



Quick User Guide

Version 1.5.15.2026



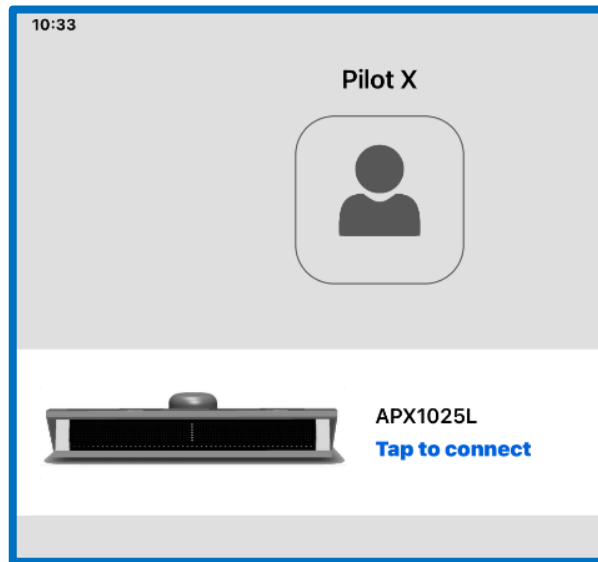
insero

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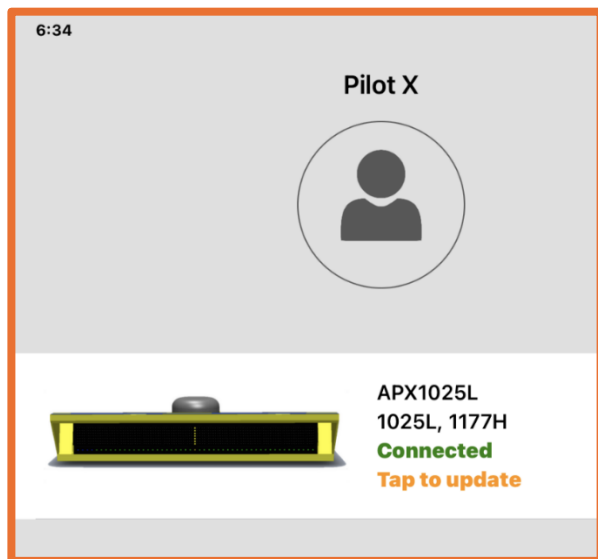
Display Overview

Home Screen *Connection*



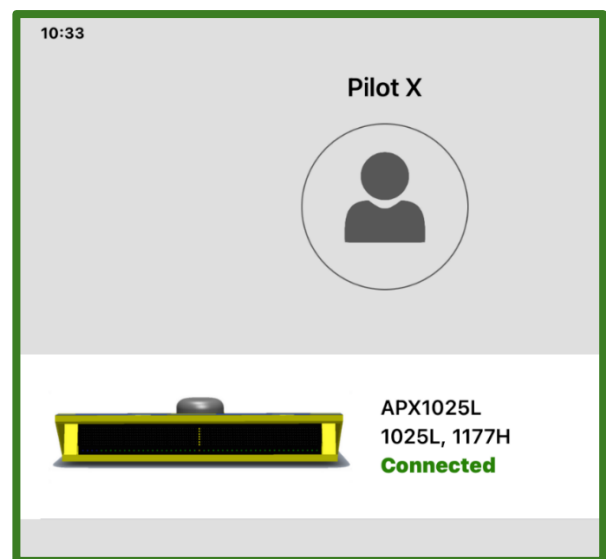
TAP TO CONNECT

Power up hub and lightbar prior to touching “Tap to Connect” will then display “**CONNECTED**”.



UPDATE

AgPilotX's Hub and Lightbar firmware update is completed “over the air” or “OTA”, this is done primarily through WiFi or cell service of the iPad.

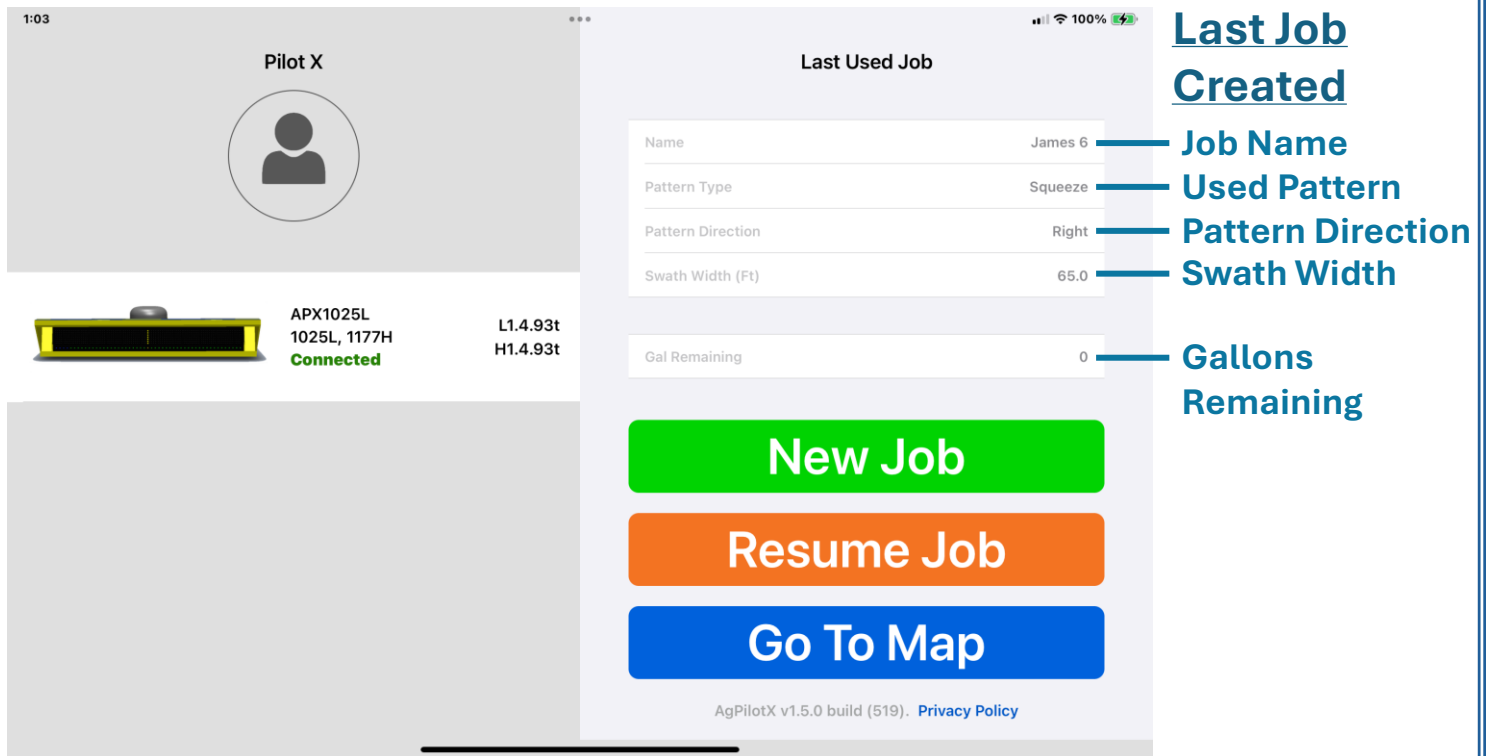


CONNECTED

After connecting you will be able to see the serial numbers and firmware versions for your equipment
[e.g. Lightbar (1025L : L1.4.92) and Hub (1177H : H1.4.92)]

Display Overview

Home Screen *Jobs*



NEW JOB

Opens a blank job to configure.

RESUME JOB

Reopens the last used job (displayed above).

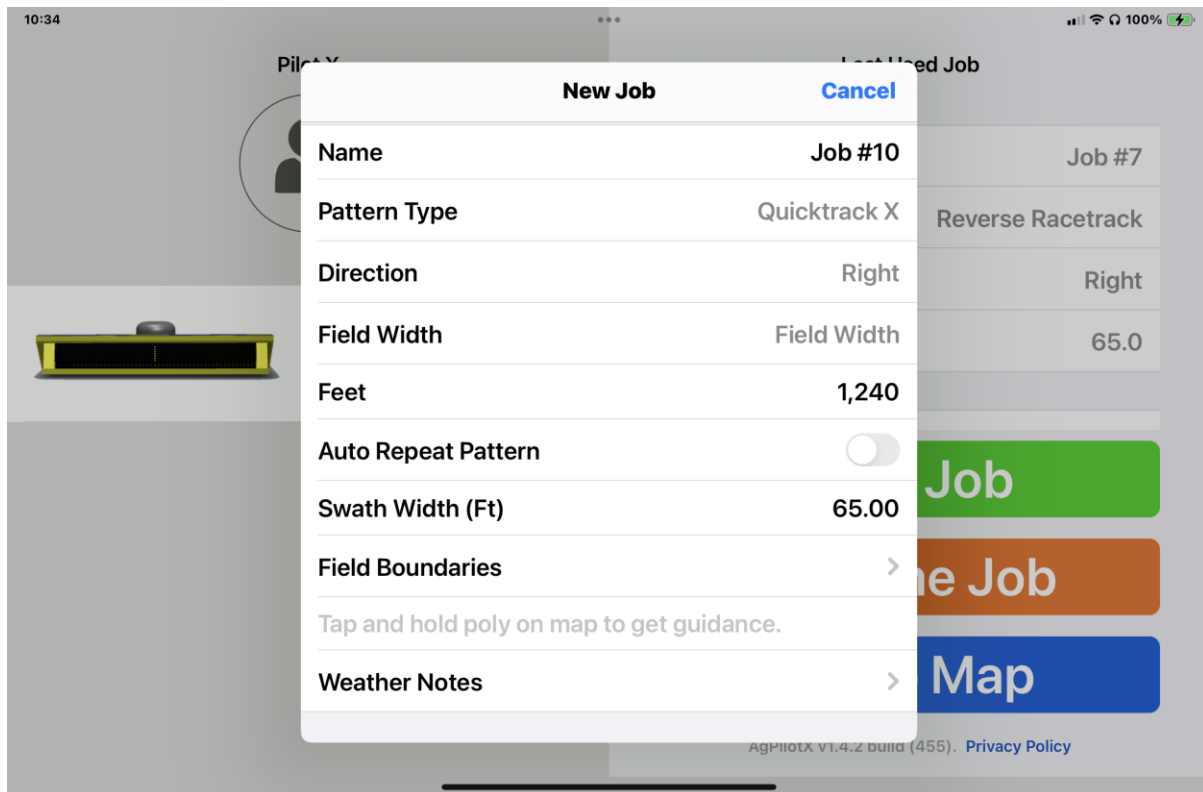
GO TO MAP

Will take you to Map/Operations Screen
(Options are available from Map Screen to Resume
an old job or start a new job)

Display Overview

Home Screen

Jobs – New Job



NEW JOB

Name: Set a user defined name or use the default name

Pattern: Tap window to pick between available patterns

Direction: Choose Left or Right

Field Width: Enter Width of Field (Available in QuicktrackX only)

Auto Pattern Repeat: Repeats a Closed Pattern when it is completed

Swath Width: Enter the width of each swath

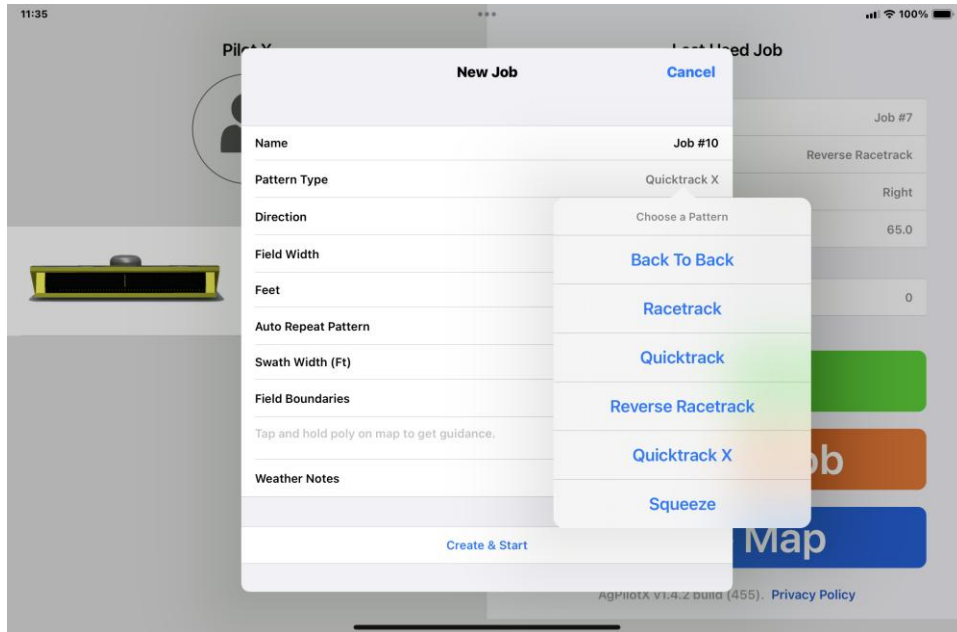
Field Boundaries: Enter a polygon or polygons to associate with the field (optional)

Weather Notes: Enter Weather Notes (optional)

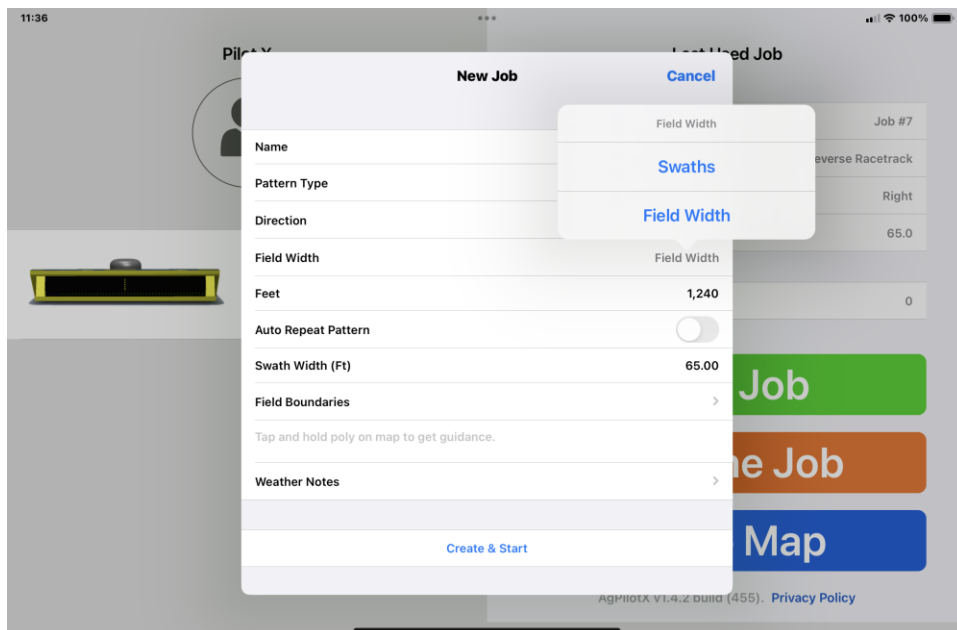
Display Overview

Home Screen

Jobs – New Job



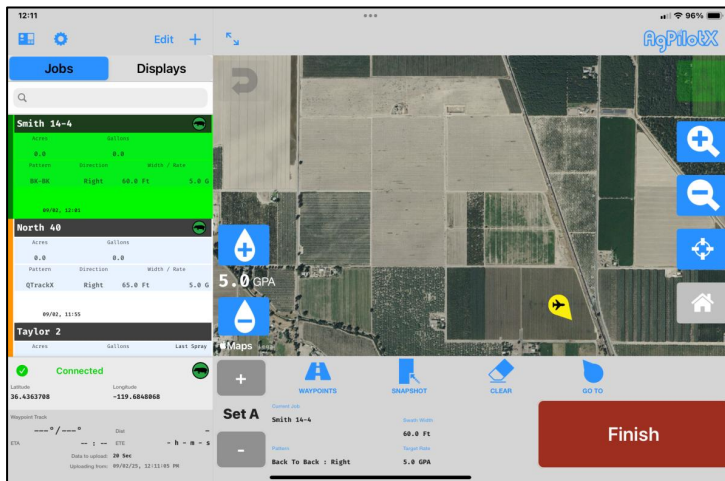
Pattern Type



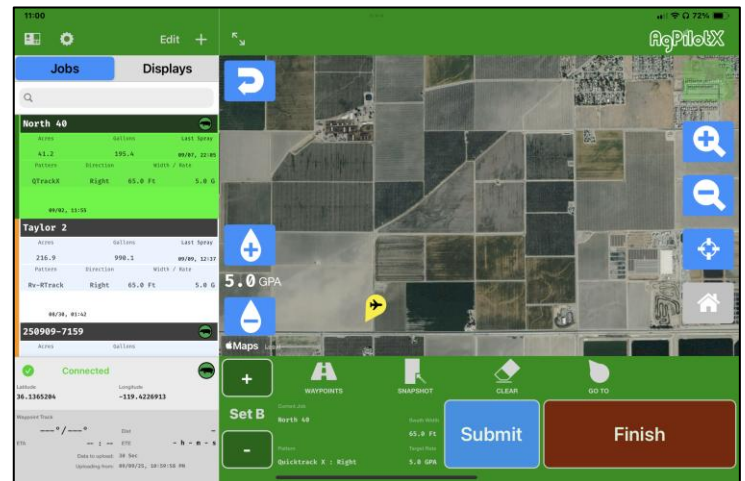
Field Width

Display Overview

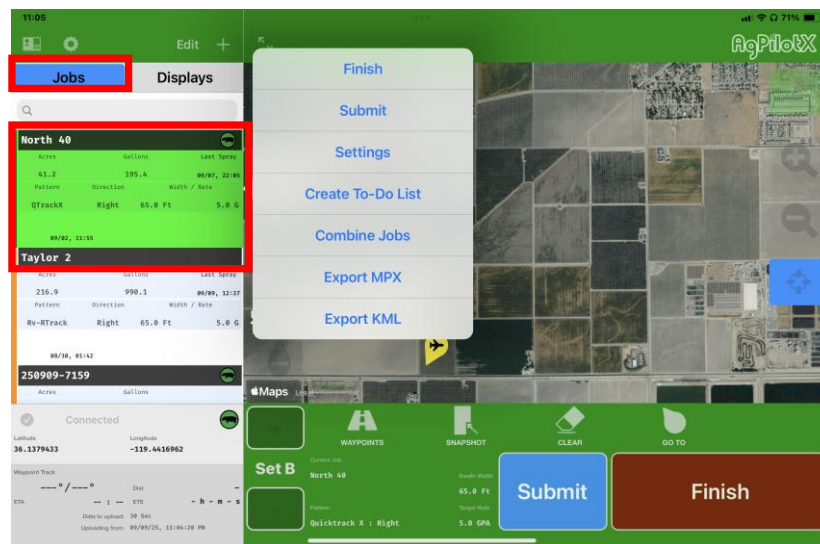
Map Screen *Jobs*



Grey Background = No Active Job



Green Background = Job Active



Touch any job to bring up menu options:

Finish – Tap to close a Job. Can return to the Job at any time

Submit – Available only when linked to an AgHippo account. Closes the Job and allows no further editing.

Settings – Edit/Change chosen job settings.

Create To-Do List – Separates jobs into a smaller more manageable job list for the days work.

Combine Jobs – Combine two or more jobs to be worked at the same time. Only used with jobs coming from an API partner

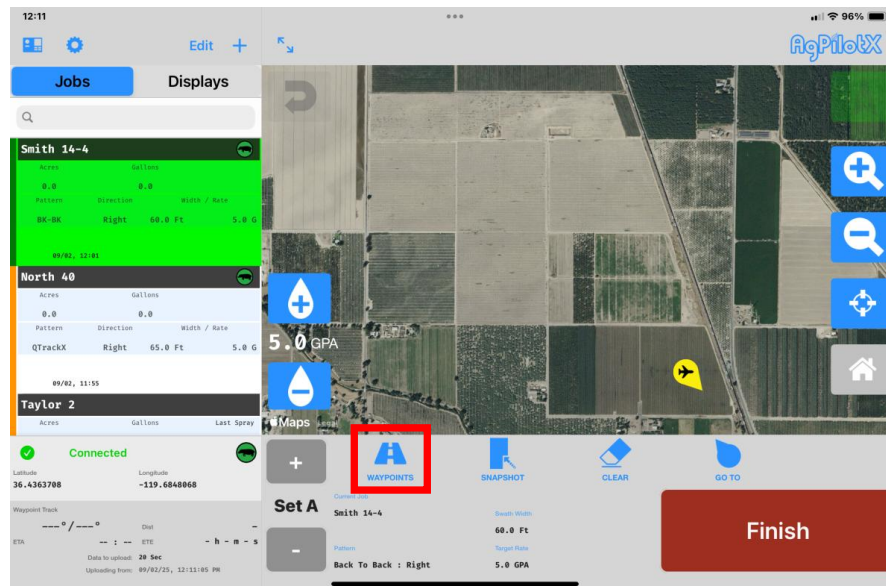
Export MPX – Export job from iPad or computer to an MPX file.

Export KML – Export job from iPad or computer to an KML file.

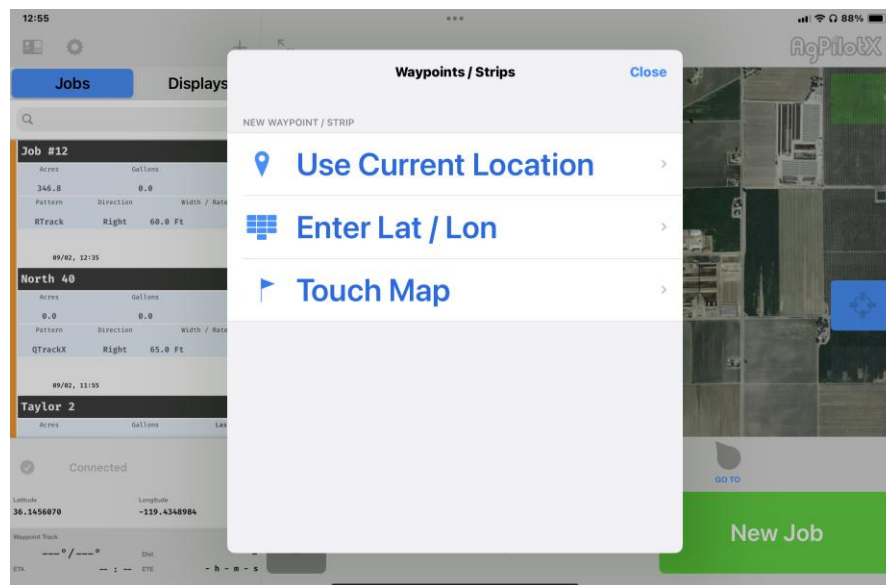
Display Overview

Map/Operations Screen

Navigation & Waypoints



Press “Waypoints” to view new waypoint options



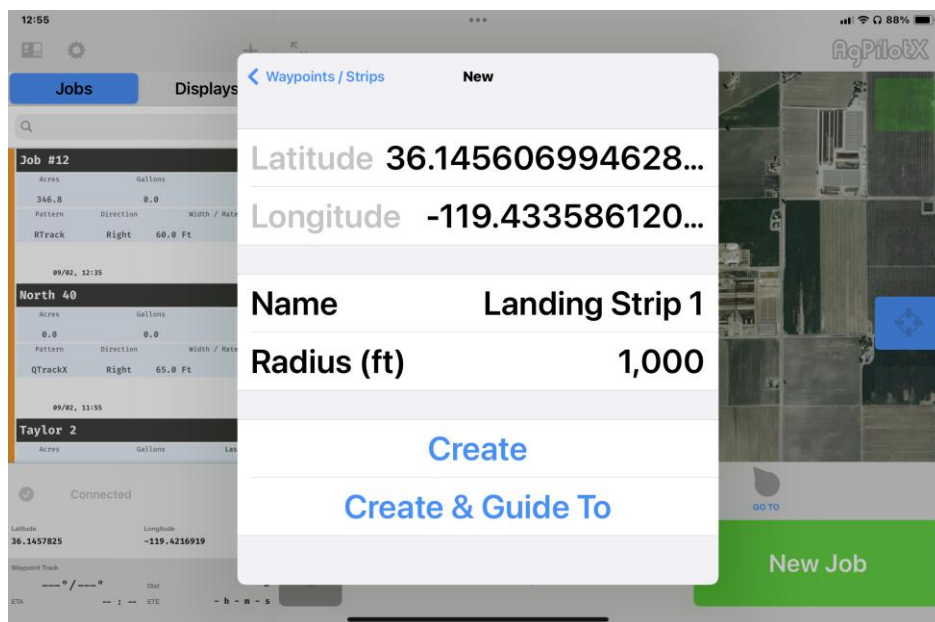
Use Current Location – Uses your current location as a new waypoint.

Enter Lat/Lon – Manually enter in the latitude and longitude of the waypoint.

Touch Map – Use the map to choose a new waypoint. Can also hold finger on map location for quick waypoint

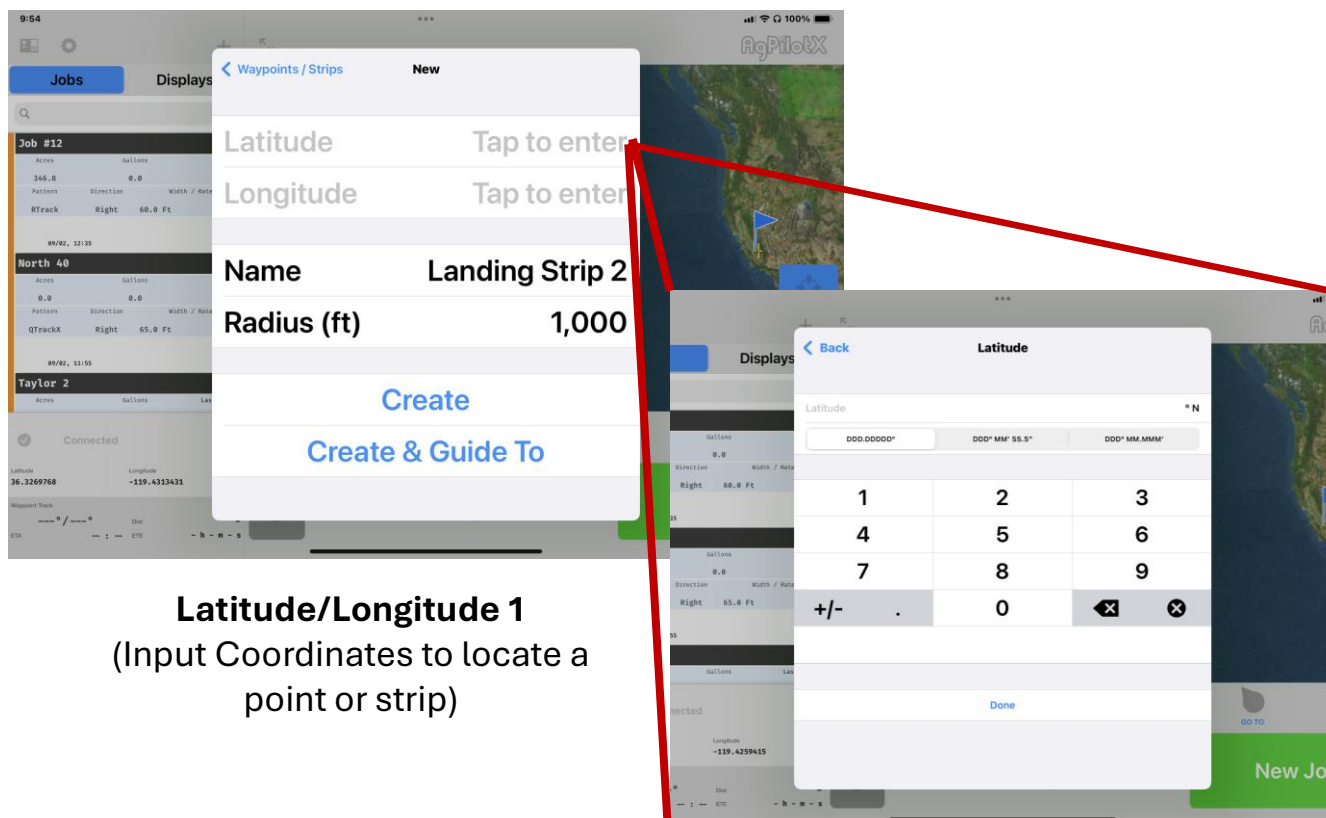
Display Overview -

Map/Operations Screen *Navigation & Waypoints (Cont.)*



Current Location

(Use current GPS location to set coordinates and Name points)



Latitude/Longitude 1

(Input Coordinates to locate a point or strip)

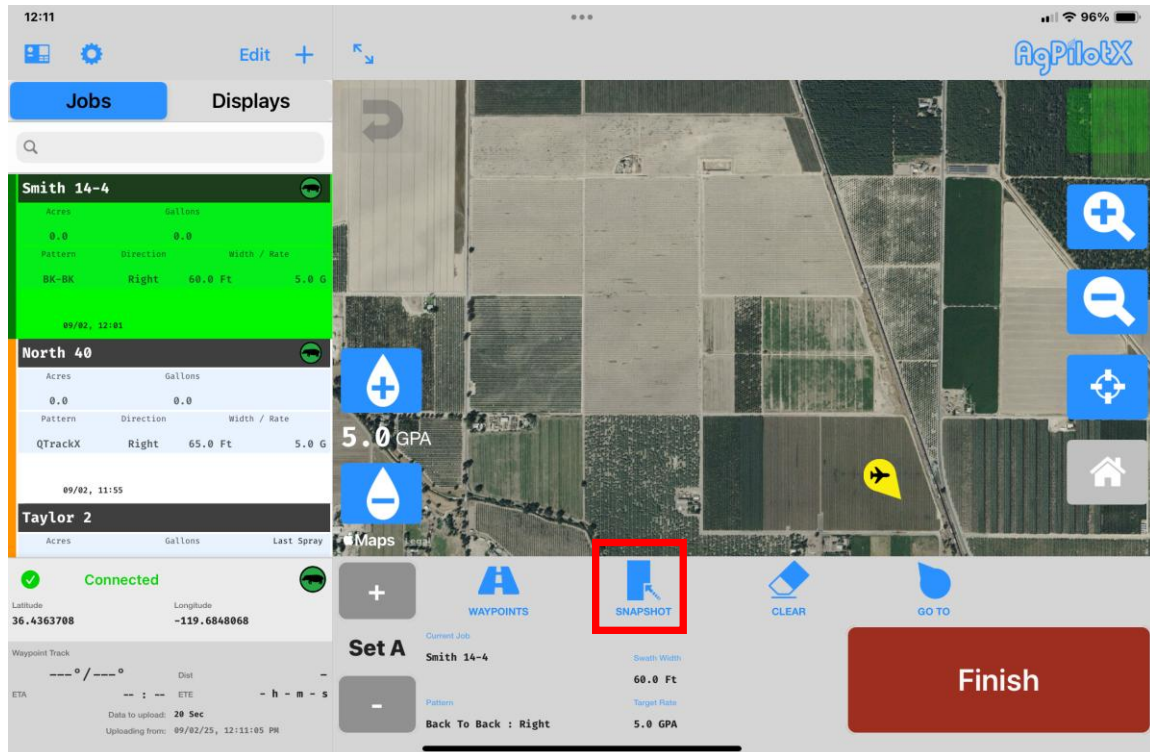
Latitude/Longitude 1

(Switch between Decimal or Minute coordinate inputs)

Display Overview

Map/Operations Screen

Snapshot

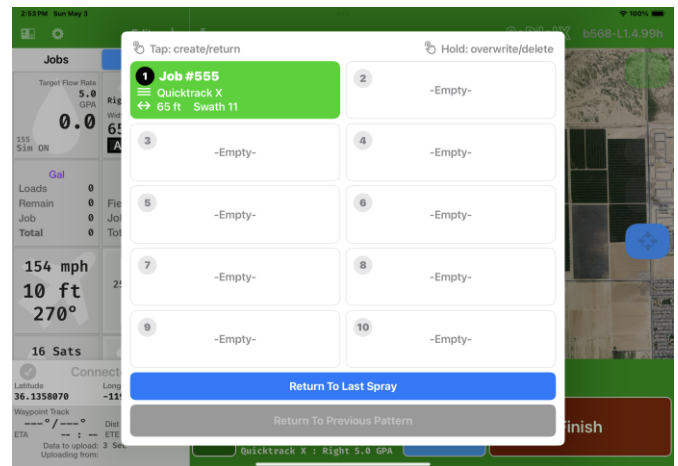
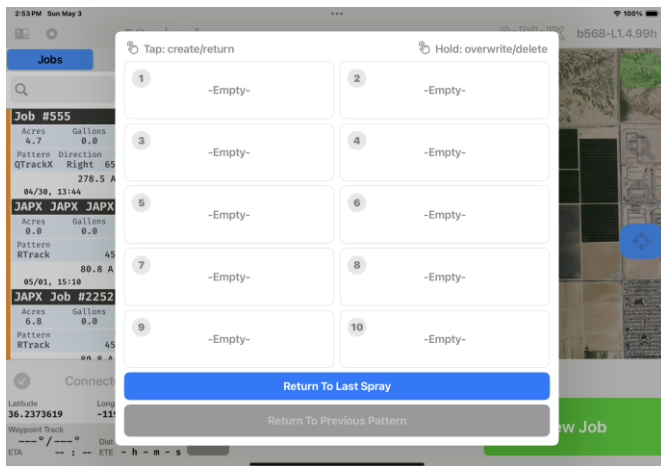


Create a snapshot of the screen.

Snapshot: Save multiple patterns in one job

Display Overview

Home Screen *Snapshots*



Create: Once a pattern is active, tap the snapshot button.

Then tap an available slot to save the pattern.

(Once the snapshot is saved you can now

Clear > Pattern change the pattern if necessary and set a new AB)

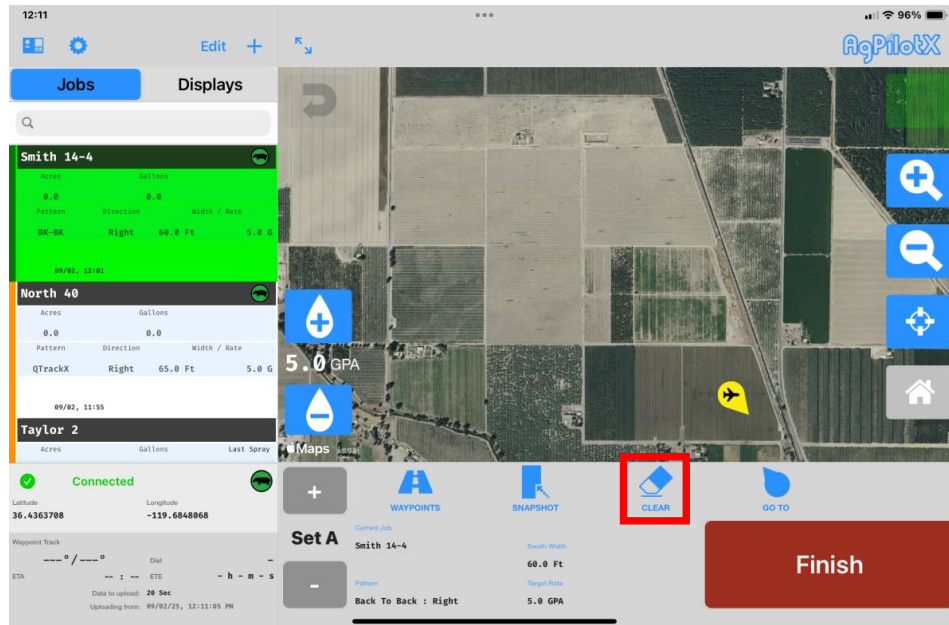
Return: Open the snapshot menu, tap the green job number to return to the original saved pattern.

Delete/Replace: Long press any snapshot to delete or overwrite and replace with new snapshot

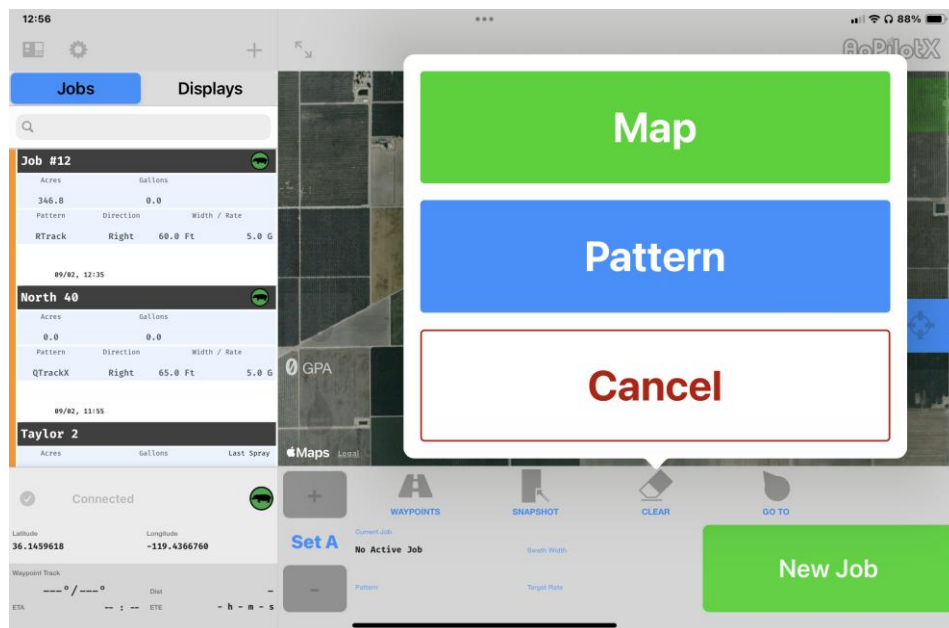
Display Overview

Map/Operations Screen

Clear Map/Pattern



Clear Map/Pattern 1

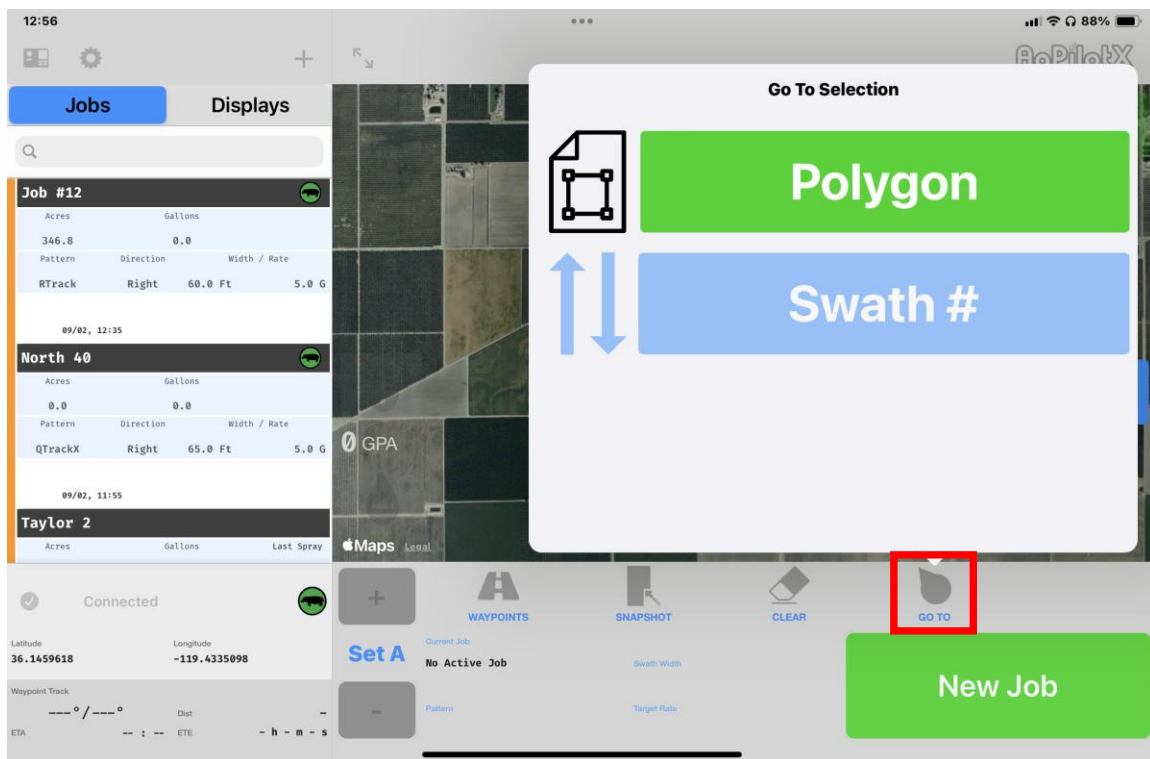


Clear Map/Pattern 2

Display Overview

Map/Operations Screen

Go To Selection



Choose to instantly go to Polygon or the Swath Number

Polygon: Select an available polygon from a list a polygons already imported into the app.

Swath #: Select to jump to a specific swath number in the pattern.

Displays



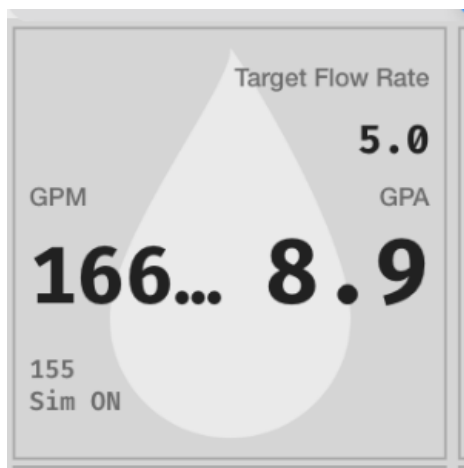
Display Overview

Map/Operations Screen

Displays - Tiles

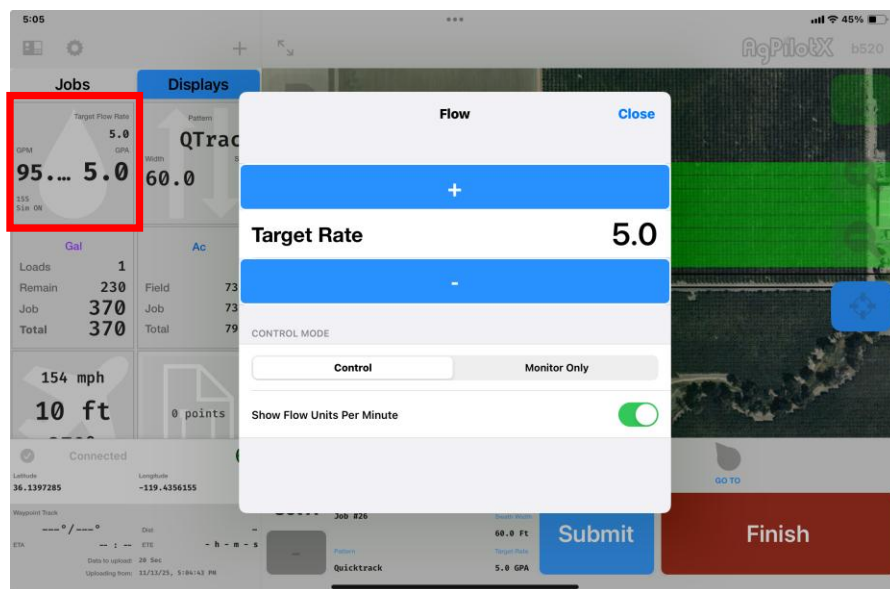
Display Tiles: Once a job is active the left display will change from the job list to the display tiles. You can manually toggle between the job list and displays by tapping Jobs or Displays at the top of the list.

Target Rate Tile



Target Flow Rate Tile

- Displays target (desired) application rate and the current/actual application rate.
- Optional view can show flow in gallons per minute (GPM) depending on configuration.
- Primary “live” feedback tile for rate control during application.



+/- Target Rate – Tap the number to manually enter the target rate or adjust the target rate using the + / - controls.

Control Mode – Actively commands flow hardware.

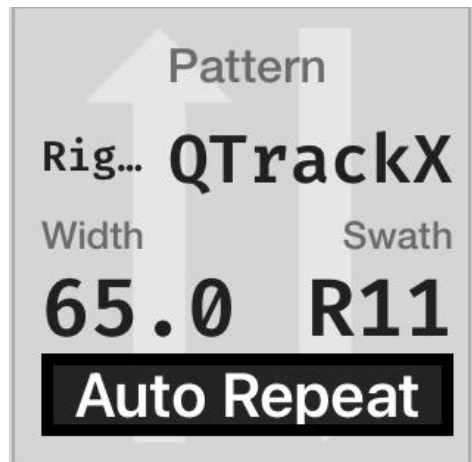
Monitor Mode – Displays rate information without commanding the valve.

Show Flow Units Per Minute – Optionally enable GPM display on the tile.

Display Overview -

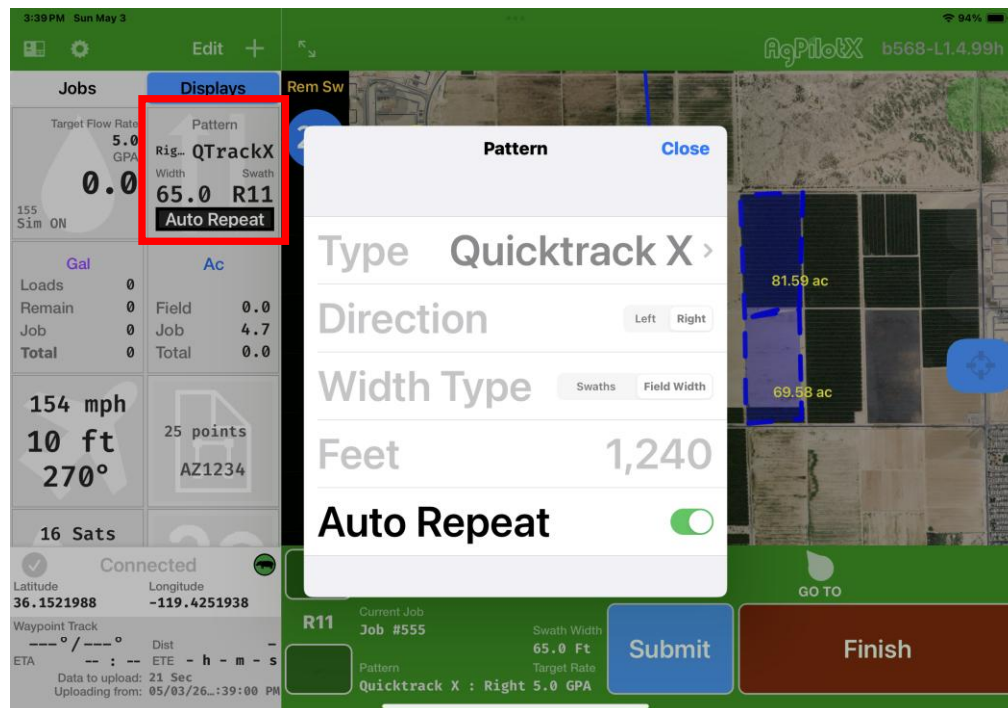
Map/Operations Screen *Displays – Tiles (cont.)*

Pattern Tile



Pattern Tile

- Shows the current pattern in use (example shown: QuickTrack/Racetrack depending on job).
- Displays swath width used for the pattern (feet).
- Auto Repeat is Active
- Helps confirm the correct pattern and swath are selected before and during a job.



Pattern Type – Displays the currently selected pattern. (See pattern section for more pattern information)

Auto Repeat Pattern – Repeats the number of swaths of a closed pattern once the previous closed pattern is finished.

Swath Width – Set current swath width for aircraft and application.

Display Overview -

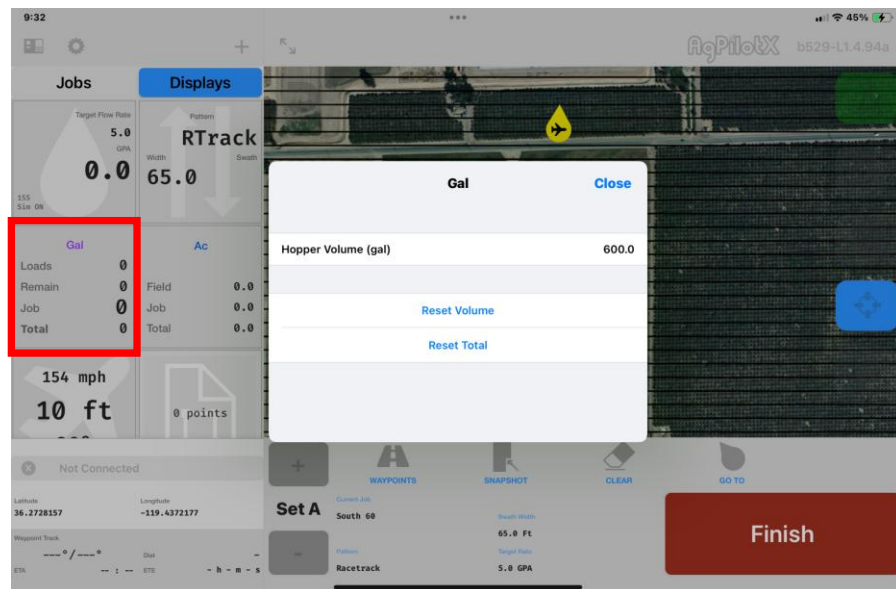
Map/Operations Screen *Displays – Tiles (cont.)*

Gallons Tile

Gal	
Loads	0
Remain	33
Job	567
Total	567

Gal Tile

- Tank/Hopper tracking tile.
- Loads – Counts one load every time the hopper volume is reset.
- Remain - Gallons remaining in hopper.
- Job - Total gallons used in the current Job.
- Total – Gallons accumulated for the current days work.



Hopper Volume (gal) – Tap to input current hopper volume.

Reset Volume – Resets volume back to full.

Reset Total – Reset Total clears accumulated volume totals.

Display Overview -

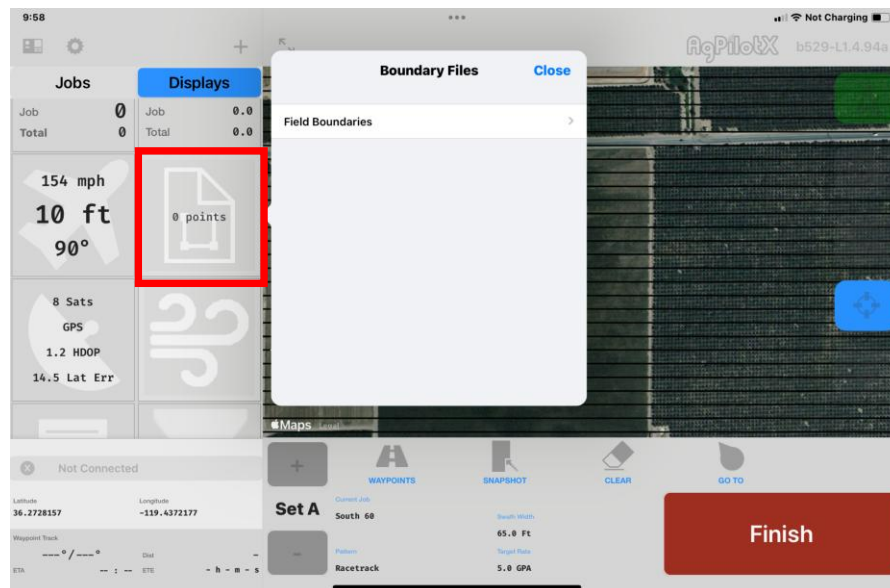
Map/Operations Screen *Displays – Tiles (cont.)*

Field Boundary Tile



Field Boundary / Import tile

- Field boundary information and boundary importing tools.
- Used to load/select field boundaries for a job and display them on the map.
- Displays number of points in a field boundary file.
- KMLs and Shape files can be imported from emails, APIs, AirDrop or other methods in order to add them to the boundary library on the system. Tap the poly display or Go-To button to see a list of available field boundaries.



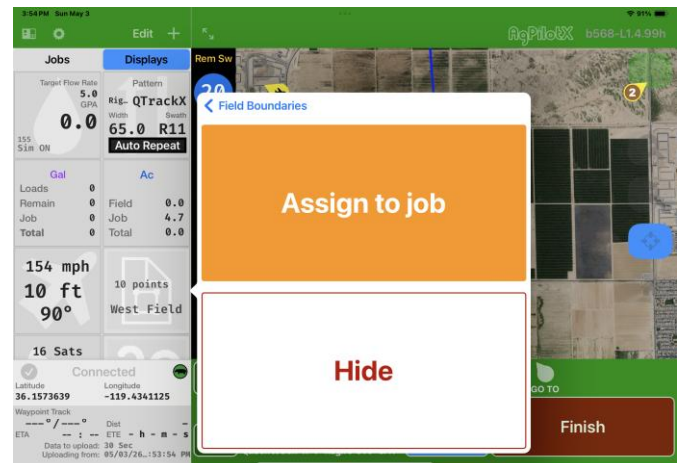
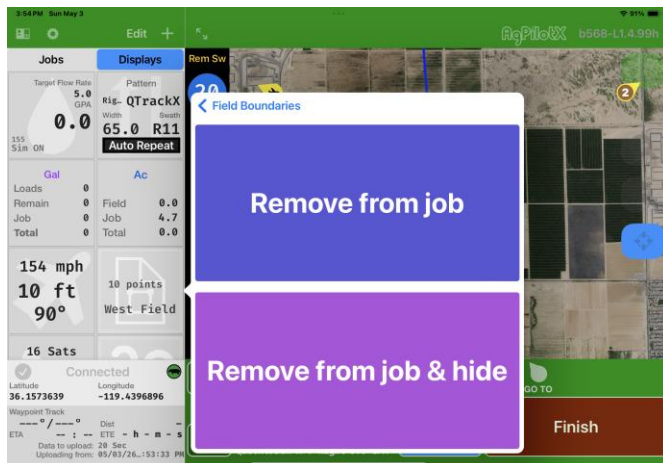
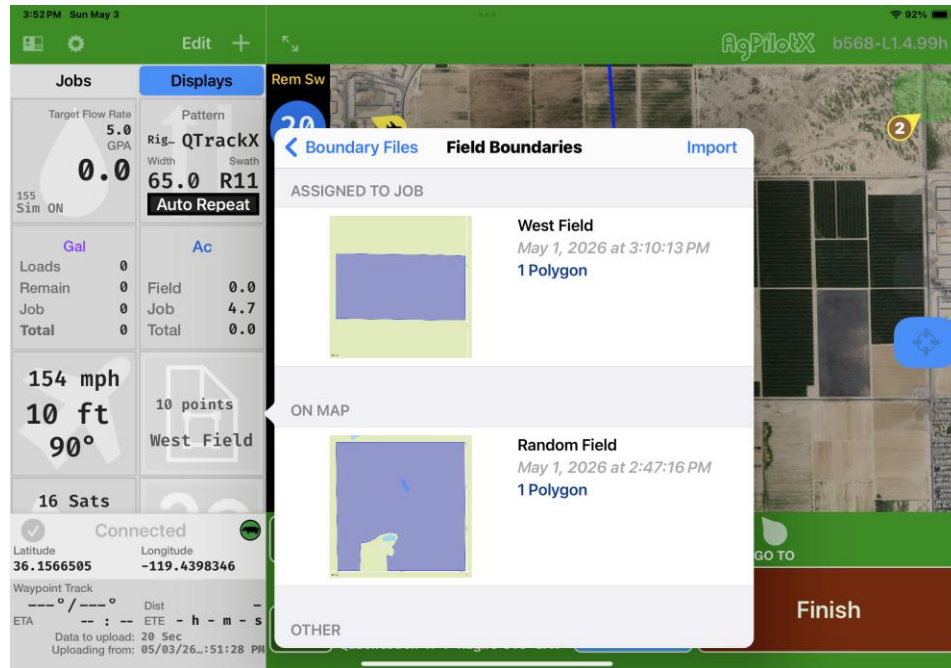
Access and manage field boundary files. Assign or remove a field boundary from an existing job. Add or remove a field boundary from the map.

Shows which field boundaries are currently assigned to this job. Which boundaries are On the Map and other boundaries in the app.

Display Overview -

Map/Operations Screen Displays – Tiles (cont.)

Field Boundary Tile (cont.)



Display Overview -

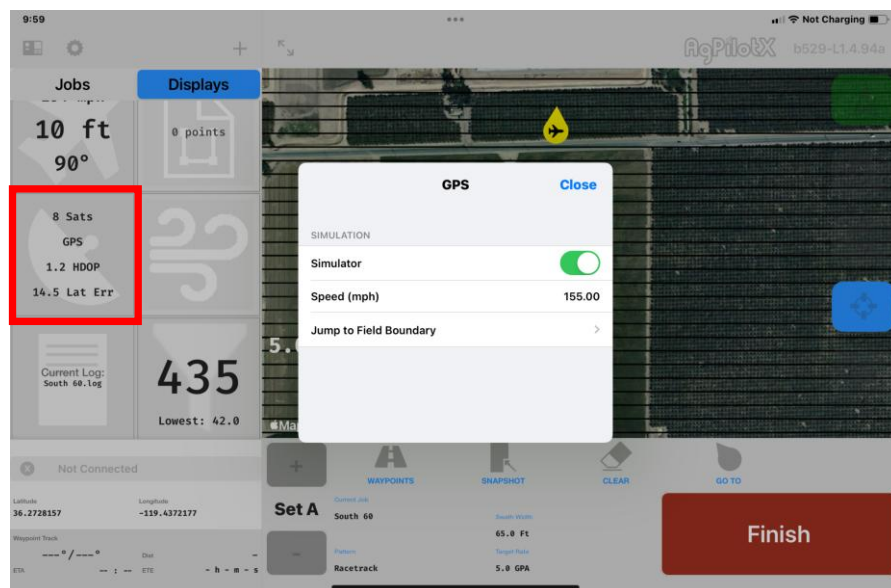
Map/Operations Screen *Displays – Tiles (cont.)*

GNSS Tile



GPS Tile

- GPS health/status readout (example: satellites, HDOP, lateral error).
- Tap tile to turn on simulator



Simulator – Enable GPS simulation for testing and training.

Speed (mph) – Set simulated ground speed.

Jump to Field Boundary – Jump directly to a selected field boundary.

***Disable simulation during live application.**

Display Overview -

Map/Operations Screen *Displays – Tiles (cont.)*

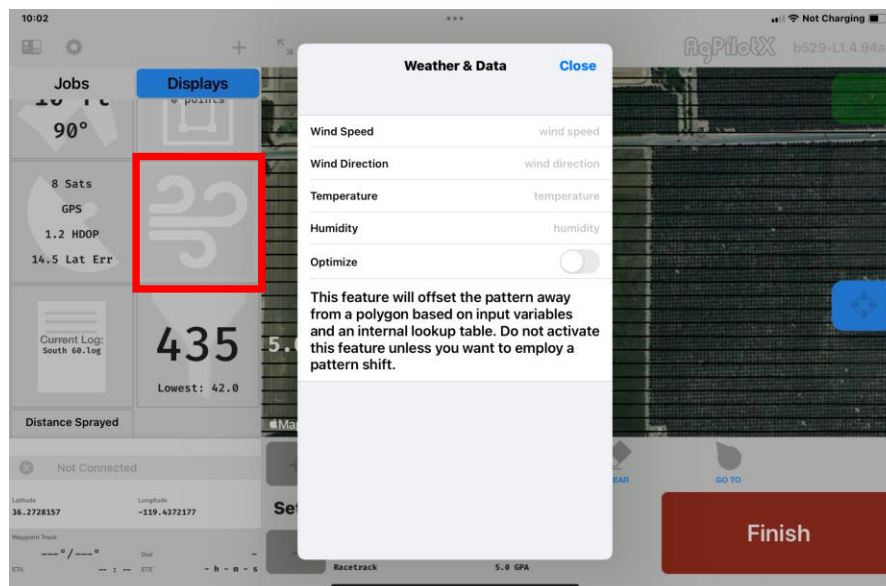
Weather and Data Tile



Weather tile

- Pilot can input weather conditions.
- Used to shift/offset a pattern to compensate for conditions.
- Receive weather inputs from AIMMS

Modeling can be used to project the spray pattern and shift guidance to adjust for wind speed, wind direction, humidity and altimeter height.



- Record environmental conditions including wind speed, wind direction, temperature, and humidity.
- **Optimize** – Turn on to shift patterns based on weather inputs using the **AgDISP Model**.
- Weather data can also be received from the **AIMMS** weather device.

Display Overview -

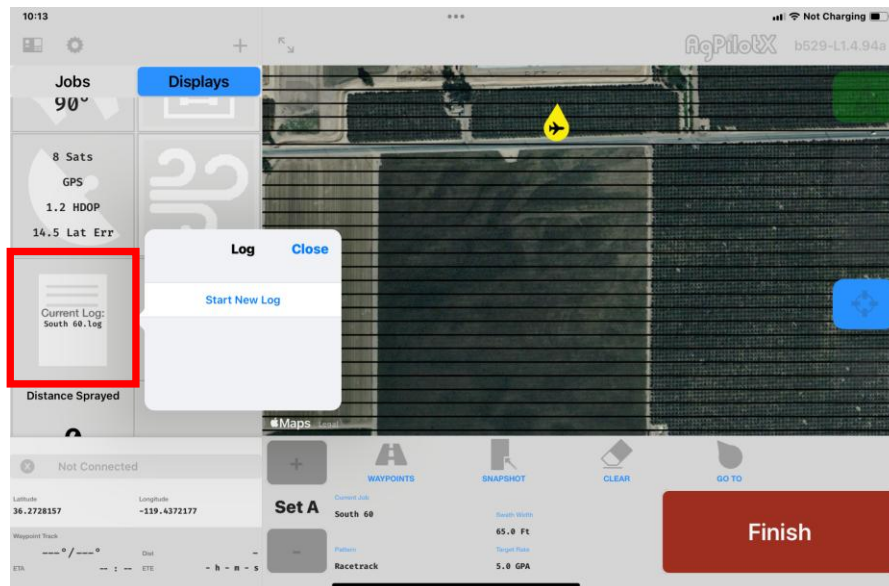
Map/Operations Screen *Displays – Tiles (cont.)*

Log Tile



Current Log Tile

- Shows the current log file name being generated (useful for troubleshooting and support uploads).



Start New Log – Closes the current log file and begins a new one.

*** Use when changing fields, loads, or operational context without restarting the app.**

Display Overview -

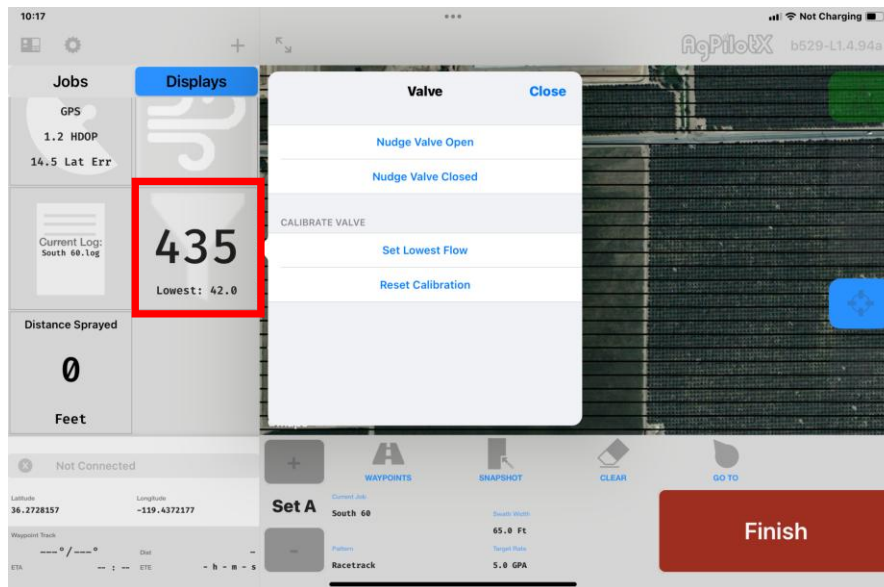
Map/Operations Screen *Displays – Tile (cont.)*

Valve Tile



Valve Tile

Shows the relative position of the valve. Tapping this button will allow the user to nudge the valve open and closed, to see the relative position, and to set a Low Flow Threshold to prevent the valve from passing this position. The Threshold should be set at about 30% from the closed position (for ball valves).



Nudge Valve Open/Closed – Nudge Valve Open / Closed provides manual valve movement each time the button is pressed.

***Intended for use while in Monitor Only mode.**

Set Lowest Flow – Establishes a minimum allowable valve position. The valve will close past this set position.

Reset Calibration – Clears valve calibration values and restores defaults.

***Valve movement is constrained by numerical valve position limits.**

Display Overview -

Map/Operations Screen

Displays – Tiles (cont.)

Ac	
Field	95.1
Job	94.8
Total	95.1

Acre Tile (acres sprayed)

- Displays Acres sprayed.
- Shows acreage for Field, Job, and Total.

Field Acres represents acres for the field and resets with Clear Pattern.

Job Acres clears with each new Job.

Total Acres accumulates throughout the session of the app.

154 mph
10 ft
270°

Airspeed / Altitude / Heading Tile

- Live airspeed (mph).
- GPS Altitude (ft).
- Heading (degrees).

Distance Sprayed
0
Feet

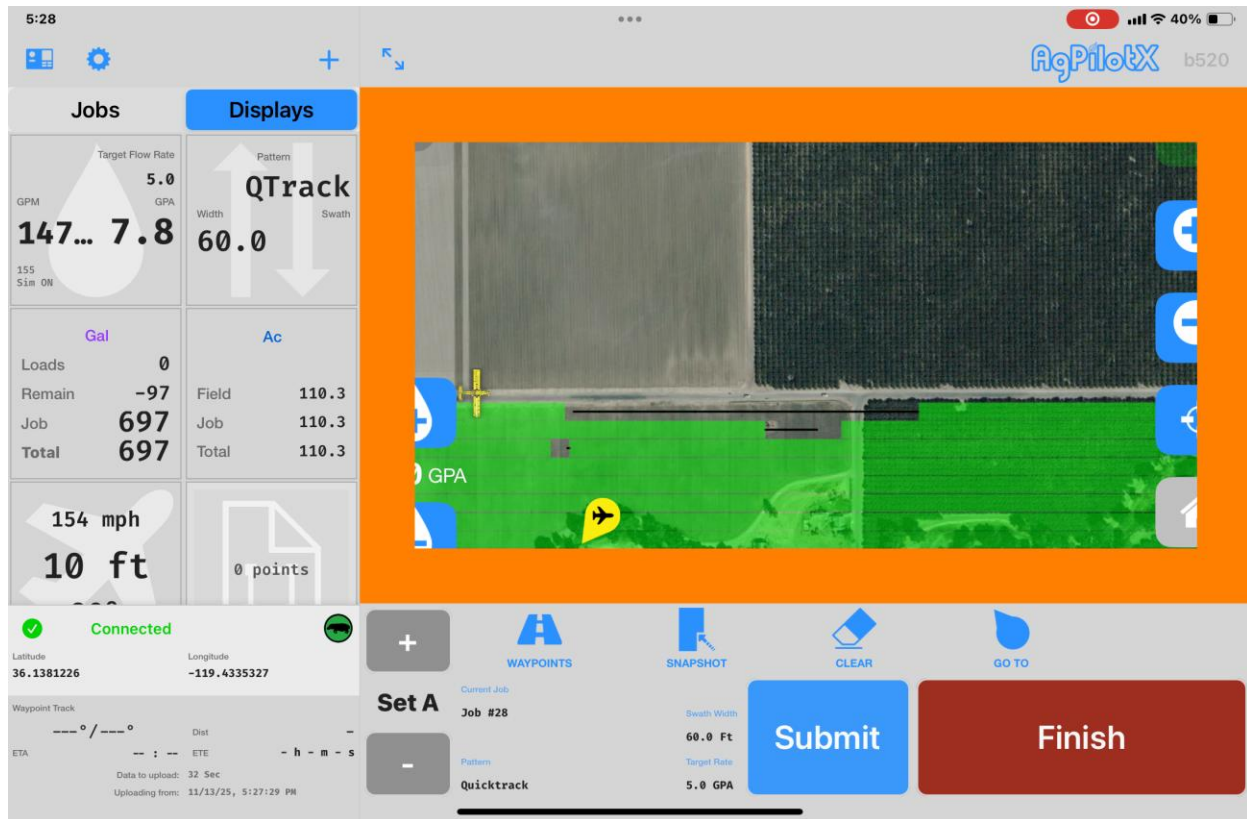
Distance Sprayed Tile

- Shows distance sprayed (feet) for the current pass.
- Resets to zero the next time spray on is triggered.
- Tap to toggle between Miles and Feet.

Display Overview

Map/Operations Screen

Displays – Double Spray

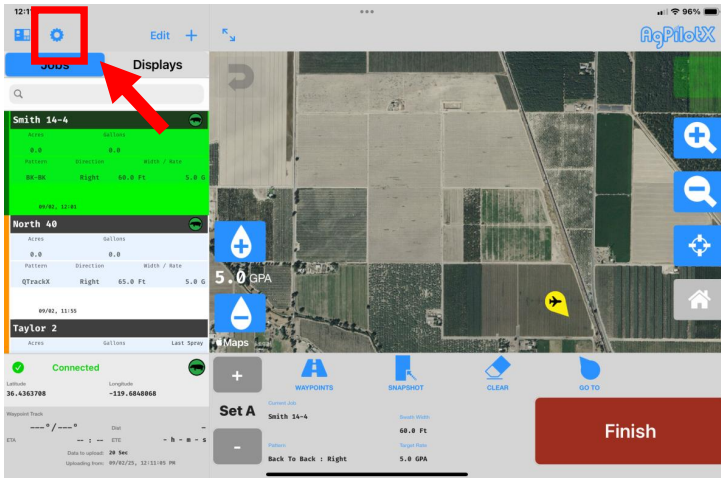


Double Spray Warning

- A flashing orange boarder will indicate double spray.
- Double spray in triggered by turning spray on, off and on again without hitting swath advance.
- Aircraft must be within 20 feet of current swath.
- Setting can be turned off in General Settings.

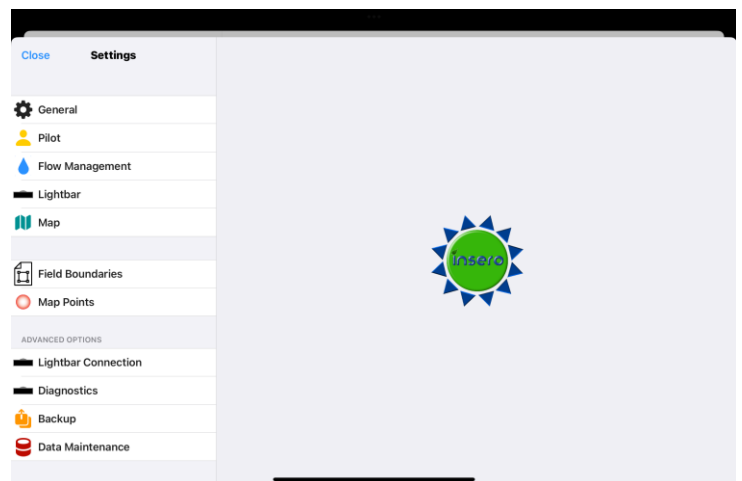
Display Overview

Map/Operations Screen *Settings*



Settings Button

Settings Menu



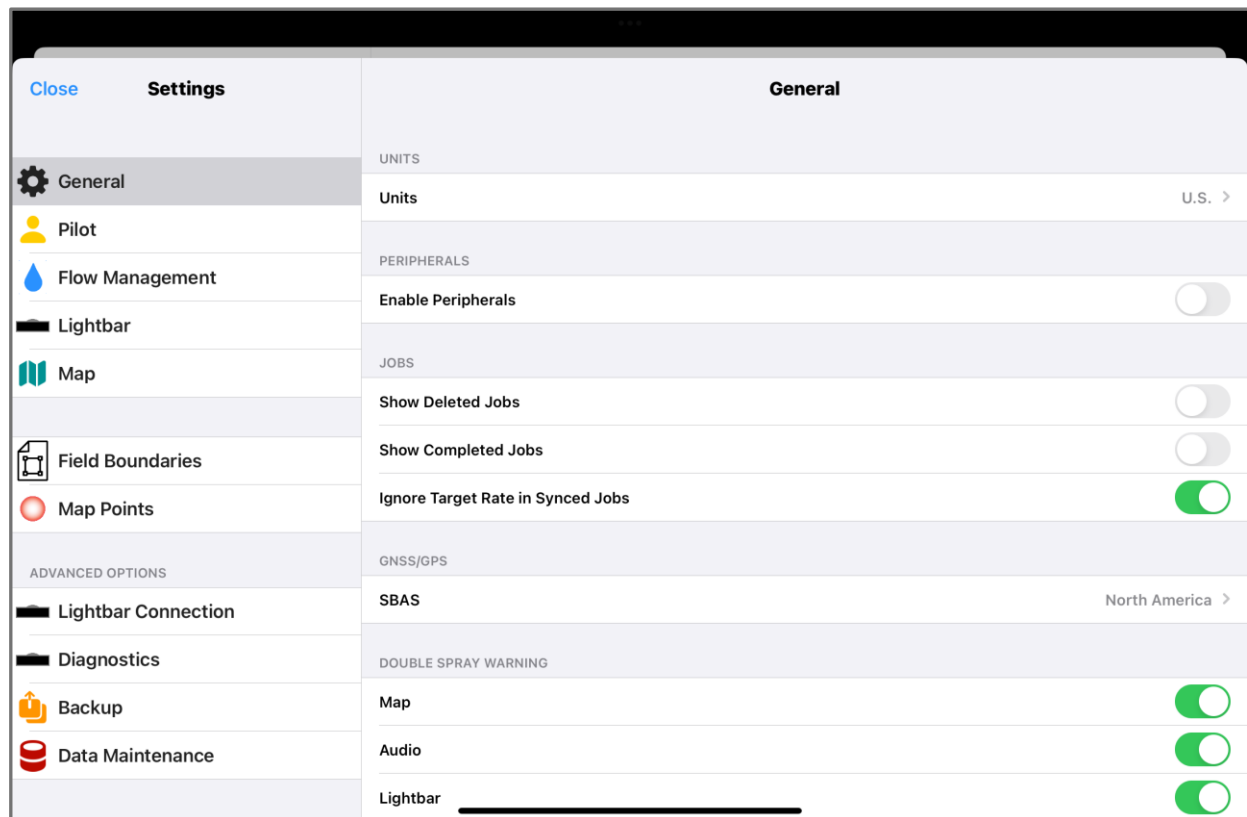
AgPilotX Settings

- Access the settings menu by tapping the Gear icon in the top left-hand corner of the map screen
- iPad must be in landscape mode to see setting buttons.
- Settings include General, Pilot, Flow settings, Lightbar setup and map setup.

Display Overview

Map/Operations Screen

Settings - General



General Settings

Units – Select your desired unit of measurement (U.S./Metric)

Enable Peripherals – Enable to add tile to displays that allows you to select external hardware (i.e. laser altimeter, hopper gauge, etc.)

Jobs – Job Settings (Toggle On/Off):

- Show Deleted Jobs – Jobs deleted within the last 30 days
- Show Complete Jobs - Jobs that have been submitted
- Ignore Target Rate in Synced Jobs – Disregards the flow rate in work orders if they are sent from 3rd party software over API.

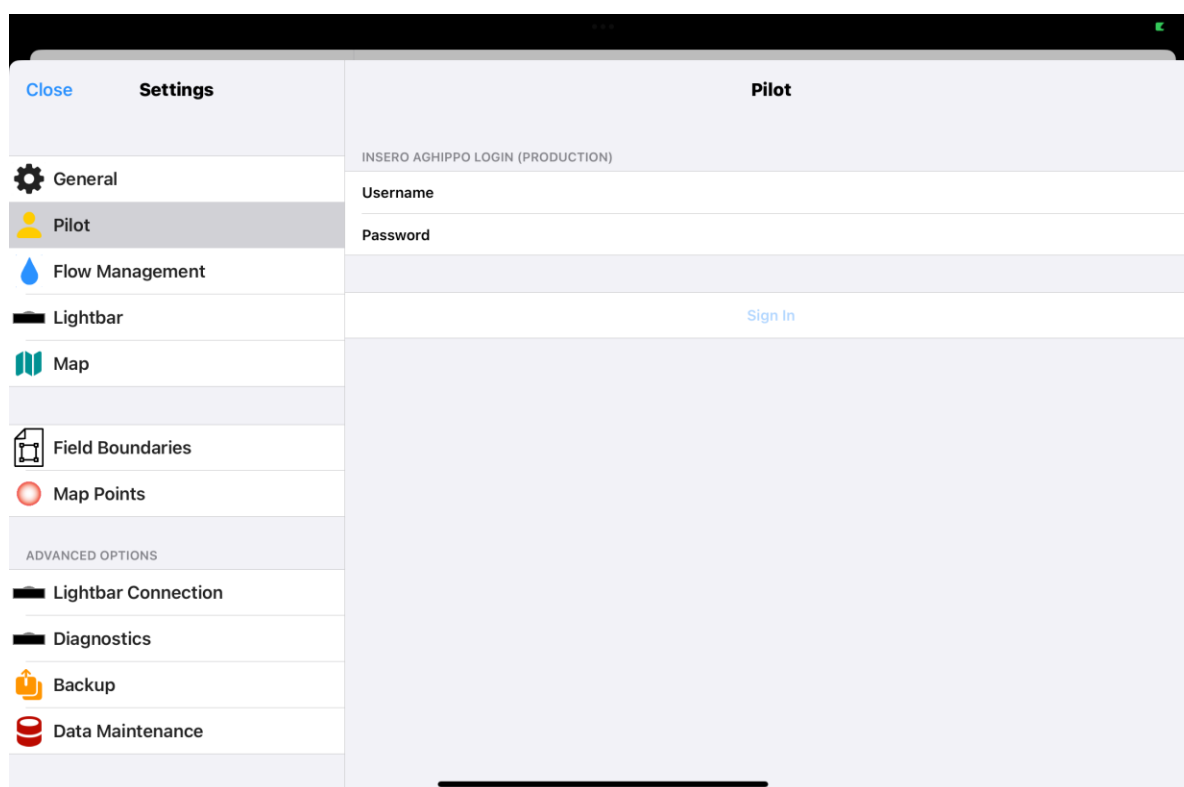
GNSS/GPS – Turns SBAS off when outside of North America

Double Spray Warning – Toggle alerts for double spray warnings (On/Off):

- Map
- Audio
- Lightbar

Display Overview

Map/Operations Screen *Settings – Pilot Login*



The screenshot shows a mobile application interface. On the left is a 'Settings' sidebar with a 'Close' button at the top. The sidebar contains a list of settings categories: General (gear icon), Pilot (person icon), Flow Management (water drop icon), Lightbar (lightbar icon), Map (map icon), Field Boundaries (document icon), Map Points (red circle icon), and a section for 'ADVANCED OPTIONS' containing Lightbar Connection, Diagnostics, Backup, and Data Maintenance. The 'Pilot' setting is selected. The main content area is titled 'Pilot' and contains the text 'INSERO AGHIPPO LOGIN (PRODUCTION)'. Below this are two input fields labeled 'Username' and 'Password'. A 'Sign In' button is located below the password field. At the bottom of the screen, there is a horizontal line representing a mobile home indicator.

Pilot Login Screen (Settings)

Enter your AgHippo login to start uploading data to AgHippo.

Data will automatically start uploading to AgHippo when logged in and connected to the internet.

Contact Insero customer service for an AgHippo login.

Display Overview

Map/Operations Screen

Settings – Flow Management

Flow Management (Settings)

Close	Settings	Flow Management
	General	Reset Flow Settings
	Pilot	This will send all current flow settings to the LightBar AUTO ON/OFF
	Flow Management	Auto ON/OFF Unlock LOCKED
	Lightbar	
	Map	Other Rate Control/Monitor System ☐
	Field Boundaries	Display Ounces Per Acre ☐
	Map Points	Meter Cal (PPG) 100.00
ADVANCED OPTIONS		AGGRESSIVENESS
	Lightbar Connection	Major 1.80
	Diagnostics	Minor 2.50
	Backup	This setting tells the valve how aggressive it should be. The higher the number, the more movement the valve will have. The lower the number, the less responsive the valve will be.
	Data Maintenance	More
		Direction Factor 1.0

Main Menu

Reset Flow Settings – Resets all flow settings to default.

Auto On/Off Unlock – Toggle to activate auto-boom. Call dealer or Insero for unlock code.

Other Rate Control/Monitor System – Toggle on for compatible dry gate controllers or auto-cal. Compatible controls include Air Repair and Reabe.

Display Ounces Per Acre – Shows ounces per acre on the flow display tile.

Meter Cal (PPG) – Meter calibration number in pulses per gallon. Cal number is typically stamped on the meter depending on the manufacturer.

Aggressiveness – Power sent to valve

- Major: power when more than 20% from target rate

Display Overview

Map/Operations Screen

Settings – Flow Management

Flow Management (Settings)

Close	Settings	Flow Management
⚙️ General		Reset Flow Settings
👤 Pilot		This will send all current flow settings to the LightBar AUTO ON/OFF
💧 Flow Management		Auto ON/OFF Unlock LOCKED
📶 Lightbar		
🗺️ Map		Other Rate Control/Monitor System ☐
📄 Field Boundaries		Display Ounces Per Acre ☐
📍 Map Points		Meter Cal (PPG) 100.00
ADVANCED OPTIONS		AGGRESSIVENESS
📶 Lightbar Connection		Major 1.80
🔧 Diagnostics		Minor 2.50
📁 Backup		This setting tells the valve how aggressive it should be. The higher the number, the more movement the valve will have. The lower the number, the less responsive the valve will be.
📊 Data Maintenance		More
		Direction Factor 1.0

Aggressiveness – This setting controls how much power is sent to the valve when in control mode.

For more power or to move the valve faster, increase the number.

For less power or to move the valve slower, decrease the number.

- **Major:** power when outside 25% of target rate (Default 1.8)
- **Minor:** power when inside 25% of target rate (Default 2.5)

*Major should be lower than minor

Example:

Target rate set to 2.0 GPA. When spraying GPA sits around 2.3 - 2.5 but never comes down to the target rate. In this case you want to increase the minor number.

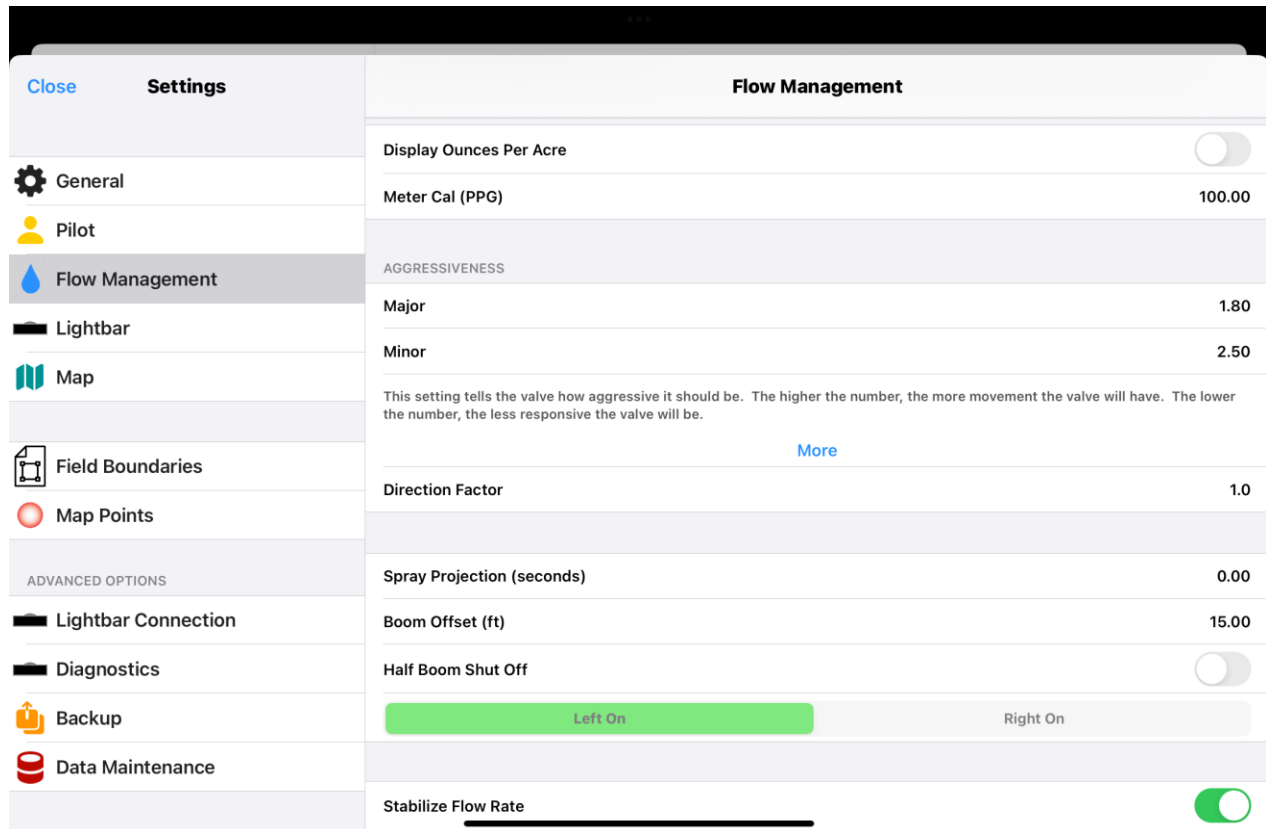
If the opposite happens and the valve is oscillating, then decrease the aggressiveness.

Display Overview

Map/Operations Screen

Settings – Flow Management (cont.)

Flow Management (Settings)



Settings	Flow Management
Close	
General	Display Ounces Per Acre ☐
Pilot	Meter Cal (PPG) 100.00
Flow Management	AGGRESSIVENESS
Lightbar	Major 1.80
Map	Minor 2.50
Field Boundaries	This setting tells the valve how aggressive it should be. The higher the number, the more movement the valve will have. The lower the number, the less responsive the valve will be.
Map Points	More
ADVANCED OPTIONS	Direction Factor 1.0
Lightbar Connection	Spray Projection (seconds) 0.00
Diagnostics	Boom Offset (ft) 15.00
Backup	Half Boom Shut Off ☐
Data Maintenance	☒ Left On ☐ Right On
	Stabilize Flow Rate ☒

Main Menu (cont.)

Direction Factor – multiplies the power to open the valve as opposed to closing it. Greater than 1 will create more force to Open.

Spray Projection – pushes spray positions forward to compensate for delays caused by switch timing.

Boom Offset (ft.) – Distance from the antenna to the booms.

Half Boom Shut Off – Toggle on to use half boom feature (Select desired Left or Right). Swath on the map will show accordingly as well as flow control adjustment for half boom.

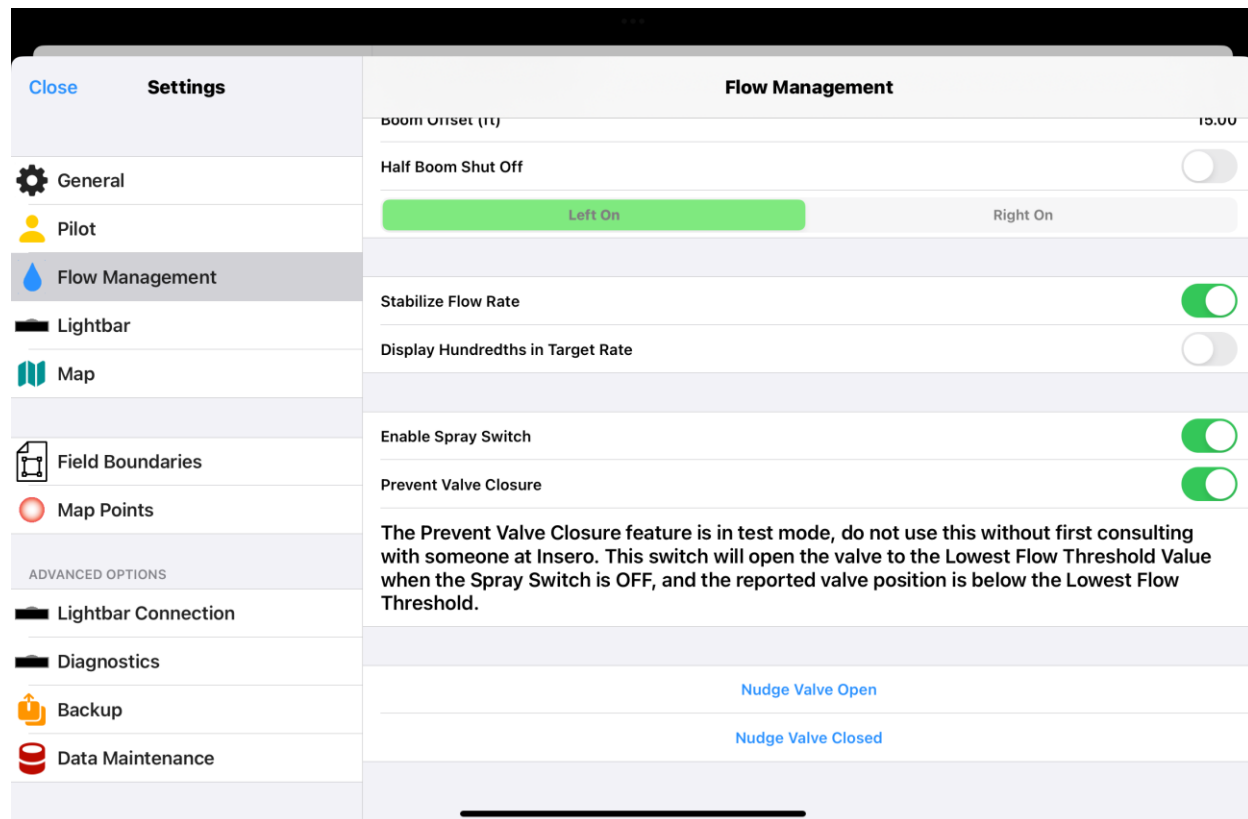
***External switch and relay needed for input to hub.**

Display Overview

Map/Operations Screen

Settings – Flow Management (cont.)

Flow Management (Settings)



Settings	Flow Management
Close	Boom Onset (11) 15.00
Settings	Half Boom Shut Off ☐
General	Left On Right On
Pilot	Stabilize Flow Rate ☒
Flow Management	Display Hundredths in Target Rate ☐
Lightbar	Enable Spray Switch ☒
Map	Prevent Valve Closure ☒
Field Boundaries	The Prevent Valve Closure feature is in test mode, do not use this without first consulting with someone at Insero. This switch will open the valve to the Lowest Flow Threshold Value when the Spray Switch is OFF, and the reported valve position is below the Lowest Flow Threshold.
Map Points	Nudge Valve Open
ADVANCED OPTIONS	Nudge Valve Closed
Lightbar Connection	
Diagnostics	
Backup	
Data Maintenance	

Main Menu (cont.)

Stabilize Flow Rate – Rounds out the display when close to target.

Display Hundredths in Target Rate – Adds a hundredths place to your target rate (i.e. 2.75).

Enable Spray Switch – Enable when using pressure switch or micro switch for spray on/off

Prevent Valve Closure – Toggle on to use the lowest flow threshold setting on the valve position tile. Will prevent valve closure when it falls below the threshold value.

***Must setup low flow threshold on Valve position tile.**

Nudge Valve Open/Closed – Press to move valve open/close

Display Overview

Map/Operations Screen

Settings - Lightbar

Close	Settings	Lightbar
	General	LIGHTBAR DISPLAY NAME APX1025L
	Pilot	LIGHTBAR DISPLAYS
	Flow Management	Far Left Swath # >
	Lightbar	Center Left Rate / Speed >
	Map	Center Right Heading >
	Field Boundaries	Far Right Cross Track >
	Map Points	Helicopter Lightbars need to set Center Left and Center Right Displays to "blank" and set Far Left and Far Right Displays to desired option
	ADVANCED OPTIONS	POLY FEATURES
	Lightbar Connection	Lightbar Polygon Interaction ☐
	Diagnostics	SETTINGS
	Backup	Lightbar Center LED Time to Edge Warning ☐
	Data Maintenance	Forward Prediction (secs) 0.75

Lightbar (Settings)

Lightbar Display Options

Select desired display for each display window on the lightbar:

- [Blank](#)
- [Swath #](#)
- [Rate/Speed](#)
- [Heading](#)
- [Cross Track](#)
- [Speed](#)
- [Rate/Area](#)
- [AgLaser Altitude](#)
- [Distance to Edge](#)
- [Poly In/Out](#)
- [Rate](#)
- [Time to Edge](#)
- [Valve Position](#)

***For helicopter lightbar set center-left and center-right displays to blank**

Display Overview

Map/Operations Screen

Settings – Lightbar (cont.)

Lightbar (Settings)

Close Settings		Lightbar	
		POLY FEATURES	
 General  Pilot  Flow Management  Lightbar  Map	Lightbar Polygon Interaction		
	Max Points 500		
	SETTINGS		
	Lightbar Center LED Time to Edge Warning		
	Forward Prediction (secs) 0.75		
		CROSS TRACK (FT)	
 Field Boundaries  Map Points	LED 1 3.0		
	LED 2 6.0		
	LED 3 9.0		
	LED 4 12.0		
	LED 5 24.0		
ADVANCED OPTIONS		LED 6 48.0	
 Lightbar Connection		LED 7 96.0	
 Diagnostics		LED 8 250.0	
 Backup		LED 9 400.0	
 Data Maintenance			

Main Menu (cont.)

Poly Features

- **Lightbar Polygon Interaction** - When turned on, all polygons in the active job are sent to the lightbar for processing. Toggle on for features like auto-boom and distance/time to edge on lightbar.
- **Max Points** – Maximum points allowed in a field boundary file. (Max Points 750)

Settings

- **Lightbar Center LED Time to Edge Warning** - Toggle on to have center row LEDs count down to field boundary.

***Required: Polygon interaction must also be on**

Forward Prediction (secs) – The delay in seconds between when the light bar displays a guidance prompt and when you need to react.

Display Overview -

Map/Operations Screen Settings – Lightbar (Cont.)

Close Settings		Lightbar	
		CROSS TRACK (FT)	
General		LED 1	3.0
Pilot		LED 2	6.0
Flow Management		LED 3	9.0
Lightbar		LED 4	12.0
Map		LED 5	24.0
		LED 6	48.0
Field Boundaries		LED 7	96.0
Map Points		LED 8	250.0
		LED 9	400.0
ADVANCED OPTIONS		LED 10	550.0
Lightbar Connection		LED 11	700.0
Diagnostics		LED 12	850.0
Backup		LED 13	1,000.0
Data Maintenance		LED 14	1,200.0
		LED 15	1,400.0

Lightbar Cross Track Settings

Top Row: Each LED represents the feet off from center

Close Settings		Lightbar	
		ANGLE OF INTERCEPT (DEG)	
General		LED 1	0.50
Pilot		LED 2	1.00
Flow Management		LED 3	2.00
Lightbar		LED 4	3.00
Map		LED 5	4.00
		LED 6	5.00
Field Boundaries		LED 7	6.00
Map Points		LED 8	7.00
		LED 9	8.00
ADVANCED OPTIONS		LED 10	9.00
Lightbar Connection		LED 11	10.00
Diagnostics		LED 12	11.00
Backup		LED 13	12.00
Data Maintenance		LED 14	13.00
		LED 15	14.00

Lightbar Angle of Interception (DEG)

Bottom Row: Each LED represents the angle in degrees towards current swath line

Display Overview

Map/Operations Screen

Settings - Map

Settings	Map
Close	
General	Map Style: Satellite, Standard, Hybrid
Pilot	
Flow Management	
Lightbar	
Map	ZOOM BUTTONS
	Percentage Increment: 100.0
	Customise the level of incremental zoom when using the map buttons. Default is 100.
	RECENT PATH
	Show Recent Path Only: ☐
Field Boundaries	
Map Points	SPRAY
	Overlap Percentage: 0
ADVANCED OPTIONS	PATTERNS
Lightbar Connection	Continue Swath Numbers When Patterns Repeat: ☐
Diagnostics	Show Unsprayed Swath Numbers (Closed Patterns Only): ☒
Backup	Non-Sprayed Pattern Line Color: Black >
Data Maintenance	Sprayed Pattern Line Color: Orange >
	FIELD BOUNDARIES

Map (Settings)

Main Menu

Map Style – Choose your desired background map.

Percentage Increment - Level of incremental zoom when the zoom in/out buttons on the map are pressed.

Show Recent Path Only – Toggle on to delete previous flight path after desired path length.

Overlap Percentage – Visual display of spray over the swath width (percentage over current swath width).

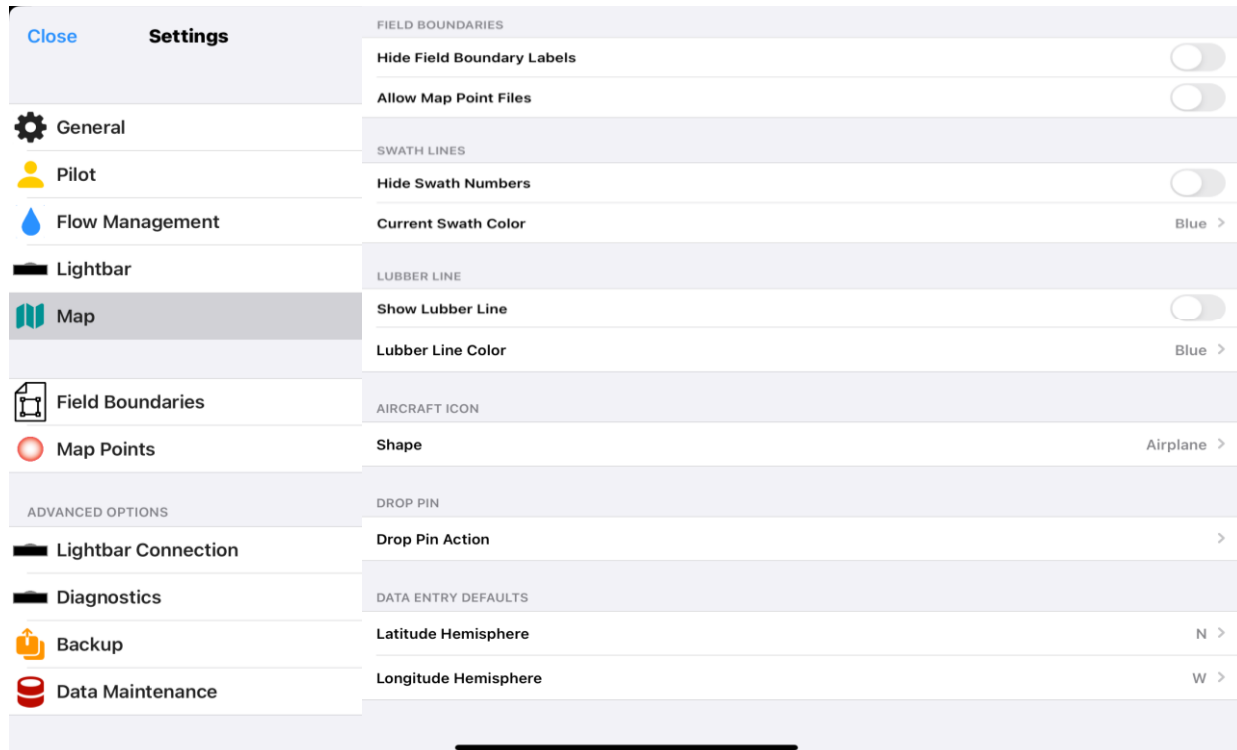
Patterns

- **Continue Swath Numbers when Patterns Repeat** - When toggled off repeat patterns start at swath 1. When turned on the numbers are continuous on the repeated pattern.
- **Show Unsprayed Swath Numbers (Closed Patterns Only)** - Toggle on to show unsprayed swath numbers on map screen.

Display Overview

Map/Operations Screen

Settings – Map (cont.)



Main Menu (Settings Cont.)

Field Boundaries

- **Hide Field Boundary Labels** – Turn off labels on polygons such as acres or numbers.
- **Allow Map Point Files** – allows the use of point files to be imported for obstacle viewing

Swath Lines – Hide or show swath numbers and change the color of swath lines (Blue/Red/Yellow/Red-Hashed).

Lubber Line – Line that extends out indefinitely from the front of the aircraft on the map.

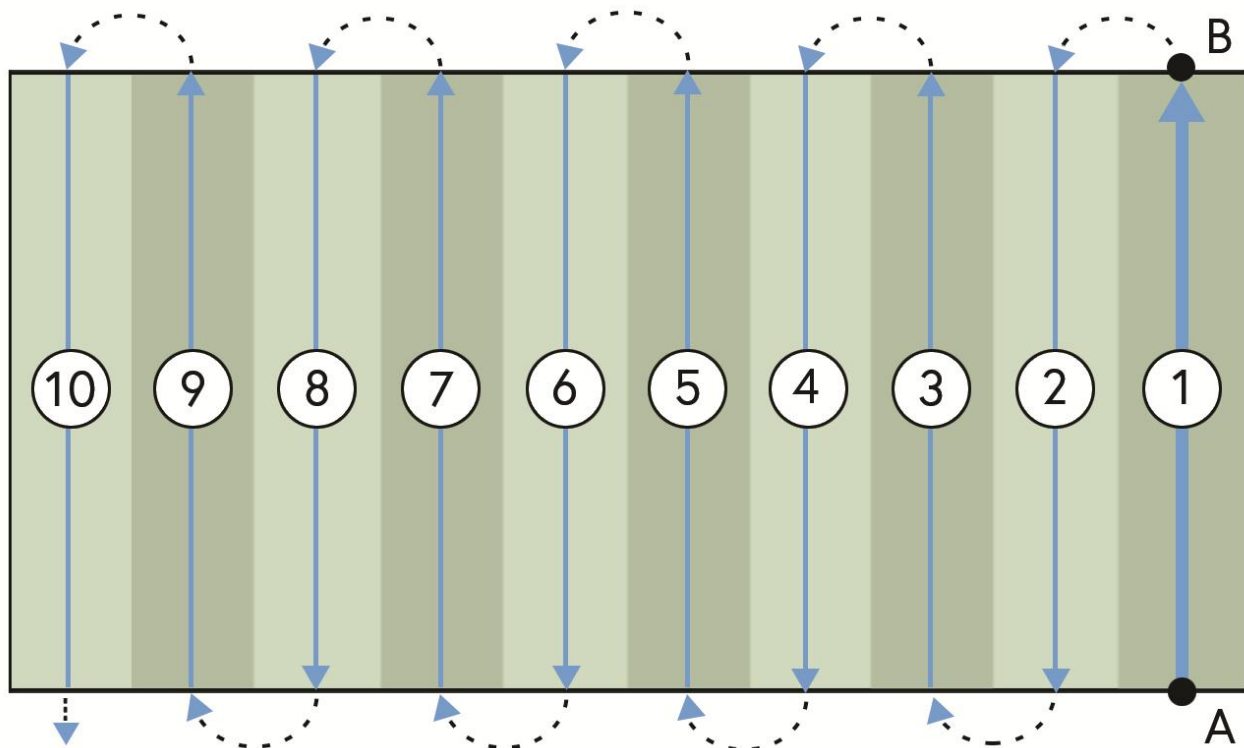
Aircraft Icon – Change aircraft icon (Airplane/Helicopter).

Data Entry Defaults – Change Latitude Hemisphere (North/South) & Longitude Hemisphere (East/West).

Pattern Types

Back-to-Back

This pattern makes passes in the same direction, flying in a continuous, back-and-forth motion across a field, setting the first pass along the field's edge and adjusting the subsequent passes by the swath width.



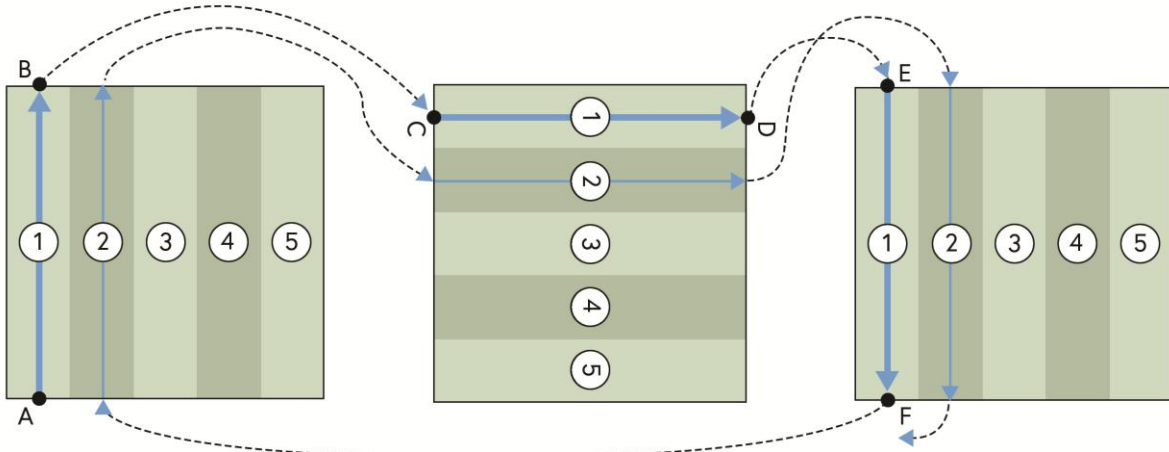
- **Purpose:** Fast, efficient coverage of rectangular fields with minimal ferry time.
- **General Setup:** Establish **A|B** baseline; confirm swath width, boom status.
- **Entry:** Align on **Swath 1** at field edge; start spray at the designated “on” mark.
- **Sequence:** Fly **parallel, adjacent swaths** in order (1 → 2 → 3 ...), reversing heading each pass.
- **Turns:** Execute **tight 180° turnaround** just outside the crop boundary; re-intercept the next swath at the lead-in mark.
- **Variations:** **Odd-even skip, Half-turn, Multi**

Pattern Types

Back-to-Back (Multiple Fields)

Full Rotate

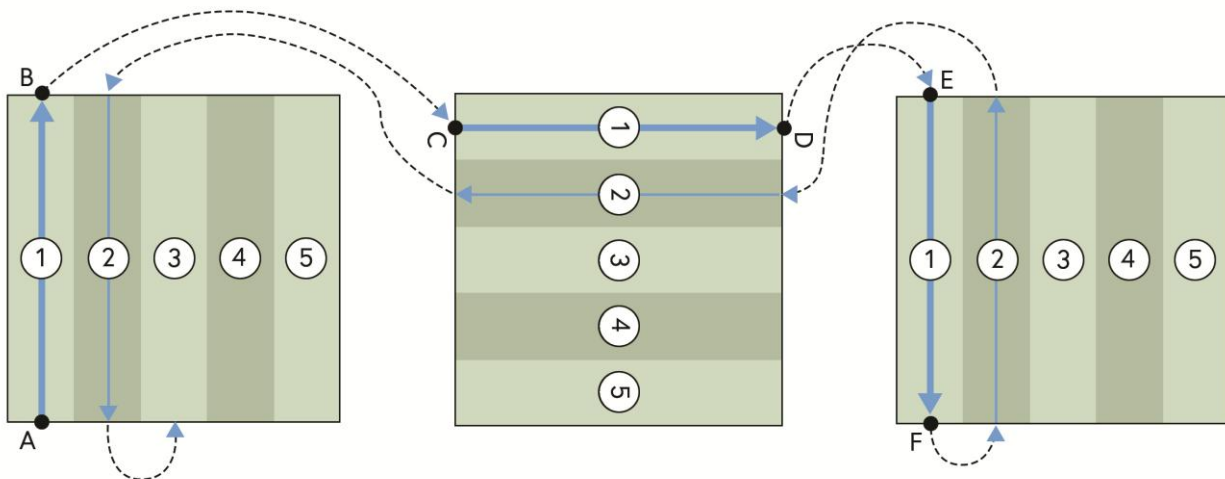
In this pattern you fly back-to-back patterns over a maximum of nine fields. Multiple back-to-back patterns can be full rotate or half rotate patterns.



Full rotate means you fly the first swath of each field and then fly the second swath of each field starting again at Field 1.

Back-to-Back (Multiple Fields)

Half Rotate



Half rotate means you fly the first swath of each field, then fly the second swath of each field in the opposite direction beginning with the last field (Field 3).

Pattern Types

Back-to-Back (Multiple Fields)

Full Rotate

- **Purpose:** Treat **adjacent fields in sequence** using back-to-back swaths while **fully rotating the start edge/heading each field** to distribute turns, workload, and deposition orientation.
- **Uses:** Multiple rectangular fields share a boundary or parallel edges; you want **minimal ferry** and even deposition orientation across the site.
- **General Setup:** Create **A|B** for each field (A1–B1, A2–B2, ...); verify **parallel baselines** and **equal swath width**.
- **Entry (Field 1):** Field 1-Swath 1, Field 2-Swath 1, Field 3-Swath 1; Field 1-Swath 2, Field 2-Swath 2, Field 3-Swath 2.
- **Sequence:** Complete a field or a defined **block of swaths**, then **ferry directly across the shared boundary**, apply the **half-rotate**, and continue back-to-back on the next field; repeat for Fields 3, 4...
- **Turns:** Use **tight 180° turnarounds** outside the crop on normal ends; if space-limited on one side, designate that side for **teardrop half-turns** only where obstacle-free; booms **OFF** in all turns.

Back-to-Back (Multiple Fields)

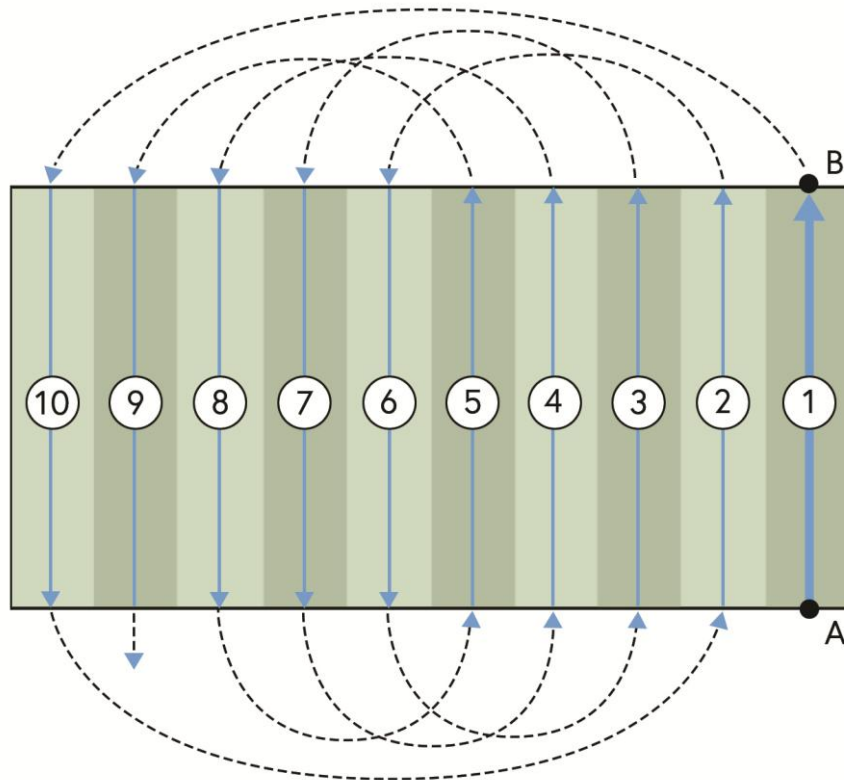
Half Rotate

- **Purpose:** Efficiently treat **adjacent blocks** using back-to-back swaths while **alternating (half-rotating) the start edge/heading** between fields to balance drift and turn traffic.
- **Uses:** Multiple rectangular fields share a boundary or parallel edges; you want **minimal ferry** and even deposition orientation across the site.
- **General Setup:** Create **A|B** for each field (A1–B1, A2–B2, ...); verify **parallel baselines** and **equal swath width**.
- **Entry (Field 1):** Field 1-Swath 1, Field 2-Swath 1, Field 3-Swath 1; **Field 3-Swath 2**, Field 2-Swath 2, Field 1-Swath 2
- **Sequence:** Complete a field or a defined **block of swaths**, then **ferry directly across the shared boundary**, apply the **half-rotate**, and continue back-to-back on the next field; repeat for Fields 3, 4...
- **Turns:** Use **tight 180° turnarounds** outside the crop on normal ends; if space-limited on one side, designate that side for **teardrop half-turns** only where obstacle-free; booms **OFF** in all turns.

Pattern Types

Racetrack

This pattern consists of a series of loops (or racetracks) resulting in wider, smoother turns. In a racetrack pattern, you first fly each side of a field, then alternately work from swath #2 to the middle, and from the middle toward the other end of the field.

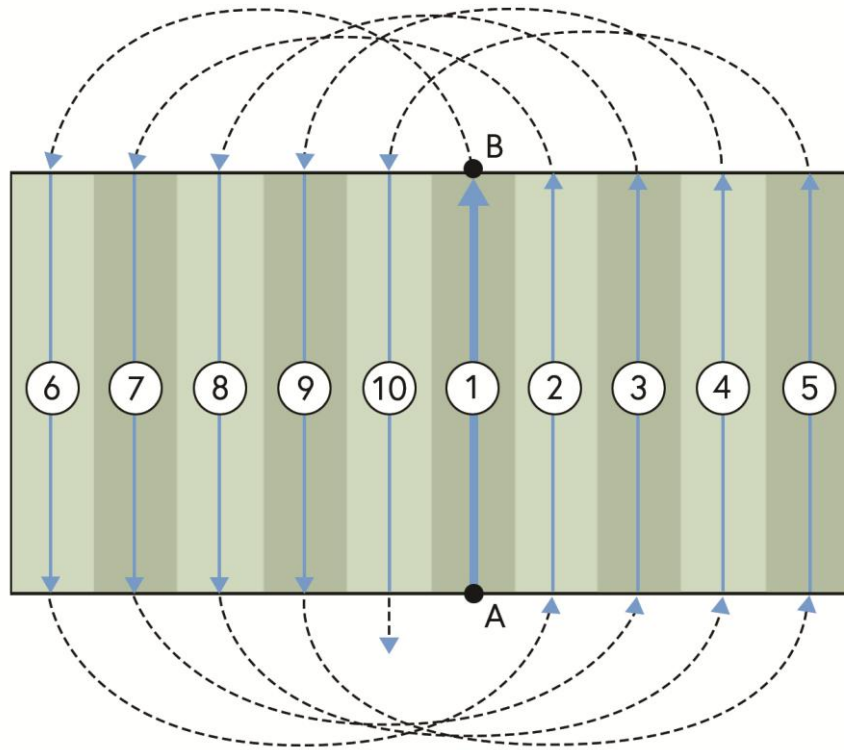


- **Purpose:** Smooth, low-workload coverage using wide oval turns (“racetrack”) on a common heading.
- **Setup:** Establish **A|B** baseline; set **Racetrack** mode (add **C** point if system requires); confirm swath width/boom config.
- **Entry:** Line up on **Swath 1** at the upwind edge; arm booms at the “spray-on” marker.
- **Sequence:** Spray one swath, **loop around the end** outside the boundary, and pick up the **next adjacent swath** on the same primary heading.
- **Turns:** Use **wide, constant-bank turns**; maintain spray **OFF** during turn; re-intercept at the lead-in mark.
- **Variations:** **Reverse Racetrack** (**center-out** or **edge-in** starts, or **odd-even** sequence if drift or rinse-back requires).

Pattern Types

Reverse Racetrack

This pattern is similar to the racetrack pattern. But in “reverse” racetrack you are flying one direction, but swaths are incrementing in the opposite direction. In reverse racetrack, you set your A|B line in the middle of the field.

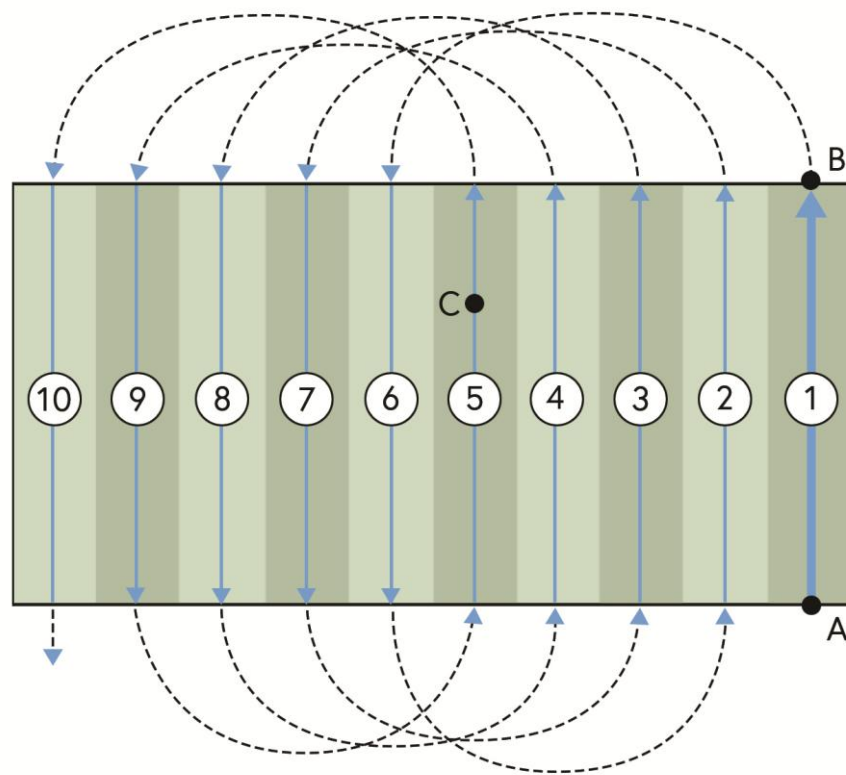


- **Purpose:** Racetrack variant that **alternates headings each pass** to balance deposition and manage wind/sensitive edges. This pattern is recommended for circular fields or other fields where the center line is clearly visible.
- **Setup:** Establish **A|B** baseline; select **Reverse Racetrack** (or Racetrack + Reverse option); verify swath width/boom config.
- **Entry:** Align on **Swath 1** at the upwind edge; arm booms at the spray-on mark.
- **Sequence:**
 - Spray Swath 1 **A→B**.
 - At **B end**, execute a **reverse (≈270°) turn** to roll onto **Swath 2 B→A**.
 - At **A end**, make a **wide oval** outside the boundary to pick up **Swath 3 A→B**.
 - Continue with **alternating reverse/oval turns**, taking the next adjacent swath each time.
- **Turns:** Spray **OFF** in all turns; keep the **reverse turn on the clear side** of the field when possible; maintain constant-bank entries.

Pattern Types

QuicktrackX

Pattern similar to the quick racetrack. You specify the 'C' point for QuickTrack X patterns by the number of swaths or the distance from A|B to the furthest swath in the pattern. After you have set the A and B points, fly the pattern like a quick racetrack.

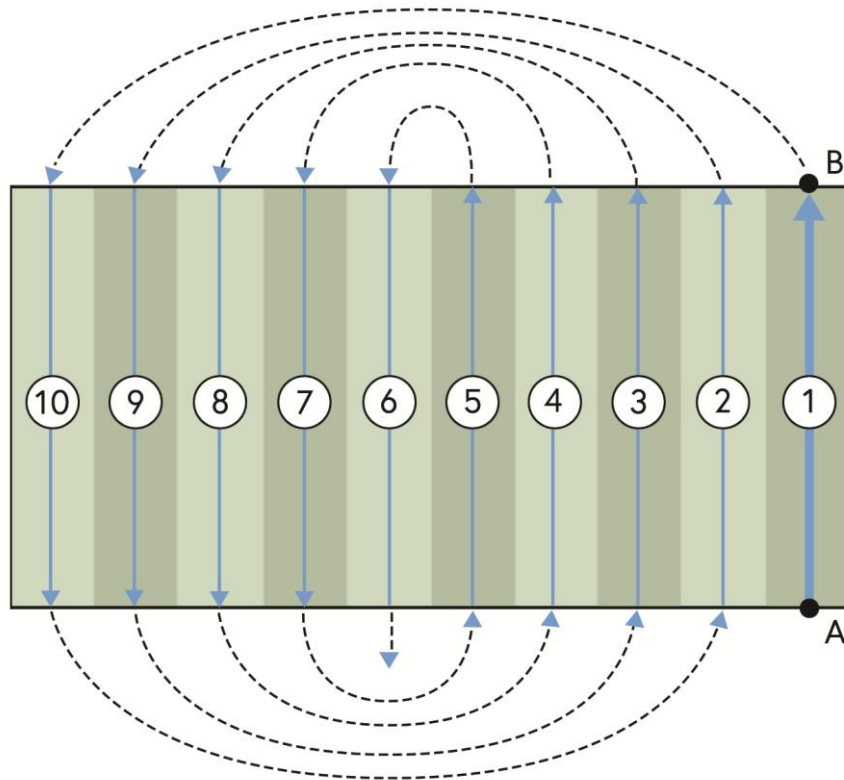


- **Purpose:** Maximum cycle speed using **tight teardrop turns at both ends** (no wide oval).
- **Setup:** Establish **A|B** baseline; select **QuickTrack X**; confirm swath width and boom config.
- **Entry:** Start on **Swath 1** at the **upwind edge**; arm booms at the spray-on mark.
- **Sequence:** Spray Swath 1 **A→B** → **quick teardrop at B** → Swath 2 **B→A** → **quick teardrop at A** → Swath 3 **A→B** → continue taking the **next adjacent swath** each pass.
- **Turns:** Use **constant-bank teardrops** at **both ends**; booms **OFF** in turns; re-intercept at the lead-in marks.

Pattern Types

Squeeze

Fly loops of decreasing size, from the outside of the field to the middle of the field. This pattern allows you to make wide turns at the beginning of a job when carrying a heavy load, and narrower turns as your load becomes lighter.

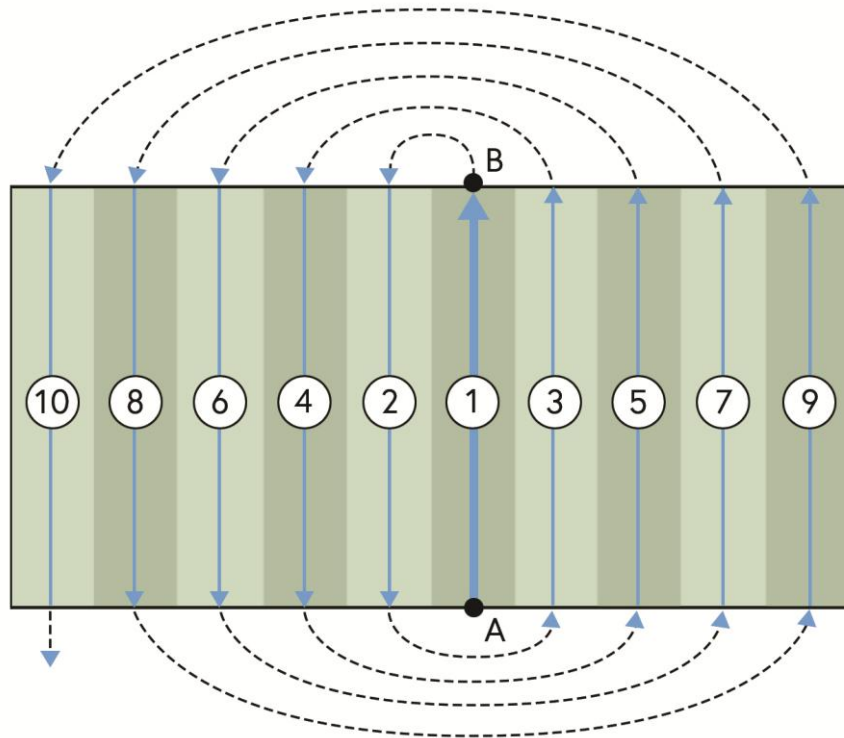


- **Purpose:** Cover a block by **working from both edges toward the center** to balance deposition and manage wind/sensitive borders.
- **Setup:** Establish **A–B** baseline; select **Squeeze** pattern; confirm swath width and boom config.
- **Entry:** Start at the **upwind edge** on the outermost swath.
- **Sequence (outer-in):** Spray **Swath 1**, reposition to the **opposite outer edge** and spray **Swath N**, then **2, N-1, 3, N-2** ... continue **alternating sides** until the center swath(s) are completed.
- **Turns:** Use **wide, constant-bank ovals** outside the boundary; booms **OFF** in all turns; re-intercept on the lead-in marks.

Pattern Types

Expand

This pattern begins with the A|B line in the center of the field and successive swaths increase outward. Expand patterns are useful for fields with a visible center line or with a long, irregular shape.



- **Purpose:** Center-out coverage to **push drift away from sensitive edges** and keep turn traffic off boundaries early. Useful for fields with a visible center line or with a long, irregular shape.
- **Setup:** Establish **A–B** baseline; select **Expand / Center-Out**; confirm swath width and boom config.
- **Entry:** Intercept the **center swath** at the **upwind** side; booms **ON** at the spray-on mark.
- **Sequence:** Spray **center swath**, then take the **adjacent swath on one side**, then the **adjacent on the other**; continue **alternating sides** to **expand outward** until edges are completed.
- **Turns:** Use short 180° or teardrop turns **inside the block** where possible; booms **OFF** in all turns; re-intercept at lead-in marks.