

9: Projecting Alternate Futures

Overview

The What if? Allocation option projects future land use, population and employment patterns by: (1) allocating the projected land use demands derived from a user-selected demand scenario to different locations on the basis of: (2) their relative suitability, as defined by the assumptions in a user-selected suitability scenario, and (3) the allocation controls defined in a user-selected control scenario.

The Allocation outputs include: (1) maps showing the projected land use patterns in each projection year; (2) reports identifying the projected land uses, residential population, dwelling units, and employment in each projection year for the study area and for user-defined subareas; and (3) shape files reporting the projected land uses, population, and employment for enumeration districts and user-defined areas.

The Allocation option can be used to project the following variables:

- Land use by type
- Total population
- Group quarters population
- Number of households
- Number of housing units
- Number of vacant housing units
- Vacancy rate
- Average household size, and
- Employment by employment sector and place of work.

The available outputs for a particular study are dependent on the analysis option that was used to create the project.

This chapter contains nine sections. The first two sections briefly describe the land use projection process and the What if? allocation controls. The next seven sections describe the procedures for projecting future conditions and for viewing the Allocation outputs. The final section describes the procedures that can be used to deal with insufficient land that may be encountered in allocating the projected demand. The

computational procedures used to project the study area's future population, housing, and employment patterns are described in detail in Appendix F.

Land Use Projection Process

What if? projects future land use patterns in each projection year by allocating the projected demand for each land use to different locations on the basis of their relative suitability for that land use, subject to the allocation controls you specify. The projected land use demands are derived from a previously defined demand scenario. The relative suitability of different locations is determined a previously defined suitability scenario. The allocation controls are derived from a previously defined allocation control scenario.

What if? begins by allocating the projected land use demand for each projection year in turn, i.e., for the first projection year; then for the second allocation year; and so on. The process continues until: (1) the final projection year; (2) build out, if that option has been selected; or (3) there is not enough land to satisfy the projected demand.

What if? Allocation Controls

The following allocation controls can be used to guide the process by which the various land use demands are allocated to different locations.

Land Use Allocation Order

Land Use Allocation Order

The user can first specify the order in which the various land uses demands are allocated in a year, i.e., the projected land use demand that is satisfied first in each projection year, the land use demand that is satisfied second, and so on.

Spatial Allocation Order

Spatial Allocation Order

The user can then specify the order in which different locations will be used to satisfy the projected land use demand, i.e., the criteria to be used in selecting the locations to which the demands will be allocated first, the locations to which the demands will be allocated second, and so on.

Land Use Controls

Land Use Controls

The What if? allocation process can also incorporate user-specified land use controls such as land use plans or zoning ordinances. It does this by allowing the projected demands to be allocated only to areas which the specified land use control permits. Thus, for example, if a land use plan has been specified the projected industrial demand will only be allocated to areas that are planned for industrial uses.

Infrastructure Controls

Infrastructure Controls

The What if? allocation process can also consider infrastructure controls such as the provision of water and sewer service or proximity to major

highways or expressway interchanges. Assume, for example, that: (1) a sewer service infrastructure control has been selected which identifies areas where sewer service will be provided in different years; and (2) it is assumed that new industrial development can only be located in areas that have sewer service. In this situation, the model will only allocate the projected industrial demand to areas that have sewer service in a given projection year.

Growth Patterns

Growth Patterns

The What if? allocation process can also incorporate “growth patterns” specifying the order in which the projected demand should be allocated to different locations. That is, other things being equal, the model will allocate the projected demand for a particular land use to UAZs with regards to the values in the specified growth pattern layer, proceeding from the smallest value to the largest one.

Projecting Future Conditions

The following seven-step process can be used to project future land use, population, housing, and employment patterns:

1. Selecting an allocation scenario;
2. Specifying allocation priorities;
3. Specifying infrastructure controls;
4. Specifying land use controls;
5. Specifying growth patterns;
6. Allocating demand; and
7. Viewing allocation outputs.

The procedures for conducting each of these steps are described in detail below.

9.1 Selecting an Allocation Scenario

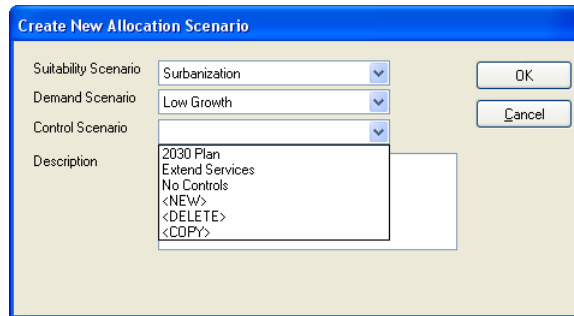
The What if? demand allocation process is initiated by selecting the **Allocation | Scenarios** option from the main What if? form.

The procedures for opening, copying, creating, and deleting allocation scenarios are generally the same as those for the suitability option described in Section 7.1 Selecting a Suitability Scenario. The only difference is the procedure for creating a new Allocation scenario, which will be described below.

9.1.1 Creating a New Allocation Scenario

Creating a New Allocation Scenario

After selecting the **Allocation | Scenarios | New...** option you will be presented with the **Create New Allocation Scenario** form (shown below).



The **Create New Allocation Scenario** form requires you to select the suitability, demand, and control scenarios that will be used in the allocation scenario. This is done to recognize the fact that the allocation scenario results reflect the combined effect of these three scenarios.

As their labels suggest, the three drop-down lists on the form can be used to select previously defined suitability, demand, and controls scenario.

Creating a New Control Scenario

9.1.2 Creating a New Control Scenario

As shown above, the **Control Scenario** list includes a **<NEW>** option that allows you to define a new control scenario. To do this, you should:

1. Select the **Allocation | Scenarios | New...** option;
2. Select the **<NEW>** option from **Control Scenario** list and click on **OK**;
3. Specify the name for new control scenario on the **New Control Scenario** form; and
4. Click on **OK**.

You will then be presented with the Allocation Scenario Assumptions form (to be described below) that will allow you to define the control assumptions for your newly created control scenario.

Copying a Control Scenario

9.1.3 Copying a Control Scenario

As shown above, the **Control Scenario** list includes a **<COPY>** option that allows you to copy an existing control scenario. To do this, you should:

1. Select the **Allocation | Scenarios | New...** option;
2. Select the **<COPY>** option from **Control Scenario** list and click on **OK**;
3. Select the scenario you wish to copy from the **Source Scenario** drop-down list on the **Copy Control Scenario**;
4. Specify the name for new control scenario in the **New Scenario** text box; and
5. Click on **OK**.

Deleting a Control Scenario

9.1.4 Deleting a Control Scenario

The **Control Scenario** list also includes a **<DELETE>** option that allows you to delete a previously defined control scenario. To do this,

1. Select the **Allocation | Scenarios | New...** option;
2. Select the **<DELETE>** option from **Control Scenario** list and click on **OK**;
3. Select the control scenario you'd like to delete from the drop-down list on the **Delete Control Scenario** form; and
4. Click on **OK**.

NOTE!

NOTE: You cannot delete a control scenario that is included in an allocation scenario. As a result, to delete a control scenario you must first delete all of the allocation scenarios that are associated with it.

Allocation Scenario Names

9.1.4 Allocation Scenario Names

The default allocation scenario names created by What if? identify the suitability, demand, and allocation control scenarios that underlie them. That is:

- The first part of the scenario name is identical to the name of the suitability scenario name that was selected on the **Create New Allocation Scenario** form;
- The second part of the name is identical to the name of the demand scenario that was selected on the **Create New Allocation Scenario** form; and
- The final part is identical to the name of the control scenario that was selected on the **Create New Allocation Scenario** form.

For example, the **Conservation – Low Growth – Extend Services** scenario combines the assumptions specified in: (1) The **Conservation** suitability scenario; (2) the **Low Growth** demand scenario; and (3) the **Extend Services** control scenario.

9.2 Specifying Allocation Priorities

After selecting an allocation scenario, you are presented with the **Allocation Scenario Assumptions** form which can be used to specify the assumptions which underlie an allocation scenario. The procedures for doing this are described below.

You can begin by using the **Allocation Order** sheet (shown below) to specify:

1. the order in which projected land use demands are to be allocated; and

2. the order in which the projected land use demands are to be allocated to different locations.

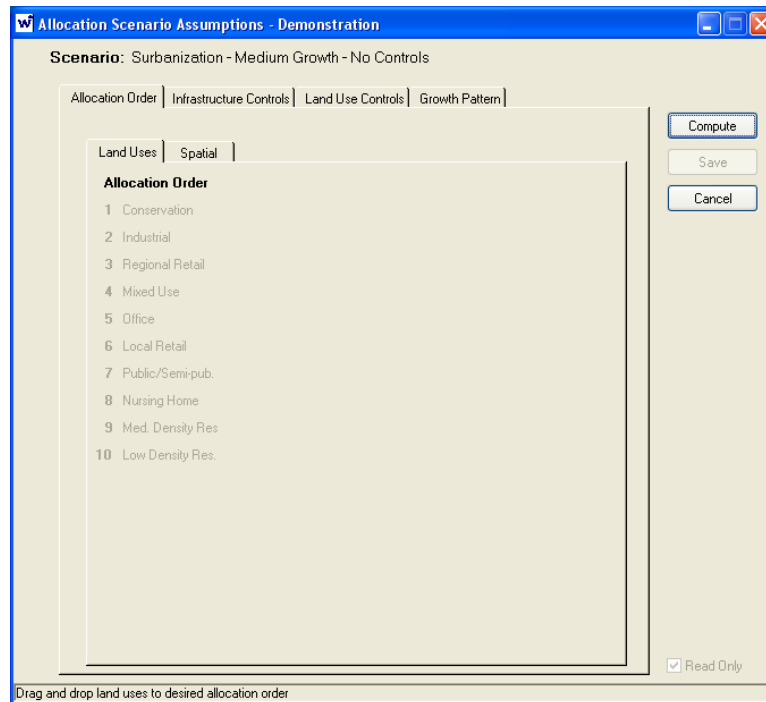
The procedures for doing this are described briefly below.

Specifying Land Use Allocation Order

9.2.1 Specifying Land Use Allocation Order

As its name suggests, the **Allocation Order | Land Uses** sheet (shown below), is used to specify the order in which different land use demands are to be satisfied, i.e., the land use demand to be satisfied first, the demand to be satisfied second, and so on. Thus, in the example below, the Conservation demand will be satisfied first; the Industrial demand will be satisfied second; and so on.

The land use allocation order will normally reflect the value of different land uses, i.e., their ability to “out bid” each other for land and purchase the most desirable locations in the study area. However, this ordering may be adjusted to incorporate public policies such as the preservation of conservation lands that are assumed to override the normal land market forces.



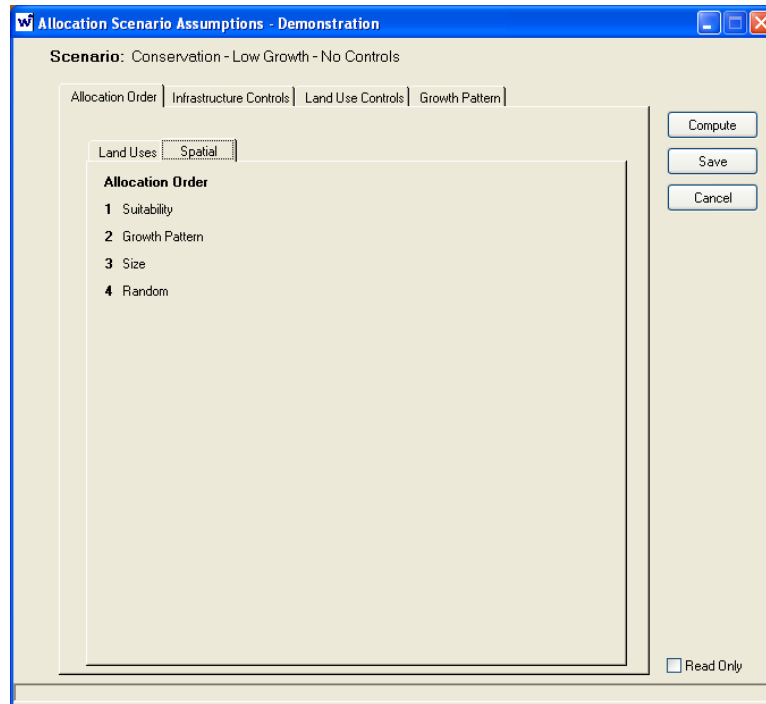
The allocation order list can be revised by selecting a land use label (not the number) from the list and dragging it to its preferred location in the list.

Specifying Spatial Allocation Order

9.2.2 Specifying Spatial Allocation Order

The **Allocation Order | Spatial** sheet (shown below), can be used to specify the order in which different locations will be used to satisfy the projected land use demands.. The following factors can be used to determine the spatial allocation order:

- **Suitability.** This option allocates the projected land use demands to different locations on the basis of their suitability for accommodating each land use, as determined by the assumptions in the suitability scenario that is incorporated into the allocation scenario. That is, other things being equal, the projected demands will be allocated to UAZs with the highest suitability scores; then to UAZs with the second highest suitability scores; and so on.
- **Growth Pattern.** This option allocates the projected demand on the basis of user-defined “growth patterns” specifying the order in which the projected demand should be allocated to different locations. That is, other things being equal, the projected demand will be allocated to UAZs on the basis of the values in the specified growth pattern layer, proceeding from the smallest value to the largest
- **Size.** Other things being equal, this option allocates the projected demand to UAZs on the basis of their size, starting with the largest suitable UAZ and proceeding to the smallest one.
- **Random.** This option allocated the projected demand to different locations in a completely random pattern, without regard to land suitability, growth patterns, or UAZ size.



What if? allocates the projected demand first with regards to the first factor listed on the **Allocation Order | Spatial** sheet, e.g., Suitability for the example above. If more than UAZ have the same values for the first factor, it allocates the projected demand with respect to the second factor on the list. If more than one UAZs have the same values for the first and second factors, the model allocates demand with respect to the third factor; and so on.

As was true for the **Allocation Order | Land Uses** sheet, the allocation order list can be revised by selecting an allocation factor label (not the number) from the list and dragging it to its preferred location in the list.

9.3 Specifying Infrastructure Controls

After specifying the allocation order, you can use the **Infrastructure Controls** sheet (shown below) to specify the effect that the availability of different kinds of infrastructure will have on the allocation process.

NOTE!

NOTE: If no infrastructure controls were specified on the Setup | Define Allocation Controls | Infrastructure Controls option, the Infrastructure Controls form will indicate that no infrastructure controls have been defined.

Selecting Infrastructure Plans

9.3.1 Selecting Infrastructure Plans

First, you can use the **Infrastructure Controls | Infrastructure Plans** sheet to select the infrastructure plan (or plans) that will be used to help control the allocation process. As the example below illustrates, the infrastructure controls can include plans for the expansion of sewer and water service and for the construction of new roads and new interchanges on limited access highways.

Allocation Scenario Assumptions - Demonstration

Scenario: Conservation - Low Growth - Extend Services

Allocation Order | Infrastructure Controls | Land Use Controls | Growth Pattern

Infrastructure Plans | Infrastructure Required

Sewer Service
Sewer Plan

Water Service
Water Plan

Major Roads
None

Interchanges
None

Compute
Save
Cancel

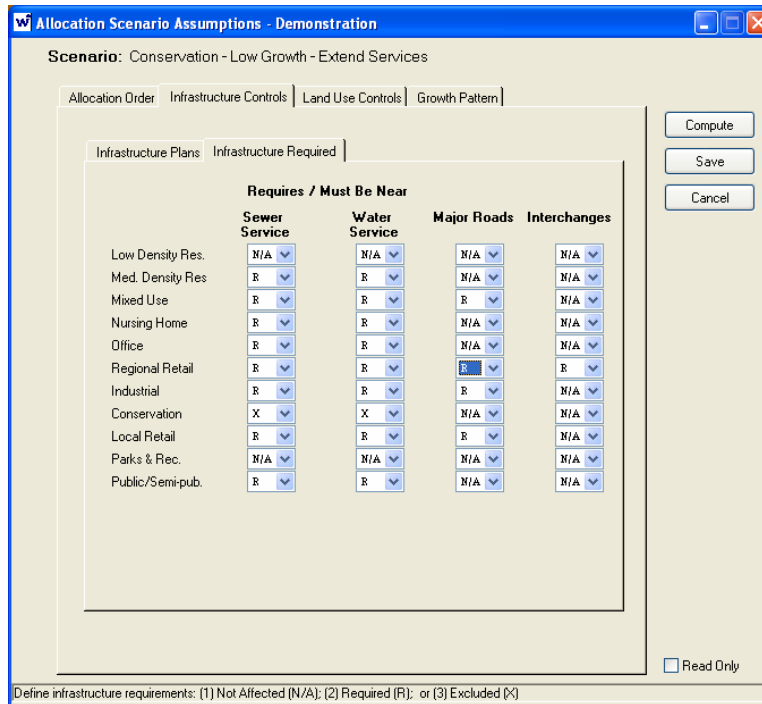
Read Only

(Select infrastructure plan(s))

Specifying Infrastructure Requirements

9.3.2 Specifying Infrastructure Requirements

Next, you can use the **Infrastructure Controls | Infrastructure Required** sheet (shown below) to specify the infrastructure requirements for different land uses. The sheet lists the land uses to be allocated and drop down list boxes corresponding to the infrastructure controls listed on the **Infrastructure Plans** sheet.



You can use the drop-down list boxes to choose one of the following options for each land use and infrastructure control:

- **N/A (Not Affected).** Use this option for land uses whose location is not affected by the availability of (or proximity to) a given type of infrastructure. Thus, for instance, the example above assumes that location of low density residential housing is not affected by the availability of sewer service because these units could be served by on-site septic systems. As a result, the projected demand for low density residential land demands will be located in the most suitable locations, regardless of the presence of sewer service.
- **R (Required).** Use this option for land uses which are assumed to require the availability of—or a location near to—a particular type of infrastructure. Thus, the example above assumes that new Regional Retail development requires water and sewer service and must be located near major roads. As a result, the projected demand for these land uses will only be allocated to areas that have water and sewer service and are near a major road in a given projection year.
- **X (Excluded).** Use this option for land uses that are assumed to be excluded from areas that are served by—or near to—a particular type of infrastructure. Thus, in the example above, new Conservation land is assumed to be excluded from areas that have sewer and water service because these locations are too expensive to be devoted to conservation uses.

9.4 Specifying Land Use Controls

Next, click on the **Land Use Controls** sheet to select a previously defined land use plan, zoning ordinance, or “vision plan” that will be assumed to control the location of future demand. If a land use control is selected, future demand for all land uses will only be located in places where the use is permitted. That is, future industrial demand will only be allocated to areas in which the land use control permits industrial development; residential land will only be allocated to areas where residential development is permitted; and so on.

As pointed out in Section 4.6.5 Defining Planned Land Uses, the What if? land use controls can incorporate “Uncontrolled” land uses for which there are no development restrictions, i.e., areas in which any future land uses can be allocated. If no land use controls are specified, the allocation process will locate projected land use demands without regard to any land use plan or other land use control.

NOTE!

NOTE: If no land use controls were specified on the Setup | Define Allocation Controls | Land Use Controls option, the Infrastructure Controls form will indicate that no land use controls have been defined.

9.5 Specifying Growth Patterns

The **Growth Pattern** sheet can be used to select a previously defined growth pattern that will be used to control the way in which projected land use demands are allocated to suitable locations. This option allows you to specify the general pattern in which different locations will be developed.

For example, you may select a “Concentric” growth pattern which allocates future growth to concentric rings centered on a neighboring central city. Alternatively, you may select: (1) a “Radial” growth pattern which allocates future growth to buffers lying alongside major transportation roots, or (2) a “Growth Pole” growth pattern that allocates future growth to buffers around existing population centers. These options are selected by picking the desired growth pattern from the drop-down list displayed on the **Growth Pattern** sheet.

NOTE!

NOTE: It is strongly recommended that you use a Growth Pattern to specify the general spatial pattern in which future development will occur. If no growth pattern is specified, new development will occur in a totally random pattern, other things being equal.

9.6 Allocating Demand

After providing the required information for all four sheets of the **Allocation Scenario Assumptions** sheet you can click on the **Compute** button to project future land use, population and employment patterns in your study area. Prompts at the bottom of the screen, indicate the land use which is currently being allocated and the year in which it is being allocated and the status of other computations that are part of the allocation computational process. A sound is emitted and a message is displayed at the bottom of the screen when the allocation has been successfully completed.

If there is not sufficient land to satisfy the demand for a particular land use, a message box is displayed indicating the demand which cannot be satisfied. You can then click on the **Cancel** button to end the allocation process or click on the **OK** button to continue the allocation process for the other land uses. In either case, a message box is displayed at the bottom of the screen, indicating that the allocation was not completed successfully.

When the allocation process is completed, you can click on the **Save** button to save the scenario results and return to the main What if? form to view the allocation scenario outputs. If you like, you can click on the **Cancel** button to return to the main form without saving the scenario results.

Note that the allocation process may take several minutes to complete. The system must examine each of literally thousands of UAZs to determine the one which is most suitable for a given land use and then allocate a portion of the projected growth to it. It must then find the next most suitable UAZ and allocate a portion of the projected demand to it, and repeat the process again and again. It must also compute the projected population and employment for all sub-areas in all projection years. This is a long process which may take quite a bit of time on even a fast computer, particularly for large areas with many UAZs.

9.7 Viewing Allocation Outputs

You are now ready to view the outputs of the Allocation process. The following options are available for examining the allocation analysis results:

1. Viewing projected land use maps;
2. Viewing new development maps;
3. Comparing allocation maps;
4. Viewing allocation reports;
5. Viewing allocation assumptions reports;
6. Viewing projected land uses for subareas;
7. Viewing projected population for subarea; and

8. Viewing projected employment for subareas.

The procedures for viewing the allocation outputs are described briefly below:

Viewing Projected Land Use Maps

9.7.1 Viewing Projected Land Use Maps

What if? can be used to generate a series of maps showing the projected land uses in the study area for each projection year, given the suitability, demand, and control assumptions you specified in creating the allocation scenario.

The projected land use maps can be viewed by selecting the **Allocation | Maps** option from the main What if? screen.

Allocation Map Contents

9.7.1.1 Allocation Map Contents

As shown below, the allocation maps contain a table of contents and a main map form, as described in Section 6.1 What if? Mapping Option. The table of contents contains several main sections:

- A “Display Layers” data frame that allows you to turn the display layers on and off;
- A data frame for each of the allocation scenarios you have created. Each section has the name of allocation scenario and contains a list of projection years associated with that scenario.

These options can be used to quickly and easily to view maps showing the projected land uses in each projection year for your allocation scenarios and the new development in each year. The procedures for doing this are described briefly below.

Preparing Projected Land Use Maps

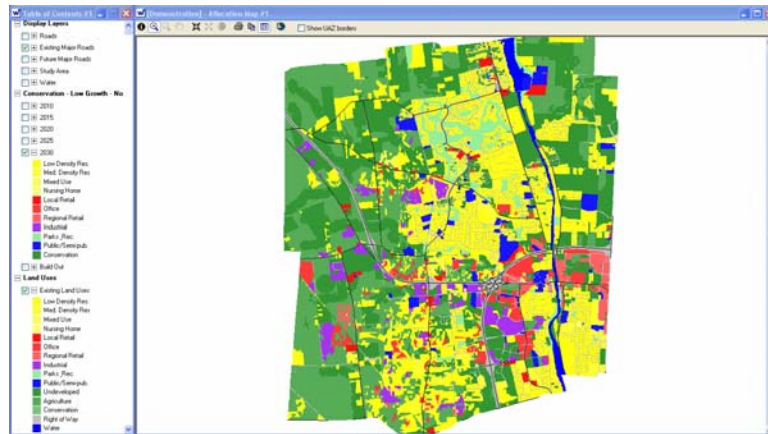
9.7.1.2 Preparing Projected Land Use Maps

To prepare a map showing the projected land uses in a projection year for a particular allocation scenario, you must:

1. Click on the **Existing Land Uses** check box, to display the study area’s current land uses; and
2. Click on the check box to the left of the projection year and allocation scenario you wish to view.

This procedure displays the projected land uses on top of the current land use map, generating a map showing the projected land uses for the selected allocation scenario and projection year.

Thus, for example, the map below shows the projected land uses in 2030 for the Conservation – Low Growth – No Controls allocation scenario.



9.7.2 Viewing New Development Maps

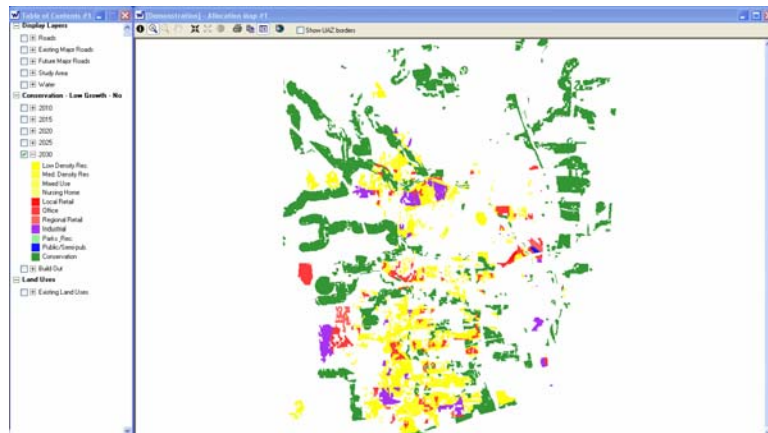
Viewing New Development Maps

If you wish, you can view maps which display the newly allocated land uses in a projection year, without displaying the existing land uses. This is particularly useful for studying the projected land uses changes.

To do view a new development map you can:

1. Make sure that the **Existing Land Uses** check box is not checked; and
2. Click on the check box to the left for the projection year and allocation scenario you wish to view.

This procedure displays the projected land uses for the selected allocation scenario and projection year, without displaying the current land use map. Thus, for example, the map below shows the projected new development map in 2010 for the Conservation – Low Growth – No Controls allocation scenario.



Comparing Allocation Maps

9.7.3 Comparing Allocation Maps

After selecting the **Allocation | Maps** option to display the allocation map form, you can click on the **Open New Map** tool (the right-most tool on the main map form) to open up to four different map forms. This allows you to simultaneously compare:

- The projected land use patterns in different years for a particular suitability scenario; or
- The projected land use patterns for the same (or different) years for different allocation scenarios.

Viewing Allocation Reports

9.7.4 Viewing Allocation Reports

The What if? allocation reports record the projected land uses, residential population and employment for each projection year and for build out for the sub-areas you defined in the **Setup | Define Sub-Areas** option described in Section 4.16.3 Defining Sub-Areas. It also provides information on the change in the quantity of land, the residential population, and the employment for each projection year.

The allocation reports can be viewed by:

1. Selecting the **Allocation** option from the main What if? screen;
2. Selecting the **Report** option;
3. Selecting the desired allocation scenario from the list that is displayed on the screen; and
4. Selecting the sub-area type for the report you'd like to view from the **Allocation Report** form.

The following information is provided in the Allocation Reports:

Viewing Scenario Header

9.7.4.1 Viewing Scenario Header

As shown below, the Allocation report header provides the following information:

- The scenario name;
- The project name;
- The dates on which the scenario was computed and the report was printed;
- The failure message that was displayed when the scenario was computed (if any);
- The location of the scenario files; and
- The type of sub-area included in the report.

What if? Allocation Report

Scenario: Conservation - Low Growth - No Controls
Project Name: Demonstration
Report Printed: Jul 14, 2005 1:27 PM
Scenario Created: Jul 09, 2005 11:03 AM
Failure Message: None
Location: C:\Program Files\What if? Projects\Demonstration\Allocation\Conservation - Low Growth - No Controls
Area(s): Public Units

Central City

LAND USE INFORMATION

Land Use	Acres						Buildout
	2004	2010	2015	2020	2025	2030	
Agriculture	255.77	238.03	170.81	117.42	71.33	70.69	0.00
Conservation	0.00	20.30	63.79	73.71	105.22	105.22	0.00
Industrial	0.00	0.00	24.21	40.75	45.88	45.88	0.00
Local Retail	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Low Density Res.	32.11	32.11	40.47	51.48	64.46	64.46	0.00
Med. Density Res.	0.00	0.00	0.00	3.32	6.79	7.98	0.00
Mixed Use	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Missing Home	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Office	0.00	0.00	0.00	3.65	6.77	6.77	0.00
Public & Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public/Gen. pub.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Retail	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Right of Way	6.72	6.72	6.72	6.72	6.72	6.72	0.00
Undeveloped	60.17	57.61	40.72	27.72	17.85	17.85	0.00
Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00

9.7.4.2 Viewing Land Use Information

Viewing Land Use Information

As shown above, the Land Use Information portion of the allocation report records the projected quantity of land in each sub-area for all projection years. It also records the change in the quantity of land for each land use between one projection year and the next.

9.7.4.3 Viewing Residential Population Information

Viewing Residential Population Information

As shown below, the Population Information portion of the allocation report records the following information for each sub-area in each projection year, and the change for each variable between projection years:

- Total population;
- Group quarters population;
- Number of households;
- Number of housing units;
- Number of vacant housing units;
- Vacancy rate; and
- Average household size.

9.7.4.4 Viewing Employment Information

Viewing Employment Information

As shown below, the Employment Information portion of the allocation report records the projected employment for all employment sectors for each sub-area and the change in the employment for each employment sector between projection years for each sub-area.

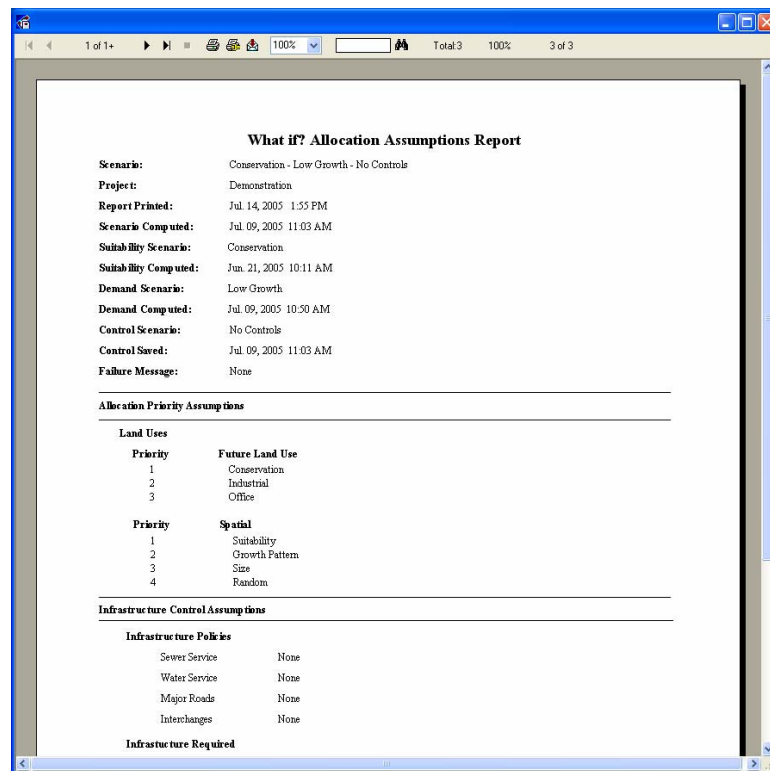
Viewing Allocation Assumptions Reports

9.7.5 Viewing Allocation Assumptions Reports

The assumptions which underlie a land use allocation scenario can be reviewed by viewing the Allocation Assumptions Report (shown below).

The allocation assumption reports can be viewed by:

1. Selecting the **Allocation** option from the main What if? screen;
2. Selecting the **Assumptions** option;
3. Selecting the desired allocation scenario from the list that is displayed on the screen.



The following information is provided on the allocation assumptions report:

- The names of the suitability, demand, and control scenarios incorporated into the scenario and the dates they were last computed;
- The assumed land use and spatial allocation priorities;
- The assumed infrastructure policies;
- The assumed infrastructure requirements;
- The assumed land use control; and

- The assumed growth pattern.

9.7.6 Viewing Projected Land Uses for Subareas

9.7.6.1 Viewing Subarea Land Uses for One Year

9.7.6.2 Viewing Subarea Land Uses for Multiple Years

9.7.7 Viewing Projected Population for Subareas

9.7.7.1 Viewing Subarea Population for One Year

9.7.7.2 Viewing Subarea Population for Multiple Years

9.7.8 Viewing Projected Employment for Subareas

9.7.8.1 Viewing Subarea Population for One Year

9.7.8.2 Viewing Subarea Population for Multiple Years

9.8 Dealing with Insufficient Land

What if? projects future land use patterns by allocating the user-specified land use demands to different locations on the basis of the user-specified suitability assumptions. If the projected demands exceed the available land, What if? will “run out of land” and generate an error message, indicating that the allocation failed.

This is not an error in the program; it is a result of unforeseen inconsistencies in the scenario assumptions. That is, the model runs out of land simply because the projected demand for a land use (or multiple land uses) exceeds the amount of available land which is available for accommodating that demand. Three general strategies can be used to deal with this situation:

1. Increasing the supply of suitable land;
2. Reducing the demand for land; and

3. Modifying allocation controls.

Increasing the Supply of Suitable Land

9.8.1 Increasing the Supply of Suitable Land

The first strategy is to increase the supply of suitable land that is available to accommodate the future demand for that use, as defined in a Suitability scenario. Several things can be done to increase the supply of suitable land.

First, you can review the suitability factor scores on the **Suitability | Define Scenario Suitability Ratings** sheet. Any areas which have suitability ratings of zero (e.g., areas inside the floodplain or with high slopes) will be excluded from development. As a result, you can increase the amount of developable land by changing one of the zero values, if this is appropriate.

You can also increase the supply of suitable land by using the **Suitability | Define Scenario | Conversion** sheet to specify that additional land uses can be converted to a particular land use. For instance, if not enough land is available to satisfy the projected demand for, say, industrial uses, you can specify that other current land uses, say low density residential, can be converted to industrial uses. This will increase the pool of land in which the projected industrial demand can be located.

Decreasing the Demand for Land

9.8.2 Reducing the Demand for Land

A second strategy for dealing with a mismatch between the demand for and supply of suitable land is to reduce the projected land use demands. Selecting a lower set of assumed growth rates will obviously reduce the demand for the available land. However, this can only be done if it is reasonable to assume that the lower growth rates will, in fact, be experienced.

In addition, you can increase the assumed development densities for the residential, regional, and local land uses. Increasing these densities will mean that less land is required to absorb future growth and encourage compactness in the allocation of land. Conversely, using lower densities will require more land, leading to a more dispersed development pattern.

If appropriate, you can also increase the infill percentages on the three Infill sheets. This will reduce the quantity of land to be allocated to currently undeveloped locations by increasing the portion that is assumed to be allocated to vacant lots in currently developed areas.

Modifying Allocation Controls

9.8.3 Modifying Allocation Controls

The final strategy for dealing with an inadequate supply of suitable land modifies the controls that are used to guide the allocation process.

The first strategy that should be tried here is to run the allocation scenario without any infrastructure or land use controls. These controls often constrain the availability of land in less than obvious ways. As a

result, it is useful to insure first that there is sufficient land in the absence of any controls and then add the various controls incrementally to determine how they affect the availability of land—and your ability to successfully complete an allocation scenario.

Another technique that can be used would be to upgrade the order in which a particular land use demand is considered during allocation process. The demand for a use with a higher allocation order will be satisfied before the demand for lower-ordered uses, increasing the likelihood that enough land will be available to satisfy the higher order use.

The availability of land can also be increased by modifying the assumed infrastructure and land use controls. For example, you can select an alternative infrastructure plan which increases the quantity of land provided with required public services. The infrastructure requirements specified on the **Allocation | Infrastructure Controls | Infrastructure Required** sheet can also be modified to be less restrictive.