Oregon's Environment

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RECREATION FUNDS FOR OREGON

The State of Oregon was notified in late November that it will receive $710,597 in federal funds to finance state, county, and municipal outdoor recreation land acquisitions and developments. And there is more available if the governmental units will hurry and exhaust the first batch of money! This is a unique feature of the Land and Water Conservation program administered by the Bureau of Outdoor Recreation (BOR) of the U. S. Department of the Interior.

However, the federal funds must be matched dollar-for-dollar with non-federal funds. And, all projects must be in accord with Oregon's comprehensive plan. These requirements have not stymied efforts to promote recreational resources in the state and there is little doubt that the Fiscal Year 1974 allocation of $710,597 will be expended and additional funds sought from the special reserve. There is a long list of projects which would require more than is likely to be available in the years ahead.

Funds are channeled from Washington, D.C. to a regional office of BOR and then to David G. Talbot, State Parks Superintendent, who is Oregon's liaison officer for the program. Directly involved on Talbot's staff is Walter J. McCallum, State Recreation Director.

Currently, the state government holds on to 60% of the funds and distributes the remaining 40% to counties on the basis of population. The state share is used for administration and to meet the requirements of state agencies and institutions. This has to be done on a selective basis because of the meager apportionment. There is some indication that the ratio of "60% state and 40% counties" will be revised before the end of 1973 --- with more being distributed to counties.

The program calls for governmental units to pay the full costs of acquiring or developing sites. Upon completion, the federal government reimburses the state and counties for half of the agreed upon total amount. There is an auxiliary program which permits no-cost conveyances to state and local agencies of federal surplus property suitable for park and recreation use.

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WASTEWATER PERMITS: Oregon is expected to issue between 700 and 800 permits for discharging wastewater. The state is one of the very few which have satisfied EPA that their standards and procedures are more than adequate to perform the job in lieu of the federal government.

DRAFT WATER PLAN

The State Water Resources Board has identified important issues and options related to Oregon's water supply and present and potential use. Emphasis has been placed on defining critical near-term water and related land problems and needs. The information, in draft form, is undergoing analysis as an input to the Western U.S. Water Plan (Westwide) for the 11 western states.

The Westwide study was originally scheduled by Congress to continue into 1977, but the budget and schedule have both been shortened. Each state will feed into the final report recommendations regarding studies required to meet environmental problems. Some of the top priority Oregon problems which have been identified are: need to protect and enhance water related environmental values, water quality, Indian water rights and land ownership, electrical power needs, land use related to increasing urbanization, population pressures on estuaries and adjacent lands, urban flood problems.

OREGON MAN NAMED BY NIXON

President Nixon has appointed Stanley D. Heisler to the Air Quality Advisory Board of the Environmental Protection Agency (EPA). Heisler, who lives in The Dalles, is an attorney in the law firm of Heisler and VanVolkenburgh. The Board, which is chaired by the Administrator of EPA, has 15 members, each appointed for a term of 3 years. It was created to advise EPA on administrative policy as that organization seeks to enforce provisions of the Clean Air Act and to make recommendations to the President on effective control of air quality.

THE CORPS OF ENGINEERS has modified design recommendations for one-third of five hundred projects under construction to accommodate environmental considerations since the enactment of the National Environmental Policy Act in 1969. In almost a third of 200 studies of proposed projects the alternative chosen was significantly changed to minimize the impact on the environment.

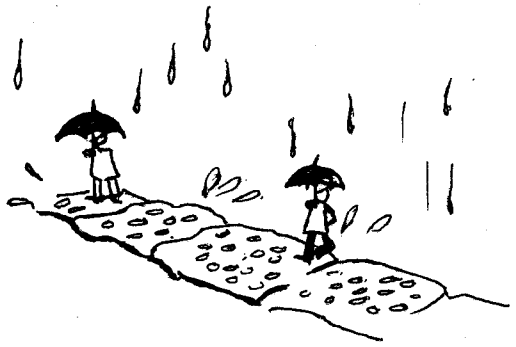
WATER USE

In general, the public is not aware of the extent to which water is already being re-used. One third of the population currently takes water from streams which have, on the average, one gallon in thirty which has already been used upstream. In some cases, one gallon in five has been used before. In the average industrial situation, where both cooling and process water are involved, each gallon of water is re-cycled 2.25 times before being discharged.

Data from the Water Resources Council forecast that industrial withdrawals will increase from the 1965 base of 46 billion gallons per day to 166 billion gallons per day in 2020 --- an increase of 260%. Use by steam electric plants is expected to rise from 85 billion gallons per day to 914 billion gallons in the same period --- an increase of 975%. However, some experts claim that as much as 55% of the demand in 2020 could be met with saline waters.

POROUS PAVEMENT

Research is being conducted by the Franklin Institute Research Laboratory on the use of porous pavements to control runoff. The idea is to provide relief from flash flooding, safer roads, and partial elimination of combined sewer overflows. The approach is to alleviate the problem of overflow pollution by permitting the stormwater to percolate through the pavement in to the soil.



ENVIRONMENTAL EFFECTS OF LARGE DRY COOLING TOWERS

Because of energy requirements and limited water resources, dry cooling towers on power generating plants will receive more consideration in the future, according to a recent report prepared for the U.S. Atomic Energy Commission. The study concentrated on the hot air plume behavior and possible effects on the environment of the waste heat rejected from 1000-MW(e) plants by dry cooling systems.

The researchers concluded that adverse environmental effects are unlikely for single 1000-MW(e) power plants. Locally induced winds and local heating are expected to be insignificant at ground level. Noise levels from mechanical-draft towers will be high but noise suppression techniques can be implemented to reduce the effect of undesirable noise to an acceptable level. Aesthetically, the large natural-draft towers will present an imposing appearance, whereas the much lower mechanical-draft towers are expected to be more acceptable.

Land usage requirements, while large, are realistic in terms of the area normally set aside for power plant installations. Other effects that were considered and found to be within acceptable limits include the possibility of increased lightning strikes due to a hot dry plume, ecological damage, and possible danger to light aircraft by the plume updraft.

The report states that plumes from large dry cooling towers can potentially affect weather phenomena in the region occupied by the power plant. Meteorologists have raised questions, which cannot be answered at this time, concerning mesoscale weather modification due to a "triggering" effect of plumes. On a smaller scale, specific calculations were made with a numerical plume and cloud growth model to investigate the possibility of cloud formation and precipitation on days during which clouds would naturally form. The results show that, even though the dry cooling tower plumes will rise to considerable heights, either large clouds or clouds that develop substantial precipitation are not likely to occur. Only rarely, in fact, should visible clouds form.

Dry cooling towers, it is claimed, have several potentially beneficial effects. Fogs can be dispersed by the large heated plumes above the towers and by induced air circulation near the towers. The full potential of fog dispersion by the heated plume will rarely be realized because the plume will rapidly ascend to high altitudes. However, it is expected that radiation fogs will be eliminated due to induced winds near the ground in a region extending about 1000 ft from the tower. Plumes from both natural draft and mechanical draft towers are expected to penetrate ground-level and elevated inversions under normal conditions. Positive use could be made of this characteristic, it is suggested, by releasing pollutants within the plume to ensure their transport above inversion layers.

(From *Plume Behavior and Potential Environmental Effects of Large Dry Cooling Towers*. February 1973. Published by Gulf General Atomic Co., San Diego, California 92138).

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As much as 250 million acre-feet of water may be stored under the sage brush of Idaho's southern desert area. This huge aquifer is about 8 times the amount held in Lake Mead, the largest man-made lake in the U.S. The state is probing it as a source for irrigating new farmlands.

(Editor's Note: We present here a paper delivered by Charles Lindblom, Professor, Yale University, at the National Conference on Managing the Environment, held May 14-15, 1973 in Washington, D.C. We think it is a viewpoint which should be seriously considered, remembered, and tempered with the realization that the general and the specific must be somehow woven together. It is not a question of only one or the other.)

INCREMENTALISM AND ENVIRONMENTALISM

In simplest form, the answer to the question "How are we to translate broad goals and comprehensive plans into action programs" is "Don't!" That does not mean that I oppose action programs. I support action programs. I also advocate planning. What I bridle at is stress on the breadth of goal and the comprehensiveness of plan.

The axiom that plans ought to be comprehensive and goals ought to be broad which is an axiom many of us take for granted, indicates that the study of planning and policy making and the practice of them are still in their infancy. On any kind of sober view of how to go about planning and goal setting, two attributes of action programs to beware of are breadth and comprehensiveness.

As I see the world of policy-making or the study of decision-making, there are fundamentally---speaking very broadly---two hypothetical alternative approaches to making intelligent decisions on complex matters. The first is to aspire with never ending frustration to be comprehensive, broad and complete, to wrap up together all aspects of a program, to master it intellectually, to comprehend it in all aspects. To succeed in this is, however, in actual fact impossible. For any complex problem, it cannot be done. I am not on that point idiosyncratic. If you examine some of the rich contributions to the literature on policy-making and decision-making, particularly in the last ten or fifteen years, you will see that an increasing number of people recognize that these are really foolish aspirations, since one cannot be comprehensive, one cannot be complete, one cannot be competently broad (only erratically broad) for complex problems.

The alternative and feasible method, therefore, of getting into action programs, or thinking intelligently, or acting intelligently, on complex problems ---the problems we face in the public policy and environmental fields--- is to be discriminating, selective, corner cutting, tricky, cunning, strategic, and tactical. The second broad alternative is to recognize that we must reach a decision before we have intellectually mastered the problem and that we will somehow have to make a decision and begin to act long before all the facts are in. We shall have to come to some kind of conclusion long before we can achieve any kind of comprehensive or broad mastery of a plan.

What a skillful planner ought to do consequently is to ask, "What are the defensible, skillful, or tactically useful ways to cut corners? What are the defensible ways to leave things out? What are the defensible ways, to put it crudely, to botch a job, since all policy-making is going to be botched to some significant degree?" The decision maker must face up to the fact that he is going to make mistakes. He must decide, therefore, how to pick and choose among elements of his problem in order to devise in some skillful, imaginative way a realizable solution. His will be a method full of error, but errors that are somehow easier to live with or more correctable than others or errors that give him more feedback information for future decision steps than do others. Skill in policy-making, talent, inventiveness, or genius is not in pursuing the will-o'the-wisp of breadth and comprehensiveness, but in developing a kind of low cunning or brilliance in improvisation, in tactics for corner cutting, in learning a high degree of selectivity and discrimination, in making up highly focused rather than broad attacks on problems.

Good action programs should lay out sequences of attacks, so that sustained attack may be maintained in the face of repeated inevitable error and in fact draw information through feedback from that error to make the sustained attack increasingly well-focused and precise.

Why planners resist the common sense choice between the impossible and the possible - why they often persist in broad goals and comprehensive plans -- needs explaining. Several considerations throw light on why we are wedded to the old-fashioned axiom that the way to be intelligent about policy is to be broad and comprehensive, instead of selective and strategic.

One is that this old axiom is conventional scholarly wisdom. We draw our canons of good policy-making procedures from the scientific method. In a conventional understanding of the scientific method, man attempts to grasp, to master, to understand, to comprehend. Consequently, all the prestige of science bolsters the conventional notion that these are virtues for policy makers too, regardless of the complexity of policy problems when compared to the relatively constrained scientific problems that most scientists deal with in their own academic work.

Second, modest and realistic tactical or strategic selective approach to policy is painstaking hard work and not very exciting. It requires that social change be smuggled into the social system, rather than introduced with flags flying. Many of us recoil from meticulous, persistent repair work and lunge off in the direction of glamorous comprehensive plans. We may do so for the same reason that many people enjoy buying something new as therapy, Comprehensive planning is one of the great therapies of hard-pressed policy-makers. It is a way of getting into something fresh and new. Among its other attractions are the minor therapies of white paper and unsoiled notes instead of messy old files and the dismal record of past failures.

A third reason for a bias toward the broad and comprehensive is that most of us believe that because we became involved in our environmental difficulties piecemeal, we shall have to get out comprehensively. If piecemeal gradualism was the way that we blundered into our environmental problems, then clearly we shall have to devise some other method to get out.

Clearly the argument contains a fallacy. We did fall into our environmental problems through piecemeal gradualism. That still leaves open the possibility that the same route is the only route out of the problems. There are no logical defenses for "in one door, out another."

Finally, many of us resist selective, highly focused programs because we now understand that the environment is all interconnected. It is a system. We are deeply impressed as we have never been before with the interrelation of parts. Believing, then, that everything is interconnected, we fall into the logical fallacy of believing the only way to improve those interconnections is to deal with them all at once.

Clearly, everything is connected. But because everything is connected, it is beyond our capacity to manipulate variables comprehensively. Because everything is interconnected, the whole of the environmental problem is beyond our capacity to control in one unified policy. We have to find critical points of intervention - tactically defensible, or strategically defensible points of intervention.

I have presented two models -- the traditional, conventionally scientific method of policy-making, and the other, the much more highly selective, incremental, tactical-focused method of policy-making. There is no doubt about which one we can more skillfully exploit.

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COMBINED DOMESTIC AND INDUSTRIAL WASTES

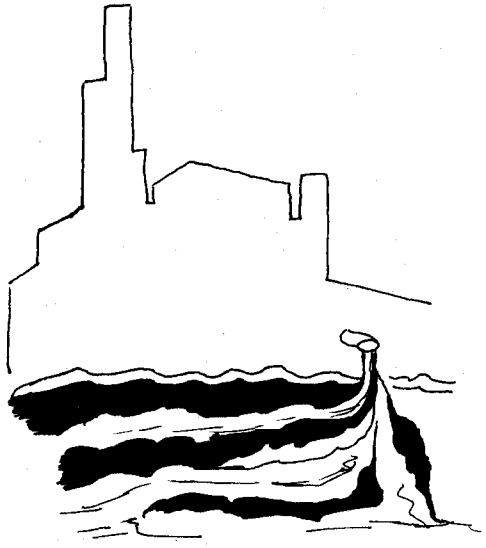
Operation of a secondary-tertiary treatment facility for combined domestic and pet food manufacturing industrial wastewaters at the City of Tualatin, Oregon, was studied for 16 months by the Environmental Protection Agency (EPA). The study demonstrated the feasibility of automated tertiary treatment for small communities treating a combined domestic and industrial wastewater at a reasonable cost.

The system was designed for an average daily flow of 280,000 gpd and a BOD_5 load of 630 pounds per day. The extended aeration activated sludge process with a design detention time of 24 hours was employed for secondary treatment. An experimental 60 degree inclined tube settler located in the aeration-surge basin provided secondary effluent clarification.

The tertiary system consisted of a four step process: 1) alum and polyelectrolyte coagulation, 2) flocculation, 3) inclined tube sedimentation, and 4) mixed media filtration. The tertiary system demonstrated the capability to produce an effluent quality of less than 10 mg/l BOD_5 and 5 mg/l suspended solids with a total phosphate residual of 0.1 to 1.0 mg/l (as P), according to the report.

The total capital cost of the facility was $245,800. Based on total annual cost, the cost of treatment at the design conditions was $0.42 per 1000 gallons processed and $0.19 per pound of BOD_5 removed.

The City of Tualatin, with a Municipal Research and Demonstration Grant from the federal government, had hired the engineering firm of CH_2M/Hill to design the treatment facility and exercise technical supervision over the research and development program. The plant began operations in April 1970 and is supposed to operate for about 5 years, at which time connection is to be made to a regional sewerage system.



(From *Tertiary Treatment of Combined Domestic and Industrial Wastes.* EPA-R2-73-236, May 1973. EPA Washington, D.C. 20460).

SYSTEMS ANALYSIS OF IRRIGATION WATER

A 96,000 acre irrigated tract in eastern Idaho was studied to develop techniques for regional water management studies and investigate alternatives for alleviating a high water table problem in the area. A complete water budget including irrigation diversions, system losses and wastes, and crop consumptive use was determined. On-farm water management practices, crop and property damage was also determined.

A digital aquifer model was developed to evaluate aquifer response to changes in water management. The model includes an automated calibration routine to adjust aquifer parameters to fit historical water table elevations.

Results indicate that canal seepage and heavy irrigation application rates are the main causes of the rise of up to 40 feet in water tables during the irrigation season. The problem could be alleviated with a 20% reduction in irrigation diversions or by lining selected reaches of canals.
(From *Systems Analysis of Irrigation Water Management in Idaho,* Oct. 1973. WRRI, Univ of Idaho, Moscow, ID).

SOCIAL EFFECTS OF PUBLIC WORKS PROJECTS

More research is needed on the social effects of public works projects, according to a study recently concluded for the Corps of Engineers. Knowledge is required about the nature of the effects and also about techniques for measuring and forecasting them.

The author suggests that each public works agency should have a special unit staffed by social scientists to monitor a continuing program. Projects would be examined to determine "what difference it made to people and their communities." The actual work of data gathering and analysis could be done by contract with outside scientists.

The work of the social research staff within a public works agency would have at least four important functions: (1) direct a continuing program of research on the agency's projects to produce more and better knowledge of their social effects, (2) assemble and disseminate findings from research on social effects, (3) evaluate the effectiveness of the agency's projects in attaining social well-being objectives, and (4) develop improved methods of social research for planning purposes including efficient techniques for studying communities and identifying, measuring, and forecasting social effects.

(From *Assessing the Social Effects of Public Works Projects*, June 1973. Resident Scholar Program. Corps of Engineers, Fort Belvoir, VA)

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PULP AND PAPER MILL SLUDGE

Many pulp and paper mills are now faced with a serious problem in disposal of primary treatment plant sludge. The system selected by mills for sludge disposal or utilization must be one that has a minimal overall impact upon the environment. Research on this subject was conducted by EPA.

The original EPA project was designed to evaluate four methods by which such fibrous sludge may be used. These methods of sludge disposal were: 1) incineration in an air entrained dryer-incinerator, 2) burning in hog fueld boilers, 3) incorporation into soil as an amendment, and 4) hydromulching for soil stabilization. During the course of this study, other possible uses for sludge were suggested and investigated. The report includes data from such experimental observations.

Disposal of sludge in incinerators or hog fuel boilers will cost between $11-$13/dry ton. At the mill site sludge could be made available for other means of disposal at costs between $7 and $20/dry ton, depending on the degree of dewatering and form in which it would be handled.

Incorporation of sludge in farm soil was found to be an excellent method for disposal of large quantities of sludge. In combination with crop production, however, certain problems could arise. At high levels, such as 600 tons per acre, a year fallow appears necessary in order to obtain significant increases in crop yield. Crop yields in fresh mixtures of low sludge levels and soil were satisfactory provided adequate nitrogen was added.

Sludge alone or in combination with bark was competitive as a hydromulch material in establishing grass stands on steep embankments.

(From *Methods for Pulp and Paper Mill Sludge Utilization and Disposal*, May 1973. EPA, Washington, D.C.)

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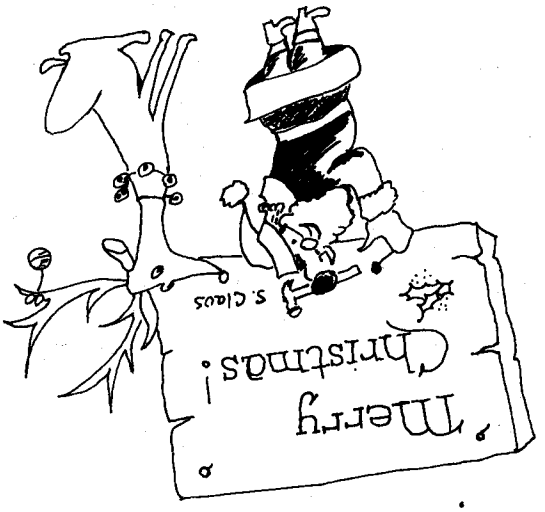

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