



Spatial Quality and Anomalies Diagnosis (SQUAD) Tool for QGIS Quick Start Guide

April 2018



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Quick Start Guide

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MEASURE Evaluation

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INTRODUCTION

QGIS is a free and open-source geographic information system (GIS) software. The Spatial Quality and Anomalies Diagnosis (SQUAD) tool is a QGIS plug-in that will assess data quality of large spatial data sets. Because it can be difficult to perform data quality checks on large data sets, the SQUAD tool rapidly and automatically looks for anomalies in the data that may indicate data quality issues.

The tool requires two data sets (in the form of shapefiles): one consisting of point locations and the other consisting of polygons that represent administrative units. The tool will review the point locations and identify one of six anomalies:

1. Missing coordinates
2. Truncated coordinates (lack of adequate precision)
3. Duplicate coordinates for distinct records
4. Duplicate key attributes (two identical names, but plotting in different locations)
5. Coordinate not located exactly where it would be expected (but falling within two kilometers of a border)
6. Coordinate not located anywhere near where expected

The quick start guide provides a general overview of the use of the tool with the sample data available for the tool. A more detailed overview is available on the MEASURE Evaluation web site, here:

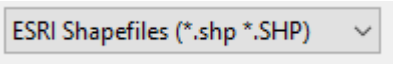
<https://www.measureevaluation.org/resources/tools/geographic-information-systems/squad-tool/spatial-quality-and-anomalies-diagnosis-squad-tool>.

NOTE: Screen shots are of QGIS version 2.18. While the interface of version 3.0 has a slightly different appearance, the steps are the same. The tool is available as a plug-in for both versions. QGIS is available as a free download at <http://qgis.org>.

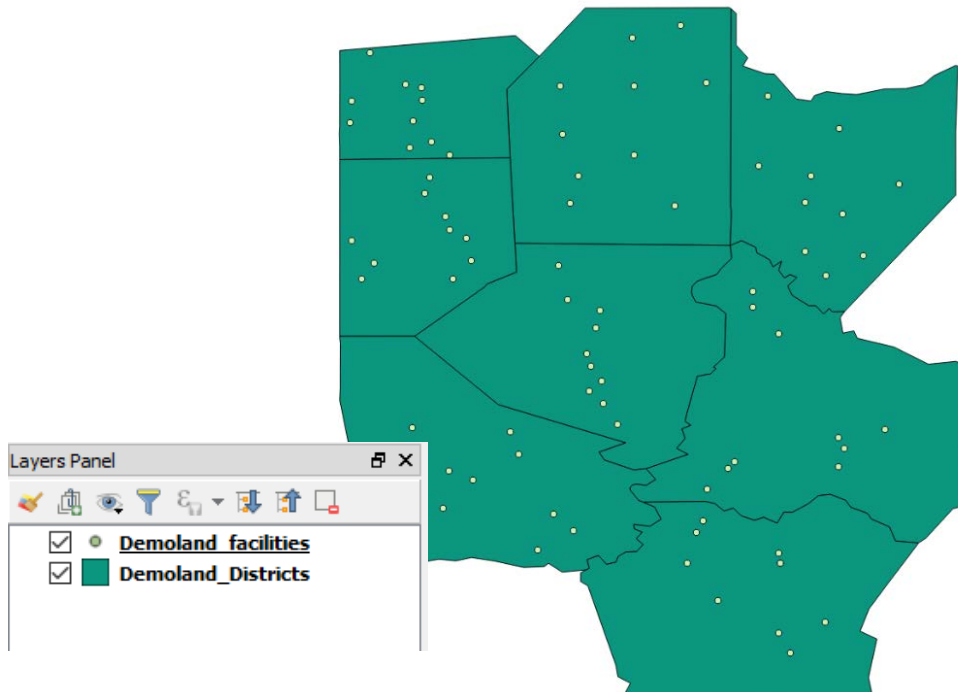
Quick Start Guide for the SQUAD Plug-In for QGIS

- (1) **Launch** QGIS version 2.18 or 3.0 (search for and then double-click on the QGIS Desktop shortcut icon, or search for the app in the windows taskbar).

- (2) Click on **Project>New**. Click the **"Add Vector Layer"** button  on the left-hand toolbar.


- (3) Browse to the **"sample data"** folder that came with these instructions. In the file type pop-up menu choose **ESRI Shapefiles**  and then select *Demoland_Districts.shp*. Do the same for *Demoland_facilities.shp*.

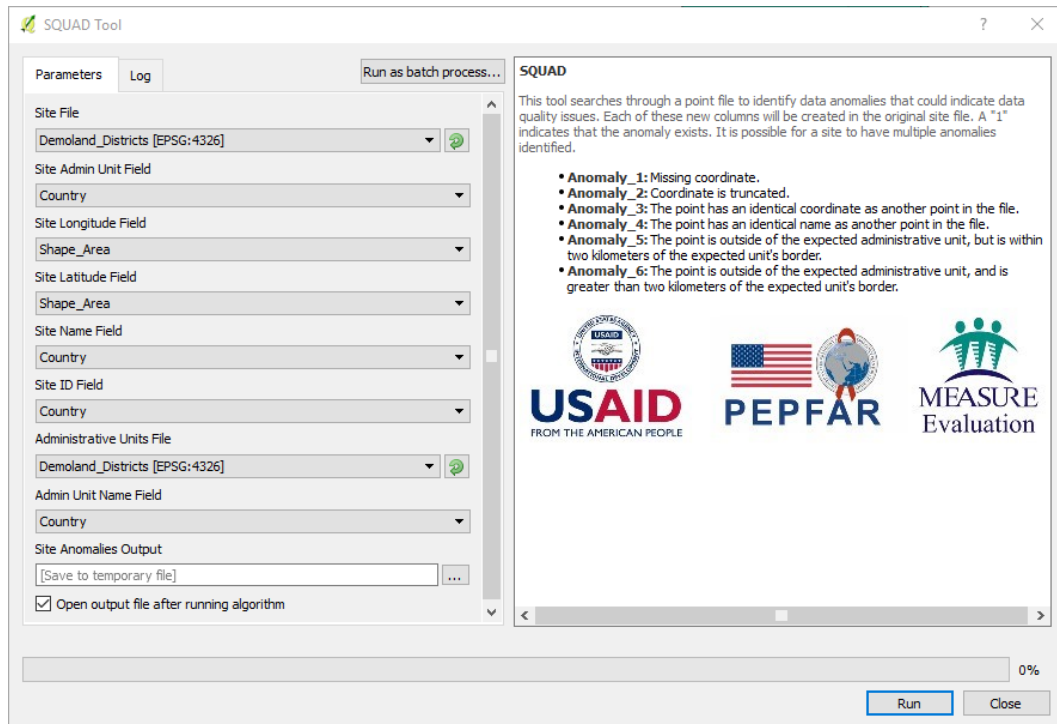
- (4) Make sure that the **Demoland_facilities** layer appears above the **Demoland_Districts** layer in the **Layers Panel**, and that both are visible on the screen:



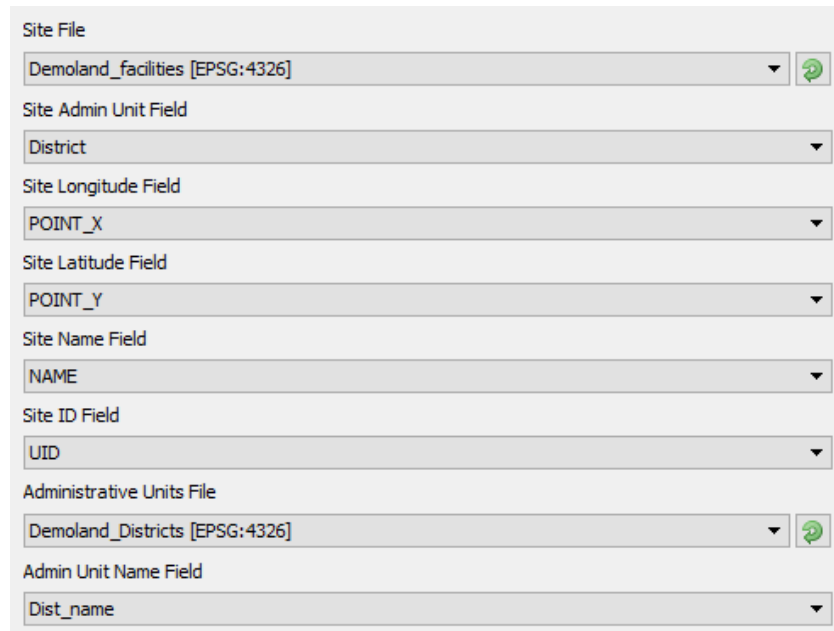
- (5) Go to **Plugins>Manage and Install Plugins...** Click on the **All** tab, and in the search box **type SQUAD**.
 - a. For version 2.18, click on SQUAD tool.

- b. For version 3.0, click on SQUAD Tool v3.
- c. Click the "Install Plugin" button, then Close the dialog box.

(6) Look for the SQUAD tool icon in the toolbar  and click on it to activate the tool. (Alternatively, go to **Plugins>SQUAD>SQUAD plugin**.) This will start the tool. You should see a dialog box like this:



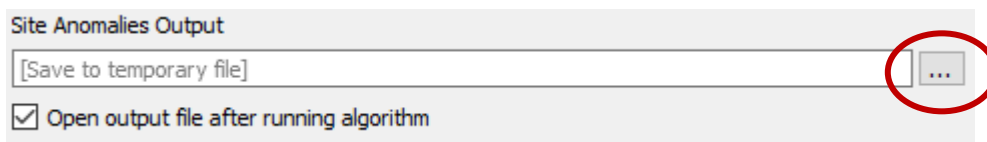
- (7) Fill in the various parameters needed to check for anomalies in your data set. For the test data set included, Demoland, choose the following parameters:



The screenshot shows a form with the following fields and values:

- Site File: Demoland_facilities [EPSG:4326]
- Site Admin Unit Field: District
- Site Longitude Field: POINT_X
- Site Latitude Field: POINT_Y
- Site Name Field: NAME
- Site ID Field: UID
- Administrative Units File: Demoland_Districts [EPSG:4326]
- Admin Unit Name Field: Dist_name

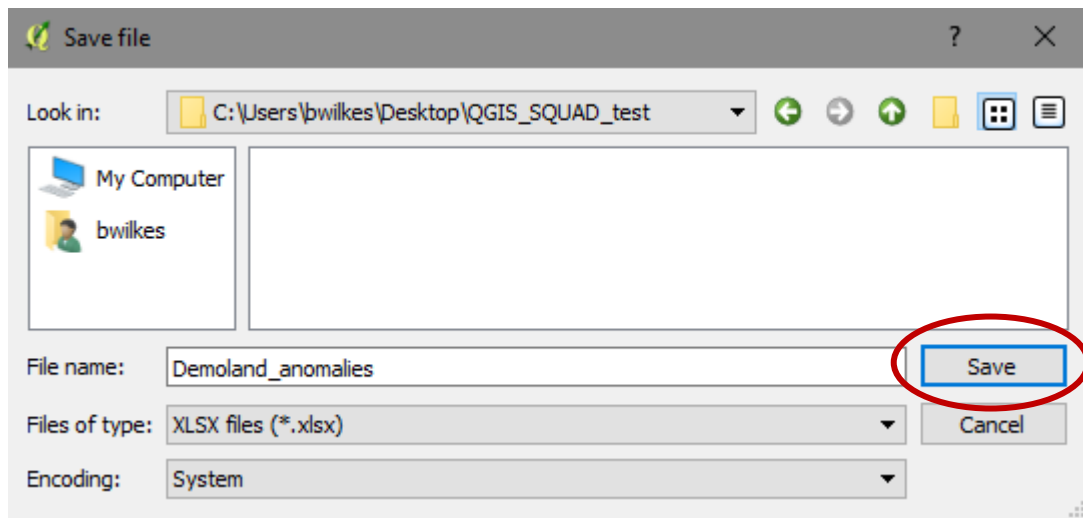
- (8) In the bottom box, under “**Site Anomalies Output,**” click the **Browse** button:



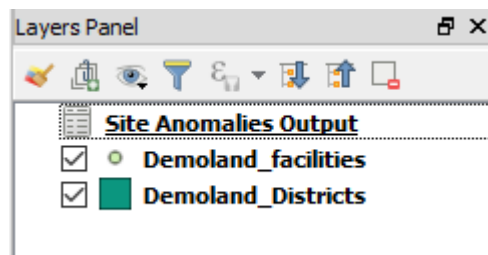
The screenshot shows the 'Site Anomalies Output' section with a text box containing '[Save to temporary file]' and a 'Browse' button (represented by a folder icon with three dots) circled in red. Below the text box is a checked checkbox labeled 'Open output file after running algorithm'.

... and choose “Save to file.”

- (9) In the resulting dialog box, you should choose to save the file as either a new **Shapefile** (SHP) or an **Excel spreadsheet** (XLSX). You may put it in the location of your choosing. **NOTE:** if you do not save to a file, a temporary output layer will be generated. You can then save this output by right-clicking on it in the Layers Panel and choosing “Save As.” **If you do not do either of these things, then when you quit QGIS, the information generated by the tool will be lost.**



- (10) Click "**Save**," then click on the "**Run**" button. The Log tab will appear and show you a progress bar while the tool is running. Your new output layer will display in the **Layers Panel** with the name "**Site Anomalies Output**." (You may **double-click** it to see and edit its name and source file, and source file location.)



- (11) **Right-click** on the new layer and choose "**Open Attribute Table**" from the drop-down menu to view the contents of your newly-coded file. If you saved your output as a SHP file, you can select various locations in the table to highlight and view them on the map.

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