CLR-34 Neighborhoods Assn.

V. Real Estate Property Values

USR15-0027

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Response to the

Weld County 34 Value Diminution Study by Michael Smith, Foster Valuation Company LLC

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The Smith report for MMM concludes:

"Thousands of homes throughout Northern Colorado have been constructed and sold in proximity to industrial uses, gravel mines, asphalt batch plants, concrete batch plants, railways, and other uses in similar intensity to those planned for the Martin Marietta Weld County 34 project. Analysis of paired sales data revealed very similar sale prices per square foot for single family homes located in and out of proximity to more intense industrial uses similar to those planned. Therefore, as of the June 18, 2015 date of value, it is unlikely that completion of the Martin Marietta Weld County 34 project as planned will result in a diminution in value with regard to future sale prices of single-family homes."

We reviewed Mr. Smith's report and find that it provides no credible evidence that the Martin Marietta Weld County 34 project will not cause substantial declines in nearby residential property values.

- ***The first sentence in the quoted conclusion above has no bearing on the question of whether establishing the asphalt/concrete/aggregate plant to the proposed location will reduce property values in adjacent residential areas.*** Any construction and sales after industrial uses are established are based on prices that already reflect any reduction of property values due to the industrial uses.

- ***Paired sales analysis is not a valid way of estimating the effect of the proposed industrial use on property values.***

    - Mr. Smith compared homes that sold in neighborhoods near an asphalt and concrete batch plant or unspecified disamenities to homes that sold in the same period in neighborhoods not located near heavy industrial uses. Comparison homes were selected to have similar physical properties to the homes near heavy industrial uses (similar square footage and similar year of construction) based on information in the MLS. The analyst asserts that the comparison data are considered to be a good representation, but does not say how the comparison sales were selected or demonstrate that they are representative or even say who considers them representative. **One has to conclude that the comparison sales were likely handpicked to support the desired conclusion. We could likely find comparison houses that would lead to the opposite conclusion.**

    - **The paired sales analysis does not take into account other important factors that affect house values**, such as neighborhood characteristics, public school quality, distance from a central business district, or how much information the buyers had about the nearby industrial uses when they decided to purchase the home. Omitting these other factors biases the results. **Thus, the results that are presented are not credible**.

- If the MMM analyst selected houses in the neighborhoods near heavy industry that were bought by out-of-state buyers who may not have had information about the nearby heavy industry or may have been under pressure to buy a house quickly and paid a higher price because of that lack of information or pressure, then the comparisons would clearly misrepresent the effect of the heavy industry on house values.

- **The use of MLS data for purposes of finding matched properties is questionable.** Researchers using these data in more sophisticated statistical models (see below) have found that analyses based on MLS data lead to estimates of effects on house values that are biased toward finding little or no effect.

- ***Economists who study the effects of "disamenities" (gravel mines, landfills, etc) on residential property values use more sophisticated statistical models*** that include all sales records in the study areas, control for a wide range of factors that can also affect housing values, and address the statistical problems inherent in making simple, selective comparisons like those that Mr. Smith made.

    - ***Economists who have studied the effects of disamenities on residential property values consistently find that they have negative effects.*** That is, when statistical models account for differences in house characteristics as well as differences in neighborhood characteristics, property taxes, public school quality, and information effects, the distance to the disamenity affects the average house sales price significantly, and the effect is negative. That is, all other things equal, the closer a house is to the disamenity, the lower the sale price for the house.

    - ***Without data from another location with a similar asphalt/concrete/aggregate plant with a rail loop, we cannot estimate the amount by which property values will decline here, but the existing studies strongly suggest that the decline will be substantial.***

Background

To arrive at these conclusions, we drew on the key studies summarized below that analyze the effect of environmental disamenities on residential property values.

Hite, Diane, Chern, Wen, Hitzhusen, Fred, and Randall, Alan (2001). Property-Value Impacts of an Environmental Disamenity: The Case of Landfills. *Journal of Real Estate Finance and Economics*, vol. 22, no. 2/3, pp. 185-202.

- Examined the property value impacts of landfills using a hedonic price model

- The model accounts for:

    - housing structure characteristics (age of structure, number of rooms, bedrooms, baths, half baths, porches, and stories, square footage, garage and lot, and whether it is a condominium, has central air conditioning, has a fireplace, and masonry construction)

    - neighborhood effects (distance to central business district; school district quality; crime rate)

    - information effects (percentage of buyers who came from out of state)

    - distance to landfills and other disamenities and amenities

- The percentage of buyers who moved in from out of state (and presumably had less knowledge about local amenities and disamenities) is positively associated with property value, suggesting that information may play an important role in determining market price. When buyers come from out of state and may not know much about the landfill or have to make quick house buying decisions, housing prices are higher, all other things equal.

- Property values are negatively impacted by proximity to landfills, all other things equal. If all houses inside of 3.25 miles of the landfill are moved to 3.25 miles from the landfill, property values are estimated to increase by nearly 18%.

Brasington, David M., and Hite, Diane (2003). Demand for Environmental Quality: A Spatial Hedonic Analysis. *LSU Department of Economics Working Paper Series*, Working Paper 2005-08.

Used hedonic price analysis to estimate the average value of a house in the geographic area as a function of a set of explanatory variables.

- Explanatory variables include:
    - house characteristics (lot size, age of house, size of house, number of full and partial bathrooms, number of detached structures on lot)
    - neighborhood characteristics (distance from central business area, community population growth, neighborhood racial composition, education levels, income levels, and poverty rates)
    - property tax rates
    - public school quality (proficiency test scores)
    - distance to the nearest hazard
- Uses small geographic areas such as census block groups as the unit of analysis, with variables that are averages for that geographic area. Thus no single transaction or characteristic has an unwarranted influence on the overall findings.
- Spatial dependence, that is, the degree to which the price and characteristics of a house affect the price of neighboring houses, is taken into account in the statistical model

Second stage demand model

- Estimates distance to the nearest hazard as a function of the implicit prices derived from the hedonic price analysis and other demand shift variables
- Implicit prices are partial derivatives of average house price from the first equation with respect to distance to hazard, school quality, house size, and lot size. However, these are endogenous, so instruments for these must be found (arts, accessibility, MSA growth, and commute time)
- Demand shift variables are community income, climate, % with a graduate degree, % with children

Findings

- Hedonic price analyses show that environmental hazards have a small negative but statistically significant relationship with average constant-quality house prices. At the mean, moving 10% closer to the nearest hazard decreases average house price by .3%.

- Demand model analyses shows that people with higher income, higher education levels, and people with children demand more environmental quality (larger distance from hazard).

- Taking a house that is slightly more than a mile from the hazard and moving it to half a mile from the hazard results in a loss of $3,278 (about 6% of the value of the average house).

- In an expert witness report, Diane Hite characterizes the findings by saying that the analysis "confirmed that house values at ¼ mile from a toxic release source…would have their value decreased by 48%, all else constant."

Erickcek, George A. (2006). An Assessment of the Economic Impact of the Proposed Stoneco Gravel Mine Operation on Richland Township. Report completed at the request of the Richland Township Planning Committee.

- Examined the potential impact of a proposed gravel mine on residential property values and the potential employment impact of the mine on the area's economy

- Summarizes the literature by saying that studies applying hedonic pricing models generally show that proximity to landfills, hazardous waste sites, and the like has a significant negative effect on the price of a residential property.

- Drew on Hite (2006) study of the effects of distance from a 250-acre gravel mine on the sale price of 2,552 residential properties, controlling for a large set of other factors that influence a house's price. She found a large, statistically significant effect of proximity to the gravel mine on home sale prices. The closer to the mine, the greater the loss in house value. A residential property located a half mile from the mine experienced a 20% reduction in value. A property one mile from the mine experienced a 14.5% decline in value. These estimates are similar to estimates of the effects of landfills in the literature.

- The loss in house value is a way to quantify in dollars the loss in quality of life as capitalized in home values.

- Using the model parameters from the Hite study, this study simulated the loss in housing values that would result from the proposed gravel mine. More than 1,400 homes within a 3-mile radius of the mine would have been negatively impacted, with the total loss of values reaching nearly $32 million.

- The fact that over time housing and commercial developments move closer to and sometimes adjacent to mine operations does not mean that the mine has no effect on housing values. Prices adjust within a short time following establishment of a mine to compensate for the loss in quality of life, and new residents and businesses make decisions based on the new prices.

Anstine, Jeff (2003). Property Values in a Low Populated Area When Dual Noxious Facilities are Present. *Growth and Change*, vol. 34, no. 3, pp. 345-358.

- Used a hedonic price model to analyze the effects of distance from a heavy metal manufacturing facility and a rubber-compounding factor on assessed tax value of homes between one-tenth of a mile and five miles of the two facilities.

- The rubber-compounding factory produces visible smoke and a detectable odor while the heavy metal manufacturing facility does not. The former has a significant negative effect on assessed tax value of homes, controlling for other house characteristics.

- A home's distance from the rubber-compounding factory significantly affected its assessed tax value, and if the home was located between the two facilities, there was a further reduction in assessed tax value.

Hite, Diane, and Jauregui, Andres (2005). Don't Ask, Don't Tell: The Impact of Real Estate Agents on House Prices Near Environmental Disamenities.

- Studied the impact of real estate agents on the price of houses that are located close to landfills using a hedonic price model. The authors hypothesized that real estate agents obtain higher prices than those theoretically expected when the houses are located closer to an environmental disamenity. They attribute this result to differences in information about the presence of the environmental disamenity between buyers, sellers, and their real estate agent, that ultimately have an impact on their bargaining position.

- The analysis is based on 2,967 transactions involving houses located close to four landfills in Franklin County, Ohio, in 1990.

- On average, results suggest that at distances less than 1 mile away from the landfills, the percentage increase in the house price obtained by a real estate agent is greater than the commission rate. For example, the weighted predicted rent for transactions made through a real estate agent at an interval distance of 0.75 miles away from the landfills is $7,680.37, while the predicted rent for transactions made without an agent is $6,780.71. The difference between these two predicted house values is 13.27 percent.

- The paper provides evidence that estimating hedonic price models with MLS data can downwardly bias estimated impacts of an environmental disamenity.

Nelson, Jon P. (2004). Meta-Analysis of Airport Noise and Hedonic Property Values. *Journal of Transport Economics and Policy*, vol. 38, no. 1, pp. 1-27.

- Based on meta-analysis of the findings of 33 studies, the author concludes that a property located at 55 dB would sell for about 10-12% less if it was located at 75 dB.

Baranzini, A., Schaerer, C., and Thalmann, P. (2010). "Using measured instead of perceived noise in hedonic modles." Transportation Research Part D: Transport and Environment, vol. 15, no. 8, pp. 473-482.

- Finds a 23% discount in housing values due to daytime noise levels of 65 dB

Batemean, I. A., Day, B.H., Lake, I.R., and Lovett, A.A. (2001). *The effect of road traffic on residential property values: A literature review and hedonic price study*. Scottish Executive Transport Research Series, The Stationery Office, Edinburgh.

- Finds that noise impacts depend on magnitude, frequency, duration, variability, and time of occurrence.

Larsen, J.E. 2012. " Surface street traffic volume and single-family house price*." Transportation Research Part D: Transport and Environment* 17(4):317-320.

- Additional traffic from a mine that can cause significant congestion has a negative effect on house prices. House values near a street under study lost approximately 2.1% of their value when traffic was doubled.

Additional information provided by Dr. Diane Hite, an academic economist with expertise in environmental valuation and economic modeling

- Synthesis of published studies shows that the value reduction associated with a distance of ¼ mile from a gravel pit is 25% and a distance of ½ mile from a gravel pit is 18%. Similarly, the value reduction associated with a distance of ¼ mile from industrial odor is 48% and a distance of ½ mile from industrial odor is 23%.

- These estimates are separate, and it is Dr. Hite's opinion that the diminution in value will be greater when these two disamenities are found together.

Summary

We can summarize our findings by the following observations:

- Research studies suggest that the loss in market value of nearby residential properties could be as high as 40% for those nearest to the proposed Highway 34 project location.
- These losses will lead to a loss in property tax revenue for the county and reduced welfare of older neighbors who are relying on the savings invested in their houses to sustain them in old age.
- MMM has proposed NO mitigation.