



APPENDIX B:
**Industrial Land Inventory
and Supply Estimates
Technical Background**

INDUSTRIAL LAND INVENTORY AND SUPPLY ESTIMATES—

TECHNICAL BACKGROUND

Inventory Approach

In updating the Industrial Land Inventory and producing Industrial Land Supply Estimates for the Municipality of Anchorage (MOA), the EPS Team has followed an approach designed to assign all of the land located within the defined Study Area and in existing I-1, I-2, I-3 and MI Zoning Districts to mutually exclusive, but collectively comprehensive, categories. The industrial parcel classification criteria and selection rules defined for this process are parametric (i.e., they are based on discrete parcel attributes, development characteristics, and administrative/ownership status qualifiers) and recorded in the Industrial Land Inventory Database, which is described later in this section. This means the Industrial Land Supply Estimates may be directly related to the individual parcels making up each defined Supply Category, and that the Supply Estimates can be rapidly updated to reflect updates to parcel development status and/or adjustments to the defined selection criteria and categories.

Study Area, Subareas and Context

The Industrial Land Inventory and Industrial Supply Estimates pertain to the MOA's current Light Industrial (I-1), Heavy Industrial (I-2), Rural Industrial (I-3) and Marine Industrial (MI) Zoning Districts. The MOA boundary is shown in the context of nearby communities on the map **Figure B-1**. This map also shows a 65-square mile Observation Perimeter, which is discussed with the Industrial Demand projections of this report, and a Project Perimeter, which encloses the parcels located in the MOA's currently defined I-1, I-2, I-3 and MI Industrial Zoning Districts.

For the purposes of this Study, the MOA has been subdivided into 14 Subareas, as shown in map **Figure B-2**. The Study Subareas and boundaries are generally familiar from *Anchorage 2020* and other recent studies. At the request of MOA and AEDC staff, and as shown in map **Figure B-3**, the Ted Stevens International Airport has been 'broken out' of the previously defined Anchorage Southwest (ANC-Southwest) Study Subareas.

The Study Subareas shown with hachure shading in **Figures B-2** and **B-3** do not contain currently defined I-1, I-2, I-3 or MI Zoning Districts and land parcels within these Subareas are not included in the Inventory update or Supply estimates. In accordance with discussions with MOA and AEDC staff early in the Study, the Girdwood Industrial Zoning Districts and industrially-zoned parcels were excluded from the analysis. As shown by the Project Perimeter boundary, the Inventory and Supply estimates extend beyond the Anchorage Bowl to include industrially-zoned land in the Eagle River and Chugiak – Eklutna Subareas.

Identification of industrially-zoned MOA parcels was performed using digital map layers of existing (pre-Title 21) Zoning and parcel boundaries provided by MOA GIS Services. Following discussions with MOA Planning and GIS staff, EPS geocoded all of the 83,600 'physical' lots defined in the parcel layers provided to the EPS Team during December 2008 and January 2009,

Figure B-1
Observation and Project Perimeter

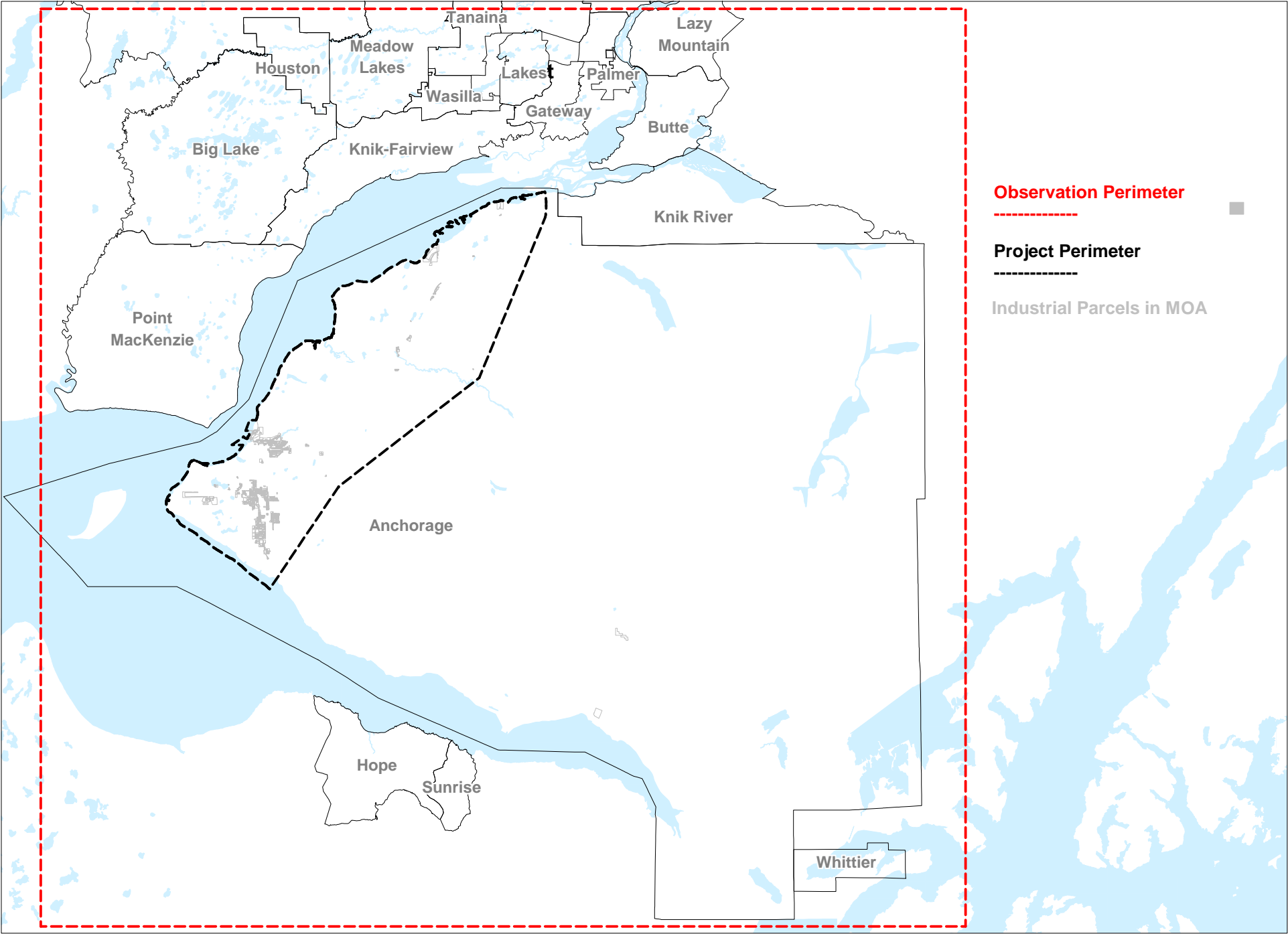


Figure B-2
Study Subareas in Regional Context

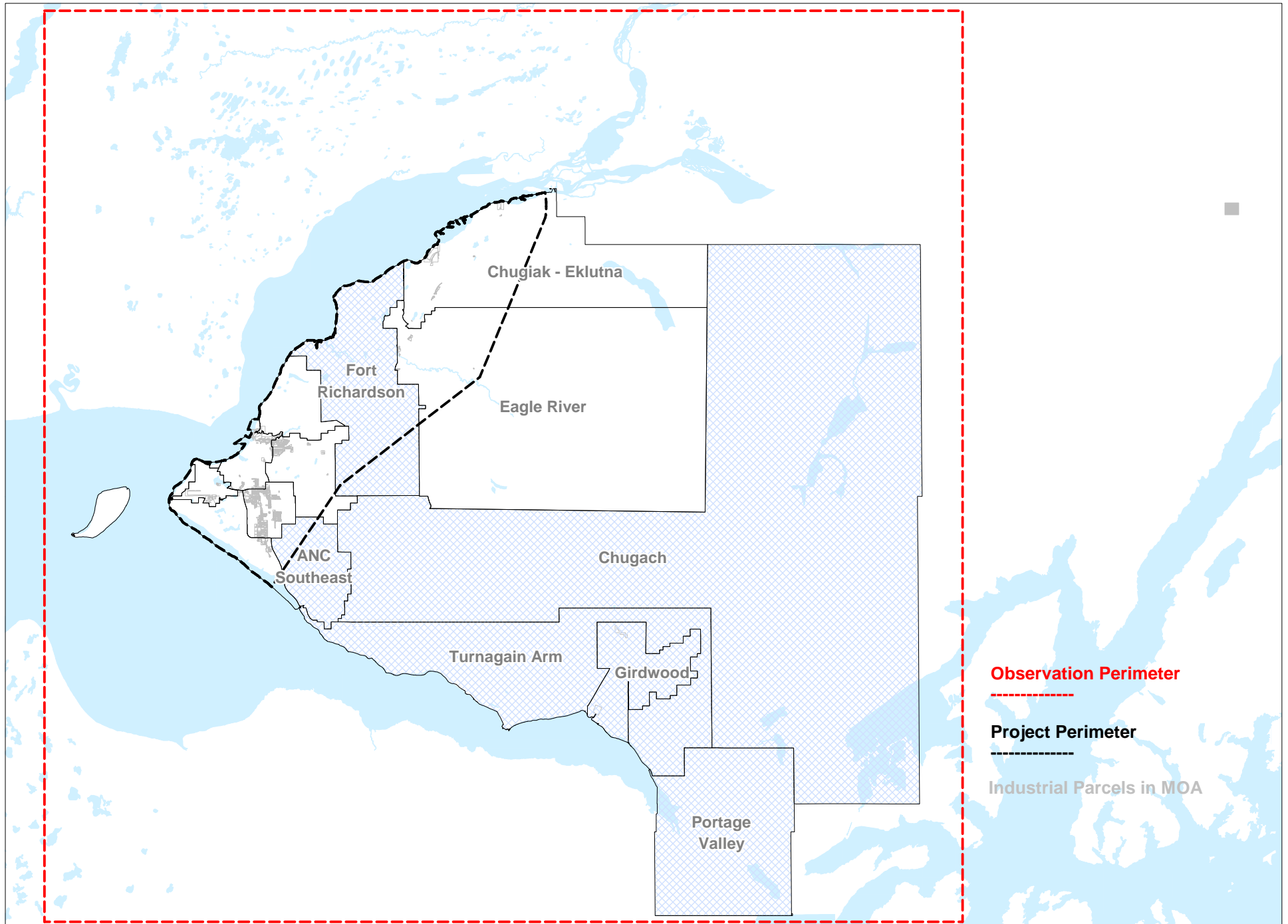
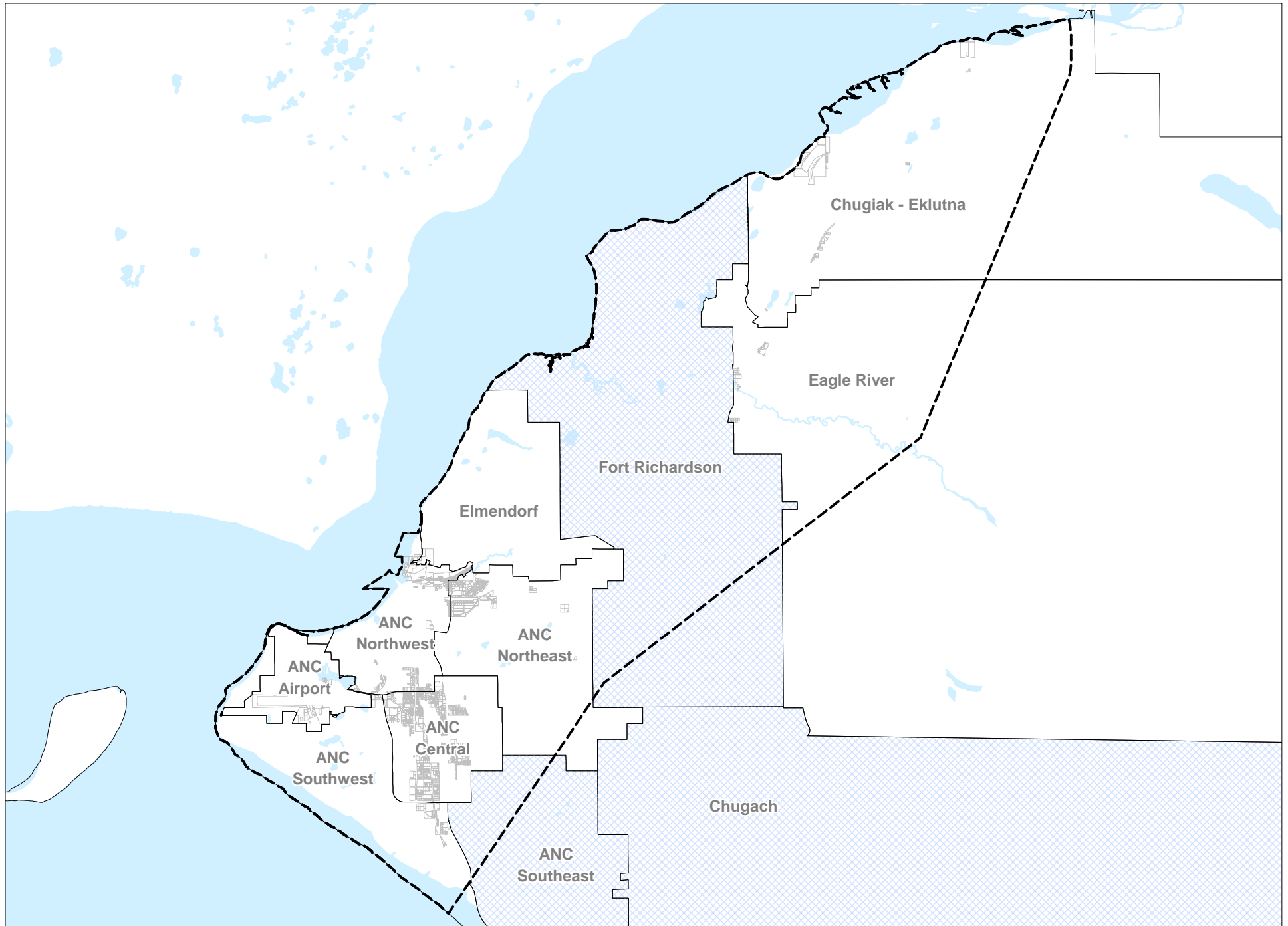


Figure B-3
Study Subarea Detail



according to their locations within Zoning Districts and by MOA GIS Land Use Category. During this process, EPS used the most recent Zoning and Land Use reference layers provided by MOA staff and/or available from the online MOA GIS data download website.

The locations and general zoning of the land identified as industrially zoned is shown in **Figure B-4**. EPS included lots having Special Limitation overlay status (e.g., I-1 SL and I-1 SL 2, I-2 SL, and I-3 SL 1 and I-3 SL 2) in the Inventory and Supply Estimates, and has grouped them with the more general I-1, I-2 and I-3 zoned land where appropriate. After discussions with MOA staff, the Zoning reference map layer provided by MOA GIS Services was assumed to have precedence in identifying current zoning designation over zoning designation fields found in CAMA and MUNIVIEW.

Where parcel boundaries were 'split' by the Zoning polygon boundaries in the reference maps, lots were assumed to be industrially zoned if the majority of the lot areas were located within the plotted Industrial Zone areas. EPS visually checked all 'split' lot zone geocoding to confirm this automated assignment, revising some assignments to compensate for lot geometric centroids located outside of lots' actual boundaries. In total, 2,675 lots were initially identified as being completely or partially within Industrial Zoning Districts; following visual checks and exclusion of the Girdwood Subarea, 2,654 lots were selected for subsequent characterization and analysis.

Supply Categories

Five distinct Industrial Land Supply categories have been defined for this study:

- Currently Undeveloped
- Redevelopable Residential
- Underutilized Non-Residential
- Currently Developed
- Unsuitable

These five supply categories are defined and discussed individually below, with references to the selection criteria also summarized in **Search and Classification Criteria**. Current estimates of parcel counts and aggregate acreage of Industrial Land in each category, by Study Subarea, are shown in **Table B-1**.

Unsuitable for Development

The Industrial Land estimates in the **Unsuitable** Supply Category are shown near the bottom of **Table B-1**. However, the **Unsuitable** category was the first to be defined for this study, as the parcels in this group all have attributes, which are assumed to effectively exclude them from default consideration as land developable before 2030. Unsuitability for default classification of industrially-zoned land as having residual development capacity broadly includes parcels owned by the Federal, State or Local Governments, parcels having legislated status as wetland

Figure B-4
Industrially Zoned Parcels

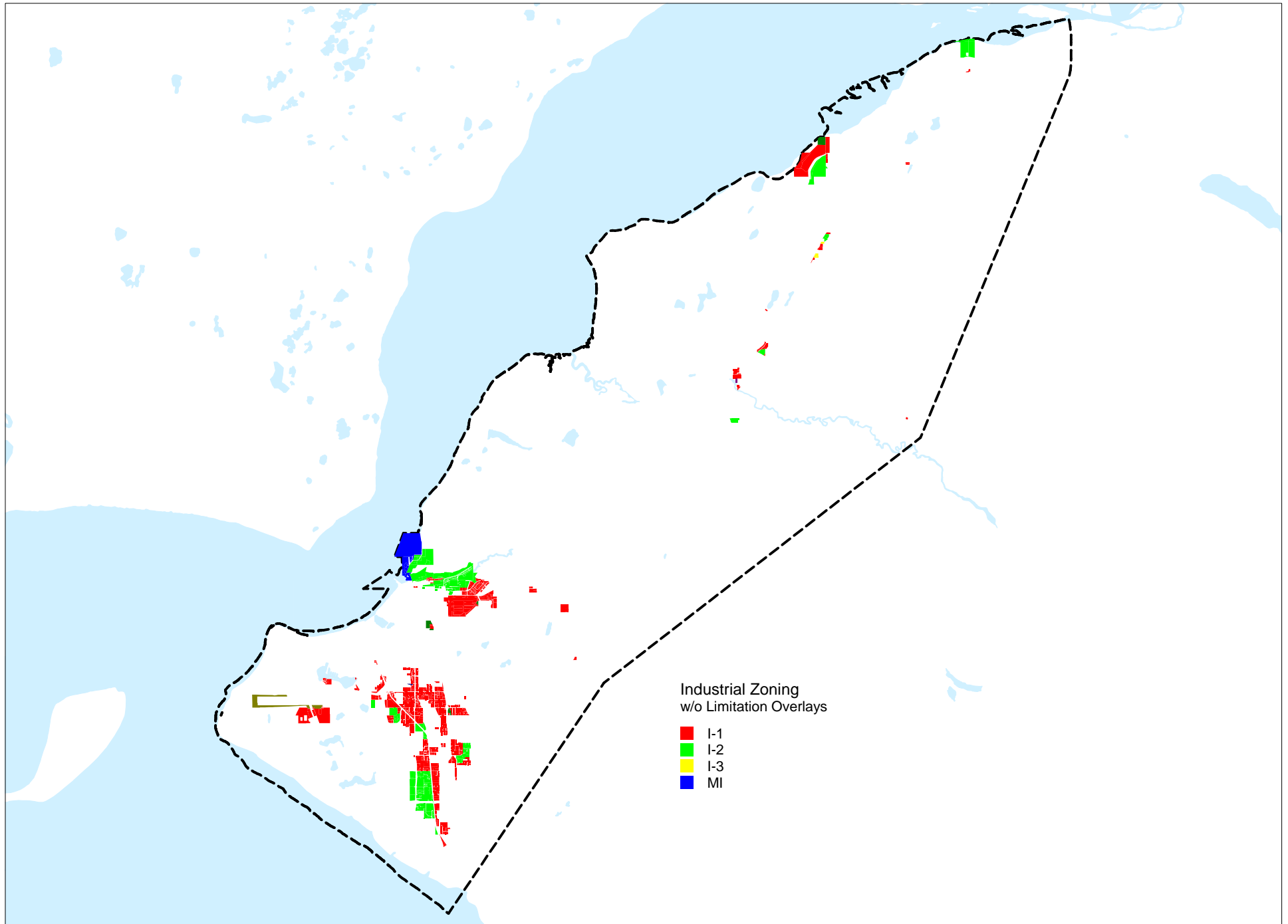


Table B-1
Anchorage Bowl Industrial Land Assessment
Preliminary Industrial Zoning Districts Land Supply Estimates [1]

Land Summary by
Class

	Search and Classification Criteria									Subarea Geography														Study Area Totals			
	Class	Ownership	MOA LU Types Included	Primary Land Use (Prior Status)	MOA LU Types Excluded	Ival : Lval ratio	DU : Land ratio	Floor Area Ratio	Suitability Classes	Airport Parcels	Acres	Northwest Parcels	Acres	Northeast Parcels	Acres	Central Parcels	Acres	Southwest Parcels	Acres	Chugiak / Eklutna Parcels	Acres	Eagle River Parcels	Acres				
Industrial Zoning - Potentially Decreasing Supply	Currently Undeveloped (No Permanent Structures, E-Linkages or Assessed Building Value)	Private	8000s	'Vacant' Land	Utility-Related; Institutional; Parks and OS; Transportation-Related ROWs; Military; Intertidal, etc.	0.00	0.00	0.00	0, 1, 2			18	25.74	11	37.21	186	255.73	12	21.88	10	144.56	10	47.54	247	532.66		
			2000s - 2400s	Commercial								7	1.15	8	6.00	67	58.80	2	2.31			1	1.18	85	69.45		
			3000 - 3700s	Industrial								10	4.13	23	27.57	220	143.58	12	14.12	4	9.22			269	198.62		
	Redevelopable Residential	Private	1000s - 1400s	Residential	[2] 1240, 1900s	< 0.75 [3]	< 1 : 5,000 sqft	< 0.10 [3]	0, 1, 2			1	0.27	1	0.15	71	25.68			10	19.17	2	4.78	85	50.04		
			1500s - 1700s	Mixed Use										1	0.49					1	0.49			1	0.49		
			1800	Unsound Dwelling Units																			0	0.00			
	Underutilized Non-Residential	Private	2000s - 2400s	Commercial	< 0.75 [3]	#N/A	< 0.10 [3]	0, 1, 2			12	8.58	12	18.92	68	102.03	6	41.35			2	2.76	100	173.65			
			3000 - 3700s	Industrial							16	26.10	31	57.02	147	255.52	12	49.88	1	9.83	3	3.04	210	401.38			
			8000s	Previously 'Vacant' Land							5	1.37	1	0.42	36	28.12	1	6.94					43	36.85			
	Currently Developed	Private	1000s - 1400s	Residential	1800	>= 0.75	>= 1 : 5,000 sqft	#N/A	0 - 3			1	0.62	1	3.73	43	8.10			1	4.28			46	16.73		
			1500s - 1700s	Mixed Use						[2]	[3]			3	0.81	2	0.58					5	1.40				
			1240, 1900s	Residential Associated										8	1.61					8	1.61						
			2000 - 2400s	Commercial								#N/A		96	117.66	70	98.39	355	352.42	22	53.42	1	2.28	5	6.50	549	630.67
			3000 - 3700s	Industrial								>= 0.10		65	65.03	53	88.25	347	396.07	16	38.74	6	27.48	8	8.44	495	624.00
			8000s	Previously 'Vacant' Land										3	5.50			20	76.29			3	193.80	1	15.00	27	290.60
	Unsuitable	Government, [4] Utilities, Institutional	3800s - 7300s 8100, 8200	Utility-Related; Institutional; Parks and OS; Transportation-Related ROWs; Military; Intertidal, etc.	1000s - 3700s	#N/A	#N/A	#N/A	3	28	269.23	239	662.90	94	388.77	86	239.98	12	46.68	13	240.35	12	27.14	484	1,875		
Totals by Subarea		[5]								28	269.23	473	919.04	305	726.43	1,658	1,945.24	97	275.92	49	650.95	44	116.38	2,654	4,903.20		

Sources: Economic & Planning Systems, using MOA GIS Parcel, Zoning and Land Use boundary layers and 'roll-up' summaries of parcel development and valuation status developed by Dan Quinn and provided by MOA Information Technology Staff

Notes: These preliminary estimates incorporate 2009 Assessed Valuation, but do not yet reflect revisions in 4-digit Land Use Codes which are being assigned to update current site usage of Industrially Zoned properties.

[1] The targeted Industrial Zoning Districts are I-1, I-2, I-3 and MI, as located in the Anchorage Bowl, Chugiak-Eklutna, and Eagle River subareas of the Municipality of Anchorage; the Anchorage Bowl Subarea has been further subdivided into six regions: Airport, Northwest, Northeast, Central, Southeast and Southwest.

[2] Mixed-Use can contain both Residential and Non-Residential Components.

[3] Threshold criteria for underutilized/redevelopable land have been set within the ranges indicated in**Bold Red Italic**.

[4] Government, Utility, and Institutional contacts have been made independently to determine development plans and estimate potential development capacity on land generally excluded as 'Unsuitable' - these estimates will be added to the estimated supply from the Vacant, Redevelopable Residential and Underutilized Non-Residential classes.

[5] Parcel counts and acreages reflect reclassification of 1 SW parcel from 'Undeveloped' to 'Underutilized' in response to reviewers knowledge of site usage.

preserves, dedicated open space and parks, military reserves, etc. The specific selection criteria for this and the other Supply Categories are identified below and in the report sections for those categories.

Specific potentials for development on industrial land categorized as generally 'Unsuitable', where identified during the Team's interviews and research, constitute net additions to the 'default', 'raw' or baseline estimates of Currently Undeveloped, Redevelopable Residential and Underutilized Non-Residential development- and infill- capable land shown in **Table B-1**. As an example, all 269 acres of industrially zoned land in the Airport Study Subregion, having State or Federal ownership or being within the TSIA boundaries, is assigned a first-pass classification of Unsuitable. The EPS Team's estimates of potential future industrial development for the Airport Subarea therefore represent a net addition of estimated Industrial Development Capacity to year 2030.

The defined exclusionary criteria applied to assign **Unsuitable** status include:

Existing Land Use

The following MOA Planning/GIS Land Use classes and included sub classifications are assumed to be incompatible with default assumed potential for additional or alternative Industrial development:

3800s Utility-Related Facilities

4000s INSTITUTIONAL

5000s PARKS, OPEN SPACE, AND RECREATION AREAS

6000s TRANSPORTATION - RELATED

7000s R.O.W.s and Military Reservations

8100 Intertidal Areas

8200 Waterbodies

EPS observed, consistent with MOA documentation and discussions with MOA Planning and GIS staff, several Industrially Zoned parcels with only partial Intertidal or Water Body coverage were assigned primary Land Use codes other than 8100 or 8200. Examples of such parcels are shown in the Chapter 5 of this Report. EPS used MOA and Census Bureau digital maps of marine, shoreline and inland water bodies to 'net out' Industrially-zoned parcels' water acreage, in order to prevent overestimating the actual land acreage available to absorb new industrial uses.

Wetland Preserves

EPS visual review of all Industrially Zoned 'vacant' parcels of 0.5 gross acres or larger via Google Earth (which recently loaded 2006 orthophotographs provided by the MOA) showed some Industrially Zoned parcels located on or adjacent to obvious riparian or wetland habitats. This visual impression was confirmed against digital map wetland coverages available from the MOA GIS website. Those parcels having a wetland code of 'PRESERVATION' per the MUNIVIEW_BOTH table provided to the EPS Team have been assumed to have legislated wetland protection and have been assigned to the 'Unsuitable' category.

Institutional, Government and Utility Ownership

The following Property Tax Exemption Codes, as indicated in the MUNIVIEW_PARCEL table provided to the EPS Team are assumed indicate Industrially Zoned parcel ownership incompatible with consideration for (additional/alternative) Industrial development:

'A' Utility

'F' Education - State

'2' State

'3' Federal

'4' Municipal

'9' Education - MOA

Anchorage 2020 Development Suitability Ratings

Industrially Zoned Parcels which had previously been assigned a Suitability Rating of '3' – that is, 'Unsuitable' for assumed development, infill or redevelopment, due to environmental sensitivity, problematic access, etc. during the *Anchorage 2020* buildout analysis, have also been assumed to be Unsuitable for consideration of development before 2030 in this Study. Parcels which had been assigned a Suitability Rating of '2' – 'Marginally Suitable' during *Anchorage 2020* buildout analysis, were 'passed through' for assignment to the other Supply Categories, unless they also matched other exclusionary criteria.

Currently Undeveloped

Industrially-Zoned Land with no or primarily non-residential surface use has been classified as **Currently Undeveloped** if it passes through the exclusionary criteria described above, has Zero (0) Residential Units, Zero Non-Residential Permanent Buildings **AND** Zero 2009 Building Assessed Value, per end of year 2008 and Tax Year 2009 CAMA extracts and MUNIVIEW tables provided to EPS by MOA staff. Land parcels meeting the Currently Undeveloped criteria are 'Vacant' in the sense they have no permanent, taxable structural improvements, but may not be 'Empty' lots; in fact, a large number of the 'Vacant' parcels viewed by EPS using 2006 and 2007 MOA and USGS aeriels are seen to have some or even intensive use as lay-down and bulk storage yards.

To define a reasonable 'Undeveloped' standard for this Study, prior MOA GIS/Planning land use classifications other than 8000 – Vacant Land have been considered as potential candidates for Currently Undeveloped supply status. This consideration provided the industrially-zoned parcels met the Zero Buildings/Zero 2009 Building Assessed Value criteria **AND** were not Economically Linked to other, Currently Developed parcels, per the Economic Linkage and Lease maps and reference tables provided to EPS by MOA staff.

In all, EPS has classified 601 of the 2,654 parcels and 801 of the 4, 903 land acres in the Study Area as Currently Undeveloped (see **Table B-1**). The majority of the Currently Undeveloped category comprises parcels having an assigned MOA GIS/Planning Land Use Code of 8000 - Vacant Land in previous inventories, but 268 or one-third of the 801 acres are parcels which previously assigned Commercial or Industrial Land Use Codes – the non-vacant coding is

consistent with the outdoor storage/rental/repair of heavy equipment and outdoor bulk storage and 'wall-less warehousing' observed when EPS staff checked 2006 and/or 2007 aerials for all parcels assigned to the Currently Undeveloped category and having 0.5 or greater acres in gross area.

As shown in **Table B-1**, over half of the total acreage categorized as Currently Undeveloped is located in the Anchorage Central Subarea, and an additional nearly 20% of the total located in the Chugiak/Eklutna Subarea. Note the average parcel sizes for Currently Undeveloped Land in the Anchorage Central Subarea are much smaller than for the Chugiak/Eklutna Subarea.

This average size differential has possible implications for the ease of property assemblage for development, and can be examined in more detail in **Table B-2**. The breakouts by parcel size range show that in the Anchorage Central Subarea, 83% of the parcels and slightly less than one-third of the estimated 'land' acreage are in lots of less than 1 Acre; only 1% of the parcels and 20% of the 'land' acreage are in lots of 10 acres or larger. By comparison, in the Chugiak/Eklutna Subarea, over two-thirds of the parcels and 99% of the estimated 'land' acreage are in parcels of 1 acre or larger, with over 20% of the parcel count and over 80% of the estimated 'land' acreage in lots of 10 acres or larger.

The proportional distribution of Currently Undeveloped land within existing MOA Industrial Zoning Districts also varies by Subarea. As can be seen in **Table B-3**, approximately 66% of Anchorage Central currently undeveloped industrial land is located in **I-1** zones. For the Chugiak/Eklutna Subarea, 47% of the currently undeveloped industrial land is located in **I-1** zones.

The defined Currently Undeveloped selection criteria include:

Existing Land Use

The following MOA Planning/GIS Land Use classes and included sub classifications are assumed to be compatible with Currently Undeveloped status for additional or alternative Industrial development:

8000s Vacant Land

2000s – 2400s Commercial (Surface) Uses

3000s – 3700s Industrial (Surface) Uses

Anchorage 2020 Development Suitability Ratings

Industrially Zoned Parcels which previously were assigned a Suitability Rating of '0', '1' or '2' – that is, 'Not Rated' 'Suitable' or 'Marginally Suitable' for assumed development, infill or

Table B-2
Anchorage Bowl Industrial Land Assessment
Preliminary Industrial Zoning Districts - Vacant Land Supply Estimates [1] [2] [3]

Vacant Land by
Parcel Sizes

Search and Classification Criteria									Subarea Geography															
Parcel Land Acres	Ownership	MOA LU Types Included	Primar Land Use (Prior Status)	MOA LU Types Excluded	Residential Units	Number of Buildings	Assessed Building Value	Suitability Classes	Airport Parcels	Acres	Northwest Parcels	Acres	Northeast Parcels	Acres	Central Parcels	Acres	Southwest Parcels	Acres	Chugiak / Eklutna Parcels	Acres	Eagle River Parcels	Acres	Study Area Totals Parcels	Acres
	Private	2000 - 3700s, 8000	Vacant / Unbuilt Land	1000-1900s, 3800s-7300s, 8100, 8200	0	0	0	0, 1, 2																
0 - 20,000 Sq. Ft.											25	4.93	12	4.15	291	70.09	9	2.81	2	0.47			339	82.45
20,000 Sq. Ft. - 1 Acre											1	0.79	18	11.81	100	74.62	7	4.90	3	1.75	1	0.93	130	94.82
1 - 3 Acres											6	11.62	7	12.61	56	98.27	6	10.29	2	3.14	6	12.88	83	148.81
3 - 7 Acres											3	13.67	1	5.15	15	77.45	3	13.00	3	12.22	2	8.96	27	130.46
7 - 10 Acres													4	37.06	6	51.99	1	7.32	1	9.94	1	9.86	13	116.18
10 Acres+															5	85.67			3	126.26	1	16.08	9	228.02
Total									0	0.00	35	31.02	42	70.78	473	458.11	26	38.32	14	153.78	11	48.72	601	800.73

"vac_size"

Sources: Economic & Planning Systems, using MOA GIS Parcel, Zoning and Land Use boundary layers and 'roll-up' summaries of parcel development and valuation status developed by Dan Quinn and provided by MOA Information Technology Staff

Notes: These estimates incorporate 2009 Assessed Valuation and Development Status, but do not yet reflect revisions in 4-digit Land Use Codes which are being assigned to update current site usage of Industrially Zoned properties.

[1] Land Acreage adjusted by EPS to exclude areas with permanent/ standing water-coverage, tidal flats, low coastlands, etc.

[2] Government, Utility, and Institutional contacts have been made independently to determine development plans and estimate potential development capacity - these estimates will be added to the estimated supply from the Vacant/Unbuilt, Redevelopable Residential and Underutilized Non-Residential classes.

[3] Final parcel counts and acreages.

Table B-3
Anchorage Bowl Industrial Land Assessment
Preliminary Industrial Zoning Districts - Vacant Land Supply Estimates [1] [2] [3]

Vacant Land by
Zone

Search and Classification Criteria									Subarea Geography												Study Area Totals	
Zoning Designation	Ownership	MOA LU Types Included	Primar Land Use (Prior Status)	MOA LU Types Excluded	Residential Units	Number of Buildings	Assessed Building Value	Suitability Classes	Northwest Parcels	Northwest Acres	Northeast Parcels	Northeast Acres	Central Parcels	Central Acres	Southwest Parcels	Southwest Acres	Chugiak / Eklutna Parcels	Chugiak / Eklutna Acres	Eagle River Parcels	Eagle River Acres	Parcels	Acres
	Private	2000 - 3700s, 8000	Vacant / Unbuilt Land	1000-1900s, 3800s-7300s, 8100, 8200	0	0	0	0, 1, 2														
I-1									34	28.56	31	56.15	409	292.18	15	11.89			8	28.41	497	417.19
I-1 SL											3	7.59	3	8.16			1	21.76	1	2.44	8	39.96
I-1 SL 2																	3	50.76			3	50.76
I-2									1	2.46	8	7.04	61	157.77	9	25.67			2	17.87	81	210.81
I-2 SL															2	0.76	5	71.76			7	72.52
I-3 SL 1																	3	5.12			3	5.12
I-3 SL 2																	2	4.38			2	4.38
Totals by Subarea									35	31.02	42	70.78	473	458.11	26	38.32	14	153.78	11	48.72	601	800.73

"vac_zone"

Sources: Economic & Planning Systems, using MOA GIS Parcel, Zoning and Land Use boundary layers and 'roll-up' summaries of parcel development and valuation status developed by Dan Quinn and provided by MOA Information Technology Staff

Notes: These estimates incorporate 2009 Assessed Valuation and Development Status, but do not yet reflect revisions in 4-digit Land Use Codes which are being assigned to update current site usage of Industrially Zoned properties.

[1] The targeted Industrial Zoning Districts are I-1, I-2, I-3 and MI, as located in the Anchorage Bowl, Chugiak-Eklutna, and Eagle River subareas of the Municipality of Anchorage; the Anchorage Bowl Subarea has been further subdivided into six regions: Airport, Northwest, Northeast, Central, Southeast and Sou

[2] Government, Utility, and Institutional contacts have been made independently to determine development plans and estimate potential development capacity - these estimates will be added to the estimated supply from the Vacant/Unbuilt, Redevelopable Residential and Underutilized Non-Residential classes.

[3] Final parcel counts and acreages.

redevelopment during the *Anchorage 2020* buildout analysis, are assumed Suitable for consideration of development before 2030 in this Study.

Soil Limitation Ratings for Small Commercial Buildings

EPS calculated Approximate Soil Limitation Ratings for all Industrially-Zoned Parcels using GIS layers and documentation of the United States Department of Agriculture's *Soil Survey of Anchorage, Alaska*, provided by MOA staff and obtained from the USDA Natural Resources Conservation Service. Specific ratings by soil type were derived from the *Soil Survey's Table 13 - Building Site Development: Structures; Limitations for Small Commercial Structures*¹. Parcel ratings were allocated by EPS, using weighted averages where parcel polygons intersected multiple soil types.

The allocated Soil Limitation Ratings are approximate, for broad-brush analysis and not a substitute for parcel-specific onsite evaluations, and therefore have not been used as filtering or selection criteria for assignments of land to the Supply Categories. However, the Soil Limitation Ratings provide an aggregate impression of the relative challenge and potential costs of developing land in the Currently Undeveloped Category, as shown in **Table B-4**.

The *Soil Survey* Small Commercial Structure limitation ratings range from Not Rated (often assigned to already graded and filled, 'urbanized' areas) through 0.00 (No Limitation) to 1.00 (The most severe limitations for potential commercial construction). EPS has assumed, following a reading of the *Soil Survey* notes and documentation for Table 13 - Building Site Development: Structures; Limitations for Small Commercial Structures, that parcels having weighted average Small Commercial Structure limitation ratings in the range of 0.51 to 1.00 may have Very Severe limitations for competitive industrial development requiring permanent structures onsite.

For the Anchorage Central Subarea, nearly one-third (32%) of the Currently Undeveloped gross parcel acreage appears to be in the Very Severe Limitation range, which can be correlated in many cases to the extents of the Doroshin and Iknuun Peats. For the Chugiak/Eklutna Subarea, approximately 47% of the of the Currently Undeveloped gross parcel acreage appears to be in the Very Severe Limitation range, which can be correlated in many cases to the extents of tidal flats into parcels along the Knik Arm, and to slope conditions for parcels located inland.

¹ From the *Soil Survey*: "Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments."

Table B-4
Anchorage Bowl Industrial Land Assessment
Preliminary Industrial Zoning Districts - Vacant Land Supply Estimates [1] [2] [3] [4]

Vacant Land by Soil
Rating

Search and Classification Criteria										Subarea Geography												Study Area Totals	
Soil Limitation Rating	Soil Limitation # Range	Ownership	MOA LU Types Included	Primar Land Use (Prior Status)	MOA LU Types Excluded	Residential Units	Number of Buildings	Assessed Building Value	Suitability Classes	Northwest Parcels	Northwest Acres	Northeast Parcels	Northeast Acres	Central Parcels	Central Acres	Southwest Parcels	Southwest Acres	Chugiak / Eklutna Parcels	Chugiak / Eklutna Acres	Eagle River Parcels	Eagle River Acres	Parcels	Acres
		Private	2000 - 3700s, 8000	Vacant / Unbuilt Land	1000-1900s, 3800s-7300s, 8100, 8200	0	0	0	0, 1, 2														
Not Rated	#N/A									1	1.77	1	5.15	44	51.03	11	27.60	2	4.38			59	89.93
Not Limited	0.00 - 0.00											1	9.63	7	7.74			2	1.62	1	1.79	11	20.78
Some Limitation	0.01 - 0.10									20	8.72	40	56.00	333	192.85	15	10.72	4	26.88	1	1.18	413	296.35
Moderate Limitation	0.11 - 0.25									1	2.46			9	21.13							10	23.59
Severe Limitation	0.26 - 0.50									1	0.79			9	36.76			1	48.57	1	16.08	12	102.21
Very Severe Limitation	0.51 - 1.00									12	17.28			71	148.60			5	72.33	8	29.67	96	267.87
Totals by Subarea										35	31.02	42	70.78	473	458.11	26	38.32	14	153.78	11	48.72	601	800.73

"vac_soil"

Sources: Economic & Planning Systems, using MOA GIS Parcel, Zoning and Land Use boundary layers and 'roll-up' summaries of parcel development and valuation status developed by Dan Quinn and provided by MOA Information Technology Staff

Notes: These estimates incorporate 2009 Assessed Valuation and Development Status, but do not yet reflect revisions in 4-digit Land Use Codes which are being assigned to update current site usage of Industrially Zoned properties.

[1] Soil Limitation Ratings derived from GIS layers and documentation of Soil Survey of Anchorage, Alaska provided by MOA staff and USDA Natural Resources Conservation Service. Specific ratings by soil type derived from Table 13 - Building Site Development: Structures; Limitations for Small Commercial Structures*. Parcel ratings allocated by EPS, using weighted averages where parcel polygons intersected multiple soil types. Ratings are approximate, for broad-brush analysis and not a substitute for parcel-specific onsite evaluations.

[2] "Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments."

[3] Government, Utility, and Institutional contacts have been made independently to determine development plans and estimate potential development capacity - these estimates will be added to the estimated supply from the Vacant/Unbuilt, Redevelopable Residential and Underutilized Non-Residential classes.

[4] Final parcel counts and acreages.

Redevelopable Residential

Industrially-Zoned Land with primarily residential surface use has been classified as **Redevelopable Residential** if it passes through the exclusionary criteria described above, and had a ratio of more than 5,000 square feet of land per residential unit **OR** a ratio of less than 0.75 of 2009 Building Assessed Value / Assessed Land Value, per end of year 2008 and Tax Year 2009 CAMA extracts and MUNIVIEW tables provided to EPS by MOA staff. Redevelopable Residential parcels located within industrial zones are therefore defined for this Study to include both relatively low densities of residential development for urbanized areas and relatively low-valuation of residential units compared to the value of the land they are occupying.

For Mixed-Use parcels having both residential and non-residential onsite uses, a more restrictive set of selection criteria have been applied, as such parcels can be generally well-developed even if the density and valuation of component individual uses to parcel totals may fall below the thresholds established for single-use development. Industrially-Zoned Land with mixed surface use has been classified as **Redevelopable Residential** if it had a ratio of more than 5,000 square feet of land per residential unit, **AND** a ratio of less than 0.75 of 2009 Building Assessed Value / Assessed Land Value, **AND** an overall Floor Area Ratio (FAR) of less than 0.10.

EPS also defined criteria to classify industrially-zoned parcels occupied by Unsound Residential Units (MOA GIS Land Use Code 1800) as **Redevelopable Residential**. In practice, no such parcels have been identified in the Study Area.

As was the pattern of distribution found for the Currently Undeveloped category, and as shown in **Table B-1**, the majority of the 86 parcels and about 50.5 acres of **Redevelopable Residential** land in the Study Area are located in the Anchorage Central and Chugiak/Eklutna Subareas. Similarly, the average size of parcels differs by Subarea, with the Anchorage Central Redevelopable Residential parcels averaging about 0.36 acres while the Chugiak/Eklutna Redevelopable Residential parcels average about 0.59 acres in size (see **Table B-2**).

The defined Redevelopable Residential selection criteria include:

Existing Land Use

The following MOA Planning/GIS Land Use classes and included sub classifications are assumed to be compatible with Redevelopable Residential status for additional or alternative Industrial development:

1000s – 1400s Single- and Multi-Family Residential, Mobile Homes and RV Parks, Group Quarters

1500s – 1700s Mixed Use Commercial/ Religious/ and Industrial/Residential

1800 Unsound Building Units

The following MOA Planning/GIS Land Use classes and included sub classifications are assumed to be incompatible with default assignment to Redevelopable Residential status for additional or alternative Industrial development:

1240 Parcels associated with mobile home park – no structure on lot

1900s Miscellaneous Residential-associated Uses

These exclusions are intended to prevent residential back yards, gardens, recreational yards and common space associated with existing residential buildings from being classified as vacant or underutilized. In practice, only 8 such parcels covering 1.61 land acres were found to be located on Industrially-Zoned land in the Anchorage Central Subarea – these were assigned to the Currently Developed category described below.

Development Thresholds

The following MOA current development densities and assessed valuation thresholds are assumed to be compatible with Redevelopable Residential status for additional or alternative Industrial development:

Land Sq. Ft. per Dwelling Unit > 5,000 Sq. Ft.

Building Value / Land Value < 0.75

Floor Area Ratio (FAR) < 0.10

Anchorage 2020 Development Suitability Ratings

Industrially Zoned Parcels which had previously been assigned a Suitability Rating of '0', '1' or '2' – that is, 'Not Rated' 'Suitable' or 'Marginally Suitable' for assumed development, infill or redevelopment during the *Anchorage 2020* buildout analysis, have been assumed to be Suitable for consideration of development before 2030 in this Study.

Underutilized Non-Residential

Industrially-Zoned Land with primarily non-residential surface use has been classified as **Underutilized Non-Residential** if it passes through the exclusionary criteria described above, and had a Floor Area Ratio (FAR) less than 0.10 **AND** a ratio of 2009 Building Assessed Value / 2009 Assessed Land Value less than 0.75. Underutilized Non-Residential parcels located within industrial zones are therefore defined for this Study as having both relatively low densities of commercial/industrial development for urbanized areas and relatively low-valuation of commercial/industrial structures compared to the value of the land they are occupying.

As shown in **Table B-5**, the majority of the 353 parcels and about 612 acres of **Underutilized Non-Residential** land in the Study Area are located in the Anchorage Central, Anchorage Southwest and Anchorage Northeast Subareas, Approximately 66% or two-thirds of the total land supply in this category was classified as Industrial usage under the existing (circa ~2006) MOA GIS/Planning Land Use Codes; about 28% was classified as Commercial usage and the remaining 6% was classified as Vacant Land, prior to this Study's update of industrially-zoned

Table B-5
Anchorage Bowl Industrial Land Assessment
Preliminary Industrial Zoning Districts - Underutilized Land Supply Estimates [1] [2] [3]

Underutilized Land
by Parcel Sizes

Search and Classification Criteria									Subarea Geography														Study Area Totals	
Parcel Land Acres	Ownership	MOA LU Types Included	Primary Land Use (Prior Status)	MOA LU Types Excluded	Ival : Lval ratio	DU : Land ratio	Floor Area Ratio	Suitability Classes	Airport Parcels	Acres	Northwest Parcels	Acres	Northeast Parcels	Acres	Central Parcels	Acres	Southwest Parcels	Acres	Chugiak / Eklutna Parcels	Acres	Eagle River Parcels	Acres	Parcels	Acres
	Private	2000 - 3700s, 8000	Underutilized/Unbuilt Non-Residential	1000-1900s, 3800s-7300s, 8100, 8200	> 0	< 0.75	< 0.10	0, 1, 2																
0 - 20,000 Sq. Ft.											20	5.38	11	4.47	103	28	6	1.56					140	39.41
20,000 Sq. Ft. - 1 Acre											3	2.36	18	12.09	76	55	1	0.71			1	0.72	99	70.62
1 - 3 Acres											8	15.04	8	12.65	44	73.90	5	9.47			4	5.08	69	116.14
3 - 7 Acres											1	3.60	5	21.86	22	100.83	3	17.60					31	143.88
7 - 10 Acres											1	9.67	1	9.58	2	16.32	1	9.30	1	9.83			6	54.68
10 Acres+													1	15.72	4	111.89	3	59.53					8	187.14
Totals by Subarea									0	0.00	33	36.04	44	76.36	251	385.67	19	98.17	1	9.83	5	5.80	353	611.87

"under_size"

Sources: Economic & Planning Systems, using MOA GIS Parcel, Zoning and Land Use boundary layers and 'roll-up' summaries of parcel development and valuation status developed by Dan Quinn and provided by MOA Information Technology Staff

Notes: These estimates incorporate 2009 Assessed Valuation and Development Status, but do not yet reflect revisions in 4-digit Land Use Codes which are being assigned to update current site usage of Industrially Zoned properties.

[1] Land Acreage adjusted by EPS to exclude areas with permanent/ standing water-coverage, tidal flats, low coastlands, etc.

[2] Government, Utility, and Institutional contacts have been made independently to determine development plans and estimate potential development capacity - these estimates will be added to the estimated supply from the Vacant/Unbuilt, Redevelopable Residential and Underutilized Non-Residential classes.

[3] Final parcel counts and acreages.

parcels' development status and assessed building and land valuation². The average size of parcels differs by Subarea, with Anchorage Central Underutilized Non-Residential parcels averaging about 1.54 acres, Anchorage-Northeast about 1.74 acres and Anchorage-Southwest Underutilized Non-Residential parcels 5.17 acres (see **Table B-5**).

Table B-6 indicates over 340 of the 612 acres, 56%, is zoned I-1 or I-1 SL, while the remaining 272 acres, 44%, is zoned I-2 or I-2 SL. **Table B-7** shows the Underutilized Non-Residential land in the Study Area sorted by soil limitation ratings.

The defined Underutilized Non-Residential selection criteria include:

Existing Land Use

The following MOA Planning/GIS Land Use classes and included sub classifications are assumed to be compatible with Underutilized Non-Residential status for additional or alternative Industrial development:

2000s – 2400s Commercial (Surface) Uses

3000s – 3700s Industrial (Surface) Uses

8000s (Previously) Vacant Land

Development Thresholds

The following MOA current development densities and assessed valuation thresholds are assumed to be compatible with Underutilized Non-Residential status for additional or alternative Industrial development:

Building Value / Land Value < 0.75

Floor Area Ratio (FAR) < 0.10

Anchorage 2020 Development Suitability Ratings

Industrially Zoned Parcels which had previously been assigned a Suitability Rating of '0', '1' or '2' – that is, 'Not Rated' 'Suitable' or 'Marginally Suitable' for assumed development, infill or redevelopment during the *Anchorage 2020* buildout analysis, have been assumed to be Suitable for consideration of development before 2030 in this Study.

² As indicated in the following section of this **Appendix**, EPS has also linked and recorded updated (EOY 2008, BOY 2009) CAMA and MUNIVIEW land and site use and structure type designations for all of the Industrially-Zoned parcels, and has prepared Correlation Tables relating these MOA Property use codes to MOA GIS/Planning four-digit code equivalents.

Table B-6
Anchorage Bowl Industrial Land Assessment
Preliminary Industrial Zoning Districts - Underutilized Land Supply Estimates [1] [2] [3]

Underutilized Land
by Zone

Search and Classification Criteria									Subarea Geography														Study Area Totals	
Zoning Designation	Ownership	MOA LU Types Included	Primary Land Use (Prior Status)	MOA LU Types Excluded	Ival : Lval ratio	DU : Land ratio	Floor Area Ratio	Suitability Classes	Airport Parcels	Acres	Northwest Parcels	Acres	Northeast Parcels	Acres	Central Parcels	Acres	Southwest Parcels	Acres	Chugiak / Eklutna Parcels	Acres	Eagle River Parcels	Acres	Parcels	Acres
	Private	2000 - 3700s, 8000	Underutilized/Unbuilt Non-Residential	1000-1900s, 3800s-7300s, 8100, 8200	> 0	< 0.75	< 0.10	0, 1, 2																
I-1											33	36.04	39	50.85	213	214.46	12	31.01			5	5.80	302	338.16
I-1 SL													1	1.42	1	0.71							2	2.13
I-1 SL 2																							0	0.00
I-2													4	24.08	37	170.51	7	67.16					48	261.75
I-2 SL																			1	9.83			1	9.83
I-3 SL 1																							0	0.00
I-3 SL 2																							0	0.00
Totals by Subarea									0	0.00	33	36.04	44	76.36	251	385.67	19	98.17	1	9.83	5	5.80	353	611.87

"under_zone"

Sources: Economic & Planning Systems, using MOA GIS Parcel, Zoning and Land Use boundary layers and 'roll-up' summaries of parcel development and valuation status developed by Dan Quinn and provided by MOA Information Technology Staff

Notes: These estimates incorporate 2009 Assessed Valuation and Development Status, but do not yet reflect revisions in 4-digit Land Use Codes which are being assigned to update current site usage of Industrially Zoned properties.

[1] The targeted Industrial Zoning Districts are I-1, I-2, I-3 and MI, as located in the Anchorage Bowl, Chugiak-Eklutna, and Eagle River subareas of the Municipality of Anchorage; the Anchorage Bowl Subarea has been further subdivided into six regions: Airport, Northwest, Northeast, Central, Southeast and Southwest.

[2] Government, Utility, and Institutional contacts have been made independently to determine development plans and estimate potential development capacity - these estimates will be added to the estimated supply from the Vacant/Unbuilt, Redevelopable Residential and Underutilized Non-Residential classes.

[3] Final parcel counts and acreages.

Table B-7
Anchorage Bowl Industrial Land Assessment
Preliminary Industrial Zoning Districts - Underutilized Land Supply Estimates [1] [2] [3] [4]

Underutilized Land
by Soil Rating

Search and Classification Criteria									Subarea Geography														Study Area Totals	
Soil Limitation Rating	Soil Limitation # Range	Ownership	MOA LU Types Included	Primary Land Use (Prior Status)	MOA LU Types Excluded	Ival : Lval ratio	Floor Area Ratio	Suitability Classes	Airport Parcels	Acres	Northwest Parcels	Acres	Northeast Parcels	Acres	Central Parcels	Acres	Southwest Parcels	Acres	Chugiak / Eklutna Parcels	Acres	Eagle River Parcels	Acres	Parcels	Acres
		Private	2000 - 3700s, 8000	Underutilized/ Unbuilt Non-Residential	> 0	< 0.75	< 0.10	0, 1, 2																
Not Rated	#N/A										2	11.30			24	137.32	6	75.62					32	224.24
Not Limited	0.00 - 0.00														5	5.11	1	10.81			1	1.11	7	17.04
Some Limitation	0.01 - 0.10										30	24.49	43	60.64	207	217.79	12	11.74			2	2.35	294	317.02
Moderate Limitation	0.11 - 0.25												1	15.72	4	6.04			1	9.83			6	31.59
Severe Limitation	0.26 - 0.50														3	6.41							3	6.41
Very Severe Limitation	0.51 - 1.00										1	0.24			8	12.99					2	2.34	11	15.58
Totals by Subarea									0	0.00	33	36.04	44	76.36	251	385.67	19	98.17	1	9.83	5	5.80	353	611.87

Sources: Economic & Planning Systems, using MOA GIS Parcel, Zoning and Land Use boundary layers and 'roll-up' summaries of parcel development and valuation status developed by Dan Quinn and provided by MOA Information Technology Staff

Notes: These estimates incorporate 2009 Assessed Valuation and Development Status, but do not yet reflect revisions in 4-digit Land Use Codes which are being assigned to update current site usage of Industrially Zoned properties.
[1] Soil Limitation Ratings derived from GIS layers and documentation of Soil Survey of Anchorage, Alaska provided by MOA staff and USDA Natural Resources Conservation Service. Specific ratings by soil type derived from Table 13 - Building Site Development: Structures; Limitations for Small Commercial Structures. Parcel ratings allocated by EPS, using weighted averages where parcel polygons intersected multiple soil types. Ratings are approximate, for broad-brush analysis and not a substitute for parcel-specific onsite evaluations.
[2] "Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments."
[3] Government, Utility, and Institutional contacts have been made independently to determine development plans and estimate potential development capacity - these estimates will be added to the estimated supply from the Vacant/Unbuilt, Redevelopable Residential and Underutilized Non-Residential classes.
[4] Final parcel counts and acreages.

Currently Developed

Industrially-Zoned Land with primarily residential surface use has been classified as **Currently Developed** if it passes through the exclusionary criteria described above, and has a ratio of land per residential unit less than or equal to 5,000 square feet **AND** a ratio of 2009 Building Assessed Value / 2009 Assessed Land Value greater than or equal to 0.75, **OR** has been identified by the MOA as Economically Linked to other Currently Developed parcels.

Industrially-Zoned Land with primarily non-residential surface use has been classified as **Currently Developed** if it passes through the exclusionary criteria described above, has a Floor Area Ratio (FAR) greater than or equal to 0.10, **OR** has a ratio of 2009 Building Assessed Value / 2009 Assessed Land Value greater than or equal to 0.75, **OR** has been identified as Economically Linked to other currently developed parcels by MOA staff.

Currently Developed parcels located within industrial zones are therefore defined for this Study as having moderate to high densities of residential/commercial/industrial development for the Anchorage area and/or moderate to high valuation of residential/commercial/industrial units and structures to the land they are occupying. Development of these parcels with additional infill or alternative industrial development could therefore require displacement of well-established existing economic uses or extensive demolition or redevelopment of existing structures.

As indicated below, approximately 40% of the total acreage in this category has existing Industrial Land Use coding and thus may have (some) additional industrial infill capacity, but it is evident from both field work and inspection of historical and recent aerial views that many existing industrial establishments are intensive users of surface space for bulk outdoor storage, heavy equipment parking, assembly yards, etc., so that economically functional lot 'coverage' is often much greater than the associated permanent structures' 'footprints'.

As shown in **Table B-1**, the majority of the 1,130 parcels and about 1,565 acres of **Currently Developed** land in the Study Area are located in the Anchorage Central Subarea, containing about 53% of the acreage in this category, and the Chugiak/Eklutna Subarea, containing about 15% of the acreage in this category. The Anchorage-Northeast and Anchorage Northwest Subareas each contain about 190 acres or 12% of the category – together about 24% of the Currently Developed land.

The total land acreage in this category has been classified as 40% Commercial and 40% Industrial usage under the existing (circa ~2006) MOA GIS/Planning Land Use Codes; about 19% was previously classified as Vacant land and the remaining 1% was classified in Residential and Mixed Uses, prior to this Study's update of parcels' development status and assessed building and land valuation.

The defined Currently Developed selection criteria include:

Existing Land Use

The following MOA Planning/GIS Land Use classes and included sub classifications are assumed to be compatible with Currently Developed status:

1000s – 1400s Single- and Multi-Family Residential, Mobile Homes and RV Parks, Group Quarters1240 Parcels associated with mobile home park – no structure on lot1500s – 1700s Mixed Use Commercial/ Religious/ and Industrial/Residential1900s Miscellaneous Residential-associated Uses2000s – 2400s Commercial (Surface) Uses3000s – 3700s Industrial (Surface) Uses8000s (Previously) Vacant Land

The following MOA Planning/GIS Land Use classes and sub classifications were assigned to **Unsuitable** status, and have been excluded from the Currently Developed category to prevent double-counts of unique parcels and acreage:

3800s Utility-Related Facilities4000s INSTITUTIONAL5000s PARKS, OPEN SPACE, AND RECREATION AREAS6000s TRANSPORTATION - RELATED7000s R.O.W.s and Military Reservations8100 Intertidal Areas8200 Waterbodies***Development Thresholds***

The following MOA current development densities and assessed valuation thresholds are assumed to be compatible with Currently Developed status:

Land Sq. Ft. per Dwelling Unit \leq 5,000 Sq. Ft.Building Value / Land Value \geq 0.75Floor Area Ratio (FAR) \geq 0.10***Anchorage 2020 Development Suitability Ratings***

Industrially Zoned Parcels which had previously been assigned a Suitability Rating of '0', '1' or '2' – that is, 'Not Rated' 'Suitable' or 'Marginally Suitable' for assumed development, infill or redevelopment during the *Anchorage 2020* buildout analysis, have been assumed to be Suitable for consideration of development before 2030 in this Study.

Additional Technical Discussion

In preparing the current Inventory of MOA Industrial Land, i.e., identifying MOA land parcels located in currently defined I-1, I-2, I-3 and MI Zoning Districts, and updating information about the physical characteristics, ownership, site use(s) and development status of those parcels, the EPS team assembled GIS map layers and data from several sources. These sources include:

- GIS map 'layers' in ESRI shapefile format, downloaded from the MOA GIS website: <http://munimaps.muni.org/moagis/download.htm> and provided by MOA staff. GIS Technician/Senior Cartographer Lisa Ameen, GIS Technician Terry Lamberson and GIS Tech II Brittnei Kilborn have all been very generous with their expertise and very rapid in their response to EPS' requests for data and technical assistance, and have taken pains to convey the origins, complexity, special characteristics and limitations, and potential sources of misunderstanding in the supplied data.

The shapefiles supplied by MOA GIS Services have as their defined projection and coordinate system State Plane Coordinate System 1983, Alaska 5004, Zone 4 (US Survey Feet). EPS has adhered to this standard in creating the Industrial Land Inventory shapefile, which comprises the parcel boundary digital map regions and the associated parcel attributes.

- GIS map 'layers' and data tables obtained from other government agencies, including 2000 and 2008 TIGER/Line shapefiles downloaded from ESRI and U.S. Census Bureau archives; Anchorage Soil Survey tables and documentation obtained from the Natural Resources Conservation Service; and USGS 1 degree Digital Elevation Map files downloaded from the WebGIS portal: http://www.webgis.com/terr_pages/AK/dem75/anchorageborough.html.
- Anchorage Computer Assisted Mass Appraisal (CAMA) and MUNIVIEW tables, documentation and custom data extracts provided by MOA Information Technology. Senior Systems Analyst Heidi Pollard provided invaluable guidance to EPS in dealing with the intricacies of the parcel appraisal and cadastral data, suggesting and coordinating assistance and special 'roll-up' parcel data extraction by MOA Contractor-Programmer Analyst Daniel W. Quinn.

Mr. Quinn suggested and programmed data extraction and reporting code that assembles Year 2009 parcel development (in terms of aggregate residential units, building counts and gross building square footage) and the associated building and land valuations, summarizing and assigning the aggregate development and AV measures at the 'physical'/mappable parcel level. This greatly simplifies and accelerates access to data that would otherwise have required significant time and effort be expended by the Consultant Team, in tracing and correctly processing parcel development and valuation measures distributed across multiple CAMA data tables, 'cards' and property-lease relationships.

- The special parcel data extracts described immediately above, and correspondence tables of Anchorage CAMA land use codes and structure types to MOA GIS/Planning land use code equivalents constructed by EPS, in large part superseded the need to apply Alaska State Business License records obtained at the very beginning of the study from the Alaska State Department of Commerce, Community and Economic Development: <http://www.commerce.state.ak.us/occ/buslic4.cfm>. The State's business license records are coded by industry using the North American Industry Classification System (NAICS) and have been helpful in a limited number of instances in supplementing data available from the MOA online Parcel Viewer: <http://munimaps.muni.org/website/anchorage/application/map.htm> to identify or confirm the location of specific industrial businesses during the interview and field check phases of the current study.

In follow-up and more extended land use studies within the MOA, EPS suggests the State Business License lists may have continuing utility, particularly if the full license database

contains more information about licensed establishments' actual physical locations (which appears to be a requirement for issuance of a license) as opposed to the license-holders mailing address, and if both the MOA's CAMA Parcel Site Address records and the State's Business License Physical Address records were standardized to US Postal Office formats, possibly using services such as those offered to government researchers without charge by the University of Southern California GIS Research Laboratory: <https://webgis.usc.edu/>.

Data Dictionary

The Industrial Land Inventory Data Dictionary is summarized as **Table B-8**, which shows the component data fields' names, descriptions and formats. **Table B-8** also indicates the data sources, indicating which data were assembled from CAMA, MUNIVIEW and GIS materials provided by the MOA, and which fields were assigned or calculated by EPS. Among the latter are: the development density ratios LSQFT_DU09 and FAR09, which are the calculated ratios of square feet of 'land' (excluding permanent water-body coverage) per dwelling unit for residentially-developed lots, and Floor Area Ratios; and IL_RATIO09, which is the calculated ratio of Aggregate Building Assessed Value to Aggregate Land Assessed Value, per calendar year 2009 tax valuations.

It should be noted the MOA's CAMA database does not always include development data for tax-exempt properties, such as those owned by the Federal and State governments, and so the Inventory records for lots and parcels with Exemption Codes "A", "F", "2", "3", "4" and "9" (and possibly others) should be used with caution – EPS tagged several such parcels with a "B" flag in the LBFLAG_06 field to indicate visual confirmation of permanent surface structures, per 2006 and 2007 aerial views available in Google Earth. To 'normalize' variations in the prior assignment of Exemption Codes between CAMA fields EX_CD_1 and EX_CD_2, EPS created the field EX_CD_ASSM to assure uniform selection/filtering capability for parcels with Exemption Codes "A", "F", "2", "3", "4" and "9" .

For the purposes of this study, EPS used GIS tools to independently assign gross lot and parcel areas in acres, and subsequently adjusted these gross area estimates to exclude water coverage, as recorded in the EPS_ACRES, LAND_ACRES, WET_ACRES and LND_SF_ADJ fields. The MOA provided area fields AREA and LAND_SQFT have been included to allow comparison and, if necessary, future checks and revisions. Similarly, EPS created fields such as EPSROWID, PFC_LINK, DQS_ULNK, DQS_PLNK, and ELNK121208 to aid referential integrity when relating data across several GIS layers and CAMA and MUNIVIEW tables and extracts. Some of these linking fields, and the MOAs older SEQNUM fields, may now be superseded by the UNIQUEID field created jointly by GIS and Information Services staff in late December, 2008 – EPS has recorded the UNIQUEID field as UNIQ123008.

During the Inventory and Supply analyses, EPS has made extensive use of parcel overlays created for Google Earth using our Google Earth Pro license and ArcGIS and MapInfo GIS applications. To assist future users of the Industrial Land Inventory, EPS has included the coordinates for each of the included lots and parcels as WGS84 Latitude and Longitude coordinates, recorded in the LAT_WGS84 and LON_WGS84 fields. The Google Earth overlays will be included in the Work Products for this Study in KML or KMZ format, along with the Inventory database and associated map layer in ESRI shapefile format.

Table B-8
Anchorage Bowl Industrial Land Assessment
Industrial Land Inventory Data Dictionary Summary [1] [2] [3]

Field	FieldDesc	Type	Size	Decimals	Primary/Rollup	Source
PARCEL_NUM	11-digit Parcel ID, No "-" MASK	Text	11			MOA GIS 12/08/2008
PLOT_CNT	EPS-assigned count of GIS parcels sharing identical PARCEL_NUM attribute	Numeric	11	0		MOA GIS, EPS
SEQNUM	Superseded unique link attribute for CAMA/GIS 'parcels'	Text	10			MOA GIS 12/08/2008
AREA	GIS 'parcel' area in SqFT	Float				MOA GIS 12/08/2008
LEN	GIS 'parcel' perimeter in SqFT	Float				MOA GIS 12/08/2008
ZONING_DES	Zoning Designation, per 12/08/2008 Zoning shape file	Text	9			MOA GIS, EPS
ZONING_GRP	Zone (MOA Planning Dept. standard acronym)	Text	4			MOA GIS, EPS
GIS_LU_PRV	Planning/GIS 4-digit Land Use Code (per 12/08/2008 shape file)	Numeric	4	0	X	MOA GIS, EPS
GIS_LU_Y09	Planning/GIS 4-digit Land Use Code (per 2009 Update in progress)	Numeric	4	0	X	EPS
SUIT_VCNT	Suitability for development - (per Anchorage 2020 'vacant' parcel buildout analysis)	Numeric	1	0		MOA GIS, EPS
SUIT_UNDR	Suitability for infill - (per Anchorage 2020 'underutilized' parcel buildout analysis)	Numeric	1	0		MOA GIS, EPS
SUIT_REDEV	Suitability for redevelopment - (per Anchorage 2020 'non-conforming' parcel buildout analysis)	Numeric	1	0		MOA GIS, EPS
EPSROWID	EPS-assigned unique ordinal # for 12/08/2008 GIS parcel records	Numeric	11	0		EPS
SUBREGION	MOA Regional Planning Subareas - per AEDC suggestions and GIS 'Community' shape files.	Text	4			EPS
UNIQ123008	Current unique link attribute for CAMA/GIS 'parcels'	Numeric	11	0		MOA GIS, IT
IND_FLAG	EPS-assigned T/F flag for GIS parcels completely or mostly located in Industrial Zoning Districts	Logical	1			EPS
IND_SPLIT	EPS-assigned T/F flag for GIS parcels 'split' by Industrial Zoning District boundaries	Logical	1			EPS
EPS_ACRES	GIS 'parcel' area in Acres (polygon area - may include water-coverage)	Float				EPS
LAND_ACRES	GIS 'parcel' land area in Acres (land area - excludes water-coverage, tidal flats, low coastlands)	Float				MOA GIS, EPS
WET_ACRES	GIS 'parcel' wetland area in Acres (wetland area - per MOA GIS wetlands layer)	Float				MOA GIS, EPS
WET_TYPE	GIS 'parcel' wetland type - per MOA GIS wetlands layer	Text	10			MOA GIS, EPS
MAP_COMMENT	Platting comment(s)	Text	60			MUNIVIEW_PARCEL 12/08/2008
PFC_LINK	EPS-assigned T/F flag checking match on PARCEL_NUM to 1/08/09 MUNIVIEW_PARCEL file	Logical	1			EPS
DQS_ULNK	EPS-assigned T/F flag checking unique match on PARCEL_NUM to 1/12/09 Quinn Summary File	Logical	1			EPS
DQS_PLNK	EPS-assigned T/F flag checking match on PARCEL_NUM to 1/12/09 Quinn Summary File	Logical	1			EPS
ELNK121208	Economic Link - Unique Ordinal # assigned to Economic Linkage Polygons in MOA-provided coverage.	Numeric	11	0		MOA GIS, EPS
Y09_LND_AV	Aggregate Current tax year land value	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
Y09_BLD_AV	Aggregate Current tax year building value	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2010
Y09_TOT_AV	Aggregate Current tax year value of property	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2011
LAT_WGS84	Parcel Centroid 'Y' Coordinate (WGS84 Latitude)	Numeric	11	6		EPS
LON_WGS84	Parcel Centroid 'X' Coordinate (WGS84 Longitude)	Numeric	11	6		EPS
CLASS_CD	Class of parcel [Residential, Commercial]	Text	17			MUNIVIEW_BOTH 12/08/2008
APPLUCD	Appraisal/Property 3-digit Land Use Code (per 12/08/2008 MUNIVIEW_BOTH file)	Numeric	3		X	MUNIVIEW_BOTH 12/08/2008
LD_USE_CD	Land Use Description	Text	24		X	MUNIVIEW_BOTH 12/08/2008
STRCT_TYPE	Structure type description [Apartment, Hotel, Nursing home, etc.]	Text	25		X	MUNIVIEW_COMMERCL 12/08/2008
VDO	V=vacant, D=Dwelling, O=Other (Superseded; used as crosscheck for other fields)	Text	1			MUNIVIEW_BOTH 12/08/2008
RENUMBR_ID	Previous Parcel ID. Parcel may be renumbered and/or replatted	Text	13		X	MUNIVIEW_PARCEL 1/08/2009
OWN_NAME_1	Owner Name, Part 1/3	Text	30			MUNIVIEW_PARCEL 1/08/2009
OWN_NAME_2	Owner Name, Part 2/3	Text	30			MUNIVIEW_PARCEL 1/08/2009
OWNER_ADDR	Owner Mailing Address (Unparsed 'Street' Address)	Text	30			MUNIVIEW_PARCEL 1/08/2009
CITY	Owner Mailing Address City	Text	16			MUNIVIEW_PARCEL 1/08/2009
STATE	Owner Mailing Address State	Text	2			MUNIVIEW_PARCEL 1/08/2009
ZIP_CODE	Owner Mailing Address 5-digit ZIP Area	Text	5			MUNIVIEW_PARCEL 1/08/2009
ZIP_BLOCK	Owner Mailing Address 4-digit ZIP Suffix	Text	4			MUNIVIEW_PARCEL 1/08/2009
SITE_ADDR	Site Address (Unparsed 'Street' Address)	Text	40			MUNIVIEW_PARCEL 1/08/2009
ST_EXMP_CD	State exemption code	Text	1		X	MUNIVIEW_PARCEL 1/08/2009
STATE_EXCD	State exemption code description	Text	15		X	MUNIVIEW_PARCEL 1/08/2009
EX_CD_ASSM	Exemption code assumed for Industrial Land Inventory Study (EPS checks of leases and ownership)	Text	1			EPS
EX_CD_1	Exemption code one	Text	1		X	MUNIVIEW_PARCEL 1/08/2009
EX_CD_1_LB	Exemption code description one	Text	21		X	MUNIVIEW_PARCEL 1/08/2009
EX_CD_2	Exemption code two	Text	1		X	MUNIVIEW_PARCEL 1/08/2009
EX_CD_2_LB	Exemption code description two	Text	21		X	MUNIVIEW_PARCEL 1/08/2009
MAP_KEY	8 character parcel ID for tie to mapping	Text	8			QUINN SUMMARY 'ROLL-UP' 01/12/2009
MKEYLOTS	EPS-assigned count of GIS parcels sharing identical MAP_KEY attribute	Numeric	11	0		EPS, QUINN LEASE 'ROLL-UP' 01/12/09
RES_UNITS	Total number of living units on 'physical' parcel	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
LAND_SQFT	Land Area in SqFt	Numeric	11	0		QUINN SUMMARY 'ROLL-UP' 01/12/2009
YEAR_BUILT	Original date of construction	Numeric	5	0		MUNIVIEW_COMMERCL 12/08/2008
EFF_YEAR_B	Effective year built	Numeric	5	0		MUNIVIEW_COMMERCL 12/08/2008
LND_SF_ADJ	Adjusted Land Area in SqFt - excludes water-coverage, tidal flats, low coastlands	Numeric	11	0		EPS
NBR_BLDGS	Total number of buildings on 'physical' parcel	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
BLDG_AREA	Total GBA in SqFt on 'physical' parcel	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
BLDG_COVER	Total built coverage (ground floor SqFt) on 'physical' parcel	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
BLDG_STORY	Maximum floor levels on 'physical' parcel	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
CLASS	'Binary' Class of parcel [Residential, Commercial]	Text	1		X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
CONDO_CNT	Total number of condominium units on 'physical' parcel	Numeric	10	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
APTMT_CNT	Total number of apartment units on 'physical' parcel	Numeric	10	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
LEASE	Active Lease Flag ('Y' or '')	Text	1			QUINN SUMMARY 'ROLL-UP' 01/12/2009
LEASE_CNT	Active Lease Count	Numeric	11	0	X	QUINN SUMMARY 'ROLL-UP' 01/12/2009
IL_RATIO09	Aggregate building value (2009) / Aggregate land value (2009)	Numeric	9	2		EPS
LSQFT_DU09	Adjusted Land Area in SqFt / Total # of living units on 'physical' parcel	Numeric	9	2		EPS
FAR09	Floor Area Ratio : Total GBA in SqFt / Adjusted Land Area in SqFt	Numeric	9	2		EPS
BSDS_SCM	Soil Suitability/Limitation Rating for Small Commercial Structures	Numeric	5	2	X	EPS, USDA Anchorage Soil Survey
WET_LAND	Wetland legislated condition	Text	13		X	MUNIVIEW_BOTH 12/08/2008
LBFLAG_06	'Snapshot' impression of parcel surface development status, per Google Earth and 2006 MOA imagery	Text	1			EPS, for selected parcels
SUPPLY_CAT	Industrial Land Supply Category and Land Use Group Code	Text	7			EPS
SUPPLY_GRP	Industrial Land Supply Group Code	Text	3			EPS
GEOTIF_06	Aerial 'tile' location, per USGS index, for use with 2007 MrSID Aerials of Anchorage Bowl	Text	15			USGS

"diction_summ"

Sources: MOA GIS datasets and metadata; Economic & Planning Systems.

- Notes: [1] The field list, data types and sizes indicated above are draft and subject to change during collaboration with MOA staff.
[2] The Inventory Work Product will include an ArcView shapefile, using Alaska State Plane Coordinate System, Zone 4, (1983 U.S. Survey Feet) as the default projection.
[3] Fields with Yellow Backgrounds are 'scaffolding' aids that may be dropped from final Industrial Land Inventory Deliverable.