


SOFTWARE RELEASE NOTICE

1. SRN Number: 259 312 <i>316/04 20</i>		
2. Project Title: General usage package for watershed modeling of water and sediment		Project No. Primarily WFO and 20.06002.01.131
3. SRN Title: KINEROS2 Version 1.12wS		
4. Originator/Requestor: Randall Fedors		Date: 4/14/04
5. Summary of Actions <input type="checkbox"/> Release of new software <input type="checkbox"/> Change of access software <input checked="" type="checkbox"/> Release of modified software: <input type="checkbox"/> Software Retirement <input checked="" type="checkbox"/> Enhancements made <input checked="" type="checkbox"/> Corrections made		
6. Validation Status <input type="checkbox"/> Validated <input type="checkbox"/> Limited Validation <input checked="" type="checkbox"/> Not Validated Explain: Scheduled for completion of validation test by June 2004		
7. Persons Authorized Access		
Name	Read Only/Read-Write	Addition/Change/Delete
Randall Fedors	RO	
David Woolhiser	RO	Addition
Roger Smith	RO	Addition
Gary Walter	RO	Addition
David Farrell	RO	
James Winterle	RO	
Walter Illman	RO	Deletion
Debra Hughson	RO	Deletion
8. Element Manager Approval: <i>Gordon Wittmeyer</i>		Date: <i>4/15/2004</i>
9. Remarks: Version upgrade from KINEROS 00_4 (1.4) to KINEROS2 1.12wS		

SOFTWARE SUMMARY FORM

01. Summary Date: 4/14/04	02. Summary prepared by (Name and phone) Randall Fedors 210-522-6818	03. Summary Action: upgrade version	
04. Software Date: 2003	05. Short Title: KINEROS2 1.12		
06. Software Title: KINEROS2 Version 1.12wS		07. Internal Software ID:	
08. Software Type: <input type="checkbox"/> Automated Data System <input checked="" type="checkbox"/> Computer Program <input type="checkbox"/> Subroutine/Module	09. Processing Mode: <input type="checkbox"/> Interactive <input type="checkbox"/> Batch <input checked="" type="checkbox"/> Combination	10. Application Area a. General: <input checked="" type="checkbox"/> Scientific/Engineering <input type="checkbox"/> Auxiliary Analyses <input type="checkbox"/> Total System PA <input type="checkbox"/> Subsystem PA <input type="checkbox"/> Other b. Specific: Surface water, sediment transport, and 2-layer infiltration model for watersheds	
11. Submitting Organization and Address: CNWRA/SwRI 6220 Culebra Road San Antonio, TX 78228		12. Technical Contact(s) and Phone: Randall W. Fedors (210) 522-6818 Roger Smith (970) 491-8549 or (970) 493-2662	
13. Software Application: This version of KINEROS2 now has a graphical user interface to control simulations. The same input control file as used with the previous, command-line driven program, still can be used. KINEROS2 routes surface water and sediment using a kinematic equation formulation solved by finite difference and linked to a 2-layer infiltration approximation.			
14. Computer Platform PC with pentium processor	15. Computer Operating System: Windows 2000, NT, XP	16. Programming Language(s): Executable (provided), originally derived from Fortran code	17. Number of Source Program Statements: N/A
18. Computer Memory Unknown lower limit	19. Tape Drives: N/A	20. Disk Units: Unknown lower limit	21. Graphics: N/A
22. Other Operational Requirements			
23. Software Availability: <input type="checkbox"/> Available <input type="checkbox"/> Limited <input checked="" type="checkbox"/> In-House ONLY		24. Documentation Availability: <input type="checkbox"/> Available <input type="checkbox"/> Preliminary <input checked="" type="checkbox"/> In-House ONLY	
25. User  Date: 4/15/04			

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
QA VERIFICATION REPORT

FOR

→ ACQUIRED SOFTWARE NOT TO BE MODIFIED ←

Software Title/Name:

Kineros 2

Version:

1.12 ws

Demonstration workstation:

Bubo

Operating System:

Windows NT

User:

R. Fedores

NOTE: Acquired software may or may not meet all requirements and will be evaluated on a case-by-case basis.

Installation Testing [TOP-018, Section 5.6]

Has installation testing been conducted for each intended computer platform and operating system?

Yes: ☒ No: ☐ N/A: ☐

Computer Platforms: PC

Operating Systems: Windows NT

Location of Acceptance Test Results: See enclosed memo dated

Comments: April 14, 2004

Software Output [TOP-018, Section 5.5.4]

Is software designed so that individual runs are uniquely identified by date, time, name of software and version?

Yes: ☐ No: ☒ N/A: ☐

Date and Time Displayed: None

Name/Version Displayed: Kineros 2 version 1.12 ws Sept 18, 2004

Comments:

NOTE: Output identification content and format is typically taken as is.

Medium Documentation [TOP-018, Section 5.5.6]

The physical labeling of software medium (tapes, disks, etc.) contains: Program Name, Module/Name/Title, Module Revision, File type (ASCII, OBJ, EXE), Recording Date, and Operating System(s)?

Yes: ☒ No: ☐ N/A: ☐

Comments:

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User Documentation [TOP-018, Section 5.5.7]

Is there a Users' Manual for the software and is it up-to-date?

Yes: ☒ No: ☐ N/A: ☐

User's Manual Version and Date:

Comments: *See enclosed memo dated April 14, 2004*

Are there basic instructions for the *installation* and *use* of the software?

Yes: ☒ No: ☐ N/A: ☐

Location of Instructions: *See enclosed memo dated April 14, 2004*

Comments:

Configuration Control [TOP-018, Section 5.7, 5.9.3]

Is the Software Summary Form (Form TOP-4-1) completed and signed?

Yes: ☒ No: ☐ N/A: ☐

Date of Approval: *April 15, 2004*

Is the list of files attached to the Software Summary Form complete and accurate?

Yes: ☒ No: ☐ N/A: ☐

Comments: *See memo dated April 14, 2004*

Is the source code available or, is the executable code available in the case of (acquired/commercial codes)?

Yes: ☒ No: ☐ N/A: ☐

Location of Source Code: *Enclosed CD*

Comments:

Have all the script/make files and executable files been submitted to the Software Custodian?

Only the executable files are being submitted.

Yes: ☒ No: ☐ N/A: ☐

Location of executable files: *Enclosed CD*

Comments:

Software Release [TOP-018, Section 5.9]

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
QA VERIFICATION REPORT

FOR

→ACQUIRED SOFTWARE NOT TO BE MODIFIED ←

Upon acceptance of the software as verified above, has a Software Release Notice (SRN), Form TOP-6 been issued and does the version number of the software match the documentation?

Yes: ☐ No: ☐ N/A: ☐

SRN Number: 259

Comments:

Software Validation [TOP-018, Section 5.10]

Has a Software Validation Test Plan (SVTP) been prepared for the *range of application* of the software?

Yes: ☐ No: ☒ N/A: ☐

Version and Date of SVTP: _____

Date Reviewed and Approved via QAP-002: _____

Comments: Scheduled for June 2004

Has a Software Validation Test Report (SVTR) been prepared that documents the results of the validation cases, interpretation of the results, and determination if the software has been validated?

Yes: ☐ No: ☒ N/A: ☐

Version and Date of SVTR: _____

Date Reviewed and Approved via QAP-002: _____

Comments.: Scheduled for June 2004

Additional Comments:

R. Jellon 5/6/04
Software Evaluator/User/Date

L. Jellon 5/6/04
Software Custodian/Date

TO: Robert Brient
FROM: R. Fedors
SUBJECT: TOP-018 for KINEROS2 Version 1.12wS
DATE: April 14, 2004

KINEROS2 is a widely distributed, off-the-shelf program for surface water modeling. It is a KINematic runoff and EROsion model for event-based modeling of interception, infiltration, surface runoff, and erosion from small watersheds due to precipitation. Watersheds are divided into assemblages of planes and channels for which a rain event and subsequent runoff is routed through the watershed. KINEROS2 Version 1.12wS will replace KINEROS2 Version 00_4 as the version under CNWRA TOP-018 control.

KINEROS2 version 1.12wS is available from Carl Unkrich or David Goodrich of the U.S. Department of Agriculture (USDA), Agricultural Research Service in the Tucson, Arizona, office. Whereas KINEROS2 version 00_4 was run from a DOS prompt, KINEROS2 Version 1.12wS is run using a graphical user interface. The header in the output file indicates that this is version 1.12wS, however, the USDA refers to this version as 3.2 because its in-house graphical user interface does not write the version number of the underlying code. See the included email (retained on cdrom in QA folder for KINEROS2) from Carl Unkrich explaining the difference between the version number associated with the graphical user interface. Requests for version 1.12wS from the USDA should be directly made to Carl Unkrich or David Goodrich, rather than downloading the available version from the website for KINEROS2. The program is labeled kin2_1.12.exe. Only the compiled (executable) version of the code was provided by the USDA, hence no modifications are possible.

Documentation obtained from the KINEROS2 website is provided on the attached CDROM. In addition, The documentation for KINEROS2 v. 00_4 should remain in the KINEROS2 folder because it provides more details than the web version. The KINEROS2 website is <http://www.tucson.ars.ag.gov/kineros/>. In addition, the following documents contain useful descriptions of models and algorithms in KINEROS2:

Woolhiser, D.A., R.E. Smith, and D.C. Goodrich. 1990. KINEROS, A Kinematic Runoff and Erosion Model, U.S. Department of Agriculture, Agricultural Research Service, ARS-77, 130 p.

Smith, R.E., D.C. Goodrich, D.A. Woolhiser, and C.L. Unkrich. 1995. KINEROS - A Kinematic Runoff and Erosion Model, in Computer Models of Watershed Hydrology, ed. V.P. Singh, Water Resources Publications, Highlands Ranch, CO, chapter 20, p. 697-732.

Smith, R.E. 1996. The Soil Infiltration Model in KINEROS2: Preliminary Documentation, draft copy, electronic file=2layinf.doc on attached CDROM.

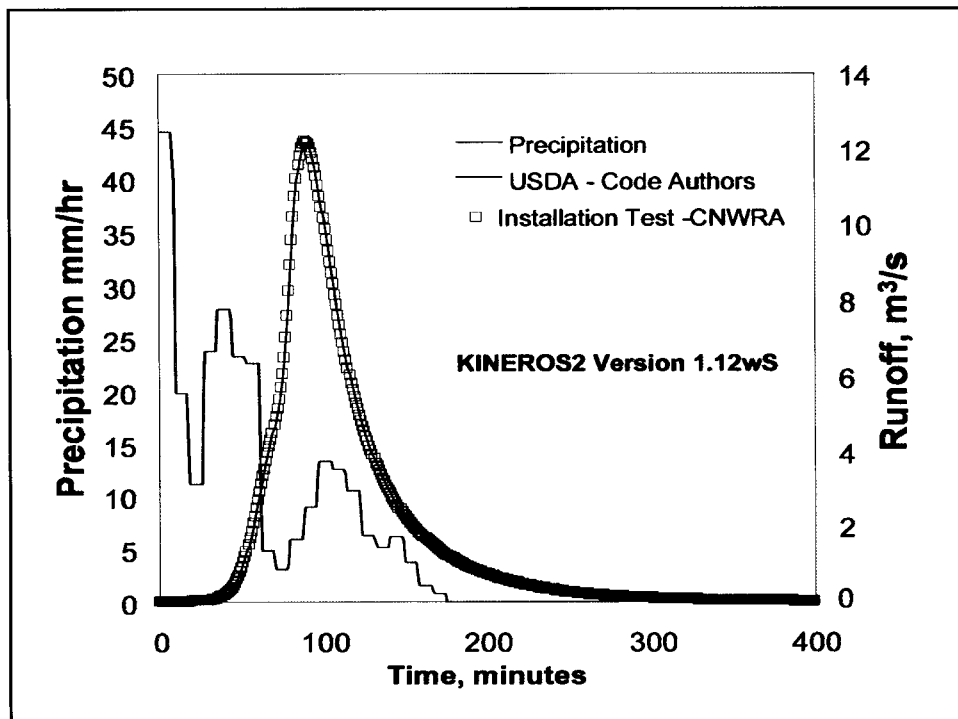
The installation test uses inputs for the Solitario Canyon watershed. Carl Unkrich of the USDA provided the output file (filename=ARS_Verification_Run-1.12_16March2004.txt) for comparison with the CNWRA installation test (filename=v1.12rf.OUT). To run the code, type the executable name. The graphical user interface will open, then (i) in the START submenu, enter the name of the control run file (11sep51.fil), (ii) confirm the inputs in the OPTIONS submenu, and (iii) start the simulation using the RUN menu item. The control file (11sep5a.fil) contains the following information for parameter file (*.par), precipitation file (*.pre), and simulation controls:

```

E:\KINEROS\Kin203_2w\TOP-018_Version1.12\Sj_o1.par
E:\KINEROS\Kin203_2w\TOP-018_Version1.12\11sep5a.pre
E:\KINEROS\Kin203_2w\TOP-018_Version1.12\vl.12rf.OUT
SOLITARIO CANYON KIN2 version 1.12 RFedors installation test
600.0                      Duration (min)
1.0                        Time step (min)
N                          Courant Adjustment (y/n)
N                          Sediment (y/n)
N                          Multipliers (file/n)
N                          Tabular Summary (y/n)
N                          API Initializing (val/N)

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The installation test was successfully completed and the results compared closely to the output provided by the USDA authors of the code. For each plane element checked, mass balance for inflow, infiltration, and outflow agreed up to the 5th significant figure. In addition, discharge (or runoff) values from the outflow location (plane element 284) for the watershed were compared. The figure below illustrates the good match in discharge between the installation test results and the USDA code author results.



The KINEROS2 Version 1.12wS executable, input files, output files (both code-author output file and the CNWRA output file) are contained on the CDROM put into the TOP-018 folder.

Attachments:

1. Xerox of title page for KINEROS documentation, Woolhiser et al. (1990)
2. Xerox of title page and source for Smith et al. (1995)
3. CDROM with supporting electronic files; CDROM contents are:

.InstallationTest*	Input files, output file, and spreadsheet for plotting figure
.USDA-Results*	Code-author output file and copy of email
.Documentation*	KINEROS2 web documents and report infiltration module
kin2_1.12.exe	KINEROS2 Version 1.12wS executable
top-018-kinerosV1.12.wpd	This memo; Word Perfect 10 format