COMPREHENSIVE WATERSHED MANAGEMENT
WATER USE TRACKING PROJECT

Change Management Plan

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Date	Revision	Description	Author

Change Management Plan

1   Executive Summary

Change control is one of the fundamental activities of software engineering, and managing this process is a critical success factor for any project. The addition of unnecessary features, or "scope creep," is traditionally one of the most serious software development risks. Change control provides the opportunity to manage "scope creep" and improve decision-making about which changes are actually implemented. For the Water Use Tracking (WUT) project, both formal and informal change control procedures have been defined to manage change with respect to project cost, quality, and schedule. The difference between formal and informal change procedures relates to when the change request is initiated and whether it impacts a formally approved and baselined deliverable. Formal change procedures apply after a deliverable has been approved and baselined, while informal change procedures apply prior to a deliverable being formally approved.

This document presents a detailed description of the steps to be followed for implementing both formal and informal change control procedures during the WUT project and includes the form that will be used for implementing the formal change procedures.

2   Introduction

2.1   Software Engineering Process

The software engineering process identifies the sequence of phases, steps, and tasks that must be completed in order to design and create a high-quality application that meets all identified business requirements. The WUT Project will follow IBM's Rational Unified Process (RUP), a software development approach that is iterative, architecture-centric, and use-case driven. The RUP is a configurable software development process platform that delivers proven best practices and a configurable architecture.

The RUP enables the software development team to select and deploy only the process components they need for each stage of the project. This customization of the RUP is outlined within the WUT Development Case document. The process that will be followed for the WUT project is comprised of the following development phases:

- Inception
- Elaboration
- Construction
- Transition

2.2   Change Control

Change control is one of the fundamental activities of software engineering, and managing this process is a critical success factor for any project. The addition of unnecessary features, or "scope creep," is traditionally one of the most serious software development risks. This phenomenon is due to:

- Related increase in software complexity
- Its destabilizing effect on the system design and code
- The increased cost and schedule associated with an ever-expanding project scope

Change control provides the opportunity to manage "scope creep" and improve decision-making about which changes are actually implemented. It also provides an opportunity for all parties concerned to be involved in those decisions. All changes, however, are not equal in significance or magnitude. This distinction depends upon when the change request is initiated and whether it impacts a formally approved and baselined deliverable. As a result, formal and informal change control procedures must be defined that reflect these distinctions during the Project's Inception Phase to guide the project development team and to establish the controls required by the WUT Project Manager that are necessary to manage project cost, quality, and the overall project schedule.

2.3   Formal vs. Informal Change Control Procedures

Formal change control procedures apply when changes are requested for a deliverable that has been formally approved by the WUT Project Manager and baselined. Prior to this point in time, informal change control procedures apply. Both formal and informal change control procedures are discussed in more detail later in this document.

2.4   WUT Change Control Process – Implementation Overview

The WUT Project Development Team will implement a change control process through the following mechanisms:

- The implementation and use of Microsoft Visual Safe Source, an automated configuration management/version control system to be used to manage and baseline all deliverables.
- Software configuration management as described in the Software Architecture Document
- The definition of formal and informal WUT change control procedures within this document and enforcement of these procedures.
- The use of Lotus Notes' Team Room to post deliverables for review by stakeholders and also allows the addition of discussion threads for stakeholders to comment on the deliverable being reviewed.

Change requests that will lead to a significant change to the deliverable, either through the informal or formal procedures, will need to be approved by the WUT Project Manager. If the WUT Project Manager cannot make a decision on whether to approve or deny a change request, the request will be presented to the WUT Change Management Team. This team will make all final decisions that cannot be determined by the WUT Project Manager.

The WUT Change Management Team will be made up of one member from each of the four business areas for the WUT project. The Change Management Team will consist of the following members:

- Ken Weber – Regulatory group
- Mark Barcelo – Science group
- Kurt Fritsch – Executive group
- Steve Dicks – Technical group

3   WUT Informal Change Control Procedure

The informal change control procedure detailed in this section applies when changes are requested to a deliverable that is still under review and has not been formally approved by the WUT Project Manager. Initially, stakeholders are made aware that a deliverable is ready for review in two ways:

- An email is sent to each stakeholder with the deliverable attached.
- The deliverable is placed in the Team Ream with the task for the stakeholder to review the document.

Stakeholders will typically be given two weeks to review a document. At that time, the requested changes will be compiled. Simple changes, such as grammar and spelling, will be implemented into the deliverable. Changes or questions about content of the deliverable will be presented to the WUT Project Manager to determine if the change should be made. If the WUT Project Manager is unable to make a decision regarding the change, the WUT Change Management Team will be presented the change and they will have the final determination whether the change will be implemented into the deliverable.

The following steps comprise the informal change control procedures defined for the WUT project. These steps should be followed whenever a change is requested while a deliverable is still in the review process.

1) **Deliverable Review Request**
   a) The deliverable is presented to the stakeholders for review. This is done by both sending an email and by placing the deliverable in the Team Room, as described above.
   b) The stakeholders are given a specific amount of time, typically two weeks, to review the deliverable.
   c) Feedback from the deliverable is sent from the stakeholders to the development team in several forms: comments within the Team Room discussion threads, email consisting of requested changes, marked up hard-copy document, or by inserting comments into the electronic file of the deliverable.

2) **Analyze Impacts of Change Request**

a) The requested changes are compiled and reviewed.
b) Simple changes, such as grammar and spelling, are implemented into the deliverable.
c) Content changes are analyzed.
d) If the change is based on content received from the requester and misinterpreted by the development team, the change is made.
e) If the change is based on content provided by someone other than the requester, further discussions will be held with the affected parties.

3) **Approval By Project Manager**
a) Change requests with conflicting feedback will be presented to the WUT Project Manager for review.
b) The WUT Project Manager will approve or deny the change.

4) **Change Management Team**
a) If the WUT Project Manager cannot determine if a change should be implemented, or which change should be made if conflicting requests are made, the request is presented to the WUT Change Management Team.
b) The team will review the requested change and determine a final resolution.
c) The Change Management Team will inform the project development team of the needed change to the deliverable.

5) **Deliverable Approved and Baselined**
a) After all changes have been made and all conflicts have been resolved, the deliverable is determined to be approved and baselined.
b) Any further change requests will be handled through the Formal Change Control Procedure.

4 WUT Formal Change Control Procedure

The formal change control procedures detailed in this section apply when changes are requested to a deliverable that has been formally approved by the WUT Project Manager. A deliverable is immediately baselined following the WUT Project Manager's formal approval. The formal procedure is very similar to the informal procedure, except in the formality of the change request. Changes requested to an approved and baselined deliverable must be documented in a Change Request Form for tracking purposes.

The following steps comprise the formal change control procedures defined for the WUT project. These steps should be followed whenever a change is requested for an approved and baselined deliverable.

1) **Deliverable Change Request Submitted**

a) The request for a change to an approved and baselined deliverable is made using the WUT Change Request Form.
b) The Requester submits the form to the WUT Project Manager.
c) The WUT Project Manager will assign a tracking identifier with the following convention: aa-bb-cccc-dd, where aa is the month, bb is the date, cccc is the year, and dd is a sequential number for a given day. For example, the second request received on June 15, 2004 will be given an ID of 06-15-2004-02.
d) The WUT Project Manager sends the form to the project development team.

2) **Analyze Impacts of Change Request**
   a) The requested change is reviewed and analyzed by the project development team.
   b) The impacts of the change (i.e., resources, time to complete, impact on other development, etc.) are documented.
   c) The change and the impacts of the change are sent to the Project Manager for review.

3) **Approval By Project Manager**
   a) The WUT Project Manager reviews the impact of the change
   b) The WUT Project Manager approves or denies the requested change.
   c) If approved, the Project Manager will inform the project development team of the needed change to the deliverable.

4) **Change Management Team**
   a) If the WUT Project Manager cannot determine if a change should be implemented, or which change should be made if conflicting requests are made, the request is presented to the WUT Change Management Team.
   b) The WUT Change Management Team will review the requested change/impacts and determine a final resolution.
   c) The Change Management Team will inform the project development team of the needed change to the deliverable.

5) **Deliverable Approved and Baselined**
   a) After all changes have been made and all conflicts have been resolved, the deliverable is determined to be approved and baselined again.
   b) A new version number will be assigned to the deliverable for tracking purposes.

Appendix A

Change Request Form

Change Request Form

Change Request # : _____

Requested by:	Date:

Window, Tab, Object, or Document:	
Change Description: Change Purpose:	

Database Change – Table, Element, or Alter:	
Table: Alter File: Change Description: Change Purpose:	

Evaluated by:	Date:

Check all that apply to requested change:

Requirements Documents	Prototypes	Design Documents	Application Code	Database	User Documents	Training Documents

Impact Evaluation Summary:	
Cost: Quality: Schedule: Comments:	

Approved by:	Date:

Change Request Form (cont.)

Change Requirements and Specifications	
Specifications for the change:	

Assigned to:	Assigned by:	Date:

Unit Test Plan	
Steps used to test the change (attached before and after screen captures and printed output):	

Tested and code review by:	Date tested/reviewed:
Unit test/code Reviewer's comments:	

Implemented by:	Version/Release:	Date: