**CACIE Tool #14.0** – ***ca-getmodsurfs (ca-getmodsurfs.pl)***

**Version** **1.0**

**QA**: **TEST** or **NA** or **QA**

1. **Description and Purpose**

One or two paragraphs describing the tool’s function and purpose.

The ca-getmodsurfs tool (AKA ca-spf.pl) reads the surface fluxes from a vadose zone run and creates a file for plotting of a specified solute.

1. **Functional Requirements**

The functional requirements of the tool will be documented in this section. Each requirement will have an ID, such as: FR-N, where N starts at 1 and increments for each Functional Requirement. Each of the Functional Requirement IDs will have a corresponding test ID listed in the RTM.

FR-1: Get command line arguments and verify valid arguments

FR-2: Read STOMP input file, skip to surface flux cards

FR-3: Loop for a number of cards looking for grid groups and keyword

FR-4: Read surface flux files, verify accepted units, calculate and write sources

FR-5: Check that all columns are the same across surface files

FR-6: Load the mudflow grid cords (min x & y, max x & y)

FR-7: Write plot file

FR-8: Write out cumulative table

FR-9: Make gnuplot script

FR-10: Count number of plots

FR-11: Make map

FR-12: Get plotting extent from domainfile

FR-13: Add two pages for plan view plots

FR-14: Plot fluxes for each mudflow grid block

FR-15: Make a plot

1. **Software Requirements Specifications**

The software requirements specification of the tool will be documented in this section.

PERL

Scalar::Util module/library

1. **Software Design Description**

The software design description of the tool will be documented in this section. The results of a Code Walkthrough with an independent third party will be summarized in this section.

Arguments:

STOMP input file

Keyword in surface flux cards (keyword)

Units

Top or Bot (torb)

Output file prefix (model-name)

Model Domain file (csv)

Modflow grid file (csv file with blank lines between polygons)

Waste site (ehsit) file (csv file with blank lines between polygons)

Input files:

STOMP input file

Model Domain file

Modflow grid file

Surface files

Outputs: (model-name, keyword, and torb are passed in as command line arguments)

model-name-keyword-torb.csv

model-name-keyword-cumulative-torb.csv

model-name-keyword-torb-gnu.sh

1. **Requirements Traceability Matrix**

A requirements traceability matrix for the tool will be documented in this section. At a minimum, the matrix will include IDs of: Functional Requirements and the corresponding Acceptance Test, along with an indication of the test result (Pass/Fail).

Table 1 presents the requirements traceability matrix for the ca-getmodsurfs tool.

| **Table 1. ca-getmodsurfs Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1 |  |  |
| FR-2 |  |  |
| FR-3 |  |  |
| FR-4 |  |  |
| FR-5 |  |  |
| FR-6 |  |  |
| FR-7 |  |  |
| FR-8 |  |  |
| FR-9 |  |  |
| FR-10 |  |  |
| FR-11 |  |  |
| FR-12 |  |  |
| FR-13 |  |  |
| FR-14 |  |  |
| FR-15 |  |  |

1. **Test Plan and Cases**

The test plan for the tool will be documented in this section. Each test will have a unique ID and criteria for determining if the test result is pass or fail. The TEST ID will be referenced in the RTM and ATR. An installation test, labeled **IT-1**, will be used by the Tool Runner to confirm the version of the tool being used is running correctly before launching it with the user’s parameters.

The Unit Testing done on the tool will be documented here, also.

The test plan for the ca-getmodsurfs tool is as follows.

| **Table 2. ca-getmodsurfs Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

1. **Acceptance Test Report**

The test report will state whether the tool is qualified for use, summarize test case results, and report all resolved incidents and resolution of unresolved incidents.

1. **User Guide**

A guide for using the tool will be documented in this section.