Ag-Analytics

COMMON LAND UNIT BOUNDARIES

API Documentation 2021

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Service Overview

Common Land Unit (CLU) boundaries are farm or field boundaries used by the United States Department of Agriculture (USDA) in the delivery of certain farm programs. It is not uncommon for more than one crop to be grown on a CLU. These CLU boundaries are derived from the last publicly available USDA distribution from 2008. A single CLU is approximately interpreted as a "field". A Common Land Unit (CLU) is the smallest unit of land that has a permanent, contiguous boundary, a common land cover and land management, a common owner and a common producer in agricultural land associated with USDA farm programs.

The Ag-Analytics Common Land Unit Boundary API provides a service for which a user can pass a point (x, y coordinates pair), a line, an envelope (bounding box), or a polygon in geojson. The service will send back boundaries in geojson. To retrieve the desired level of boundary, user will need to pass a level parameter in the GET request.
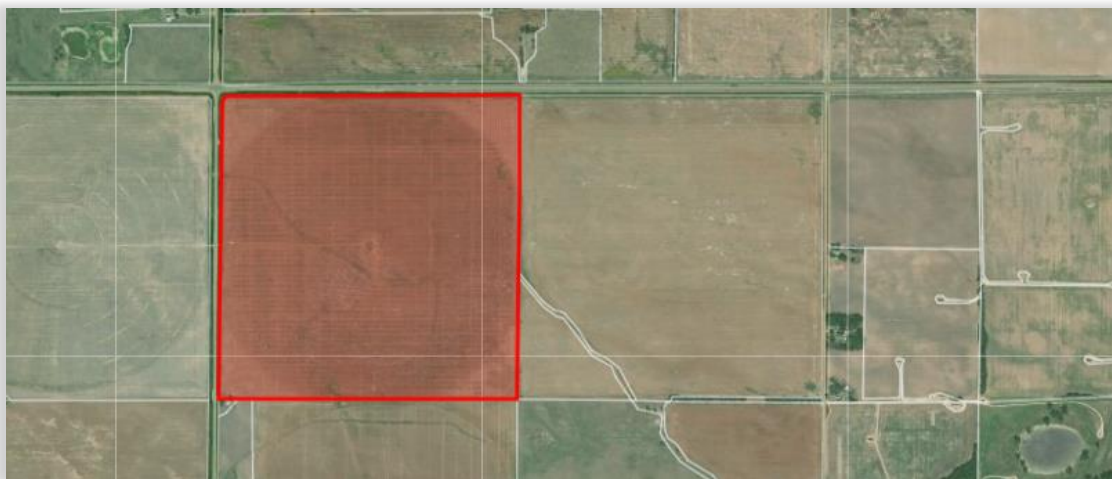
CLU Boundaries shown in DataLayers

GET Request

GET Request Example – application/json

```
Polygon CLU Level Search:

{

"Geometry": "{"geometryType": "esriGeometryPolygon", "features": [{"geometry":
{"rings": [[[-91.53900737389114, 34.55980772414722], [-91.53894861128936,
34.560481053757655], [-91.53892673258258, 34.56192576336332], [-91.53889249809026,
34.56325987524309], [-91.5388720178293, 34.564625711607334], [-91.53882557593954,
34.566462376337654], [-91.53913423046032, 34.566538207172584], [-
91.53917447152463, 34.566730301462314], [-91.53962869840569, 34.566740245266146],
[-91.54305890694297, 34.56681730907161], [-91.54305614512498, 34.566585087032195],
[-91.54304565183531, 34.56613185570063], [-91.54306887772651, 34.56417543544802],
[-91.54310131717199, 34.562940478320456], [-91.54309762365637, 34.56170736210515],
[-91.54308258968973, 34.561319449433086], [-91.54285584362225, 34.56111836821816],
[-91.54218857094577, 34.56094358497853], [-91.54135688960872, 34.560665392294084],
[-91.54036096688509, 34.56031309277506], [-91.53965887605625, 34.560065743239534],
[-91.53900737389114, 34.55980772414722]]], "spatialReference": {"wkid": 4326}}}]}"

"Geometry_type": "polygon",

}

Envelope County Level Search:

{

'Geometry': '{"xmin": -101.79931640625, "ymin": 37.45741810262938, "xmax": -
101.79931640625, "ymax": 41.16211393939692,"spatialReference": {"wkid": 4326}}',
'Geometry_type': 'envelope',

'Level': 'County'

}

Point PLSS Level Search:

{'Geometry': '{"x":-91.53900737389114,"y": 34.55980772414722}',
'Geometry_type': 'point',
'Level': 'PLSS'}
```

Supported Boundary Level

Parameter	Source	Description
Common Land Unit (CLU)	USDA	Boundaries from this source are derived from the last publicly made 2008 Common Land Unit (CLU) boundaries distribution by the USDA.
1 SQMI Grid	-	Square mile grid
Public Land Survey System (PLSS)	USGS	The Public Land Survey System (PLSS) is the surveying method developed and used in the United States to plat, or divide, real property for sale and settling.
Public Land Survey System (PLSS) - First Division	USGS	This source provides the boundaries of first division when PLSS is not available.
County	-	County level US boundaries
State	-	State level US boundaries

Header Parameters

Ocp-Apim-Subscription-Key: Subscription keys are given upon purchase - Purchase APIs ⬈

Request Parameters

Parameter	Type	Required?	Default	Options	Description
Geometry	GeoJSON /JSON	Yes	-	GeoJSON, JSON, envelope, point	The AOI used for searching boundaries. It can be a point (x,y coordinate pairs), a line or polygon in GeoJSON, or an envelope (bounding box with xmin, xmax, ymin, ymax).
Geometry_type	String	Yes	-	'envelope', 'point', 'line', 'polygon'	The geometry type of the geometry passed in the request.

Level	String	No	'CLU'	'CLU', 'County', 'State', 'PLSS','PLSS_FIRSTDIVISION', '1SQMI_GRID'	Boundary searching level. See description above.

GET Response

GET Response Example (Snippet) – application/json

```
{'msg': 'Found 2 results',
 'results':
    {'crs': {'properties': {'name': 'EPSG:4326'}, 'type': 'name'},
    'features': [
      {'geometry': {'coordinates': [[[-91.52992284616238, 34.56657638609141], [-
        91.53092105316404, 34.56660643963551], [-91.53463674249161,
        34.56668041337042], [-91.53826525963399, 34.566753229677886], [-
        91.54311329704097, 34.56686304319493], ...], 'type': 'Polygon'},
      'id': 1744,
      'properties': {'CALCACRES':14.68000031,'CALCACRES2':None,'OBJECTID': 1744},
      'type': 'Feature'},
      {'geometry': {'coordinates': [[[-91.53900737389114, 34.55980772414722], [-
        91.53894861128936, 34.560481053757655], [-91.53892673258258,
        34.56192576336332], [-91.53889249809026, 34.56325987524309], ...],
      'type': 'Polygon'},
      'id': 1,
      'properties': {'CALCACRES': 65.45999908, 'CALCACRES2': None, 'OBJECTID': 1},
      'type': 'Feature'}
    ],
    'type': 'FeatureCollection'},
 'status': 'SUCCEED'}
```

Response Parameters

Parameter	Data Type	Description
status	String	Status of the API call: 1. SUCCEED: API call was successful. 2. FAILURE: API call was failed, see msg for error message. 3. NoFound: No boundaries found for current geometry
msg	String	Messages from the API call
results	GeoJSON	If the API call was successful, all boundaries will be returned in GeoJSON as a feature collection

Boundary Availability by State

State	State FIPS	Total Acres	Boundary Count
Arizona	4	528,832	33,917
Arkansas	5	6,080,673	254,254
California	6	13,396,334	212,539
Colorado	8	19,579,683	211,719
Connecticut	9	531,976	59,321
Delaware	10	533,347	39,968
Georgia	13	8,705,326	751,898
Hawaii	15	1,611,910	10,512
Idaho	16	10,732,363	383,671
Illinois	17	25,372,970	1,482,605
Indiana	18	14,093,068	753,056
Iowa	19	26,580,471	1,380,415
Kansas	20	43,326,372	1,142,617
Kentucky	21	10,264,908	957,171
Louisiana	22	7,248,373	222,710
Maine	23	2,373,594	127,727
Maryland	24	2,849,453	203,967
Massachusetts	25	547,786	45,412
Michigan	26	4,006,083	195,718
Minnesota	27	22,442,920	875,986
Mississippi	28	1,649,422	95,411
Missouri	29	29,821,742	1,899,246
Montana	30	50,721,906	658,292
Nebraska	31	36,676,731	645,104
Nevada	32	1,672,609	23,266
New Hampshire	33	894,481	33,972
New Jersey	34	952,435	77,706
New York	36	9,490,409	549,223
North Carolina	37	13,146,229	1,194,191
North Dakota	38	32,140,089	872,467
Ohio	39	14,995,390	983,316

Oklahoma	40	29,320,352	733,846
Oregon	41	13,212,207	199,824
Pennsylvania	42	7,445,215	470,518
Rhode Island	44	72,680	7,486
South Carolina	45	2,897,836	182,273
South Dakota	46	36,605,108	624,934
Tennessee	47	14,462,059	1,165,303
Texas	48	123,069,000	1,326,269
Utah	49	4,941,516	87,729
Vermont	50	1,544,910	131,722
Virginia	51	14,283,368	821,230
Washington	53	6,000,411	183,964
West Virginia	54	2,843,839	171,781
Wisconsin	55	15,227,478	959,647
Wyoming	56	18,996,788	82,021
Total		**703,890,650**	**23,525,924**

Citations:

- USDA Common Land Unit Boundaries
- GeoJSON Specification
- ArcGIS Features and Geometries
- ArcGIS REST API Query Information
- ArcGIS Esri Geometry Types
- Spatial Reference Information: World Geodetic System (WGS 84) - National Geospatial-Intelligence Agency – 1984

Ag-Analytics

Please contact **support@analytics.ag** or **josh@ag-analytics.org** with any comments or questions.

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