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CPAs Have a Vital Role to Play in Ecology

Robert L. Sullivan

Many CPAs have questioned why or how they have a vital interest in ecology, aside from their normal responsibilities as citizens. This study of ecological problems raised by an airport improvement in the Northwest makes it clear why —

CPAS HAVE A VITAL ROLE IN ECOLOGY

by Robert L. Sullivan
Peat, Marwick, Mitchell & Co.

THOSE who live near airports, particularly in the flight approach patterns to airports, suffer, with varying degrees of patience, the noise of arriving and departing aircraft. As air traffic has increased and as planes have grown larger, the problem has become more and more acute.

The passage of the National Environmental Protection Act of 1969 brought the problem to a head. For a provision of the Act required that all major Federal actions significantly affecting the quality of the human environment would require a detailed statement of the environmental impact of the proposed action. Since most major airports have a portion of their operating costs and capital expansion or improvement costs supported by Federal grants-in-aid, they are required under the 1969 law to file an Environmental Impact Statement when any expansion or improvement is planned. With noise being a major factor significantly affecting the quality of the human environment in the vicinity of an airport, the Environmental Impact Statement requires a demonstration of how Federally defined standards for maximum permissible noise levels will be achieved by the airport.

What has all this to do with either CPAs or management consultants? Simply this: Determination of the best alternatives for achieving an objective (e g., noise standard) involves making a cost-benefit study; getting the best possible relationships for the least possible cost. And here, very definitely, is where consultants are needed.

CPAs, whether interested in ecology or not, are also involved not only because of their obvious role in cost-benefit studies but also because of the long-range impact such studies may have on the entire tax structure of the community served. Finally, all CPAs could be involved in ecology because the Securities and Exchange Commission has ruled that the probable environ-

mental impact of any development plan for any firm listed on the exchange must now be given in the company's annual financial statement.

Airports are just one example, of course, of areas where consultants and CPAs play a major role. Environmental Impact Statements have to be filed for many other industries requiring Federal licensing as well: for public utilities, for railroads, for any undertaking that has any Federal financing, whatever. At airports a key problem is simply one of noise pollution.

We became involved recently with a major expansion program in a large airport serving two metropolitan areas on the West Coast. An Environmental Impact Statement had to be filed, of course, and it showed very clearly that one of the expanded north-south runways would increase the noise level of a heavily populated area to unacceptable levels.

The measurement of noise impact reductions that are likely to be brought about as a result of changes in policies of airport operation or land use development is relatively simple and straightforward. First a study unit must be selected to relate data to some common base. The study unit chosen here was a 1/16 section cell (containing approximately 40 acres). Initial input requires analysis of existing land use and airport noise characteristics within each cell. Land use information on the acreage and number of structural units by land use type is assembled as illustrated in Exhibit 1, below. Using Department of Housing and Urban Development (HUD) criteria for the sensitivity of land use to noise, each type of land use in the cell is assigned a sensitivity value. Then if the land use should be changed at some future date or if the land use policies to be evaluated create changes in land use, the sensitivity value can be modified to reflect such changes.

Thus, any land use policy or set

EXHIBIT I

SUMMARY OF LAND USE INFORMATION
Example for Cell J-6

Land Use	Acreage	Units	HUD Land Use Sensitivity Value
Single Family Residence	17.1 Acres	100	1
Multi-Family Residence	2.34 Acres	16	2
Commercial	3.58 Acres	4	3
Public/Semi-Public	0.39 Acres	1	2
Vacant, Private	6.2 Acres	N/A	0

N/A indicates Not Applicable

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of policies can be represented by a set of sensitivity values for each land use in each cell.

The existing noise characteristics are measured by modeling on a computer the actual airport operations and sounds these operations produce. The result is a set of Noise Exposure Forecast Curves. The results of such modeling are then compared to actual noise measurements and cell value of noise exposure is determined.

Then, if airport operations are changed in some manner, or if the airport policies to be evaluated create changes in airport operations, the cell noise value can be modified to reflect such changes.

In this manner any airport operational policy or set of policies can be represented by a related set of noise exposure values for each cell.

The next step requires matching the sensitivity values in each cell, which represent that land development policy, with the noise exposure values in the same cells, which represent the given airport's operational policy. Then we can get some measure of relative impacts. If the ratio of exposure values (E) to sensitivity values (S) is two or less, the impact (I) is acceptable. When the ratio exceeds two, the impact is not acceptable, and one or both of the policies being evaluated, land development policy and airport operational policy, must be discarded or modified.

Yet in our West Coast example, the north-south runway was essential and the topography of the countryside, mountains on one side, the sea on the other, made it impossible simply to shift the runway a few miles to the east or the west.

So, the first of two possible solutions to airport noise pollution levels was ruled out: adaptation of the airport policies to lessen noise impact. The north-south runway was fixed in location by topography. The only remaining approach we could use was to measure the costs required to reduce any residual noise impact to acceptable levels.

Federal regulations do not demand ceiling noise levels in open, unprotected approach areas. The measurement of the noise impact is within area buildings, either residential, industrial, or commercial.

Possible solutions

Basically, in a situation such as we faced on the West Coast, an irresistible-force-meeting-an-immovable-object kind of situation, there are solutions. They vary in attractiveness according to the area within the approach pattern.

1. Buy up all the property in the approach pattern, relocate the people, and destroy their homes. This obviously can work only in sparsely populated areas if prohibitive costs are to be avoided.

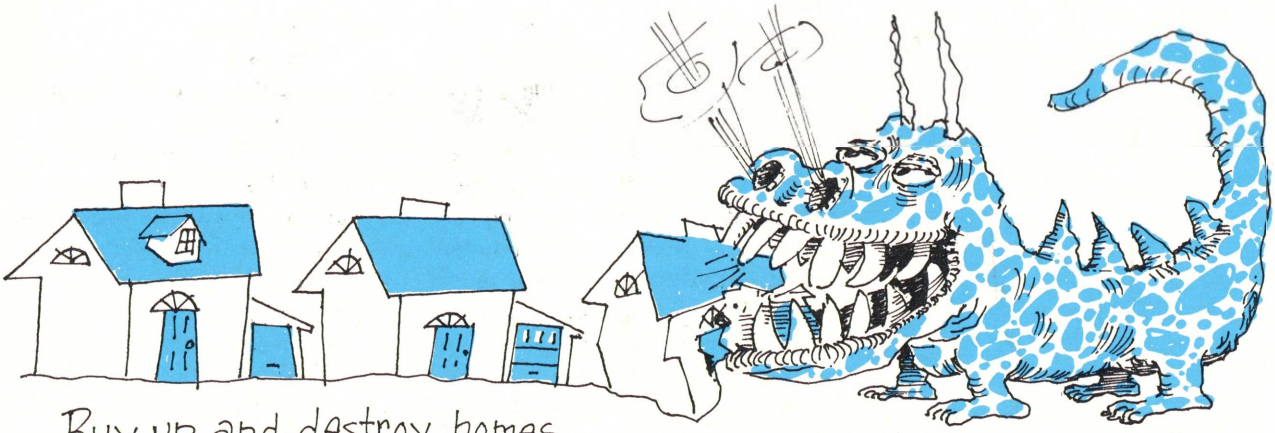
2. Insulate existing houses and buildings so noise levels will be within acceptable limits.

3. If the area is not too heavily developed already, zone it for industry rather than residential future development.

4. Ignore present buildings on the theory that people who bought them knew they were near an airport, and therefore took the risk of high noise levels knowingly. But ensure that all future construction meets structural and insulation levels needed for good noise control.

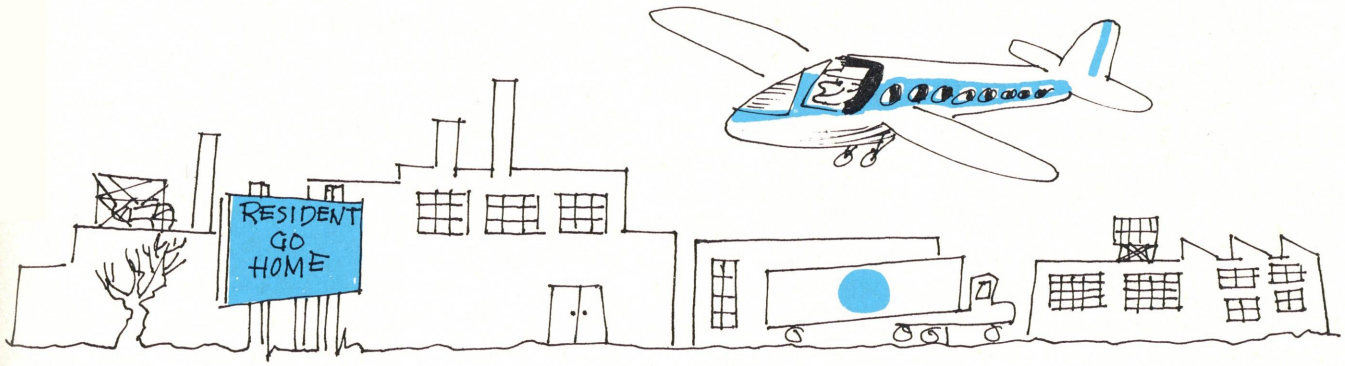
This brings the CPA squarely into the picture, whether he is a management consultant or not. For these are obvious cost-benefit questions. Which of the various solutions would achieve the greatest good for the lowest cost? And also,

ROBERT L. SULLIVAN is principal in charge of the management consulting department of the Washington, D.C., office of Peat, Marwick, Mitchell & Co. and director in charge of the firm's government consulting. He is a member of the AICPA's management advisory services environmental accounting committee. Mr. Sullivan has been an instructor in economics at Fordham University and at the American Institute of Banking, New York Chapter. He received his A.B. and M.A. in economics from Boston College.



Buy up and destroy homes

Insulate all houses



Zone it for industry

Ignore them

what would its influence on the future of the area be? On the community tax base?

In the West Coast project we have been describing, the first of our four options—buy up all the land and destroy existing structures—is not out of the realm of possibility. The Federal Government would provide an attractive incentive in the form of a grant of up to 50 per cent of the cost of purchasing outright all the land and buildings. However, the land held not only homes but a school and other public facilities. Relocation of the school or redistribution of its students to other school districts would add an extremely onerous, if not insupportable, tax burden to the other districts. Elimination of the homes would remove a substantial source of tax revenues. In a similar situation in a community in the southeast part of the United States, redefinition of land use due to a large development project and the resultant rezoning and loss of tax revenues, was projected to result in the city being unable to meet debt service on its general obligation bonds unless the legal limitation on the tax rate, which is controlled by state law, could be changed. Whether the West Coast airport improvement will have a similar impact is presently under examination.

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We have not yet come up with an answer to the problems involved in the improvement of the West Coast airport. The noise problem is only one element of the Environmental Impact Statement and study and evaluation is continuing of the other impacts of the airport expansion such as:

- Impacts on the ecology of the area, i.e., on drainage conditions, soil conditions, and topography;
- Possible changes in the quality of the air around the airport, year round, under all conditions of weather and airport use;
- Changes in the visual appearance and aesthetics of the area;
- Changes that might be anticipated in community attitudes toward the airport by citizens living in the vicinity as determined by a special survey;
- Impacts on direct and indirect employment in the surrounding communities;
- Changes in the development patterns of surrounding communities and ways to control or ameliorate them through zoning ordinances and building codes;
- Impacts on the multiple local governments and special districts involved and their ability to take coordinated action on the changes anticipated by the expansion.

All of these factors are being studied together with the noise element for a complete assessment of the environmental impacts of the airport.

In summary, this airport expansion study provides, in our opinion, an excellent example of the need for an expanded role for the CPA beyond his traditional involvement with accounting, auditing, and financial management in private business. In any cost-benefit study the determination of what costs to assign to each alternative under consideration is a key input to the study and one which the accountant is best qualified to handle. In addition, communities such as the one in which this airport expansion is being contemplated must remain financially viable by paying their expenses, including debt retirement, out of tax revenues while maintaining essential services.

The CPA, working together with the planning engineer, can translate the consequences of alternative development plans into projections of community-cash flow for a determination of which alternatives are financially responsible. Finally, most communities are audited annually by CPA firms. It seems clear that the auditor, when certifying to the financial condition of a community, should be alert to the existence of major development projects which could have a substantial impact on the community's financial viability. Unanticipated bankruptcies are not the province of private business alone.