

One of the most critical measuring sticks we use in agriculture is the **field boundary**. And the necessity of optimum field boundary utility will only increase in the years ahead. The proliferation of sustainability and carbon sequestration programs will require the establishment of durable field boundaries to ensure enrolled areas are accurately accounted for.

Despite the importance of a durable field boundary, the industry has failed to build out a set of standards for even the most basic aspects.

Responding to this need, AgGateway is taking a systematic approach to standardizing the properties of a field boundary as an important first step. Member volunteers are participating in an AgGateway Working Group that is seeking alignment on terminology and key data elements associated with fields and field boundaries. One of the first exercises was coming to agreement on the definitions of **"Field"** and **"Field Boundary."**



### **Field**

A named and farmer-accepted physical space where production agriculture takes place used to partition and identify data.

### **Field Boundary**

A geometry that identifies the geo-spatial coordinates of a field. The boundary can be used to define the area for a particular operation, a particular crop or crops, or for legal purposes. A field can have different boundaries that may vary in geometry based on their specific use but are always either a polygon or multi-polygon.

### **Farm**

A grouping of fields that the farmer considers part of the same management group.

### **Grower**

An individual in charge of on-site farm operations to produce, harvest, transport and store a commodity; one who oversees mobile and stationary asset usage; one who oversees selection, application, and usage of all commodity inputs.

## **Categorizing Field Boundaries**

The Working Group developed four categories of field boundaries, a particular field boundary may fit into one or more of the categories.

### **Conceptual Field Boundary**

This boundary represents how the grower thinks of a field, and what they would share with service providers to allocate information at the highest level of the field concept within their operation.

### **Operational Boundary**

This boundary represents a management area used for a specific set of field operations as defined by or for the grower and is shared with service providers for field operation execution, analysis, or recommendations.

### **Economic Defined Boundary**

This boundary is used to define, plan, and analyze a field for business purposes as defined by or for the grower. Use examples would include greenhouse gas/sustainability/traceability programs, ownership/splits, and billing.

### **Administrative Received Boundary**

This boundary is used to organize data that is defined by some other authority and is generally not easy to change. Use examples include government programs, insurance, and legal land description.

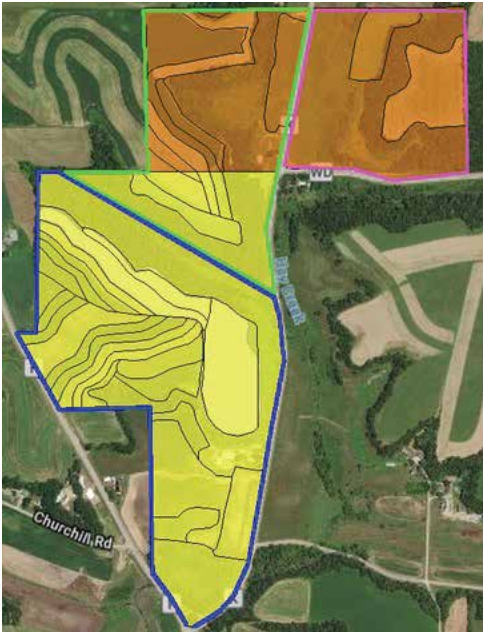
## Visualizing the Defined Boundary

So, what does this look like in the real world? Here's an example of how these definitions fit on a farm field. This can be very messy with different boundary types overlapping or one boundary being able to fall under multiple types in some instances or may need to be completely separate in other situations.

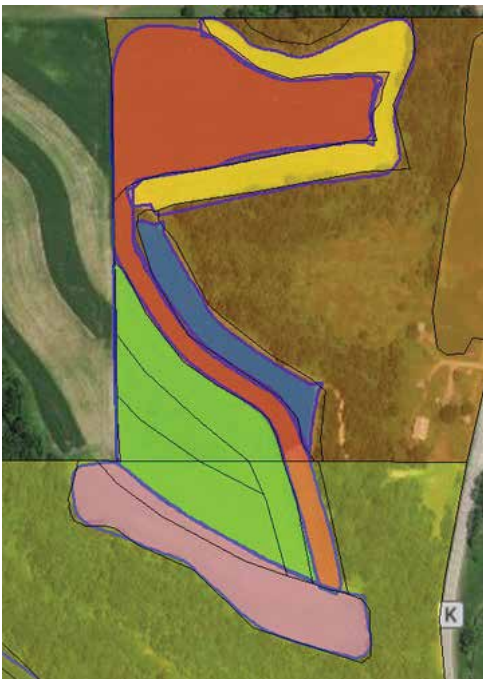
Here's a typical farm field rendering at the start of a farmer-trusted partner business relationship (**Fig. 1**), showing the various fields that make up the farmer's land.

For economic analysis, the pink, green, and blue boundaries represent separate **Economic Defined Boundaries** since the fields are managed at the farm level for economic purposes with the green and blue boundaries showing separate farms, but under the same ownership and the pink boundary under different ownership with cash rent.

The yellow and orange shaded areas represent **Administrative Received Boundaries**. In this example, there are two different government/insurance reporting units.



**Fig. 1**



**Fig. 2**

Zooming in on the green box (**Fig. 2**), we can see how the land is divided up for **Conceptual Field Boundaries**. The pink, green, red, blue, and yellow shaded areas are all managed as separate fields. In this case these **Conceptual Field Boundaries** match the **Operational Boundaries** used during planting. Note the **Operational Boundaries** for the green and red fields have area in two different **Administrative Received Boundaries**, indicated by the same yellow and orange shading as above. When applying lime, only one **Operational Boundary** is used covering all **Conceptual Field Boundaries** since it makes more sense to do as a single operation by the service provider.

## Controlled Vocabulary for Field Boundaries

A separate but equally important challenge for the working group is establishing terminology for referencing the various aspects of the field and field boundary.

Contact member services for more information about joining subsequent working groups building off this effort. The email address is [member.services@aggateway.org](mailto:member.services@aggateway.org). Future topics being scoped and prioritized include field boundary accuracy, field identifiers, as well as numerous other aspects related to accurately and efficiently sharing field and field boundary information throughout the industry.