SOUTH FEATHER
WATER & POWER

30 January 2004

Stanley M. Martinson, Chief
State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812-0100

Subject: South Feather Water & Power Agency Request for Administrative Extension
Statewide General Permit No. CAG 990003, Aquatic Pesticides General Permit

Dear Mr. Martinson:

South Feather Water & Power Agency ("SFWP" or "Agency") requests that General Permit No. CAG 990003, Aquatic Pesticides General Permit, issued to SFWP on 10 September 2001, be administratively extended beyond its current expiration date of 31 January 2004. This request is made pursuant to Title 23 California Code of Regulations Section 2235.4 "Continuation of Expired Permits" which provides that "the terms and conditions of an expired permit are automatically continued pending issuance of a new permit if all requirements of the federal NPDES regulations on continuation of expired permits are complied with."

We understand that the State Water Resources Control Board is working on the development of a new statewide general permit for the application of aquatic pesticides. In the event that the State Water Resources Control Board is prepared to seek from agencies such as SFWP notice of intent to comply with the terms of the new statewide permit, then SFWP, by this letter, gives such notice of intent.

Water quality standards for receiving waters that may be affected by the application of aquatic pesticides are generally established by the California Toxics Rule (CTR). SFWP believes that its Monitoring Plan / Quality Assurance Project Plan, which outline the Agency's aquatic pesticide application and monitoring protocol, will result in SFWP meeting water quality standards for receiving waters; however, in the unlikely event that a water quality exceedance does occur, SFWP requests categorical exception to the CTR pursuant to the Surface/Inland Waters Plan (SIP). This position is supported based upon analysis in our Initial Study, as filed with the State Clearinghouse in accordance with the California Environmental Quality Act, and closure of the required review period with no comments received. Subsequently at their meeting on 27 January, the SFWP Board of Directors approved and adopted the Negative Declaration. Copies of the Initial Study, Negative Declaration, and Notice of Determination (as recorded) are enclosed.

Additional documents (enclosed) that support the Agency's application for categorical exception to the SIP include the Agency's: (1) Monitoring Plan/Quality Assurance Project Plan for Aquatic Herbicide Applications Program, dated 12 April 2002, (2) Changes to Aquatic Pesticide Application Program and Monitoring Plan, dated 28 April 2003, (3) Changes to Pesticide Application Methods and Monitoring Plan for General Aquatic Pesticides NPDES Permit – Butte County, dated 9 May 2003 by the Region 5 Water Quality Control Board, and (4) current SFWP Aquatic Herbicide Applications Program Study Area Map.

Please let me know if you agree that SFWP has fully complied with the application requirements for a new aquatic pesticides general permit, including a request for a categorical exception.

Sincerely,
SOUTH FEATHER WATER & POWER

Tom Venus, PE
Environmental & Safety Compliance Officer

Enclosures: Initial Study and Notice of Determination for Adoption of Negative Declaration
Monitoring Plan/Quality Assurance Project Plan (4/12/2002)
Changes to Aquatic Pesticide Application Program and Monitoring Plan (OWID, 4/28/2003)
Changes to Pesticide Application Methods and Monitoring Plan for General Aquatic Pesticides NPDES Permit – Butte County (RWQCB, 5/9/2003)
SFWP Aquatic Herbicide Applications Program Study Area Map

c: Michael Glaze, General Manager
Kathryn Petersen, Power Division Manager
Bryan Smith, Region 5 Water Quality Control Board

SOUTH FEATHER
WATER & POWER

NOTICE OF DETERMINATION

To: County Clerk
County of Butte
25 County Center Dr.
Oroville, CA 95965

From: South Feather Water and Power Agency
P.O. Box 581
Oroville, CA 95965

PROJECT TITLE: Miners Ranch Conduit Aquatic Herbicide Program SCH#: 2003122132

CONTACT PERSON: Tom Venus, Environmental & Safety Compliance Officer (530-533-4578)

PROJECT LOCATION: Miners Ranch Conduit, located on the southern bank of the South Fork Feather River arm of Lake Oroville, in Sections 1 and 2, T19N, R5E; Sections 5 and 6, T19N, R6E; and Sections 32 and 33, T20N, R6E; and Miners Ranch Reservoir in Section 18, T19N, R5E, Butte County, California

PROJECT DESCRIPTION: South Feather Water and Power Agency intends to apply for an exception under the State Water Resources Control Board's proposed General NPDES Permit for aquatic pesticide applications in order to use a copper-based aquatic pesticide.

This is to advise that the SOUTH FEATHER WATER AND POWER AGENCY approved the above-described project on January 27, 2004, after complying with CEQA, and has made the following determinations regarding the above-described project:

1. The project will not have a significant effect on the environment.
2. A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
   The Negative Declaration and record of project approval may be examined at the Agency's office at 2310 Oro-Quincy Hwy., Oroville, California.
3. Mitigation measures were not made a condition of the approval of the project.
4. A Statement of Overriding Considerations was not adopted for this project.

January 30, 2004
Date

Michael Glaze, General Manager
South Feather Water and Power Agency

SOUTH FEATHER
WATER & POWER

NOTICE OF PREPARATION OF NEGATIVE DECLARATION

PROJECT TITLE: Miners Ranch Conduit Aquatic Herbicide Program

PROJECT LOCATION: Miners Ranch Conduit, located on the southern bank of the South Fork Feather River arm of Lake Oroville, in Sections 1 and 2, T19N, R5E; Sections 5 and 6, T19N, R6E; and Sections 32 and 33, T20N, R6E; and Miners Ranch Reservoir in Section 18, T19N, R5E, Butte County, California.

PROJECT DESCRIPTION: South Feather Water and Power Agency proposes to apply for an exception under the State Water Resources Control Board's new General NPDES permits for aquatic pesticide applications in order to use a copper-based aquatic pesticide. The aquatic pesticide is applied to the upstream end of Miners Ranch Conduit, where it exits Ponderosa Tunnel, in order to control vegetation growth throughout the length of the conduit. The water in Miners Ranch Conduit flows approximately 10.5 miles to Miners Ranch Reservoir, where the Agency's Miners Ranch Treatment Plant withdraws water for treatment and distribution to domestic customers, and where the Bangor Canal outlet releases water to irrigation and domestic customers, and where the Kelly Ridge Power Tunnel and Penstock (2.4 miles combined) releases water through the Kelly Ridge Powerhouse to the Feather River below the Oroville Dam.

Pursuant to the CEQA Guidelines adopted by the South Feather Water and Power Agency, a Proposed Negative Declaration on the above named project has been prepared and is available for review at the Agency's main office complex located at 2310 Oro-Quincy Highway, Oroville, California.

Final adoption of the Negative Declaration will be considered at the Agency Board of Directors' Regular Meeting, Tuesday, January 27, 2004, commencing at 2:00 P.M. at 2310 Oro-Quincy Highway, Oroville, California.

Any appeals to this action may be made to the Agency in writing at any time prior to said Board meeting, or verbally during said Board meeting.

Mailing Address: Board Secretary
South Feather Water and Power Agency
P.O. Box 581
Oroville, CA 95965-0581

INITIAL STUDY

ENVIRONMENTAL CHECKLIST FORM

1. **PROJECT TITLE**: Miners Ranch Conduit Aquatic Herbicide Program

2. **LEAD AGENCY**: South Feather Water and Power Agency
   P.O. Box 581
   Oroville, CA 95965

3. **CONTACT PERSON**: Tom Venus, Environmental & Safety Compliance Officer
   530-533-4578

4. **PROJECT LOCATION**: Miners Ranch Conduit, located on the southern bank of the South Fork Feather River arm of Lake Oroville, in Sections 1 and 2, T19N, R5E; Sections 5 and 6, T19N, R6E; and Sections 32 and 33, T20N, R6E; and Miners Ranch Reservoir in Section 18, T19N, R5E, Butte County, California

5. **PROJECT SPONSOR**: South Feather Water and Power Agency

6. **GENERAL PLAN DESIGNATION**: Timber Mountain (TM), Agricultural Residential (AR)

7. **ZONING**: Unclassified (U)

8. **DESCRIPTION OF PROJECT** – South Feather Water and Power Agency proposes to apply for an exception under the State Water Resources Control Board's new General NPDES permits for aquatic pesticide applications in order to use a copper-based aquatic pesticide. The aquatic pesticide is applied to the upstream end of Miners Ranch Conduit, where it exits Ponderosa Tunnel, in order to control vegetation growth throughout the length of the conduit. The water in Miners Ranch Conduit flows approximately 10.5 miles to Miners Ranch Reservoir, where the Agency's Miners Ranch Treatment Plant withdraws water for treatment and distribution to domestic customers, and where the Bangor Canal outlet releases water to irrigation and domestic customers, and where the Kelly Ridge Power Tunnel and Penstock (2.4 miles combined) releases water through the Kelly Ridge Powerhouse to the Feather River below the Oroville Dam.

9. **SURROUNDING LAND USES AND SETTING** – Miners Ranch Conduit is located in the foothills of the northern Sierra Nevada Mountains, on the southern bank of the South Fork Feather River arm of Lake Oroville in Butte County, California. Miners Ranch Reservoir is located immediately south of the Bidwell Canyon Saddle Dam on Lake Oroville. Miners Ranch Conduit is located in the foothill zone at elevations of less than 1,000 ft, with vegetation generally dominated by Blue Oak, often with gray pine as a sub- or co-dominant, and an understory of various grasses, forbs, and shrubs such as ceanothus, manzanita, and chaparral coffeeberry. Terrestrial wildlife observed in the area includes deer and coyote. Vegetation in the area of Miners Ranch Reservoir includes bunchgrasses, deergrass, foxtail chess, wild oat, bent grass, buckbrush, scrub oak and poison oak.

Avian species include Canadian geese, various species of ducks, quail, ravens, vultures, flickers, meadowlark and killdeer.

10. **OTHER AGENCIES WHOSE APPROVAL IS REQUIRED** (e.g., permits, financing approval, or participation agreement): State Water Resources Control Board and Regional Water Quality Control Board – Central Valley Region.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

☐ Aesthetics	☐ Agricultural Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology and Soils
☐ Hazards & Hazardous Materials	☐ Hydrology and Water Quality	☐ Land Use and Planning
☐ Mineral Resources	☐ Noise	☐ Population and Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities and Service Systems	☐ Mandatory Findings of Significance	

DETERMINATION

On the basis of this initial evaluation:

☒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Michael Glaze, General Manager
South Feather Water and Power Agency

12.23.03
Date

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is provided for all answers except "No Impact" answers that are adequately supported by the information sources cited in the parentheses following each question. Explanations may be provided following each question or at the end of this evaluation.

2) All answers take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) When it has been determined that a particular physical impact may occur, the checklist answers will indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" will be designated if there is substantial evidence that an effect may be significant.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock out-croppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Comments:

The Miners Ranch Conduit is visible by boaters on the South Fork Feather River arm of Lake Oroville. However, it has been part of the existing landscape for 40 years, and the process of adding aquatic herbicides to the flowing water within the conduit will not alter its aesthetic character.

II. AGRICULTURAL RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agricultural and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland, to non-agricultural use?	☐	☐	☐	☒

Comments:
There is no agricultural usage of lands near the work location.

III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒

Comments:
Introduction of an aquatic pesticide to the flowing water within Miners Ranch Conduit will not affect air quality in the project area.

IV. BIOLOGICAL RESOURCES. Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

Comments:

The purpose of the aquatic pesticide program is to limit the growth of invasive moss and algae species within the Miners Ranch Conduit. Therefore, while the program will have an effect on biological resources, it is a desirable effect.

V. CULTURAL RESOURCES. Would the project:

a) Cause substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Comments:

There are no cultural resource issues or impacts associated with the project.

VI. GEOLOGY AND SOILS. Would the project:

a) Expose people or structures to potential substantial adverse effect, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Involve unstable areas, or areas that would become unstable as a result of the project, and potentially result in or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒

Comments:
Use of an aquatic pesticide will not create an impact on geology and soils.

VII. HAZARDS AND HAZARDOUS MATERIALS.
Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact

Comments:

The pesticide(s) used could create a hazard if released accidentally in significant quantities. However, South Feather Water and Power Agency's employees are trained in how to properly transport and handle the pesticides used in order to minimize the possibility of release.

VIII. HYDROLOGY AND WATER QUALITY. Would the project:					
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site?	☐	☐	☐	☒
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site?	☐	☐	☐	☒
e)	Create or contribute runoff water which would exceed the capacity of existing or planned storm-water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f)	Otherwise substantially degrade water quality?	☐	☐	☐	☒
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Comments:

Because the project involves introduction of aquatic pesticide(s) into the flowing water in Miners Ranch Conduit, which subsequently flows into Miners Ranch Reservoir, a source of domestic and irrigation water to South Feather Water and Power Agency's customers, it is possible that water quality standards could be violated. The Agency's release and monitoring processes are designed to ensure that no such violation will occur.

IX. LAND USE AND PLANNING. Would the project:

a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Comments:

The project will have no impact on land use and planning.

X. MINERAL RESOURCES. Would the project:

a) Result in the loss of availability of a known region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Comments:

There are no mineral resources associated with the project.

XI. NOISE. Would the project result in:

a) Exposure of persons to or generations of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generations of excessive ground-borne vibration on ground-borne noise levels?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project are to excessive noise levels?	☐	☐	☐	☒

Comments:
The project will not affect noise levels in the area.

XII. POPULATION AND HOUSING. Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension or roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Comments:
The project will have no impact on population or housing.

XIII. PUBLIC SERVICES

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact

Comments:
The proposed project would have no impact on public services.

XIV. RECREATION

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒
c) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Comments:
The proposed project will have no impact on recreation.

XV. TRANSPORTATION/TRAFFIC. Would the project:

a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ration on roads, or congestion at intersections)?	☐	☐	☐	☒
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantial increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Result in inadequate parking capacity?	☐	☐	☐	☒

Comments:
The proposed project will not impact transportation systems or traffic.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI.UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Comments:

There are no utility or service systems issues or impacts associated with the project.

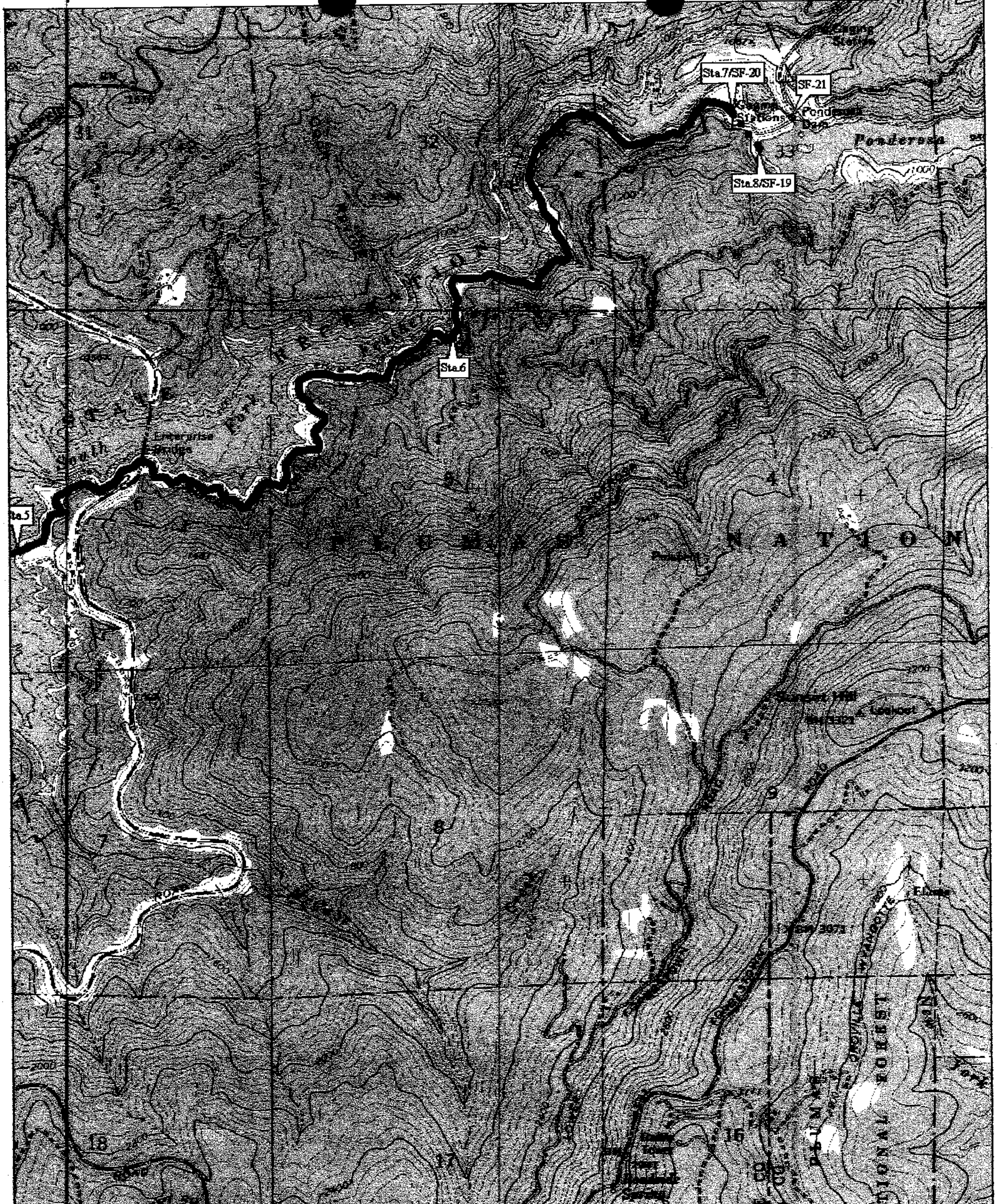
XVII.MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major period of California history or prehistory?	☐	☐	☐	☒

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Comments:

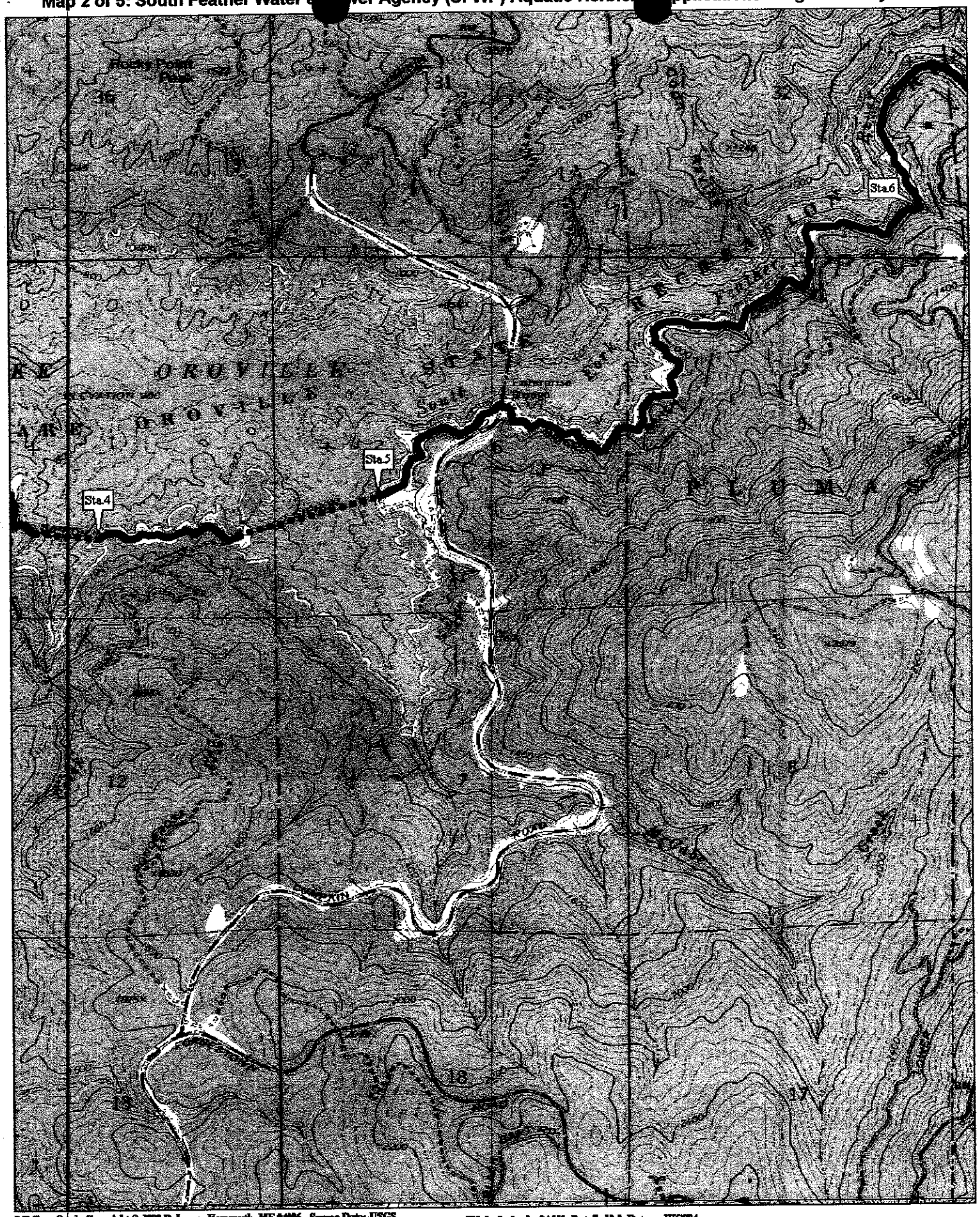
The use of aquatic pesticide(s) has the potential to cause adverse health effects to the employees who handle the material. Appropriate training will be provided to all employees who handle the pesticide(s), and all employees will be provided with the appropriate personal protective equipment, where engineering controls to prevent contact with or inhalation of harmful substances are not sufficient.

Map 1 of 5: South Feather Water & Power Agency (SFWP) Aquatic Herbicide Applications Program Study Area

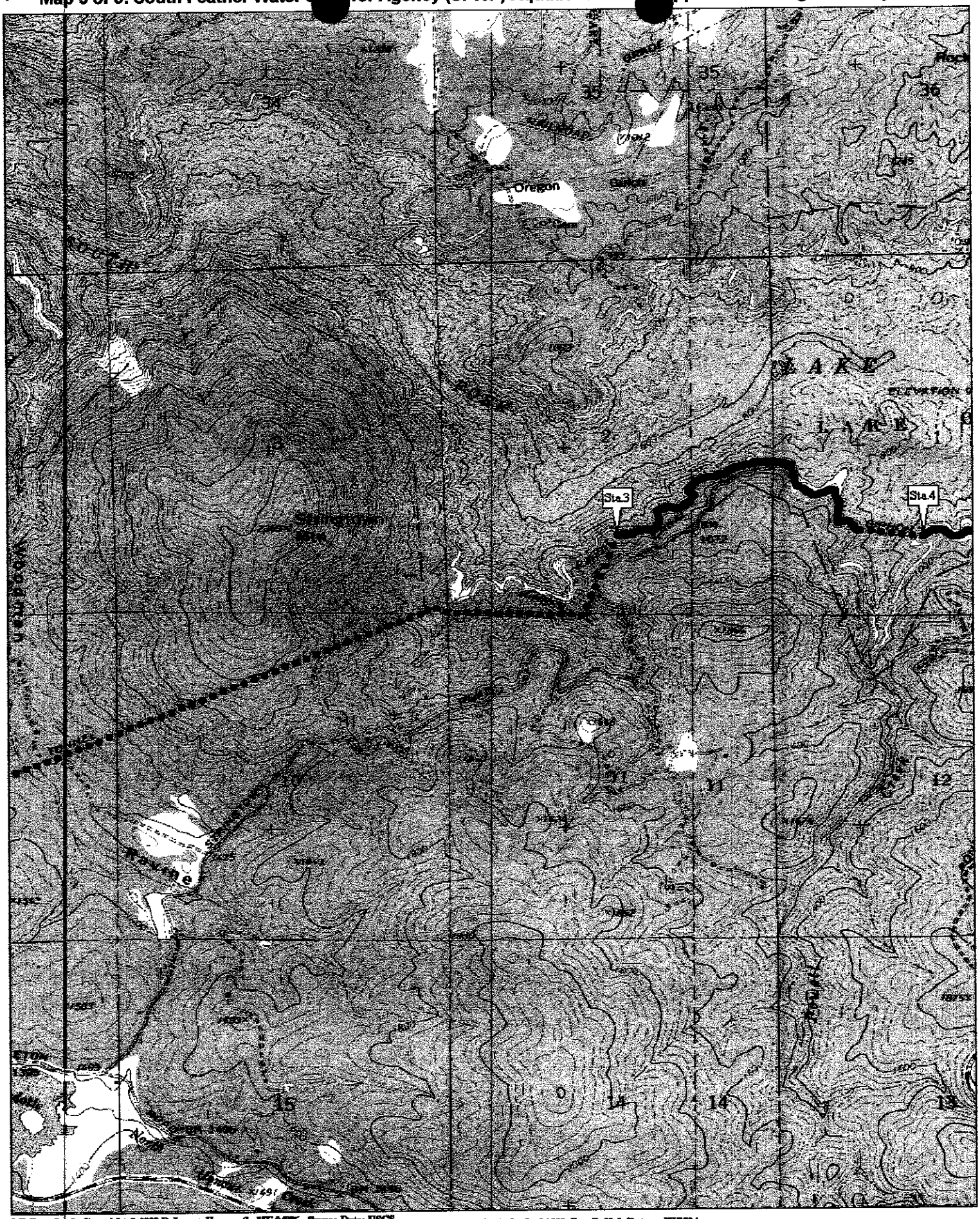


3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 700 ft Scale: 1 : 24,000 Detail: 13-0 Datum: WGS84

Map 2 of 5: South Feather Water & Power Agency (SFWP) Aquatic Herbicide Applications Program Study Area

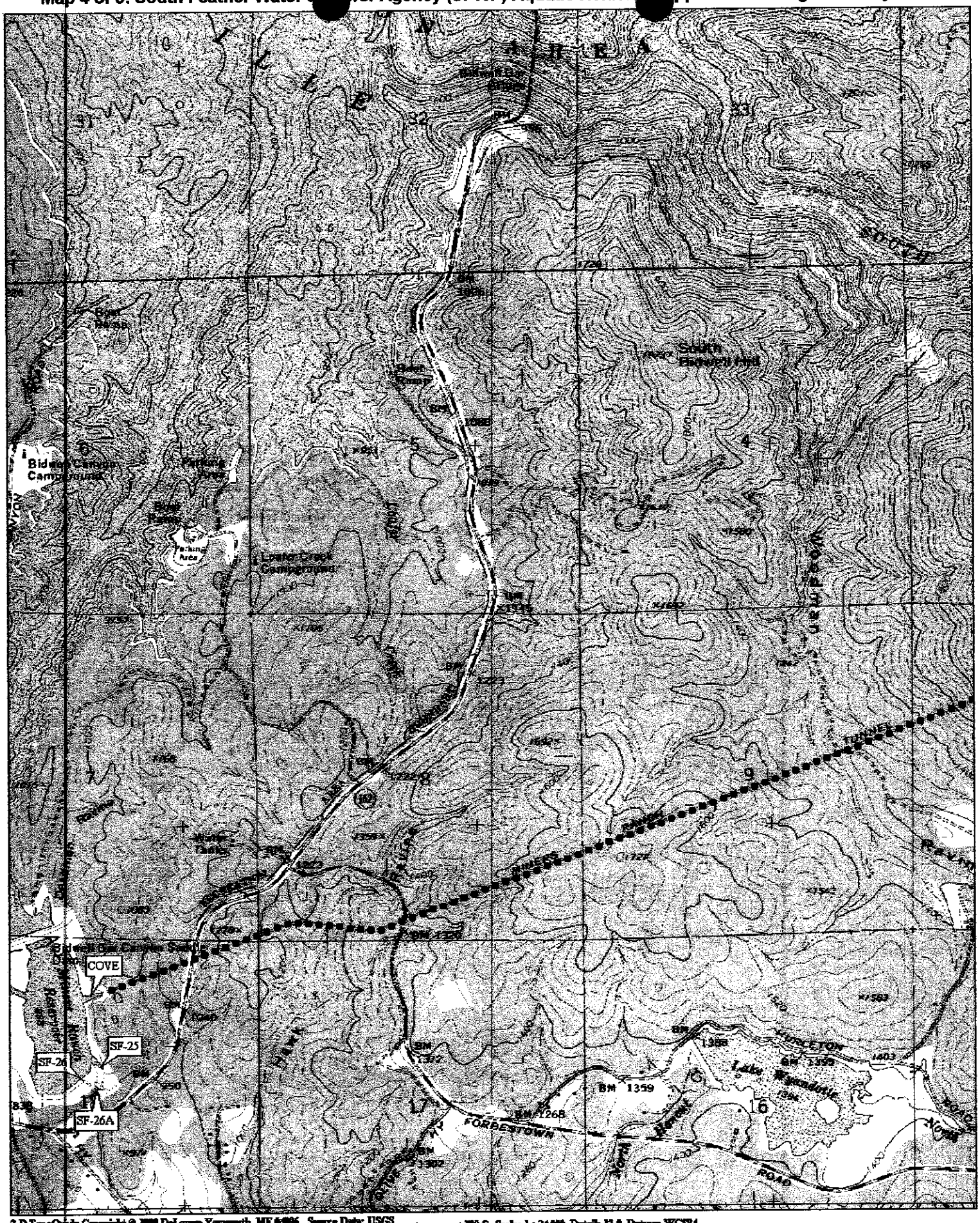


Map 3 of 5: South Feather Water & [redacted]wer Agency (SFWP) Aquatic Herbici[redacted]pplications Program Study Area



 700 ft Scale: 1 : 24,000 Detail: 13-0 Datum: WGS84

Map 4 of 5: South Feather Water & Power Agency (SFWP) Aquatic Herbicide Applications Program Study Area



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California Regional Water Quality Control Board
Central Valley Region
Robert Schneider, Chair

Winston H. Hickox
Secretary for Environmental Protection

Redding Branch Office
Internet Address: http://www.swrcb.ca.gov/rwqcb5
415 Knollcrest Drive, Suite 100, Redding, California 96002
Phone (530) 224-4845 • FAX (530) 224-4857

Gray Davis
Governor

9 May 2003

Tom Venus, P.E.
Oroville-Wyandotte Irrigation District
P.O. Box 581
Oroville, CA 95965

CHANGES TO PESTICIDE APPLICATION METHODS AND MONITORING PLAN FOR GENERAL AQUATIC PESTICIDES NPDES PERMIT – BUTTE COUNTY

We have reviewed your letter, dated 28 April 2003, regarding changes to your pesticide application methods and monitoring program. In consideration of your letter, and subsequent verbal communications, we have the following comments.

We understand that your current stock of copper sulfate pesticide is no longer suitable for use in your previously-used hopper delivery mechanism. While your interim use of the "drag method" for applying the pesticide in Miners Ranch Canal appears to be in accordance with the pesticide label, it does pose a greater threat to downstream water quality due to the much greater mass loading rate that will occur in Miners Ranch Reservoir. On an application day, the mass of copper introduced to the reservoir will be twelve times higher than with your previous practice. One of the goals of the Aquatic Pesticide program is to implement best management practices to minimize or eliminate negative impacts to the receiving water. Your new application method is not consistent with this goal. However, you have stated that this method will only be used for the current application season, until an automated liquid application method can be implemented. We expect that the liquid application method will be similar to the hopper delivery method and will result in similar copper mass loading rates and concentrations. Therefore, for the current application season, we do not object to the changes you outlined in your 28 April 2003 letter, with the following modifications, additions, and clarifications.

- Collect and analyze a water sample for dissolved copper concentration from the Miners Ranch Reservoir "cove" into which the Miners Ranch Canal tunnel discharges. This sample should be collected within 30 minutes after the tail end of the canal copper plume is estimated to have discharged into the reservoir. This sample should be collected once, during your next application.

- Water samples from the water treatment plant intake should be collected approximately 24 hours following the expected arrival of the copper plume into the reservoir.

MAY 13 2003

- Visual observations of the reservoir should be made and recorded following a copper treatment in the canal. The observations should include the presence or absence of dead fish or other aquatic life, discoloration, foam, odor, etc.

- If analytical results indicate that copper is present at a dissolved concentration greater than or equal to 2.5 micrograms per liter (ug/L) in water collected at the treatment plant, then the Regional Board shall immediately be notified and additional sampling to be determined at that time shall occur.

If you have any questions, please contact the undersigned at (530) 226-3425 or at the letterhead address above.

Bryan J. Smith, P.E.
Associate Water Resources Control Engineer

BJS:rt

OROVILLE-WYANDOTTE IRRIGATION DISTRICT

WATER and HYDROPOWER

2310 Oro Quincy Highway
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Oroville, CA 95965-0581
Voice: 530-533-4578, ext. 215
FAX: 530-533-9700
Tvenus@owid.com

Tom Venus, PE
Environmental & Safety
Compliance Officer

28 April 2003

Mr. Brian Smith, PE
Associate Water Resources Control Engineer
Regional Water Quality Control Board – Central Valley Region
415 Knollcrest Drive, Suite 100
Redding, California 96002

Subject: Changes to Aquatic Pesticide Application Program and Monitoring Plan
NPDES General Permit No. CAG990003

Dear Brian:

The purpose of this letter is to follow-up in writing our telephone conversation of 17 April 2003. During this conversation we discussed the changes that Oroville-Wyandotte Irrigation District (OWID) has had to make to its aquatic pesticide application program. We also discussed the ways said changes impact compliance monitoring, as currently specified in the *Monitoring Plan / Quality Assurance Project Plan for Aquatic Herbicide Applications Program, General Permit No. CAG990003* (OWID, rev. 12 April 2002).

As you may recall, OWID finds beneficial the use of Griffin Blue Viking Copper Sulfate Crystal (Copper Sulfate Penthydrate, 25.2% metallic copper equivalent, EPA Registration No.1812-374) for the control of filamentatious (mat-forming green) algae in the Miners Ranch Canal. Unfortunately, we have found that a large percentage of our existing stock is no longer in loose, crystalline form but contains hardened lumps. These hardened lumps will no longer pass through our mechanical feeder. Manually breaking up the hardened lumps presents an undesirable hazard to staff. Therefore for the coming year we have decided to change the method of application and dosage duration due to engineering, administrative, and personnel safety reasons.

As discussed, Bluestone will still be applied at the headworks of the Miners Ranch Canal (Station 7), but via a perforated, stainless-steel container immersed in the flowing water of the canal. The application device has been designed to dissolve bluestone at a dosage rate of 50 pounds (one sack) over a period of 30 minutes. For effective treatment, 300 pounds of bluestone applied uniformly over an extended contact time of three hours duration in a typical set flow of 270 – 280 cubic feet per second (cfs) will yield an average metallic copper concentration of 0.42 – 0.40 mg/l (milligrams per liter), respectively, which is within the range of 0.27 – 0.54 mg/l specified on the pesticide label. It is anticipated that this dosage rate and duration will more effectively control the targeted aquatic pest, while ultimately requiring fewer treatments and less bluestone over a season than in past years. Bluestone dosage calculations for the Miners Ranch Canal are enclosed.

Based on the above changes to the application methodology, we then discussed the following changes to the monitoring plan. Our comments to the proposed changes are included.

- We decided that there was no further need for Event No.1 pre-season sampling from any station, or from Station 8 during subsequent treatment season monitoring events as OWID showed in 2002 that the background concentrations of dissolved copper are below the detection limit of 2.0 µg/l (micrograms per liter). OWID is in agreement with this proposed change, understanding that the pre-season monitoring event and Station 8 samples during the treatment season were essentially for our benefit.

- Reduce the number of monitoring events during the treatment season from three to two. OWID is in agreement with this proposed change, understanding that the two events should be representative of conditions during the treatment season.

- During each of the two treatment season monitoring events, samples would be collected from Station 2 and Station 3 (i.e., 3A, 3B, 3C) in accordance with the current monitoring plan (OWID, rev. 04/12/02), as well as from some intermediate location downstream from Station 7 but upstream of Station 6. As OWID understands, the best location would be where it's believed that the chemical has completely dissolved and the concentration homogeneously uniform across the entire canal cross-section. To accurately calculate this location would seem quite difficult, having to consider such factors as chemical solubility, dispersion, diffusion, mixing through laminar/turbulent flow conditions, etc. As OWID feels uncomfortable with attempting to calculate accurately this location we feel the point of compliance should be the Station 6 Sand Trap/Waste Gate. This is the first location downstream of the point of application that might conceivably release treated water in an emergency.

- All other requirements of the current *Monitoring Plan* would remain in effect.

The Oroville-Wyandotte Irrigation District trusts that the information and counter-proposal provided meets with your satisfaction. The favor of a written approval would be appreciated. However, should you have any questions or concerns, please do not hesitate to contact me at (530) 533-4578.

Sincerely,
OROVILLE-WYANDOTTE IRRIGATION DISTRICT

Tom Venus, PE
Environmental & Safety Compliance Officer

Enclosure

cc: Mr. Michael Glaze, General Manager

Bluestone Dosage Calculations for Miners Ranch Canal

Given:

270 - 280 cfs	MRC flow range (typ.) during treatment season.
25.2%	Metallic Copper equivalent in Copper Sulfate Pentahydrate (Griffin LLC Blue Viking Copper Sulfate Crystal).
0.27 - 0.54 ppm	Pesticide label's recommended copper concentration range for treatment of filamentatious (mat-forming green) algae in water 60° F and above. Note - Larger quantities (sic) required for treatment in hard or flowing water.
3 hours	Minimum effective contact time

Calculations:

At 270 cfs, what is maximum no. of pounds $CuSO_4 \cdot 5H_2O$ that can be applied over 3 hours to yield an average Cu concentration of no more than 0.54 ppm?

$$\frac{270\ ft^3_w}{sec} \left| \frac{60\ sec}{min} \right| \frac{60\ min}{hr} \left| \frac{3\ hrs}{} \right| \frac{62.4\ \#_w}{ft^3_w} \left| \frac{0.54 \times 10^{-6}\ \#_{Cu}}{\#_w} \right| \frac{\#\ CuSO_4 \cdot 5H_2O}{0.252\ \#_{Cu}}$$

$$= \underline{390\ \#\ CuSO_4 \cdot 5H_2O}$$ (maximum dosage for low-flow conditions)

At 280 cfs, what is minimum no. of pounds $CuSO_4 \cdot 5H_2O$ that can be applied over 3 hours to yield an average Cu concentration of at least 0.27 ppm?

$$\frac{280\ ft^3_w}{sec} \left| \frac{60\ sec}{min} \right| \frac{60\ min}{hr} \left| \frac{3\ hrs}{} \right| \frac{62.4\ \#_w}{ft^3_w} \left| \frac{0.27 \times 10^{-6}\ \#_{Cu}}{\#_w} \right| \frac{\#\ CuSO_4 \cdot 5H_2O}{0.252\ \#_{Cu}}$$

$$= \underline{202\ \#\ CuSO_4 \cdot 5H_2O}$$ (minimum dosage for high-flow conditions)

Conclusion

Dosage of 300 # Bluestone (six 50 # sacks) applied uniformly over 3 hour treatment period into MRC flow set between 270-280 cfs will yield average metallic copper concentration within allowable range specified on pesticide label.

Thomas O. Venus
Env. & Safety Comp. Officer
Oroville-Wyandotte Irr. Dist.

MONITORING PLAN /
QUALITY ASSURANCE PROJECT PLAN
FOR
AQUATIC HERBICIDE APPLICATIONS PROGRAM
GENERAL PERMIT NO. CAG990003

11 March 2002

Revised 12 April 2002

OROVILLE-WYANDOTTE IRRIGATION DISTRICT
2310 Oro-Quincy Highway
Oroville, California 95965-0581

Approval Page

The staff of Oroville-Wyandotte Irrigation District (OWID) prepared this Monitoring Plan/Quality Assurance Project Plan for Aquatic Herbicide Applications Program. This document provides a description of the District's aquatic herbicide applications program, monitoring objectives, and a common framework of quality assurance practices to be followed for this water-quality monitoring project. OWID staff will periodically review this document. OWID staff may periodically revise this document as necessary to update analytical procedures and/or program information. The OWID Environmental & Safety Compliance Officer, serving in the capacity of Technical Project Manager/Project Quality Assurance Manager, must approve all revisions of this Monitoring Plan.

Tom Venus, PE
OWID Environmental & Safety Compliance Officer

04/12/02
Date

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Dennis Wilson, California Regional Water Quality Control Board – Central Valley Region
Tom Venus, Oroville-Wyandotte Irrigation District – District Headquarters
Jim Coffelt, Oroville-Wyandotte Irrigation District – Miners Ranch Treatment Plant

Section 1: Introduction

1.1 Background

Located 70 miles north of Sacramento in Butte County, California, Oroville-Wyandotte Irrigation District (OWID) was formed in 1919 as an irrigation water purveyor. With an elected five-member board of directors and over 60 employees, OWID is an efficient, cost-effective, and service-oriented water agency. The District supplies water for domestic and agricultural uses, produces electricity, and provides recreational facilities for the public.

OWID finds beneficial the use of certain non-restricted use pesticides in the management of its facilities. OWID is committed to the safe use of these pesticides in conformance with all applicable laws and regulations governing protection of employee health and safety, public welfare, and the environment. OWID has a written Herbicide Applications Program, implemented to satisfy regulatory requirements of California Department of Pesticide Regulation (DPR) and California Division of Occupational Safety & Health (DOSH, also referred to as Cal-OSHA). A component of this program is the application of an aquatic herbicide into one of the District's canals. OWID's aquatic herbicide applications program is described further in Section 2 of this document.

On 12 March 2001, the U.S. Ninth Circuit Court of Appeals ruled in the *Talent Decision* that discharges of pollutants from the use of aquatic pesticides to waters of the U.S. require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. On 19 July 2001, the California State Water Resources Control Board (SWRCB) adopted Water Quality Order No. 2001-12-DWQ. This order adopted NPDES General Permit No. CAG990003. A copy of this permit is provided in Appendix A.

To qualify for coverage under this General Permit, dischargers must meet the following criteria:

- The discharger must submit a fully completed Notice of Intent (NOI), a project map, and first annual fee.
- The discharger must be a public entity.
- Dischargers must be licensed by either the DPR or California Department of Health Services (DHS), if such licensing is required for such public entities, to apply aquatic pesticides.

OWID has satisfied all three of the above criteria and qualifies for coverage under this General Permit. A copy of the District's NOI application package is provided in Appendix B.

1.2 Objectives

The objective of this Monitoring Plan/Quality Assurance Project Plan is to document compliance with General Permit requirements. The basic requirements of the General Permit include the following:

- The discharger must follow all pesticide label instructions and any Use Permits issued by a County Agricultural Commissioner.
- The discharger must implement Best Management Practices (BMPs).
- The discharger must comply with monitoring requirements.

The format of this Monitoring Plan/Quality Assurance Project Plan is specifically organized to meet the requirements contained in the General Permit.

- Section 2 describes OWID's aquatic herbicide applications program.
- Section 3 describes some of OWID's program safeguards, including analysis of potential impacts, evaluation of alternatives, and BMPs.
- Section 4 describes water quality monitoring tasks proposed to comply with the General Permit.
- Section 5 describes the various reports this plan impacts.

1.3 Project Roles and Responsibilities

Several different agencies have become involved with OWID's aquatic herbicide applications program following the *Talent Decision*. The names and affiliations, along with relevant roles and responsibilities, of the individuals or agencies now involved with OWID's aquatic herbicide applications program are summarized in Table 1.

1.4 Project Schedule

General Permit No. CAG990003 identifies several key dates contained within Water Quality Order No. 2001-12-DWQ. A project schedule including these key dates within the context of OWID's aquatic herbicide applications program is exhibited as Figure 1.

Section 2: Herbicide Applications Program

2.1 Aquatic Herbicide

OWID finds beneficial the use of a registered aquatic herbicide containing elemental copper to effectively control and limit the growth of moss and algae in its Miners Ranch Canal. OWID has used copper sulfate (also known as 'Bluestone') as its aquatic herbicide of choice for at least 20 years. The product currently in use by OWID is called Blue Viking Copper Sulfate Crystal (EPA Registration No. 1812-374). Manufactured by Griffin LLC of Valdosta, Georgia, it contains 99.0 percent Copper Sulfate Pentahydrate (25.2 percent metallic copper equivalent) and 1.0 percent inert ingredients (unlisted). A copy of the pesticide label for this product is provided in Appendix C.

2.2 Application Area

The Miners Ranch Canal (and downstream Miners Ranch Tunnel) conveys water from Ponderosa Reservoir to the Miners Ranch Reservoir. Originally constructed in 1961, the Miners Ranch Canal is a 37,100-ft long gunite or composite concrete flume ranging from 11 ft 4½ in. to 15 ft wide and averaging 7½ ft deep. There are two long 78-inch diameter siphons within sections of the canal, that convey water under the McCabe Creek arm of Lake Oroville (siphon length 2,345 feet) and the Powell Creek arm of Lake Oroville (siphon length 1,200 feet). There are four, roughly 12-foot deep sand traps within the Miners Ranch Canal. These sand traps are equipped with large gate valves that can be opened to drain sections of the canal during scheduled maintenance activities.

Flow in the Miners Ranch Canal is continuous approximately 50 weeks a year. The canal is taken out of service for 10 days of scheduled inspection and repair, as necessary, each September or October (five weekdays off, weekend back on, another five weekdays off). When in operation, flow ranges from approximately 100 to 300 cubic feet per second (cfs) throughout the year. However, during the aquatic herbicide application season (approximately April 1 – September 15), flow is typically held constant between 270 to 280 cfs. A map showing important geographic features of OWID's aquatic herbicide applications program study area is provided as Figure 2.

2.3 Application Method

Copper sulfate is applied at the head gate of the Miners Ranch Canal. A small, wood-frame building built on a concrete slab with wooden walls and a metal roof adjacent to the head gate contains the controls. The control building houses electrical power circuit breakers and electronics control panels within one room, while another room is dedicated storage for 50-pound bags of copper sulfate. Steel doors on the building are double-locked and equipped with intrusion alarm signal contacts. A sign posted on the copper sulfate storage room exterior reads "Danger – Poison Storage Area."

Copper sulfate is applied automatically to flowing water at the head of the Miners Ranch Canal via a secured, stainless steel hopper with auger feed mechanism. An Intermatic Model T101R 24-hour clock timer in the adjacent control building supplies power to the auger feed motor. This clock timer is set to come on at 0900 each day and run for 30 minutes during the application season. When the clock timer's circuit is closed, a small motor within the base of the hopper gently vibrates and turns a small horizontal auger, allowing a measured amount of copper sulfate to be applied to the water flowing beneath it. Seasonal calibration regulates the mechanical addition of approximately 40 pounds per 30-min application cycle daily during the approximately five-month application season.

Section 3: Program Safeguards

3.1 Potential Impacts

Neither the Miners Ranch Canal or Miners Ranch Reservoir are recognized fisheries. The Miners Ranch Reservoir is an important supply reservoir for the Miners Ranch Treatment Plant, the intake for the Kelly Ridge Powerhouse hydroelectric plant located on the Feather River, and the Bangor Ditch (which conveys irrigation water and source supply on its way to the Bangor Treatment Plant). Treated water in the Miners Ranch Canal eventually discharges to the Feather River below the Kelly Ridge Powerhouse hydroelectric plant. Although unlikely, Bluestone-treated water might conceivably be discharged into Lake Oroville (major supply reservoir of the State Water Project) through sand-trap waste-gate discharges during unscheduled emergency maintenance on the Miners Ranch Canal.

Application according to the pesticide label is safe for potable water reservoirs, and crop and non-crop irrigation conveyance systems. However, there are several potential adverse impacts from copper sulfate herbicide application efforts even following the pesticide label directions for use. According to the Blue Viking Copper Sulfate Crystal pesticide label,

> *This pesticide is toxic to fish. Direct application of copper sulfate to water may cause a significant reduction in the population of aquatic invertebrates, plants, and fish. Trout and other species of fish may be killed at application rates recommended on the label.*

Furthermore, use of this product has potential hazards to humans and domestic animals. The pesticide label precautionary statement reads,

> *Causes severe eye and skin irritation. Harmful if absorbed through skin or inhaled. May cause skin sensitization reactions in certain individuals. Avoid contact with skin, eyes or clothing. Avoid breathing dust. Protective clothing, including goggles, should be worn, Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.*

3.2 Alternatives Evaluation

Knowledgeable of the potential impacts described above, OWID takes great care in the handling and use of bluestone. In fact, the District's concern over the potential impacts from any aquatic pesticide limits their use to just the Miners Ranch Canal. With a cumulative total of over 110 miles of irrigation canals, the seven-mile long Miners Ranch Canal is the only water conveyance system in the entire District where an aquatic herbicide is used.

The District has evaluated other available control measures to determine if there were feasible alternatives to its selected aquatic pesticide application project on the Miners Ranch Canal that could reduce potential water quality impacts. Among the alternatives evaluated include the following:

- ***Do Nothing*** – The 'Do Nothing' alternative was evaluated and discarded as infeasible. Rampant growth of pest plants in the Miners Ranch Canal would dramatically affect its ability to convey water to the Miners Ranch Reservoir, and subsequently supply the Miners

Ranch Treatment Plant, the tunnel intake to the Kelly Ridge Powerhouse, and Bangor irrigation canal and Bangor Treatment Plant. Furthermore, the quality of water delivered to the treatment plants would be negatively impacted. Problems associated with algae growth in drinking water reservoirs include discoloration, foul odors, unpleasant tastes, and clogged filters. Shortened filter runs requiring frequent filter backwashes reduce the efficacy of water treatment plants, thus raising the cost to the consumer. Chlorinating to remove algae is costly, as is carbon filtration to remove off flavors and odors. In addition, the reaction of chlorine with organic compounds, including algae, can produce trihalomethanes (THMs), suspected carcinogens.

- ***Other Chemical Controls*** – The 'Other Chemical Controls' alternative was evaluated and discarded as inefficient. Copper sulfate is a cost-effective treatment alternative for the control of algae and submerged aquatic plants. Generally, copper does not affect terrestrial plants as terrestrial plants have a cuticle covering, rendering them mostly impervious to copper's detrimental effects. The use of other aquatic pesticides with a non-copper active ingredient might affect plants eventually irrigated with OWID's treated water. If allowed to settle following treatment, as in OWID's Miners Ranch Reservoir, copper sulfate, as opposed to chelated forms of copper, is believed to produce sediment not conducive to the growth of pest plants.

- ***Increase Physical/Mechanical Removal Efforts*** – The District does utilize physical and mechanical removal efforts to control noxious weed growth in the Miners Ranch Canal and Reservoir. As mentioned previously, for two weeks a year (usually scheduled in late September or early October), the Miners Ranch Canal is taken out of service for annual inspection, maintenance and repair, as necessary. Water is drawn down, the sides and bottom hydro-blasted with a pressure washer, and accumulated sediment collected and removed. However, the cost of lost hydroelectric revenue (Kelly Ridge Powerhouse also shares the same scheduled outage period) prevents more frequent drawdown and cleaning of the Miners Ranch Canal. Therefore, the 'Increase Physical/Mechanical Removal Efforts' alternative was evaluated and discarded as not cost-effective.

- ***Biological Controls*** – Plant consumers (herbivores), microbial bio-augmentation (micro-organisms), plant pathogens (diseases), and competitive species are under study as "natural approaches to controlling noxious vegetation. While some have shown promise under some scenarios, the introduction of exotic organisms carries with it unknown, long-term ecological consequences. Therefore, the 'Biological Controls' alternative was evaluated and discarded as impractical for the Miners Ranch Canal due to existing high flow velocities, and cool temperatures.

- ***Bottom Barriers*** – Bottom barriers made of plastic, rubber, fiberglass screen, or nylon are available for to inhibit or prevent rooted growth within selective areas. They are installed during drawdown or during periods when growth is not present. Unfortunately, algae and free-floating vegetation are unaffected. Furthermore, the high flow velocity and potential for passed debris to rip such liners would severely limit the practicality of this alternative. Therefore, the 'Bottom Barriers' alternative was evaluated and discarded as impractical.

3.3 Best Management Practices

OWID utilizes Best Management Practices (BMP's) that are designed to maximize the efficacy of its control efforts and simultaneously minimize potential adverse impacts to the environment. As organized in the General Permit, OWID practices the following categories of BMPs.

- ***Licensing*** – OWID is registered with the office of Butte County Agricultural Commissioner (BCAC) for non-restricted pesticide applications on its right-of-ways (Operator Identification No. 04-02-0407034). The only product utilized is registered for its intended use as an aquatic herbicide. This is not a restricted-use pesticide requiring special permits, licensing, or certification for use in California. OWID's use is consistent with the pesticide label.

- ***Notifications*** – The BCAC is knowledgeable of OWID's Herbicide Applications Program and its pesticide use through past and ongoing communications, including the required Monthly Summary Pesticide Use Reports. With the advent of the NPDES General Permit, the SWRCB is now knowledgeable of OWID's aquatic herbicide applications program through receipt of the General Permit Form A – NOI. The California Regional Water Quality Control Board, Central Valley Region (RWQCB) is also knowledgeable of OWID's aquatic herbicide applications program through receipt of this Monitoring Plan. Furthermore, the RWQCB will receive copies of the required Monthly Summary Pesticide Use Reports.

- ***Preliminary Site Evaluations*** – The District conducts periodic site inspections to verify the need for treatment, options to treatment (including non-toxic and less toxic alternatives), and suitability of the site for treatment.

- ***Secondary Site Evaluations and Pre-Treatment Monitoring*** – Using adaptive management techniques over twenty years of treatment, OWID has already refined the type and intensity of treatment needed. This evaluation has included measurements and analysis of indicators to provide information on potential efficacy and water quality impacts, including identification of the target pests to be controlled (filamentous algae and moss), and monitoring of flow, temperature, hardness, and copper concentrations.

- ***Alternative Control Measures*** – As discussed in the sub-section above, OWID evaluates other available BMPs and alternative control measures to determine if there are feasible alternatives to the selected aquatic pesticide application project that could reduce potential water quality impacts.

- ***Treatment*** – Prior to and during application season treatment, OWID evaluates the factors that impact control efficacy and modifies treatment plans accordingly. These indicators include water depth and flow. If this examination indicates the potential for reduced control efficacy and/or heightened water quality impacts, the treatment schedule would be modified.

- ***Post-Treatment*** – During and following treatments, OWID assesses the control efficacy and water quality impacts of its pesticide application program. OWID evaluates the results of this assessment to continually refine its future project operations through an adaptive management process. For example, at the request of DHS, OWID performed water quality testing for copper in Miners Ranch Reservoir during the 2000 and 2001 application seasons. Laboratory analyses detected no copper above the reporting limits of 5.0 and 10 µg/l (micrograms per liter or parts per billion, ppb). The additional data generated from this first year General Permit compliance monitoring should also prove to be very valuable in this ongoing assessment effort.

Section 4: Water Quality Monitoring

4.1 Water Quality Standards

The United States Environmental Protection Agency established water quality criteria for priority pollutants in the 'National Toxics Rule' (US EPA, 1992 and subsequent revisions) and the 'California Toxics Rule' (US EPA, 2000). The RWQCB established water quality objectives for priority pollutants in *Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and San Joaquin River Basin* (RWQCB, 1998). The SWRCB has adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Abbreviated as SIP) (SWRCB, 2000) that contains implementation provisions for these water quality criteria and objectives. The RWQCB's *A Compilation of Water Quality Goals* (RWQCB, 2000) contains numerous numerical water quality standards, criteria, objectives, and goals. OWID has summarized various Water Quality Goals for Copper in Table 2.

The SIP provides that categorical exceptions may be granted to allow short-term or seasonal exceptions from meeting the priority pollutant criteria/objectives if "necessary to implement control measures ...for resource or pest management conducted by public entities to fulfill statutory requirements" (General Permit). Although the General Permit does not require immediate compliance with such water quality standards as they pertain in this case, OWID is required to implement additional BMPs to eliminate or reduce the pollutants that are causing or contributing to an exceedance. At this point, it is unknown whether OWID's aquatic herbicide applications program causes an exceedance of copper in the receiving water. For eventual data comparison purposes, Figure 3 presents the National/California Toxics Rules' Copper Water Quality Criteria to Protect Freshwater Aquatic Life. It should be noted that this water quality standard for copper is hardness-dependent.

4.2 Monitoring Locations

Project monitoring locations were chosen to bracket the application area. OWID proposes to collect samples upstream of the aquatic herbicide application point (Station 7), and at several locations downstream of the application point. Proposed monitoring locations are described below. Monitoring locations are exhibited in Figure 2.

- Station 8: Inlet to Ponderosa Tunnel (Coordinates to be determined);
- Station 6: Sand-Trap Waste Gate on Goat Trail (N.39.54063°, W.121.32251°).
- Station 5: Sand-Trap Waste Gate approximately 0.2 miles upstream of inlet to McCabe Creek Siphon (N.39.53310°, W.121.34483°).
- Station 4: Sand-Trap Waste Gate at inlet to Powell Creek Siphon (N.39.52954°, W.121.36077°).
- Station 3: Sand-Trap Waste Gate at inlet to Miners Ranch Tunnel/End of Canal (N.39.52984°, W.121.37826°).
- Station 2: Miners Ranch Reservoir at Miners Ranch Treatment Plant Raw Water Intake Pumps, immediately upstream of Kelly Ridge Tunnel Inlet (N., W.).

An additional monitoring location would be sampled in the unlikely event of an unexpected emergency failure in the canal sidewall. The affected panel number would identify the monitoring location.

4.3 Monitoring Schedule

Samples shall be collected over four events prior to and during OWID's aquatic herbicide application season. These multiple events should characterize pre-project conditions, and through the varying seasonal conditions of late Spring, Summer, and early Fall, according to the following schedule:

- Event 1: Pre-application season sampling.
- Event 2: First sampling during application season, near start of season.
- Event 3: Second sampling during application season, near middle of season.
- Event 4: Third sampling during application season, near end of season.

Additional monitoring event(s) would be conducted in the unlikely event that a sand-trap waste gate had to be opened to spill water from the Miners Ranch Canal, or an emergency failure of the canal sidewall caused an unexpected release of water to the shoreline above Lake Oroville.

Not all monitoring locations will be sampled during each event. Event 1 sampling would be performed every year but only at monitoring locations Sta.8, Sta.3, and Sta.2. Event 2, Event 3, and Event 4 sampling would be performed every year at monitoring locations Sta.8, Sta.3, and Sta.2. For this first year of the monitoring project, Event 2 samples will also be collected at monitoring locations Sta. 6, Sta.5, and Sta.4. A monitoring matrix summarizing the monitoring locations and for each monitoring event is provided in Table 3.

4.4 Sampling Sequence

Because copper sulfate is only applied during a short period to a fast flowing body of water, the relative timing of sample collection at each monitoring station is somewhat critical. In early April 2002, OWID conducted an experiment to determine travel times between monitoring locations just for this purpose. OWID timed the progress of a dozen oranges dropped simultaneously at Sta.7 under typical flow conditions (276 cfs). Oranges marking the leading edge of this artificial slug passed Sta.6 after 41 minutes, Sta.5 after 1 hour 27 minutes, Sta.4 after 1 hour 59 minutes, and Sta.3 after 2 hours 17 minutes following introduction at Sta.7. OWID will use these representative travel times to sequence the collection times at each monitoring location being sampled. Samples from Sta.6, Sta.5, Sta.4, and Sta.3 should be collected at the time of expected arrival of the copper sulfate slug, or within approximately 30 minutes thereafter. Three samples per monitoring event at Sta.3 are proposed to increase the likelihood that a representative sample from the main body of the copper sulfate slug is obtained. Therefore, Sta.3a will be collected 30 minutes before the expected arrival of the copper sulfate slug, Sta.3b at the expected arrival, and Sta.3c at 30 minutes after the expected arrival of the copper sulfate slug. A monitoring matrix summarizing the monitoring locations and timing sequence for each monitoring event is provided in Table 3.

4.5 Sampling Methodology

OWID's Miners Ranch Treatment Plant staff will conduct the water quality sampling for this project. The DHS Division of Drinking Water and Environmental Management, Drinking Water Program,

Certification Unit is responsible for certification of water treatment staff throughout the State. The DHS's Water Treatment Operator Certification Program is responsible for ensuring that individuals certified as drinking water treatment operators meet the educational competence required by law. The program administers a licensing program for the State's approximately 9,000 water treatment plant operators and examines approximately 2,000 applicants each year. Treatment Plant staff will require no additional or special training to implement the monitoring project.

Sampling will be conducted in accordance with OWID's Standard Operating Guideline for Surface Water Sampling, included as Appendix D1. Standard chain-of-custody protocol shall be observed from the time of sample collection through laboratory analyses. Appendix D2 presents OWID's Standard Operating Guideline for Creating and Filling Out a Chain-of-Custody Record. Sample handling will be conducted in accordance with OWID's Standard Operating Guideline for Transporting, Packaging, and Shipping Samples, included as Appendix D3.

4.6 Laboratory Analyses

Samples shall be submitted under chain-of-custody protocol to Basic Laboratory, Inc. of Redding, California. Basic Laboratory is certified by the California Department of Health Services Environmental Lab Accreditation Program (ELAP#1677) to perform the requested inorganic analyses.

Attachment B to the General Permit identifies the required components of the monitoring plan, including water quality analyses. Specifically, the General Permit states that the water quality analyses shall include the active ingredients in the pesticide applied (copper in OWID's case), and may include the following:

- Other constituents that have been identified that may adversely impact beneficial uses of the receiving waters as a result of the project (not applicable to OWID as the inert ingredient is unlisted);
- Dissolved oxygen;
- Temperature;
- pH;
- Turbidity;
- Hardness and other water quality parameters that may influence pesticide persistence or toxicity; and
- Electrical conductivity (specific conductance).

OWID will monitor for dissolved copper, hardness, pH, electrical conductivity, and turbidity only. Quality assurance practicalities will preclude OWID's field-testing and reporting of temperature and dissolved oxygen measurements. Table 3 presents the monitoring matrix for this project.

Laboratory analyses shall be conducted in accordance with Basic Laboratory's Quality Assurance Plan. Basic Laboratory's quality assurance objectives for water samples collected for this project are described in Table 4. Laboratory analytical reports from Basic Laboratory shall be delivered with Level 2 Quality Assurance/Quality Control documentation. A copy of Basic Laboratory's Quality Assurance Plan is incorporated herein by reference and provided in Appendix E.

Section 5: Project Records and Reports

5.1 Drinking Water Reports

The California DHS, Division of Drinking Water and Environmental Management is responsible for enforcement of California regulations governing drinking water. In addition, due to State primacy, the DHS is also responsible for enforcement of US EPA regulations governing drinking water. As an entity responsible for the operation of two water treatment plants and appurtenant transmission and distribution facilities, OWID already tests for and reports on the occurrence and/or concentration of copper detected in its raw water supply and treated water. The General Minerals requirement requires OWID to test for copper every five. The California Toxics Rule requires OWID to test for copper every five years. The Lead and Copper Rule requires OWID to test its (treated) water every three years. Finally, the Consumer Confidence Reporting Rule requires OWID to report its most recent copper test results annually. OWID's Aquatic Herbicide Applications Program, the General Permit, nor this Monitoring Plan will modify the requirements of OWID's copper testing or reporting requirements per DHS.

5.2 Monthly Pesticide Use Reports

As mentioned previously, OWID already completes a Monthly Summary Pesticide Use Report. Historically, OWID has provided this report to the BCAC by the 10th of the month following the month in which the work was performed. Reports are hand-delivered or mailed, the postmark serving as the date of delivery.

As a requirement of the General Permit and OWID's NOI, OWID must now provide additional aquatic pesticide use documentation to the RWQCB. According to the monitoring and reporting program for the General Permit, the discharger shall maintain records of the following information for each treatment site:

- The location of the treatment area (address, cross roads, coordinates);
- The names of the water bodies treated (canal, creek, lake);
- Project size (the water surface area, volume of water treated, flow rate);
- Name, formulation, concentration, and amount of pesticide used; and
- Documentation of activities in compliance with the General Permit Section D. Best Management Practices.

Copies of these documentation records shall be submitted to the RWQCB in monthly Pesticide Use Reports due the 15th of the following month. The DPR Monthly Summary Pesticide Use Report forms may be used as part of the documentation.

5.3 Project Annual Report

In addition to the monthly submittal of the Pesticide Use Reports, OWID shall submit a calendar year Annual Report to the SWRCB by January 31 of the following year (beginning January 2003). The Annual Report shall contain tabular summaries of the pesticide monitoring data obtained during the previous year in a format that satisfies the requirements for inclusion in the DPR's surface water database. The DPR's Description of Data Format for the Department of Pesticide Regulation's

Surface Water Database (DPR, November 2001) describes the minimum data required for inclusion in the database. This data includes the following:

- Name of the sampling agency or organization;
- Date that each sample was collected;
- Date of each sample analysis;
- County where samples were taken;
- Detailed sampling location information, detailed map, or description of each sampling site;
- Name or description of water body sampled;
- Name of the active ingredient analyzed for, concentration detected (with unit of measurement), and limit of quantitation; and
- Description of analytical QA/QC plan, or statement that no formal plan exists.

Although not required for inclusion in the database, the following chemical analysis information will be submitted if available:

- QA/QC documentation;
- Time of day each sample was collected;
- Collection method (e.g., grab sample, time-integrated sample, equal-width increment, etc.);
- Type of sample (e.g., whole water, filtered, split, etc.);
- Date of sample extraction;
- Reporting limit or method detection limit, including units of measurement;
- Method of analysis;
- Analytical laboratory name;
- Type of sampling equipment used; and
- All associated water quality information (e.g., pH, dissolved oxygen, temperature, etc.).

The Annual Report to the SWRCB shall include the above-required information and a summary including the following:

- Objectives of the monitoring program;
- Interpretation of data in relation to frequency, duration, and magnitude of impacts to beneficial uses.

Sketches of sample locations, chain-of-custody forms, and other information developed as part of this monitoring program shall be maintained by OWID and submitted to the RWQCB upon request.

References

DPR, 14 November 2001. Description of Data Format for the Department of Pesticide Regulation's Surface Water Database. Memo to Interested Parties, http://www.cdpr.ca.gov/docs/surfwatr/req.htm.

OWID, 24 August 2001. Attachment A to Water Quality Order No. 2001-12-DWQ, Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Aquatic Pesticides to Waters of the United States (General Permit), General Permit No. CAG990003 (Form A). OWID submittal to SWRCB, including $400.00 Application Fee.

RWQCB, Central Valley Region, 1998. *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, Fourth Edition – 1998, The Sacramento River Basin and the San Joaquin River Basin.*

RWQCB, Central Valley Region, August 2000. *A Compilation of Water Quality Goals.*

RWQCB, Central Valley Region, 27 March 2002. Letter to Tom Venus, OWID, re: Monitoring Plan for General Aquatic Pesticides NPDES Permit – Butte County.

SWRCB, 2 March 2000. *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.* http://www.swrcb.ca.gov/iswp/index.htm

SWRCB, 7 August 2001. Letter to Aquatic Pesticide Applicators: Water Quality Order No. 2001-12-DWQ, Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Aquatic Pesticides to Waters of the United States (General Permit), General Permit No. CAG990003. Received by OWID 10 August 2001.

US EPA, Office of Water, April 1999. *National Recommended Water Quality Criteria – Correction.* EPA 822-Z-99-001, http://www.epa.gov/ost/pc/revcom.pdf.

US EPA, Thursday, 18 May 2000. *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* [California Toxics Rule]. Federal Register, Vol. 65, No. 97, pp. 31682-31719.

Tables

Table 1: Project Roles and Responsibilities

Agency	Name	Responsibility
State Water Resources Control Board PO Box 100 Sacramento, CA 95812-0100	Larry Nash Water Resources Control Engineer (916) 341-5586	Aquatic Pesticide Program Coordinator; Recipient of: Notice Of Intent; Annual Report
Regional Water Quality Control Board 415 Knollcrest Dr, Ste 100 Redding, CA 96002	Bryan Smith Associate Water Resources Control Engineer (530) 226-3425	Recipient of: Monitoring Plan/ QAPP; Monthly Summary Pesticide Use Reports
Butte County Office of Agricultural Commissioner 316 Nelson Road Oroville, CA 95965-3318	Richard Price Agricultural Commissioner (530) 891-538-7381	Designates Pesticide Operator Use Numbers; Forwards Monthly Summary Pesticide Use Reports to DPR
Oroville-Wyandotte Irrigation District 2310 Oro-Quincy Hwy Oroville, CA 95965-0581	Mike Glaze General Manager (530) 533-4578	Manage District Operations
	Tom Venus Environmental & Safety Compliance Officer (530) 533-4578	Environmental and Safety Regulations Compliance; Technical Project Manager/ Project QA Manager
	George Barber Water Division Manager (530) 533-4578	Manage OWID Water Division Operations and Staff
	Jim Coffelt Treatment Superintendent (530) 589-0212	Supervise Treatment Plant Operations and Staff; Supervise Project Sample Collection, Handling, Shipment
	Kathy Petersen Power Division Manager (530) 534-1221	Manage OWID Power Division Operations and Staff
	Jim Higgins Electrical Maintenance Foreman (530) 534-1221	Supervise Aquatic Pesticide Application In Accordance With Label Directions
Minasian, Spruance, Baber, Meith, Soares & Sexton, LLP 1681 Bird Street Oroville, CA 95965-1679	Michael Sexton Attorney at Law (530) 533-2885	Provide Legal Risk Management Counsel to OWID Regarding Aquatic Herbicide Applications Issues
Basic Laboratory, Inc. 2218 Railroad Avenue Redding, CA 96001	James Hawley Laboratory Director (530) 243-7234	Conduct Contract Laboratory Analyses for OWID
	T. Davis QA/QC Manager (530) 243-7234	Implement Basic Laboratory's Quality Assurance Plan

Table 2: Water Quality Goals for Copper

Water Quality Goals	Agency	Concentration[a]
Drinking Water Standards		
Primary MCL[b]	California Dept. of Health Services	1300
Secondary MCL	California Dept. of Health Services	1000
Primary MCL	US Environmental Protection Agency	1300
Secondary MCL	US Environmental Protection Agency	1000
MCL Goal	US Environmental Protection Agency	1300
Pesticide Label Instructions		
Blue Viking Copper Sulfate Crystal (Copper Sulfate Pentahydrate – 25.2% metallic copper equivalent) Griffin LLC	US Environmental Protection Agency	¼ to 2 pounds per cubic foot per second of water per repeat treatment
California Toxics Rule Criteria		
Drinking Water Sources (Water + Organisms) Human Health (30-day Average) Inland Surface Waters	US Environmental Protection Agency	1300
Taste and Odor Threshold	US Environmental Protection Agency	1000
Continuous Concentration (4-day Average) Freshwater Aquatic Life Protection Inland Surface Waters	US Environmental Protection Agency	See Figure 3
Maximum Concentration (1-hour Average) Freshwater Aquatic Life Protection Inland Surface Waters	US Environmental Protection Agency	See Figure 3
National Recommended Ambient Water Quality Criteria		
Human Health and Welfare Protection Non-Cancer Health Effects Sources of Drinking Water (Water + Organisms)	US Environmental Protection Agency	1300
Taste and Odor Threshold	US Environmental Protection Agency	1000

Table 2: Water Quality Goals for Copper

Water Quality Goals	Agency	Concentration[a]
National Recommended Ambient Water Quality Criteria (continued)		
Continuous Concentration (4-day Average) Recommended Criteria Freshwater Aquatic Life Protection	US Environmental Protection Agency	See Figure 3
Maximum Concentration (1-hour Average) Recommended Criteria Freshwater Aquatic Life Protection	US Environmental Protection Agency	See Figure 3
Other		
Public Health Goal in Drinking Water	California Office of Environmental Health Hazard Assessment	170
One-In-a-Million Incremental Cancer Risk Estimates for Drinking Water Integrated Risk Information System (IRIS)	US Environmental Protection Agency	Note (c)
One-In-a-Million Incremental Cancer Risk Estimates for Drinking Water Drinking Water Health Advisory Suggested No-Adverse-Response Level	US Environmental Protection Agency	Note (c)
Agricultural Water Quality Goal	United Nations	200

(a) Concentrations reported in µg/l (parts per billion, ppb) unless noted.
(b) Maximum Contaminant Level.
(c) Not classified as to human carcinogenicity; no data or inadequate evidence.

Table 3: Monitoring Matrix

	Monitoring Stations[b]								
Event[a]	Sta.8	Sta.7	Sta.6	Sta.5	Sta.4	Sta.3a	Sta.3b	Sta.3c	Sta.2
1	✓						✓		✓
2A	✓		✓	✓	✓	✓	✓	✓	✓
2B	✓					✓	✓	✓	✓
3	✓					✓	✓	✓	✓
4	✓					✓	✓	✓	✓
Time[c]	<0:00	0:00	+0:45	+1:30	+2:00	+1:50	+2:20	+2:50	>3:30

Notes:

(a) Monitoring Events:
Event 1 – Pre-application season monitoring event (Every season).
Event 2A – First monitoring event during application season, near start of season (2002).
Event 2B – First monitoring event during application season, near start of season (Every season after 2002).
Event 3 – Second monitoring event during application season, near middle of season (Every season).
Event 4 – Third monitoring event during application season, near end of season (Every season).

(b) Monitoring Stations:
Station 8 – Ponderosa Reservoir at south end of dam abutment.
Station 7 – Copper sulfate application feeder at radial gate/head of Miners Ranch Canal (does not get sampled, included for time reference only).
Station 6 – Sand-trap waste gate on Goat Trail.
Station 5 – Sand-trap waste gate approximately 0.2 miles upstream of McCabe Creek Siphon inlet.
Station 4 – Sand-trap waste gate at Powell Creek Siphon inlet.
Stations 3a, 3b, and 3c – Sand-trap waste gate at Miners Ranch Tunnel inlet, from foot of deer escape.
Station 2 – Miners Ranch Reservoir, from Miners Ranch Treatment Plant Raw Water Intake Pump (Tap SP-1).

(c) Monitoring Sequence (hours:minutes) relative to start of 30-minute application feed cycle at Station 7.
Sample Sta.6, Sta.5, and Sta.4 at expected arrival times of copper sulfate slug, or within 30 minutes thereafter.
Sample Sta.3a approximately 30 minutes before expected arrival of copper sulfate slug.
Sample Sta.3b at expected arrival of copper sulfate slug.
Sample Sta.3c approximately 30 minutes after expected arrival of copper sulfate slug.

Table 4: Quality Assurance Objectives for Water Samples

Parameter	Method	Precision[a]	Accuracy[b]	Completeness[c]
pH	4500-H+[d]	20	75-125	90
Conductivity	2510[d]	20	75-125	90
Hardness, total	2340[d]	20	75-125	90
Turbidity	2130[d]	20	75-125	90
Copper	200.7/220.1[e]	20	75-125	90

(a) Precision defined as recovered percent difference.
(b) Accuracy defined as average percent recovery.
(c) Completeness defined as percent of parameters falling within quality assurance acceptance criteria and subsequently being reported.
(d) Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992.
(e) US EPA. Methods for Chemical Analysis of Water and Wastes. PB 84-128677. March 1983.

Figures

Figure 1. Project Schedule

ID	Task Name	Start	Finish
1	**REGULATORY DRIVERS**	**3/12/01**	**8/23/01**
2	'Talent Decision' by US Ninth Circuit Court of Appeals	3/12/01	3/12/01
3	SWRCB Authorizes Water Quality Order 2001-12-DWQ (General Permit No.CAG990003)	7/19/01	7/19/01
4	OWID Submits General Permit Notice of Intent (Form A) to SWRCB	8/23/01	8/23/01
5	**PLAN AQUATIC HERBICIDE MONITORING PROJECT**	**8/24/01**	**4/1/02**
6	OWID Prepares Draft Monitoring Plan/QAPP	8/24/01	3/1/02
7	OWID Submits Monitoring Plan/QAPP to RWQCB	3/4/02	3/4/02
8	RWQCB Reviews Monitoring Plan/QAPP	3/1/02	4/1/02
9	**IMPLEMENT AQUATIC HERBICIDE MONITORING PROJECT**	**3/25/02**	**10/15/02**
10	OWID Conducts Sampling Event No.1: Pre Project	3/25/02	3/29/02
11	OWID Conducts Sampling Event No.2: Early Season	4/15/02	4/19/02
12	OWID Conducts Sampling Event No.3: Mid Season	6/17/02	6/21/02
13	OWID Conducts Sampling Event No.4: Late Season	8/26/02	8/30/02
14	**Submit Monthly Pesticide Use Reports to RWQCB**	**4/15/02**	**10/15/02**
15	March 2002 Summary Pesticide Use Report	4/15/02	4/15/02
16	April 2002 Summary Pesticide Use Report	5/15/02	5/15/02
17	May 2002 Summary Pesticide Use Report	6/14/02	6/14/02
18	June 2002 Summary Pesticide Use Report	7/15/02	7/15/02
19	July 2002 Summary Pesticide Use Report	8/15/02	8/15/02
20	August 2002 Summary Pesticide Use Report	9/13/02	9/13/02
21	September 2002 Summary Pesticide Use Report	10/15/02	10/15/02
22	**ASSESSMENT OF AQUATIC HERBICIDE MONITORING PROJECT**	**10/1/02**	**2/3/03**
23	OWID Prepares Annual Report	10/1/02	1/31/03
24	OWID Submits Annual Report to SWRCB	2/3/03	2/3/03
25	**ACTIVITIES INDEPENDENT OF MONITORING PROJECT**	**1/10/02**	**1/10/03**
26	OWID Applies Bluestone to Miners Ranch Canal	4/15/02	8/30/02
27	OWID Conducts Annual Scheduled Maintenance to Miners Ranch Canal	9/23/02	10/4/02
28	OWID Submits Monthly Summary Pesticide Use Reports to BCAC	1/10/02	1/10/03

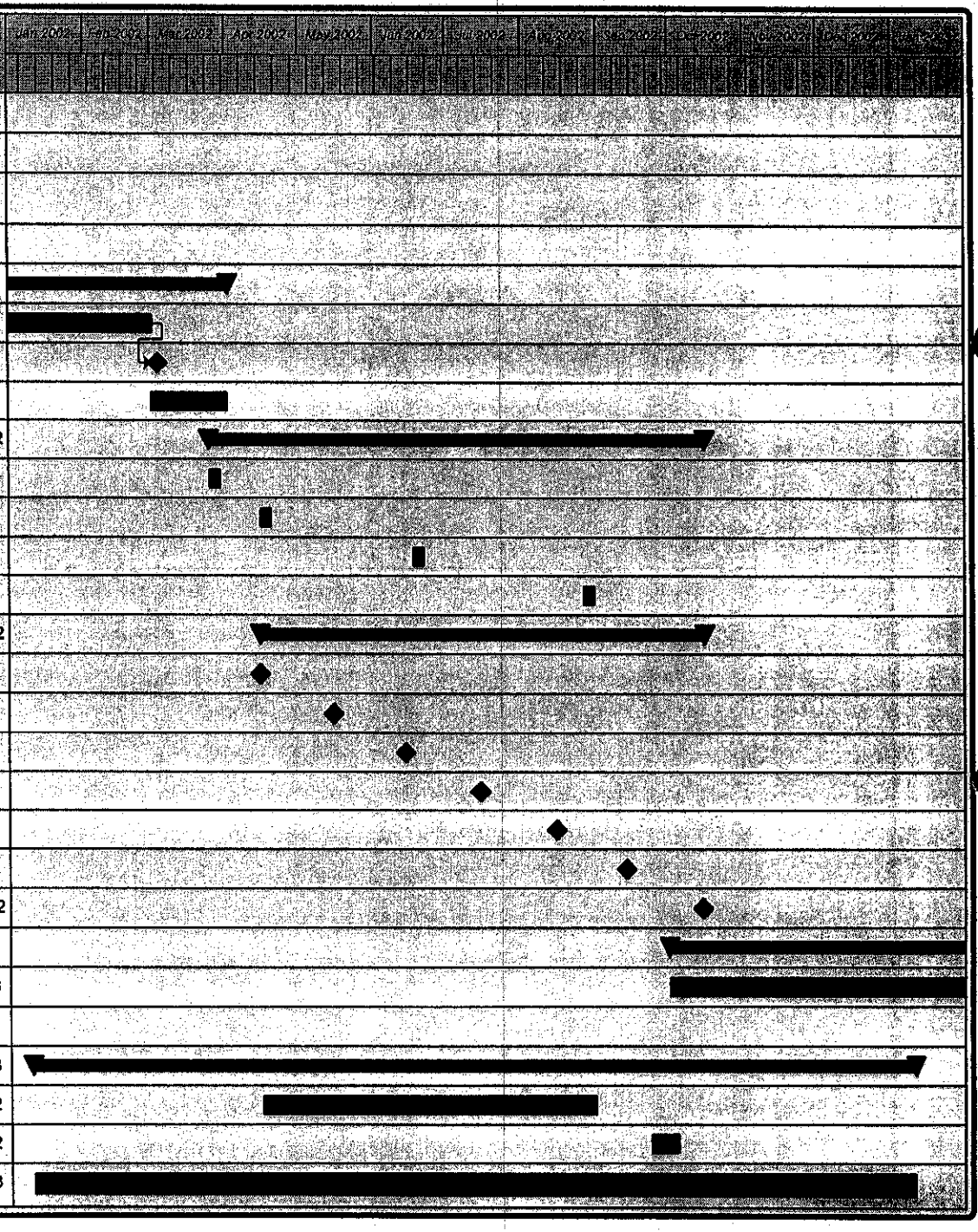
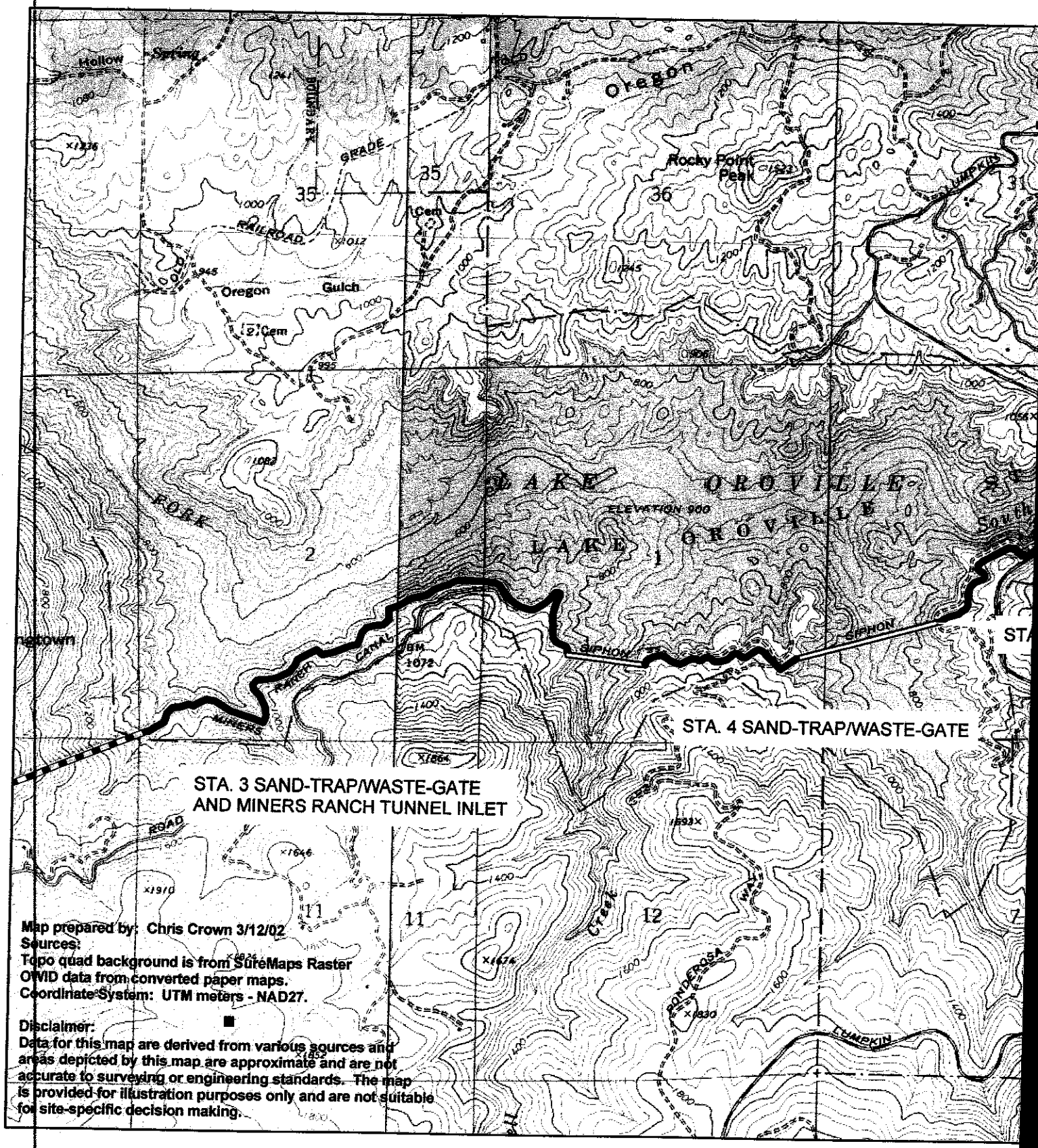


Figure 2A: Aquatic Herbicide Applications Program Study



Map prepared by: Chris Crown 3/12/02
Sources:
Topo quad background is from SureMaps Raster
OWID data from converted paper maps.
Coordinate System: UTM meters - NAD27.

Disclaimer:
Data for this map are derived from various sources and areas depicted by this map are approximate and are not accurate to surveying or engineering standards. The map is provided for illustration purposes only and are not suitable for site-specific decision making.

Area - Upstream

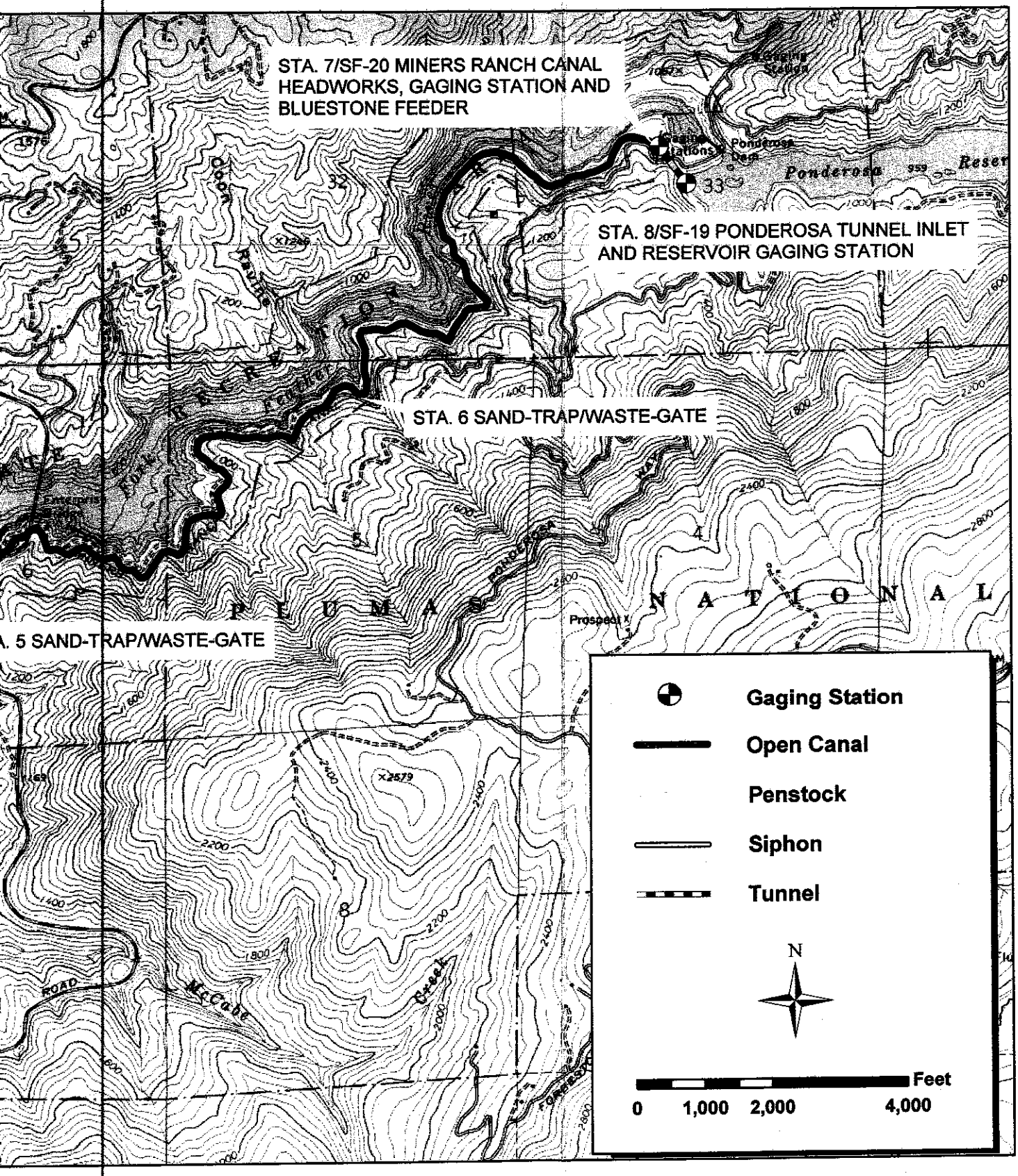
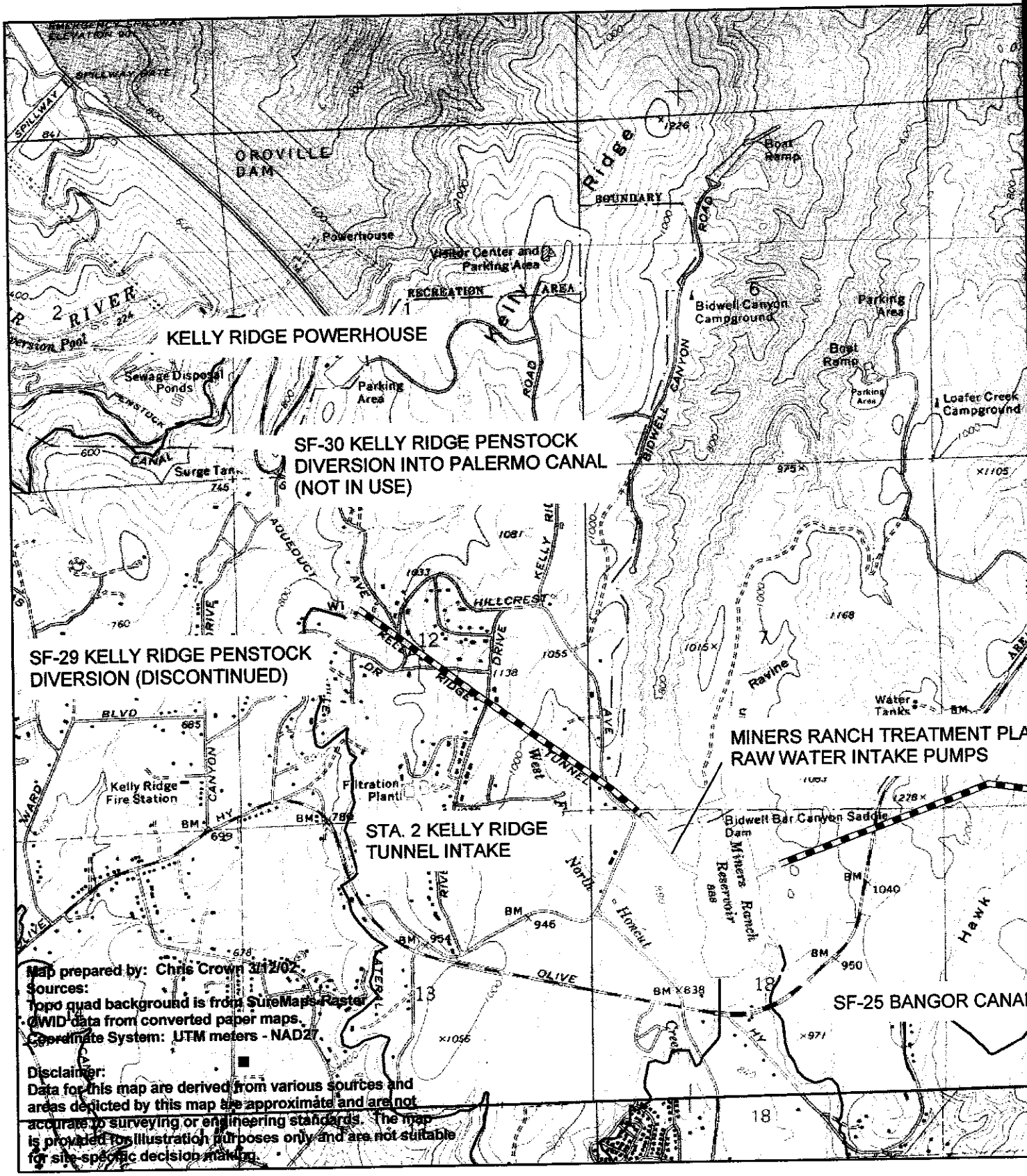


Figure 2B: Aquatic Herbicide Applications Program Stu



dy Area - Downstream

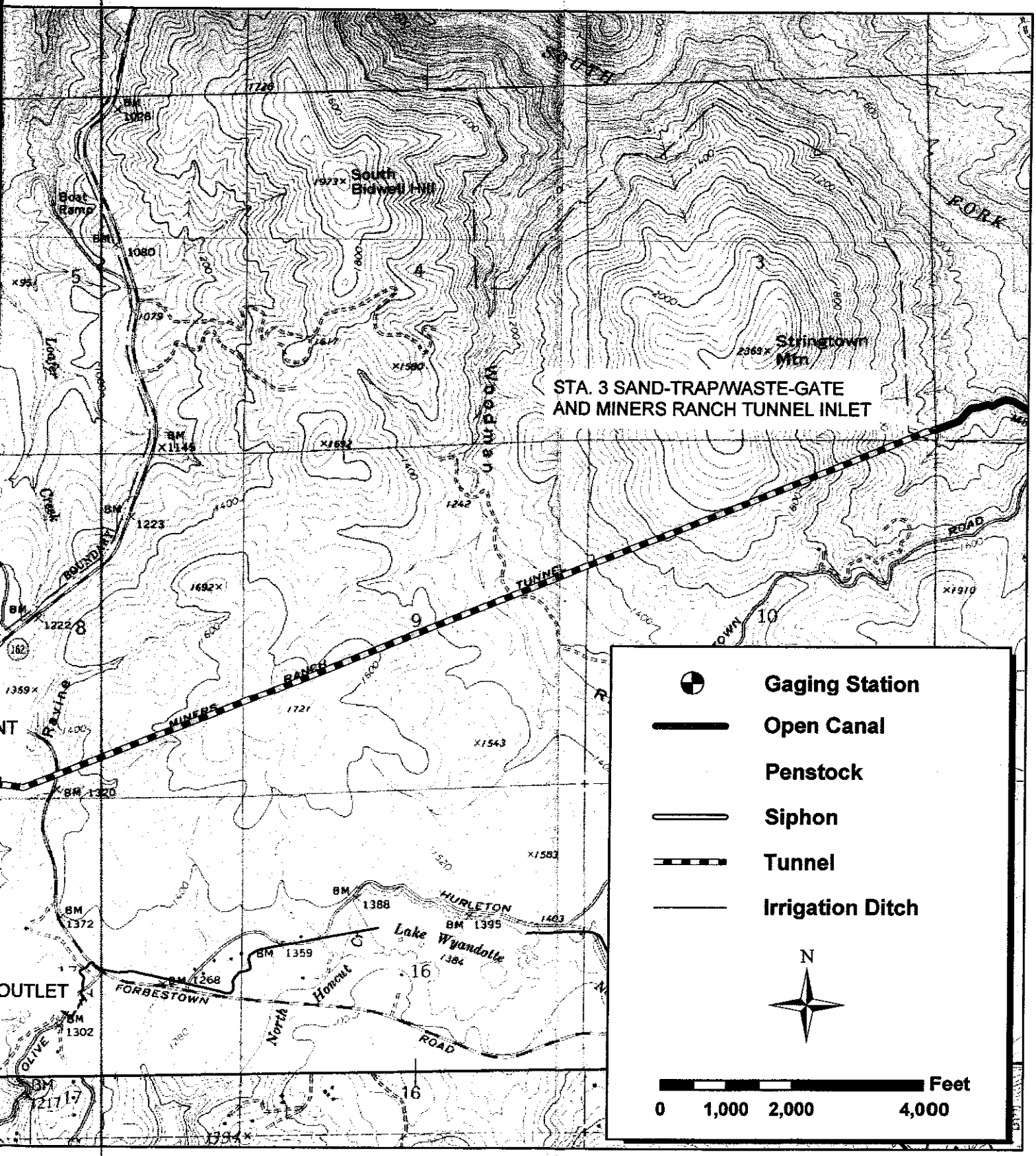


Figure 3: Copper Water Quality Criteria to Protect Freshwater Aquatic Life[a,b]

Hardness (mg/L as CaCO3)	Copper	
	Continuous Conc. 4-day Avg. (ug/L)	Maximum Conc. 1-hour Avg. (ug/L)
< 25	use formula	use formula
25	2.7	3.6
30	3.2	4.3
35	3.7	5.0
40	4.1	5.7
45	4.5	6.3
50	5.0	7.0
55	5.4	7.7
60	5.8	8.3
65	6.2	9.0
70	6.6	9.6
75	7.0	10
80	7.4	11
85	7.8	12
90	8.2	12
95	8.6	13
100	9.0	13
110	9.7	15
120	11	16
130	11	17
140	12	19
150	13	20
160	13	21
170	14	22
180	15	23
190	16	25
200	16	26
210	17	27
220	18	28
230	18	30
240	19	31
250	20	32
260	20	33
270	21	34
280	22	36
290	22	37
300	23	38
310	24	39
320	24	40
330	25	41
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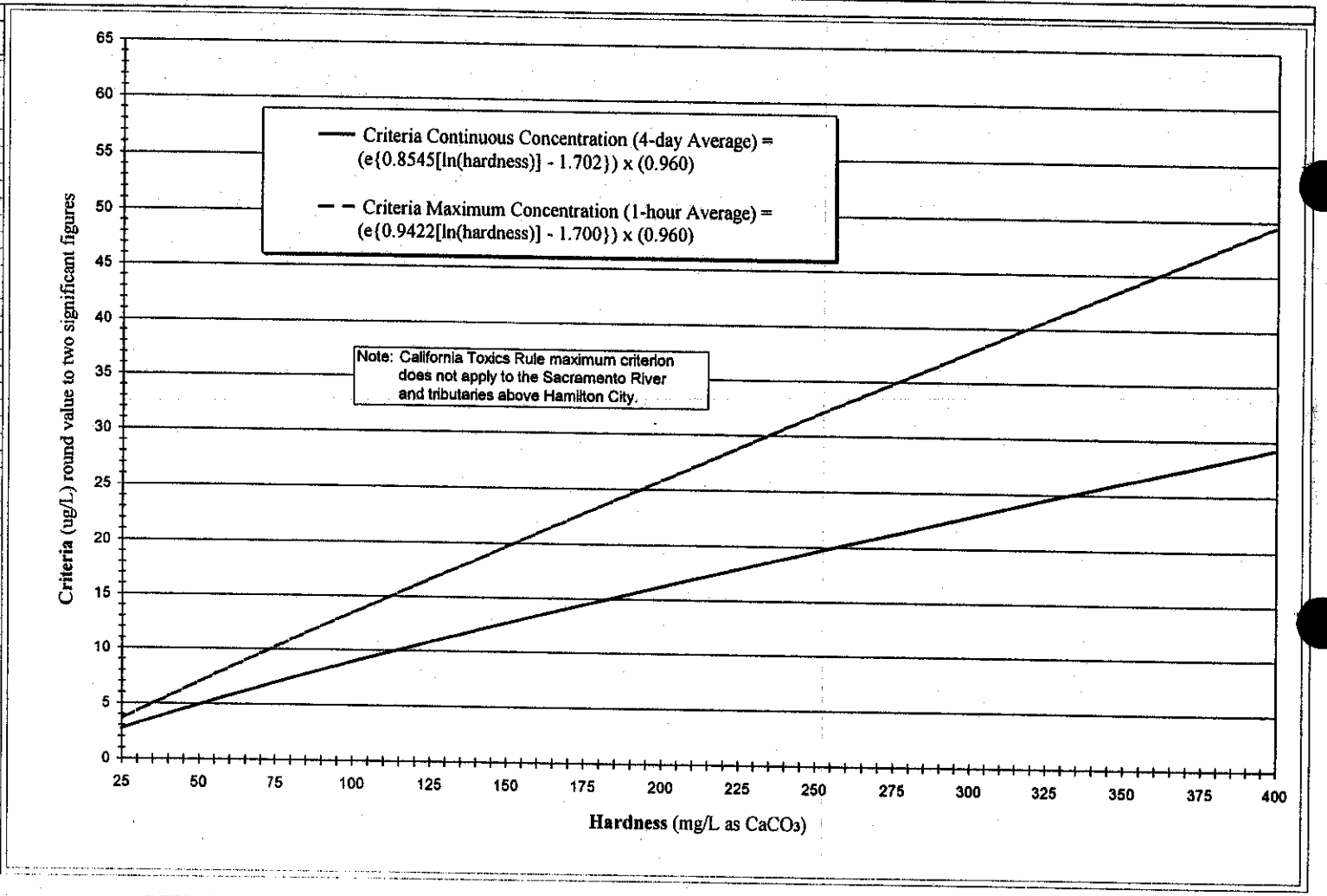
390	29	48
400	29	50
> 400	29	50



(a) US EPA, Federal Register, Vol. 65, No. 97 (Thursday, 18 May 2000), pp.31682-31719 [California Toxics Rule].
(b) US EPA, Office of Water, *National Recommended Water Quality Criteria – Correction*, EPA 822-Z-99-001 (April 1999), http://www.epa.gov/ost/pc/revcom.pdf.

Appendix A

General Permit No. CAG990003

State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
FAX (916) 341-5463 • Internet Address: http://www.swrcb.ca.gov

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at http://www.swrcb.ca.gov.

AUG 0 7 2001

AUG 10 2001

To: Aquatic Pesticide Applicators

WATER QUALITY ORDER NO. 2001-12-DWQ
STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR DISCHARGES OF AQUATIC PESTICIDES TO WATERS OF THE UNITED STATES (GENERAL PERMIT)
GENERAL PERMIT NO. CAG990003

On July 19, 2001, in response to the Talent decision and numerous requests by aquatic pesticide applicators, the State Water Resources Control Board (SWRCB) adopted a "Statewide General Permit for Discharges of Aquatic Pesticides to Surface Waters." A copy of the adopted General Permit, fact sheet, Notice of Intent (NOI) form, and detailed instructions are enclosed.

Our records show that you submitted a NOI prior to the adoption of the subject General Permit to obtain coverage under one of the Cleanup and Abatement Orders (CAOs) adopted by a Regional Water Quality Control Board (RWQCB). These RWQCBs' CAOs were issued to regulate the discharge of aquatic pesticides as an interim measure pending the adoption of a statewide General Permit. The CAOs will expire soon or be rescinded as to each discharger at the time that the discharger is subject to a NDPES permit.

In order to obtain coverage under General Permit No. CAG990003, the revised NOI Form A contained in Attachment A of the enclosed package must be completed, signed, and submitted with project maps and the first annual fee of $400 to:

Larry Nash
Regulation Unit
Division of Water Quality
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

AUG 0 7 2001

If you have any questions or need further assistance regarding the General Permit or the NOI process, please telephone Mr. Larry F. Nash, Regulation Unit, at (916) 341-5586.

Sincerely,

Stan Martinson, Chief
Division of Water Quality

Enclosures

STATE WATER RESOURCES CONTROL BOARD

FACT SHEET FOR WATER QUALITY ORDER NO 2001-12-DWQ STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR DISCHARGES OF AQUATIC PESTICIDES TO WATERS OF THE UNITED STATES (GENERAL PERMIT) GENERAL PERMIT NO. CAG990003

BACKGROUND

On March 12, 2001, the Ninth Circuit Court of Appeals decided that discharges of pollutants from the use of aquatic pesticides to waters of the United States require coverage under an NPDES permit, (Headwaters, Inc. v. Talent Irrigation District). The Talent decision was issued just prior to the major season for applying aquatic pesticides. Because of the serious public health, safety, and economic implications of delay in such applications, this General Permit has been developed on an emergency basis in order to provide coverage for broad categories of aquatic pesticide use in California. The State Water Resources Control Board (SWRCB) will rescind or revise this General Permit if the law as stated in the Talent decision changes.

Coverage under this General Permit is available to public entities for discharges of pollutants to waters of the United States ("water bodies") associated with the application of aquatic pesticides for resource or pest management. This limitation to "public entities" is based on the provisions of the SWRCB's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Policy, or SIP) allowing categorical exceptions from meeting priority pollutant criteria/objectives for resource or pest management control measures conducted by "public entities." "Public Entity" is defined in the SIP to include "the federal government or state, county, city and county, city, district, public authority, or public agency." The categorical exception provision also gives examples of management programs that such public entities may conduct: vector or weed control, pest eradication, or fishery management. The entities that conduct such programs vary in legal structure, but all have in common a public role of protecting waterways and/or the public health from harmful organisms. This General Permit is available to all such entities regardless of legal structure, including mutual water companies, public water purveyors, investor-owned utilities, and homeowners' associations.

The SIP further provides that the categorical exception is for resource or pest management conducted by public entities "to fulfill statutory requirements, including, but not limited to, those in the California Fish and Game, Food and Agriculture, Health and Safety, and Harbors and Navigation codes." Some of these statutory provisions do not mandate the management programs but make their implementation discretionary. The exception is properly read to include such discretionary programs.

This General Permit **does not** cover indirect or non-point source discharges from agricultural or other applications of pesticides to land that may be conveyed in storm water or irrigation runoff. This General Permit **does not** cover applications of pesticides that are **not registered for use on aquatic sites**. This General Permit **does** cover the uses of properly registered and applied aquatic pesticides that constitute discharges of "pollutants" to waters of the United States.

The aquatic pesticides covered by this General Permit will be applied directly into the water body, and/or directly to organisms in the water or on the water surface with the purpose and intent of killing the target aquatic organisms. The impacts of these chemicals may not be limited to the target organisms – other plants and aquatic life in the treatment area may be impacted. Due to water movement at the treatment locations, the residual pesticides can be carried to adjacent areas while concentrations in the water are still high enough to cause adverse impacts not only to aquatic organisms but also to other beneficial uses, such as irrigation, municipal water supplies and recreation (such as swimming). As part of the pesticide registration process conducted by the U.S. Environmental Protection Agency (USEPA) and Department of Pesticide Regulation (DPR), adverse impacts relevant to these beneficial uses have been evaluated and determined not to be unreasonable. A purpose of this Order is to minimize the areal extent and duration of adverse impacts to beneficial uses of water bodies treated with aquatic pesticides.

To qualify for coverage under this General Permit, dischargers must meet the following criteria:

1. The discharger must submit a fully completed Notice of Intent (NOI), a project map, and first annual fee.
2. The discharger must be a public entity.
3. Dischargers must be licensed by DPR or Department of Health Services (DHS) if such licensing is required for such public entities, to apply aquatic pesticides.

The basic requirements of this General Permit include:

1. The discharger must follow all pesticide label instructions and any Use Permits issued by a County Agricultural Commissioner.
2. The discharger must implement best management practices (BMPs).
3. The discharger must comply with monitoring requirements.

WATERS OF THE UNITED STATES

This General Permit regulates the addition of pollutants associated with the application of aquatic pesticides to navigable waters. "Navigable waters," means waters of the United States. "Waters of the United States" include all waters currently used, used in the past, or susceptible to use in interstate commerce; all interstate waters; all other waters the use, degradation, or destruction of which would or could affect interstate or foreign commerce. Waters of the United States include waters used by interstate or foreign travelers for recreation, waters from which fish or shellfish are taken and sold in interstate or foreign commerce, impoundments of and tributaries to waters of the United States, and wetlands adjacent to waters of the United States. For instance, irrigation canals that exchange water with natural streams and lakes are waters of the United States.

EMERGENCY CONDITIONS

This General Permit is being issued under emergency conditions. On March 12, 2001, the Ninth Circuit Court of Appeals in Headwaters, Inc. v. Talent Irrigation District determined that discharges of aquatic pesticides to waters of the United States require coverage under an NPDES permit. Discharge of aquatic pesticides by the public entities covered by this General Permit is necessary at this time. These public entities conduct resource or pest management programs in order to fulfill statutory requirements and to protect beneficial uses of water and the public health. Many of the public entities would be unwilling to perform the activities prior to issuance of an NPDES permit because of the substantial liability they could incur for discharging aquatic pesticides in violation of the Clean Water Act (CWA).

Because of the emergency nature of this General Permit, many of the actions that would normally occur prior to issuance of a permit granting a categorical exception to priority pollutant objectives/criteria have not yet occurred. This General Permit is issued as a limited term permit, and it will expire January 31, 2004. During the term of this General Permit, activities will occur that will provide the basis for a full-term permit in the future. The public entities subject to the General Permit will complete necessary California Environmental Quality Act (CEQA) documents to justify the categorical exception. The public entities will develop monitoring plans that will be the basis of monitoring requirements in the next permit. The SWRCB will consider issuing future permits that are more limited in nature as to specific pesticides, types of resource and pest management programs, or areas of the State. The future permits will be based on the submittals received during this General Permit term, will specify whether categorical exceptions are warranted, and will ensure that other applicable water quality standards, including the antidegradation policy, are achieved.

RELATED PESTICIDE REGULATIONS

DPR and the County Agricultural Commissioners (CACs) regulate the sale and use of pesticides in California. Pesticide applications subject to this General Permit must be consistent with the pesticide label instructions and any Use Permits issued by the CACs. According to federal law, pesticide label language is under the sole jurisdiction of USEPA. Label language and any changes thereto must be approved by USEPA before the product can be sold in this country. DPR cannot require manufacturers to make changes in labels; however, DPR can refuse to register products unless manufacturers address unmitigated hazards by amending the pesticide label. As part of the pesticide registration process, USEPA and the California Department of Pesticide Regulation (DPR), evaluate data submitted by registrants to assure that a product used according to label instructions will cause no harm (or "adverse impact") on non-target organisms that cannot be reduced (or "mitigated") with protective measures or use restrictions. Registrants are required to submit data on the effects of pesticides on target pests (efficacy) as well as nontarget effects. Data on nontarget effects include plant effects (phytotoxicity), fish and wildlife hazards (ecotoxicity), impacts on endangered species, effects on the environment, environmental fate, breakdown products, leachability and persistence.

Requirements that are specific to use in California are included in many pesticide labels that are approved by USEPA. Applicators of a pesticide designated as a restricted material must either be licensed by DPR or must work under the supervision of someone who is licensed. For aquatic herbicides, this must be a holder of a Qualified Applicator Certificate with the category "aquatic." Use must be reported to the CAC where required by law or by agreement with DPR.

State regulations require that the CAC determine if a substantial adverse environmental impact will result from the proposed use of a restricted material. If the CAC determines that this is likely, the commissioner may deny the Use Permit or may issue it under the condition that site-specific use practices be followed (beyond the label and applicable regulations) to mitigate potentially adverse effects. DPR conducts scientific evaluations of potential health and environmental impacts and provides commissioners with information in the form of suggested permit conditions. DPR's suggested permit conditions reflect minimum measures necessary to protect people and the environment. CACs use this information and their evaluation of local conditions to set site-specific limits in permits.

The State's pesticide regulation laws provide special procedures for vector control agencies operating under cooperative agreements. (See, e.g., Food and Agricultural Code § 11408(e). The application of pesticides by mosquito abatement districts and other vector control agencies is regulated by a special arrangement among the DHS, DPR, CACs, and vector control agencies. Vector control districts are not directly regulated by DPR. Instead, supervisors or applicators are licensed by DHS. Pesticide use by vector control agencies is reported to the CAC in accordance with a 1995 Memorandum of Understanding (MOU) among DPR, DHS, and the CACs for the Protection of Human Health from the Adverse Effects of Pesticides and with cooperative agreements entered into between DHS and vector control agencies, pursuant to Health and Safety Code section 116180.

WATER QUALITY STANDARDS

USEPA established water quality criteria for priority pollutants in the National Toxics Rule and the California Toxics Rule, and Regional Water Quality Control Boards (RWQCBs) establish water quality objectives for priority pollutants in basin plans. The SWRCB has adopted the SIP that contains implementation provisions for these water quality criteria and objectives. The SIP provides that categorical exceptions may be granted to allow short-term or seasonal exceptions from meeting the priority pollutant criteria/objectives if "necessary to implement control measures ... for resource or pest management conducted by public entities to fulfill statutory requirements." The SIP specifically refers to vector or weed control, pest eradication, and fishery management as bases for categorical exceptions. This General Permit grants a categorical exception from water quality criteria and objectives for priority pollutants for the application of aquatic pesticides by public entities in the exercise of resource or pest management powers authorized by State statute. The SWRCB recognizes that the discharges of pollutants may also cause or contribute to exceedance of water quality standards for parameters or constituents that are not priority pollutants. This General Permit does not require immediate compliance with such water quality standards, but requires that the dischargers implement additional BMPs to eliminate or reduce the pollutants that are causing or contributing to exceedance.

As a condition to retaining the categorical exception, dischargers must comply with conditions that are included in the General Permit. Further, consistent with the SIP exception, dischargers are allocated a temporal zone of impact on beneficial uses of water within which there may be a temporary exceedance of criteria, but the resulting impact must be transient, and must allow for full restoration of water quality and protection of beneficial uses upon project completion. The SIP exception applies only to water quality criteria/objectives for priority pollutants and not to other water quality standards, such as the antidegradation policy.

For parameters or constituents that are not priority pollutants, dischargers must implement appropriate BMPs to achieve compliance with other applicable water quality standards contained in a Statewide Water Quality Control Plan or in an RWQCB Basin Plan. If the discharges of any non-priority pollutants cause or contribute to exceedance of water quality standards, the dischargers are required to develop and implement improved BMPs to prevent or reduce such pollutants.

EFFLUENT LIMITATIONS

NPDES permits for discharges to surface waters must meet all applicable provisions of Sections 301 and 402 of the CWA. These provisions require controls of pollutant discharges that utilize best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to reduce pollutants and any more stringent controls necessary to meet water quality standards.

It is not feasible at this time for the SWRCB to establish numeric effluent limitations for pollutants in discharges associated with aquatic pesticide applications. Establishment of numeric effluent limitations for pollutants is not feasible because: (1) aquatic pesticide applications are made directly to the water body and/or to organisms in the water or on the water surface, (2) there may be numerous short duration intermittent pesticide releases to surface waters from many different locations, and (3) there are numerous pesticides used, including many inert ingredients, and the SWRCB does not have the ability to establish numeric effluent limitations for each of these constituents. Therefore, pursuant to Title 40, Code of Federal Regulations (CFR) Section 122.44(k), the effluent limitations contained in this General Permit are narrative and include requirements to implement appropriate BMPs, including compliance with all pesticide label instructions. The BMPs required herein constitute BAT and BCT, and they will be implemented to minimize the areal extent and duration of impacts caused by the discharge of pollutants and to allow for full restoration of water quality and protection of beneficial uses of the receiving waters following completion of resource or pest management projects.

BEST MANAGEMENT PRACTICES (BMPs)

The development of BMPs provides the flexibility necessary to establish controls to minimize the areal extent and duration of impacts caused by the discharge of pollutants and to allow for full restoration of water quality and protection of beneficial uses of the receiving waters following completion of resource or pest management projects. This flexibility allows dischargers to implement different BMPs for different types of applications and different types of waters.

Much of the BMP development has been incorporated in the pesticide regulation process by the USEPA, DPR, DHS, and CACs. As discussed above, the dischargers must be licensed by DPR or DHS if such licensing is required for the aquatic pesticide application project. The pesticide use must be consistent with the pesticide label instructions and any Use Permits issued by CACs.

A pesticide label has been reviewed by both USEPA and DPR scientists to ensure that a product used according to label instructions will cause no harm (or "adverse impact") on non-target organisms that cannot be reduced (or "mitigated") with protective measures or use restrictions. Many of the label directions constitute BMPs to protect water quality and beneficial uses. Label directions may include: precautionary statements regarding toxicity and environmental hazards; directions for proper handling, dosage, application, and disposal practices; prohibited activities; spill prevention and response measures; and restrictions on type of water body and flow conditions.

A Use Permit issued by the CAC incorporates applicable suggested permit conditions from DPR and local site-specific conditions necessary to protect the environment. State regulations require that specific types of information be provided in an application to the CACs for a pesticide use permit. The CACs review the application to assure that appropriate alternatives were considered and that any potential adverse effects are mitigated. The CACs also conduct pre-project inspections on at least 5 percent of projects.

The General Permit requires that the dischargers must comply with all pesticide label instructions, DPR and DHS regulations, and any Use Permits issued by the CACs. The General Permit also specifies the steps that will be followed to identify and implement appropriate BMPs that are designed to maximize efficacy of control efforts and minimize adverse impacts to the environment. These steps are:

1. *Preliminary site evaluations*. The discharger will conduct a site inspection to verify the need for treatment, options to treatment (including non-toxic and less toxic alternatives), and suitability of the site for treatment.
2. *Alternative Control Measures*. The discharger will evaluate other available BMPs and alternative control measures to determine if there are feasible alternatives to the selected aquatic pesticide application project that could reduce potential water quality impacts.
3. *Secondary site evaluations and pre-treatment monitoring*. The discharger will determine the type and intensity of treatment needed. This evaluation will include measurement and analysis of indicators to provide information on potential efficacy and water quality impacts.
4. *Treatment*. Immediately prior to treatment, the discharger will examine a series of indicators and modify treatment plans accordingly. These indicators may include day length, precipitation, recreational activity, sunlight, tidal water exchange, water depth, water flows, water turbidity, and wind. If this examination indicates a potential for reduced control efficacy and/or heightened water quality impacts, the treatment will be rescheduled.

5. *Post-treatment.* The discharger will assess control efficacy and water quality impacts. The results of this assessment will be evaluated by the discharger to refine project operations through an adaptive management process.

The selection of control measures that use non-toxic and less toxic alternatives is an example of an effective BMP. Mosquito Control Districts and other vector control agencies can select larvicides for mosquito control in some situations that have very low toxicity and pose very little or no threat to the environment. Specifically, (a) for microbial larvicides (e.g., Bacillus thuringiensis israelensis, Bacillus sphaericus), USEPA has concluded that they do not pose risks to wildlife, non-target species, or the environment; and (b) for methoprene, USEPA has concluded that, as used in mosquito control programs, it does not pose unreasonable risks to wildlife or the environment. Thin film larvicides (e.g., Agnique) also have low inherent toxicity.

The General Permit includes requirements for the dischargers to identify and implement additional BMPs and alternative control measures where such additional BMPs and measures will prevent or reduce impacts to water quality.

MONITORING REQUIREMENTS

The General Permit requires that the dischargers comply with the Monitoring and Reporting Program (MRP) that is incorporated as Attachment B of the General Permit. Dischargers are also required to submit technical and monitoring reports as directed by the appropriate RWQCB's Executive Officer. The MRP requires that the dischargers develop and implement Monitoring Plan (Plans) to:

1. Document compliance with the requirements of the General Permit;
2. Support the development, implementation, and effectiveness of BMPs; and
3. Demonstrate the full restoration of water quality and protection of beneficial uses of the receiving waters following completion of resource or pest management projects.
4. Identify and characterize aquatic pesticide application projects conducted by the discharger.
5. Assure that projects are monitored that are representative of all pesticides and application methods used by the discharger.

Dischargers must comply with these requirements either individually or by joining with other dischargers to participate in one or more Regional Pesticide Monitoring Program(s) (RPMPs). Any discharger planning to comply through an RPMP must so indicate at Section VI. of the NOI (Attachment A).

The establishment of the RPMPs by groups of dischargers that use similar pesticides and application methods provides an opportunity for dischargers to cost-effectively comply with the MRP. By combining resources and selecting a limited number of representative projects, the RPMPs will be able to conduct monitoring efforts that are comprehensive and technically sound.

Each Discharger shall submit a Plan to the appropriate RWQCB(s) by **March 1, 2002** for approval. Copies of Plans developed by RPMPs shall be provided to the SWRCB and each RWQCB. The Plan submitted by a discharger should describe any individual monitoring

activities and incorporate by reference the RPMP Plans that have been prepared by RPMPs in which the discharger is participating. The Plan must include monitoring of a representative project for each pesticide identified by the discharger at Section IV. B. of the NOI. The dischargers and RPMPs shall implement the Plans **by July 1, 2002** in accordance with any modifications required by the RWQCB.

The MRP lists six monitoring elements that must be incorporated in all monitoring plans except for some plans for vector control projects. Monitoring exemptions may be appropriate for vector control projects that use microbial larvicides, thin film larvicides, and methoprene. These aquatic pesticides may represent the non-toxic or less toxic pest control alternative with reduced or no threat to the environment. Furthermore, feasible specific quantitative test methods may not be available for these pesticides at label application concentrations. Dischargers of these pesticides should document the rationale for not including plan elements where appropriate.

The MRP requires the dischargers to submit a monthly report to the RWQCB documenting specific information for each aquatic pesticide treatment site. The discharger is also required to submit a calendar-year annual report to the RWQCB by January 31 of the following year (beginning January 2003). The report shall include a summary for the previous year including but not limited to (1) objectives of the monitoring program(s); (2) results; and (3) interpretation of data in relation to frequency, duration, and magnitude of impacts to beneficial uses.

NOTIFICATION REQUIREMENTS

To obtain coverage under this General Permit, an NOI and the first annual fee ($400.00) must be submitted. A separate enrollment is required for discharges located within more than one RWQCB's boundary, as defined in Section 13200 of the California Water Code. Each enrollment will cover all discharges occurring within the boundaries of that RWQCB. Only one annual fee must be submitted to the SWRCB for all covered discharges from one entity.

Signing the certification on the NOI signifies that the discharger intends to comply with the provisions of this General Permit. Dischargers are authorized to discharge upon submission of a complete and accurate NOI application for coverage. The NOI Form A is included as Attachment A within this General Permit package. The fully completed NOI, a project map, and first annual fee constitute a complete application for coverage under this General Permit. An NOI must be signed to be valid. Dischargers who submit a valid NOI application are not required to submit an individual permit application.

The authorization to discharge under this General Permit is terminated upon receipt of a Notice of Exclusion (NOE)[1] or upon the adoption of either an individual or other general NPDES permit covering the discharge. The discharger must submit additional information if requested by the SWRCB or RWQCB. The RWQCB may determine that a discharger submitting an NOI is not eligible for coverage under this General Permit and may require submittal of an application for an individual permit. Individual application forms will be provided by the appropriate RWQCB.

[1] An NOE is a one-page notice that indicates that the proposed discharger is NOT eligible for coverage under this General Permit and states the reason why.

The completed NOI application must be submitted to the following address:

Larry Nash
Regulation Unit
Division of Water Quality
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812

This General Permit will expire on January 31, 2004. Enrollees who are covered under this General Permit must obtain coverage under another general permit for aquatic pesticide applications or an individual NPDES permit.

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

WATER QUALITY ORDER NO. 2001-12-DWQ
STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR DISCHARGES OF AQUATIC PESTICIDES TO SURFACE WATERS OF THE UNITED STATES (GENERAL PERMIT)

GENERAL PERMIT NO. CAG990003
WASTE DISCHARGE REQUIREMENTS

The State Water Resources Control Board (hereinafter SWRCB) finds that:

1. On March 12, 2001, the Ninth Circuit Court of Appeals decided that discharges of pollutants from the use of aquatic pesticides in waters of the United States require coverage under an NPDES permit, (Headwaters, Inc. v. Talent Irrigation District). Because of the serious public health, safety and economic implications of delay, the SWRCB developed this General Permit on an emergency basis in order to provide immediate NPDES permit coverage for broad categories of aquatic pesticide use in California. The SWRCB will rescind or revise this General Permit if the law as stated in the *Talent* decision changes.

2. States may request authority to issue general NPDES permits pursuant to Title 40, Code of Federal Regulations (CFR) section 122.28. On June 8, 1989, the SWRCB submitted an application to the U.S. Environmental Protection Agency (USEPA) requesting revisions to its NPDES Program in accordance with 40 CFR §§122.28, 123.62, and 403.10. The application included a request to add general permit authority to its approved NPDES program. On September 22, 1989, the USEPA, Region 9, approved the SWRCB's request and granted authorization for the State to issue general NPDES permits.

3. Federal regulation at 40 CFR §122.28(a)(1) allows NPDES permits to be written to cover a category of discharges within State political boundaries. This General Permit is intended to authorize the short-term and seasonal discharges of pollutants to waters of the United States (water bodies) resulting from the application of aquatic pesticides by public entities for resource or pest management. These public entities are authorized by statute to conduct resource or pest management projects.

4. This General Permit is intended to cover short-term or seasonal discharges by public entities of pollutants to waters of the United States ("water bodies") associated with the application of aquatic pesticides for resource or pest management. Dischargers eligible for coverage under this General Permit are public entities that conduct resource or pest management control measures. "Public entities" include entities that conduct resource or pest management control measures for public purposes of protecting waterways and/or the public health from harmful organisms, regardless of the legal structure of the entity. Examples of public entities that may obtain coverage under this General Permit include, but are not limited to, Mosquito Abatement Districts and other local agencies responsible for control of vectors, and local, State, federal agencies, mutual water companies, public

water purveyors, investor-owned utilities, and homeowner's associations responsible for control of algae, aquatic weeds, and other organisms that adversely impact operation and use of drinking water reservoirs, water conveyance facilities, irrigation canals, and natural water bodies. The organisms controlled by these public entities may be destructive to the beneficial uses of waters, including municipal and irrigation supply, navigation, and aquatic life. Mosquitoes and other similar vectors constitute a serious threat to public health. To avoid the adverse consequences from these harmful or nuisance organisms, the waters are treated with aquatic pesticides. These treatments make it impossible for the waters to maintain their functional characteristics or simultaneously meet all beneficial uses.

5. The aquatic pesticides covered by this General Permit are applied directly into the water body, and/or directly to organisms in the water or on the water surface with the purpose and intent of killing the target aquatic organisms. The impacts of these chemicals may not be limited to the target organisms–other plants and aquatic life in the treatment area may be impacted. Due to water movement at the treatment locations, the residual pesticides can be carried to adjacent areas while concentrations in the water are still high enough to cause adverse impacts not only to aquatic organisms but also to other beneficial uses such as irrigation, municipal water supplies and recreation (such as swimming). As part of the pesticide registration process, USEPA and the Department of Pesticide Regulation (DPR), evaluate data submitted by registrants to assure that a product used according to label instructions will cause no harm (or "adverse impact") on non-target organisms that cannot be reduced (or "mitigated") with protective measures or use restrictions. A purpose of this Order is to minimize the areal extent and duration of adverse impacts to beneficial uses of water bodies treated with aquatic pesticides.

6. DPR and the County Agricultural Commissioners (CACs) regulate the sale and use of pesticides in California. The use of pesticides must be consistent with the pesticide label instructions and any Use Permits issued by the CACs. If applying a pesticide designated as a restricted material, then applicators must either be licensed by DPR or work under the supervision of someone who is licensed. For the use of aquatic herbicides, this must be a Qualified Applicator Certificate with the category "aquatic" and must be reported to the CACs where required by law or by agreement with DPR. The USEPA and DPR have reviewed pesticide label instructions prior to registration of the pesticides for use in California, and this review includes an evaluation of potential impacts to the environment.

7. The State's pesticide regulation laws provide special procedures for vector control agencies operating under a cooperative agreement. The application of pesticides by mosquito abatement districts and other vector control agencies is regulated by a special and unique arrangement among the State Department of Health Services (DHS), DPR, CACs, and vector control agencies. Vector control districts are not directly regulated by DPR. Supervisors or applicators of restricted pesticides to control public health pests must be licensed by DHS. Pesticide use by vector control agencies is reported to the CACs in accordance with a 1995 Memorandum of Understanding (MOU) among DPR, DHS, and the CACs for the Protection of Human Health from the Adverse Effects of

Pesticides and with cooperative agreements entered into between DHS and vector control agencies pursuant to Health and Safety Code Section 116180.

8. DPR regulates the use of pesticide-treated commodities and sites where needed to assure that pesticide residues or breakdown products do not pose a hazard to human health or the environment. DPR also regulates the use of pesticides to reduce the release of residues from treated sites. This includes regulation of wastes generated by applications not in accordance with all laws and regulations, including drift from applications. Pesticide formulations may include the "active ingredients" and the inert ingredients. Adjuvants may be added to the active ingredients in the application equipment that is used in the delivery of the pesticide. Pesticides may become waste after the application has occurred. Adjuvants are regulated as pesticides in California. Other wastes generated by the use of pesticides are not regulated by DPR. These wastes include pesticide residues and breakdown products. These wastes pose a threat to the beneficial uses of the State's waters if not properly managed and therefore are subject to regulation under this General Permit.

9. For the purposes of this Order, the term pesticide shall include: (a) any substance, or mixture of substances intended to be used for eradicating or defoliating plants, regulating an organism's growth, or for preventing, destroying, repelling, or mitigating any pest which may infest or be detrimental to vegetation, man, animals, or households, or that may be present in any agricultural or nonagricultural environment, or (b) any spray adjuvant, or (c) any breakdown products of these materials that adversely affect beneficial uses. This Order regulates the discharge of pollutants, which includes the residues of pesticides that are left in waters of the United States following application.

10. Although a discharge may be eligible for coverage under this General Permit, the appropriate Regional Water Quality Control Board (RWQCB) may determine that the discharge must be regulated under an individual permit or a different general NPDES permit. If an individual or another general NPDES permit is issued for a discharge, then the applicability of this General Permit to the discharge is immediately terminated on the effective date of the other permit.

11. If the area of aquatic pesticide application extends beyond a single RWQCB boundary, then the discharges in each Region shall be covered by a separate Notice of Intent (NOI) under this General Permit. Only one annual fee must be submitted to the SWRCB.

12. The Threat To Water Quality (TTWQ) and Complexity rating for this General Permit is III-c. This category is appropriate because aquatic pesticides applications incorporate Best Management Practices to control potential impacts to beneficial uses and short-term violations of water quality objectives. The annual fee associated with this rating is $400, which has been determined in accordance with current state regulations. Future fees may be adjusted if the regulations are revised.

13. The SWRCB has considered antidegradation pursuant to 40 CFR §131.12 and SWRCB Resolution 68-16. Discharges must be consistent with both State and federal

antidegradation policies. These policies allow degradation of water quality only under specified circumstances. Decreases in water quality must be in the best interests of the people of the State and must protect beneficial uses of water. The SWRCB finds that water supplies and public health would be seriously jeopardized if the resource and pest management projects were not allowed to continue. The SWRCB further finds that adoption of this General Permit is a benefit to the people of the State and that the provisions of this Order will minimize adverse impacts, protect the State's waterways, and ensure full restoration of beneficial uses following completion of pesticide application projects. Therefore, this Order is consistent with the antidegradation policies.

14. This General Permit does not authorize any take of endangered species. The discharge is prohibited from adversely impacting biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws. To ensure that endangered species issues are raised to the responsible agencies, the SWRCB has notified the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Game of this General Permit.

15. There may be other non-toxic or less toxic control measures available to minimize the discharge of wastes to waters of the State. This Order requires dischargers to evaluate BMPs that may include alternative control options, procedures to determine that water quality impacts have been minimized, and a determination that there are no feasible alternatives to the selected resource or pest management measures.

16. The SWRCB, in establishing the requirements contained herein, considered factors including, but not limited to, the following:

    a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose;
    b. Other waste discharges;
    c. Past, present, and probable future beneficial uses of the waters under consideration;
    d. Environmental characteristics of the waters under consideration;
    e. Economic considerations;
    f. The need to control vectors to protect public health;
    g. The need to maintain conveyance facilities to provide water supplies for municipal, irrigation, and industrial purposes; and
    h. Seasonal and weather conditions that require timely implementation of control measures.

17. The designated beneficial uses of surface waters throughout the State may include municipal, domestic, industrial, and agricultural supply; water contact and non-contact recreation; navigation; ground water recharge; fresh water replenishment; hydropower generation; wildlife habitat; cold freshwater and warm freshwater habitat; fish migration and fish spawning; marine habitat; estuarine habitat; shellfish harvesting; ocean commercial and sport fishing; preservation of areas of special biological significance; and preservation of rare and endangered species. To the extent that the applicable RWQCB Water Quality Control Plan (WQCP) designates additional or different beneficial uses, the WQCP shall control.

18. USEPA establishes water quality criteria for priority pollutants in the National Toxics Rule and the California Toxics Rule, and RWQCBs establish water quality objectives for priority pollutants in basin plans. The SWRCB *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (the Policy) went into effect on May 22, 2000 and generally requires limitations for all constituents that will cause, have the reasonable potential to cause, or contribute to chronic toxicity in receiving waters.

19. Because of the nature of the discharge of aquatic pesticides, it is not feasible at this time for the SWRCB to establish numeric effluent limitations for the pollutant(s) in discharges associated with aquatic pesticide applications. Establishment of numeric effluent limitations for pollutants is not feasible because: (a) aquatic pesticide applications are made directly to the water body or to organisms on the water surface; (b) there may be numerous short duration intermittent pesticide releases to surface waters from many different locations; and (c) there are numerous pesticides used, and the SWRCB does not have the ability to establish numeric effluent limitations for each of these constituents. Therefore, pursuant to 40 CFR. §122.44(k), the effluent limitations contained in this General Permit are narrative and include requirements to implement appropriate BMPs to minimize the areal extent and duration of impacts caused by the discharge of pollutants and to allow for full restoration of water quality and protection of beneficial uses of the receiving waters following completion of resource or pest management projects.

20. Section 5.3 of the Policy provides that the SWRCB may allow short-term or seasonal categorical exceptions from meeting the priority pollutant criteria/objectives if it is determined to be necessary to implement control measures for resource or pest management conducted by public entities to fulfill statutory requirements, including, but not limited to, those in the California Fish and Game, Food and Agriculture, Health and Safety, and Harbors and Navigation codes.

21. Because of the emergency nature of this General Permit, many of the actions that would normally occur prior to issuance of a permit granting a categorical exception to priority pollutant objectives/criteria have not yet occurred. This General Permit is issued as a limited-term permit, and it will expire January 31, 2004. During the term of this General Permit, the public entities subject to the General Permit will complete necessary CEQA documents and prepare other submittals to satisfy the criteria for the categorical exception. These activities will provide the basis for future full-term permits. The public entities will also develop monitoring plans that will be the basis of monitoring requirements in future permits.

22. As authorized under the Policy, this General Permit grants a categorical exception to dischargers from requirements to meet applicable water quality criteria and objectives for priority pollutants. The SWRCB recognizes that the dischargers may also cause or contribute to exceedance of other applicable water quality standards for parameters or constituents that are not priority pollutants that are contained in a Statewide Water Quality Control Plan or in an RWQCB Basin Plan. This General Permit does not require immediate compliance with such water quality standards. Dischargers must comply with appropriate conditions, which

are included in the General Permit, including following label instructions and employing BMPs. Dischargers are allocated a temporal zone of impact on beneficial uses of water within which there may be a temporary exceedance of criteria, but the resulting impact must be transient, and allow for full restoration of water quality and protection of beneficial uses upon project completion. The exception only applies to water quality criteria/objectives for priority pollutants and not to other water quality standards, such as the antidegradation policy. For parameters or constituents that are not priority pollutants, the dischargers are required to develop and implement improved BMPs to prevent or reduce such pollutants that cause or contribute to exceedance of water quality standards.

23. The information submitted with the NOI, combined with the findings and requirements of this General Permit, satisfy the requirements to receive a categorical exception described in Finding 20.

24. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA (Public Resources Code Section 21100, et seq.), in accordance with Section 13389 of the California Water Code. Nevertheless, this General Permit includes requirements to explore alternatives and to implement BMPs as mitigation measures to address the policy provisions of Chapter 1 of CEQA pursuant to 23 C.C.R. §3733.

25. The adoption of this General Permit, including granting a categorical exception from meeting applicable priority pollutant criteria and objectives is necessary to avert an emergency. If dischargers are prevented from applying aquatic pesticides immediately, there is a likelihood of a public health emergency, and the adoption of this General Permit is therefore exempt from CEQA pursuant to Title 14, CRC section 15269.

26. The SWRCB has notified interested agencies and persons of its intent to prescribe waste discharge requirements (WDRs) in this General Permit and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

27. The SWRCB, in a public hearing, heard and considered all comments pertaining to the discharges to be regulated by this General Permit.

28. This order shall serve as an NPDES permit pursuant to Section 402 of the Clean Water Act (CWA) and amendments thereto and shall take effect upon the date of adoption.

IT IS HEREBY ORDERED that all dischargers who have submitted an NOI and annual fee shall comply with the following:

A. Application:

1. Dischargers eligible for coverage under this General Permit are entities that conduct resource or pest management control measures for public purposes of protecting waterways and/or the public health from harmful organisms, regardless of the legal structure of the entity, provided that:

a. The discharger submits to the following address a complete and accurate NOI Form A to comply (Attachment A), project map, and first annual fee to cover all discharges by that discharger within the boundaries of each RWQCB, as defined in Section 13200 of the California Water Code. The NOI must be signed in accordance with the signatory requirements of Standard Provision B.2. The NOI shall be submitted to:

Larry Nash
Regulation Unit
Division of Water Quality
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812

b. The discharger, upon request, submits any additional information which the SWRCB and/or RWQCB determines is necessary in order to ascertain whether the discharge meets the criteria for coverage under this General Permit.

c. The discharger does not receive a written Notification of Exclusion (NOE) from the RWQCB. The discharger's authority to discharge under this General Permit terminates upon receipt of an NOE.

d. If the discharger receives a request to submit an application for an individual or other general permit from the SWRCB or from an RWQCB, the discharger will continue to by covered by this General Permit until covered by an individual or other general NPDES permit.

B. Discharge Prohibitions:

1. The discharge of wastes other than as described in this General Permit is prohibited.

2. The discharge of wastes shall not create or cause conditions of nuisance or pollution.

3. The discharge shall not cause or contribute to long-term adverse impacts on beneficial uses of waters of the United States.

4. The discharge shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws.

C. Effluent Limitations:

1. The discharge of aquatic pesticides must comply with all pesticide label instructions, DPR and DHS regulations, and any Use Permits issued by CACs.

2. The discharge of aquatic pesticides shall be managed using BMPs (discussed in Section D) to minimize the areal extent and duration of impacts caused by the discharge of pollutants and to allow for full restoration of water quality and protection of beneficial uses of the receiving waters following completion of resource or pest management projects.

D. Best Management Practices (BMPs)

1. Dischargers must be licensed by DPR or DHS if such licensing is required for the aquatic pesticide application project. The pesticide use must be consistent with the pesticide label instructions and any Use Permits issued by CACs.

2. Prior to initial discharge under this General Permit the Discharger shall take steps to notify potentially affected public and governmental agencies.

3. The dischargers will follow BMPs that are designed to maximize efficacy of control efforts and minimize adverse impacts to the environment. The steps that will be followed to identify appropriate BMPs include:

    a. *Preliminary site evaluations*. The discharger will conduct a site inspection to verify the need for treatment, options to treatment (including non-toxic and less toxic alternatives), and suitability of the site for treatment.

    b. *Secondary site evaluations and pre-treatment monitoring*. The discharger will determine the type and intensity of treatment needed. This evaluation will include measurement and analysis of indicators to provide information on potential efficacy and water quality impacts.

    c. *Alternative Control Measures*. The discharger will evaluate other available BMPs and alternative control measures to determine if there are feasible alternatives to the selected aquatic pesticide application project that could reduce potential water quality impacts.

    d. *Treatment*. Immediately prior to treatment, the discharger will examine a series of indicators and modify treatment plans accordingly. These indicators may include day length, precipitation, recreational activity, sunlight, tidal water exchange, water depth, water flows, water turbidity, and wind. If this examination indicates a potential for reduced control efficacy and/or heightened water quality impacts, the treatment will be rescheduled.

    e. *Post-treatment*. The discharger will assess control efficacy and water quality impacts. The results of this assessment will be evaluated by the Discharger to refine project operations through an adaptive management process.

E. Solids Disposal:

Solids removed from liquid wastes shall be disposed of in a manner that is consistent with Chapter 15, Division 3, Title 23, of the California Code of Regulations (CCR) and approved by the appropriate RWQCB's Executive officer.

F. Receiving Water Limitations:

1. Discharges shall not adversely impact human health or the environment.

2. Discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan or in the applicable RWQCB Basin Plan for parameters or constituents that are not priority pollutants.

3. A discharger will not be in violation of Receiving Water Limitation F.2 as long as the discharger has implemented the BMPs required by this General Permit and the following procedure is followed:

   a. Should it be determined by the discharger, the RWQCB, or the SWRCB that discharges of pollutants are causing or contributing to the exceedance of water quality standards, the discharger, within 60 days of the determination, shall submit a report to the appropriate RWQCB that describes the BMPs that are currently being implemented and the additional BMPs that will be implemented to prevent or reduce such pollutants. The report shall include an implementation schedule. The RWQCB may require modifications to the report.

   b. Following approval of the report described in F.3.a, the discharger shall implement the additional BMPs in accordance with the schedule.

4. The discharger is granted a categorical exception from meeting the priority pollutant criteria/objectives as specified Section 5.3 of the SWRCB's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries. This exception is short-term (including seasonal) and applies only during and following the use of aquatic pesticides that have been identified by the discharger in the NOI, Form A (Attachment A). Any impacts on beneficial uses of water must be temporary in nature and must allow for full restoration of the pre-project water quality and thus protection of the beneficial uses upon project completion.

G. Provisions:

1. The discharger must comply with all conditions of this General Permit including timely submittal of technical and monitoring reports as directed by the appropriate RWQCB's Executive Officer.

2. If, in accordance with Best Management Practices D.3.c., the discharger identifies alternative control measures to the selected aquatic pesticide application project that

could reduce potential water quality impacts and that are also feasible, practicable and cost-effective, the discharger shall implement the identified alternative measures.

3. The discharger shall comply with the attached Monitoring and Reporting Program (MRP), General Permit No. 2001-12-DWQ, contained in Attachment B of this General Permit and any revision thereto.

4. In accordance with the MRP, the discharger shall submit a Monitoring Plan (Plan) to the appropriate RWQCB(s) by March 1, 2002 for approval. If the discharger chooses, compliance with the requirements to develop and implement a Monitoring Plan may be accomplished by participating in a Regional Pesticide Monitoring Program(s) (RPMPs).

5. Any discharger planning to comply with the MRP through an RPMP must so indicate at Section VI. of the NOI. Individual discharger Plans should incorporate by reference the RPMP Plans that have been prepared by RPMPs in which the discharger is participating. The individual discharger Plan and any incorporated RPMP Plans must include monitoring of a representative project for each pesticide identified by the discharger(s) at Section IV. B. of the NOI. The dischargers and RPMPs shall implement the Plans by July 1, 2002 in accordance with any modifications required by the RWQCB.

6. The discharger shall comply with all the applicable items of the Standard Provisions and Reporting for Waste Discharge Requirements (Standard Provisions), which are part of this General Permit (Attachment C).

7. If the area of aquatic pesticide application extends beyond a single RWQCB boundary, then the discharges in each Region shall be covered by an NOI. One annual fee must be submitted to the SWRCB for all covered discharges from one entity.

8. For the RWQCB to receive immediate and accurate information regarding all points of discharge, the discharger shall establish and maintain a liaison contact with the appropriate RWQCB. A list of designated liaison personnel, telephone number(s), and specific area(s) of responsibility shall be submitted to the appropriate RWQCB within **30 days** from the date of submittal of the NOI and after any update to the designated personnel list.

9. A copy of this General Permit shall be kept where key operating personnel can refer to the documents. Key operating and site management personnel shall be familiar with its contents.

10. When requested by USEPA, the discharger shall also complete and submit Discharge Monitoring Reports to USEPA. The submittal date shall be specified in the USEPA request.

11. The discharger is required to retain records, including all monitoring information and copies of all reports required by this General Permit, for five years unless directed otherwise by an RWQCB.

12. This General Permit expires on January 31, 2004.

13. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the discharger, the discharger shall notify the succeeding owner or operator of the existence of this General Permit by letter, a copy of which shall be immediately forwarded to the appropriate RWQCB office. The new discharger shall complete and submit to the SWRCB a revised NOI Form A (Attachment A) in accordance with Application A.1.

H. RWQCB Authorities:

1. Following the SWRCB's adoption of this General Permit, RWQCBs as necessary, shall:

   a. Review and approve Monitoring Plans submitted by dischargers and RPMPs.

   b. Review monitoring reports and other reports submitted by the dischargers, conduct compliance inspections, and take appropriate enforcement actions.

   c. Issue permits, as they deem appropriate, to individual dischargers, categories of dischargers, or dischargers in a geographic area. Upon issuance of such permits by an RWQCB, this General Permit shall no longer regulate the affected dischargers.

2. RWQCBs may require additional monitoring and reporting program requirements, where deemed necessary.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on July 19, 2001.

AYE: Arthur Baggett, Jr.
Richard Katz
Peter Silva

NO: None

ABSENT: None

ABSTAIN: None

Maureen Marché
Clerk to the Board

California Environmental Protection Agency

Attachment A to Water Quality Order No. 2001-12-DWQ

Gray Davis, Governor

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE AQUATIC PESTICIDES FOR DISCHARGES OF AQUATIC PESTICIDES TO SURFACE WATERS OF THE UNITED STATES GENERAL PERMIT NO. CAG990003

FORM A

I. NOTICE OF INTENT STATUS (see instructions)

MARK ONLY ONE ITEM 1. ☐ New Applicator 2. ☐ Change of Information for WDID# _____

II. PESTICIDE APPLICATOR INFORMATION

Name/Agency			Contact Person		
Mailing Address			Title		
City	County		State	Zip	Phone ( ) –

III. RECEIVING WATER INFORMATION

A. Do wastes and pesticide residues discharge to (check all that apply):

1. ☐ Canals, Ditches, or other constructed conveyance facilities owned and controlled by Applicator?_____
2. ☐ Other conveyance systems? - Enter owner's name:_____
3. ☐ Directly to waters of U.S. (e.g., river, lake, creek, stream, bay, ocean, etc.)? _____

B. Regional Water Quality Control Board(s) where application sites are located (REGION 1,2,3,4,5,6,7,8, or 9): REGION _____
(List all regions where pesticide application is proposed.)

C. Name of receiving water: (river, lake, creek, stream, bay, ocean): _____

IV. PESTICIDE APPLICATION INFORMATION

A. Target Organism: ____Algae ____Aquatic Weeds (surface) ____Aquatic Weeds (submerged) ____Mosquitoes and other Vectors
____OTHER (identify): _____

B. Pesticides Used: List Name and Active ingredients - _____

C. Period of Application: Start Date _____ End Date_____

FOR OFFICE USE ONLY Date Received_____ Date Sent To Regions_____

V. VICINITY MAP AND FEE

Have you included vicinity map(s) with this submittal? ☐ YES ☐ NO
Separate vicinity maps must be submitted for each Region where a proposed discharge will occur.

Have you included payment of the annual fee with this submittal? ☐ YES ☐ NO

VI. MONITORING AND REPORTING REQUIREMENTS

This permit includes a requirement to develop and implement an individual Pesticide Monitoring Plan or participate in a Regional Pesticide Monitoring Program. Check the applicable Box or Boxes

I will develop an individual Pesticide Monitoring Plan in accordance with the permit requirements. ☐

I will participate in a Regional Pesticide Monitoring Program developed in accordance with the permit requirements. ☐

VII. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I certify that the provisions of the permit, including developing and implementing a monitoring program, will be complied with."

Printed Name: _____

Signature: _____ **Date:** _____

Title: _____

VIII. FORM A SUBMITTAL INFORMATION

A. Send the completed and signed Form A along with the annual fee and vicinity map(s) to:

State Water Resources Control Board
Division of Water Quality
Regulations Unit
P.O. Box 100
Sacramento, CA 95812-0100

INSTRUCTIONS
FOR COMPLETING THE NOTICE OF INTENT TO DISCHARGE AQUATIC PESTICIDES TO SURFACE WATERS OF THE STATE GENERAL PERMIT

These instructions are intended to help you, the discharger, complete the Notice of Intent (NOI) form for the general NPDES permit, "General Permit to Discharge Aquatic Pesticides to Surface Waters" (General Permit). **Please type or print clearly when completing the NOI form and vicinity map(s).**

One NOI should be submitted by each owner/agency to cover all proposed discharges within the boundaries of each Regional Water Quality Control Board (RWQCB). If proposed discharges will occur in more than one Region, submit extra copies of the NOI and maps for each Region where a discharge will occur. Only one annual fee is required for each owner/agency.

Section I – Status

Please mark whether this is the first time coverage under this General Permit has been requested or if this is a change of information for a discharge already covered under this General Permit. If this is a change of information, please supply the eleven-digit WDID number for the discharge.

Section II – Pesticide Applicator Information

1. **Name** - The name (first and last) of the owner/operator. If the owner/operator is a company or agency, put the name of the company or agency in this space.
2. **Mailing Address** - The street number and street name where mail and correspondence should be sent (P.O. Box is acceptable).
3. **City, County, State, and Zip Code** - The city, county, state, and zip code that apply to the mailing address given.
4. **Telephone** - Daytime telephone number of the owner/operator.
5. **Contact Person** - The name (first and last) of the contact person for the owner/operator (agency, company, etc.) listed above.
6. **Title** – The contact person's title.

Section III – Receiving Water Information

A. Check all boxes that apply. At least one box must be checked.
   1. Check this box if the application site is a canal, ditch or other constructed conveyance system owned and controlled by the Applicator/Permittee.
   2. Check this box if the application site is a canal, ditch or other constructed conveyance system owned and controlled by a different person or entity than the Applicator/Permittee. Clearly print the name of the owner of the conveyance system.
   3. Check this box if the pesticide will be applied directly to waters of the United States. Clearly print the name of the river, lake, etc. where the pesticide will be applied.

B. List all region numbers where pesticide application is proposed. Regional Water Board boundariesare defined in Section 13200 of the California Water Code. The numbers for each Region are given below.

1- North Coast
3- Central Coast
5- Central valley (Sacramento, Fresno, Redding)
7- Colorado River
9- San Diego

2- San Francisco
4- Los Angeles
6- Lahontan (South Lake Tahoe, Victorville)
8- Santa Ana

C. Enter the name of the receiving water that the constructed conveyance empties into, or if applicable, the name of the water body to which the pesticide is directly applied (the same as in A. 3.).

Section IV – Pesticide Application Information

A. Check the appropriate target organism. If the target organism is not listed, check OTHER and list the name or type of target organism in the space provided.
B. List the name and active ingredients of each pesticide to be used.
C. List the start and end date of proposed pesticide application.

Section V – Vicinity Map and Fee

1. If you have included vicinity map(s) with your Form A submittal, check the YES box, if you have not included the vicinity map(s), check the NO box. **NOTE:** Vicinity map(s) of the proposed pesticide application site must be received before your permit can be issued. You must submit separate vicinity map(s) for each Regional Board service area where a discharge is proposed. If applying for coverage under Region 5, please send in two additional copies of the required map, if applying for coverage under Region 6, please send in one additional copy of the required map.
2. Check the YES box if you have included payment of the $400 annual fee with your Form A submittal. Check the NO box if you have not included this payment. **NOTE:** Payment of this fee must be received before you can obtain coverage under this General Permit. You will be invoiced annually and payment is required to continue coverage.

Section VI – Monitoring and Reporting Requirements

Monitoring and Reporting Program, Section A. *Monitoring Plans* describes in detail the requirements for monitoring activities to be conducted by the permittee. Check the appropriate box to indicate if you will develop an individual Pesticide Monitoring Program, or if you will jointly establish and support a Regional Pesticide Monitoring Program. You must check at least one of the boxes.

Section VII - Certification

1. **Printed Name** - Please print your name legibly. This section should be filled out by the person responsible according to Section B.2.a. of the Standard Provisions (Attachment C).
2. **Signature and Date** - Signature of person whose name is printed above, and the date signed.
3. **Title** – The professional title of the person signing the NOI.

Attachment B
to Water Quality Order
No. 2001-12-DWQ

STATE WATER RESOURCES CONTROL BOARD

MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR DISCHARGES OF AQUATIC PESTICIDES TO SURFACE WATERS OF THE UNITED STATES (GENERAL PERMIT) GENERAL PERMIT NO. CAG990003

A. MONITORING PLANS: Individual and Regional

Each discharger seeking coverage under this general permit shall submit a Monitoring Plan (Plan) for approval by the appropriate Regional Water Quality Control Board (RWQCB) and shall implement the Plan as approved. Plans shall achieve the following goals:

1. Document compliance with the requirements of the General Permit;

2. Support the development, implementation and effectiveness evaluation of Best Management Procedures (BMPs);

3. Demonstrate the full restoration of water quality and protection of beneficial uses of the receiving waters following completion of resource or pest management projects;

4. Identify and characterize aquatic pesticide application projects (projects) conducted by the discharger; and

5. Assure that the Plan provides for monitoring of projects that are representative of all pesticides and application methods used by the discharger.

BMPs include activities that eliminate or reduce the discharge of pollutants that minimize the areal extent and duration of impacts caused by the discharge of pollutants and that identify and implement non-toxic or less toxic alternatives.

Dischargers must comply with the requirements of this Section either individually or by participating in a Regional Pesticide Monitoring Program(s) (RPMPs). Any discharger planning to comply through an RPMP must so indicate at Section VI of the Notice of Intent (Attachment A).

Each Discharger is responsible for submitting a Plan to the appropriate RWQCB(s) by March 1, 2002 for approval. All Plans, whether individual or RPMP, must include monitoring of at least one representative project for each pesticide identified by the discharger(s) at Section IV. B. of the Notice of Intent. All Plans shall be implemented by July 1, 2002, in accordance with any modifications required by the RWQCB.

All Plans shall incorporate the following elements, except that monitoring exemptions may be appropriate for vector control projects that use microbial larvicides, thin film larvicides, and methoprene. These aquatic pesticides may represent the non-toxic or less toxic pest control alternative with reduced or no threat to the environment. Furthermore, feasible specific quantitative test methods may not be available for these pesticides at label application concentrations. Dischargers of these pesticides should document the rationale for not including plan elements where appropriate.

The following elements shall be included in each **Plan**, unless exempted as described above:

1. Characterization of representative aquatic pesticide application projects, including: diversity of actual pesticide use, diversity in season, receiving water types (e.g., canals, creeks, sloughs, etc.), climate, differing rates of pesticide applications or concentrations, project size (area, water volume, and flow).

2. Visual assessment of existing or potential adverse impacts on beneficial uses caused by application of pesticides.

3. Water quality analyses (using test procedures specified in 40 CFR Part 136) for selected constituents and parameters to demonstrate full restoration of water quality and protection of beneficial uses of the receiving waters following project completion. Analyses shall include the active ingredients in the pesticides applied and may include:

    a. Other constituents that have been identified that may adversely impact beneficial uses of the receiving waters as a result of the project;
    b. Dissolved Oxygen;
    c. Temperature;
    d. pH;
    e. Turbidity;
    f. Hardness and other water quality parameters that may influence pesticide persistence or toxicity; and
    g. Electrical Conductivity.

4. A Quality Assurance Plan (QAP) to provide references, standardized procedures and quality specifications for the sampling, analysis, and data review procedures for the monitoring program.

5. An evaluation of any non-toxic or less-toxic pest control methods that may provide a practicable substitute for pesticide application. This evaluation shall include an estimate of each alternative's costs, a review of any known barriers to implementing the alternative and any solutions to overcoming those barriers.

6. Evaluation of the effectiveness of representative BMPs to eliminate or reduce the discharge of pollutants and minimize the areal extent and duration of impacts caused by the discharge of pollutants.

B. AQUATIC PESTICIDE USE DOCUMENTATION:

The discharger shall maintain records of the following information for each treatment site:

1. The location of the treatment area (address, cross roads, coordinates);
2. The names of the water bodies treated (canal, creek, lake);
3. Project size (the water surface area, volume of water treated, flow rate);
4. Name, formulation, concentration, and amount of pesticide used; and
5. Documentation of activities in compliance with the General Permit Section D. Best Management Practices

Copies of these documentation records shall be submitted to the RWQCB in monthly Pesticide Use Reports due the 15th of the following month. Dischargers may use Pesticide Use Report forms (from DPR) as part of the documentation.

C. REPORTING:

All reports shall be submitted to the appropriate RWQCB Executive Officer. All reports submitted in response to this Order must comply with the provisions stated in "Standard Provisions-and Reporting for Waste Discharge Requirements (NPDES)" (Attachment C), Section 1B, "Monitoring and Reporting Requirements", including the signatory requirements of Standard Provision B.2.

In addition to the monthly submittal of the Pesticide Use Reports, the discharger shall submit a calendar year Annual Report to the SWRCB by January 31 of the following year (beginning January 2003). The discharger may refer to Annual Reports prepared by applicable RPMPs. Copies of all reports prepared by RPMPs must be provided to the SWRCB and each RWQCB. The Annual Report shall contain tabular summaries of the pesticide monitoring data obtained during the previous year in a format that satisfies the requirements for inclusion in the Department of Pesticide Regulation's surface water database. The Annual Report shall include a summary including but not limited to (1) objectives of the monitoring program(s); (2) results; and (3) interpretation of data in relation to frequency, duration and magnitude of impacts to beneficial uses.

Sketches of sample locations, chain of custody forms and other information developed as part of this monitoring program shall be maintained by the discharger and submitted to the RWQCB upon request.

Attachment C
to Water Quality Order
No. 2001-12-DWQ

STATE WATER RESOURCES CONTROL BOARD (SWRCB) STANDARD PROVISIONS AND REPORTING FOR WASTE DISCHARGE REQUIREMENTS (WDR) FOR STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR DISCHARGES OF AQUATIC PESTICIDES TO SURFACE WATERS OF THE UNITED STATES (GENERAL PERMIT) GENERAL PERMIT NO. CAG990003

A. General Provisions

1. Duty to Comply [40 CFR 122.41(a)][CWC 133811

   a. The discharger must comply with all of the conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action, for permit termination, revocation and reissuance or modification, or for denial of a permit renewal application.

   b. The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act within the time provided in the regulations that establish these standards or prohibitions, even if this permit has not been modified to incorporate the requirement.

2. Duty to Mitigate [40 CFR 122.41(d)]

   a. The discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment.

3. Proper Operation and Maintenance [40 CFR 122.41(e)],

   a. The discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the discharger to achieve compliance with this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of, backup or auxiliary facilities or similar systems, which are installed by a discharger only when necessary to achieve compliance with the conditions of this permit.

4. Permit Actions [40 CFR 122.41(f)][CWC 13263(e)1[40 CFR 122.44(b)(1)]

   a. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a permit modification, revocation and reissuance, or

termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

b. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge, and that standard or prohibition is more stringent than any limitation on the pollutant in this permit,this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the discharger so notified.

5. Property Rights [40 CFR 122.41(g)][CWC 13263(g)]

a. This permit does not convey any property rights of any sort, or any exclusive privileges.

b. All discharges of waste into water of the state are privileges, not rights.

6. Duty to Provide Information [40 CFR 122.41(h)]

a. The discharger shall furnish the Regional Water Quality Control Board (RWQCB), the SWRCB, or the U.S. Environmental Protection Agency (U.S. EPA), within a reasonable time, any information which the RWQCB, SWRCB, or U.S. EPA may request to determine compliance with this general permit. Upon request, the discharger shall also furnish to the RWQCB, SWRCB, or U.S. EPA, copies of records required by this permit to be kept.

7. Inspection and Entry [40 CFR 122.41(h)]

a. The discharger shall allow the RWQCB, SWRCB, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit; and

(2) Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(3) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit; and

(4) Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act or the Porter-Cologne Water Quality Control Act, any substances or parameters at any location.

8. Bypass and Upset [40 CFR 122.41(m)] [40 CFR 122.41(n)]

a. Definitions.

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(3) "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond, the reasonable control of the discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Prohibition of Bypass.

(1) Bypass is prohibited, and the RWQCB may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under 40 CFR 122.41 (m) (3)

c. Conditions necessary for a demonstration of upset.

(1) A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that:

(a) An upset occurred and that the permittee can identify the cause(s) of the upset;

(b) The permitted facility was at the time being properly operated; and

(c) The permittee submitted notice of the upset as required in 24 Hour Reporting.

(d) The permittee complied with any remedial measures required under 40 CFR 122.41 (d)

d. Burden of proof

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

9. Transfers [40 CFR 122.41(L)(3)] [CWC 133771] [40 CFR 122.61 (a)(b)]

a. This permit is not transferable to any person except after notice to the RWQCB. The RWQCB may require modification or reissuance of the permit conditions to change the name of the discharger and incorporate such other requirements as may be necessary under the Clean Water Act and the Porter-Cologne Water Quality Control Act.

10. Severability

a. The provisions of this Order are severable and, if any provision of this order or the application of any provisions of this Order to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Order shall not be affected thereby.

11. Pollution, Contamination, or Nuisance [CWC 13050]

a. Neither the treatment nor the discharge shall create a condition of pollution, contamination, or nuisance.

B. Monitoring and Reporting Requirements

1. Monitoring and-Records (40 CFR 122.41(j)][Title 23, CCR, Div 3, Ch 14]

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The dimensions, size and/or volume of vault;

(4) The duration of the discharge;

(5) The estimated volume of discharge;

(6) The date(s) analyses were performed;

(7) The individual(s) who performed the analysis;

(8) The analytical techniques or methods used; and

(9) The results of such analyses.

c. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 or unless other test procedures have been specified in this permit.

2. Signatory Requirements [40 CFR 122-41(k)] [40 CFR 122.221]

a. All permit applications or NOIs submitted to the RWQCB, SWRCB, and/or U.S. EPA shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this provision, a responsible corporate officer means: a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a Federal agency includes: the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S EPA).

b. All reports required by this permit and other information requested by the RWQCB, SWRCB, or U.S. EPA. shall be signed by a person described in paragraph (a) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a) of this provision;

(2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for

environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

(3) The written authorization is submitted to the RWQCB, SWRCB, or USEPA.

c. If an authorization under paragraph (b) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this provision must be submitted to the RWQCB, SWRCB or U.S. EPA prior to or-together with any reports, information, applications, or NOIs to be signed by an authorized representative.

d. Any person signing a document under paragraph (a) or (b) of this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

3. Monitoring Reports [40 CFR 122.41(l) (4)]

a. Monitoring results shall be reported at the intervals specified in the permit.

b. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms approved by the RWQCB or SWRCB for reporting results of monitoring of pollutants and sludge use or disposal practices.

c. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this permit.

4. Compliance Schedules [40 CFR 122.41(l) (5)]

a. Reports of compliance or noncompliance with interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

5. Twenty-four Hour Reporting [40 CFR 122.41(l) (6)]

a. The discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within five days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times and, if the noncompliance has not

been corrected, the anticipated time it is expected to continue, and, steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as-information that must be reported within 24 hours under this paragraph:

(1) Any bypass which exceeds any effluent limitation in the permit.

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed in this permit is to be reported within 24 hours. The RWQCB may waive the above required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours.

6. Other Noncompliance [40 CFR 122.41 (1) (7)]

a. The discharger shall report all instances of noncompliance not reported under Provisions (B.3), (B.4), and (2.5) at the time monitoring reports are submitted. The reports shall contain the information listed in Provision (B.5).

7. Other Information [40 CFR 122.41(l) (8)]

a. When the discharger becomes aware that it failed to submit any relevant facts in a permit application or NOI, or submitted incorrect information in a permit application, NOI or in any report to the RWQCB, SWRCB, or U.S. EPA, the discharger shall promptly submit such facts or information.

8. Planned Changes [40 CFR 122 41(l)(1)]

a. The discharger shall give notice to the RWQCB as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40- CFR Part 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit nor to notification requirements under 40 CFR Part 122.42 (a) (1); or

(3) The alteration or addition results in a significant change in the discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application/NOI process or not reported pursuant to an approved land application plan.

9. Anticipated Noncompliance [40 CFR 122.41(l)(2)]

   a. The discharger shall give advance notice to the RWQCB or SWRCB of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

10. Discharge Monitoring Quality Assurance (DMQA) Program [SWRCB/EPA 106 MOA]

   a. The discharger shall conduct appropriate analyses on any sample provided by U.S. EPA as part of the DMQA program. The results of such analyses shall be submitted to U.S. EPA's DMQA manager.

C. Enforcement Provisions

1. The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of violation. Any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day for each violation, or by imprisonment of not more than one year, or both. Higher penalties may be imposed for knowing violations and for repeat offenders. The Porter-Cologne Water Quality Control Act provides for civil and criminal penalties comparable to and in some cases greater than those provided under the Clean Water Act. [40 CFR 122.41(a)(2)][CWC Sections 13385 and 13387]

2. The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both. [40 CFR 122-41(k) (2)]

3. The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or both. Higher penalties may be imposed for repeat offenders. [40 CFR 122.41(j)(5)]

Appendix B

Notice of Intent Form A

OROVILLE-WYANDOTTE IRRIGATION DISTRICT

WATER and HYDRO-ELECTRIC

Tom Venus, PE
Environmental & Safety
Compliance Officer

2310 Oro Quincy Highway
P.O. Box 581
Oroville, CA 95965-0581
Voice: 530-533-4578, ext. 215
FAX: 530-533-9700
Tvenus@owid.com

Transmittal

TO: State Water Resources Control Board
Division of Water Quality
Regulations Unit
P.O. Box 100
Sacramento, CA 95812-0100

DATE: 24 August 2001
OWID #: 805
SUBJECT: Herbicide Applications Program

VIA: ☒ Mail ☐ Overnight ☐ Courier ☐ Fax 9 Pgs. (inc. cover)

PLEASE FIND ENCLOSED:

Copies	Date	No.	Description
1	8/23/01		Attachment A to Water Quality Order No. 2001-12-DWQ: Notice of Intent to comply with the terms of the Statewide General National Pollutant Discharge Elimination System (NPDES) Permit to discharge aquatic pesticides for discharges of aquatic pesticides to surface waters of the United States, General Permit No. CAG990003 (Form A)
1	8/27/01		Check for $400.00: Application Fee

THESE ARE SUBMITTED AS CHECKED BELOW:

- ☐ As requested
- ☐ For information and coordination
- ☐ Return material when review complete
- ☐ Return after loan to us
- ☒ For approval by: RWQCB - 5 Return to: NA
- ☐ For review and comment by: Return to:
- ☐ Other: _____

REMARKS: None

Signed: Thomas A. Venus
Tom Venus, ESCO

Copies to: Kathy Petersen, Power Division Mgr.
George Barber, Water Division Mgr.

Quality On Tap!
Our Commitment Our Profession

California Environmental tection Agency

State Water Resources Control Bo

Attachment A
to Water Quality Order
No. 2001-12-DWQ

Gray Davis
Governor

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE AQUATIC PESTICIDES FOR DISCHARGES OF AQUATIC PESTICIDES TO SURFACE WATERS OF THE UNITED STATES GENERAL PERMIT NO. CAG990003

FORM A

I. NOTICE OF INTENT STATUS (see instructions)

MARK ONLY ONE ITEM 1. ■ New Applicator 2. ☐ Change of Information for WDID#

II. PESTICIDE APPLICATOR INFORMATION

Name/Agency Oroville-Wyandotte Irrigation District		Contact Person Tom Venus, PE		
Mailing Address PO Box 581		Title Environmental & Safety Compliance Officer		
City Oroville	County Butte	State CA	Zip 95965	Phone (530) 533 -- 4578

RECEIVING WATER INFORMATION

A. Do wastes and pesticide residues discharge to (check all that apply):

1. ■ Canals, Ditches, or other constructed conveyance facilities owned and controlled by Applicator? Miners Ranch Canal
2. ☐ Other conveyance systems? - Enter owner's name: _____
3. ■ Directly to waters of U.S. (e.g., river, lake, creek, stream, bay, ocean, etc.)? Spillways to receiving waters (below)

B. Regional Water Quality Control Board(s) where application sites are located (REGION 1,2,3,4,5,6,7,8, or 9): REGION 5
(List all regions where pesticide application is proposed.)

C. Name of receiving water: (river, lake, creek, stream, bay, ocean): Lake Oroville, Thermalito Diversion Pool of Feather River

V. PESTICIDE APPLICATION INFORMATION

A. Target Organism: X Algae ____ Aquatic Weeds (surface) X Aquatic Weeds (submerged) ____ Mosquitoes and other Vectors
____ OTHER (identify): _____

B. Pesticides Used: List Name and Active ingredients - Griffin LLC: Blue Viking Copper Sulfate Crystal (Pentahydrate)

C. Period of Application: Start Date April 15 End Date Sept. 1

FOR OFFICE USE ONLY Date Received_____ Date Sent To Regions_____

V. VICINITY MAP AND FEE

ave you included vicinity map(s) with this submittal? ..... ■ YES ☐ NO
Separate vicinity maps must be submitted for each Region where a proposed discharge will occur.

Have you included payment of the annual fee with this submittal? ..... ■ YES ☐ NO

VI. MONITORING AND REPORTING REQUIREMENTS

This permit includes a requirement to develop and implement an individual Pesticide Monitoring Plan or participate in a Regional Pesticide Monitoring Program. Check the applicable Box or Boxes

I will develop an individual Pesticide Monitoring Plan in accordance with the permit requirements..... ■

I will participate in a Regional Pesticide Monitoring Program developed in accordance with the permit requirements. ..... ☐

VII. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I certify that the provisions of the permit, including developing and implementing a monitoring program, will be complied with."

Printed Name: Thomas A. Venus

Signature: Thomas A. Venus Date: 8/23/01

e: Environmental & Safety Compliance Officer

VIII. FORM A SUBMITTAL INFORMATION

A. Send the completed and signed Form A along with the annual fee and vicinity map(s) to:

State Water Resources Control Board
Division of Water Quality
Regulations Unit
P.O. Box 100
Sacramento, CA 95812-0100

OROVILLE-WYANDOTTE IRRIGATION DISTRICT

WATER and HYDRO-ELECTRIC

Tom Venus, PE
Environmental & Safety
Compliance Officer

2310 Oro Quincy Highway
P.O. Box 581
Oroville, CA 95965-0581
Voice: 530-533-4578, ext. 215
FAX: 530-533-9700
Tvenus@owid.com

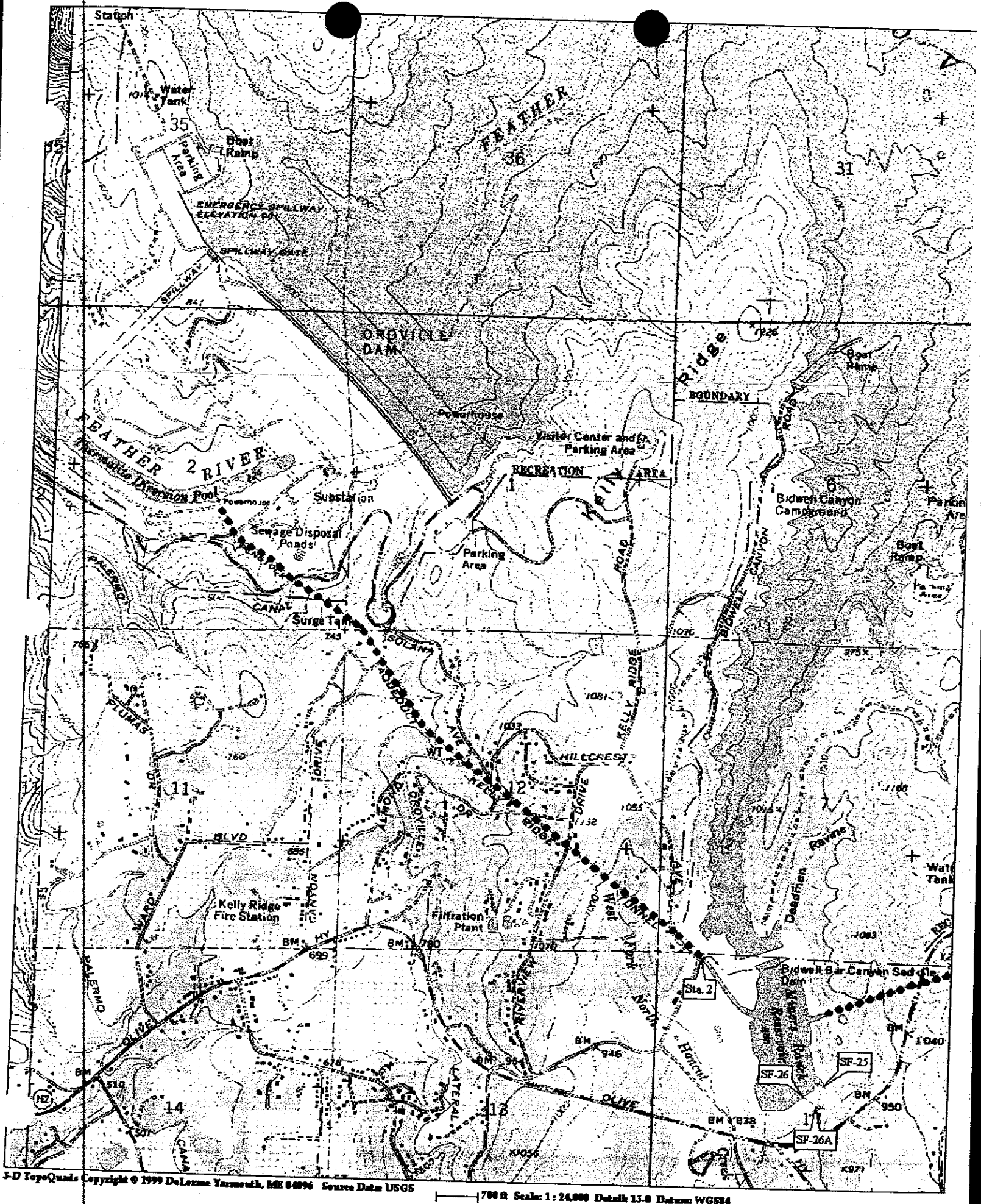
Key to Vicinity Map

For SWRCB Attachment A to Water Quality Order No. 2001-12-DWQ: Notice of Intent to comply with the terms of the Statewide General National Pollutant Discharge Elimination System (NPDES) Permit to discharge aquatic pesticides for discharges of aquatic pesticides to surface waters of the United States, General Permit No. CAG90003 (Form A)

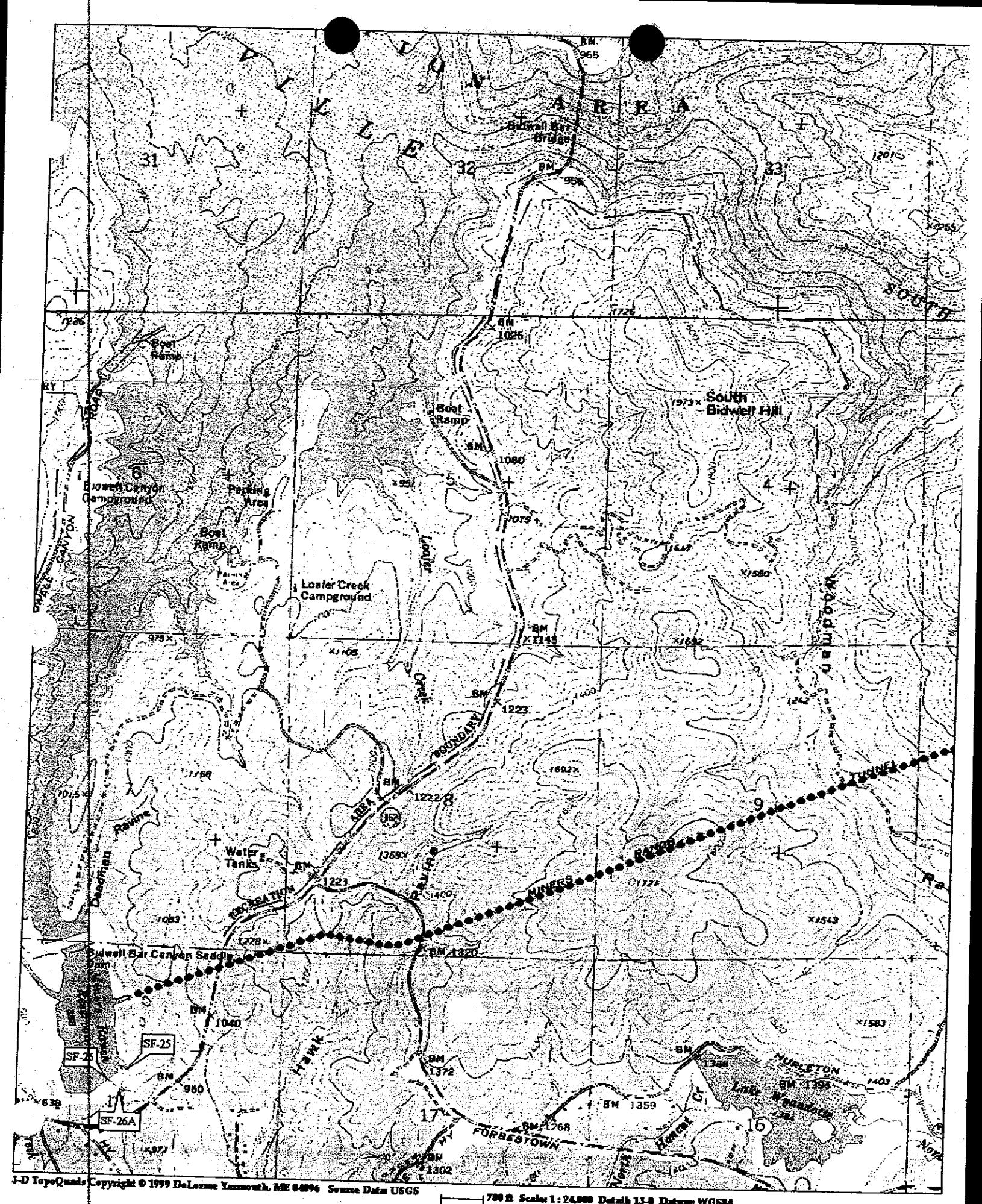
Vicinity map provided as five over-lapping panels at 1:24,000 scale, oriented with north direction at top of each page

Point of application (discharge) located immediately below Ponderosa Reservoir. Identified on furthest east map panel as Sta. 7 / SF20

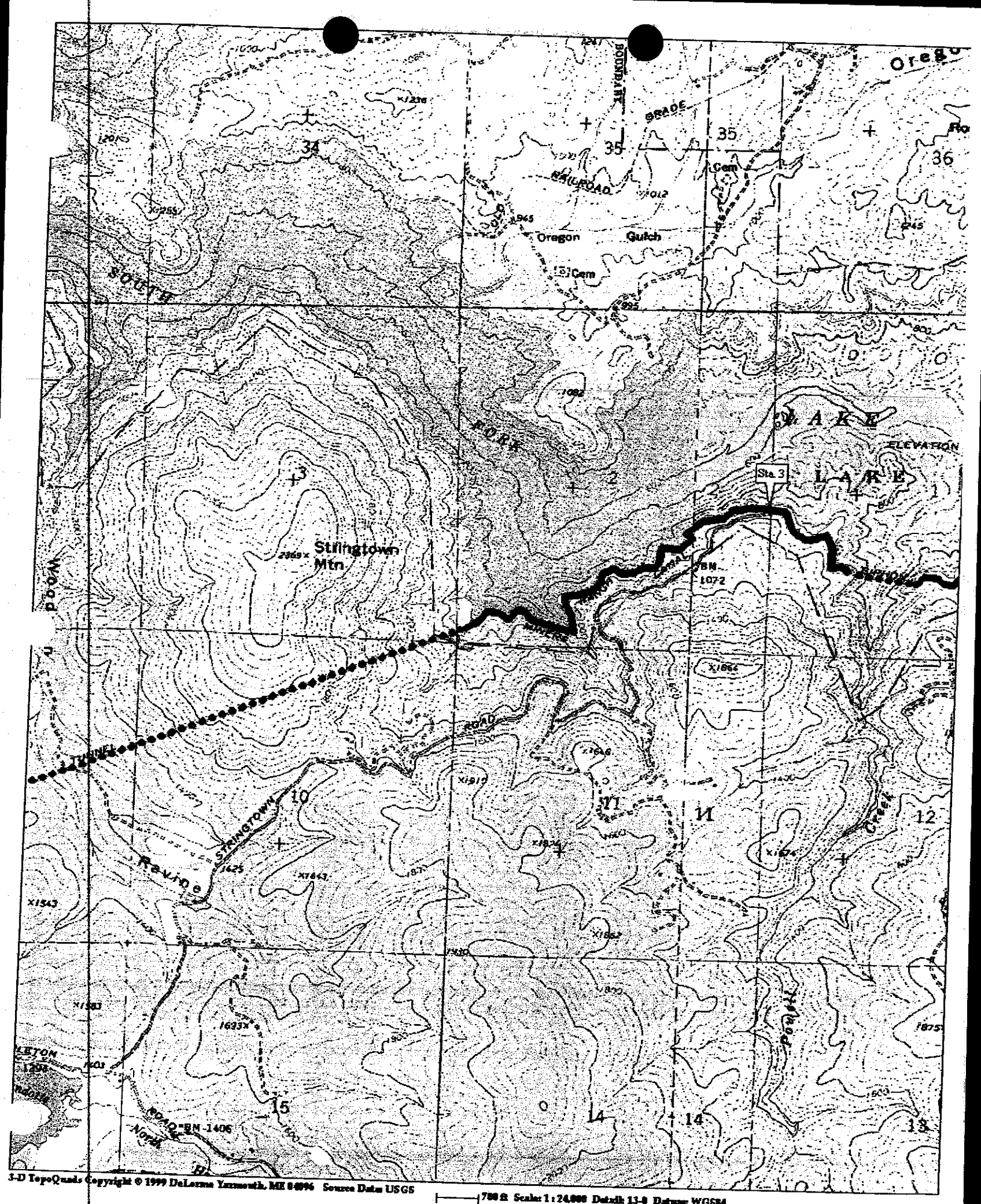
Broad Solid Line (Red) is Miners Ranch Canal subject to treatment.
Broad Dashed Line (Red) is enclosed pipe siphon, tunnel, or penstock.



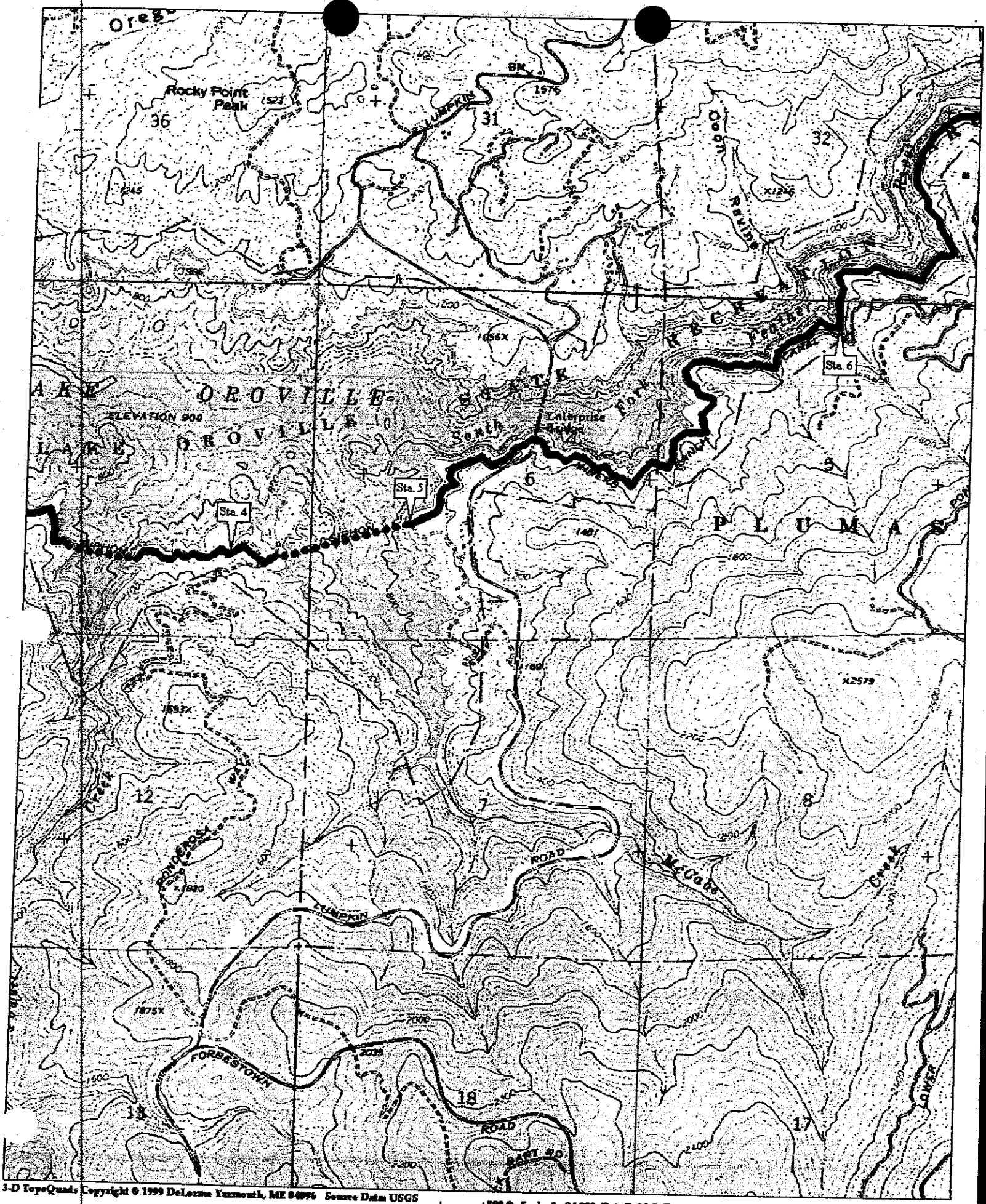
700 ft Scale: 1 : 24,000 Detail: 13-8 Datum: WGS84



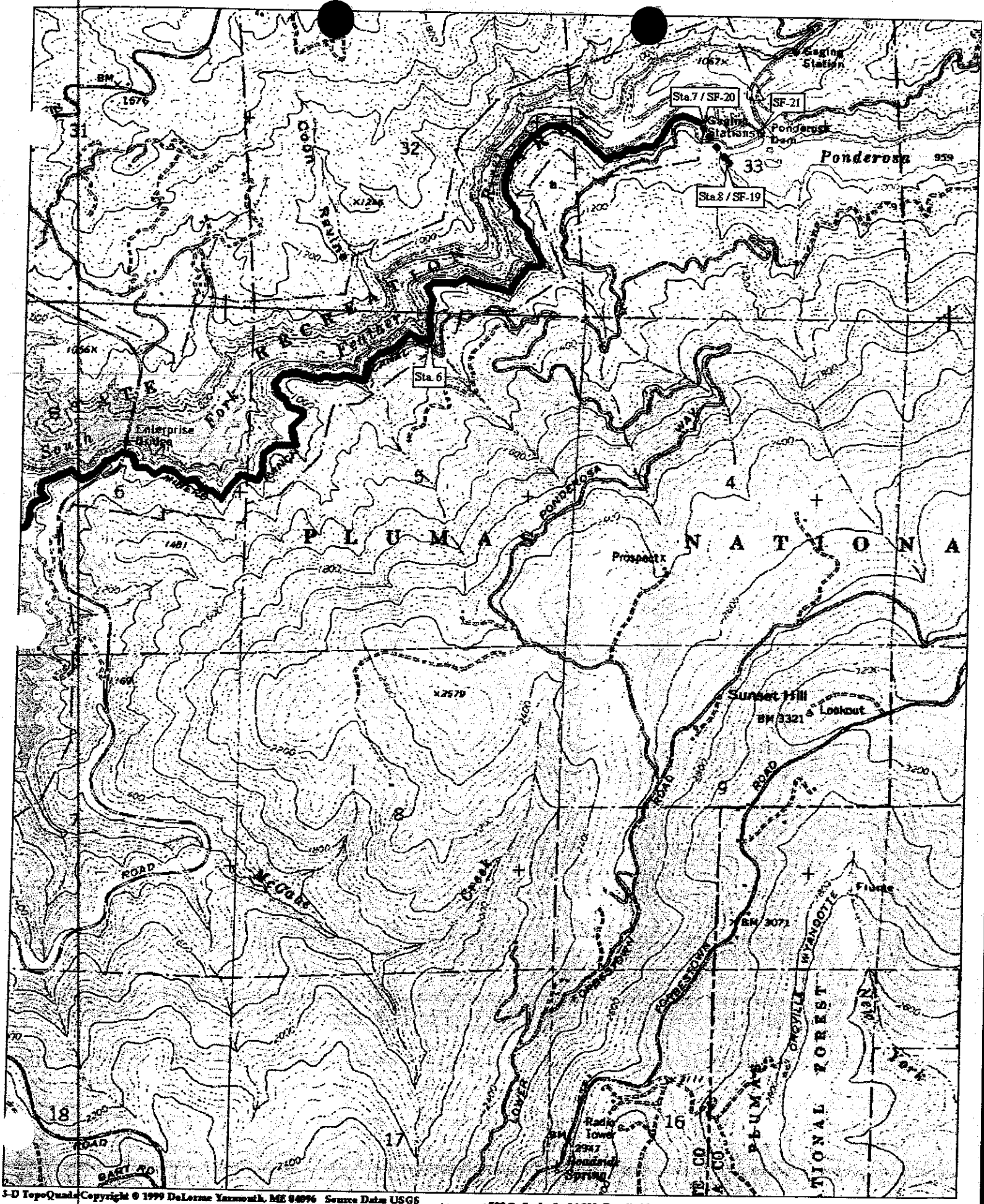
700 ft Scale 1:24,000 Detail 13-8 Datum WGS84



7500 ft Scale: 1:24,000 Datalib 13-0 Datum: WGS84



700 ft Scale 1 : 24,000 Detail: 13-8 Datum: WGS84



700 ft Scale: 1 : 24,000 Detail: 11-9 Datum: WGS84

Appendix C

Gvthn LLC Blue Viking Copper Sulfate Crystal Specimen Label

Griffin®

BLUE VIKING®

Copper Sulfate Crystal

COPPER SULFATE PENTAHYDRA

Made in the U

ACTIVE INGREDIENT	GRANULAR	MEDIUM	LARGE
Copper Sulfate Pentahydrate			99.0%
INERT INGREDIENTS			1.0%
TOTAL			100.0%

Metallic copper equivalent 25.2%

FOR

(See label for specific use directions.)

- Algae control in impounded waters, lakes, ponds and reservoirs
- Algae and pondweed control in irrigation conveyance systems
- Control root growth in sewers
- Wood treatment to prevent fungus, decay and rot
- For manufacturing, repackaging, formulation of algaecides, fungicides, wood preservatives and also non-pesticidal uses*

* Each formulator using this product to formulate an end use pesticide product is responsible for obtaining an EPA registration for his end use product.

KEEP OUT OF REACH OF CHILDREN

DANGER – PELIGRO

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Flush with plenty of water. Call a physician.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF SWALLOWED: Drink promptly a large quantity of milk, egg white, gelatin solution, or, if these are not available, large quantities of water. Avoid alcohol.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

See label for Additional Precautions and Directions for Use.

GRIFFIN CORPORATION
VALDOSTA, GEORGIA 31601

Specimen Label

EPA REG. NO. 1812-374

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

Causes severe eye and skin irritation. Harmful if absorbed through skin or inhaled. May cause skin sensitization reactions in certain individuals. Avoid contact with skin, eyes or clothing. Avoid breathing dust. Protective clothing, including goggles, should be worn. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARDS

SPECIAL PRECAUTIONS when applying this product directly to water as an algaecide or herbicide: This pesticide is toxic to fish. Direct application of copper sulfate to water may cause a significant reduction in population of aquatic invertebrates, plants and fish. Do not treat more than one half of a lake or pond at one time in order to avoid depletion of oxygen from decaying vegetation. Allow 1 to 2 weeks between treatment for oxygen levels to recover. Trout and other species of fish may be killed at application rates recommended on this label, especially in soft or acid waters. However, fish toxicity generally decreases when the hardness of water increases. Do not contaminate water by cleaning of equipment or disposal of wastes.

FOR MANUFACTURING USE: This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional office of the EPA.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store product in a secure dry place. Keep product dry as product is water soluble. When opening, closing or handling open packages, or pouring product, wear goggles to prevent dusting into eyes. Spilled product should be swept up, used if clean, or disposed of according to the procedures below. Store product only in original container. Store pesticide separately to prevent cross-contamination of other pesticides, fertilizers, food and feed.

DISPOSAL: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

GENERAL INSTRUCTIONS FOR USE

Do not apply this product through any type of irrigation system.

Blue Viking Copper Sulfate Crystal effectively controls many species of both filamentous (mat forming green) and planktonic (single cell blue-green) algae.

Use Blue Viking Copper Sulfate Crystal as noted below. When using Blue Viking Copper Sulfate Crystal to control algae, there are many factors to consider, water hardness, temperature of the water, kind and amount of vegetation to be controlled and the amount of water flow.

Algae can be controlled more easily and effectively if treatment with Blue Viking Copper Sulfate Crystal is made soon after plant growth has started. Small amounts of copper sulfate can effectively control algae in water. However, if treatment is delayed until a large amount of algae is present, larger quantities of copper sulfate may be required. Control of algae in water systems is not always permanent. Usually algae is more difficult to control with copper sulfate when water temperatures are low. The dose rates recommended for copper sulfate are based on water temperatures of 60°F or above. Larger quantities of copper sulfate will also be required in hard water. Normally, larger quantities of copper sulfate will be required to kill algae in water which is flowing than in a body of stagnant water. If possible, curtail the flow of water before treatment and hold dormant for approximately 3 days after treatment or until the plants have begun to die. It is usually best to treat algae on a sunny day when the heavy mats of filamentary algae are most likely to be floating on the surface where it can be sprayed directly. If there is some doubt about the concentration to apply, it is generally best to start with a lower concentration and to increase this concentration until the algae is killed.

NOTE: When preparing a copper sulfate solution in water, it is best that the mixing container be made of glass or plastic or if a metal container is used, that it be either painted, enameled or copper-lined. The use of a galvanized container causes a chemical reaction to take place by which the copper displaces the galvanized coating of the container.

NOTE: This product may be reactive on metal and masonry surfaces such as galvanized roofing. Avoid contact with metal surfaces. Do not spray on cars, houses, lawn furniture, etc.

NOTE: It must be determined in the selection process if proper application equipment is available and if the waste associated with its use can be properly handled. Materials used in the construction of application equipment is also an important factor as agricultural chemicals are often reactive with soft metals such as aluminum and even some synthetic materials such as plastics, rubbers, etc. Therefore it is necessary when working with equipment containing these materials that they are thoroughly flushed with clean water after each day's use.

CALCULATIONS FOR THE AMOUNT OF WATER IMPOUNDED AND FOR THE AMOUNT OF BLUE VIKING COPPER SULFATE CRYSTAL TO BE USED

Calculate water volume as follows:

1. Obtain surface area by measuring of regular shaped ponds or mapping of irregular ponds or by reference to previously recorded engineering data or maps.
2. Calculate average depth by sounding in a regular pattern and taking the means of these readings or by reference to previously obtained data.
3. Multiply surface area in feet by average depth in feet to obtain cubic feet of water volume.
4. Multiply surface area in acres by average depth in feet to obtain total acre-feet of water volume.

NOTE: If treated water is to be used as potable water, the residual copper content must not exceed 1 ppm (4 ppm copper sulfate pentahydrate).

ALGAECIDE

Blue Viking Copper Sulfate Crystal can be used in Slow Moving or Quiescent Bodies of Water Including: Lakes; Potable Water Reservoirs; Golf, Farm, Fish and Fire Ponds; Fish Hatcheries; and Crop and Non-Crop Irrigation Conveyance Systems, Ditches, Canals and Laterals.

LAKES, POTABLE WATER RESERVOIRS; PONDS (Golf, Farm, Fish and Fire); FISH HATCHERIES; AND CROP AND NON-CROP IRRIGATION CONVEYANCE SYSTEMS, DITCHES, CANALS AND LATERALS - Blue Viking Copper Sulfate Crystal kills filamentous and planktonic algae in water. Apply at a rate of 3 to 6 pounds per acre foot of water (0.27 ppm to 0.54 ppm (Cu) in the treated water). Apply as a uniform surface spray dissolved in at least 3 to 5 gallons of water using boat, plane or other pressurized spray device. Apply twice yearly or as needed. Determine the number of acre feet of water to be treated. An acre foot of water is equal to 1 acre of water 1 foot deep which equals 328,000 gallons or 2,720,000 pounds.

How to Apply: Blue Viking Copper Sulfate Crystal can be applied to impounded water by the following methods.

1. **Application by Dragging under Water:** Blue Viking Copper Sulfate Crystal can be applied by dragging it in a burlap or finer mesh bag attached to a boat or float so that bags are suspended in the top foot of water until the crystals are dissolved. Drag the bag of crystals first near the shoreline and continue outward by moving as the boat travels in parallel lines about 20 to 100 feet apart until area has been treated or until ⅛ to ½ of the surface area has been treated. Continue dragging bag over treated area until the required minimum dose is applied and all crystals are dissolved. Determine the quantity of crystals needed to treat the problem area following direction and cautions on this label.
2. **Application by Spraying Solution on Water Surface:** Dissolve the minimum required dose of Blue Viking Copper Sulfate Crystal in water and spray the solution uniformly over the body of water. When spraying a solution of copper sulfate, mix copper sulfate in sufficient water to thoroughly spray the water surface. While the volume per surface acre depends on the type of spray equipment being used, spray volume should be approximately 20 to 500 or more gallons per acre of surface water. Several types of solutioning and spraying equipment may be used. Observe previous cautions on the effect of copper sulfate solution on various metals in spraying containers.
3. **Application by Broadcasting:** Dry Blue Viking Copper Sulfate Crystal can be broadcast on the water surface using a properly equipped boat. An air blower can be used to discharge these crystals at a specific rate over the surface of the water. When using this method, the wind direction is an important factor. Do not use this method unless completely familiar with this type of application.
4. **Application by Spraying from Airplanes and Helicopters:** Professional personnel licensed by the State Agricultural Extension Service are allowed to apply dry Blue Viking Copper Sulfate Crystal in some states.

CROP AND NON-CROP IRRIGATION CONVEYANCE SYSTEMS, DITCHES, CANALS AND LATERALS - Blue Viking Copper Sulfate Crystal controls the Potomogeton Pondweeds, leafy and sago.

How to Apply: Blue Viking Copper Sulfate Crystal can be applied to irrigation conveyance systems by the following methods:

1. **Continuous Application Method:** Apply 1.6 to 2.4 pounds per cubic foot per second per day.

   NOTE: For best control of leafy and sago pondweed, it is essential to begin copper sulfate additions when water is first turned into the system or ditch to be treated and continued throughout the irrigation season. Copper sulfate becomes less effective as the bicarbonate alkalinity increases. Its effectiveness is significantly reduced when the bicarbonate alkalinity exceeds about 150 ppm as $CaCO_3$. Should copper sulfate fail to control pondweeds satisfactorily, it may be necessary to treat the ditch with either a suitable approved herbicide or use mechanical means to remove excess growth. In either case resume copper sulfate addition as soon as possible.
2. **Slug Application Method:** Make a dump of Blue Viking Copper Sulfate Crystal into the irrigation ditch or lateral at ¼ to 2 pounds per second of water per treatment. Repeat about every 2 weeks as needed. A dump is usually necessary every 6 to 30 miles depending on water hardness, alkalinity and algae concentration. Copper sulfate becomes less effective as the bicarbonate alkalinity increases. Its effectiveness is significantly reduced when the bicarbonate alkalinity exceeds about 150 ppm as $CaCO_3$.

SEWER TREATMENT – ROOT DESTROYER*

GENERAL INFORMATION: Roots of shrubbery and trees growing near sewer lines frequently penetrate sewer lines in search of moisture and nutrients, even through extremely small cracks, holes or poorly sealed joints. These tiny root hairs, if not controlled, will continue to grow both in diameter and number, causing tile breakage, gradual reduced flow and frequently flow stoppage. Copper Sulfate Crystal has successfully controlled roots for over 50 years in residential and commercial sewers.

To Control Root Growth in Commercial, Institutional, and Municipal Sewers Use as Follows:

SEWERS - Use 2 pounds of Blue Viking Copper Sulfate Crystal every 6 to 12 months, applied into each junction or terminal manhole as a preventive measure. Add copper sulfate during period of reduced flow; however, a small flow is essential. If reduced flow due to root masses is observed, but not completely stopped, add the copper sulfate in the next manhole above the reduced flow area. If completely blocked, use a rod to penetrate the mass so some flow begins before treatment.

STORM DRAINS - Use 2 pounds of Blue Viking Copper Sulfate Crystal per drain per year. Apply during a period of light water flow. In dry weather, introduce a flow with a hose. If storm drains become almost plugged, repeat treatment 3 or 4 times at 2-week intervals.

SEWER PUMPS AND FORCE MAINS - Place 2 pounds of Blue Viking Copper Sulfate Crystal in a cloth bag at the storage well inlet. Repeat as needed.

To Control Root Growth in Residential or Household Sewer Systems Use as Follows: Make treatment when the reduced flow rate thought to be caused by root growth is first noticed. Do not delay until stoppage has occurred because even a slight flow is needed to move Blue Viking Copper Sulfate Crystal to root growth. When roots accumulate sufficient copper sulfate to cause death, root decay will begin and flow rate should increase in 3 to 4 weeks. Since copper sulfate treatment usually kills only those roots in the pipe, roots will regrow, requiring follow-up treatments. Generally

make a treatment in the spring after plants begin to grow, with a second treatment during late summer or early fall each year, and/or any time when reduced flow possibly caused by root growth is noted.

HOW TO USE BLUE VIKING COPPER SULFATE CRYSTALS: In household sewers use 2 to 6 pounds of crystals twice yearly as discussed before. Add Blue Viking Copper Sulfate Crystal to sewer line by pouring about ½ pound into the toilet bowl nearest to the sewer line and flush, repeating process until recommended dose has been added, or removed cleanout plug and pour entire recommended quantity directly into the sewer line, replacing plug and flush toilet several times.

If system is equipped with a septic tank, copper sulfate will be precipitated in the septic tank and little will pass into the absorption drain field. To treat drain field pipes, add 2 to 6 pounds of Blue Viking Copper Sulfate Crystal to distribution box located between the septic bank and the drain field. If distribution box does not have an opening, it would be advisable to install a cleanout plug opening into the outlet pipe from the septic tank leading to the drain field for effective root control in the drain field pipes.

NOTE: Do not apply Blue Viking Copper Sulfate Crystal through sink or tub drains as it will corrode these metal drains.

NOTE: Laboratory studies have shown that copper sulfate added to an active 300 gallon septic tank at 2, 4 and 6 pounds per treatment temporarily reduced bacterial action, but was again normal 15 days after treatment. Trees and shrubbery growing near a treated line normally will have only a small portion of its total roots in contact with the copper sulfate that primarily kills only those roots inside the pipe, thus not effecting the growing plants.

* **Do not use as a sewer addivite where prohibited by State law. State law prohibits the use of this product in sewage systems in the State of Connecticut.**

WOOD TREATMENT
(green, peeled posts)

Fungus, Decay, Rot: Prepare a solution of 18 pounds of sodium chromate in each 26 gallons of water to be used and a separate second solution of 18 pounds of copper sulfate in each 24 gallons of water to be used; soak the peeled, green posts, butt end down first in the copper sulfate for 3 days, then butt end down in the sodium chromate solution for 2 days, and finally turn the post upside down in the sodium chromate solution for 1 additional day, remove and rinse posts with clear water.

WARRANTY STATEMENT

GRIFFIN warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials or the manner of use or application, all of which are beyond the control of GRIFFIN. In no case shall GRIFFIN be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. The exclusive remedy of any buyer or user of this product for any and all losses, injuries, or damages resulting from or in anyway arising from the use, handling, or application of this product, whether in contract, warranty, tort, negligence, strict liability, or otherwise, shall not exceed the purchase price paid for this product or at Griffin Corporation's election, the replacement of this product. GRIFFIN MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

GCN 082196
CPC 060054

Appendix D

Standard Operating Guidelines

D1 – Surface Water Sampling

D2 – Creating and Filling Out a Chain-of-Custody Record

D3 – Transporting, Packaging and Shipping Samples

APPENDIX D1

SURFACE WATER SAMPLING
Standard Operating Guideline

INTRODUCTION

This guideline describes field procedures typically followed by Oroville-Wyandotte Irrigation District personnel to obtain surface water samples from a variety of water bodies, including drainage ditches, rivers and streams, lakes, estuaries, and oceans. Methods of sampling are directly affected by study objectives and parameters that are to be analyzed. To help ensure efficient sampling and useful results, decisions regarding appropriate techniques and equipment employed must be made at the beginning of a project and incorporated in the comprehensive sampling plan.

EQUIPMENT

Depending on the project, it might be necessary to take surface water samples from a location directly adjacent to land, such as a lakeshore or riverbank, or remote from land, such as a lake or river.

Land-Based Surface Water Sampling Equipment

- Suitable sample containers and caps (that fit). Containers should be clean and of appropriate type and size for the chemical component sampled.
- Container labels and waterproof marking pens.
- Automatic sample retrieval equipment. There are several models commercially available. The decision to use an automatic sampler and the choice of type are dependent on the objectives of the project.
- Manual sample retrieval equipment. This equipment can include a scoop or container, for surface sampling, or a Kemmerer-type sampler, for sampling at depth in a water column.
- Waterproof field notebook.
- Ice chest with sufficient blue ice to last for the duration of sampling and transport.
- Packing materials for transport.
- Chemical preservatives.
- Transfer funnels.
- Portable analytical equipment, if necessary (pH, DO, conductivity, temperature, etc.).
- Chain-of-custody forms.

Offshore Surface Water Sampling Equipment

- Sampling device capable of sampling at discrete depths.
- Extension lines for all portable analytical probes, of sufficient length to take readings at required depths.
- Depth-measuring equipment, such as a marked-off line.
- Rented boat or raft of sufficient size to accommodate gear for all crewmembers and analytical equipment.
- All equipment required to operate boat efficiently and safely, including motor, fuel, tool kit, oars, anchors, and life preservers.
- Personal gear appropriate to location and conditions, such as insect repellent, rain gear, extra clothing, hats, sun block, water, and food.

DEFINITIONS

There are four general types of surface water sampling in which samples are retrieved for immediate or eventual analysis:

1. Grab Sampling (At Water Surface). A grab sample is a single sample taken at a point in time. It can be obtained by using a pump, scoop, or vacuum or by using a hand-held dipping device. The receiving container is of a specified material and of a size appropriate to the analyses required. Grab samples are collected to:
   a. Characterize water quality at a particular time
   b. Provide information about minimum and maximum values
   c. Allow collection of a variable volume of material
2. Composite Or Continuous Sampling (At Water Surface). A composite sample is formed by mixing discrete samples taken periodically or during a continuous portion of the flow. A sequential composite sample is a series of short grab samples, each of which is held in an individual container and later composited to cover a longer time period. Composite samples are sometimes taken at volumes proportional to source flow. Composite sampling are collected to:
   a. Determine average concentrations over a specific period
   b. Determine mass loading as a function of concentration and flow
3. Grab Sampling (At Depth). Grab sampling at depth is identical to surface grab sampling, except that it allows a discrete sample to be taken at a particular depth in the water column. An example of grab sampling at depth is sampling in a lake, where water chemistry exhibits variation as a function of depth (stratification).
4. Composite Or Continuous Sampling (At Depth). Composite sampling at depth is similar to composite surface sampling, except that it allows multiple or continuous samples to be taken at a discrete water column depth. In general, a mechanical device, such as a pump, is required to carry out this type of sampling.

TYPICAL PROCEDURES

1. Review project and research objectives to develop an appropriate sampling plan.
2. Consult with the laboratory regarding sampling procedures, type and size of containers required, sample preservatives, holding times, and shipping recommendations.
3. Prepare a sample bottle (if it does not already contain a preservative) by rinsing it out two or three times with the water to be collected.
4. If a remote sample retrieval device, such as a Kemmerer sampler, is being used, rinse it out with distilled or deionized water between samples.
5. Treat each sample individually with regard to the substances to be determined. In other words, use the recommended preservative and container for the particular substance of interest.
6. For most samples, fill the container completely. Space can be left for some microbiological analyses. For samples that are to be shipped, leave an air space of about 1 percent of the container to allow for thermal expansion. For volatile and semi-volatile analysis, no headspace should be allowed.
7. Collect water samples using pre-cleaned Teflon or stainless steel bailers, disposable bailer or pre-cleaned Kemmerer (depth-specific) samplers. As required by anticipated analyses, label and fill containers according to the following guidelines.
   a. Total petroleum hydrocarbons (TPHs): 1 L amber glass bottle.
   b. Benzene, toluene, xylene, and ethylbenzene (BTEX) compounds: three to six 40-ml brown glass volatile organic analysis (VOA) vials with Teflon septa.
   c. Volatile organic compounds (VOCs): three to six 40-ml brown glass VOA vials with Teflon septa.
   d. Metals and polychlorinated biphenyls (PCBs): 1-L amber glass bottles. Samples will not be field-filtered if the samples can be filtered in the laboratory within 12 hours of collection. Otherwise field-filtering should be performed. Preserve the samples with the appropriate preservative, where applicable.
   e. When multiple analyses will be performed, samples should be collected in order of decreasing sensitivity to volatilization (i.e., VOC samples first and metals last).
8. Make a record of every sample collected, indicating date, time, location, sample ID, sample type, and name of sample taker. Make sure this information is indicated on the sample container label and recorded in the field notebook. Also, record other pertinent observations, such as weather conditions, water level, flow, proximity to underwater or surface discharges, etc.
9. Close container caps and lids securely and pack samples in a cooler (if cooling is required) or other receptacle.
10. Use packing materials to fill any voids in the cooler or receptacle. Close and fasten the lid securely, using tape or elastic cords if necessary.
11. Fill out chain-of-custody forms and deliver samples to the laboratory as soon as possible, either in person or by shipping.

12. Clean all sampling equipment thoroughly and return each component to its designated storage space.

CONSIDERATIONS AND PRECAUTIONS

1. Before beginning field-sampling operations, determine appropriate containers, preservatives, and holding times for the parameters to be sampled. Consult the laboratory and standard methods (APHA, AWWA, WPCF 1985) or 40 CFR 136 (EPA 1987).
2. Because of the chemical and/or biological volatility of certain sampled substances, immediate analysis in the field might be required. In other cases, preservation of samples by addition of chemicals or by cooling is required while they are transported to the laboratory for analysis. The following parameters usually need immediate field testing:
   a. Dissolved gases
   b. Residual chlorine
   c. Soluble sulfide
   d. Temperature
   e. pH
3. In general, do not composite samples that can degrade chemically or biologically.
4. Clean sampling equipment as soon as possible after fieldwork to prevent dried residues and/or biological growth on the equipment.
5. Determine all locations to be sampled and the number of samples required before going into the field.
6. Determine the most accessible routes to the sampling site and determine whether special equipment, such as a boat, is required.
7. Consider obtaining from the analytical laboratory containers that have preservatives already included for specific parameters.

QUALITY ASSURANCE/QUALITY CONTROL

1. Thoroughly clean sampling equipment after each use. Depending on the project goals, cleaning equipment may require washing in a laboratory soap solution and rinsing in de-ionized water.
2. Do not reuse sample containers.
3. Change gloves or wash hands between sample collections.
4. Typically, collect ten percent blind duplicate samples and submit them to the laboratory blind for analysis unless alternative QA/QC procedures are identified in the sampling plan.
5. Protocol for particular chemical analysis, such as VOCs, may require the use of travel and field blanks.

EQUIPMENT CLEANING

Sampling equipment must be decontaminated immediately after use, according to the procedure outlined in the QA/QC plan for the project. Disposable gloves and sampling equipment are placed in plastic garbage bags and disposed of in accordance with methods identified in the work plan.

INVESTIGATION-DERIVED WASTES

No wastes, other than the small amount of material submitted to the laboratory for analysis, should be generated during sampling. Generally, the laboratory arranges for disposal of samples of potentially hazardous material.

REFERENCES

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U.S. Environmental Protection Agency. 1987. *Regulations on Test Procedures for the Analysis of Pollutants* (40 CFR 136). U.S. EPA, Washington, D.C.

APPENDIX D2

CREATING AND FILLING OUT A CHAIN-OF-CUSTODY RECORD
Standard Operating Guideline

INTRODUCTION

Purpose

A chain-of-custody record (COC) is an appropriate format to record important data associated with each individual sample. Normally, a COC is used to record three types of information: field information, laboratory information, and the people who handle the sample. This SOG discusses the procedures for the third item, handling the sample. The other two items are discussed in other SOGs.

Definitions

1. Chain of Custody (COC) is a legal document designed to track persons who are responsible for the preparation of the sample container, sample collection, sample delivery, storage, and sample analysis.

2. A Sample Number is a unique number given to a sample, usually attached to the sample container with label tape (SOG D1).

TYPICAL PROCEDURES

Creating the COC

A specific COC is created for each study. A COC normally has three sections: field information, laboratory information, and the signatures of the people who handle the sample. The form is generally a three-page carbon-less form, including a white (original), yellow, and pink sheet.

1. Field Information – The COC must contain places to enter the following field information: study number, sample number, sampling date, and type of sample. Other field information may be recorded as specified in the study protocol.

2. Laboratory Information – The COC must contain places to enter the following laboratory information: reporting limit of each analyte, the result of analysis, date of extraction, date of analysis, and the signature of the person performing the extraction and analysis. Other laboratory information may be recorded as specified in the study protocol.

3. Signatures – The COC must contain places for all people who handle the sample to sign his/her name. This is a record of persons who had custody of the sample during all steps of the process from container preparation, sample collection, sample storage and transport, and sample analysis. There should be signature lines to relinquish custody of the sample and to receive custody of the sample.

Filling out the COC

The first "relinquished by" line is normally signed by the person who prepared the sample container. The "received by" line is normally signed and dated by the person collecting the sample, that person then signs to relinquish the sample. This process is repeated for the person who transports the sample to the laboratory. In case there are additional steps in the process requiring another person or persons to take custody of the sample, the form has additional lines for signatures. The laboratory signs the last "received by" line.

No erroneous information may be erased on the COC. Errors must be lined out and initialed, and the correction written in. Furthermore, a COC may not be destroyed or discarded and must be retained by the Project Manager.

1. Container Preservation – The COC should be initiated at the time the containers are prepared. The COC at that time should include the study number, the sample number (which should correspond with a unique number of the sample container), chemicals to be analyzed if known, and the signature of the person preparing the sample container and date prepared.

2. Sample Collection – The personnel who receive the sample containers, transport them to the field, collect the samples, and place them into containers normally sign their name on the COC under the first received by column and write the date and time the sample container was received on the line next to it. They also fill in the information required on the COC and sign the relinquished by line.

3. Sample Storage – When samples are relinquished to the sample custodian, that person will sign the COC on the next received by line, and will write the date and time. The pink copy of the COC is detached from the other two copies. Pink COC sheets are to be retained at the sample storage facility until they are entered into the sample tracking database, at which point they should be given to the Project Manager.

4. Sample Delivery – Once the sample is delivered to the lab, the laboratory personnel will sign and date the "received by" line located at the bottom of the COC.

5. Laboratory Analysis – The analyzing laboratory will record the reporting limit of each analyte, the results of analysis, date of extraction, date of analysis, and the signature of the person performing extraction and analysis. When the analysis is completed and approved by the laboratory, white COC sheets will be given to the sample custodian. The yellow copy is retained by the laboratory.

6. Data Review and COC Delivery – The appropriate information is entered into the sample tracking database. If a quality assurance officer is assigned to the study, they will review the analytical data. The white COC is then forwarded to the Project Manager.

APPENDIX D3

TRANSPORTING, PACKAGING AND SHIPPING SAMPLES
Standard Operating Guideline

INTRODUCTION

This guideline describes the procedures that will typically be followed by Oroville-Wyandotte Irrigation District personnel for packaging and transporting samples after they have been collected. Its purpose is to ensure that samples are adequately packed in the field to avoid breakage and that samples are stored at the appropriate temperature for each media.

MATERIALS

- Coolers or ice chests
- Appropriate ice (Wet, Blue, or Dry)
- Hobo® Temp Data Logger or Min/Max Temperature Recorder
- Sorbent material
- Appropriate packing material for sample containers
- Bubble-wrap
- Strapping tape
- Labels and pens
- Chain-of-Custody forms
- Chain-of-Custody seals
- UPS, Federal Express, or Greyhound shipping manifests

PROCEDURES

Preparation for Sample Collection

1. Before leaving the warehouse (sometime prior to sample collection), an ice chest should be filled with the appropriate ice (wet, 'blue,' dry). This is to ensure that the samples are chilled immediately after collection.
2. If the study is conducted under Good Laboratory Practices, a Hobo® Temp Data Logger or Min/Max Temperature Recorder should be placed in each ice chest.

Sample Transport from the Field

1. Labels of samples may get wet. Use of waterproof pens and labels is desirable for identification of sample containers. Use of clear tape to cover each affixed sample label is helpful in ensuring sample identification.

2. Place samples in Styrofoam holders or other containers in ice chests immediately after sampling in the field.
3. Surround the samples with sufficient ice to chill to the appropriate temperature.
4. If the study is conducted under Good Laboratory Practices, the time and date the samples were placed in the ice chest should be recorded in the field notebook.
5. Check the samples often, making sure there is enough ice to maintain the required temperature. Add more ice when necessary, and drain off water as wet ice melts.

Packaging Samples for Shipment

1. Absorbent pads should be placed in the bottom of the shipping container to absorb liquids in the event of sample container breakage. Transportation regulations require absorbent capacity of the material to equal the amount of liquid being shipped; each pad absorbs approximately 1 quart of liquid.
2. Liquid samples in glass jars or bottles should also be wrapped in plastic bubble wrap.
3. An equal weight of ice substitute should be used to keep the samples below 4 degrees Centigrade for the duration of the shipment (up to 48 hours). Care in choosing a method of sample chilling should be observed so that the collected samples are not physically or chemically damaged. Re-usable blue ice blocks, block ice, ice cubes, or dry-ice are suitable for keeping samples chilled.
6. Chain-of-custody documentation should accompany shipments of samples to the analytical laboratory. Often, the chain-of-custody document contains an analytical request section that may be completed following sample collection. Chronological listing of collected samples is desirable. A copy of the completed chain-of-custody form should be retained in the event that the original form is lost or destroyed. Refer to SOG D2 – Creating and Filling Out a Chain-of-Custody Record.
4. Strong adhesive tape should be used to band the coolers closed. Additionally, it is recommended that the drain plug be covered with adhesive tape to prevent any liquid from escaping.

Shipping Samples

1. Samples shipped to each analytical laboratory can be sent by UPS or Federal Express on a next-day basis unless other arrangements are made (Many laboratories offer courier service as well). Greyhound bus service should only be used if there is direct service (e.g., Sacramento or Bakersfield to San Francisco). Ice chests, used to refrigerate perishable items, can be used to convey non-hazardous samples to the analytical laboratory.
2. Specific requirements for packaging materials may apply if the samples being shipped are known to be hazardous materials as defined in 49 CFR 171.8 (samples are not considered hazardous waste and therefore manifest requirements do not apply). UPS holds shippers responsible for damage occurring in the event of accidents when a hazardous material is shipped as a non-hazardous material. Samples that obviously are hazardous materials should therefore be shipped as

such, and samples that most likely are not hazardous materials should be shipped in coolers. Guidelines for shipping hazardous materials by UPS are provided in the *Guide for Shipping Hazardous Materials* available from UPS. Specific labels for shipping of hazardous materials are available.

ADDITIONAL NOTES

It should be noted that samples retained by the analytical laboratory which are not chosen for analysis may be assessed a fee for disposal. Often a disposal fee is assigned to a sample, typically soil, that has been retained beyond standard analytical holding periods. Therefore, consultation with project management is recommended to determine which samples may be of interest. Contacting the selected analytical laboratory regarding disposal policies is also recommended. Arrangements may be made with the analytical laboratory for return of the unanalyzed samples for later disposal to the area of origin.

Appendix E

Basic Laboratory Quality Assurance Plan

QUALITY ASSURANCE PLAN

Revision 6.0
JANUARY 2002

Prepared By

Basic Laboratory, Incorporated
2218 Railroad Avenue
Redding, California 96001

Approved by: _____
Laboratory Director

Date: 1/11/02

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3.0 ORGANIZATION AND RESPONSIBILITY

3.1 INTRODUCTION

Basic Laboratory is committed to the production of analytical data of the highest quality in all environmental analyses. Basic Laboratory recognizes that quality data is a function of an effective and consistent quality assurance program. It is in support of Basic Laboratory's commitment to data integrity that this Quality Assurance Plan was prepared.

The different elements of the Quality Assurance Plan are discussed in the remainder of this manual. The detailed procedures on how each element of the plan is carried out can be found in the Standard Operating Procedures (SOP).

Basic Laboratory provides microbiological, general chemical, organic chemical, and metals analysis. Radiological, electron microscopy, and other testing services are provided through state certified subcontractor laboratories with established quality assurance plans.

The implementation of the Quality Assurance Plan is achieved through a laboratory-wide effort of the entire staff. The laboratory organization and personnel are geared toward carrying out the objectives of the Quality Assurance Plan. This may be seen in the organization chart in Appendix A and in the descriptions of the staff duties, responsibilities, and qualifications provided in the remainder of this section and in Appendix B. As the lab grows, additional staff will be added to the organizational structure.

To strengthen its commitment to the production of quality data, Basic Laboratory has established high qualification standards for employment and provides a comprehensive training program for all its employees. The result is a laboratory staff who offer a unique blend of scientific and technical expertise, highly capable of serving a wide range of analytical needs in environmental studies.

3.2 DUTIES AND RESPONSIBILITIES OF PERSONNEL

- The Laboratory Director has the responsibility for the overall management of the laboratory. He will interface with clients on all aspects of their projects including progress, problems, and recommended solutions. He will also work with the QA coordinator and laboratory personnel in reviewing progress reports, analytical reports, financial reports, and QC reports.

- The QA Coordinator assists the laboratory in the production of accurate, valid, and reliable data by monitoring the implementation of the laboratory quality assurance program. The Coordinator administers interlaboratory QA efforts, reviews performance evaluation results, takes corrective actions, and prepares quality assurance reports for management.

- The department managers and/or supervisors are responsible for each task identified in the scope of work. They are responsible for organizing and directing the technical activities within their task. They are involved in daily laboratory operations and are responsible for verifying that laboratory QC and analytical procedures are being followed as specified for each project. They are responsible for organizing, assembling, disseminating, and filing all documents pertinent to the analysis for each set of samples. The section supervisors are responsible for the review of data for accuracy and chemical interpretation. They also advise the Laboratory Director of progress, needs, and potential problems of their task.

- The analysts perform analytical procedures, data processing, and recording in accordance with SOPs. They are responsible for calibration and preventive maintenance of instrumentation, data reduction, data review, and reporting of all out-of-control situations.

- The sample custodian is responsible for the proper preparation, shipment and receipt of sampling kits. When the samples are received into the laboratory, the sample custodian is responsible for checking and documenting the chain-of-custody by checking sample descriptions, labels, and parameters requested against the chain of custody record. If any discrepancies are noted, the sample custodian informs the Laboratory Director who coordinates with clients. After this information is recorded into a sample logbook, the sample custodian is responsible for the dissemination of all appropriate sample documents to the various division managers.

3.3 PERSONAL QUALIFICATIONS

See Appendix B - Personnel Resumes.

3.4 PERSONNEL TRAINING

To ensure that all personnel involved in analytical activities are able to carry out their duties, they are required to undergo a training program. Training is administered by trainers designated by the Laboratory Director, normally a senior analyst.

The program is presented to new hires upon employment and must be completed prior to assumption of assigned duties. It includes modules on orientation, review of the job description and how the position integrates with the overall organization, overview of the QA program, overview of the safety program, and initial on-the-job training on the employee's initial job assignment. The readiness of the new employee to assume initial job assignment is assessed by the area supervisor. Acceptable performance is determined by meeting quality assurance

criteria for each method performed. Each acceptable performance of analysis is noted on each personnel's training record. After approval by the area supervisor, the employee is allowed to begin initial assignments.

4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The laboratory's quality assurance objectives of precision, accuracy, and completeness are listed in Appendix C and D. These objectives are based on the laboratory's capabilities as indicated by historical data or results of validation studies. Where sufficient data is not available, EPA CLP control criteria are used. The Fish toxicity bioassay QA/QC objectives and a report format are listed in Appendix E.

5.0 SAMPLE COLLECTION, PRESERVATION AND STORAGE

5.1 SAMPLE COLLECTION CONTROLS

Special consideration is given to the procurement, storage, and transportation of samples to be analyzed. Procedures ensure that the analyte(s) originally present in the sample matrix has not undergone degradation or concentration, and that contaminants which might interfere with the analysis have not been added. Plastic containers are not used for samples to be analyzed by electron capture detector. Use of metal containers is discouraged since they may contain trace impurities such as oil films, lacquers, or rosin from soldered joints, which cause interference during gas chromatographic analysis. In general, glass jars or bottles with Teflon-lined lids or aluminum foil are the most suitable sample containers. In certain cases, the analyte of interest may be unstable because of its chemical nature and/or interaction with the sample matrix, and special preservatives need to be added during sample collection. Appendix E summarizes the requirements for sample containers, preservation procedures, and holding times according to the Federal Register, 40CFR Part 136.

5.2 SAMPLING KIT PREPARATIONS

Sampling kits to be used by the field personnel are prepared by BASIC sample custodians following instructions indicated on the Bottle Order Form (BOF). The BOF (sample included in Appendix G) is generated where the client contacts a BASIC representative about analyzing samples. The instructions on the BOF are therefore unique to the client's requirements.

Preservatives are added to the sample containers by the sample custodians according to the instructions on the BOF. These preservatives are prepared by the General Chemistry Laboratory personnel according to the appropriate written Standard Operating Procedure. The type of preservative added is indicated on the sample container labels (Appendix G).

Sampling kits are assembled in ice chests containing blue ice.

6.0 SAMPLE CUSTODY

6.1 SAMPLE RECEIPT AND LOG-IN

All samples submitted to BASIC laboratory are delivered to the laboratory's central sample receiving area and are received by the sample custodian. If required, temperature and pH of the sample are checked and recorded on the Chain-of-Custody Record. The sample custodian compares the samples received against the Chain-of-Custody Record (Appendix G).

If a sample discrepancy, e.g., a broken or missing specimen, is observed at check-in by the sample custodian, a statement to that effect is written in the remarks section of the Chain-of-Custody Record. At this time, the QA Coordinator, the Laboratory Manager, and the Project Manager are notified so that the problem can be addressed. A follow-up statement accompanies the Chain-of-Custody Record for any sample processed and reported under these conditions.

All samples received are recorded in a sample receipt logbook with the following information: client name, project code, analytical parameter requested, and laboratory reference number. The laboratory reference number is a sequential number that is unique to that sample. Samples are processed through the laboratory by the laboratory reference number. Special instructions about the samples are written onto the Chain of Custody (COC). All samples are scheduled in the department work in progress reports, and a copy of the COC is given to each section.

Samples are taken by the sample custodian to the designated storage areas. Access to these areas is limited to authorized laboratory personnel only. Access to the laboratory itself is through a monitored reception area only.

6.2 SAMPLE ANALYSIS AND TRACKING

All reference to a sample is made using the Basic Laboratory reference number. The laboratory reference number affixed to each sample is unique to that sample. Samples are tracked through the laboratory by the Chain-of-Custody and the Work in Progress report.

Each analyst is required to maintain laboratory benchsheets to provide sufficient detail to enable others to reconstruct the analysis should the analyst not be available to do so.

In summary, the system for tracking samples through preparation and analysis consists of Chain-of-Custody Records, the Work in Progress report, laboratory benchsheets, laboratory notebooks, instrument operation logbooks, instrument printouts (raw data), and final analytical reports.

This tracking system ensures that the Laboratory's records can be used as valid evidence should such data become the subject of litigation or any other type of review or investigation.

7.0 CALIBRATION PROCEDURE AND FREQUENCY

This section deals with the systems that are in place in the laboratory to ensure that all conditions are in a state of control at the time of analytical data generation.

The operation of each system is documented in written Standard Operating Procedures (SOPs) to ensure consistent execution and compliance at all times. Analytical procedures used are based on approved and published methods and are documented in in-house SOPs also. All Standard Operating Procedures have been assembled into an SOP Manual, copies of which are provided at the analysts' bench.

7.1 ICP/AA CALIBRATION PROCEDURE

The ICP/AA is calibrated for the metals of interest by the analysis of calibration standards of known concentrations.

For atomic absorption by cold vapor and gaseous hydride, the instrument is calibrated using a minimum set of three standards prepared by diluting a stock solution of known concentration. For atomic absorption by graphite furnace, a minimum of four concentrations are used for initial calibration.

Each instrument is calibrated at the beginning of each series of samples analyzed. The concentration of the calibration standards is chosen so as to cover the working range of the instrument. Subsequently, all sample measurements are made within this working range. An EPA reference standard, or a standard from a different source from the calibration standards, of known concentration is analyzed to verify initial calibration. A laboratory check standard or continuing calibration check standard is analyzed at a frequency of every 10 samples to verify continuing instrument calibration. Analytes in the continuing calibration standard must be within ± 10 percent of the true value. For each analytical batch, a preparation blank is analyzed. A calibration blank is also run after every 10 samples.

7.2 ICP/MS CALIBRATION PROCEDURES

Calibration is performed strictly according to the instrument manufacturer's specifications and each individual EPA Method Protocol.

7.3 UV-VIS SPECTROPHOTOMETER CALIBRATION PROCEDURE

UV-VIS spectrophotometers are checked with standard color solution yearly. A blank and at least four standard concentrations over the linear range are used for calibration for each analysis. The curve must meet the minimum criteria for

correlation coefficient. Each curve is validated using an EPA reference standard or a laboratory check standard independently purchased or prepared from a different lot number or vendor than the calibration standards.

Mirror, grating alignment, and wavelength alignment are checked if warranted, such as when deviations of the standard color solutions are noted.

7.4 GC AND GC/MS CALIBRATION PROCEDURE

Calibration is performed strictly according to the instrument manufacturer's specifications and each individual EPA Method Protocol.

7.5 OTHER CALIBRATION PROCEDURES

Regular periodic calibrations are performed for equipment such as balances, thermometers, ovens, incubators, and D.O. meters that are required in analytical methods, but that are not routinely calibrated as part of the analytical procedure. All the calibration measurements are recorded in a dedicated QA instrument log or laboratory benchsheet.

- Balances--Checked by Class S weights daily or before each use, whichever is less frequent.
- Incubators, ovens, and waterbaths--Temperatures checked with an NBS grade thermometer and necessary adjustments made as required.
- DO meters, conductivity meters, pH meters, and spectrophotometers--Each instrument is checked for calibration using pre-established standards.
- Routine titrants--Each titrant is checked and the concentration/normality recorded on the container with the date.

8.0 ANALYTICAL PROCEDURES

The laboratory uses Standard Operating Procedures that are based on prescribed and published methods from USEPA, APHA, ASTM, and NIOSH. New procedures are validated according to an established protocol prior to implementation. The following publications are used as references for the Standard Operating Procedures:

1. *Annual Book of ASTM Standards. Part 26-Gaseous Fuels; Coal and Coke;* Atmospheric Analysis. ASTM, 1981. American Society for Testing and Materials. Philadelphia, PA 19103.
2. *Annual Book of ASTM Standards Part 31-Water* ASTM, 1981. American Society for Testing and Materials. Philadelphia, PA 19103.

3. *Chemical Characterization of Marine Samples*, API Publication No. 4307, 1978. American Petroleum Institute, Washington, DC.

4. *Collection and Analysis of Purgeable Organics Emitted from Wastewater Treatment Plants*. U.S. EPA, Cincinnati, Ohio, 1980. Publication No. EPA-600/2-80-017.

5. *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*; U.S. EPA, 1984, Federal Register, 40 CFR Part 136.

6. *Handbook for Analytical Quality Control in Water and Wastewater Laboratories*, U.S. EPA, 1977. Publication No. EPA-600/4-79-019.

7. *Handbook for Sampling and Sample Preservation of Water and Wastewater*, U.S. EPA, Cincinnati, Ohio, 1982. Publication No. EPA-600/4-82-029.

8. *Laboratory Protocols for Evaluating the Fate of Organic Chemicals in Air and Water*, U.S. EPA, Athens, GA, 1982, Publication No. EPA-600/3-82-022.

9. *Manual of Analytical Methods for the Analysis of Pesticides in Humans and Environmental Samples*, U.S. EPA, Research Triangle Park, N.C., 1980, Publication No. EPA-600/8-80-038.

10. *Manual of Analytical Quality Control for Pesticides and Related Compounds*, U.S. EPA, Research Triangle Park, N.C., 1979, Publication # EPA-600/1-79-008.

11. *Manual of Chemical Methods for Pesticides and Devices*, U.S. EPA, Office of Pesticide Programs, Belteville, Maryland, 1982.

12. *Methods of Analysis of the Association of Official Analytical Chemists*, Thirteenth edition, 1980.

13. *Methods for Chemical Analysis of Water and Wastes*, U.S. EPA, Cincinnati, Ohio, 1979, Publication No. EPA-600/4-79-020.

14. *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*. U.S. EPA, Cincinnati, Ohio, 1982. Publication No. EPA-600/4-82-057.

15. *NIOSH Manuals of Analytical Methods, Vols. 1-7*, National Institute for Occupational Safety and Health, Cincinnati, Ohio, 1981.

16. *Oil Spill Identification System*, U.S. Coast Guard, Office of Research and Development, Washington, DC, 1977. Report No. CG-D-52-77.

17. *Procedures for Handling and Chemical Analysis of Sediment and Water Samples*, U.S. EPA, 1981, Technical Report EPA/CE-81-1-1.

18. *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association, Water Pollution Control Federation, 18th Edition, 1992.

19. *Test Methods for Evaluating Solid Waste-Physical Chemical Methods*. Office of Solid Waste, U.S. EPA, Washington, DC, SW-846, Third Edition, 1986.

20. *The Analysis of Polychlorinated Biphenyls in Transformer Fluid and Waste Oils*, U. S. EPA/EMSL, Cincinnati, Ohio.

21. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*, U.S. Environmental Protection Agency, EPA-600/4-85/13.

22. *Microbiological Methods for Monitoring the Environment: Water and Wastes*, U.S. Environmental Protection Agency, EPA-600/8-78-017.

23. *Guidelines for Performing Static Acute Toxicity Fish Bioassays in Municipal and Industrial Waste Waters*, California Department of Fish and Game, 1976.

24. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*, U.S. Environmental Protection Agency, EPA/600/4-90/027F.

9.0 DATA REDUCTION, VALIDATION AND REPORTING

9.1 DATA VALIDATION

All data is validated against the acceptance criteria specified by the appropriate Standard Operating Procedures.

The analyst has the initial responsibility for proper instrument conditions and calibration, for the data meeting all acceptance criteria, and for all calculations to be accurate. If this is not the case, the analyst has the responsibility to correct all deficiencies at the time they are discovered. When acceptance criteria are not met, appropriate corrective action is taken.

Before analytical results are reported to the client, they are subjected to a data validation process. All data is validated against the acceptance criteria specified by the appropriate method.

When data validation is finished, the Quality Assurance Audit checklist (sample shown in Appendix H) is completed. The Lab Director or his designee approves all reports. All out-of-control conditions are reviewed and dispositioned by the Lab Director or his designee.

The remainder of this section will discuss how data validation is performed for broad parameter categories.

The requirements that are checked during validation are listed below:

- Holding Times. Laboratory holding times are verified by comparing the analysis dates with the sampling dates.

- Calibration. Daily instrument calibration using the correct number of standards and blank is verified. The correlation coefficient for standard curves (AA) is verified to be acceptable. Random recalculation of percent recoveries in the initial and continuing calibration verification standards is done to verify that acceptance criteria are met.

- Blanks. Contaminants are verified to be absent or at acceptable levels.

- Laboratory Control Sample. One or more percent recoveries are recalculated to verify that the acceptance criteria are met.

- Duplicate Sample Analysis. Percent recoveries and relative percent difference are randomly recalculated to verify that they fall within the control limits.

- Matrix Spike. Percent recoveries are randomly recalculated to verify that they meet acceptance criteria.

- Sample Results. Results are randomly recalculated to verify that any dilutions were factored in. The raw data are randomly checked to verify that the results fall within the linear range. Where contaminants were found in the blanks at acceptable levels, the sample results are verified to be at levels high enough to be valid.

9.2 VALIDATION STATUS INDICATOR

No data can be reported before it is validated. The validation status is indicated by the presence of a completed Quality Assurance Audit Checklist.

10.0 INTERNAL QUALITY CONTROL CHECKS

The laboratory employs control samples to assess the validity of the analytical results of the field samples. Determination of the validity of field sample results is based on the acceptance criteria being met by the control sample. The acceptance criteria for each type of control sample are delineated in the appropriate standard operating procedures. These acceptance criteria are based on the laboratory's statistical process capabilities determined from historical data, and meet the EPA CLP acceptance criteria as a minimum. The control samples are analyzed in the same manner as the field samples. They are interspersed with the field samples at frequencies that are specified by the appropriate standard operating procedure. The frequencies may be altered to comply with client-specific requirements.

10.1 METHOD BLANK ANALYSES

A method blank is a "clean" sample (i.e., containing no analyte of concern), most often deionized water, to which all reagents are added and analytical procedures are performed. Method blanks are analyzed at a rate of one per sample lot or at least every 20 samples. The blank is analyzed in order to assess possible contamination from the laboratory, and corrective actions are taken, if necessary.

Corrective Actions--The method blank results should not exceed the method detection limits or the control chart limits. If high blank values are observed, laboratory glassware and reagents are checked for contamination and the analysis halted until the system is brought under control.

10.2 MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSES

To evaluate the effect of the sample matrix on the analytical methodology, a matrix spike is analyzed, and in some cases, a matrix spike/matrix spike duplicate is analyzed. The matrix spike/matrix spike duplicate (MS/MSD) is analyzed at a frequency of 10% for drinking water and 5% for other matrices. The percent recovery for the spiking compounds is calculated. The relative percent difference (RPD) between the MS/MSD is also calculated.

Corrective Actions--The observed percent recoveries and RPD between the MS/MSD are used to determine the accuracy and the precision of the analytical method for the sample matrix. If the percent recovery and RPD results exceed the control limits as specified for each spiking compound, the sample is not reanalyzed. Poor recovery in matrix spiked samples does not necessarily represent an analytical system out of control. It is possible that unavoidable interference and matrix effects from the sample itself preclude efficient recoveries.

For samples with interfering matrices, a special analytical technique called the method of standard addition may have to be employed. This is usually done in the analysis of metals. It consists of adding known incremental amounts of the target analyses to equal aliquots of the sample, and establishing a calibration curve from the responses. The native sample concentration is then calculated from the curve.

10.3 DUPLICATE SAMPLE ANALYSES

Duplicate analyses are performed to evaluate the reproducibility of the method. Results of the duplicate analyses are used to determine the relative percent difference (RPD) between replicate samples. Duplicates are analyzed at a frequency of 10% for drinking water (5% for metals) and 5% for other matrices.

Corrective Actions--The precision value, RPD, is reviewed by the department supervisor and the department manager. If the precision value exceeds the control limit for the given parameter, the sample set is reanalyzed for the parameter in question.

10.4 CHECK STANDARD ANALYSES

Analysis of check standards is used to verify the standard curve and is performed with each group of samples. Results of these data are summarized, evaluated, and presented to the department supervisor and the division manager for review.

Corrective Actions--The results of the check standard analysis are compared with the true values, and the percent recovery of the check standard is calculated. If correction is required, the check standard is reanalyzed to demonstrate that the corrective action has been successful.

11.0 PERFORMANCE AND SYSTEM AUDITS

Systems are in place to monitor the effectiveness of the laboratory in carrying out the Quality Assurance Plan.

11.1 EXTERNAL PERFORMANCE EVALUATIONS SAMPLE PROGRAM

The laboratory participates in the EPA performance evaluation programs, such as the WS, WP, and HW studies. The laboratory also participates in performance evaluation studies sponsored by the states in which it is certified.

The results of all performance evaluation samples are reported to management and the staff by the LQAO. The LQAO also coordinates investigations and corrective actions on the deficiencies noted.

11.2 EXTERNAL AUDITS

The laboratory contracts with an independent quality assurance evaluator to provide annual audits of the laboratory.

11.3 INTERNAL AUDITS

Internal audits of the laboratory are conducted in two phases. The internal audits consist of semi-annual audits performed by the LQAO. An audit report is issued at the completion of the audit. Responses and follow-up corrective action to the audit findings are required, and are monitored by the LQAO. All audit reports are issued to management and circulated to all staff.

11.4 QC CHART MONITORING

The LQAO periodically checks to see that each section is complying with any applicable control charting requirements. If any abnormalities are found, a report is prepared for management.

11.5 QUALITY REPORTS TO MANAGEMENT

The performance of the laboratory as assessed by the quality monitoring systems in place is reported by the LQAO to management both on a periodic basis and as needed (as described above for each monitoring system). Most, if not all, reports are circulated to the staff to keep them informed of the laboratory's performance. Copies of all quality reports are maintained in the LQAO files.

12.0 PREVENTATIVE MAINTENANCE

Preventive maintenance, such as lubrication, source cleaning, and detector cleaning, is performed according to the procedures delineated in the manufacturer's instrument manual, including the frequency of such maintenance. Precision and accuracy data are examined for trends and excursions beyond control limits to determine evidence of instrument malfunction. Maintenance is performed when an instrument begins to degrade as evidenced by the degradation of peak resolution, shift in calibration curves, decreased ion sensitivity, or failure to meet one or another of the quality control criteria.

Instrument maintenance logbooks are maintained in the laboratory at all times. The logbook contains a complete history of past maintenance, both routine and nonroutine. The nature of work performed, the date, and the signature of the person who performed the work are recorded in the logbook. Preventive maintenance is scheduled according to each manufacturer's recommendation. Instrument downtime is minimized by keeping adequate supplies of all expendable items, where expendable means an expected lifetime of less than one year.

The instrument operator handles routine instrument preventive maintenance. Repair maintenance is performed by an instrumentation technician.

13.0 ASSESSMENT OF PRECISION AND ACCURACY

13.1 ACCURACY

Accuracy is defined as the closeness of the results to the true value. The average percent recovery of QC check standards is used to evaluate the accuracy of an analysis. This average is calculated from historical data or from replicate determinations that are done initially to evaluate the accuracy and precision of the analytical method.

For measurements where matrix spikes are used, the percent recovery (%R) is calculated:

$$\%R = 100 \times \frac{S - U}{C_{sa}}$$

where: S = measured concentration in spiked aliquot
U = measured concentration in unspiked aliquot
C_{sa} = actual concentration of spike added

For situations where a standard reference material (SRM) is used instead of, or in addition to, a matrix spike, the percent recovery (%R) is calculated:

$$\%R = 100 \times \frac{C_m}{C_{srm}}$$

where: C_m = measured concentration of SRM
C_{srm} = actual concentration of SRM

13.2 PRECISION

Precision is a measure of the mutual agreement among individual measurements of the same parameters under prescribed similar conditions.

If calculated from duplicate measurements:

$$RPD = \frac{(C_1 - C_2) \times 100}{(C_1 + C_2)/2}$$

where: RPD = relative percent difference
C_1 = larger of the two observed values
C_2 = smaller of the two observed values

If calculated from three or more replicates, use relative standard deviation (RSD) rather than RPD:

$RSD = (s/\bar{y}) \times 100\%$

where: s = standard deviation
$\bar{y}$ = mean of replicate analysis

Standard deviation(s) is defined as follows:

$$s = \sqrt{\frac{\sum_{i=1}^{n} (y_i - \bar{y})^2}{n-1}}$$

where:

y_i = measured value of the *i*th replicate
$\bar{y}$ = mean of replicate measurements
n = number of replicates

13.3 COMPLETENESS

Completeness is defined as the percent of parameters falling within acceptance criteria and the results subsequently reported. It is calculated as:

$$\% C = \frac{\text{No. of Acceptable parameters}}{\text{Total number analyzed}} \times 100$$

14.0 CORRECTIVE ACTION

The laboratory has a Corrective Action System that ensures the proper documentation and dispositions of conditions requiring corrective action. The system also ensures that the proper corrective action is implemented to prevent recurrence of the condition.

The Corrective Action System applies to all situations that impact data quality. These situations may include, but are not limited to, quality control criteria being exceeded, statistically out-of-control events, deviations from normally expected results, suspect data, deviations from the standard operating procedure, and special sample handling requirements.

The procedure consists of documenting the condition requiring corrective action on a Corrective Action Report (see Appendix H for sample form) and implementing corrective action based on the results of the investigation performed to determine the cause of the condition.

When a condition requiring corrective action arises, the Corrective Action Report is initiated. The initiator describes the condition requiring corrective action. An investigation, if necessary, is conducted to determine the cause of the condition. A corrective action is recommended based on the results of the investigation. The Corrective Action Report is reviewed by the manager/supervisor who either approve the recommended corrective action or indicate the appropriate corrective action.

The originator has the responsibility of following up and making sure that the corrective action is implemented. Implementation of the corrective action is documented by the Corrective Action Report being signed and dated by the person who implemented the corrective action.

Corrective action conditions are documented, whenever appropriate, on the same narrative.

15.0 QUALITY ASSURANCE REPORTS

Data is generally reported in tabular format. When required, QC data, such as blank analyses, standard spike recoveries, surrogate recoveries, and duplicate analyses, are reported with the sample results. Detection limit of the analytical method is reported when the sample result is less than the detection limit. Flagging consistent with EPA-defined reporting qualifiers is used when an explanation for reported values is required. Recognizing the wide range of client needs for report content and format, the laboratory has identified different levels of quality control and the deliverables incident to each level. These are given below

Levels of QA/QC

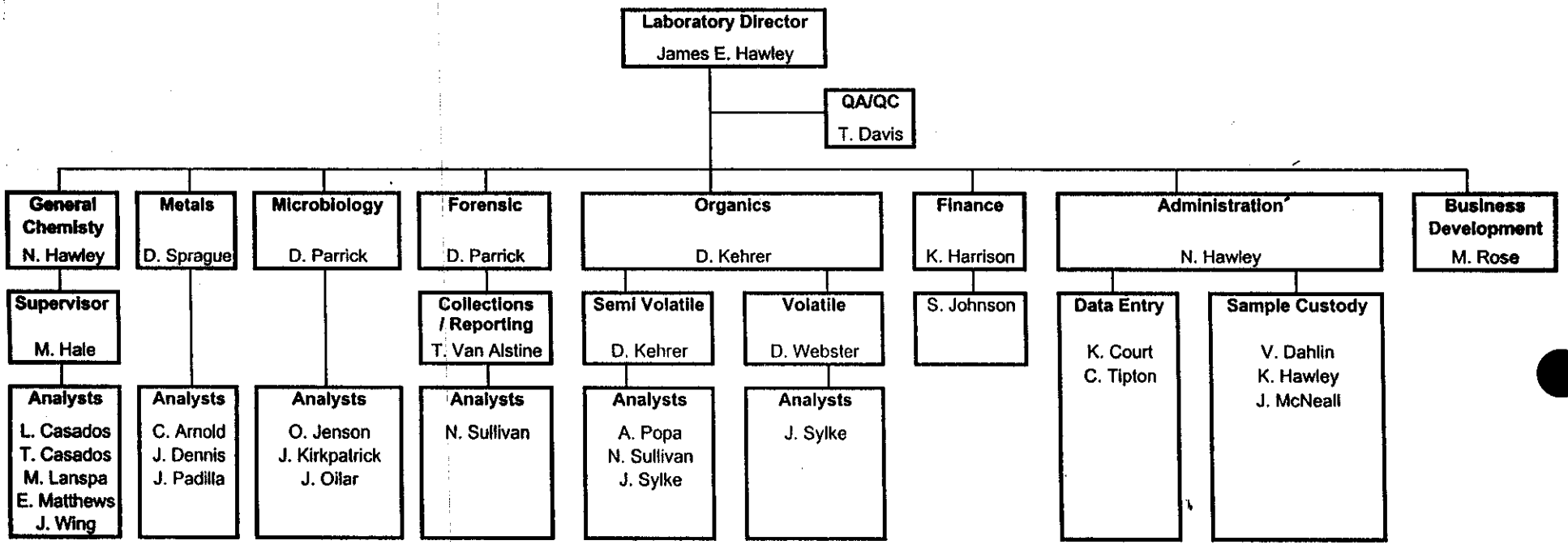
Levels of Quality Control and Deliverables	
Level 1:	Report of sample results with blanks and surrogate recovery summaries.
Level 2:	Report of sample results with all supporting QC data summaries, (i.e. blanks, spikes, duplicates, mstmsd, LCs).
Level 3:	Full QC package with raw data for all samples and QC performed on each sample delivery group.

The laboratory may also meet project-specific QC requirements (control charts, method blank spikes, etc.) not covered by the routine QC levels.

APPENDIX A

LABORATORY ORGANIZATIONAL CHART

Basic Laboratory, Inc.
Organizational Structure
January, 2002



APPENDIX B

PERSONNEL RESUMES

James E. Hawley

Analytical Laboratory Director

Education

Shippensburg State University, B.S. Chemistry, 1971
Oregon State University, M.S. Analytical Chemistry, 1974
Thermo Jarrell Ash Corporation, 61 ICP, 1988
Thermo Jerrell Ash Corporation, 61 E ICP TRACE, 1994
Perkin Elmer ICP/MS, 2001

Experience

March 1992 to Present

Basic Laboratory, Incorporated
Mr. Hawley directs the laboratory. He is responsible for operations, quality assurance, client services project management, instrumentation advancement, and finance. Provides extensive testing services for nutrient, nitrate, and microbiological studies for California Water Quality Control Board and United States Bureau of Reclamation for both ground water and surface water.

February 1975 to March 1992

CH_2M Hill Environmental Laboratories
Inorganic Division Manager, Project Manager, Quality Control Manager, Section Supervisor, Senior Consultant Inorganic and Organic Analysis.

Mr. Hawley joined CH_2M Hill Environmental Laboratories in 1975. He has helped CH_2M Hill Environmental Laboratories grow from a 400 square foot lab to an 18,000 square foot lab, equipped with state-of-the-art instrumentation, and over 50 staff members. Mr. Hawley's primary responsibilities were methods development, supervising and managing the inorganic and analytical testing for air, water, wastewater, hazardous waste, soil ores, and biological samples. Inorganic testing capabilities included wet chemical, atomic spectroscopic, inductively coupled argon plasma spectroscopic, molecular spectroscopic. radiation, fish bioassay, and microbiological techniques. Organic testing capacities included gas chromatography—high-pressure liquid chromatography; gas chromatography / mass spectroscopy.

Mr. Hawley was responsible for developing and implementing the QA/QC program. He was also responsible for productivity, instrumentation purchases, project management, staffing, client services, profit plans, marketing, and preparing cost proposals for analytical services. Mr. Hawley has secured and maintained certification for the Safe Drinking Water Act, Clean Water Act, and Resource Conservation Recovery Act in California and many other states.

Mr. Hawley has experience developing, conducting, and managing analytical testing programs and sampling programs requiring EPA methods, CLP data packages, and special analytical methods. He has experience in date validation. He has also developed and managed pilot plant projects. He is also familiar with agricultural testing programs for forest fertilization and wastewater land application. He has developed and performed fluorescent dye studies to assess the efficiency of small hydroelectric power generators.

Further experience includes base line water quality design, sampling, and monitoring. He has performed flow studies using fluorescent dyes and fluorometers, and he has installed cipolette weirs for measuring flows from acid mine wastes. He has extensive experience in providing the necessary testing required in the permitting process of the gold mining industry. He has been involved in wastewater treatment form a uranium mine. He has performed studies to reduce hydrogen sulfide in wastewater using hydrogen peroxide and pressurized oxygen and air.

Membership in Professional Organizations

American Chemical Society
American Water Works Association
Water Pollution Federation

Publications

With J. D. Ingle. "Improvements in Cold-Vapor Atomic Absorption Analysis of Mercury." *Analytical Chemistry Acta*, Vol. 47, p. 719. 1975.

With J. D. Ingle. "Improvements in Non-Flame Atomic Fluorescence Determination of Mercury." *Analytical Chimica Acta*, Vol. 77, p. 71. 1975

David P. Sprague
Metals Manager

Education

Western Baptist College, B.S. Theology, 1972
Shasta College, Industrial Arts, 1977
Shasta College, Chemistry, 1991
Thermo Jarrell Ash Corporation, 61E ICP TRACE, 1994
Perkin Elmer Corporation, ICP MASS SPECTROMETRY, 2001

Experience

1993 to Present
Basic Laboratory, Incorporated
Principal operator of TJA 61E TRACE ICP , ICP MS, GFAA and FAA for metals analysis.
Senior analyst for General Chemistry, Microbiology, and Fish Bioassay.

1989 to 1993
CH2M Hill - Quality Analytical Laboratory
Principal analyst in General Chemistry for water, wastewater, sludge, and solid waste using EPA and Standard Methods.

Donald T. Keher
Organics Manager

Education

University of Oregon, Eugene OR, B.S. Biochemistry, 1990

Experience

2000 to Present
Basic Laboratory, Incorporated
Senior Organics analyst overseeing sample extraction, GC, GC/MS analysis and quality control. Repair and maintenance of instrumentation including auto samplers. Preparation of client data packages.

1997 to 1999
Northern Testing Laboratories
Analytical Chemist for VOA's, Semi-VOA's. Method development for GC/MS VOA and Semi-VOA 8260 and 8270 methods. Responsibilities also include training personnel on VOA, Semi-VOA, GC, GC/MS, and extractions.

1995 to 1997
Columbia Analytical Services
Analytical Chemist for VOA's by method 8260 and 8240. Analysis of Gas/BTEX by 8020. Repair and maintenance of all VOA Gas Chromatograph and mass spec instrumentation. Responsibilities include training new chemists and preparation and review of client data reports.

1991 to 1994
Precision Analytical Laboratories
Analytical Chemist for TPH-Diesel and Gas/BTEX using Varian and HP Gas Chromatography instrumentation. Preparation of extractions for TPH-Diesel (8015), Gas/BTEX (8020), mass spec (8270), pesticides and metals soil & water samples. Occasional Wet Chemistry and Sample Custody duties.

1990 to 1991
Quality Analytical Laboratory
Analytical Chemist for CLP Pesticides, TPH-Diesel, PNA and Phenol samples using Varian 3400 & 3600 Gas Chromatography.

Daniel P. Webster
Senior Analyst

Education

University of California, Davis, B.S. Biochemistry, 1995

Experience

1995 to Present
Basic Laboratory, Incorporated
Analyst in General Chemistry from 1995 to 1999. Skilled in the use of ion chromatography, TOC analysis, UV-Vis spectrophotometry, specific ion and pH analysis, turbidimeter, dissolved oxygen meter, titrimetric and gravimetric analysis.

From 1999 to present, analyst in the Organic Chemistry Department. He is responsible for volatile organic analysis by GCMS and diesel range organics by GC FID as well as troubleshooting and maintenance of gas chromatographs and other laboratory equipment.

1994 to 1995
University of California Plant Pathology Laboratory
Research of disease causing pathogens in vegetable crops. Skills obtained in microscopy, gel electrophoresis, and chromatography.

Matthew A. Culver
Organics Consultant

Education

William Jewell College, B.A. Chemistry, 1977

Experience

May 1998 to Present
Basic Laboratory, Inc.
Consultant to the organics laboratory, certification work for all organic methods.

December 1996 to May 1998
Independent Contract/Consulting Chemist
Environmental organics chemist as needed—clients include Quanterra Field Analytical Services, Onsite Environmental, RECRA Labnet-Philadelphia (formerly Roy F. Weston), RECRA Labnet-Chicago, and Air Toxics Ltd.

November 1988 to December 1996
CH2M Hill Environmental Laboratories
GC/MS supervisor, GC lab data system manager for MicroVAX 3100; in addition to analytical and supervisory work he also developed software both for Finnigan Incos data systems and the VMS system which eliminated tasks formerly done by analysts.

June 1996 to November 1988
California Water Laboratories, Inc.
GC/MS Chemist

November 1979 to March 1985
Environmental Science and Engineering, Inc.
Pesticide residue chemist; THMs analysis in drinking water; project chemist for wastewater treatment group; designed and built a micro computer-controlled device which simulated a carbon column pilot plant.

July 1977 to November 1979
Langston Laboratories, Inc.
GC and HPLC chemist; pesticides/PCBs, herbicides in multiple matrices, food/feed assays of preservatives, product stability testing of pharmaceuticals

Darrin K. Parrick
Microbiology and Forensic Manager

Education

California State University, BS, Microbiology, 1997
Shasta College, AA, General Education, 1994
Academy of Health Sciences, Medical Specialist, 1987

Experience

Since 1989, Mr. Parrick has had experience in general bacteriology, virology, parasitology, serology, mycology and water bacteriology.

1999 to Present
Basic Laboratory, Incorporated
His responsibilities include microbiological testing of all water, wastewater and other sample matrices. He performs all fish toxicity bioassays.

1998 – 1999
Redding Orthopedic Center
Duties included scheduling surgeries, wound care, suture removal, casting, splinting, paperwork, scheduling diagnostic tests and office work. He setup computer network and customized database.

1995 – 1998
Redding Pathologist Laboratory
Mr. Parrick was responsible for venipuncture, blood analysis and maintenance of automated analyzers.

1989 – 1995
Shasta Community Health Care Laboratory
Performed routine venipuncture and assisted in complex testing and maintained automated analyzers.

1986 – 1989
United States Army
Mr. Parrick was a medical specialist / combat medic.

APPENDIX C

QUALITY ASSURANCE OBJECTIVES FOR WATER SAMPLES

Quality Assurance Objectives for Water Samples				
Parameter	Water Samples			
	Method	Precision[1]	Accuracy[2]	Completeness[3]
General Analyses				
Ph	4500-H+**	20	75-125	90
Alkalinity	2320**	20	--	90
Color	2120**	20	--	90
Conductivity	2510**	20	75-125	90
Hardness, total	2340**	20	75-125	90
Turbidity	2130**	20	75-125	90
Odor	2150**	--	--	90
Saturation index (corrosivity)	--	--	--	90
Total dissolved solids	2540C**	20	73-126	90
Total suspended solids	2540D**	20	75-125	90
Volatile suspended solids	2540E**	20	--	90
Total Solids	2540B**	20	--	90
Cations				
Aluminum	200.7/202.1*	20	75-125	90
Antimony	200.7/204.1*	20	75-125	90
Arsenic	200.7/206.3*	20	75-125	90
Beryllium	200.7/210.1*	20	75-125	90
Barium	200.7/208.1*	20	75-125	90
Cadmium	200.7/213.1*	20	75-125	90
Calcium	200.7/215.1*	20	75-125	90
Chromium	200.7/218.1*	20	75-125	90
Hexavalent chromium	3500Cr**	20	75-125	
Copper	200.7/220.1*	20	75-125	90
Iron	200.7/236.1*	20	75-125	90
Lead	200.7/239.1*	20	75-125	90
Magnesium	200.7/242.1*	20	75-125	90
Mercury	200.7/245.1*	20	75-125	90
Nickel	200.7/249.1*	20	75-125	90
Selenium	200.7*	20	75-125	90
Potassium	200.7/258.1*	--	75-125	90
Silicon	200.7/370.1*	20	75-125	90
Silver	200.7/272.1*	20	75-125	90
Sodium	200.7/273.1*	20	75-125	90
Thallium	200.7/279.1*	20	75-125	
Zinc	200.7/289.1*	20	75-125	90
Boron	200.7/212.3*	20	75-125	90
Manganese	200.7/243.1*	20	75-125	90
Cobalt	200.7/219.1*	20	75-125	90
Molybdenum	200.7/246.1*	20	75-125	90
Vanadium	200.7/286.1*	20	75-125	90

Quality Assurance Objectives for Water Samples				
	Water Samples			
Parameter	Method	Precision[1]	Accuracy[2]	Completeness[3]
Anions				
Chlorine	4500**	--	--	90
Chloride	300.0*	20	75-125	
Fluoride	300.0*	20	75-125	90
Sulfate	300.0*	20	75-125	90
Sulfide	4500S**	--	--	90
Total Cyanide	4500CN**	20	75-125	90
Free Cyanide	4500CN-D**	20	75-125	90
Bromide	300.0*	20	75-125	90
Nutrients				
Ammonia	$4500NH_3$**	20	75-125	90
Nitrate	300.0*	20	75-125	90
Nitrite	300.0*	20	75-125	
Total Kjeldahl Nitrogen	4500Norg**	20	75-125	90
Ortho phosphorous	300.0*	20	75-125	90
Total phosphorous	4500P**	20	75-125	90
Nitrate and nitrite	300.0*	20	75-125	
Oxygen Demand Analyses				
BOD_5 (total)	5210**	--	--	90
BOD_5 (carbonaceous)	5210**	--	--	90
COD	5220**	20	75-125	90
Dissolved oxygen	4500-O**	--	--	90
Organic Analyses				
Oil and Grease	5520**	20	75-125	90
MBAS	5540**	20	75-125	90
Phenols	5530**	20	75-175	90
GC Analyses	EPA	Method Specific	Method Specific	90
Chlorinated Pesticides	508/608	Method Specific	Method Specific	90
Polychlorinated Biphenyls	508/608	Method Specific	Method Specific	90
Chlorophenoxy Acid Herbicides	515.1	Method Specific	Method Specific	90
GC/MS Analyses	EPA	Method Specific	Method Specific	90
Volatile Organic Chemicals	524.2/624	Method Specific	Method Specific	90
Semivolatile Organic Chemicals	525.2/625	Method Specific	Method Specific	90

1. Precision defined as recovered percent difference.
2. Accuracy defined as average percent recovery.
3. Completeness defined as percent of parameters falling within quality assurance acceptance criteria and subsequently being reported.

-- = Not available.

* = U.S. EPA. Methods for Chemical Analysis of Water and Wastes. PB 84-128677. March 1983

** = Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992.

APPENDIX D

QUALITY ASSURANCE OBJECTIVES FOR SOIL/SEDIMENT SAMPLES

Quality Assurance Objectives for Soil/Sediment Samples				
Parameter	Soil/Sediment Samples			
	Analytical Method/Extraction	Precision[1]	Accuracy[2]	Completeness[3]
General Analyses				
pH	9045*	20	75-125	90
Alkalinity	310.1**	20	75-125	90
Conductivity	9050*	20	75-125	90
Volatile solids	160.4**	20	75-125	90
Total solids	160.3**	20	75-125	90
Cations				
Aluminum	3010/7020*/3050	20	75-125	90
Antimony	6010/7040*/3050	20	75-125	90
Arsenic	6010/7061*/3050	20	75-125	90
Beryllium	6010/7090*/3050	20	75-125	90
Barium	6010/7080*/3050	20	75-125	90
Cadmium	6010/7130*/3050	20	75-125	90
Calcium	6010/7140*/3050	20	75-125	90
Chromium	6010/7190*/3050	20	75-125	90
Hexavalent chromium	7196*/3050	20	75-125	90
Copper	6010/7210*/3050	20	75-125	90
Iron	6010/7380*/3050	20	75-125	90
Lead	3010/7420*/3050	20	75-125	90
Magnesium	6010/7450*/3050	20	75-125	90
Mercury	6010/7471*/3050	20	75-125	90
Nickel	6010/7520*/3050	20	75-125	90
Potassium	6010/7610*/3050	20	75-125	90
Selenium	6010/7741*/3050	20	75-125	90
Silver	6010/7760*/3050	20	75-125	90
Sodium	6010/7770*/3050	20	75-125	90
Thallium	6010/7840*/3050	20	75-125	90
Zinc	6010/7950*/3050	20	75-125	90
Manganese	6010/7460*/3050	20	75-125	90
Cobalt	6010/7200*/3050	20	75-125	90
Molybdenum	6010/7480*/3050	20	75-125	90
Vanadium	6010/7910*/3050	20	75-125	90
Anions				
Chloride	325.1**	20	75-125	90
Fluoride	340.1**	20	75-125	90
Sulfate	9036*/Method	20	75-125	90
Sulfide	9030*/ Method	20	75-125	90
Total Cyanide	9010*/ Method	20	75-125	90
Nutrients				
Nitrate	353.3**	20	75-125	90
Nitrate and nitrite	353.3**	20	75-125	90

Quality Assurance Objectives for Soil/Sediment Samples				
Parameter	Soil/Sediment Samples			
	Analytical Method/Extraction	Precision[1]	Accuracy[2]	Completeness[3]
Organic Analyses				
Oil and Grease	9070*/Method	20	75-125	90
GC Analyses				
Chlorinated Pesticides	EPA 8081	Method Specific	Method Specific	90
Polychlorinated Biphenyls	EPA 8082	Method Specific	Method Specific	90
Chlorophenoxy Acid Herbicides	EPA 8151	Method Specific	Method Specific	90
GC/MS Analyses				
Volatile Organic Chemicals	EPA 8260	Method Specific	Method Specific	90
Semivolatile Organic Chemicals	EPA 8270	Method Specific	Method Specific	90

1. Precision defined as recovered percent difference.
2. Accuracy defined as average percent recovery.
3. Completeness defined as percent of parameters falling within quality assurance acceptance criteria and subsequently being reported.

-- = Not available.

* = Test Methods for Evaluating Solid Waste. SW-846, 2nd Edition revised April 1985 and 3rd Edition, September 1986; Accuracy expressed as percent recovery based on published method control limits.

** = Methods for Chemical Analysis of Water and Wastes. PB 84-128677. March 1983.

APPENDIX E:

QUALITY ASSURANCE OBJECTIVES FOR ACUTE TOXICITY BIOASSAY AND REPORT FORMAT

QUALITY ASSURANCE DOCUMENT:
ACUTE TOXICITY FISH BIOASSAY – *Oncorhyncus mykiss*

Percent Survival acute toxicity bioassay:

All procedures conform to methods EPA/600/4-90/027F and EPA/600/4-85/013.

Test organisms:

Test organisms will be purchased from registered aquaculturist:

Thomas Fish Co., P.O. Box 851, Anderson, CA 96007

Registration number: 37 Expiration: 12/31/00

Should the need arise, an alternate vendor will be:

Mt. Lassen Trout Farm, 28125 Hwy 36E, Red Bluff, CA, 96080 (530) 597-2222

After receipt of a new lot of fish, assign number in the reagent and media log, and document and verify the condition of fish.

Acclimation:

Holding period:	5-7 days before use.
Holding capacity:	60-80 fish per 20 liters at 1-2 grams per liter.
Mortality:	Recorded periodically if >10% die within 4 days preceding the bioassay.
Feeding:	Fish are fed every 48 hours alternating holding tanks each day.

Size:

Size: Representative of 15-30 days old (after yolk sac absorption to 30 days) rainbow trout.

Test containers:

Size: Five-liter minimum. Chambers are covered to prevent fish from jumping out.

Cleaning:

1. Soak 15 min. in tap water, then scrub with detergent.
2. Rinse twice with tap water, then rinse once with fresh, dilute (10% v:v) hydrochloric or nitric acid to remove scale, metals, and bases.
3. Rinse twice with deionized water.
4. Under a fume hood or canopy, rinse once with full-strength, pesticide-grade acetone to remove organic compounds.
5. Rinse three times with deionized water.

Sample containers:

To reduce the risk of sample contamination, all sample containers are punctured and discarded to prevent reuse.

Dilution water:

Dechlorinated tap water is stored for at least 48 hours prior to assay at 12°C ± 1.

Effluent water:

Effluent water samples are brought to12°C ±1°C.

Temperature:

12°C ±1°C. Recording thermograph used to monitor the test chamber.

Dissolved oxygen:

Aeration not required unless D.O. concentration falls below 6.0mg/L; aeration rate (if needed) should not exceed 100 bubbles per minute (1-2 bubbles per second).

Sample size and number of fish:

Sample:	Fish:
Minimum 20 liters for effluents	2 chambers with 10 fish each (20 total)
Minimum 40 liters for receiving waters	4 chambers with 10 fish each (40 total)

Photo period:

Light:	16 hours (Timer on light switch)
Dark:	8 hours

Control:

Dechlorinated tap water from City of Redding used as a control for each test batch. A test is invalidated if the control fish survival is less than 90%.

Duration:

96 hours

Physical and chemical data:

Initial data to include temperature, pH, DO, alkalinity, hardness, and electrical conductivity. For each subsequent 24-hour period, temperature, pH, DO, and fish mortality are recorded. Each test is performed according to the laboratory QA/QC plan and individual test standard operating procedures. Results are recorded on the report sheet.

Expression of results:

Percent survival is based on the number of fish surviving in the test water for 96 hours.

Reference toxicant:

The LC_{50} determination using three levels of sodium dodecyl sulfate representing toxicity levels of 0%, 50%, and 100%. Results are plotted using the Spearman-Karber analysis and expressed with 95% confidence level limits.

Fish disposal:

Euthanasia is accomplished by placing fish in hot water (80-85°F).

Biological data:

Record species, source, and age of test organisms.
Measure length and weight of 15 representative fish to the nearest centimeter and 0.1 grams, respectively, and record the minimum and maximum values. Calculate the average for the length and weight.

References:

1. *Guidelines for Performing Static Acute Toxicity Fish Bioassays in Municipal and Industrial Waste Waters,* California Department of Fish and Game, 1976.

2. *Microbiological Methods for Monitoring the Environment: Water and Wastes,* U.S. Environmental Protection Agency, EPA/600/8-78-017.

3. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms,* U.S. Environmental Protection Agency, EPA/600/4-85/-13.

4. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms,* U.S. Environmental Protection Agency, EPA/600/4-90/027F.

Basic Laboratory, Inc.

FISH TOXICITY BIOASSAY REPORT

Report to:	Lab Number:
	Date Reported:
Attention:	Date Sampled:
	Date Received:
Sample Description:	Date Test Started:
Sampled By:	Time Test Started:

TEST ORGANISM

Common Name: Rainbow Trout:	Scientific Name: Oncorthynchus mykiss			
Source of Fish:	Thomas Fish Company	Ave.	Min.	Max.
Volume of Test Solution:	Length (cm)			
Acclimatization: _____ days at _____ degrees Celsius	Weight (grams)			

CHEMICAL DATA

	Initial		24 hour		48 hour		72 hour		96 hour	
	test	control	Test	Control	test	control	test	control	test	control
Temp. C										
pH										
DO (mg/l)										
Alkalinity (mg/l)										
Hardness (mg/l)										
Conductivity (umhos/cm)										
Total Residual CL (mg/l)										

SURVIVAL DATA (Number of fish surviving)

	Initial	24 hour	48 hour	72 hour	96 hour	% Survival
Test						
Control						

Notes: Ammonia @ N: Method 4500NH3 Reporting Limit: 0.05 Units: mg/l

Reference Toxicant: LC50= Confidence Limits:

The information shown in this sheet is test data only and no analysis or interpretation is intended or implied.

Reported by: _____

2218 Railroad Ave – Redding, CA 96001 – (530) 243-7234 – Fax (530) 243-7494
www.basiclabinc.com

APPENDIX F

SUMMARY OF CONTAINERS, PRESERVATION, AND HOLDING TIMES

Summary of Containers, Preservation, and Holding Times

Sample Type/Procedure	Soil/Sludge				Water/Wastewater			
	Container	Quantity	Preserve	Hold Time	Container	Quantity	Preservation	Hold Time
VOLITILE ORGANICS								
601/8010 Purgeable Hydrocarbons	st. steel	4 oz	Cool 4°C	14 days	G-TLS	3-40 ml	4°C + HCL #	14 days
602/8020 Purgeable Aromatics	st. steel	4 oz	Cool 4°C	14 days	G-TLS	3-40 ml	4°C + HCL #	14 days
601/602:8010/8020	st. steel	4 oz	Cool 4°C	14 days	G-TLS	3-40 ml	4°C + HCL #	14 days
603/8015	st. steel	4 oz	Cool 4°C	14 days	G-TLS	2-40 ml	4°C + HCL #	14 days
Nonhalogenerated Vol. Org.								
524.2/624/8240 Volatile Organics	st. steel	4 oz	Cool 4°C	14 days	G-TLS	2-40 ml	4°C + HCL #	14 days
BTXE	st. steel	4 oz	Cool 4°C	14 days	G-TLS	2-40 ml	4°C + HCL #	14 days
TPH as gas	st. steel	4 oz	Cool 4°C	14 days	G-TLS	2-40 ml	4°C + HCL #	14 days
TPH as gas + BTXE	st. steel	4 oz	Cool 4°C	14 days	G-TLS	2-40 ml	4°C + HCL #	14 days
Trihalomethane	st. steel	4 oz	Cool 4°C	14 days	G-TLS	2-40 ml	4°C + Thio	14 days
SEMIVOLITILE ORGANICS								
604/8040 Phenols	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	1-2.5 l	Cool 4°C	7 days *
508/608/8080 Pesticides and PCBs	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	1-2.5 l	Cool 4°C	7 days *
610/PAH/PNA	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	1-2.5 l	Cool 4°C	7 days *
612/8120 Chlorinated Hydrocarbons	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	1-2.5 l	Cool 4°C	7 days *
622/8140 Organophosphorous Pesticides	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	1-2.5 l	Cool 4°C	7 days *
515/615/8150 Chloribnated Herbicides	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	1-2.5 l	Cool 4°C	7 days *
613/8280 2,3,7,8-TCDD	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	2-2.5 l	Cool 4°C	7 days *
525/625/8270 Semivolatile Organics	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	2-2.5 l	Cool 4°C	7 days *
504 EDB/DBCP	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	2-125 ml	Cool 4°C	28 days *
TFH: diesel, jet fuel, kerosene	st. steel	16 oz	Cool 4°C	14 days*	G/TLC	1-2.5 l	Cool 4°C	14 days *
METALS								
Chromium VI	st. steel	8 oz	Cool 4°C	24 hours	P,G	250 ml	Cool 4°C	24 hours
Mercury	st. steel	4 oz	Cool 4°C	28 days	P,G	250 ml	4°C HNO_3 #	28 days
Organic Lead	st. steel	4 oz	Cool 4°C	6 months	G-TLC	1 liter	Cool 4°C	6 months
All other metals	st. steel	8 oz	Cool 4°C	6 months	P,G	1 liter	4°C HNO_3 #	6 months
GENERAL AND INORGANINCS								
Acidity	st. steel	4 oz	--	--	P,G	250 ml	Cool 4°C	14 days
Alkalinity	st. steel	--	--	--	P,G	250 ml	Cool 4°C	14 days
Ammonia	st. steel	4 oz	--	--	P,G	1 liter	4°C H_2SO_4 #	28 days
BOD	st. steel	--	--	--	P,G	1 liter	Cool 4°C	48 hours
Chloride	st. steel	4 oz	--	28 days	P,G	100 ml	Cool 4°C	28 days
Bromide	st. steel	8 oz	-	--	P,G	250 ml	none	28 days
COD	st. steel	4 oz	--	--	P,G	100 ml	4°C H_2SO_4	28 days

Summary of Containers, Preservation, and Holding Times

	Soil/Sludge				Water/Wastewater			
Sample Type/Procedure	**Container**	**Quantity**	**Preserve**	**Hold Time**	**Container**	**Quantity**	**Preservation**	**Hold Time**
GENERAL AND INORGANINCS								
Chlorine	--	--	--	-- 28 days	P,G	250 ml	Cool 4°C	24 hours
Chloride	st. steel	4 oz	--	--	P,G	250 ml	--	28 days
Color	--	--	--	--	P,G	250 ml	Cool 4°C	48 hours
Coliform	--	--	--	14 days	P,G	125 ml	4°C $Na_2S_2O_3$	6 hours
Cyanide	st. steel	4 oz	Cool 4°C	28 days	P,G	1 liter	4°C NaCl	14 days**
Flashpoint	st. steel	4 oz	--	--	G-TLC	250 ml	--	28 days
Fluoride (total)	st. steel	4 oz	--	--	P	250 ml	--	28 days
Hardness	--	--	--	--	P,G	250 ml	HNO_3 or H_2SO_4#	6 months
Nitrate	st. steel	4 oz	Cool 4°C	--	P,G	100 ml	Cool 4°C	48 hours
Nitrite	st. steel	4 oz	Cool 4°C	--	P,G	100 ml	Cool 4°C	48 hours
Nitrate/Nitrite	st. steel	4 oz	Cool 4°C	28 days	P,G	100 ml	4°+ H_2SO_4#	28 days
Oil and Grease	st. steel	4 oz	Cool 4°C	28 days	G-TLC	3 liters	4°+ H_2SO_4#	28 days
Phenolics	st. steel	4 oz	Cool 4°C	28 days	G-TLC	1-2.5 l	4°+ H_2SO_4#	28 days
Phosphorous, total	st. steel	4 oz	Cool 4°C	28 days	G-TLC	250 ml	Cool 4°C + 1 ml HCl/l	28 days
Phosphate, ortho	st. steel	--	--	--	G-TLC	250 ml	Filter immediatel y; cool 4°C	48 hours
pH	--	4 oz	Cool 4°C	--	P,G	100 ml	Cool 4°C	immed.
Radiological	st. steel	--	--	--	P,G	1 liter	HNO_3	6 months
Reactivity in Acids and Bases	st. steel	4 oz	Cool 4°C	28 days	P,G	500 ml	Cool 4°C	7 days
Reactivity in Water	--	--	Cool 4°C	28 days	P,G	250 ml	Cool 4°C	28 days
Silica	--	--	--	--	P	250 ml	Cool 4°C	28 days
Solids, dissolved	--	--	--	--	P,G	250 ml		7 days
Solids, Suspended Total/Volume	--	--	--	--	P,G	1 liter	Cool 4°C	7 days
Solids, Total/Volume	--	--	--	--	P,G	250 ml	Cool 4°C	7 days
Specific Conductivity	st. steel	--	--	--	P,G	500 ml	Cool 4°C	28 days
Specific Gravity	--	4 oz	Ambient	--	P,G	25 ml	ambient	28 days
Steel Corrosion	st. steel	--	--	--	P,G	500 ml	Cool 4°C	28 days
Sulfate	--	8 oz	Cool 4°C	--	P,G	500 ml	Cool 4°C	28 days
Sulfite	st. steel	--	--	--	P,G	500 ml	Cool 4°C	24 hours
Sulfide	--	8 oz	Cool 4°C	--	P,G	500 ml	Cool 4°C	7 days
Surfactants	st. steel	--	--	--	P,G	1 liter	Cool 4°C	48 hours
Tannins and Lignin	st. steel	8 oz	Cool 4°C	--	G	1 liter	4°C + NaOH pH > 9	7 days

Summary of Containers, Preservation, and Holding Times

Sample Type/Procedure	Soil/Sludge				Water/Wastewater			
	Container	Quantity	Preserve	Hold Time	Container	Quantity	Preserve	Hold Time
GENERAL AND INORGANINCS (Continued)								
TKN	st. steel	4 oz	--	--	P,G	1 liter	4°+ H_2SO_4#	28 days
Total Organic Carbon	st. steel	4 oz	--	--	P,G	250 ml	4°+ H_2SO_4#	28 days
Total Organic Halogen	--	--	--	--	G-TLC	500 ml	4°+ H_2SO_4#	28 days
Turbidity	--	--	--	--	P,G		Cool 4°C	48 hours

NOTES:

* Days to extraction, 40 days to analysis after extraction.

pH less than 2..

• pH greater than 12.

@ Need three to do MS and MSD.

& Zn acetate and NaOH to pH greater than 9.

** Maximum holding time for water samples is 24 hours when sulfide is present. Optionally, all samples may be testsed with lead acetate paper before adjusting pH to determine if sulfide is present. If sulfide is present, it can be removed with cadmium nitrate powder until a negative spot is obtained. The sample is filtered and then NaOH is added to pH 12.

st—stainless, G--glass, P--polyethylene; TLC-- Teflon-lined cap; TLS--Teflon-lined sepum.

Basic Laboratory, Inc.

BOTTLE ORDER FORM

Client: _____ Client Contact: _____

Address: _____ Phone Number: _____

BASIC LAB Contract: _____

Date: _____

Project Number: _____

Turn Around Time: _____ Quote #: _____

QA/QC Level: _____ Date Bottles Needed: _____

Analysis	Matrix	# of Samples	Bottles per sample	Bottle Size/type	Total Bottles	Preservative Added	Unit Cost

SHIPPING ADDRESS: _____

_____

SAMPLE CUSTODY USE ONLY:

Method Shipped: _____ Prepared By: _____

Cooler Number: _____ Date Shipped: _____

2218 Railroad Ave. – Redding, CA 96001 – (530) 243-7234 Fax (530) 243-7494

BASIC LABORATORY CHAIN OF CUSTODY RECORD

2218 Railroad Ave. Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

CLIENT NAME:			PROJECT NAME:	PROJECT #:	LAB #:
ADDRESS:			REQUESTED COMPLETION DATE:		# SAMPLES
			ANALYSES REQUESTED		PAGE ___ OF ___
PROJECT MANAGER:			# OF BOTTLES		QUOTE #.
PHONE:	FAX:	SYSTEM #:			CUST. SEAL
INVOICE TO:		PO #:			ICE
					TEMP
					pH
STA NO	DATE	COMP SOIL	SAMPLE DESCRIPTION	LAB. ID	REMARKS

SAMPLES BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:
RECEIVED BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:
RECEIVED BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:
RECEIVED BY LAB:	DATE/TIME:	SAMPLESSHIPPEDVIA: UPS POST BUS FED-X OTHER	