

Consider each of the following examples carefully. You may find it helpful to replicate, more closely examine, and perhaps even modify each.

1

A WITHIN (Container) Join

In this example, each of a set of “target features” on a **Lakes** layer (shown below as a set of irregular polygons in various colors) inherits the attribute values of whatever “join feature” on a **Towns** layer (shown as rectilinear polygons in grey) wholly contains that lake.

Geoprocessing

Spatial Join

Parameters Environments

Target Features
Lakes

Join Features
Towns

Output Feature Class
lakesWITHINTowns

Join Operation
Join one to one

☒ Keep All Target Features

Match Option
Within

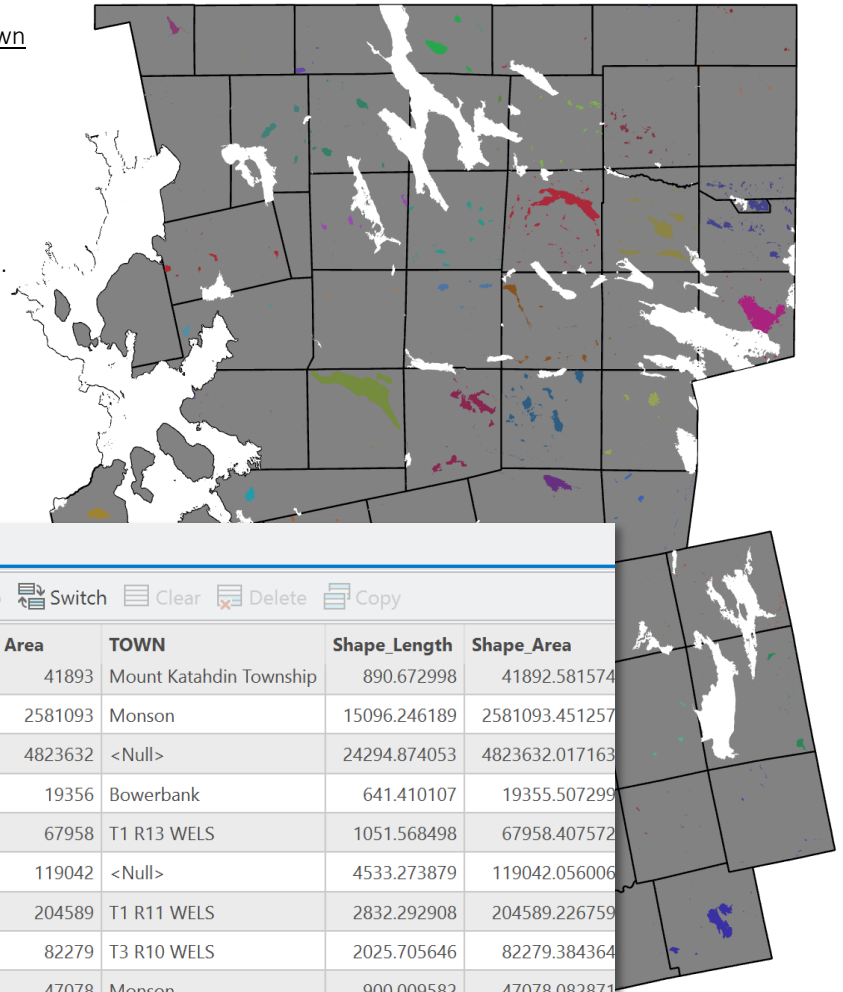
Search Radius

Fields

Attribute Match

Lakes that lie entirely within each town are colored according to that town, while lakes that span multiple towns and are shown in white.

This is because the latter are not wholly contained within a one town and therefore inherit no town values.

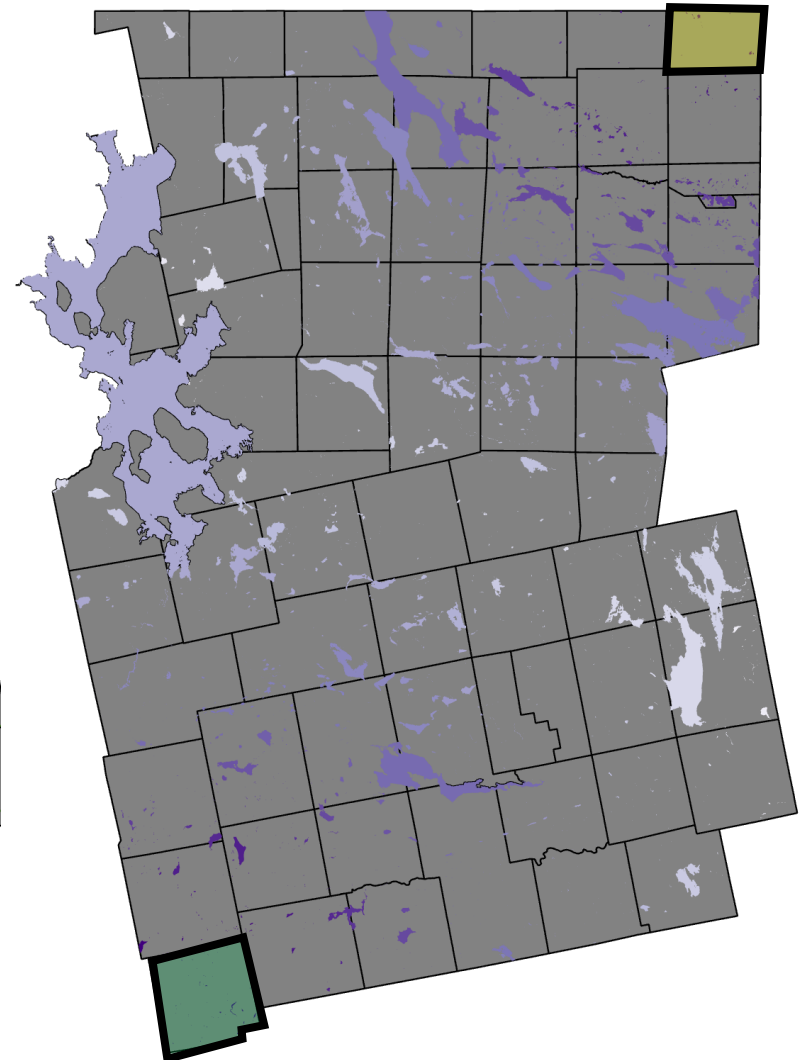
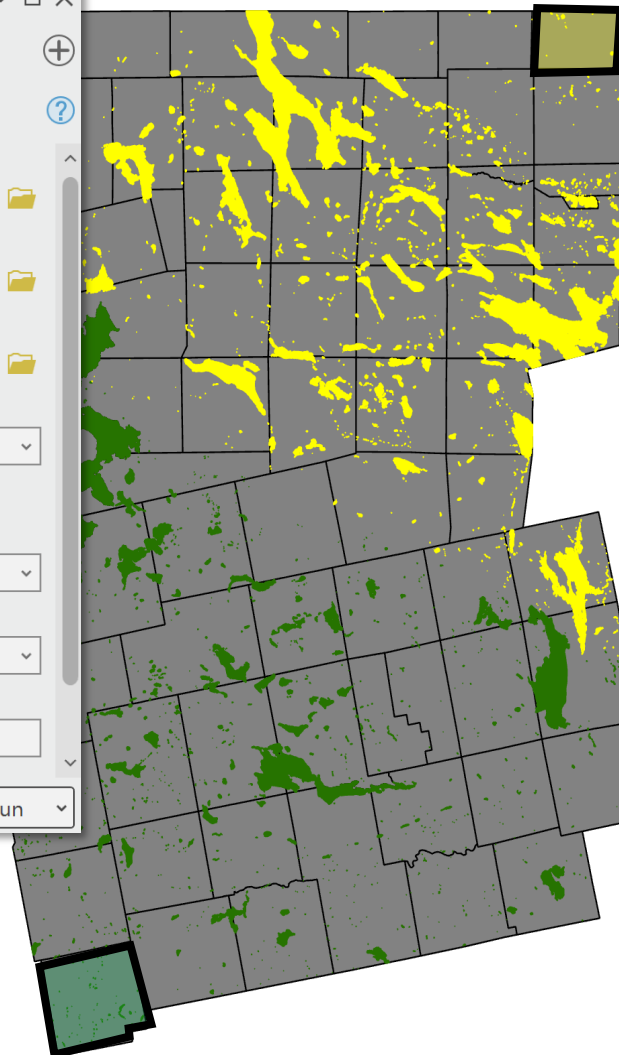
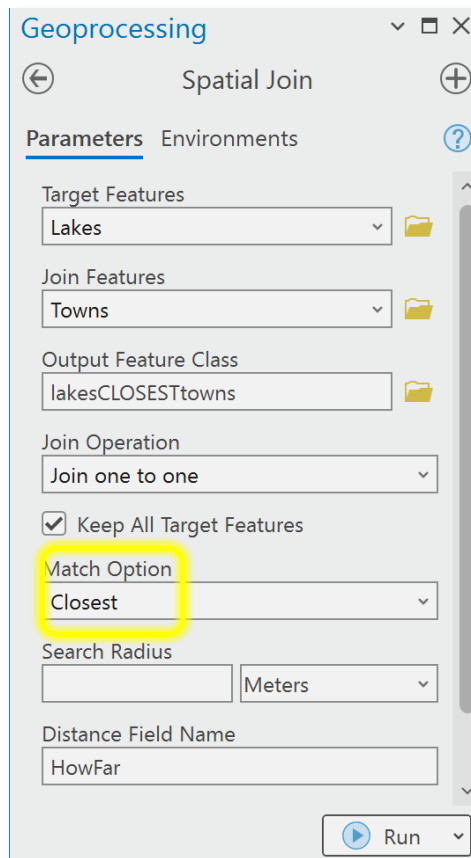


Field:	Add	Calculate	Selection:	Select By Attributes	Zoom To	Switch	Clear	Delete	Copy
OBJECTID *	Shape *	Join_Count	TARGET_FID	Name	Area	TOWN	Shape_Length	Shape_Area	
2150	743	Polygon ZM	1	742	Lake Cowles	41893	Mount Katahdin Township	890.672998	41892.581574
2151	787	Polygon ZM	1	786	Lake Hebron	2581093	Monson	15096.246189	2581093.451257
2152	1322	Polygon ZM	0	1321	Lake Onawa	4823632	<Null>	24294.874053	4823632.017163
2153	916	Polygon ZM	1	915	Lamont Ponds	19356	Bowerbank	641.410107	19355.507299
2154	255	Polygon ZM	1	254	Lazy Tom Pond	67958	T1 R13 WELS	1051.568498	67958.407572
2155	296	Polygon ZM	0	295	Lazy Tom Stream Reserv...	119042	<Null>	4533.273879	119042.056006
2156	2022	Polygon ZM	1	2021	Leavitt Pond	204589	T1 R11 WELS	2832.292908	204589.226759
2157	475	Polygon ZM	1	474	Lily Pad Pond	82279	T3 R10 WELS	2025.705646	82279.384364
2158	347	Polygon ZM	1	346	Lily Pond	47078	Monson	900.009582	47078.082871
2159	2157	Polygon ZM	0	2156	Lily Pond	80909	<Null>	1438.625063	80909.267601
2160	2030	Polygon ZM	1	2029	Little Beaver Pond	20332	Rainbow Township	710.460735	20332.178609
2161	2310	Polygon ZM	1	2309	Little Beaver Pond	28140	T3 R11 WELS	950.190251	28139.789638

2

A CLOSEST (Nearest Neighbor) Join

In this example, each of a set of “target features” on a **Lakes** layer (shown below as a set of irregular polygons in bright yellow or green) inherits the attribute values of whatever selected “join feature” on a **Towns** layer (shown in darker yellow and green) lies closest to that lake.



If (and only if) a *Distance Field Name* is specified, that field's values will also indicate each lake's distance to the nearest selected town feature (as shown to the far right in dark-to-light shades of purple).

3

[A Basic INTERSECTS \(Contact Summary\) Join](#)

In this example, each of a set of “target features” on the **Towns** layer counts the number of “join features” on the **Lakes** layer that touch that town, even if not wholly contained by it.

Geoprocessing [icon] [icon]

← Spatial Join (+)

Parameters Environments (?)

Target Features
Towns [icon]

Join Features
Lakes [icon]

Output Feature Class
townsINTERSECTlakes [icon]

Join Operation
Join one to one [icon]

☒ Keep All Target Features

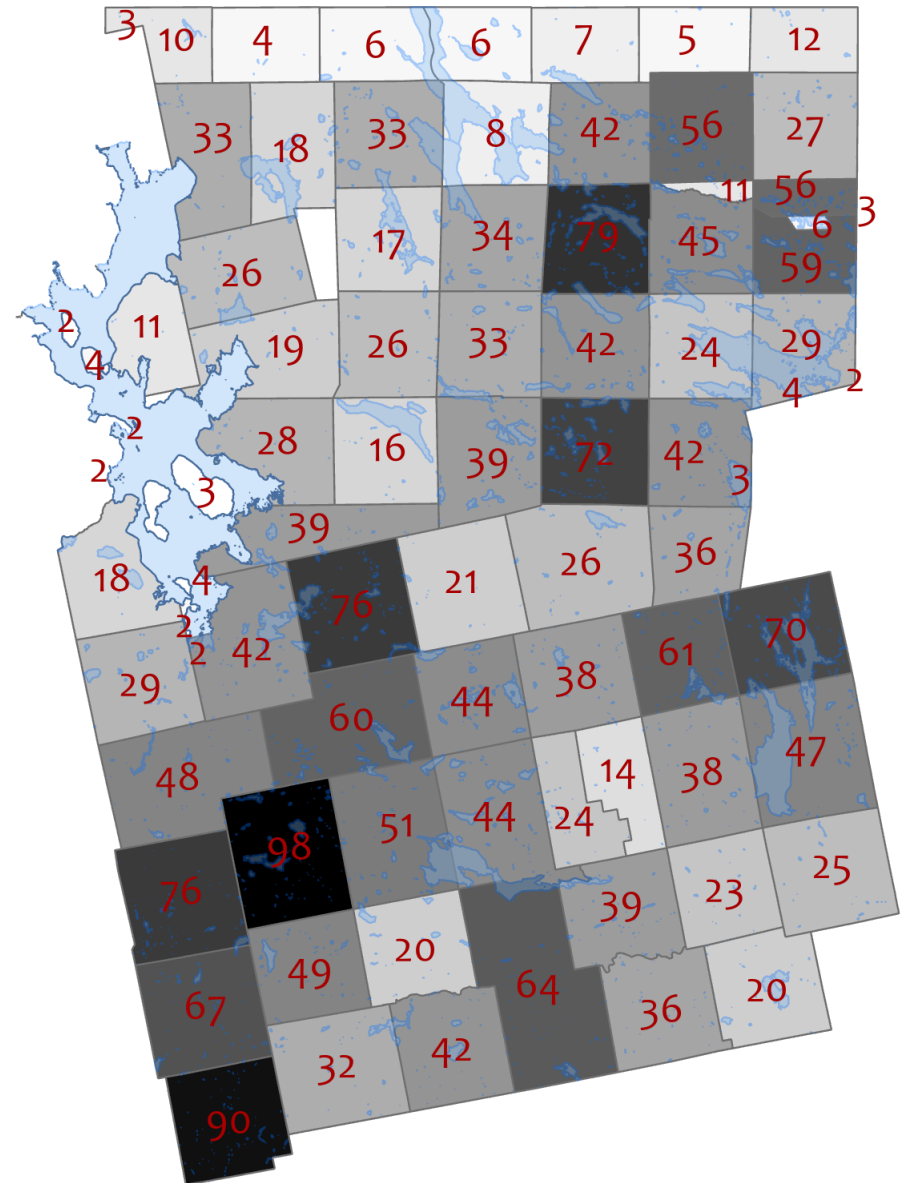
Match Option
Intersect [icon]

Search Radius
[] Meters [icon]

> Fields

> Attribute Matching

[Run] [icon]



This number is again indicated by the red label over each town (which you should now compare to those on the previous page).

4

[A Basic CONTAINS \(Content Summary\) Join](#)

In this example, each of a set of “target features” on that **Towns** layer counts the number of “join features” on the **Lakes** layer that are wholly contained by that town.

Geoprocessing ⌵ □ ×

← **Spatial Join** +

Parameters Environments ?

Target Features
Towns 📁

Join Features
Lakes 📁

Output Feature Class
townsCONTAINlakes 📁

Join Operation
Join one to one ⌵

☒ Keep All Target Features

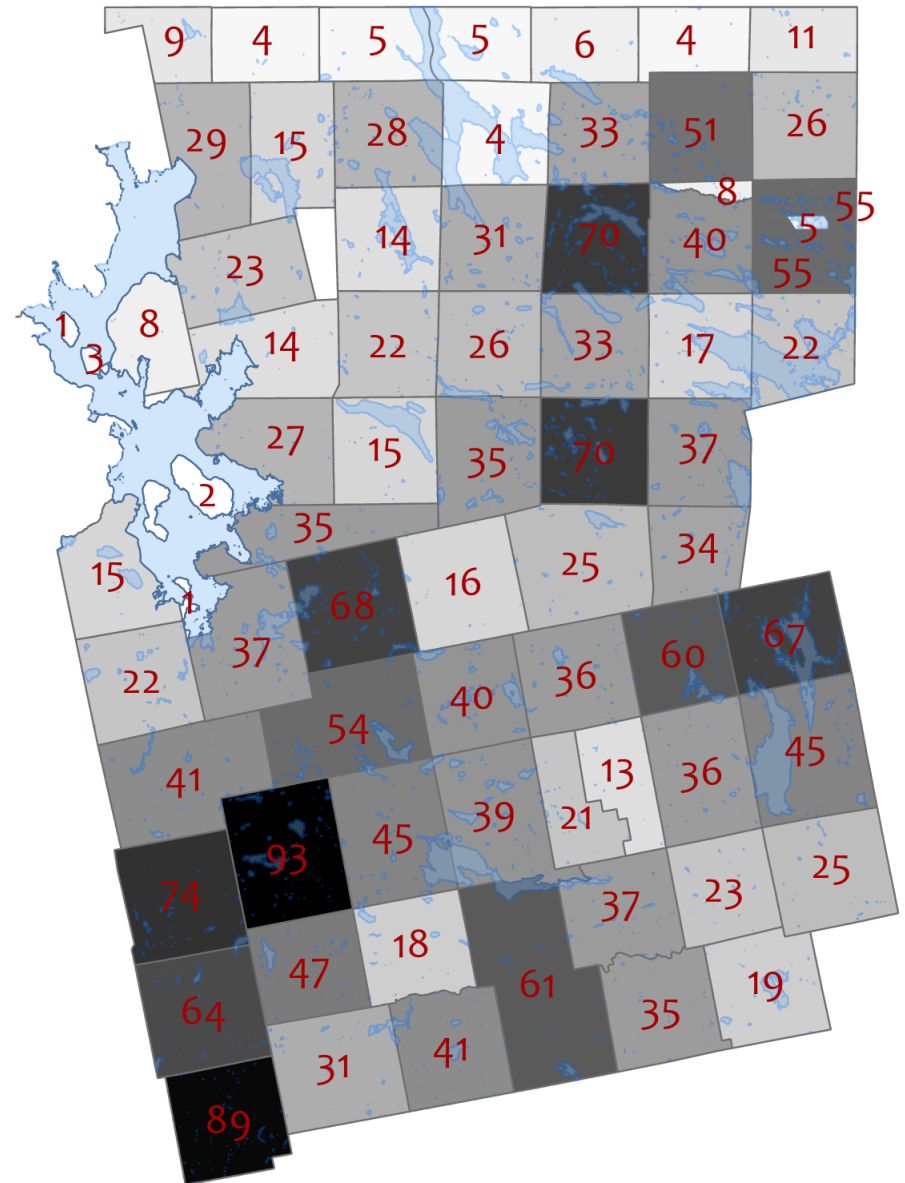
Match Option
Contains ⌵

Search Radius
 Meters ⌵

➤ Fields

➤ Attribute Matching

▶ Run ⌵



This number is indicated by the red label over each town.

5

[Another CONTAINS \(Content Summary\) Join](#)

In this example, each “target feature” on the **Towns** layer summarizes a specified attribute of whatever “join features” on the **Lakes** layer are wholly contained by that town. The **Lakes** attribute being summarized is *Area*, the summary statistic employed is the *Maximum* value, and new field recording that summary statistic will be called *Area_Max*.

The screenshot displays the **Geoprocessing** window with the **Spatial Join** tool selected. The **Parameters** tab is active, showing the following settings:

- Target Features:** Towns
- Join Features:** Lakes
- Output Feature Class:** townsCONTAINLakes
- Join Operation:** Join one to one
- ☒ **Keep All Target Features**
- Match Option:** Contains
- Search Radius:** (empty)
- Fields:** (button highlighted with a red dashed line and callout 1)
- Attribute Matching:** (expanded section)

The **Fields** panel is open, showing the **Add Fields** dropdown (callout 2) and the **Select Field(s)** list. The **Area** field is selected (callout 4). The **Select Action(s)** panel shows the **Maximum** summary statistic selected (callout 5). Other available actions include First, Last, Count, Minimum, Sum, Mean, Standard Deviation, Median, Mode, Concatenate, and Range.

The background map shows a grid of town polygons with various numerical values (e.g., 892673, 28776, 417112, 1811919, 99362, 43617, 93334) overlaid on them, representing the results of the spatial join.

6

A Simplified **One-to-one** INTERSECT (Contact Summary) Join

In this example, each of two pre-selected “target features” on a **Towns** layer records the number of “join features” on a **LAKES** layer that are touched by that town.

Geoprocessing

Spatial Join

Parameters Environments

Target Features
Towns

☒ Use the selected records: 2

Join Features
Lakes

Output Feature Class
twotownsINTERSECTlakes

Join Operation
Join one to one

☐ Keep All Target Features

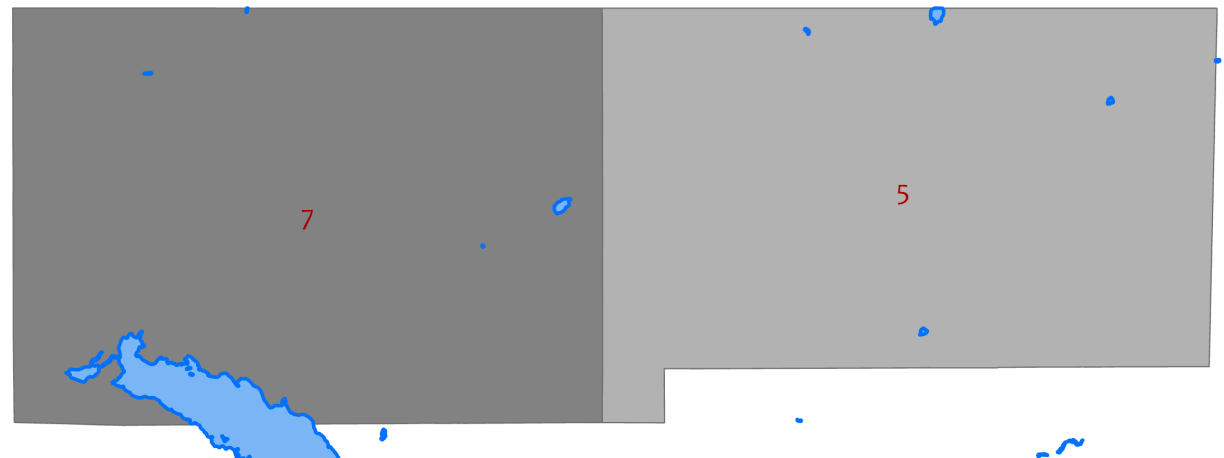
Match Option
Intersect

Search Radius
Meters

Fields

Attribute Matching

Run

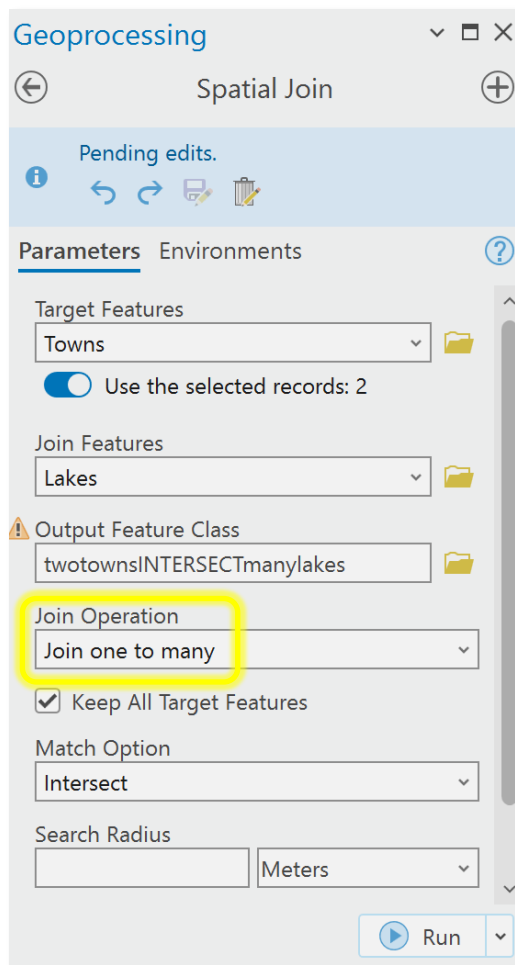


twotownsINTERSECTlakes									
Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy									
	OBJECTID *	Shape *	Join_Count	TARGET_FID	TOWN	Name	Area	Shape_Length	Shape_Area
1	1	Polygon ZM	7	4	T4 R11 WELS	(unnamed)	6011	34074.984328	70590274.014512
2	2	Polygon ZM	5	7	T4 R10 WELS	(unnamed)	7278	34801.353683	64252420.943048

7

A Simplified **One-to-many** INTERSECT (Contact Summary) Join

In this example, each of two pre-selected “target features” on a **Towns** layer is actually replicated for each of the “join features” on a **LAKES** layer that touches that town.



Field:	Add	Calculate	Selection:	Select By Attributes	Zoom To	Switch	Clear	Delete	Copy
OBJECTID *	Shape *	Join_Count	TARGET_FID	JOIN_FID	TOWN	Name	Area	Shape_Length	Shape_Area
1	1	Polygon ZM	1	4	926	T4 R11 WELS (unnamed)	6011	34074.984328	70590274.014512
2	2	Polygon ZM	1	4	927	T4 R11 WELS (unnamed)	2067	34074.984328	70590274.014512
3	3	Polygon ZM	1	4	961	T4 R11 WELS Williams Pond	41692	34074.984328	70590274.014512
4	4	Polygon ZM	1	4	1328	T4 R11 WELS Harrington Lake	4932295	34074.984328	70590274.014512
5	5	Polygon ZM	1	4	1729	T4 R11 WELS Duck Pond	99362	34074.984328	70590274.014512
6	6	Polygon ZM	1	4	2018	T4 R11 WELS (unnamed)	688	34074.984328	70590274.014512
7	7	Polygon ZM	1	4	2278	T4 R11 WELS (unnamed)	1350	34074.984328	70590274.014512
8	8	Polygon ZM	1	7	1013	T4 R10 WELS (unnamed)	7278	34801.353683	64252420.943048
9	9	Polygon ZM	1	7	1246	T4 R10 WELS Center Pond	43617	34801.353683	64252420.943048
10	10	Polygon ZM	1	7	1546	T4 R10 WELS (unnamed)	2204	34801.353683	64252420.943048
11	11	Polygon ZM	1	7	1796	T4 R10 WELS (unnamed)	9098	34801.353683	64252420.943048
12	12	Polygon ZM	1	7	2041	T4 R10 WELS (unnamed)	3795	34801.353683	64252420.943048

In other words, the output feature class will include seven copies of that dark grey town feature – each with data on just one of that town’s seven lakes.

And it will include five copies of the light grey town – each with data on just one of that town’s five lakes.