
TILLAMOOK COUNTY LAND USE DECISION APPROVING AN EXCEPTION TO STATEWIDE PLANNING GOAL 18, IMPLEMENTATION MEASURE 5 & FLOODPLAIN DEVELOPMENT PERMIT

ERIC FRUITS, PH.D.

1 Executive summary

In this matter, I have been asked to address a straightforward question: *Would the installed riprap revetments affect surrounding property values?*

The short answer is the installed riprap revetment would likely *increase* the property values of both the subject properties and surrounding properties.

This conclusion is based on a review of peer-reviewed academic research on this particular question, specifically:

- Walsh, Patrick, Charles Griffiths, Dennis Guignet & Heather Klemick, "Adaptation, Sea Level Rise, and Property Prices in the Chesapeake Bay Watershed," *Land Economics* 95(1):19-34 (Feb. 2019), hereafter "Walsh, et al."
- Dundas, Steven J. & David J. Lewis, "Estimating Option Values and Spillover Damages for Coastal Protection: Evidence from Oregon's Planning Goal 18," *Journal of the Association of Environmental and Resource Economists* 7(3):519-554 (May 2020), hereafter, "Dundas & Lewis."

2 Qualifications

I am president and chief economist at Economics International Corp., a consulting firm that specializes in providing economics services to private and public sector clients. I am also an adjunct professor at Portland State University, where I have taught courses in economics and real estate finance. I have been the editor of a quarterly real estate journal published by PSU and served as a peer reviewer for *Land Economics*, a top-tier specialty academic journal. My research on the effects of natural gas pipelines and residential property values was published in the *Journal of Real Estate Research*. I have been engaged in many projects involving valuation of real estate and my expert testimony has been accepted by state and federal courts.

My graduate-level training included the study of statistics and econometrics (the application of statistical methods to economics issues). I have taught graduate-level courses in economics, econometrics, real estate finance, and the economics of regulation and antitrust. I have published several peer-reviewed papers, each of which has included statistical and econometric analysis.

3 Research on shoreline protection structures and residential property values

I understand the record in this matter includes information speculating that installing a riprap revetment on the subject properties might reduce surrounding property values. My task is not to debate hypotheticals, but to examine the available empirical research evaluating whether *actual existing* shoreline protection structure investments affect subject and surrounding property values.

This is a somewhat niche question and available peer-reviewed published research is sparse. Indeed, I could find only two publications. One found that riprap revetments are associated with increased property values for both subject properties and surrounding properties (Walsh, et al.). Another found that both the presence of a structure and a property's proximity to a structure have no effect on property values (Dundas & Lewis).

Peer-reviewed research by Patrick Walsh and his co-authors published in *Land Economics* is especially relevant to this matter. Walsh, et al. examine the effect of structures to help protect against sea level rising on coastal residential

property values. Structures examined include riprap, bulkheads, and groin fields. Their statistical analysis calculates property value effects on properties with structures as well as neighboring properties without structures. Their findings indicate that the riprap structures on this matter's subject properties would likely *increase* the property values of their own properties as well as neighboring properties. In particular, Walsh et al. find the existence of riprap structures are associated with the following effects on property values, as shown in the table below from their article:

- An approximately 20% *increase* in the subject property's value; and
- An 8% *increase* in neighboring properties' values.

Neighbor Interactions

	Tract	Block
SLR zone 0-2	-0.1923*** (0.0663)	-0.1227* (0.0711)
SLR zone 2-5	-0.0335 (0.0412)	-0.0101 (0.0444)
Bulkhead	0.2000*** (0.0284)	0.1699*** (0.0277)
Riprap	0.2121*** (0.0290)	0.2123*** (0.0294)
Groin field	0.0112 (0.0570)	0.0781 (0.0695)
Bulkhead × Groin field	0.0392 (0.0777)	-0.0150 (0.0766)
Riprap × Groin field	0.1394 (0.1562)	0.0043 (0.1299)
Bulkhead × Neighbor	0.1446*** (0.0291)	0.1116*** (0.0282)
Riprap × Neighbor	0.0754*** (0.0207)	0.0830*** (0.0205)
SLR zone 0-2 × Bulkhead	0.2322** (0.1088)	0.2424** (0.1064)
SLR zone 2-5 × Bulkhead	0.0918* (0.0522)	0.0770 (0.0534)
SLR zone 0-2 × Riprap	0.2509** (0.1190)	0.1575 (0.1049)
SLR Zone 2-5 × Riprap	-0.0296 (0.0519)	-0.0077 (0.0539)
Flood zone	-0.0027 (0.0231)	0.0059 (0.0236)
Observations	2,841	2,841
Number of fixed effects	49	126
R-squared	0.785	0.806

Note: Standard errors are in parentheses. Coefficients in the table are transformed using the Halvorsen and Palmquist (1980) correction ($e^{\beta_s} - 1$).

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

While the research of Steven Dundas and David Lewis relates to Oregon coastal property values, it is of little relevance to the matter at hand. Dundas & Lewis attempt to evaluate the *option* to place structures mitigating the risk of rising sea levels. They note the option to privately install a shoreline protection structure on a coastal property is determined by a statewide land-use policy known as Planning Goal 18. This policy prohibits shoreline armoring but allows for exceptions based on a parcel's eligibility. Dundas & Lewis's paper focuses on the property value associated with the *possibility* of obtaining an *exception* rather than the value of a *structure itself*.

Nevertheless, Dundas & Lewis's statistical analysis includes two variables relevant to the matter at hand: (1) whether a parcel has shoreline protection structure and (2) a parcel's distance from the nearest shoreline protection structure. None of the study's seven regression models find any statistically significant effect of these variables on a parcel's property value.

4 Conclusion

In summary, (1) Dundas & Lewis find the presence of a shoreline protection structure has *no effect* on surrounding properties while (2) Walsh et al. find that a riprap structure is associated with a *positive* effect on both subject properties and surrounding properties. Thus, based on available empirical evidence, it would be reasonable to conclude the riprap revetments in this matter would not reduce surrounding property values and would likely be associated with increased property values for surrounding properties.

Respectfully submitted by

A handwritten signature in black ink, appearing to read "Eric Fruits", written in a cursive style.

Dated: February 19, 2023

Eric Fruits, Ph.D.

Eric Fruits, Ph.D.

Tel: 503-928-6635

www.econinternational.com

fruits@econinternational.com

Dr. Eric Fruits is an economics expert, finance expert, and statistics expert. He has produced numerous research studies involving economic analysis, financial modeling, and statistical analysis. As an expert witness, he has provided expert testimony in state courts, federal courts, and an international court.



As an economic damages expert, Dr. Fruits has provided expert testimony regarding business valuation, lost profits, and foregone income. He has been a testifying expert in cases involving real estate valuation, health care services, and transportation and shipping services. His research on the formation of cartels was published in the top-tier *Journal of Law & Economics*. His study of the impact of natural gas pipeline on residential property values has been published in the *Journal of Real Estate Research*, one of the premier academic journals in the field. He has provided expert testimony to state courts and federal courts.

Dr. Fruits is an antitrust expert who has written articles on price fixing and cartels for the top-tier *Journal of Law and Economics*. He has assisted in the review of several mergers including Sysco-US Foods, Exxon-Mobil, BP-Arco, and Nestlé-Ralston. He has worked on many antitrust lawsuits, including *Ross-Simmons v. Weyerhaeuser*, a predatory bidding case that was ultimately decided by the United States Supreme Court.

As a finance expert, Dr. Fruits has been a testifying expert and provided expert consulting services in cases alleging insider trading and market manipulation. He is a securities expert who has conducted numerous research studies on financial issues, including initial public offerings and municipal bonds.

As a statistical expert, Dr. Fruits has provided expert testimony regarding real estate transactions, profit projections, agricultural commodities, and war crimes allegations. His expert testimony has been submitted to state courts, federal courts, and an international court.

He has written peer-reviewed articles on real estate markets, initial public offerings (IPOs), the municipal bond market, and the formation and operation of cartels.

Dr. Fruits has been affiliated with Portland State University, Pacific Northwest College of Art, University of Southern California, Indiana University, and the Claremont Colleges. He has been an economic consultant with Nathan Associates, LECG, ECONorthwest, and Econ One Research.

Present Positions & Affiliations

Economics International Corp. President and Chief Economist	2006–present
Cascade Policy Institute Vice President of Research	2019–present
International Center for Law & Economics Senior Competition Scholar	2017–present
Portland State University Adjunct Professor in Economics, Business Administration, and Urban Studies & Planning	2002–present

Previous Professional Experience

Portland State University Oregon Association of Realtors Faculty Fellow <i>Center for Real Estate Quarterly Report</i> , Editor	2010–2019
Nathan Associates Inc. Principal Consultant	2012–2018
Info Tech, Inc. Expert Consultant	2015–2018
Pacific Northwest College of Art Adjunct Professor	2009–2010
ECONorthwest Senior Economist	2002–2008
LECG, LLC Senior Economist	1999–2002
Claremont Graduate University Adjunct Professor of Economics and Visiting Scholar	1996–2002
Econ One Research, Inc. Economist	1998–1999
University of Southern California, Marshall School of Business Visiting Assistant Professor of Finance & Business Economics	1997–1998
Indiana University, Kelley School of Business Visiting Assistant Professor of Business Economics & Public Policy	1997
Scripps College Adjunct Professor of Economics	1996
Pomona College Lecturer in Economics	1994
Andersen Consulting Staff Consultant	1990–1991

Education

Ph.D., Economics, Claremont Graduate University	1997
M.A., Economics, Claremont Graduate University	1993
B.S. with Distinction, Business Economics & Public Policy, Indiana University	1990

Publications

- The fatal economic flaws of the contemporary campaign against vertical integration. *Kansas Law Review*, with G. A. Manne and K. Stout. 68:923–973. 2020.
- Static and Dynamic Effects of Mergers: A Review of the Empirical Evidence in the Wireless Telecommunications Industry*. OECD Directorate for Financial and Enterprise Affairs Competition Committee, Global Forum on Competition. DAF/COMP/GF(2019)13, with J. Hurwitz, G. A. Manne, J. Morris, and A. Stapp. January 31, 2020.
- Perceived environmental risk, media, and residential sales prices. *Journal of Real Estate Research*, with J. Freybote. 37(2):217–243. 2015.
- Compact development and greenhouse gas emissions: A review of recent research. *Center for Real Estate Quarterly Journal*, 5(1):2–7. Winter 2011.
- Test bank for W. B. Brueggeman and J. D. Fisher. *Real Estate Finance and Investments*, 14th ed. McGraw-Hill/Irwin. 2010.
- A comprehensive evaluation of the comparative cost of negotiated and competitive methods of municipal bond issuance. *Municipal Finance Journal*, with R. J. Pozdena, J. Booth, and R. Smith. 28(4):15–41. Winter 2008.
- Market power and cartel formation: Theory and an empirical test. *Journal of Law and Economics*, with D. Filson, E. Keen, and T. Borchering. 44:465–480. 2001.
- The Determinants of Managerial Ownership: Theory and Evidence From Initial Public Offerings*. Claremont Graduate University. 1997.
- Managerial ownership, compensation, and initial public offerings. In Marr, M. and Hirschey, M., editors, *Advances in Financial Economics*, volume 2. JAI Press. 1996.

Testimony in Legal Proceedings

- Gabriel Bryce Owens vs. Mt. Hood Ski Bowl, LLC, H. Ski Corp, Mt. Hood Ski Company, LLC*. Circuit Court for the State of Oregon for the County of Multnomah. Case No. 18CV22336. Trial testimony March 18, 2022.
- Renee Booth and Bradley Converse v. United States of America*. United States District Court for the Eastern District of California. Case No. 2:19-at-00754. Deposition testimony December 14, 2021.
- Paul Mathew Kirby v. Oregon Health & Science University School of Nursing*. Circuit Court for the State of Oregon for the County of Multnomah. Case No. 18CV22336. Trial testimony November 17, 2021.
- In Re: Packaged Seafoods Antitrust Litigation*. United States District Court for the Southern District of California. Case No. 3:15-MD-02670-JLS-MDD. Deposition testimony October 28, 2021.
- Beatbox Music, Pty, Ltd. v. Labrador Entertainment, Inc., et al.* United States District Court for the Central District of California, Western Division. Case No. 2:17-CV-6108-MWF (JPRX). Deposition testimony August 11, 2021.

- Kimberly Taylor Blair and Kelly Blair v. United States of America.* United States District Court for the Western District of Washington Case No. 3:20-cv-05172. Deposition testimony May 26, 2021.
- Bean v. Bean.* Circuit Court for the State of Oregon for the County of Coos. Case No. 20DR11385. Trial testimony April 15, 2021.
- Faun Patzer vs. Adventist Health Medical Group, Portland Adventist Medical Center.* Circuit Court for the State of Oregon for the County of Multnomah. Case No. 17CV04441. Trial testimony June 18, 2019.
- Julie Veysey v. Israel Cervante Meraz and Henry Nicholas Veysey.* Circuit Court for the State of Oregon for the County of Marion. Case No. 17CV52030. Trial testimony October 3, 2018.
- Katrina L. Pinkerton v. Wells Fargo Bank, N.A.* United States Bankruptcy Court for the District of Oregon. Case No. 17-33794-tmb13. Adv. Proc. No. 18-03016-tmb. Prove-up hearing testimony June 20, 2018.
- Estate of Jamey Charlotte Haines v. State of Oregon Department of Transportation.* Circuit Court for the State of Oregon for the County of Washington. Case No. 17CV17952. Trial testimony February 6, 2018.
- Rosebank Road Medical Services Ltd. dba Rosebank Road Medical Centre, and Geeta Murali Ganesh v. Ramji Govindarajan and John Does 2–20.* Superior Court of California, County of San Francisco, Unlimited Civil. Case No. CGC-16-549755. Deposition testimony September 27, 2017. Trial testimony December 13–14, 2017.
- United States of America ex rel. Duke Tran v. Wells Fargo Bank, N.A.* United States District Court for the District of Oregon, Portland Division. Case No. 3:15-cv-979. Deposition testimony October 3, 2017.
- Nubia Rodriguez v. The State of Oregon, Department of Human Services and Antoinette Hughes.* Circuit Court for the State of Oregon for the County of Multnomah. Case No. 16CV09393. Trial testimony September 13, 2017.
- Madison-Rae Jordan v. United States of America.* United States District Court for the Southern District of California. Case No. 3:15-cv-01199-BEN-NLS. Deposition testimony January 25, 2017.
- Marie M. Pearson v. Waste Management of Oregon, Inc. and James Walker.* Circuit Court for the State of Oregon for the County of Multnomah. Case No. 15CV18258. Trial testimony August 23, 2016.
- Investors Asset Acquisition, et al. v. Angelo S. Scardina, et al.* Circuit Court of the 15th Judicial Circuit in and for Palm Beach County, Florida. Case No. 502014CA004618XXXMB AD. Deposition testimony August 5, 2016.
- James Busey vs. Richland School District, Richard Jansons, Heather Cleary, Mary Guay, Rick Donahoe, and Phyllis Strickler.* United States District Court for the Eastern District of Washington. Case No. CV-12-5022-EFS. Deposition testimony February 25, 2016.
- Kivoin Varghese v. Amazon.com, Inc. and Amazon Technologies, Inc.* Superior Court for the State of Washington in and for the County of King. No. 12-2-39303-6 SEA. Deposition testimony September 22, 2014.

- LMG Concerts, LLC v. Salem Communications Corporation, Salem Media of Oregon, Inc., Caron Broadcasting, Inc., Does 1 through 5.* U.S. District Court for the District of Oregon. Case No. 3:12-CV-1117. Deposition testimony September 18, 2013.
- Claude Hadley v. Extreme Technologies, Inc.* Circuit Court for the State of Oregon for Lane County. Case No. 16-11-03225. Trial testimony March 14, 2012.
- David Hill Development, LLC, v. City of Forest Grove, Steve A. Wood, and Robert A. Foster.* U.S. District Court for the District of Oregon. Civ. No. 08-266-AC. Deposition testimony December 10, 2010. Trial testimony September 20, 2011.
- Gordon Ogawa v. Malheur Home Telephone Company dba Malheur Bell and Qwest Corporation.* U.S. District Court for the District of Oregon. No. CV 08-694-MO. Trial testimony September 9, 2010.
- Dave Molony and Gold Leaf Investments, Inc. v. Crook County.* U.S. District Court for the District of Oregon. No. 3:05-CV-1467-MO. Trial testimony May 27, 2009.
- Starr-Wood Cardiac Group of Portland, P.C., Dr. H. Storm Floten, and Dr. Anthony Furnary v. Dr. Jeffrey S. Swanson, Dr. Hugh L. Gately, and Cardiothoracic Surgeons LLC.* Circuit Court for the State of Oregon for the County of Multnomah, No. 0706-06308. Trial testimony September 5, 2008.
- Milutinovic et al.* International Criminal Tribunal for the former Yugoslavia, No. IT-05-87 PT. Trial testimony April 23–24, 2008.
- In re: The Marriage of Virginia Salvadori and Gabriel Salvadori.* State of Washington Clark County Superior Court, No. 06-3-00692-2. Trial testimony April 14, 2008.
- Pamela L. Bond, Individually and as Personal Representative of the Estate of Craig R. Bond, Deceased v. United State of America.* U.S. District Court for the District of Oregon. No. 06-1652-JO. Trial testimony February 6, 2008.
- Erik E. Tolleshaug v. Shaver Transportation Co.* Circuit Court for the State of Oregon for the County of Multnomah, No. 060809122. Trial testimony December 14, 2007.
- In re: The Marriage of Denise M. Kunze and Gust F. Kunze.* State of Washington Clark County Superior Court, No. 05-3-00801-3. Trial testimony October 29, 2007.
- Securities and Exchange Commission v. Philip Evans and Paul Evans.* U.S. District Court for the District of Oregon. No. CV 05-1162-PK. Deposition testimony February 27, 2007. Trial testimony March 8, 2007.
- Randall D. Lam v. Kaiser Foundation Hospitals; Northwest Permanente, P.C.; Kaiser Foundation Health Plan of the Northwest; Robert James Shneidman, M.D.; and David Lee Brown, Jr., P.A.* Circuit Court for the State of Oregon for the County of Multnomah. No. 020706633. Trial testimony November 9, 2006.
- Vitascan Partners I and Vitascan Partners II v. G.E. Healthcare Financial Services and GE/Imatron.* Superior Court for the State of California. No. 01129909. Trial testimony July 24, 2006.
- Squaxin Island Tribe, Island Enterprises, Inc., Swinomish Indian Tribal Community, and Swinomish Development Authority v. Fred Stephens, Director, Washington State Department of Licensing.* U.S. District Court for Western District of Washington. No. C033951Z. Deposition testimony June 15, 2005.

Androutsakos v. M/V PSARA, PSARA Shipping Corporation, and Chevron U.S.A., Inc. United States District Court for the District of Oregon. No. 02CV1173KI. Trial testimony May 21, 2004.

In re: Consolidated PERS Litigation. Supreme Court for the State of Oregon. Nos. S50593, S50532, S50656, S50657, S50645, S50685, S50687, and S50686. Trial testimony February 27, 2004.

CollegeNET, Inc., v. ApplyYourself, Inc. United States District Court for the District of Oregon. Nos. 02CV484HU and 02CV1359HU. Daubert hearing May 9, 2003.

Committee and Other Service

Peer reviewer and academic adviser for textbooks and academic journals:

A. O'Sullivan. *Urban Economics*, 9th ed. McGraw-Hill/Irwin. 2018.

Taking Sides: Clashing Views in Urban Studies. M. A. Levine, editor. McGraw Hill. 2012.

W. B. Brueggeman and J. D. Fisher. *Real Estate Finance and Investments*, 14th ed. McGraw-Hill/Irwin. 2011.

Municipal Finance Journal

Land Economics

Citizens for Accountability, Trust and Reform. Board Member, 2020–present.

Taxpayer Association of Oregon. Board Member, 2014–present.

City Club of Portland. Research Board Member, 2015–2017.

State of Oregon. Explanatory Statement Committee member. Ballot Title 86: Amends Constitution: Requires creation of fund for Oregonians pursuing post-secondary education, authorizes state indebtedness to finance fund. 2014.

Laurelhurst Neighborhood Association. City of Portland, Oregon. Past President and Board Member, 2014–2015. President, 2009–2014.

City of Portland. Mayor's Economic Cabinet. 2008–2012.

State of Oregon Department of Environmental Quality. Fiscal Advisory Committee for the Proposed Adoption of Air Quality Improvements at the PGE Boardman Power Plant. 2008.

State of Oregon Department of Environmental Quality. Fiscal Advisory Committee for the Proposed Adoption of the Utility Mercury Rule and Other Federal Air Quality Regulations. 2006.

City of Portland. Mayor's Ad Hoc Work Group on Regulatory Reform. 2002.

Grants and Awards

City of Portland Spirit of Portland Award, nominee 2010

City of Portland Livability Volunteer Award 2010

Institute for Humane Studies Research Grant 1996

John Randolph Haynes and Dora Haynes Foundation Grant	1995
Lynde and Harry Bradley Foundation Grant	1992–1995
Lionel Edie Award	1990

Courses Taught

Microeconomics
Industrial Organization
Economics of Regulation and Antitrust
Urban Economics
Managerial Economics
Econometrics
Real Estate Finance and Investment
State and Local Public Finance
Economics and the Creative Industries
War Crimes