MEMORANDUM

SUBJECT: Ozone 1-Hour to 8-Hour Ratios for the 2002-2004 Design Value Period

FROM: Lance McCluney, EPA-OAQPS, Air Quality Analysis Group

TO: Ozone NAAQS Review Docket (OAR-2005-0172)

DATE: January 18, 2007

Ozone monitoring data for 2002-2004 was pulled from Air Quality System (AQS) on January 10, 2007. Ozone design values where calculated for both the 1-hour standard, based on 40 CFR Chapter 1 Part 50 Appendix H, and the ozone 8-hour standard, based on 40 CFR Chapter 1 Part 50 Appendix I. The monitoring data was aggregated to the United States Census Bureau defined Core-Base Statistical Areas (CBSA). The definitions used are according to OMB Bulletin 06-01 (December 2005).The monitoring site(s) within a CBSA that had the highest 1-hour and the highest 8-hour design value was chosen. Finally, the ratios of 1-hour to 8-hour design values were calculated for each CBSA to determine if there is a difference between the ozone 1-hour standard and the 8-hour standard. Each ratio was rounded to the nearest tenth. In the appendix, there is a list of each CBSA 1-hour and 8-hour design values and the ratio, sorted by descending ratio and CBSA..

APPENDIX

CBSA	Ozone 1-Hour Design Value	Ozone 8-Hour Design Value	Ratio:1-hour to 8-hour
Houston-Sugar Land-Baytown, TX	0.17	0.101	1.7
Michigan City-La Porte, IN	0.135	0.086	1.6
Baton Rouge, LA	0.137	0.089	1.5
Fresno, CA	0.151	0.104	1.5
Hartford-West Hartford-East Hartford, CT	0.135	0.092	1.5
Portland-South Portland-Biddeford, ME	0.126	0.084	1.5
Richmond, VA	0.131	0.09	1.5
Salem, OR	0.095	0.065	1.5
San Francisco-Oakland-Fremont, CA	0.123	0.083	1.5
Athens-Clarke County, GA	0.107	0.078	1.4
Baltimore-Towson, MD	0.133	0.095	1.4
Bangor, ME	0.105	0.075	1.4
Beaumont-Port Arthur, TX	0.13	0.092	1.4
Boston-Cambridge-Quincy, MA-NH	0.124	0.091	1.4
Bridgeport-Stamford-Norwalk, CT	0.137	0.095	1.4
Brigham City, UT	0.105	0.076	1.4
Chicago-Naperville-Joliet, IL-IN-WI	0.132	0.094	1.4
De Ridder, LA	0.102	0.073	1.4
El Centro, CA	0.121	0.085	1.4
El Paso, TX	0.111	0.078	1.4
Elizabethtown, KY	0.102	0.075	1.4
Gaffney, SC	0.109	0.08	1.4
Greensboro-High Point, NC	0.121	0.084	1.4
Harrisburg-Carlisle, PA	0.111	0.082	1.4
Los Angeles-Long Beach-Santa Ana, CA	0.171	0.125	1.4
Louisville-Jefferson County, KY-IN	0.12	0.088	1.4
Manchester-Nashua, NH	0.114	0.084	1.4
Mayfield, KY	0.104	0.077	1.4
Memphis, TN-MS-AR	0.119	0.087	1.4
Milwaukee-Waukesha-West Allis, WI	0.12	0.088	1.4
Minneapolis-St. Paul-Bloomington, MN-WI	0.094	0.069	1.4
Morgantown, WV	0.104	0.076	1.4
Napa, CA	0.092	0.066	1.4
New Haven-Milford, CT	0.137	0.095	1.4
New York-Northern New Jersey-Long Island, NY-NJ-PA	0.137	0.099	1.4
Niles-Benton Harbor, MI	0.117	0.086	1.4

Norwich-New London, CT	0.122	0.088	1.4
Ogden-Clearfield, UT	0.107	0.079	1.4
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	0.129	0.095	1.4
Portland-Vancouver-Beaverton, OR-WA	0.097	0.068	1.4
Poughkeepsie-Newburgh-Middletown, NY	0.126	0.089	1.4
Provo-Orem, UT	0.104	0.076	1.4
Racine, WI	0.125	0.087	1.4
Reading, PA	0.113	0.083	1.4
Rochester, NY	0.11	0.081	1.4
Sacramento--Arden-Arcade--Roseville, CA	0.142	0.102	1.4
Salisbury, NC	0.127	0.094	1.4
Salt Lake City, UT	0.109	0.079	1.4
Sarasota-Bradenton-Venice, FL	0.109	0.077	1.4
Spartanburg, SC	0.114	0.084	1.4
Springfield, MA	0.128	0.09	1.4
Trenton-Ewing, NJ	0.126	0.091	1.4
Tulsa, OK	0.107	0.079	1.4
Tuscaloosa, AL	0.099	0.073	1.4
Ukiah, CA	0.083	0.058	1.4
Vallejo-Fairfield, CA	0.099	0.071	1.4
Virginia Beach-Norfolk-Newport News, VA-NC	0.121	0.086	1.4
Washington-Arlington-Alexandria, DC-VA-MD-WV	0.137	0.096	1.4
Weirton-Steubenville, WV-OH	0.113	0.083	1.4
Wheeling, WV-OH	0.109	0.078	1.4
Akron, OH	0.114	0.089	1.3
Albany-Schenectady-Troy, NY	0.11	0.086	1.3
Allegan, MI	0.121	0.093	1.3
Allentown-Bethlehem-Easton, PA-NJ	0.112	0.088	1.3
Altoona, PA	0.102	0.081	1.3
Ames, IA	0.073	0.058	1.3
Anderson, IN	0.112	0.089	1.3
Anderson, SC	0.105	0.082	1.3
Asheville, NC	0.104	0.082	1.3
Ashtabula, OH	0.119	0.094	1.3
Atlanta-Sandy Springs-Marietta, GA	0.123	0.093	1.3
Atlantic City, NJ	0.107	0.084	1.3
Augusta-Waterville, ME	0.102	0.076	1.3
Bakersfield, CA	0.151	0.116	1.3
Barnstable Town, MA	0.118	0.088	1.3
Bellingham, WA	0.073	0.057	1.3
Birmingham-Hoover, AL	0.109	0.085	1.3

Boise City-Nampa, ID	0.099	0.076	1.3
Boulder, CO	0.1	0.076	1.3
Bowling Green, KY	0.101	0.078	1.3
Buffalo-Niagra Falls, NY Metropolitan Sta	0.114	0.091	1.3
Canton-Massillon, OH	0.109	0.086	1.3
Chambersburg, PA	0.114	0.085	1.3
Charleston, WV	0.105	0.081	1.3
Charlotte-Gastonia-Concord, NC-SC	0.124	0.092	1.3
Chattanooga, TN-GA	0.113	0.085	1.3
Chester, SC	0.104	0.08	1.3
Cincinnati-Middletown, OH-KY-IN	0.116	0.091	1.3
Claremont, NH	0.1	0.077	1.3
Cleveland-Elyria-Mentor, OH	0.128	0.095	1.3
Columbus, GA-AL	0.093	0.072	1.3
Columbus, OH	0.117	0.091	1.3
Concord, NH	0.095	0.075	1.3
Corpus Christi, TX	0.1	0.08	1.3
Dallas-Fort Worth-Arlington, TX	0.129	0.098	1.3
Daphne-Fairhope, AL	0.096	0.076	1.3
Dayton, OH	0.111	0.087	1.3
Decatur, IL	0.093	0.073	1.3
Deltona-Daytona Beach-Ormond Beach, FL	0.087	0.069	1.3
Denver-Aurora, CO	0.112	0.084	1.3
Detroit-Warren-Livonia, MI	0.124	0.092	1.3
Dover, DE	0.112	0.084	1.3
Durham, NC	0.114	0.087	1.3
Erie, PA	0.114	0.087	1.3
Eugene-Springfield, OR	0.094	0.07	1.3
Evansville, IN-KY	0.107	0.083	1.3
Fayetteville, NC	0.105	0.084	1.3
Florence, SC	0.101	0.08	1.3
Gardnerville Ranchos, NV	0.081	0.064	1.3
Gettysburg, PA	0.103	0.08	1.3
Grand Rapids-Wyoming, MI	0.105	0.084	1.3
Greeley, CO	0.098	0.077	1.3
Greenville, NC	0.103	0.081	1.3
Greenville, SC	0.1	0.08	1.3
Gulfport-Biloxi, MS	0.103	0.08	1.3
Hagerstown-Martinsburg, MD-WV	0.109	0.083	1.3
Hanford-Corcoran, CA	0.121	0.093	1.3
Hickory-Lenoir-Morganton, NC	0.104	0.082	1.3

Holland-Grand Haven, MI	0.107	0.084	1.3
Honolulu, HI	0.053	0.042	1.3
Houma-Bayou Cane-Thibodaux, LA	0.097	0.076	1.3
Huntington-Ashland, WV-KY-OH	0.114	0.086	1.3
Indianapolis-Carmel, IN	0.119	0.092	1.3
Jacksonville, FL	0.094	0.074	1.3
Johnstown, PA	0.104	0.08	1.3
Kalamazoo-Portage, MI	0.102	0.081	1.3
Kansas City, MO-KS	0.109	0.082	1.3
Keene, NH	0.093	0.074	1.3
Kingsport-Bristol-Bristol, TN-VA	0.106	0.084	1.3
Kinston, NC	0.098	0.078	1.3
Knoxville, TN	0.114	0.091	1.3
Lafayette, IN	0.103	0.082	1.3
Lake Charles, LA	0.107	0.08	1.3
Lancaster, PA	0.115	0.087	1.3
Laredo, TX	0.081	0.064	1.3
Las Cruces, NM	0.101	0.077	1.3
Lexington-Fayette, KY	0.098	0.073	1.3
Lincolnton, NC	0.108	0.086	1.3
Little Rock-North Little Rock, AR	0.101	0.078	1.3
Longview, TX	0.112	0.083	1.3
Macon, GA	0.111	0.086	1.3
Madera, CA	0.119	0.089	1.3
Madison, WI	0.093	0.074	1.3
McAllen-Edinburg-Mission, TX	0.092	0.072	1.3
Medford, OR	0.096	0.073	1.3
Miami-Fort Lauderdale-Miami Beach, FL	0.086	0.066	1.3
Middlesborough, KY	0.1	0.079	1.3
Mobile, AL	0.103	0.079	1.3
Modesto, CA	0.119	0.094	1.3
Montgomery, AL	0.096	0.074	1.3
Morgan City, LA	0.093	0.073	1.3
Morristown, TN	0.114	0.087	1.3
Mount Vernon, IL	0.099	0.079	1.3
Mount Vernon, OH	0.107	0.083	1.3
Mount Vernon-Anacortes, WA	0.07	0.052	1.3
Muskegon-Norton Shores, MI	0.116	0.086	1.3
Nashville-Davidson--Murfreesboro, TN	0.106	0.083	1.3
Natchez, MS-LA	0.097	0.076	1.3
New Castle, PA	0.103	0.077	1.3

New Orleans-Metairie-Kenner, LA	0.104	0.082	1.3
Ocala, FL	0.095	0.074	1.3
Olympia, WA	0.084	0.065	1.3
Orlando, FL	0.098	0.075	1.3
Owensboro, KY	0.104	0.08	1.3
Oxnard-Thousand Oaks-Ventura, CA	0.118	0.094	1.3
Paducah, KY-IL	0.101	0.08	1.3
Panama City-Lynn Haven, FL	0.1	0.078	1.3
Parkersburg-Marietta, WV-OH	0.113	0.084	1.3
Pascagoula, MS	0.098	0.078	1.3
Peoria, IL	0.095	0.075	1.3
Phoenix-Mesa-Scottsdale, AZ	0.11	0.085	1.3
Pittsburgh, PA	0.119	0.09	1.3
Port Angeles, WA	0.057	0.044	1.3
Providence-New Bedford-Fall River, RI-MA	0.121	0.09	1.3
Quincy, IL-MO	0.09	0.072	1.3
Raleigh-Cary, NC	0.116	0.088	1.3
Reno-Sparks, NV	0.093	0.074	1.3
Riverside-San Bernardino-Ontario, CA	0.163	0.127	1.3
Rockland, ME	0.109	0.081	1.3
San Antonio, TX	0.119	0.091	1.3
San Diego-Carlsbad-San Marcos, CA	0.115	0.089	1.3
San Jose-Sunnyvale-Santa Clara, CA	0.112	0.084	1.3
San Luis Obispo-Paso Robles, CA	0.092	0.073	1.3
Santa Cruz-Watsonville, CA	0.085	0.066	1.3
Santa Rosa-Petaluma, CA	0.08	0.061	1.3
Savannah, GA	0.085	0.068	1.3
Scranton--Wilkes-Barre, PA	0.108	0.081	1.3
Seaford, DE	0.112	0.085	1.3
Seattle-Tacoma-Bellevue, WA	0.099	0.074	1.3
Sevierville, TN	0.113	0.087	1.3
Sheboygan, WI	0.123	0.092	1.3
Shelton, WA	0.075	0.058	1.3
South Bend-Mishawaka, IN-MI	0.115	0.089	1.3
Springfield, MO	0.09	0.07	1.3
St. Louis, MO-IL	0.12	0.089	1.3
State College, PA	0.109	0.084	1.3
Stockton, CA	0.103	0.081	1.3
Syracuse, NY	0.101	0.077	1.3
Tampa-St. Petersburg-Clearwater, FL	0.103	0.077	1.3
Terre Haute, IN	0.108	0.083	1.3

Torrington, CT	0.117	0.089	1.3
Traverse City, MI	0.105	0.083	1.3
Utica-Rome, NY	0.102	0.078	1.3
Vineland-Millville-Bridgeton, NJ	0.116	0.089	1.3
Watertown-Fort Drum, NY	0.115	0.086	1.3
Wichita, KS	0.094	0.075	1.3
Williamsport, PA	0.103	0.082	1.3
Winchester, VA-WV	0.105	0.078	1.3
Winston-Salem, NC	0.116	0.087	1.3
York-Hanover, PA	0.114	0.086	1.3
Youngstown-Warren-Boardman, OH-PA	0.118	0.091	1.3
Yuba City, CA Metropolitan Statistical	0.113	0.09	1.3
Adrian, MI	0.1	0.083	1.2
Albuquerque, NM	0.096	0.077	1.2
Alexandria, LA	0.086	0.073	1.2
Americus, GA	0.082	0.07	1.2
Ann Arbor, MI	0.099	0.084	1.2
Appleton, WI	0.085	0.073	1.2
Augusta-Richmond County, GA-SC	0.103	0.083	1.2
Austin-Round Rock, TX	0.104	0.085	1.2
Baraboo, WI	0.082	0.07	1.2
Beaver Dam, WI	0.091	0.077	1.2
Bennington, VT	0.096	0.078	1.2
Bloomington, IN	0.102	0.084	1.2
Bloomington-Normal, IL	0.09	0.075	1.2
Brownsville-Harlingen, TX	0.08	0.067	1.2
Brunswick, GA	0.085	0.072	1.2
Burlington-South Burlington, VT	0.093	0.076	1.2
Cadillac, MI	0.088	0.076	1.2
Cape Coral-Fort Myers, FL	0.083	0.07	1.2
Carson City, NV	0.079	0.067	1.2
Cedar Rapids, IA	0.082	0.067	1.2
Champaign-Urbana, IL	0.087	0.073	1.2
Charleston-North Charleston, SC	0.091	0.073	1.2
Chico, CA	0.103	0.088	1.2
Clarksville, TN-KY	0.099	0.082	1.2
Clearlake, CA	0.08	0.065	1.2
Cleveland, MS	0.084	0.073	1.2
Clinton, IA	0.091	0.073	1.2
Colorado Springs, CO	0.087	0.073	1.2
Columbia, SC	0.102	0.086	1.2

Dalton, GA	0.103	0.083	1.2
Davenport-Moline-Rock Island, IA-IL	0.091	0.075	1.2
Decatur, AL	0.099	0.08	1.2
Des Moines-West Des Moines, IA	0.069	0.057	1.2
DuBois, PA	0.104	0.085	1.2
Durango, CO	0.074	0.061	1.2
Effingham, IL	0.088	0.072	1.2
Elkhart-Goshen, IN	0.107	0.087	1.2
Elmira, NY	0.095	0.077	1.2
Fargo, ND-MN	0.071	0.061	1.2
Farmington, NM	0.088	0.073	1.2
Flint, MI	0.101	0.085	1.2
Fond du Lac, WI	0.088	0.075	1.2
Fort Collins-Loveland, CO	0.101	0.082	1.2
Fort Wayne, IN	0.106	0.085	1.2
Gadsden, AL	0.093	0.075	1.2
Gainesville, FL	0.089	0.072	1.2
Gillette, WY	0.086	0.07	1.2
Granbury, TX	0.101	0.081	1.2
Green Bay, WI	0.106	0.087	1.2
Harrison, AR	0.091	0.076	1.2
Huntington, IN	0.097	0.08	1.2
Huntsville, AL	0.092	0.078	1.2
Iron Mountain, MI-WI	0.078	0.065	1.2
Jackson, MS	0.086	0.073	1.2
Jackson, WY-ID	0.073	0.063	1.2
Jamestown-Dunkirk-Fredonia, NY	0.115	0.093	1.2
Janesville, WI	0.096	0.078	1.2
Kalispell, MT	0.068	0.055	1.2
Kingston, NY	0.098	0.08	1.2
Laconia, NH	0.093	0.075	1.2
Lafayette, LA	0.098	0.079	1.2
Lake City, FL	0.087	0.07	1.2
Lakeland, FL Metropolitan Statistical	0.09	0.073	1.2
Lansing-East Lansing, MI	0.098	0.08	1.2
Las Vegas-Paradise, NV	0.104	0.085	1.2
Lawrenceburg, TN	0.094	0.076	1.2
Lawton, OK	0.088	0.076	1.2
Lebanon, NH-VT	0.089	0.072	1.2
Lima, OH	0.108	0.087	1.2
Lincoln, NE	0.066	0.056	1.2

Logan, UT-ID	0.081	0.068	1.2
Manitowoc, WI	0.101	0.083	1.2
Marshall, TX	0.097	0.081	1.2
Merced, CA	0.122	0.102	1.2
Meridian, MS	0.086	0.071	1.2
Miami, OK	0.09	0.078	1.2
Monroe, WI	0.086	0.071	1.2
Mountain Home, ID	0.082	0.066	1.2
Muncie, IN	0.102	0.083	1.2
Naples-Marco Island, FL	0.079	0.068	1.2
Oklahoma City, OK	0.096	0.079	1.2
Omaha-Council Bluffs, NE-IA	0.087	0.074	1.2
Palm Bay-Melbourne-Titusville, FL	0.086	0.069	1.2
Pensacola-Ferry Pass-Brent, FL	0.099	0.08	1.2
Phoenix Lake-Cedar Ridge, CA	0.102	0.084	1.2
Port St. Lucie-Fort Pierce, FL	0.081	0.066	1.2
Prescott, AZ	0.092	0.077	1.2
Rapid City, SD	0.081	0.068	1.2
Red Bluff, CA	0.1	0.085	1.2
Redding, CA	0.083	0.071	1.2
Roanoke, VA	0.097	0.079	1.2
Rockford, IL	0.089	0.073	1.2
Rocky Mount, NC	0.106	0.085	1.2
Salinas, CA	0.08	0.068	1.2
Santa Barbara-Santa Maria, CA	0.101	0.082	1.2
Sebring, FL	0.083	0.069	1.2
Seneca, SC	0.097	0.082	1.2
Seymour, IN	0.099	0.08	1.2
Shreveport-Bossier City, LA	0.093	0.076	1.2
Somerset, KY	0.091	0.074	1.2
Spokane, WA	0.088	0.073	1.2
Springfield, IL	0.089	0.073	1.2
Springfield, OH	0.108	0.087	1.2
Tallahassee, FL	0.088	0.074	1.2
Toledo, OH	0.109	0.089	1.2
Truckee-Grass Valley, CA	0.117	0.097	1.2
Tucson, AZ	0.091	0.076	1.2
Tupelo, MS	0.087	0.075	1.2
Tyler, TX	0.097	0.081	1.2
Union, SC	0.097	0.078	1.2
Vicksburg, MS	0.085	0.069	1.2

Victoria, TX	0.094	0.079	1.2
Visalia-Porterville, CA	0.126	0.105	1.2
Walterboro, SC	0.09	0.075	1.2
Watertown-Fort Atkinson, WI	0.092	0.077	1.2
Whitewater, WI	0.092	0.078	1.2
Wilmington, NC	0.089	0.075	1.2
Wilmington, OH	0.113	0.091	1.2
Bishop, CA	0.088	0.08	1.1
Duluth, MN-WI	0.072	0.064	1.1
Flagstaff, AZ	0.083	0.074	1.1
McAlester, OK	0.083	0.073	1.1
Monroe, LA	0.086	0.077	1.1
Sierra Vista-Douglas, AZ	0.08	0.072	1.1
Waterloo-Cedar Falls, IA	0.077	0.067	1.1
Wausau, WI	0.079	0.07	1.1