Vermont Stream Geomorphic Assessment

Appendix B

Phase 1

Data Management System Instructions

Vermont Agency of Natural Resources
May 2007

Appendix B - Phase 1
Data Management System Instructions

Introduction

The Vermont Agency of Natural Resources has developed a web based Data Management System (DMS) to allow for efficient data entry and retrieval of Vermont Stream Geomorphic data. We hope you find it a useful tool and we welcome your feedback.

Please read and understand the DMS instructions prior to entering any data. Data must be entered in the order described in the instructions. Any deviation from the process could result in errors. To ensure the accuracy of the data entered into the state geomorphic database, there are several QA checks built into the DMS.

Before you start

In order to use the DMS you must have a login issued by one of the river assessment staff. To determine who the staff person is in your area of Vermont go to:
http://www.anr.state.vt.us/dec/waterq/rivers/htm/rv_geoassess-contact.htm

To log in for the first time you will need to do the following:
1) Copy and paste this web address into your browser
https://anrnode.anr.state.vt.us/ssl/sga/
If asked about a Security Certificate, choose 'Yes' to proceed.

2) Login using the information listed above: you will be prompted to change your password.

3) Read the DMS instructions.

4) Navigate around and get familiar with the program.

5) Save the web address to your favorites before you log out!

Metadata

Metadata is used to document the methods and sources used in collecting geomorphic assessment data. The River Management Program (RMP) has developed a list of standard metadata options for each of the Phase 1 parameters. The documentation of metadata is completed during the manual data entry task where the user will find a drop-down menu listing the options for each parameter. The default for each parameter is the data collection method most commonly used. If you did not use the default method you must change the metadata for each applicable reach.

If you find that none of the metadata options for a parameter adequately describes the method you used please contact the RMP staff.

Welcome Page

The first web page you will see after you login will be the welcome page. The welcome page (or *Home* page) will list any recent changes to the DMS and any other important anouncements. Please review this page each time you login. (Figure 1)

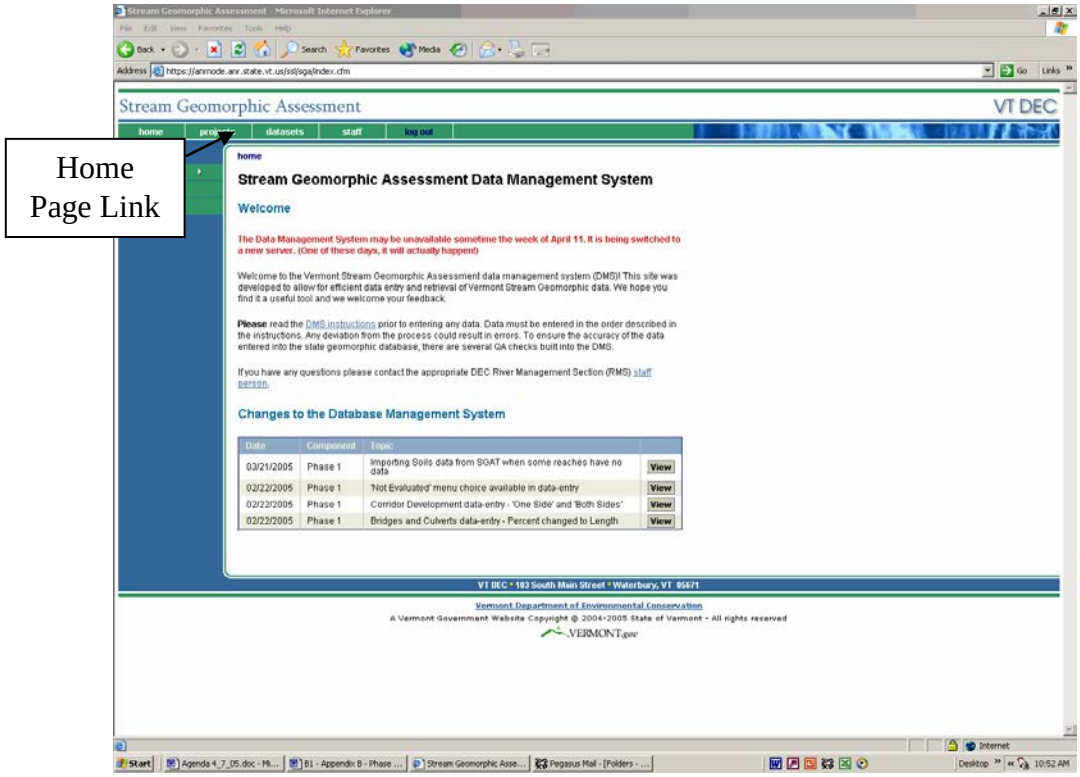


Figure 1. Data Management System Welcome Page

Projects page

To access the specific project you are working on you select the "Projects" button at the top of the webpage and then select the *Phase I* button to the left.

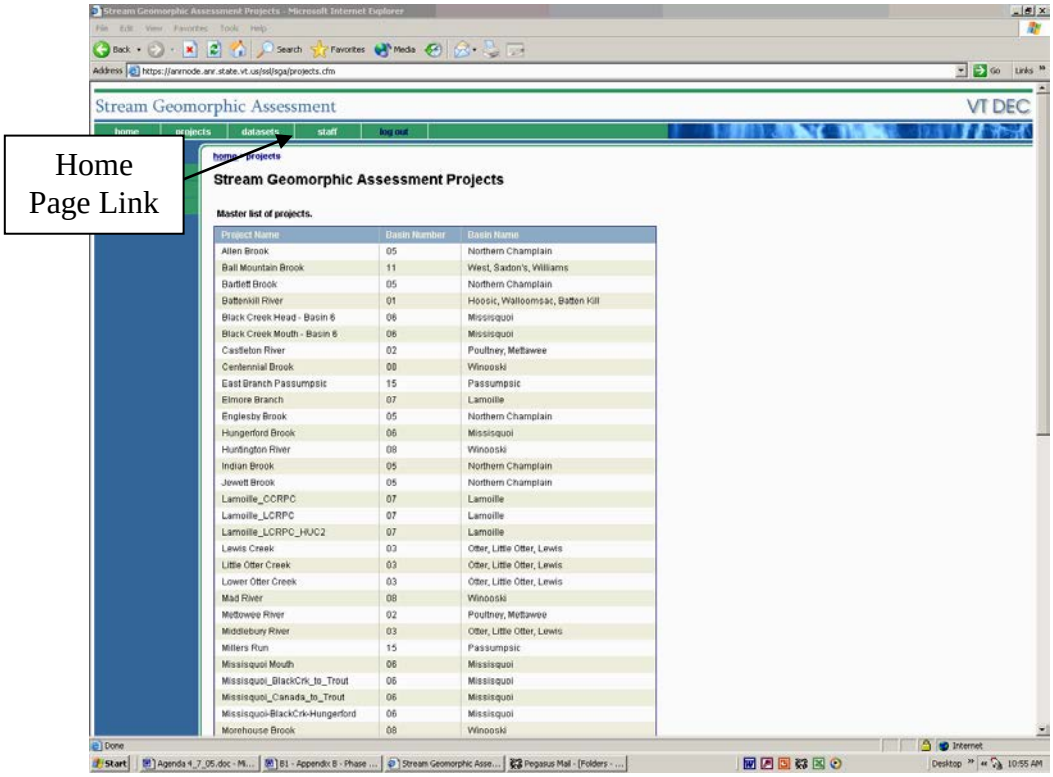


Figure 2. Data Management System Projects Page

The projects page will list all of the projects you have access to. You will only have access to projects you are working on and have data entry privelidges.

Background Page (Figure 3)

Once you select a specific project you will be routed to the background page for the project (Figure 3). This page will list the project name, contact information for the user and any milestones that have been met in the data entry process.

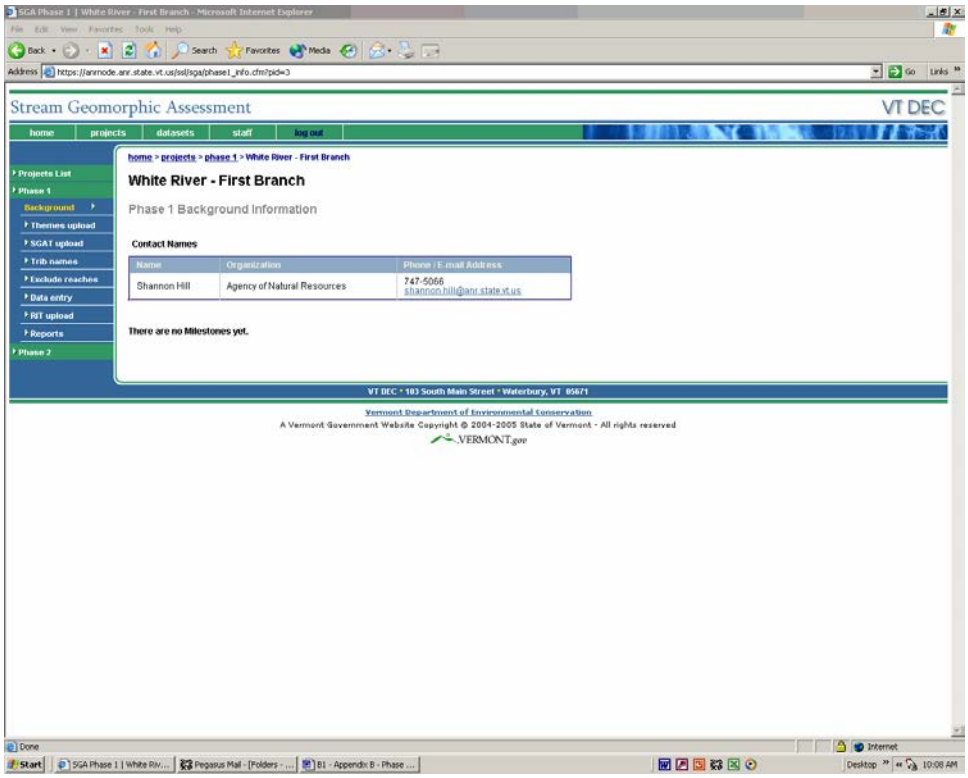


Figure 3. Data Management System Phase I Projects Page

The Phase I data entry process has been divided into separate tasks, each listed on the left hand task bar. These tasks should be completed in order, from top to bottom as listed on the task bar.

Themes Upload (Figure 4)

DMS Theme Upload

Login to the DMS with your name and password
From the top bar select "projects". This will bring up the *Stream Geomorphic Assessment Projects* "Master list" screen.

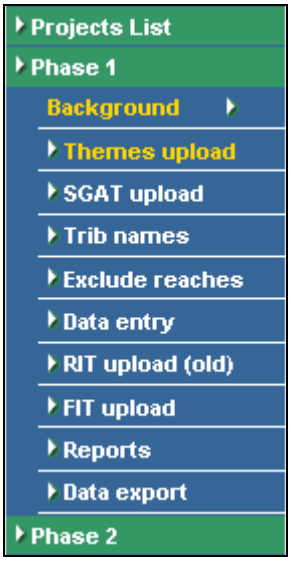
Select "Phase 1" from the menu on the left hand side of the screen.

All Theme Uploads are done is Phase 1, regardless of the phase you are working with.

Scroll down through the list of all the projects (found in the *Project Name* column) until you have found your project.

***Note**: All projects are organized first by basin and then alphabetically.*

Now select "Themes upload" from the left side menu. This will bring up the *Upload ArcView Themes* screen.



On this page you see a table of Themes to be uploaded.
Themes:

1. MapServe	Phase 1 & 2
2. MeanderCenterline	
3. SubWatershed	Phase 1
4. ValleyWall	

Pre-Phase 1 Upload

Before you are able to start the Phase 1 by running the Stream Geomorphic Assessment Tool (SGAT) you must create and upload the Meander Center Line, the Sub-Watersheds, and the Valley Wall shapefiles.

Before you can continue with the SGAT portion of the Phase 1, the River Management program must QA your 3 themes

When creating a theme (shapefile) ArcView or ArcMap generate a collection of files per theme. Every shapefile collection will contain:

-a **".shp"** file. This file is the true "shape" file in that it stores the geometry of the of what you created

-a **".dbf"** file. This file contains all the attribute table information. (tabular information).

-a **".shx"** file. This file stores all the look-up index (how the tabular information is connected to the spatial information.

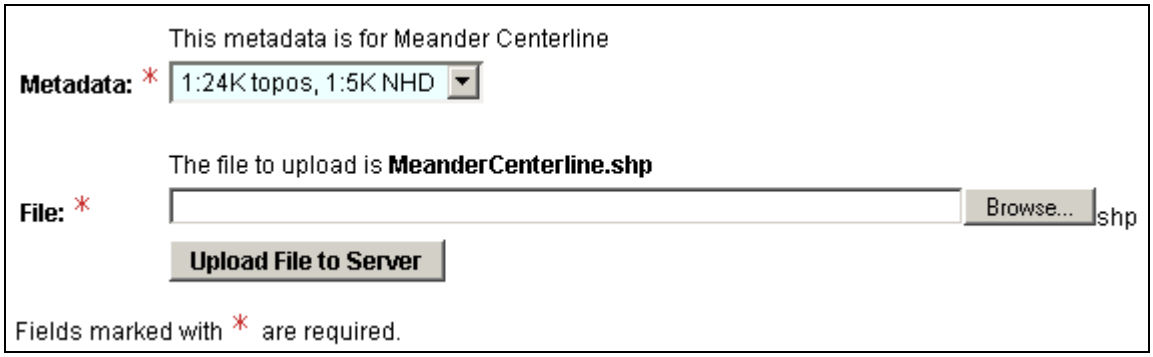
-and *sometimes* a **".sbn"** or a **".sbx"** file. These files are spatial indexes for read-write shape files. These files increase the speed at which a shape file can be drawn or queried.

For each of the 3 shape files that you have created you must upload all extensions that exist (.shp, .dbf, and .shx are required, but if the others exist they must be sent as well). See below.

	Theme	Extension	Upload ?		Date/Time Uploaded
	MapServe	zip	organization	Upload	
PHASE 1	MeanderCenterline	shp	required	Upload	02/26/2007 14:24
	MeanderCenterline	dbf	required	Upload	02/26/2007 14:24
	MeanderCenterline	shx	required	Upload	02/26/2007 14:25
	MeanderCenterline	sbn	if exists	Upload	02/26/2007 14:25
	MeanderCenterline	sbx	if exists	Upload	02/26/2007 14:25
	SubWatershed	shp	required	Upload	02/26/2007 14:25
	SubWatershed	dbf	required	Upload	02/26/2007 14:25
	SubWatershed	shx	required	Upload	02/26/2007 14:26
	SubWatershed	sbn	if exists	Upload	02/26/2007 14:26
	SubWatershed	sbx	if exists	Upload	02/26/2007 14:26
	ValleyWall	shp	required	Upload	02/26/2007 14:26
	ValleyWall	dbf	required	Upload	02/26/2007 14:26
	ValleyWall	shx	required	Upload	02/26/2007 14:27
	ValleyWall	sbn	if exists	Upload	
	ValleyWall	sbx	if exists	Upload	

There is no direct order in which the pre-phase 1 upload should be conducted (we recommend you do it in sequential order)

Click the Upload button for "Meandercenterline.shp" and this will bring up the *Upload a file for one theme* screen.



Use the "**Metadata:**" drop down menu to select the best option as to how you drew your Meander Centerline.

Now in the "**File:**" box you must enter the location of the meander center line file on your computer. If you do not know the exact location you can click on the Browse... button and navigate through your computer until you find the file and then click the "Open" button.

If the route name in the "**File:**" box is correct, click the Upload File to Server button.

Your name for the meander centerline may be different, but as you upload each file in the DMS it will be renamed (e.g. MeanderCenterline.shp).

When the file has been uploaded a date and time will appear in the Date/Time Uploaded column of the *Upload ArcView Themes* table.
Now repeat this process for the other 9-15 files that you have.

Once you have uploaded all pre-phase 1 themes, please notify the River Management Staff, so that there can be a QA of this information.

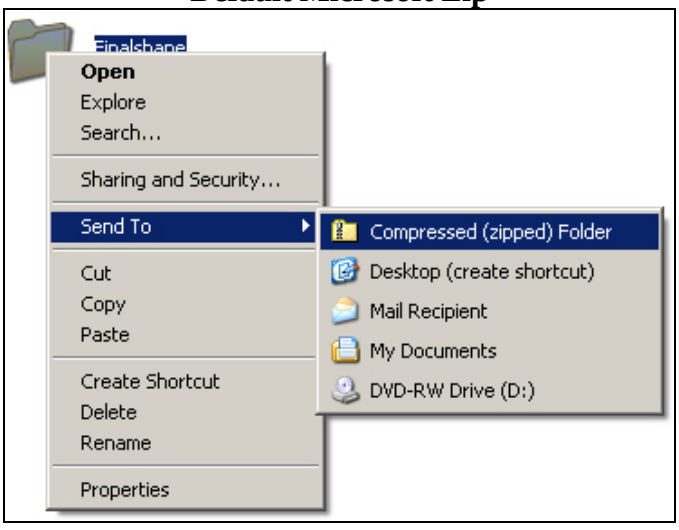
Phase 1 & 2 Upload

When you have finished working with SGAT, you must place all 9 (6 if this is phase 1) of your themes (SGAT generated shapefiles) in a folder called "**Finalshape**" and zip* it.

s06rpts s05swfinaldslv fit00ptimpact fit00lnimpact s09corridor	
seg01segptsproj seg01swseg fit01ptimpactseg fit01lnimpactseg	Phase 2 only

*zipping is a file compression technique, designed to make files more manageable. If you are unfamiliar with the zipping process simply right click on your folder (if you have a non windows zipping program it should appear here in your options), if not most current operating systems (at least windows XP and 2000) will allow you to send the file to a compressed (zipped) Folder. See below. If you do not currently posses the ability to zip a folder please download Winzip from www.winzip.com ($29.95).

Default Microsoft Zip



WinZip

Now that the file is zipped you must enter the DMS as stated above and click on the Upload button next to the "Finalshape" theme. This will bring you to the *Upload a file for one theme* screen.

Note: *There is no metadata drop down for this data set.*

Type in the location of your zipped folder. If you do not know the location you can click the Browse... button and search your computer for the folder. Once you have found the folder click the "Open" button.

If the route name in the "**File:**" box is correct, click the Upload File to Server button.

When the file has been uploaded a date and time will appear in the Date/Time Uploaded column of the *Upload ArcView Themes* table.

Once you have uploaded the zipped folder, please notify the River Management Staff, so that there can be a QA of this information.

Your project will remain at provisional status until the QA of the zipped folder has been conducted

Accessing Data:

All uploaded data can be downloaded by clicking the Download uploaded files button.

SGAT Upload (Figure 5)

After completing the SGAT portion of the Phase I the user will upload five of the resulting tables for automated transfer of the data into the DMS. Upload each of the five files by navigating to the SGAT project file and selecting the appropriate file name. Once a theme has been uploaded run the automated QC check by pressing the QC check button.

If an error is found in the SGAT data the DMS will open a new page and list the specific error. All errors must be fixed before the DMS will upload the data into the state wide database and allow the user to proceed to the next step. Once the SGAT data is uploaded the user may view the data by selecting the button to the right of the file name.

If more accurate soils or land use data becomes available the user can re-run SGAT using the new data and re-upload the Step 14 files in to the DMS. The DMS is programmed to allow for wholesale replacement of the soils and land use data. The reach and project data cannot be re-uploaded from SGAT. After the initial SGAT upload, any changes to SGAT data other than soils and land use must be made manually in the DMS.

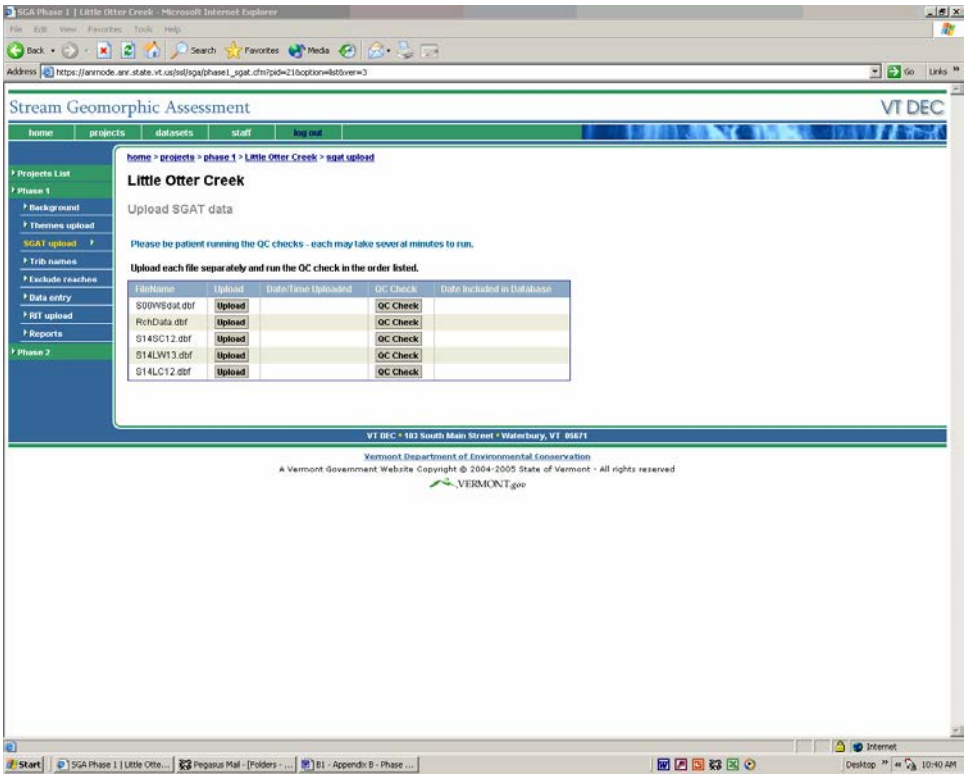


Figure 5. SGAT data uplaod page

Tributary Names (Figure 6)

The user must enter all stream names before proceeding to the manual data entry step!

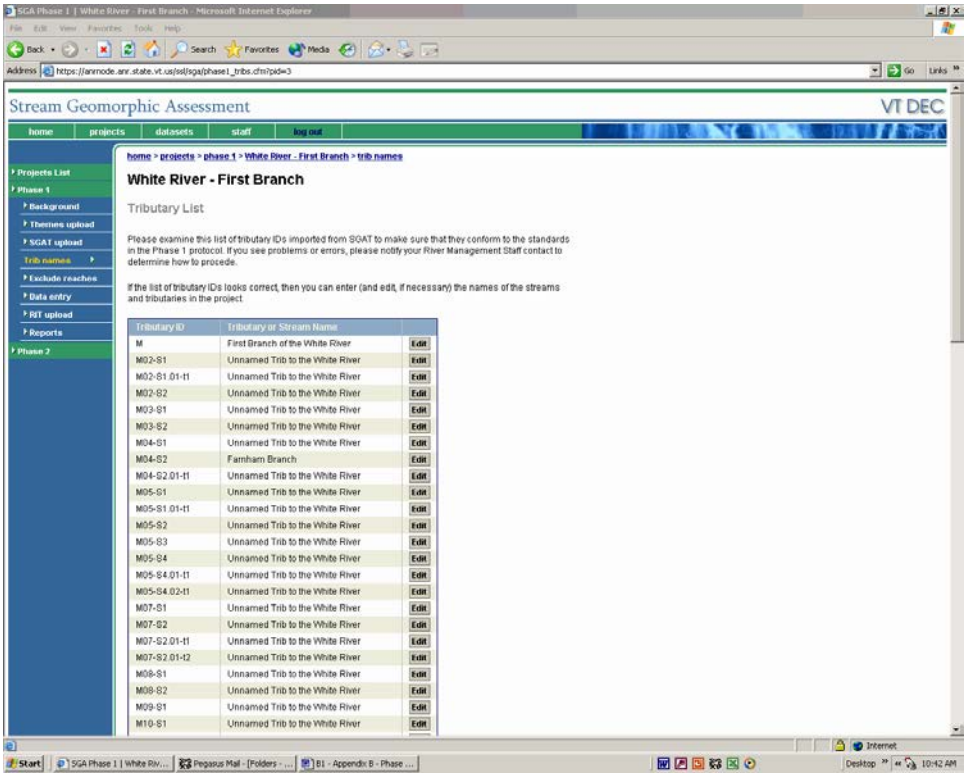


Figure 6. Tributary Naming webpage

In order to eliminate data entry redundancy the DMS allows the user to enter each tributary name once for each Trib ID as identified in SGAT. The DMS will automatically populate each reach on the tributary with the appropriate name. The tributary name can be determined from the topographic map, Gazetteer or local knowledge. If the stream does not have a name, list it as the first tributary to BLANK stream, second tributary to BLANK stream from downstream to upstream.

Exclude Reaches (Figure 7)

The exclude reaches task of the Phase I DMS should only be selected if the user does not plan to manually enter any Phase I data for a reach.

Two examples of when to use Exclude:

- The reach is impounded by a dam and therefore the SGA is not applicable.
- Due to limited funding for a project, the entire watershed was completed in SGAT and the remaining Phase I parameters were only collected on select sub-set of the reaches. In order to prevent data entry errors, the user can exclude the SGAT-only reaches from showing up in the data entry section of the online DMS.

If either of these scenarios is true, the user will select the exclude button on the left hand task bar and check the appropriate box that describes the reason for excluding the reach from the Phase I manual data entry.

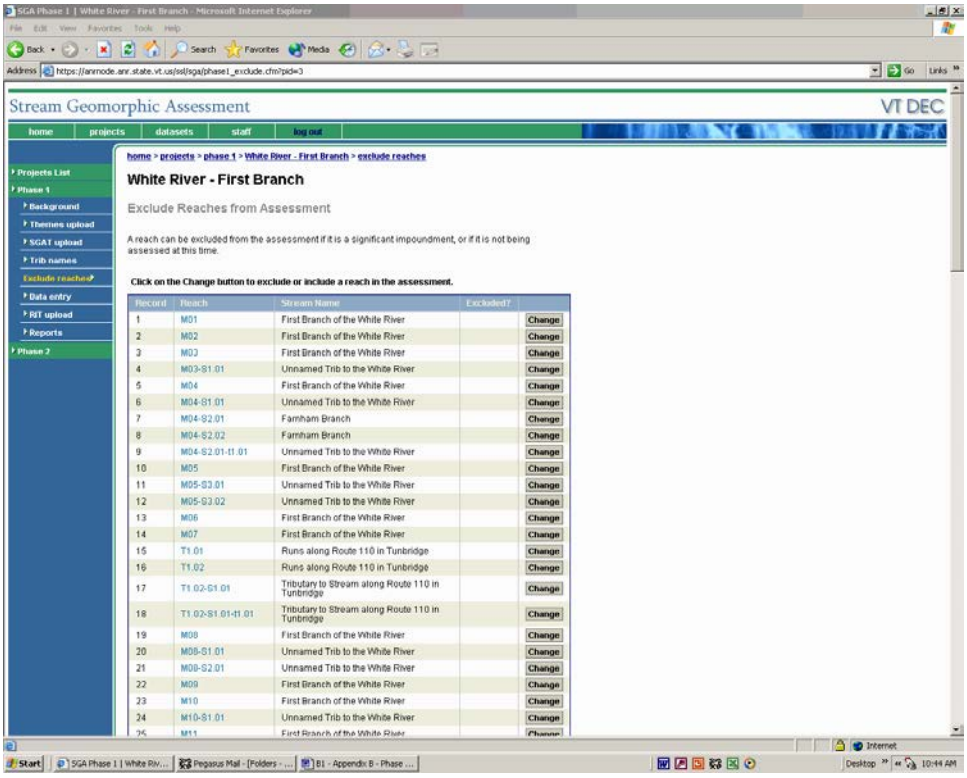


Figure 7. Option to exclude reaches from data entry

Data Entry (Figure 8)

The data entry area of the DMS is where the user will enter all of the data not automated by the SGAT or the Reach Indexing Tool (RIT). Collect the data on the paper data sheets and manually enter the data in the appropriate protocol step. Don't forget to document the appropriate metadata!

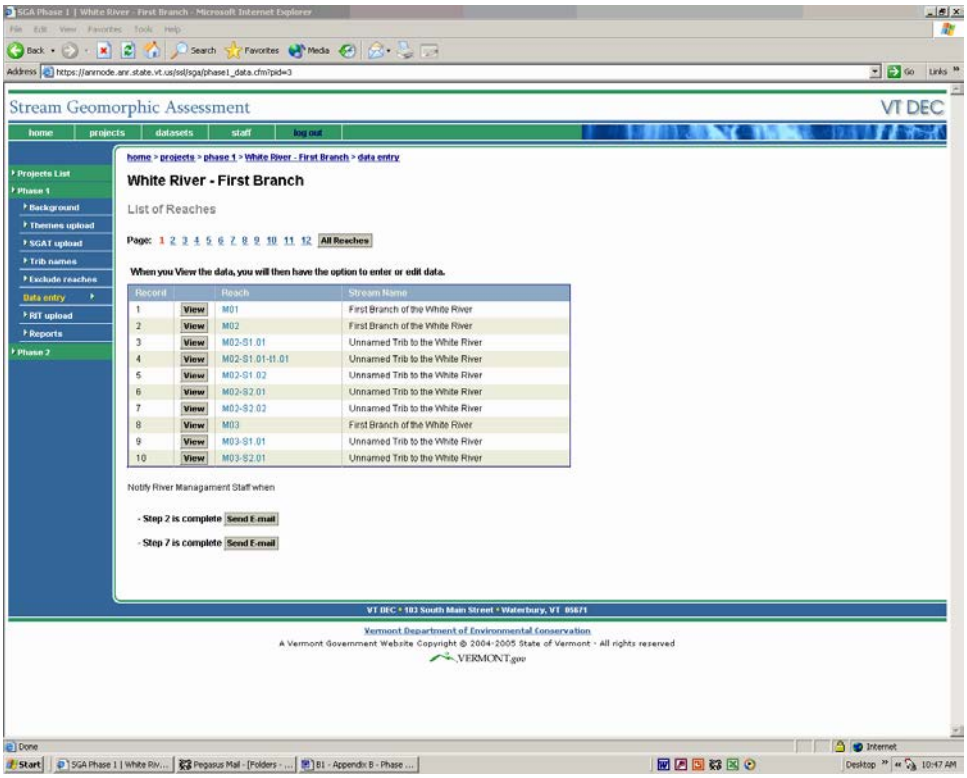


Figure 8. Data Entry by Step, as listed in the Phase 1 Handbook

FIT Upload (Figure 9)

The feature indexing tool (FIT) is a functionality built into the Stream Gemorphic Assessment Tool (SGAT) ArcView extension. It should be used to document the locations of the following impacts during the Phase 1 and 2:

Phase 1	Phase 2	Shape	Impact	Sub-Impact	Location	Option 1	Option 2
3.1	1.2	Point	Alluvial Fan	N/A	N/A	N/A	N/A
5.3	3.1	Polyline	Bank Armoring or Revetment	Rip-Rap Hard Bank Other	Right Bank Left Bank		
N/A	4.9	Point	Beaver Dam	N/A	N/A	Length Affected	
5.2	4.8	Point	Bridge and Culvert	Bridge Culvert Unknown	N/A	Length Affected	
4.3	3.2	Polyline	Buffer Less than 25 feet	N/A	Right Bank Left Bank		
N/A	2.x	Point	Cross Section Location	NOT Representative Representative	N/A	Number	
N/A	4.4	Point	Debris Jam	N/A	N/A		
6.2	1.3	Polyline	Development	N/A	Both Sides One Side		
5.5	5.5	Polyline	Dredging	Commercial Mining Dredging Gravel Mining	Exact Location General Location		
6.1	1.3	Polyline	Encroachment	Berm Improved Path Railroad Road	Both Sides One Side	Height	

7.2	3.1	Polyline	Erosion	N/A	Left Bank Rigth Bank	Height	
5.1	4.5	Point	Flow Regulation and Water Withdrawal	Large Bypass Large Run of River Large Store and Release Large Withdrawal Small Bypass Small Run of River Small Store and Release Small Withdrawal	Drinking Flood Control Hydro-electric Other Recreation		
3.2	1.6	Point	Grade Control	Dam Ledge Waterfall Weir	Picture NO Picture	Height Above Water	Total Height
N/A	3.1	Point	Gully	N/A	N/A	Height	
N/A	3.1	Polyline	Mass Failure	N/A	Left Bank Right Bank	Height	
6.4	5.2	Point	Migration	Avulsion Braiding Flood Chute Neck Cutoff			
N/A	5.3	Point	Steep Riffle or Head Cut	Head Cut Steep Riffle			
N/A	4.7	Point	Storm Water Input	Field Ditch Other Overland Flow Road Ditch Tile Drain Urban Storm Water Pipe			
5.4	5.5	Polyline	Straightening	Straightening With Windrowing			
N/A	5.4	Point	Stream Crossing	Animal Crossing Stream Ford			

Follow the directions in Appendix P for using the Feature Indexing Tool to document the impacts for each reach. Upload the FITExport.dbf file by navigating to the location of the file on your computer. After uploading the FIT file select the QC check button and you will be notified of any problems with the data. If an error is found in the FIT data the DMS will open a new page and list the specific error. All errors must be fixed before the DMS will upload the data into the state wide database. Once the FIT data is uploaded the DMS will list each reach and any associated FIT data for the user to view.

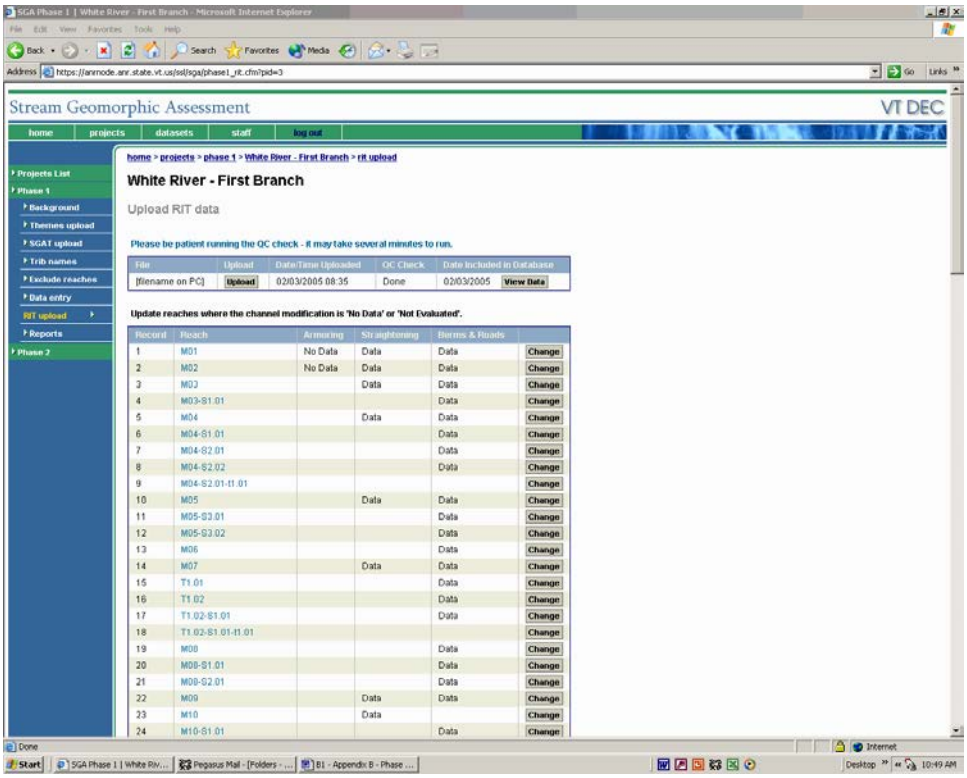


Figure 9. Reach Indexing Tool Data Upload

Reports (Figure 10)

A number of standard reports are available for viewing and printing under the reports tab. Where applicable, the reports can be viewed and printed by tributary or by reach. To view a report select either the view all, by tributary, or by reach tab.

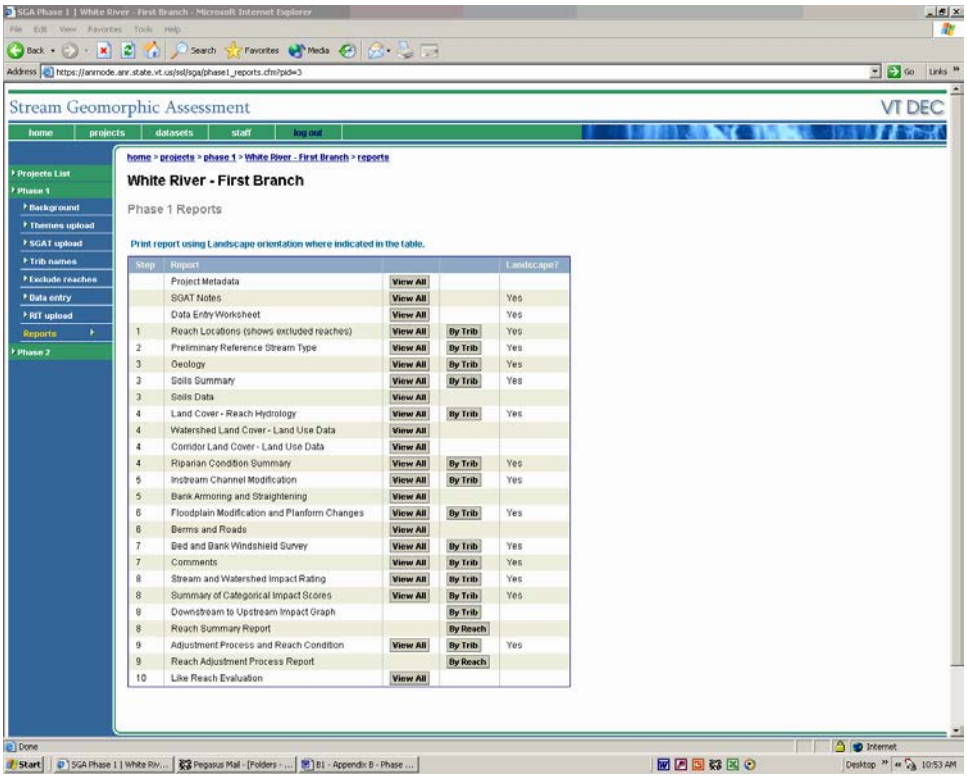


Figure 10. Data Management System Reports

If you would like to request the RMS add another standard report to help you with data analyses please contact the appropriate RMS staff person for your project.

The following reports are available:

Project Meta Data: Lists the meta data for each Phase 1 parameter selected for the project.

SGAT Notes: Lists any notes that were imported from SGAT.

Data Entry Worksheet: This report will list all of the reach numbers imported from SGAT. The user can print this report and use it as a data collection worksheet.

Reach Locations: Lists Step 1 Geomorphic Information. This reports includes the list of Phase I reaches that were excluded in the DMS from Phase I data entry.

Preliminary Reference Stream Type: List Step 2 reference stream type information for each reach

Geology: Lists Step 3 geoligic information for each reach. This report summarizes thedominant and sub-dominant geologic material data imported from SGAT.

Soil Summary: This report summarise all of the soil property data and displays only the dominant data for each of the soil propety categories.

Soils Data: The Soil data report lists all of the data for the Step 3.5 soil properties. You must select the buttons on the top of the page to navigate between soils properties reports which list a percent for each category.

Land Cover – Reach Hydrology: List all of the Phase 1 step 4 data for each reach. This report summarises the land use/land cover data imported from SGAT and only displays the dominant category and the percentage of urban and crop land.

Watershed Land Cover – Land Use Data: Displays the percent of each land use category within the watershed for each reach.

Corridor Land Cover – Land Use Data: Displays the percent of each land use category within the reach corridor.

Instream Channel Modifications: Lists all of the Phase I step 5, Channel Modifications, data for each reach.

Bank Armoring and Straightening: Displays the FIT data uploaded for bank armoring and straightening.

Floodplain Modification and Planform Changes: Displays al of the Phase 1 step 6 data for each reach.

Berms and Roads: Displays the FIT data uploaded forberms and roads.

Bed and Bank Windshield Survey: Lists all of the Phase I step 7 data for each reach.

Comments: Comments listed for each reach.

Channelization Report: Lists all reches that heva been indexed as straightened along with the stream type, meande width ratio and wavelength ratio.

Stream and Watershed Impact Rating: Lists all of the impact ratings for each reach as well as the reference stream typing data.

Summary of Categorical Impact Scores: This report sums the impact ratings for each of the Step 4, 5, 6 and 7 categories.

Downstream to Upstream Impact Graph: Graph of the impact ratings for each reach from upstream to downstream for each tributary name.

Reach Summary Report: A two page report that lists all of thePhase I data for each reach, including the computer generated adjustment process, condition and sensitivity.

Adjustment Process and Reach Condition: Lists the reference stream type data, total impact, adjustment score, reach condition and sensitivity for each reach.

Reach Adjustment Process Report: Lista all impacts associate with a reach and whether the reach was scored for aggradation, degredation, widening or planform adjustments.

Like Reach Evaluation: This page allows the user to define sorting criteria and to create specific like reach reports. The DMS allows for a first, second and third sort. Once the user has specified the sorting criteria the DMS will generate a report. The user can update the sorting criteria and re-run the report to generate different like reach groupings.

Rapid Geomorphic Data: This report will show the Rapid Geomorphic data for all the reaches.

Adjustment Process Rating Methodology (used to generate adjustment process scores in Step 9.1)

NOTE: Evaluate Adjustment Processes from Left to Right: Degradation, Aggradation, Widening then Planform.

Process	Degradation		Aggradation		Widening		Planform	
Special Considerations	**None**		**Add 2 if Degredation > 4**		**Add 2 if Deg. or Agg. are >4 & Add 1 if Deg. and Agg. are > 4**		**Add 2 if Deg. or Agg. are >4 & Add 1 if Deg. and Agg. are > 4 & Add 1 if Deg. and Agg. and Widening are >4 If confinement = "NC" Then Planform = 0 If confinement = "SC" then Planform = Total-3**	
Watershed Land Use/Cover	High		High / Low	crop or urban	High			
Corridor Land Use/Cover			High / Low	crop or residential, commercial, industrial				
Riparian Buffer Width			High / Low		High		High	
Flow Regulation/ Withdrawal	High		High		High		High	
Bridges and Culverts	High / Low		High				High / Low	
Bank Stabilization / Revetments	High						High	
Channel Modification	High / Low						High / Low	
Dredging/Gravel Mining	High / Low						High / Low	
Berms, Roads, Railroads, Paths	High							
Floodplain Developments	High						High	
Channel Bars			High / Low		High			
Meander Migration	High	Avulsions Only	High	Avulsions Only			High	
Meander Width Ratio	High	<4						
Wavelength Ratio	High / Low	>14						
Bank Erosion/Bank Height	High		High		High			
Ice/Debris Jam Potential			High					
Total Scores:								