

**Report Concerning the Economic Impact of the Proposed
Roblar Road Quarry**

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March 30, 2010

Scope of Analysis

I have been asked by the Citizens Advocating for Roblar Rural Quality (hereafter “CARRQ”) to review and analyze the application by North Bay Construction to develop a 70-acre hard-rock quarry along Roblar Road in Sebastopol (hereafter “RRQ”). My specific focus is to evaluate the economic impact of the proposed quarry and the economic claims made in the Sonoma County Planning Commission Staff Report’s (2009) statement of overriding considerations.

Qualifications

Appendix A to this report is my curriculum vita, documenting my 7 years of professional experience in the area of economics, including but not exclusive to, my research and teaching focus on the economics of industrial organization. The curriculum vita contains a complete listing of my economic consulting experience, professional peer-reviewed publications, and teaching experience. As a litigation consultant, I have worked on numerous cases determining market definition, estimating market power, and ascertaining economic damages. I am a Post Doctoral Scholar and received my Ph.D. in Agricultural and Resource Economics in 2008 at the University of California, Davis. My research and teaching focuses are agricultural economics, resource and environmental economics, industrial organization, and applied microeconomics. I have taught environmental economics and applied microeconomics at the University of California, Davis and California State University, Sonoma.

In conducting my analysis I reviewed a number of documents relevant to the RRQ application and the aggregate market in Sonoma and surrounding counties. Specifically, my research included review of

- EIR prepared by ESA for the County of Sonoma Planning and Resource Management Department (SCH #2004092099);
- Sonoma County Planning Commission Staff Report PLP03-0094 dated December 17, 2009 (hereafter referred to as “Staff Report 2009”);
- Shamrock Aggregate Import Facility Traffic Impact Study, prepared for the County of Sonoma by Whitlock & Weinberger Transportation, Inc., in July 2003;
- 2006 and 2007 Annual Reports on Aggregate Production in Sonoma County prepared by the Permit and Resource Management Department;
- “Aggregate Materials in Sonoma County,” California, CGS Special Report 175, prepared by the California Geological Survey, August 2005;
- Various documents produced in response to the CARRQ Public Records Request, December 11, 2009;
- Various reports prepared by the U.S. Census Bureau regarding aggregate mining in Sonoma and surrounding counties; and
- Various reports and publications on production and sale of aggregate in California.

It has been brought to my attention that the Sonoma County Planning Commission has produced a revised version of the Staff Report (PLP03-0094, 2009) that I reviewed when writing this report. To the extent that the revised Staff Report (2010) contains information substantively different from that previously reviewed, I reserve the right to provide a supplement to this report in order to address the revised content deemed relevant.

Summary of Opinions

The Staff Report's (2009) Statement of Overriding Considerations outlines 4 specific benefits associated with approving the development of the RRQ. Two of these opinions are based on the *alleged* economic benefits associated with operation of RRQ including:

1. The local supply of aggregate is considered an asset to the County in order to keep construction costs down and reduce environmental impacts and roadway wear impacts associated with importation and/or hauling rock from more distant locations. The Roblar Quarry would provide a local and accessible source of rock consistent with the General Plan and ARM Plan and would help keep construction costs down and reduce environmental impacts and roadway wear impacts associated with the importation and/or hauling of rock from more distant sources (Staff Report, 2009, p. 31).¹
2. The demand for additional local sources of hard rock, especially PC and AC grade material for road construction, has and will continue to increase due to the decreased utilization of gravel produced from terrace mining because terrace mining is being phased out per the ARM Plan. Roblar Quarry would provide a reliable and accessible source of PC and AC grade rock. The location of the Roblar Quarry would provide for efficient delivery of rock to planned local and regional transportation projects funded by tax Measure M over the next 15 years as the majority of these roadway construction projects are in central and southern Sonoma County (Staff Report, 2009, p. 31).²

The two opinions above assert that RRQ rock would satisfy existing demand, reduce the cost of construction in county, and reduce the costs of County projects (e.g., roadway improvements). Based upon the documents I have reviewed, outlined above, I have

¹ To the extent that this particular statement, contained in the Staff Report's (2009) Statement of Overriding Considerations, differs substantively from that contained in revised Staff Report (2010), I reserve the right to provide a supplement to this report to address those revisions deemed relevant.

² See footnote 1.

arrived at the following conclusions that are contrary to those asserted in the Staff Report's (2009) Statement of Overriding Considerations:

- First and foremost, none of the documents that I have reviewed provide any evidence that rock from RRQ would be cheaper than existing supplies.
- The magnitude of any price impact is extremely difficult to predict without an extensive study of the aggregate market in Sonoma and the surrounding counties. No such analysis has been conducted and it is thereby, at best, speculative to assert that the price of aggregate will fall with the development of RRQ.
- With the approval of the RRQ, North Bay will be in a position to underbid rivals to gain more contracts, or, alternatively, maintain its contract market share at a higher rate of profits by not adjusting its bids downward to reflect its lower costs relative to competing firms. Thus, the main impact resulting from development of RRQ will be to provide North Bay Construction with a competitive advantage in the market for construction, which does not necessarily translate into cost savings for the county or Sonoma County real estate buyers.
- There is no evidence that Sonoma County requires new supply of aggregates. Alternative sources of supply through international imports or recycled aggregate may present superior alternatives to mining virgin aggregate within the county to the extent new sources of supply are deemed desirable.
- Finally, no evidence has been presented in the EIR or other documents that I have reviewed that supports the claim that the RRQ will reduce aggregate haulage in the county or reduce roadway wear.

Supporting discussion, documentation, and analysis substantiating these opinions is provided in the subsequent analysis section of this report.

Background

The applicant is a construction contractor who proposes to mine up to 570,000 cubic yards per year (roughly 925,000 tons) for a 20-year period from the Roblar Road Quarry. Staff Report (2009) reports the estimate that 90% of production will be used in Sonoma County, and 60-80% will be used by applicant North Bay for its construction projects.

Based upon the 2007 Annual Report on Aggregate Production in Sonoma County, 2,439,479 tons of aggregate were mined in the County in 2007, 90% of it from quarries and 10% from in-stream sources. Total demand for 2007 aggregate in Sonoma County was 2,810,000 tons. Imports of aggregate from outside Sonoma County were estimated to be 725,000 tons for 2007, while for the same period 572,480 tons of Sonoma County production was exported from the county, making net imports for 2007 150,720 tons, or 5.4% of total demand.

The County estimated total demand for 2006 to be 4,013,913 tons, of which 750,000 tons were imported from out of Sonoma County. A total of 388,000 tons mined in Sonoma County were exported outside the County during this period, making net imports 362,000 tons or 9.0% of total demand.

Sonoma County has sought to phase out terrace mining of aggregate within its boundaries, and in 2007 none of the County's production came from terrace mining, in contrast to 20% in 2006. In-stream production accounted for 5% of the total in 2006 and 10% of the total in 2007.

Analysis

Although Sonoma County has been a net importer of aggregate in 2006 and 2007, net imports on a percentage basis have been small—less than 10%. Notably, 2007 net

imports on a percentage basis were less than 2006 imports, despite the complete phase out in 2007 of terrace mining.

The proposed annual production from the Roblar Road Quarry significantly exceeds the amount of imports for Sonoma County for either 2006 or 2007. If the Roblar Road Quarry is approved, it will be cost efficient for North Bay to operate it at the maximum committed capacity of 570,000 cubic yards or 925,000 tons. This would represent about a 37% increase in county production of aggregate based upon the average production for 2006 and 2007. Given the economies of scale inherent in mining of aggregate, it is unlikely that incumbent suppliers in Sonoma County will reduce production in response to entry by the Roblar Road Quarry, at least in the short term.

Thus, it is reasonable to predict that Sonoma County will become a net exporter of aggregate. Even under the unlikely scenario that the County's imports of aggregate were eliminated entirely in the presence of production from the Roblar Road Quarry, exports of aggregate from the County would increase by nearly 200,000 tons per year (based upon average imports for 2006-07). In reality imports are not likely to be eliminated for several reasons: imported aggregate will be more cost effective than aggregate mined in county for some construction sites and concrete manufacturing locations, contracts to import aggregate will remain in effect, and some contractors operating in Sonoma County who have vertically integrated their own aggregate supplies from outside the county will continue to use those supplies.

North Bay is expected to utilize 60-80% of production from the Roblar Road Quarry for its own uses, meaning that a significant majority of the production will be held as a captive supply and not enter the market. However, to the extent this vertically integrated production replaces demand that North Bay would have made on the open market, some price reduction for aggregate may occur. However, given the significant flows of aggregate into and out of Sonoma County, it is clear that the relevant market area in which price is determined is broader than just Sonoma County. The magnitude of any price impact, thus, is extremely difficult to predict without an extensive study of the aggregate market in the multi-county area. Any analysis of price effects must also account for actual and potential international imports of aggregate into the county. The larger the geographic region within which price is determined (i.e., the larger the relevant geographic market), the greater the dissipation of any price effect in Sonoma County from approval of the Roblar Road Quarry due to the approving the Roblar Road Quarry.

For the County to derive any economic benefit from approval of the Roblar Road Quarry through reduced construction costs, it is necessary that there be both a meaningful reduction in aggregate costs, *and* that this cost savings become reflected in lower construction costs and not simply higher profits to contractors. It is well accepted that changes in producers' costs often do not become reflected fully in price reductions for the end product—in this case construction projects. In particular, cost savings are known to

transmit to final prices less fully and with more delay than cost increases.³ The extent and timing of any cost savings to County construction projects would depend importantly on the competitiveness of bidding, a subject that has not been addressed in any review of the proposed project.

A main impact is likely to be a competitive advantage for North Bay Construction on construction projects in Sonoma County. Because it would have secure access to the quarry's substantial production (60-80% of which is estimated to be retained for North Bay's own use), North Bay can price this aggregate internally at its marginal cost of production, which most likely will be below the market price for aggregate. Thus, North Bay will be in a position to underbid rivals to gain more contracts, or, alternatively, can maintain its contract market share at a higher rate of profits by not adjusting its bids downward to reflect its lower costs relative to competing firms.

The Planning Commission staff also anticipates reduced haulage of aggregate and hence environmental benefits and reduced wear on roadways from approval of the Roblar Road Quarry. Such benefits are speculative at best. I have already shown that more aggregate will be shipped out of the County as a consequence of the project, thus engendering longer hauls than if the material were used locally. Whether imports of aggregate will be reduced substantially from the project, at least in the short run, is doubtful as well, as I have noted. Finally, if North Bay uses from 60-80% of the production from the quarry

³ Peltzman, S. "Prices Rise Faster Than They Fall." *Journal of Political Economy* 108(2000): 466-502.

internally, as projected in the Staff Report (2009), then necessarily the aggregate mined from the Roblar Road facility will travel to where North Bay's jobs are located, both within and external to Sonoma County. Whether those projects are located in close proximity to the production site or not depends on the outcome of the bidding processes, as well as a multitude of other factors, and there is no way to claim credibly that haulage of aggregate within and through Sonoma County will be reduced by this project.

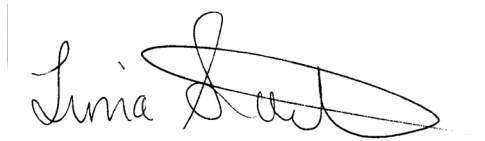
Alternative Sources of Supply

Given the small percentage of net imports of aggregate into Sonoma County there is little evidence that a substantial new source of aggregate production is required for Sonoma County to meet its needs. However, to the extent new sources of supply are deemed desirable, I see no evidence of consideration of alternative sources of that supply. The California Geological Survey estimated that 2.4 million tons of aggregate were imported into California in 2005 from Canada and Mexico. Although imports as a share of the total California supply are not large, they are a prospectively important source of supply for counties with good port access as Sonoma County has in Petaluma via the Petaluma River. Shamrock Materials, Inc. has proposed a facility on the Petaluma River that would be supplied via rail and barge. Such a facility would have the South-County location advantages touted in the Planning Commission Staff Report (2009) for the Roblar Road location but would not negate environmental consequences associated with an active mine.

The California Integrated Waste Management Board has estimated that use of recycled aggregate can save from \$3-10 per ton, in addition to providing environmental benefits through diverting asphalt and concrete to productive uses that would otherwise be destined for landfills. A substantial new supply of virgin aggregate from the Roblar Road Quarry would represent a strong disincentive to developing the environmentally superior and potentially more cost effective source of supply via recycling.

Conclusion

There is little evidence that Sonoma County requires a substantial new supply of aggregate to meet its needs. Further, economic analysis does not support the claim that the Roblar Road facility will reduce construction costs in the County. Similarly lacking supporting evidence is the claim that the facility will reduce aggregate haulage in the county and stress on roads. Finally, alternative sources of supply through international imports or recycled aggregate may present superior alternatives to mining virgin aggregate within the county to the extent new sources of supply are deemed desirable.



Tina L. Saitone

Appendix A

CURRICULUM VITAE
Tina L. Saitone

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EDUCATION

- Ph.D. Agricultural and Resource Economics, University of California, Davis,
September 2008.
Primary Fields: Agricultural Economics and Industrial Organization
Secondary Fields: Econometrics

Dissertation: The Economics of Minimum Quality Standards Imposed by
Agricultural Producer Organizations
- M.S. Agricultural and Resource Econ, University of California, Davis, 2006
- B.A. Economics, Summa Cum Laude, Sonoma State University, 2003
Concentrations: Mathematics and Econometrics

PROFESSIONAL EXPERIENCE

Fields of Interest: Food Marketing, Industrial Organization, Agricultural Policy, Applied Econometrics, International Agricultural Trade

Economic Consulting

Economist, OnPoint Analytics. Responsibilities include utilizing analytical modeling and estimation techniques to establish liability and quantify economic damages in antitrust cases including:

- Sweetwater Valley Farm et al. v. Dean Foods, et al., (2010). Case alleging a conspiracy to fix and suppress prices paid to dairy farmers in the Southeast Region of the United States.
- Readymade Concrete Antitrust Litigation, (2010). Case alleging a price fixing conspiracy associated with the sale of readymade concrete in the Midwest United States.
- United States of America, State of New York, State of New Jersey, State of Connecticut, Hoosier Environmental Council, and Ohio Environmental Council v.

Cinergy Corporation, PSI Energy, Inc., and Cincinnati Gas and Electric Co., (2009). Case alleging excessive pollution from a coal fired power plant contaminating the environment and compromising human health.

- United States of America v. Smithfield Foods, Inc. and Premium Standard Farms, LLC., (2008). Case involving a merger between two hog processing companies.

Western United Dairymen's Association. Analyze and provide expert opinion regarding proposed supply management strategies for implementation at the national level.

National Sugarbeet Growers Association. Center for Food Safety et al. v. Tom Vilsack et al. (2010). Responsibilities included forecasting economic losses to growers that would result if an injunction prevented the use of Roundup Ready® sugarbeet seed in the United States.

Mushroom Council. Develop and estimate an empirical model to quantify the sales and price impact of in-store retail advertising campaign.

U.S. Department of Justice. United States et al. v. JBS S.A. and National Beef Packing Company, LLC., (2008). Responsibilities included determining scope of relevant market, empirical estimation of bidding processor bidding functions, and modeling competitive interaction of beef processors.

Sambado Farms. Sambado v. Mid Valley Agricultural Services, Inc., (2008) Responsibilities included quantifying the economic loss in a case alleging damages to a cherry orchard due to a dormant-season oil application.

Lecturer

Department of Agricultural and Resource Economics, University of California, Davis. Full responsibility for instruction and administration of the course, including supervision of graduate student teaching assistants.

- Intermediate Microeconomic Theory, Summer 2008. Instructor Rating: Currently Unavailable.
- Regulation of Business, Spring 2008. Instructor Rating: 3.9/5.0.
- Intermediate Microeconomic Theory, Winter 2007. Instructor Rating: 4.5/5.0.
- Intermediate Microeconomics Theory, Summer 2008. Instructor Rating 4.6/5.0.

Department of Economics, Sonoma State University. Full responsibility for instruction and administration of the course.

- Economics of Business Regulation, Fall 2008. Instructor Rating: 4.2/5.0.
- Environmental and Natural Resource Economics, Spring 2008. Instructor Rating: 4.0/5.0.

Teaching Assistant

Department of Agricultural and Resource Economics, University of California, Davis, Master's Level Microeconomic Theory, Spring 2008. Responsible for office hours, preparation and grading of assignments and exams. Student Evaluation Scores—TA Rating: 5.0/5.0.

Department of Agricultural and Resource Economics, University of California, Davis, Intermediate Microeconomic Theory, Winter 2006. Responsible for student discussion sections, office hours, preparation and grading of assignments and exams. Student Evaluation Scores—TA Rating: 4.6/5.0.

Research Assistant

Department of Agricultural and Resource Economics, University of California, Davis
Supervisor: Richard J. Sexton, Fall 2005-Winter 2006.

Research Project: "Agricultural Trade Liberalization and Economic Development: The Role of Downstream Market Power."

Department of Agricultural and Resource Economics, University of California, Davis
Supervisors: Richard J. Sexton and Hoy F. Carman, Spring 2006-present

Research Project: "The Industrial Organization Implications of Marketing Order Quality Regulations in a Free Trade Environment."

PUBLICATIONS

"Industrial Organization in Food Markets." In Press, *Annual Review of Resource Economics* 2010 (with Richard J. Sexton).

"Cooperatives and Quality-Differentiated Markets: Strengths, Weaknesses, and Modeling Approaches." *Journal of Rural Cooperatives* 37(2010): 201-25 (with Pierre R. Mérel and Richard J. Sexton).

"Impacts of Minimum Quality Standards Imposed Through Marketing Orders or Related Producer Organizations." *American Journal of Agricultural Economics* 92(2010): 164-80 (with Richard J. Sexton).

"Supply Management for the U.S. Dairy Industry? Opportunities and Challenges." *Agricultural and Resource Economics Update* Vol. 13, No.2, 2009 (with Richard J. Sexton).

“Optimal Cooperative Pooling in a Quality-Differentiated Market.” *American Journal of Agricultural Economics* 91(2009): 1224-32 (with Richard J. Sexton).

“Market Power in the Corn Sector: How Does it Affect the Impacts of the Ethanol Subsidy?” *Journal of Agricultural and Resource Economics* 2(33) (August 2008): 169-194 (with Richard J. Sexton and Steven E. Sexton).

“Alpaca Lies? Speculative Bubbles in Agriculture: Why They Happen and How to Recognize Them.” *Review of Agricultural Economics* 2(29) (Summer 2007): 286-305 (with Richard J. Sexton).

“Alpaca Lies? Do Alpacas Represent the Latest Speculative Bubble in Agriculture?” *Agricultural and Resource Economics Update*, Vol. 9, No. 3, 2006, (with Richard J. Sexton).

PAPERS UNDER REVIEW

“Industry Self Regulation and Economic Welfare: Minimum Quality Standards in Agricultural Industries.” Submitted *Canadian Journal of Agricultural Economics* (with Richard J. Sexton).

“Are Minimum Quality Standards Acting as Non-Tariff Trade Barriers?” Submitted *American Journal of Agricultural Economics*.

WORKING PAPERS

“Food Quality, Firm Quality, and Cooperatives: Positioning Agricultural Marketing Cooperatives to Succeed in Contemporary Food Markets.” Prepared for presentation at the Research on the Economic Impact of Cooperatives Conference, September 2008 (with Richard J. Sexton).

GRANTS AND AWARDS

Giannini Foundation Research Grant

“The Implications of Marketing-Order Quality Regulations in a Free-Trade Environment.” (with Richard J. Sexton and Hoy F. Carman) 2007-2008.

Jastro-Shields Research Grant

“The Implications of Marketing-Order Quality Regulations in a Free-Trade Environment.” 2007-2008.

Cota Robles Fellowship

Full tuition and stipend, Fall 2003-Summer 2005, the University of California, Davis.

Giannini Foundation Research Grant

“Alpaca Lies? Do Alpacas Represent the Latest Speculative Bubble in Agriculture.” (with Richard J. Sexton) 2004-2005.

Graduate Teaching and Research Fellowship

Full tuition and stipend for the duration of the Ph.D. program

California State University Forgivable Loan Fellowship

Awarded by California State University, Summer 2003