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simtable.com

User Manual

https://www.simtable.com/support/

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<u>Executive Summary</u>

   The purpose of this manual is to convey detailed instructions for effective use of the Simtable. The Simtable is an educational and interactive simulation tool that is used for emergency response and hazard training. It utilizes projection to overlay aerial imagery and simulation layers onto a physical substrate such as sand to create or mimic world landscapes. The projection technology, paired with AnyHazard Software, allows the user to simulate scenarios of natural disasters such as the spread of wildfire, floods, and other incidents in real time, providing a hands-on way to visualize and plan for emergencies.

   This manual was conceptualized by the combined efforts of California Polytechnic University and the City of San Luis Obispo GIS Department based on the original user manual provided by Simtable. The goal of the updated manual is to provide more detailed instruction for future users to proficiently operate the Simtable and create scenarios for research, education, and training. This manual offers step-by-step instructions, emphasizing practical applications of dynamic disaster simulations. The Simtable is a valuable resource for fire and emergency personnel, educators, researchers, and students, providing an opportunity to tailor scenarios for the purpose of improving preparedness and response to real-world emergencies.

Chapter 1: Setting Up the Simtable and Sand Tray

Components

- Pelican Storage Case:
  - o Head Unit
    - ▪ Projector, Mac Mini, Camera
  - o Head Unit Mount
  - o Wireless USB Keyboard
  - o Laser Pointer
  - o Power Strip
  - o Projector Remote
  - o Power Cables
- Simtable Sand Tray Bag
  - o Sand Tray
  - o Two 4' Plexiglass Planks
  - o Two 6' Plexiglass Planks
- Substrate
  - o Six 5-gallon buckets of BahaPlay Sand
  - o Two 5-gallon buckets of Walnut Shell
- C-stand for Head Unit

Labels on image: Head Unit Mount, Power Strip, Keyboard, Laser Pointer, Head Unit, Projector Remote, Power Cables
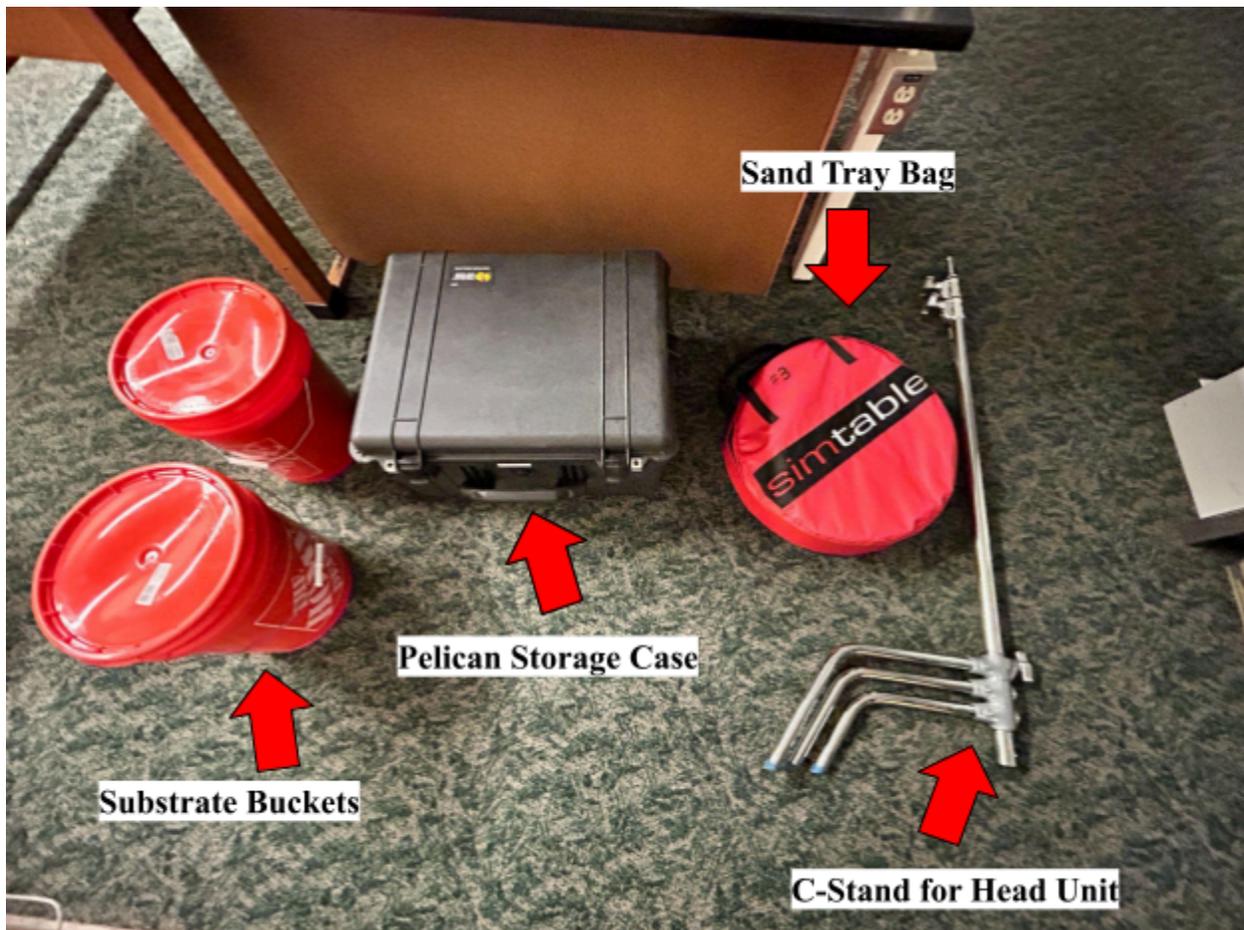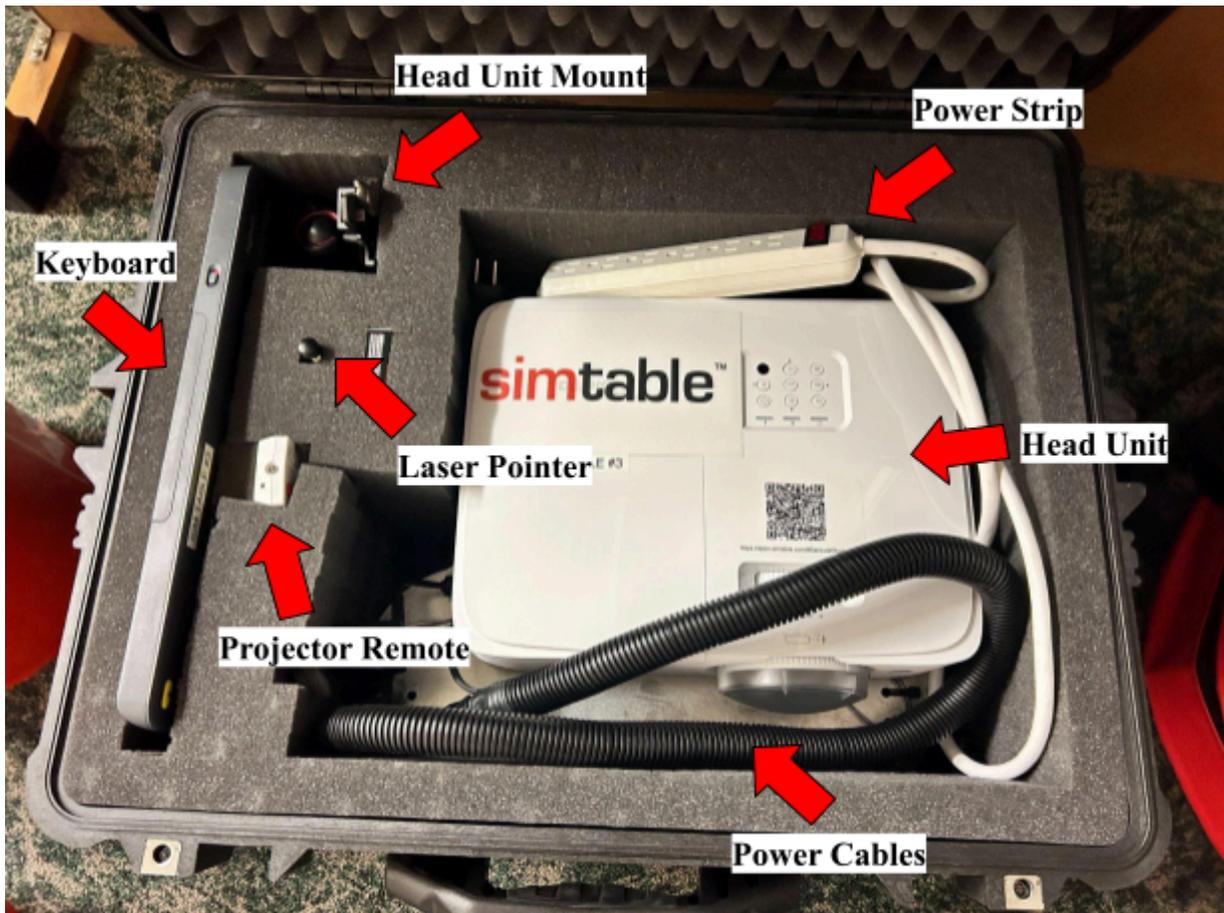
<u>Determining Location for Table Setup</u>

The following are suggestions for selecting a location that will provide the best results when setting up the Simtable:

Suggestions:
- Adjustable lighting or shades
- Easily accessible power outlets
- WiFi connection available or readily accessible ethernet wall port
- Flat table (at least 6' x 4')

Avoid:
- Locations with direct sunlight
- Remote locations without internet or electricity access
- Locations without adequate space to maneuver the Simtable components

Simtable Physical Setup

- Use the following instructions to set up the Simtable **sand tray**:

- Use the following instructions to apply the **substrate**:
    1. Pour the desired substrate (Baha Play Sand or walnut shell) into the tray, and evenly spread with hands or a preferred tool.

NOTE: <u>DO NOT</u> mix the substrates. For example, If you use the play sand, ensure that all buckets of sand used are play sand, not walnut shell.

WARNING: Walnut shell may cause an allergic reaction for some users. Use an alternate substrate, such as the Baha Play Sand, if allergic.

- Use the following instructions to set up the **C-Stand:**
    1. Loosen the knob at the base of the C-stand that secures the legs and rotate them outwards
       NOTE: If done correctly, the legs will "snap" into a set position.
    2. After the legs of the stand are in the appropriate position, tighten the knob at the base of the stand to ensure that the legs will remain in a locked position.
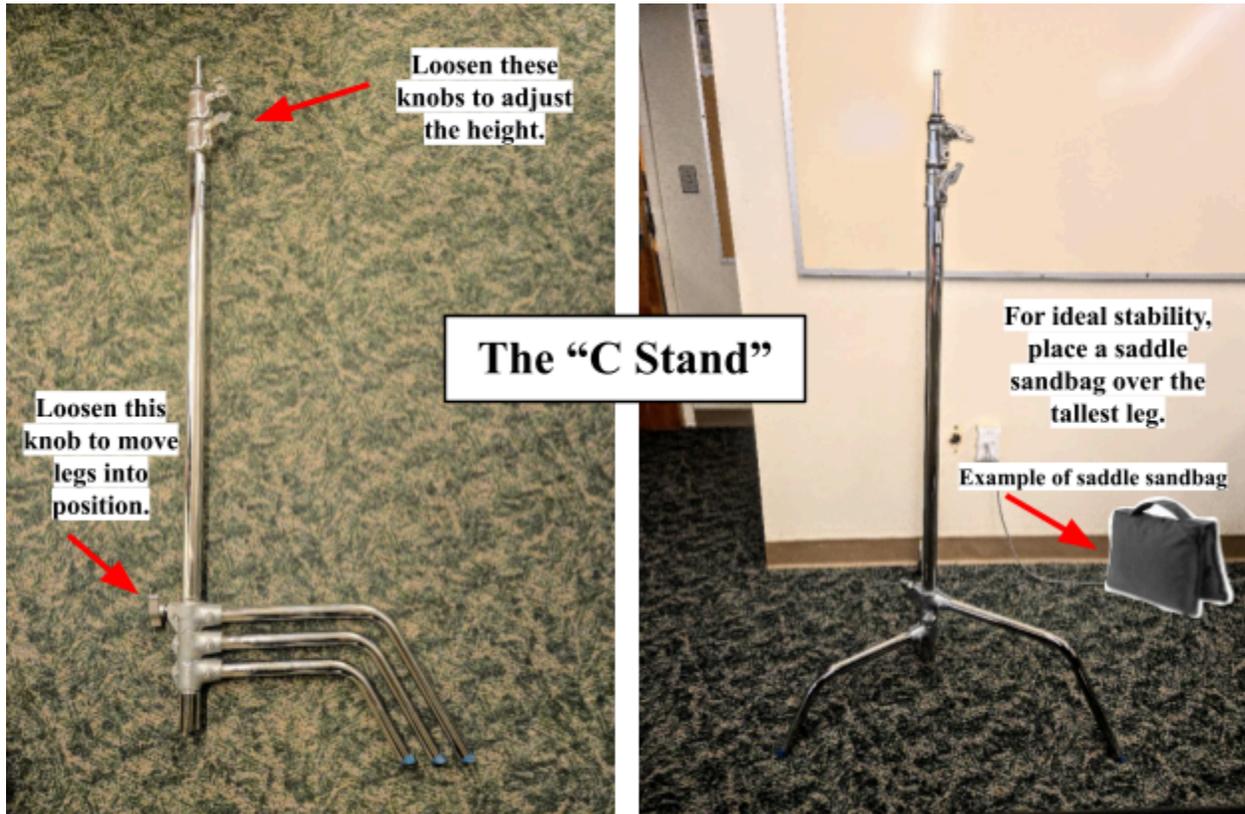
NOTE: For additional guidance, watch 1:06-1:25 of the video linked below:
    https://www.youtube.com/watch?v=4Q4-rKRlarI

    3. Place the stand center with the longest edge of the sand table approximately two feet from the table's edge.

● Use the following instructions to **mount the Head Unit to the C-Stand:**

1. Secure the mount to the top of the C-Stand.

The "Head Unit Mount"

NOTE: When loosened, this knob allows the user to change the angle of the connection. It can be difficult to move. Ensure that the knob is fully loosened (supporting the head unit if it is attached), and apply force if necessary.

2. Tighten knob to secure.

Unlock the Mount

LOCKED

UNLOCKED

4. *Ensure that the mount is UNLOCKED first.

Attach this bracket to the mount on the C-Stand.

The head unit will click into place when secure.

Mount the Head Unit

*Ensure a strong connection has been made BEFORE releasing the head unit in order to avoid dropping the equipment.

Loosen these knobs to adjust the height.

Loosen this knob to adjust the angle of the head unit. Tighten to secure.

Adjustments

- For **additional guidance**, see the video on :

  https://www.youtube.com/watch?v=zqgHSGyMlB8

Power Up Sequence

1. Connect both plugs from the head unit into a power strip or wall outlet.
2. Remove the lens cover on the projector.

3. Power on the projector by pressing the button on the unit OR The button on the remote

A blue light indicates that the projector is ON.

4. Power on the computer component of the head unit.

5. Adjust the focus of the projector using this knob.
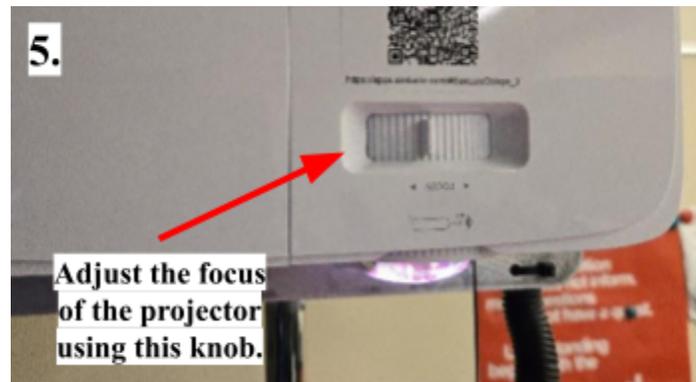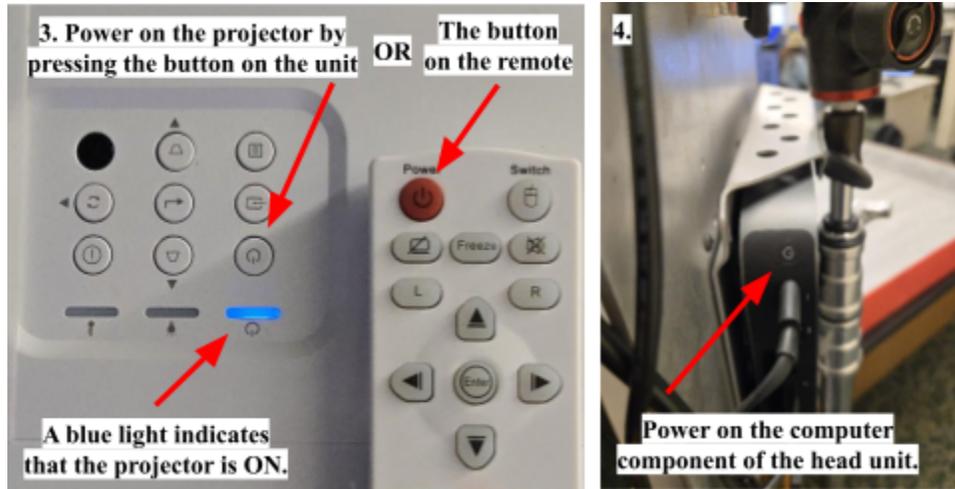
6. If prompted, type in the username and password for the Simtable, using the wireless keyboard.

7. Once the computer is on, ensure that all tabs and applications have been closed.

8. Launch the AnyHazard software from the taskbar at the bottom of the screen.

NOTE: The AnyHazard software used for the Simtable will not launch if any other application is open.

For open tabs, right click on the app icon and select "quit."

An open tab may be indicated by a white dot under the app.

Options
Show Recents
Open

AnyHazard application icon.
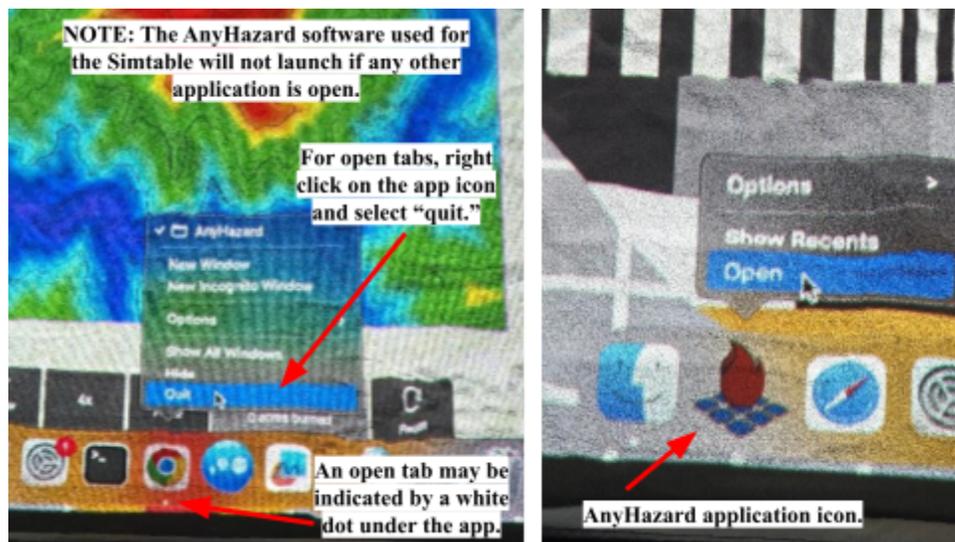
Camera Calibration

Upon startup of the AnyHazard Software, the application may ask you to calibrate the camera. The camera, attached next to the projector on the head unit, is used to scan the work area.

> NOTE: If using the provided laser pointer as an alternative to the wireless keyboard, the camera will detect and relay the command to the computer.

1. Adjust the camera so that the inner (white) rectangle is fully contained within the outer rectangle projected on the sand.
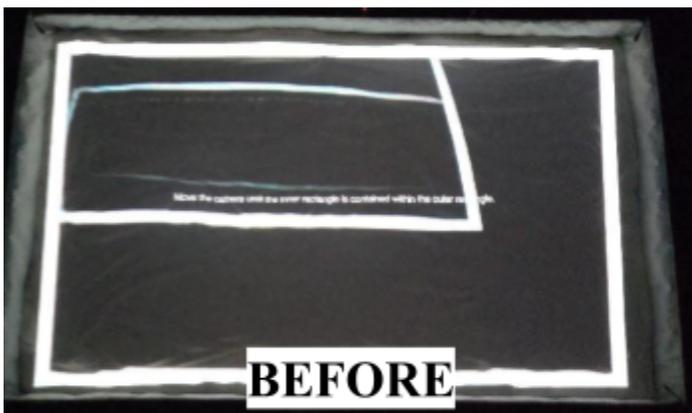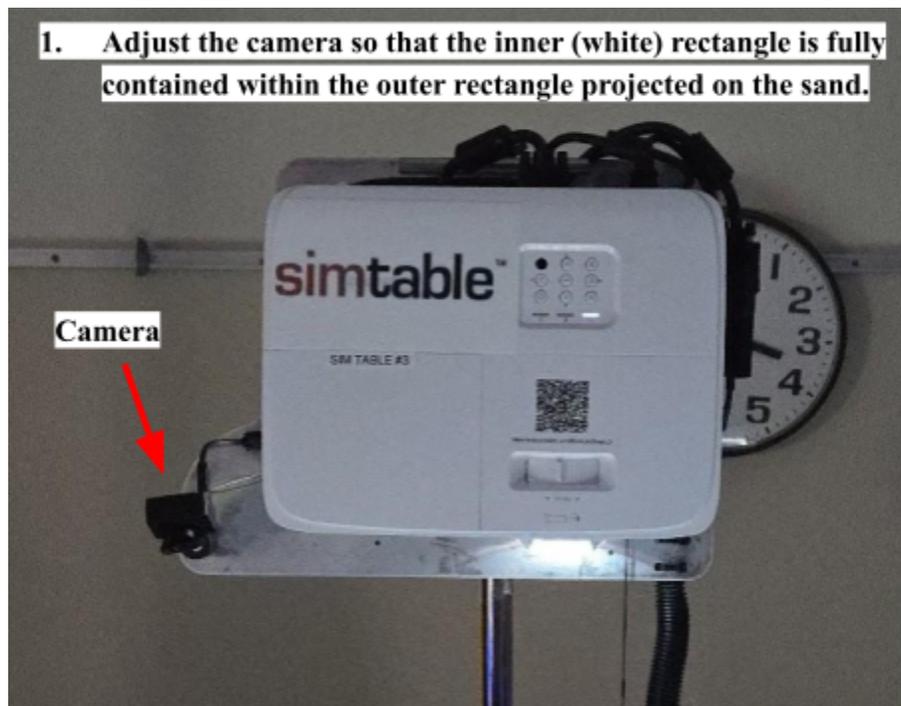
2. Next, press the spacebar on the wireless keyboard.

If the application does not prompt you to calibrate the camera, you can navigate to this manually by pressing Windows+R on the keyboard. Once camera calibration has been completed, you will be able to use the laser pointer. If the table or stand are bumped, the user may use the following tools to check the camera alignment, check for blank spots, or calibrate the camera as needed: **NOTE: these hotkeys only work if the laser pointer is ON**.

Calibrate the Camera: ("c" key) – This will prompt the camera calibration sequence as previously described.

Align the Camera: ("a" key) – This will prompt the camera alignment sequence. If the camera alignment is suitable, and the image is in focus and visible, press the spacebar to exit. If you made some adjustments then exited, press "c" to re-calibrate the camera.

Visualize Blind Spots: ("b" key) – This will allow the user to see any blind spots on the table. When active, the application will show a gray square overlay on the screen, representing the blind spots. If large areas are grayed out, realign the camera and check again. If the view is satisfactory, press "b" again to turn off the blind spots overlay.

Congratulations! You are ready to start using the AnyHazard Software with the Simtable! Keep reading along to gain further insight into the use of the software and the functionality of each tool.

Chapter 2: Disassemblement of the Simtable

Clean Up

Proper disassemblement of the Simtable is crucial to avoid unnecessary damages and promote longevity of the equipment. The following instructions provide guidance on how to successfully dismantle and store the Simtable and its components:

Head Unit and C-Stand:
1. Close the AnyHazard Software by pressing the windows key on the wireless keyboard. Right click and select "quit."
2. Power off the computer and the projector by pressing the power button associated with each device.
3. Disconnect the **two** power cables from the power strip or wall outlet.

NOTE: Do not disconnect any of the smaller cables connecting the computer to the projector.
4. Loosen the knobs on the shaft of the C-Stand and lower the head unit back down to the lowest setting on the stand. Tighten the knobs to lock the height of the C-stand.
5. Carefully disconnect the head unit by unlocking the mechanism on the mount. Place in the carrying case.
6. Remove the mount from the top of the C-stand.
7. Loosen the knob at the bottom of the C-stand and collapse the legs.

8. Ensure that the following components are returned to their designated location in the carrying case:
    a. Head Unit
    b. Head Unit Mount
    c. Wireless USB Keyboard
    d. Laser Pointer
    e. Power Strip
    f. Projector Remote
9. Fasten all latches on the pelican case, ensuring that it is properly closed and secured before carrying.

Sand Table:
1. Remove all substrate from the sand table and store in the 5-gallon buckets.
NOTE: If using sand, do not fill buckets more than halfway. They will be heavy and difficult to move.
2. Once all of the sand is stored, remove the 4-foot plexiglass planks from each of the shorter sides.
3. Place the short plexiglass planks along the long side of the flattened tray and fold each of the longer sides toward the middle.
NOTE: If completed properly, the folded tray should be one plexiglass plank in width.
4. Roll the folded sand tray so that it will fit into the circular carrying case.

_____

Chapter 3: Setting up a Scenario with AnyHazard

What is a Scenario?
A scenario in AnyHazard represents a specific set of conditions and variables used to properly simulate an incident (fire, floods, etc.). Scenarios allow the user to explore how different conditions such as wind and terrain will affect the behavior of these incidents, and better visualize the progression of events, as well as test various response strategies. Setting up a scenario in AnyHazard allows the software to render fuel and topography data to get the best and most accurate real-time simulations of natural disasters.

Creating a Scenario

1. Scenario Setup:
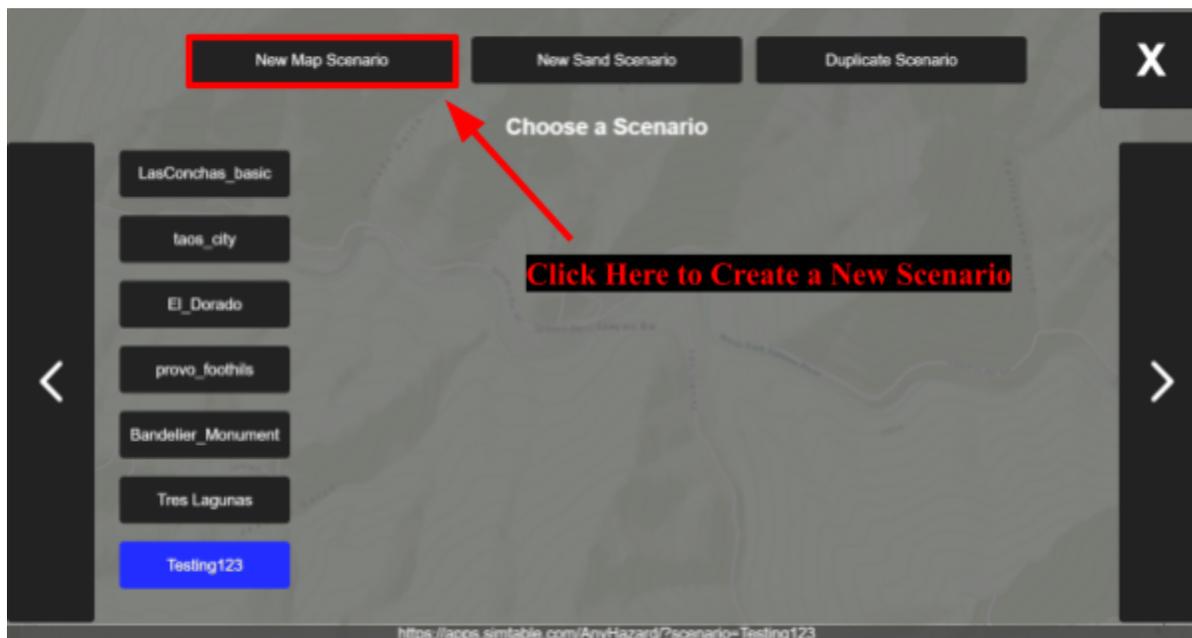
NOTE: There are three Scenario Choices. The following describes each choice:

New Map Scenario - For scenarios with a set location

New Sand Scenario - For users to create a custom landscape
1. After selecting "Scenarios", select "New Sand Scenario"
2. Flatten out the sand as best as possible
3. Press space to allow the projector to adjust
4. Create a mound of sand in the location indicated by the projector
5. Press space once more to project the simulation overlay
6. Enter the scenario name and press "Save"

**Duplicate Scenario** - For users to duplicate an existing scenario
Scenarios can be duplicated when the user wishes to run another simulation (i.e. different point of origin or resources) within the same area, as only one checkpoint can be saved a time for any given scenario.
1. After selecting "Scenarios", select "Duplicate Scenario"
2. Change the scenario name to the new desired name
3. Select whether or not to save the checkpoints on the current scenario
4. Press "Save"

NOTE: Scenarios are only saved locally, meaning they cannot be accessed on another device.

2. Setting Location (in New Map Scenario):

a. Search for a desired location on the search tab in the top right corner.
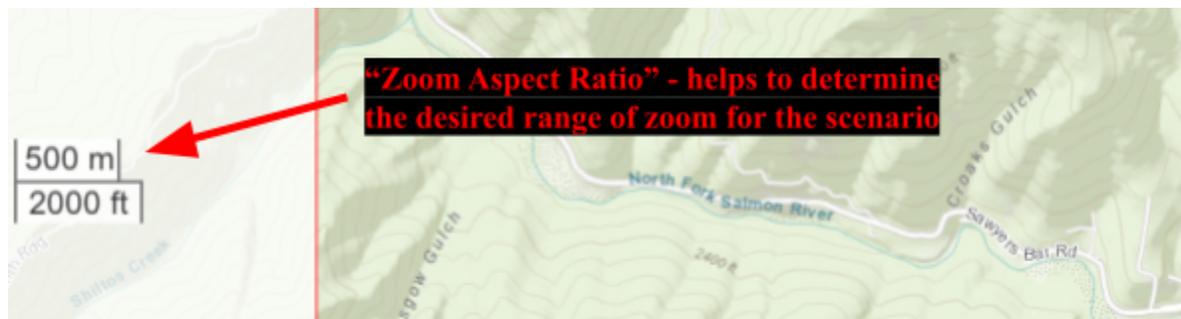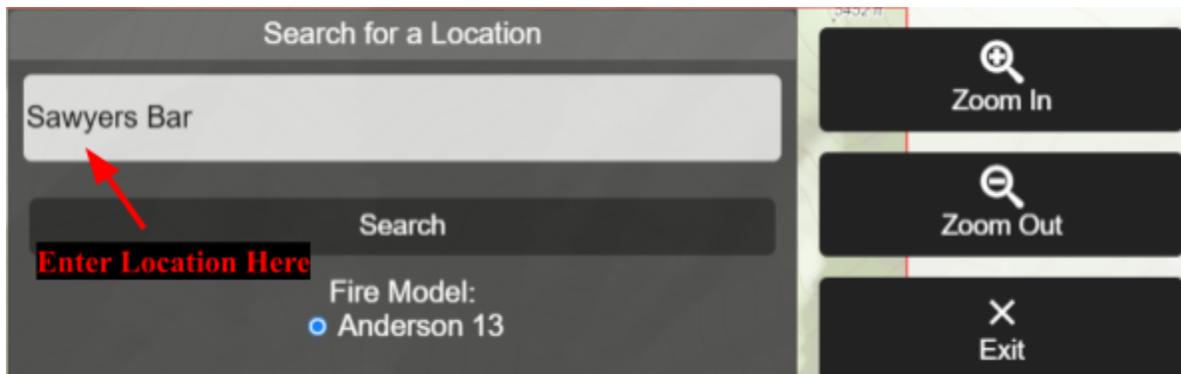
b. Create a title for the scenario and save.

c. After rendering, the scenario should look like this:

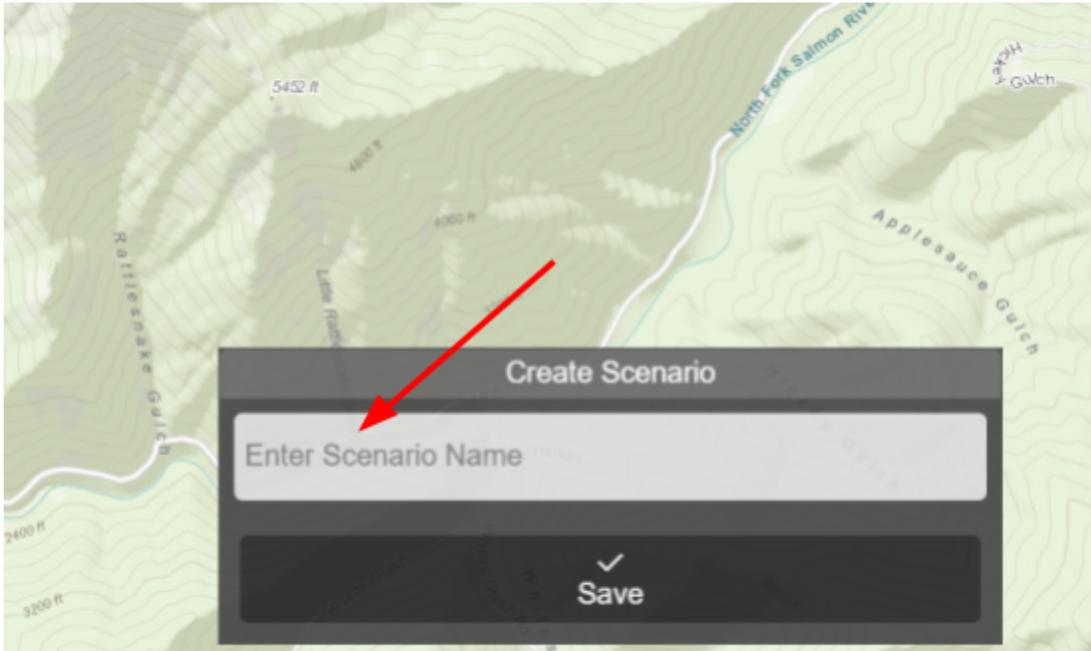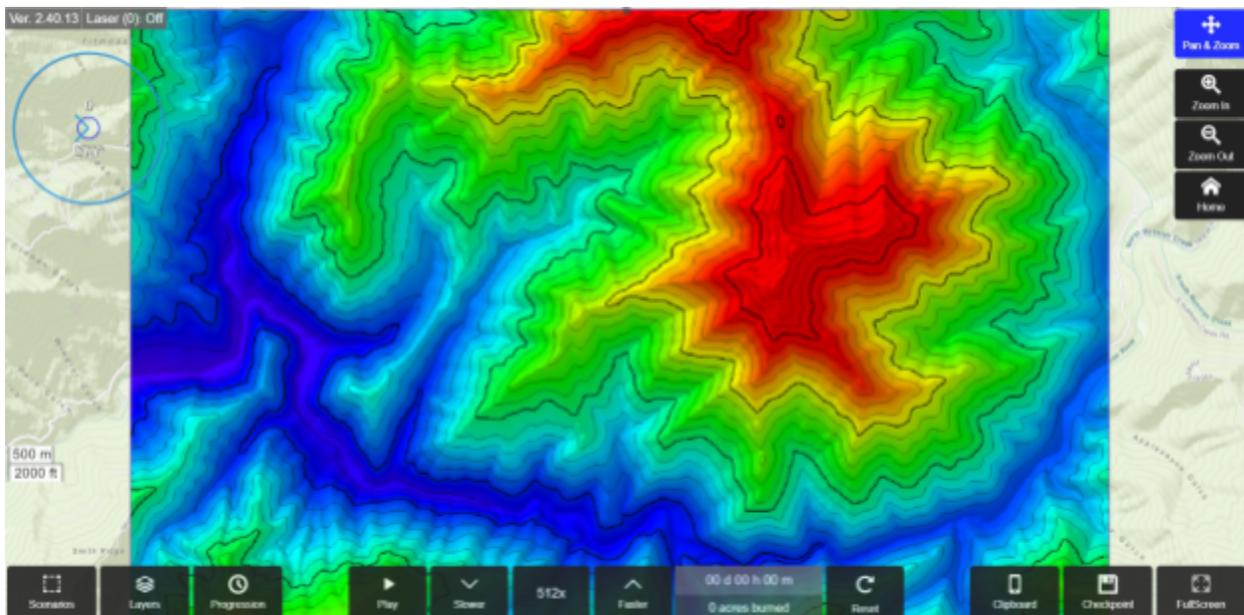**3. Shape the Sand (***Skip if only using the AnyHazard Software Online***)**

    a. Select "Layers" located in the bottom left corner. Under the "Overlays" column, select "Elevation Shading" (if not already applied).
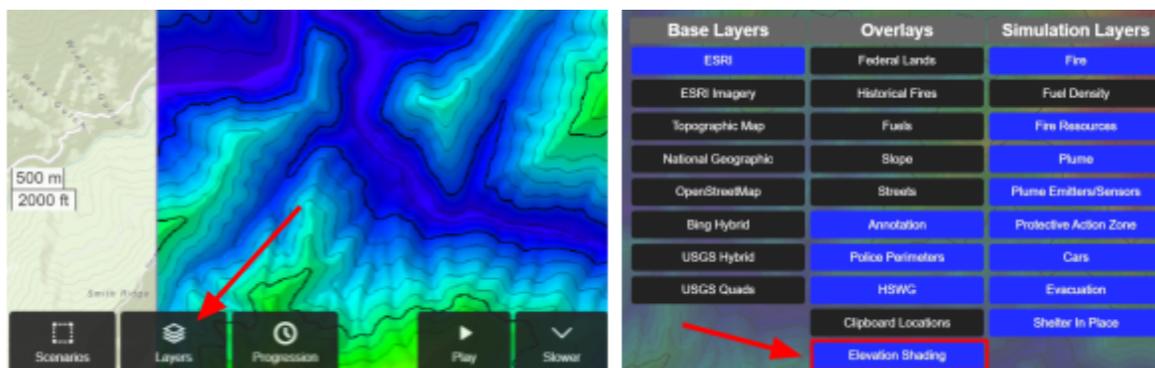
The elevation shading layers follow an RGB scale, where red is the highest elevation relative to the area within your scenario.

Hand-shape the sand to match the RGB elevation grid.

Reset a Scenario

Resetting a scenario reverts **any** changes made to it, returning the setup to its saved baseline (Time = 0). Here, all incidents, tools, and resources, will be reset with the exemption of custom fuel modifications (see Chapter 7).
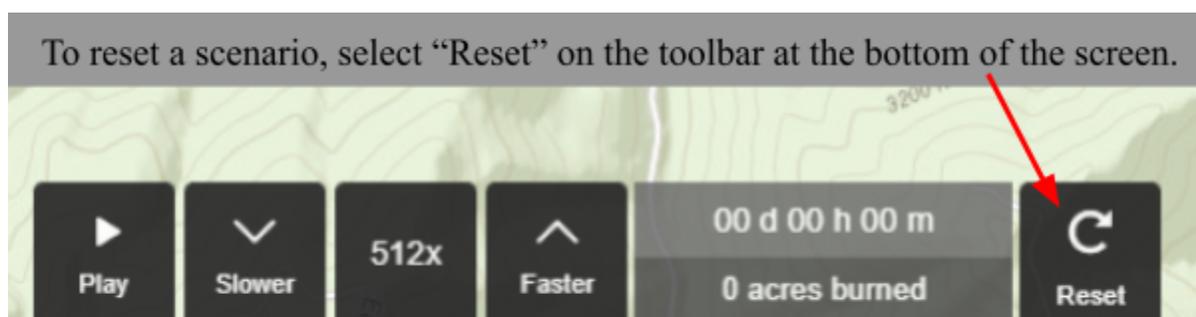
For a more custom reset, there is an option to save a checkpoint. This will allow the user to rewind back to a specific time, essentially saving the resources used up to that specific point in time. If a checkpoint is saved, the "Reset" button will have a different prompt.

If a checkpoint **has not been saved**, selecting the "Reset" button will result in this prompt.

If a checkpoint **has been saved**, selecting the "Reset" button will result in this prompt.

Are you sure you want to reset?

The Fire, Plume, Flood, and Resources will be reset.

C
Reset

×
Cancel

Are you sure you want to reset?

The Fire, Plume, Flood, and Resources will be reset.

C
Reset

✓
Go Back To Checkpoint

×
Cancel

Save a Checkpoint

Checkpoints are used to save work that has been done with resources (except water and cars) in a scenario. Creating a checkpoint will create a custom save option so that when the scenario is reset, it will revert to a point in time with all resources that were present when the checkpoint was set. This is a useful tool while working with the fire resource, as it will allow the user to reset the growth of fire to the size it was when the checkpoint was set.
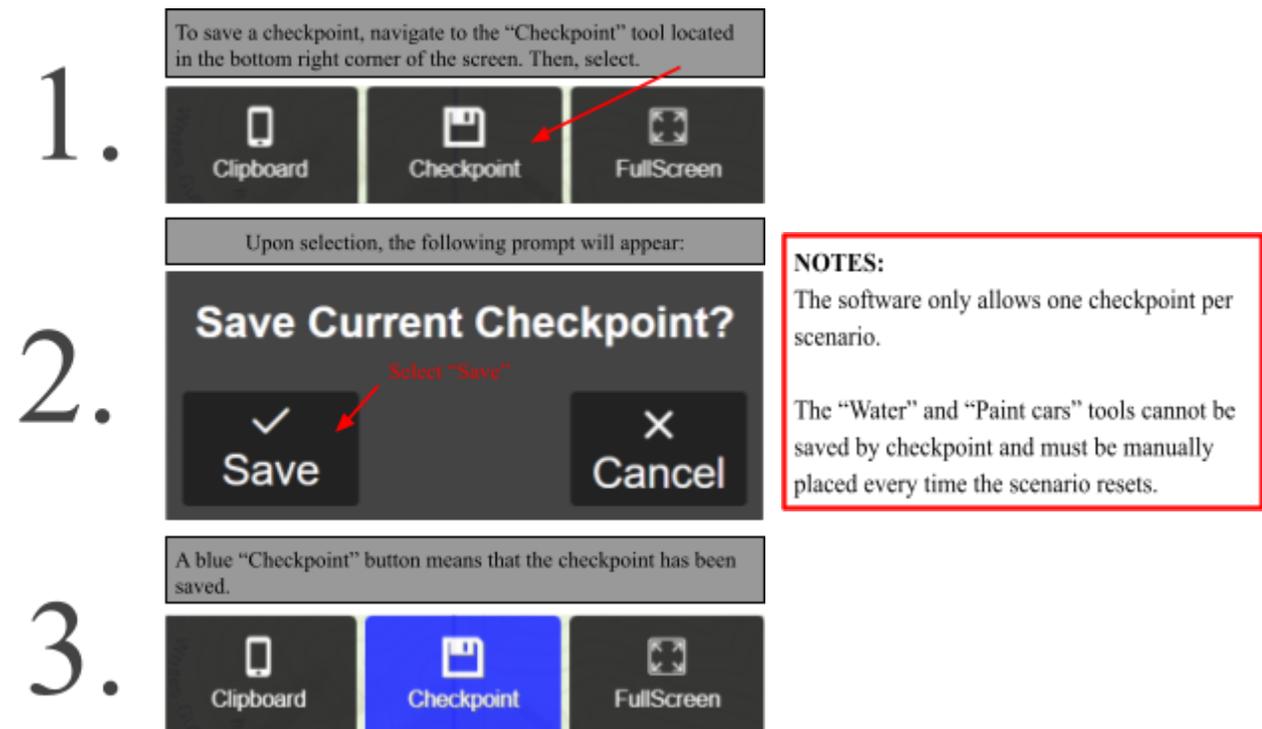
1.

To save a checkpoint, navigate to the "Checkpoint" tool located in the bottom right corner of the screen. Then, select.

Clipboard   Checkpoint   FullScreen

2.

Upon selection, the following prompt will appear:

Save Current Checkpoint?

Select "Save"

✓
Save

×
Cancel

NOTES:
The software only allows one checkpoint per scenario.

The "Water" and "Paint cars" tools cannot be saved by checkpoint and must be manually placed every time the scenario resets.

3.

A blue "Checkpoint" button means that the checkpoint has been saved.

Clipboard   Checkpoint   FullScreen

Time Controls

Once incidents, resources, or tools have been placed, the speed and playback of the simulation can be controlled by the toolbar at the bottom of the screen (see image below for example). The speed/progression of these items can be manipulated from real-time (1x) all the way up to 65,536 times real time (65536x). The current speed, time, and acreage or burn will be displayed at the bottom when the simulation is running within the scenario (see image below).
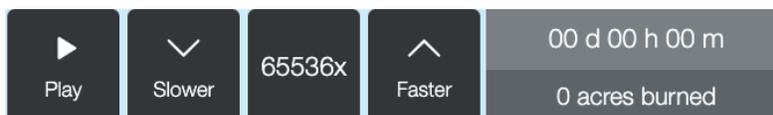
Wind Controls

Chapter 4: Overview of the Tools Bar

At the beginning of a new scenario in AnyHazard, this toolbar will appear to the right of the screen. The blue color highlights the tool that is currently active.

To switch to a new tool, click the tool that is currently active. This will reveal the expanded toolbar with more fire simulation related tools.
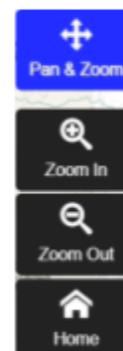
To the right is the expanded toolbar.

Instructions describing the use of each of these tools can be found in Chapters 5-11 in this manual.

Note: The "Info" and "Pan & Zoom" tools are not described in Chapters 5-11. Brief instruction on these tools will be provided in the current chapter.
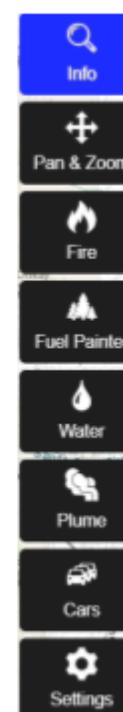
The "Info" tool can be used to identify features within the map, including elevation, geographic coordinates, and fuel type.

This information can be revealed by clicking on any location on the map.
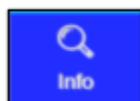
The "Pan & Zoom" tool can be used to navigate around the map area. When active, this tool reveals zoom buttons that can be used to change the scale of the map.

Note: The range of zoom must be set while creating the map scenario (see Chapter 3).

Chapter 5: Layers and Progressions

What are Layers?

In the AnyHazard software, layers represent different types of data that are overlaid on the terrain in a given scenario. They can be toggled on or off from the "Layers" menu, which determines which map and which information is displayed on the table. Layers help users visualize various aspects of a simulation, such as topography, hazards, and other environmental factors. By customizing these layers, users can create scenarios tailored to their needs while enhancing both the quality and realism of their simulations. Many of the layers that users will need are already built into the AnyHazard software, but more can be uploaded to the software if necessary.
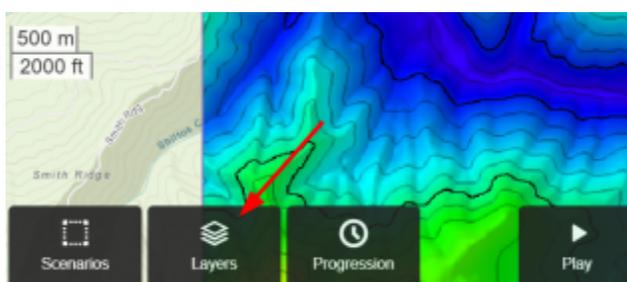
Layer Classifications

There are four categories of layers in the "Layers" menu that can be brought into a scenario on AnyHazard.

"Device Layers" are added through external sources, such as GPS devices, drones, environmental sensors, etc. They display data in the exact same ways as "Overlays" but are custom data files made in a GIS of various formats (KML/KMZ, geojson. WFS, WMS, etc.) that are imported directly from the user's files into the AnyHazard software.

See "**Chapter 9: Customizing Settings**" **for more information on Device layers and settings**.

Progressions

Progressions are a combination of layers and scenarios. They refer to how different layers evolve during the course of the simulation. This is done by overlaying data onto the Simtable using prebuilt scenarios based on historical data of certain disasters (primarily fires) in specific locations.

- Progressions have an additional time bar which allows users to observe the timing of the incident and manipulate the scenario in real time by scrolling.
- When running a progression, the user is still able to control tools and resources within the software, but it will not affect the running progression nor operate at the same time frame.

Chapter 6: Customizing The Fire Tool

What is the Fire Tool?

The "Fire**"** tool is used to display fire simulations. This ranges from placing flames within the scenario to placing firefighting/first responder resources such as engines, crews, air tankers, or even ambulances. This tool is designed to be able to interact with other tools such as fuel painter, the wind dial, cars, and the time manipulation tool. This tool provides users with the ability to model the spread of fires and adjust key parameters such as fuel density and wind, and analyze how different factors can influence fire behavior. This fire tool is very useful in training scenarios and emergency response related planning when it comes to wildfires.
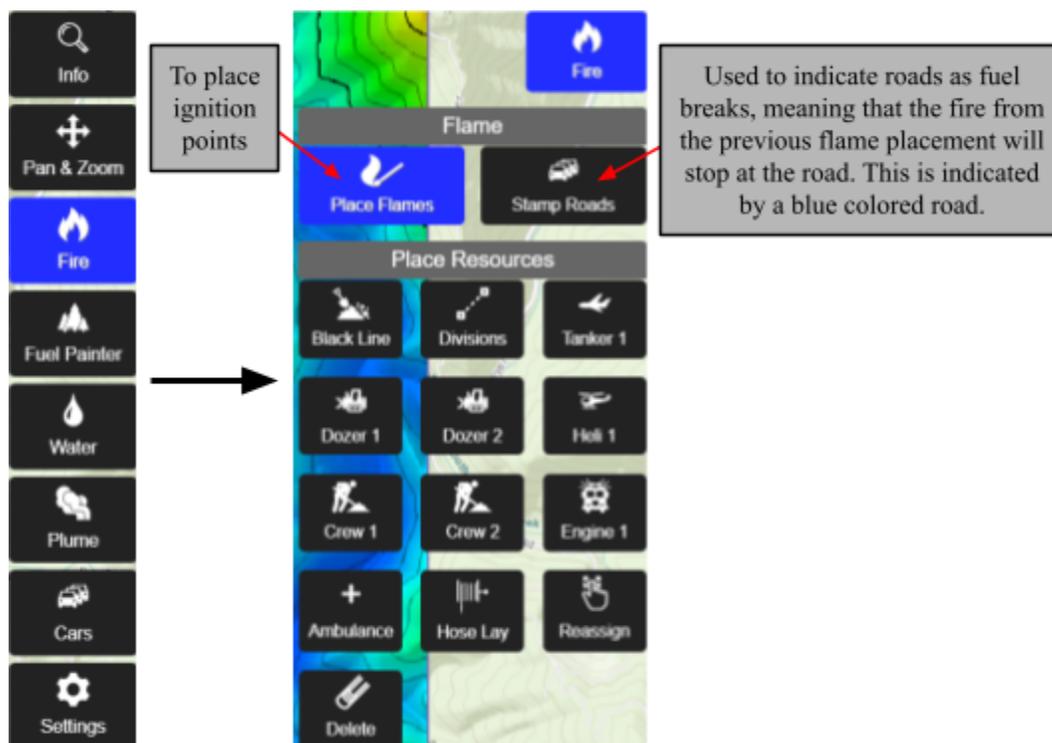
Place Resources Submenu

There are many different tools under the "Place Resources" section of the fire tool tab (See image below for layout of the "Place Resources" tab). These resources are primarily used for fire suppression training but can also be used to show the effectiveness of mitigation treatments such as black lines. Below are all of the resources that can be placed:

1. "**Black Line**" forms a line in which ALL fuels are removed, creating a firebreak across a landscape without having to alter fuel types or density in the fuel painter tool.

- This function has a "HIGH", "MED", and "LOW" line stability indicator
- Lower the line stability is, the more likely that fire will breach the line over time
- This is a very useful tool for designing prescribed fires.

Black Line

2. "**Divisions**" serve as visual indicators of operational division within the scenario/incident. This is good for visualizing divisions and establishing an incident command system

Divisions

3. "**Tanker 1**" functions as a fire suppression air tanker which drops thousands of gallons of water/retardant on a fire per run. The main function of this resource is creating a fuel break with a maximum length of 1000 meters (~3280 feet)
   - Similarly to the "Black Line", this resource also has a line stability of "HIGH", "MED", and "LOW"
   - To simulate refilling the tanker at an airbase, the return interval for this resource can be set at up to 70 minutes


Tanker 1
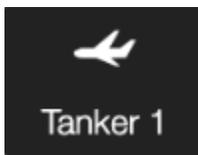
4. "**Dozer 1**" functions as a fire suppression dozer that simulates the creation of a fuel break by a bulldozer. Like in reality, dozers in the AnyHazard software cannot cross bodies of water or steep terrain. One interesting function of the dozer is that if a dozer reaches the fire, it will make a hotline by moving with and adapting to the movement of the fire
   - The production rate is based on NWCG production calculations depending on fuel height and relative slope. Can be used to increase or decrease the rate of production from 0% to 200% production.
   - Similarly to the "Black Line", this resource also has a line stability of "HIGH", "MED", and "LOW"
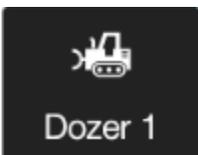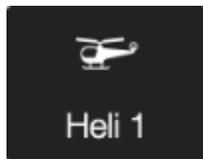

Dozer 1

5. "**Dozer 2**" functions exactly the same as Dozer 1
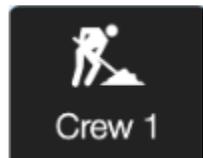   - Production rate can be manipulated from 0% to 200%

- Similarly to the "Black Line", this resource also has a line stability of "HIGH", "MED", and "LOW"


Dozer 2
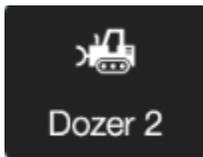
6. "**Heli 1**" functions as a fire suppression helicopter which drops hundreds of gallons of water on a fire per run. The main function of this resource is creating a fuel break to slow/stop the spread of fire.
    - Similarly to the "Black Line", this resource also has a line stability of "HIGH", "MED", and "LOW"
    - To simulate refilling the helicopter at an airbase, the return interval for this resource can be set at up to 70 minutes


Heli 1

7. "**Crew 1**" allows the user to place a hand crew which will follow along a drawn path until they encounter a burned part of the fire. Similarly to the dozer, if a hand crew reaches the fire it will make a hotline by moving with and adapting to the movement of the fire
    - Production rate can be manipulated from 0% to 200%
    - Similarly to the "Black Line", this resource also has a line stability of "HIGH", "MED", and "LOW"

Crew 1

8. "**Crew 2**" functions exactly the same as Crew 1
    - Production rate can be manipulated from 0% to 200%
    - Similarly to the "Black Line", this resource also has a line stability of "HIGH", "MED", and "LOW"

Crew 2
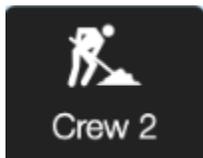
9. "**Engine 1**" allows the deployment of a fire engine, only if there is an existing road network. Start and end points must be defined in order for the engine to construct a path.
    - Production rate can be manipulated from 0% to 200%
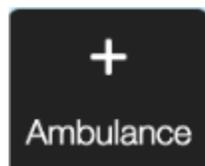   - Similarly to the "Black Line", this resource also has a line stability of "HIGH", "MED", and "LOW"
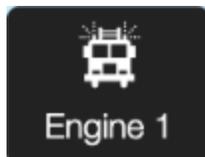
Engine 1

10. "**Ambulance**" functions in a similar way to Engine 1 in that it requires existing road networks to operate, but they do not do anything for fighting fires. They are simply there in an auxiliary fashion

Ambulance

11. "**Hose Lay**" Functions in the same way as Crew 1 but with added efficiency to mimic the speed of a hose lay in the real world.
    - Production rate can be manipulated from 0% to 200%

Hose Lay
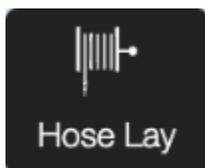
12. "**Reassign**" is used mainly to reassign engines to different areas on an incident
    - Select Reassign tool, then click a resource's location icon or a division name to edit its information. Set to 150ft (1 stick) per deployment.

Reassign

13. "**Delete**" tool will remove the selected resource rather than resetting the whole toolbar with the reset button.

Delete
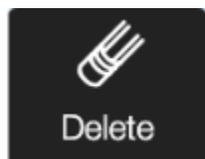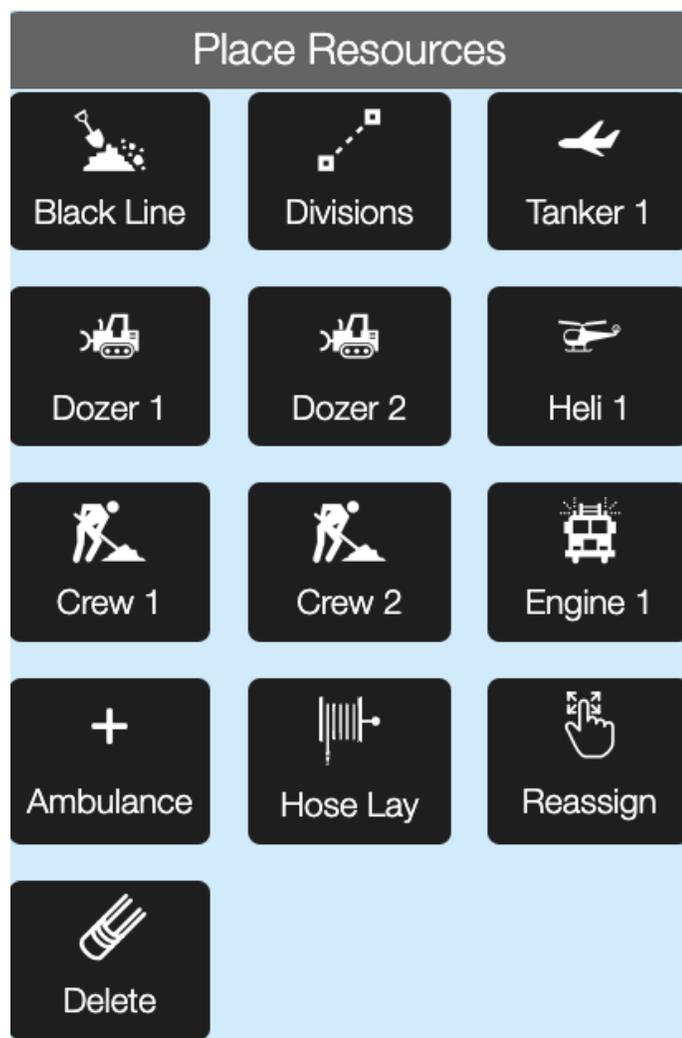
Reset and Close

- The "Reset" button acts in a similar way to the master reset button located at the bottom of anyhazard. However, it differs in the sense that only resources, flames, and stamped roads within the fire tool will be reset and the time of incident will be set to zero. This reset will not reset the other tools or modifications made to fuels.
- The "Close" button will simply minimize the resource window and indicate what resource will be deployed in a small box under the "fire" tab.

Chapters 7: Customizing The Fuel Painter

What is the Fuel Painter Tool?

Fuel Painter is a tool in AnyHazard that allows the user to customize the fuel characteristics of a landscape. This feature is very useful when it comes to simulating disasters like fires, as the ability to alter characteristics that affect fire behavior such as vegetation type, fuel density, and distribution allows for accurate and realistic simulations. Fuel Painter contains two alterable functions: fuel density and fuel type.

Density Submenu

The Fuel Density function alters the concentration of fuels (density) within an area. This will affect the quantity of fuels (regardless of type) that exists within the scenario location. This function is particularly useful if trying to present topics such as: fuel breaks, fire perimeters, fuel treatments, moisture conditions, etc. Fuel density can range anywhere from 0% to 100%. By default, fuel density is set to 100%, so the user may alter the fuel density using the brush in 10% increments.

"Brush Size": There are three different sizes of brushes (small, medium, large) to choose from in order to alter the fuel models shown within the scenario. The brush can be used to overwrite the default data on the map.

   a.   NOTE: after resetting, the data will reappear on the layout

Fuel Type Submenu

Within the Fuel Type tab in the top right corner of the screen, the user will be able to see fuel data imputed by approximately 1-acre squares based on LANDSAT data.

There are 3 submenus under the Fuel Type tab:

2. **"Brush Size"**: much like in the fuel density painter, there are three different sizes of brushes (small, medium, large) to choose from in order to alter the fuel models shown within the scenario. The brush can be used to overwrite the default data on the map..
   a. NOTE: after resetting, the data will reappear on the layout
3. **"Fuel Model"**: The Fuel Model submenu allows users to select from predefined fuel models, and depending on the fuel model chosen, the fire simulations will run differently. There are several options of fuel models to choose from. However, the table's default is set to "Anderson13" where the urban/industrial structures are classified as "non-burnable."
4. **"Fuel Type"**: The Fuel Type submenu provides more advanced options for customizing the specific composition of fuel in a selected area. Here, the user can select what fuel type they would like to draw/paint on the map. The fires running in the simulation will then adapt to these new fuel types as they run across the landscape.
   a. NOTE: Each fuel type has different characteristics of moisture, height, volume to surface area ratio, density, and compaction based on a standardized set of fuel data which will produce different capacities of flames. Great for representing fuel treatments and more current conditions of growth within the area.
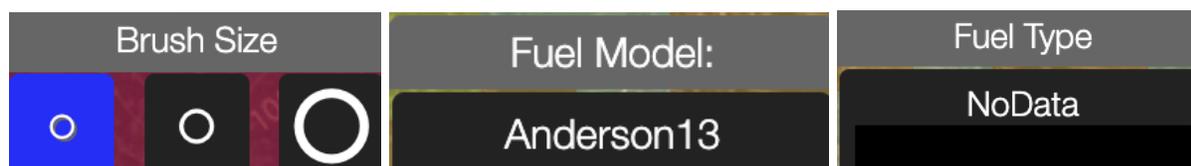
Reset and Close

Similarly to the previous sections, the reset button in fuel painter will undo all previous work done to the fuel within the table, resetting all the fuels back to the original preset fuel model (Anderson13).
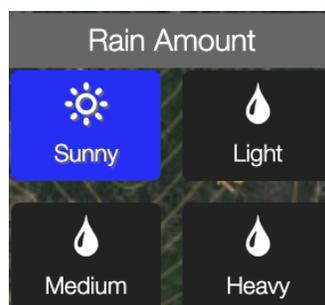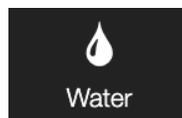- NOTE: Resetting the fuel painter resource will not reset the scenario itself nor any of the other resources such as fire.

Chapter 8: Customizing The Water Tool

What is the Water Tool?

The water tool is used to model the way that water would travel along the landscape, helping to identify where accumulation for flooding would take place.

Paint Options Submenu

Rain Amount

This submenu only affects the "Rain" paint option out of the three options. Within this submenu, there lie three rain modes with the default weather mode being set to sunny (no rain). Once the rain has been dropped (using left click on the map) then the amount of rain can be changed using these modes. Clicking "Sunny" will reduce the rainfall to zero, "light" will change the rainfall to a slight amount, and so on with "medium" and "heavy".

Once rain has started to fall, the scenario will show where water will likely pool up (indicated by darker blues).

When using the rain tool, clicking on the map will generate a set amount of water then simulate its movement across the landscape and will run the scenario with time. The area over which the water is generated is determined by the brush size. The rain tool is affected by the simulation speed setting in that the speed of water movement will be affected by the speed of the playback.
  - NOTE: The Rain tool does not interact with already-existing simulated fires or gas plumes (fires cannot be put out or affected by the rain in the AnyHazard software)

Watershed

When using the watershed tool, clicking on the map will generate a gradient area radiating outwards from the point clicked on. By clicking on a given point, the user can easily delineate the watershed of that area assuming that point is the flowpoint of the watershed (i.e. all water within the highlighted area will flow to the selected point). Within the gradient, darker blue indicates that a greater percentage of the water at that location will flow towards the point.
- NOTE: The watershed tool does not display where water flows past the point selected.
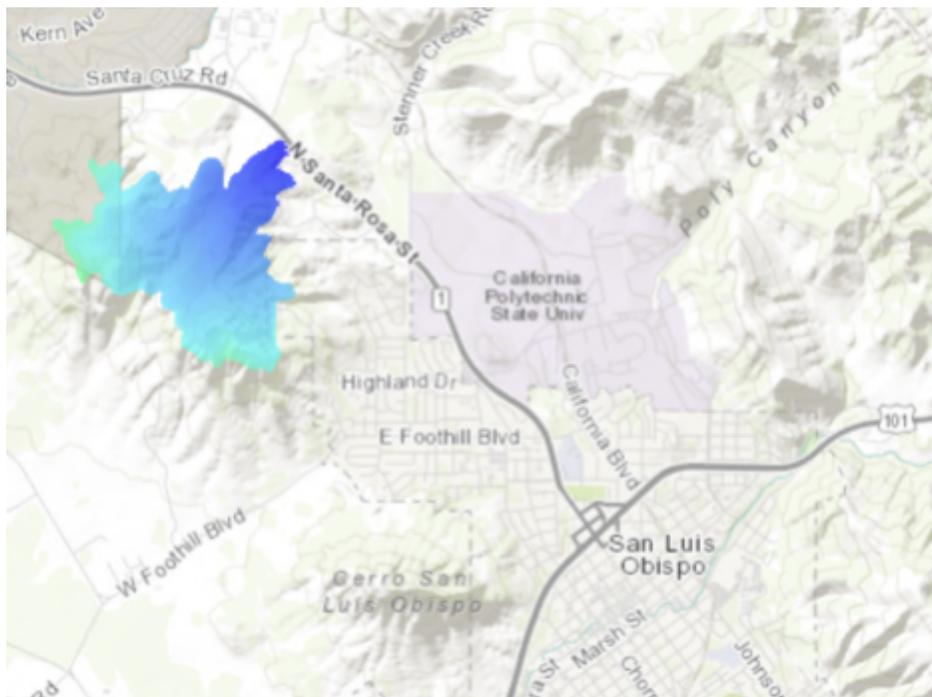
Release

The release tool simulates the release of a 10-meter water column at a given point (to simulate a flood). When using the release tool, clicking on the map generates a gradient that covers the area over which that water column will flow. Darker blue indicates a greater percentage of the 10-meter water column will reach that area.
- NOTE: Similarly to the rain tool, the release tool does not interact with already-existing simulated fires or gas plumes.
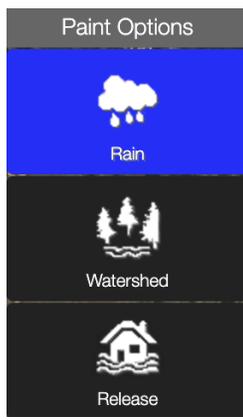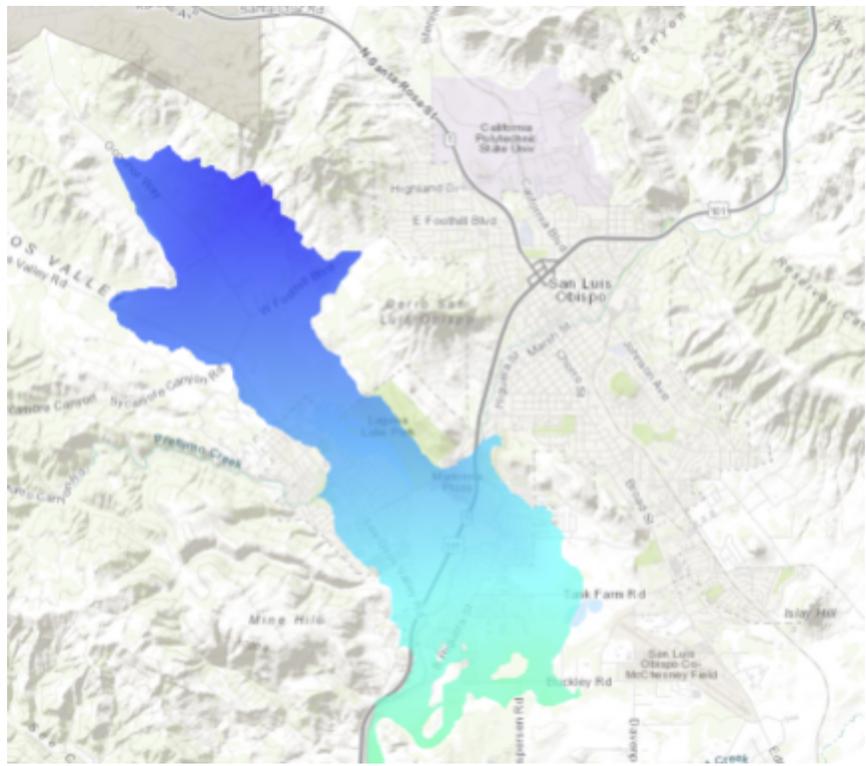
Reset and Close

- The "Reset" button will reset all water tool edits. This will not affect the runtime of the scenario or any other simulation.
- The "Close" button will simply minimize the resource window and indicate what function is being used in a small box under the "water" tab.
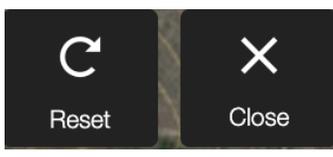
Chapter 9: Customizing The Plume Tool

What is the Plume Tool?

The Plume Tool in AnyHazard demonstrates the dispersion of airborne substances such as smoke, chemicals, hazardous materials in a simulation. It represents how these materials would spread over time and space while factoring in environmental variables such as wind speed/direction and terrain. Plume modeling is very useful in visualizing scenarios involving wildfires, industrial accidents, or hazardous material spills


Plume Model Submenu

The Plume Model button under the Plume tool (pictured below) allows the user to define the characteristics of the plume, such as type of airborne substance. These options include smoke plumes as well as other gas emissions and hazardous material spill emissions (pictured below). To change the plume model, the user must simply click which plume model they would like from the menu and return to the Plume tool main screen.
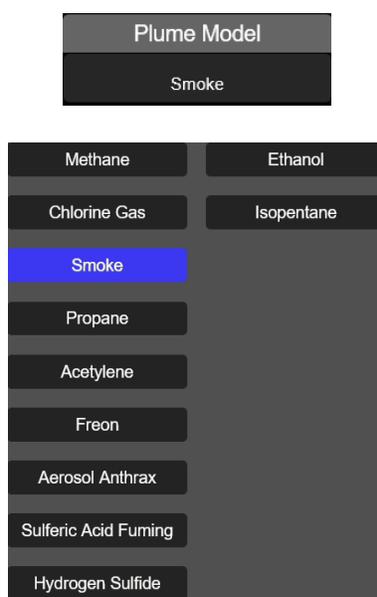
Placing Sensors/Emitters

Add Emitter

This tool can be used to place a point or multiple points on the map which the chosen plume model will start to flow from. This could be the location of a gas leak, ignition point of a fire, or the location of a hazardous material spill that could have detrimental effects if it went

airborne. This, paired with the use of the wind speed/direction dial (see page 12) could help determine the direction and coverage of the gas these incidents emit over time.

- NOTE: The speed at which the emitter travels is affected by the playback speed of the simulation. x1024 is the ideal playback speed to get an accurate visualization of the travel of these airborne substances.

Add Sensor

This tool can be used to place flag icons on the map representing a sensor station.

- NOTE: the flags placed on the screen do not actually sense the emitter, they are simply placeholders. Sensors can be used to sense the emitter by using the clipboard (see "Chapter 10: Utilizing the Clipboard")
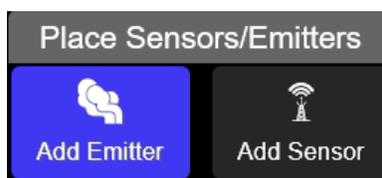
Reset and Close

- The "Reset" button will reset all plume tool edits. Much like fuel painter and water this will not affect the runtime of the scenario or any other simulation.
- The "Close" button will simply minimize the resource window and indicate what function is being used in a small box under the "plume" tab.

Chapter 10: Customizing the Cars Tool

What is the Car Tool?

The Car simulation tool is a great tool to use to get a sense of what evacuation would look like for an incident. AnyHazard has the ability to read in road data from Openstreetmap for a simple traffic model. Using this information, AnyHazard can simulate vehicle movement during evacuation scenarios, offering insight into traffic flow, evacuation timing, and road usage. By integrating scenario data, it allows the user to visualize key factors in evacuation situations such as traffic density, evacuation routes, bottlenecks, and estimated travel time. All of these can help emergency response teams formulate and plan effective and realistic evacuation strategies
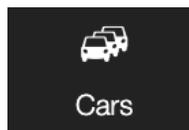
Evacuation Submenu

The Evacuation submenu is where the majority of the Cars tool is operated within. Under this submenu, the user has the option of deploying (painting) cars, drawing evacuation zones, drawing evacuation destinations, and applying templates to the basemap.

Paint Cars
The "Paint Cars" function will allow the user to place several cars with a single click anywhere on the map. The cars will be represented by little black squares that will move around randomly and unsystematically once the scenario starts. This tool is especially useful when trying to figure out where traffic generally flows during an emergency and where congestion would occur on local roads.
-   NOTE: cars can only be painted in areas on the map with roads

Draw Evacuation Area
Below the paint cars button, the user will be able to navigate the "Draw Evacuation Area" button which allows the user to click or use the laser pointer on the map to draw polygons and create designated evacuation areas. The zone polygon will automatically be set to the "Go" evacuation status which will be touched on in "Change Evacuation Status."

Draw Destination
Much like the "Draw Evacuation Area" function, the "Draw Destination" function will allow users to draw in the same fashion and create polygons in which cars placed on the map will travel to. This can be primarily used in trying to determine the best option for safety zone destinations in terms of evacuation. These areas will be indicated by a blue colored fill.

Apply Templates
Just below the "Draw Evacuation Area" button is the "Apply Templates" button. This will allow users, similarly to the layer function, to upload their own KML/GEOJSON files as

evacuation templates for evacuation areas and safety zones. Once the template has been uploaded, the user will be able to open a menu much like in "Layers", and generate the template onto the map.

- NOTE: loading polygons into the AnyHazard Software will automatically classify all evacuation zones as "inactive", and that can be changed by using the "Change Evacuation Status" submenu

Remove All Evacuation Polygons

Lastly, the "Remove All Evacuation Polygons" will erase all the polygons drawn on the map without getting rid of the cars that have been placed on the map.
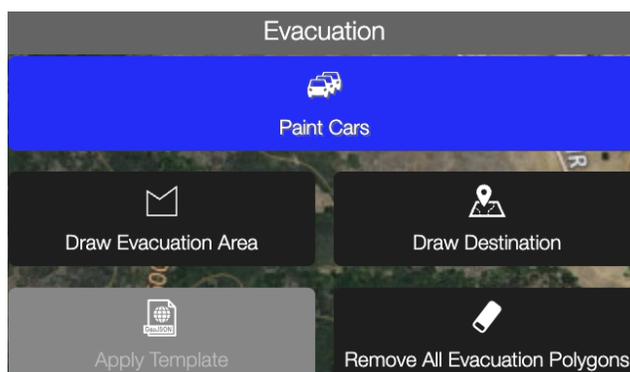
Change Evacuation Status

The "Change Evacuation Status" function serves to further assist the evacuation functions listed before when running a scenario involving cars specifically. It is useful to have multiple zones of varying awareness when it comes to evacuation zones, as incidents like fires are unpredictable, and it is good to know which areas will be in danger should an incident continue to progress.

Inactive

This status indicates that no evacuation is currently planned or active for the select area or route. Cars will move along as if nothing is happening. These areas will be indicated by a grey fill

Ready

The "Ready" status indicates that evacuation may soon be necessary. It signifies increased awareness among residents, with little to no change in traffic patterns. These areas will be indicated by a green fill

- NOTE: cars will continue to act as they do in the "Inactive" Zones. They will not move toward the drawn "Destination" unless they are in a "Go" Zone.

Set

The "Set" status indicates that evacuation is imminent. It signifies maximum awareness among residents, and preparedness in the event that the evacuation mandate is activated. These areas will be indicated by a yellow fill

- NOTE: cars will continue to act as they do in the "Inactive" Zones. They will not move toward the drawn "Destination" unless they are in a "Go" Zone.

Go

The "Go" status indicates an active evacuation. Vehicles move along designated routes, with traffic patterns showing the impacts of the evacuation order. This status is important for visualizing bottlenecks, travel times, and congestion under high-pressure evacuations. These areas will be indicated by a red fill

Reset and Close.

- The reset button will remove cars from the simulation/map while keeping the evacuation areas and destinations that have been drawn on the map.
- The "Close" button will simply minimize the resource window and indicate what function is being used in a small box under the "plume" tab.
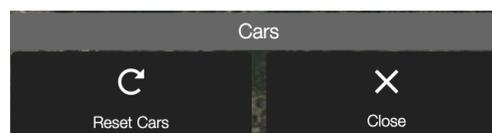
# Chapter 11: Customizing Settings

Why Alter the Settings?

The Settings Menu in AnyHazard is a tool that can be used for customizing and refining a user's scenario. It provides access to various tabs that allow the user to manage important aspects of their simulation. By being able to manage these settings, the user can create specific and realistic simulations that meet their needs. This does not mean that it is required to change the settings, but it is a useful tool to have in case the user needs to. The tabs included in the Settings menu are: Scenarios, Progressions, Layers, Advanced.
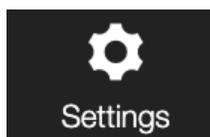
Scenarios Tab

The scenarios tab allows the user to search, "favorite", or delete certain scenarios that have been made or come pre-made with the Simtable. The search bar will allow users to search for scenarios by name if there are too many to choose from on the drop down list. Favoriting by clicking on the checkbox to the left of a scenario name will indicate whether that scenario will show up in the scenario menu when opened (see page 10). Unfavoriting a scenario hides the scenario on the menu without deleting it from the table's memory.
- NOTE: The delete function will remove the scenario and all its assets from the table's memory, so exercise caution when deleting versus unfavoriting a scenario.

Progressions Tab

"Progressions" is very similar in layout and function to the "Scenarios" tab. Here users are able to favorite or unfavorite the pre-made progressions stored within the memory of the table. New progressions can also be added to the table from a select list of pre-made progressions made by Simtable Professionals.

- NOTE: New progressions cannot be made by users. However the user may be able to contact Simtable support with interest in adding a new progression to the menu.

| Scenarios | Progressions | Layers | Advanced |

My Progressions

Add Progression

FAVORITE	PROGRESSION	Associated Layers
☑	Black Forest CO	
☑	Jaroso NM	
☑	Las Conchas NM	
☑	Northside TX	
☑	Rockhouse TX	
☑	Rough CA	
☑	Silver Fire NM	
☑	Valley CA	
☑	Yarnell Hill AZ	

Save All

Layers Tab

The "Layers" tab is likely to be the most different tab between Simtables. This is where users can upload their own files from the GIS application into the AnyHazard software. In this tab, there are many ways to add a layer in various different formats and capabilities:

KML/GEOJSON: Allows users to upload a GIS feature layer in the form of a KML/KMZ or in a GEOJSON format.
1. To add a KML/GEOJSON layer, click the "upload" button
2. Select the desired file from the file explorer
3. Once uploaded, the user may preview the layer on the map above the subtabs by toggling the visibility by clicking on the eye icon.
   a. Custom layers can also be deleted via the "delete" column indicated by the trash icons.
4. Click the "Save All" button either at the top right or bottom right of the page before exiting back to the main AnyHazard software.

WMS: Allows for a user to input a Web Map Service link to generate new map layers/images to overlay as a layer.
1. Enter the desired name for the WMS layer
2. Paste the WMS url into the "url" box
3. Click "add/update"
4. Once uploaded, the user may preview the layer on the map above the subtabs by toggling the visibility by clicking on the eye icon.
   a. Custom layers can also be deleted via the "delete" column indicated by the trash icons.

5. Click the "Save All" button either at the top right or bottom right of the page before exiting back to the main AnyHazard software.

WFS: Allows for a user to input a Web Feature Service link to directly return features to overlay as layers.
1. Paste the WFS url into the "url" box
   a. The layers should appear after clicking the "Query Layers" as a list underneath the box
2. Click "add" to add the desired layers to the table
3. Once uploaded, the user may preview the layer on the map above the subtabs by toggling the visibility by clicking on the eye icon.
   a. Custom layers can also be deleted via the "delete" column indicated by the trash icons.
4. Click the "Save All" button either at the top right or bottom right of the page before exiting back to the main AnyHazard software.

XYZ: Allows for a user to import a "Slippy Map" tile into the AnyHazard software as a feature overlay.
1. Enter the desired name for the XYZ layer
2. Input the Slippy Map link into the "url" box
3. Click "add/update"
4. Once uploaded, the user may preview the layer on the map above the subtabs by toggling the visibility by clicking on the eye icon.
   a. Custom layers can also be deleted via the "delete" column indicated by the trash icons.
5. Click the "Save All" button either at the top right or bottom right of the page before exiting back to the main AnyHazard software.

Raster Layers: Allows users to upload a GIS feature layer in the form of raw raster data format.
1. To add a raster layer, click the "upload" button
2. Select the desired file from the file explorer
3. Once uploaded, the user may preview the layer on the map above the subtabs by toggling the visibility by clicking on the eye icon.
   a. Custom layers can also be deleted via the "delete" column indicated by the trash icons.
4. Click the "Save All" button either at the top right or bottom right of the page before exiting back to the main AnyHazard software.

Evacuation Templates: Allows user to upload a GIS feature layer in the form of a KML/KMZ or in a GEOJSON format which will then appear on the map as the evacuation zones/areas, similarly to the to the manually drawn zones in the "car" tool (see page 25).

1. To add an evacuation template, click the "upload" button
2. Select the desired file from the file explorer
3. Once uploaded, the user may preview the layer on the map above the subtabs by toggling the visibility by clicking on the eye icon.
   a. Custom layers can also be deleted via the "delete" column indicated by the trash icons.
4. Click the "Save All" button either at the top right or bottom right of the page before exiting back to the main AnyHazard software.

All: This tab will preview all the custom uploaded layers from all of the previous file tabs. It serves to be a quick access to any of the layers in which can be favorited, unfavorited, previewed on the map ("visibility column"), and deleted.
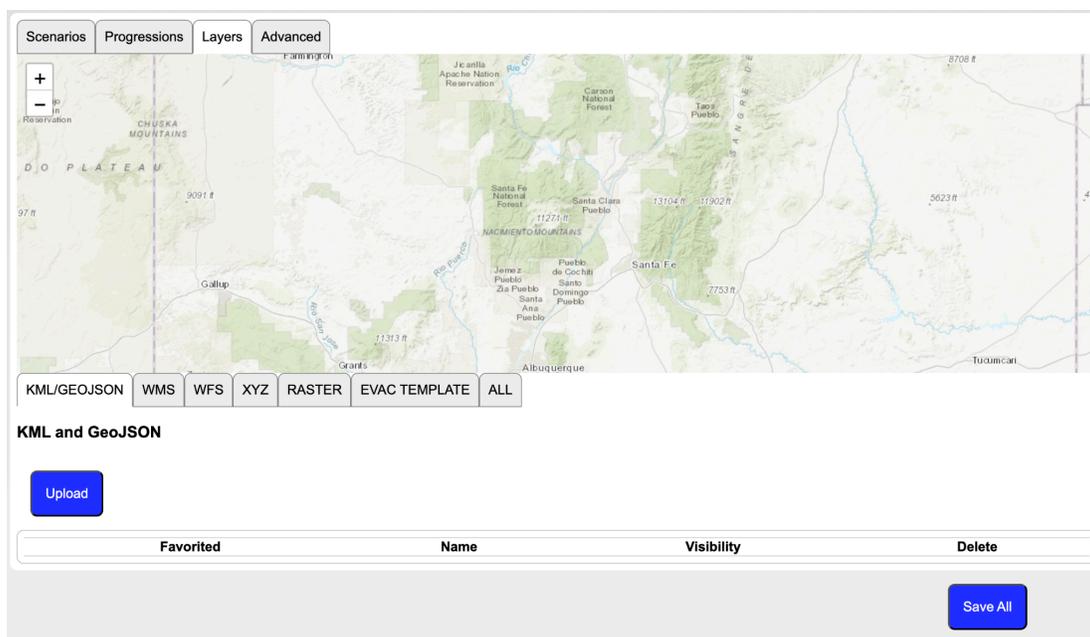
Advanced Tab

The "advanced" tab allows the user to adjust hardware settings such as the projector or camera on the physical Simtable Unit. There is also an area with a button saying "clear" to clear the service worker cache if the user so desires.
- NOTE: These settings almost never need to be changed.

See Below for an image of the Advanced Tab

Scenarios | Progressions | Layers | Advanced

Metric System: ☐

Projector/Camera

- 🔘 Other Projector
- ⚪ White Optima TX610
- ⚪ Black Optima TX610
- ⚪ Black Vivetek
- ⚪ Optima W319ST Py3
- ⚪ White Optoma w305st with 2.5mm lens
- ⚪ Region 5 Giant Table
- ⚪ Black Optima w Firefly S USB3.0
- ⚪ USB3 Aravis Firelfly
- ⚪ Custom
- ⚪ Elgato Facecam
- ⚪ USB WebCam

Bright Shutter:
Dark Shutter (for laser): 10
Bright Trigger: 0.0001
Dark Trigger: 0.007
Bright Gain: 6
Dark Gain: 1
Photo Delay: 100
Shutter Search Upper Limit: 320
Shutter Search Increment: 10
Shutter Bright Pixel Threshold: 400
Laser Bright Pixel Threshold: 100

Open Camera View

Clear Service Worker Cache | **CLEAR** | ⚠️

Device ID: 0f33aebb86c3cd

Save All

Chapter 12: Utilizing Clipboard

What is Clipboard?

Clipboard is a streamlined, web-based interface that is designed to connect with and enhance collaboration with the Simtable. The tool allows the user to execute basic functions of the AnyHazard software from their mobile device. By generating a unique web link and QR code for each scenario, Clipboard enables quick access to information without needing to operate all of the AnyHazard Software. This tool is extremely useful for sharing scenarios such as live exercises or training presentations.
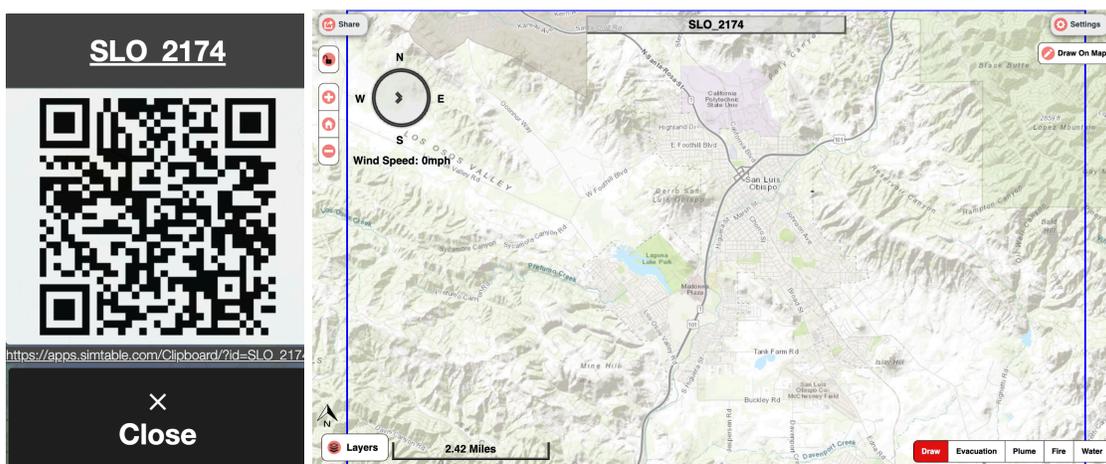
How is Clipboard Different from AnyHazard?

The AnyHazard Software and Clipboard serve different yet somewhat similar roles in the operation of the Simtable. AnyHazard is a hardy simulation program designed for more in-depth scenario creation. It offers tools to customize, analyze, and in ways predict complex incidents, while allowing users to easily change its settings and integrate their own GIS data easily.

On the other hand, Clipboard is a simplified, tablet-based interface used for live interaction and scenario playback during planning or training/educational sessions. While AnyHazard enables intricate adjustments and scenario development, the Clipboard focuses on ease of use, providing quick access to basic controls and allowing real-time collaboration through web links or QR codes. Together, they balance each other out, taking the complexity of AnyHazard and the usability of Clipboard to address both planning and execution phases effectively.

Clipboard Tools and How they Differ from AnyHazard

Layers

When the Layers Menu is opened, the user will be presented with two tabs: Base Map and Overlays. Much like with the AnyHazard Software, this tab changes the base map displayed on the Simtable. They provide the fundamental mapping data on which the other layers are

overlaid. There are, however, less basemaps in Clipboard than there are in AnyHazard. Overlays are specific layers associated with the scenario, and can be toggled on and off. The list of overlays is very long and contains simulation resources, simulation progressions, user-defined zones/perimeters/markers, and GIS layers loaded into the scenario.

≋ Layers ✚ Base Map ✚ Overlays

Draw

Unlike the AnyHazard Software, the user can draw on the maps in the clipboard. At the bottom right of the Clipboard screen, there is a button labeled "Draw" After clicking on that, another button will appear at the top right of the screen labeled "Draw on Map." Here, the user can draw points, lines, and polygons on their Clipboard map.
- Additionally, styles of the drawings such as point shape, line width, and color can be manipulated

Draw ✏ Draw On Map

Evacuation

The Evacuation tool in Clipboard offers the user several advanced features that enhance the realism and effectiveness of the evacuation on the Simtable. Unlike AnyHazard, Clipboard allows the user to set the congestion setting (amount of traffic) in a given area. Additionally, users can define different perimeters (Hot Zone, Inner, Outer) to mark the boundaries of evacuation zones and incidents like a hazardous materials spill. Finally, along with the tools included in AnyHazard, Clipboard has a few others such as roadblock and shelter areas. This would be a useful tool to use to set up evacuation destinations with shelter areas for evacuees and how roadblocks may affect the flow of traffic in the event of an evacuation.

Evacuation ✚ Evacuation ✚ Perimeters

Plume

There are three stark differences between the Plume tool on AnyHazard and the Plume tool in Clipboard. First and foremost, as previously mentioned, the flags representing sensors placed on the screen do not actually sense the emitter, they are simply placeholders (page 22). In Clipboard, however, they can sense airborne substances and report them in a percentage. Additionally, there are some additional emergency response resources added to the Plume tool that can be utilized in Clipboard that aren't in AnyHazard. Both protective action zones and evacuation routes can easily be drawn into the map:
- When placing a protective action zone, all the user needs to do is click where they want to protect and select a radius and distance from which they want to protect that point.
- When adding evacuation routes, simply click the start and end points, and within Clipboard, the quickest route between those two points (on digitized roads) will appear

Fire

Unlike in the AnyHazard Software, it is not possible to change the fuel models of scenarios in Clipboard. Though they cannot be changed, spread rate charts for both Anderson 13 (American) and Prometheus (Canadian) in the North American model can be viewed for each type of fuel in the model (for educational purposes). The Australian model does not have just one set model, but includes a variety of parameters which can be altered by the user such as rainfall, time since last rain, fuel load and range, and Keetch-Byram Drought Index (KBDI). See image below for example of Clipboard's Australian fuel model customizer.

Water

The Water tool in Clipboard is nearly identical to the water tool in the AnyHazard Software. There is one small difference, however. When it comes to the release function in the Paint Options submenu, the user can control how much water they want to release. The release tool in the AnyHazard software simulates the release of a 10-meter water column at a given point (see page 22), and in Clipboard it can be set anywhere from 1ft. to 163ft.