

APPENDIX A
TETRA TECH OFFSHORE GIS MODEL

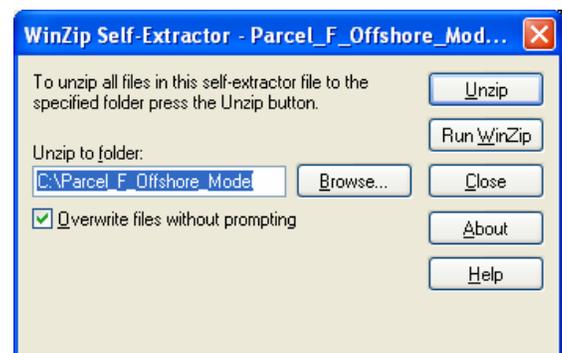
A1.0 OVERVIEW

The purpose of the Hunters Point Parcel F Offshore Model (the model) is to calculate the approximate remediation volume and area based on a set of user-supplied do-not-exceed criteria. The criteria are applied to a polygon data layer in a geographic information system (GIS), which contains relevant sample analytical data for five offshore subareas (Areas I, III, VIII, IX, and X) of Parcel F. The analytical data for each polygon is compared with the supplied criteria, and polygons that exceed one or more criterion are flagged for remediation.

A2.0 INSTALLATION

The program is approximately 4 megabytes in size, when installed, and requires that the user's computer have Microsoft Access™ 2000 or higher installed. If you do not have Access, consult with your system administrator.

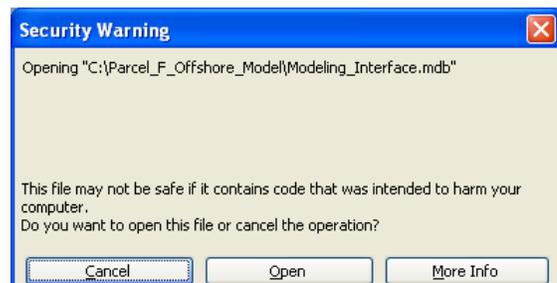
The setup program to install the model is called `Parcel_F_Offshore_Model.exe` and is located on the compact disc. It is a self-extracting compressed file. When run, the installation process will unzip three files (`Modeling_Interface.mdb`, `Parcel_F_Data.mdb`, and `HPS_Offshore_Modeling.mxd`) to a directory specified by the user (default is `C:\Parcel_F_Offshore_Model`).



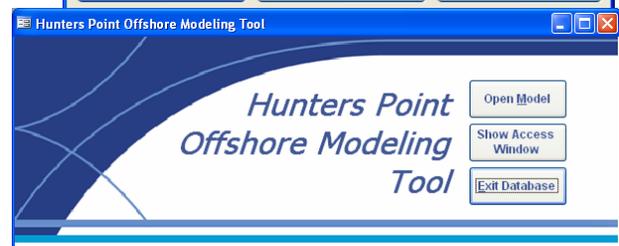
Following installation, double-click `Modeling_Interface.mdb` to run the model. If you wish to use the optional mapping interface open `HPS_Offshore_Modeling.mxd` in ArcGIS version 9.1 or later.

A3.0 SYSTEM USE

When `Modeling_Interface.mdb` is run, the user may be prompted with a security warning, as shown to the right. This security warning will display, depending on security settings within Access, whenever the user opens an `.mdb` file with executable code, and is not specific to the contents of the database. Click "OK" to proceed.



Following the security warning, the user will be presented with the database startup form, from which the user can open the model interface, show the standard access window (useful for viewing source code or the underlying data) or exit the database. Click Open Model to view the model interface.



Scenarios

2006-12-13 Standard Model	Total PCBs (ug/kg)	Mercury (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Remediated
Replacement Fill Values	143	0.43	68.1	43.2	140,357 cubic yards
Target Weighted-Average					44 acres
Achieved Weighted-Average	173	0.47	61.3	48.1	14 % of area
By Subarea:					
Oil Reclamation Area IX					0 cubic yards
Do-Not-Exceed Criterion	1200	2	270		0 polygons
Maximum Remaining	827.602	1.2	97.5	89.4	0 acres
Achieved Weighted-Average	278	0.49	68.7	62.6	0 % of area
South Basin Area X					115,317 cubic yards
Do-Not-Exceed Criterion	1200	2	270		103 polygons
Maximum Remaining	1133.958	1.4	138	270	36 acres
Achieved Weighted-Average	386	0.51	76.8	59.1	56 % of area
Point Avisadero Area III					25,040 cubic yards
Do-Not-Exceed Criterion	1200	2	270		91 polygons
Maximum Remaining	1023.758	1.5776	221	161	8 acres
Achieved Weighted-Average	123	0.5	68.5	32.8	35 % of area
Eastern Wetland Area VIII					0 cubic yards
Do-Not-Exceed Criterion	1200	2	270		0 polygons
Maximum Remaining	545.49	0.8	58.7	52	0 acres
Achieved Weighted-Average	31.1	0.45	49	38.5	0 % of area
India Basin Area I					0 cubic yards
Do-Not-Exceed Criterion	1200	2	270		0 polygons
Maximum Remaining	111.24	0.55	117	126	0 acres
Achieved Weighted-Average	40.6	0.37	53.9	33.4	0 % of area

Comment:

Criteria / SUF Calculation Mode
 Allow any criteria, ignore SUF
 Use SUF below to set all criteria
 Site Use Factor (0.5 - 1.0):

Depth
 0 - 1 ft bgs
 0 - 2 ft bgs

Previous Next New Delete Save Recalculate Map Jump to: Exit

As distributed, the model includes two scenarios: one showing a cleanup scenario using cleanup criteria derived from a site-use factor (SUF) of 0.5 applied to sample data from the top 2 feet of sampling locations; and the second showing a prerediation scenario (that is, starting conditions.) Click the Next and Previous buttons to toggle between these existing scenarios. You may also click a button to create a New to or Delete an existing scenario.

An existing scenario may be modified in a number of ways. Do-not-exceed criteria may be changed in one of two modes set by the tool in the lower part of the interface labeled "Criteria/SUF Calculation Mode." When set to use the SUF, a user enters a number between 0.5 and 1.0 into the SUF box and clicks "Recalculate." Do-not-exceed criteria are derived from the SUF and applied to each subarea, and the remediated volume and area calculated. Alternatively, the mode may be switched to allow any criteria, and custom do-not-exceed criteria may be entered into each box, for each subarea. Different criteria may be applied to each subarea. Leaving a criterion blank instructs the program to not apply any do-not-exceed criterion for that chemical and subarea.

The user may choose to change the depth the model should consider by toggling between 0 to 1 feet below ground surface (bgs) and 0 to 2 feet bgs. Changing from 0 to 1 to 0 to 2 feet bgs has two effects: (1) it doubles the factor by which the area is multiplied to derive the remediation volume; and (2) it includes samples collected from 0 to 2 feet bgs in determining the maximum concentration of each chemical for each polygon, rather than 0 to 1 feet bgs. This last effect can result in additional polygons being flagged for remediation, in cases where samples from 1 to 2 feet bgs are of higher concentration than those from 0 to 1 feet bgs.

Subareas can be removed from a scenario by clicking the blue Delete link in the subarea's section of the form. Additional subareas can be added by scrolling the list of subareas down to a blank entry and using the subarea dropdown to select the desired subarea. When a new scenario is created, it starts with no subareas.

Following any change to the input parameters, the user must click the Recalculate button or alternatively (if the GIS mapping interface is being used) the Map button.

The model returns the maximum remaining and achieved weighted average concentrations for each subarea, and, at the top, the achieved weighted average concentrations for all subareas included in the scenario. The model also returns the estimated remediation area and volume for each subarea, and, at the top, the summed remediation area and volume of all subareas.

To use the GIS mapping interface, open `HPS_Offshore_Modeling.mxd` in ArcGIS. After clicking the "Map" button in the database interface, return to ArcGIS and click the refresh (↻) button once or twice, until the map displays the latest scenario results. The map will always display the last scenario for which the Map button was clicked. Remediated polygon areas are highlighted yellow, while unremediated polygons are shown as a grey outline only. If a subarea is not included in a scenario, it will not be shown in the map.

To exit the application, the user clicks the "Exit" button on the interface and Exit Database on the startup form.

If there are any questions regarding the application, or to report any bugs encountered, please contact Simon Cardinale at 505-881-3188 x107 or simon.cardinale@ttemi.com.