

IDAHO WATER PROJECT UPDATE

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FALL SUPPLEMENTAL ISSUE 1991

TABLE OF CONTENTS

Agriculture

BMP's	2.1-9
Education	2.10-12
Erosion/Sedimentation	
Groundwater	2.13-17
Irrigation Management	2.18
Nitrates	2.19
Pesticides	
Surface Water	2.20-24

Education

Education and Information	2.25-26
Publications	2.27
School Curricula	
Teacher Development	
Youth Program	2.28-30

Energy/Hydropower

Dams	
Geothermal	
Groundwater Pumps	
Water Flow	

Fish and Wildlife

Education	
Commercial Fish	
Fish Habitat	
Instream Flows	2.31
Wildlife Habitat	

Flood and Sediment Control

Education	
Flood Control	2.32-35
Sediment Control	2.36-37
Warning Systems	2.38

Forestry

BMP's	2.39-40
Classification	2.41
Education	2.42
Erosion/Sedimentation	
Harvest Management	
Range Management	2.43
Road Building	
Surface Water	
Waste Disposal	2.44

Industry

BMP's	
Groundwater	2.45-48
Surface Water	

Mining

Groundwater	
Surface Water	2.49-50

Recreation

Fishing/Boating	2.51
Surface Water	

Urban/Domestic

Education	2.52-53
Groundwater	2.54-55
Septic Tanks	2.56
Waste Disposal	2.57-59

General Programs

Groundwater	
Planning	2.60-61
Policy/Management	2.62-65
Remediation	
Riparian Areas	
Surface Water	2.66-68
Wetlands	

AGRICULTURE



BMP'S

2.1

LAKE CREEK IMPLEMENTATION PROJECT

Jerry Reid, Lewis SWCD; Rob Fredericksen, SCS; Chuck Pentzer, SCC

Lapwai Creek is designated in the Water Quality Advisory Working Committee Designated Stream Segments of Concern book as Segment #1143. Lapwai Creek annually delivers large amounts of sediment and nutrients from cropland, rangeland, forestland, and a small urban center to the receiving waters of the Clearwater River. The pollutants of sediment and nutrients are reducing the fishery habitat of the stream. • The objective of this project is to apply land treatment BMP's to 75 percent of the Lapwai Creek watershed area which is critical in terms of water quality. Project goals are to protect and enhance the stream's beneficial uses of agricultural water supply, cold water biota, salmonid spawning, primary contact recreation, and secondary contact recreation.

2.2

MISSION CREEK IMPLEMENTATION PROJECT

Jerry Reid, Lewis SWCD; Rob Fredericksen, SCS; Chuck Pentzer, SCC

Mission Creek is designated in the Water Quality Advisory Working Committee Designated Stream Segments of Concern book as Segment #1147. Mission Creek annually delivers large amounts of sediment and nutrients from cropland, rangeland, and forestland to the receiving waters of the Clearwater River. The pollutants of sediment and nutrients are reducing the fishery habitat of the stream. • The objective of this project is to apply land treatment, BMP's to 75 percent of the Lapwai Creek watershed area which is critical in terms of water quality. Project goals are to protect and enhance the stream's beneficial uses of agricultural water supply, cold water biota, salmonid spawning, primary contact recreation, and secondary contact recreation.

2.3

NORTH EAST WORLEY IMPLEMENTATION PROJECT

G. Wade McLean, Kootenai-Shoshone SCD; Kim Golden, SCS

Lake Coeur d'Alene which is designated in the Idaho Pollution Abatement Plan as first priority stream segment PB30S. The tributaries of the NE Worley Project that drain into Lake Coeur d'Alene annually deliver large amounts of sediment and nutrients from cropland, rangeland, forestland, and a small urban center to the receiving waters of Lake Coeur d'Alene. The pollutants of sediment and nutrients are reducing the quality of recreational opportunities in the lake, and have degraded the fishery habitat of the stream. The objective of this project is to apply land treatment BMP's to 75 percent of the NE Worley watershed area which is critical in terms of water quality. Project goals are to protect and enhance the stream's beneficial uses of agricultural water supply, cold water biota, salmonid spawning, primary contact recreation, and secondary contact recreation.

DEAR READER,

Did you know Idaho has the cleanest water in the nation. However, even with our clean water status we still have some major problems in water quality and quantity.

The Institute of Southern Studies, a public interest advocacy research group in Durham, North Carolina, recently ranked Idaho's environmental health as 19th among the 50 states. The research group judged 256 factors related to the environment and public health. Oregon and Washington ranked 1st and 9th, respectively.

The Institute of Southern Studies found that Idaho had the cleanest water in the nation (yes, better than Alaska!) and ranked second in handling its forest and fishery resources. On the down side Idaho was ranked 45th in control of agricultural pollution (primarily for poor erosion control and lack of implementation of conservation practices compared to other states). Idaho also received low marks in per capita water use (rank 50) and recycling programs.

Some positive facts include: On a per capita basis Idahoans release fewer toxic chemicals to public sewers than people in 36 other states. Ninety-six percent of our public sewers are in compliance with EPA standards (rank 7 out of 50). Only 17% of our river and stream miles are impaired by pollution compared to 30.4% nationally. We rank first with the lowest percentage of polluted lakes and reservoirs. Only five states spend more money than Idahoans per capita - \$22.10 on water quality and water resource conservation and development.

Idaho's top ranking for water quality is great news for citizens; however, we have a difficult challenge to maintain this enviable position. To continue to protect water quality coalitions between local, state and federal agencies, and public interest groups will be even more important in the future. The adoption of the new groundwater plan developed by the Groundwater Council for the state legislature will be a giant step in the right direction.

The University of Idaho Cooperative Extension System (CES) and the Idaho Water Resources Research Institute (IWRRI) are pleased to present the Fall 1991 Supplement to IDAHO WATER PROJECT UPDATE, produced through our combined efforts.

We welcome all comments and contributions.

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2.4 PINE CREEK IMPLEMENTATION PROJECT

Dennis Dau, Nez Perce SWCD; Frank Gariglio, SCS; Biff Burleigh, SCC

Pine Creek is designated in the top 25% of impaired waters in the Idaho Agriculture Pollution Abatement Plan. Pine Creek delivers sediment from cropland, rangeland, pastureland, and forestland into the Clearwater River. The sediments are reducing fish habitat, reducing navigational traffic paths, and impairing downriver dam operations. • The primary purpose of this project is to identify and correct water quality degradation from agricultural nonpoint sources within the Pine Creek watershed boundaries. The goal is to implement BMP's on 75% of the critical acres in the watershed and enhance beneficial uses of the stream segment. Beneficial uses include agricultural water supply, cold water biota, primary contact recreation, secondary contact recreation, and steelhead spawning.

2.5 LITTLE POTLATCH CREEK/LENVILLE SUBWATERSHED IMPLEMENTATION PROJECT

Kyle Hawley, Latah SWCD; Ken Houska, SCS; Shelly Gilmore, SCC

Little Potlatch Creek/Lenville Subwatershed is designated in the Idaho Agriculture Pollution Abatement Plan as first priority stream segment CB 154. Agriculture and grazing activities contribute to nonpoint source pollution impacts on Little Potlatch Creek, a tributary of the Clearwater River. Sediment and nutrient delivery to the receiving waters of Little Potlatch Creek contribute to the degradation of its beneficial uses. Those uses include secondary contact recreation, cold water biota, agricultural water supply, and anadromous fish habitat. Implementation of BMP's through this project will reduce the nonpoint source pollution to Little Potlatch Creek and its tributaries, effectively protecting the beneficial uses.

2.6 BOULDER CREEK 319 RIPARIAN DEMONSTRATION PROJECT

Barry Holloway, Valley SWCD; Russ Manwaring, SCS; David Blew, SCC

Boulder Creek is designated in the Idaho Agricultural Pollution Abatement Plan as a first priority stream segment SWB 895. Annually Boulder Creek delivers high volumes of nutrients and sediments to Cascade Reservoir due to land uses within the watershed including range, cropland, and forestry. These sediments and nutrients adversely affect the beneficial uses of Cascade Reservoir and Boulder Creek. These beneficial uses are agricultural water supply, primary and secondary contact recreation, salmonid spawning, and cold water biota. • This project will demonstrate grazing techniques and strategies that are expected to be compatible with riparian improvement and maintenance.

2.7 BOULDER CREEK AGRICULTURAL POLLUTION ABATEMENT PLAN

Barry Holloway, Valley SWCD; Russ Manwaring, SCS; Nancy Welbaum, SCC

Boulder Creek is designated in the Idaho Agricultural Pollution Abatement Plan as a first priority stream segment SWB 895. Boulder Creek annually delivers large amounts of sediment and nutrients from cropland, rangeland, and forestland to the receiving waters of the Cascade Reservoir. The pollutants are reducing fisheries and the quality of recreation of Boulder Creek and Cascade Reservoir. • The implementation of BMP's on critical acres within the Boulder Creek watershed will enhance the beneficial uses of Cascade Reservoir and Boulder Creek, which include agricultural water supply, primary and secondary contact recreation, salmonid spawning and cold water biota.

2.8 WEST UPPER DEEP CREEK IMPLEMENTATION PROJECT

Ken Tverdy, Balanced Rock SWCD; Kevin Davidson, SCS; Gary Andrus, SCC

The West Upper Deep Creek Water Quality Project is a sub-basin of the Deep Creek Watershed, and is located in Twin Falls County in South Central Idaho. Deep Creek has been identified as a priority stream segment in the Idaho Agricultural Pollution Abatement Plan. The project purpose is to correct water quality degradation from agricultural nonpoint sources within the proposed project area, and to promote recognition and voluntary compliance with regard to State Water Quality Standards, through implementation of a balanced program of

treatment and preventive practices that are technically, economically, and socially acceptable.

• The objective of this project is to apply land treatment BMP's to 75% of the West Upper Deep Creek watershed area which is critical in terms of water quality. Project goals are to protect and enhance the stream's beneficial uses of agriculture water supply, cold water biota, salmonid spawning, primary contact recreation, and secondary contact recreation.

2.9 TETON RIVER IMPLEMENTATION PROJECT

Darwin Josephson, Teton SWCD; Steve Ray, SCS; Biff Burleigh, SCC; Dave Hull, DEQ

The segment of the Teton River included in this project has been designated as a stream segment of concern. Erosion from cropland and unstable streambanks deposits sediment and chemicals into the river. This pollution negatively impacts beneficial uses such as agricultural water supply, cold water biota, primary and secondary contact recreation, and salmonid spawning. • The goal of this project is to apply conservation practices that will reduce soil erosion to acceptable levels on 75% (14,700 acres) of the critical land within the watershed.

EDUCATION

2.10 DISTRICT IV WATER QUALITY WORKING GROUP

Dan Lucas, Janice Stimpson, Stan Gortsema, UI CES

Water quality has become an issue of great concern for residents of Eastern Idaho. The District IV Water Quality Working Group presented a district wide educational program during the spring of 1991 that received intense interest across the region. The workshops were attend by 174 rural residents. Participants were made aware of health concerns related to domestic water quality, impacts of specific agricultural practices on water quality, and issues related to riparian concerns and surface water. Augmenting the workshops were water tests for nitrate nitrogen and coliform bacteria. Participants applied testing information to their specific water quality values, and some were stimulated to pursue more extensive testing based on knowledge gained through the workshops. • There is a strong need for District IV faculty to disseminate current information in an effective manner to a concerned public. The District IV Water Quality Group is in a unique position to provide the necessary comprehensive training to increase the effectiveness of county water quality education programming. With this in mind, the District IV Water Quality Working Group is planning a series of three comprehensive faculty training programs. The objectives of each program will be to: 1) provide faculty with current water quality information resources; 2) providing training for county faculty in the use of nitrate field test kits, and interpretation of results as educational tools; 3) assist county faculty in designing water quality educational programs to meet individual county goals; and, provide insight to faculty about potential questions related to risk communication.

2.11 CROP MANAGEMENT STRATEGIES TO ENHANCE WATER QUALITY IN IDAHO

Bob Mahler, UI CES Soil Science

Crop management practices in Idaho have a significant effect on water quality. This educational program is working to develop farming practices that are both economically and environmentally sound. Over 50% of Extension's water quality educational efforts are directed at crop management primarily in the areas of fertilizer, pesticide and irrigation management recommendations. Over 1,500 employee days are annually devoted to aspects of crop management impacting water quality. Extension educational programs provide the following: (1) accurate pesticide recommendations that protect water quality, (2) fertilizer recommendations to maximize nutrient use efficiency, optimize economic yields and protect water quality, (3) irrigation management recommendations that maximize crop water use efficiencies, conserve water and minimize erosion and leaching of agricultural chemicals into groundwater, (4) information about erosion control, and (5) information and training about integrated pest management systems that improve pest control and result in reduced pesticide use.

2.12 LIVESTOCK/RANGE MANAGEMENT STRATEGIES TO ENHANCE WATER QUALITY IN IDAHO

Dean Falk, Robert Ohlensehlen, UI CES Twin Falls

Water quality issues that affect livestock also affect the general public. Extension is working with ranchers and range managers to increase animal productivity and protect water quality. Extension provides the following: (1) information on grazing and riparian management to increase the productivity of the system and also reduce soil erosion, (2) economic assessment of management practices that protect water quality, (3) information on current methods of livestock pest control that are both economically sound and environmentally responsible, (4) information on dairy waste management that maintains water quality, and (5) information on how to maintain and protect water sources for livestock.

GROUNDWATER

2.13 FIELD INVESTIGATION OF LANDFILL DISPOSAL OF CULL ONIONS

J.L. Osiensky, UI Geology & Geological Engineering; J.E. Hammel, UI Soil Science

Onion packing operations in the Treasure Valley generate large quantities of cull onions. Current disposal methods of cull onions aimed at minimizing insect and disease problems include landfill or burial pit disposal. Landfill disposal of cull onions in concentrated areas has been suspected of being a potential contaminant hazard to the region's groundwater. Specific objectives of this research are: 1) design and instrument a series of "test disposal pits" to evaluate the characteristics of leachate generation by different pit configurations, 2) determine the rate of leachate migration through the unsaturated sediments beneath the site and toward the water table, and 3) evaluate the best management practice for cull onion disposal in landfills.

2.14 IDAHO SNAKE RIVER PLAIN USDA WATER QUALITY DEMONSTRATION PROJECT

Jeff Bohr, SCS; Stacy Camp, UI CES Burley; ASCS; DEQ; Local SCDs

The Mini-Cassia Water Quality Demonstration Project comprises over 1,946,000 acres in Blaine, Cassia, Jerome, Lincoln, Minidoka, Oneida, Power and Twin Falls counties. The objective of this five year project is to demonstrate effects of alternative best management practices (BMPs) and agricultural systems which include: (1) incorporating water, nutrient and pesticide best management practices into an integrated system that will improve water quality, (2) monitor water quality characteristics with the adoption of

EDITOR'S CORNER

In the Fall Supplemental Issue of Idaho Water Project Update, we have added several subcategories. As the newsletter evolves we will continue to develop a format that makes it easy to locate abstracts of interest, provides all pertinent information, and makes maximum use of space. We urge contributors to submit their abstracts in this format, using these abbreviations to identify their agencies. Our goal is to receive abstracts in a form that can be printed as submitted.

We reserve the right to edit your contributions, primarily for length, but also for spelling, grammar, and punctuation.

NEWSLETTER STAFF

UI, College of Agriculture
Robert L. Mahler

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state of the art BMP's, (3) gain on-farm acceptance, adoption and experience through demonstration and education, and (4) evaluate the economic and social impact of this program through a complete evaluation process.

2.15 IDAHO SNAKE-PAYETTE RIVERS USDA WATER QUALITY HYDROLOGIC UNIT PROJECT

*Tim Stack, SCS; Tim Stieber, UI CES;
ASCS; DEQ; Local SCD's*

The Idaho Snake-Payette Rivers Hydrologic Unit Water Quality Project comprises over 840,000 acres in Canyon, Gem, Payette and Washington counties. The objectives of this five year project include: (1) determination of the extent of nonpoint source pollution of groundwater from pesticides and nutrients, (2) determination of the nutrient and pesticide contributions of each crop grown in the project area, (3) development of BMP's to improve groundwater quality, (4) development of an economic evaluation for BMP effectiveness, and (5) development and implementation of an information and education plan.

2.16 ROLE OF MOBILE SOIL COLLOIDS IN THE TRANSPORT OF SYNTHETIC ORGANIC PESTICIDES

*Matthew J. Morra, John E. Hammel,
UI Soil Science; Ray von
Wandruska, UI Chemistry*

This research is aimed at providing the theoretical support and database to more accurately model pesticide movement in agricultural soils of Idaho. The research specifically examines the ability of an available model for such purposes. In achieving the goals of the project, innovative instrumental techniques and methodologies will be developed which in themselves will be useful to others working in the field of solute transport.

2.17 A TRANSFER FUNCTION MODEL FOR PREDICTION OF SOLUTE TRANSPORT IN SURFACE IRRIGATED FIELDS

*Behzad Izadi, Bradley King, Ian
McCann, UI Agricultural
Engineering*

Nitrate contamination of ground water resources caused by agricultural practices is gaining increasing public attention. Idaho is fourth in the nation in terms of irrigated acreage. Proper irrigation and nitrogen management is essential for preserving ground water quality. This study investigates the feasibility of using a simple stochastic model for prediction of solute transport in a surface irrigated field, and will be a basis for the future development of nitrogen management practices under surface irrigation systems.

IRRIGATION MANAGEMENT

2.18 BIG LOST RIVER AUGMENTATION STUDY

*Dale R. Ralston, UI Geology and
Geological Engineering; Roy Mink,
UI IWRI*

Many irrigation wells have been constructed in Big Lost River valley since 1960. The ground water resource over much of the valley is hydraulically interconnected with the Big Lost River. Consequently, ground water pumpers often are accused of depleting the already deficient supplies of surface water irrigators. The water right priorities of surface water irrigators generally are far senior to ground water users, suggesting that the liability is clouded by complicating conditions. The general objective of this research is to assess the impact of ground water pumping on surface water flows and recommend the best alternative for resolution of the conflict.

NITRATES

2.19 EVALUATION OF THE IMPACT OF FERTILIZER NITROGEN USE IN BLUEGRASS SEED PRODUCTION ON THE ENVIRONMENTAL QUALITY OF THE RATHDRUM PRAIRIE AQUIFER

*R.L. Mahler, J.E. Hammel, P.
McDaniel, UI AES Soil Science;
John Sutherland, DEQ*

Significant quantities of agrichemicals are used in crop management on the Rathdrum Prairie.

The combination of high, fall nitrogen applications on bluegrass seed land and high winter precipitation probably result in large leaching losses of applied nitrogen posing a serious threat to the Rathdrum Prairie aquifer. The purpose of this study is to document the impact of nitrogen fertilization and management strategies on the Rathdrum Prairie aquifer. Specific objectives of the research are: 1) determine nitrogen leaching losses and subsequent vertical movement of nitrate in the vadose zone in soils under bluegrass production, 2) estimate leachate generation under bluegrass fields based on weather records, crop-water use, and soil characteristics, 3) determine a nitrogen budget for bluegrass seed production, 4) evaluate the need for the development of alternative nitrogen management strategies for bluegrass seed production, and 5) develop alternative nitrogen management strategies for bluegrass seed production to reduce impact on groundwater.

SURFACE WATER

2.20 UPPER PORTNEUF RIVER/AG-33

*Harry Ozburn, Caribou SWCD;
Dave Modersitzki, SCS; Paul
Christensen, Winnifred Christensen,
SCC; Tim Schroeder, Caribou
SWCD*

The upper reaches of the Portneuf River (stream segment USB-410) are located in Caribou County, Idaho. The project area contains 206,766 acres, of which 10,675 acres are used for dryland farming and 22,253 acres are used for irrigated farming. Beneficial uses designated in the Idaho water quality standards for this segment are domestic water supply, agricultural water supply, cold water biota, salmonid spawning, primary contact recreation and secondary contact recreation. The cold water biota and salmonid spawning uses are considered not to be supported or only partially supported. Primary and secondary contact recreation are considered supported but threatened in some reaches of the upper Portneuf River. Three segments of the upper Portneuf River are designated as Stream Segments of Concern due to agriculture and grazing activities. The pollutants of concern are sediment, nutrients and bacteria.

2.21 UPPER PORTNEUF RIVER/AG-P-29

*Harry Ozburn, Caribou SWCD; Lee
Crockett, SCS; Paul Christensen,
Winnifred Christensen, SCC;
Tim Schroeder, Caribou SWCD*

The upper reaches of the Portneuf River (stream segment USB-410) are located in Caribou County, Idaho. Beneficial uses designated in the Idaho Water quality standards for this segment are domestic water supply, agricultural water supply, cold water biota, salmonid spawning, primary contact recreation and secondary contact recreation. The cold water biota and salmonid spawning uses are considered not to be supported or only partially supported. Primary and secondary contact recreation are considered supported but threatened in some reaches of the Portneuf River. Three segments of the upper Portneuf River are designated as Stream Segments of Concern due to agriculture and grazing activities. Pollutants of concern are sediment, nutrients and bacteria. This project complements the Upper Portneuf River implementation project (AG-33) by providing resources to plan and investigate the feasibility of stream channel stabilization practices. The river has been diverted for irrigation purposes to a new and unstable channel. This project is intended to address the technical aspects of stabilizing the new stream channel.

2.22 JUMP CREEK PLANNING PROJECT

*Ray Mansidor, Owyhee SWCD;
Dave Brown, SCS*

Jump Creek is a Snake River tributary in Owyhee County, Idaho. The beneficial uses of Jump Creek are reported to be agriculture water supply, cold water biota, salmonid spawning, primary contact recreation and secondary contact recreation. The cold water biota, salmonid spawning and primary contact recreation uses are considered to be in need of restoration. The nonpoint sources of pollution suspected to have the greatest impact on the beneficial uses of Jump Creek are irrigation return flows and degraded riparian areas. Pollutants of concern are sediment, nutrients, pesticides, and bacteria.

2.23 LAKE CREEK PLANNING PROJECT

*G. Wade McLean, Kootenai-
Shoshone SWCD; Kim Golden, SCS*

Lake Creek drains into Lake Coeur d'Alene which is designated in the Idaho Pollution Abatement Plan as first priority stream segment PB30S. Lake Creek annually delivers large amounts of sediment and nutrients from cropland, rangeland and forestland, and a small urban center to the receiving water of Lake Coeur d'Alene. The pollutants of sediment and nutrients are reducing the quality of recreational opportunities in the lake, and have degraded the fishery habitat of the stream. • The objective of this study is to investigate the nonpoint source pollution to Lake Creek and its origin, to identify and select an effective treatment to protect and enhance the beneficial uses of agricultural water supply, cold water biota, salmonid spawning, primary contact recreation and secondary contact recreation, and to assess support for this treatment alternative.

2.24 INFLUENCE OF RIPARIAN HERBAGE ON WATER QUALITY OF RANGELAND STREAMS

*Jeff Mosley, Tom Lance, UI Range
Resources; John Walker, ARS; Mike
Falter, UI Fish and Wildlife
Resources; Dan Lucas,
Terry Tindall, UI CES*

This project evaluates the role of riparian herbage as a nutrient filter for rangeland streams. Non-point runoff, groundwater, and soils are being analyzed for nitrogen and phosphorus content under 5 different levels of herbage mass. Herbage mass is being regulated by mowing and by cattle grazing.

EDUCATION



EDUCATION & INFORMATION

2.25 MASTER WATER WATCH TRAINING

*Vickie Parker-Clark, UI CES
Kootenai County; Susan McNall, UI
CES Bonner County; Sue Hailey,
North Idaho Lake Association
Coalition*

Extension and the North Idaho Lake Association Coalition teamed up to develop a Master Water Watch Program patterned after the Bay Watchers program in Washington state. This program provides 35 hours of class time and three field tours. The program is open to the general public and includes an overview of the creation and evolution of watersheds and a discussion of all the impacts on surface and groundwater quality. The goal of the training is to emphasize how we can lessen those impacts. This program was piloted in 1991 in Kootenai and Bonner counties, but in the future can be brought to any area in the state. Instructors included representatives from 7 local and state agencies, consulting firms and environmental coalitions.

2.26 IDAHO STREAMWALK

Roy Mink, UI IWRI; EPA

Idaho Streamwalk, is an easy to use screening tool for monitoring stream corridor health. It is designed to be used by lay people, people who are interested in learning more about their streams and rivers. The Streamwalk data collected will be used as a screening tool to focus attention on areas that might be of concern, and to help direct further evaluation by experts. Please contact IWRI, (208) 885-6429 for additional information.

PUBLICATIONS

2.27 EXTENSION PUBLICATIONS ABOUT WATER QUALITY *Bob Mahler, UI CES Soil Science*

The University of Idaho Cooperative Extension System is producing a series of "Quality Water for Idaho" publications. Current titles include: Pesticide Handling Practices to Protect Groundwater (CIS 861), Pesticides and Their Movement in Soil and Water (CIS 865), Nitrate and Groundwater (CIS 872), Water Testing (CIS 873), Drinking Water Standards (CIS 874), Idaho's Water Resource (CIS 887), Household Water Dos and Don'ts (CIS 893), Laundry Problems and Water Quality (CIS 895), and Groundwater in Idaho (CIS 900). All publications are available free of charge. To order, contact the University of Idaho Cooperative Extension System office in your county or write Ag Publications, Building J40, Idaho Street, University of Idaho, Moscow, Idaho 83843-4196. Telephone: (208) 885-7982.

YOUTH PROGRAMS

2.28 NATURAL RESOURCE EDUCATION FOR IDAHO YOUTH *Arlinda Nauman, Maureen Toomey, UI CES 4-H Office*

Extension places an emphasis on youth programming. Several extension youth programs target natural resource education. In many cases, these programs deal with water quality issues. Extension also works with teachers on natural resource educational efforts. Over 200 employee days are annually spent on natural resource programming for Idaho youth. Youth programming for water quality issues include: (1) 4-H youth natural resource programs, (2) natural resource camps that include water education programs, (3) direct contact with classroom teachers for development of natural resource curricula, (4) classroom education, and (5) FFA and FHA programs.

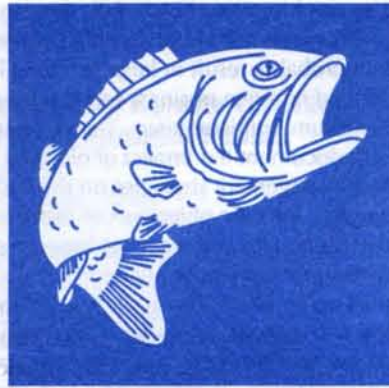
2.29 RATHDRUM PRAIRIE GROUNDWATER EDUCATIONAL MODULE FOR SECONDARY SCHOOLS *Randall Sounhein, PHD*

The Panhandle Health District, together with the Post Falls School District, has developed a groundwater educational module on the Rathdrum Prairie Aquifer. This module is primarily focused on educating secondary grade level students (7-12) about the Rathdrum Prairie Aquifer, groundwater systems, water quality protection, and water conservation. This module will be used primarily by the Post Falls and Coeur d'Alene Districts. Copies of the module are also available to any interested school district throughout north Idaho and the State.

2.30 INLAND EMPIRE NATURAL RESOURCES YOUTH CAMP (IENRYC) *Nancy Folliard, Latah SWCD*

The purpose of the Inland Empire Natural Resources Youth Camp (IENRYC) is to provide youth with an understanding of the importance of our natural resources. Natural resource topics covered during this one week camp in June include: wildlife, soils, water, range, outdoor recreation, land use planning and forestry. The camp is open to all teens, ages 13-16 in eastern Washington and northern Idaho. There is room for 100 campers. Approximately 2,700 teens have been through this camp during its 31 year existence. The camp is organized and governed by a coalition of seven groups which include: Society of American Foresters (Inland Chapter), Society for Range Management (Pacific Northwest Section), Soil and Water Conservation Society of America (Inland Empire Chapter), Washington Association of Soil Conservation Districts, Idaho Association of Soil Conservation Districts, Washington State University CES and the University of Idaho CES.

FISH & WILDLIFE



INSTREAM FLOWS

2.31 1992 COLUMBIA RIVER SALMON FLOW MEASURES OPTIONS ANALYSIS ENVIRONMENTAL IMPACT STATEMENT *Greg Graham, ACE*

National Marine Fisheries Service (NMFS) has proposed listing the sockeye salmon, spring and summer chinook (as a combined species) and the fall chinook salmon as endangered. Concurrent with NMFS status review, the Corps is investigating water management and reservoir drawdown options. The current objective is to determine the most effective dam operation, implementable in 1992, to improve salmon migration flow conditions in the lower Columbia River and lower Snake River projects.

FLOOD & SEDIMENTATION CONTROL



FLOOD CONTROL

2.32 LITTLE WOOD RIVER PROJECT *Jerry Roediger, ACE*

A 1976 feasibility report evaluated flood problems within the Big Wood River Basin including flood damages that accrue within the cities of Gooding and Shoshone, Idaho. The report recommended construction of two separate facilities on the Little Wood River to divert flood water into adjacent lava beds through the existing Dietrich and Milner-Gooding Irrigation canals. The project was authorized for construction by the Water Resource Development Act of 1986, Public Law 99-362. Due to the long delay between the feasibility study and project authorization, the project formulation was reviewed to reflect recent hydrology studies, current development, and needs of the local community. As part of that review, it was determined that the project was economically feasible. The sponsor has indicated that they do not have the financial capability and did not want to further pursue the project. For that reason, further studies are being terminated. A re-evaluation report will be completed in September 1991 to document the hydrology and economic studies completed.

2.33 SALMON RIVER ICE JAM STUDY *Jerry Roediger, ACE*

The city of Salmon is plagued by ice jam flooding on the average of about once in every 3 years. A 1986 Detailed Project Report (DPR) investigated alternative solutions to the ice jam problem. The DPR recommended no action because an implementable plan could not be identified. Studies were subsequently initiated by the Corps of Engineer's Cold Regions Research and Engineering Laboratory (CRREL) to evaluate an ice control

structure to be placed upstream of the city to trap frazzle ice and reduce the availability of ice to form jams. CRREL is currently testing a prototype ice boom with promising results. Testing by CRREL is scheduled to continue through the winter of 1991-1992. A supplement to the 1986 DPR is scheduled to be completed during fiscal year 1994.

2.34 POCATELLO CHANNEL PROJECT *Jerry Roediger, ACE*

An appraisal level study has been initiated on the existing Pocatello Flood Control Channel on the Portneuf River through the city of Pocatello, Idaho. The city has had considerable disruption and expenses related to ice jams that occur in the concrete portion of the channel during the winter season. The study will evaluate the feasibility of modifying the channel to alleviate or reduce the ice jam problem. Modification of the channel is also being considered under a new authority, Section 1135 (b) of the Flood Control Act of 1986. This authority allows modifications to existing Federal projects for restoration of fish and wildlife habitat lost as a result of construction of the original project.

2.35 BIG LOST RIVER BASIN FEASIBILITY STUDY *Gareth Clausen, ACE*

Flood damages occur frequently in the 28-mile reach along the Big Lost River between Mackay Dam and Arco, Idaho. Twelve major floods have occurred since 1943. The flood of May-June 1967 was the largest to date and inundated some 7,000 acres. Smaller, frequent floods damage agricultural lands, bridges, roads, and Idaho National Engineering Laboratory property downstream of Arco. The study was unable to identify an economically feasible flood abatement project for the Big Lost River Basin. A final report will be completed in September 1991.

SEDIMENT CONTROL

2.36 BIG LOST RIVER AT MOORE *Ed Blodgett, ACE*

A county bridge just upstream of the city of Moore's sewage lagoons will be flanked by major floods. If the approach road is breached, high flows could be directed at the city's lagoons. The study will determine if it is less expensive to replace the embankments after a flood or armor them with riprap.

2.37 LOWER GRANITE LOCK AND DAM; SNAKE RIVER, WASHINGTON AND IDAHO; SEDIMENTATION FEASIBILITY STUDY *Gareth Clausen, ACE*

Sediment accumulation in Lower Granite Reservoir has and continues to reduce the design capacity of the Lewiston levee system. Approximately 2 million cubic yards of sediment enter the reservoir annually, reducing levee freeboard at a rate of 0.25 feet per year. The 5-foot levee freeboard for the design flood has decreased since project completion in 1975 to less than 3-feet in 1986. Interim dredging has stabilized the problem since 1986, but a long-term solution is needed. Detailed studies to identify a long term solution began in 1984 and are expected to continue through 1994. Hydraulic, economic, and environmental studies are currently underway and include prototype in-water disposal tests within an involved environmental monitoring program.

WARNING SYSTEMS

2.38 BOISE FLOOD WARNING AND PREPAREDNESS PLANNING STUDY *Gary G. McMichael, ACE*

The Boise foothills are susceptible to thunderstorm and snowmelt floods which threaten property and life in the City of Boise and Ada County. This study is one of four test studies nationwide by the Corps of Engineers on potential warning system installations.



BMP'S

2.39 FORESTRY BMP'S: DESIGNING STREAM PROTECTION ZONES

G.H. Belt, UI Forest Resources

The purpose of this study is to evaluate currently available information on relationships between stream protection zones (SPZ's), forest practices, water quality and fishery habitat. Under the Idaho Forest Practice Act Rules and Regulations, BMP's in the form of fixed-width SPZ's are mandated for Idaho streams. These requirements, considered minimum standards, may be extended for particular stream segments of concern. Information on SPZ effectiveness determined by design characteristics, e.g. width, vegetation etc. is being compiled. This information will help determine how SPZ's may be designed and used more effectively. A final report is scheduled for early 1992.

2.40 ESTIMATING STREAM CHANNEL STABILITY BASED ON SUBSTRATE SIZE DISTRIBUTIONS AND CHANNEL GEOMETRY

G.H. Belt, UI Forest Resources; Judy Hallisey, Gary Kapesser, USFS

Forest practices which increase streamflow and sedimentation above natural levels may alter channel stability, water quality and impact fishery habitat. The cumulative effects of these practices are reflected in the quantities and sizes of channel substrate materials moved or stored as bedload within the channel. The purpose of this study is to test the utility of the Wolman pebble count procedure as an index of channel stability.

CLASSIFICATION

2.41 STREAM REACH CLASSIFICATION CRITERIA FOR NORTHERN WISCONSIN

G.H. Belt, UI Forest Resources; Theresa Stevens, Dale Higgins, USFS

Identification of stream reaches which respond similarly to management facilitates inventory and analysis of land use impacts, as well as design of channel stabilization and fishery mitigation programs. While a number of morphologically based classification systems are available, they have been developed in other regions and few have been verified extensively in the field. The purpose of this study is to test the applicability of the Rosgen Classification System to conditions in Northern Wisconsin and to identify alternative classification criteria as appropriate.

EDUCATION

2.42 FORESTRY WATER QUALITY EDUCATION

Chris Schnepf, UI CES Kootenai County; Ron Mahoney, UI CES Forest Resources

Extension promotes forestry practices that are both economically and environmentally sound. Approximately 100 employee days are annually devoted to water quality aspects of forestry and woodlot management. Specific programming areas include providing information on: (1) sustainable forest production based on soil and water quality, (2) timber management programs that consider water quality, and (3) erosion control and road building that will minimize soil loss and stream sedimentation.

RANGE MANAGEMENT

2.43 EVAPOTRANSPIRATION FROM SEMI-ARID RANGELAND

G. H. Belt, UI Forest Resources

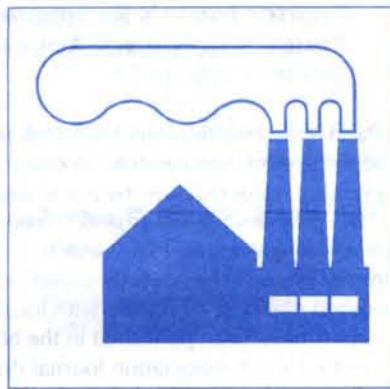
The purpose of this study is to develop an improved model for estimating evapotranspiration (ET) from rangeland in southern Idaho. Approximately 75-85 percent of the 8-20" of average annual precipitation on southern Idaho rangelands is delivered in the form of winter snow and spring rain. During spring and the early summer months the annual charge of soil moisture necessary for forage production is depleted by E.T. Improved estimates of potential E.T. losses would permit better forecasting of forage yields and availability.

WASTE DISPOSAL

2.44 LOCAL MANAGEMENT OPTIONS DEVELOPMENT FOR WOOD LOG YARD WASTE

Edgar O. Hale, Ken W. Lustig, PHD

The Panhandle Health District, in concert with Kootenai County, Idaho, and four wood products mills, have formed a committee to develop management alternatives for log yard woodwaste. These include land application, batch composting and incineration. Several prototype programs have begun utilizing University of Idaho researchers. Preliminary data have been obtained on land application and a final research report is expected in November of 1991. The committee will then draft guidelines for land application based on the report.



GROUNDWATER

2.45 DETERMINATION OF HYDRAULIC AND CHEMICAL PROPERTIES INFLUENCING SUBSURFACE MICROORGANISMS

Tom Ore, Paul Link, ISU Geology; John Welhan, IGS

The purpose of this research is to characterize the hydraulic, mineralogic and textural properties of sediment and basalt cores collected aseptically from the New Production Reactor test hole at the INEL, as part of a DOE program to identify and culture subsurface microorganisms for waste remediation technologies. These data will be used to evaluate the geologic, hydrogeologic and micro-environmental parameters which affect the viability of microbes in a deep basaltic/sedimentary ground water system.

2.46 THE GEOLOGY OF UPLIFTED BASALTIC LAVAS AND SEDIMENTS ON BIG SOUTHERN BUTTE, EASTERN SNAKE RIVER PLAIN, IDAHO

Mike McCurry, ISU Geology; Bill Hackett, Dick Smith, EG&G

The purpose of this project is to improve our understanding of the chemical, mineralogical and structural features of rocks hosting the SRP aquifer system near the INEL. The study focuses on a thick, uplifted flap of upper SRP basalts and sediment interbeds marginal to a silicic laccolith/dome complex about 10 km south of the INEL. Excellent exposures allow for application of traditional geological mapping and geochemical techniques, and are being applied to develop a detailed cross-section of subsurface features only exposed in drill cores elsewhere.

2.47 HYDROGEOCHEMICAL STUDIES OF WELLS OPEN THROUGH LARGE INTERVALS AT THE INEL

Mike McCurry, ISU Geology; John Welhan, IGS

The purpose of this project is to collate an internally consistent data set for injection well and miscellaneous waste injection source history at the ICPP. The principle objectives of this part of the study are to make as accurate, and as complete a record as possible of waste solute mass flux into the vadose and saturated zones at the ICPP, as well as related geochemical and hydrologic data from selected monitoring wells near the ICPP which document the spread of contaminants over time. This work will provide a basis for future straddle-packer-based studies of the hydrochemistry of the groundwater system near the ICPP.

2.48 PREVENTING GROUNDWATER POLLUTION AND OPENING CHANNELS OF COMMUNICATION THROUGH A LOCAL, FACILITATIVE REGULATION

Richard G. Martindale, PHD

The Panhandle Health District has implemented regulations that require fixed facilities that store, use, or handle chemicals (critical materials) to satisfy two needs: chemical reporting and the use of secondary containment systems. Proper chemical reporting facilitates communication between industry and government agencies. Secondary containment of chemicals assures that they do not come into contact with the surface of the ground, or are not otherwise discharged to the Rathdrum Prairie Aquifer.



SURFACE WATER

2.49 ATSDR HEALTH CONSULTATION ON LOWER COEUR D'ALENE RIVER

Ed Javorka, CBIG

At BLM's request, the Agency for Toxic Substances and Disease Registry reviewed and commented on heavy metals contamination on public lands along the lower Coeur d'Alene River system. Existing information and data was reviewed for lead, cadmium, zinc and mercury in sediment, soil, fish, waterfowl and surface water. Observations were made in respect to lead levels in the biota and possible human health hazards, surface water contamination and fish mercury levels. Twelve specific management recommendations were listed, such as restricting public access at one site, more extensive metals monitoring in soils and biota, warning signs and continuing public information programs.

2.50 EUTROPHICATION AND TRACE-ELEMENT CONTAMINATION OF COEUR D'ALENE LAKE, IDAHO

Paul F. Wood, USGS

Coeur d'Alene Lake has been the repository for trace-element-contaminated tailings produced by more than 100 years of mining and ore-processing activities. Large quantities of trace elements and nutrients may be released from the lakebed as the hypolimnion or lakebed sediments become anaerobic, concurrent with ongoing eutrophication. The massive amount of trace elements in the lakebed cannot be physically removed; therefore, the principal means of retaining them is to management eutrophication process to curtail development of anaerobic conditions. This study will employ a nutrient-load/lake-response model to quantify nutrient loads that must be exceeded to prevent anaerobic conditions developing within the lake's hypolimnion, and to determine the availability of sediment-associated trace elements under various physiochemical conditions.

RECREATION



FISHING/BOATING

2.51 NO DISCHARGE PETITION FOR COEUR D'ALENE AND PEND OREILLE LAKES

Ed Javorka, CBIG

The CLCC has formally petitioned the EPA (through DEQ) to reclassify Coeur d'Alene and Pend Oreille Lakes as closed to boat sewage discharge under federal regulations. An exploding large boat population with marine sewage discharge facilities has heightened concern about nutrient loading, sanitation and human health risks. A CLCC analysis of available marine pump-out stations on both lakes was made to support the petition. EPA will respond within 90 days of application receipt; decision will consider whether adequate sewage removal and treatment facilities are available on these lakes.

URBAN/ DOMESTIC



EDUCATION

2.52 DOMESTIC/URBAN WATER QUALITY EDUCATION

Ernestine Porter, UI CES Home Economics; Roy Taylor, Tom Karsky, UI CES Agricultural Engineering

Extension designs water quality programs as needed for urban and domestic target audiences. Projects range from laundry detergent recommendations to safe disposal of household chemicals. In addition, information on water treatment, local sources of water and factors affecting water quality are regularly provided. In 1991 over 100 employee working days were spent on domestic/urban water quality issues. Specific programs include providing: (1) recommendations on laundry detergents that protect water quality, (2) water sampling to determine water quality on a local basis, (3) information on water storage and treatment, (4) information on adverse health effects of poor water quality, (5) information on how to evaluate water sources, (7) information on disposal of waste water, (8) information on proper disposal of hazardous waste, and (9) economic assessments of water use and associated treatment.

HOUSE/LAWN/GARDEN CHEMICAL EDUCATION

Hugh Homan, Gene Carpenter, UI CES Entomology; Bob Mahler, UI CES Soil Science

2.53

House, lawn and garden chemicals can have a significant and large impact on water quality. Extension provides information and materials that relate proper storage, handling and application techniques of household chemicals. Extension programming also provides information on lawn and garden chemicals. Approximately 200 employee days are spent every year providing education on using household, lawn and garden chemicals.

GROUNDWATER

2.54 STORMWATER RUNOFF CONTROL ON THE RATHDRUM PRAIRIE AQUIFER

Jeff Lawlor, PHD

The Panhandle Health District has developed a program to protect the areas "sole source" Rathdrum Aquifer from contamination due to underground injection of storm water runoff. The program involves cooperation between the Idaho Department of Water Resources, the Health District, Kootenai County and three cities located over the aquifer. A draft uniform stormwater management ordinance has been developed which calls for grass infiltration areas to be used for the treatment and disposal of stormwater runoff over the Rathdrum Prairie Aquifer.

2.55 EVALUATION OF RECHARGE FROM PARADISE CREEK TO THE BASALT AQUIFERS AT THE UI

Dale R. Ralston, UI Geology and Geological Engineering

This research is directed toward gaining a better understanding of recharge to basalt aquifers from streams in the Pullman-Moscow Basin by monitoring ground water responses to stream flow in Paradise Creek. The results of this research will be applicable to other sites with similar hydrogeologic conditions within the Columbia Plateau.

SEPTIC TANKS

2.56 INNOVATIVE SUBSURFACE SEWAGE MANAGEMENT: A PROGRAM TO PROTECT IDAHO'S RATHDRUM PRAIRIE SOLE SOURCE AQUIFER

Ken W. Lustig, PHD

Idaho's Panhandle Health District has undertaken a unique septic system management program to protect drinking water supplied by a sole source aquifer. The program combines general regulations and contractual agreements to achieve both environmentally and economically sound sewage waste disposal planning consistent with local needs. Papers have been published in the National Environmental Health Association Journal (Vol. 51, No. 1) and as an EPA Case Study (Wash. DC office of Policy, Planning and Evaluation, EPA).

WASTE DISPOSAL

2.57 GEOLOGIC AND HYDROLOGIC INVESTIGATION OF THE FORT HALL MINE CANYON LANDFILL, BANNOCK COUNTY

Tom Ore, Dave Rodgers, Paul Link, ISU Geology

It has been proposed that the Fort Hall Mine Canyon solid waste landfill site, in operation since 1949 and operated by the City of Pocatello and Bannock County since 1978, be used as a regional landfill. Surface geologic mapping, hydrogeologic evaluation using information from three new monitoring wells, and parameter evaluation of soil cores are being used to determine suitability of the site for extended use and to recommend monitoring procedures.

2.58 SOLID WASTE MANAGEMENT PLAN: PANHANDLE REGION

Edgar O. Hale, Ken W. Lustig, PHD

In July 1990 the State of Idaho Legislature provided limited funding to the Health Districts to create a solid waste plan for the state. The funds were accompanied by a six month deadline for a final report to the legislature. The seven districts responded by agreeing to a format for the plan and utilizing Regional Solid Waste Advisory Committees. A solid waste plan for the region was completed in November of 1990 and collated with plans from other areas to produce the state report to the legislature in January of 1991.

2.59 MODIFICATION OF PHOSPHORUS TRANSPORT THROUGH SOIL MATERIALS

Denny V. Naylor, Steven L. McGeehan, UI Soil Science

Improved methods for waste management are needed to satisfy both development and land use needs while at the same time preserving the integrity of water resources. Requests for land application of P-containing wastes will likely increase in the future. The diverse nature of soils found in Idaho coupled with variable waste materials make permit evaluation a difficult task. This research will identify the specific soil analyses required to accurately evaluate the P treatment capacity of a site, as well as specific solid and waste parameters which facilitate P transport. A comprehensive database identifying soil and waste factors critical to the evaluation of P transport will also be collected.

GENERAL PROGRAMS



PLANNING

2.60 ASSESSMENT OF SEVERITY AND SPATIAL VARIABILITY OF THE 1980'S DROUGHT

Dennis R. Horn, UI Civil Engineering

This research examines the annual streamflow records of a large number of streams in and near Idaho, concentrating on the gages where the records have included the recent drought. Using the flow statistics developed from these records, along with the application of run-theory to the long-term time series at each gage, the study will result in an estimation of return periods applicable to the magnitude of the 1980's drought. The results of this study could be used for future water project planning, evaluating the performance of existing water resources systems, and for developing any future drought-management plans for the state.

2.61 MUNICIPAL GROUND WATER SUPPLY OF THE BOISE, IDAHO AREA: PHASE II- AQUIFER TESTING, LEAKAGE, AQUIFER PARAMETERS, AND PRESSURE LEVELS IN AQUIFERS

Spencer H. Wood, BSU Geology and Geophysics; James Osiensky, UI Geology and Geological Engineering

This research focuses on aquifer testing and water level monitoring to obtain parameters needed to model the system. The results will be a better understanding of aquifer parameters across the system, an evaluation of vertical hydraulic conductivity and leakage parameters, and mapping of ground water levels, and evaluation of the direction and magnitude of ground water flow.

POLICY/ MANAGEMENT

2.62 COEUR D'ALENE BASIN INTERAGENCY GROUP (CBIG) A LOCAL MANAGEMENT OPTION (FORMATION, FUNDING AND AUTHORIZATION) *Ken W. Lustig, PHD; Ed Javorka, CBIG*

The CDA Basin is a vast hydrologic network with ten small lateral lakes off of the main Coeur d'Alene River, plus the St. Joe and other smaller tributaries draining to Lake Coeur d'Alene. This basin has all the inherent problems of cultural nutrient loading complicated by over one hundred years of mine tailings and mining activity. The basin is a mosaic of ownerships and jurisdictional authorities from private through federal. Problem definition not couped through management coordination is futile. The function of the CBIG is to help develop a process in which agencies efforts can be tracked via a timetable and integrated into a management mosaic. Bimonthly meetings of all 23 agencies/jurisdictions takes place in Coeur d'Alene

2.63 TWIN LAKES MANAGEMENT PLAN (DRAFT) IN CONFORMANCE WITH THE CLEAN LAKES COORDINATION COUNCIL (CLCC) *Ed Javorka, CBIG*

Declining water quality in Twin Lakes is perceived to be a significant problem. Residents have become concerned about decreased water clarity, algal blooms, oxygen depletion, lake shallowing and increased aquatic vegetation coverage. This plan is based on the data provided by Falter and Hallock, and on public input obtained through a workshop, agency consultations, lake associations, and a questionnaire. The goal is to improve lake water quality and then maintain it. Plan has received final public review through a public hearing held by CLCC. The final CLCC approved plan goes next to County Commissioners for their approval and implementation.

2.64 HAUSER LAKE MANAGEMENT PLAN (DRAFT) IN CONFORMANCE WITH THE CLEAN LAKES COORDINATION COUNCIL *Ed Javorka, CBIG*

The Hauser Lake Phase I Diagnostic and Feasibility Analysis released in February, 1990 was the first EPA approved Phase I baseline study in north Idaho. Based on data, analysis and recommendations from this effort and subsequent public involvement, a basin-specific lake management plan was developed by the Idaho Clean Lakes Coordinating Council. Through public and agency involvement during 1989-1990, a list of 9 primary issues and concerns was developed. These issues provide the focus for goal setting and specific management recommendations. Public involvement to date supports an aggressive "maintain and improve water quality" direction. • Completion of the plan is anticipated in 1992.

2.65 GIS USED BY PANHANDLE HEALTH DISTRICT TO PROMOTE GROUNDWATER PROTECTION FOR THE RATHDRUM PRAIRIE AQUIFER *Randall Sounhein, PHD*

The Panhandle Health District (PHD) is currently utilizing an ARC/INFO - based GIS to manage and model pertinent land use and groundwater quality information from the Rathdrum Prairie Aquifer and Critical Aquifer Recharge Areas (CARA). • The GIS will be able to produce quick and accurate 1:24000 digital maps of the aquifer, CARA's and surrounding regional area. Furthermore this system will allow PHD officials to inventory and query any data related to groundwater management issues. e.g., wellhead protection, critical materials fixed facility sites, and comprehensive land use planning. PHD has also formed an interagency computer committee. The goals of this committee are to share GIS information and avoid duplication of efforts.

SURFACE WATER

2.66 FINAL BASIN REPORT, UPPER SNAKE RIVER AND TRIBUTARIES *Gareth Clausen, ACE*

This study was authorized under Resolution of the Senate Committee on Public Works adopted March 19, 1954. The purpose was to investigate flood damage reduction, hydropower potential, instream flow, irrigation, and municipal and industrial water supply needs in the Upper Snake River Basin. Numerous reports and studies were done under this authority. The objective of this report will be to summarize the history of Corps of Engineers interim studies conducted under this authority and identify any problems or unmet opportunities within the basin. The report is scheduled for completion in September 1992.

2.67 COEUR D'ALENE BASIN RECLAMATION PROJECT *Al Murrey, Roy Mink, UI IWRRRI; EPA; DEQ*

The purpose of this project is to gather information about the basin area and to identify 1) where additional information is needed, 2) environmental problems in the basin area using this information, 3) problems which can be addressed quickly under existing federal, state, and local authorities using currently available resources, and 4) plan a long-term Basin restoration approach.

2.68 MIDDLE SNAKE RIVER WATER QUALITY STUDY *C.E. Brockway, UI AES Kimberly*

The purpose of this research is to provide additional information and analysis necessary to assess the cumulative impacts of existing and proposed activities on Middle Snake River water quality and beneficial uses. This analysis would permit evaluation of existing agricultural program effectiveness, identification of critical agricultural subbasins contributing pollutants to the river, prioritization of future agricultural water quality projects in this basin, evaluation of hatchery nutrient and solids loadings, and evaluation of proposed hydroelectric projects for 401 certification.

FOR AGENCIES OR ORGANIZATIONS WITH MORE THAN ONE OFFICE/BRANCH, UNLESS INDICATED OTHERWISE, THE MAIN BRANCH IS INDICATED, I.E., BOISE OFFICE FOR STATE AGENCIES, MOSCOW CAMPUS FOR UI.

ACE	U.S. Army Corps of Engineers	IDWR	Idaho Department of Water Resources
AES	Agricultural Experiment Station (UI)	IFB	Idaho Farm Bureau
AES-Lab	Analytical Services Lab (UI)	IRSUSFS	Intermountain Research Station
ARS	Agricultural Research Service	IGS	Idaho Geological Survey
ASCS	Agricultural Stabilization and Conservation Service	ISCC	Idaho Soil Conservation Commission
ARS	Agricultural Research Service	ISU	Idaho State University
BIA	Bureau of Indian Affairs	IWRRRI	Idaho Water Resources Research Institute (UI)
BLM	U.S. Bureau of Land Management	NCHD	North Central Health District
BSU	Boise State University	PAG	Policy Analysis Group, College of Forestry, Wildlife, and Range Sciences (IU)
CBIG	Coeur d'Alene Basin Interagency Group	PHD	Panhandle Health District
CES	Cooperative Extension System (UI)	PSES	Department of Plant, Soil, and Entomological Sciences (UI)
CLCC	Clean Lakes Coordinating Council	RD	Ranger District
DEQ	Division of Environmental Quality (Idaho)	SCC	Soil Conservation Commission (Idaho)
DOT	Department of Transportation (Idaho)	SCS	Soil Conservation Service
EPA	U.S. Environmental Protection Agency	SDHD	Southeast Health District
EGG	EG&G Idaho, Inc	SRC	Spokane Research Center, USBM
HD	Health District (Idaho)	SWCD	Soil and Water Conservation District
HWC	UI Center for Hazardous Waste Remediation Research	UI	University of Idaho
IDA	Idaho Department of Agriculture	USBM	United States Bureau of Mines
IDE	Idaho Department of Education	USBR	United States Bureau of Reclamation
IDEQ	Idaho Division of Environmental Quality	USDA	United States Department of Agriculture
IDFG	Idaho Department of Fish and Game	USFS	United States Forest Service
IDHW	Idaho Department of Health and Welfare	USGS	United States Geological Survey
IDL	Idaho Department of Lands	WQB	Water Quality Bureau
IDPR	Idaho Department of Parks and Recreation	WRD	Water Resources Division
IDOT	Idaho Department of Transportation		

IDAHO WATER PROJECT UPDATE

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FALL SUPPLEMENTAL ISSUE 1991

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