

Runoff Water Quality Index (WQI_{ag})

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Introduction

Getting Started

Welcome to the **Water Quality Index for Runoff Water from Agricultural Fields (WQI_{ag})**. This web-based software application was designed to provide a simple, convenient way to express multiple water quality parameters into a single, easy to understand value. A calculated **WQI_{ag}#** value is ranked from 1 to 10, where a value of 10 is assigned to the runoff water of highest quality and value of 1 to lowest water quality.

Below, an image of the **WQI_{ag}** main page shows where to find the following items:

- | | | | |
|---|------------------------------------|----|---|
| 1 | Site Information | 6 | Irrigation / Tile Drain Management |
| 2 | Field Physical Sensitivity Factors | 7 | Runoff Water Quality Index (WQI _{ag} #) calculated value |
| 3 | Nutrient Management Factors | 8 | Conservation Practices |
| 4 | Tillage Management Factors | 9 | WQI _{ag} # adjusted for Conservation Practices |
| 5 | Pest Management Factors | 10 | Project file and Report |

WQI_{ag} main page example screen:

Runoff Water Quality Index (WQIag)

USDA United States Department of Agriculture
Natural Resources Conservation Service

Water Quality Index WQIag

About Help Contact Us

Runoff Water Quality Index Version: 1.0.13 Date: 12/28/2012

Site Information * Required

*State: (Select one) *County: HUC:

*Field #: *Field name: *Acres:

*Project date: 7/27/2012 *Description:

FACTORS	DESCRIPTION	WQI RANKING FACTOR	WEIGHTING	WEIGHT
Field Physical Sensitivity Factors				
Slope (%)	Get Slope Interaction (Select one)			
HS group	(Select one)	0.00	0.00	0.00
K-factor	(Select one)	0.00	0.00	0.00
OM content	(Select one)	0.00	0.00	0.00
Rainfall/Veg	Get Rain / Vegetation Interaction	0.00	0.00	0.00
Duration	By Year By Month By Season Year: January - December		0.00	0.00
Nutrient Management Factors				
Application rate	(Select one)	0.00	0.00	0.00
N-source and timing	(Select one)	0.00	0.00	0.00
P-source and timing	(Select one)	0.00	0.00	0.00
Soil condition / application	(Select one)	0.00	0.00	0.00
			0.00	0.00
Tillage Management Factors				
Description / STIR	(Select one)	0.00	0.00	0.00
			0.00	0.00
Pest Management Factors				
Description	(Select one)	0.00	0.00	0.00
			0.00	0.00
Irrigation / Tile Drain Management				
Irrigation	No irrigation (0%)			
Tile Drain	No Tile Drain (0%)			
Runoff Water Quality Index (WQIag)				0.00
Conservation Practices				
Get Conservation Practice(s)			# Selected	0
Runoff Water Quality Index (WQIag) with additional Conservation Practices				0.00
Project file:	(none)	Open	Report	

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To generate a single dimensionless **Runoff Water Quality Index** calculated value (**WQIag#**), a minimal amount of user information is **required**. The easy to use worksheet design accepts user input for the following categories:

- **1 Site Information** (required; see [Site Information](#))
- **2 Field Physical Sensitivity Factors** (required; see [Field Factors](#))
- **3 Nutrient Management Factors** (required; see [Nutrient Factors](#))
- **4 Tillage Management Factors** (required; see [Tillage Factors](#))
- **5 Pest Management Factors** (required; see [Pest Factors](#))
- **6 Irrigation / Tile Drain Management** (optional; see [Irrigation / Tile Drain Management](#))
- **8 Conservation Practices** (optional; see [Conservation Practices](#))

About WQIag

The **USDA** Natural Resources Conservation Service (**NRCS**), West National Technology Support Center (**WNTSC**), Water Quality and Quantity National Technology Development Team, developed and supports the **Water Quality Index for Runoff Water from Agricultural Fields (WQIag)**.

WQIag is a simple, convenient way to express multiple water quality parameters into a single, easy to understand value. **WQIag** was developed to evaluate the quality of runoff water from agricultural fields.

The **US Department of Agriculture, Natural Resources Conservation Service (USDA/NRCS)** provides technical assistance (TA) and financial assistance (FA) cost shares that encourage agricultural producers to be good stewards of the Nation's soil, water, and related natural resources on private and tribal lands. One of the key goals of implementing conservation practices is to safeguard and improve water quality of the watershed.

The **USDA/NRCS** is always looking for approaches and techniques to evaluate the effects of its programs on the environment. For example, the CEAP Program (**USDA/NRCS**, 2011) is one such program that uses the APEX model for this purpose. The **WQIag** may serve as a simple tool in the effort to evaluate the effects of the conservation practices on improving and/or sustaining the quality of water in the watershed.

Contact Us

For questions or comments regarding the **Water Quality Index for Runoff from Agricultural Fields (WQIag)**, please contact:

Runoff Water Quality Index (WQI_{ag})

Harbans Lal

Environmental Engineer
West National Technology Support Center
USDA-NRCS
1201 NE Lloyd Blvd., Suite 1000
Portland, OR 97232

Harbans.Lal@por.usda.gov

Shaun McKinney

Water Quality / Quantity Team Leader
West National Technology Support Center
USDA-NRCS
1201 NE Lloyd Blvd., Suite 1000
Portland, OR 97232

Shaun.McKinney@por.usda.gov

Other Resources

For additional information relating to the **Water Quality Index for Runoff from Agricultural Fields (WQI_{ag})**, please see:

Topic	Description
Conservation Practices	<p>Best Management Practices for Georgia Agriculture – Conservation Practices to Protect Water Quality.</p> <p>The Georgia Soil and Water Conservation Commission, P.O. BOX 8024, Athens, GA 30603 (706) 652-3065</p> <p>External link: www.gaswcc.georgia.gov</p>
HUC Codes	<p>Six Easy Steps to Finding Your 12-digit Hydrologic Unit Code (HUC)</p> <p>External link: http://www.azdeq.gov/environ/water/watershed/download/easy_steps.pdf</p>
Integrate	USDA/NRCS Integrated Pest Management (IPM) Practice

d Pest Management	Standard 595 External link: IntegratedPestManagementPracticeStandard.pdf
Nutrient Management Practice Standard	USDA/NRCS Nutrient Management Practice Standard 590 External link: NutrientManagementPracticeStandard.pdf
RUSLE2	USDA/NRCS, undated. RUSLE2 - Revised Universal Soil Loss Equation 2 External link: ftp://ftp-fc.sc.egov.usda.gov/IA/news/RUSLE2.pdf
WQI ag Review	The Introduction to the Water Quality Index Expressing water quality information in a format that is simple and easily understood by common people. External link: http://www.waterefficiency.net/WE/Articles/The_Introduction_to_the_Water_Quality_Index_15374.aspx
WQI ag Tech Note	Water Quality Index for Runoff from Agricultural Fields Technical Note document by: Harbans Lal and Shaun McKinney External link: ftp://ftp.wcc.nrcs.usda.gov/wntsc/WQI/wqiTechNote.docx
WQI ag PowerPoint	Water Quality Index for Runoff from Agricultural Fields PowerPoint document by: Harbans Lal and Shaun McKinney External link: ftp://ftp.wcc.nrcs.usda.gov/wntsc/WQI/wqiAg.pptx

Runoff Water Quality Index (WQI_{ag})

WQI_{ag} Documen tation	Documentation for Water Quality Index for Runoff from Agricultural Fields (WQI_{ag}). Select either Adobe Portable Document Format (PDF) or Microsoft Word (DOC) formats. External links: Adobe PDF: RunoffWaterQualityIndex.pdf Microsoft Word: RunoffWaterQualityIndex.doc
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Using WQIag

Introduction

The **Water Quality Index for Runoff from Agricultural Fields (WQIag)** has an easy to use worksheet design.

To generate a single dimensionless **Runoff Water Quality Index** calculated value (**WQIag#**), a minimal amount of user information is **required**. The easy to use worksheet design accepts user input for the following categories:

1. **Site Information** - several user input fields are **required**; for details, see [Site Information](#)
2. **Field Physical Sensitivity Factors** - **required**; for details, see [Field Factors](#)
3. **Nutrient Management Factors** - **required**; for details, see [Nutrient Factors](#)
4. **Tillage Management Factors** - **required**; for details, see [Tillage Factors](#)
5. **Pest Management Factors** - **required**; for details, see [Pest Factors](#)
6. **Irrigation / Tile Drain Management** - optional; for details, see [Irrigation / Tile Drain Management](#)
7. **Conservation Practices** - optional; for details, see [Conservation Practices](#)

Note: Click the topic links above for additional information.

See [Getting Started](#) for more information about the location of these and other items on the **WQIag** main page. Also, **WQIag** now requires a **State** selection before any other user inputs. See [Site Information](#) for details.

Print a Report

After entering the required user information, use the **Report** button to review and print a **WQIag** report. See Reports [Introduction](#) for details.

Use a Project File

Using a **WQIag** project file is optional. A **WQIag** project file can be used to save / reload user inputs and **WQIag** values. See [Project Files](#) for details.

Some **WQIag** categories have more than one user input (see partially completed [Example 1](#) below). When all of the user inputs for a category area have been entered, a **WEIGHT** value for the category area will be calculated (see [Example 2](#) below). When all of the **WQIag** categories with

Runoff Water Quality Index (WQIag)

required inputs have been entered, the **WQIag#** (Water Quality Index value) will be calculated (see [Example 3](#) below).

Example 1: Shows partially completed Nutrient Management Factors category inputs. The calculated category **WEIGHT** remains zero (0.00) in this example:

Nutrient Management Factors				
Application rate	LGU recommendations	5.00	0.30	1.50
N-source and timing	Synth Fert, single, pre-growing season	6.00	0.30	1.80
P-source and timing	Synthetic Fert, pre-growing season	2.00	0.15	0.30
Soil condition / application	(Select one)	0.00	0.00	0.00
			0.00	0.00

Partially entered category inputs

category WEIGHT

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Example 2: Shows all of the Nutrient Management Factors category inputs entered. The calculated category **WEIGHT** is now 1.25 in this example:

Nutrient Management Factors				
Application rate	LGU recommendations	5.00	0.25	1.25
N-source and timing	Synth Fert, single, pre-growing season	6.00	0.25	1.50
P-source and timing	Synthetic Fert, pre-growing season	2.00	0.25	0.50
Soil condition / application	Dry/Well Drained, N fertilizer, Broadcast and Incorporat	7.00	0.25	1.75
			0.25	1.25

All category inputs entered

category WEIGHT

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Example 3: When all of the **WQIag** categories with required inputs have been entered, the calculated **WQIag#** (Water Quality Index value) will display:

Runoff Water Quality Index (WQIag#)	7.19
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Site Information

Site Information Activities

- Review the **Site Information** user input requirements.
- A **State** location selection is required before other user inputs.
- Enter information into all **required** fields.

Site Information Overview

This is the **Site Information** category (see [Example 1](#) below). All **required** fields must have user inputs before a report can be produced.

Note: [See Other Resources](#) for additional information.

Provide user inputs for:

State: - Select the **State** location (**required**) from the list. A **State** location selection is required before other user inputs. Changing a **State** location selection will result in a complete **WQIag** reset and restart on the main page. Attempting user inputs without a **State** selection will result in the following message:



Saving user inputs to a **WQIag** project file is optional. Attempting to change a **State** location selection with previously unsaved user inputs will result in the following message:

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Select **Yes** to continue with the **State** selection change and **WQIag** will reset and restart on the main page.

Select **No** to return to the **WQIag** main page.

County: - After selecting a **State**, select the **County** location (**required**) from the list.

HUC: - Enter the 12-digit **Hydrologic Unit Code** for your watershed classification (optional).

Field #: - Enter a unique **Field #** identifier (**required**).

Field name: - Enter a **Field name** identifier (**required**).

Acres: - Enter the number of **Acres** in the field (**required**).

Project date: - Enter a **Project date** for this **WQIag** run (**required**).

Description: - Enter a project **Description** for this **WQIag** run (**required**).

Example 1: User input fields:

Example with initial values:



Site Information		* Required			
* State:	(Select one)	* County:		HUC:	
* Field #:		* Field name:		* Acres:	
* Project date:	7/27/2012	* Description:			

Example with required fields values:

Site Information * Required			
* State:	Oregon	* County:	CLACKAMAS
		HUC:	
* Field #:	1	* Field name:	Westside Hay
		* Acres:	80
* Project date:	5/15/2012	* Description:	
		Oregon Hay Farms	

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Field Physical Sensitivity Factors

Activities

- Review the **Field Physical Sensitivity Factors** category selection requirements (see [Example 1](#) below).
- Use the **Get Slope Interaction** button to input **Slope(%)**, **HS group** (Hydrologic soil group), and **K-factor** (Soil erodibility factor).
- Make a selection for **OM content** (Organic matter) in this category.
- Use the **Get Rain / Vegetation Interaction** button to identify monthly rainfall and monthly vegetation cover.

Note: A State, County and Slope(%) selection is required before you can enter Rain/Vegetation information.

Overview

This is the **Field Physical Sensitivity Factors** category. Make a selection from each of the following:

Click the **Get Slope Interaction** button to open a pop-up window (see [Example 2](#) below) allowing you to select Slope(%), Hydrologic soil group, and K-factor. See [Field Slope Interaction](#) for details.

OM content - Select the field percent organic matter content from the list (see [Example 3](#) below).

Click the **Get Rain / Vegetation Interaction** button to open a pop-up window (see [Example 4](#) below) allowing you to select / enter monthly rainfall and monthly vegetation cover. See [Field Rain/Veg Interaction](#) for details.

Duration - Three buttons control the **Duration** selection. Changing the **Duration** results in a change to the Rainfall/Veg WQI Ranking value and a recalculation of the WQIag#.

The **By Year** button is the default selection which uses the Rainfall/Vegetation Interaction value for the entire year, January through December. The **By Year** default selection is shown in [Example 1](#) below.

Runoff Water Quality Index (WQIag)

The **By Month** button allows a single month selection and uses the Rainfall/Vegetation Interaction value for the selected month (see [Example 5](#) below).

The **By Season** button allows a contiguous months selection and uses the Rainfall/Vegetation Interaction value for the selected range of months (see [Example 6](#) below).

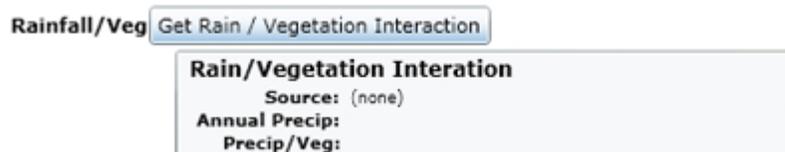
When all of the user inputs for this category area have been entered, a **WEIGHT** value for the category area will be calculated (see [Example 1](#) below).

Example 1: All category selections completed for **Field Physical Sensitivity Factors**:

FACTORS	DESCRIPTION	WQI RANKING	WEIGHTING FACTOR	WEIGHT
Field Physical Sensitivity Factors				
Slope (%)	Get Slope Interaction (2% to 5%)			
HS group	(A - low runoff potential)	9.00	0.25	2.25
K-factor	(<=0.10 very low erodibility)	10.00	0.25	2.50
OM content	2-4%	6.00	0.25	1.50
Rainfall/Veg	Get Rain / Vegetation Interaction	4.42	0.25	1.11
Duration	By Year By Month By Season Year: January - December		0.25	1.84

Tooltip

Hover the mouse over the **Get Rain / Vegetation Interaction** button to show the Rainfall/Veg tooltip:



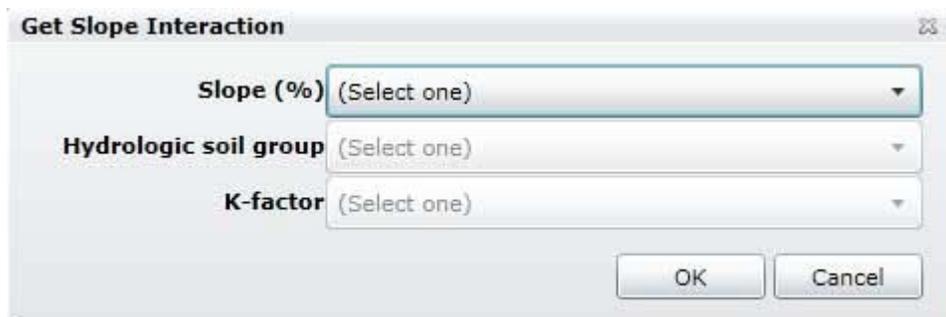
Source: Displays a Station name or 'Custom'.

Annual Precip: Annual precipitation in inches.

Precip/Veg: Calculated precipitation / vegetation interaction value. **Note:** The **Precip/Veg** value shown corresponds to the **Duration** selection: **By Year**, **By Month** or **By Season**.

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Example 2: Pop-up window for **Slope (%)**, **Hydrologic soil group** and **K-factor**:



The image shows a dialog box titled "Get Slope Interaction". It contains three dropdown menus, each with "(Select one)" as the current selection. The labels for the dropdowns are "Slope (%)", "Hydrologic soil group", and "K-factor". At the bottom right of the dialog box, there are two buttons: "OK" and "Cancel".

See [Field Slope Interaction](#) for details.

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Example 3: Selection list for **OM content (Organic matter)**:



The image shows a selection list for "OM content (Organic matter)". The list includes the following options: "(Select one)", ">8%", "6-8%", "4-6%", "2-4%", "0.5-2%", and "<0.5%".

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Example 4: Pop-up window for **Rain / Vegetation Interaction**:

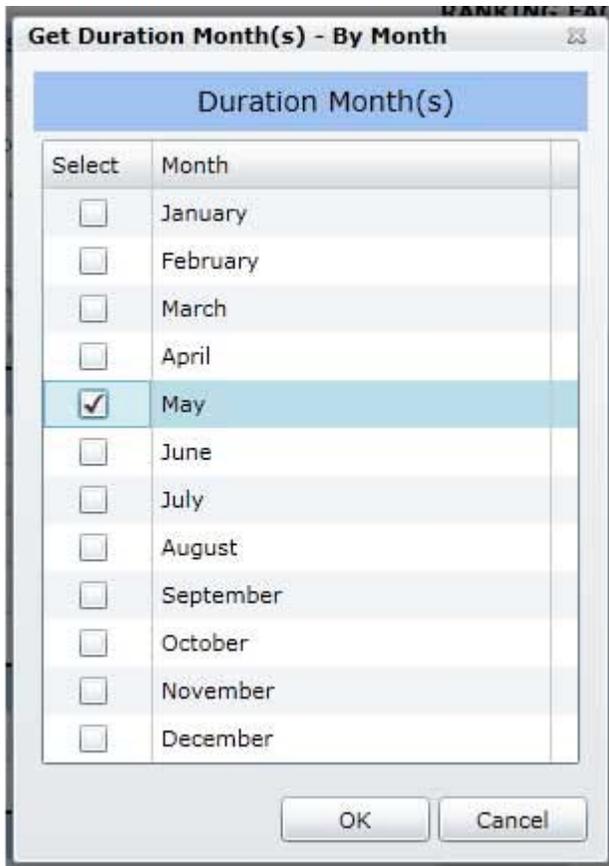
Runoff Water Quality Index (WQI_{ag})

Month	Precip(In)	Vegetative Cover (dead & alive)	Precip(LMH)	Precip/Veg
January	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
February	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
March	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
April	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
May	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
June	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
July	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
August	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
September	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
October	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
November	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
December	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
Annual total	0.00			

See [Field Rainfall/Vegetation Interaction](#) for details.

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Example 5: Pop-up window for **By Month** selection:

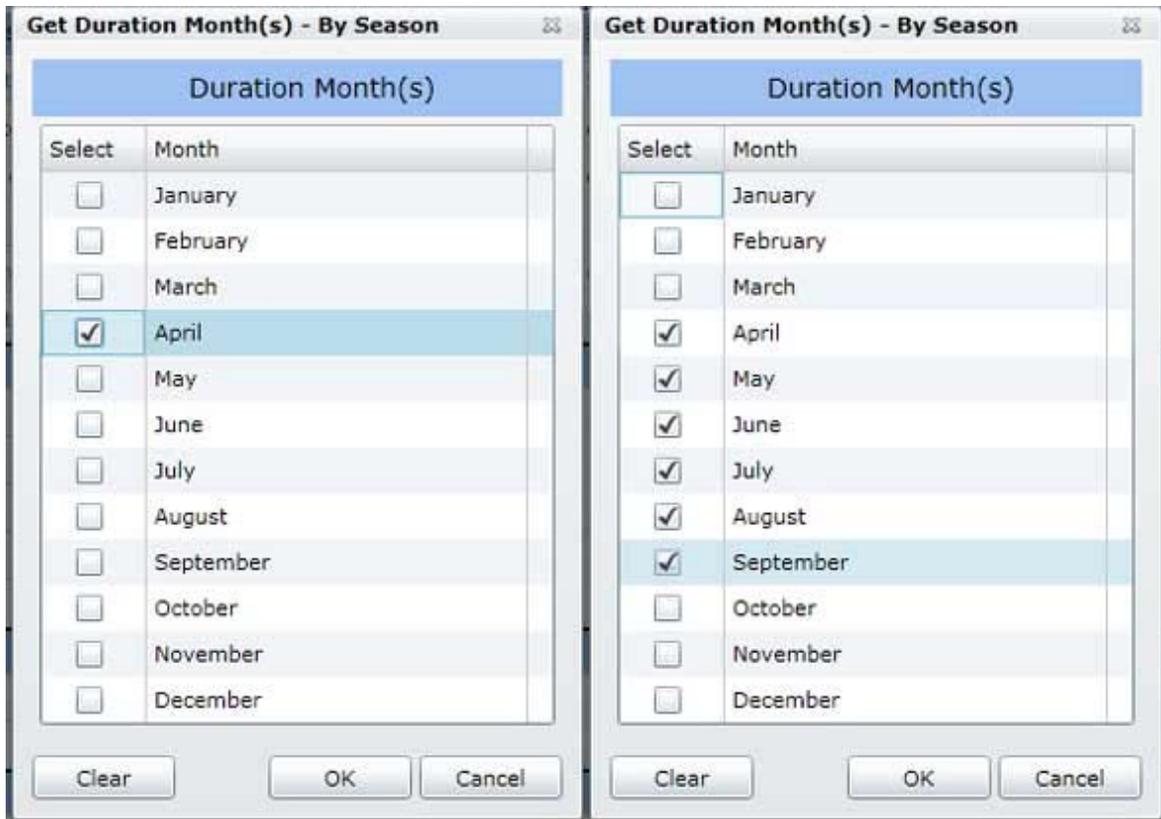


Click the **OK** button to save your selection or click the **Cancel** button to ignore changes.

Duration Month: May
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Example 6: Pop-up window for **By Season** selection examples:

Runoff Water Quality Index (WQIag)



To perform the above example **By Season** selection for a range of contiguous months:

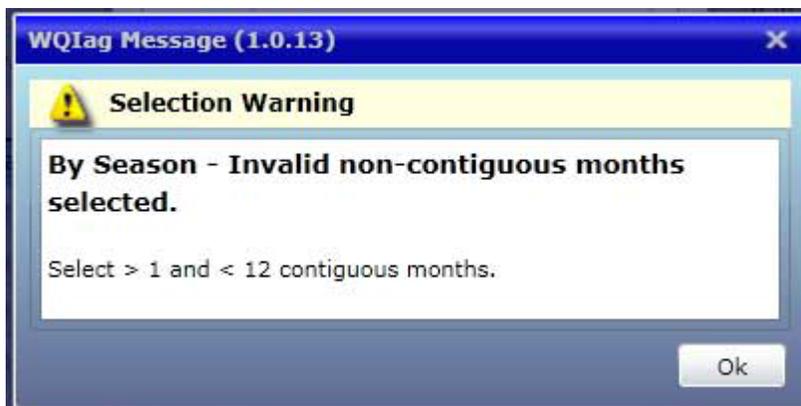
1. Select the starting month - April (shown on the left-side).
2. Select the ending month - September (shown on the right-side). **Note:** The contiguous months in between are automatically selected.
3. Click the **OK** button to save your selections or click the **Cancel** button to ignore changes.

Duration Season: April - September

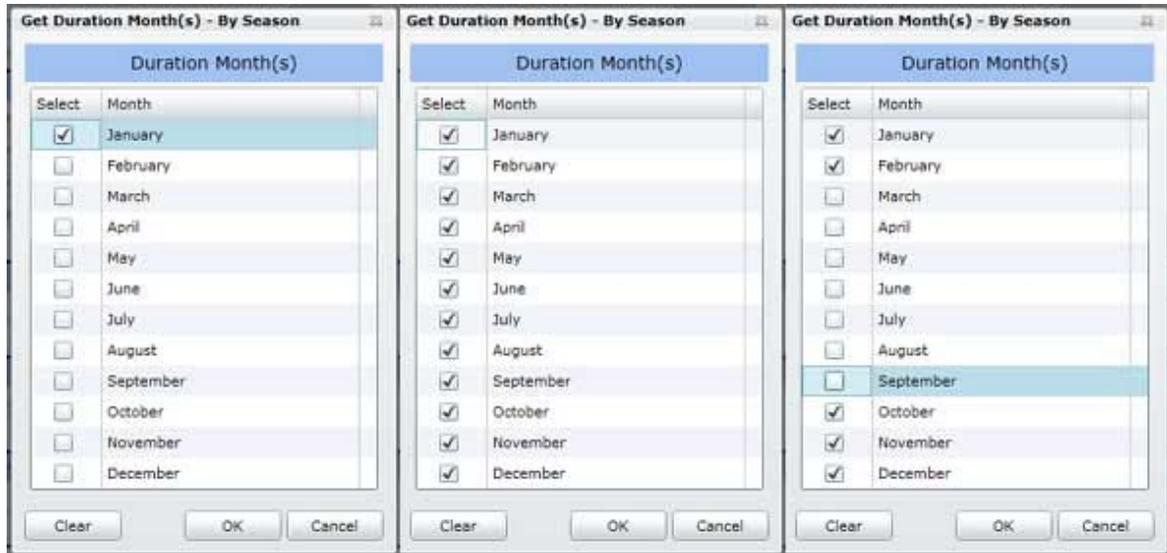
Use the **Clear** button to de-select all previous selected months.



To de-select a single month, **click any selected month to de-select it** as shown for July in the example above. The above example does not contain a valid contiguous set of selected months. Clicking the **OK** button will result in the following error message:



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To perform the above example **By Season** selection for a 'fall-winter-spring' range of contiguous months:

1. Select the starting month - January (shown on the left-side).
2. Select the ending month - December (shown in the middle). **Note:** The contiguous months in between are automatically selected.
3. Continue to de-select March through September by clicking each one (shown on the right-side).
4. Click the **OK** button to save your selections or click the **Cancel** button to ignore changes.

Duration Season: October - February

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Field Slope Interaction

Activities

- Review the **Slope Interaction** selection requirements (see [Example 1](#) below).
- Make a selection for **Slope(%)**.
- Make a selection for **Hydrologic soil group**.
- Make a selection for **K-factor**.

Note: Slope(%), Hydrologic soil group and K-factor selections are required to calculate a WQIag#.

Overview

From the main page, click the **Get Slope Interaction** button to open this pop-up window (see [Example 1](#) below). The **Get Slope Interaction** pop-up window provides a selection from each of the following:

Slope(%) - Select the **Slope(%)** from the list (see [Example 2](#) below). Field slope plays an important role in runoff generation and transport. The higher the slope value, the more susceptible it is to generate runoff and soil erosion. The field slope interacts with the site rainfall, and soil physical and erosion factors such as **Hydrologic soil group** and the **K-factor** in generating runoff.

The field **Slope(%)** selection also interacts with the **Irrigation / Tile Drain Management, Tile Drain** selection. Tile Drain selections are possible only when the field **Slope(%)** selection is 5% or less. If the field **Slope(%)** selection is greater than 5%, the **Tile Drain** selection will be limited to 'No Tile Drain (0%)'.

Note: A Slope(%) selection is required before you can enter Rain/Vegetation information.

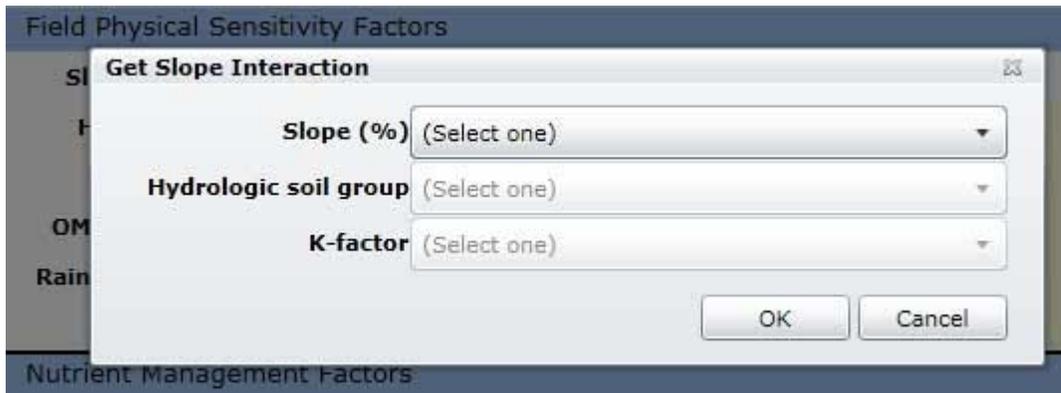
Hydrologic soil group - Select the **Hydrologic soil group** from the list (see [Example 3](#) below). Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. Soil map unit components are assigned a hydrologic group in the NASIS soil survey database (USDA/NRCS, 2009). Most soils are placed in hydrologic groups A, B, C, or D. Soils assigned to hydrologic group 'A' have the lowest runoff potential, whereas soils in hydrologic group 'D' have the highest runoff potential.

K-factor - Select the **K-factor** from the list (see [Example 4](#) below). K-factor defines the susceptibility of a soil to sheet and rill erosion by water. It is one of the six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) that are used to predict the average annual rate of soil loss (USDA/NRCS, undated). The K-factor ranges from 0.02 to 0.69 and is based primarily on percentage of silt, sand and organic matter, the soil structure and the saturated hydraulic conductivity. The higher the K value, the more susceptible the soil is to sheet and rill erosion by water thus leading to decreasing the quality of runoff water.

Click the **OK** button to save your selections or click the **Cancel** button to ignore changes.

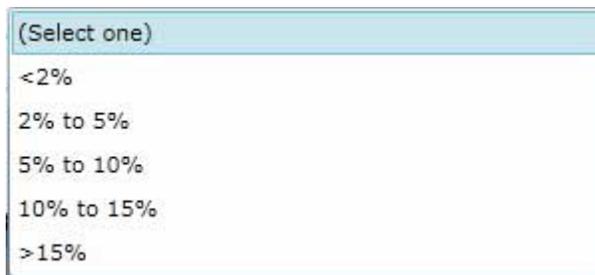
Note: See [Other Resources](#) for reference links.

Example 1: Initial pop-up window for **Slope Interaction**:



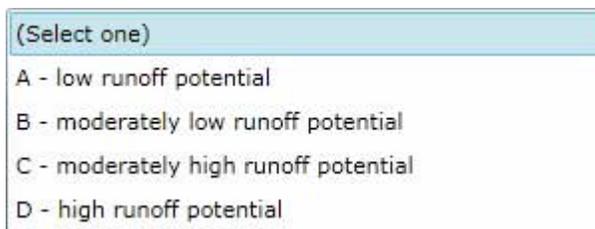
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Example 2: Selection list for **Slope(%)**:



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Example 3: Selection list for **Hydrologic soil group**:



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Example 4: Selection list for **K-factor**:

(Select one)
<=0.10 very low erodibility
0.11 - 0.20 low erodibility
0.21 - 0.32 moderate erodibility
0.33 - 0.43 high erodibility
0.44 - 0.64 very high erodibility

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Field Rainfall / Vegetation Interaction

Activities

- Review the **Rainfall / Vegetation Interaction** selection requirements (see [Example 1](#) below).
- Make a selection for **Precip Source** (precipitation source): **Station** (weather station) or **Custom**. You can have both Station and Custom information but the calculated WQIag# will only use selected Precip Source.
- When the **Precip Source is Station**, select a **Station:** (weather station) from the list and select a **Vegetative Cover** value (Low, Medium or High) for each month. For the **Station:** selected, each months **Precip(In)** (precipitation in inches) will display along with the Annual total precipitation.
- When the **Precip Source is Custom**, enter **Precip(In)** (monthly precipitation amounts in inches) for each month and select a **Vegetative Cover** value (Low, Medium or High) for each month. The Annual total precipitation will accumulate as the monthly **Precip(In)** values are entered.
- When the Precip Source is Station and a Station: is selected, you can use the **Copy button** to copy the selected Station: monthly precipitation amounts to Custom monthly precipitation amounts.
- When the Precip Source is Custom, you can use the **Clear button** to reset all of the Custom monthly precipitation amounts to zero.

Note: Either Station or Custom Rainfall/Vegetation information is required before a WQIag# can be calculated.

Overview

The precipitation magnitude and its duration falling on the field becomes the primary source of runoff. The field sensitivity/physical factors such as slope,

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soil texture, etc., control the quantity and rate of runoff. The runoff carries with it the sediments and other pollutants, both dissolved constituents as well as entraining particles.

The **Precip(LMH)** and **Precip/Veg** data columns are display only and do not allow user input. The values displayed for these two columns are computed values.

From the main page, click the **Get Rain / Vegetation Interaction** button to open this pop-up window (see [Example 1](#) below). The **Get Rainfall / Vegetation** pop-up window provides a selection from each of the following:

Precip Source - Select either **Station** (weather station) or **Custom**.

Station: - When the **Precip Source is Station**, select a **Station:** (weather station) from the list. For the **Station:** selected, the monthly **Precip(In)** (precipitation in inches) values will display along with the Annual total precipitation.

Precip(In) - When the **Precip Source is Custom**, enter **Precip(In)** (monthly precipitation amounts in inches) for each month. The Annual total precipitation will accumulate as the monthly **Precip(In)** values are entered.

Vegetative Cover - Select a **Vegetative Cover** value (Low, Medium or High) for each month.

Copy button - Optionally, when the **Precip Source is Station** and a **Station:** is selected, you can use the **Copy** button to copy the selected **Station:** monthly precipitation amounts to Custom monthly precipitation amounts.

Clear button - Optionally, when the **Precip Source is Custom**, you can use the **Clear** button to reset all of the Custom monthly precipitation amounts to zero.

Click the **OK** button to save your updates or click the **Cancel** button to ignore changes.

Data Entry Examples

- Making a **Precip Source - Station** selection (see [Example 2](#) below).
- Making a **Precip Source - Custom** selection (see [Example 3](#) below).

- **Copy** precipitation amounts from a Station: selection to Custom (see [Example 4](#) below).
- **Clear** precipitation amounts in Custom (see [Example 5](#) below).

Example 1: Initial pop-up window for **Rainfall / Vegetation**: showing initial values (in this example Oregon and Clackamas were previously selected as the State and County):

Month	Precip(In)	Vegetative Cover (dead & alive)	Precip(LMH)	Precip/Veg
January	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
February	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
March	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
April	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
May	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
June	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
July	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
August	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
September	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
October	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
November	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
December	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High		
Annual total	0.00			

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Example 2: Making a **Precip Source - Station** selection:

This example shows a climate **Station** selection in Clackamas county Oregon.

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For the climate **Station** selected, the following columns are automatically populated:

- **Precip(In)** - monthly precipitation amounts in inches.
- **Precip(LMH)** - Low, Med or High designation.
- **Precip/Veg** - Range value from 1 to 9.

Step 1:

1. **Precip Source:** Select **Station**
2. **Station:** Select a Station: from the list (example N Willamette Exp Stn)

Rainfall / Vegetation	
State: Oregon	Precip Source
County: CLACKAMAS	<input checked="" type="radio"/> Station <input type="button" value="Copy"/>
Station: N WILLAMETTE EXP STN OR6151	<input type="radio"/> Custom <input type="button" value="Clear"/>

Step 2:

1. **Surface Vegetation:** For each month (January through December) select the **Surface Vegetation** (Low, Medium or High) that most describes your conditions.
2. Vegetative cover (live or dead) and rainfall is classified into three categories (Low, Medium and High). The following categories are suggested for vegetative cover (live or dead).
 - Less than 30% vegetative cover = Low Vegetation (VI)
 - 31 to 80% vegetative cover = Medium Vegetation (Vm)
 - More than 80% vegetative cover = High Vegetation (Vh)
3. The example below shows medium and high vegetation from April through November.

Month	Precip(In)	Surface Vegetation (Low, Medium or High)	Precip(LMH)	Precip/Veg	
January	6.17	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	High	1	
February	4.39	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Med	2	
March	3.99	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Med	2	
April	2.64	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	Med	5	
May	2.17	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	Med	5	
June	1.73	<input type="radio"/> Low <input type="radio"/> Medium <input checked="" type="radio"/> High	Low	9	
July	0.70	<input type="radio"/> Low <input type="radio"/> Medium <input checked="" type="radio"/> High	Low	9	
August	0.94	<input type="radio"/> Low <input type="radio"/> Medium <input checked="" type="radio"/> High	Low	9	
September	1.84	<input type="radio"/> Low <input type="radio"/> Medium <input checked="" type="radio"/> High	Low	9	
October	3.11	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	Med	5	
November	6.03	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	High	4	
December	7.09	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	High	1	
Annual total	40.80			5.08	

Step 3:

1. When all of the Surface Vegetation selections have been completed, click the **OK** button to save your changes or click **Cancel** to ignore changes.

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Example 3: Making a **Precip Source - Custom** selection:

This example shows a **Custom** selection and climate entry.

For a **Custom** selection, the following columns are automatically populated:

- **Precip(In)** - all monthly precipitation amounts (in inches) are set to zero.
- **Precip(LMH)** - set to Low designation.
- **Precip/Veg** - set to 3 (no rain and Low Surface Vegetation).

Step 1:

1. **Precip Source:** Select **Custom**

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Rainfall / Vegetation	
State: Oregon	Precip Source
County: CLACKAMAS	<input type="radio"/> Station <input type="button" value="Copy"/>
Station: (Select one) ▼	<input checked="" type="radio"/> Custom <input type="button" value="Clear"/>

Step 2:

1. **Precip(in)**: For each month (January through December) enter your monthly total precipitation in inches. As each monthly amount is entered, the **Annual total** will automatically accumulate. Also, the **Precip(LMH)** column may change based on the monthly amount entered. In this example below, monthly precipitation amounts have been entered from January through May and June is waiting for input.
2. **Surface Vegetation**: For each month (January through December) select the Surface Vegetation (Low, Medium or High) that most describes your conditions. The example below shows partial data entry for January through May.

Month	Precip(In)	Surface Vegetation (Low, Medium or High)	Precip(LMH)	Precip/Veg
January	5.30	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Med	2
February	4.12	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Med	2
March	2.20	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
April	0.75	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	Low	6
May	0.30	<input type="radio"/> Low <input type="radio"/> Medium <input checked="" type="radio"/> High	Low	9
June	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
July	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
August	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
September	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
October	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
November	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
December	0.00	<input checked="" type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High	Low	3
Annual total	12.67			3.58

Step 3:

1. When all of the monthly Precip(In) precipitation amounts and Surface Vegetation selections have been completed, click the **OK** button to save your changes or click **Cancel** to ignore changes.

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Example 4: Copy precipitation amount to Custom:

Use the **Copy** button to copy the selected Station: monthly precipitation amounts to Custom monthly precipitation amounts.

Step 1:

1. **Precip Source:** Select **Station**
2. **Station:** Select a Station: from the list to see the monthly precipitation amounts in inches.

Step 2:

1. Click the **Copy** button to copy the selected Station: monthly precipitation amounts to Custom monthly precipitation amounts.

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Example 5: Clear precipitation amounts in Custom

Use the **Clear** button to reset all of the Custom monthly precipitation amounts to zero.

Step 1:

1. **Precip Source:** Select **Custom**

Step 2:

1. Click the **Clear** button to clear the Custom monthly precipitation amounts. The monthly precipitation amounts will be reset to zero.

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- Less than 30% vegetative cover = Low Vegetation (VI)
- 31 to 80% vegetative cover = Medium Vegetation (Vm)
- More than 80% vegetative cover = High Vegetation (Vh)

Nutrient Management Factors**Activities**

- Review the **Nutrient Management Factors** category selection requirements (see [Example 1](#) below).
- Make a selection for **Application rate** in this category. An **Application rate** selection is required before the other user **Nutrient Management Factors** inputs.
- Make a selection for **N-source and timing** in this category.
- Make a selection for **P-source and timing** in this category.
- Make a selection for **Soil condition / application** in this category.

Overview

This is the **Nutrient Management Factors** category. Nutrient management is composed of four inputs: the rate, timing, form, and method of fertilizer application. The primary objective of nutrient/pest management is to balance the application of nutrients and pesticides for the vegetative requirement to achieve sustainable crop yields while minimizing their off-site transport and losses.

The USDA/NRCS Practice Standards 590 (Nutrient Management Practice Standard) and 595 (Integrated Pest Management) respectively describes these practices in much greater details (USDA/NRCS, 2006 and USDA/NRCS, 2010).

Note: See [Other Resources](#) for reference links.

Make a selection from each of the following:

Application rate - Select the nutrient application rate from the list (see [Example 2](#) below). An **Application rate** selection is required before the other user **Nutrient Management Factors** inputs. Many of the selections are based on State Land Grant University (**LGU**) recommendations.

Higher fertilizer application rates lead to increasing water quality concerns. Farmers generally apply fertilizers using **LGU** recommendations.

N-source and timing - Select the nitrogen (**N**) source and timing from the list (see [Example 3](#) below).

The timing of fertilizer application plays an important role in the fate of nutrients because of the physiological effectiveness of the plant to uptake the applied nutrients. If applied at the optimum time, a large percentage of nutrients are taken up by the plants, thus minimizing negative impact on the water quality.

P-source and timing - Select the phosphorus (**P**) source and timing from the list (see [Example 4](#) below).

The timing of fertilizer application plays an important role in the fate of nutrients because of the physiological effectiveness of the plant to uptake the applied nutrients. If applied at the optimum time, a large percentage of nutrients are taken up by the plants, thus minimizing negative impact on the water quality.

Soil condition / application - Select the soil condition / nutrient application method from the list (see [Example 5](#) below).

Application method and soil condition at the time of fertilizer application are two additional factors that play key role in plant nutrient uptake and impact on water quality. Fertilizer directly injected into dry/well drained soils is best for plant uptake and also causes minimal impact on the water quality.

Attempting to make a selection for **N-source and timing**, **P-source and timing** or **Soil condition / application** before an **Application rate** has been selected will result in the following message:



When all of the user inputs for this category area have been entered, a **WEIGHT** value for the category area will be calculated (see [Example 1](#) below).

Example 1: All category selections completed for **Nutrient Management Factors**:

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FACTORS	DESCRIPTION	WQI RANKING	WEIGHTING FACTOR	WEIGHT
Nutrient Management Factors				
Application rate	LGU recommendations	5.00	0.25	1.25
N-source and timing	Sythetic fertilizer, single, pre-growing season	6.00	0.25	1.50
P-source and timing	Synthetic fertilizer, pre-growing season	2.00	0.25	0.50
Soil condition / application	Dry/well drained, N fertilizer, broadcasted	6.00	0.25	1.50
			0.25	1.19

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Example 2: Selection list for **Application rate**:

(Select one)

- No fertilizer applied
- 50% less than LGU recommendations
- 40% less than LGU recommendations
- 30% less than LGU recommendations
- 20% less than LGU recommendations
- 10% less than LGU recommendations
- LGU recommendations
- 10% more than LGU recommendations
- 20% more than LGU recommendations

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Example 3: Selection list for **N-source and timing**:

(Select one)
Synthetic fertilizer, single, during growing season
Synthetic fertilizer, single, pre-growing season
Synthetic fertilizer, single, slow release
Composted organics, single, pre-growing season
Uncomposted manure, single, pre-growing season
Synthetic fertilizer, split application, during growing season
Synthetic fertilizer, split application, pre-growing season
Composted organics, split application, pre-growing season
Uncomposted manure, split application, 1-2 days prior to planting
Uncomposted manure, split application, 3-7 days prior to planting
Uncomposted manure, split application, > 7 days prior to planting

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Example 4: Selection list for P-source and timing:

(Select one)
No P fertilizer applied
Synthetic fertilizer, single, during growing season
Synthetic fertilizer, single, pre-growing season
Synthetic fertilizer, split application, during growing season
Synthetic fertilizer, split application, pre-growing season
Composted organics, pre-growing season
Uncomposted manure, pre-growing season
Uncomposted manure, split application, < 1 week prior to planting
Uncomposted manure, split application, 1-2 weeks prior to planting
Uncomposted manure, split application, > 2 weeks prior to planting

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Example 5: Selection list for Soil condition / application method:

Runoff Water Quality Index (WQIag)

(Select one)

- Dry/well drained, Anhydrous Ammonia
- Moist, Anhydrous Ammonia
- Dry/well drained, N fertilizer, injected
- Dry/well drained, N fertilizer, surface banded
- Dry/well drained, N fertilizer, broadcasted & incorporated
- Dry/well drained, N fertilizer, broadcasted
- Moist, N fertilizer, injected
- Moist, N fertilizer, surface banded
- Moist, N fertilizer, broadcasted & incorporated
- Moist, N fertilizer, broadcasted
- Moist, P fertilizer, injected
- Moist, P fertilizer, surface banded
- Moist, P fertilizer, broadcasted & incorporated
- Moist, P fertilizer, broadcasted
- Moist, N/P fertilizer, injected
- Moist, N/P fertilizer, surface banded
- Moist, N/P fertilizer, broadcasted & incorporated
- Moist, N/P fertilizer, broadcasted
- Frozen, N fertilizer, broadcasted

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Tillage Management Factors

Activities

- Review the **Tillage Management Factors** category selection requirements (see [Example 1](#) below).
- Make a selection for **Description / STIR**.

Overview

This is the **Tillage Management Factors** category.

The effect of soil tillage on soil erosion is well established. The more the soil is tilled, the more susceptible it becomes to erosion. Thus, it is an important factor in evaluating the quality of runoff water from a field. **Soil Tillage Intensity Rating (STIR)** is a tool that has been widely used for evaluating the soil disturbance as well as the severity of the disturbance caused by tillage operations. Specific components of STIR value include: Operational

speed of tillage operation, tillage type, depth of tillage operation and percentage of soil surface area disturbed.

Note: See [Other Resources](#) for reference links.

Make a selection from each of the following:

Description /STIR - Select the **Description / STIR** from the list (see [Example 2](#) below).

The STIR value can range between 0-200. Low STIR value reduces likelihood of sheet rill erosion. By definition, No-Till operation gets the STIR value of 30.

When all of the user inputs for this category area have been entered, a **WEIGHT** value for the category will be calculated (see [Example 1](#) below).

Example 1: All category selections completed for **Tillage Management Factors**:

FACTORS	DESCRIPTION	WQI RANKING	WEIGHTING FACTOR	WEIGHT
Tillage Management Factors				
Description / STIR	Mulch Till or STIR Value 31 to 60	7.50	1.00	7.50
			0.25	1.88

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Example 2: Selection list for **Description /STIR**:

(Select one)

No Till or STIR Value < 30

Mulch Till or STIR Value 31 to 60

Conventional Till or STIR Value 60 to 100

Intensive Till or STIR Value > 100

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Pest Management Factors

Activities

Runoff Water Quality Index (WQI_{ag})

- Review the **Pest Management Factors** category selection requirements (see [Example 1](#) below).
- Make a selection for **Description**.

Overview

This is the **Pest Management Factors** category.

Pests (weeds, insects, and diseases) are expected elements of a farming system. Considerable amount of efforts and resources are devoted on controlling and/or managing them. Modern pest management approach uses combination of practices generally referred to as **Integrated Pest Management (IPM)**. They incorporate crop rotations, cultural practices, scouting, crop selections, and other field practices to prevent pest problems from occurring. When pest infestations do occur at damaging levels they are controlled using chemicals in the most effective way with minimum risk to environmental including water quality.

Make a selection from each of the following:

Description - Select the **Description** from the list (see [Example 2](#) below). Several of the selections are based on **IPM** recommendations.

When all of the user inputs for this category have been entered, a **WEIGHT** value for the category will be calculated (see [Example 1](#) below).

Example 1: All category selections completed for **Pest Management Factors**:

FACTORS	DESCRIPTION	WQI RANKING FACTOR	WEIGHTING FACTOR	WEIGHT
Pest Management Factors				
Description	Basic IPM - Threshold-based suppression with additiona	7.00	1.00	7.00
			0.25	1.75

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Example 2: Selection list for **Description**:

(Select one)
Advanced IPM - Primarily pest prevention/avoidance without suppression
Basic IPM - Threshold-based suppression with additional site-specific risk mitigation
Low Risk Pest Control - Suppression with site-specific environmental risk mitigation
Basic Pest Control - Suppression with only label-required mitigation (i.e. setbacks)

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Irrigation / Tile Drain Management

Activities

- Review the **Irrigation / Tile Drain Management** category selection requirements. An **Irrigation / Tile Drain Management** category selections are optional and the initial default selection values are 'No irrigation (0%)' and 'No Tile Drain (0%)' (see [Example 1](#) below).
- Make a selection for **Irrigation**.
- Make a selection for **Tile Drain**.

Overview

This is the **Irrigation / Tile Drain Management** category.

Irrigation is used to supplement rainfall for successful crop production. There is no indication how irrigation could influence the overall quality of water from an agricultural field. In addition, the irrigation methods could influence the runoff and its quality differently based upon field slope and its soil physical properties such as slope, organic matter (OM) content and rain pattern. For example, surface irrigation on level basins with blocked ends will not affect to the aggregated seasonal runoff from agricultural field.

On the other hand, irrigation using wild flooding could add significantly to the seasonal runoff water quality. It is mainly due to uncertain and unpredictable rainfall patterns. At the tail end of a dry spell if the producer decides to irrigate and saturates a field; it would generate much higher runoff from a rainfall event than another adjacent field that did not get any irrigation -- thus leading to lower **WQIag#** value. However, the magnitude of the negative impact of irrigation on **WQIag#** could vary significantly depending on the method of irrigation.

Make a selection from each of the following:

Irrigation - Select the **Irrigation** from the list (see [Example 2](#) below).

Runoff Water Quality Index (WQI_{ag})

The magnitude of the negative impact (percentage used for reducing the **WQI_{ag}#** value) of irrigation on the **WQI_{ag}#** can vary significantly depending on the method of irrigation.

Tile Drain - Select the **Tile Drain** from the list (see [Example 3](#) below).

The selection of a **Tile Drain** method can have an effect on the **Nutrient Management Factors**, **Tillage Management Factors** and **Pest Management Factors (NTP)** category calculated weight values.

The magnitude of the positive or negative impact (percentage used for increasing or reducing the **NTP** category calculated weight values) of a **Tile Drain** selection on the **NTP** category calculated weight values can vary significantly depending on the **Tile Drain** method selected.

Example 1: Category selections for Irrigation / Tile Drain Management:

Irrigation / Tile Drain Management	
Irrigation	No irrigation (0%)
Tile Drain	No Tile Drain (0%)

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Example 2: Selection list for Irrigation:

No irrigation (0%)
Center Pivot (-10%)
Center Pivot with Polyacrylamide (PAM) (-1.5%)
Level basin/blocked end (0%)
Sprinkler (-5%)
Surface - Graded border and surge (-15%)
Surface - Graded furrow (-20%)
Surface - Graded furrow with Polyacrylamide (PAM) (-5%)
Surface - Wild flood (-25%)
Trickle/Drip (0%)

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Example 3: Selection list for Tile Drain:

No Tile Drain (0%)
Tile Drain standard density (-20% NTP)
Tile Drain standard density with Bio-reactor (+10% NTP)
Tile Drain standard density with Wetland/Pond (+10% NTP)
Tile Drain standard density with vegetative filter (0% NTP)
Tile Drain high density (-25% NTP)
Tile Drain high density with Bio-reactor (+5% NTP)
Tile Drain high density with Wetland/Pond (+5% NTP)
Tile Drain high density with vegetative filter (0% NTP)

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Conservation Practices**Activities**

- Review the optional **Conservation Practices** category selection requirements. **Conservation Practice** category selections are optional and the initial default # selected value is zero (see [Example 1](#) below).
- Make up to 3 **Conservation Practices** selections.

See [Definitions](#) for an explanation of each of the **Conservation Practices**.

Overview

This is the **Conservation Practices** category:

Click the **Get Conservation Practice(s)** button to open a pop-up window allowing you to select up to 3 **Conservation Practices** (see [Example 2](#) below).

Note: See [Other Resources](#) for additional information.

Example 1: Conservation Practices and Get Conservation Practice(s) button on main page:

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Conservation Practices

Get Conservation Practice(s)# Selected 0

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Example 2: Selection window for **Conservation Practices**:

Get Conservation Practices (3 max)

Conservation Practices

Select	Conservation Practice
<input type="checkbox"/>	Conservation Cover
<input type="checkbox"/>	Contour Buffer Strip
<input type="checkbox"/>	Contour Stripcropping
<input type="checkbox"/>	Field Borders
<input type="checkbox"/>	Field Stripcropping
<input type="checkbox"/>	Filter Strip
<input type="checkbox"/>	Grassed Waterway
<input type="checkbox"/>	Riparian Forest Buffer
<input type="checkbox"/>	Sediment Basin
<input type="checkbox"/>	Water and Sediment Control Basins
<input type="checkbox"/>	Tailwater Recovery System

OK Cancel

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Definitions

Practice Name	NRCS Code	Description
Conservation Cover	327	The establishment and maintenance of permanent vegetative cover on retired agricultural land or highly erodible land.
Contour Buffer	332	Strips of permanent vegetation

Strip		established on a field's contour to reduce erosion, slow sediment transport and reduce runoff.
Contour Stripcropping	585	A planting system in which crops are grown in an alternating pattern with fallow strips of equal width to reduce soil erosion and water degradation.
Field Borders	386	Permanently vegetated borders established around fields and pastures to reduce soil erosion.
Field Stripcropping	586	A planting system in which crops are grown in alternating strips with grasses to reduce soil erosion and runoff.
Filter Strip	393	Strips of vegetation located between cropland, grazing land or disturbed areas and water sources to protect water quality.
Grassed Waterway	412	Natural or constructed grass channels established within a field to slow the flow of water, re-direct excess water from fields and to prevent soil erosion.
Riparian Forest Buffer	391	Use trees or shrubs to reduce sediment, organic matter, nutrients and pesticides in surface runoff alongside watercourses.
Sediment Basin	350	
Water and Sediment Control Basins	638	An impoundment constructed to temporarily capture runoff, trap sediment, reduce soil erosion and improve water quality.
Tailwater Recovery System	447	A water recovery system designed to collect, store and transport tailwater for reuse in an irrigation system.

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Project Files

Activities

- **Open** an existing **WQIag** project file.

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- **Save** user inputs / selections to a new **WQI ag** project file. The **WQI ag** project file extension is: **wqiproj** (e.g. a project file named 'FieldOne' would have a complete file name of: **FieldOne.wqiproj**).
- **Save** user inputs / selections to another project file name (**Save As**).

Overview

Using a project file in **WQI ag** is optional. You can **save** user inputs / selections to a project file or **open** a previously saved project file to restore user inputs / selections:

Project file: - The optional **Project file:** value is set to '(none)' and can be found toward the bottom of the WQIag main page (see [Example 1](#) below).

Open - Click the **Open** button to load a previously saved project file (see [Example 2](#) below).

Close - Click the **Close** button to close an open project file (see [Example 3](#) below). If changes were made to the open project file, a warning message will display.

Save - Making a change in **WQI ag** will cause the **Save** button to appear. To save inputs / selections to a project file, click the **Save** button. Enter a **Save in:** location and a **File name:** (see [Example 4](#) below).

Save As - To save inputs / selections to an existing or another project file, click the **Save** button. Enter a **Save in:** location and the existing or different **File name:** (see [Example 4](#) below).

Example 1: Project file: location and initial value:



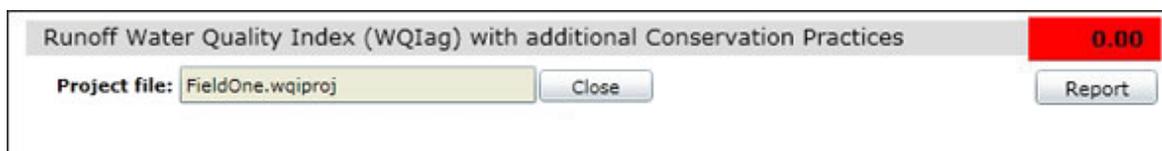
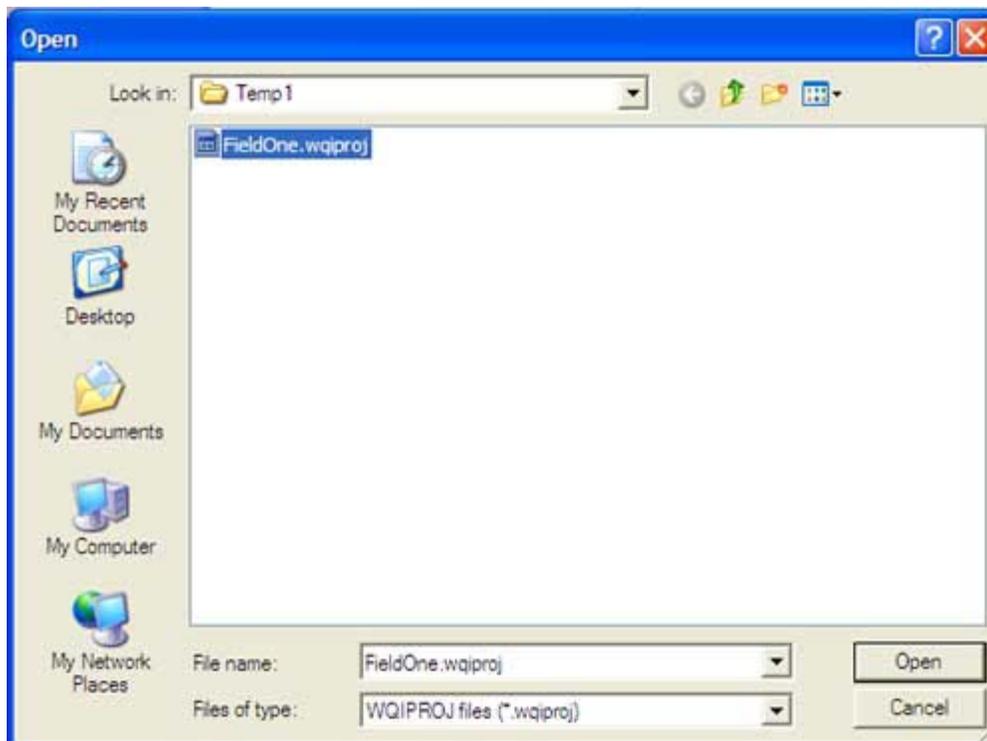
The screenshot shows a web interface for the Runoff Water Quality Index (WQIag) with additional Conservation Practices. At the top right, a red box displays the value 0.00. Below this, there is a 'Project file:' label followed by a text input field containing '(none)'. To the right of the input field is an 'Open' button. Further to the right is a 'Report' button.

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Example 2: To **Open** a **WQI ag** project file:

1. Click the **Open** button to see the **Open** dialog screen.

2. Identify a **Look in:** location (e.g. Temp1)
3. Select a **File name:** (e.g. FieldOne.wqproj).
4. Click the **Open** dialog screen **Open** button. The **Project file:** value will show the now opened file name and the **Close** button appears.
5. You can open a project file when the **Open** button and **Save** button are present. A warning message (see below) will display allowing you to continue without saving your previous changes.



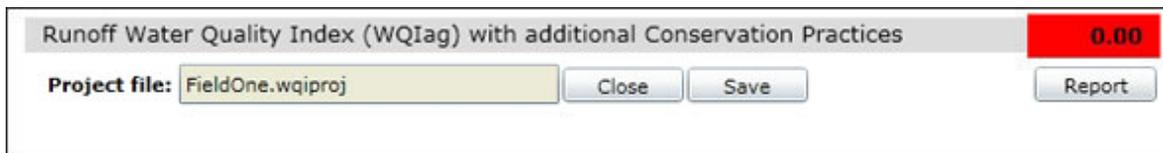
Runoff Water Quality Index (WQIag)

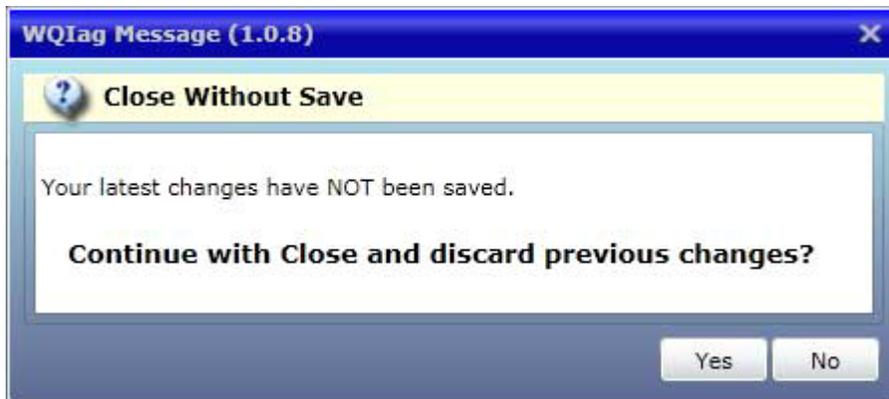


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Example 3: To close a **WQIag** project file:

1. Click the **Close** button to close the opened file and return to the '(none)' value.
2. If changes were made after the project file was opened, the **Close** button and the **Save** button will appear (see below). A warning message (see below) will display when changes were made and you attempt to close an open project file.





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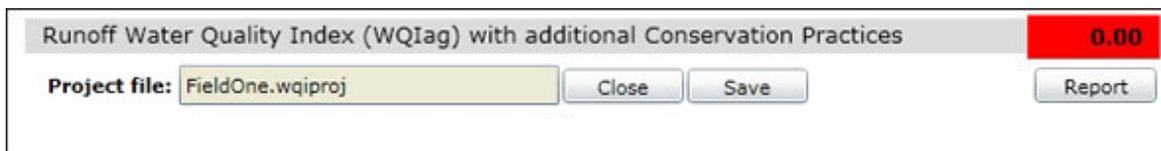
Example 4: To **Save** a project file:

1. Click the **WQI Save** button to see the **Save As** dialog screen.
2. Identify a **Save in:** location (e.g. Temp1)
3. Enter a **File name:** (e.g. FieldOne).
4. Click the **Save As** dialog screen **Save** button.

Example saving changes to a new project file or open a project file:

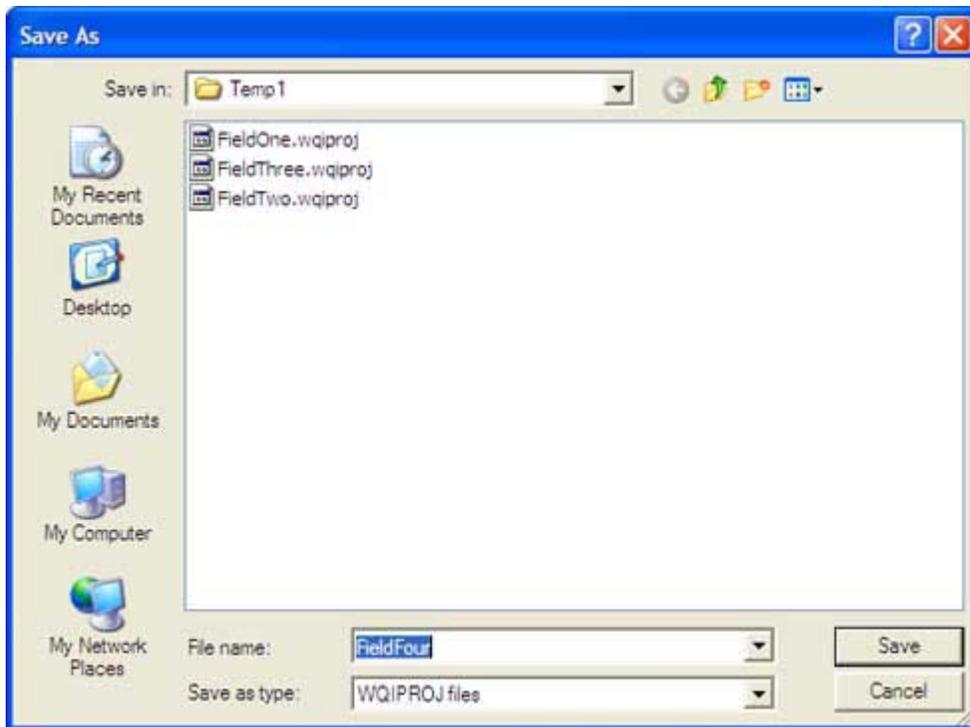


Example saving changes to an opened project file or close the project file:

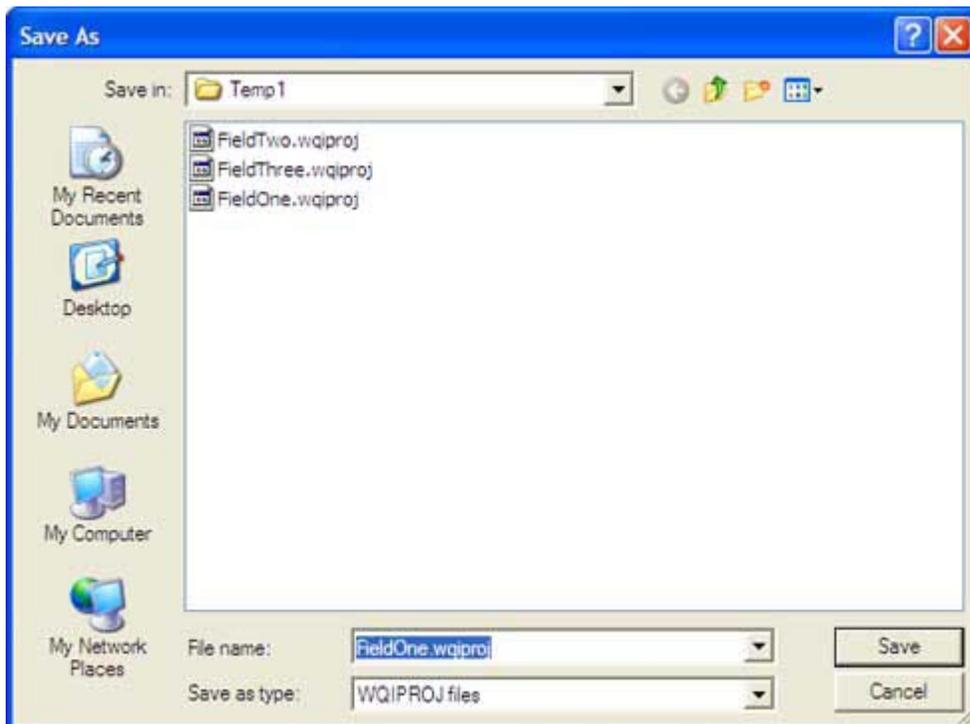


Example saving changes to a new project file named 'FieldFour':

Runoff Water Quality Index (WQI_{ag})



Example saving changes to an existing project file named 'FieldOne':



Warning message when saving to an existing project file:



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Reports

Introduction

The **Water Quality Index for Runoff from Agricultural Fields (WQIag)** produces a report when all required fields have been entered and a **WQIag#** value has been calculated. Use the **Report** button at the bottom right-side of the **WQIag** main page to access the pop-up Report window.

Overview

From the main page, click the **Report** button (see [Example 1](#) below) to view the **WQIag Report** pop-up window.

If all required fields have not been entered or a **WQIag#** value has not been calculated, a message will display showing what information is still required (see [Example 2](#) below).

When all required fields have been entered and a **WQIag#** value has been calculated, a **WQIag Report** pop-up window will show the report (see [Example 3](#) below).

Click the **Print** button (bottom right-side) to select a printer and print the **WQIag** report (see [Example 4](#) below).

Example 1: Report button location on main page:

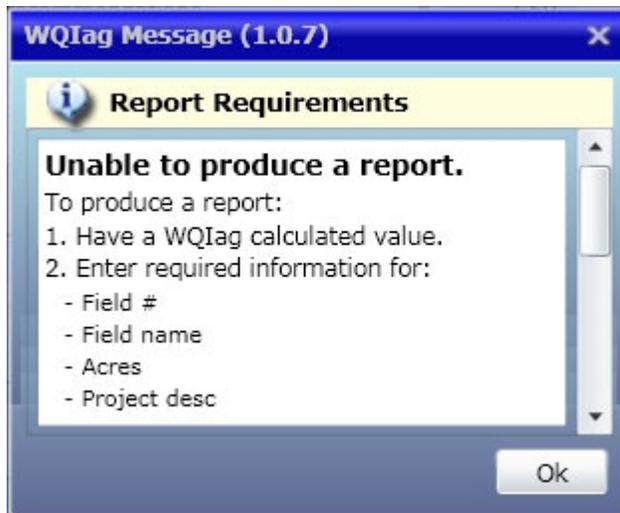


The screenshot shows a web interface for the 'Runoff Water Quality Index (WQIag) with additional Conservation Practices'. At the top right, a red box displays the value '0.00'. Below this, there is a 'Project file:' label followed by a text input field containing '(none)', an 'Open' button, and a 'Report' button.

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Example 2: Report: button requirements message:

Runoff Water Quality Index (WQIag)



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Example 3: WQIag Report:

WQIag Report



United States Department of Agriculture
Natural Resources Conservation Service



Runoff Water Quality Index (WQIag) Report

Report date: 12/5/2012 3:08 PM

Project desc: Oregon Hay Farms **Project date:** 11/12/2012

State: Oregon **County:** CLACKAMAS **HUC:** 17090009

Station: OREGON CITY OR6334

Field #: 1 **Acres:** 80 **Field name:** Westside Hay

Runoff Water Quality Index (WQIag#): 6.47
WQIag# with additional Conservation Practices: 7.62

WQIag Factors

Field Physical Sensitivity **1.90**

Slope(%): (<2%)

HS group: (A - low runoff potential)

K-factor: (0.11 - 0.20 low erodibility)

OM content: 2-4%

Rainfall/Veg: Station

Duration: Year: January - December

Month	Precip(In)	Veg Cover	Month	Precip(In)	Veg Cover
January	7.13	Low	July	0.78	High
February	5.21	Low	August	1.16	High
March	4.78	Low	September	2.05	Medium
April	3.41	Medium	October	3.44	Low
May	2.54	Medium	November	6.87	Low
June	1.91	High	December	7.79	Low

Nutrient Management **0.94**

Application rate: LGU recommendations

N-source and timing: Composted organics, single, pre-growing season

P-source and timing: Composted organics, pre-growing season

Soil condition / application method: Moist (25% field capacity in upper 24 in), N-broadcasted

Tillage Management **1.88**

Mulch Till or STIR Value 31 to 60

Pest Management **1.75**

Basic IPM - Threshold-based suppression with additional site-specific risk mitigation

Irrigation / Tile Drain Management

No irrigation (0%)

No Tile Drain (0%)

Conservation Practices

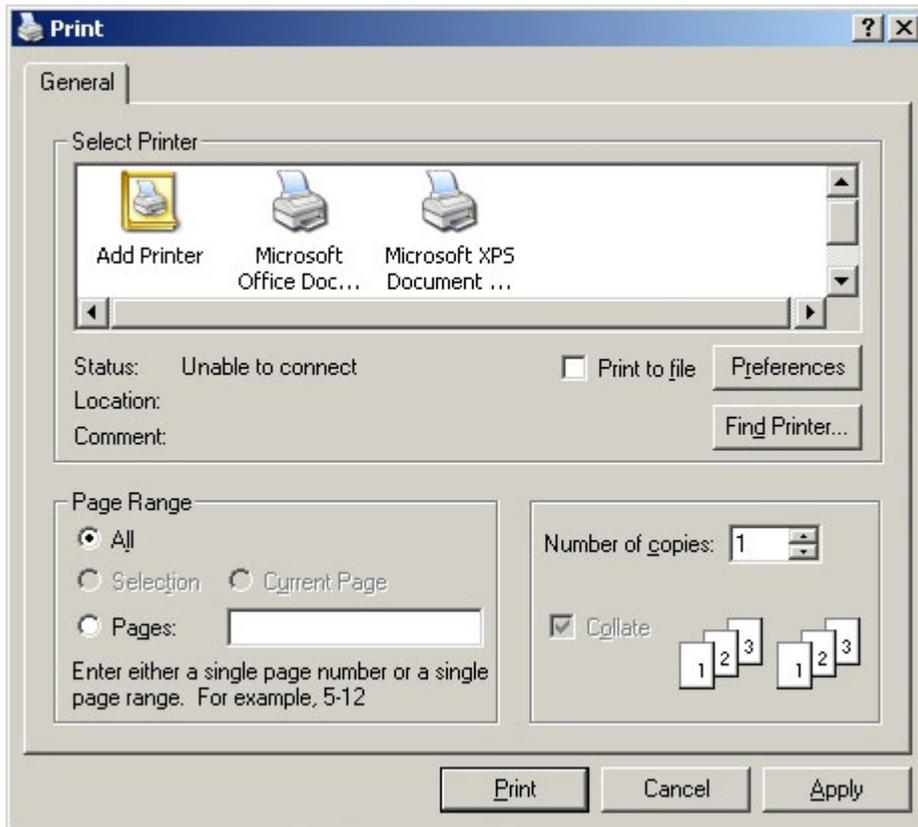
Filter Strip

Version: 1.0.12 **Date:** 11/28/2012

Print
Close

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Example 4: Print the WQIag Report:



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