

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0083

WASTE DISCHARGE REQUIREMENTS

FOR

DEFENSE DISTRIBUTION DEPOT SAN JOAQUIN  
SHARPE WASTEWATER TREATMENT FACILITY  
SAN JOAQUIN COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Board), finds that:

1. On 5 March 1997, the Defense Distribution Depot San Joaquin (hereafter Discharger) submitted a Report of Waste Discharge (RWD) for treatment and disposal to surface water of municipal wastewater generated at the Sharpe Site. Subsequent to this submittal, the Discharger decided to not seek renewal of the National Pollutant Discharge Elimination System (NPDES) permit No. 92-184, and instead apply for a permit to discharge treated wastewater to land within the Discharger's facility. Although a RWD for land discharge has not been submitted, the Discharger has provided the necessary information to prepare this permit through monthly performance monitoring reports, the October 1999 *Water Management Report*, and other supplemental reports.
2. For the purposes of this Order, the wastewater treatment facility (WWTF) shall mean the wastewater treatment plant, the wastewater storage ponds, and the designated land application areas. The facility site location is shown on Attachment A, which is attached hereto and made part of this Order by reference.
3. The discharge is presently governed by Order No. 92-184, adopted by the Board on 25 September 1992, which includes NPDES permit No. CA0003905. Order No. 92-184 prescribed discharge to the South San Joaquin Irrigation District (SSJID) Canal. The Discharger has evaluated the available percolation pond adjacent to the WWTF and concluded that the pond is adequate for disposal of the anticipated long-term wastewater flows from the Sharpe Site. Effluent from the WWTF may also be discharged to a temporary percolation pond south of Building 404. Storm water discharges to SSJID Canal are also covered under Order 92-184 and the Discharger has applied for coverage under the General NPDES Industrial Stormwater Permit (Order No. 97-03-DWQ).

**Wastewater Treatment and Disposal System**

4. The treatment facility and land application areas are in the northeast  $\frac{1}{4}$  of Section 24, T1S, R6E, MDB&M, as shown on Attachment A. Industrial developments comprise most of the land usage immediately north, east, and south of the facility and land application area. The area west of the facility is primarily residential, but some commercial and industrial entities are also present. The SSJID Canal and the Union Pacific Railroad are adjacent to the eastern property boundary. The

facility site plan is shown on Attachment B, which is attached hereto and made part of this Order by reference.

5. The wastewater treatment plant and percolation ponds cover approximately 10 acres of the 720-acre Sharpe Site.
6. The Discharger's wastewater treatment process includes primary treatment, secondary treatment, disinfection, and solids handling systems. The primary treatment consists of physical treatment in a single clarifier to remove settleable and floating solids. The secondary treatment consists of a two-stage trickling filter and a second clarifier. Disinfection is accomplished by a chlorine contact tank. Prior to discharge, wastewater is dechlorinated with sulfur dioxide gas. The solids handling system consists of a single anaerobic digester and four sludge-drying beds. Dried sludge is collected from the beds and hauled to a local permitted landfill for disposal. Effluent is currently discharged to an evaporation/percolation pond adjacent to the WWTF or the SSJID Canal under WDR No. 92-184
7. Based on flow monitoring data collected by the Discharger from January 2003 to December 2003, the average dry weather flow to the wastewater treatment plant is approximately 42,000 gallons per day (gpd). The Discharger is currently operating the treatment plant at 10 to 15% of design capacity (380,000 gpd) Defense Distribution Depot San Joaquin–Sharpe d) and an increase in wastewater flows in the next five years is not expected.
8. The evaporation/percolation pond adjacent to the treatment plant is an unlined pond that is approximately two acres in size and has a storage capacity of approximately 50,000 gpd (allowing for two feet of freeboard). If additional disposal capacity is needed or the Discharger needs to perform maintenance on this pond, the treated wastewater will be discharged to a temporary percolation pond located south of Building 404.

In November 2003, a two-month percolation test was performed in the area south of Building 404 and a ¼-acre test area was able to accommodate approximately twice the anticipated flow from the WWTF. Approximately 50 acres of open land are available for construction of a temporary pond south of Building 404. Effluent from the WWTF will be conveyed to the temporary pond via tanker trucks or temporary aboveground piping.

9. The designated disposal areas are not located near the Discharger's drinking water supply wells and specific monitoring requirements for the supply wells are not included in attached Monitoring and Reporting Program No. R5-2004-0083. The primary effluent disposal pond near the WWTF is located more than 4,000 feet south and trans gradient from the nearest facility drinking water supply well. The temporary pond south of Building 404 is located more than 6,000 feet south and trans gradient from the nearest facility drinking water supply well.
10. Monitoring and Reporting Program No. 92-184 requires that the Discharger monitor the WWTF effluent for several constituents. The average concentrations of these constituents for November 2002 through October 2003 are as follows:

<u>Parameter</u>	<u>Units</u>	<u>Results</u>
Biochemical Oxygen Demand	mg/l	5.8
Total Dissolved Solids	mg/l	434
Ammonia	mg/l	0.22
Total Suspended Solids	mg/l	10.8
Settleable Solids	mg/l	<0.1
Chlorine Residual	mg/l	0.35
Oil and Grease	mg/l	<5
Temperature	Degrees F	64
Electrical Conductivity	µmhos/cm	837
pH	pH units	7.7
Bioassay	%survival	100
Total Coliform Bacteria	MPN/100 ml	<2

### **Sanitary Sewer Collection System**

11. The Discharger's wastewater collection system is an installation-wide sewer system. Wastewater is collected by the sewer system using a combination of gravity flow and lift (pump) stations. There is more than 30,000 feet of collection system piping, including approximately 25,000 feet of main line and approximately 5,000 feet of lateral lines. The system consists primarily of six-inch and 8-inch diameter vitrified clay mains and laterals. There are six lift stations within the sanitary sewer collection system.
12. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.
13. At this site, sanitary sewer overflows consist of municipal sewage. The chief causes of sanitary sewer overflows include grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, and lack of capacity.
14. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, and other pollutants. Sanitary sewer overflows can cause temporary exceedences of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.
15. The Discharger is expected to take all necessary steps to adequately maintain, operate, and prevent discharges from its sanitary sewer collection system. The Discharger prepared an *Operation and Maintenance Manual, Sharpe Army Depot* (ES Environmental Services, Inc., 1986) to govern Sanitary Sewer System Operation, Maintenance, Overflow Prevention, and

Response Plan. This Order requires that the Discharger implement this Manual or subsequent updates approved by Regional Board staff.

### **Site Specific Conditions**

16. Annual precipitation in the vicinity averages approximately 13.31 inches. The mean pan evaporation rate is approximately 41.36 inches per year.
17. The facility lies within the San Joaquin Delta Hydrologic Unit Area No. 544.00, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
18. The area surrounding the Sharpe Site is a mixture of industrial, agricultural, and residential.
19. Based on the National Resource Conservation Service soil survey, the soils in the proposed land application areas are Tinnin loamy coarse sand, Veritas fine sandy loam, Merritt silty clay loam, and Timor loamy sand. Published infiltration rates for the soils range from 0.3 to 3.0 in/hr. Based on boring log data from existing monitoring wells, shallow soils in the area are described as silty sand with clay lenses.
20. Approximately 208 groundwater monitoring wells, 34 piezometers, 45 extraction wells, and four drinking water supply wells are present at the Discharger's facility. The monitoring wells, piezometers, and extraction wells were installed as part of the on-going efforts to remediate several large groundwater plumes comprised primarily of trichloroethene and tetrachloroethene. These plumes have migrated beyond the western boundary of the facility, but the extraction well network is expected to achieve full-containment of the plumes in the next five years. The designated wastewater discharge areas are within or directly up gradient of the current capture zone of the extraction well network. The existing well network is considered to be adequate for monitoring discharge of treated wastewater.
21. Groundwater from the first aquifer, locally described as the A-aquifer zone, is not considered a viable source of drinking water without treatment for inorganics. The first aquifer contains elevated concentrations of arsenic and other inorganics. The Discharger has defined an ambient arsenic concentration of 273 µg/L for the first aquifer, which exceeds the Federal Maximum Contaminant Level (MCL) of 10 µg/L.

### **Groundwater Degradation**

22. State Water Resources Control Board (State Board) Resolution No. 68-16 (hereafter Resolution 68-16 or the "Antidegradation Policy") requires the Regional Board in regulating the discharge of waste to maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies (e.g., quality that exceeds water quality objectives).
23. Continued operation of Discharger's facility is a benefit to the people of California, and therefore sufficient reason exists to accommodate limited groundwater degradation beneath the designated land application areas, provided that:

- a. The degradation is confined within a specified boundary;
  - b. The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures;
  - c. The degradation is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order; and
  - d. The degradation does not result in water quality less than that prescribed in the Basin Plan.
24. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations in this Order, and by constituents that can be effectively removed by conventional treatment (e.g., total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, and waste constituent treatability).

#### **Treatment and Control Practices**

25. This WWTF provides treatment and control of the discharge that incorporates:
- a. Technology for secondary treatment of wastewater;
  - b. Chlorination and dechlorination;
  - c. Appropriate sludge disposal practices;
  - d. A Sanitary Sewer System Operation, Maintenance, Overflow Prevention, and Response Plan; and
  - e. Certified operators to assure proper operation and maintenance.
26. The WWTF design incorporates some BPTC measures, however it has not been demonstrated that the use of the evaporation/percolation pond for wastewater disposal results in compliance with the Groundwater Limitations of this Order. In order to determine compliance with Resolution No. 68-16, it is appropriate to establish a schedule for sampling of groundwater monitoring wells and to formally determine background groundwater concentrations for selected constituents. If groundwater is degraded or there is evidence that the discharge may cause degradation, then the Discharger will be required to evaluate and implement additional BPTC measures for each conveyance, treatment, storage, and disposal component of the system. Completion of these tasks will ensure that BPTC and the highest water quality consistent with the maximum benefit to the people of the state will be achieved.
27. This Order establishes interim groundwater limitations for the WWTF that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains tasks for assuring that BPTC and the highest water quality consistent with the maximum benefit to the people of the state will be achieved. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16. Based on the results of the scheduled tasks, the Regional Board

may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.

### **Basin Plan, Beneficial Uses and Regulatory Considerations**

28. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Board. Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.
29. Surface water drainage from the WWTF is to the SSJID Canal. The canal is a surface drainage course that flows to the French Camp Slough upstream of the San Joaquin River and Delta. The Basin Plan identifies the following existing and potential beneficial uses of the San Joaquin River and the Delta downstream of the discharge: municipal and domestic supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, body contact water recreation, other non-body contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.
30. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, and industrial service and process supply.
31. The Basin Plan establishes numerical and narrative water quality objectives for surface and groundwater within the basin, and recognizes that water quality objectives are achieved primarily through the Regional Board's adoption of waste discharge requirements and enforcement orders. Where numerical water quality objectives are listed, these are limits necessary for the reasonable protection of beneficial uses of the water. Where compliance with narrative water quality objectives is required, the Regional Board will, on a case-by-case basis, adopt numerical limitations in orders, which will implement the narrative objectives to protect beneficial uses of the waters of the state.
32. The Basin Plan identifies numerical water quality objectives for waters designated as municipal supply. These are the maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that the Regional Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
33. The Basin Plan contains narrative water quality objectives for chemical constituents, tastes and odors, and toxicity. The toxicity objective requires that groundwater be maintained free of toxic

substances in concentrations that produce detrimental physiological responses in humans, plants or animals. The chemical constituent objective requires that groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The tastes and odors objective requires that groundwater shall not contain tastes or odors producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

34. Section 13241 of the Water Code requires the Regional Board to consider various factors, including economic considerations, when adopting water quality objectives into its Basin Plan. Water Code Section 13263 requires the Regional Board to address the factors in Section 13241 in adopting waste discharge requirements. The State Board, however, has held that a Regional Board need not specifically address the Section 13241 factors when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting water quality objectives. These waste discharge requirements implement adopted water quality objectives. Therefore, no additional analysis of Section 13241 factors is required.
35. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 CFR 503, *Standard for the Use or Disposal of Sewage Sludge*, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria.
36. The Regional Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Regional Board is not the implementing agency for 40 CFR 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the EPA.
37. The action to update WDRs for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), in accordance Title 14, California Code of Regulations (CCR), Section 15301.
38. Section 13267(b) of the California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2004-0083" are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the wastes subject to this Order.

39. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC Section 13801, apply to all monitoring wells.
40. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. While the WWTF is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.
41. The discharge authorized herein and the treatment and storage facilities associated with the discharge, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), Section 20005 et seq. (hereafter Title 27). The exemption, pursuant to Title 27 CCR Section 20090(a), is based on the following:
  - a. The waste consists primarily of municipal sewage and treated effluent;
  - b. The waste discharge requirements are consistent with water quality objectives; and
  - c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.
42. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

#### **Public Notice**

43. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
44. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
45. In a public meeting, all comments pertaining to the discharge were heard and considered.

**IT IS HEREBY ORDERED** that Order No. 92-184 is rescinded and, pursuant to Sections 13263 and 13267 of the California Water Code, Defense Distribution Depot San Joaquin, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

*[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge*



*Requirements” dated 1 March 1991.*

**A. Discharge Prohibitions:**

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated or partially treated waste is prohibited.
3. Discharge of sewage from a sanitary sewer system at any point upstream of the WWTF is prohibited. Discharge of treated wastewater downstream of the treatment plant, other than at the approved discharge areas, is prohibited.
4. Discharge of waste classified as ‘hazardous’, as defined in Sections 2521(a) of Title 23, CCR, Section 2510, et seq., (hereafter Chapter 15), or ‘designated’ as defined in Section 13173 of the California Water Code, is prohibited.
5. The discharge of any wastewater other than that from municipal sources or municipal equivalent is prohibited.

**B. Discharge Specifications:**

1. The monthly average inflow to the WWTF shall not exceed 50,000 gpd.
2. Disposal of effluent shall be confined to the designated disposal area as defined in Finding 8.
3. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
4. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the California Water Code, Section 13050.
5. Objectionable odor originating at the facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.
6. As a means of discerning compliance with Discharge Specification No.5, the dissolved oxygen content in the upper zone (1 foot) of the evaporation/percolation pond shall not be less than 1.0 mg/l.
7. Public contact with wastewater shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.
8. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

9. The wastewater treatment, storage, and disposal system shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
10. The facility shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary infiltration and inflow during the winter months. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.
11. The freeboard in the evaporation/percolation pond shall never be less than two feet as measured vertically from the water surface to the lowest point of overflow.
12. On or about **1 November** each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications No. 10 and No. 11.

**C. Effluent Limitations**

1. Effluent discharged to the designated percolation ponds shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Monthly Median</u>
BOD <sup>1</sup>	mg/L	20	40	--
Total Settleable Solids	ml/L	0.5	1.0	--
Total Coliform <sup>2</sup> Organisms	MPN/100 ml	--	240	23

<sup>1</sup> BOD denotes 5-day biochemical oxygen demand at 20° C.

<sup>2</sup> This limitation becomes effective on 30 June 2006.

2. Effluent discharged to the designated percolation ponds shall not have a pH of less than 6.5 or greater than 8.4.

**D. General Solids Disposal Specifications:**

Sludge, as used in this document, means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screenings generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal plant operation.
2. Treatment and storage of sludge generated by the WWTF shall be confined to the WWTF property, and shall be conducted in a manner that precludes infiltration of waste constituents into soils in a mass or at concentrations that will violate the Groundwater Limitations of this Order.
3. Any storage of residual sludge, solid waste, and biosolids at the WWTF shall be temporary, and the waste shall be controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or at concentrations that will violate the Groundwater Limitations of this Order.
4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, WWTFs, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.
5. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water quality control board. In most cases, this will mean the General Biosolids Order (State Water Resources Control Board Water Quality Order No. 2000-10-DWQ, *General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities*). For a biosolids use project to be covered by the General Biosolids Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.
6. Use and disposal of biosolids shall comply with the self-implementing federal regulations of Title 40, Code of Federal Regulations (CFR), Part 503, which are subject to enforcement by the U.S. EPA, not the Regional Board. If during the life of this Order, the State accepts primacy for implementation of 40 CFR 503, then the Regional Board may also initiate enforcement where appropriate.

#### **E. Land Disposal Specifications**

1. Discharge of effluent to a temporary pond south of Building 404 may only occur to perform maintenance on the primary disposal pond or to prevent shutdown of the WWTF when the primary disposal pond does not provide adequate capacity. The Discharger shall submit a technical memorandum to the Regional Board at least 2 weeks in advance of discharging to the temporary pond. The technical memorandum shall specify the location of the temporary pond, conveyance system from the WWTF to the pond, estimated discharge rate, and anticipated duration of discharge to the pond. Discharge to the temporary pond shall not exceed 60 days within a calendar year without the written approval of Regional Board staff. The Regional Board may impose additional groundwater monitoring requirements if discharge to the temporary pond exceeds 60 days within a calendar year.

2. The temporary pond shall be located within the discharge area shown in Attachment B and shall comply with the following setback requirements:

<u>Setback Definition</u> <sup>1</sup>	<u>Minimum Setback (feet)</u>
Edge of temporary pond to property boundary	50
Edge of temporary pond to public road	50
Edge of temporary pond to irrigation well	100
Edge of temporary pond to domestic well	100
Edge of temporary pond to manmade or natural surface water drainage course	50

<sup>1</sup>As defined by the outward edge of the pond berm.

3. Effluent shall be completely contained within the designated discharge areas and shall not enter any surface water drainage course.
4. All wastewater ponds shall be managed to prevent the breeding of mosquitoes. In particular,
- a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the waste surface.
  - b. Weeds shall be minimized through control of water depth, harvesting, and/or herbicides.
  - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

**F. Groundwater Limitations:**

1. Release of waste constituents from any wastewater treatment storage and disposal system component associated with the WWTF shall not cause groundwater under and beyond that system component, as determined by an approved well monitoring network, to:
- a. Contain any of the following constituents in concentration greater than as listed or greater than ambient background quality, whichever is greater:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Coliform Organisms	MPN/100 ml	< 2.2
Total Dissolved Solids <sup>1</sup>	mg/L	450
Total Nitrogen	mg/L	10
Nitrite (as N)	mg/L	1
Nitrate (as N)	mg/L	10
Ammonia (as N)	mg/L	1.5
Bromoform	ug/L	4
Bromodichloromethane	ug/L	0.27
Chloroform	ug/L	1.1
Dibromochloromethane	ug/L	0.37

<sup>1</sup> A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

- b. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.
- c. Impart taste, odor, or color that creates nuisance or impairs any beneficial use.

## G. Provisions

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described by Provision G.3.
  - a. **By 30 June 2006**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and comparison of background groundwater quality to that in wells used to monitor the facility. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least four consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare measured concentrations for compliance monitoring wells with: 1) the calculated background concentration, and 2) the interim numeric limitations set forth in Groundwater Limitation F.1.a. Where background concentrations are statistically greater than the interim limitations

specified in Groundwater Limitation F.1.a, the report shall recommend final groundwater limitations for waste constituents listed therein. Subsequent use of a concentration as a final groundwater limitation will be subject to the discretion of the Executive Officer.

- b. **At least 90 days prior** to biosolids removal and disposal, the Discharger shall submit a *Biosolids Cleanout Plan*. The plan shall include a detailed program and schedule for periodic pond cleanout and disposal of biosolids removed during pond cleanout, including at least the items listed in Attachment C of this Order.
2. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain waste constituents in concentrations statistically greater than background water quality then, within **120 days** of the request of the Executive Officer, the Discharger shall submit a *BPTC Evaluation Workplan* that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for each waste constituent listed in the Groundwater Limitation F.1.a of this Order. The workplan shall contain a preliminary evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.
3. **By 30 June 2006**, the Discharger shall upgrade disinfection equipment at the wastewater treatment plant to comply with the interim groundwater limitations for total coliform organisms and trihalomethanes set forth in the Groundwater Limitations.
4. In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall the professional's signature and/or stamp of the seal.
5. The Discharger shall comply with Monitoring and Reporting Program No. R5-2004-0083, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
6. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
7. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with discharge limits specified in this order.

8. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23 of the California Code of Regulations, Division 3, Chapter 26.
9. As described in the Standard Provisions, the Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.
10. Upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow, the Discharger shall take any necessary remedial action to (a) control or limit the volume of sewage discharged, (b) terminate the sewage discharge as rapidly as possible, and (c) recover as much as possible of the sewage discharged (including wash down water) for proper disposal. The Discharger shall implement all applicable remedial actions including, but not limited to, the following:
  - a. Interception and rerouting of sewage flows around the sewage line failure;
  - b. Vacuum truck recovery of sanitary sewer overflows and wash down water;
  - c. Use of portable aerators where complete recovery of the sanitary sewer overflows are not practicable and where severe oxygen depletion is expected in surface waters; and
  - d. Cleanup of sewage-related debris at the overflow site.
11. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."
12. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater includes rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
13. The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharge shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board in writing when it returns to compliance with the time schedule.
14. In the event of any change in control or ownership of land or waste discharge facilities described herein, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.
15. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

16. A copy of this Order shall be kept at the wastewater treatment facility. Key operating personnel shall be familiar with its contents.
17. The Regional Board will review this Order periodically and may revise requirements when necessary.

I, THOMAS R. PINKOS, 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, Central Valley Region, on 4 June 2004.

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THOMAS R. PINKOS, Executive Officer

Attachments  
MLP: 9 June 2004



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0083

FOR

DEFENSE DISTRIBUTION DEPOT SAN JOAQUIN  
SHARPE WASTEWATER TREATMENT FACILITY  
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) presents requirements for monitoring of the wastewater influent, effluent, percolation ponds, groundwater, and sludge. This MRP is issued pursuant to Water Code Section 13267. The Discharger may request revisions to this MRP after one year of monitoring data has been collected and reported to the Regional Board. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Specific sample station locations shall be approved by Regional Board staff prior to implementation of sampling activities.

All wastewater samples should be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. All samples shall be collected and preserved in accordance with EPA and analytical methodology.

Field testing instruments (such as those used to test pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The testing instruments shall be calibrated and serviced in accordance with manufacturer's recommendations; and
3. Field calibration reports are provided with the appropriate monitoring report.

**INFLUENT MONITORING**

Influent samples shall be collected at approximately the same time as effluent samples and should be representative of the waste stream. Influent monitoring shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow <sup>1</sup>	gpd	Continuous Meter	Daily	Monthly
BOD <sub>5</sub> <sup>2</sup>	mg/L	Grab	Monthly	Monthly

<sup>1</sup> Flow may be monitored from the pump station that conveys effluent into the evaporation/percolation pond.

<sup>2</sup> 5-day biochemical oxygen demand.

### EFFLUENT MONITORING

Samples of effluent shall be collected from the pump station downstream of the wastewater treatment plant prior to discharge to the evaporation/percolation pond. At a minimum, effluent monitoring shall consist of the following:

<u>Constituent</u> <sup>1</sup>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u> <sup>1</sup>	<u>Reporting Frequency</u> <sup>1</sup>
Total Coliform Organisms	MPN/100 ml <sup>2</sup>	Grab	Weekly	Monthly
pH	Standard	Grab	Monthly	Monthly
BOD <sub>5</sub>	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Grab	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Monthly
Standard Minerals <sup>3</sup>	mg/L	Grab	Annually	Annually

<sup>1</sup> Monitoring for these constituents must be implemented on or before 1 October 2004. Until 1 October 2004, the sampling program in Order 92-184 may be followed.

<sup>2</sup> Most probable number per 100 ml.

<sup>3</sup> Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, magnesium, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

### POND MONITORING

The primary disposal pond near the WWTF shall be monitored as follows. These monitoring requirements also apply to the temporary pond south of Building 404 when effluent is discharged to it. If the pond is empty on the scheduled monitoring date, the Discharger may report the freeboard monitoring result as "dry".

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Dissolved Oxygen <sup>1</sup>	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly

<sup>1</sup> If the pond depth exceeds one foot, samples shall be collected at a depth of one foot, opposite the inlet. Samples shall be collected between 0700 and 0900 hours

### GROUNDWATER MONITORING

The Discharger shall sample existing wells MW-409A, MW-419A, MW-419B, MW-452A quarterly to assess potential impacts to groundwater quality beneath and adjacent to the primary disposal pond. In addition, monitoring well MW-470AR will be sampled annually to assess groundwater quality 500 feet down gradient from the primary disposal pond. Wells MW-410A, MW-416A, and MW-401A will be sampled quarterly the first year and annually thereafter to assess background groundwater quality.

Additional groundwater monitoring requirements may be imposed if discharge to the temporary pond south of Building 404 exceeds 60 days in a calendar year or occurs more frequently than once every two years.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged in accordance with the current version of the *DDJC-Sharpe/Tracy Comprehensive Field Work Plan* (updated annually). Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u> <sup>1,5</sup>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling<sup>5</sup> Frequency</u>	<u>Reporting<sup>5</sup> Frequency</u>
Depth to Groundwater	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation <sup>2</sup>	0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	degrees	Calculated	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
Total Coliform Organisms	MPN/100ml	Grab	Quarterly	Quarterly
Trihalomethanes <sup>3</sup>	µg/l	Grab	Quarterly	Quarterly
Standard Minerals <sup>4</sup>	mg/L	Grab	Annually	Quarterly

<sup>1</sup> All constituents will be collected during each scheduled monitoring event except Standard Minerals. Standard Minerals will be collected annually from monitoring wells MW-409A, MW-419A, MW-419B, MW-452A, and MW-470AR. Standard minerals will be collected quarterly from monitoring wells MW-410A, MW-416A, and MW-401A for the first year and annually thereafter.

<sup>2</sup> Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

<sup>3</sup> Analysis shall be performed by EPA Method 8020 or equivalent.

<sup>4</sup> Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, iron, manganese, magnesium, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

- <sup>5</sup> Monitoring for these constituents must be implemented on or before 1 October 2004. Until 1 October 2004, the sampling program in Order 92-184 may be followed.

## SOLID WASTE AND SLUDGE MONITORING

A log shall be kept of solid waste (grits and screenings) and sludge quantities generated and of handling and disposal activities, and shall be submitted as part of the monthly monitoring reports

### REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

#### A. Monthly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in monthly monitoring reports. Monthly reports shall be submitted to the Regional Board on the **1<sup>st</sup> day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Results of influent, effluent, and pond monitoring;
2. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
3. If requested by staff, copies of laboratory analytical report(s); and
4. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.

#### B. Quarterly Monitoring Reports

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Regional Board by the **1<sup>st</sup> day of the second month after the quarter** (i.e. the

January-March quarterly report is due by May 1<sup>st</sup>) and may be combined with the monthly report or with the quarterly monitoring report submitted under the Federal Facilities Agreement (FFA). The Quarterly Report shall include the following:

1. Results of groundwater monitoring;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;
4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum;
8. Copies of laboratory analytical report(s) for groundwater monitoring.

### **C. Annual Report**

An Annual Report shall be prepared as the third quarter monitoring report. The Annual Report will include all monitoring data required in the monthly/quarterly schedule. The Annual Report shall be submitted to the Regional Board by **31 December** each year and may be combined with the FFA Annual Progress Report. In addition to the data normally presented, the Annual Report shall include the following:

1. The contents of the regular groundwater monitoring report for the last sampling event of the year;
2. If requested by staff, tabular and graphical summaries of all data collected during the year;
3. An evaluation of the groundwater quality beneath the wastewater treatment facility;

4. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements;
5. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program;
6. A copy of the certification for each certified wastewater treatment plant operator working at the facility and a statement about whether the Discharger is in compliance with Title 23, CCR, Division 3, Chapter 26.
7. Summary of information on the disposal of sludge and/or solid waste;
8. The results from annual monitoring of the groundwater wells and water supply;
9. The results from any sludge monitoring required by the disposal facility; and
10. A forecast of influent flows, as described in Standard Provision No. E4.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: \_\_\_\_\_  
Thomas R. Pinkos, Executive Officer

\_\_\_\_\_  
(Date)

MLP: 9 June 2004

## INFORMATION SHEET

ORDER NO. R5-2004-0083  
DEFENSE DISTRIBUTION DEPOT SAN JOAQUIN  
SHARPE WASTEWATER TREATMENT FACILITY  
SAN JOAQUIN COUNTY

### **Site Description and Background**

Defense Distribution Depot San Joaquin Sharpe Site (DDJC-Sharpe) is an active storage and distribution facility for various supplies common to U.S. military services in the Western United States and throughout the Pacific Region. DDJC-Sharpe is in San Joaquin County and is located approximately nine miles south of Stockton, California. The installation forms a rectangle that is approximately 0.5 mile wide (east-west) and 2 miles long (north-south) and encompasses approximately 720 acres.

The facility was established in 1940, and since that time the facility has received, stored, packaged, and shipped military supplies. The facility's operations in later years included maintenance of equipment and aircraft. Environmental investigations in 1979 revealed that on-base activities had contaminated site soils and groundwater. In 1987 the facility was placed on the U.S. Environmental Protection Agency's (USEPA's) National Priorities List (NPL) due to groundwater and on-site soil contamination by cleaning and degreasing solvents (including the volatile organic compounds (VOC's) trichloroethylene (TCE) and tetrachloroethylene (PCE)) and, to a lesser extent, by metals, pesticides, and nitrate. This Order governs the discharge of treated domestic wastewater to land only and is not applicable to soil and groundwater cleanup activities specified in the Record of Decision or monitoring/reporting activities specified in the Federal Facilities Agreement.

### **Discharge**

DDJC-Sharpe owns, operates, maintains, and monitors a domestic wastewater treatment facility (WWTF). The WWTF serves the entire 720-acre site, which consists primarily of warehouse buildings and offices. DDJC-Sharpe's wastewater treatment process includes primary treatment, secondary treatment, disinfection, and solids handling systems. The primary treatment consists of physical treatment in a single clarifier to remove settleable and floating solids. The secondary treatment consists of a two-stage trickling filter and a second clarifier. Disinfection is accomplished by a chlorine contact tank. Prior to discharge, wastewater is dechlorinated with sulfur dioxide gas. The solids handling system consists of a single anaerobic digester and four sludge-drying beds. Dried sludge is collected from the beds and hauled to a local permitted landfill for disposal. Effluent is discharged to a evaporation/percolation pond adjacent to the WWTF. During periods of pond maintenance or if additional disposal capacity is needed, DDJC-Sharpe may also discharge to a temporary pond located south of Building 404.

Based on flow monitoring data collected by the Discharger from January 2003 to December 2003, the average dry weather flow to the wastewater treatment plant is approximately 42,000 gallons per day (gpd). The Discharger is currently operating the treatment plant at 10 to 15% of design capacity (380,000 mgd) and an increase in wastewater flows in the next five years is not expected.

The previous Waste Discharge Order, No. 92-184 (NPDES permit No. CA0003905), allowed discharge of treated wastewater to the South San Joaquin Irrigation District Canal. DDJC-Sharpe has requested rescission of the NPDES permit. The NPDES permit also included requirements for discharge of storm water to the South San Joaquin Irrigation District Canal. Therefore, DDJC-Sharpe has applied for coverage under the General NPDES Industrial Stormwater Permit (Order No. 97-03-DWQ). This Order does not allow discharge of any industrial wastes or treated groundwater from site cleanup activities to be discharged to the domestic waste system.

### **Basin Plan, Beneficial Uses, and Regulatory Considerations**

The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

### **Antidegradation**

The antidegradation directives of Section 13000 of the California Water Code require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan (including by reference State Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation" Policy).

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Board to evaluate that fully characterizes:



- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degradation to water quality objectives.

In allowing a discharge, the Board must comply with CWC section 13263 in setting appropriate conditions. The Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

Certain waste constituents in wastewater are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater. Some degradation for certain constituents is consistent with maximum benefit to the people of California at this facility because DDJC-Sharpe provides vital support to the security of the United States. The existing alternatives to on-site treatment/disposal of wastewater are considered more harmful to State waters, are currently infeasible, and/or are too costly. Furthermore, the quality of groundwater in the first aquifer zone is considered poor as it cannot be used as a source of drinking water without treatment for naturally-occurring metals. This Order authorizes some degradation of groundwater consistent with the maximum benefit to the people of the state.

Groundwater monitoring has not been conducted at the site for several constituents of concern in the discharge. Therefore, the most appropriate groundwater limits for a few constituents cannot be established at this time. In addition, certain aspects of waste treatment and control practices may not be justified as representative of best practicable treatment and control (BPTC). Reasonable time is necessary to gather specific information about the WWTF and the site to make informed, appropriate, long-term decisions. Therefore, this proposed Order establishes interim receiving water limitations to assure protection of the beneficial uses of groundwater of the State pending the completion of certain tasks and provides time schedules to complete specified tasks. The Discharger is expected to identify, implement, and adhere to, BPTC as individual practices are reviewed and upgraded in this process. During this period, degradation may

occur from certain constituents, but can never exceed water quality objectives (or background water quality should it exceed objectives) or cause nuisance.

Water quality objectives define the least stringent limits that could apply as water quality limitations for groundwater at this location, except where natural background quality unaffected by the discharge already exceeds the objective. The values below are concentrations directly from the Basin Plan, or derived indirectly using Basin Plan procedures for implementation of narrative water quality objectives, and must be met to maintain specific beneficial uses of groundwater. They are based on numeric and narrative water quality objectives. Consistent with the Policy for Application of Water Quality Objectives in the Basin Plan, criteria of appropriate agencies have been used to implement narrative water quality objectives. Unless natural background for a constituent proves higher, the interim groundwater quality limitations established in the proposed Order is the most stringent of the values listed for the constituents below.

<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>Beneficial Use</u>	<u>Criteria or Justification</u>
Ammonia	mg/L	1.5	MUN <sup>1</sup>	Taste and Odor <sup>2</sup>
Boron	mg/L	0.7	AGR <sup>3</sup>	Boron Sensitivity <sup>4</sup>
Chloride	mg/L	1.0	MUN <sup>1</sup>	Calif. Drinking Water Action Level <sup>11</sup>
		106	AGR <sup>3</sup>	Chloride sensitivity on certain crops irrigated via sprinklers <sup>4</sup>
		142	AGR <sup>3</sup>	Chloride sensitivity on certain crops <sup>4</sup>
		250	MUN <sup>1</sup>	Recommended Secondary MCL <sup>5</sup>
		500	MUN <sup>1</sup>	Upper Secondary MCL <sup>5</sup>
Iron	mg/L	0.3	MUN <sup>1</sup>	Secondary MCL <sup>6</sup>
Manganese	mg/L	0.05	MUN <sup>1</sup>	Secondary MCL <sup>6</sup>
Nitrate as N	mg/L	10	MUN <sup>1</sup>	Primary MCL <sup>7</sup>
Nitrite as N	mg/L	1	MUN <sup>1</sup>	Primary MCL <sup>7</sup>
Sodium	mg/L	69	AGR <sup>3</sup>	Sodium sensitivity on certain crops <sup>4</sup>
Total Dissolved Solids	mg/L	450 <sup>8</sup>	AGR <sup>3</sup>	Salt sensitivity <sup>4</sup>
		500	MUN <sup>1</sup>	Recommended Secondary MCL <sup>5</sup>
		1,000	MUN <sup>1</sup>	Recommended Upper MCL <sup>5</sup>
Total Coliform Organisms	MPN/100 ml	<2.2	MUN <sup>1</sup>	Basin Plan
pH	pH Units	6.5 to 8.5	MUN <sup>1</sup>	Secondary MCL <sup>10</sup>
		6.5 to 8.4	AGR <sup>3</sup>	Protect sensitive crops <sup>4</sup>

1 Municipal and domestic supply  
2 J.E. Amooore and E. Hautala, *Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution*, Journal of Applied Toxicology, Vol. 3, No. 6 (1983).  
3 Agricultural supply

- 4 Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)
- 5 Title 22, California Code of Regulations (CCR), section 64449, Table 64449-B
- 6 Title 22, CCR, section 64449, Table 64449-A
- 7 Title 22, CCR, section 64431, Table 64431-A
- 8 Title 22, CCR, section 64439
- 9 Title 22, CCR, section 64439
- 10 Title 40, Code of Federal Regulations, Section 143.3
- 11 California Department of Health Services, Division of Drinking Water and Environmental Management, Drinking Water Action Levels, <http://www.dhs.cahwnet.gov/ps/ddwem>.

Domestic wastewater contains numerous dissolved inorganic waste constituents (i.e., salts, minerals) that together comprise total dissolved solids (TDS). Each component constituent is not individually critical to beneficial use protection unless they are individually listed. The cumulative impact from these other constituents, along with the cumulative affect of the constituents that are individually listed can be effectively controlled using TDS as a generic indicator parameter.

Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. As chloride concentrations in most groundwaters in the region are much lower than in treated municipal wastewater, chloride is a useful indicator parameter for evaluating the extent to which effluent reaches groundwater. Boron is another TDS constituent that may occur in wastewater in concentrations greater than groundwater depending on the source water, to the extent residents use cleaning products containing boron, and whether any industrial dischargers utilize boron (e.g., glass production, cosmetics). Other indicator constituents for monitoring for groundwater degradation due to recharged effluent include total coliform bacteria, ammonia, total nitrogen, and Total Trihalomethanes (TTHMs), a by-product of chlorination. Dissolved iron and manganese are useful indicators to determine whether components of the WWTF with high-strength waste constituents, such as sludge handling facilities, are ineffective in containing waste. Exceptionally high TDS and nitrogen also typifies this type of release.

### **Treatment Technology and Control**

Given the character of wastewater from the types of sources present at DDJC-Sharpe, secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. Adding disinfection significantly reduces populations of pathogenic organisms, and reasonable soil infiltration rates and unsaturated soils can reduce them further. Neither organics nor total coliform organisms, the indicator parameter for pathogenic organisms, should be found in groundwater in a well-designed, well-operated facility.

Chlorine disinfection of effluent causes formation of trihalomethanes, which are priority pollutants. Treatment to reduce these in wastewater generally has not been performed, and little is known at this point on the typical impact on groundwater. DDJC-Sharpe currently operates a groundwater extraction/treatment system for volatile organic compounds that is down gradient from the WWTF, so potential groundwater degradation by trihalomethanes would be limited to groundwater beneath the facility

Wastewater from the types of sources present at DDJC-Sharpe typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Degradation by nitrogen can be controlled by tertiary treatment for nitrogen reduction, and agronomic reuse on harvested crops. The effectiveness varies, but generally best practicable treatment and control should be able to control nitrogen degradation at a concentration well below the water quality objectives. The proposed interim limitation reflects water quality objectives.

Waste constituents that are forms of salinity pass through the treatment process and soil profile and effective control of long-term affects relies upon effective source control and pretreatment measures. In the best of circumstances, long-term land discharge of treated municipal wastewater will degrade groundwater with salt (as measured by TDS and EC) and the individual components of salts (e.g., sodium, chloride). The proposed Order sets water quality objectives for the interim while site-specific, constituent-specific limits are developed in conjunction with a BPTC evaluation of source control and pretreatment. The next Order will likely contain effluent limits for salt components other than chloride that, if met, assure groundwater quality will be controlled to an acceptable level.

Other potential constituents in wastewater that may pass through the treatment process and the soil profile include recalcitrant organic compounds (e.g., ethylene glycol, or antifreeze), radionuclides, and pharmaceuticals. Hazardous compounds are not usually associated with wastewater from the types of sources present at DDJC-Sharpe and when present are reduced in the discharge to inconsequential concentrations through dilution with domestic waste, treatment, and the implementation of effective pretreatment programs. It is inappropriate to allow degradation of groundwater with such constituents, so proposed limitations are nondetect.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (i.e., below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Discharge of residual sludge to land may also lead to increases in groundwater alkalinity and hardness to concentrations that impair the water's beneficial uses and contribute to an overall increase in TDS. Overloading is preventable. Though iron and manganese limits are set at the water quality objective, groundwater pH is expected to remain the same as background.

## **Title 27**

Title 27, CCR, section 20380 et seq. (“Title 27”), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27, except for residual sludge and solid waste generated as part of the treatment process [section 20090(a) of Title 27]. The condition requires that the discharge not result in violation of any water quality objective in groundwater.

Treatment and storage facilities for sludge that are part of the WWTF are considered exempt from Title 27 under section 20090(a), under the condition that the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g., grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the discharge of effluent and the operation of treatment or storage facilities associated with a wastewater treatment plant can be allowed without requiring compliance with Title 27, but only if resulting degradation of groundwater is in accordance with the Basin Plan. This means, among other things, degradation of groundwater must be consistent with Resolution 68-16 and in no case greater than water quality objectives. The conditions for sludge, solid waste, and biosolids management proposed in this Order are intended to assure this and must all be evaluated along with other aspects of BPTC.

## **Proposed Order Terms and Conditions**

### **Discharge Prohibitions and Specifications**

The proposed Order establishes an average monthly flow limit of 50,000 gpd. The proposed discharge specifications for BOD<sub>5</sub> and TSS are based on the treatment technologies employed. The proposed Order requires the Discharger to disinfect the effluent. The discharge specifications regarding dissolved oxygen and freeboard are consistent with Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

### **Monitoring Requirements**

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed Order includes monitoring requirements for influent, effluent, evaporation/percolation pond, groundwater, and sludge.

The Title 27 zero leakage protection strategy relies heavily on extensive groundwater monitoring to increase a discharger's awareness of, and accountability for, compliance with the prescriptive and performance standards. With a high volume, concentrated, uncontained discharge to land, monitoring takes on even greater importance. Therefore, the proposed Order includes monitoring of groundwater.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive infiltration into groundwater occurs. However, where, as here, such infiltration occurs, it is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code section 13267.

The Discharger must monitor groundwater for constituents present in the discharge and capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate.

### **Reopener**

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. However, information is presently insufficient to develop final effluent and groundwater limitations for constituents of concern, so the proposed Order contains some interim limitations. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained,

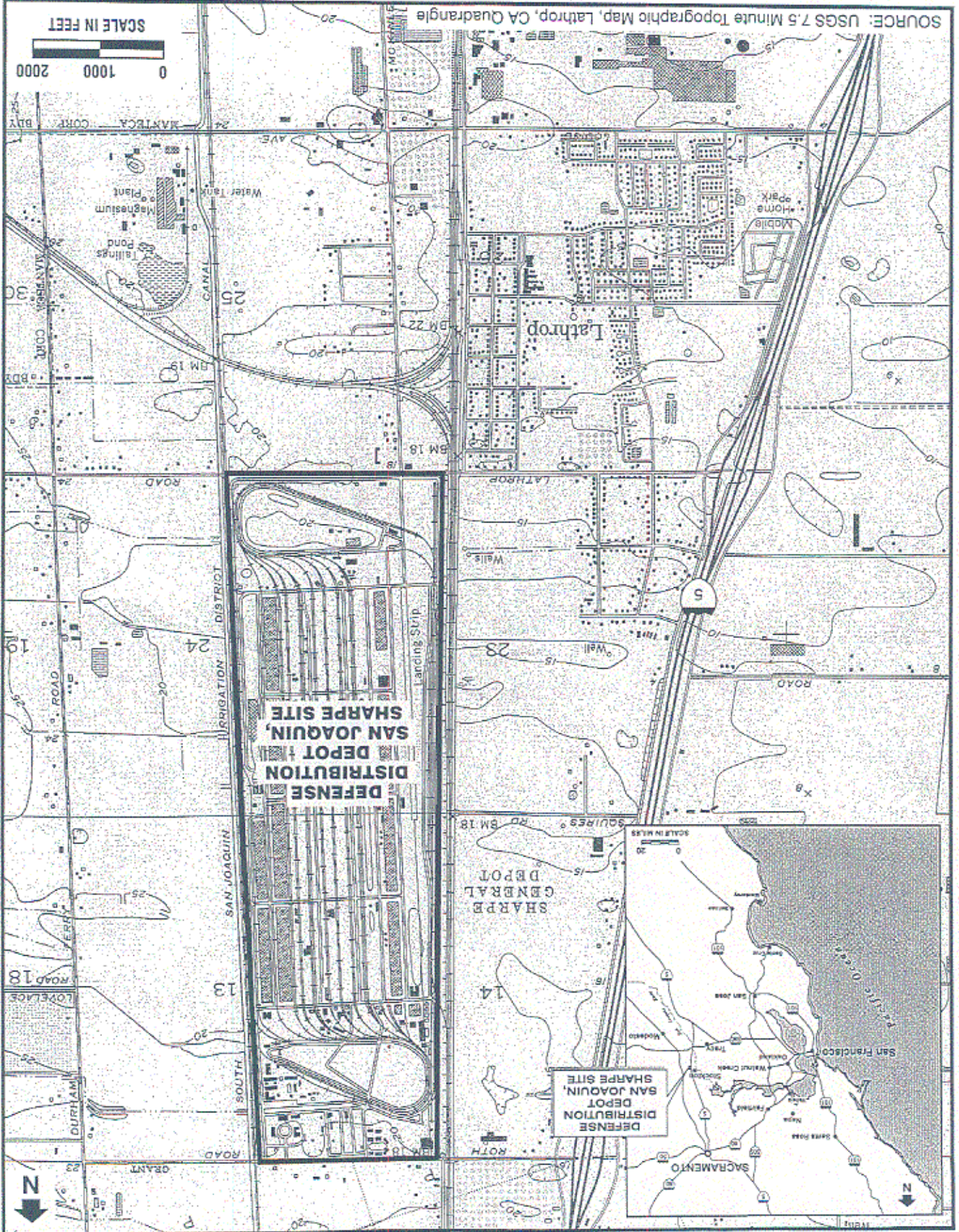
decisions will be made concerning the best means of assuring the highest water quality possible and that could involve substantial cost. It may be appropriate to reopen the Order if applicable laws and regulations change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Order. The CWC requires that waste discharge requirements implement all applicable requirements.

MLP: 9 June 2004

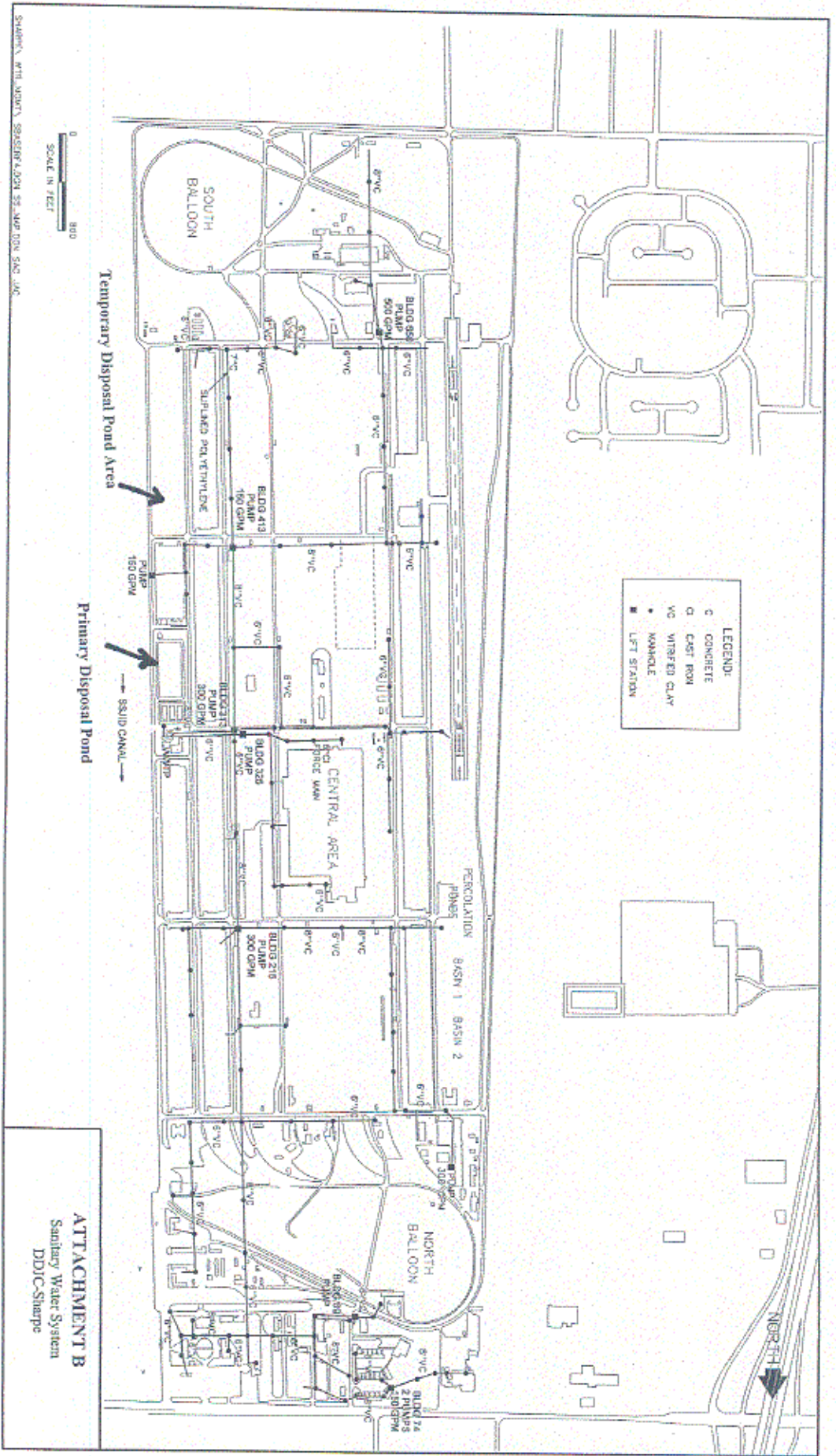


# ATTACHMENT A: DDC-Sharp and Vicinity

WMF-SHP SITE COR - VMG 1/22/99 SAC







**LEGEND:**

C	CONCRETE
□	CAST IRON
V/C	VALVED CLAY
•	MANHOLE
■	LIFT STATION

0 900  
SCALE IN FEET

SHARPE, WTL NORTH SEWERAGE, 2024 SE. MAP DOW SAC JAC

**ATTACHMENT B**  
Sanitary Water System  
DDIC-Sharpe