CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 85-95
NPDES NO. CA0038687

WASTE DISCHARGE REQUIREMENTS FOR:

NAPA SANITATION DISTRICT AND KIRKLAND CATTLE COMPANY,
LIME ALGAE SLUDGE APPLICATION TO LAND FROM OXIDATION POND NO. 1
NAPA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Board), finds that:

1. Napa Sanitation District and Kirkland Cattle Company, hereinafter called the discharger, by application dated June 25, 1985 has applied for waste discharge requirements and a permit to dispose lime algae sludge from the corner of oxidation pond No. 1 under the National Pollutant Discharge Elimination System (NPDES).

2. The discharger operates a 8.0 million gallon per day Primary treatment plant at Imola Avenue in Napa. The effluent is pumped about three miles south to a 340 acre oxidation pond system. Physical-chemical treatment is provided for the pond effluent, using lime or polymers for the removal of algae. Discharge is made to the Napa River. The lime-algae sludge is presently thickened and stored in a lagoon. Heavy metal concentrations in the lime-algae sludge are generally much lower than those found in sludges generated in normal sewage treatment. The discharger has recently analysed sludge from oxidation pond No. 1 and it is not considered a hazardous waste.

3. The discharger(s) proposes a one time application of lime-algae stored in the corner of oxidation pond No. 1 to about 620 acres of agricultural parcels known as Kirkland Ranch owned by the District and the Kirkland Cattle Company, in conjunction with wastewater reclamation projects. The Kirkland Ranch is located about two miles east of the oxidation ponds and northeast of State Highway 29 as shown in the map (Attachment A) which is hereby made part of this Order.

4. The proposed site is gently rolling agricultural land bordered by State Highway 12 on the south and Kelly Road on the west. Sheehy Creek is the major surface drainage

system and is tributary to Napa River. The site is dominated by Fagan and Haire soils consisting of sandy-clay loam having low permeability. The pH of the soil ranges from 5.5 to 6.0 useable groundwater is more than 50 feet below surface. The groundwater and adjacent surface waters at site are not used for domestic or agricultural purposes.

5. There is approximately 90,000 cubic yards of lime-algae sewage sludge to be removed from northeast corner of pond No. 1 which is contained in a 800 foot square area. The lime algae sludge will be applied only once to the Kirkland Ranch covering about 230 acres of District's owned land and approximately 390 acres of Kirkland Cattle Company property. The discharger has submitted a management plan which describes proposed method and quantity of sludge application, assessment of the heavy metals concentration in the sludge, soil and water. A contracter under the supervision of the District's staff will convey the sludge to the Kirkland Ranch and the farmer Larry Kirkland of Kirkland Cattle Company will disc the sludge into soil. The one time application will be completed by summer of 1986.

6. On June 23, 1983 the Board adopted Order No. 83-16 (NPDES Permit) for sludge application to two(2) agricultural parcels owned by the District in conjunction with wastewater reclamation projects. Napa County Health Department has informed the Board in writing dated June 25, 1985 indicating no objection to proposed one time application of lime algae sludge on the Kirkland Ranch.

7. Section 405 of the Federal Clean Water Act provides that whenever the disposal of sludge from a publicly owned treatment works would result in any pollutant from such sludge entering waters of the United States, such disposal shall be regulated in accordance with a permit under the National Pollutant Discharge Elimination System (NPDES). Drainage from the proposed sludge disposal sites as described in Findings 3, 4 and 5 above would contain pollutants from sludge applied by the District, and said drainage would enter Sheehy Creek and the Napa River, waters of the United States.

8. On September 13, 1979, U. S. Environmental Protection Agency (EPA), under authority of the Resources Conservation and Recovery Act of 1976 (PL94-58) and Section 405 of the Federal Clean Water Act issued an interim final regulations (40 CFR 257) related to sludge disposal practices of

publicly owned wastewater treatment plants; "Criteria for Classifications of Solid Waste Disposal Facilities and Practices". The regulations include guidelines for sludge application to land used for the production of food-chain crops with limits on the amount of cadmium and polychlorinated biphenyls (PCB) that can be added to the soil. The limitations contained in this Order are consistent with the federal regulations cited above.

9. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on July 21, 1982. The Basin Plan contains water quality objectives for Fagan Creek, Suscol Creek, Sheehy Creek, and Napa River.

10. The beneficial uses of Sheehy Creek, and Napa River in the vicinity of the discharge as contained in the Basin Plan are:

    a. Fish migration
    b. Fish spawning
    c. Wildlife habitat
    d. Preservation of rare and endangered species
    e. Cold freshwater habitat for fish
    f. Warm freshwater habitat for fish
    g. Navigation
    h. Water contact recreation
    i. Non-contact water recreation
    j. Industrial water supply
    k. Esthetic enjoyment

11. The discharger has conducted an initial study and prepared an Environmental Impact Assessment entitled "Kirkland Ranch Sludge Utilization" dated April 15, 1985, in accordance with the California Environmental Quality Act (Public Resource Code Section 2100, et Seq.). A Negative Declaration was issued by the Discharger stating that the proposed project did not have a significant effect on the environment.

12. The Board finds that the potential adverse impacts on beneficial uses stemming from the discharger's project will be mitigated by measures incorporated into the project design or required by this Order.

13. This Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided

them with an opportunity for a public hearing and an opportunity to submit their written comments and recommendations.

14. The Board in a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to provisions of the California Water Code, the Federal Water Pollution Control Act as amended, the Federal Resources Conservation and Recovery Act, and to regulations adopted thereunder, that the discharger shall comply with the following:

A. Prohibitions

1. Waste disposed at the site shall be limited to lime-algae sludge from the northeast corner of oxidation pond only.

2. No waste that contains contaminants in concentrations in excess of thresholds defined in the Environmental Protection Agency's Hazardous Waste List in 40 CFR 260-265 shall be disposed of on the site.

3. Crops grown on the site shall be limited to animal feed only.

4. Sludge shall not be applied to the disposal field between November 1 and May 1.

5. Sludge shall not be applied within 100 feet of Sheehy Creek or any drainage channel.

6. Grazing animals shall not be permitted on the fields which have received sewage sludge within the preceeding thirty (30) days.

7. Milking animals shall not be allowed to graze on sludge amended parcels until twelve (12) months have elapsed after the last sludge application.

B. SEWAGE SLUDGE APPLICATION RESTRICTIONS

1. Neither the transport, handling, storage nor application of sewage shall cause a condition of pollution nor nuisance as defined by Section 13050(m) of the California Water Code.

2. The pH of the sludge and soil mixture shall be 6.5 or greater at the time of incorporation, except for sludge with cadmium concentrations of 2.0 mg/kg or less.

3. The annual Cadmium (Cd) application rate shall not exceed the following limits:

Time Period	Annual Cd Application rate (kg/ha)
Present to Dec. 31, 1986	1.25(1.11 lb/Ac)
Beginning January 1, 1987	0.50(0.44 lb/Ac)

4. The maximum cumulative application of cadmium from sewage sludge shall not exceed 5 kg/ha.

5. Sludge containing concentrations of Polychlorinated Biphenyls (PCBs) equal to or greater than 10 mg/kg (dry weight) shall be incorporated into soil immediately when applied to land.

6. The application rate of sludge to farmland shall be based on type of crops grown, nitrogen demand of the crops and heavy metal concentration of the sludge. This rate shall be calculated, and documentation submitted each year for Executive Officer approval prior to any land application of the sludge.

7. The application of sewage sludge shall not cause the degradation of any ground water so as to impair beneficial use.

8. All abandoned wells located within the disposal area shall be sealed to the satisfaction of the Napa County Department of Health Services and the California Department of Health Services.

9. The application of sludge to land shall not cause the following conditions to exist in waters of the United States at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

   b. Bottom deposits or aquatic growths;

c. Alteration of temperature, and turbidity beyond present natural background levels;

d. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

10. The discharge of waste shall not cause the following limits to be exceeded in waters of the United States in any place within one foot of the water surface:

a.	Dissolved oxygen	5.0 mg/l minimum. Annual median - 80% saturation. When natural factors cause lesser concentration(s) than those specified above, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
b.	Dissolved sulfide	0.1 mg/l maximum.
c.	pH	Variation from natural ambient pH by more than 0.5 pH units.
d.	Un-ionized Ammonia as N	0.025 mg/l annual median 0.4 mg/l maximum
e.	Nutrients	50 ug/l chlorophyll a maximum. When background levels exceed this requirement, then this discharge shall not add further nutrients.

11. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality

standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

C. PROVISIONS

1. The discharger shall comply with all portions of this Order immediately upon adoption.

2. The discharger shall file with the Regional Board technical reports on self-monitoring work performed according to detailed specifications as directed by the Executive Officer. Such reports shall include a site management plan to include plans for the upcoming dry season, and an assessment of the impacts of past sludge applications. This report shall be submitted by May 15, of any year in which sludge is proposed to be discharged.

3. The discharger shall file with this Board a report of any material change or proposed change in the character, treatment, or volume of this waste discharge. For the purpose of these requirements, this includes any proposed change in the boundaries, or ownership of the property.

4. The discharger shall permit the Board, the Environmental Protection Agency or its authorized representative in accordance with California Water Code Section 13267(c):

   a. Entry upon premises in which an effluent source is located or which any required records are kept;

   b. Access to copy any records required to be kept under terms and conditions of this Order;

   c. Inspection of monitoring equipment or records; and

   d. Sampling of discharge, soil or agricultural crop.

5. These requirements do not exempt the operator of this waste disposal facility from compliance with any other laws, regulations, or ordinances which may be

applicable; they do not legalize this waste disposal facility, and they leave unaffected any further restraint on the disposal of wastes at this site which may be contained in other statutes or required by other agencies.

6. In accordance with Section 13263 of the Water Code, these requirements are subject to periodic review and revision by this Regional Board. The Board shall take into consideration the results of the self-monitoring program whenever these periodic reviews occur.

7. This Order expires October 15, 1988. The discharger must file a Report of Waste Discharge in accordance with the Title 23, Chapter 3, Subchapter 9 of the California Administrative Code not later than 180 days in advance of such expiration date.

8. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act or amendments thereto, and shall become effective 10 days after date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objection.

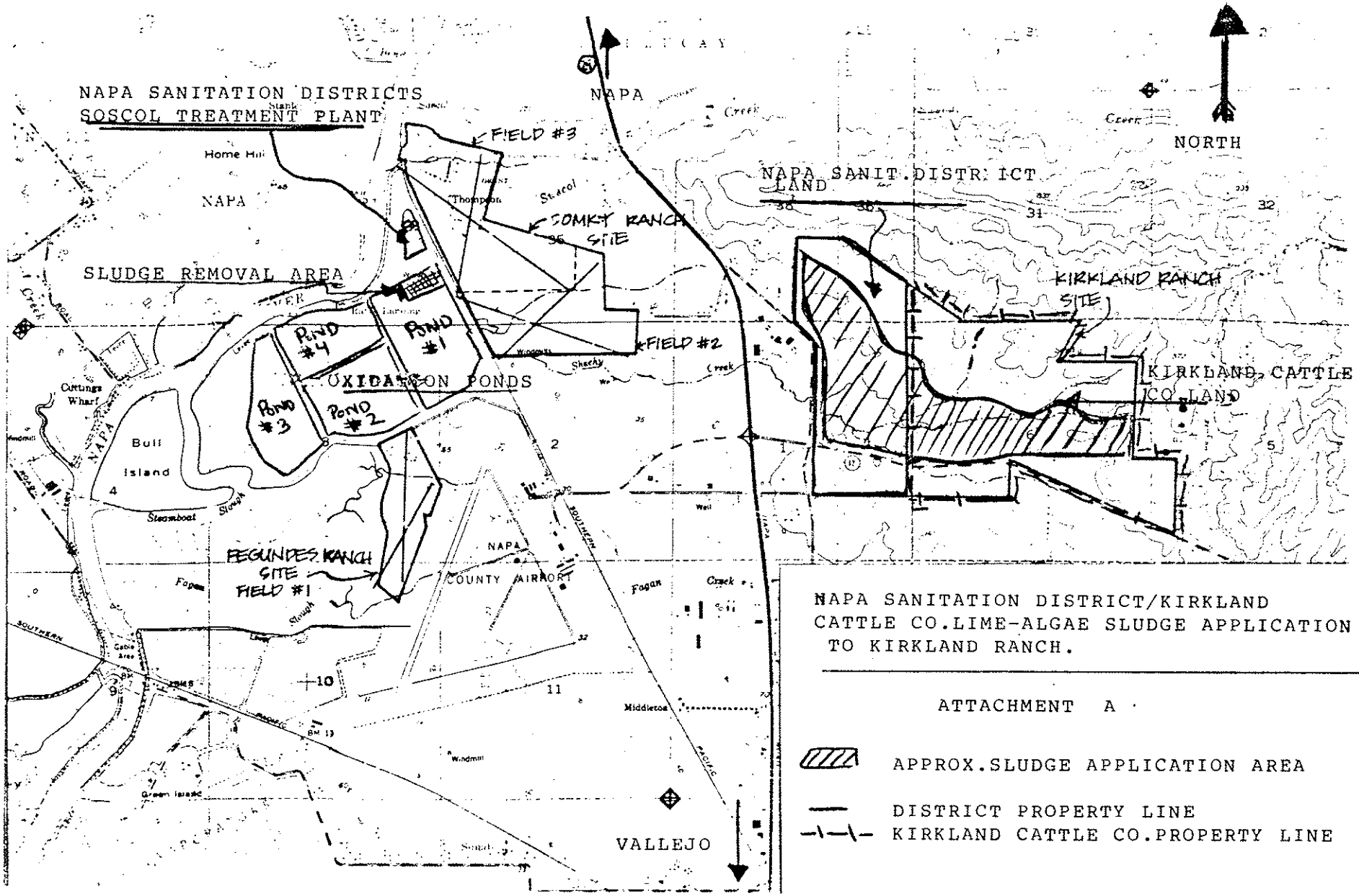
I, Roger B. James, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 18, 1985.

Teng-chung Wu

for ROGER B. JAMES
Executive Officer

Attachments:

A. Site Map



NAPA SANITATION DISTRICT/KIRKLAND CATTLE CO.LIME-ALGAE SLUDGE APPLICATION TO KIRKLAND RANCH.

ATTACHMENT A

APPROX.SLUDGE APPLICATION AREA

DISTRICT PROPERTY LINE

KIRKLAND CATTLE CO.PROPERTY LINE

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

F I N A L

SELF-MONITORING PROGRAM

FOR

NAPA SANITATION DISTRICT AND KIRKLAND CATTLE COMPANY, LIME ALGAE SLUDGE APPLICATION TO LAND FROM OXIDATION POND NO. 1

NPDES NO. CA0038687

ORDER NO. 85-95

CONSISTS OF

PART A

AND

PART B

Monitoring Program for Sludge Management Project to Kirkland Ranch

PART A

I. GENERAL

All analysis shall be performed by an approved (certified) laboratory using generally acceptable methods or current EPA/State guidelines and procedures for sampling and analysis of sludge, soil, water and plants.

II. REPORTING

A single annual report shall be submitted to the Board. This report shall be prepared by, or under the supervision of, a soil scientist, agronomist, soils engineer, or other individual having a recognized expertise on the impacts of sewage sludge on soils and on surface and groundwaters. The annual report shall be submitted no later than April 1 of each year, and shall include the following:

1. Annual Management Plan Update

This section shall describe the method of operation for the upcoming season and include the following:

a. Fields to which sludge is to be applied and the crop to be grown.

b. Sludge loading rate to be used, expressed in dry tons per field as kg/ha.

c. Method proposed for incorporating sludge into soil.

d. Field for which soil sampling is planned in the coming dry weather season.

e. Any changes to past practices that have been identified as being needed in the subsequent portion of the report.

2. Report on Impact of Previous Sludge Application

The overall intent of this section is to provide a comprehensive annual assessment of the project. This

section shall include data presentation and a narrative evaluation of the sludge applied to the land, and of the impacts on soils, water, and crops. If problems are found to exist, proposed solutions shall be included.

a. Sludge

Present data on sludge composition. All data shall be presented, and any anomolies found shall be discussed.

b. Soils

For each field, the following table shall be completed based on the most recent data obtained:

Field_____ Last date sampled_____

Parameter	Prior Cumulative Loading, kg/ha	Soil Concentration mg/kg "0-24"
sludge added as dry solid %		
Ammonium-N		
Organic-N		
Nitrate-N		
TKN		
Phosphorous		
Potassium		
Zinc		
Copper		
Nickel		
Cadimium		
Lead		
Chromium		
pH		

The data presented above shall be evaluated and discussed. This discussion shall include whether the project has had any effects on soil texture or workability. Any change in soil pH shall be described.

c. Accounting for Heavy Metals

An accounting shall be made in the sludge applied for each field, and be based on the cumulative total sludge applied. This accounting shall includge the following possible sinks:

(1) Retained in the soil

(2) Lost from the site with the crop

(3) Lost from the site in runoff water

(4) Present in soluable form in underlying groundwater

PART B

SAMPLING AND ANALYSIS

I. Sludge

During the period in which sludge is being applied to the Kirkland Ranch directly from the oxidation pond No. 1, sampling and analyses shall be performed once a month over five consecutive days as follows:

Equal volumes of the daily composite (3 grab samples at equal intervals during 8 hour shift) from truckload or sludge transmission line leaving plant shall be combined into a five day composite. This shall be analyzed for the following:

pH	Percent Solids
TKN	Nitrate-N
Potassium	Total Zinc
Total Copper	Total Nickel
Total Cadmium	Total Lead
Total Chromium	

All the results shall be expressed as mg/kg except for pH and Percent Solids.

An analytical sensitivity for heavy metals of 0.1 mg/kg shall be adequate.

II. Soils

1. Comprehensive Testing

Comprehensive testing shall be done prior to sludge application for three (3) types of soil to define conditions that prevailed prior to the commencement of this monitoring program. After this initial testing, comprehensive testing shall be conducted early spring following the completion of sludge application.

2. Fields

There are three soil series transects (1 to 3) on the site as shown as the attached monitoring map.

3. For any given soil(s) type to be sampled, diagonal transects shall be established as shown on the map. Along each transect, and spaced equidistantly, a minimum of ten soil samples shall be taken 0-12" and 12" to 24" depth. Soil samples shall be composited and analyzed for the parameters specified below.

Parameter	Units
pH	pH unit
Acidity or Basicity	mg/kg as CaCO3
CEC	meq/100 gm.
Electrical Conductivity	Millimhos/cm @ 25°C
Texture (1)	
Ammonium-N	mg/kg
Organic-N	mg/kg
Nitrate-N	mg/kg
TKN	mg/kg
Total-P	mg/kg
Total-K	mg/kg
Cd	mg/kg
Total-Cr	mg/kg
Cu	mg/kg
Ni	mg/kg
Pb	mg/kg
Zn	mg/kg

(1) To be analyzed only once per field to obtain background information in order to determine the variability in the field.

III. Groundwater

1. Sampling Stations

Stations	Location
GD-1	Located downgradient of the property as shown on the map.

The depth of the G well shall be as deep as necessary to reach at least 2 feet below the dry weather water table. The well shall be constructed so as to exclude surface runoff and should be minimum of four inches diameter.

The "G" well shall be sampled once each quarter for two years.

NOTE: Standing water in each well shall be flushed prior to taking samples.

2. Analysis

Parameter	Units
Depth to water	ft.
pH	pH unit
Conductivity	mhos/cm @ 25°C
Cd (Cadmium)	mg/l
Total-Cr (Chromimum)	mg/l
Cu (Copper)	mg/l
Zn (Zinc)	mg/l
Nitrate-N	mg/l
Pb (Lead)	mg/l
Ni (Nickel)	mg/l

IV. Surface Water

1. Sampling Stations

Stations	Location
S-1	Located on Sheehy Creek above the project site.
S-2	Located on Sheehy Creek below the project site.

(See attached map for location)

2. Frequency

These stations (S-1, S-2) shall be sampled once a month between October thru May for two years. The sample at each station shall consist of two grab samples.

3. Analyses

Parameter	Units
pH	pH unit
Conductivity	mhos/cm at 25°C
Cd (Cadmium)	mg/l

Total Cr (Chromiuml	mg/l
Cu (Copper)	mg/l
Pb (Lead)	mg/l
Ni (Nickel)	mg/l
Zn (Zinc)	mg/l
Nitrate N	mg/l

I, Roger B. James, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with sludge disposal specifications established in the Board's Order No. 85-95.

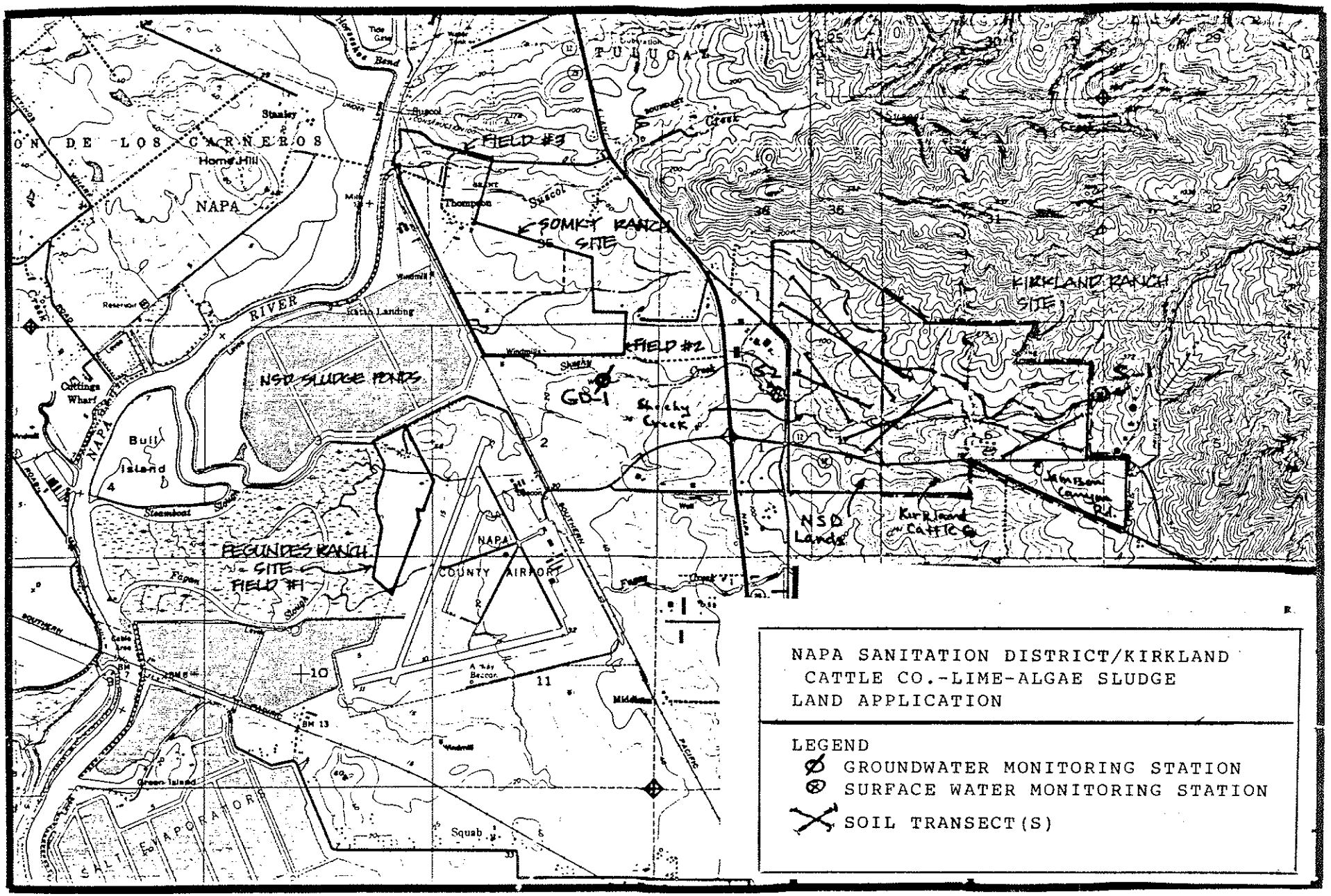
2. Is effective on the date shown below.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer.

Teng-chung Wu
for ROGER B. JAMES
Executive Officer

Effective Date September 18, 1985

Attachment:
Map of the Napa SD-Kirkland Cattle Company-
Ranch Site with sampling location(s)


NAPA SANITATION DISTRICT/KIRKLAND CATTLE CO.-LIME-ALGAE SLUDGE LAND APPLICATION
LEGEND
GROUNDWATER MONITORING STATION
SURFACE WATER MONITORING STATION
SOIL TRANSECT(S)
FIELD #3
SOMKY RANCH SITE
FIELD #2
KIRKLAND RANCH SITE
NSD SLUDGE PONDS
GB-1
Sheehy Creek
NSD Lands
Kirkland Cattle Co.
FIELD #1
FEGUNDES RANCH SITE
NAPA COUNTY AIRPORT
Bull Island
Cuttings Wharf
Napa River
Napa Landing
Steamboat Slough
Tulucay Creek
Green Island
SALT EVAPORATORS
Squab
ON DE LOS CARNEROS
Stanley
Horne Hill
NAPA
TULUCAY