RESEARCH
Oregon Department of Transportation

Research Notes

RSN 00-08 March 2000

Aggregate Into the Future

Portable Crusher Setup on Kummer Bar for I-5 Paving Job (Summer 1999)

As the use of Oregon's transportation system increases, so does the need for good quality aggregates, the rock materials used in construction. The Oregon Department of Transportation (ODOT) Research Group is studying aggregate needs and supplies to help ODOT plan ahead and prevent future shortfalls.

Aggregate supplies are already limited in some areas of the state. In addition, land use rules may impact mining operations at current sites and affect new site development. Aggregate sources near developing areas may need early protection from possible land use conflicts. Establishing new sources of rock requires advance planning and a lengthy permit process with Oregon's Department of Geology and Mineral Industries (DOGAMI).

RESEARCH OBJECTIVES

Research staff is conducting an inventory of ODOT owned and leased quarry sites to estimate current aggregate resources. The research team is using Global Positioning System coordinates to locate and catalog sites. The study will identify sites with potential land use conflicts, so ODOT can protect these sites from encroachment by other land uses.

The study will also forecast aggregate needs to meet ODOT's future maintenance and construction requirements. Comparing available resources and projected needs will provide an estimate of shortfalls for the next 30 years. Potential alternate materials to fill the need will also be suggested.

IMPORTANCE OF THE WORK

According to the U.S. Geological Survey, highway construction accounts for over 30% of the aggregate used in the United States. Current information on sources and needs in Oregon is limited, however.

A 1995 DOGAMI report provided fifty-year (2001-2050) forecasts of aggregate consumption for the state and each county. The report showed how the need for sand, gravel, and crushed rock rises with population growth. For road use, the study offered an average annual aggregate consumption rate for each Oregon county, using an economic model with population, income, and demographic indicators in the forecast.

Although useful, the study did not address specific quarry sites, land use considerations or new site development. To ensure a continuous supply,

ODOT needs more information on aggregate quantity and quality, land use issues, and alternate material availability.

An important tool in planning for future aggregate needs is Oregon's Statewide Planning Goal 5. This goal addresses natural resources, including aggregates. OAR 660-023, which implements Goal 5, outlines how to evaluate unique sites and initiate protective land use action to conserve and protect significant sites. Sites are considered "significant" if one of the following criteria is met:

(a) A sample of aggregate meets ODOT specifications for base rock, air degradation, abrasion, and sodium sulfate soundness; and the estimated supply is more than 2,000,000 tons within the Willamette Valley or 100,000 tons outside the Willamette Valley;

(b) The material meets local government standards that establish a lower threshold for significance than subsection (a) above;

(c) The site is listed on an inventory of significant aggregate sites in an acknowledged plan.

If an aggregate-producing site is found to be significant, ODOT must submit a Post-Acknowledgment Plan Amendment (PAPA) application to the local government that has jurisdictional control over the site.

This research project will help ODOT determine which sites are "significant." Additionally, it will support planning for acquisition of new sites and protecting sites from future adjacent land use that may be incompatible.

IMPLEMENTATION

The research results will be used across ODOT. Regional planners and geologists may use study data to target sites with potential land use conflicts. Information from the study may also be helpful in corridor plans.

The research findings will be used in policy development and strategic planning by ODOT management teams, including the following:

- the Project Delivery Leadership Team
- the Planning Business Line Team, and
- the Maintenance Leadership Team

ODOT Districts can also use the information as they plan for highway maintenance requirements.

Since this information will also be of interest to the private sector, ODOT will make the report available to aggregate and construction industry organizations such as the Association of General Contractors, the Asphalt Pavement Association of Oregon, and the Oregon Concrete and Aggregate Producers Association.

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For more information on ODOT Research projects, check the website at: http://www.odot.state.or.us/tddresearch