The Relationship Between the Real Estate Tax Roll and the Property Spatial Database

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1. General Overview

Each of the two databases being discussed, the Real Estate Tax Roll and the Property Spatial Database, perceive parcel data in a different light. The Real Estate Tax Roll describes every piece of taxed property and some properties that are not taxed. The Property Spatial database attempts to define every taxed parcel (with some gaps that will be explained later) and also all land within the county that is not taxed (i.e., right-of-way).

The Real Estate Tax Roll contains three types of parcels:

❑ Platted Parcels ("P") (90.45%)

❑ Non-Platted (acreage) Parcels ("F") (9.51%)

❑ Leased Land Parcels ("L") (0.04%)

The Property Spatial Database contains six types of polygons:

❑ Platted Polygons ("P") (83.3%, 26.8% by area)
❑ Non-Platted (acreage) Polygons ("F") (9.3%, 66.5% by area)
❑ Right-of-way Polygons ("R") (0.7%, 0.3% by area)
❑ Right-of-way Polygons Dedicated by a Plat, or Non-Platted, City-owned Right-of-way ("D") (3.3%, 4.6% by area)
❑ Right-of-way Polygons Owned by Johnson County ("C") (3.2%, 1.7% by area)
❑ Polygons with multiple Real Estate Tax Roll PropID claims on them (Z) (0.2%, 0.1% by area)

2. The Real Estate Tax Roll

The Real Estate Tax Roll (RE roll) is maintained through an application/database called OASIS and is stored as mainframe VSAM files. It contains ownership, address, and property tax data about platted parcels, non-platted parcels, and leased land. Platted parcels account for 90.45% of the records in the RE roll (171,758 of 189,888), non-platted parcels account for 9.51% (18,053 of 189,888), and leased land parcels account for 0.04% (77 of 189,888).

As the name implies, a platted parcel is created as the result of a recorded plat. The legal description of a platted parcel makes reference to the plat. For example, the legal description, "CEDAR VALLEY LT 75 LEC 12A 75", makes mention of the plat ("CEDAR VALLEY) and the lot number ("LT 75"). ("LEC" stands for Lenexa City and "12A 75" is a "Plate number" that explains the parcel's origin.)

A non-platted parcel has a metes and bounds legal description (a.k.a., Rectangular Survey). For example, the description, "1-14-22 W 1/2 N 1/2 NW1/4 NW1/4 EX W 50' & EX N 50' 8.54 ACS M/L", states a Section (1), Township (14), Range (22), a portion of a quarter section (W 1/2 N 1/2 NW1/4 NW1/4), an excepted tract of land (EX W 50' & EX N 50'), and a total acreage (8.54 ACS M/L).

An ID for a parcel is called different things in different settings. In some settings it is know as an RE# ("RE number"); in other settings it is called a Parcel ID; in still others it is referred to as a PropID. All of these different names refer to the same ID. This document will refer to an ID for a parcel as a PropID.

PropIDs are formatted in two different ways. Platted parcels are assigned a PropID with a length of 15 or 16 characters in the format "CPSSSSBBBB LLLLL", where …

- Position 1 (C): City /Township Code (cities are letters, townships are numbers)
- Position 2 (P): The letter "P"
- Positions 3 – 6 (SSSS): Subdivision number (numbers are assigned alphabetically by plat name within each city/township).
- Positions 7-10 (BBBB): Block number
- Position 11: A blank space
- Positions 12 – 15 (LLLL): Lot number

- Position 16 (L): Lot number continued (optional — usually on a split parcel)

Non-platted parcels are assigned a PropID with a length of 13 characters in the format "CFRRTTSS-QLLL", where …

- Position 1 (C): City /Township Code (cities are letters, townships are numbers)
- Position 2 (F): The letter "F"
- Positions 3 – 4 (RR): Public Land Survey System (PLSS) Range
- Positions 5 – 6 (TT): PLSS Township
- Positions 7 – 8 (SS): PLSS Section
- Position 9: A dash ("-")
- Position 10: Quarter Section (1=Northwest, 2=Southwest, 3=Northeast, 4=Southeast)
- Positions 11-13: Lot number

Because the second character of a platted parcel is always the letter "P", a platted parcel is sometimes referred to as a "P" parcel. Similarly, because the second character of a non-platted parcel is always the letter "F" (presumably for "farm"), a non-platted parcel is sometimes referred to as an "F" parcel.

In a leased land situation, responsibility for property taxes is divided between a land owner and a person/organization that leases a building on the land. The building is leased to the other party and they pay taxes on their usage of the leased property. Most leased land parcels are County owned (and are found at New Century Air Center).

Leased land can occur on platted and non-platted parcels. In either situation, a leased land PropID refers to the building and is identical to the PropID of the parcel on which the building resides, except that the second character is an L. Thus, for example, in a platted situation, if the PropID of the actual parcel is "NP96000002 0002", the building (i.e., the leased land) PropID would be "NL96000002 0002". Similarly, in a non-platted situation if the actual parcel PropID is "2F231418-4009", the building (i.e., leased land) PropID would be "2L231418-4009".

In general, the "L" parcel is assigned the Improved Value and the associated "F" or "P" parcel is assigned the Land Value. In other words, the "L" parcel has an Improved Value > 0 and a Land Value = 0, while the associated "F" or "P" parcel has a Land Value > 0 and an Improved Value = 0. The most common exception to this is the situation where the associated "F" or "P" parcel is also assigned its own Improved Value. Another fairly common exception is the situation where the "L" parcel has neither a Land Value nor an Improved Value, and the associated "F" or "P" parcel has both a Land Value and Improved Value. We suspect this last exception may be due to expired leases for which data about the Leased Land parcel has not yet been deleted.

3. The Property Spatial Database

The Property Spatial Database is maintained through a Geographic Information System (GIS) and is stored in ESRI® coverage format. The Property Spatial Database is a graphical representation of parcel boundaries and right-of-way. The legal description of a parcel boundary for a non-platted parcel is a straightforward metes and bounds description. A boundary description for a platted parcel references a plat. The recorded plat contains the information that describes each parcel boundary in detail (the bearing and distance of lines and the parameters of curve segments). Delineation of right-of-way is also an important function of the Property Spatial Database.

4. The Relationship Between the Real Estate Tax Roll and the Property Spatial Database

Actually, the Property Spatial Database is more than a *graphical representation* of parcel boundaries. A drawing sketched on paper or made with computer aided drafting software would qualify as a *graphical representation*. The parcel polygons in the Property Spatial Database are "*intelligent shapes*" (as opposed to "*dumb graphics*") in that they can be linked to data about the parcel (e.g., owner name, situs address, land value, improved value). This "linking" is precisely what takes place here at Johnson County. Parcel polygons in the Property Spatial Database are linked to data from the Real Estate Tax Roll. In order to perform this link, every parcel polygon in the Property Spatial Database must be assigned the ID of the parcel it is associated with in the Real Estate Tax Roll. In other words, every parcel polygon is assigned a PropID.

On the surface it would seem logical that there would be one polygon in the Property Spatial Database for each PropID in the Real Estate Tax roll. Unfortunately, however, the situation is far more complex than a simple one-to-one relationship. The complexity of the relationship between the Real Estate Tax Roll and the Property Spatial Database is due to four exceptions to this one-to-one relationship:

- ❑ Entities that are taxed but not mapped (**Unmapped Taxed Entities**)
- ❑ Entities that are mapped but not taxed (**Untaxed Mapped Entities**)
- ❑ Entities that are taxed but are mapped as multiple polygons (**Taxed Entities Mapped as Multiple Polygons**)
- ❑ Entities that are mapped as a single polygon but relate to multiple taxed entities (**Multiple Taxed Entities Mapped as a Single Polygon**)

Each of these categories is described in greater detail below.

a. Unmapped Taxed Entities

Unmapped Taxed Entities refer to the situations where a record in the Real Estate Tax Roll has no associated polygon in the Property Spatial Database. There are 1388 records (0.7%) that fit into this "Unmapped Taxed Entities" category. There are three distinct

situations that make up this category: 1) Leased Land, 2) Mineral Rights and Underground Warehouses, and 3) Condominiums. Each is discussed in turn below.

As mentioned earlier, the Real Estate Tax Roll contains 77 Leased Land records. Leased Land resides within the boundaries of another parcel (platted or non-platted); it does not have its own legally described parcel boundary. As such, Leased Land PropIDs are not found in the Property Spatial Database.

The Real Estate Tax Roll contains 92 records (74 non-platted records and 18 platted records) which describe mineral rights (Land Use 991 or 998) or underground warehouses (Land Use 511U). The parcel boundary descriptions for such parcels reference underground geologic formations (e.g., 6-13-24 PT S 1/2 NE1/4 LYG BELOW THE FARLEY LEDGE OF LIMESTONE BG 1292.59' S & 1573.95' W NE CR NE1/4 W 1070'S 875' E 1070' N 875' TO POB (UNDERGROUND TRACT) 21.493 ACS M/L). Given that the Property Spatial Database is limited to two-dimensional space, parcels which describe mineral rights or underground warehouses are unmapped (and their PropIDs are not found in the Property Spatial Database).

The remaining "Unmapped Taxed Entities" are platted condominium parcels that, for one reason or another, cannot be mapped. It is important to emphasize that most (approximately 90%) condominium parcels can be mapped. There are, however, some (approximately 10%) that cannot be mapped in any form. There are two situations that prevent condominiums from being mapped properly. First, as explained earlier with regard to mineral rights and underground warehouses, the Property Spatial Database is limited to two-dimensions. Attempting to map a three-story building where each floor is a separate parcel in this two-dimensional space would result in coincident polygons. Second, a condominium community may have a common area whereby each resident owns a partial and undivided interest in the land between buildings. A more complete discussion of condominiums can be found in the subsequent section entitled "Multiple Taxed Entities Mapped as a Single Polygon".

b. Untaxed Mapped Entities

Approximately 9% of the land area in Johnson County is untaxed right-of-ways. The vast majority of right-of-way is owned by Johnson County itself, one of the incorporated municipalities in Johnson County, the State of Kansas (e.g., Department of Transportation, State Highway Commission), or a private railroad (e.g., Atchison Topeka & Santa Fe, Burlington Northern).

Right-of-ways are mapped as polygons in the Property Spatial Database and are assigned a PropID. Of the 21,492 right-of-way polygons, around 70% have no link to the Real Estate Tax Roll. These right-of-ways have either "R", "C", or "D" as the second character in their PropID (e.g., Q**R**57550000 0011C, 9**C**241517-1001, I**D**70500000 0015, M**S**251202-2003). The PropIDs of the remaining 30% are found in the Real Estate Tax Roll and are identified by having a Total Value of 0 and a right-of-way Land Use code (411, 458, 458P). These right-of-ways have either a "P" (platted) or an "F" (non-platted) as the second character in their PropID (e.g., N**P**69600000 0008B, 9**F**231509-4012).

Obviously there is no straightforward way to identify all of the right-of-way polygons in the County. The logic that one must employ is to select all of the "R", "C", and "D" polygons (i.e., all of the polygons that have "R", "C", or "D" as the second character in their PropID), plus also all of the "F" and "P" polygons (i.e., all of the polygons that have "F" or "P" as the second character in their PropID) that have Value = 0 and Land Use = 411 or 458 or 458P.

The authors are unable to explain why the Property Spatial Database employs so many different ways to designate right-of-way. We can, however, convey our understanding of what each designation means:

- "**D**" — The principal use of "D" is to denote a "dedicated street". These are right-of-way polygons that are created by a "deed of dedication" on a recorded plat. A less common use of "D" is to identify city-owned right-of-way that is not contained within a recorded plat. A "D" parcel may be owned by Johnson County or by a particular municipality within Johnson County. 6949 polygons have "D" as the second character of their PropID.
- "**C**" — A "C" indicates County-owned right-of-way. (Be careful — not all County-owned right-of-way is designated as a "C" parcel. "D", "R", "P", and "F" right-of-way parcels may be County-owned.) Typically "C" right-of-way is found 20' on either side of section lines. 6663 polygons have "C" as the second character of their PropID.
- "**R**" — Designating polygons as "R" right-of-ways began in 1997 as a way to stop adding right-of-way data to the Real Estate Tax Roll (see note immediately following). "R" polygons may be owned by Johnson County, an incorporated municipality in Johnson County, the State of Kansas, or a private railroad. 1503 polygons have "R" as the second character of their PropID.
  - o Note: While no Real Estate Tax Roll data exists for these "D", "C", and "R" right-of-way polygons, basic ownership and legal description data is stored in a separate "Right-of-Way Tax Roll" (RW roll) for "R" polygons. The RW roll contains parcels formerly on the RE roll which are not taxed and are public right-of-way. The RW roll is by no means a complete list of right-of-way in Johnson County. Currently AIMS receives only RE roll data on a nightly basis. If this were expanded to include RW roll data, then it would be possible to link this basic data to "R" type right-of-ways. (December 2002 Addendum: AIMS is now receiving the RW roll in addition to the RE roll.)
- "**P**" or "**F**" — In contrast to the right-of-way just mentioned, there are a substantial number of right-of-way polygons (approximately 30%) with associated records in the Real Estate Tax Roll. These include both platted ("P") and non-platted ("F") parcels with a Total Value of 0 and a right-of-way Land Use code (411, 458, 458P). These right-of-way PropIDs are slowly being migrated to the Right-of-Way Tax Roll (RW roll) when they appear in deeds, but existing parcels are not actively being moved to the RW roll at this point. An automated migration of these parcels to the RW roll would be the fastest and safest method for moving these parcels off of the RE roll.

c. Taxed Entities Mapped as Multiple Polygons

While the vast majority of taxable entities are mapped as a single polygon (97.8%, 185,809 of 189,88), there remains a significant minority (2.2%) that are represented in the Property Spatial Database by two or more polygons. Although we do not have hard numbers to support our claims, we have visual evidence that most of these situations are the result of transactions that combine adjacent parcels (with two different PropIDs) into a single taxable entity (with one PropID). The accepted practice for working such a transaction in the Property Spatial Database is not to delete the line(s) that previously served as the boundary between the adjacent lots, but rather to mark it as an "original lot line". The result is two adjacent polygons with identical PropIDs. (The rationale for retaining "original lot lines" is because subsequent deeds may reference these lines.)

Not all "Taxed Entities Mapped as Multiple Polygons" cases are contiguous polygons as in the situation just cited; in rare circumstances the polygons may be discontiguous. An example of this occurs with the residential golf development at Cedar Creek. The fairways and greens of Shadow Glen Golf Course have a single PropID, but consist of 22 different polygons (the course is disrupted by roads and residences).

d. Multiple Taxed Entities Mapped as a Single Polygon

In our earlier discussion of Unmapped Taxed Entities, we mentioned that approximately 10% of condominium parcels cannot be mapped, while 90% can be mapped. This 90% figure is slightly misleading, however, as the following two examples illustrate. First, if the condominium parcel consists of both a carport and a living unit and the living unit is delineated vertically — thus making it unmappable, only the carport will be mapped (e.g., see NP861000B9 U047). Second, the legal description of many condominium parcels indicate "an undivided interest in common area" (e.g., see KP19001107 0U20). While some descriptions substitute an explicitly defined fraction (e.g., 1/44) for the word "undivided" (e.g., see KP57200002 0001), both situations identify tracts of common land that are "owned by" multiple taxable entities. These two examples suggest that the statement, "90% of condominium parcels can be mapped", is more accurately stated as, "90% of condominium parcels can be mapped at least in some part".

Given that multiple taxable entities have "ownership" in the common areas just mentioned, what PropID should be assigned to common area polygons? The practice in Johnson County has been to assign a unique PropID using the following general guidelines:

- The first six characters should be identical to the first six characters of the PropIDs of the individual condominium parcels within the particular condominium (these will be identical), except that the second letter should be a "Z".
- Characters seven through ten can optionally indicate a block number, tract designation, or building number.
- Characters twelve through fifteen (or sixteen) should typically be "LAND", "BLDG", or a tract designation (e.g., 0T0C for Tract C).

The following example is provided to help clarify the above guidelines. Edgebrook, located in southwest Olathe, consists of thirteen distinct buildings — designated as tracts A through M — and a single tract of common land — designated as tract N. The PropIDs of the individual buildings are DP21600000 0T0A (tract A), DP21600000 0T0B (tract B), DP21600000 0T0C (tract C), and so on. The PropID of the common land is DZ21600000 0T0N (tract N).

Obviously a fabricated "Z" PropIDs is only found in the Property Spatial Database; the PropIDs of the individual condominium parcels are found in the Real Estate Tax Roll. A record of the individual condominium parcel PropIDs that relate to particular common area "Z" PropIDs has not been maintained in recent years. The Office of the County Clerk and the AIMS Department are currently working together to construct and make use of such a list. (See section entitled "August 2003 Addendum" below.) There are approximately 75 condominiums in Johnson County. Within these there are 469 unique "Z" PropIDs; these in turn relate to approximately 3000 PropIDs in the Real Estate Tax Roll.

It should also be noted that "Z" PropIDs are employed in similar fashion to define areas where parcels are vertically delineated. Like the common interest situation just discussed, a fabricated "Z" PropID is used in the Property Spatial Database to represent multiple taxable entities in the Real Estate Tax Roll (e.g., see NZ05000B14 BLDG in Bordeaux Condomiumns).

5. August 2003 Addendum

The Office of the County Clerk and the AIMS Department have constructed, and are now actively maintaining, a table that records the "Z" PropID(s) that each condominium PropID relates to. For instance, consider the following records from that table:

TaxPropID	GeoPropID
NP861000B7 U085	NZ86100004 LAND
NP861000B7 U085	NZ861000B7 0085
NP861000B7 U086	NZ86100004 LAND
NP861000B7 U086	NZ861000B7 0086
NP861000B7 U087	NZ86100004 LAND
NP861000B7 U087	NZ861000B7 0087
NP861000B7 U088	NZ86100004 LAND
NP861000B7 U088	NZ861000B7 0088
NP861000B7 U089	NZ86100004 LAND
NP861000B7 U089	NZ861000B7 0089
NP861000B7 U090	NZ86100004 LAND
NP861000B7 U090	NZ861000B7 0090
NP861000B7 U091	NZ86100004 LAND
NP861000B7 U091	NZ861000B7 0085
NP861000B7 U092	NZ86100004 LAND
NP861000B7 U092	NZ861000B7 0086
NP861000B7 U093	NZ86100004 LAND
NP861000B7 U093	NZ861000B7 0087
NP861000B7 U094	NZ86100004 LAND
NP861000B7 U094	NZ861000B7 0088
NP861000B7 U095	NZ86100004 LAND
NP861000B7 U095	NZ861000B7 0089
NP861000B7 U096	NZ86100004 LAND
NP861000B7 U096	NZ861000B7 0090

The PropIDs in the column on the left (TaxPropID) are PropIDs for condominium parcels that are found in the Real Estate Tax Roll. The PropIDs in the column on the right (GeoPropID) are fabricated "Z" PropIDs that are only found in the Property Spatial Database. The first two rows of this table indicate that tax roll PropID NP861000B7 U085 relates to two mapped "Z" PropIDs: NZ86100004 LAND, which is the PropID assigned to a piece of land held in common interest, and NZ861000B7 0085, which is the PropID assigned to a piece of land for which there is vertical property ownership.

In addition to tracking the relationships between taxed and mapped PropIDs for condominiums, this table is also being used to track the same tax-map PropID relationships for Leased Land, and Mineral Rights/Underground Warehouses. Consider the following records from the table:

TaxPropID	GeoPropID
DL76000000 0024A	DP76000000 0024A
HL251334-3001	HF251334-3001
IL241234-2030	IF241234-2030
IL241234-2030A	IF241234-2030
IL241234-2030B	IF241234-2030
IF241232-2004	IF241232-2002
IF241232-2004	IF241232-2003
IF241232-2004	IF241232-2006
IF241232-2004	IF241232-2007
IF241232-2004	IF241232-2010
IF241232-2004	IP10130001 0000
IF241232-2004	IP10130002 0000
IF241232-2004	IP10130002 0000A

The first five rows of this table record the mapped PropID (GeoPropID) that five different leased land PropIDs (TaxPropID) relate to. Note that the GeoPropID IF241234-2030 has three different leased land TaxPropIDs associated with it. The remaining eight rows of this table indicate that the mineral right IF241232-2004 underlies eight different mapped PropIDs.

Ongoing maintenance of this table enables AIMS/Clerk to derive an "enhanced" Property Spatial Database that embeds these relationships, thus allowing every taxed entity to be mapped in its entirety. For instance, the "enhanced" Property Spatial Database would know that the TaxPropID NP861000B7 U085 includes the polygon represented by NZ 861000B7 U085 (a vertical parcel), NP861000B7 U085 (a carport), and NZ86100000 LAND (a "common interest" parcel). It would also reveal that there are 12 parcels with partial interest in the polygon represented by NZ86100004 LAND (NZ86100004 U085 – NZ86100004 U096). Similarly, it would reveal that the TaxPropID HL251334-3001 is leased land on HF251334-3001, and that IF241232-2004 is a mineral right that encompasses eight mapped PropIDs.

AIMS/Clerk make this "enhanced" Property Spatial Database available as a seamless, county-wide ESRI SDE feature class and as a shapefile. The name of this database is "property_pl". Unlike a previous edition of a seamless property shapefile (i.e., prop_poly), property_pl contains coincident, overlapping polygons. By using the table mentioned above, each TaxPropID is mapped in its entirety. Thus, for instance, NP861000B7 U085 would be mapped with three polygons: one polygon that represents the vertical parcel, one polygon that represents the carport, and one polygon that represents the common area. NP861000B7 U091 would be mapped with three polygons as well: one polygon that represents the vertical parcel (this polygon is coincident with the vertical parcel polygon for NP861000B7 U085), one polygon that represents the carport, and one polygon that represents the common area (this polygon is coincident with the common interest polygon for NP861000B7 U085 and all the other condominium units in this area).

The fact that property_pl contains coincident polygons and RE Tax Roll data is attached to each polygon/record, caution must be exercised when summing or averaging these data. For instance, if one were to sum the number of dwelling units in a condominium that contains vertical ownership and a common area, results would be overstated since individual TaxPropIDs would be counted more than once. Users of the Property Spatial Database should already be used to such caution since a similar overstatement is created by the "Taxed Entities Mapped as Multiple Polygons" situation mentioned previously.

6. Miscellaneous Notes

❑ There are 47 parcels in the Property Spatial Database with a PropID of "O/S County". Polygons with this PropID represent areas outside of Johnson County. There are two uses of "O/S County": 1) North of the Kansas River. These parcels exist to show the complete outline of those sections that are split by the river. 2) Along the Missouri border. There are two parcels that overlap the state boundary and are referred to in that manner in their deeds. The "O/S County" polygon identifies the portion on the Missouri side.

❑ Since "C" parcels have indistinct boundaries that are not described in the Real Estate Tax Roll or anywhere else (to our knowledge), we can use these spatial parcels to define County owned right-of-way that is not accounted for in any other system. This would cover the requirements for the County to keep track of all of its assets, without requiring any office to do additional research work. A spatial definition is the primary purpose of the asset-tracking requirement.

❑ The numeric values provided in this document (record counts, percentages, etc.) are based on data as of August 20, 2003.