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# **FRAMES Ecological Module and Multiple Database Capability**

## **Objective**

The objective is to develop an ecological impacts and multiple database capability in the FRAMES user interface.

## **Definitions**

- Requirement: Characteristics and behaviors that a piece of software must possess to function adequately for its intended purpose. A good requirement is also testable. Sometimes a function is called a requirement, although it is not related to a regulatory definition.
- Design: A design is a comprehensive description of how a piece of software will function (i.e., how it will meet its requirements).
- Specifications: Specifications are a detailed description of an interface to a computer program or set of subroutines such that another programmer could develop a program that would make proper use to the subroutines.
- Model/Code: Loosely defined herein to represent the software product for simulating an aspect associated with the release, fate & transport, exposure, intake, or risk/hazard of chemicals released into the environment; however, a model/code can simulate any phenomenon and is not limited to hazardous waste site assessments.
- Module: Model/Code and accompanying 1) pre- and post-processors for communicating with other models, databases, frameworks, etc. and 2) model-specific user interface (MUI).
- System or Framework: Loosely defines a grouping of models, modules, databases, processors, or combination.
- Testable: Refers to the property of having the capability of examining and interrogating, such that a clear and concise conclusion can be drawn.

## **Requirements**

Requirements are characteristics and behaviors that a piece of software must possess to function adequately for its intended purpose. The additional module icon capability shall meet the following requirements when integrated into the FRAMES architecture:

- 1) function within the FRAMES icon tool bar
- 2) be dynamic, given a module category and type
- 3) be capable of being dragged from the FRAMES toolbar to the FRAMES work space.

The ecological icon will:

- 1) receive a link from a surface water icon (indicating the capability to accept a WCF file format)
- 2) receive a link from another ecological icon (indicating the capability to accept a EPF file format)
- 3) allow the user to select from a list of available “ecological” module types.

The multiple database capability will:

- 1) allow the user to link to any model type
- 2) allow for multiple databases in the same simulation.

## **Design**

A new implementation of the FRAMES plug-and-play environment was developed to allow for a dynamic module accessibility based on module category and type of information stored in the DES file.

## **Test Case Description and Rationale**

The purpose of this test is to determine if the FRAMES user interface will allow for an Ecological Icon to be selected. In addition, this case will test the capability of the FRAMES user interface to allow for multiple databases.

## **Input Data**

The Description file and icon bitmap need to be installed into the FRAMES directory for the ecological module type and at least one database beyond the FRAMES database. For this test case, the Eco Benchmarks database will be used as the second database, and the TBP model will be used as the ecological model.

## **Expected Results**

Both the ecological module type icon and the ecological exposure database option icon should appear on the left hand side if a description file and icon have been added to the FRAMES directory. The Ecological and Eco Database Icons should appear on the FRAMES screen as an option in the left hand column as in Figure 1. Double click on both the Ecological Icon and Eco Benchmarks Database Icon. After being selected and connected to a water module icon, the general information option for the ecological icon should display the option “Theoretical Bioaccumulation Potential (TBP) 1.0.0 “ as in Figure 2.

## **Testing Results**

These screen captures confirm the full functionality of the Ecological Icon and Multiple Database Icon Option.

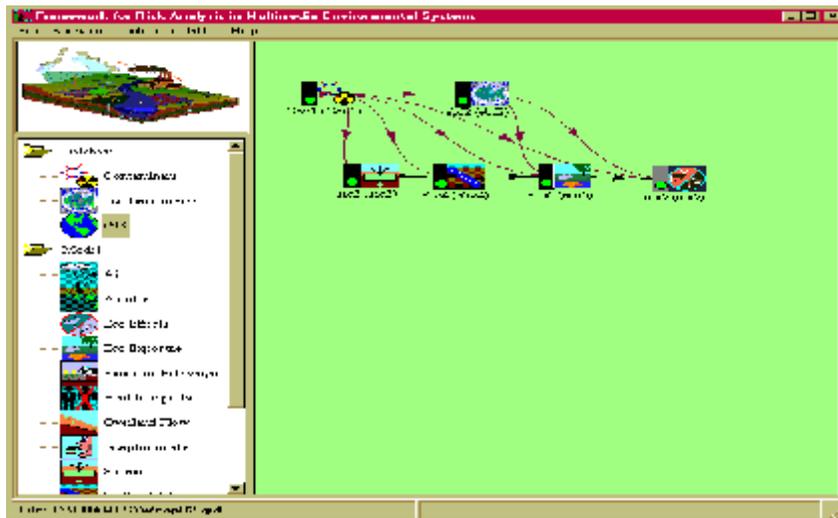
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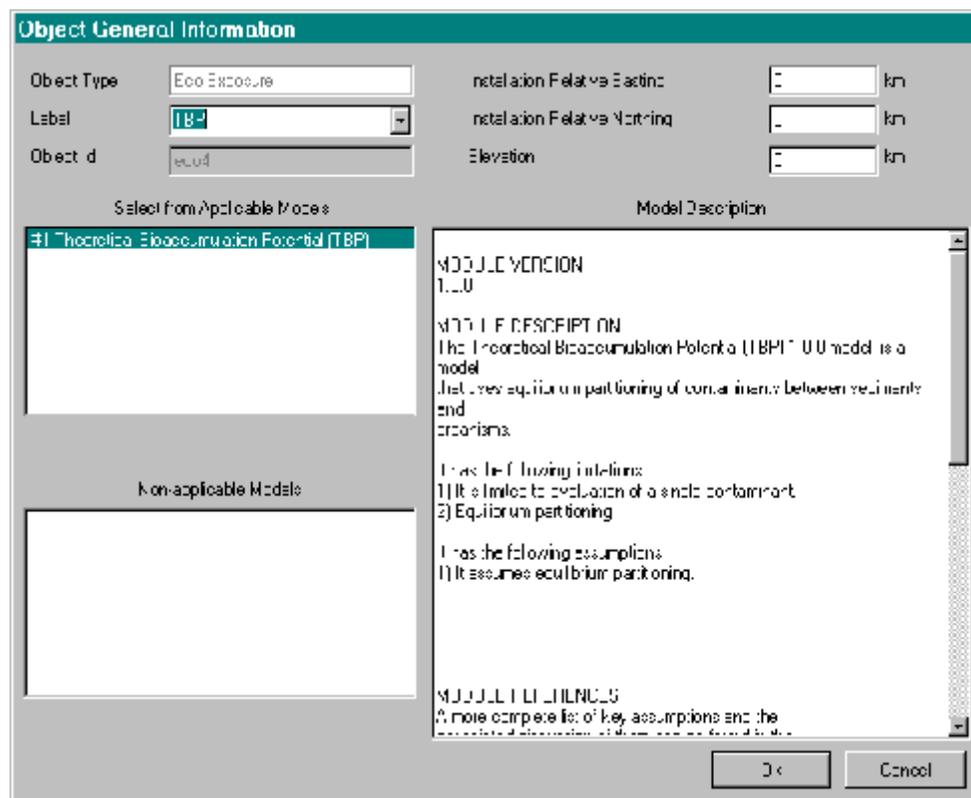
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**Figure 2** Ecological Icons as they Appear on the FRAMES Main Screen



**Figure 2.** General Information Screen for Eco Icon