CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 97-123
WASTE DISCHARGE REQUIREMENTS FOR CORRECTIVE ACTION FOR:

THE DOW CHEMICAL COMPANY
PITTSBURG FACILITY
CONTRA COSTA COUNTY

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

SITE DESCRIPTION

1. The Dow Chemical Company (hereinafter Dow) operates a facility located at the end of Loveridge Road in the city of Pittsburg 35 miles northeast of San Francisco, California (Figure 1). The site is bounded by New York Slough on the north, the Pittsburg-Antioch Highway on the south, Loveridge Road on the west, and residential, commercial, and park lands to the east. The site occupies about 993 acres of which approximately 235 are a wetland preserve.

   Currently the "industrial" or "active" portion of the site contains chemical manufacturing facilities, one active Class II landfill, a groundwater treatment plant and a number of inactive or closed disposal units. The Dow plant formerly manufactured chlorine, sodium hydroxide, hydrogen, and chlorinated solvents including tetrachloroethene and carbon tetrachloride. Presently latex, agricultural chemicals, fumigants, fungicides, and hollow fibers are manufactured. In addition, the facility conducts chemical development research, treats raw water, and generates steam and electrical power.

PURPOSE

2. This Order contains requirements for the operation of a groundwater extraction, treatment and injection system that will be used in the cleanup of a portion of the groundwater at the Dow facility containing elevated levels of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Groundwater will be extracted from wells near the facility boundary with the New York Slough and treated to remove a significant amount of the organic pollutants. The treated groundwater will then be injected upgradient of the extraction wells in such a way that injected groundwater will not significantly alter the groundwater flow regime, nor will injected water cause VOC-impacted groundwater to migrate more rapidly toward the New York Slough.

   This system may be operated temporarily as interim corrective action while the final facility-wide corrective action remedy components are being constructed, or it may become part of the long term plan for managing a portion of the extracted groundwater in lieu of discharging it to New York Slough through Dow's deep water outfall. Upon completion of the correction action remedy selection process, a comprehensive facility-

wide Waste Discharge Requirements Order will be issued incorporating complete hydraulic containment and source remediation. Use of an injection system will depend on Dow's ability to manage the treated groundwater through various alternate means. If Dow chooses to use other water management alternatives to comply with this Order, it must demonstrate that these alternatives ensure the continued extraction and treatment of VOC-impacted groundwater at the minimum rate specified in this Order.

REGULATORY STATUS

3. The Dow Pittsburg facility is currently regulated by the Board under Waste Discharge Requirements (WDR) Orders No. 87-064 and 87-158, NPDES permit CA0004910 (WDR Order No. 94-147), and Cease and Desist Order 94-148. A Corrective Action Schedule of Compliance is contained in the Hazardous Waste Facility Permit (EPA ID Number: CAD 076 528 678) issued by the Department of Toxic Substances Control (DTSC).

   This Board is serving as the lead state agency pursuant to H&SC 25204.6(b) at the Dow facility to implement and enforce the requirements of Article 6, Chapter 14 of Division 4.5, Title 22 CCR, which includes corrective action.

4. Wells used to inject treated groundwater are allowed under the Resource Conservation and Recovery Act (RCRA) § 3020 (b) and 40 CFR part 144.13(c) if the injection is an approved corrective action.

SITE HYDROGEOLOGY

5. The Dow Pittsburg facility is located in the Pittsburg groundwater basin which extends from the hills south of the facility to Suisun Bay, New York Slough, and the western portion of the Sacramento-San Joaquin River delta in the north, and from the vicinity of Bay Point in the west to the City of Antioch in the east. The basin is filled with unconsolidated fluvial and alluvial sediments deposited in the Sacramento-San Joaquin River delta and in alluvial fans formed by streams draining the hills south of the facility. Groundwater at the Dow facility is encountered at depths varying from approximately 2 to 13 feet below ground surface (bgs).

   The subsurface has been divided into three aquifer intervals generally composed of sand and silty sand. The aquifer intervals are referred to as the water table interval (approximately 2 to 25 feet bgs), the mid-depth interval (30 to 75 feet bgs), and the deep interval (80 to 130 feet bgs). Regionally and at the site, a clay interval is found from approximately 130 to as much as 800 feet bgs. In the southern portion of the facility, generally south of 3rd Street, the mid and deep intervals are not separated by a clay layer and are composed mostly of sand. North of 2nd Street, along New York Slough, the aquifer intervals are separated by clay layers. The aquifer intervals in the north are thinner and consistently finer-grained than those in the southern part of the facility.

GROUNDWATER CHARACTERISTICS

Summary of Groundwater Contamination

6. Tetrachloroethene and carbon tetrachloride, along with other volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), have been detected at elevated concentrations in groundwater at various locations under the Dow facility including areas adjacent to New York Slough where discharge of polluted groundwater is likely to occur. In mid-depth extraction wells near Bundesen Bay, a 2.5 acre embayment connected to New York Slough, total VOC concentrations in excess of 200,000 μg/l have been measured in groundwater.

Ranges of Concentrations of Selected Constituents in Bundesen Bay Area Extraction Wells

Constituent	Range of Concentrations (μg/l)
1,2-Dichloroethane	38 to 5,000
1,2-Dichloropropane	30 to 24,000
Carbon Tetrachloride	32 to 140,000
Chlorobenzene	99 to 600
Chloroform	100 to 51,000
cis-1,2-Dichloroethene	60 to 40,000
Methylene Chloride	37 to 180,000
Tetrachloroethene	190 to 41,000
Toluene	40 to 19,000
trans-1,2-Dichloroethene	300 to 2,000
Trichloroethene	11 to 43,000
Vinyl Chloride	140 to 20,000
Copper	5 to 130
Nickel	4 to 480

7. The concentration of total VOCs in the vicinity of IW-1(formerly IW-414), the single existing on-site injection well located at the corner of G and 4th streets, is 90.7 μg/l in the mid-depth interval and 10.5 μg/l in the deep interval. Although the concentrations of VOCs in the groundwater at IW-1 are low compared to concentrations of VOCs in groundwater near Bundesen Bay, VOCs have been detected at higher concentrations in the Monofill area located approximately 1000 feet southeast of IW-1: in the central

portion of the facility located approximately 400 to 600 feet north of IW-1; and in the west-central portion of the facility approximately 1000 feet west of IW-1.

CORRECTIVE ACTION

8. Dow and Regional Board staff are in the process of investigating the feasibility of implementing various corrective measure technologies and alternatives for control of the remaining contaminants in groundwater and other affected media on a facility-wide basis. Dow has submitted a work plan and schedule that runs through the end of 1998 for tasks related to the selection of containment/corrective action for the facility. Most of the tasks, including optimization of the existing groundwater treatment plant, identification of methods for managing treated groundwater, and the selection of final corrective action measures will be completed by the end of 1997.

Interim Measures

9. In the interim until the final facility-wide corrective action plan is fully implemented, Dow will perform groundwater extraction focusing on mass removal of VOCs in groundwater in the Bundesen Bay area to the extent that neither the hydraulic nor the VOC removal capacity of the existing groundwater treatment system is exceeded. The Bundesen Bay area was chosen for interim corrective action due to the relatively high concentrations of VOCs in close proximity to surface water, and the corresponding likelihood of discharge.

Water Management Options

10. Dow has explored various options for disposal of treated groundwater including on-site reuse, discharge to the local POTW, discharge to surface water (NPDES) and injection. None of the options will singularly be capable of handling the various quantities and composition of extracted groundwater. It is likely that the final corrective actions will utilize several treatment technologies and disposal options, including groundwater injection.

Groundwater Treatment and Injection System

11. The current treatment system consists of an air-stripper followed by a 340,000-gallon feed tank and three 20,000-pound steam-regenerated carbon beds operated in series. The three carbon beds operate until concentrations of organic compounds exiting the third bed approach the concentration limits for injected groundwater established in this Order. At this time, the primary bed is regenerated while untreated groundwater is stored in the treatment system feed tank. The volume of the feed tank is the limiting factor in the hydraulic capacity of the treatment system. Accounting for a working volume between 15% and 85% of feed tank capacity requires that a continuous groundwater extraction flow of no more than 150 gpm be maintained to avoid overfilling the tank during primary bed regeneration. Dow determined that a maximum regeneration cycle frequency of once per week was acceptable based on logistical, mechanical, and personnel limitations.

Approximately 50 gpm must be pumped from the hydraulic control system surrounding the former Class I solar evaporation ponds (Monofill) to comply with post-closure requirements for that unit. In order to ensure that the hydraulic capacity of the groundwater treatment plant is not exceeded, the maximum feasible extraction rate from Bundesen Bay area extraction wells is limited to 100 gpm for the interim operation period until final facility-wide corrective action is approved.

12. Injection Test Results: Dow conducted an injection test on a well constructed in the central area of the facility (IW-1 on Figure 2). The well location was selected due to: 1) the presence of a 70- to 90-foot thick sand interval with no silt/clay layer; 2) the least potential of splitting the plume or disturbing the capture zone of operating extraction wells; and 3) proximity to infrastructure (e.g., piperacks) necessary for injection and long-term use. A 6-inch diameter injection well with a screened interval extending from 45 to 125 feet below ground surface was used. Five piezometers were installed at this location to monitor the influence of the injection.

During the test, water from a hydrant at the facility was injected into the aquifer at rates of 20 to 69.5 gpm over a 24-hour period; the average rate was 37.8 gpm. Injection test results concluded that a flow of approximately 60 gpm is sustainable without significant mounding or impacts such as upgradient migration of VOCs in injected groundwater. Dow performed hydrogeologic modeling analyses on the influence of a series of injection wells as part of a hydraulic containment scenario for future facility-wide corrective action. The effects of 2, 4, 6, 8, and 10 wells injecting water at a rate of 50 gpm per well were modeled. The groundwater flow model indicated that injection of water from 8 wells at 50 gpm (400 gpm total) did not adversely affect containment of the entire site.

13. Effluent Data: The groundwater treatment system is designed to remove dissolved organic compounds. Effluent data from a three-month-long pilot operation demonstrated the effective removal of organic compounds with treatment levels for metals of concern being below 15 ug/l for copper and ranging from about 61 to 520 ug/l for nickel. Dow has proposed injecting treated groundwater with a maximum copper concentration of 37 μg/l and a maximum nickel concentration of 300 μg/l.

BASIN PLAN

14. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

BENEFICIAL USES

15. The Basin Plan provides that "Unless otherwise designated by the Regional Board, all groundwaters are considered suitable or potentially suitable for municipal or domestic water supply. In making any exceptions, the Regional Board will consider the criteria referenced in Regional Board Resolution No. 89-39, 'Sources of Drinking Water' where: ...The total dissolved solids exceed 3,000 mg/l (5,000 μS/cm electrical conductivity) and it is not reasonably expected by the Regional Board that the groundwater could supply a public water system."

16. The conditions in the areas of the site regulated by this Order satisfy the Basin Plan exception criteria cited in Finding 15. Therefore, the groundwater in these areas as described below is not considered suitable for municipal or domestic water supply. The areas of the site regulated by this Order consist of those areas wherein lie existing and proposed injection and extraction wells. These areas are all located within the Dow facility north of the Atchison Topeka and Santa Fe Railway line.

    The groundwater beneath the Dow site north of the Atchison Topeka and Santa Fe Railway line has TDS/electrical conductivity (minimum - 2100 μS/cm, maximum - 80,300 μS/cm, median - 8650 μS/cm) that is significantly higher than the 3000 mg/l (5000 μS/cm) levels considered as maximums for suitability for municipal or domestic water supply. Furthermore, it is not reasonable to expect that the groundwater could supply a public water system because significant pumping of the aquifer is likely to result in saltwater intrusion that would further degrade water quality. There is evidence that past pumping of the aquifer in the early 1900s resulted in increased salinity.

17. The potential beneficial uses of groundwater underlying the portions of the site that will receive the discharge regulated by this Order are:

    (i) Limited industrial process and service water supply

18. Treated groundwater will be injected into an area where the existing groundwater is already highly impacted by VOCs. Under the Provisions of this Order, Dow is required to demonstrate that the higher hydraulic head created by the injection mound does not adversely affect the migration direction and distribution of VOCs in groundwater and that the aquifer beneath the facility will not be further degraded by this action.

19. The northern portion of the Dow facility is bounded by New York Slough. New York Slough is located within the San Francisco Bay/Delta system between Suisun Bay to the west and the confluence of the Sacramento and San Joaquin Rivers to the east. Contra Costa Water District maintains a drinking water intake at Mallard Slough four miles west of the Dow facility. The Mallard Slough intake is used to augment the main supply primarily during winter and spring months when the salinity is low. The existing and potential beneficial uses of New York Slough and contiguous waters are:

    (i) Industrial service and process supply

(ii) Municipal water supply

(iii) Water contact and non-contact recreation

(iv) Wildlife habitat

(v) Commercial and sport fishing

(vi) Fish migration and spawning

(vii) Navigation

(viii) Estuarine habitat

(ix) Preservation of rare and endangered species

20. The Basin Plan prohibits discharge of "all conservative toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, to waters of the Basin." Dow's groundwater extraction and treatment system and associated operation, maintenance, and monitoring constitutes an acceptable control program for minimizing the discharge of toxicants to waters of the State.

CEQA

21. This action is categorically exempt from the provisions of the California Environmental Quality Act pursuant to Section 15308, Title 14, of the California Code of Regulations.

NOTICE AND MEETING

22. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge, and has provided them with an opportunity to submit their written comments.

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

IT IS HEREBY ORDERED that the Dow Chemical Company, their agents, successors and assigns shall meet the applicable provisions contained in Title 23, Division 3, Chapter 15, of the California Code of Regulations and Division 7 of the California Water Code, and shall comply with the following:

A. EFFLUENT LIMITS FOR INJECTION OF TREATED GROUNDWATER

1. Key contaminant constituents identified in the site-wide groundwater monitoring of the facility shall be used to monitor injection concentrations. **Constituents of**

Concern (COCs) consist of all constituents likely to be present in groundwater based on the history of chemical use at the facility and approximately ten years of groundwater monitoring data. **Monitoring Parameters (MPs)** are a subset of the COCs. They include the light-end VOCs with poor carbon adsorption qualities that are usually the first constituents to break through the carbon beds in the groundwater treatment plant. Concentrations of MPs can thus be used as indicators of treatment plant compliance with effluent limits established for the entire list of COCs. Copper and Nickel are also included in the list of MPs because the groundwater treatment plant does not include a treatment train for metals.

2. Basis for Effluent Limits: The effluent limits for organic compounds are based on the data from a three-month-long pilot operation of the groundwater treatment plant and Dow's NPDES permit limits for the groundwater effluent stream. The current NPDES permit limits are, for the most part, based on granular activated carbon adsorption performance limits established from other solvent-contaminated groundwater cleanup sites. The effluent limits for VOCs in the table below are orders of magnitude lower than the concentrations of VOCs in Bundesen Bay and Monofill area groundwater before treatment, and thus meet the primary goal of interim corrective action which is to get the greatest mass removal of organic compounds technologically and economically achievable with the existing treatment system at the facility.

   The pilot operation also showed that copper is effectively removed in the carbon beds down to the detection limit of 15 μg/l, while nickel in the effluent varied from 61 μg/l to 520 μg/l. Dow has proposed injecting treated groundwater with a maximum copper concentration of 37 μg/l and a maximum nickel concentration of 300 μg/l. The value of 300 μg/l is an average of the nickel concentration at existing injection well IW-1 (120 μg/l) and the maximum concentration of nickel observed in the Bundesen Bay area (480 μg/l). Although it appears that injection will raise the concentration of nickel in the immediate vicinity of the injection wells, this will not cause significant water quality degradation or unreasonably impact present or anticipated beneficial uses of the groundwater beneath the Dow facility. Higher concentrations of nickel are found in other parts of the facility downgradient of the injection well area. It is staff's position that using extraction and injection as a means of expediting the cleanup of VOC-impacted groundwater in areas where it threatens to discharge into surface water justifies the localized and relatively insignificant water quality degradation in the vicinity of the proposed injection wells and is consistent with maximum benefit to the people of the state.

3. Instantaneous maximum concentrations in the influent to the groundwater injection system (effluent from the groundwater treatment plant) shall not contain constituents in excess of the following limits:

Constituent (MP) denotes Monitoring Parameter	**Effluent Limits (µg/l)**
Metals	
Copper **(MP)**	37
Nickel **(MP)**	300
Purgeable Organics	
Benzene	5
Carbon Tetrachloride **(MP)**	5
Chloroform **(MP)**	5
Chlorobenzene	5
1,1-dichloroethane	5
1,2-dichloroethane **(MP)**	5
1,1-dichloroethene	5
cis-1,2-dichloroethene	5
trans-1,2-dichloroethene	5
1,2-dichloropropane	5
Methylene Chloride **(MP)**	44
Tetrachloroethene **(MP)**	5
Toluene	5
1,1,1-trichloroethane	5
1,1,2-trichloroethane	5
Trichloroethene	5
Vinyl Chloride **(MP)**	5

B. PROHIBITIONS

1. The treatment, storage and discharge of treated groundwater shall not create a nuisance as defined in Section 13050(m) of the California Water Code, nor degrade the quality of the groundwater in the aquifers to which it is injected.

2. There shall be no bypass or overflow of untreated or inadequately treated waste groundwater to waters of the state from the Dow's wastewater collection, treatment, or distribution facilities.

3. The injection of waste other than treated extracted groundwater, as defined in this Order, is prohibited.

4. The discharger shall not cause the following conditions to exist in waters of the State at any place outside the extraction well capture zone:

   a. Surface Waters

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

      Bottom deposits or aquatic growth.

      Turbidity, apparent color, or water levels beyond natural background levels.

      Visible, floating, suspended or deposited oil or other products of petroleum origin.

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

   b. Groundwater

      Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

C. PROVISIONS

1. Dow shall comply with all sections of this Order upon adoption by the Board and upon starting any discharge by injection.

2. Dow shall comply with any Self-Monitoring Program for Injection of Treated Groundwater as adopted by the Board and as may be amended by the Executive Officer.

3. All reports submitted pursuant to this Order shall be prepared under the supervision of and signed by a registered engineer, registered geologist, or certified engineering geologist.

4. Dow shall notify the Regional Board if any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited by this Order.

5. Dow shall operate the existing groundwater treatment plant between a minimum capacity of 100 gpm and the maximum permitted and hydraulic capacity of 150 gpm except for limited periods of maintenance and repair. The maximum rate of

injection of treated, extracted groundwater into the existing or proposed wells shown on Figure 2 shall not exceed 400 gpm.

6. Dow shall maintain in good working order, and operate as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

7. **SPECIFICATIONS FOR INTERIM GROUNDWATER CORRECTIVE ACTION**

Dow shall submit a detailed plan, acceptable to the Executive Officer, for start-up, operation, and maintenance of a groundwater injection system or alternate water management program that will ensure the operation and maintenance of the current groundwater extraction and treatment system at a minimum rate of 100 gpm in the interim period until final facility-wide corrective action has been approved and implemented. If injection is the proposed alternative, the plan should include construction details for proposed injection wells and a map showing their locations. Also included should be construction details and a map of the conveyance system that will transport groundwater from the extraction wells to the treatment plant and from the treatment plant to the injection wells.

COMPLIANCE DATE: November 3, 1997

8. **DEMONSTRATION OF INJECTION MOUND DISSIPATION**

Dow shall submit a work plan, acceptable to the Executive Officer, for demonstrating dissipation of the groundwater injection mound upgradient of the extraction well capture zone or an equivalent method to ensure that the higher hydraulic head created by the injection mound does not adversely affect the migration direction and distribution of VOCs in groundwater.

COMPLIANCE DATE: November 28, 1997, only if injection is the water management program proposed in C.7. above

9. **CONTINGENCY PLAN**

Dow shall submit a contingency plan, acceptable to the Executive Officer, for handling excess treated groundwater in the event that the injection system or alternate water management program, for any reason, is unable to accept the volumetric flow of treated, extracted groundwater allotted to it in the plan required under Provision C.7. In all cases, extraction and treatment of VOC-impacted groundwater from the Bundesen Bay and Monofill areas must be maintained between a minimum of 100 gpm and the hydraulic capacity of the

groundwater treatment plant except during periods of maintenance and repair pursuant to Provision C.5.

COMPLIANCE DATE: November 28, 1997

10. **CERTIFICATION OF WATER MANAGEMENT IMPLEMENTATION**

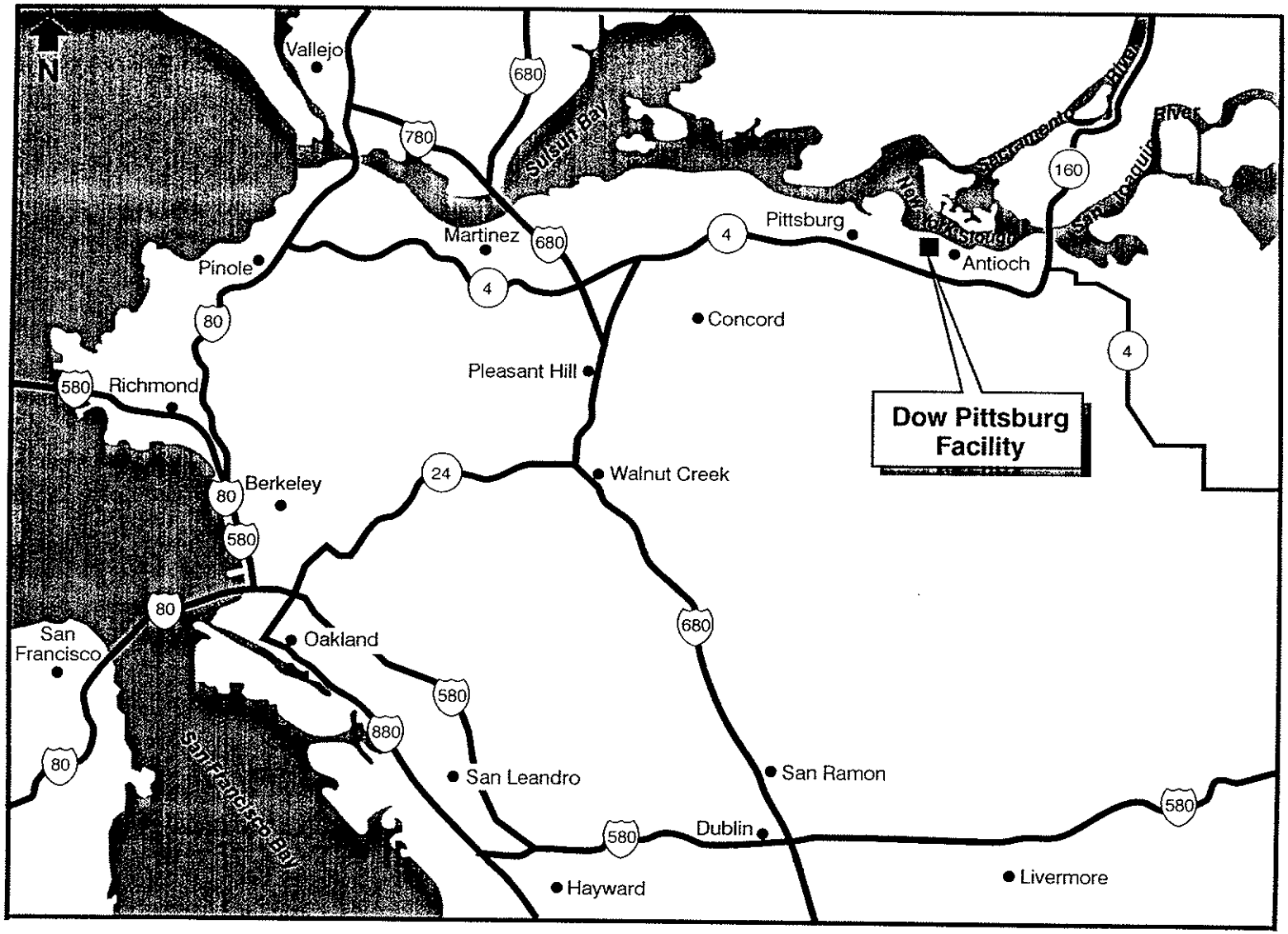
Dow shall submit a letter, acceptable to the Executive Officer, certifying that injection of treated, extracted groundwater or an alternate Executive Officer-approved water management program has been implemented in accordance with all requirements of this Order.

COMPLIANCE DATE: December 15, 1997

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on October 15, 1997.

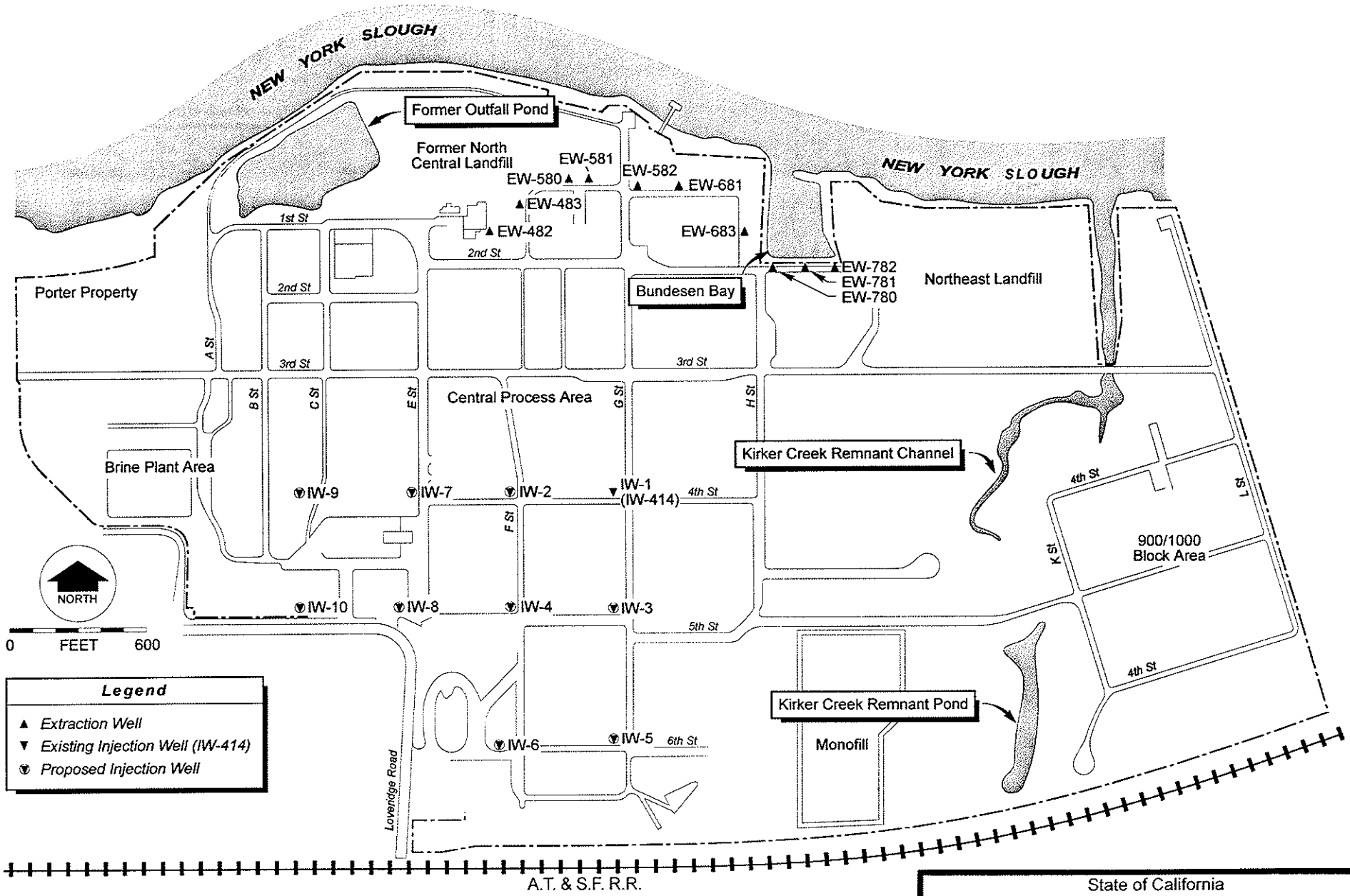
Loretta K. Barsamian
Executive Officer

Attachments: Figure 1 - Site Location Map
Figure 2 - Existing and Proposed Extraction and Injection Well Locations



State of California
Regional Water Quality Control Board
San Francisco Bay Region

Figure 1: Site Location Map
The Dow Chemical Company
Pittsburg CA Facility



State of California
Regional Water Quality Control Board
San Francisco Bay Region

Figure 2: Existing and Proposed Extraction and Injection Well Locations
The Dow Chemical Company
Pittsburg CA Facility

DOW9697.FH5 - VMG 9/5/97 SAC

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING AND REPORTING PROGRAM

FOR

DOW CHEMICAL COMPANY
PITTSBURG FACILITY
RICHMOND MANUFACTURING FACILITY

CONTRA COSTA COUNTY

ORDER NO. 97-123

A. GENERAL

1. Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16. This Discharge Monitoring Program is issued in accordance with Provision 2 of Regional Board Order No. 97-123.

2. The principal purposes of a discharge monitoring program are: (1) to document compliance with waste discharge requirements and prohibitions established by the Board, (2) to facilitate self-policing by the waste dischargers in the prevention and abatement of pollution arising from waste discharge, and (3) to develop or assist in the development of standards of performance, pretreatment and toxicity standards.

B. SAMPLING AND ANALYTICAL METHODS

1. Sample collection, storage, and analyses shall be performed according to the most recent version of EPA Standard Methods and in accordance with an approved sampling and analysis plan.

2. Water and waste analysis shall be performed by a laboratory approved for these analyses by the State of California. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.

3. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. SPECIFICATIONS FOR SAMPLING AND ANALYSIS

1. Dow is required to perform sampling and analysis at the points listed below and according to the schedule in Table 1.

2. Description of Sampling Points:

I-1	At a point in the Monofill area extracted groundwater conveyance line immediately prior to treatment
I-2	At a point in the Bundesen Bay area extracted groundwater conveyance line immediately prior to treatment
E-1	At a point in the groundwater treatment system effluent conveyance line prior to discharge into an injection well

TABLE 1

Sampling and Analysis Schedule

Parameter or Constituent	I-1 and I-2	E-1
Treated Groundwater Flow Rate (gal/day)	W_1/D_2	NA
System Operation*	D	D
pH (units)	NA	M
Purgeable Hydrocarbon MPs (carbon tetrachloride, chloroform, 1,2-dichloroethane, methylene chloride, tetrachloroethene, vinyl chloride, µg/l) using EPA Method 8010 or 8240	Q	M
Purgeable Hydrocarbon COCs (Halogenated and Aromatic VOCs, µg/l) using EPA method 8240 or equivalent	Q/SA	Q/SA
Extractable Hydrocarbon COCs (SVOCs, µg/l) using EPA Method 8270 or equiv.	Q/SA	Q/SA
Metal MPs (Cu and Ni)	Q	M
Physical Parameters affecting injection (Hardness, TDS, etc.)	TBD	TBD

NA = not applicable
D = daily
D_2 = daily for the influent conveyance line from the Bundesen Bay area pumps
W_1 = weekly at the meter totaling flow from the Monofill area pump
M = monthly
Q = quarterly
Q/SA = quarterly for the first year, then semi-annually
TBD = to be determined before final order is adopted

* Visual confirmation that tanks, valves, and associated piping in the groundwater treatment system are not leaking/releasing extracted groundwater prior to injection - performed according to the "Permit by Rule Tank Leak Inspection Procedures" for California regulated hazardous waste tanks under the authority of the Department of Toxic Substances Control

D. RECORDS TO BE MAINTAINED

Written reports, calibration and maintenance records, sampling and analytical records, and other compliance records shall be maintained by Dow for a period equal to the life of

this Order, but not less than three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board.

E. REPORTS TO BE FILED WITH THE REGIONAL BOARD

Report of Order Violations
In the event that Dow violates or threatens to violate the conditions of this Order, Dow shall notify the Regional Board within one working day of knowledge of the violation or threatened violation. Notice may be made by telephone to the current staff case handler, with a written confirmation report to be forwarded within five working days of the violation.

Self-Monitoring Reports
Written reports shall be filed regularly for each calendar quarter within 60 days from the end of the quarter.

Quarterly reports shall include:

1) A letter transmitting the essential points in each report. Such a letter shall include a discussion of any requirement violations found during the last report period, and actions taken or planned for correcting the violations. If Dow previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last report period this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

2) Data - All monitoring and operational data is to be submitted in tabular form and should include at least the following:

   a) Table 1 Results - flow rate by well or station and dated sampling and analytical results.

   b) Treatment System Performance Data - summary of performance data for the quarter to include average daily and total extraction in gallons, influent concentrations, effluent concentrations, and approximate total pounds of VOCs removed.

3) Site Map - a site map showing locations of sample and observation stations, and any location where violations have occurred shall accompany each quarterly report.

4) Discussion of Monitoring Activities - the report shall include a detailed discussion of the following monitoring activities:

a) Order Violations - any violations of requirements of this Order which occurred during this reporting period, cause of violation, and actions taken or planned to achieve compliance.

b) Sampling and Monitoring - all sampling and monitoring methodologies shall be performed according to the most current Sampling and Analysis Plan (SAP) approved by the Executive Officer. Any deviations from procedures outlined in the SAP for a particular monitoring event shall be described in detail in the text of the corresponding monitoring report.

c) Injection Mound - confirmation that the injection mound is not adversely affecting the migration direction and distribution of VOCs in groundwater as proposed in the approved *Demonstration of Injection Mound Dissipation* (Provision 8 of Order 97-123). Monitoring points should provide groundwater level and concentration data both upgradient and downgradient of the injection well/s. If necessary to maintain hydraulic control of the injection mound, adjustments in the operation of the extraction and injection well system shall be proposed.

d) Injection Well Performance - any symptoms that may indicate potential failure of the injection well system through clogging, saturation, or other mechanism.

I, Loretta K. Barsamian, Executive Officer, hereby certify that the foregoing Self-Monitoring and Reporting Program:

1. Has been developed in accordance with the procedures set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Board's Order No. 97-123.

2. Is effective on the date shown below.

3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer.

Date Ordered: October 15, 1997

Loretta K. Barsamian
Executive Officer