Spring 2026
Volume 3, Issue 1

In the Know with Virginia Nutrient Management

NM Online Plan Writing Enhancement Feature Live March 27, 2026!

The Nutrient Management Downloadable Spreadsheet (NMDS) is an alternative tool for viewing and writing a

Nutrient Management Plan (NMP) in conjunction with DCR's Conservation Application Suite (CAS). The

NMDS is a Microsoft Excel-based application that exports NMP data from CAS and populates a spreadsheet

template, which can then be used to complete the NMP on the user's desktop. Once finalized, the NMDS is

imported back into CAS to finish the plan-writing process.

Key capabilities of the NMDS include:

- Instant nutrient balance calculations in a familiar spreadsheet format.
- No internet connection required after the initial down-load.
- Access to phosphorus assessment tools such as the P-Index without delay.
- Support for spreadsheet features like filtering and drag -down entry to streamline nutrient application.

For more information please see the attached Guidelines. These documents along with training videos will be available on the DCR website at https://www.dcr.virginia.gov/soil-and-water/nmplnr under the NM Plan Writing App tab. A series of live webinars to support the feature are being schedule, the first will be held on Wednesday, April, 1, 2026. . See page two for registration details.

Inside this issue

Attachments to this Newsletter:

1. Manure Analysis for NMP Info Sheet
2. NMDS: Project Overview
3. NMDS Quick Launch Guideline
4. NMDS Export/Import Technical Guideline
5. NMDS Spreadsheet Overview Technical Guideline

CEUs

Have you heard about a field day you think would be educational regarding nutrient management? A webinar related to nutrient management that sounds appealing? Please let us know!

We try to stay abreast of field days, conferences, and outreach events, but undoubtably miss many. If there is an event you think might be eligible for continuing education credit, please contact Steph Dawley at stephanie.dawley@dcr.virginia.gov.

CEU events can be hosted by a variety of partnering agencies and do not have to be in VA. CEUs have been approved in NC, MD, DE, and other states.

Introducing DCR NM Urban Coordinator: Justin Lindemeyer

Please welcome the new Urban Nutrient Management Coordinator at DCR, Justin Lindemeyer. Since joining the team in August, he's been eager to connect with the professionals who keep our program running on the ground. He can be contacted at justin.lindemeyer@dcr.virginia.gov or 540-270-0039.

Justin comes to this role with a background in the turfgrass industry dating back to 2009—spanning residential lawn care, sports field maintenance, and general landscape management. Having been in the field, he truly values the work you do. His goal is to be a supportive partner as we work toward our common goal of responsible nutrient application.

Over the coming year, Justin's priorities include: developing new turf-oriented CEU workshops., assisting new planners through our DCR schools and exams, networking with the industry, and learning the nuances of this role to better serve the planning community.

Note on Plan Reviews: In the meantime, please continue to send all nutrient management plans to Gonzalo Ortiz at Gonzalo.Ortiz@dcr.virginia.gov for review and approval.

Justin looks forward to meeting and working with you all. Please don't hesitate to reach out if you have any questions or just want to introduce yourself.

Upcoming Webinars

April 1, 2026 at 2 pm: Webinar on Online NM Plan Writing App (Module) Enhancement Feature. First in a series of Live Demos and Q&A's on the Nutrient Management Downloadable Spreadsheet. 1 CEU. Register here: https://events.gcc.teams.microsoft.com/event/8cb7887d-3e39-4d9d-afb4-becb2d8b6cd5@620ae5a9-4ec1-4fa0-8641-5d9f386c7309

Mid-April, 2026, date and time TBD: Join us for a webinar on how you can assist farmers you work with on filling out the Virginia Farm Voluntary Ag BMP Inventory Survey. This survey is an important part of showing how VA farmers are voluntarily helping protect the waters of the Chesapeake Bay. 1 CEU. Registration and more information to follow!

DCR's Resource Management Plan Program

Are you interested in offering next-level services for your clients? You can do that by offering Resource Management Plan planning services.

A Virginia Resource Management Plan (RMP) is a comprehensive conservation plan that includes agricultural best management practices proven to ensure the farm is meeting a conservation farming standard. A farmer's decision to have an RMP written, or to implement the plan, is completely voluntary. The plans are written by certified RMP developers and are specific to the farm operation. The RMP will address onsite erosion issues, including measures to protect perennial streams, and include recommendations for nutrient management. The RMP provides a list of agricultural BMPs for the farmer to implement.

What do you get?

Using the Direct Payment Initiative, RMP developers can be paid directly by DCR for both RMP development services and for certification services. Payment rates are currently $13/acre for development and $4/acre for certification.

What does the farmer get?

- Eligibility for enhanced tax credit
- Potentially higher priority for VACS funding
- Eligibility for RMP-2 payments for certified RMPs
- RMPs are written by certified RMP plan developers and provided at no cost to your farm.
- RMPs that have been certified as fully implemented are considered environmentally compliant. Should newer, more stringent state regulations related to the Chesapeake Bay or local stream TMDLs be adopted, the certified RMP farm operation is considered compliant with nutrient, sediment and water quality standards. The certificate is valid for nine years provided the farmer continues to implement the RMP.

What do you need to do?

Currently-certified NM planners can apply to become a certified RMP developer. You must also either be a certified conservation planner or have experience and education in conservation and agriculture. The RMP developer application can be found here at http://www.dcr.virginia.gov/form/DCR199-228.docx
For more information, visit http://www.dcr.virginia.gov/soil-and-water/rmp/
or contact DCR's Barbara McGarry, barbara.mcgarry@dcr.virginia.gov, 804-371-0297.

Interested in the Online Plan Writing Program?

The Online Nutrient Management Plan Writing App (or Module) is available to all planners. To gain access to the Conservation Application Suite (CAS) that houses the Module, you first must take a brief webinar (45 mins) on internet and computer security, and complete a CAS request access form. Once the requirements have been completed your login credentials will be created.

For more information click here or contact Steph Dawley at stephanie.dawley@dcr.virgnia.gov.

Online For Hire Planner Directory

Would you like to be listed in the Planner For Hire Directory on the DCR website? This directory is for planners wanting to advertise their services to the wider farming community. The directory is hosted on the DCR website here.

If you are not listed in the directory and wish to be included, contact Susan Jones at susan.jones@dcr.virginia.gov for the form to fill out with the needed information.

The directory is updated after each certification renewal/exam cycle. Please contact Susan by April 14, 2026 to be included in this update.

DCR Staff

Field Staff:

Carl Kling: Abingdon Office
Abby Pierson: Radford Office
Alec Lipscomb: Staunton Office
Scarlett Reel: Staunton Office
Caroline Schrider-Sullivan: Staunton Office
Stacy Polk: Staunton Office
Jay Marshall: Warrenton Office
Robert Shoemaker: Warrenton Office
Vacant: Tappahannock Office
Marie Schirmacher: Suffolk Office
Rachel McAden-Farmer: Suffolk Office
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Click Here to see full map of planner areas and contact information.

Office Staff:

Hunter Landis: Program Manager
Stephanie Dawley: Training and Certification Coordinator
Seth Mullins: Animal Waste Coordinator
Justin Lindemeyer: Urban Coordinator
Vacant: Biosolids Coordinator
Susan Jones: Training and Certification Technician
Vacant: Direct Pay Specialist
Pamela Capps: Direct Pay Technician
Gonzalo Ortiz: Urban Specialist
Click Here for specific topics covered and contact information of office staff.

*Please make sure you have a non-work related email on file with the DCR! Your certification is attached to **YOU**, not your work. If you leave your current place of employment, and only have that email on file, it is difficult for us to keep in touch regarding your certification. Please contact Susan Jones at Susan.Jones@dcr.virginia.gov to check on or update your email status.*

DCR
Virginia Department of Conservation & Recreation

Manure Analysis for Nutrient Management Plan Information Sheet

The most recent organic nutrient source analysis results or *an average of past nutrient analysis results for the specific operation* **within the last three-year period** shall be used to determine the nutrient content of organic nutrient sources for nutrient management plans.

Manure analysis is recommended before field application until a baseline nutrient content is established for the specific manure type on the corresponding farm operation. After a baseline nutrient content is established, a manure analysis is recommended at least once every three years for dry or semisolid manures, and at least once every year for liquid manures[1].

Manure analyses shall include[2]:

- Percent moisture
- Total nitrogen *or* Total Kjeldahl nitrogen (TKN)
- Ammonium nitrogen (NH4)
- Total phosphorus,
- Total potassium

Producers should reach out to a lab directly to determine the cost, test included, and information regarding collecting and submitting a sample.

Nearby laboratories to complete manure analysis:

- Clemson University
- https://www.clemson.edu/public/regulatory/ag-srvc-lab/animal-waste/
- Cumberland Valley Analytical Services
- https://www.foragelab.com/Services/Manure/Sampling-Instructions/
- North Carolina Department of Agriculture & Consumer Services
- https://www.ncagr.gov/divisions/agronomic-services/waste-and-compost-analysis/growers/tests-and-fees
- Waypoint Analytical
- https://waypointanalytical.com/Agricultural

[1] Other programs or permits may have additional criteria for manure nutrient testing. Individuals in these programs or with these permits should determine what additional testing criteria are required.

[2] Values to be determined using laboratory methods consistent with *Recommended Methods of Manure Analysis, publication A3769*, University of Wisconsin, 2003 or other methods approved by the department.

Nutrient Management Enhancements

Project Overview

Virginia Department of Conservation and Recreation — Division of Soil and Water Conservation | Conservation Application Suite (CAS)

The launch of the Nutrient Management Enhancements project in DCR's Conservation Application Suite (CAS) introduces several significant improvements to the functionality and usability of the Nutrient Management (NM) Module. The following is a brief overview of these improvements. Additional technical documentation will be distributed for some features, and planner training sessions are being scheduled.

1 Lime Recommendation Improvements and Balance Calculations

Prior to this project, lime recommendations in the NM Module were only accurate for soil labs utilizing either the Mehlich or SMP extraction processes. Support for labs using the Adams-Evans process for estimating lime needs has now been added. This means that all soil labs approved for use in DCR's Nutrient Management program now produce accurate lime recommendations in the NM Module, eliminating the need to refer to lab report recommendations directly.

When a user enters the soil pH and buffer pH values for a soil test, the NM Module will reliably calculate lime recommendations for that field — regardless of the testing lab used — based on the target pH of the crop(s) entered in the Crop Rotation tab.

Additionally, a running balance of lime needs is now provided in the Nutrient Applications tab. This balance adjusts as lime is applied to a field, in the same manner that the Phosphorus and Potassium running balances are calculated and displayed.

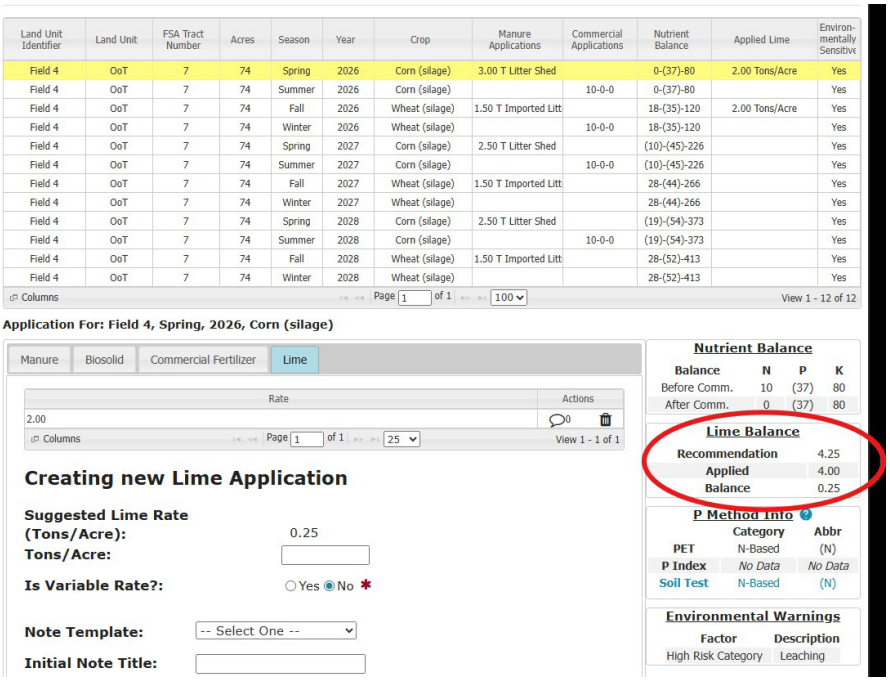

Figure 1 — Lime balance display in the Nutrient Applications tab

2 Phosphorus Assessment Workflow Improvements

When calculating allowed phosphorus (P) on a field, the NM Module will now default to actual crop needs as determined by the Soil Test Assessment for the field. Previously, the NM Module bypassed Soil Test-determined needs and defaulted to calculating allowable P using the Phosphorus Environmental Threshold (PET) method. This was not in line with how DCR teaches Nutrient Management plan writing — P recommendations should stem from soil test crop needs, and if determined necessary by the planner and producer, additional flexibility for allowable P from organic sources can be calculated using either the PET or Phosphorus Index (P-Index) methods. This change brings the NM Module in line with DCR's Nutrient Management Program standards.

Planners can still use the PET and P-Index to calculate allowable P for a field, but must elect to do so on a field-by-field basis. This can be done in the Land Units Summary tab, or through the use of the Nutrient Management Downloadable Spreadsheet (NMDS), as described in Feature 3 below.

In addition to this workflow change, increased P-Assessment visibility has been added within the NM Module. In the Land Units Summary tab, the planner can now see calculated values for all three P-assessment tools for each field simultaneously. The currently selected method for a field is displayed in **bold**. This allows the planner to quickly compare allowable P across assessment methods and elect a different strategy by clicking on the P-Method tab and editing the Use Method. Note that 'No Data' will display under the P-Index Category column if the P-Index has not yet been run for that field, as it requires additional inputs.

This enhanced visibility has also been added to the Nutrient Applications tab, where P Method Info is displayed under the Nutrient Balance window for each field.

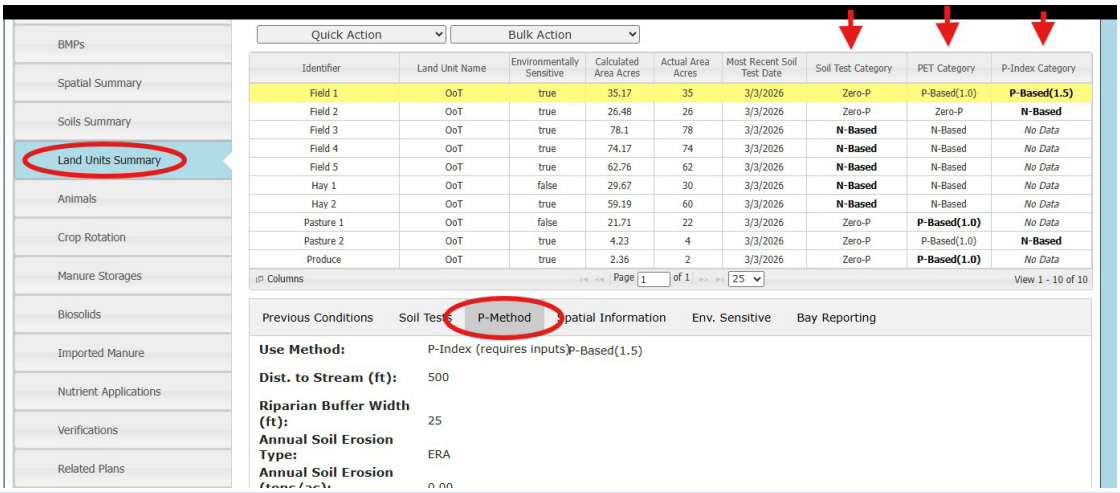

Figure 2 — P-Assessment visibility in the Land Units Summary tab

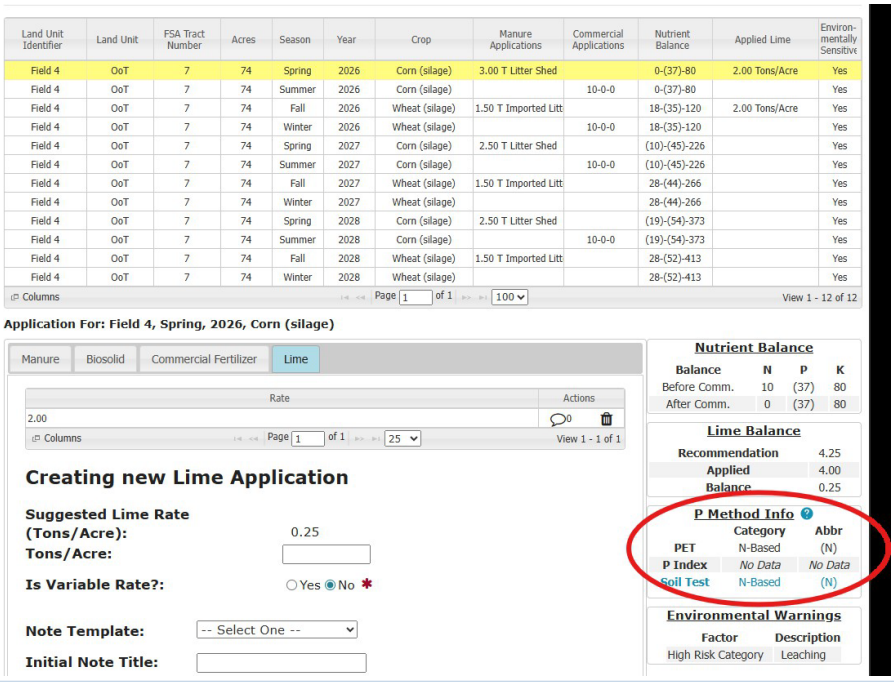

Figure 3 — P Method Info display in the Nutrient Applications tab

3 Nutrient Management Downloadable Spreadsheet (NMDS)

The Nutrient Management Downloadable Spreadsheet (NMDS) is an alternative tool for viewing and writing a Nutrient Management Plan (NMP) in conjunction with DCR's Conservation Application Suite (CAS). The NMDS is a Microsoft Excel-based application that exports NMP data from CAS and populates a spreadsheet template, which can then be used to complete the NMP on the user's desktop. Once finalized, the NMDS is imported back into CAS to finish the plan-writing process.

Key capabilities of the NMDS include:

- Instant nutrient balance calculations in a familiar spreadsheet format.
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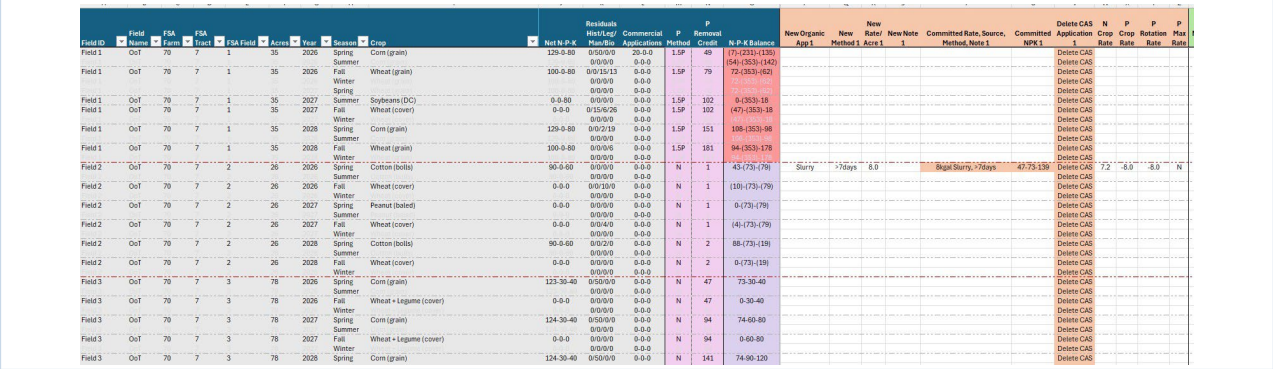
- Access to phosphorus assessment tools such as the P-Index without delay.
- Support for spreadsheet features like filtering and drag-down entry to streamline nutrient applications.



Field ID	Field Name	FSA Farm	FSA Tract	FSA Field	Acres	Year	Season	Crop	Net N-P-K	Residuals Hist/Leg/ Man/Bio	Commercial Applications	P Method	P Removal Credit	N-P-K Balance	New Organic App 1	New Method 1	New Rate/ Acre 1	New Note 1	Committed Rate, Source, Method, Note 1	Committed NPK 1	Delete CAS Application 1	N Crop Rate	P Crop Rate	P Rotation Rate	P Max Rate
Field 1	OoT	70	7	1	35	2026	Spring	Corn (grain)	129-0-80	0/50/0/0	20-0-0	1.5P	49	(7)-(231)-(135)							Delete CAS				
							Summer			0/0/0/0	0-0-0			(54)-(353)-(142)							Delete CAS				
Field 1	OoT	70	7	1	35	2026	Fall	Wheat (grain)	100-0-80	0/0/15/13	0-0-0	1.5P	79	72-(353)-(62)							Delete CAS				
							Winter			0/0/0/0	0-0-0			72-(353)-(62)							Delete CAS				
							Spring			0/0/0/0	0-0-0										Delete CAS				
Field 1	OoT	70	7	1	35	2027	Summer	Soybeans (DC)	0-0-80	0/0/0/0	0-0-0	1.5P	102	0-(353)-18							Delete CAS				
Field 1	OoT	70	7	1	35	2027	Fall	Wheat (cover)	0-0-0	0/15/6/26	0-0-0	1.5P	102	(47)-(353)-18							Delete CAS				
							Winter			0/0/0/0	0-0-0										Delete CAS				
Field 1	OoT	70	7	1	35	2028	Spring	Corn (grain)	129-0-80	0/0/2/19	0-0-0	1.5P	151	108-(353)-98							Delete CAS				
							Summer			0/0/0/0	0-0-0			108-(353)-98							Delete CAS				
Field 1	OoT	70	7	1	35	2028	Fall	Wheat (grain)	100-0-80	0/0/0/6	0-0-0	1.5P	181	94-(353)-178							Delete CAS				
							Winter			0/0/0/0	0-0-0			94-(353)-178							Delete CAS				
Field 2	OoT	70	7	2	26	2026	Spring	Cotton (bolls)	90-0-60	0/0/0/0	0-0-0	N	1	43-(73)-(79)	Slurry	>7days	8.0		Segal Slurry, >7days	47-73-139	Delete CAS	7.2	8.0	8.0	N
							Summer			0/0/0/0	0-0-0										Delete CAS				
Field 2	OoT	70	7	2	26	2026	Fall	Wheat (cover)	0-0-0	0/0/10/0	0-0-0	N	1	(10)-(73)-(79)							Delete CAS				
							Winter			0/0/0/0	0-0-0										Delete CAS				
Field 2	OoT	70	7	2	26	2027	Spring	Peanut (baled)	0-0-0	0/0/0/0	0-0-0	N	1	0-(73)-(79)							Delete CAS				
							Summer			0/0/0/0	0-0-0										Delete CAS				
Field 2	OoT	70	7	2	26	2027	Fall	Wheat (cover)	0-0-0	0/0/4/0	0-0-0	N	1	(4)-(73)-(79)							Delete CAS				
							Winter			0/0/0/0	0-0-0										Delete CAS				
Field 2	OoT	70	7	2	26	2028	Spring	Cotton (bolls)	90-0-60	0/0/2/0	0-0-0	N	2	88-(73)-(19)							Delete CAS				
							Summer			0/0/0/0	0-0-0										Delete CAS				
Field 2	OoT	70	7	2	26	2028	Fall	Wheat (cover)	0-0-0	0/0/0/0	0-0-0	N	2	0-(73)-(19)							Delete CAS				
							Winter			0/0/0/0	0-0-0										Delete CAS				
Field 3	OoT	70	7	3	78	2026	Spring	Corn (grain)	123-30-40	0/50/0/0	0-0-0	N	47	73-30-40							Delete CAS				
							Summer			0/0/0/0	0-0-0										Delete CAS				
Field 3	OoT	70	7	3	78	2026	Fall	Wheat + Legume (cover)	0-0-0	0/0/0/0	0-0-0	N	47	0-30-40							Delete CAS				
							Winter			0/0/0/0	0-0-0										Delete CAS				
Field 3	OoT	70	7	3	78	2027	Spring	Corn (grain)	124-30-40	0/50/0/0	0-0-0	N	94	74-60-80							Delete CAS				
							Summer			0/0/0/0	0-0-0										Delete CAS				
Field 3	OoT	70	7	3	78	2027	Fall	Wheat + Legume (cover)	0-0-0	0/0/0/0	0-0-0	N	94	0-60-80							Delete CAS				
							Winter			0/0/0/0	0-0-0										Delete CAS				
Field 3	OoT	70	7	3	78	2028	Spring	Corn (grain)	124-30-40	0/50/0/0	0-0-0	N	141	74-90-120							Delete CAS				

Figure 4 — NMDS spreadsheet interface overview

Additional Technical Documentation

Because of the scope of NMDS functionality, dedicated technical guides cover its complete use and operation. Please refer to the following documents for detailed descriptions and instructions:

- › *NMDS Technical Guide: Quick Launch Guide*
- › *NMDS Technical Guide: Export/Import Process*
- › *NMDS Technical Guide: Spreadsheet Overview*

4 Improved Performance and Loading Times

In the process of restructuring the NM Module to accommodate the NM Enhancements project, software developers were able to reformulate database queries and calculations throughout the module. The result is significant performance improvements across CAS. Load times have been reduced for various NM Module functions, most notably for P-Index calculations and report generation.

Nutrient Management Downloadable Spreadsheet

Virginia Department of Conservation and Recreation — Division of Soil and Water Conservation

Quick Launch Guideline

Overview

The Nutrient Management Downloadable Spreadsheet (NMDS) is an alternative tool for viewing and writing a Nutrient Management Plan (NMP) in conjunction with DCR's Conservation Application Suite (CAS).

For comprehensive instructions, refer to the complete NMDS Technical Guide: Export/Import Process, and NMDS Technical Guide: Spreadsheet Overview.

Quick Launch Steps

1 **Create a New Plan in CAS**

Begin the NMP writing process by creating a new plan in CAS.

2 **Enter Required NMP Data into CAS**

The following data must be entered into CAS before the NMDS can be exported:

- Fields must be mapped.
- Manure Storage Units must be mapped (if applicable).
- Previous Condition data must be entered (if applicable).
- Soil Test data must be entered.
- Crop Rotation data must be entered.
- User-adjusted yield data must be entered (if applicable).
- User-adjusted crop N need data must be entered (if applicable).
- Animal data must be entered (if applicable).
- Manure Storages data must be entered (if applicable).
- Imported Manure data must be entered (if applicable).
- Biosolids data must be entered (if applicable).

3 **Export the NMDS**

Once the required data has been entered, use the Export/Import NMP tool in CAS to export the NMSS. You will receive an email with the NMDS file as an attachment when the export is complete.

4 **Understand the Locked NMP State**

While an active NMDS is in use, the NMP in CAS is LOCKED and cannot be edited directly. To unlock the NMP and edit it in CAS again, use the Export/Import NMP tool to cancel the export. Note: if you cancel the export and later wish to use the NMDS, a new export will be required.

5 **Finalize the NMP in the NMDS and Import Back into CAS**

Once the NMP is complete in the NMDS, use the Export/Import NMP tool to import it back into CAS. A plan cannot advance beyond the Develop stage until the NMDS process is either cancelled or the completed NMDS is imported.

6 **Generate Plan Reports and Complete the Plan**

After a successful import, plan reports can be generated in CAS and a completion date can be entered to move the NMP out of Develop stage.

Nutrient Management Downloadable Spreadsheet

Technical Guide: Export/Import Process

Virginia Department of Conservation and Recreation — Division of Soil and Water Conservation

Overview

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Key capabilities of the NMDS include:

- Instant nutrient balance calculations in a familiar spreadsheet format.
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- Support for spreadsheet features like filtering and drag-down entry to streamline nutrient applications.

This guide provides detailed instructions on how to export, use, and reimport the NMDS into CAS. It assumes that the user is familiar with creating and writing an NMP in CAS, and has basic knowledge of Microsoft Excel (desktop, latest versions).

Technical Notes and Contacts

Access & Training

The NMDS is not a stand-alone application — CAS login credentials are required. For access and training, contact Stephanie Dawley, NM Training and Certification Coordinator: Stephanie.Dawley@dcr.virginia.gov.

CAS Technical Support

For technical issues related to CAS, contact the CAS Help Desk: dswc-cas-help@dcr.virginia.gov.

NMDS-Specific Issues

For issues specific to the NMDS, contact Joe Tesauro, Business Systems Analyst: Joe.Tesauro1@dcr.virginia.gov.

File Compatibility

The NMDS downloads as a .xlsb file and requires a desktop installation of Microsoft Excel. The NMDS is NOT compatible with Microsoft 365 Online Excel or Google Sheets.

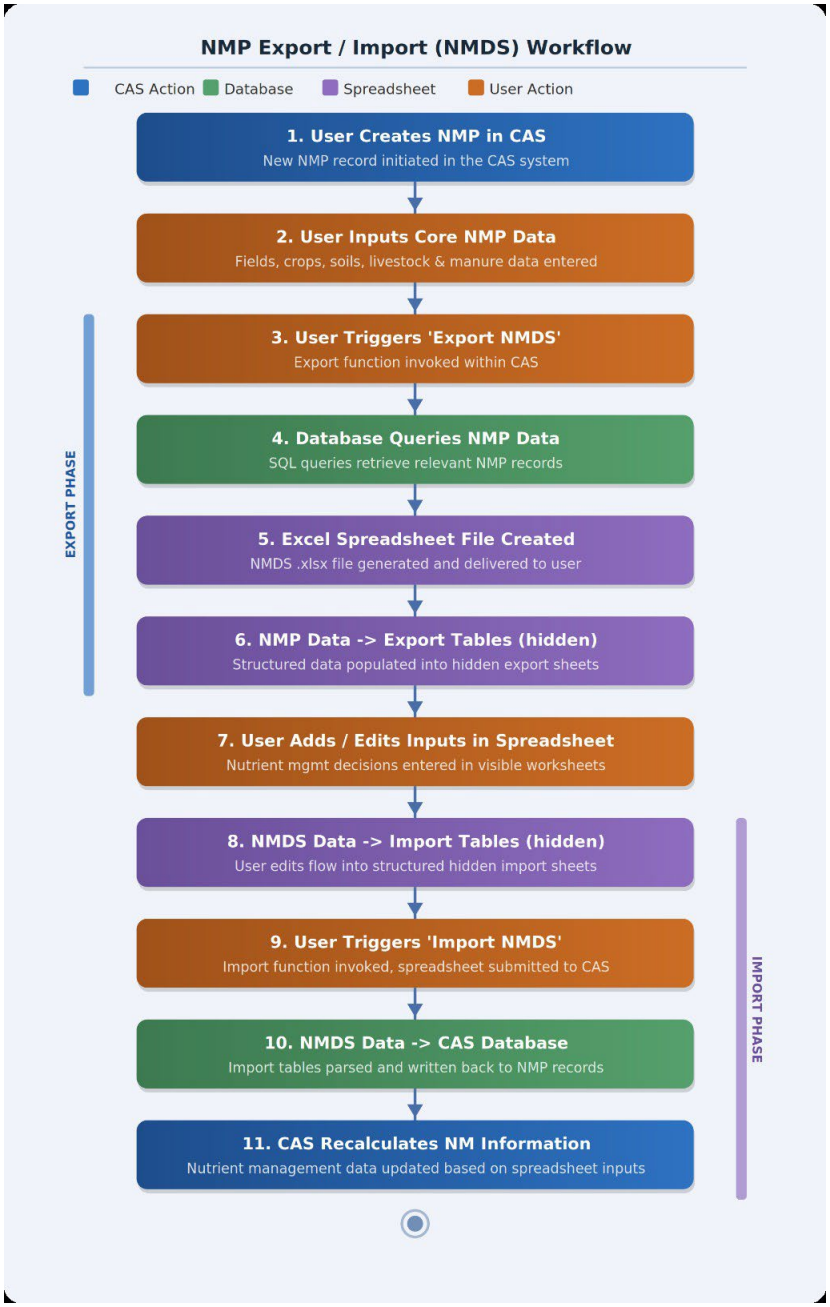

Figure 1 — NMP Export/Import (NMDS) Workflow

Section 1: Pre-Export

To begin, the planner must have an NMP in CAS. Existing NMPs can be exported into an NMDS to make further revisions. If no existing NMP is available, the planner should create a new NMP in CAS as usual before proceeding.

Understanding "Core" NMP Data

The following plan information is classified as **core data** and must be entered through CAS before a functional NMDS can be exported and used to finish writing the NMP:

- Fields must be mapped.
- Manure Storage Units must be mapped (if applicable).
- Previous Condition data must be entered (if applicable).
- Soil Test data must be entered.
- Crop Rotation data must be entered.
- User-adjusted yield data must be entered (if applicable).
- User-adjusted crop N need data must be entered (if applicable).
- Animal data must be entered (if applicable).
- Manure Storages data must be entered (if applicable).
- Imported Manure data must be entered (if applicable).
- Biosolids data must be entered (if applicable).

> **CAS Reference**
> For technical assistance entering core data in CAS, refer to the existing technical documentation for the Nutrient Management Module.

Core plan data is **only editable through CAS**. If any of this information changes during the plan-writing process or over the life of the NMP (for example, if fields are added or removed, or soil tests are updated), the planner must make those edits in CAS. A new NMDS can then be exported containing the updated core data.

Section 2: Exporting the NMDS

After all core NMP data has been entered in CAS, the user may export an NMDS at any time by following the steps below.

1

Open the Export/Import Function

Select the Export/Import function from the bottom of the navigation bar on the left-hand side of the CAS screen.

Figure 2 — Export/Import navigation option in CAS

2

Initiate the Export

The Export NMP window will appear, explaining the process. Select the Export button — the NMDS (.xlsb file) will be sent to the planner's email address once the export is complete.

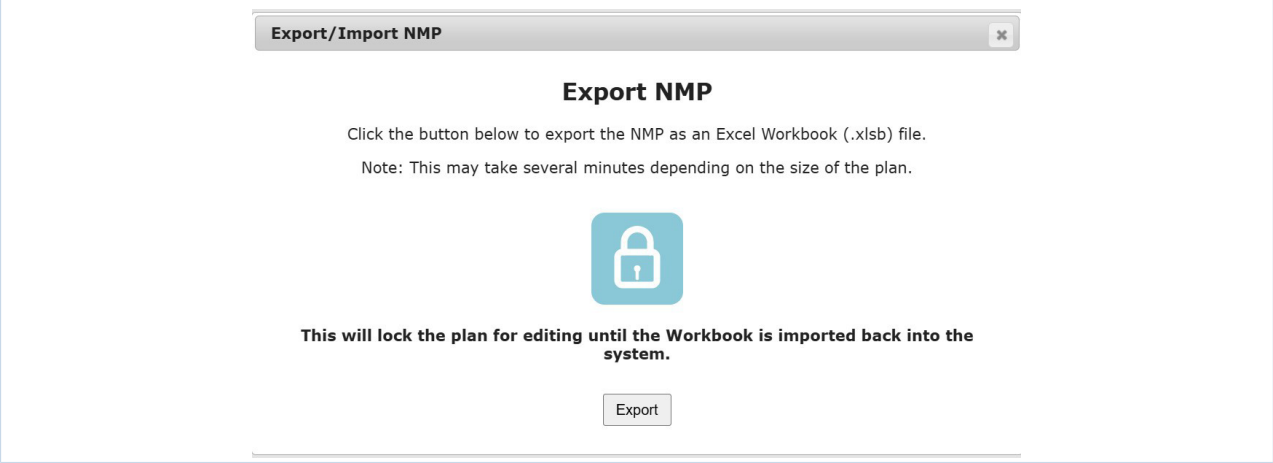

Figure 3 — Export NMP dialog window

3

Download and Open the NMDS File

Once the email is received, download the .xlsb file to the desktop and open it using Microsoft Excel (desktop version required).

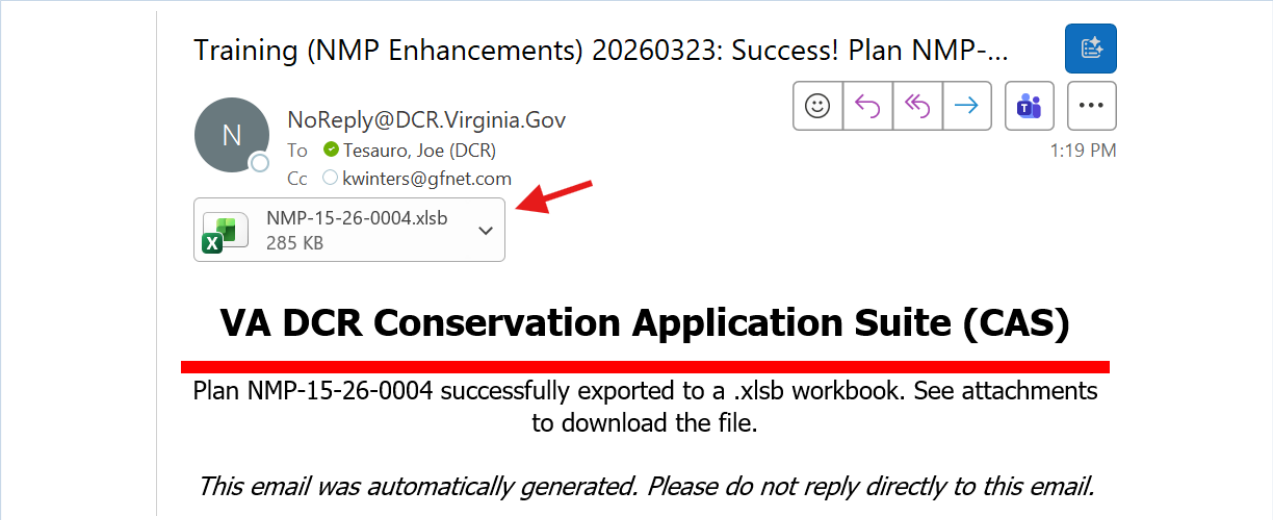

Figure 4 — Export confirmation email with attached NMDS file

Understanding 'Locked' Plan Status

Once an NMDS has been exported, the NMP becomes **locked** in CAS. This prevents users from making changes in CAS that would not be reflected in the exported spreadsheet, ensuring data integrity throughout the process.

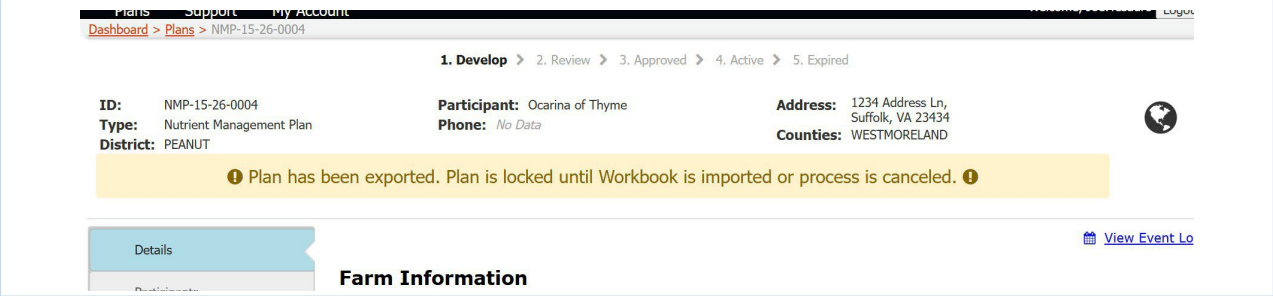

Figure 5 — Locked plan status indicator in CAS

The NMP cannot be edited in CAS again until one of the following actions is taken:

a. The exported NMDS is imported back into CAS, fully updating the plan with all spreadsheet inputs (see Section 3 for import instructions).

b. The export process is cancelled, returning control of the NMP to CAS and invalidating the previously exported NMDS file.

Cancelling the Export/Import Process

To cancel an in-progress export, select the Export/Import NMP function again and choose the Cancel Process option. A confirmation window will appear — the user must confirm the cancellation to proceed.

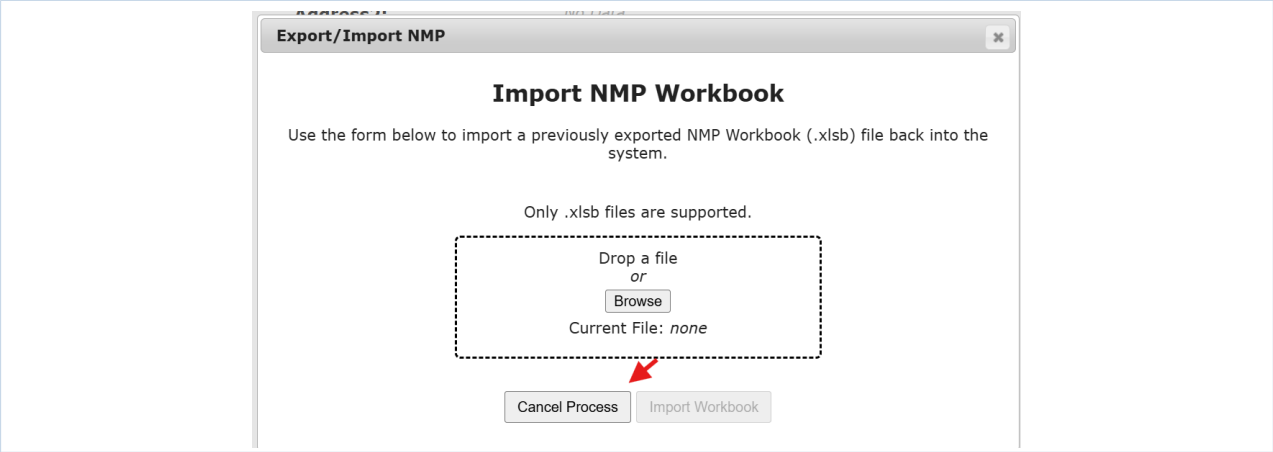

Figure 6 — Cancel Process confirmation dialog

■ Important

Once cancelled, the previously exported NMDS file can no longer be imported into CAS. If the NMDS is still needed, the export process must be restarted to generate a new file. Any edits made to the NMP in CAS after cancellation will be reflected in the newly exported file.

■ Key Concept

A unique ID is embedded in the .xlsb file at the time of export. Only the spreadsheet carrying that ID can be imported back into CAS — if the export is cancelled and the original file is submitted, the import will fail.

Only one version of the NMDS can be active at any time, ensuring that all shared plan data between CAS and the NMDS remains current and valid.

A user may make a backup copy of the downloaded NMDS if desired; the unique ID is preserved in copied files. The filename may also be renamed without affecting the Export/Import process.

Section 3: Importing the NMDS Back into CAS

Once all inputs to the NMP have been completed in the NMDS, the file can be imported back into CAS. This fully updates the plan with all spreadsheet inputs and enables the NMP to be finalized and moved to Review/Active status.

1

Open the Export/Import Function

Select the Export/Import function from the bottom of the navigation bar on the left-hand side of the CAS screen.

Figure 7 — Export/Import navigation option in CAS

2

Upload the NMDS File

Drag and drop the NMDS file into the upload window, or use the Browse option to locate it on your computer. Once the Current File name is displayed, select Import Workbook.

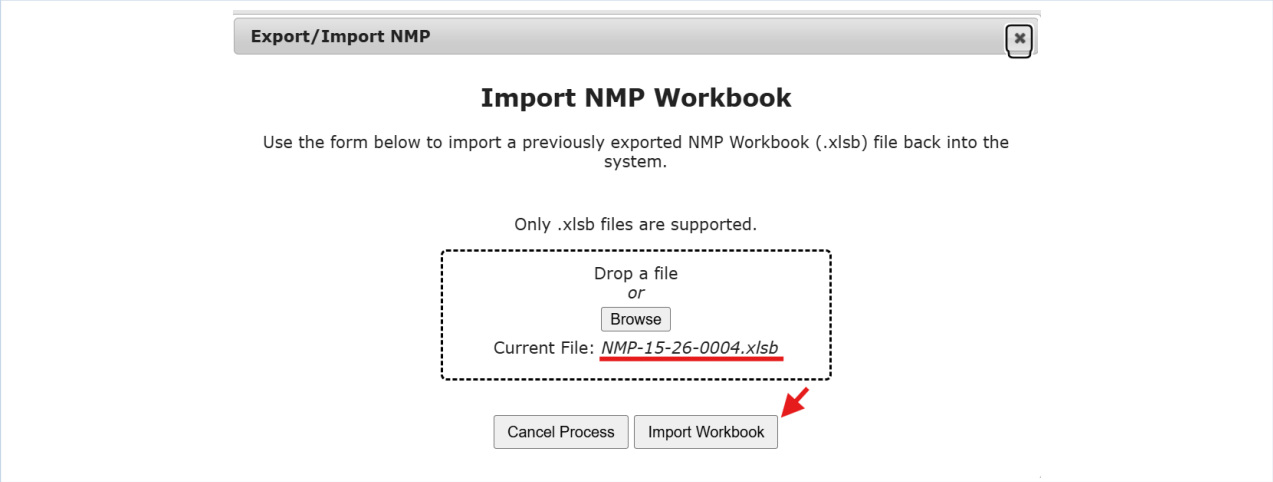

Figure 8 — Import Workbook dialog with file upload area

3

Confirm Successful Import and Complete the Plan

Once the import is complete, the NMP in CAS is updated with all data added or edited in the NMDS, and the plan status returns to Unlocked. From here, the user may make additional edits in CAS, enter a plan completion date in the Details tab, or generate plan reports.

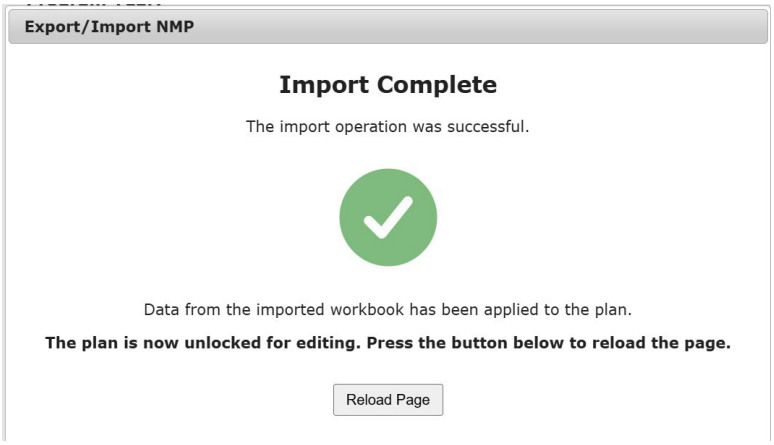

Figure 9 — Post-import plan status showing Unlocked state

Restarting the Export/Import Process

The Export/Import process can be initiated again at any point if additional changes are needed. However, once an NMDS file has been successfully imported, that file is no longer valid for re-import. A fresh export must be generated, which will include all data added to the NMP during the previous import.

Nutrient Management Downloadable Spreadsheet

Technical Guideline: Spreadsheet Overview

Virginia Department of Conservation and Recreation — Division of Soil and Water Conservation

Overview

The Nutrient Management Downloadable Spreadsheet (NMDS) is an alternative tool for viewing and writing a Nutrient Management Plan (NMP) in conjunction with DCR's Conservation Application Suite (CAS). The NMDS is a Microsoft Excel-based application that exports NMP data from CAS and populates a spreadsheet template, which can then be used to complete the NMP on the user's desktop. Once finalized, the NMDS is imported back into CAS to finish the plan-writing process.

Key capabilities of the NMDS include:

- Instant nutrient balance calculations in a familiar spreadsheet format.
- No internet connection required after the initial download.
- Access to phosphorus assessment tools such as the P-Index without delay.
- Support for spreadsheet features like filtering and drag-down entry to streamline nutrient applications.

This guide provides detailed instructions on how to use the NMDS spreadsheet to complete an NMP. It assumes that the user is familiar with creating and writing an NMP in CAS, and has basic knowledge of Microsoft Excel (desktop, latest versions). For step-by-step instructions on the Export/Import process, refer to the *Technical Guide: NMDS Export/Import Process*.

Technical Notes and Contacts

Access & Training

The NMDS is not a stand-alone application — CAS login credentials are required. For access and training, contact Stephanie Dawley, NM Training and Certification Coordinator: Stephanie.Dawley@dcr.virginia.gov.

CAS Technical Support

For technical issues related to CAS, contact the CAS Help Desk: dswc-cas-help@dcr.virginia.gov.

NMDS-Specific Issues

For issues specific to the NMDS, contact Joe Tesauro, Business Systems Analyst: Joe.Tesauro1@dcr.virginia.gov.

File Compatibility

The NMDS downloads as a .xlsb file and requires a desktop installation of Microsoft Excel. The NMDS is NOT compatible with Microsoft 365 Online Excel or Google Sheets.

Section 1: Process Overview

The following is a brief overview of how data flows between the NMDS and CAS. For step-by-step guidance on Export/Import procedures, refer to the *Technical Guide: NMDS Export/Import Process*.

How the NMDS Shares Data with CAS

Core NMP data can only be entered and edited within CAS. When the user triggers the Export NMDS function in CAS, an NMDS file is created and core NMP data is populated into worksheets within the spreadsheet. The user then uses the NMDS to apply nutrients to the NMP. The Import NMDS function then brings that new data back into CAS to finalize the process.

Figure 1 — NMP Export/Import (NMDS) Workflow

■ Key Concept

While **Core** NMP data is only editable within CAS, both CAS and the NMDS can be used to enter nutrient application and phosphorus assessment data. Users can work back and forth between the two platforms as needed.

Once an NMDS has been exported, CAS edits are locked until the export is either cancelled or the import is completed. If further edits to core data are needed in CAS, the export must first be cancelled. A fresh NMDS can then be exported that reflects those changes.

Any nutrient application or phosphorus assessment data entered in CAS will carry over into the NMDS each time a fresh copy is exported. These values can be edited or deleted within the NMDS, and the updated values will be written back to CAS when the import is completed.

■ Important

Due to rounding and formulaic differences between the NMDS and CAS, nutrient balance and other NMP data may not match identically between the two platforms. In the event of minor discrepancies, CAS values should be considered correct and final. All reports generated from CAS will reflect these correct values, regardless of whether the NMDS was used in the plan-writing process.

If a user encounters significant discrepancies that interfere with NMP creation, contact Joe Tesauro for technical assistance: Joe.Tesauro1@dcr.virginia.gov.

Section 2: General Spreadsheet Use

The NMDS should be thought of as a nutrient application calculator that enables the user to quickly apply nutrients and see real-time crop needs, nutrient balance, and organic use calculations. The NMDS also provides useful visibility into key plan components — such as soil tests and phosphorus assessment results — so it may be worthwhile to export an NMDS during the plan-writing process simply to gain a better overview of the NMP, even before making inputs.

Editable Data in the NMDS

The following non-core NMP data can be added or edited within an exported NMDS:

- Field-by-field phosphorus assessment strategy (Soil Test Needs, PET, or P-Index)
- Commercial Nutrient Applications (up to 3 per season)
- Organic Nutrient Applications (up to 2 per season)
- Biosolids Nutrient Applications (up to 2 per season)
- Application Notes
- Lime Applications

User Permissions

Spreadsheet permissions are in place to protect formula integrity and prevent data corruption. The table below summarizes what users can and cannot do within the NMDS:

Users CAN	Users CANNOT
• Enter data in designated input columns	• View or edit formulas and formatting rules
• Hide columns not needed for their view	• Enter data in non-designated columns
• Resize columns to better display content	• Delete, insert, or resize rows
• Filter on designated columns (indicated by a ▼ icon next to a column header)	• Make hidden columns visible
	• Filter on non-designated columns
	• Sort data

Hidden Export/Import Tabs

The NMDS contains hidden tabs used to map data between the spreadsheet and CAS. While spreadsheet permissions technically allow these tabs to be unhidden, they are locked against editing to prevent data corruption. Tampering with these tabs may cause the NMDS to malfunction or the import to fail.

Copying and Renaming the NMDS File

The NMDS .xlsb file can be copied and/or renamed at any point during the NMP-writing process. The unique ID embedded in the file — which is used to match the NMDS to the correct NMP in CAS during import — is preserved in copied files. However, only a file with that intact ID can be imported back into CAS. Refer to the *Technical Guide: NMDS Export/Import Process* for a complete explanation of version integrity during the Export/Import process.

Section 3: Spreadsheet Tabs

The NMDS is organized into the following tabs. Read-only tabs display core NMP data exported from CAS; editable tabs allow the user to enter and modify nutrient application data.

1 Crop Summary

The **Crop Summary** tab displays core NMP data related to Crop Rotation and Yield inputs. This is a read-only tab, with filtering options to display data by Field ID/Name, FSA IDs, Plan Seasons/Years, and Crop.

Column Notes:

VALUES Yield

Displays user-modified yield values from CAS where applicable; otherwise displays VALUES-derived yield estimates.

Net N Need

Displays user-modified nitrogen needs from CAS where applicable; otherwise displays default crop nitrogen needs derived from crop yield.

Crop Productivity Rating

An *estimated* rating that does not account for yield reduction factors such as slope, erosion, or rock outcroppings. The definitive Productivity Rating can be found in the Crop Rotations tab within CAS.

2 Soil Test Summary

The **Soil Test Summary** tab displays core NMP data related to Soil Test inputs. This is a read-only tab, with filtering options to display data by Field ID/Name, FSA IDs, Plan Seasons/Years, and Crop.

Column Notes:

P Value / K Value

The actual numerical values entered from the Soil Lab report for each field.

P MI ppm Value / K MI ppm Value

Converts the P Value and K Value inputs into the Mehlich I ppm standard used in DCR's Nutrient Management standards.

P Rating / K Rating

L–VH rankings for P and K nutrients, correlated to Virginia Tech's soil testing lab standards.

Soil Test Allowed P

Indicates the allowed phosphorus defined by *crop need* as determined by soil test data. Fields below VH P ratings display 'N-Based'; VH P rating fields display 'Zero-P'.

PET Allowed P

Indicates the allowed phosphorus as determined by soil test data and DCR's Phosphorus Environmental Threshold (PET) method.

P-Index Allowed P

Indicates the allowed phosphorus as determined by soil test data and DCR's Phosphorus Index (P-Index) method. If P-Index calculations were run in CAS prior to the NMDS export, this column displays those results. Otherwise, it displays P-Index results calculated within the NMDS. NMDS-derived values are not definitive unless the user selects the P-Index method in the **P Assessment** tab and enters all required inputs. A 'Need Inputs' designation indicates that the P-Index was not run in CAS and that further inputs are required in the **P Assessment** tab.

3 Balance Sheet

The **Balance Sheet** tab displays all current nutrient applications and crop/field balances, updating in real-time as applications are added or edited in the NMDS. This is a read-only tab, with filtering options to display data by Field ID/Name, FSA IDs, Plan Seasons/Years, and Crop.

Non-relevant columns can be hidden to simplify the view — for example, if the NMP does not include multiple nutrient applications per season, or if it is not a biosolids plan.

Column Notes:

N-P-K Balance

The running balance of all nutrient credits and applications from all sources. The current balance displays for each season/row in a rotation — the final crop nutrient balance appears in the last row for each crop, and the final field nutrient balance appears in the last row for each field. This column highlights **red** when:

- Total nitrogen supplied (including residuals) exceeds crop need by more than 10 lbs.
- Total phosphorus supplied exceeds the total allowed for a field (as determined by the currently selected P-Assessment tool) by more than 10 lbs.

P Method

Displays the current P-Assessment tool rating for each field. This can be edited in the **P Assessment** tab.

Crop Productivity Rating

An *estimated* rating that does not account for yield reduction factors such as slope, erosion, or rock outcroppings. The definitive Productivity Rating can be found in the Crop Rotations tab within CAS.

4 P Assessment

The **P Assessment** tab is an editable interface for viewing and editing P-Assessment tools for each field in the NMP. Filtering options are available by Field ID/Name and FSA IDs. Columns with a color background are non-editable; non-colored columns become editable depending on user input.

Column Notes:

Module P Assessment

Displays the most current P-Assessment rating calculated within CAS at the time of the NMDS export.

Module P Method

Displays the most current P-Assessment tool used within CAS at the time of the NMDS export.

New P Method

Editable dropdown to select a new P-Assessment tool within the NMDS. Using this feature overrides the P-Assessment method and rating imported from CAS.

P-Index: RUSLE2 (if known) / Distance to Stream / Riparian Buffer Width

Optional editable fields to refine P-Index calculations made in the NMDS. Inputs here override any values entered in CAS prior to export. Yellow highlighting indicates optional fields. If left blank, the NMDS applies the following defaults:

a. **RUSLE2 (if known):** Ignored — calculations default to the Erosion Risk Assessment estimated soil loss, calculated automatically within the NMDS.

b. **Distance to Stream:** Assumed value is 0 feet.

c. **Riparian Buffer Width:** Assumed value is 0.

P-Index: Pasture Ground Cover

Editable dropdown that activates when the P-Index method is selected for any field where Acreage Category = Pasture. This input is required for P-Index pasture fields; without it, the P rating displays as 'Need Inputs'.

P-Index: Contour Planting / Strip Cropped / Installed Terraces / Conservation Tillage

Optional editable fields to refine P-Index calculations for fields where Acreage Category = Crop. These override any values entered in CAS prior to export. Yellow highlighting indicates optional fields. If left blank, the NMDS defaults to 'No' for each.

New P Assessment

The calculated result of whichever P-Assessment tool the user selects in the NMDS. If this column is blank (no new P-Assessment method is chosen for a field), CAS values are retained upon import. If required data is missing when using the P-Index (New P Assessment = 'Need Inputs'), CAS values are also retained upon import.

5 Organic Applications

The **Organic Applications** tab is an editable interface for viewing and applying nutrients from organic sources. Organic sources must first be entered through CAS as part of the core data required before the NMDS can be exported. Filtering options are available by Field ID/Name, FSA IDs, Plan Seasons/Years, and Crop. Users may make up to two organic nutrient applications per season.

If organic nutrient applications were previously entered through CAS or carried over from a prior NMDS import, those applications will pre-populate when a new NMDS is exported. They can be edited or deleted within the NMDS as needed.

Column Notes:

Commercial Applications
Read-only display of any nutrient applications entered in the **Commercial Applications** tab.

P Method
Displays the current P-Assessment rating for the field, as determined in the **P Assessment** tab. 'N' indicates the field is nitrogen-based, with no phosphorus restrictions.

P Removal Credit
Running total of phosphorus removal credit per field. Displays even for nitrogen-based fields.

N-P-K Balance
Running balance of all nutrient credits and applications from all sources (see **Balance Sheet** tab for a full description). Highlights red when nitrogen or phosphorus limits are exceeded by more than 10 lbs.

New Organic App 1/2
Dropdown options displaying all organic nutrient sources exported from CAS into the NMDS. Selecting a source will erase and override any existing organic applications from CAS, but will not commit a new application unless an application method and rate are also entered.

New Method 1/2
Dropdown options for the organic application method. If a source and rate are selected but no method is chosen, the NMDS defaults to '>7 days'.

New Rate/Acre 1/2
Numerical input for the application rate. The unit of application (tons or kGals) for each organic source can be referenced in the **Organic Summary** tab.

New Note 1/2
Dropdown options for application notes defined in the **Notes** tab.

Committed Rate, Source, Method, Note 1/2
Displays the application inputs for each field/season/crop that will be committed to the NMP upon import into CAS. If empty, no application will be committed. Pre-populates with applications carried over from CAS; these can be edited or deleted.

Committed NPK 1/2
The committed N-P-K values per acre for each organic application, based on the Committed Rate, Source, Method, and Note values.

Delete CAS Application 1/2

Selecting 'Delete CAS' erases the organic application for that field/season/crop that was imported from CAS. Clearing this column restores the original application. Note that existing CAS applications are also overridden when a new organic application is committed in the NMDS.

N Crop Rate / P Crop Rate / P Rotation Rate / P Max Rate

Suggested application rates for the selected organic source. These columns populate once a New Organic App and New Method are entered. Definitions:

a. N Crop Rate: Rate to meet the nitrogen need of the crop, after all other nitrogen inputs (residuals and other applications) are deducted from the net need.

b. P Crop Rate: Rate to meet the phosphorus need of the crop as determined by Soil Test-derived crop needs, minus any existing phosphorus applications on the field.

c. P Rotation Rate: Rate to meet the phosphorus need of the field's crop rotation as determined by Soil Test-derived crop needs, minus any existing phosphorus applications.

d. P Max Rate: The maximum rate allowed to supply the total permitted phosphorus for the field based on the current P-Assessment method. 'N' indicates no phosphorus limitations; otherwise, this is the allowed P-removal factor (0P, 1P, 1.5P, or 2P) multiplied by the sum P-removal credit for the field, minus any existing phosphorus applications.

6 Commercial Applications

The **Commercial Applications** tab is an editable interface for viewing and applying nutrients from inorganic (commercial) sources. Filtering options are available by Field ID/Name, FSA IDs, Plan Seasons/Years, and Crop. Users may make up to three commercial nutrient applications per season.

If commercial applications were previously entered through CAS or carried over from a prior NMDS import, those applications will pre-populate when a new NMDS is exported. They can be edited or deleted within the NMDS as needed.

Column Notes:

Organic Applications

Read-only display of any nutrient applications entered in the **Organic Applications** tab.

N-P-K Balance

Running balance of all nutrient credits and applications from all sources (see **Balance Sheet** tab for a full description). Highlights red when nitrogen or phosphorus limits are exceeded by more than 10 lbs.

New N/P/K Application 1/2/3

Numerical inputs to apply specified nutrients to a crop. Entering values in any of these columns will erase and override any commercial applications exported from CAS. If values are entered in some columns but not others, blank columns default to 0.

New Application Method 1/2/3

Dropdown options for the inorganic application method. If any New N/P/K Application value is entered but no method is chosen, the NMDS defaults to 'Broadcast'.

New Note 1/2/3

Dropdown options for application notes defined in the **Notes** tab.

Variable Rate 1/2/3

Dropdown Yes/No options for variable application rate. If no selection is made, no value will be imported into CAS.

Committed NPK Application / Method / Note 1/2/3

Displays the application inputs for each field/season/crop that will be committed to the NMP upon import into CAS. If empty, no application will be committed. Pre-populates with applications carried over from CAS; these can be edited or deleted.

Delete CAS Application 1/2/3

Selecting 'Delete CAS' erases the commercial application for that field/season/crop that was imported from CAS. Clearing this column restores the original application. Existing CAS applications are also overridden when any new N/P/K Application value is committed.

7 Lime Applications

The **Lime Applications** tab is an editable interface for viewing and applying lime. Filtering options are available by Field ID/Name, FSA IDs, Plan Seasons/Years, and Crop. Users may make one lime application per season.

If lime applications were previously entered through CAS or carried over from a prior NMDS import, those applications will pre-populate when a new NMDS is exported. They can be edited or deleted within the NMDS as needed.

Column Notes:

Biosolid Lime Applied
Lime credited to the field through an application of a lime-stabilized biosolid source.

Lime Balance
Calculated lime need for the field minus any existing applications.

New Lime Application
Numerical input to apply lime to a field. Entering a value will erase and override any lime application exported from CAS.

New Note
Dropdown options for application notes defined in the **Notes** tab.

Variable Rate
Dropdown Yes/No options for variable application rate. If no selection is made, no value will be imported into CAS.

Committed Lime Application / Note
Displays the lime application inputs for each field/season/crop that will be committed to the NMP upon import into CAS. If empty, no application will be committed. Pre-populates with applications carried over from CAS.

Delete CAS Application
Selecting 'Delete CAS' erases the lime application for that field/season/crop imported from CAS. Clearing this column restores the original application. Existing CAS applications are also overridden when a new lime application is committed.

8 Notes

The **Notes** tab allows the user to enter application notes that can be attached to nutrient applications across all application tabs — organic, commercial, lime, and biosolids. Up to 25 unique notes can be entered in a single NMDS.

If application notes from CAS are exported to the NMDS, they pre-populate in this tab and are available for selection while writing the NMP. Any blank rows are available for new entries.

> **Saving Commonly Used Notes**
> Application notes saved in CAS cannot currently be exported to the NMDS. However, users may wish to maintain a notes template on their computer and copy commonly used notes into the NMDS as needed.

9 Organic Summary

The **Organic Summary** tab displays core NMP data related to organic inputs, including both on-farm generated and imported sources. This is a read-only tab; all data is only editable through CAS prior to the NMDS export.

The tab consists of two sections:

a. Manure Storage and Animal Data from core NMP inputs in CAS.

b. Manure usage totals, calculated and updated in real-time as organic applications are committed in the NMDS.

- The **Balance** column is the **Produced** quantity for a given source minus **Exported** minus committed **Used** for a particular year.
- The **Balance** column highlights red when the balance exceeds +/- 10% of the **Produced** quantity for a given source and year.
- A usage total row is only created for a source/year when committed applications for that source/year have been made in the NMDS.

10 Biosolid Applications

The **Biosolid Applications** tab is an editable interface for viewing and applying nutrients from biosolid sources. Biosolid sources must first be entered through CAS as part of the core data required before the NMDS can be exported. Filtering options are available by Field ID/Name, FSA IDs, Plan Seasons/Years, and Crop. Users may make up to two biosolid nutrient applications per season.

If biosolid nutrient applications were previously entered through CAS or carried over from a prior NMDS import, those applications will pre-populate when a new NMDS is exported. They can be edited or deleted within the NMDS as needed.

Column Notes:

Commercial Applications
Read-only display of any nutrient applications entered in the **Commercial Applications** tab.

Organic Applications
Read-only display of any nutrient applications entered in the **Organic Applications** tab.

P Method
Displays the current P-Assessment rating for the field, as determined in the **P Assessment** tab. 'N' indicates the field is nitrogen-based, with no phosphorus restrictions.

P Removal Credit
Running total of phosphorus removal credit per field. Displays even for nitrogen-based fields.

N-P-K Balance
Running balance of all nutrient credits and applications from all sources (see **Balance Sheet** tab for a full description). Highlights red when nitrogen or phosphorus limits are exceeded by more than 10 lbs.

New Biosolid App 1/2
Dropdown options displaying all biosolid nutrient sources exported from CAS into the NMDS. Selecting a source will erase and override any existing biosolid applications from CAS, but will not commit a new application unless an application method and rate are also entered.

New Method 1/2
Dropdown options for the biosolid application method. If a source and rate are selected but no method is chosen, the NMDS defaults to 'BC ≥7 day'.

New Rate/Acre 1/2
Numerical input for the application rate. The unit of application (tons or kGals) for each biosolid source can be referenced in the **Biosolid Summary** tab.

New Note 1/2
Dropdown options for application notes defined in the **Notes** tab.

Committed Rate, Source, Method, Note 1/2
Displays the application inputs for each field/season/crop that will be committed to the NMP upon import into CAS. If empty, no application will be committed. Pre-populates with applications carried over from CAS; these can be edited or deleted.

Committed NPK 1/2
The committed N-P-K values per acre for each biosolid application, based on the Committed Rate, Source, Method, and Note values.

Delete CAS Application 1/2

Selecting 'Delete CAS' erases the biosolid application for that field/season/crop imported from CAS. Clearing this column restores the original application. Existing CAS applications are also overridden when a new biosolid application is committed.

N Crop Rate / P Crop Rate / P Rotation Rate / P Max Rate

Suggested application rates for the selected biosolid source. These columns populate once a New Biosolid App and New Method are entered. Definitions are identical to those described in the **Organic Applications** tab above.

11 Biosolid Summary

The **Biosolid Summary** tab displays core NMP data related to biosolid inputs. This is a read-only tab; all data is only editable through CAS prior to the NMDS export.

The tab consists of two sections:

a. Biosolid source data from core NMP inputs in CAS.

b. Biosolid usage totals, calculated and updated in real-time as biosolid applications are committed in the NMDS.

- The **Balance** column is the **Available Amount** for a given source minus **Used** for a particular year. If the **Available Amount** displays 'FALSE', no quantity has been specified in CAS for that source.
- The **Balance** column highlights red when the balance exceeds +/- 10% of the **Available Amount** for a given source and year.
- A usage total row is only created for a source/year when committed applications for that source/year have been made in the NMDS.

Section 4: Finalizing an NMP with the NMDS

After all necessary nutrient applications have been committed in the NMDS, the .xlsb file must be imported into CAS to complete the plan-writing process. Before importing, it is strongly recommended that the user review the **Balance Sheet** tab carefully to verify that all inputs are accurate — once the file is imported, those values are committed to the NMP.

For step-by-step import instructions, refer to the *Technical Guide: NMDS Export/Import Process*.

Once imported, a plan completion date should be added to the NMP in CAS to move it from Develop stage into Review/Active. NMP reports can be generated at this time.

If further edits to the NMP are needed after import, the user can copy the plan for Amendment, Modification, or Revision as appropriate. Edits can then be made directly in CAS, or a fresh NMDS can be exported — containing all current NMP data — edited, and reimported to update the plan.