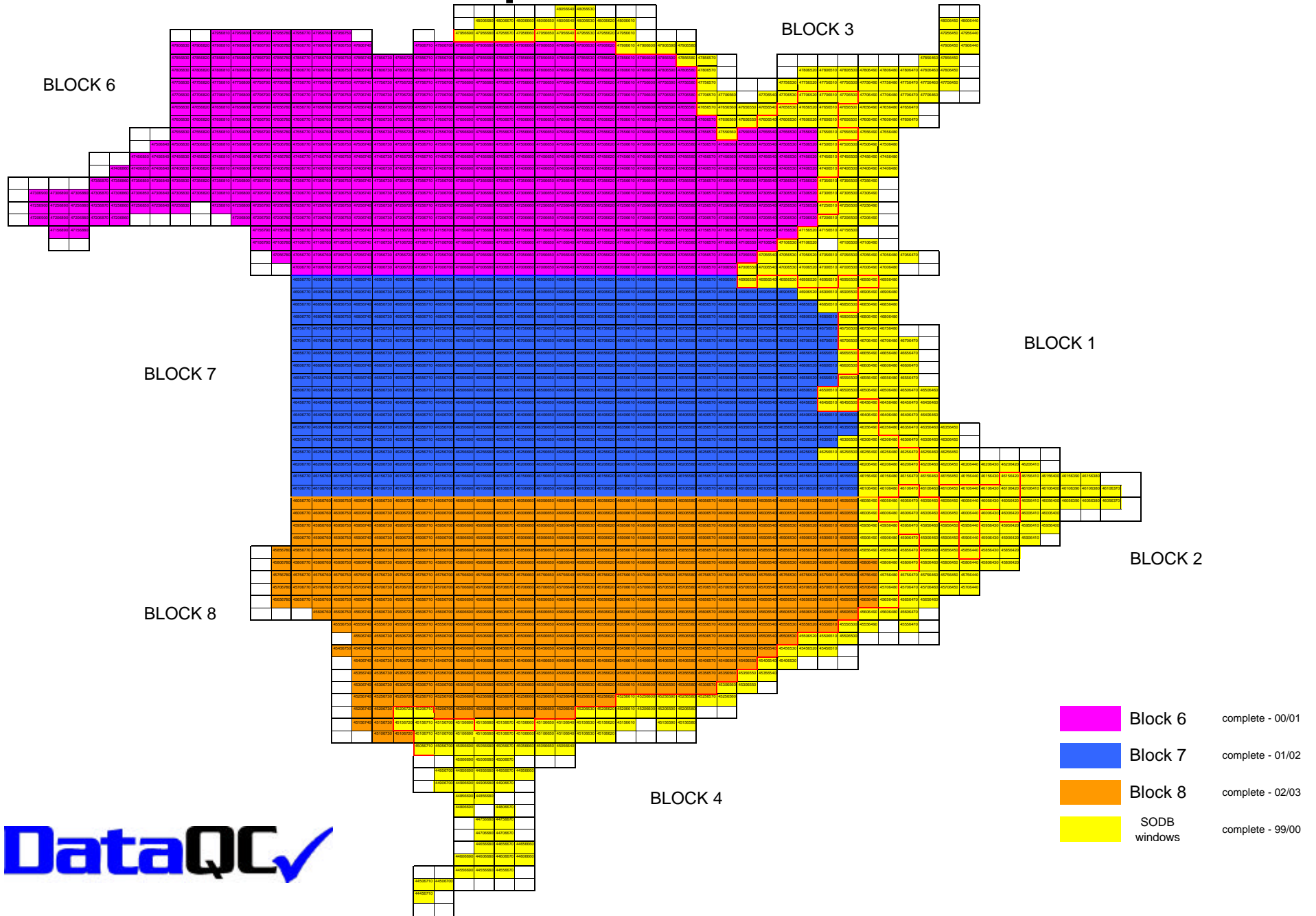
APPENDIX B

Index of Year of Photography

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

Index of Year of Photography

■ (blue)	**1996**
■ (green)	**1997**
■ (red)	**1999**
■ (orange)	**2000**
■ (pink)	**2001**

DataQC✓

APPENDIX C

TIFF Header Sample

New 🚢 Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001
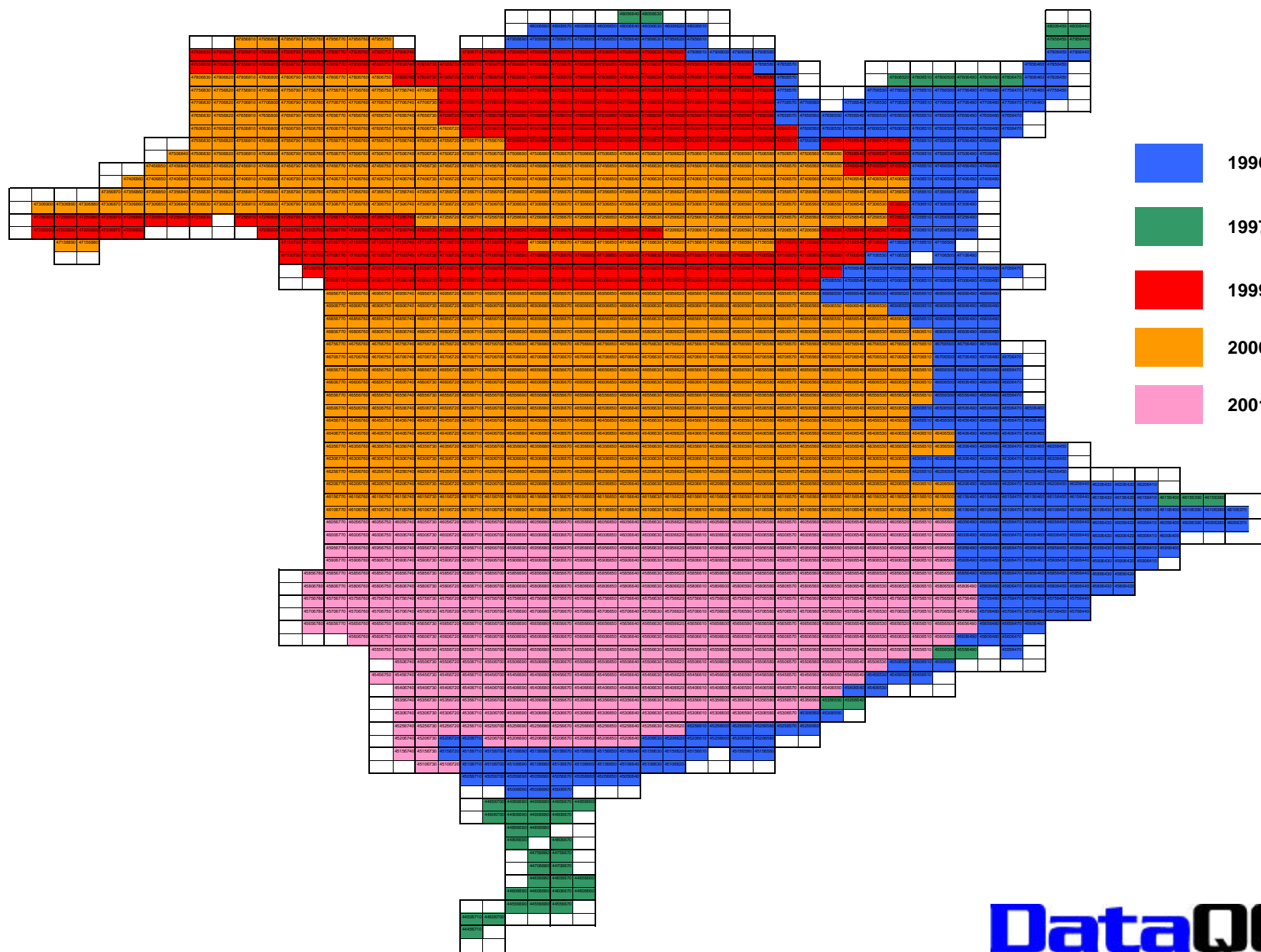
Sample TIFF Header - 44706670.ort

TIFF Directory at offset 0x7edbb96
  Image Width: 7942
  Image Length: 5583
  X Resolution: 254
  Y Resolution: 254
  Resolution Unit: pixels/inch
  Bits/Sample: 8
  Compression Scheme: None
  Photometric Interpretation: RGB color
  Orientation: row 0 top, col 0 lhs
  Samples/Pixel: 3
  Rows/Strip: 558
  Planar Configuration: single image plane
  11 Strips:
  Strip Offsets Strip Byte Counts
     0: [8, 13294908]
     1: [13294916, 13294908]
     2: [26589824, 13294908]
     3: [39884732, 13294908]
     4: [53179640, 13294908]
     5: [66474548, 13294908]
     6: [79769456, 13294908]
     7: [93064364, 13294908]
     8: [106359272, 13294908]
     9: [119654180, 13294908]
    10: [132949088,   71478]

APPENDIX D

List of each SODB File with Date of Photography

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
47056470	1996	46456460	1996	45956400	1996
47056480	1996	46456470	1996	45956410	1996
47056490	1996	46456480	1996	45956420	1996
47056500	1996	46456500	1996	45956430	1996
47056510	1996	46456510	1996	45956450	1996
47056520	1996	46406460	1996	45956460	1996
47056530	1996	46406470	1996	45956470	1996
47056540	1996	46406480	1996	45906410	1996
47006480	1996	46356450	1996	45906420	1996
47006490	1996	46356460	1996	45906430	1996
47006500	1996	46356470	1996	45906450	1996
47006510	1996	46356480	1996	45906460	1996
47006520	1996	46306450	1996	45856420	1996
47006530	1996	46306460	1996	45856430	1996
47006540	1996	46306470	1996	45856450	1996
47006550	1996	46256450	1996	45856460	1996
46956480	1996	46256460	1996	45806420	1996
46956510	1996	46206410	1996	45806430	1996
46956520	1996	46206420	1996	45806440	1996
46956550	1996	46206430	1996	45806450	1996
46906480	1996	46206440	1996	45806460	1996
46906490	1996	46206450	1996	45756440	1996
46856480	1996	46206460	1996	45756450	1996
46856490	1996	46156380	1996	45756460	1996
46806480	1996	46156390	1996	45756470	1996
46806490	1996	46156400	1996	45706440	1996
46806500	1996	46156410	1996	45706450	1996
46756480	1996	46156430	1996	45706460	1996
46756490	1996	46156440	1996	45706470	1996
46756500	1996	46156450	1996	45656460	1996
46706470	1996	46106370	1996	45656470	1996
46706480	1996	46106380	1996	45606470	1996
46706490	1996	46106390	1996	45606480	1996
46706500	1996	46106400	1996	45606490	1996
46656470	1996	46106410	1996	45556470	1996
46656480	1996	46106470	1996	48056630	1996
46656490	1996	46056370	1996	48056640	1996
46606470	1996	46056380	1996	48006440	1996
46606480	1996	46056390	1996	48006450	1996
46606490	1996	46056400	1996	48006680	1996
46555470	1996	46056410	1996	48006610	1996
46555480	1996	46056460	1996	48006670	1996
46555490	1996	46056470	1996	48006620	1996

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
46556500	1996	46056480	1996	48006660	1996
46506460	1996	46006400	1996	48006630	1996
46506470	1996	46006410	1996	48006650	1996
46506480	1996	46006430	1996	48006640	1996
46506490	1996	46006460	1996	47956440	1996
46506500	1996	46006470	1996	47956450	1996
46506510	1996	46006480	1996	47956690	1996
47956680	1996	47656570	1996	45306560	1996
47956610	1996	47606470	1996	45256560	1996
47956670	1996	47606480	1996	45256570	1996
47956620	1996	47606490	1996	45256580	1996
47956660	1996	47606500	1996	45256590	1996
47956630	1996	47606550	1996	45256600	1996
47906440	1996	47606560	1996	45256610	1996
47906450	1996	47556480	1996	45206720	1996
47906580	1996	47556490	1996	45206710	1996
47906590	1996	47556560	1996	45206580	1996
47906600	1996	47506480	1996	45206590	1996
47906610	1996	47506490	1996	45206600	1996
47856450	1996	47506500	1996	45206610	1996
47856460	1996	47456480	1996	45206620	1996
47856570	1996	47456490	1996	45206630	1996
47856580	1996	47456500	1996	45156720	1996
47806450	1996	47406480	1996	45156710	1996
47806460	1996	47406490	1996	45156580	1996
47806470	1996	47406500	1996	45156700	1996
47806480	1996	47356490	1996	45156590	1996
47806490	1996	47356500	1996	45156690	1996
47806500	1996	47356510	1996	45156610	1996
47806510	1996	47306490	1996	45156620	1996
47806520	1996	47306500	1996	45156630	1996
47806570	1996	47306510	1996	45156650	1996
47756450	1996	47256490	1996	45156640	1996
47756460	1996	47256500	1996	45106710	1996
47756470	1996	47206490	1996	45106700	1996
47756480	1996	47206500	1996	45106690	1996
47756490	1996	47206510	1996	45106680	1996
47756500	1996	47156500	1996	45106670	1996
47756510	1996	47156510	1996	45106620	1996
47756520	1996	47156520	1996	45106660	1996
47756530	1996	47106490	1996	45106630	1996
47756570	1996	47106500	1996	45106650	1996
47706460	1996	47106520	1996	45106640	1996
47706470	1996	47106530	1996	45056710	1996

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
47706480	1996	45556490	1996	45056700	1996
47706490	1996	45556500	1996	45056690	1996
47706530	1996	45506500	1996	45056680	1996
47706540	1996	45506510	1996	45056670	1996
47706560	1996	45506520	1996	45056660	1996
47706570	1996	45456510	1996	45056650	1996
47656470	1996	45456520	1996	45056640	1996
47656480	1996	45456530	1996	45006690	1996
47656490	1996	45406530	1996	45006680	1996
47656500	1996	45406540	1996	45006670	1996
47656540	1996	45356540	1996	44956700	1996
47656550	1996	45356550	1996	44956690	1996
47656560	1996	45306550	1996	44956680	1996
44956670	1996	46906510	1996	45856470	1996
44956660	1996	46906520	1996	45856480	1996
44906700	1996	46856500	1996	45856490	1996
44906690	1996	46856510	1996	45806470	1996
44906680	1996	46656500	1996	45806480	1996
44906670	1996	46606500	1996	45756480	1996
44856690	1996	46456490	1996	45706480	1996
45856490	1996	46406490	1996	45656480	1996
44806690	1996	46356490	1996	45156680	1996
44806670	1996	46306480	1996	45156670	1996
44756680	1996	46306490	1996	45156660	1996
44756670	1996	46306500	1996	47956810	1999
44706680	1996	46306510	1996	47956800	1999
44706670	1996	46256470	1996	47956790	1999
44656680	1996	46256480	1996	47956780	1999
44656670	1996	46256490	1996	47956770	1999
44656660	1996	46256500	1996	47956760	1999
44606690	1996	46256510	1996	47956750	1999
44606680	1996	46206470	1996	47906830	1999
44606670	1996	46206480	1996	47906820	1999
44606660	1996	46206490	1996	47906810	1999
44556690	1996	46156420	1996	47906800	1999
44556680	1996	46156460	1996	47906790	1999
44556670	1996	46156470	1996	47906780	1999
44506710	1996	46156480	1996	47906770	1999
44506700	1996	46156490	1996	47906760	1999
44456710	1996	46106420	1996	47906750	1999
47956650	1996	46106430	1996	47906740	1999
47956640	1996	46106440	1996	47906710	1999
47706500	1996	46106450	1996	47906700	1999
47706510	1996	46106460	1996	47906690	1999

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
47706520	1996	46106480	1996	47906680	1999
47656510	1996	46106490	1996	47906670	1999
47656520	1996	46056420	1996	47906620	1999
47656530	1996	46056430	1996	47906660	1999
47606510	1996	46056440	1996	47906630	1999
47606520	1996	46056450	1996	47906650	1999
47606530	1996	46056490	1996	47906640	1999
47606540	1996	46006420	1996	47856830	1999
47556500	1996	46006440	1996	47856820	1999
47556510	1996	46006450	1996	47856810	1999
47506510	1996	46006490	1996	47856800	1999
47456510	1996	45956440	1996	47856790	1999
47406510	1996	45956480	1996	47856780	1999
47256510	1996	45956490	1996	47856770	1999
46956490	1996	45906440	1996	47856760	1999
46956500	1996	45906470	1996	47856750	1999
46956530	1996	45906480	1996	47856740	1999
46956540	1996	45906490	1996	47856730	1999
46906500	1996	45856440	1996	47856720	1999
47856710	1999	47756720	1999	47656740	1999
47856700	1999	47756580	1999	47656730	1999
47856590	1999	47756710	1999	47656720	1999
47856690	1999	47756700	1999	47656710	1999
47856600	1999	47756590	1999	47656580	1999
47856680	1999	47756690	1999	47656700	1999
47856610	1999	47756600	1999	47656590	1999
47856670	1999	47756680	1999	47656600	1999
47856620	1999	47756610	1999	47656690	1999
47856660	1999	47756620	1999	47656680	1999
47856630	1999	47756670	1999	47656610	1999
47856650	1999	47756630	1999	47656620	1999
47856640	1999	47756660	1999	47656670	1999
47806830	1999	47756650	1999	47656660	1999
47806820	1999	47756640	1999	47656630	1999
47806810	1999	47706830	1999	47656650	1999
47806800	1999	47706820	1999	47656640	1999
47806790	1999	47706810	1999	47606830	1999
47806780	1999	47706800	1999	47606820	1999
47806770	1999	47706790	1999	47606810	1999
47806760	1999	47706780	1999	47606800	1999
47806750	1999	47706770	1999	47606790	1999
47806740	1999	47706760	1999	47606780	1999
47806730	1999	47706750	1999	47606770	1999
47806720	1999	47706740	1999	47606760	1999

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
47806710	1999	47706730	1999	47606750	1999
47806580	1999	47706720	1999	47606740	1999
47806590	1999	47706710	1999	47606730	1999
47806700	1999	47706580	1999	47606720	1999
47806690	1999	47706700	1999	47606570	1999
47806600	1999	47706590	1999	47606710	1999
47806680	1999	47706690	1999	47606580	1999
47806610	1999	47706600	1999	47606700	1999
47806620	1999	47706680	1999	47606590	1999
47806670	1999	47706610	1999	47606690	1999
47806660	1999	47706620	1999	47606600	1999
47806630	1999	47706670	1999	47606680	1999
47806650	1999	47706660	1999	47606610	1999
47806640	1999	47706630	1999	47606620	1999
47756830	1999	47706650	1999	47606670	1999
47756820	1999	47706640	1999	47606660	1999
47756810	1999	47656830	1999	47606630	1999
47756800	1999	47656820	1999	47606650	1999
47756790	1999	47656810	1999	47606640	1999
47756780	1999	47656800	1999	47556830	1999
47756770	1999	47656790	1999	47556820	1999
47756760	1999	47656780	1999	47556810	1999
47756750	1999	47656770	1999	47556800	1999
47756740	1999	47656760	1999	47556790	1999
47756730	1999	47656750	1999	47556780	1999
47556770	1999	47506680	1999	47406780	1999
47556520	1999	47506610	1999	47406770	1999
47556760	1999	47506670	1999	47406520	1999
47556530	1999	47506620	1999	47406760	1999
47556750	1999	47506660	1999	47406530	1999
47556540	1999	47506630	1999	47406750	1999
47556740	1999	47506650	1999	47406540	1999
47556550	1999	47506640	1999	47406740	1999
47556730	1999	47456850	1999	47406550	1999
47556720	1999	47456840	1999	47406730	1999
47556570	1999	47456830	1999	47406560	1999
47556710	1999	47456820	1999	47406720	1999
47556580	1999	47456810	1999	47406570	1999
47556700	1999	47456800	1999	47406710	1999
47556590	1999	47456790	1999	47406580	1999
47556690	1999	47456780	1999	47406700	1999
47556600	1999	47456770	1999	47406590	1999
47556610	1999	47456520	1999	47406690	1999
47556680	1999	47456760	1999	47406600	1999

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
47556670	1999	47456530	1999	47406680	1999
47556620	1999	47456750	1999	47406610	1999
47556660	1999	47456540	1999	47406670	1999
47556630	1999	47456740	1999	47406620	1999
47556650	1999	47456550	1999	47406660	1999
47556640	1999	47456730	1999	47406630	1999
47506840	1999	47456560	1999	47406650	1999
47506830	1999	47456720	1999	47406640	1999
47506820	1999	47456570	1999	47356870	1999
47506810	1999	47456710	1999	47356860	1999
47506800	1999	47456580	1999	47356850	1999
47506790	1999	47456700	1999	47356840	1999
47506780	1999	47456590	1999	47356830	1999
47506770	1999	47456690	1999	47356820	1999
47506520	1999	47456600	1999	47356810	1999
47506760	1999	47456680	1999	47356800	1999
47506530	1999	47456610	1999	47356790	1999
47506750	1999	47456670	1999	47356780	1999
47506540	1999	47456620	1999	47356770	1999
47506740	1999	47456660	1999	47356520	1999
47506550	1999	47456630	1999	47356760	1999
47506730	1999	47456650	1999	47356530	1999
47506560	1999	47456640	1999	47356750	1999
47506720	1999	47406860	1999	47356540	1999
47506570	1999	47406850	1999	47356740	1999
47506710	1999	47406840	1999	47356550	1999
47506580	1999	47406830	1999	47356730	1999
47506700	1999	47406820	1999	47356560	1999
47506590	1999	47406810	1999	47356720	1999
47506690	1999	47406800	1999	47356570	1999
47506600	1999	47406790	1999	47356710	1999
47356580	1999	47306650	1999	47206760	1999
47356700	1999	47306640	1999	47206530	1999
47356590	1999	47256900	1999	47206750	1999
47356690	1999	47256890	1999	47206540	1999
47356600	1999	47256880	1999	47206740	1999
47356680	1999	47256870	1999	47206550	1999
47356610	1999	47256860	1999	47206730	1999
47356670	1999	47256850	1999	47206560	1999
47356620	1999	47256840	1999	47206720	1999
47356660	1999	47256830	1999	47206570	1999
47356630	1999	47256810	1999	47206710	1999
47356650	1999	47256800	1999	47206580	1999
47356640	1999	47256790	1999	47206700	1999

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
47306900	1999	47256780	1999	47206590	1999
47306890	1999	47256770	1999	47206690	1999
47306880	1999	47256520	1999	47206600	1999
47306870	1999	47256760	1999	47206680	1999
47306860	1999	47256530	1999	47206610	1999
47306850	1999	47256750	1999	47206670	1999
47306840	1999	47256540	1999	47206620	1999
47306830	1999	47256740	1999	47206660	1999
47306820	1999	47256550	1999	47206630	1999
47306810	1999	47256730	1999	47206650	1999
47306800	1999	47256560	1999	47206640	1999
47306790	1999	47256720	1999	47156890	1999
47306780	1999	47256570	1999	47156880	1999
47306770	1999	47256710	1999	47156790	1999
47306520	1999	47256580	1999	47156780	1999
47306760	1999	47256700	1999	47156770	1999
47306530	1999	47256590	1999	47156760	1999
47306750	1999	47256690	1999	47156530	1999
47306540	1999	47256600	1999	47156750	1999
47306740	1999	47256680	1999	47156540	1999
47306550	1999	47256610	1999	47156740	1999
47306730	1999	47256670	1999	47156550	1999
47306560	1999	47256620	1999	47156730	1999
47306720	1999	47256660	1999	47156560	1999
47306570	1999	47256630	1999	47156720	1999
47306710	1999	47256650	1999	47156570	1999
47306580	1999	47256640	1999	47156710	1999
47306700	1999	47206900	1999	47156580	1999
47306590	1999	47206890	1999	47156700	1999
47306690	1999	47206880	1999	47156590	1999
47306600	1999	47206870	1999	47156690	1999
47306680	1999	47206860	1999	47156600	1999
47306610	1999	47206800	1999	47156680	1999
47306670	1999	47206790	1999	47156610	1999
47306620	1999	47206780	1999	47156670	1999
47306660	1999	47206770	1999	47156620	1999
47306630	1999	47206520	1999	47156660	1999
47156630	1999	47056630	1999	46906750	2000
47156640	1999	47056650	1999	46906540	2000
47156650	1999	47056640	1999	46906740	2000
47106790	1999	47006770	1999	46906550	2000
47106780	1999	47006760	1999	46906730	2000
47106770	1999	47006750	1999	46906560	2000
47106760	1999	47006740	1999	46906720	2000

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
47106750	1999	47006730	1999	46906570	2000
47106540	1999	47006560	1999	46906710	2000
47106740	1999	47006720	1999	46906580	2000
47106550	1999	47006570	1999	46906700	2000
47106730	1999	47006710	1999	46906590	2000
47106560	1999	47006580	1999	46906690	2000
47106720	1999	47006700	1999	46906600	2000
47106570	1999	47006590	1999	46906680	2000
47106710	1999	47006690	1999	46906610	2000
47106580	1999	47006600	1999	46906620	2000
47106700	1999	47006680	1999	46906670	2000
47106590	1999	47006610	1999	46906630	2000
47106690	1999	47006670	1999	46906660	2000
47106600	1999	47006620	1999	46906640	2000
47106680	1999	47006630	1999	46906650	2000
47106610	1999	47006660	1999	46856770	2000
47106670	1999	47006640	1999	46856520	2000
47106620	1999	47006650	1999	46856760	2000
47106660	1999	46956770	2000	46856530	2000
47106630	1999	46956760	2000	46856750	2000
47106650	1999	46956750	2000	46856540	2000
47106640	1999	46956740	2000	46856740	2000
47056780	1999	46956730	2000	46856550	2000
47056770	1999	46956560	2000	46856730	2000
47056760	1999	46956720	2000	46856560	2000
47056750	1999	46956570	2000	46856720	2000
47056740	1999	46956710	2000	46856570	2000
47056550	1999	46956580	2000	46856710	2000
47056730	1999	46956700	2000	46856580	2000
47056560	1999	46956590	2000	46856700	2000
47056720	1999	46956690	2000	46856590	2000
47056570	1999	46956600	2000	46856690	2000
47056710	1999	46956680	2000	46856600	2000
47056580	1999	46956610	2000	46856680	2000
47056700	1999	46956670	2000	46856610	2000
47056590	1999	46956620	2000	46856620	2000
47056690	1999	46956630	2000	46856670	2000
47056600	1999	46956660	2000	46856630	2000
47056680	1999	46956640	2000	46856660	2000
47056610	1999	46956650	2000	46856640	2000
47056670	1999	46906770	2000	46856650	2000
47056620	1999	46906760	2000	46806510	2000
47056660	1999	46906530	2000	46806770	2000
46806520	2000	46756650	2000	46656620	2000

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
46806760	2000	46756640	2000	46656670	2000
46806530	2000	46706510	2000	46656630	2000
46806750	2000	46706770	2000	46656660	2000
46806540	2000	46706520	2000	46656640	2000
46806740	2000	46706760	2000	46656650	2000
46806550	2000	46706530	2000	46606510	2000
46806730	2000	46706750	2000	46606770	2000
46806560	2000	46706540	2000	46606520	2000
46806720	2000	46706740	2000	46606760	2000
46806570	2000	46706550	2000	46606530	2000
46806710	2000	46706730	2000	46606750	2000
46806580	2000	46706560	2000	46606540	2000
46806700	2000	46706720	2000	46606740	2000
46806590	2000	46706570	2000	46606550	2000
46806690	2000	46706710	2000	46606730	2000
46806600	2000	46706580	2000	46606560	2000
46806680	2000	46706700	2000	46606720	2000
46806610	2000	46706590	2000	46606570	2000
46806620	2000	46706690	2000	46606710	2000
46806670	2000	46706600	2000	46606580	2000
46806630	2000	46706610	2000	46606700	2000
46806660	2000	46706680	2000	46606590	2000
46806640	2000	46706620	2000	46606690	2000
46806650	2000	46706670	2000	46606600	2000
46756510	2000	46706630	2000	46606680	2000
46756770	2000	46706660	2000	46606610	2000
46756520	2000	46706650	2000	46606670	2000
46756760	2000	46706640	2000	46606620	2000
46756530	2000	46656510	2000	46606630	2000
46756750	2000	46656770	2000	46606660	2000
46756540	2000	46656520	2000	46606640	2000
46756740	2000	46656760	2000	46606650	2000
46756550	2000	46656530	2000	46556510	2000
46756730	2000	46656750	2000	46556770	2000
46756560	2000	46656540	2000	46556520	2000
46756720	2000	46656740	2000	46556760	2000
46756570	2000	46656550	2000	46556530	2000
46756710	2000	46656730	2000	46556750	2000
46756580	2000	46656560	2000	46556540	2000
46756700	2000	46656570	2000	46556740	2000
46756590	2000	46656720	2000	46556550	2000
46756690	2000	46656580	2000	46556730	2000
46756600	2000	46656710	2000	46556560	2000
46756680	2000	46656700	2000	46556720	2000

New Nouveau Brunswick
Service New Brunswick
Services Nouveau-Brunswick
Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
46756610	2000	46656590	2000	46556570	2000
46756620	2000	46656690	2000	46556710	2000
46756670	2000	46656600	2000	46556580	2000
46756630	2000	46656610	2000	46556700	2000
46756660	2000	46656680	2000	46556590	2000
46556690	2000	46456700	2000	46356730	2000
46556600	2000	46456590	2000	46356560	2000
46556680	2000	46456690	2000	46356720	2000
46556610	2000	46456600	2000	46356570	2000
46556670	2000	46456680	2000	46356710	2000
46556620	2000	46456610	2000	46356580	2000
46556660	2000	46456670	2000	46356700	2000
46556630	2000	46456620	2000	46356590	2000
46556650	2000	46456660	2000	46356690	2000
46556640	2000	46456630	2000	46356600	2000
46506770	2000	46456650	2000	46356680	2000
46506520	2000	46456640	2000	46356610	2000
46506760	2000	46406500	2000	46356670	2000
46506530	2000	46406510	2000	46356620	2000
46506750	2000	46406770	2000	46356660	2000
46506540	2000	46406520	2000	46356630	2000
46506740	2000	46406760	2000	46356650	2000
46506550	2000	46406530	2000	46356640	2000
46506730	2000	46406750	2000	46306770	2000
46506560	2000	46406540	2000	46306520	2000
46506720	2000	46406740	2000	46306760	2000
46506570	2000	46406550	2000	46306530	2000
46506710	2000	46406730	2000	46306750	2000
46506580	2000	46406560	2000	46306540	2000
46506700	2000	46406720	2000	46306740	2000
46506590	2000	46406570	2000	46306550	2000
46506690	2000	46406710	2000	46306730	2000
46506600	2000	46406580	2000	46306560	2000
46506680	2000	46406700	2000	46306720	2000
46506610	2000	46406590	2000	46306570	2000
46506670	2000	46406690	2000	46306710	2000
46506620	2000	46406600	2000	46306580	2000
46506660	2000	46406680	2000	46306700	2000
46506630	2000	46406610	2000	46306590	2000
46506650	2000	46406670	2000	46306690	2000
46506640	2000	46406620	2000	46306600	2000
46456770	2000	46406660	2000	46306680	2000
46456520	2000	46406630	2000	46306610	2000
46456760	2000	46406650	2000	46306670	2000

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
46456530	2000	46406640	2000	46306620	2000
46456750	2000	46356500	2000	46306660	2000
46456540	2000	46356510	2000	46306630	2000
46456740	2000	46356770	2000	46306650	2000
46456550	2000	46356520	2000	46306640	2000
46456730	2000	46356760	2000	46256770	2000
46456560	2000	46356530	2000	46256520	2000
46456720	2000	46356750	2000	46256760	2000
46456570	2000	46356540	2000	46256530	2000
46456710	2000	46356740	2000	46256750	2000
46456580	2000	46356550	2000	46256540	2000
46256740	2000	46156770	2000	46106660	2000
46256550	2000	46156520	2000	46106630	2000
46256730	2000	46156760	2000	46106650	2000
46256560	2000	46156530	2000	46106640	2000
46256720	2000	46156750	2000	46056500	2001
46256570	2000	46156540	2000	46056510	2001
46256710	2000	46156740	2000	46056770	2001
46256580	2000	46156550	2000	46056520	2001
46256700	2000	46156730	2000	46056760	2001
46256590	2000	46156560	2000	46056530	2001
46256690	2000	46156720	2000	46056750	2001
46256600	2000	46156570	2000	46056540	2001
46256680	2000	46156710	2000	46056740	2001
46256610	2000	46156580	2000	46056550	2001
46256670	2000	46156700	2000	46056730	2001
46256620	2000	46156590	2000	46056560	2001
46256660	2000	46156690	2000	46056720	2001
46256630	2000	46156600	2000	46056570	2001
46256650	2000	46156680	2000	46056710	2001
46256640	2000	46156610	2000	46056580	2001
46206500	2000	46156670	2000	46056700	2001
46206510	2000	46156620	2000	46056590	2001
46206770	2000	46156660	2000	46056690	2001
46206520	2000	46156630	2000	46056600	2001
46206760	2000	46156650	2000	46056680	2001
46206530	2000	46156640	2000	46056610	2001
46206750	2000	46106500	2000	46056670	2001
46206540	2000	46106510	2000	46056620	2001
46206740	2000	46106770	2000	46056660	2001
46206550	2000	46106520	2000	46056630	2001
46206730	2000	46106760	2000	46056650	2001
46206560	2000	46106530	2000	46056640	2001
46206720	2000	46106750	2000	46006500	2001

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
46206570	2000	46106540	2000	46006510	2001
46206710	2000	46106740	2000	46006770	2001
46206580	2000	46106550	2000	46006520	2001
46206700	2000	46106730	2000	46006760	2001
46206590	2000	46106560	2000	46006530	2001
46206690	2000	46106720	2000	46006750	2001
46206600	2000	46106570	2000	46006540	2001
46206680	2000	46106710	2000	46006740	2001
46206610	2000	46106580	2000	46006550	2001
46206670	2000	46106700	2000	46006730	2001
46206620	2000	46106590	2000	46006560	2001
46206660	2000	46106690	2000	46006720	2001
46206630	2000	46106600	2000	46006570	2001
46206650	2000	46106680	2000	46006710	2001
46206640	2000	46106610	2000	46006580	2001
46156500	2000	46106670	2000	46006700	2001
46156510	2000	46106620	2000	46006590	2001
46006690	2001	45906720	2001	45806520	2001
46006600	2001	45906570	2001	45806530	2001
46006680	2001	45906710	2001	45806760	2001
46006610	2001	45906580	2001	45806750	2001
46006670	2001	45906700	2001	45806540	2001
46006620	2001	45906590	2001	45806740	2001
46006660	2001	45906690	2001	45806550	2001
46006630	2001	45906600	2001	45806730	2001
46006650	2001	45906680	2001	45806560	2001
46006640	2001	45906610	2001	45806720	2001
45956500	2001	45906670	2001	45806570	2001
45956510	2001	45906620	2001	45806710	2001
45956770	2001	45906660	2001	45806580	2001
45956520	2001	45906630	2001	45806700	2001
45956760	2001	45906650	2001	45806590	2001
45956530	2001	45906640	2001	45806690	2001
45956750	2001	45856500	2001	45806600	2001
45956540	2001	45856780	2001	45806680	2001
45956740	2001	45856510	2001	45806610	2001
45956550	2001	45856770	2001	45806670	2001
45956730	2001	45856520	2001	45806620	2001
45956560	2001	45856760	2001	45806660	2001
45956720	2001	45856530	2001	45806630	2001
45956570	2001	45856750	2001	45806650	2001
45956710	2001	45856540	2001	45806640	2001
45956580	2001	45856740	2001	45756490	2001
45956700	2001	45856550	2001	45756500	2001

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
45956590	2001	45856730	2001	45756510	2001
45956690	2001	45856560	2001	45756780	2001
45956600	2001	45856720	2001	45756520	2001
45956680	2001	45856570	2001	45756770	2001
45956610	2001	45856710	2001	45756760	2001
45956670	2001	45856580	2001	45756530	2001
45956620	2001	45856700	2001	45756750	2001
45956660	2001	45856590	2001	45756540	2001
45956630	2001	45856690	2001	45756740	2001
45956650	2001	45856600	2001	45756550	2001
45956640	2001	45856680	2001	45756730	2001
45906500	2001	45856610	2001	45756560	2001
45906510	2001	45856670	2001	45756720	2001
45906770	2001	45856620	2001	45756570	2001
45906520	2001	45856660	2001	45756710	2001
45906760	2001	45856630	2001	45756580	2001
45906530	2001	45856650	2001	45756700	2001
45906750	2001	45856640	2001	45756590	2001
45906540	2001	45806490	2001	45756690	2001
45906740	2001	45806500	2001	45756600	2001
45906550	2001	45806780	2001	45756680	2001
45906730	2001	45806510	2001	45756610	2001
45906560	2001	45806770	2001	45756670	2001
45756620	2001	45656720	2001	45556560	2001
45756660	2001	45656710	2001	45556570	2001
45756630	2001	45656580	2001	45556720	2001
45756650	2001	45656700	2001	45556580	2001
45756640	2001	45656590	2001	45556710	2001
45706490	2001	45656690	2001	45556700	2001
45706500	2001	45656600	2001	45556590	2001
45706780	2001	45656680	2001	45556690	2001
45706510	2001	45656610	2001	45556600	2001
45706520	2001	45656670	2001	45556680	2001
45706770	2001	45656620	2001	45556610	2001
45706760	2001	45656660	2001	45556670	2001
45706530	2001	45656630	2001	45556620	2001
45706750	2001	45656650	2001	45556660	2001
45706540	2001	45656640	2001	45556630	2001
45706740	2001	45606500	2001	45556650	2001
45706550	2001	45606510	2001	45556640	2001
45706730	2001	45606520	2001	45506530	2001
45706560	2001	45606760	2001	45506540	2001
45706720	2001	45606530	2001	45506740	2001
45706570	2001	45606750	2001	45506550	2001

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
45706710	2001	45606540	2001	45506730	2001
45706580	2001	45606740	2001	45506560	2001
45706700	2001	45606550	2001	45506570	2001
45706590	2001	45606730	2001	45506720	2001
45706690	2001	45606560	2001	45506580	2001
45706600	2001	45606570	2001	45506710	2001
45706680	2001	45606720	2001	45506700	2001
45706610	2001	45606580	2001	45506590	2001
45706670	2001	45606710	2001	45506690	2001
45706620	2001	45606700	2001	45506600	2001
45706660	2001	45606590	2001	45506680	2001
45706630	2001	45606690	2001	45506610	2001
45706650	2001	45606600	2001	45506670	2001
45706640	2001	45606680	2001	45506620	2001
45656490	2001	45606610	2001	45506660	2001
45656500	2001	45606670	2001	45506630	2001
45656780	2001	45606620	2001	45506650	2001
45656510	2001	45606660	2001	45506640	2001
45656770	2001	45606630	2001	45456750	2001
45656520	2001	45606650	2001	45456540	2001
45656760	2001	45606640	2001	45456740	2001
45656530	2001	45556510	2001	45456550	2001
45656750	2001	45556520	2001	45456730	2001
45656540	2001	45356630	2001	45456560	2001
45656740	2001	45356650	2001	45456720	2001
45656550	2001	45356640	2001	45456570	2001
45656730	2001	45556530	2001	45456710	2001
45656560	2001	45556750	2001	45456580	2001
45656570	2001	45556540	2001	45456700	2001
45456590	2001	45556740	2001	45406630	2001
45456690	2001	45556550	2001	45406650	2001
45456600	2001	45556730	2001	45406640	2001
45456680	2001	45306740	2001	45356740	2001
45456610	2001	45306730	2001	45356730	2001
45456670	2001	45306720	2001	45356560	2001
45456620	2001	45306570	2001	45356720	2001
45456660	2001	45306710	2001	45356570	2001
45456630	2001	45306580	2001	45356710	2001
45456650	2001	45306700	2001	45356580	2001
45456640	2001	45306590	2001	45356700	2001
45406740	2001	45306690	2001	45356590	2001
45406550	2001	45306600	2001	45356690	2001
45406730	2001	45306680	2001	45356600	2001
45406560	2001	45306610	2001	45356680	2001

New Nouveau Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

FILENAME:	Year	FILENAME:	Year	FILENAME:	Year
45406720	2001	45306670	2001	45356610	2001
45406570	2001	45306620	2001	45356670	2001
45406710	2001	45306660	2001	45356620	2001
45406580	2001	45306630	2001	45356660	2001
45406700	2001	45306650	2001	45256670	2001
45406590	2001	45306640	2001	45256620	2001
45406690	2001	45256740	2001	45256660	2001
45406600	2001	45256730	2001	45256630	2001
45406680	2001	45256720	2001	45256650	2001
45406610	2001	45256710	2001	45256640	2001
45406670	2001	45256700	2001	45206740	2001
45406620	2001	45256690	2001	45206730	2001
45406660	2001	45256680	2001	45206700	2001
45206690	2001	45206650	2001	45156730	2001
45206680	2001	45206640	2001	45106730	2001
45206670	2001	45156740	2001	45106720	2001
45206660	2001				

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc
Version 1.5
March 13, 2001

APPENDIX E

Example of Surround Files

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

BOUDREAU
COMTÉ WESTMORLAND COUNTY
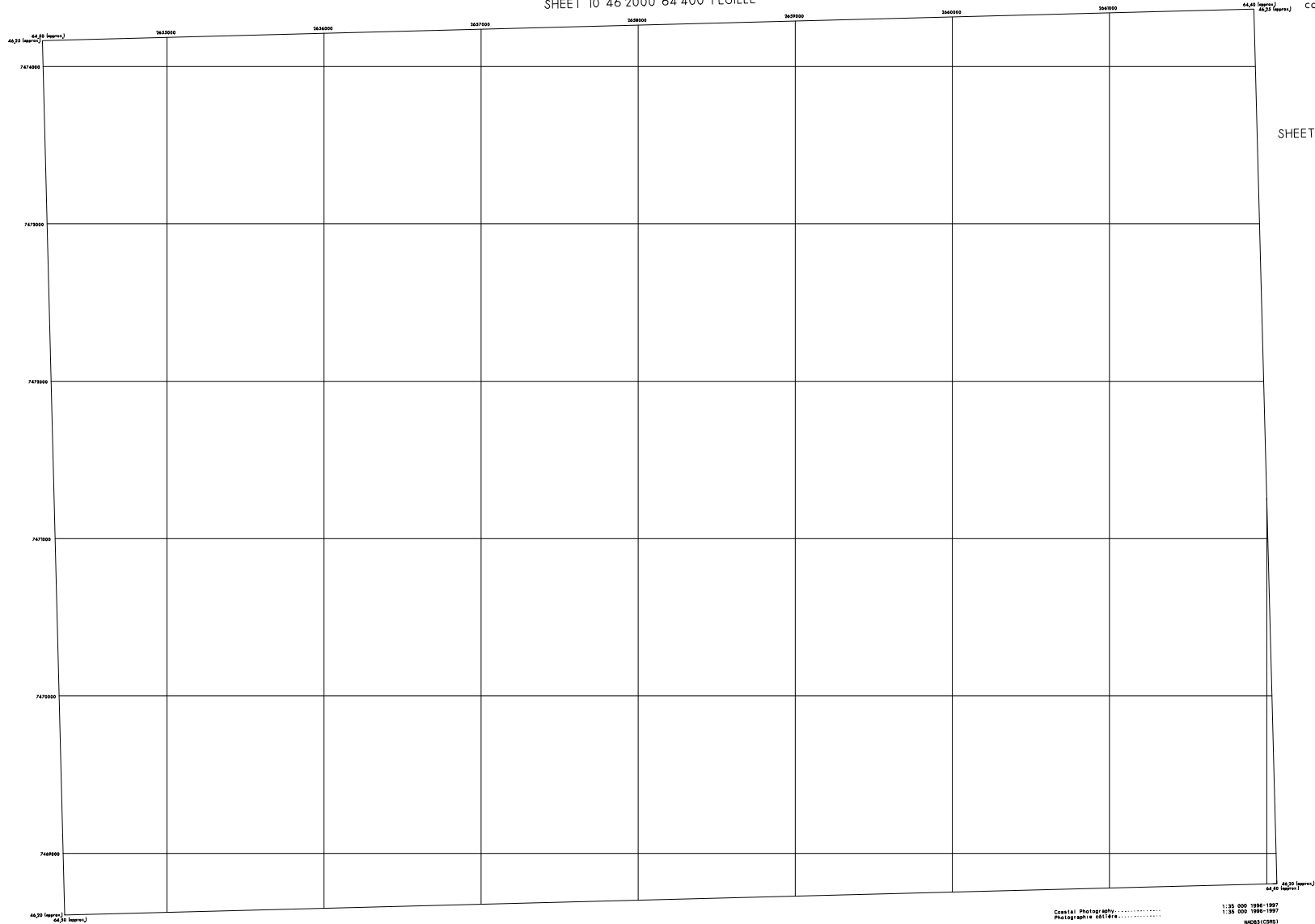
SHEET 10 46 2000 64 400 FEUILLE

10 46 2300 64 300		
10 46 2000 64 300	10 46 2000 64 400	10 46 2000 64 300
10 46 1500 64 300	10 46 1200 64 400	10 46 1500 64 300

Vrai North
Nord géographique

SCALE 1:10 000 ÉCHELLE

500 metres   0   500   1000   1500 mètres

Produced by.............................. Service New Brunswick
Préparé par.............................. Services Nouveau-Brunswick

Photography.............................. Airborne Sensing Corporation
Photographie..............................

Photo control.............................. Key Surveys
Contrôle photogrammétrique..............

Aerial Triangulation...................... Geoplot Technologies Ltd.
Triangulation aérienne....................

Orthophotography.......................... Geoplan Consultants Inc.
Orthophotographie........................

Quality Control.......................... DataQC
Contrôle de la qualité...................

Coastal Photography.................	1:35 000 1996-1997
Photographie côtière................	1:35 000 1996-1997
Geodetic Datum......................	NAD83(CSRS)
Système de référence géodésique....	NAD83(CSRS)
Reference Grid......................	N.B. Stereographic Projection
Quadrillage........................	Projection stéréographique du N.-B.
Grid Size..........................	1 000 metres
Quadrillage de.....................	1 000 mètres
False Northing (Y).................	7 500 000
Ordonnée (Y) à l'origine...........	7 500 000
False Easting (X)..................	2 500 000
Abscisse (X) à l'origine...........	2 500 000
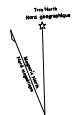
FILE 46206440.ORT FICHIER

APPENDIX F

Header for Orthophotomap Surround File

Header for Orthophotomap Surround File

```
============================== Header ==============================
1. Title   Orthophoto Surround
2. File ID          45206640    3. Horizontal coord system      NEMR
4. Header length         198    5. Vertical coord system          MR
6. Descriptor length      16    7. Sounding, Spot Ht units    MR,M1
8. Coordinate resolutions       9. Coordinate shifts
    XY          1.0000000000    X                    0.000000000
                                Y                    0.000000000
     Z          0.1000000000    Z                    0.000000000
10. Projection             ST   11. Central meridian   66-30-00.000W
12. Scale          10000.00     13. Scaling lat 1      46-30-00.000N
14. Scaling factor  0.999912    15. Scaling Lat 2                N/A
16. Ellipsoid            NA83   17. Vertical datum              MSL
18. N/A                         19. N/A
20. Graphic extent (*NAD83CSRS*,*NAD83CSRS*,*NAD83CSRS*,*NAD83CSRS*)
(system)
21. Neatline corners (metres)   21. Neatline corners Lat,Long
E=    *NAD83CSRS* N=    *NAD83CSRS*    45-12-00.077N    66-29-59.863W
E=    *NAD83CSRS* N=    *NAD83CSRS*    45-12-00.079N    66-23-59.886W
E=    *NAD83CSRS* N=    *NAD83CSRS*    45-15-00.079N    66-23-59.888W
E=    *NAD83CSRS* N=    *NAD83CSRS*    45-15-00.076N    66-29-59.862W
22. Format ID              5    23. Last edited    16-JUL-1998 21:43
24. False North  7500000.000    25. False East  2500000.000
```

New Nouveau
Brunswick

Service New Brunswick
Services Nouveau-Brunswick

Document: ORE1999Q.doc

Version 1.5
March 13, 2001

APPENDIX G

Naming Convention for Support Files

Description	Pre 2000 Name	Post 2000 Name	Pre 2000 Name for Distribution	Post 2000 Name for Distibution
		Naming Convention for Support Files		
CARIS Colour Table File	ETB96TBL.col	ETByyyyA.col	ETB96TBL.zip	ETByyyyA.zip
CARIS Colour Map File	ETB96MAP.cma	ETByyyyA.cma	ETB96MAP.zip	included above
CARIS Master File	ETB96MAS.txt	ETByyyyA.txt	ETB96MAS.zip	included above
CARIS Symbol File	ETB96SYM.dat	ETByyyyA.dat	ETB96DAT.zip	included above
CARIS Symbol File - binary	ETB96SYM.bin	ETByyyyA.bin	ETB96BIN.zip	included above
DXF Shape File	NBGIC10.shp	DXFyyyyA.shp	SHAPE.zip	DXFyyyyA.zip
DXF shape file (binary)	NBGIC10.shx	DXFyyyyA.shx	included above	included above
ETB96 Index Map (ASCII)	INDEX96.asc	NDX1996A.asc	INDEX96.zip	NDX1996A.zip
ETB96 Index Map (DXF)	INDEX96.dxf	NDX1996A.dxf	included above	included above
ETB96 Index Map (PRN)	INDEX96.prn	NDX1996A.prn	included above	included above
ETB98 Index Map (ASCII)		NDX1998A.asc	Not Applicable	NDX1998A.zip
ETB98 Index Map (DXF)		NDX1998A.dxf	Not Applicable	included above
ETB98 Index Map (PRN)		NDX1998A.prn	Not Applicable	included above
SODB User Guide (English)		OREyyyyA.doc	Not Applicable	Not Available
SODB User Guide (French)		ORFyyyyA.doc	Not Applicable	Not Available
SODB User Guide (PDF) English		OREyyyyA.pdf	Not Applicable	ORE1998A.pdf
SODB User Guide (PDF) French		ORFyyyyA.pdf	Not Applicable	ORF1998A.pdf

Notes:
1. Where: yyyy = 4 digit year, and A = version (A - Z)

2. All file names must adhere to the character case convention as follows:
        all text to left of "." is to be UPPERCASE
        all text to right of "." is to be lowercase

SODB Agreement (English)		See CTDB/DTDB98 Agreement		See CTDB/DTDB98 Agreement
SODB Agreement (French)		See CTDB/DTDB98 Agreement		See CTDB/DTDB98 Agreement
SODB Agreement (PDF) English		See CTDB/DTDB98 Agreement		See CTDB/DTDB98 Agreement
SODB Agreement (PDF) French		See CTDB/DTDB98 Agreement		See CTDB/DTDB98 Agreement
ETB96 User Guide (English)	ETB96UGE.wpd	UGE1996A.doc	Not Available	Not Available
ETB96 User Guide (French)	BDA96GUF.wpd	GUF1996A.doc	Not Available	Not Available
ETB96 User Guide (PDF) English	ETB96UGE.pdf	UGE1996A.pdf	ETB96UGE.zip	UGE1996A.pdf
ETB96 User Guide (PDF) French	BDA96GUF.pdf	GUF1996A.pdf	BDA96GUF.zip	GUF1996A.pdf
ETB96 Agreement (English)	ETB96AGR.wpd	AGR1996A.doc	Not Available	Not Available
ETB96 Agreement (French)	BDA96ENT.wpd	ENT1996A.doc	Not Available	Not Available
ETB96 Agreement (PDF) English	ETB96AGR.pdf	AGR1996A.pdf	ETB96AGR.zip	AGR1996A.pdf
ETB96 Agreement (PDF) French	BDA96ENT.pdf	ENT1996A.pdf	BDA96ENT.zip	ENT1996A.pdf
ETB96 Name Cross Reference (ASCII)	ETB96XRF.asc	XRF1996A.asc	ETB96XRF.zip	XRF1996A.zip
CTDB/DTDB98 User Guide (English)		UGE1998A.doc	Not Applicable	Not Available
CTDB/DTDB98 User Guide (French)		GUF1998A.doc	Not Applicable	Not Available
CTDB/DTDB98 User Guide (PDF) English		UGE1998A.pdf	Not Applicable	UGE1998A.pdf
CTDB/DTDB98 User Guide (PDF) French		GUF1998A.pdf	Not Applicable	GUF1998A.pdf
CTDB/DTDB98 Agreement (English)		AGR1998A.doc		Not Available
CTDB/DTDB98 Agreement (French)		ENT1998A.doc		Not Available
CTDB/DTDB98 Agreement (PDF) English)		AGR1998A.pdf		AGR1998A.pdf
CTDB/DTDB98 Agreement (PDF) French		ENT1998A.pdf		ENT1998A.pdf

Notes:
1. Where: yyyy = 4 digit year, and A = version (A - Z)

2. All file names must adhere to the character case convention as follows:
        all text to left of "." is to be UPPERCASE
        all text to right of "." is to be lowercase