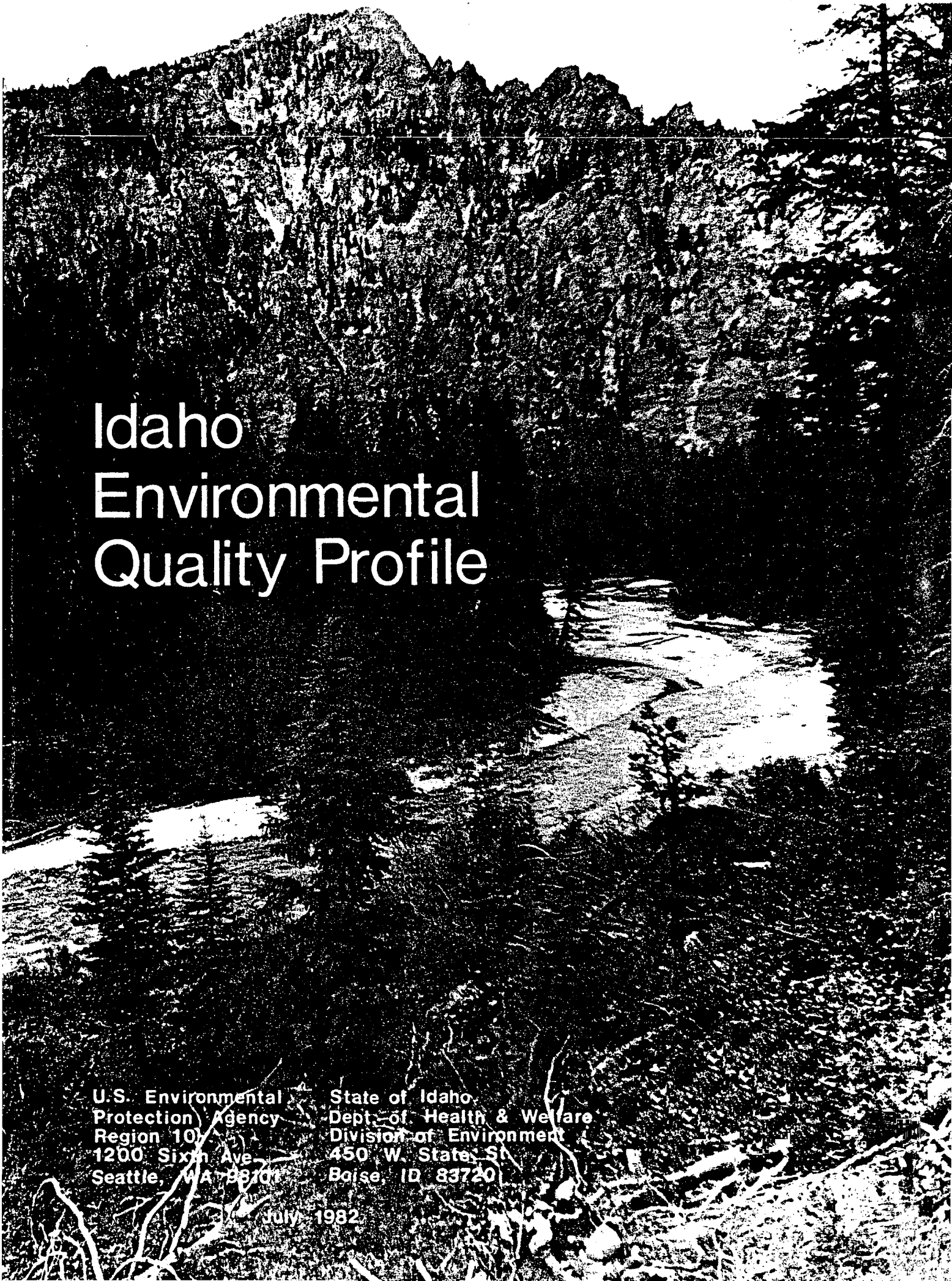

Idaho Environmental Quality Profile

U.S. Environmental Protection Agency
Region 10
1200 Sixth Ave.
Seattle, WA 98101

State of Idaho
Dept. of Health & Welfare
Division of Environment
450 W. State St.
Boise, ID 83720

July 1982

Contents/Summary

Since July 1, 1981, when funding for the State air program was terminated, EPA assumed as much of that responsibility as it had resources and authority. To assure the protection of public health, EPA's program focused on monitoring the quality of State's air. Most of the State continues to meet health-based air quality standards for total suspended particulates (TSP), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_x), nitrogen dioxide (NO_2), and lead. However, Silver Valley, Boise, Pocatello, Soda Springs-Conda and Lewiston areas continue to violate one or more of these standards. Recognizing the public health and economic consequences resulting from non-attainment of air quality standards, the Legislature voted overwhelmingly to reestablish a State air program. In FY 83, the State will again assume the primary responsibility for the management of Idaho's Air resources.

Idaho's Environmental Quality Profile

The Idaho Department of Health and Welfare, Division of Environment (IDHW-DOE) and the Environmental Protection Agency (EPA) have jointly prepared this Idaho Environmental Assessment and Proposed Program.

The purpose of this document is to provide the public with a current assessment of environmental problems in Idaho and the related program efforts of DOE and EPA that will be directed at solving these priority problems. This is a draft report and it is intended for interested Idaho citizens to have the opportunity to provide guidance on redirection of program priorities. EPA and DOE would like feedback to determine if there are environmental problems of a higher priority than those described in this report that may have been missed in our assessment. Thus:

- What are the most serious environmental quality problems in Idaho?
- Where should we be directing our declining resources for environmental clean-up?
- Are there better methods for tackling these environmental problems?
- Do we need to place more emphasis on specific geographical environmental problem areas? Where?

We are seeking the public's opinions on these questions. The result will be used to provide additional direction for the future programs.

Please direct any comments, concerns or questions to:

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Statehouse
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Water Quality Standards - History and Definition

When Congress enacted amendments to the Federal Water Pollution Control Act in 1972, a national goal to achieve "fishable, swimmable" waters by 1983 was set. The purpose of the Act is to protect the quality of our nation's waters for a variety of uses, including public water supply, wildlife, fish and shellfish, recreation, navigation, agriculture and industry. Each water use depends on certain characteristics, such as temperature, concentration of dissolved oxygen, or absence of bacteria, which can be measured and used to evaluate water quality. Idaho's Water Quality Standards provide a comprehensive set of

criteria defining water quality levels necessary to protect human health, aquatic life and other desired uses of rivers and streams. These criteria thus represent water quality goals. Most of Idaho's streams are managed to support cold water game fish species such as trout and salmon; however, some are managed as warm water fisheries, supporting bass, catfish and other fish requiring less stringent criteria. The water quality of individual streams or stream portions is determined at monitoring stations by measuring temperature, dissolved oxygen, acidity, etc., and comparing the results with the criteria.

TABLE 1: CRITERIA CATEGORIES FOR THE WATER QUALITY INDEX

Criteria Category	Explanation
Temperature	Water temperature influences the type of fish and other aquatic life that can survive in a river. Excessively high temperatures are detrimental to aquatic life.
Dissolved Oxygen	To survive, fish and aquatic life must have certain levels of oxygen in the water. Low oxygen levels can be detrimental to these organisms.
pH	pH is the measure of acidity or alkalinity of water. Extreme levels of either can imperil fish and aquatic life.
Aesthetics	Refers to oil, grease, and turbidity which are visually unpleasant. For the Index, this group is mostly represented by the turbidity parameter, which is a measure of the clarity of the water, because it is much more widely measured than any of the others within the group.
Solids	Dissolved mineral and suspended material such as mud or silt. Excess dissolved minerals can interfere with agricultural, industrial and domestic use. Excess suspended solids adversely affect fish feeding and spawning and may have adverse secondary impacts on dissolved oxygen.
Radioactivity	May be in water as a result of radioactive waste discharges or fallout. Excess levels can harm aquatic and other life forms.
Fecal Coliform Bacteria	These bacteria indicate probable presence of disease-related organisms and viruses not natural to water (i.e. from human sewage or animal waste).
Trophic (Nutrient Enrichment)	Indicates the extent of algae or nutrients in water. Nutrients promote algae growth. When algae flourish they make the water murky, and the growths make swimming and fishing unpleasant. Decomposition of dead algae can decrease dissolved oxygen concentrations to the levels harmful to fish.
Organic Toxicity	Includes pesticides and other organic poisons having similar effects and persistence.
Inorganic Toxicity	Heavy metals and other elements; excess concentrations are poisonous to aquatic and other life forms. Also includes excessive dissolved gases in water which can affect the metabolism of aquatic life.

Water Quality Trends

The general water quality picture in Idaho, as represented by 35 monitoring stations, has exhibited little apparent change over the last seven years. Trends indicate improvement in the aesthetics and amount of solids being discharged in many of the stream segments. Segments exhibiting the greatest improvement are the Upper and Middle Snake due to the removal of most of the discharges from potato processing and the Portneuf River due to tranfer of discharges from the City of Pocatello and the Simplot plant to a new land application system.

Quality of Idaho's Principal Rivers

Water Quality in Idaho is generally good to excellent; however, at certain times of the year portions of major rivers have marginal quality with respect to state and national water quality goals.

Pollutants that reach the state's streams have two general origins: 'Point sources', such as wastewater from industries and sewage treatment plants that enter streams at an easily identifiable location; and less easily identifiable 'non-point sources' that consist of stormwater from urban areas, irrigation tail-water, and runoff from forest and mining areas and dryland farms (such as non-irrigated wheat farms).

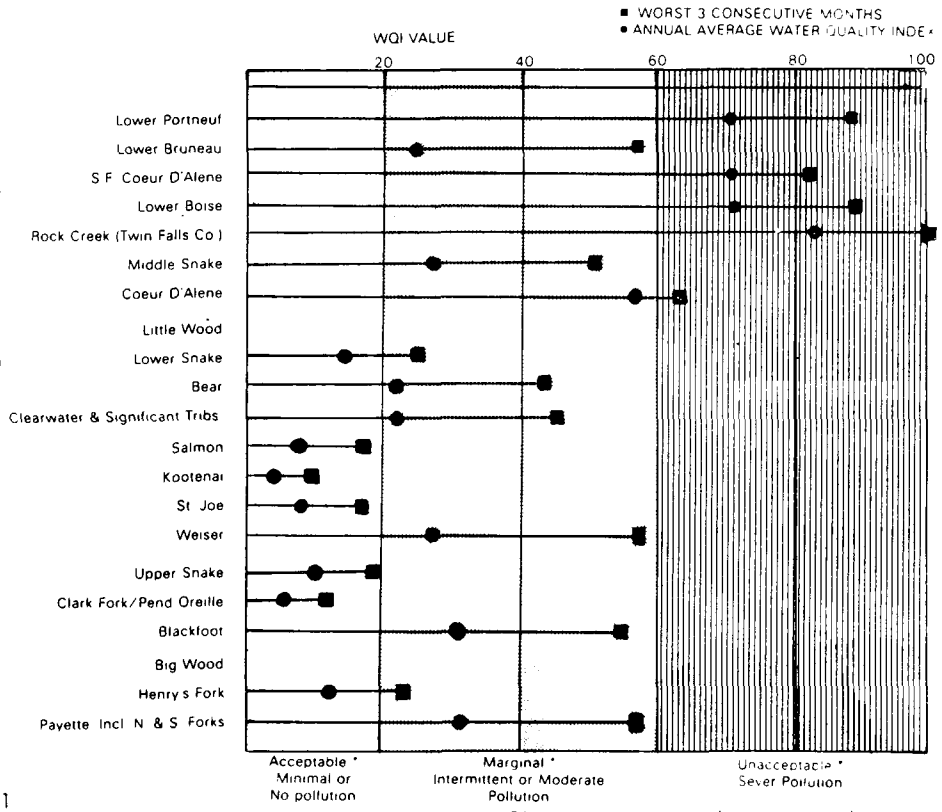
Water quality criteria most often exceeded are those for temperature, bacteria, nutrient levels and sediment. The significance of organic toxics is not known since adequate information to make such a determination has not been collected. To attain the water quality goals, NPDES and municipal wastewater facility grant programs for point sources and best management practices for non-point sources either have been implemented or are planned. Table 1 gives the major parameters measured and used in determining the relative quality of various streams (the Water Quality Index).

The most polluted streams in Idaho (i.e. those that exceed the water quality limits most frequently) are the South Fork Coeur d'Alene River in north Idaho, and Panther Creek, Big Deer Creek and Blackbird Creek in the Salmon River drainage. Much of the South Fork Coeur d'Alene River is affected by high levels of heavy metals from past and present mining and ore-producing activities within its basin. Pollution from these activities also contributes to water quality problems in the Spokane and main-stem Coeur d'Alene Rivers.

The Portneuf River has been degraded by a combination of municipal, industrial, agricultural and natural sources. The upper Portneuf River is heavily impacted by sediment from rainfall and snowmelt runoff from dryland agricultural areas. Since the summer of 1980, however, much of the municipal and industrial wastewater has been diverted from the lower reaches of the river resulting in significant water quality improvement. Rock Creek, which flows through Twin Falls, is heavily polluted by irrigation wastewater entering its lower reaches. Improved soil management practices continue to reduce this pollution. Both the Portneuf River and Rock Creek impact segments of the Snake River. Panther, Big Deer and Blackbird Creeks are affected by acid mine drainage from the old Blackbird Mine near Cobalt. The native and anadromous fisheries (trout, dolly varden, salmon, etc.) have been eliminated from portions of each of these streams. (For Panther Creek, the largest of these streams, the fisheries have been almost entirely eliminated in a reach from the confluence with the Salmon and extending for 35 miles upstream.)

Many water quality problems are attributed to agricultural runoff from irrigation return flows, particularly in Southern Idaho and from dryland farming in the Palouse area and in Eastern Idaho. Still other stream reaches are affected by discharges from municipal and industrial sewage treatment plants. High concentrations of heavy metals from unknown sources are primarily responsible for the Lower Salmon and Clearwater Rivers' marginal ratings. The remaining streams, located in more remote areas of the state, lack significant agricultural, urban and industrial activities and generally meet water quality goals.

Figure 1: Water Quality Index Values for Idaho's Principal Rivers



Most of the other principal streams monitored in Idaho are significantly degraded intermittently during the year. Typically, a stream will meet the water quality standards throughout most of the year; however, during the summer low-flow heavy-usage periods, these standards may not be maintained. Some streams, such as the Boise River below Lucky Peak Dam, exhibit problems during winter low-flows.

Figure 1 gives the worst three month and the average annual Water Quality Index of various Idaho river and stream reaches with respect to the water quality categories evaluated. Figure 2 shows the location of the major streams in Idaho.

Many stream reaches, particularly in the more arid portions of the state, exceed the temperature criterion. Excessive fecal

coliform bacterial levels occur in some of Idaho's southern streams, due primarily to runoff from grazing and animal confinement areas. Over half of the stream segments evaluated show excessive nutrient concentrations during at least part of the year. These are mostly over-enriched by runoff from irrigated and dryland agriculture, although treated sewage may contribute to these problems in some streams, such as the Boise River. Streams with high suspended solids levels due to agricultural runoff include the Bear River near the Wyoming border, the Bruneau River and the Portneuf River.

Many of these water quality problems will be the target of DOE's and EPA's program effort during FY 83. An exception is the South Fork Coeur d'Alene River. Due to past mining practices, mine wastes (drainage and tailings dumps) are extensive through "Silver Valley" and very little can be economically done to reverse or eliminate the contaminated runoff. Consequently, the resource commitment to solve these problems would be great in relationship to the environmental gains.

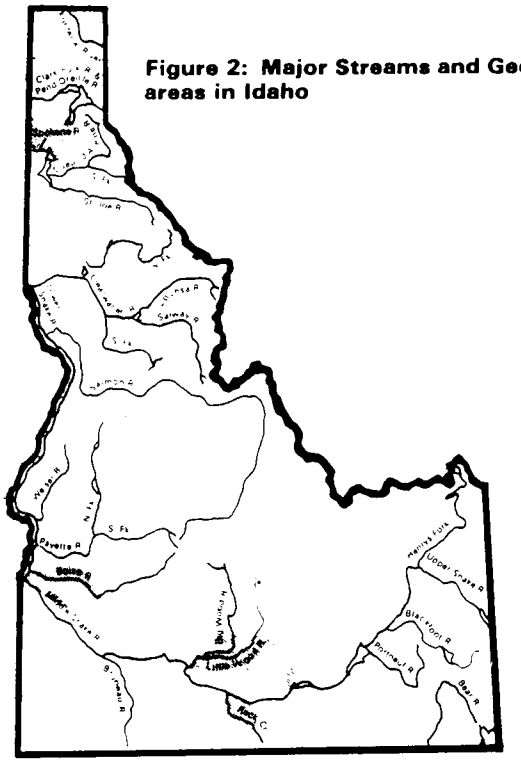


Figure 2: Major Streams and Geographical high priority areas in Idaho

Point Sources of Pollution

In Idaho, industries and municipalities that discharge waste into streams are required to apply for permits issued by EPA under the National Pollution Discharge Elimination System (NPDES). These permits define the level of pollutants that can be discharged to Idaho's streams and still maintain water quality as established in the standards. However, due to resource limitations, EPA does not generally issue (or reissue) permits to minor dischargers in Idaho. In most other states, the NPDES programs have been delegated to state agencies which carry out this responsibility. Idaho has not qualified for delegation in the past because of low state penalities available for enforcement. Through the NPDES permitting process, point source pollutants are to be removed to acceptable levels before wastewater reaches the river. Problems still exist, however, including inadequate wastewater treatment, overloading of facilities from groundwater and/or stormwater entering into sewers and inadequate stream flow to provide mixing of the effluent from industrial and municipal wastewater treatment facilities during the summer periods when water quality normally is lower. Food processing industries, mining and ore processing facilities are other major point sources requiring improvements.

EPA resources for permitting municipal and industrial discharges will be less than last year's level, as will DOE's. First priority will be given to issuance and reissuance of permits and compliance monitoring in the environmentally impacted geographic areas. Pre-treatment programs will be developed in some cities providing for control of certain industrial wastes prior to discharge to municipal sewage treatment systems.

Through the Construction Grants Program, EPA provides financial assistance to the state for the construction of municipal sewage treatment systems. DOE has been awarded partial delegation for the Idaho Municipal Facilities Construction program and is providing active management of this program. This delegation trend will continue and all activities will be assumed by DOE by the end of FY 83 with the exception of certain construction management activities which will be performed by the Corps of Engineers. DOE and EPA will continue to emphasize the upgrading of municipal sewage treatment facilities to provide secondary treatment.

To meet Idaho's Water Quality Standards on some rivers, treatment beyond secondary may be required for a few municipal discharges. EPA is working with both Idaho and Washington to establish a coordinated plan for control of phosphorus in the Spokane River in order to meet Washington's water quality standards.

Operation and maintenance (O&M) of municipal facilities will continue to be a priority element of the Municipal Facilities Construction Program and O&M manual development and review will be emphasized. Training programs for treatment plant O&M staff will be continued at Boise State University in cooperation with DOE. A new training facility is now under construction for BSU through a 100% EPA grant.

Non-point Sources of Pollution

Non-point sources of pollution are generally not easily treated and "best management practices" (BMPs) must be applied to achieve control. For example, agricultural best management practices might include adequate, controlled waste storage areas to keep organic wastes from reaching streams, or contour plowing to prevent erosion of soil into rivers.

The responsibility for developing methods to control non-point source pollution has been given to local and state agencies assigned to develop water quality management plans as provided by the Federal Water Pollution Control Act.

Agriculture continues to be one of the most significant non-point sources of water pollution in Idaho. A statewide agricultural Pollution Abatement Plan was completed in 1979.

This voluntary program is being implemented primarily through the 208 planning process and State cost-share program in ten high priority areas: Rock Creek, LQ Drain and Cedar Draw in Twin Falls County, Paradise Creek-South Fork Palouse River and Cow Creek in Latah County, Marsh Creek in Bannock County, the lower Boise River in Canyon County, Willow Creek in Bonneville County, Little Malad River in Oneida County, and Hangman Creek in Benewah County.

Activities on Federal lands are the responsibility of either the Forest Service or Bureau of Land Management. BMPs have been developed. However, a program t insure implementation is lacking at the state level due to inadequate funding. On Federal land, implementation of BMPs varies from forest to forest, an there is no monitoring to insure that good practices are utilized Currently, the major efforts being made are the development o an education/information program to make timber harvesting operators aware of the impacts o poor practices and a road construction methods study. Mining activities are another major non-point source of pollution. DOE is working closely with the Noranda and Cyprus mining companies to minimize water quality impacts a these operations progress.

One approach for controlling non-point sources of pollution has been through the '208 planning process'. A number of high priority pollution problems have been addressed through this program and solutions are successfully being implemented.

The 208 program is being phased out due to lack of Federal funding. There remain several '208 projects' in progress in Idaho, the last of which are scheduled for completion in 1984.

A project in the Rock Creek watershed providing for implementation of BMP's is being funded through the Rural Clean Water Program.

Runoff from timber harvesting is also a major cause of non-point source problems. The Idaho Department of Lands (IDL) has the responsibility for controlling pollution from logging practices on state and private lands through the Forest Practices Act.

Runoff from abandoned and inactive mining operations, which is difficult and expensive to control, creates problems in the South Fork and main Coeur d'Alene Rivers. There are also problems due to uncontrolled discharges and pond leakage. State plans to rehabilitate the South Fork have been hampered by lack of funds.

DOE and EPA will explore other means for dealing with non-point source pollution problems. Implementation of existing projects will be given a high priority.

Idaho Lake Water Quality

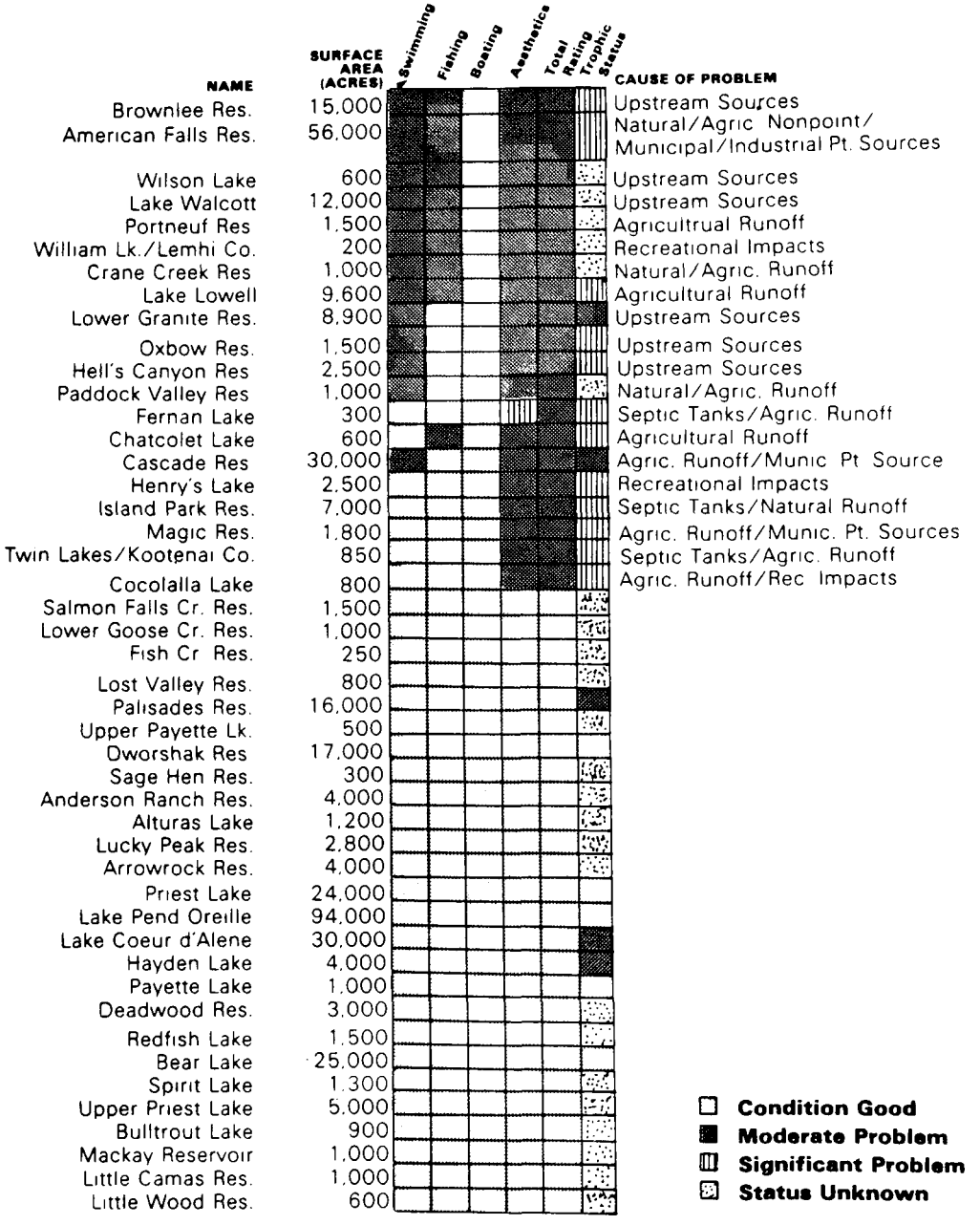
Inland lakes and waterways constitute one of Idaho's most important recreational and commercial resources. Lake water quality in Idaho is among the best in the nation. Only a few of the major recreational lakes have significant water quality problems that impair their use.

Figure 3 shows the principal recreational lakes in Idaho and the status of the lakes for various recreational uses.

If a lake is undisturbed by human activities, it undergoes a natural process of aging known as eutrophication. Man's activities, however, may accelerate this process by introducing nutrients to lake waters through improper land use and waste disposal practices. Land use practices on farm land, forests and construction sites often result in erosion of nutrient-rich soils into streams feeding lakes. Significant quantities of nutrients are discharged by sewage treatment, certain industrial plants and runoff from urban areas, pastures and feedlots.

Water quality agencies in Idaho are concerned with the status of Idaho's lakes because many uses of the lakes and development around the lakes will affect the aging process. Highly eutrophic lakes are characterized by dense algal blooms, floating mats of

Figure 3: Principal Recreational Lakes in Idaho and a rating of their condition



vegetation, and a murky appearance. Algae are found naturally in every body of water, but when stimulated by abundant nutrients, sunlight, and warm temperatures, they rapidly multiply to become a nuisance to recreational users and seriously affect water quality for other uses. These nuisances may curtail or even eliminate recreational activities (such as swimming, boating and fishing), impart tastes and odors to water supplies, and cause toxic conditions which adversely affect other aquatic life in the lakes. For example, when sufficient quantities of these aquatic plants die, the decaying process may consume quantities of dissolved oxygen sufficient to kill fish and other aquatic life. The recreational use of lakes in itself can affect water quality. Power boats may release mixtures of oil and gasoline and associated contaminants to the water. Removal of vegetation along shorelines to enhance public access can lead to erosion.

Most major impairments of the principal lakes in Idaho appear to be due to algal blooms stimulated by nutrients from agricultural runoff and septic tanks. Runoff from agricultural non-point sources entering the Snake River upstream of Oxbow and Brownlee Reservoirs has degraded those two water bodies. Lake Lowell, an off-stream reservoir near Boise, receives heavy recreational use by residents of the Boise Valley. Excessive algal growth in the summer impairs such use. The conditions are primarily due to nutrients from summer inflows from agricultural non-point sources and the large waterfowl population which utilizes the lake. However, because of the significant impact due to waterfowl, control of the agricultural sources of nutrients may not achieve a solution to this problem.

The water quality of American Falls Reservoir is affected by nutrients from dryland and irrigated agriculture, winter discharges of treated sewage effluents from Pocatello, phosphate deposits in the soils and from many springs in the area.

Many of the lakes in the Panhandle area of Northern Idaho are presently of high quality. However, development around the lakes is increasing and the lakes are extensively used for recreation. Some of the lakes are showing signs of degradation.

In order to protect these valuable resources, lake shore management plans are being developed to insure that development occurs with minimal impacts on lake water quality.

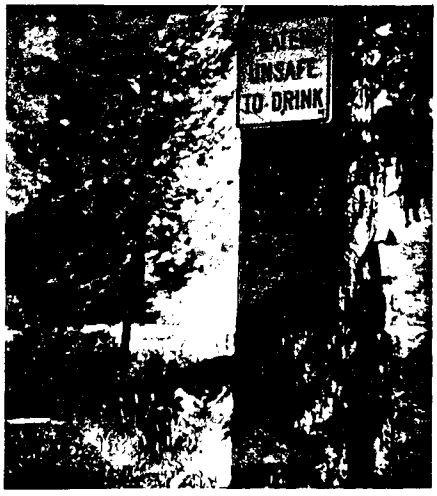
Federal funding to deal with lake water quality problems has been through the 208 and Clean Lakes programs. Idaho presently has two Clean Lakes grants; one to do a lake classification analysis to determine the trophic status of Idaho's lakes and the other to study pollution sources and to develop a protection plan for Bear Lake. The Clean Lakes program also is being phased out because of cuts in Federal funding.

Without Federal funding or increased State funds, little progress may be made in improving degraded lake water quality.

Drinking Water Quality - Public Water System Program

The Safe Drinking Water Act, passed in 1974, gave EPA primary responsibility for establishing drinking water standards and assuring national program consistency, but intended that the states implement programs ensuring that public water systems are in compliance with standards. Idaho has assumed primary responsibility for working with public water systems to implement drinking water standards. Emphasis has been placed on voluntary compliance with the National Interim Primary Drinking Water Regulations, but when voluntary efforts fail, more formal enforcement procedures have been pursued.

In most cases, contamination of a water supply system is due to bacteria. Disease may result from consuming small quantities of contaminated water. The national drinking water standards address treated water quality characteristics, as measured by periodic tests. EPA recognizes that these are minimum standards and are not adequate in themselves to protect public health. Therefore, EPA encourages states to implement comprehensive programs (ie: operator training and plan review) that go beyond addressing only finished water quality.



The primary means to assure safe drinking water is for public water systems to have properly operated, well-maintained, adequately designed facilities. That means a major part of a state's program is evaluation of facility design and inspection of water systems to determine facility deficiencies which can create health hazards. Approximately one-fourth of the water supplies in Northern Idaho are not meeting minimum state monitoring requirements, or have never been inspected by the state.

There is concern by water quality agencies that current Idaho rules and regulations governing subsurface sewage disposal may not prevent pollution of drinking water sources or health hazards in the populated areas in Southwest Boise (Ada County) and over the Snake Plain and Rathdrum aquifers.

The drinking water program is funded with state monies and EPA grant monies made available to IDHW. The state will maintain the drinking water program to provide the maximum level of public protection that resources allow. First priority will be to ensure that drinking water systems violating the maximum contamination levels for bacteria, chemical, radiochemical and turbidity contaminants are surveyed and the problems corrected. Public notification when drinking water maximum containment levels are violated will also receive major emphasis. If IDHW should lose existing District Health Department support due to inadequate Federal and State funding, less emphasis will be given to non-community public water systems and fewer public water supply system sanitary surveys may be conducted.

Groundwater Protection

The Safe Drinking Water Act also established a program to protect underground sources of drinking water. EPA's role is to develop national Underground Injection Control (UIC) regulations, provide oversight and ensure national program consistency. Congress intended for the states to implement the UIC program and that EPA would list the states needing the program. Idaho, although not initially listed, petitioned to be included in the UIC listing. EPA awarded UIC grants to Idaho (Department of Water Resources) in 1979, and those grants were continued through 1982. Idaho is using developmental grant funds to collect background data on aquifers, inventory injection wells and evaluate the adequacy of state laws and regulations. The Idaho Department of Water Resources, in cooperation with DOE, has applied for delegation of the UIC program which would provide protection against groundwater degradation through regulation of injected fluids. A surface impoundment assessment (pits, ponds and lagoons) has been completed by the University of Idaho. While the study indicates there is potential for contamination of groundwater by impoundment, few actual cases of groundwater contamination have been documented. 'Sole source aquifer designation' is another feature of the groundwater protection program, in which an aquifer may be designated as the only source of drinking water for a particular area. The Spokane Valley-Rathdrum Prairie Aquifer, first designated a sole source aquifer in 1978, provides drinking water for about 40,000 Idaho residents and 300,000 Washington residents in the Coeur d'Alene and Spokane areas. The designation requires that EPA review groundwater impacts of projects proposed for Federal funding and prohibits such funding for any project which may contaminate this important aquifer.

Where there is rapid development in rural areas that affects vital groundwater systems, DOE and EPA have been helping local agencies develop management plans to prevent degradation. The Panhandle Health District adopted and is implementing regulations for sewage disposal over the Rathdrum Prairie Aquifer. EPA is encouraging Spokane County to adopt similar regulations. Ada Planning Association has finalized a wastewater management plan in coordination with the development of a comprehensive land use plan which will help prevent groundwater degradation in rural areas of Ada County. This plan also summarizes and consolidates all adopted central sewer facility plans, procedures for amending area plans and area-wide policies for their coordination and implementation. The Southeast Idaho Council of Governments has developed a plan addressing prevention of groundwater degradation in Bingham County. The District Seven Health Department has developed a plan to prevent contamination of the Snake River Aquifer in the six counties making up its district.

The importance of protecting groundwater resources is recognized by Idaho and EPA. EPA will continue to provide grant support to IDWR and IDHW for development of an underground injection control program. However, 208 grant funds for planning to protect against other sources of groundwater degradation will be discontinued due to the phase out of monies for this program. DOE is developing a groundwater management plan that will establish a groundwater pollution control/protection strategy and will define steps needed to implement this strategy.

Solid and Hazardous Wastes

Concern about improper management of storage, collection, transportation, treatment and disposal of solid and hazardous wastes causing public health hazards; the scarcity of land disposal sites; and, the loss of resources and energy through waste materials prompted Congress to pass the Resource Conservation and Recovery Act (RCRA) of 1976.

Municipal open dumps were generally abandoned or converted for more adequate sanitary management as landfills. Unfortunately a great majority of these landfills are little more than open dumps. Progress has been made in identifying these "dumps", and in monitoring groundwater at these sites, however, the inventory to classify disposal sites is not yet complete.

Open burning of wastes has been virtually eliminated in Idaho, but environmental problems related to improper disposal of municipal solid wastes remain, with water pollution being one of the major concerns. Rainwater draining over a fill and filtering into the ground through the wastes will carry harmful chemicals and bacteria into

streams and groundwater, which can then pose a threat to drinking water supplies. Other problems are related to waste disposal. For example, when garbage decomposes, methane gas is produced as a by-product. Methane is toxic to vegetation and is explosive in certain concentrations. It has been detected at certain landfills in the state. Decomposition can produce odors and may attract disease-carrying plants and insects. Proper disposal with daily cover and proper compaction will reduce many of these problems.

Sewage sludge disposal is an increasing problem as water pollution regulations become more strict and landfill space becomes scarce. Alternatives for waste materials, such as incineration and the use of sludge on farm and forest lands, are being tried.

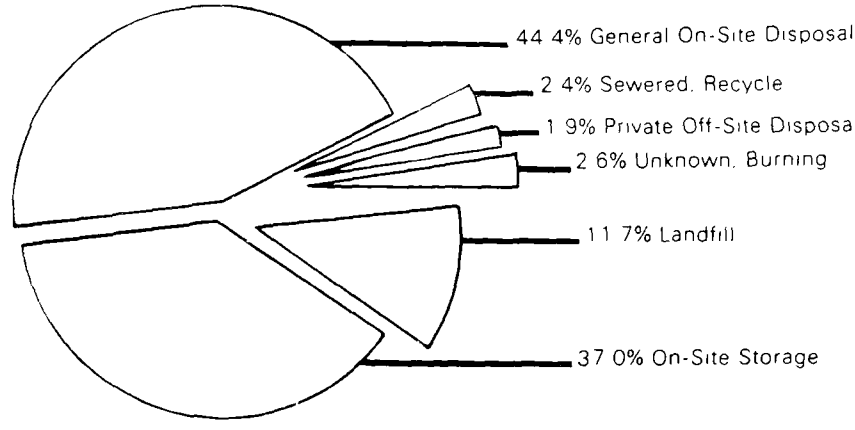
The lack of federal and state funds will practically eliminate the surveillance of municipal solid waste disposal sites and continuation of the open dump inventory of other waste types.

In addition to hazardous wastes being regulated by the RCRA, the Toxic Substances Control Act (TSCA) controls handling and disposal of PCB and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) controls the use of pesticides used in Idaho agriculture.

No major problems have occurred from disposal of hazardous waste in Idaho due to regulations requiring environmentally sound on-site or off-site disposal. Most of the federally regulated types and quantities of hazardous wastes are disposed of at EPA and state approved chemical disposal sites in southwestern Idaho. Other volumes of waste are either shipped to a secure chemical landfill in Oregon or are disposed on-site pursuant to special state/EPA permit conditions.

Waste types and quantities which are not regulated by the federal program will continue to be addressed by the DOE and local municipal landfill authorities to alleviate potential hazardous waste disposal problems.

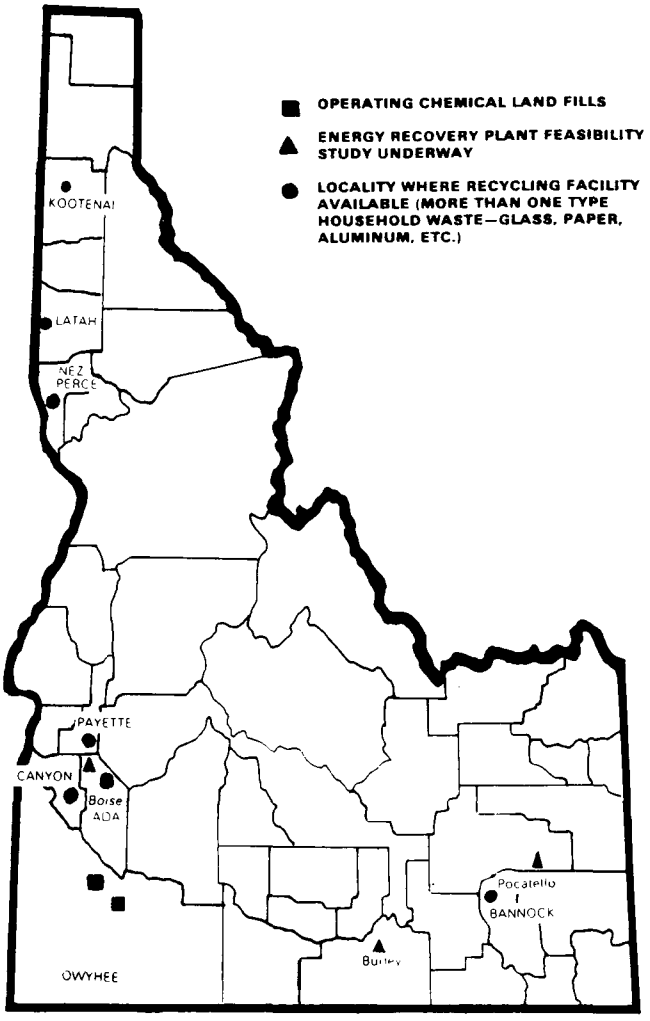
Figure 4: Waste Disposal Practices



Resource Recovery

Federal funding has been discontinued for both the financial assistance and technical assistance panels programs used by state and local waste management authorities to develop and implement comprehensive solid waste management plans. The plans were to include environmentally sound disposal methods and resource recovery and conservation programs.

Figure 5: Location of Hazardous Waste and Resource Recovery Facilities



Some municipal wastes can be recycled to obtain material such as metal and newspaper and much of the rest can be incinerated to generate energy such as steam or electricity.

Cassia County was the first political entity in the state to plan, develop and bring on line a full scale solid waste energy recovery facility utilizing municipal waste. The plant at Heyburn consists of a fifty ton-per-day Consumat incinerator with a heat recovery boiler providing part of the steam needs of the adjacent Simplot potato processing plant. In Kootenai County the Coeur d'Alene sanitary landfill has been retro-fitted with a methane recovery system designed by EMCON Associates and is providing space heating for the city's shop complex. In Lewiston, the Potlatch Forest Products Company has brought on line an electrical generation complex that is powered by wood wastes.

Ada County, Idaho, is studying the feasibility of converting waste to energy. A Technical Report has been published. It gives an economic analysis of a resource recovery facility as publically constructed, owned, and operated. The anlysis demonstrated that such a facility was not economically feasible largely due to high interest rates associated with initial capital costs. The project has been deferred until economic conditions are more favorable. Analysis recommended that private construction, ownership, and operation be purchased as the feasibility of the project is renewed.

An Energy Recovery and Solid Waste Disposal Feasibility Study has just been completed for Shoshone County by Harper Owes of Seattle, Washington. In Bannock County, the Commissioners are exploring the feasibility of an energy recovery plant.

Figure 5 shows the location of operating chemical landfills and recycling facilities and energy recovery facilities in Idaho.

The economics of recycled materials are typically very good in other areas, but recycling programs in Idaho suffer from high transportation costs and small volume.

Other wastes with a potential for recovery include tires, lubricating oil and wood waste, which present serious disposal problems.

Discarded tires gradually work to the surface in a landfill where they trap water, become a breeding place for mosquitoes and pose a fire hazard. Waste lubricating oil is used on roads as a dust suppressant, but can contaminate air and water. Lead in the oil makes indiscriminate burning or disposal undesirable. Wood waste, which can pollute water resources and consume significant space in landfills, is presently being used to produce steam in several Idaho timber mills and utilities.

Air Quality Standards - History and Definition

The Clean Air Act of 1970 directed EPA to establish National Ambient Air Quality Standards ("ambient" refers to outdoor rather than indoor conditions) and in 1977, amendments to the Act required that the standards be met as soon as possible and practical. In the case of primary (health-related) standards, the new deadline is December 31, 1982. The Act required that all states adopt implementation plans, now commonly referred to as State Implementation Plans or SIP's which provided for implementation, maintenance and enforcement of these standards. Under certain conditions, an extension to December 31, 1987 can be granted for carbon monoxide and ozone. The Clean Air Act is currently under review by Congress and it is expected that significant amendments will be made to the Act.

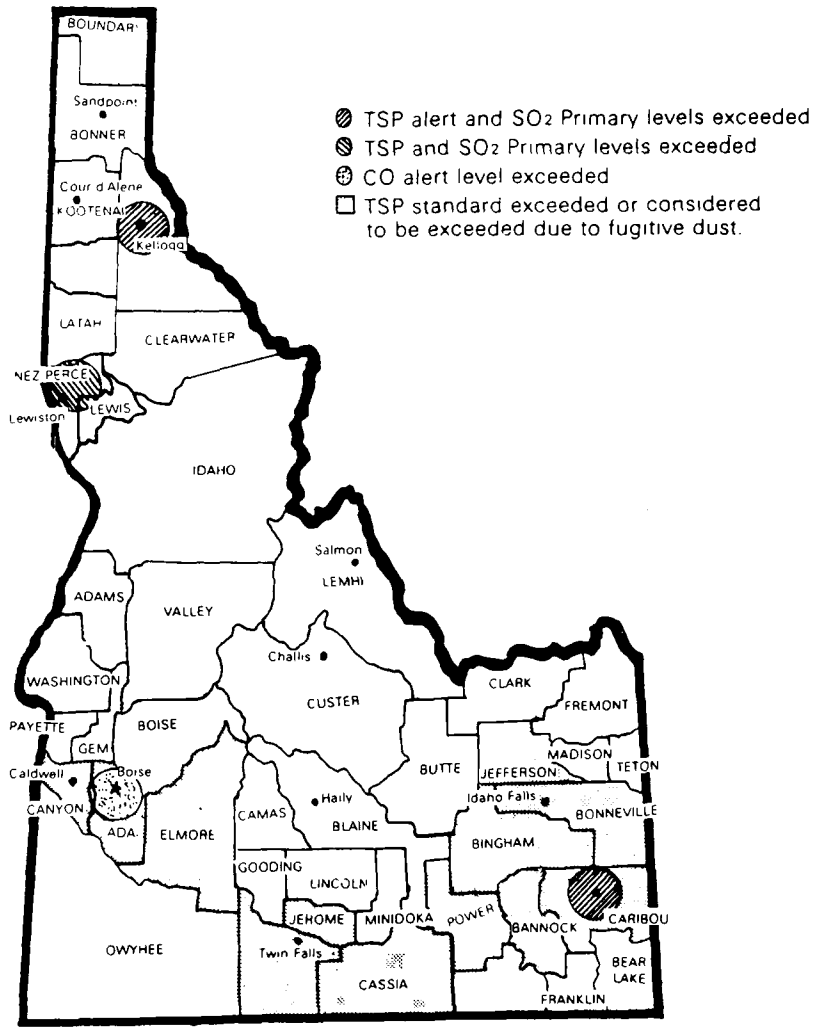
The more highly concentrated a pollutant, the worse its effect on humans and their environment. Because some pollutants have both chronic and acute effects on health, standards are based on their average concentration over vario s lengths of time, with a margin of safety included. Pollutants that exceed secondary standards have detrimental impacts on the public welfare and cause deterioration of many consumer products. Exceeding primary standards poses a threat to public health. If the pollutant concentration reaches the alert level, individuals, industry and government should curtail outdoor activities, use of automobiles and certain industrial operations.

Federal standards have been set for six major pollutants: Total Suspended Particulates (TSP), Sulfur Dioxide (SO_2), Carbon Monoxide (CO), Ozone (O), Nitrogen Dioxide (NO_2) and lead. Pollutants monitored in Idaho are TSP, SO_2, lead and CO. NO_2, photochemical oxidants and hydrocarbons are not being monitored at this time. NO_2 levels measured in Ada County and Boise in the past were about 35 percent of the ambient air quality standard. The most serious air pollution problems in Idaho are due to TSP, SO_2, lead and CO concentrations in excess of the standards.

Table 2 lists the effects on health and property that normally result when the Federal standards are exceeded. Figure 6 shows the areas in Idaho where the Air Quality Standards are exceeded. Areas within Idaho where source emissions, combined with influencing weather conditions, cause air quality standards to be exceeded have been designated "non-attainment". All other areas are classified as "attainment". The original determination of non-attainment was based on data for 1965 through 1977. Areas presently classified 'attainment' may have exceeded the standards during 1980 and are also illustrated in this report.

Though EPA is currently administering the air quality program in Idaho, the State will reassume that responsibility by August 1, 1982. In the interim, EPA will continue its program while planning to make a smooth transition of functions and equipment back to the State.

Figure 6: Air Quality Status of Existing polutants excluding the air quality standards in Idaho.



Total Suspended Particulates

Suspended particulates are solid or liquid particles of different sizes having health effects that vary with particle size and composition. Particulates can aggravate asthma and chronic lung diseases; they increase coughing and chest discomfort. Some particulates can be toxic or cancer-causing (lead or asbestos particles, for example). Particulate pollution may interfere with visibility, injure vegetation and increase building cleaning and maintenance costs.

Suspended particulate matter is a widespread problem throughout the Northwest. Some particulate emissions come from 'point sources', which are easily identified stationary industrial sources of emission such as smokestacks. The rest, which cannot be pinpointed to a specific source, are 'area sources', such as space heating (resident and commercial heating units) and fugitive dust. Fugutive dust can be created by industrial and agricultural operations and by vehicles on paved as well as unpaved roads. In areas with little major industrial development and low population density, fugitive dust is composed mostly of natural soil particles and is believed to be less harmful to the health. For this reason, many areas are considered to be attaining air quality standards even though particulate standards are exceeded. Data from these areas show the percentage of samples that exceeded standards based upon the number of days monitored. (Particulate samples are routinely collected once every six days).

The major point sources of total suspended particulates in the Pocatello and Conda-Soda Springs areas, are fertilizer and industrial chemical processors. In the latter area, fugitive dust from roads and fields also contributes to TSP levels in excess of standards. In Lewiston, the wood products industry and a kraft pulp mill are the chief point sources. In the Silver Valley area, the Bunker Hill Company's smelting operation has been a major source of TSP. Based upon curtailment of this operation, in October 1981, the air quality in the Silver Valley is being carefully monitored and assessed.

In these four areas, where the ambient air quality standards are being violated, the State will continue to develop State

Table 2: Effects of Major Air Pollutants on Health and Property

POLLUTANT	HEALTH EFFECTS	PROPERTY EFFECTS
Total Suspended Particulates	Correlated with increased bronchial and respiratory disease, especially in young and elderly	Corrodes metals and concrete, discolors surfaces; soils exposed materials; decreases visibility
Sulfur Dioxide	Upper respiratory irritation at low concentrations, more difficult breathing at moderate concentrations (3000 ug/m^3), correlated with increased cardio-respiratory disease, acute lung damage at high concentrations.	Corrodes and deteriorates steel marble, copper, nickel, aluminum, and building materials; causes brittleness in paper and loss of strength in leather; deteriorates natural and synthetic fibers, "burns" sensitive crops.
Carbon Monoxide	Physiological stress in heart patients, impairment of psycho-motor functions, dizziness and headaches at lower concentrations, death when exposed to 1000 ppm for several hours	Corrodes limestone and concrete structures
Ozone	Irritates eyes, nose, throat, deactivates respiratory defense mechanisms, damages lungs.	Deteriorates rubber and fabrics; corrodes metals; damages vegetation
Nitrogen Dioxide	Combines with hydrocarbons in the presence of sunlight to form photo-chemical smog, irritates eyes, nose, throat, damages lungs	Corrodes metal surfaces; deteriorates rubber, fabrics, and dyes
Lead	Primary concern with young children. Most pronounced effects on nervous system (damage may occur at low levels), kidney system, and blood forming system (high levels may have severe and sometimes fatal consequences such as brain disease, palsy, and anemia). Blood levels >30mg deciliter are associated with an impairment in cell function	Injures plants through absorption of soil Affects nervous system of grazing animals.

implementation plan revisions to improve air quality while allowing economic growth and recovery.

Particulate control devices such as bag-houses, electrostatic precipitators and scrubbers have been installed on many industrial sources, and some plants are scheduled to further reduce emissions in the future.

As existing plants are modified and new facilities are constructed, the best technology available to control suspended particulates will be required. Control of fugitive dust is more difficult to achieve.

Paving roads and parking areas can help, as well as improved "housekeeping" in industrial areas (such as covering hoppers and conveyor belts or other equipment transporting raw materials). Construction sites can be wetted down to reduce dust. However, it is expected that reduction of fugitive dust will be gradual due to the high cost of control.

Although most of the industries that produce significant amounts of particulates have installed required control devices, particulate problems, especially those resulting from area sources and poor operation of control equipment, still remain.

Ada Planning Association has expressed interest in obtaining more specific information on residential wood combustion and its effect on the particulate problem in the Boise Valley.

Sulfur Dioxide

Sulfur dioxide is formed when coal or oil containing sulfur is burned, or when sulfur is burned in an industrial process. Breathing air continuing sulfur dioxide can produce health effects similar to those for suspended particulates. When sulfur dioxide combines with moisture in the air to form acidic mist and rain, it can pose an increased health hazard. In addition, it corrodes buildings, is harmful to vegetation and can deteriorate the water quality of lakes and streams far from the source of the pollutant. These are three areas in Idaho where the sulfur dioxide standards have been exceeded.

The principal cause of sulfur dioxide violations in the State has been due to smelting of non-ferrous ores (lead and zinc) and the production of sulfuric acid for the phosphate fertilizer industry. In Kellogg, where the Bunker Hill Company has been smelting and refining lead and zinc, rugged terrain of the Silver Valley inhibited adequate dispersion of sulfur dioxide.

Since curtailment of operation in October 1981, monitored levels of sulfur dioxide have dropped well below primary standards. Redesignating this area to attainment will be considered.

The major source of sulfur dioxide in the Pocatello area is a J. R. Simplot plant, which produces fertilizers and industrial chemicals. The company is installing controls that should reduce their emissions by 25 percent. The Beker Industry's phosphate fertilizer plant near Soda Springs is the major source of sulfur dioxide in that area; primary sources are two sulfuric acid plants, both of which operate in compliance with applicable emission regulations when their control equipment is functioning properly.

The State will continue with the development of state implementation plan revisions for each of these non-attainment areas.

Lead

In 1978, EPA established an air quality standard for lead, which is to be achieved by November, 1982. The State has been, and EPA will continue, gathering data to identify areas where the standard is being exceeded.

Violations of the lead standard have occurred in the Kellogg area where the major sources are the Bunker Hill Company's lead smelter and general areawide contamination resulting from 60 years of milling and smelting operations. However, operation of the lead smelter was curtailed in October 1981, and is not likely to resume. Following the curtailment, monitored levels of lead dropped sharply below the primary standard. Though it is obvious that emissions of lead and TSP from the smelter have ceased, it will be necessary to continue monitoring through the drier summer and fall months to determine the impact of fugitive dust on levels of lead in the Silver Valley.

Carbon Monoxide

Carbon monoxide is a colorless, odorless, tasteless gas - high concentrations can cause unconsciousness or even death. At concentrations above the primary standard, this pollutant can interfere with mental alertness and physical activity especially for persons with heart or lung disorders. Carbon monoxide is a by-product of fossil fuels combustion. Its major source is motor vehicles, and the most severe violations of standards are recorded where automobiles are concentrated in urban areas. Ada County exceeded the primary standard level of carbon monoxide about 15 percent of the time and the 'alert level' once during a 339-day study of the city's air.

The EPA is working closely with the Ada Planning Association to develop a program to reduce carbon monoxide below the ambient standard. Legislation that would have allowed the enforcement of a vehicle emissions inspection/maintenance (I/M) program to be tied in with auto registration in Ada County did not pass the 1981 Legislature. Alternative enforcement options have been and will continue to be evaluated. A free voluntary vehicle emissions test program was operated December 15, 1981 through April 3, 1982.

This program was largely funded through community donations and volunteer support.

Motor vehicles are responsible for about 90 percent of the CO emissions; therefore, plans for reducing such emissions center on improvements to automobiles and to the transportation system as a whole. As older cars are replaced by models with up-to-date pollution control equipment, CO levels should decline. Regular vehicle inspection and maintenance will ensure that emission control devices are functioning effectively. An inspection and maintenance program will be included in the 1982 Transportation Control Plan. Implementation of this plan is expected to result in attainment of the CO standard by 1987. Other measures for mitigating some form of the problem are based upon reducing the number and length of vehicle trips, traffic flow improvements, transit improvements, increased carpooling, and parking management.

CO problems are compounded by adverse climate conditions. During the winter months, extreme stable inversions develop which severely inhibit the dispersion of pollutants resulting in high pollutant concentrations. Also, it is difficult to maintain efficient combustion processes in cold weather. Automobiles take longer to warm up and emit substantially more air pollutants than at warmer ambient temperatures; carbon monoxide emissions during engine warm-up may account for up to 65 percent of the total vehicle emissions produced, depending upon the size of the engine. Therefore, maintaining a warm engine or reducing average engine size may be effective in reducing cold-start emissions. The proposed low temperature emissions standard should help alleviate the cold-engine, cold weather problem. The local strategy of encouraging multipurpose trips when possible will also help reduce this problem.