**CACIE Tool #03.1a & #18.1a** – ***Source to Plot (srcloc\_plot\_all.exe)***

**CACIE Tool #03.1b & #18.1b** – ***Source to Plot (srcloc\_by\_site\_all.exe)***

**CACIE Tool #10.3c & #11.3c** – ***Source to Plot (src\_input\_yr.exe)***

**CACIE Tool #10.3d & #11.3d & #17.1d** – ***Source to Plot (src\_plot\_graph.exe)***

**CACIE Tool #17.1e** – ***Source to Plot (src\_plot\_yr.exe)***

**Version** **1.0**

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

1. **Description and Purpose**

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

1. Srcloc\_plot\_all.f: Generates a .dat file using a list of .card files
2. Srcloc\_by\_site\_all.f: Reads source list output from srcloc\_plot\_all.exe and output Tecplot file with different number for each site for color coding
3. Src\_input\_yr.f: Read source card input from STOMP input file and output in a year-by-year format.
4. Src\_plot\_graph.f: Read src card rates and output in plotting format.
5. Src\_plot\_yr.f: Read src card input from Mark’s script and output in a year-by-year format.
6. **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.

The functional requirements for the Source to Plot All tool are as follows:

FR-1a: Open srclistloc.dat with STATUS=REPLACE

FR-2a: Read input.nij file

FR-3a: Read source card file name

FR-4a: Read card file(s)

FR-5a: If “Aqueou” or “Solute” write lines to output file: srclistloc.dat

FR-6a: Read input.sij file

FR-7a: Open src\_locations.dat with STATUS=REPLACE

FR-8a: Write source locations, zone, source nodes, datapacking block, and varlocation to src\_locations.dat

FR-9a: If more than one layer defined, write such to srclistloc.dat along with 2 coordinate points

The functional requirements for the Source to Plot by Site All tool are as follows:

FR-1b: Open srclist\_by\_site.dat with STATUS=REPLACE

FR-2b: Open srclistloc.dat with STATUS=OLD (output from srcloc\_plot.exe)

FR-3b: Read site location file: srclistloc.dat

FR-4b: Open input.sij with STATUS=OLD

FR-5b: Read node edge locations

FR-6b: Open srcloc\_by\_site.dat with STATUS=REPLACE

FR-7b: Write source locations, zone, source nodes, datapacking block and varlocation to src\_by\_site.dat

FR-8b: Write sources to src\_by\_site.dat (sources are cell centered)

The functional requirements for the Source to Plot Year by Year tool are as follows:

FR-1c: Open srccard.dat as outfile1 with STATUS=REPLACE

FR-2c: Open input as infile1 with STATUS=OLD

FR-3c: Read input file to find “Source Card” then jump depending on which of “Site =”, “Aqueou”, or “Solute” is found.

FR-4c: Read information from input file, write information to outfile1

The functional requirements for the Source to Plot Graph tool are as follows:

FR-1d: Open srcbysiteyr.dat as outfile1 with STATUS=REPLACE

FR-2d: Open srcbysite.dat as outfile2 with STATUS=REPLACE

FR-3d: Open srcbyyr.dat as outfile3 with STATUS=REPLACE

FR-4d: Open srccard.in as infile1 with STATUS=OLD

FR-5d: Read source rates from infile1

FR-6d: Update variables (rates?) as communitive sum

FR-7d: Write out source values by rad/site/year to outfile1

FR-8d: Write out source values by rad/site to outfile2

FR-9d: Write out source values by rad/year to outfile3

The functional requirements for the Source to Plot Year tool are as follows:

FR-1e: Open srccard.dat as outfile1 with STATUS=REPLACE

FR-2e: Open srccard.in as infile1 with STATUS=OLD

FR-3e: Read infile1 looking for either “Site =”, “Aqueou”, or “Solute” then jump to that section of code. At end of file terminate program. NOTE: If “Site =” is read from the line, do nothing, then go back to beginning of this step

FR-4e: If Aqueou is found, verify that list was read fine, then write information to outfile1 then return to FR-3e

FR-5e: If Solute is found, read in lines and verify format, then write information to outfile1 then return to FR-3e

1. **Software Requirements Specifications**

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

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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.

03.1a – Source Plot All –

Inputs: names of the source card files

rads1-src.card

rads2-src.card

(if used) buffer-aq-src.card

Outputs:

srclistloc.dat

src\_locations.dat

03.1b – Source Plot by Site All –

Inputs: site location file (the output from srcloc\_plot and/or srcloc\_plot\_all)

srclistloc.dat

input.sij

Outputs:

srcloc\_by\_site.dat

10.3c – Source Plot Input Year –

Inputs:

input

Outputs:

srccard.dat

10.3d – Source Plot Graph –

Inputs:

srccard.in

Outputs:

srcbysiteyr.dat

srcbysite.dat

srcbyyr.dat

10.3e – Source Plot Year –

Inputs:

srccard.in

Outputs:

srccard.dat

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 Source Plot All tool

| **Table 1. Source Plot All Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1a |  |  |
| FR-2a |  |  |
| FR-3a |  |  |
| FR-4a |  |  |
| FR-5a |  |  |
| FR-6a |  |  |
| FR-7a |  |  |
| FR-8a |  |  |
| FR-9a |  |  |

Table 2 presents the requirements traceability matrix for the Source Plot by Site All tool.

| **Table 2. Source Plot by Site All Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1b |  |  |
| FR-2b |  |  |
| FR-3b |  |  |
| FR-4b |  |  |
| FR-5b |  |  |
| FR-6b |  |  |
| FR-7b |  |  |
| FR-8b |  |  |

Table 3 presents the requirements traceability matrix for the Source Plot Year by Year tool.

| **Table 3. Source Plot Input Year Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1c |  |  |
| FR-2c |  |  |
| FR-3c |  |  |
| FR-4c |  |  |

Table 4 presents the requirements traceability matrix for the Source Plot Graph tool.

| **Table 4. Source Plot Graph Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1d |  |  |
| FR-2d |  |  |
| FR-3d |  |  |
| FR-4d |  |  |
| FR-5d |  |  |
| FR-6d |  |  |
| FR-7d |  |  |
| FR-8d |  |  |
| FR-9d |  |  |

Table 5 presents the requirements traceability matrix for the Source Plot Year tool.

| **Table 2. Source Plot Year Tool Requirements Traceability Matrix** | | |
| --- | --- | --- |
| **Functional Requirement** | **Acceptance Test** | **Test Result (Pass/Fail)** |
| FR-1e |  |  |
| FR-2e |  |  |
| FR-3e |  |  |
| FR-4e |  |  |
| FR-5e |  |  |

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 Source Plot All tool is as follows.

| **Table 6. Source Plot All Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

The test plan for the Source Plot by Site All tool is as follows.

| **Table 7. Source Plot by Site All Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

The test plan for the Source Plot Input Year tool is as follows.

| **Table 8. Source Plot Input Year Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

The test plan for the source Plot Graph tool is as follows.

| **Table 9. Source Plot Graph Tool Test Plan** | | |
| --- | --- | --- |
| **TEST ID** | **Test Case** | **Test Result (Pass/Fail)** |
| IT-1 | Installation Test |  |
| ATC-X |  |  |
| ATC-X |  |  |

The test plan for the Source Plot year tool is as follows.

| **Table 10. Source Plot Year 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.