

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Petitions)
of the Department of Water)
Resources For Review of Orders)
No. 72-124, 72-125, 72-126 and) Order No. WQ 73-30
72-174, of the California)
Regional Water Quality Control)
Board, Central Valley Region)
_____)

BY THE BOARD

On November 19, 1971, the California Regional Water Quality Control Board, Central Valley Region (Regional Board) adopted waste discharge requirements for Contra Costa County Sanitation District No. 19 (Order No. 72-124), the Community of Hood (Order No. 72-125), and Dixon Dryer (Order No. 72-126). On December 17, 1971, the Department of Water Resources (DWR) petitioned the State Water Resources Control Board (State Board) for review of these waste discharge requirements.

On February 25, 1972, the Regional Board adopted waste discharge requirements for the City of Tracy (Order No. 72-174). On March 23, 1972, DWR petitioned the State Board for review of these waste discharge requirements.

The petitions of DWR involve substantial and complicated issues of fact and law. An understanding of these issues and of our decision will require extended discussion of the Sacramento-San Joaquin Delta (Delta) and water quality control policies and plans related thereto.

I. THE DELTA AND SALINITY PROBLEMS

The Delta (Figure 1) and its water quality problems, particularly its salinity problems, have been a controversial

subject for many years. Excess salinity, i.e., unsatisfactory mineralization in the waters of the Delta, is primarily a result of the combined effects of evaporation, saltwater incursion from San Francisco Bay, and numerous consumptive water uses and waste discharges throughout the Delta water system.

Saline conditions in the Delta are heavily influenced by tidally induced saltwater incursion from San Francisco Bay. The extent of saltwater incursion is directly related to the net outflow of freshwater from the Delta. At certain times of the year, saltwater incursion and therefore salinity in the Delta, is affected by any factor which reduces freshwater flows in the Delta, including diversion of freshwater flows, impoundment thereof, and flood flow regulation.

Saline conditions in the Delta are also heavily influenced by agricultural water use. Approximately two-thirds of applied irrigation water in the Delta is consumptively used in the evapotranspiration process. Irrigation tailwater bearing accumulated salts is generally discharged back into Delta waterways, either through percolation or drainage systems. The return waters frequently contain dissolved agricultural, chemical, and organic matter, such as fertilizers, pesticides, and plant debris. This process of agricultural diversion, application, and return is the major man-caused contributor to excessive mineralization problems in Delta tributaries and in the southern and eastern portion of the Delta. To some extent, water losses occurring as a result of agricultural use also affect the magnitude of saltwater incursion, as will any consumptive use resulting in reduction of freshwater flows.

Industrial and municipal water uses and resultant waste discharges also affect salinity of Delta waters. The degree of such effect depends on the circumstances surrounding the particular use involved. The place and manner of use, the nature, quantity, constituents and location of any resultant discharge, and other factors bear upon the actual impact which a specific municipal or industrial use or discharge will have on salinity in Delta waters. In general, municipal and industrial water use results in increased mineralization in Delta waters in several ways. Such use may result in increase of dissolved minerals in return wastewaters, or in concentration of dissolved minerals in the discharged wastewaters. As with agricultural use, any consumptive industrial or municipal use of water diverted from Delta channels also affects the magnitude of saltwater intrusion by reducing the amount of flow available for saltwater repulsion.

II. THE DISCHARGERS AND THEIR WASTE DISCHARGE REQUIREMENTS

Relevant facts pertaining to the four dischargers involved in the petitions of DWR are as follows:

1. Contra Costa County Sanitation District No. 19 - This discharger is responsible for collection, treatment, and disposal of sewage from the Discovery Bay Subdivision. The discharger proposed to treat and discharge approximately 0.4 mgd of domestic waste into a drainage ditch from whence waters are pumped to Old River. The point of ultimate discharge into Old River is approximately 1500 feet south of the Highway 4 bridge, two miles north of the mouth of Italian Slough and eight miles south of Rock Slough. (Figure 2).

2. The Community of Hood - This discharger proposed to collect, treat and dispose of sewage from the entire Hood townsite and an adjacent 20-unit mobile home park. The discharger proposed to treat approximately 0.05 mgd of domestic waste. Overflow from the treatment facilities directly to the Sacramento River was proposed. The point of discharge would be within one mile of the Hood townsite. (Figure 3).

3. Dixon Dryer - This discharger engages in the drying of alfalfa and sugar beet pulp. Principal water uses consist of wet scrubbing and in heat exchange. Waste from these uses, together with beet pulp press water and boiler blowdown, are collected in a sump from which they are either returned to the process or discharged to the Sacramento River north of Clarksburg. The discharger proposed a maximum discharge of approximately 0.33 mgd to the Sacramento River (Figure 4).

4. City of Tracy - This discharger collects, treats and disposes of industrial and domestic wastes. The discharger proposed to expand its treatment capacity to 10 mgd with combined industrial and domestic wastes to be discharged directly into Old River at its junction with Salmon Slough. (Figure 5).

The waste discharge requirements adopted for Contra Costa County Sanitation District No. 19, the Community of Hood, and Dixon Dryer all contain the following provision:

"The waste discharge shall not cause the total dissolved solids level in the receiving waters to fall below quality levels established in water quality control plans for the receiving waters."

The waste discharge requirements adopted for the City of Tracy contain the following provision:

"The waste discharge shall not cause the total dissolved solids (TDS)... in the receiving waters to fall below quality levels established in water quality control plans for receiving waters."

None of the waste discharge requirements involved contain any other provision which can be said to be directly related to salinity controls in the Delta.

III. CONTENTIONS OF DWR

DWR contends that the waste discharge requirements for the four dischargers involved should be modified "to provide that the total dissolved solids (TDS) level of the waste discharge shall not exceed the quality level established in water quality control plans for the area." Specifically, DWR requests that all of these waste discharge requirements be modified as follows:

1. To establish a TDS limit on the actual discharge, rather than one which relates to the quality of the receiving waters.
2. To require submission within a reasonable time of a plan from the discharger showing how he intends to meet the requirements.
3. To require continuous or daily year-round monitoring of the TDS concentration of the waste effluent."

IV. CONSIDERATION OF CONTENTIONS

We have considered the contentions of DWR and the records of the Regional Board. Our determinations with respect to each of the contentions raised by DWR are as follows:

Contention: The waste discharge requirements should be modified to establish a TDS limit on the discharge involved rather than a limit which relates solely to the quality of the receiving waters. The effluent limit established should not exceed the TDS objective applicable to receiving waters in the area of the discharge.

It appears to be the basic position of DWR that the TDS requirement set forth in the waste discharge requirements adopted by the Regional Board is not proper for several reasons, which include the following:

1. The Regional Board requirement, as written, is unenforceable. The DWR petitions themselves recite:

"A TDS limitation on the receiving water, which by its own terms applies only where a discharge causes receiving waters to fall below certain quality levels, presents several serious enforcement problems not present in a direct TDS limitation on a discharge itself. As the quality of the receiving water approaches or exceeds its established limitation, the question of causation of the degradation of the receiving waters becomes critical. It would be difficult to affix responsibility to a controlled municipal discharger when uncontrolled agricultural discharges are being made above and below the municipal discharge. As many studies have shown, agricultural discharges in the Delta are generally of very poor quality. With the tidal flow reversals throughout the Delta, pinpointing one or another discharger as specifically causing a degradation of the receiving waters would be extremely difficult, if not impossible."

2. The waste discharge requirements on TDS, as presently written, do not properly control the cumulative effect of the many waste discharges in the Delta. As the petitioner put the matter:

"A second problem is the cumulative effect of many waste discharges in Delta channels ... (I)t would be entirely possible that a discharger could meet a receiving water limit in his immediate vicinity, but due to this cumulative effect cause the quality at a given Delta Standard Control Station to exceed the limitation."

As an example of this cumulative effect, DWR cites the following situation. A TDS level in the San Joaquin River near Vernalis of 260 ppm TDS increases to 288 ppm TDS in Old River past Tracy, further increases to 300 ppm TDS in Old River in the vicinity of Italian Slough, and further increases to 420 ppm TDS in Old River at Holland Tract.

3. Failure to establish a TDS limit on individual waste dischargers in the Delta will, by virtue of degradation of the receiving waters, require additional releases of water from state and federal water projects in order to maintain Delta water quality standards. The petitions state this point as follows:

"In the absence of an effective means of controlling dischargers, which a direct TDS discharge limitation affords, we are concerned that the regulating agency may find it simpler to rectify the degradation by requiring additional dilution water."

The statement of DWR before the Regional Board supplements the position of DWR on this point. DWR stated:

"On July 28, 1971, the State Water Resources Control Board adopted Water Rights Decision 1379. The Board found on page 37 of the Decision that the State Delta Standards (which include TDS standards measured as specific conductivity) are necessary and proper to provide reasonable protection for all beneficial uses of water in the Delta, and that they are in the public interest. This Decision placed responsibility for preventing total dissolved solids concentration at specific points in the Delta Channels from exceeding these standards on the Department of Water Resources and the U. S. Bureau of Reclamation. The quality standards imposed by this Decision guarantee to Delta water users water of lower chloride and total dissolved solids concentrations than would be available in the absence of State and Federal water development projects. The State Board ordered that this quality enhancement be provided by releases of water from State and Federal impoundments. Releases from State and Federal projects involve substantial costs, and we believe that these projects should not be additionally burdened by the practices of Delta dischargers. Permitting discharges not in conformity with all the State Delta Standards creates a cost burden which is inequitable.

"The Delta Standards promulgated by Decision 1379 call for material enhancement of mineral quality in the face of future upstream water depletions. The absence of TDS limits on discharge requirements for this District will set a precedent for indiscriminate disposal of mineral wastes to Delta waters thus increasing the requirement for ever greater flushing flows of California's limited water supplies. Delta waste dischargers should not be so privileged. Accordingly, we request that TDS limitations be placed on the quality of the discharge currently under consideration and all other waste discharges to the surface waters of the Delta."

In its petitions, DWR submits that there are several methods by which Delta dischargers could meet a discharge TDS limit. These methods, as expressed by DWR in its petitions, or in its arguments to the Regional Board, include:

1. Use of better quality water supplies so that the treated effluent would meet appropriate TDS limits. DWR suggests that Contra Costa County Sanitation District No. 19 could utilize high quality water from the proposed Kellogg Unit of the federal Central Valley Project; the City of Tracy could use high quality water from the California Aqueduct or the Delta Mendota Canal; and the Community of Hood and Dixon Dryer could use Sacramento River water.

2. Export of waste discharges which exceed prescribed TDS limits. DWR suggests that Contra Costa County Sanitation District No. 19 could use the proposed San Joaquin Master Drain for this purpose, and that the City of Tracy might use the federal San Luis Drain. In the alternative, the solution suggested by DWR is the construction of a project to export waste discharges which exceed prescribed limits of TDS.

3. Purchase of flushing or dilution water.

4. Use of evaporation ponds.

In addition to the foregoing methods, there are several other methods for dischargers to meet TDS limits on a discharge including demineralization of supplies, demineralization of wastewaters, and complete recycle and reuse of certain industrial waste waters resulting in elimination of discharge to Delta waters.

Initially, there are several comments we wish to make concerning the various contentions and proposals of DWR:

1. The position of DWR that the salinity requirement of the present waste discharge requirements "applies only where a discharge causes receiving waters to fall below... quality levels" is incorrect. A regional board may take appropriate action not only where a violation of salinity objectives is actually taking place but also where such a violation is threatened. (Water Code Section 13300). In the event that any particular discharger- threatened violation of Delta salinity objectives, a regional board could take appropriate enforcement action. It is, however, undeniably true that, in the light of circumstances in the Delta, the fixing of responsibility for violation of objectives on a particular discharger would be extremely difficult if not impossible.

2. At least one of the methods suggested by DWR by which Delta dischargers could meet TDS discharge limits may be self-defeating. The use of evaporation ponds, when such use serves to reduce flows in the Delta, may, in effect, only serve to increase salinity problems in certain portions of the Delta by reducing repulsion flows and thereby increasing saltwater incursion problems. The same would be true of the proposed export of wastewaters.

Present Delta salinity objectives are primarily point objectives at certain locations in Delta waters. The objectives vary materially, and a particular discharge may affect Delta salinity at different points having different objectives. As DWR itself points out, it is entirely possible that a discharger could meet receiving water limits in his immediate vicinity but, due to the cumulative effect of many factors, this discharge could still cause or contribute to a violation of salinity objectives in other areas of the Delta. The fact that Delta salinity objectives apply at only a limited number of points in Delta waters, that these objectives vary materially, and that a discharge may affect salinity at a number of different locations would make it exceedingly difficult, if not impossible, to determine at this time what requirements should be established for any particular discharge.

In discussing Delta salinity problems, we must continually bear in mind that we are not dealing with an homogeneous body of water. Nor are we necessarily dealing with controllable salinity contributions. One of the pervasive problems in the Delta, and one alluded to by DWR itself, involves uncontrolled agricultural discharges. The contributions of dissolved minerals to Delta waters from agricultural, municipal and industrial discharges have been estimated from available information. The estimates are as follows:

<u>Source</u>	<u>TDS Emission¹ (Tons/year)</u>	<u>% of Total</u>
Municipal	150,000	4.9
Agricultural	2,830,000	92.7
Industrial	75,000	2.4

1. California Framework Studies - Water Quality, Pollution and Health Factors, Appendix 15, Pg. 189.

Outside of saltwater incursion, agriculture is by far the leading source of dissolved mineralization in Delta waters. Possible methods of reducing the dissolved mineral contribution of agriculture would appear to involve reduction of the amount of irrigated land or change of current irrigation and agricultural practices. An alternative could involve exportation of agricultural return waters to a saline water body, such as San Francisco Bay. Unfortunately, while this would reduce salinity in the freshwater tributaries, it very well might degrade the receiving waters due to toxic and biostimulatory substances contained in the drainage, and the accompanying loss of repulsion flow would complicate the Delta's saltwater incursion problems.

The complexity of the problems is magnified by the fact that, in reality, it is not just interior Delta discharges which contribute to salinity conditions in Delta waters. Discharges of dissolved minerals outside of the Delta but tributary to Delta waters also have their impact on salinity conditions in Delta waters.

In the light of the foregoing discussion, and under existing circumstances, we are of the opinion that the only practical method of controlling mineralization of Delta waters due to agricultural use is by release of sufficient waters to the Delta from upstream impoundments to dilute the dissolved mineral contributions of agricultural use to an acceptable level. Release of sufficient stored water is also, at present, a necessary and effective means of controlling saltwater incursion at times of the year when natural outflow of freshwater is insufficient.

Maintenance of Delta flows to the point necessary to accomplish the objectives just mentioned will require substantial water releases regardless of the presence or absence of municipal and industrial discharges in the Delta. In the light of the tremendous amount of mineralization of Delta waters due to agricultural use, as opposed to the comparatively minor amount of mineralization attributable to municipal and industrial use, and in the light of the necessity of maintaining an appropriate hydraulic barrier against saltwater incursion, we are not prepared at this time to conclude that any significant water releases will be required under existing circumstances for the sole purpose of diluting municipal and industrial discharges.

On the other hand, there is no doubt that present municipal and industrial discharges do contribute somewhat to salinity problems in the Delta, and that some releases of stored water into the Delta may be required to offset the effect of saline waste discharges from industrial and municipal sources. At the same time, we do agree with DWR that there should be, and must be, a balanced regulation of all sources of saline contributions to Delta waters. Excessive mineral contributions to Delta waters by waste dischargers, whether they actually discharge to Delta waters or whether their discharge is tributary to Delta waters, should not be tolerated.

It is our intent that the regional board shall develop and adopt a water quality control plan which will result in an overall solution to the salinity problems in the Delta and its tributaries, including the control of salinity from all sources including municipal, industrial and agricultural discharges.

The nature of actual requirements to be imposed pursuant to such a plan will, of necessity, depend on a case by case analysis, and it would be impossible at this time for us to attempt to define the exact waste discharge requirements which will ultimately be appropriate. The requirements should insure that no discharges will be allowed in excess of water quality objectives (whether municipal, industrial or agricultural) where there is no assimilative capacity, that is, where the receiving waters are at or in excess of the objectives (see State Board Order No. 73-4).

To facilitate a determination of assimilative capacity, it may be necessary to revise existing objectives to apply to various segments of the Delta rather than at specific points. It may also be necessary for the regional board to determine the assimilative capacity for various segments of the Delta and tributaries thereto.

However if the plan cannot be adopted prior to December 31, 1974, the regional board should proceed to adopt waste discharge requirements for municipal and industrial discharges which require the discharger to use the best practicable cost effective control technique currently available to limit mineralization to no more than a reasonable increment. The requirements may be expressed as effluent salinity limitations, or incremental limits over water supply plus a maximum effluent salinity limit. In determining a reasonable increment for any discharge, the regional board should take into consideration the degree of control which can practically be achieved through means such as source

control, use of alternate water supplies of a better quality, process changes, in-plant controls, or a combination of such means.

Contention: The waste discharge requirements should be modified to require submission within a reasonable time of a plan from the discharger showing how he intends to meet the requirements.

Contention: The waste discharge requirements should be modified to require continuous or daily year-round monitoring of the TDS concentration of the waste effluent.

The regional board should require, in the revised waste discharge requirements, the discharger to submit a plan showing how he intends to comply with the requirements. The regional board should also require in the revised requirements appropriate monitoring of the TDS concentration of the waste effluent.

IV. FINDINGS, CONCLUSIONS AND ORDER

For the reasons herein expressed, we find and conclude as follows:

The waste discharge requirements for Contra Costa County Sanitation District No. 19 (Order No. 72-124), the Community of Hood (Order No. 72-125), Dixon Dryer (Order No. 72-126), and the City of Tracy (Order No. 72-174) should be reviewed and revised as necessary consistently with the contents of this order.

NOW, THEREFORE, IT IS ORDERED that California Regional Water Quality Control Board, Central Valley Region, revise Orders Nos. 72-124, 72-125, 72-126 and 72-174 consistent with this order and the conclusions thereof. Pending such revision, Orders Nos. 72-124, 72-125, 72-126 and 72-174 shall remain in full force and effect.

Dated: December 20, 1973

W W Adams
W. W. Adams, Chairman

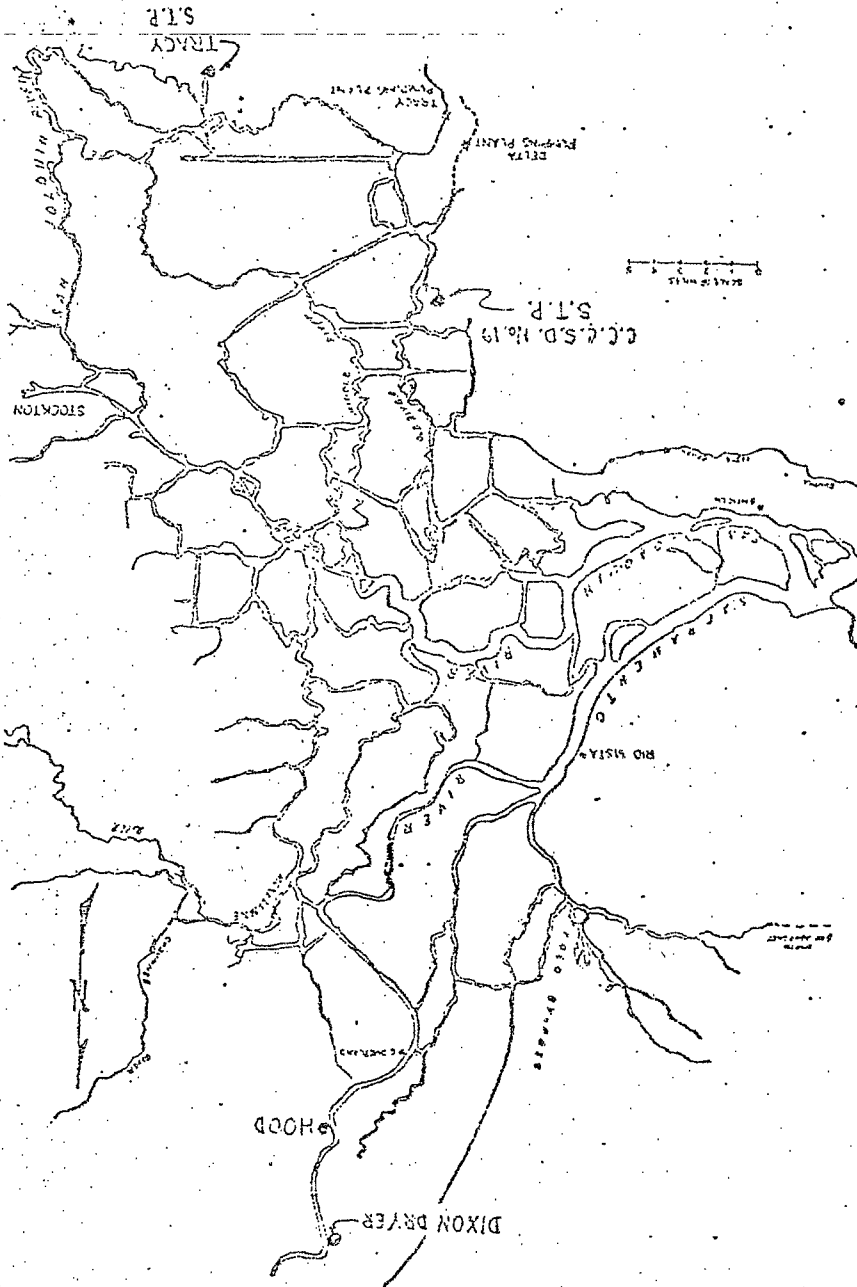
Ronald B. Robie
Ronald B. Robie, Vice Chairman

Roy E. Dodson
Roy E. Dodson, Member

Mrs. Carl H. Auer
Mrs. Carl H. (Jean) Auer, Member

W. Don Maughan
W. Don Maughan, Member

Sacramento-San Joaquin Delta



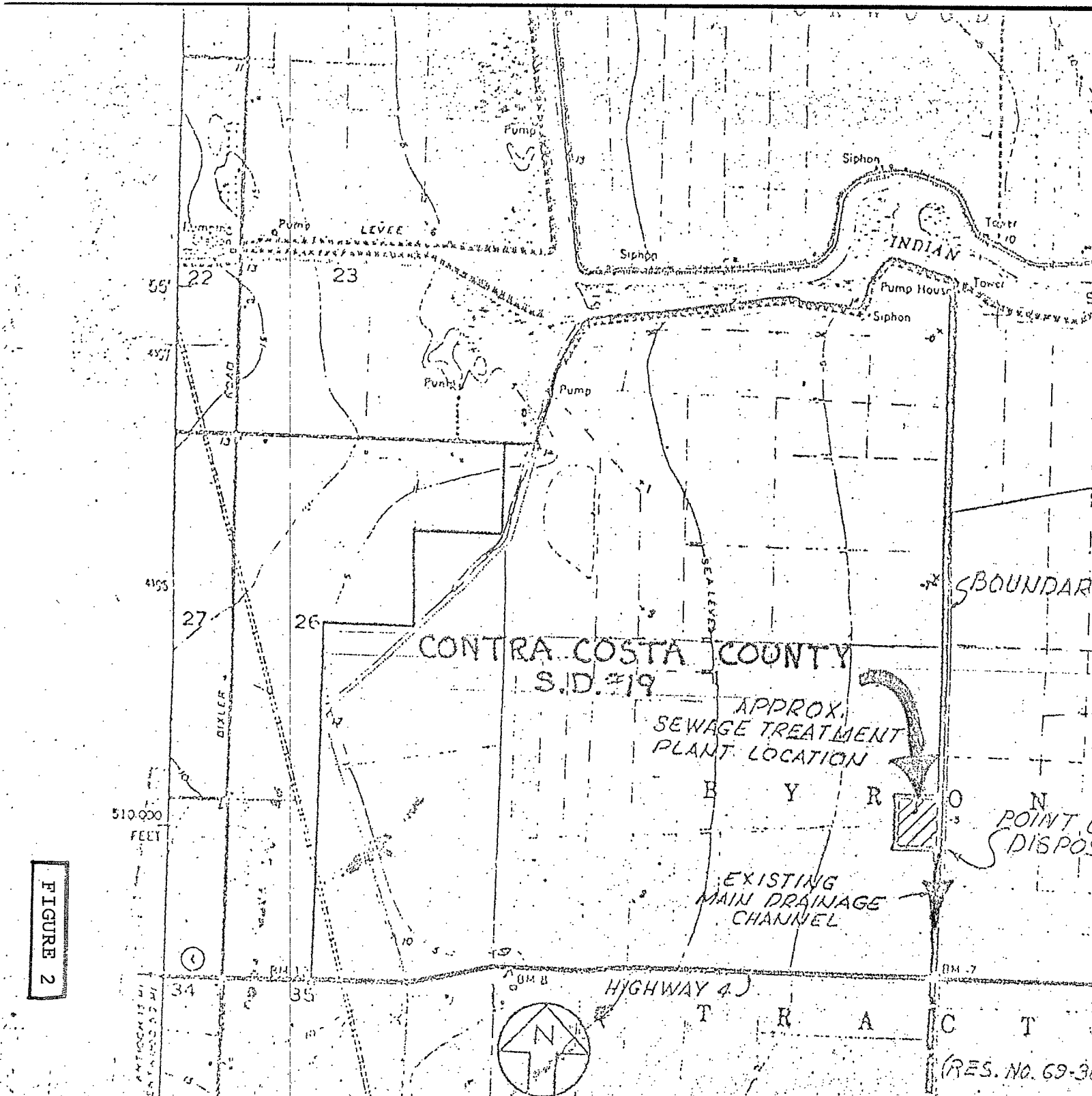
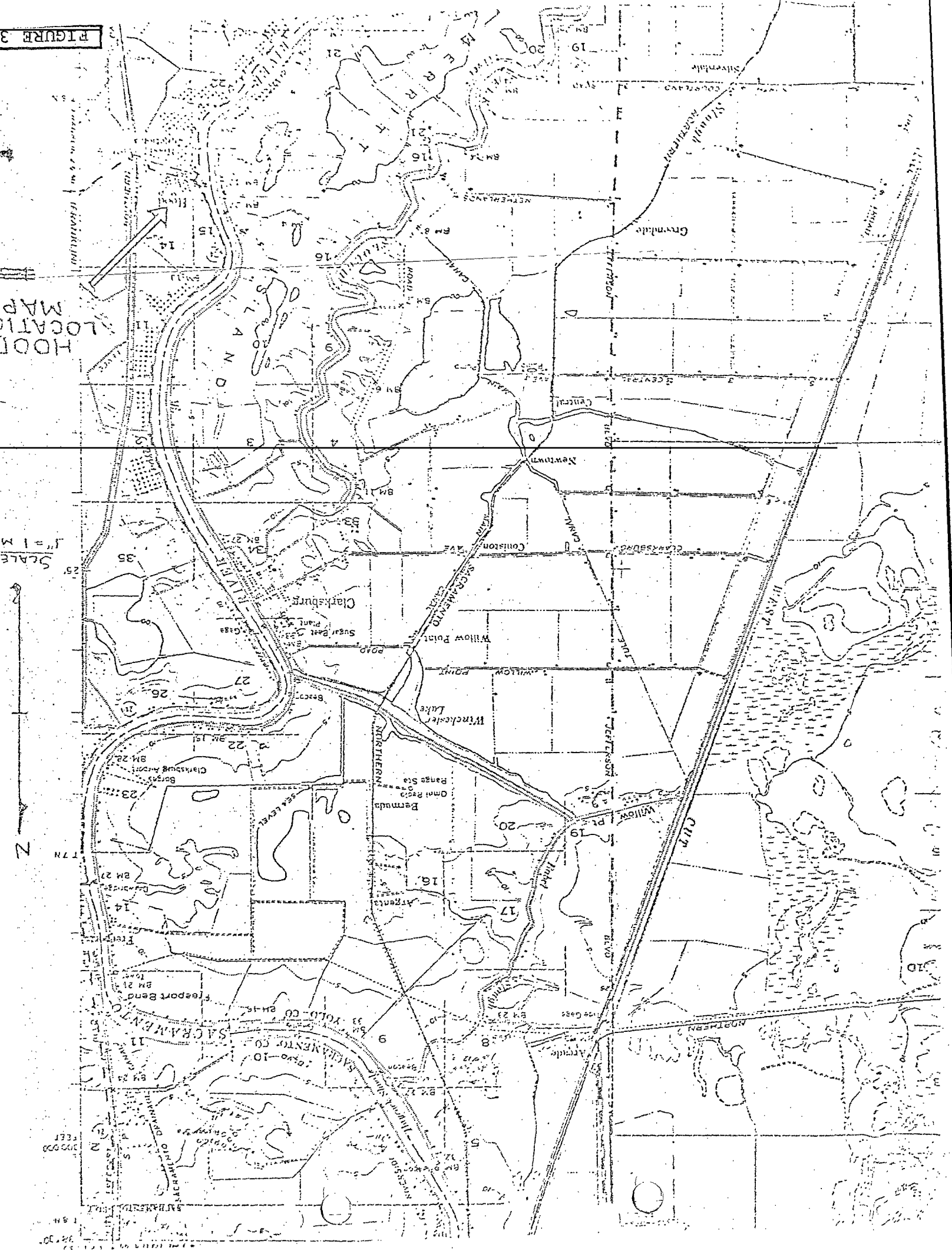


FIGURE 2



HOOD
 LOCATION
 MAP
 SCALE
 1" = 1 M
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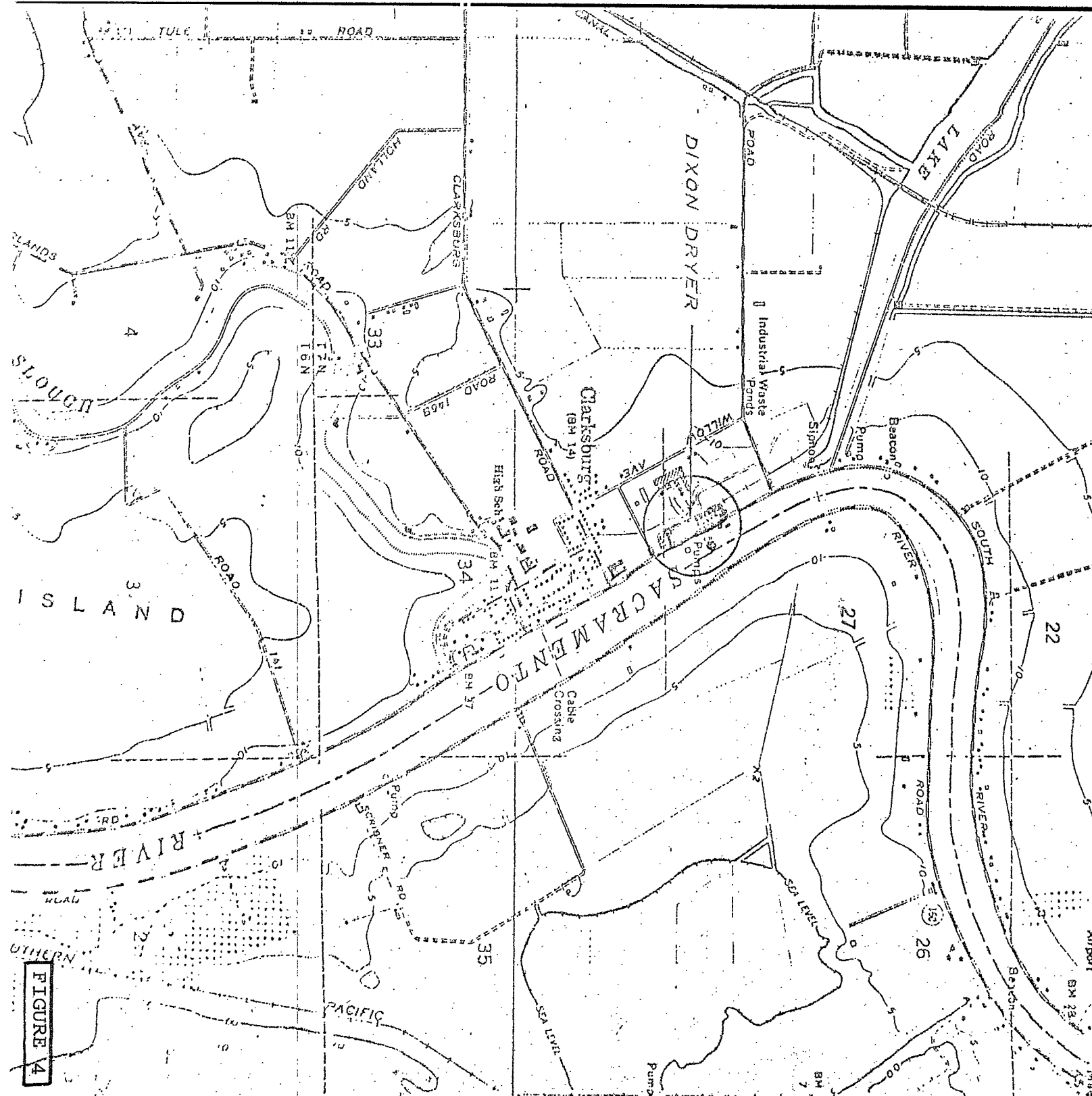


FIGURE 4

FIGURE 5

